

**LONGHORN ARMY
AMMUNITION PLANT
KARNACK, TEXAS**

**ADMINISTRATIVE
RECORD**

Volume 7

2018

Bate Stamp Numbers

00842966 - 00844815

Prepared for

**Department of the Army
Longhorn Army Ammunition Plant**

1976 – 2018

***LONGHORN ARMY AMMUNITION PLANT
KARNACK, TEXAS
ADMINISTRATIVE RECORD – CHRONOLOGICAL INDEX***

VOLUME 7

2018

- A. Title: Report (cont'd) – Quarterly Evaluation Report, 1st Quarter (January-March) 2017, Groundwater Treatment Plant, Longhorn Army Ammunition Plant, Karnack, Texas
- Author(s): AECOM Technical Services
- Recipient: U.S. Army Corps of Engineers
- Date: August 2017
- Bate Stamp: 00842966 – 00844815

Sample Name: L1702126105MS Acquired: 2/28/2017 19:13:54 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20999	4.5847	.22859	1.0342	3.4763	.02476	F 1179.7
Stddev	.00097	.0205	.00108	.0019	.0061	.00012	13.8
%RSD	.46272	.44733	.47197	.18004	.17489	.47500	1.1737

#1	.21028	4.5978	.22886	1.0351	3.4824	.02465	1163.8
#2	.21079	4.5611	.22740	1.0354	3.4703	.02473	1189.3
#3	.20891	4.5952	.22951	1.0320	3.4761	.02488	1186.0

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02874	.09530	.24121	.25470	6.9136	261.87	1.8794
Stddev	.00037	.00065	.00152	.00312	.0081	.80	.0020
%RSD	1.2879	.68245	.63132	1.2232	.11658	.30514	.10441

#1	.02916	.09469	.24081	.25785	6.9131	262.41	1.8816
#2	.02850	.09599	.23993	.25463	6.9219	260.95	1.8789
#3	.02855	.09522	.24290	.25162	6.9059	262.25	1.8778

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.449	2.3787	.49583	99.426	.29621	5.1330	.23202
Stddev	.088	.0050	.00089	.117	.00151	.0060	.00839
%RSD	.47469	.21231	.17864	.11736	.51088	.11610	3.6155

#1	18.349	2.3766	.49558	99.308	.29691	5.1382	.23856
#2	18.484	2.3751	.49509	99.428	.29724	5.1343	.23495
#3	18.513	2.3845	.49681	99.542	.29447	5.1265	.22256

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702126105MS Acquired: 2/28/2017 19:13:54 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-04

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.60985	.16696	5.2611	.46700	6.5307	.40625	.20508
Stddev	.00285	.01201	.0024	.00117	.0210	.00847	.00615
%RSD	.46750	7.1930	.04617	.25104	.32150	2.0850	2.9995

#1	.61035	.17421	5.2616	.46590	6.5509	.41434	.20872
#2	.60678	.17357	5.2633	.46686	6.5090	.39744	.19798
#3	.61242	.15309	5.2585	.46823	6.5321	.40697	.20855

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.49690	.46005	F -2.4403
Stddev	.00190	.00104	.6887
%RSD	.38303	.22632	28.222

#1	.49683	.45913	-2.2097
#2	.49504	.45984	-1.8965
#3	.49884	.46118	-3.2147

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4325.8	60590.	8007.6
Stddev	3.2	112.	18.3
%RSD	.07374	.18503	.22861

#1	4323.2	60717.	8023.9
#2	4329.4	60547.	8011.2
#3	4324.8	60506.	7987.8

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702126105MSD Acquired: 2/28/2017 19:17:44 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-05

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.21044	4.5722	.22855	1.0333	3.5011	.02466	F 1196.2
Stddev	.00148	.0053	.00613	.0040	.0067	.00009	14.3
%RSD	.70233	.11669	2.6837	.39094	.19289	.37737	1.1988

#1	.21198	4.5781	.23559	1.0380	3.4945	.02459	1185.2
#2	.20903	4.5678	.22433	1.0307	3.5007	.02477	1191.0
#3	.21033	4.5707	.22574	1.0314	3.5080	.02463	1212.4

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02874	.09517	.24079	.25570	6.9649	264.96	1.8877
Stddev	.00002	.00024	.00164	.00107	.0469	.71	.0083
%RSD	.06762	.25101	.68047	.41798	.67307	.26894	.44100

#1	.02873	.09493	.24085	.25556	6.9160	264.17	1.8840
#2	.02876	.09541	.24240	.25472	7.0094	265.18	1.8820
#3	.02872	.09519	.23912	.25684	6.9692	265.54	1.8973

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.485	2.3830	.49815	99.731	.29721	5.1275	.23106
Stddev	.085	.0023	.00042	.189	.00246	.0166	.00586
%RSD	.46224	.09464	.08443	.18925	.82697	.32297	2.5376

#1	18.387	2.3839	.49768	99.610	.29459	5.1090	.23581
#2	18.524	2.3805	.49849	99.634	.29758	5.1324	.22451
#3	18.544	2.3847	.49828	99.948	.29946	5.1411	.23288

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702126105MSD Acquired: 2/28/2017 19:17:44 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-05

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.60632	.18228	5.2908	.46527	6.5926	.39677	.20470
Stddev	.01277	.00921	.0073	.00048	.0159	.00258	.00365
%RSD	2.1055	5.0553	.13777	.10349	.24183	.64948	1.7836

#1	.61850	.17460	5.2960	.46572	6.5753	.39471	.20379
#2	.60740	.19250	5.2940	.46533	6.5958	.39593	.20873
#3	.59304	.17974	5.2825	.46477	6.6067	.39966	.20160

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.49442	.46092	F -3.1097
Stddev	.00108	.00093	.6277
%RSD	.21936	.20149	20.186

#1	.49320	.45986	-2.8833
#2	.49527	.46134	-3.8192
#3	.49479	.46157	-2.6266

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4340.0	60748.	7984.7
Stddev	4.3	51.	71.9
%RSD	.09824	.08475	.90018

#1	4335.3	60745.	8063.3
#2	4341.1	60698.	7968.3
#3	4343.7	60801.	7922.4

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 19:21:36 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40617	10.216	.40452	.50323	1.0299	.05065	10.341
Stddev	.00468	.012	.00355	.00353	.0019	.00006	.029
%RSD	1.1529	.11748	.87846	.70123	.18068	.11921	.28202

#1	.40302	10.205	.40768	.50672	1.0278	.05072	10.307
#2	.41155	10.213	.40520	.49966	1.0313	.05062	10.353
#3	.40394	10.229	.40067	.50329	1.0306	.05062	10.362

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05059	.20381	.50769	.51369	3.9185	53.063	1.0711
Stddev	.00034	.00049	.00193	.00302	.0172	.168	.0065
%RSD	.67726	.23894	.38070	.58882	.43950	.31644	.60556

#1	.05024	.20412	.50897	.51215	3.8987	52.877	1.0691
#2	.05060	.20325	.50547	.51174	3.9296	53.204	1.0784
#3	.05093	.20406	.50864	.51717	3.9273	53.107	1.0659

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.9421	.49318	1.0097	52.163	.51057	10.096	.51460
Stddev	.0564	.00249	.0037	.082	.00097	.035	.00156
%RSD	.56701	.50568	.36313	.15757	.19035	.34464	.30367

#1	9.8837	.49074	1.0139	52.094	.51052	10.135	.51535
#2	9.9962	.49572	1.0078	52.254	.50963	10.067	.51280
#3	9.9465	.49309	1.0074	52.142	.51157	10.088	.51564

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 19:21:36 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2298	.39416	5.0820	1.0103	1.0278	.98889	.50813
Stddev	.0034	.01301	.0106	.0028	.0032	.01141	.01339
%RSD	.27272	3.3006	.20880	.27343	.31127	1.1536	2.6353

#1	1.2327	.40903	5.0914	1.0109	1.0242	.97669	.51441
#2	1.2261	.38859	5.0705	1.0073	1.0287	.99069	.49276
#3	1.2305	.38486	5.0842	1.0127	1.0304	.99929	.51723

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0074	1.0033	F .45891
Stddev	.0018	.0013	.22777
%RSD	.18203	.12877	49.632

#1	1.0090	1.0043	.72183
#2	1.0054	1.0018	.32198
#3	1.0077	1.0037	.33291

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4903.3	68632.	8155.8
Stddev	16.3	98.	45.8
%RSD	.33228	.14350	.56103

#1	4906.2	68536.	8205.0
#2	4918.0	68627.	8148.0
#3	4885.8	68733.	8114.5

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 19:25:13 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00140	-0.01616	-0.00162	.00202	-0.00007	.00005	.00008	-0.00020
Stddev	.00013	.00217	.00581	.00127	.00112	.00004	.02902	.00044
%RSD	9.2946	13.456	358.46	62.725	1580.5	73.471	36355.	219.12

#1	-0.00150	-0.01367	.00507	.00080	-0.00061	.00002	.03227	-0.00069
#2	-0.00144	-0.01713	-0.00447	.00193	-0.00082	.00004	-0.00795	.00017
#3	-0.00125	-0.01768	-0.00546	.00333	.00122	.00009	-0.02407	-0.00008

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00025	-0.00105	-0.00005	-0.01714	.43343	.00036	-0.04471	.00013
Stddev	.00029	.00103	.00070	.02798	.03165	.00530	.05296	.00161
%RSD	115.33	98.074	1407.5	163.28	7.3015	1472.8	118.45	1251.7

#1	-0.00023	-0.00073	-0.00086	-0.04941	.40411	.00012	.01354	-0.00139
#2	.00003	-0.00220	.00043	-0.00248	.42919	-0.00482	-0.05772	-0.00003
#3	-0.00054	-0.00022	.00028	.00047	.46698	.00578	-0.08996	.00181

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00053	.13912	.00064	.00737	-0.00314	.00171	.00599	.00402
Stddev	.00045	.01912	.00054	.00888	.00094	.00233	.00943	.00351
%RSD	85.235	13.746	83.131	120.40	30.005	135.81	157.43	87.161

#1	.00046	.11716	.00026	.00363	-0.00366	.00008	.00527	.00204
#2	.00101	.15208	.00042	.00098	-0.00372	.00068	.01575	.00807
#3	.00012	.14814	.00126	.01751	-0.00205	.00438	-0.00306	.00196

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

K. K. Buck

Sample Name: CCB Acquired: 2/28/2017 19:25:13 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00041	-.00018	.00333	.00067	.00091	-.00063	-.00014
Stddev	.00056	.00036	.00339	.00331	.00107	.00022	.84070
%RSD	137.77	196.36	101.64	494.62	117.94	35.063	601680.

#1	-.00024	.00016	.00294	-.00315	.00212	-.00089	.84042
#2	.00073	-.00015	.00016	.00243	.00050	-.00055	.00014
#3	.00074	-.00056	.00690	.00273	.00010	-.00047	-.84097

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4914.5	70154.	8041.3
Stddev	31.2	222.	31.2
%RSD	.63515	.31676	.38826

#1	4926.0	70310.	8021.7
#2	4879.2	70252.	8077.3
#3	4938.3	69899.	8024.9

Approved: March 01, 2017

Ki K Buck

Sample Name: PBW 8A Acquired: 2/28/2017 19:29:03 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604236-02

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0062	-0.01385	-0.00286	.00189	.00045	.00007	-0.00864
Stddev	.00021	.00498	.00142	.00130	.00065	.00006	.00461
%RSD	33.269	35.953	49.429	68.534	143.89	82.027	53.315

#1	-0.0065	-0.01340	-0.00132	.00319	.00112	.00013	-0.00332
#2	-0.0040	-0.01905	-0.00316	.00190	.00040	.00004	-0.01131
#3	-0.0081	-0.00912	-0.00411	.00059	-0.00017	.00003	-0.01129

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0024	-0.0011	-0.00105	.00036	.02521	.28430	.00033
Stddev	.00053	.00044	.00115	.00110	.00857	.04301	.00176
%RSD	219.97	400.13	108.84	303.18	34.006	15.128	531.21

#1	-0.0054	.00037	.00027	.00149	.02301	.33144	-0.00123
#2	-0.0055	-0.0022	-0.00181	.00033	.01795	.24720	-0.00002
#3	.00037	-0.00048	-0.00162	-0.00072	.03466	.27426	.00224

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02028	.00026	.00056	.12531	.00080	-0.00482	.00026
Stddev	.03355	.00127	.00068	.01324	.00178	.00861	.00726
%RSD	165.47	487.55	120.64	10.568	222.91	178.67	2827.2

#1	-0.00298	.00131	.00132	.11276	-0.00040	-0.01060	.00842
#2	.00507	-0.00115	.00002	.13915	-0.00005	.00508	-0.00217
#3	.05874	.00061	.00035	.12403	.00285	-0.00893	-0.00548

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: PBW 8A Acquired: 2/28/2017 19:29:03 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604236-02

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00120	-0.00076	.00022	.00077	-0.00017	.00328	-0.00296
Stddev	.00142	.00253	.00220	.00122	.00007	.00251	.00858
%RSD	118.26	332.91	990.94	158.75	44.304	76.664	289.94

#1	.00214	.00138	.00084	.00217	-0.00008	.00434	-0.00334
#2	.00190	-0.00010	-0.00222	-0.00004	-0.00020	.00041	.00580
#3	-0.00043	-0.00355	.00205	.00017	-0.00022	.00510	-0.1133

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00037	.00052	F -.32856
Stddev	.00049	.00020	1.2494
%RSD	133.18	38.596	380.27

#1	.00085	.00055	-.31058
#2	.00038	.00031	.91176
#3	-0.00013	.00071	-1.5869

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5015.3	71617.	8132.6
Stddev	20.6	176.	64.2
%RSD	.41116	.24623	.78943

#1	5039.0	71486.	8083.1
#2	5005.4	71548.	8205.1
#3	5001.5	71817.	8109.5

Approved: March 01, 2017

Ki K Buck

Sample Name: LCSW 8A Acquired: 2/28/2017 19:32:52 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604236-03

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19879	5.1504	.19473	.91923	.51352	.02466	5.1043	.02471
Stddev	.00061	.0068	.00351	.00047	.00321	.00010	.0424	.00033
%RSD	.30602	.13195	1.8038	.05162	.62563	.41226	.83056	1.3480

#1	.19908	5.1501	.19503	.91936	.51188	.02455	5.0772	.02475
#2	.19809	5.1437	.19808	.91870	.51146	.02468	5.0825	.02502
#3	.19921	5.1573	.19107	.91963	.51722	.02475	5.1531	.02436

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10190	.24938	.25454	1.9636	26.209	.53111	4.9563	.24669
Stddev	.00030	.00148	.00215	.0434	.094	.00067	.0811	.00245
%RSD	.29681	.59253	.84364	2.2084	.35764	.12620	1.6357	.99470

#1	.10191	.25087	.25625	1.9736	26.266	.53035	5.0199	.24946
#2	.10160	.24935	.25213	1.9161	26.101	.53136	4.8650	.24478
#3	.10220	.24791	.25525	2.0011	26.261	.53162	4.9839	.24584

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50277	25.988	.25290	4.8457	.25687	.60033	.19204	2.5004
Stddev	.00079	.106	.00225	.0123	.00235	.00586	.00860	.0018
%RSD	.15780	.40698	.89006	.25306	.91631	.97534	4.4782	.07169

#1	.50368	25.991	.25102	4.8428	.25696	.59364	.18422	2.4983
#2	.50240	25.881	.25539	4.8592	.25448	.60278	.19063	2.5017
#3	.50223	26.093	.25228	4.8352	.25918	.60456	.20125	2.5011

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Approved: March 01, 2017

Ki K Buck

Sample Name: LCSW 8A Acquired: 2/28/2017 19:32:52 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604236-03

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49814	.51014	.49423	.24866	.49723	.48790	1.0805
Stddev	.00212	.00155	.00429	.00322	.00109	.00111	.6713
%RSD	.42468	.30294	.86730	1.2936	.21963	.22758	62.133
#1	.49987	.51097	.49767	.25033	.49602	.48901	.48520
#2	.49877	.50836	.48943	.25070	.49814	.48679	.94808
#3	.49578	.51109	.49561	.24495	.49755	.48791	1.8081

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4885.2	69215.	8056.4
Stddev	16.6	127.	26.3
%RSD	.34046	.18368	.32659
#1	4883.7	69333.	8046.0
#2	4869.3	69233.	8086.4
#3	4902.5	69080.	8036.9

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 19:36:35 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG603954-01

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00109	-0.00530	.00080	.00345	.00147	.00009	-0.00115	-0.00020
Stddev	.00078	.00462	.00414	.00147	.00042	.00003	.01695	.00024
%RSD	71.505	87.073	515.14	42.643	28.867	28.644	1477.4	121.46

#1	-0.00126	-0.00818	-0.00361	.00247	.00110	.00009	.01482	.00006
#2	-0.00178	-0.00776	.00143	.00273	.00193	.00012	-0.01894	-0.00042
#3	-0.00024	.00002	.00459	.00514	.00137	.00007	.00068	-0.00024

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00013	-0.00074	.00110	-0.01547	.42484	-0.00059	-0.04607	.00029
Stddev	.00038	.00109	.00226	.01288	.03801	.00124	.01941	.00088
%RSD	295.16	147.81	205.87	83.248	8.9479	212.58	42.123	307.13

#1	-0.00052	-0.00183	.00333	-.03012	.46872	-.00194	-.02368	.00077
#2	-0.00011	.00035	-.00119	-.00593	.40199	.00050	-.05656	.00081
#3	.00024	-.00073	.00115	-.01036	.40381	-.00032	-.05798	-.00073

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00091	144.04	-0.00221	-0.00323	-0.00334	.00683	.00120	.00232
Stddev	.00019	.08	.00158	.00171	.00191	.00559	.00541	.00148
%RSD	20.851	.05510	71.670	52.801	57.156	81.912	449.43	63.826

#1	.00113	143.95	-.00177	-.00128	-.00493	.00613	-.00500	.00271
#2	.00078	144.06	-.00396	-.00398	-.00122	.00161	.00367	.00068
#3	.00083	144.11	-.00089	-.00444	-.00386	.01273	.00495	.00356

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 19:36:35 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG603954-01

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00093	.00009	.00690	-.00701	.00051	.00321	.58976
Stddev	.00129	.00026	.00386	.00474	.00080	.00016	.67781
%RSD	137.92	287.53	55.955	67.544	157.29	4.9498	114.93

#1	.00077	-.00004	.00258	-.00234	-.00039	.00335	.84393
#2	-.00026	.00039	.01002	-.00690	.00116	.00304	-.17840
#3	.00229	-.00008	.00810	-.01181	.00076	.00325	1.1037

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4813.5	67479.	7967.4
Stddev	11.4	146.	89.6
%RSD	.23785	.21690	1.1250

#1	4815.4	67496.	7919.1
#2	4801.2	67616.	8070.8
#3	4823.9	67325.	7912.3

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 19:40:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG603954-02

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00170	-0.00636	-0.00223	-0.00069	.00223	.00000	.34485
Stddev	.00084	.00312	.00048	.00176	.00045	.00004	.30951
%RSD	49.085	49.084	21.491	254.11	20.249	1768.4	89.753

#1	-0.00118	-0.00564	-0.00168	-0.00209	.00216	-0.00004	.14895
#2	-0.00266	-0.00977	-0.00246	.00129	.00271	.00004	.70167
#3	-0.00126	-0.00365	-0.00255	-0.00128	.00182	.00001	.18393

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00015	.00042	-0.00102	-0.00031	.00808	.44359	-0.00164
Stddev	.00045	.00072	.00031	.00112	.00715	.05482	.00373
%RSD	303.30	169.49	29.933	358.19	88.565	12.358	228.00

#1	-0.00035	-0.00007	-0.00084	-0.00028	.00185	.38101	-0.00580
#2	.00028	.00125	-0.00138	-0.00145	.01589	.48309	-0.00051
#3	.00051	.00009	-0.00086	.00079	.00649	.46666	.00140

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00435	.00064	.00073	143.06	-0.00066	.00544	F -0.00539
Stddev	.06348	.00138	.00062	.41	.00131	.00699	.00445
%RSD	1460.7	216.95	84.586	.28562	197.82	128.55	82.648

#1	.04835	-0.00092	.00010	143.21	-0.00089	-0.00259	-0.01037
#2	.03311	.00170	.00134	142.60	.00075	.00875	-0.00177
#3	-.06842	.00114	.00076	143.38	-0.00185	.01016	-0.00403

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							225.00
Low Limit							-0.00500

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 19:40:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG603954-02

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00279	-.00342	.00435	.00127	.00255	-.00121	-.00081
Stddev	.00973	.00538	.00094	.00064	.00129	.00390	.00421
%RSD	348.34	156.99	21.670	50.003	50.524	322.93	522.52

#1	.01032	-.00724	.00331	.00124	.00159	-.00516	.00375
#2	.00625	.00272	.00515	.00192	.00401	.00264	-.00161
#3	-.00819	-.00575	.00458	.00065	.00204	-.00111	-.00456

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00100	.01953	.05010
Stddev	.00080	.00012	1.0904
%RSD	79.920	.63402	2176.4

#1	.00008	.01947	.98179
#2	.00141	.01967	.31776
#3	.00150	.01944	-1.1492

Check ?	Chk Pass	Chk Pass	Chk Pass
High Limit			
Low Limit			

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4825.0	68005.	8072.7
Stddev	17.9	147.	37.1
%RSD	.37120	.21623	.45937

#1	4843.3	68011.	8034.1
#2	4824.1	67855.	8108.0
#3	4807.5	68149.	8076.1

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702119701 Acquired: 2/28/2017 19:44:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00062	.00591	.00199	.08149	.04001	.00003	1.5322
Stddev	.00118	.00974	.00282	.00007	.00035	.00005	.0182
%RSD	189.83	164.80	141.46	.08102	.87873	156.50	1.1901

#1	-.00191	-.00534	-.00123	.08141	.03962	.00000	1.5158
#2	.00039	.01163	.00322	.08152	.04012	.00001	1.5518
#3	-.00033	.01144	.00399	.08153	.04030	.00009	1.5288

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00023	.00474	-.00085	.68811	.72238	.59746	.00189
Stddev	.00015	.00025	.00027	.00253	.01958	.07887	.00126
%RSD	64.152	5.2755	31.545	.36742	2.7098	13.201	66.847

#1	.00007	.00503	-.00076	.68979	.69991	.58960	.00291
#2	.00036	.00457	-.00064	.68520	.73572	.52282	.00229
#3	.00027	.00463	-.00115	.68933	.73151	.67997	.00048

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.17843	5.2769	.00101	133.63	.02704	F -.17328	-.00218
Stddev	.01179	.0102	.00076	.22	.00069	.00300	.00829
%RSD	6.6100	.19282	75.100	.16294	2.5553	1.7339	380.49

#1	.19188	5.2750	.00178	133.69	.02661	-.17129	-.00562
#2	.17353	5.2678	.00027	133.40	.02668	-.17183	.00728
#3	.16987	5.2879	.00097	133.82	.02784	-.17674	-.00820

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit						180.00	
Low Limit						-.10000	

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702119701 Acquired: 2/28/2017 19:44:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00054	-.00171	.41810	.00094	.00278	.00185	.00278
Stddev	.00522	.00231	.00236	.00054	.00043	.00205	.00533
%RSD	971.78	135.06	.56428	57.815	15.604	110.92	191.62

#1	.00592	-.00243	.42061	.00110	.00295	.00045	.00720
#2	-.00449	.00087	.41775	.00034	.00228	.00420	.00429
#3	.00018	-.00358	.41593	.00139	.00310	.00089	-.00314

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00063	.51179	F -.41996
Stddev	.00065	.00163	.07271
%RSD	103.25	.31860	17.314

#1	.00138	.51021	-.35683
#2	.00026	.51169	-.40360
#3	.00024	.51346	-.49946

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4954.9	69488.	8286.1
Stddev	10.4	271.	27.1
%RSD	.20967	.39039	.32744

#1	4943.0	69545.	8254.9
#2	4960.5	69193.	8303.6
#3	4961.4	69727.	8299.9

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120001 Acquired: 2/28/2017 19:48:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0016	.28881	.00301	.01523	.51921	.00003	23.318	.00092
Stddev	.00058	.00223	.00225	.00196	.00052	.00002	.060	.00017
%RSD	356.80	.77142	74.810	12.842	.10037	49.090	.25745	18.214

#1	.00013	.29026	.00463	.01360	.51861	.00001	23.249	.00111
#2	-.00083	.28624	.00044	.01468	.51942	.00004	23.349	.00086
#3	.00021	.28993	.00396	.01740	.51959	.00004	23.357	.00080

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.31076	-.00163	.00409	.05601	.51989	.00065	3.4109	1.1864
Stddev	.00060	.00034	.00110	.00124	.01013	.00228	.0088	.0022
%RSD	.19229	20.743	26.950	2.2199	1.9491	348.60	.25734	.18485

#1	.31114	-.00151	.00501	.05522	.50840	.00224	3.4206	1.1847
#2	.31007	-.00201	.00287	.05745	.52757	.00168	3.4035	1.1889
#3	.31107	-.00137	.00440	.05537	.52368	-.00196	3.4087	1.1857

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00339	10.975	.00139	2.4679	.00576	-.01734	.01726	.73212
Stddev	.00040	.070	.00131	.0112	.00140	.00182	.01274	.00095
%RSD	11.931	.63912	94.796	.45294	24.275	10.509	73.809	.12910

#1	.00375	10.897	.00037	2.4753	.00488	-.01524	.01949	.73116
#2	.00295	10.996	.00287	2.4733	.00504	-.01845	.00356	.73217
#3	.00347	11.032	.00092	2.4550	.00738	-.01834	.02874	.73304

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702120001 Acquired: 2/28/2017 19:48:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00444	.69404	.01544	-.00317	.00052	36.925	43.959
Stddev	.00133	.00083	.00274	.00087	.00061	.021	.829
%RSD	29.910	.11890	17.762	27.537	117.60	.05612	1.8866

#1	.00294	.69309	.01254	-.00409	.00002	36.937	44.867
#2	.00547	.69452	.01799	-.00235	.00035	36.901	43.769
#3	.00493	.69452	.01579	-.00308	.00120	36.937	43.241

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5239.9	75094.	8908.6
Stddev	18.9	402.	53.5
%RSD	.36106	.53500	.60101

#1	5251.6	75322.	8970.1
#2	5250.0	75331.	8872.9
#3	5218.1	74631.	8882.7

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120002 Acquired: 2/28/2017 19:51:44 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00167	1.4207	.00587	.02102	.54415	.00005	133.30
Stddev	.00058	.0036	.00131	.00225	.00178	.00003	.26
%RSD	34.614	.25619	22.288	10.699	.32757	65.510	.19850

#1	-0.00147	1.4249	.00664	.01961	.54454	.00005	133.20
#2	-0.00122	1.4190	.00436	.01984	.54570	.00002	133.60
#3	-0.00232	1.4182	.00661	.02362	.54221	.00008	133.10

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00247	.67162	.00119	.00377	.12138	.81005	.00070
Stddev	.00036	.00202	.00083	.00135	.01055	.06270	.00035
%RSD	14.647	.30017	69.968	35.945	8.6887	7.7398	49.646

#1	.00225	.67365	.00082	.00503	.13356	.82451	.00089
#2	.00288	.67159	.00213	.00234	.11533	.86425	.00092
#3	.00226	.66962	.00060	.00392	.11525	.74138	.00030

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.7300	1.6175	.00449	6.1905	-0.0022	27.724	-0.0026
Stddev	.0768	.0033	.00052	.0090	.00097	.109	.00289
%RSD	1.1406	.20296	11.557	.14521	445.16	.39346	1115.1

#1	6.7172	1.6138	.00395	6.1986	-0.00127	27.781	.00292
#2	6.6605	1.6200	.00454	6.1808	-0.00005	27.793	-0.00273
#3	6.8124	1.6187	.00499	6.1919	.00066	27.598	-0.00097

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120002 Acquired: 2/28/2017 19:51:44 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -.02345	.01983	.92457	.00549	1.3768	.01237	-.01108
Stddev	.00398	.00103	.00481	.00139	.0046	.00445	.00594
%RSD	16.980	5.1990	.51985	25.291	.33361	35.965	53.612

#1	-.02793	.01884	.92620	.00389	1.3760	.00778	-.01506
#2	-.02210	.02089	.91916	.00619	1.3818	.01666	-.01393
#3	-.02032	.01975	.92834	.00639	1.3727	.01266	-.00425

Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	45.000						
Low Limit	-.02000						

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00040	F 105.44	9.8648
Stddev	.00021	.23	.6738
%RSD	50.882	.21888	6.8304

#1	.00020	105.71	10.548
#2	.00061	105.27	9.8463
#3	.00039	105.36	9.2004

Check ?	Chk Pass	Chk Fail	Chk Pass
High Limit		45.000	
Low Limit		-.01000	

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5094.1	73020.	8763.9
Stddev	32.9	74.	23.0
%RSD	.64564	.10102	.26193

#1	5091.0	73046.	8790.1
#2	5128.4	72937.	8754.4
#3	5062.8	73077.	8747.3

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702122801 Acquired: 2/28/2017 19:55:26 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00048	.04302	.00130	.03718	.00262	.00004	53.830
Stddev	.00024	.00441	.00184	.00193	.00035	.00005	.123
%RSD	50.638	10.260	140.94	5.1861	13.271	114.57	.22896

#1	-.00064	.04247	.00341	.03828	.00223	-.00000	53.842
#2	-.00060	.03890	.00048	.03831	.00290	.00010	53.702
#3	-.00020	.04768	.00003	.03496	.00273	.00004	53.947

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00005	.02078	.09163	.09143	.29391	13.476	.00129
Stddev	.00016	.00007	.00174	.00149	.01731	.047	.00663
%RSD	313.66	.32329	1.9027	1.6351	5.8907	.35172	515.27

#1	.00001	.02073	.09084	.08998	.30529	13.421	-.00134
#2	.00023	.02086	.09042	.09296	.27398	13.497	.00883
#3	-.00008	.02076	.09363	.09134	.30245	13.509	-.00363

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5848	1.4232	.00063	169.27	.12954	-.01601	-.00404
Stddev	.0173	.0042	.00107	.51	.00233	.01043	.00321
%RSD	1.0890	.29385	169.84	.30322	1.7976	65.169	79.405

#1	1.5919	1.4223	.00186	169.18	.12700	-.00787	-.00759
#2	1.5651	1.4277	.00005	168.81	.13158	-.01239	-.00317
#3	1.5974	1.4195	-.00002	169.83	.13003	-.02777	-.00135

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702122801 Acquired: 2/28/2017 19:55:26 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00342	.00303	1.1790	.00175	.13605	.00088	-.00413
Stddev	.00239	.01091	.0029	.00018	.00027	.00155	.00452
%RSD	69.848	359.96	.24325	10.559	.19656	175.89	109.43

#1	.00569	.00014	1.1803	.00168	.13580	.00063	-.00324
#2	.00364	-.00614	1.1810	.00161	.13633	.00254	-.00012
#3	.00093	.01509	1.1757	.00196	.13602	-.00053	-.00903

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	-.00021	5.7300	F -.44261
Stddev	.00010	.0046	1.4940
%RSD	49.681	.07965	337.54

#1	-.00031	5.7330	-2.1659
#2	-.00010	5.7248	.35049
#3	-.00021	5.7323	.48759

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4825.8	67695.	8220.5
Stddev	9.7	253.	49.5
%RSD	.20037	.37319	.60260

#1	4820.6	67985.	8188.6
#2	4836.9	67575.	8277.6
#3	4819.7	67525.	8195.3

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702122802 Acquired: 2/28/2017 19:59:13 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00116	.05499	.00080	.03417	.00238	.00001	55.105
Stddev	.00055	.00246	.00488	.00128	.00004	.00007	.058
%RSD	47.632	4.4779	611.35	3.7519	1.5180	581.71	.10507

#1	-0.00140	.05260	-0.00116	.03559	.00234	.00008	55.114
#2	-0.00155	.05752	-0.00279	.03382	.00240	.00003	55.158
#3	-0.00053	.05485	.00635	.03310	.00240	-0.00007	55.043

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00023	.02041	.07940	.07761	.31099	13.719	.00003
Stddev	.00025	.00033	.00025	.00228	.00302	.069	.00340
%RSD	109.90	1.6295	.31890	2.9360	.97263	.50599	12181.

#1	-0.00003	.02007	.07911	.07566	.30896	13.655	.00299
#2	.00047	.02074	.07956	.07706	.30955	13.793	-0.00369
#3	.00025	.02041	.07953	.08012	.31447	13.710	.00078

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.6466	1.4784	.00094	174.44	.12280	-0.2323	F -.00544
Stddev	.0731	.0047	.00050	.26	.00212	.00359	.00431
%RSD	4.4370	.32064	52.819	.14792	1.7265	15.466	79.260

#1	1.6150	1.4755	.00056	174.31	.12035	-0.2215	-0.01018
#2	1.5947	1.4839	.00075	174.28	.12392	-0.2724	-0.00435
#3	1.7302	1.4760	.00150	174.74	.12412	-0.2030	-0.00177

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							225.00
Low Limit							-0.00500

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702122802 Acquired: 2/28/2017 19:59:13 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00607	.00199	1.2107	.00066	.14541	-.00231	-.00036
Stddev	.00806	.00265	.0016	.00094	.00021	.00542	.00466
%RSD	132.77	132.75	.13309	142.52	.14419	234.95	1280.7

#1	-.00187	.00420	1.2089	.00005	.14519	.00120	-.00525
#2	.01425	.00273	1.2118	.00019	.14560	.00043	.00014
#3	.00584	-.00094	1.2115	.00174	.14543	-.00856	.00402

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	-.00034	5.3102	.68098
Stddev	.00060	.0119	1.4696
%RSD	176.26	.22478	215.80

#1	-.00038	5.3030	2.1428
#2	.00028	5.3035	-.79627
#3	-.00092	5.3239	.69645

Check ?	Chk Pass	Chk Pass	Chk Pass
High Limit			
Low Limit			

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4783.3	67999.	8155.3
Stddev	24.2	307.	31.9
%RSD	.50528	.45209	.39069

#1	4809.4	67724.	8159.7
#2	4778.6	68331.	8121.5
#3	4761.7	67943.	8184.8

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132402 Acquired: 2/28/2017 20:02:59 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -0.00435	-0.00626	.01141	.05351	24.267	.00039	F 1213.1
Stddev	.00208	.00743	.00708	.00203	.276	.00007	6.1
%RSD	47.764	118.68	62.065	3.8017	1.1368	17.706	.50024

#1	-0.00655	-0.00272	.00384	.05377	23.961	.00047	1207.1
#2	-0.00409	-0.00126	.01253	.05540	24.498	.00036	1213.2
#3	-0.00242	-0.01479	.01787	.05136	24.342	.00034	1219.2

Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit	5.0000						270.00
Low Limit	-.00400						-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00493	.00605	-0.00081	.01964	17.100	62.985	.61388
Stddev	.00046	.00023	.00085	.00217	.128	.483	.00453
%RSD	9.2863	3.7760	104.99	11.070	.74735	.76699	.73824

#1	.00497	.00622	-0.00118	.02152	16.954	62.431	.61152
#2	.00445	.00579	-0.00141	.02015	17.157	63.313	.61911
#3	.00537	.00615	.00016	.01726	17.190	63.213	.61102

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	87.136	8.2027	.00250	258.89	-0.00522	.03051	.00234
Stddev	.332	.0082	.00061	.34	.00030	.01040	.00723
%RSD	.38059	.09947	24.502	.13002	5.7630	34.097	308.94

#1	86.810	8.1946	.00306	258.80	-0.00512	.03211	.01011
#2	87.124	8.2109	.00260	259.26	-0.00498	.01940	-.00420
#3	87.473	8.2025	.00185	258.61	-0.00556	.04002	.00111

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132402 Acquired: 2/28/2017 20:02:59 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00102	F -.03161	2.2107	.00261	F 26.359	F -.07882	.00629
Stddev	.01533	.00335	.0135	.00216	.353	.00289	.01003
%RSD	1506.7	10.593	.61154	83.015	1.3405	3.6640	159.42

#1	.01872	-.03151	2.1950	.00357	26.026	-.07818	-.00429
#2	-.00767	-.03502	2.2187	.00013	26.321	-.08197	.01566
#3	-.00800	-.02832	2.2182	.00412	26.729	-.07630	.00751

Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Fail	Chk Fail	Chk Pass
High Limit		90.000			9.0000	36.000	
Low Limit		-.01000			-.01000	-.03000	

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00065	.00178	F -5.4898
Stddev	.00091	.00029	1.3956
%RSD	141.13	16.426	25.422

#1	.00019	.00212	-6.5234
#2	.00006	.00160	-3.9023
#3	.00170	.00163	-6.0436

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4215.7	58851.	7667.8
Stddev	19.9	153.	41.0
%RSD	.47261	.25924	.53535

#1	4202.1	59002.	7711.8
#2	4206.4	58854.	7630.5
#3	4238.6	58697.	7661.2

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 20:07:12 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40659	10.383	.41036	.50064	1.0374	.05161	10.381
Stddev	.00077	.018	.00064	.00160	.0048	.00029	.053
%RSD	.18948	.17333	.15672	.31954	.46334	.57042	.51505

#1	.40598	10.364	.41100	.49930	1.0331	.05194	10.372
#2	.40746	10.399	.40971	.50241	1.0365	.05137	10.333
#3	.40635	10.387	.41037	.50022	1.0426	.05152	10.439

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05026	.20478	.51621	.51746	3.9227	53.422	1.0757
Stddev	.00022	.00076	.00224	.00261	.0227	.292	.0102
%RSD	.44735	.37271	.43473	.50436	.57909	.54649	.94598

#1	.05021	.20560	.51867	.51966	3.8987	53.215	1.0851
#2	.05051	.20408	.51427	.51814	3.9255	53.295	1.0649
#3	.05007	.20466	.51570	.51457	3.9438	53.756	1.0772

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.9347	.49557	1.0112	52.196	.51071	10.256	.52234
Stddev	.1578	.00207	.0002	.281	.00333	.017	.00700
%RSD	1.5881	.41767	.02359	.53853	.65233	.16826	1.3399

#1	9.7533	.49643	1.0113	51.947	.50737	10.245	.52785
#2	10.012	.49321	1.0109	52.139	.51403	10.247	.51446
#3	10.039	.49708	1.0114	52.500	.51074	10.276	.52470

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

K. K. Buck

Sample Name: CCV Acquired: 2/28/2017 20:07:12 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2465	.39708	5.1172	1.0161	1.0361	.99233	.50322
Stddev	.0034	.01248	.0075	.0019	.0040	.00962	.00199
%RSD	.27378	3.1435	.14557	.19036	.38210	.96943	.39588

#1	1.2445	.38345	5.1094	1.0142	1.0338	.98613	.50218
#2	1.2504	.39984	5.1242	1.0181	1.0338	.98745	.50552
#3	1.2444	.40795	5.1181	1.0161	1.0407	1.0034	.50197

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0170	1.0040	F 1.4130
Stddev	.0035	.0009	.6034
%RSD	.34127	.09270	42.702

#1	1.0186	1.0049	1.4557
#2	1.0130	1.0031	1.9938
#3	1.0194	1.0040	.78935

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4920.4	67892.	8109.4
Stddev	8.0	416.	101.6
%RSD	.16177	.61242	1.2530

#1	4912.9	67814.	8177.3
#2	4919.5	67521.	8158.3
#3	4928.8	68341.	7992.6

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 20:10:48 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00054	-0.01517	-0.00172	-0.00010	.00067	.00010	.00451
Stddev	.00214	.00439	.00301	.00170	.00028	.00000	.00802
%RSD	399.28	28.926	175.09	1692.2	41.451	1.6049	177.93

#1	-0.00284	-0.01032	-0.00335	.00069	.00075	.00010	.01287
#2	-0.00018	-0.01632	.00175	.00106	.00091	.00010	-0.00312
#3	.00141	-0.01886	-0.00355	-0.00205	.00037	.00010	.00376

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00009	.00041	-0.00167	.00095	.01711	.22255	-0.00331
Stddev	.00020	.00081	.00125	.00030	.00696	.14184	.00345
%RSD	215.45	200.09	75.088	31.284	40.689	63.733	104.23

#1	-0.00031	.00125	-0.00196	.00081	.01467	.30680	.00029
#2	.00009	-0.00037	-0.00276	.00129	.02496	.30205	-0.00660
#3	-0.00006	.00034	-0.00030	.00075	.01170	.05879	-0.00363

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.02193	-0.00024	.00030	.12181	.00150	.00492	F -0.00542
Stddev	.03388	.00076	.00090	.06434	.00046	.00457	.00324
%RSD	154.45	315.05	301.77	52.816	30.482	92.738	59.651

#1	-0.05844	.00028	.00100	.19117	.00118	-0.00003	-0.00571
#2	.00849	.00012	.00061	.06408	.00203	.00897	-0.00205
#3	-0.01585	-0.00112	-0.00072	.11019	.00130	.00584	-0.00851

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							.00500
Low Limit							-0.00500

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 20:10:48 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00125	.00760	.00263	-.00053	.00007	.00161	-.00330
Stddev	.00794	.00668	.00129	.00029	.00015	.00254	.00678
%RSD	635.85	87.816	48.959	54.399	214.76	157.61	205.41

#1	.00058	.00169	.00148	-.00085	.00018	.00214	-.01087
#2	-.00634	.00627	.00238	-.00033	.00014	-.00115	-.00121
#3	.00951	.01485	.00402	-.00039	-.00010	.00385	.00219

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00068	-.00066	F -.17235
Stddev	.00065	.00023	.87165
%RSD	95.623	34.700	505.74

#1	.00084	-.00048	.41617
#2	.00124	-.00059	.24049
#3	-.00004	-.00092	-1.1737

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4957.0	70208.	8016.2
Stddev	11.8	376.	36.3
%RSD	.23724	.53485	.45227

#1	4968.9	70632.	8033.0
#2	4945.4	70073.	8041.0
#3	4956.8	69918.	7974.6

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132403 Acquired: 2/28/2017 20:14:38 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-01

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00318	-0.00045	.01050	.04938	23.841	.00035	F 1213.1
Stddev	.00054	.00582	.00425	.00130	.467	.00011	17.9
%RSD	16.865	1301.2	40.447	2.6427	1.9597	32.269	1.4779

#1	-0.00257	-0.00508	.00809	.05078	23.312	.00034	1214.9
#2	-0.00341	-0.00235	.00800	.04819	24.197	.00024	1194.4
#3	-0.00356	.00609	.01540	.04916	24.015	.00047	1230.1

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00480	.00589	-0.00030	.01914	16.118	44.932	.52538
Stddev	.00031	.00087	.00137	.00043	.145	.371	.00429
%RSD	6.4876	14.726	465.76	2.2502	.90092	.82487	.81745

#1	.00448	.00489	.00079	.01872	15.952	44.505	.52067
#2	.00482	.00642	.00016	.01911	16.181	45.130	.52640
#3	.00510	.00637	-0.00184	.01958	16.222	45.162	.52908

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	95.958	7.8408	.00140	249.02	-0.00335	.03499	.00292
Stddev	.246	.0368	.00035	.80	.00108	.01060	.00351
%RSD	.25662	.46888	25.080	.32250	32.272	30.308	120.39

#1	95.989	7.8059	.00133	248.60	-0.00437	.04273	.00067
#2	95.698	7.8374	.00177	248.51	-0.00347	.02290	.00112
#3	96.188	7.8792	.00108	249.94	-0.00222	.03934	.00696

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132403 Acquired: 2/28/2017 20:14:38 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-01

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00291	F -.02255	1.9511	.00076	F 27.865	F -.07561	.00363
Stddev	.00674	.01483	.0076	.00051	.339	.00642	.00365
%RSD	231.93	65.756	.39120	67.750	1.2167	8.4957	100.53

#1	.00987	-.02317	1.9428	.00133	27.546	-.07509	.00615
#2	-.00358	-.00742	1.9577	.00034	28.221	-.08228	-.00056
#3	.00242	-.03706	1.9529	.00060	27.827	-.06947	.00530

Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Fail	Chk Fail	Chk Pass
High Limit		90.000			9.0000	36.000	
Low Limit		-.01000			-.01000	-.03000	

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00174	.00052	F -5.5239
Stddev	.00123	.00018	.7399
%RSD	70.811	34.321	13.395

#1	.00202	.00033	-5.5403
#2	.00039	.00069	-4.7759
#3	.00281	.00055	-6.2555

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4175.0	58250.	7626.6
Stddev	15.8	134.	53.1
%RSD	.37918	.22946	.69579

#1	4157.1	58396.	7680.1
#2	4187.0	58219.	7625.9
#3	4181.1	58134.	7573.9

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132404MS Acquired: 2/28/2017 20:18:51 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09952	2.1933	.11537	.51334	23.942	.01252	F 1224.7
Stddev	.00327	.0004	.01303	.00860	.243	.00002	1.2
%RSD	3.2831	.02044	11.295	1.6748	1.0133	.16162	.09573

#1	.09601	2.1930	.10797	.51785	23.676	.01254	1226.0
#2	.10006	2.1939	.13041	.51874	23.999	.01251	1224.4
#3	.10248	2.1931	.10772	.50342	24.151	.01251	1223.8

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01740	.05278	.11891	.13649	16.953	58.793	.80284
Stddev	.00024	.00023	.00199	.00452	.081	.176	.00159
%RSD	1.3667	.43309	1.6720	3.3115	.47564	.29945	.19840

#1	.01762	.05263	.12067	.13147	16.980	58.996	.80101
#2	.01744	.05267	.11675	.14023	17.017	58.684	.80395
#3	.01715	.05304	.11931	.13776	16.863	58.699	.80354

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	97.338	7.8961	.24375	260.83	.10825	2.5532	.11875
Stddev	.524	.0046	.00117	.41	.00175	.0177	.00499
%RSD	.53875	.05855	.48057	.15858	1.6167	.69490	4.2003

#1	96.803	7.8989	.24241	260.36	.10624	2.5374	.11621
#2	97.360	7.8987	.24462	261.13	.10944	2.5724	.11554
#3	97.852	7.8908	.24421	261.01	.10907	2.5499	.12449

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132404MS Acquired: 2/28/2017 20:18:51 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-04

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.30336	.05527	3.2427	.22950	F 28.179	.16110	.10607
Stddev	.00715	.00832	.0118	.00171	.117	.00525	.00428
%RSD	2.3558	15.056	.36393	.74424	.41412	3.2571	4.0316

#1	.30649	.05855	3.2305	.22765	28.044	.16403	.10825
#2	.29519	.06146	3.2540	.23101	28.236	.16423	.10115
#3	.30842	.04581	3.2436	.22984	28.256	.15504	.10882

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit					9.0000		
Low Limit					-.01000		

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.24176	.22561	F -6.8702
Stddev	.00091	.00079	1.1323
%RSD	.37646	.35102	16.482

#1	.24280	.22483	-5.8742
#2	.24132	.22641	-8.1018
#3	.24115	.22559	-6.6347

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4145.4	58513.	7584.5
Stddev	12.8	96.	57.6
%RSD	.30994	.16416	.75879

#1	4131.5	58415.	7632.3
#2	4147.7	58607.	7600.6
#3	4156.9	58517.	7520.7

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132405MSD Acquired: 2/28/2017 20:22:57 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-05

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10242	2.2454	.11154	.52402	24.394	.01279	F 1219.5
Stddev	.00121	.0122	.00333	.00571	.379	.00011	5.2
%RSD	1.1836	.54471	2.9816	1.0898	1.5534	.83683	.42287

#1	.10120	2.2567	.10783	.53039	24.349	.01291	1219.3
#2	.10362	2.2324	.11253	.52234	24.040	.01276	1214.4
#3	.10244	2.2470	.11425	.51935	24.794	.01270	1224.7

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01812	.05332	.12113	.14112	17.255	60.456	.81971
Stddev	.00050	.00073	.00046	.00196	.099	.405	.00439
%RSD	2.7843	1.3741	.38102	1.3857	.57087	.66921	.53501

#1	.01755	.05312	.12080	.14129	17.151	59.996	.81590
#2	.01828	.05271	.12166	.14298	17.346	60.759	.81874
#3	.01852	.05413	.12094	.13908	17.269	60.612	.82450

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	98.457	8.0277	.24939	265.51	.11232	2.6250	.12194
Stddev	.151	.0079	.00027	.75	.00057	.0039	.00445
%RSD	.15290	.09788	.10732	.28248	.51096	.14805	3.6467

#1	98.323	8.0202	.24932	264.77	.11277	2.6215	.11696
#2	98.620	8.0270	.24968	265.50	.11253	2.6243	.12338
#3	98.428	8.0359	.24916	266.27	.11168	2.6292	.12549

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132405MSD Acquired: 2/28/2017 20:22:57 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-05

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.30908	.05559	3.3193	.23556	F 28.869	.15815	.11238
Stddev	.00403	.01231	.0106	.00041	.162	.00553	.00590
%RSD	1.3051	22.151	.32000	.17317	.56225	3.4956	5.2482

#1	.30781	.04151	3.3119	.23573	28.826	.15969	.10585
#2	.30584	.06432	3.3145	.23585	28.732	.16275	.11398
#3	.31360	.06095	3.3314	.23509	29.048	.15201	.11732

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit					9.0000		
Low Limit					-.01000		

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.24847	.22991	F -4.9501
Stddev	.00176	.00110	1.5266
%RSD	.70852	.47630	30.840

#1	.24985	.22872	-3.4645
#2	.24908	.23013	-4.8711
#3	.24649	.23088	-6.5146

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4212.6	59243.	7546.8
Stddev	2.5	252.	36.2
%RSD	.05990	.42462	.47990

#1	4212.0	58958.	7578.3
#2	4210.4	59432.	7555.0
#3	4215.4	59340.	7507.2

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702133401 Acquired: 2/28/2017 20:27:03 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00160	.08425	-0.00449	.01111	.00214	.00008	.67319	.00020
Stddev	.00238	.00466	.00368	.00155	.00065	.00002	.02202	.00039
%RSD	148.56	5.5328	81.856	13.908	30.326	26.454	3.2704	193.34

#1	-0.00283	.08585	-0.00137	.00986	.00143	.00009	.66132	-0.00025
#2	-0.00312	.08790	-0.00356	.01064	.00270	.00009	.69859	.00040
#3	.00114	.07900	-0.00854	.01284	.00229	.00005	.65966	.00046

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00012	-0.00063	.01426	.09051	.34126	.00328	.12006	.00251
Stddev	.00013	.00024	.00139	.00692	.02985	.00165	.01945	.00118
%RSD	110.71	37.542	9.7620	7.6425	8.7464	50.527	16.197	46.944

#1	-0.00027	-0.00089	.01276	.09065	.37571	.00230	.09872	.00387
#2	.00000	-0.00059	.01451	.08353	.32488	.00234	.12466	.00178
#3	-0.00010	-0.00042	.01551	.09736	.32318	.00519	.13679	.00189

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00105	.35112	.00282	.00410	-0.00120	.00098	.01010	.18999
Stddev	.00031	.01409	.00238	.00211	.00576	.00340	.00643	.00325
%RSD	29.368	4.0134	84.360	51.411	477.81	347.17	63.690	1.7109

#1	.00129	.35273	.00309	.00242	-0.00783	-0.00295	.00583	.18651
#2	.00114	.36434	.00032	.00342	.00255	.00288	.00697	.19048
#3	.00070	.33630	.00505	.00647	.00167	.00302	.01750	.19296

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702133401 Acquired: 2/28/2017 20:27:03 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00114	.00251	.00602	-.00011	.00081	.00679	1.1027
Stddev	.00154	.00017	.00152	.00694	.00075	.00027	.6520
%RSD	135.70	6.8895	25.204	6125.3	93.531	4.0008	59.132

#1	.00074	.00234	.00771	.00720	.00161	.00684	.54641
#2	.00284	.00269	.00557	-.00093	.00069	.00650	.94137
#3	-.00017	.00249	.00478	-.00661	.00012	.00703	1.8202

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5082.2	73069.	8253.5
Stddev	38.6	85.	50.6
%RSD	.76024	.11623	.61355

#1	5115.7	72979.	8204.7
#2	5090.9	73080.	8305.8
#3	5040.0	73148.	8249.8

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702134601 Acquired: 2/28/2017 20:30:52 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0010	69.094	.07226	.05600	.59958	.00348	150.56
Stddev	.00118	.243	.00310	.00168	.00218	.00006	.49
%RSD	1227.6	.35212	4.2854	2.9989	.36351	1.6595	.32403

#1	-.00137	68.858	.06907	.05604	.59827	.00347	150.15
#2	.00011	69.344	.07247	.05430	.60210	.00344	151.10
#3	.00097	69.080	.07525	.05766	.59838	.00355	150.42

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01867	.03520	.09318	1.8542	55.746	14.532	.04662
Stddev	.00002	.00017	.00074	.0009	.297	.088	.00153
%RSD	.10493	.49084	.79328	.04779	.53343	.60306	3.2796

#1	.01864	.03532	.09398	1.8538	55.477	14.435	.04838
#2	.01867	.03529	.09252	1.8537	56.065	14.605	.04584
#3	.01868	.03501	.09305	1.8552	55.697	14.557	.04564

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	30.224	1.4017	.00312	F 295.72	.12204	69.861	.31234
Stddev	.217	.0038	.00018	3.41	.00121	.113	.00227
%RSD	.71960	.27167	5.6795	1.1544	.99329	.16131	.72732

#1	29.978	1.4006	.00309	291.78	.12136	69.961	.31147
#2	30.391	1.4060	.00296	297.50	.12344	69.883	.31491
#3	30.302	1.3986	.00331	297.87	.12132	69.739	.31063

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702134601 Acquired: 2/28/2017 20:30:52 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00909	.00320	F 69.461	.03927	.43038	.86127	-.00203
Stddev	.00720	.00950	.023	.00213	.00137	.01081	.00242
%RSD	79.228	296.53	.03333	5.4259	.31819	1.2553	119.17

#1	.01735	.01158	69.487	.03803	.42921	.84952	-.00190
#2	.00575	.00515	69.453	.04174	.43188	.86350	-.00452
#3	.00416	-.00712	69.443	.03805	.43004	.87080	.00032

Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit			36.000				
Low Limit			-1.0000				

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.10048	1.1044	F 150.72
Stddev	.00062	.0008	2.26
%RSD	.61291	.07666	1.5002

#1	.09990	1.1054	148.11
#2	.10042	1.1038	151.95
#3	.10113	1.1041	152.11

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4845.8	67115.	8333.6
Stddev	4.7	192.	44.6
%RSD	.09716	.28672	.53547

#1	4840.4	66901.	8383.0
#2	4849.2	67272.	8296.2
#3	4847.7	67173.	8321.6

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702134602 Acquired: 2/28/2017 20:34:40 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0166	54.488	.09307	.05619	.51076	.00241	69.495
Stddev	.00362	.182	.00037	.00182	.00094	.00004	.016
%RSD	217.85	.33351	.39975	3.2412	.18396	1.4751	.02328

#1	.00244	54.396	.09318	.05504	.51179	.00243	69.478
#2	-.00299	54.697	.09338	.05524	.50994	.00237	69.499
#3	-.00443	54.370	.09266	.05829	.51056	.00243	69.509

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01593	.03058	.06582	1.4454	59.675	12.334	.03284
Stddev	.00017	.00072	.00184	.0016	.183	.023	.00202
%RSD	1.0673	2.3612	2.7944	.11337	.30591	.18702	6.1514

#1	.01574	.03140	.06590	1.4437	59.813	12.307	.03218
#2	.01607	.03030	.06762	1.4455	59.744	12.344	.03511
#3	.01596	.03004	.06395	1.4470	59.468	12.350	.03124

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.970	1.2529	.00672	F 402.33	.09421	109.24	.27904
Stddev	.090	.0045	.00040	3.35	.00136	.03	.00339
%RSD	.47542	.36188	5.9317	.83374	1.4463	.03009	1.2151

#1	18.876	1.2543	.00714	398.47	.09264	109.23	.27956
#2	18.978	1.2565	.00635	404.58	.09509	109.21	.27542
#3	19.055	1.2478	.00667	403.93	.09490	109.28	.28214

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-50000			

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702134602 Acquired: 2/28/2017 20:34:40 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Ti1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00971	-0.00121	F 68.716	.02479	.22886	.81478	-0.00310
Stddev	.00752	.00085	.066	.00174	.00029	.00716	.00064
%RSD	77.471	69.581	.09610	7.0247	.12561	.87916	20.705

#1	.00245	-0.00029	68.649	.02278	.22913	.81857	-0.00245
#2	.01747	-0.00141	68.718	.02592	.22889	.81925	-0.00311
#3	.00922	-0.00195	68.781	.02566	.22855	.80651	-0.00373

Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit			36.000				
Low Limit			-1.0000				

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.07085	.91571	F 130.69
Stddev	.00108	.00033	.56
%RSD	1.5178	.03603	.43184

#1	.07197	.91547	130.25
#2	.06983	.91609	130.50
#3	.07075	.91557	131.33

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4833.3	67013.	8221.1
Stddev	10.6	324.	23.3
%RSD	.21898	.48279	.28298

#1	4837.1	66988.	8218.6
#2	4821.4	66703.	8199.2
#3	4841.5	67348.	8245.5

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135301 Acquired: 2/28/2017 20:38:29 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0010	.25988	-0.00096	.00936	.00372	.00007	1.9142	.00021
Stddev	.00107	.00764	.00289	.00194	.00067	.00004	.0184	.00009
%RSD	1091.0	2.9410	299.61	20.717	18.016	51.181	.96234	44.605

#1	.00068	.25610	-.00237	.00892	.00446	.00010	1.9214	.00029
#2	.00035	.26868	-.00287	.00768	.00316	.00007	1.9279	.00011
#3	-.00132	.25487	.00236	.01148	.00353	.00003	1.8933	.00023

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0001	-0.00117	.01913	.22934	.35549	.00335	.32922	.00529
Stddev	.00054	.00071	.00043	.01924	.01485	.00238	.04038	.00060
%RSD	3977.4	61.186	2.2665	8.3894	4.1781	70.917	12.266	11.431

#1	.00038	-.00129	.01877	.24962	.35895	.00136	.28663	.00476
#2	.00021	-.00040	.01961	.22708	.33921	.00272	.33407	.00516
#3	-.00063	-.00181	.01900	.21134	.36831	.00599	.36695	.00595

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00038	.41573	.00222	.02985	-.00042	-.00416	.01043	.43290
Stddev	.00032	.02206	.00133	.00811	.00341	.00737	.00974	.00094
%RSD	84.393	5.3057	59.787	27.184	810.88	177.31	93.405	.21790

#1	.00001	.44119	.00095	.03889	-.00409	.00432	.01792	.43390
#2	.00059	.40385	.00360	.02744	.00264	-.00905	-.00058	.43202
#3	.00052	.40217	.00213	.02321	.00018	-.00775	.01396	.43279

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702135301 Acquired: 2/28/2017 20:38:29 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00102	.00381	.01343	-.00912	.00157	.01437	.23101
Stddev	.00126	.00018	.00211	.00441	.00029	.00016	.36592
%RSD	123.77	4.6448	15.711	48.336	18.664	1.1331	158.40

#1	.00060	.00394	.01356	-.01330	.00129	.01430	.13753
#2	.00002	.00388	.01548	-.00952	.00187	.01425	-.07910
#3	.00243	.00361	.01126	-.00452	.00154	.01455	.63460

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5037.7	72546.	8198.4
Stddev	1.1	305.	43.1
%RSD	.02188	.42072	.52562

#1	5037.8	72735.	8172.1
#2	5038.7	72710.	8248.2
#3	5036.5	72194.	8175.1

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135302 Acquired: 2/28/2017 20:42:18 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00154	.37725	-0.00040	.01036	.00382	.00016	1.5097	.00017
Stddev	.00160	.01020	.00289	.00208	.00025	.00013	.0270	.00024
%RSD	103.60	2.7039	726.97	20.127	6.4945	80.591	1.7849	142.80

#1	-0.00282	.38330	.00200	.00835	.00354	.00006	1.5189	.00005
#2	.00025	.38297	-0.00360	.01022	.00395	.00011	1.5309	.00045
#3	-0.00205	.36547	.00041	.01251	.00399	.00030	1.4794	.00001

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00001	-0.00046	.07048	.28919	.35774	-0.00048	.14101	.00466
Stddev	.00031	.00058	.00064	.01492	.01551	.00464	.08451	.00152
%RSD	3746.2	127.93	.90836	5.1606	4.3352	963.53	59.936	32.725

#1	-0.00037	.00010	.07121	.27324	.33983	.00033	.23365	.00640
#2	.00017	-0.00107	.07023	.30281	.36709	-0.00548	.06813	.00396
#3	.00018	-0.00040	.07001	.29153	.36628	.00370	.12124	.00360

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00061	.36649	.00075	.01598	.00083	-0.00240	-0.00659	.66880
Stddev	.00050	.01283	.00042	.00956	.00367	.00394	.00583	.00308
%RSD	81.852	3.4995	55.901	59.854	440.44	164.64	88.467	.46005

#1	.00057	.37766	.00100	.02176	.00344	-0.00436	-0.00029	.67032
#2	.00013	.35249	.00099	.00494	-0.00337	.00214	-0.01181	.67082
#3	.00112	.36932	.00027	.02124	.00243	-0.00497	-0.00768	.66526

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135302 Acquired: 2/28/2017 20:42:18 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00179	.00368	.01347	.00271	.00077	.03118	1.6013
Stddev	.00047	.00009	.00175	.00177	.00103	.00032	1.0493
%RSD	26.390	2.3385	12.996	65.301	134.43	1.0277	65.524

#1	.00170	.00372	.01483	.00072	.00177	.03155	.55336
#2	.00229	.00358	.01150	.00331	-.00030	.03098	2.6519
#3	.00136	.00374	.01410	.00410	.00084	.03101	1.5988

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5038.5	72888.	8119.2
Stddev	2.7	245.	70.7
%RSD	.05350	.33654	.87017

#1	5037.6	72609.	8050.6
#2	5041.5	72985.	8191.8
#3	5036.4	73069.	8115.1

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135303 Acquired: 2/28/2017 20:46:07 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00041	.09764	-.00352	.00861	.00166	.00011	.44229
Stddev	.00141	.00268	.00070	.00303	.00028	.00009	.03243
%RSD	347.31	2.7440	19.933	35.178	16.590	87.366	7.3323

#1	-.00007	.09635	-.00282	.01069	.00140	.00021	.46368
#2	-.00071	.10072	-.00422	.00514	.00195	.00008	.40497
#3	.00200	.09585	-.00352	.01000	.00163	.00003	.45821

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00019	-.00014	-.00036	.01745	.09047	.18410	-.00246
Stddev	.00013	.00037	.00079	.00140	.01844	.02206	.00177
%RSD	66.304	259.85	217.90	8.0536	20.384	11.984	72.052

#1	.00014	.00017	.00030	.01624	.09229	.20810	-.00451
#2	.00010	-.00005	-.00015	.01899	.07118	.17952	-.00144
#3	.00034	-.00054	-.00123	.01711	.10793	.16469	-.00144

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08433	.00176	.00009	.16494	.00062	-.01106	.00283
Stddev	.00712	.00055	.00038	.01001	.00192	.00844	.00367
%RSD	8.4439	31.243	445.23	6.0691	310.56	76.267	129.37

#1	.09219	.00113	.00050	.16292	.00063	-.00298	.00351
#2	.07830	.00206	-.00026	.17581	.00253	-.01040	-.00112
#3	.08250	.00211	.00002	.15609	-.00131	-.01981	.00612

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135303 Acquired: 2/28/2017 20:46:07 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00016	.00200	.22372	.00063	.00142	.00698	-.00024
Stddev	.00268	.00804	.00170	.00110	.00004	.00596	.00224
%RSD	1678.5	402.47	.75906	175.85	2.7469	85.384	931.82

#1	.00201	-.00682	.22347	-.00064	.00138	.00113	.00096
#2	-.00315	.00891	.22215	.00137	.00146	.01304	.00114
#3	.00066	.00390	.22552	.00115	.00143	.00677	-.00283

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00083	.00467	F -.04870
Stddev	.00051	.00026	1.3729
%RSD	61.905	5.5055	2819.3

#1	.00026	.00474	-.75285
#2	.00097	.00438	1.5335
#3	.00126	.00488	-.92670

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5115.8	73287.	8094.1
Stddev	18.3	214.	87.7
%RSD	.35781	.29255	1.0839

#1	5094.8	73360.	7997.4
#2	5123.8	73046.	8168.7
#3	5128.7	73455.	8116.0

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 20:49:58 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40449	10.260	.41283	.50141	1.0438	.05155	10.403
Stddev	.00293	.019	.00644	.00373	.0057	.00007	.035
%RSD	.72398	.18866	1.5609	.74353	.54820	.13220	.33318

#1	.40353	10.244	.41691	.50452	1.0374	.05159	10.379
#2	.40778	10.254	.40540	.49728	1.0458	.05159	10.387
#3	.40217	10.282	.41618	.50242	1.0483	.05147	10.443

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05015	.20475	.51548	.51296	3.9009	53.795	1.0896
Stddev	.00071	.00081	.00126	.00404	.0260	.083	.0098
%RSD	1.4123	.39683	.24352	.78816	.66762	.15370	.89460

#1	.05011	.20502	.51653	.51262	3.9106	53.739	1.0791
#2	.04946	.20384	.51583	.50910	3.9207	53.755	1.0915
#3	.05088	.20539	.51409	.51716	3.8714	53.890	1.0983

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.8433	.49088	1.0135	52.925	.51380	10.237	.52329
Stddev	.0468	.00389	.0015	.311	.00365	.039	.00178
%RSD	.47500	.79236	.14939	.58777	.70952	.37878	.34009

#1	9.8134	.48648	1.0153	52.566	.51607	10.260	.52183
#2	9.8195	.49386	1.0127	53.093	.50960	10.259	.52278
#3	9.8972	.49230	1.0126	53.115	.51574	10.192	.52528

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 20:49:58 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2440	.40552	5.1324	1.0155	1.0377	.99121	.50672
Stddev	.0051	.01632	.0091	.0036	.0025	.00453	.00794
%RSD	.41125	4.0250	.17760	.35629	.24341	.45745	1.5670

#1	1.2486	.42365	5.1350	1.0188	1.0348	.98881	.49938
#2	1.2385	.40095	5.1222	1.0116	1.0395	.98839	.50564
#3	1.2449	.39198	5.1399	1.0161	1.0387	.99644	.51515

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0163	1.0058	F .67518
Stddev	.0013	.0013	.38877
%RSD	.12991	.12871	57.581

#1	1.0150	1.0069	.34876
#2	1.0176	1.0044	1.1053
#3	1.0163	1.0062	.57149

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5015.3	70032.	8234.0
Stddev	10.7	122.	64.7
%RSD	.21282	.17486	.78586

#1	5015.4	70095.	8211.4
#2	5025.9	69891.	8307.0
#3	5004.5	70111.	8183.7

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 20:53:35 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00042	-0.01766	.00193	.00087	.00041	.00009	.00540
Stddev	.00125	.00590	.00436	.00160	.00040	.00003	.01720
%RSD	295.53	33.421	226.54	184.52	99.070	30.142	318.85

#1	-0.00116	-0.02022	-0.00070	.00272	.00008	.00009	.02469
#2	-0.00114	-0.01091	.00696	-0.00011	.00086	.00006	-0.00017
#3	.00102	-0.02185	-0.00049	-0.00001	.00029	.00012	-0.00834

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00044	-0.00042	-0.00083	.00164	.00490	.20542	-0.00192
Stddev	.00040	.00005	.00060	.00108	.01610	.05916	.00504
%RSD	90.097	12.490	72.302	65.923	328.57	28.802	262.15

#1	-0.00071	-0.00047	-0.00079	.00277	.01447	.19845	-0.00288
#2	-0.00063	-0.00037	-0.00146	.00062	-.01369	.15004	-0.00642
#3	.00002	-0.00043	-0.00025	.00153	.01392	.26775	.00353

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.01417	-0.00168	-0.00064	.08536	-0.00048	.00174	-0.00214
Stddev	.05243	.00059	.00026	.03219	.00120	.00766	.00209
%RSD	370.05	35.080	40.345	37.706	251.50	441.16	97.810

#1	.00392	-0.00228	-0.00094	.12248	-0.00123	-0.00692	.00021
#2	-.07325	-0.00166	-0.00053	.06526	.00090	.00448	-0.00379
#3	.02682	-0.00110	-0.00046	.06834	-0.00110	.00764	-0.00285

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

K. K. Buck

Sample Name: CCB Acquired: 2/28/2017 20:53:35 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00130	.00910	-.00136	.00047	-.00002	.00343	-.00142
Stddev	.00959	.00341	.00211	.00063	.00024	.00276	.00718
%RSD	736.79	37.468	155.60	134.08	1003.4	80.592	505.85

#1	.00435	.00735	.00079	.00119	-.00008	.00040	-.00725
#2	.00899	.00692	-.00143	-.00000	.00024	.00582	-.00361
#3	-.00944	.01303	-.00343	.00023	-.00024	.00407	.00660

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00049	-.00027	F .26741
Stddev	.00046	.00011	1.0141
%RSD	93.334	40.558	379.24

#1	.00052	-.00026	1.2724
#2	.00093	-.00017	.28547
#3	.00002	-.00039	-.75563

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5026.0	71464.	8079.0
Stddev	15.8	95.	20.3
%RSD	.31469	.13243	.25110

#1	5035.0	71517.	8099.4
#2	5007.8	71355.	8058.9
#3	5035.4	71521.	8078.8

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135304 Acquired: 2/28/2017 20:57:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00075	.15885	-.00194	.00894	.00196	.00008	.71178	.00004
Stddev	.00235	.00360	.00556	.00209	.00049	.00001	.02889	.00020
%RSD	314.32	2.2673	286.05	23.368	24.754	8.8292	4.0591	481.61

#1	-.00123	.16091	.00033	.00733	.00172	.00009	.74170	.00000
#2	-.00283	.15469	-.00828	.01130	.00252	.00008	.68404	.00026
#3	.00181	.16095	.00212	.00818	.00165	.00009	.70960	-.00014

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00009	-.00026	.03436	.16758	.17031	.00144	.03190	.00056
Stddev	.00053	.00104	.00060	.01190	.03668	.00405	.06781	.00226
%RSD	606.70	399.11	1.7382	7.1008	21.539	280.91	212.60	405.78

#1	.00017	.00077	.03483	.17931	.20950	.00236	-.02221	-.00193
#2	-.00069	-.00024	.03457	.16790	.16461	-.00299	.10797	.00114
#3	.00027	-.00130	.03369	.15552	.13681	.00495	.00994	.00247

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00075	.16760	.00224	-.00754	.00307	.00011	.00983	.31455
Stddev	.00045	.00264	.00057	.00751	.00480	.00649	.00463	.00288
%RSD	59.853	1.5768	25.273	99.616	156.47	5963.2	47.085	.91576

#1	.00127	.16910	.00252	.00111	.00836	.00750	.01412	.31738
#2	.00044	.16455	.00262	-.01237	.00185	-.00469	.00493	.31162
#3	.00055	.16916	.00159	-.01135	-.00100	-.00249	.01042	.31466

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135304 Acquired: 2/28/2017 20:57:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00026	.00240	.00846	-.00868	.00026	.01476	.04948
Stddev	.00058	.00034	.00567	.00119	.00060	.00008	1.7970
%RSD	222.13	14.362	67.062	13.682	235.28	.50846	3631.9

#1	.00007	.00214	.00871	-.00967	.00090	.01472	-.27974
#2	-.00020	.00279	.00267	-.00736	-.00030	.01471	-1.5602
#3	.00091	.00227	.01401	-.00901	.00017	.01485	1.9883

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5028.4	72239.	8075.7
Stddev	31.9	222.	26.2
%RSD	.63434	.30662	.32419

#1	4997.9	72488.	8098.2
#2	5025.7	72163.	8047.0
#3	5061.5	72066.	8082.1

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135304PS Acquired: 2/28/2017 21:01:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604317-03

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19427	5.2067	.19118	.90446	.50961	.02452	5.6716	.02428
Stddev	.00099	.0229	.00303	.00716	.00110	.00007	.0161	.00027
%RSD	.50722	.43900	1.5840	.79162	.21548	.27933	.28443	1.0928

#1	.19344	5.2215	.18771	.91031	.50845	.02452	5.6825	.02458
#2	.19536	5.2183	.19332	.90659	.51063	.02445	5.6792	.02408
#3	.19401	5.1804	.19250	.89648	.50974	.02459	5.6530	.02419

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10025	.24789	.27823	2.0328	26.244	.53313	4.8388	.23806
Stddev	.00079	.00018	.00055	.0170	.072	.00409	.0363	.00354
%RSD	.78617	.07221	.19763	.83896	.27512	.76741	.75090	1.4855

#1	.10083	.24773	.27761	2.0157	26.163	.53443	4.8757	.24013
#2	.10057	.24809	.27844	2.0498	26.267	.53641	4.8378	.23398
#3	.09935	.24786	.27864	2.0328	26.301	.52854	4.8030	.24008

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49489	25.754	.24761	4.7849	.25743	.59664	.19018	2.7426
Stddev	.00112	.033	.00175	.0164	.00305	.00223	.00219	.0061
%RSD	.22649	.12721	.70745	.34312	1.1852	.37436	1.1520	.22398

#1	.49596	25.723	.24866	4.7715	.25882	.59620	.18774	2.7484
#2	.49499	25.788	.24858	4.7799	.25953	.59907	.19198	2.7432
#3	.49372	25.751	.24559	4.8032	.25393	.59466	.19081	2.7361

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702135304PS Acquired: 2/28/2017 21:01:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604317-03

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49073	.50677	.48595	.24350	.48998	.49018	.40475
Stddev	.00069	.00122	.00651	.00428	.00067	.00108	.50984
%RSD	.14109	.24169	1.3401	1.7563	.13638	.22018	125.96
#1	.49149	.50546	.48836	.24827	.48921	.49085	-.18126
#2	.49053	.50696	.49092	.24222	.49036	.49076	.74656
#3	.49015	.50788	.47858	.24000	.49037	.48894	.64895

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4932.6	70286.	8082.7
Stddev	11.2	62.	15.8
%RSD	.22680	.08779	.19606
#1	4919.8	70348.	8072.7
#2	4937.4	70225.	8074.5
#3	4940.7	70283.	8101.0

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135304SDL Acquired: 2/28/2017 21:04:56 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 5 Custom ID2: Custom ID3:
 Comment: WG604317-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00048	.02011	.00277	.00095	.00077	.00007	.11320
Stddev	.00222	.00269	.00153	.00251	.00032	.00001	.01424
%RSD	464.49	13.350	55.321	265.37	41.349	20.586	12.580

#1	-.00043	.01708	.00158	.00252	.00101	.00008	.10290
#2	-.00272	.02109	.00449	.00227	.00041	.00005	.12945
#3	.00172	.02217	.00223	-.00195	.00090	.00007	.10724

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00007	-.00016	-.00123	.00834	.04134	.12868	-.00374
Stddev	.00034	.00032	.00065	.00037	.01497	.04172	.00350
%RSD	511.94	194.92	53.218	4.3807	36.200	32.422	93.541

#1	-.00032	.00020	-.00076	.00798	.03874	.10814	-.00356
#2	.00029	-.00028	-.00095	.00871	.02785	.10121	-.00033
#3	.00023	-.00041	-.00198	.00833	.05744	.17669	-.00732

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00382	.00058	-.00046	.06707	-.00014	.00154	.00356
Stddev	.01177	.00116	.00048	.02032	.00042	.00427	.00430
%RSD	307.81	200.79	104.19	30.296	301.61	276.96	120.64

#1	.00769	-.00055	-.00043	.08964	.00006	-.00337	.00114
#2	.01318	.00177	-.00095	.05025	.00015	.00361	.00102
#3	-.00939	.00051	.00000	.06130	-.00062	.00439	.00852

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135304SDL Acquired: 2/28/2017 21:04:56 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 5 Custom ID2: Custom ID3:
 Comment: WG604317-04

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00618	-0.00344	.06055	.00160	.00049	.00447	-0.00276
Stddev	.00691	.00378	.00095	.00102	.00007	.00204	.00771
%RSD	111.85	109.81	1.5765	63.715	13.784	45.713	278.80

#1	-.01411	-.00743	.05960	.00043	.00043	.00665	-.00936
#2	-.00138	-.00297	.06054	.00205	.00048	.00414	.00571
#3	-.00305	.00008	.06151	.00232	.00057	.00261	-.00464

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00006	.00388	F -.14915
Stddev	.00072	.00005	1.7783
%RSD	1290.1	1.3409	1192.3

#1	.00009	.00389	1.2308
#2	.00075	.00393	-2.1561
#3	-.00068	.00382	.47786

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5192.1	74167.	8394.1
Stddev	10.6	351.	39.6
%RSD	.20413	.47374	.47168

#1	5195.1	74489.	8400.6
#2	5180.3	74219.	8351.7
#3	5200.8	73792.	8430.1

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 21:08:46 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40866	10.298	.40830	.50648	1.0402	.05146	10.356
Stddev	.00427	.027	.00386	.00417	.0031	.00012	.033
%RSD	1.0440	.26387	.94483	.82298	.30160	.23115	.32102

#1	.41244	10.302	.40874	.50937	1.0407	.05148	10.374
#2	.40404	10.269	.41192	.50837	1.0369	.05133	10.318
#3	.40951	10.322	.40424	.50170	1.0431	.05156	10.377

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05040	.20387	.51392	.51557	3.8847	53.835	1.0876
Stddev	.00034	.00041	.00055	.00108	.0175	.142	.0037
%RSD	.66862	.20085	.10733	.21026	.45125	.26368	.33796

#1	.05003	.20402	.51380	.51680	3.8704	53.880	1.0844
#2	.05046	.20417	.51344	.51474	3.9042	53.676	1.0868
#3	.05070	.20340	.51452	.51517	3.8795	53.948	1.0916

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.8278	.49026	1.0114	52.694	.51002	10.239	.52149
Stddev	.0726	.00179	.0004	.164	.00114	.031	.01024
%RSD	.73882	.36551	.04329	.31129	.22325	.29859	1.9640

#1	9.9103	.49222	1.0109	52.626	.50871	10.273	.52014
#2	9.7734	.48870	1.0117	52.576	.51059	10.232	.51200
#3	9.7997	.48986	1.0116	52.882	.51076	10.213	.53234

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 21:08:46 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2464	.40121	5.1130	1.0151	1.0350	.99038	.51486
Stddev	.0080	.00601	.0084	.0014	.0031	.00852	.00697
%RSD	.64010	1.4972	.16398	.14316	.29502	.86054	1.3545

#1	1.2373	.40163	5.1222	1.0136	1.0337	.98543	.51699
#2	1.2499	.40699	5.1057	1.0165	1.0329	.98548	.50706
#3	1.2520	.39500	5.1112	1.0151	1.0385	1.0002	.52051

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0137	1.0048	F -.41466
Stddev	.0023	.0004	.34468
%RSD	.23013	.03880	83.125

#1	1.0160	1.0052	-.29120
#2	1.0137	1.0045	-.14871
#3	1.0114	1.0046	-.80406

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4895.5	67878.	7996.1
Stddev	19.8	116.	35.2
%RSD	.40474	.17084	.44008

#1	4875.3	67819.	8001.5
#2	4914.9	68012.	8028.2
#3	4896.2	67804.	7958.5

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 21:12:24 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00231	-0.00682	.00027	.00275	.00074	.00014	-0.00666
Stddev	.00024	.00247	.00201	.00361	.00093	.00003	.02227
%RSD	10.539	36.226	750.63	130.99	124.98	21.612	334.28

#1	-0.00207	-0.00421	.00173	.00670	.00145	.00016	-0.00161
#2	-0.00230	-0.00912	-0.00202	.00194	-0.00031	.00011	.01265
#3	-0.00256	-0.00713	.00109	-0.00037	.00108	.00015	-0.3103

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00005	-0.00025	-0.00161	-0.00023	-0.00217	.16841	.00156
Stddev	.00032	.00021	.00091	.00179	.00697	.01525	.00314
%RSD	640.57	87.472	56.534	768.39	320.74	9.0566	201.49

#1	-0.00003	-0.00026	-0.00253	.00042	.00575	.18431	-0.00203
#2	.00040	-0.00002	-0.00071	-0.00226	-0.00736	.16700	.00382
#3	-0.00022	-0.00045	-0.00159	.00114	-0.00491	.15391	.00288

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.02683	-0.00038	-0.00001	.08353	-0.00114	.00837	.00146
Stddev	.03128	.00258	.00025	.00901	.00080	.00262	.00182
%RSD	116.57	681.85	2426.7	10.781	70.263	31.275	124.27

#1	.00096	.00160	-0.00029	.09296	-0.00206	.01139	.00001
#2	-0.06071	-0.00329	.00021	.07502	-0.00072	.00693	.00087
#3	-0.02075	.00055	.00005	.08259	-0.00064	.00679	.00351

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 21:12:24 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00097	.00599	.00132	-0.00017	-0.00001	.00034	-0.00257
Stddev	.00215	.01049	.00250	.00031	.00018	.00190	.00475
%RSD	221.22	174.98	188.33	184.60	3147.3	560.63	184.93

#1	-0.00057	.01400	-0.00142	.00010	-0.00000	-0.00034	-0.00773
#2	.00095	.00986	.00193	-0.00052	.00017	-0.00113	.00161
#3	-0.00329	-0.00588	.00346	-0.00009	-0.00019	.00249	-0.00158

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00009	-0.00046	F -0.04558
Stddev	.00142	.00007	.47582
%RSD	1567.6	15.944	1044.0

#1	.00057	-0.00045	-0.40721
#2	-0.00150	-0.00053	-0.22298
#3	.00121	-0.00039	.49346

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-0.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4956.7	70324.	7998.8
Stddev	5.3	165.	46.8
%RSD	.10754	.23437	.58474

#1	4961.9	70222.	8051.9
#2	4957.0	70514.	7981.1
#3	4951.2	70236.	7963.5

Approved: March 01, 2017

Ki K Buck

Sample Name: PBW AF Acquired: 2/28/2017 21:16:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-02

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00048	-.01531	-.00248	-.00014	.00098	.00007	-.01144	.00039
Stddev	.00217	.00176	.00491	.00319	.00030	.00005	.01593	.00017
%RSD	451.24	11.485	198.34	2255.6	30.591	78.707	139.20	44.608

#1	.00264	-.01700	.00230	-.00376	.00130	.00001	-.01996	.00029
#2	-.00170	-.01543	-.00752	.00228	.00091	.00007	-.02130	.00059
#3	.00050	-.01349	-.00221	.00105	.00071	.00012	.00693	.00029

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00048	-.00013	.00067	.00795	.15066	-.00399	.03668	-.00073
Stddev	.00018	.00088	.00180	.01513	.06223	.00182	.03027	.00192
%RSD	38.419	700.52	268.47	190.28	41.307	45.493	82.522	263.38

#1	-.00043	.00038	.00051	.01630	.08075	-.00340	.03839	.00114
#2	-.00032	.00038	.00255	-.00951	.20002	-.00254	.06606	-.00064
#3	-.00068	-.00114	-.00105	.01707	.17120	-.00603	.00560	-.00270

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00020	.06521	-.00088	-.00681	-.00250	.00035	-.00403	.00199
Stddev	.00047	.01110	.00084	.00916	.00396	.00282	.00085	.00352
%RSD	237.70	17.018	95.176	134.55	158.44	807.29	21.046	176.66

#1	-.00005	.05461	.00003	-.00078	-.00291	.00307	-.00461	.00098
#2	-.00010	.07675	-.00163	-.00230	-.00623	.00053	-.00443	-.00091
#3	.00074	.06427	-.00104	-.01735	.00165	-.00255	-.00306	.00591

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

K. K. Buck

Sample Name: PBW AF Acquired: 2/28/2017 21:16:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-02

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00150	-.00020	.00253	-.00719	.00050	.00026	.13060
Stddev	.00011	.00025	.00104	.00288	.00112	.00030	.92244
%RSD	7.6566	124.72	41.064	39.982	226.07	114.57	706.28

#1	.00158	.00009	.00345	-.00571	.00176	.00055	.30801
#2	.00154	-.00035	.00274	-.00536	-.00038	.00028	.95145
#3	.00137	-.00034	.00140	-.01051	.00011	-.00005	-.86765

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4948.3	70995.	7900.7
Stddev	10.0	460.	34.7
%RSD	.20124	.64730	.43860

#1	4957.2	71483.	7861.4
#2	4950.1	70570.	7914.3
#3	4937.5	70930.	7926.6

Approved: March 01, 2017

Ki K Buck

Sample Name: LCSW AF Acquired: 2/28/2017 21:20:04 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-03

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19696	5.1041	.19194	.90474	.51252	.02448	5.0843
Stddev	.00172	.0050	.00453	.00135	.00086	.00004	.0177
%RSD	.87328	.09743	2.3614	.14970	.16774	.14921	.34871

#1	.19514	5.1080	.19714	.90617	.51160	.02444	5.0638
#2	.19717	5.0985	.18885	.90458	.51331	.02450	5.0954
#3	.19856	5.1057	.18983	.90347	.51266	.02450	5.0936

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02428	.10058	.24869	.25049	1.9005	26.340	.54199
Stddev	.00034	.00027	.00212	.00227	.0259	.108	.00200
%RSD	1.3938	.26959	.85257	.90796	1.3630	.40847	.36816

#1	.02414	.10087	.25064	.25006	1.8902	26.218	.54192
#2	.02404	.10054	.24643	.24846	1.9300	26.385	.54003
#3	.02467	.10033	.24900	.25295	1.8813	26.418	.54402

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8679	.24043	.49864	25.834	.24904	4.8085	.25557
Stddev	.0571	.00095	.00131	.132	.00246	.0096	.00484
%RSD	1.1727	.39395	.26214	.51018	.98901	.19906	1.8931

#1	4.9087	.24013	.49927	25.732	.24627	4.8061	.25002
#2	4.8925	.24149	.49714	25.983	.24985	4.8004	.25884
#3	4.8027	.23967	.49951	25.787	.25099	4.8191	.25786

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: LCSW AF Acquired: 2/28/2017 21:20:04 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-03

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.60573	.19278	2.4909	.49424	.50792	.49045	.24034
Stddev	.00851	.00448	.0073	.00138	.00126	.00435	.00586
%RSD	1.4047	2.3218	.29525	.27877	.24832	.88666	2.4377

#1	.60755	.19687	2.4989	.49422	.50654	.49547	.24263
#2	.61318	.18800	2.4844	.49563	.50902	.48772	.23368
#3	.59646	.19346	2.4895	.49288	.50819	.48816	.24470

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.49192	.47919	F -.33808
Stddev	.00029	.00184	.45527
%RSD	.05985	.38319	134.66

#1	.49162	.48009	.15602
#2	.49193	.47708	-.74058
#3	.49221	.48040	-.42969

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4878.2	69238.	7901.2
Stddev	9.6	261.	59.3
%RSD	.19667	.37642	.75060

#1	4867.2	69387.	7933.9
#2	4883.4	69389.	7832.8
#3	4884.2	68937.	7937.0

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701 Acquired: 2/28/2017 21:23:46 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00179	.11815	.00346	.00694	.40148	.00011	F 279.17
Stddev	.00078	.00515	.00278	.00100	.00116	.00007	1.13
%RSD	43.600	4.3582	80.353	14.397	.28913	57.741	.40494

#1	-.00093	.11872	.00232	.00595	.40245	.00006	280.36
#2	-.00246	.12298	.00144	.00692	.40019	.00019	278.11
#3	-.00197	.11273	.00663	.00795	.40179	.00009	279.04

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00032	.00011	.00011	.00551	1.3569	1.2557	.01421
Stddev	.00032	.00013	.00058	.00224	.0197	.0434	.00155
%RSD	99.674	114.97	521.01	40.618	1.4504	3.4529	10.906

#1	.00012	.00001	.00012	.00323	1.3597	1.2450	.01520
#2	.00016	.00007	.00069	.00560	1.3360	1.3034	.01502
#3	.00070	.00026	-.00047	.00770	1.3751	1.2186	.01243

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.1335	.33258	.00063	3.4258	.00728	.09110	.00069
Stddev	.0267	.00213	.00010	.0437	.00201	.00431	.00152
%RSD	.29222	.64044	15.355	1.2758	27.657	4.7318	220.19

#1	9.1038	.33460	.00074	3.4723	.00711	.09592	-.00097
#2	9.1556	.33036	.00056	3.3855	.00535	.08763	.00104
#3	9.1409	.33277	.00057	3.4197	.00936	.08975	.00201

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701 Acquired: 2/28/2017 21:23:46 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0091	-0.0073	1.6167	.00186	.34034	-0.02057	-0.00100
Stddev	.00810	.01786	.0042	.00236	.00087	.00326	.00502
%RSD	888.94	231.13	.25910	126.74	.25573	15.871	501.94

#1	-0.00836	-0.02439	1.6119	.00236	.33980	-0.02341	-0.00667
#2	.00771	-0.00991	1.6184	-0.00071	.33988	-0.02130	.00289
#3	-0.00207	.01112	1.6197	.00394	.34135	-0.01700	.00078

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00105	.02593	F -.72854
Stddev	.00055	.00002	.75508
%RSD	52.156	.08744	103.64

#1	.00168	.02594	-1.5771
#2	.00071	.02590	-.13074
#3	.00075	.02594	-.47776

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4864.4	68640.	8102.8
Stddev	5.3	321.	7.5
%RSD	.10868	.46762	.09233

#1	4858.3	68956.	8095.1
#2	4866.9	68315.	8110.0
#3	4867.9	68648.	8103.3

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701PS Acquired: 2/28/2017 21:27:33 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment: WG604329-03

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20311	5.0463	.20159	.99571	.90480	.02514	F 278.07
Stddev	.00227	.0071	.00114	.00525	.00428	.00004	1.36
%RSD	1.1191	.14046	.56734	.52757	.47265	.15580	.48940

#1	.20384	5.0476	.20045	1.0011	.90905	.02516	279.58
#2	.20057	5.0387	.20158	.99549	.90484	.02517	277.70
#3	.20494	5.0526	.20274	.99058	.90050	.02510	276.93

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02496	.09759	.24591	.25064	3.2309	28.137	.55147
Stddev	.00032	.00034	.00117	.00150	.0066	.043	.00380
%RSD	1.2776	.35282	.47647	.59672	.20532	.15307	.68919

#1	.02530	.09799	.24726	.24989	3.2295	28.164	.54859
#2	.02489	.09735	.24521	.24968	3.2381	28.160	.55578
#3	.02468	.09744	.24526	.25237	3.2250	28.087	.55004

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.784	.57117	.48933	29.569	.24896	5.2352	.24385
Stddev	.020	.00378	.00068	.122	.00171	.0252	.00561
%RSD	.14549	.66104	.13962	.41212	.68609	.48107	2.3004

#1	13.764	.57492	.49005	29.709	.24814	5.2527	.24975
#2	13.804	.56737	.48868	29.488	.24782	5.2466	.23859
#3	13.784	.57121	.48927	29.510	.25093	5.2063	.24320

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701PS Acquired: 2/28/2017 21:27:33 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment: WG604329-03

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.60754	.19211	4.1285	.48584	.83777	.45947	.24468
Stddev	.01138	.00286	.0201	.00190	.00393	.00246	.00313
%RSD	1.8736	1.4879	.48646	.39188	.46874	.53600	1.2780

#1	.61814	.19408	4.1502	.48668	.84193	.45881	.24391
#2	.59551	.19343	4.1105	.48719	.83726	.45739	.24201
#3	.60898	.18883	4.1249	.48366	.83412	.46219	.24812

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.49114	.50142	F -.34451
Stddev	.00122	.00225	1.1320
%RSD	.24829	.44867	328.57

#1	.48974	.50390	.41033
#2	.49184	.50088	-1.6461
#3	.49186	.49950	.20221

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4831.9	67679.	8168.5
Stddev	15.0	347.	38.1
%RSD	.31041	.51227	.46656

#1	4818.0	68066.	8161.7
#2	4847.8	67577.	8209.5
#3	4829.9	67396.	8134.2

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701SDL Acquired: 2/28/2017 21:31:15 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 50 Custom ID2: Custom ID3:
 Comment: WG604329-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00138	.01923	.00212	.00369	.08142	.00010	58.702
Stddev	.00123	.00320	.00420	.00139	.00040	.00005	.069
%RSD	88.883	16.621	198.03	37.525	.49480	50.988	.11719

#1	-.00011	.02179	-.00034	.00222	.08098	.00012	58.697
#2	-.00147	.01565	-.00026	.00388	.08178	.00013	58.635
#3	-.00257	.02025	.00697	.00498	.08148	.00004	58.773

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00002	.00015	-.00140	.00310	.28357	.34566	-.00006
Stddev	.00053	.00027	.00068	.00350	.00858	.01550	.00470
%RSD	2411.3	174.44	48.776	113.04	3.0244	4.4832	8456.1

#1	-.00039	.00034	-.00062	-.00011	.28632	.34760	.00449
#2	.00059	-.00015	-.00165	.00256	.29043	.36009	.00023
#3	-.00026	.00027	-.00191	.00683	.27395	.32928	-.00489

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.8125	.06707	.00093	.71965	.00053	.02275	.00184
Stddev	.1358	.00273	.00072	.02081	.00161	.00901	.00075
%RSD	7.4939	4.0738	77.039	2.8923	302.60	39.622	40.927

#1	1.7019	.06975	.00172	.72256	.00239	.02146	.00097
#2	1.7715	.06429	.00075	.69753	-.00051	.03234	.00225
#3	1.9641	.06717	.00032	.73885	-.00029	.01445	.00229

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701SDL Acquired: 2/28/2017 21:31:15 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 50 Custom ID2: Custom ID3:
 Comment: WG604329-04

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00559	.00066	.31906	.00229	.06836	-.00278	.00667
Stddev	.00523	.00224	.00160	.00077	.00026	.00085	.00552
%RSD	93.481	336.98	.50044	33.590	.37963	30.764	82.700

#1	.00908	.00269	.31728	.00220	.06822	-.00185	.00726
#2	-.00042	-.00174	.32036	.00157	.06820	-.00296	.00088
#3	.00811	.00104	.31954	.00310	.06866	-.00353	.01188

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00041	.00790	F -.66672
Stddev	.00047	.00028	.33355
%RSD	115.66	3.5069	50.028

#1	.00002	.00780	-.65437
#2	.00027	.00821	-1.0063
#3	.00094	.00768	-.33952

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5033.6	71102.	8201.8
Stddev	10.3	160.	44.5
%RSD	.20506	.22559	.54203

#1	5045.3	71259.	8250.3
#2	5029.5	71107.	8192.2
#3	5025.9	70939.	8163.0

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701 Acquired: 2/28/2017 21:35:02 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -.00438	1.1576	.01998	.08562	4.1113	.00053	F 1379.8
Stddev	.00189	.0003	.00643	.00155	.0077	.00010	16.9
%RSD	43.212	.02883	32.189	1.8090	.18649	18.733	1.2257

#1	-.00613	1.1577	.02089	.08637	4.1031	.00057	1361.3
#2	-.00465	1.1572	.02591	.08664	4.1183	.00059	1383.7
#3	-.00237	1.1578	.01314	.08383	4.1126	.00041	1394.5

Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit	5.0000						270.00
Low Limit	-.00400						-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00511	.00287	.00158	.04101	13.314	12.027	.14238
Stddev	.00044	.00032	.00054	.00251	.016	.102	.00432
%RSD	8.6104	11.209	34.421	6.1194	.11968	.85198	3.0361

#1	.00467	.00322	.00100	.04327	13.298	11.940	.13739
#2	.00510	.00282	.00208	.03831	13.314	12.002	.14489
#3	.00555	.00259	.00166	.04146	13.330	12.140	.14487

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	86.117	3.2605	.00484	35.451	.08049	.87521	.00896
Stddev	.446	.0016	.00134	.070	.00047	.02838	.01002
%RSD	.51768	.04788	27.675	.19731	.58019	3.2431	111.79

#1	86.507	3.2593	.00431	35.480	.08060	.89729	-.00157
#2	85.631	3.2599	.00636	35.371	.08088	.88515	.01009
#3	86.212	3.2622	.00384	35.501	.07997	.84319	.01836

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701 Acquired: 2/28/2017 21:35:02 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00622	F -0.03167	16.891	.00263	3.4623	F -0.07205	-0.00886
Stddev	.00913	.01496	.012	.00084	.0096	.00302	.00587
%RSD	146.84	47.224	.07126	31.970	.27705	4.1937	66.305

#1	-.01499	-.02319	16.901	.00238	3.4519	-.06857	-.00476
#2	-.00688	-.04894	16.895	.00356	3.4709	-.07351	-.00623
#3	.00323	-.02288	16.878	.00194	3.4641	-.07406	-.01558

Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit		90.000				36.000	
Low Limit		-.01000				-.03000	

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00837	.24435	F -.76021
Stddev	.00043	.00013	.22041
%RSD	5.1578	.05286	28.993

#1	.00883	.24449	-1.0040
#2	.00831	.24425	-.70174
#3	.00798	.24430	-.57493

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4221.5	59502.	7790.5
Stddev	12.0	227.	65.8
%RSD	.28473	.38225	.84485

#1	4232.7	59293.	7856.9
#2	4223.1	59469.	7725.2
#3	4208.8	59744.	7789.5

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132702 Acquired: 2/28/2017 21:38:55 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-01

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00035	-0.00791	.00181	.01391	.20439	.00013	133.08	.00017
Stddev	.00071	.00368	.00122	.00208	.00029	.00002	.29	.00046
%RSD	203.45	46.503	67.771	14.985	.14427	13.026	.21620	274.02

#1	-0.00048	-0.00368	.00041	.01344	.20445	.00013	133.31	.00011
#2	-0.00098	-0.00976	.00231	.01619	.20407	.00015	133.17	-0.00026
#3	.00042	-0.01030	.00270	.01210	.20465	.00012	132.76	.00066

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00017	-0.00068	.00328	.00625	10.650	.04349	20.762	.03873
Stddev	.00018	.00083	.00168	.03000	.095	.00331	.090	.00288
%RSD	107.96	120.91	51.263	480.01	.89370	7.6020	.43162	7.4468

#1	.00012	-0.00092	.00284	-.01993	10.739	.04588	20.862	.04197
#2	.00001	-.00137	.00514	-.00031	10.550	.03971	20.733	.03643
#3	.00037	.00023	.00186	.03899	10.661	.04486	20.690	.03780

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00198	32.221	.05109	.00049	.00114	.00022	.01424	2.7570
Stddev	.00044	.078	.00123	.00991	.00240	.00217	.00904	.0040
%RSD	22.036	.24065	2.4013	2024.1	209.82	999.14	63.435	.14403

#1	.00211	32.250	.05212	.00661	-.00159	.00270	.00606	2.7563
#2	.00149	32.280	.04973	.00579	.00214	-.00126	.01272	2.7535
#3	.00232	32.133	.05143	-.01094	.00289	-.00079	.02394	2.7613

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132702 Acquired: 2/28/2017 21:38:55 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-01

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00030	.49392	-.00604	.00148	-.00037	.00209	.80713
Stddev	.00044	.00073	.00244	.00168	.00079	.00039	1.3118
%RSD	146.17	.14770	40.364	112.89	211.79	18.715	162.52

#1	.00029	.49308	-.00698	-.00026	.00040	.00247	.06697
#2	.00075	.49444	-.00327	.00308	-.00117	.00168	2.3217
#3	-.00013	.49423	-.00786	.00163	-.00035	.00213	.03271

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4844.8	69241.	8045.0
Stddev	4.7	312.	38.1
%RSD	.09630	.45038	.47304

#1	4847.5	69597.	8001.2
#2	4839.5	69107.	8063.3
#3	4847.5	69018.	8070.4

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132702MS Acquired: 2/28/2017 21:42:42 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19859	4.9308	.20105	.93969	.70244	.02509	131.83	.02479
Stddev	.00058	.0163	.00401	.00411	.00203	.00002	.34	.00007
%RSD	.29380	.33147	1.9951	.43751	.28874	.08200	.25619	.29017

#1	.19799	4.9349	.19951	.93497	.70014	.02507	131.47	.02479
#2	.19916	4.9447	.20560	.94168	.70323	.02509	131.89	.02486
#3	.19862	4.9128	.19803	.94243	.70395	.02511	132.14	.02472

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09798	.24613	.24871	1.8665	36.732	.57812	24.355	.26947
Stddev	.00021	.00167	.00226	.0120	.131	.00311	.132	.00189
%RSD	.21049	.68024	.90676	.64330	.35677	.53800	.54107	.70210

#1	.09774	.24695	.24684	1.8741	36.733	.57488	24.212	.26730
#2	.09810	.24724	.24808	1.8727	36.601	.58109	24.473	.27034
#3	.09809	.24421	.25121	1.8526	36.863	.57838	24.379	.27077

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50095	56.727	.28957	5.0340	.24577	.60895	.19646	5.2950
Stddev	.00127	.166	.00057	.0168	.00208	.00638	.00838	.0163
%RSD	.25449	.29267	.19586	.33432	.84836	1.0485	4.2664	.30748

#1	.50012	56.537	.29001	5.0263	.24450	.60212	.18680	5.2773
#2	.50030	56.801	.28978	5.0225	.24463	.60998	.20075	5.2981
#3	.50242	56.843	.28893	5.0533	.24817	.61476	.20183	5.3094

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702132702MS Acquired: 2/28/2017 21:42:42 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-04

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48772	.97714	.47604	.23614	.49499	.47155	.38046
Stddev	.00226	.00138	.00168	.00212	.00282	.00195	1.5394
%RSD	.46407	.14149	.35224	.89911	.57026	.41316	404.62
#1	.48540	.97560	.47754	.23792	.49582	.46961	-.87663
#2	.48992	.97826	.47423	.23671	.49731	.47155	-.07939
#3	.48785	.97758	.47633	.23379	.49185	.47350	2.0974

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4836.4	68405.	8055.6
Stddev	23.5	164.	9.0
%RSD	.48561	.23993	.11133
#1	4810.9	68487.	8053.7
#2	4841.2	68216.	8065.3
#3	4857.2	68512.	8047.7

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132702MSD Acquired: 2/28/2017 21:46:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-05

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19978	4.9290	.20278	.94786	.70772	.02505	133.61	.02456
Stddev	.00464	.0108	.00357	.00315	.00081	.00008	.27	.00013
%RSD	2.3231	.21852	1.7594	.33280	.11390	.31374	.20294	.52578

#1	.19462	4.9348	.20088	.94437	.70680	.02509	133.32	.02454
#2	.20362	4.9355	.20690	.94872	.70809	.02510	133.68	.02444
#3	.20110	4.9165	.20057	.95050	.70827	.02496	133.84	.02469

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09760	.24847	.24775	1.9052	36.798	.57690	24.821	.27383
Stddev	.00059	.00062	.00178	.0274	.041	.00220	.113	.00223
%RSD	.60348	.24966	.71980	1.4390	.11155	.38051	.45694	.81478

#1	.09799	.24883	.24671	1.8967	36.841	.57814	24.847	.27240
#2	.09692	.24775	.24981	1.8830	36.759	.57819	24.920	.27640
#3	.09789	.24883	.24673	1.9358	36.795	.57437	24.697	.27269

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49861	57.332	.29233	5.0527	.24247	.60478	.19491	5.3378
Stddev	.00059	.056	.00077	.0242	.00422	.00347	.00839	.0113
%RSD	.11741	.09790	.26435	.47795	1.7387	.57450	4.3041	.21196

#1	.49874	57.396	.29319	5.0730	.24733	.60650	.18651	5.3502
#2	.49797	57.292	.29170	5.0590	.23980	.60705	.20328	5.3352
#3	.49912	57.309	.29210	5.0260	.24027	.60078	.19494	5.3281

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702132702MSD Acquired: 2/28/2017 21:46:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-05

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48771	.98553	.47219	.23303	.49468	.47375	.50550
Stddev	.00096	.00166	.00317	.00512	.00145	.00183	1.3880
%RSD	.19752	.16852	.67122	2.1966	.29232	.38610	274.59
#1	.48660	.98545	.47107	.23699	.49623	.47482	1.8178
#2	.48820	.98391	.47576	.23486	.49337	.47479	.64624
#3	.48833	.98723	.46973	.22725	.49445	.47164	-.94756

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4871.8	69077.	8205.1
Stddev	2.3	74.	60.0
%RSD	.04714	.10643	.73117
#1	4874.4	69061.	8215.1
#2	4870.1	69158.	8140.8
#3	4871.0	69013.	8259.5

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702125302 Acquired: 2/28/2017 21:50:05 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00177	.00077	.00183	.00697	.28737	-0.00002	243.32	.00041
Stddev	.00132	.00439	.00301	.00441	.00073	.00000	.96	.00035
%RSD	74.671	571.68	164.67	63.279	.25275	9.3133	.39288	84.526

#1	-0.00292	.00551	-0.00109	.00513	.28709	-0.00003	244.03	.00009
#2	-0.00032	-0.00315	.00493	.01200	.28820	-0.00002	243.71	.00078
#3	-0.00208	-0.00006	.00164	.00377	.28683	-0.00002	242.24	.00037

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00017	-0.00173	.00466	.01132	10.341	.04113	-0.05303	-0.00059
Stddev	.00064	.00018	.00128	.00891	.020	.00516	.06231	.00125
%RSD	379.95	10.598	27.538	78.647	.19771	12.557	117.51	212.38

#1	.00042	-0.00160	.00615	.01991	10.325	.03953	-.02596	.00051
#2	-0.00008	-0.00194	.00397	.01193	10.364	.03696	-.00883	-0.00033
#3	-0.00084	-0.00166	.00387	.00213	10.333	.04691	-.12430	-0.00194

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00126	4.8199	.24066	.02198	-0.00081	.00260	.00061	.24377
Stddev	.00033	.0522	.00065	.01015	.00697	.00481	.01545	.00250
%RSD	26.191	1.0831	.27151	46.174	864.75	184.67	2520.1	1.0249

#1	.00093	4.8696	.24088	.01039	.00685	.00783	-.00094	.24117
#2	.00159	4.8246	.24118	.02926	-.00679	-.00163	.01678	.24398
#3	.00127	4.7655	.23993	.02631	-.00248	.00161	-.01401	.24616

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702125302 Acquired: 2/28/2017 21:50:05 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00256	.40916	-.01399	.00220	.00137	.00264	.60828
Stddev	.00031	.00083	.00324	.00968	.00047	.00016	.34404
%RSD	12.261	.20203	23.183	438.89	33.984	6.2027	56.559

#1	.00243	.40989	-.01771	-.00065	.00137	.00253	.97377
#2	.00233	.40932	-.01171	-.00572	.00183	.00255	.29071
#3	.00292	.40826	-.01256	.01299	.00090	.00282	.56037

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4997.7	71071.	8339.0
Stddev	10.3	103.	52.7
%RSD	.20592	.14480	.63240

#1	4997.7	70974.	8284.3
#2	5008.0	71060.	8343.2
#3	4987.5	71179.	8389.5

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 21:53:55 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40437	10.220	.40739	.49699	1.0436	.05128	10.381
Stddev	.00133	.038	.00325	.00412	.0015	.00011	.011
%RSD	.32869	.37190	.79807	.82835	.14098	.21667	.10163

#1	.40563	10.264	.41008	.50063	1.0453	.05137	10.379
#2	.40449	10.200	.40831	.49781	1.0432	.05116	10.392
#3	.40298	10.196	.40377	.49252	1.0424	.05132	10.371

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05071	.20408	.51181	.51384	3.8499	54.042	F 1.1026
Stddev	.00035	.00078	.00064	.00125	.0104	.109	.0031
%RSD	.68113	.38230	.12466	.24324	.26956	.20123	.28320

#1	.05060	.20359	.51109	.51255	3.8556	53.920	1.0994
#2	.05109	.20367	.51229	.51505	3.8379	54.077	1.1030
#3	.05042	.20498	.51204	.51393	3.8563	54.128	1.1056

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value							1.0000
Range							10.000%

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.8833	.48957	1.0100	53.067	.51035	10.176	.51801
Stddev	.1364	.00263	.0013	.095	.00231	.007	.00365
%RSD	1.3799	.53700	.13124	.17911	.45232	.06709	.70458

#1	9.7261	.48892	1.0114	53.166	.50772	10.171	.51999
#2	9.9529	.49247	1.0098	53.058	.51203	10.184	.52024
#3	9.9707	.48733	1.0088	52.976	.51130	10.173	.51380

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 21:53:55 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2408	.39957	5.1097	1.0115	1.0350	.98039	.50471
Stddev	.0051	.00716	.0023	.0018	.0017	.00126	.00527
%RSD	.41295	1.7907	.04435	.18201	.15898	.12835	1.0446

#1	1.2453	.39187	5.1073	1.0113	1.0361	.97971	.50849
#2	1.2419	.40080	5.1098	1.0098	1.0358	.97961	.50695
#3	1.2352	.40602	5.1119	1.0135	1.0331	.98184	.49869

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0105	1.0013	F 1.3332
Stddev	.0033	.0006	1.4324
%RSD	.32667	.05742	107.45

#1	1.0143	1.0008	-.25216
#2	1.0081	1.0019	1.7173
#3	1.0091	1.0011	2.5344

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4829.2	68080.	7896.7
Stddev	17.2	291.	43.6
%RSD	.35652	.42776	.55170

#1	4849.1	67753.	7890.9
#2	4819.0	68175.	7856.3
#3	4819.5	68311.	7942.9

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 21:57:32 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0011	-0.01408	-0.00133	.00366	.00050	.00014	-0.02016
Stddev	.00112	.00764	.00434	.00230	.00013	.00005	.02457
%RSD	1015.1	54.301	325.60	62.671	26.638	32.344	121.84

#1	.00105	-.02117	-.00475	.00499	.00037	.00013	-.00036
#2	-.00021	-.00598	.00355	.00101	.00064	.00019	-.04766
#3	-.00118	-.01508	-.00281	.00499	.00050	.00010	-.01248

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00024	.00014	-0.00136	.00081	.00470	.22559	.00103
Stddev	.00046	.00031	.00119	.00110	.03376	.04537	.00196
%RSD	192.24	219.63	87.266	136.57	718.27	20.113	188.94

#1	.00060	.00011	-.00188	.00204	-.01305	.26725	.00297
#2	-.00028	.00047	-.00000	.00045	.04363	.17724	.00108
#3	.00041	-.00016	-.00221	-.00007	-.01648	.23228	-.00094

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.01382	-0.00134	.00028	.08010	-0.00282	.00651	.00125
Stddev	.08568	.00061	.00075	.00782	.00121	.00551	.00431
%RSD	619.81	45.972	263.22	9.7648	42.854	84.648	344.92

#1	-.07111	-.00171	.00100	.07812	-.00225	.01287	-.00098
#2	.08468	-.00167	.00034	.08872	-.00199	.00327	.00621
#3	-.05504	-.00063	-.00049	.07345	-.00420	.00339	-.00149

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

K. K. Buck

Sample Name: CCB Acquired: 2/28/2017 21:57:32 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00570	.00258	.00327	-.00056	.00017	.00252	-.00034
Stddev	.00312	.00276	.00241	.00145	.00012	.00320	.00364
%RSD	54.786	106.82	73.698	260.52	70.206	126.94	1070.0

#1	.00258	.00105	.00165	-.00071	.00012	.00615	.00370
#2	.00568	.00093	.00604	-.00192	.00031	.00131	-.00335
#3	.00883	.00577	.00212	.00096	.00009	.00010	-.00137

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	-.00007	-.00051	F .46491
Stddev	.00055	.00031	.86455
%RSD	804.49	60.960	185.96

#1	.00009	-.00028	.01971
#2	.00038	-.00038	1.4613
#3	-.00068	-.00086	-.08631

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4871.3	69636.	7773.5
Stddev	7.6	271.	39.0
%RSD	.15625	.38976	.50230

#1	4875.5	69923.	7732.4
#2	4875.9	69384.	7778.0
#3	4862.5	69601.	7810.1

Approved: March 01, 2017

Ki K Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:01:22 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00688	.16565	.00731	.07382	.00898	.00172	.44247
Stddev	.00024	.00256	.00031	.00093	.00062	.00004	.01596
%RSD	3.5589	1.5462	4.2390	1.2648	6.9386	2.2465	3.6068

#1	.00678	.16758	.00767	.07438	.00830	.00167	.45270
#2	.00716	.16663	.00710	.07435	.00952	.00174	.42408
#3	.00671	.16275	.00717	.07275	.00913	.00174	.45063

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00091	.00386	.00145	.00437	.07923	1.0031	.08907
Stddev	.00021	.00016	.00140	.00087	.00174	.0708	.00092
%RSD	23.064	4.0982	96.535	19.900	2.1924	7.0626	1.0279

#1	.00088	.00400	.00093	.00352	.07910	1.0784	.08959
#2	.00072	.00387	.00038	.00433	.07756	.99314	.08960
#3	.00114	.00369	.00303	.00525	.08103	.93777	.08801

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40656	.00897	.00856	.47310	.01681	.81756	.00500
Stddev	.01133	.00320	.00076	.02982	.00053	.00692	.00467
%RSD	2.7873	35.713	8.8584	6.3038	3.1578	.84676	93.266

#1	.40350	.00676	.00828	.50715	.01691	.81619	.00082
#2	.39707	.01264	.00942	.45161	.01728	.81143	.00415
#3	.41911	.00750	.00799	.46054	.01623	.82507	.01004

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

K. K. Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:01:22 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08672	.02039	.75474	.41467	.04224	.02437	.16652
Stddev	.00266	.00746	.00690	.00154	.00042	.00136	.00615
%RSD	3.0660	36.586	.91357	.37155	1.0057	5.5934	3.6954

#1	.08810	.01994	.75427	.41380	.04199	.02399	.17336
#2	.08841	.02807	.74809	.41376	.04201	.02324	.16476
#3	.08366	.01316	.76186	.41645	.04273	.02588	.16144

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00805	.02033	F 131.12
Stddev	.00089	.00026	1.07
%RSD	11.069	1.2769	.81766

#1	.00713	.02003	130.76
#2	.00813	.02043	132.32
#3	.00890	.02053	130.27

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4960.2	70093.	7880.2
Stddev	16.7	194.	10.1
%RSD	.33766	.27710	.12863

#1	4941.6	69997.	7874.7
#2	4964.8	70317.	7891.9
#3	4974.1	69966.	7874.0

Approved: March 01, 2017

Ki K Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:05:11 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00803	.16846	.00830	.07664	.00894	.00173	.41599
Stddev	.00106	.00385	.00299	.00261	.00112	.00003	.01282
%RSD	13.154	2.2832	36.062	3.4044	12.499	1.5731	3.0828

#1	.00803	.16789	.00491	.07773	.00973	.00171	.42845
#2	.00697	.16493	.00942	.07366	.00944	.00171	.40283
#3	.00908	.17256	.01057	.07853	.00766	.00176	.41670

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00100	.00415	.00247	.00402	.08490	.97741	.08755
Stddev	.00022	.00027	.00160	.00095	.00337	.05739	.00125
%RSD	21.909	6.4887	64.887	23.656	3.9639	5.8716	1.4273

#1	.00077	.00396	.00319	.00358	.08728	.98803	.08640
#2	.00120	.00404	.00358	.00511	.08637	.91545	.08888
#3	.00102	.00446	.00063	.00336	.08105	1.0287	.08736

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.42651	.00827	.00825	.46708	.01611	.82615	.00681
Stddev	.02396	.00036	.00025	.00966	.00028	.02333	.00412
%RSD	5.6185	4.3053	3.0879	2.0690	1.7344	2.8245	60.489

#1	.43192	.00830	.00796	.45629	.01621	.85252	.00687
#2	.40030	.00861	.00838	.47495	.01579	.81778	.00266
#3	.44731	.00790	.00841	.47000	.01632	.80816	.01091

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:05:11 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09350	.02199	.76060	.41715	.04224	.02470	.17492
Stddev	.00748	.00606	.00460	.00081	.00062	.00394	.00449
%RSD	8.0016	27.548	.60493	.19364	1.4725	15.975	2.5678

#1	.09640	.02813	.76590	.41786	.04293	.02894	.17050
#2	.08500	.01602	.75826	.41733	.04206	.02400	.17477
#3	.09910	.02182	.75763	.41627	.04173	.02115	.17948

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00851	.01814	F 130.52
Stddev	.00049	.00024	.21
%RSD	5.7099	1.3478	.15793

#1	.00903	.01842	130.53
#2	.00844	.01805	130.31
#3	.00807	.01795	130.72

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5007.5	71415.	8084.9
Stddev	17.5	519.	56.0
%RSD	.35023	.72709	.69227

#1	5027.6	71429.	8106.2
#2	5000.0	71928.	8127.1
#3	4995.0	70890.	8021.4

Approved: March 01, 2017

Ki K Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:09:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01098	.21136	.00841	.09373	.01065	.00214	.54434
Stddev	.00320	.00413	.00547	.00132	.00045	.00003	.01178
%RSD	29.145	1.9521	65.009	1.4126	4.2602	1.2909	2.1645

#1	.00916	.20988	.00866	.09488	.01041	.00215	.55506
#2	.00910	.21602	.01376	.09404	.01118	.00216	.53172
#3	.01467	.20818	.00283	.09229	.01037	.00211	.54625

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00088	.00557	.00330	.00471	.09669	1.2148	.10855
Stddev	.00012	.00011	.00061	.00204	.02664	.0285	.00350
%RSD	13.547	1.9612	18.555	43.274	27.556	2.3472	3.2240

#1	.00086	.00563	.00401	.00317	.12132	1.2085	.10656
#2	.00077	.00544	.00299	.00702	.06841	1.2459	.10649
#3	.00101	.00563	.00291	.00394	.10035	1.1899	.11259

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51134	.00757	.01031	.60560	.02013	1.0150	.00799
Stddev	.10685	.00221	.00075	.04421	.00168	.0142	.00418
%RSD	20.896	29.270	7.3146	7.3003	8.3421	1.3958	52.384

#1	.43969	.00992	.01004	.64418	.01830	1.0282	.00528
#2	.46017	.00552	.01116	.61526	.02161	1.0169	.00587
#3	.63415	.00726	.00973	.55736	.02047	1.0000	.01281

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:09:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.00000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.11573	.02640	.93528	.51577	.05301	.03166	.20771
Stddev	.00333	.00391	.00319	.00105	.00061	.00516	.00548
%RSD	2.8776	14.810	.34069	.20283	1.1599	16.302	2.6366

#1	.11735	.03028	.93882	.51528	.05371	.02651	.20152
#2	.11190	.02246	.93263	.51697	.05257	.03162	.20970
#3	.11794	.02646	.93439	.51505	.05273	.03684	.21191

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.01126	.02434	F 163.50
Stddev	.00083	.00028	.79
%RSD	7.3499	1.1435	.48489

#1	.01098	.02446	163.79
#2	.01220	.02453	164.10
#3	.01062	.02402	162.60

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4939.6	69953.	7921.1
Stddev	15.3	306.	23.6
%RSD	.31022	.43720	.29736

#1	4932.5	69961.	7928.3
#2	4957.2	70255.	7894.8
#3	4929.1	69644.	7940.2

Approved: March 01, 2017

Ki K Buck

Sample Name: ICSA Acquired: 2/28/2017 22:12:48 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -.00695	243.69	.00218	.00317	.00005	.00009	237.01
Stddev	.00138	.55	.00060	.00210	.00078	.00002	1.10
%RSD	19.839	.22684	27.324	66.245	1692.8	17.693	.46245

#1	-.00829	243.66	.00233	.00358	-.00085	.00008	237.47
#2	-.00554	244.25	.00152	.00504	.00055	.00009	237.80
#3	-.00701	243.15	.00269	.00090	.00044	.00011	235.76

Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	.00400						
Low Limit	-.00400						

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00004	-.00081	-.00305	F .02398	91.207	.16888	.00320
Stddev	.00031	.00011	.00058	.00126	.517	.04536	.00512
%RSD	742.31	13.139	18.941	5.2695	.56659	26.860	159.92

#1	-.00031	-.00075	-.00372	.02306	90.830	.15150	.00313
#2	.00030	-.00093	-.00274	.02345	91.796	.22036	.00836
#3	-.00012	-.00075	-.00270	.02542	90.995	.13478	-.00188

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				.00400			
Low Limit				-.00400			

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	240.24	.00049	-.00000	.05475	-.00215	.05740	.00275
Stddev	1.63	.00097	.00017	.01288	.00161	.01712	.00220
%RSD	.67813	197.89	3598.5	23.515	74.850	29.825	80.007

#1	241.65	-.00056	-.00008	.06765	-.00134	.03777	.00339
#2	240.61	.00067	.00019	.05472	-.00110	.06925	.00456
#3	238.46	.00136	-.00012	.04190	-.00400	.06518	.00030

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: ICSA Acquired: 2/28/2017 22:12:48 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00468	-.00659	.00568	.00062	.00116	-.00041	.00430
Stddev	.00443	.01464	.00215	.00126	.00025	.00179	.00438
%RSD	94.532	222.14	37.811	203.36	21.566	433.92	101.89

#1	.00691	-.01023	.00754	-.00035	.00122	-.00206	-.00009
#2	-.00041	-.01907	.00617	.00204	.00137	-.00067	.00431
#3	.00756	.00953	.00333	.00017	.00089	.00149	.00867

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00383	.00047	F -17.180
Stddev	.00011	.00018	.580
%RSD	2.7916	37.793	3.3756

#1	.00392	.00062	-17.583
#2	.00371	.00027	-16.516
#3	.00385	.00052	-17.442

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.02000
Low Limit			-.02000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4572.6	63273.	7734.3
Stddev	14.6	287.	13.5
%RSD	.31986	.45369	.17441

#1	4571.3	63598.	7729.1
#2	4558.7	63055.	7724.2
#3	4587.9	63165.	7749.6

Approved: March 01, 2017

Ki K Buck

Sample Name: ICSAB Acquired: 2/28/2017 22:16:36 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49812	242.66	.24015	.48711	.25205	.25688	237.14
Stddev	.00338	.36	.00173	.00333	.00027	.00046	1.35
%RSD	.67860	.14917	.72072	.68402	.10647	.18095	.56892

#1	.49478	242.93	.23824	.48731	.25174	.25643	235.68
#2	.50154	242.25	.24162	.49033	.25215	.25736	237.39
#3	.49804	242.81	.24058	.48368	.25224	.25685	238.34

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.45833	.23552	.24467	.27213	90.887	5.5957	.00474
Stddev	.00091	.00037	.00068	.00194	.175	.1026	.00324
%RSD	.19766	.15569	.27672	.71231	.19248	1.8330	68.216

#1	.45935	.23521	.24389	.27330	90.815	5.5094	.00359
#2	.45804	.23593	.24503	.26989	90.760	5.5685	.00840
#3	.45761	.23543	.24509	.27319	91.087	5.7091	.00225

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	238.61	.23059	.00025	5.3768	.46483	-.00569	.48043
Stddev	1.19	.00104	.00164	.0420	.00223	.01062	.00365
%RSD	.50046	.45225	645.44	.78073	.47878	186.66	.75915

#1	237.23	.23070	-.00070	5.3532	.46350	.00549	.47834
#2	239.25	.23157	.00215	5.3520	.46740	-.00691	.48464
#3	239.35	.22950	-.00069	5.4253	.46359	-.01565	.47831

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: ICSAB Acquired: 2/28/2017 22:16:36 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50150	.22822	.00890	.47679	.00124	-.00066	.44078
Stddev	.00231	.01448	.00358	.00185	.00019	.00347	.00908
%RSD	.46122	6.3438	40.279	.38705	15.235	527.21	2.0590

#1	.50345	.21252	.00804	.47658	.00126	-.00466	.44581
#2	.49895	.24105	.01283	.47873	.00141	.00158	.43030
#3	.50210	.23108	.00582	.47506	.00104	.00110	.44622

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.24773	.45273	F -17.305
Stddev	.00036	.00131	.792
%RSD	.14332	.28941	4.5779

#1	.24804	.45346	-18.216
#2	.24734	.45352	-16.919
#3	.24781	.45122	-16.779

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.02500
Low Limit			-.02500

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4551.9	63189.	7661.2
Stddev	2.1	356.	10.7
%RSD	.04540	.56361	.13915

#1	4553.1	63543.	7664.2
#2	4553.1	62831.	7670.1
#3	4549.5	63193.	7649.4

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 22:20:17 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40418	10.215	.40298	.49544	1.0378	.05112	10.359
Stddev	.00160	.012	.00489	.00315	.0041	.00012	.057
%RSD	.39550	.11782	1.2135	.63619	.39827	.23320	.55454

#1	.40276	10.201	.40544	.49212	1.0348	.05098	10.328
#2	.40387	10.219	.39735	.49582	1.0425	.05119	10.426
#3	.40591	10.224	.40615	.49839	1.0362	.05118	10.325

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05038	.20441	.51047	.51850	3.8439	54.112	F 1.1008
Stddev	.00031	.00053	.00355	.00474	.0274	.170	.0050
%RSD	.61061	.25993	.69580	.91377	.71219	.31348	.45093

#1	.05031	.20477	.51079	.51319	3.8465	54.248	1.0967
#2	.05012	.20380	.50677	.52003	3.8698	54.167	1.1063
#3	.05072	.20467	.51385	.52229	3.8153	53.922	1.0994

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value							1.0000
Range							10.000%

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.7446	.48550	1.0101	53.024	.50953	10.167	.51960
Stddev	.0601	.00390	.0002	.172	.00075	.017	.00200
%RSD	.61705	.80234	.02245	.32520	.14781	.16923	.38438

#1	9.8062	.48510	1.0100	52.876	.51039	10.155	.52103
#2	9.7413	.48959	1.0104	53.213	.50912	10.160	.51732
#3	9.6861	.48183	1.0100	52.982	.50907	10.187	.52044

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 22:20:17 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2447	.40334	5.1161	1.0095	1.0316	.97856	.50475
Stddev	.0082	.01527	.0058	.0023	.0040	.00293	.00401
%RSD	.65865	3.7870	.11276	.22486	.38581	.29895	.79367

#1	1.2354	.38570	5.1116	1.0085	1.0290	.97587	.50675
#2	1.2507	.41252	5.1139	1.0079	1.0362	.97813	.50736
#3	1.2480	.41178	5.1226	1.0121	1.0297	.98167	.50014

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0059	.99373	F .28357
Stddev	.0034	.00129	.55652
%RSD	.33458	.12938	196.25

#1	1.0021	.99315	.88650
#2	1.0082	.99284	.17465
#3	1.0076	.99521	-.21043

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4822.8	67149.	7725.1
Stddev	14.7	258.	91.5
%RSD	.30465	.38473	1.1841

#1	4816.5	66938.	7626.2
#2	4812.4	67071.	7806.7
#3	4839.6	67437.	7742.4

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 22:23:55 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00086	-0.01560	-0.00314	.00021	.00028	.00007	.00674
Stddev	.00065	.00303	.00557	.00287	.00022	.00005	.01795
%RSD	75.769	19.422	177.69	1355.0	80.622	75.246	266.39

#1	-0.00013	-0.01301	-0.00064	-0.00148	.00053	.00009	.01273
#2	-0.00106	-0.01487	.00075	-0.00141	.00016	.00010	.02092
#3	-0.00138	-0.01893	-0.00952	.00353	.00014	.00001	-0.01344

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00024	-0.00007	-0.00203	.00099	-0.00399	.13962	-0.00096
Stddev	.00027	.00055	.00107	.00120	.01224	.05546	.00329
%RSD	113.29	755.77	52.564	121.95	306.87	39.721	341.91

#1	-0.00004	-0.00046	-0.00311	.00234	-0.01702	.07558	.00211
#2	.00027	.00055	-0.00098	.00060	.00727	.17138	-0.00443
#3	.00050	-0.00031	-0.00201	.00002	-0.00222	.17191	-0.00056

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.01843	.00077	.00058	.02947	.00011	.00032	-0.00368
Stddev	.07495	.00250	.00059	.01064	.00036	.00741	.00451
%RSD	406.72	324.88	100.38	36.117	333.70	2310.6	122.78

#1	-0.07040	-0.00003	-0.00001	.04132	.00024	-0.00191	.00096
#2	.06748	.00358	.00060	.02634	-0.00030	-0.00571	-0.00806
#3	-0.05237	-0.00124	.00116	.02074	.00039	.00858	-0.00392

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 22:23:55 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00044	.00239	.00044	.00011	.00007	-0.00048	-0.00572
Stddev	.00248	.00559	.00601	.00080	.00006	.00166	.00379
%RSD	559.50	233.74	1371.2	728.41	89.448	346.15	66.268

#1	-0.00330	.00085	.00444	-0.00082	.00014	-0.00061	-0.00954
#2	.00082	.00859	.00334	.00058	.00004	-0.00207	-0.00196
#3	.00115	-0.00227	-0.00647	.00056	.00003	.00124	-0.00565

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00008	-0.00064	F -1.1750
Stddev	.00077	.00018	1.0986
%RSD	922.23	28.211	93.494

#1	-0.00080	-0.00084	-.79258
#2	.00061	-0.00051	-.31878
#3	.00044	-0.00057	-2.4137

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4960.2	70929.	7978.7
Stddev	9.3	387.	61.7
%RSD	.18830	.54598	.77357

#1	4968.5	71317.	8010.4
#2	4962.1	70928.	7907.5
#3	4950.1	70542.	8018.0

Approved: March 01, 2017

Ki K Buck

2.3.2 Metals ICP-MS Data

2.3.2.1 Summary Data

Lab Report #: L17021201

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021201-01	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: LH18/24-SP650-6418-GRAB	Prep Method: 3015	Prep Date: 02/24/2017 08:46
Matrix: Water	Analytical Method: 6020A	Cal Date: 02/28/2017 10:52
Workgroup #: WG604209	Analyst: JYH	Run Date: 02/28/2017 11:32
Collect Date: 02/22/2017 10:00	Dilution: 1	File ID: NI.022817.113234
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Barium, Total	7440-39-3	0.241		0.00600	0.00300	0.00150
Lead, Total	7439-92-1	0.00100	U	0.00200	0.00100	0.000500
Silver, Total	7440-22-4	0.00100	U	0.00200	0.00100	0.000500
U	Analyte was not detected. The concentration is below the reported LOD.					

2.3.2.2 QC Summary Data

Example 6020 Calculations
Perkin Elmer NexION 300X

1.0 Initial Calibration (ICAL) Parameters

The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Final volume

Vi = Initial volume

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in (ug/L)

Example:

0.1

100

40

1

0.25

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Final volume

Vi = Initial volume

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in (ug/kg)

Example:

0.1

200

0.5

1

40

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:

Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

$Cdry$ = Concentration calculated as dry weight (ug/kg)

Example:

40

80

50

50 ug/kg = 0.050 mg/kg

Perkin Elmer NexION ICP/MS

STANDARDS KEY

QC Std 1 - ICV

QC Std 2 - ICB

QC Std 3 - LLICV

QC Std 4 - ICSA

QC Std 5 - ICSAB

QC Std 6 - CCV

QC Std 7 - CCB

QC Std 8 - LLCCV

Calibration Solutions

Analyte	Stock Conc. (mg/L)	S1 (mg/L)	S2 (mg/L)	S3 (mg/L)	S4 (mg/L)
Al	10	0	0.00005	0.05	0.1
Sb	10	0	0.00005	0.05	0.1
As	10	0	0.00005	0.05	0.1
Ba	10	0	0.00005	0.05	0.1
Be	10	0	0.00005	0.05	0.1
Ca	1000	0	0.005	5	10
Cd	10	0	0.0005	0.05	0.1
Cr	10	0	0.0005	0.05	0.1
Co	10	0	0.0005	0.05	0.1
Cu	10	0	0.0005	0.05	0.1
Fe	1000	0	0.005	5	10
Pb	10	0	0.00005	0.05	0.1
Mg	1000	0	0.005	5	10
Mn	10	0	0.00005	0.05	0.1
Ni	10	0	0.00005	0.05	0.1
K	1000	0	0.005	5	10
Se	10	0	0.00005	0.05	0.1
Ag	10	0	0.00005	0.05	0.1
Na	1000	0	0.005	5	10
Tl	10	0	0.00005	0.05	0.1
V	10	0	0.00005	0.05	0.1
U	1000	0	0.00005	0.05	0.1
Zn	10	0	0.00005	0.05	0.1

Workgroup: WG604063
 Analyst: VC
 Spike Analyst: VC
 Run Date: 02/24/2017 08:46
 Method: 3015
 Balance: BAL016
 Instrument: MW-3
 Instrument Start: 02/24/2017 08:52

SOP: ME407 Revision 19
 Spike Solution: STD78216
 Spike Witness: ERP
 HNO3 Lot #: COA19483
 40 & 50 ML. DIGESTION TU COA19487
 MS Filters- fisher-Lot# RRGT38288

SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG604063-02	BLANK	1	20 mL	50 mL	184.957 g	184.95 g	
2	WG604063-03	LCS	1	20 mL	50 mL	186.033 g	186.017 g	.25 mL
3	L17021201-01	SAMP	1	20 mL	50 mL	182.437 g	182.418 g	03/06/17
4	L17021203-01	SAMP	1	20 mL	50 mL	185.269 g	185.248 g	03/06/17
5	L17021250-01	SAMP	1	20 mL	50 mL	183.086 g	182.996 g	03/06/17
6	L17021253-04	SAMP	1	20 mL	50 mL	183.685 g	183.605 g	03/03/17
7	L17021253-06	SAMP	1	20 mL	50 mL	185.188 g	185.128 g	03/03/17
8	L17021256-01	SAMP	1	20 mL	50 mL	185.194 g	185.045 g	03/06/17
9	L17021259-01	SAMP	1	20 mL	50 mL	183.773 g	183.724 g	03/06/17
10	L17021260-01	SAMP	1	20 mL	50 mL	186.171 g	186.116 g	03/06/17
11	L17021261-01	SAMP	1	20 mL	50 mL	183.41 g	183.39 g	03/06/17
12	L17021261-02	SAMP	1	20 mL	50 mL	182.679 g	182.66 g	03/06/17
13	L17021261-03	SAMP	1	20 mL	50 mL	184.182 g	184.16 g	03/06/17
14	L17021261-04	SAMP	1	20 mL	50 mL	184.092 g	184.077 g	03/06/17
15	L17021261-05	SAMP	1	20 mL	50 mL	185.619 g	185.606 g	03/06/17
16	L17021262-01	SAMP	1	20 mL	50 mL	184.529 g	184.514 g	03/06/17
17	L17021262-02	SAMP	1	20 mL	50 mL	185.025 g	185.014 g	03/06/17
18	L17021262-03	SAMP	1	20 mL	50 mL	184.899 g	184.889 g	03/06/17
19	WG604063-01	REF	1	20 mL	50 mL	182.708 g	182.685 g	
20	L17021262-04	SAMP	1	20 mL	50 mL	182.708 g	182.685 g	03/06/17
21	WG604063-04	MS	1	20 mL	50 mL	184.003 g	183.993 g	.25 mL
22	WG604063-05	MSD	1	20 mL	50 mL	184.692 g	184.68 g	.25 mL

L17021253-04	FILTERED DIGESTATE
L17021253-06	FILTERED DIGESTATE
L17021256-01	FILTERED DIGESTATE
L17021260-01	FILTERED DIGESTATE

Analyst: Veeha Collier

Reviewer: Erin Patton



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-MS2 Dataset: 022817A.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A/200.8 SOP: ME700A Rev: 3
 Maintenance Log ID: _____
 Calibration Std: STD80374 ICV Std: STD80372 Post Spike: STD79415
 ICSA: STD80378 ICSAB: STD80375 Int. Std: RGT39300
 CCV: STD80373 LLCCV: STD80377 Tuning Sol : STD80381
 Stannous : _____ Hydroxylamine : _____

Workgroups: 604209,604489,604447,604524

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	NI.022817.103956	Blank	Blank		1		02/28/17 10:39
2	NI.022817.104301	WG604488-01	Calibration Point		1		02/28/17 10:43
3	NI.022817.104606	WG604488-02	Calibration Point		1		02/28/17 10:46
4	NI.022817.104912	WG604488-03	Calibration Point		1		02/28/17 10:49
5	NI.022817.105218	WG604488-04	Calibration Point		1		02/28/17 10:52
6	NI.022817.105524	WG604488-05	Initial Calibration Verification		1		02/28/17 10:55
7	NI.022817.105831	WG604488-06	Initial Calib Blank		1		02/28/17 10:58
8	NI.022817.110138	WG604488-07	Low Level Initial Calibration V		1		02/28/17 11:01
9	NI.022817.110443	WG604488-08	Interference Check		1		02/28/17 11:04
10	NI.022817.110748	WG604488-09	Interference Check		1		02/28/17 11:07
11	NI.022817.111055	WG604488-10	CCV		1		02/28/17 11:10
12	NI.022817.111401	WG604488-11	CCB		1		02/28/17 11:14
13	NI.022817.111708	WG604063-02	Method/Prep Blank	20/50	1		02/28/17 11:17
14	NI.022817.112013	WG604063-03	Laboratory Control S	20/50	1		02/28/17 11:20
15	NI.022817.112319	WG604063-01	Reference Sample		1	L17021262-04	02/28/17 11:23
16	NI.022817.112623	WG604063-04	Matrix Spike	20/50	1	L17021262-04	02/28/17 11:26
17	NI.022817.112928	WG604063-05	Matrix Spike Duplica	20/50	1	L17021262-04	02/28/17 11:29
18	NI.022817.113234	L17021201-01	LH18/24-SP650-6418-GRAB	20/50	1		02/28/17 11:32
19	NI.022817.113539	L17021203-01	LH18/24-SP140-7418-GRAB	20/50	1		02/28/17 11:35
20	NI.022817.113845	WG604209-01	Post Digestion Spike		1	L17021203-01	02/28/17 11:38
21	NI.022817.114150	WG604209-02	Serial Dilution		5	L17021203-01	02/28/17 11:41
22	NI.022817.114456	WG604209-02	Serial Dilution		25	L17021203-01	02/28/17 11:44
23	NI.022817.114802	WG604488-12	CCV		1		02/28/17 11:48
24	NI.022817.115107	WG604488-13	CCB		1		02/28/17 11:51
25	NI.022817.115414	L17021250-01	INS-WL02-022217	20/50	1		02/28/17 11:54
26	NI.022817.115719	L17021253-04	PZ104-GW-022217	20/50	1		02/28/17 11:57
27	NI.022817.120025	L17021253-06	PZ105-GW-022317	20/50	1		02/28/17 12:00
28	NI.022817.120330	L17021256-01	INS-WL03-022217	20/50	1		02/28/17 12:03
29	NI.022817.120636	L17021259-01	INS-WL01-022217	20/50	1		02/28/17 12:06
30	NI.022817.120941	L17021260-01	INS-WL04-022217	20/50	1		02/28/17 12:09
31	NI.022817.121246	L17021261-01	MW31-GW-022117	20/50	1		02/28/17 12:12
32	NI.022817.121552	L17021261-02	MW32-GW-022117	20/50	1		02/28/17 12:15
33	NI.022817.121857	L17021261-03	TCF-EB01-022117	20/50	1		02/28/17 12:18
34	NI.022817.122202	L17021261-04	MW28-GW-022217	20/50	1		02/28/17 12:22

Page: 1 Approved: March 01, 2017

Sam H. Rhodes

Microbac Laboratories Inc.

Instrument Run Log

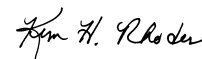
Instrument: ICP-MS2 Dataset: 022817A.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A/200.8 SOP: ME700A Rev: 3
 Maintenance Log ID: _____
 Calibration Std: STD80374 ICV Std: STD80372 Post Spike: STD79415
 ICSA: STD80378 ICSAB: STD80375 Int. Std: RGT39300
 CCV: STD80373 LLCV: STD80377 Tuning Sol : STD80381
 Stannous : _____ Hydroxylamine : _____

Workgroups: 604209,604489,604447,604524

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	NI.022817.122509	WG604488-14	CCV		1		02/28/17 12:25
36	NI.022817.122814	WG604488-15	CCB		1		02/28/17 12:28
37	NI.022817.123121	L17021261-05	SW01-022217	20/50	1		02/28/17 12:31
38	NI.022817.123427	L17021262-01	MW39-GW-022017	20/50	1		02/28/17 12:34
39	NI.022817.123731	L17021262-02	MW37-GW-022017	20/50	1		02/28/17 12:37
40	NI.022817.124037	L17021262-03	MW36-GW-022117	20/50	1		02/28/17 12:40
41	NI.022817.124344	WG604488-16	CCV		1		02/28/17 12:43
42	NI.022817.124650	WG604488-17	CCB		1		02/28/17 12:46
43	NI.022817.125821	WG604488-18	Low Level Continuing Calibra		1		02/28/17 12:58
44	NI.022817.131300	WG604209-03	Post Digestion Spike		1	L17021261-02	02/28/17 13:13
45	NI.022817.131605	WG604209-04	Serial Dilution		5	L17021261-02	02/28/17 13:16
46	NI.022817.131910	WG604209-04	Serial Dilution		25	L17021261-02	02/28/17 13:19
47	NI.022817.132216	WG604488-19	Interference Check		1		02/28/17 13:22
48	NI.022817.132521	WG604488-20	Interference Check		1		02/28/17 13:25
49	NI.022817.132829	WG604488-21	CCV		1		02/28/17 13:28
50	NI.022817.133135	WG604488-22	CCB		1		02/28/17 13:31
51	NI.022817.142134	WG604424-02	Method/Prep Blank	20/50	1		02/28/17 14:21
52	NI.022817.142440	WG604424-03	Laboratory Control S	20/50	1		02/28/17 14:24
53	NI.022817.142745	WG604263-02	Fluid Blank 2		1		02/28/17 14:27
54	NI.022817.143050	WG604424-01	Reference Sample		1	L17021324-03	02/28/17 14:30
55	NI.022817.143355	WG604424-04	Matrix Spike	20/50	1	L17021324-03	02/28/17 14:33
56	NI.022817.143701	WG604424-05	Matrix Spike Duplica	20/50	1	L17021324-03	02/28/17 14:37
57	NI.022817.144006	L17021319-02	60500-SSP0330-SSP1330	20/50	1		02/28/17 14:40
58	NI.022817.144312	L17021253-02	PZ101-GW-022217	20/50	1		02/28/17 14:43
59	NI.022817.144617	WG604489-01	Post Digestion Spike		1	L17021253-02	02/28/17 14:46
60	NI.022817.144922	WG604489-02	Serial Dilution		5	L17021253-02	02/28/17 14:49
61	NI.022817.145227	WG604489-02	Serial Dilution		25	L17021253-02	02/28/17 14:52
62	NI.022817.145535	WG604488-23	CCV		1		02/28/17 14:55
63	NI.022817.145840	WG604488-24	CCB		1		02/28/17 14:58
64	NI.022817.150147	L17021324-01	TCF-EB01-022317	20/50	1		02/28/17 15:01
65	NI.022817.150452	L17021324-02	MW35-GW-022317	20/50	1		02/28/17 15:04
66	NI.022817.150757	L17021324-06	TCF-EB02-022317	20/50	1		02/28/17 15:07
67	NI.022817.151102	L17021324-07	MW21-GW-022317	20/50	1		02/28/17 15:11
68	NI.022817.151408	L17021327-01	BSUMP-SW-0222317	20/50	1		02/28/17 15:14

Page: 2 Approved: March 01, 2017




Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-MS2 Dataset: 022817A.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A/200.8 SOP: ME700A Rev: 3
 Maintenance Log ID: _____
 Calibration Std: STD80374 ICV Std: STD80372 Post Spike: STD79415
 ICSA: STD80378 ICSAB: STD80375 Int. Std: RGT39300
 CCV: STD80373 LLCCV: STD80377 Tuning Sol : STD80381
 Stannous : _____ Hydroxylamine : _____

Workgroups: 604209,604489,604447,604524

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	NI.022817.151713	L17021327-02	BSUMP-SW-0222317	20/50	1		02/28/17 15:17
70	NI.022817.152018	L17021388-01	MW23-GW-022417	20/50	1		02/28/17 15:20
71	NI.022817.152322	L17021388-02	MW34-GW-022417	20/50	1		02/28/17 15:23
72	NI.022817.152627	L17021388-03	MW01-GW-022417	20/50	1		02/28/17 15:26
73	NI.022817.152933	L17021388-04	MW01-GW-022417D	20/50	1		02/28/17 15:29
74	NI.022817.153240	WG604488-25	CCV		1		02/28/17 15:32
75	NI.022817.153546	WG604488-26	CCB		1		02/28/17 15:35
76	NI.022817.154633	L17021319-02	60500-SSP0330-SSP1330	20/50	100		02/28/17 15:46
77	NI.022817.154940	WG604488-27	CCV		1		02/28/17 15:49
78	NI.022817.155245	WG604488-28	CCB		1		02/28/17 15:52
79	NI.022817.155554	WG604488-29	Interference Check		1		02/28/17 15:55
80	NI.022817.155859	WG604488-30	Interference Check		1		02/28/17 15:58
81	NI.022817.160207	WG604488-31	CCV		1		02/28/17 16:02
82	NI.022817.160513	WG604488-32	CCB		1		02/28/17 16:05
83	NI.022817.160920	WG604422-02	Method/Prep Blank	5/50	50		02/28/17 16:09
84	NI.022817.161225	WG604422-03	Laboratory Control S	5/50	50		02/28/17 16:12
85	NI.022817.161531	WG604265-01	Fluid Blank 1		50		02/28/17 16:15
86	NI.022817.161836	WG604265-02	Fluid Blank 2		50		02/28/17 16:18
87	NI.022817.162141	WG604422-01	Reference Sample		50	L17021347-02	02/28/17 16:21
88	NI.022817.162446	WG604422-04	Matrix Spike	5/50	50	L17021347-02	02/28/17 16:24
89	NI.022817.162752	WG604422-05	Matrix Spike Duplica	5/50	50	L17021347-02	02/28/17 16:27
90	NI.022817.163058	L17021367-01	KAISER 9 BAGS	5/50	50		02/28/17 16:30
91	NI.022817.163402	WG604447-01	Post Digestion Spike		50	L17021367-01	02/28/17 16:34
92	NI.022817.163708	WG604447-02	Serial Dilution		250	L17021367-01	02/28/17 16:37
93	NI.022817.164015	WG604488-33	CCV		1		02/28/17 16:40
94	NI.022817.164321	WG604488-34	CCB		1		02/28/17 16:43
95	NI.022817.164628	L17021368-01	AWV 24 BAGS	5/50	50		02/28/17 16:46
96	NI.022817.164935	WG604488-35	CCV		1		02/28/17 16:49
97	NI.022817.165240	WG604488-36	CCB		1		02/28/17 16:52
98	NI.022817.165547	WG604395-02	Method/Prep Blank	.25/100	50		02/28/17 16:55
99	NI.022817.165852	WG604395-03	Laboratory Control S	.25/100	1		02/28/17 16:58
100	NI.022817.170158	L17021248-01	INS-WS01-022117		1	WG604395-01	02/28/17 17:01
101	NI.022817.170504	WG604395-04	Matrix Spike	.252/100	1	L17021248-01	02/28/17 17:05
102	NI.022817.170809	WG604395-05	Matrix Spike Duplica	.255/100	1	L17021248-01	02/28/17 17:08

Page: 3 Approved: March 01, 2017

Sam H. Rhodes

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-MS2 Dataset: 022817A.REP

Analyst1: JYH Analyst2: N/A

Method: 6020/6020A/200.8 SOP: ME700A Rev: 3

Maintenance Log ID: _____

Calibration Std: STD80374 ICV Std: STD80372 Post Spike: STD79415

ICSA: STD80378 IC SAB: STD80375 Int. Std: RGT39300

CCV: STD80373 LLCCV: STD80377 Tuning Sol : STD80381

Stannous : _____ Hydroxylamine : _____

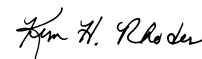
Workgroups: 604209,604489,604447,604524

Comments:

--

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
103	NI.022817.171114	L17021249-01	INS-WS01-022217	.256/100	1		02/28/17 17:11
104	NI.022817.171419	WG604524-01	Post Digestion Spike		1	L17021249-01	02/28/17 17:14
105	NI.022817.171725	WG604524-02	Serial Dilution		5	L17021249-01	02/28/17 17:17
106	NI.022817.172031	WG604488-37	CCV		1		02/28/17 17:20
107	NI.022817.172336	WG604488-38	CCB		1		02/28/17 17:23
108	NI.022817.172643	WG604524-02	Serial Dilution		25	L17021249-01	02/28/17 17:26
109	NI.022817.172949	WG604488-39	Interference Check		1		02/28/17 17:29
110	NI.022817.173254	WG604488-40	Interference Check		1		02/28/17 17:32
111	NI.022817.173657	WG604488-41	CCV		1		02/28/17 17:36
112	NI.022817.174003	WG604488-42	CCB		1		02/28/17 17:40

Page: 4 Approved: March 01, 2017




Microbac Laboratories Inc.

Data Checklist

Date: 28-FEB-2017
 Analyst: JYH
 Analyst: NA
 Method: 6020/6020A/200.8
 Instrument: ICP-MS2
 Curve Workgroup: 604488
 Runlog ID: 80692
 Analytical Workgroups: 604209,604489,604447,604524

STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	1201,1203,1250,1253,1256,1260 1261,1262,1263,1319,1324,1327 1388,1248,1249,1259
Client Forms	
Level X	
Level 3	1250,1253,1256,1259,1260,1261 1262,1263,1324,1327,1388,1248,1249
Level 4	1201,1203,1319
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	KHR
Comments	

Primary Reviewer:

Secondary Reviewer:
01-MAR-2017



Analytical Method:6020A
Login Number:L17021201

AAB#:WG604209

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6418-GRAB	01	02/22/17					02/24/2017	1.9	180		02/28/17	6.1	180	

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17021201 Work Group: WG604209
 Blank File ID: NI.022817.111708 Blank Sample ID: WG604063-02
 Prep Date: 02/24/17 08:46 Instrument ID: ICP-MS2
 Analyzed Date: 02/28/17 11:17 Method: 6020A
 Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG604063-03	NI.022817.112013	02/28/17 11:20	01
LH18/24-SP650-6418-GRAB	L17021201-01	NI.022817.113234	02/28/17 11:32	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5177650
 Report generated 03/09/2017 10:44



Login Number: L17021201 Prep Date: 02/24/17 08:46 Sample ID: WG604063-02
 Instrument ID: ICP-MS2 Run Date: 02/28/17 11:17 Prep Method: 3015
 File ID: NI.022817.111708 Analyst: JYH Method: 6020A
 Workgroup (AAB#): WG604209 Matrix: Water Units: mg/L
 Contract #: _____ Cal ID: ICP-MS -

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Barium, Total	0.00150	0.00600	0.00150	1	U
Lead, Total	0.000500	0.00200	0.000500	1	U
Silver, Total	0.000500	0.00200	0.000500	1	U

DL Method Detection Limit
 LOQ Reporting/Practical Quantitation Limit
 ND Analyte Not detected at or above reporting limit
 * |Analyte concentration| > 1/2 RL

Report Name: BLANK
 PDF ID: 5177651
 09-MAR-2017 10:44



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604063-03
Instrument ID: ICP-MS2 Run Time: 11:20 Prep Method: 3015
File ID: NI.022817.112013 Analyst: JYH Method: 6020A
Workgroup (AAB#): WG604209 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD78216 Cal ID: ICP-MS -

Analytes	Expected	Found	% Rec	LCS Limits	Q
Barium, Total	0.125	0.116	92.9	80 - 120	
Lead, Total	0.125	0.117	93.7	80 - 120	
Silver, Total	0.125	0.119	95.1	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 5177652
Report generated: 03/09/2017 10:44



Loginnum: L17021201 Cal ID: ICP-MS2- Worknum: WG604209
 Instrument ID: ICP-MS2 Contract #: _____ Method: 6020A
 Parent ID: WG604063-01 File ID: NI.022817.112319 Dil: 1 Matrix: WATER
 Sample ID: WG604063-04 MS File ID: NI.022817.112623 Dil: 1 Units: mg/L
 Sample ID: WG604063-05 MSD File ID: NI.022817.112928 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Barium	1.38	0.125	1.57	149	0.125	1.70	256	8.14	80 - 120	20	*
Lead	0.000840	0.125	0.129	102	0.125	0.137	109	6.23	80 - 120	20	
Silver	ND	0.125	0.111	88.4	0.125	0.118	94.5	6.67	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

Microbac Laboratories Inc.
Serial Dilution Report

Login: L17021201 **Worknum:** WG604209
Instrument: ICP-MS2 **Method:** 6020A
Serial Dil: WG604209-02 **File ID:** NI.022817.114150 **Dil:** 5 **Units:** ug/L
Sample: L17021203-01 **File ID:** NI.022817.113539 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Barium	148		154		3.97	
Lead	0.210	F	ND	U		
Silver	ND	U	1.71	F	16000.00	

U = Result is below MDL.

F = Result is greater than or equal to MDL and less than the RL.

X = Result is greater than or equal to RL and less than 100 times the MDL.

E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 100 times the MDL.

SERIAL_DIL - Modified 09/22/2008

PDF File ID: 5177647

03/09/2017 10:44



Sample Login ID: L17021201

Worknum: WG604209

Instrument ID: ICP-MS2

Method: 6020A

Post Spike ID: WG604209-01

File ID: NI.022817.113845

Dil: 1

Units: ug/L

Sample ID: L17021203-01

File ID: NI.022817.113539

Dil: 1

Matrix: Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
BARIUM	191		148		50	84.9	75 - 125	
LEAD	50.1		0.210	F	50	99.8	75 - 125	
SILVER	44.1		0	U	50	88.2	75 - 125	

N = % Recovery exceeds control limits

F = Result is between MDL and RL

U = Sample result is below MDL. A value of zero is used in the calculation



Login: L17021201 Workgroup (AAB#): WG604209
 Analytical Method: 6020A Instrument ID: ICP-MS2
 ICAL Worknum: WG604488 Initial Calibration Date: 28-FEB-2017 10:52

	WG604488-01		WG604488-02		WG604488-03		WG604488-04		R	Q
	Conc	INT	Conc	INT	Conc	INT	Conc	INT		
BARIUM	0	32.3	.4	132	50	85700	100	178000	1	
LEAD	0	902	.4	1340	50	486000	100	1010000	.999999	
SILVER	0	115	.4	376	50	258000	100	533000	.999999	

INT = Instrument intensity
 R = Coefficient of correlation
 Q = Data Qualifier
 * = Out of Compliance; R < 0.995



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-06
Instrument ID: ICP-MS2 Run Time: 10:58 Method: 6020A
File ID: NI.022817.105831 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG604209 Cal ID: ICP-MS2 - 28-FEB-17
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
SILVER	.2	.8	.2	U
BARIIUM	.6	2.4	.6	U
LEAD	.2	.8	.2	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-11
 Instrument ID: ICP-MS2 Run Time: 11:14 Method: 6020A
 File ID: NI.022817.111401 Analyst: JYH Units: ug/L
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Barium	0.600	2.40	0.600	U
Lead	0.200	0.800	0.200	U
Silver	0.200	0.800	0.200	U

U = Result is less than MDL.
 F = Result is between MDL and RL.
 * = Result is above RL.

CCB - Modified 03/05/2008
 PDF File ID: 5177661
 Report generated 03/09/2017 10:36



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-13
 Instrument ID: ICP-MS2 Run Time: 11:51 Method: 6020A
 File ID: NI.022817.115107 Analyst: JYH Units: ug/L
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Barium	0.600	2.40	0.600	U
Lead	0.200	0.800	0.200	U
Silver	0.200	0.800	0.200	U

U = Result is less than MDL.
 F = Result is between MDL and RL.
 * = Result is above RL.

CCB - Modified 03/05/2008
 PDF File ID: 5177661
 Report generated 03/09/2017 10:36



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-17
Instrument ID: ICP-MS2 Run Time: 12:46 Method: 6020A
File ID: NI.022817.124650 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Barium	0.600	2.40	0.600	U
Lead	0.200	0.800	0.200	U
Silver	0.200	0.800	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-22
 Instrument ID: ICP-MS2 Run Time: 13:31 Method: 6020A
 File ID: NI.022817.133135 Analyst: JYH Units: ug/L
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Barium	0.600	2.40	0.600	U
Lead	0.200	0.800	0.200	U
Silver	0.200	0.800	0.200	U

U = Result is less than MDL.
 F = Result is between MDL and RL.
 * = Result is above RL.

CCB - Modified 03/05/2008
 PDF File ID: 5177661
 Report generated 03/09/2017 10:36



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-05
 Instrument ID: ICP-MS2 Run Time: 10:55 Method: 6020A
 File ID: NI.022817.105524 Analyst: JYH Units: ug/L
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 QC Key: DOD4

Analyte	Expected	Found	%REC	LIMITS	Q
Barium	50	48.7	97.4	90 - 110	
Lead	50	48.6	97.2	90 - 110	
Silver	50	48.8	97.6	90 - 110	

* Exceeds LIMITS Limit



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-10
 Instrument ID: ICP-MS2 Run Time: 11:10 Method: 6020A
 File ID: NI.022817.111055 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Barium	0.0500	0.0497	mg/L	99.5	90 - 110	
Lead	0.0500	0.0498	mg/L	99.6	90 - 110	
Silver	0.0500	0.0524	mg/L	105	90 - 110	

* Exceeds LIMITS Criteria



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-12
 Instrument ID: ICP-MS2 Run Time: 11:48 Method: 6020A
 File ID: NI.022817.114802 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Barium	0.0500	0.0520	mg/L	104	90 - 110	
Lead	0.0500	0.0503	mg/L	101	90 - 110	
Silver	0.0500	0.0486	mg/L	97.2	90 - 110	

* Exceeds LIMITS Criteria



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-16
 Instrument ID: ICP-MS2 Run Time: 12:43 Method: 6020A
 File ID: NI.022817.124344 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Barium	0.0500	0.0528	mg/L	106	90 - 110	
Lead	0.0500	0.0482	mg/L	96.4	90 - 110	
Silver	0.0500	0.0476	mg/L	95.1	90 - 110	

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
 PDF File ID: 5177660
 Report generated 03/09/2017 10:36



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-21
 Instrument ID: ICP-MS2 Run Time: 13:28 Method: 6020A
 File ID: NI.022817.132829 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Barium	0.0500	0.0525	mg/L	105	90 - 110	
Lead	0.0500	0.0495	mg/L	98.9	90 - 110	
Silver	0.0500	0.0473	mg/L	94.5	90 - 110	

* Exceeds LIMITS Criteria



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-07
 Instrument ID: ICP-MS2 Run Time: 11:01 Method: 6020A
 File ID: NI.022817.110138 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Barium	0.750	0.659	ug/L	87.9	70 - 130	
Lead	0.200	0.180	ug/L	90.2	70 - 130	
Silver	0.400	0.371	ug/L	92.9	70 - 130	

* Exceeds LIMITS Criteria



Login Number: L17021201 Run Date: 02/28/2017 Sample ID: WG604488-18
 Instrument ID: ICP-MS2 Run Time: 12:58 Method: 6020A
 File ID: NI.022817.125821 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Barium	0.750	0.708	ug/L	94.3	70 - 130	
Lead	0.200	0.186	ug/L	92.8	70 - 130	
Silver	0.400	0.338	ug/L	84.5	70 - 130	

* Exceeds LIMITS Criteria



Login number: L17021201
Instrument ID: ICP-MS2
Sol. A: WG604488-08
Sol. AB: WG604488-09

File ID: NI.022817.110443
File ID: NI.022817.110748

Workgroup (AAB#): WG604209
Method: 6020A
Units: ug/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Barium	NS	0.0151	NS	100	92.6	92.6	
Lead	NS	0.0389	NS	100	91.9	91.9	
Silver	NS	0.00670	NS	100	83.3	83.3	

NS = Not spiked

* = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.

= Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.



Login number: L17021201
Instrument ID: ICP-MS2
Sol. A : WG604488-19
Sol. AB : WG604488-20

File ID: NI.022817.132216
File ID: NI.022817.132521

Workgroup (AAB#): WG604209
Method: 6020A
Units: ug/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Barium	NS	-0.00200	NS	100	100	100	
Lead	NS	0.0164	NS	100	95.6	95.6	
Silver	NS	0.00220	NS	100	86.3	86.3	

NS = Not spiked

* = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.

= Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.



INTERNAL STANDARD REPORT

Login: L17021201 Analytical Method: 6020
 Analytical Workgroup: WG604209 Matrix: 1
 Instrument: ICP-MS2 Analyst: JYH
 ICAL Date: 28-FEB-2017 10:43

Sample	Type	Run Date	BISMUTH	GERMANIUM	INDIUM
			% Rec	% Rec	% Rec
L17021201-01	SAMP	28-FEB-2017 11:32	81.069	82.602	82.287
L17021203-01	SAMP	28-FEB-2017 11:35	82.888	84.491	85.01
L17021261-02	SAMP	28-FEB-2017 12:15	92.411	91.563	90.517
WG604063-02	BLANK	28-FEB-2017 11:17	100.523	100.826	97.892
WG604063-03	LCS	28-FEB-2017 11:20	108.929	111.662	106.349
WG604209-01	PSPK	28-FEB-2017 11:38	83.476	84.993	84.77
WG604209-02	SERIAL	28-FEB-2017 11:41	85.145	84.437	83.893
WG604209-03	PSPK	28-FEB-2017 13:13	93.887	94.424	90.345
WG604209-04	SERIAL	28-FEB-2017 13:16	89.669	86.553	84.617
WG604488-05	ICV	28-FEB-2017 10:55	103.513	105.958	102.366
WG604488-06	ICB	28-FEB-2017 10:58	104.121	106.508	102.372
WG604488-07	LLICV	28-FEB-2017 11:01	102.672	105.225	99.967
WG604488-08	ICS	28-FEB-2017 11:04	101.887	104.751	100.965
WG604488-09	ICS	28-FEB-2017 11:07	106.703	109.224	103.982
WG604488-10	CCV	28-FEB-2017 11:10	103.544	104.845	101.749
WG604488-11	CCB	28-FEB-2017 11:14	102.99	105.015	101.105
WG604488-12	CCV	28-FEB-2017 11:48	94.348	92.954	92.054
WG604488-13	CCB	28-FEB-2017 11:51	93.401	91.616	90.119
WG604488-16	CCV	28-FEB-2017 12:43	97.082	93.955	91.765
WG604488-17	CCB	28-FEB-2017 12:46	96.332	94.268	92.082
WG604488-18	LLCCV	28-FEB-2017 12:58	91.519	88.789	86.247
WG604488-19	ICS	28-FEB-2017 13:22	95.851	95.684	92.113
WG604488-20	ICS	28-FEB-2017 13:25	98.112	97.698	94.402
WG604488-21	CCV	28-FEB-2017 13:28	93.743	92.43	91.668
WG604488-22	CCB	28-FEB-2017 13:31	88.589	85.595	85.331
WG604488-27	CCV	28-FEB-2017 15:49	<u>78.472</u>	102.212	<u>75.912</u>
WG604488-28	CCB	28-FEB-2017 15:52	<u>77.801</u>	99.319	<u>73.575</u>
WG604488-29	ICS	28-FEB-2017 15:55	77.174	100.131	74.741
WG604488-30	ICS	28-FEB-2017 15:58	83.095	104.348	81.004
WG604488-31	CCV	28-FEB-2017 16:02	83.215	105.244	81.451
WG604488-32	CCB	28-FEB-2017 16:05	82.113	103.94	<u>79.414</u>
WG604488-37	CCV	28-FEB-2017 17:20	86.729	109.152	85.469
WG604488-38	CCB	28-FEB-2017 17:23	81.789	99.448	<u>78.53</u>
WG604488-39	ICS	28-FEB-2017 17:29	85.572	103.857	83.792
WG604488-40	ICS	28-FEB-2017 17:32	89.082	105.101	87.024
WG604488-41	CCV	28-FEB-2017 17:36	88.897	111.498	87.769
WG604488-42	CCB	28-FEB-2017 17:40	85.502	107.089	83.585

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
 Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
 PDF File ID: 5177655
 Report generated: 03/09/2017 10:35



Login Number: L17021201 Date: 01/24/2017
Instrument ID: ICP-MS2 Method: 6020A

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Antimony	1.00	100.0
Arsenic	1.00	100.0
Barium	1.00	100.0
Cadmium	1.00	100.0
Chromium	1.00	100.0
Cobalt	1.00	100.0
Copper	1.00	100.0
Lead	1.00	100.0
Manganese	1.00	100.0
Nickel	1.00	100.0
Selenium	1.00	100.0
Silver	1.00	100.0
Thallium	1.00	100.0
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

Comments:

All analytes passed acceptance criteria at the specified concentration.



2.3.2.3 Raw Data

MassCal File Name

Mass Calibration File Name Default.tun
 MassCal File Path C:\NexlONData\MassCal\Default.tun
 Peak Search Window: 1.00

Sample Information

Sample Date/Time: Tuesday, February 28, 2017 10:18:14

Mass Calibration and Resolution

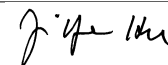
Analyte	E Mass	Meas Mass	Mass C DAC Val	Res DAC Value	Meas Peak W	Custom Res
Li	7.016	7.025	1315	2026	0.694	
Mg	23.985	23.975	4506	2021	0.700	
Co	58.933	58.925	11684	2022	0.705	
In	114.904	114.875	22855	2028	0.701	
U	238.050	238.075	47453	2046	0.704	

Relative Std. Dev.

Mass	Meas. Intens.	RSD
5.525		15.767
5.575		11.749
5.625		8.578
5.675		3.891
5.725		3.740
5.775		4.141
5.825		4.513
5.875		3.415
5.925		4.581
5.975		3.967
6.025		3.353
6.075		4.887
6.125		3.578
6.175		4.191
6.225		4.783
6.275		5.176
6.325		7.618
6.375		41.691
6.425		47.507
6.475		72.436
6.525		28.331
6.575		20.163
6.625		8.810
6.675		2.531
6.725		4.518
6.775		3.679
6.825		3.138

Report Date/Time: Tuesday, February 28, 2017 10:21:25
 Page 1

Approved: March 01, 2017



6.875	4.685
6.925	4.528
6.975	5.099
7.025	4.791
7.075	4.701
7.125	4.380
7.175	3.599
7.225	2.107
7.275	3.937
7.325	5.943
7.375	4.871
7.425	30.822
7.475	34.233
7.525	79.756
7.575	47.140
7.625	93.541
7.675	104.583
7.725	37.268
7.775	76.697
7.825	60.990
7.875	79.756
7.925	73.193
7.975	23.570
8.025	51.349
8.075	49.215
8.125	74.154
8.175	22.822
8.225	47.507
8.275	69.722
8.325	30.901
8.375	33.535
8.425	63.949
8.475	76.697
22.525	136.931
22.575	30.619
22.625	39.123
22.675	39.510
22.725	61.443
22.775	61.435
22.825	22.122
22.875	49.743
22.925	21.858
22.975	22.276
23.025	21.123
23.075	30.322
23.125	38.221
23.175	23.981

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 2

Approved: March 01, 2017



23.225	31.439
23.275	69.027
23.325	24.786
23.375	36.444
23.425	33.756
23.475	18.288
23.525	3.352
23.575	2.528
23.625	3.442
23.675	3.247
23.725	2.950
23.775	3.173
23.825	2.383
23.875	1.926
23.925	2.402
23.975	2.469
24.025	2.304
24.075	3.217
24.125	2.920
24.175	3.437
24.225	1.858
24.275	10.849
24.325	34.494
24.375	45.175
24.425	25.513
24.475	6.870
24.525	4.371
24.575	4.760
24.625	3.334
24.675	3.747
24.725	4.084
24.775	3.823
24.825	4.410
24.875	4.179
24.925	3.727
24.975	4.529
25.025	4.017
25.075	3.867
25.125	4.840
25.175	4.236
25.225	6.860
25.275	30.842
25.325	36.780
25.375	34.468
25.425	33.433
25.475	14.945
57.525	14.218

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 3

Approved: March 01, 2017



57.575	7.532
57.625	7.170
57.675	4.042
57.725	3.146
57.775	3.937
57.825	3.346
57.875	4.814
57.925	2.020
57.975	4.256
58.025	3.855
58.075	3.188
58.125	3.888
58.175	3.306
58.225	4.133
58.275	7.209
58.325	23.936
58.375	41.247
58.425	14.663
58.475	17.907
58.525	3.764
58.575	6.639
58.625	4.251
58.675	3.491
58.725	4.448
58.775	4.650
58.825	3.199
58.875	4.307
58.925	4.727
58.975	4.942
59.025	3.024
59.075	4.680
59.125	3.820
59.175	4.724
59.225	3.971
59.275	9.422
59.325	18.744
59.375	51.446
59.425	47.650
59.475	21.317
59.525	6.613
59.575	11.607
59.625	2.094
59.675	5.955
59.725	2.948
59.775	4.693
59.825	6.737
59.875	5.143

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 4

Approved: March 01, 2017



59.925	5.590
59.975	6.686
60.025	5.684
60.075	6.681
60.125	4.660
60.175	4.295
60.225	2.625
60.275	10.538
60.325	34.810
60.375	50.461
60.425	33.535
60.475	45.913
113.525	10.677
113.575	6.687
113.625	5.287
113.675	6.633
113.725	4.829
113.775	5.144
113.825	3.834
113.875	4.634
113.925	4.277
113.975	4.624
114.025	4.694
114.075	3.828
114.125	4.030
114.175	5.582
114.225	2.694
114.275	12.487
114.325	9.878
114.375	29.780
114.425	8.488
114.475	5.234
114.525	3.548
114.575	6.390
114.625	5.676
114.675	4.747
114.725	5.182
114.775	4.671
114.825	5.038
114.875	4.804
114.925	5.002
114.975	4.711
115.025	4.809
115.075	3.912
115.125	5.503
115.175	3.747
115.225	3.335

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 5

Approved: March 01, 2017



115.275	4.967
115.325	15.002
115.375	35.551
115.425	46.022
115.475	22.247
115.525	20.662
115.575	9.872
115.625	2.768
115.675	8.982
115.725	5.977
115.775	6.170
115.825	7.477
115.875	4.645
115.925	5.799
115.975	3.164
116.025	4.311
116.075	6.162
116.125	4.684
116.175	2.672
116.225	10.190
116.275	23.435
116.325	19.016
116.375	28.287
116.425	28.464
116.475	56.519
236.525	
236.575	23.516
236.625	30.043
236.675	20.000
236.725	12.163
236.775	23.598
236.825	26.082
236.875	26.791
236.925	15.111
236.975	4.980
237.025	19.542
237.075	22.482
237.125	14.203
237.175	15.247
237.225	21.246
237.275	34.237
237.325	13.363
237.375	18.757
237.425	15.589
237.475	31.111
237.525	23.254
237.575	11.152

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 6

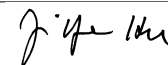
Approved: March 01, 2017



237.625	7.994
237.675	9.766
237.725	4.393
237.775	3.804
237.825	4.476
237.875	4.439
237.925	4.014
237.975	3.952
238.025	4.378
238.075	4.345
238.125	4.357
238.175	4.400
238.225	4.520
238.275	4.365
238.325	3.942
238.375	6.402
238.425	3.561
238.475	3.613
238.525	8.320
238.575	16.174
238.625	35.059
238.675	13.046
238.725	18.951
238.775	34.115
238.825	26.854
238.875	12.748
238.925	23.837
238.975	9.109
239.025	24.191
239.075	20.917
239.125	7.434
239.175	14.677
239.225	19.845
239.275	14.974
239.325	21.120
239.375	11.106
239.425	13.737
239.475	17.459

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 7

Approved: March 01, 2017



SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\NexIONData\Wizard\SmartTune\ESI SmartTune Fullmicrobac.swz

Start Time: 2/28/2017 10:24:17 AM

End Time: 2/28/2017 10:26:30 AM

Daily Performance Check - [Passed] Optimum value(s): N/A

Obtained Intensity (Be 9.0122): 10319.71

Obtained Intensity (Mg 23.985): 106647.20

Obtained Intensity (In 114.904): 88238.89

Obtained Intensity (U 238.05): 112576.52

Obtained Intensity (Bkgd 220): 0.27

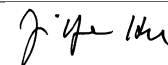
Obtained Formula (CeO 155.9 / Ce 139.905): 0.014 (=3518.28 / 243648.09)

Obtained Formula (Ce++ 69.9527 / Ce 139.905): 0.004 (=1010.70 / 243648.09)

Report Date/Time: Tuesday, February 28, 2017 10:26:30

Page 1

Approved: March 01, 2017



SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\NexIONData\Wizard\SmartTune\ESI SmartTune Fullmicrobac.swz

Optimization Status

Start Time: 2/28/2017 10:24:17 AM

Daily Performance Check

Optimization Settings:

Method: C:\NexIONData\Method\ESI Daily Performance.mth.
Intensity Criterion: Be 9.0122 > 2000
Intensity Criterion: Mg 23.985 > 15000
Intensity Criterion: In 114.904 > 40000
Intensity Criterion: U 238.05 > 30000
Intensity Criterion: Bkgd 220 <= 5
Formula Criterion: CeO 155.9 / Ce 139.905 <= 0.025
Formula Criterion: Ce++ 69.9527 / Ce 139.905 <= 0.03

Optimization Results:

Initial Try

Obtained Intensity (Be 9.0122): 10319.71
Obtained Intensity (Mg 23.985): 106647.20
Obtained Intensity (In 114.904): 88238.89
Obtained Intensity (U 238.05): 112576.52
Obtained Intensity (Bkgd 220): 0.27
Obtained Formula (CeO 155.9 / Ce 139.905): 0.014 (=3518.28 / 243648.09)
Obtained Formula (Ce++ 69.9527 / Ce 139.905): 0.004 (=1010.70 / 243648.09)

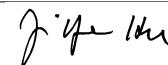
[Passed] Optimum value(s): N/A

End Time: 2/28/2017 10:26:30 AM

Report Date/Time: Tuesday, February 28, 2017 10:26:30

Page 2

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: Blank

Sample Date/Time: Tuesday, February 28, 2017 10:39:56

Number of Replicates: 3

Autosampler Position: 1

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	250103.6	3.1				ug/L		Standard
|	Be	9	6.7	43.3				ug/L		Standard
|	Al	27	596.7	3.8				ug/L		Standard
|	Sc	45	41680.6	0.6				ug/L		Standard
|	Ti	47	85.7	1.8				ug/L		Standard
|	V	51	1740.0	7.1				ug/L		Standard
|	Cr	52	7178.0	4.2				ug/L		Standard
|	Cr	53	573.3	7.0				ug/L		Standard
|	Mn	55	3072.3	4.2				ug/L		Standard
|	Co	59	572.7	3.1				ug/L		Standard
|	Ni	60	263.7	5.6				ug/L		Standard
|	Cu	65	530.3	4.6				ug/L		Standard
|	Zn	66	252.0	4.6				ug/L		Standard
>	Ge	72	641188.2	1.8				ug/L		Standard
|	As	75	-83.0	32.4				ug/L		Standard
|	Se	82	15.6	19.4				ug/L		Standard
|	Se-1	77	126.0	7.7				ug/L		Standard
>	Ga	71	70.0	28.6				mg/L		Standard
|	Rb	85	33.3	17.3				ug/L		Standard
|	Y	89	493982.0	2.6				ug/L		Standard
>	Rh	103	16.7	34.6				ug/L		Standard
|	Mo	98	53.9	11.8				ug/L		Standard
|	Ag	107	137.0	11.7				ug/L		Standard
|	Cd	111	5.6	27.4				mg/L		Standard
|	Cd	114	19.6	60.7				ug/L		Standard
>	In	115	755264.4	2.4				ug/L		Standard
|	Sn	118	137.7	11.6				ug/L		Standard
|	Sb	123	391.3	20.3				ug/L		Standard
|	Ba	135	31.7	10.2				ug/L		Standard
|	Ce	140	41.7	18.3				ug/L		Standard
>	Tb	159	966827.3	1.5				ug/L		Standard
|	Ho	165	11.7	49.5				ug/L		Standard
|	Tl	203	19.3	20.9				ug/L		Standard
|	Tl	205	58.3	4.9				ug/L		Standard
|	Pb	206	463.7	9.8				ug/L		Standard
|	Pb	207	405.3	5.4				ug/L		Standard
|	Pb	208	876.3	5.4				ug/L		Standard
|	U	238	13.7	54.9				ug/L		Standard
>	Bi	209	599145.9	1.6				ug/L		Standard

Sample ID: Blank

Report Date/Time: Tuesday, February 28, 2017 10:42:06

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	mg/L	Standard
Mg	24	30.0	33.3	mg/L	Standard
K	39	10.0	50.0	mg/L	Standard
Ca	43	83.3	19.3	mg/L	Standard
Fe	54	21.3	26.2	mg/L	Standard
Fe	57	240.0	5.5	mg/L	Standard
Sc-1	45	41680.6	0.6	mg/L	Standard
Cl	35	2.0	0.0	ug/L	Standard
Kr	83	5.3	60.3	ug/L	Standard
Br	81	1586.7	4.2	ug/L	Standard
P	31	50.0	17.3	ug/L	Standard
S	34	8.3	91.7	ug/L	Standard
Sr	88	198.3	7.7	ug/L	Standard
C	12	33.3	69.3	mg/L	Standard
N	14	0.0		mg/L	Standard
Hg	202	3.3	173.2	mg/L	Standard
Dy	164	6.2	193.7	mg/L	Standard
Ho-1	165	11.7	49.5	mg/L	Standard
Er	166	10.0	173.2	mg/L	Standard
I	127	5502.7	1.8	mg/L	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
> Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
> Ge	72			
As	75			
Se	82			
Se-1	77			
> Ga	71			

Sample ID: Blank

Report Date/Time: Tuesday, February 28, 2017 10:42:06

Page 2

Approved: March 01, 2017



[	Rb	85
[	Y	89
>	Rh	103
[	Mo	98
[	Ag	107
[	Cd	111
[	Cd	114
>	In	115
[	Sn	118
[	Sb	123
[	Ba	135
[	Ce	140
>	Tb	159
[	Ho	165
[	Tl	203
[	Tl	205
[	Pb	206
[	Pb	207
[	Pb	208
[	U	238
>	Bi	209
[	Na	23
[	Mg	24
[	K	39
[	Ca	43
[	Fe	54
[	Fe	57
>	Sc-1	45
[	Cl	35
[	Kr	83
[	Br	81
[	P	31
[	S	34
[	Sr	88
[	C	12
[	N	14
[	Hg	202
[	Dy	164
[	Ho-1	165
[	Er	166
[	I	127

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: Blank

Report Date/Time: Tuesday, February 28, 2017 10:42:06

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: Standard 1

Sample Date/Time: Tuesday, February 28, 2017 10:43:01

Number of Replicates: 3

Autosampler Position: 1

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	255210.3	2.0				ug/L	250104	Standard
|	Be	9	6.7	43.3				ug/L	7	Standard
|	Al	27	625.0	7.9				ug/L	597	Standard
|	Sc	45	42063.3	2.6				ug/L	41681	Standard
|	Ti	47	80.0	4.5				ug/L	86	Standard
|	V	51	1589.1	8.7				ug/L	1740	Standard
|	Cr	52	6954.3	1.0				ug/L	7178	Standard
|	Cr	53	705.0	11.7				ug/L	573	Standard
|	Mn	55	2874.3	3.2				ug/L	3072	Standard
|	Co	59	467.0	3.0				ug/L	573	Standard
|	Ni	60	284.3	2.3				ug/L	264	Standard
|	Cu	65	587.7	2.0				ug/L	530	Standard
|	Zn	66	283.3	4.8				ug/L	252	Standard
>	Ge	72	661329.7	1.4				ug/L	641188	Standard
|	As	75	-39.4	60.3				ug/L	-83	Standard
|	Se	82	20.1	16.7				ug/L	16	Standard
|	Se-1	77	128.3	6.5				ug/L	126	Standard
>	Ga	71	83.3	9.2				mg/L	70	Standard
|	Rb	85	33.3	34.6				ug/L	33	Standard
|	Y	89	505092.6	1.8				ug/L	493982	Standard
>	Rh	103	18.3	41.7				ug/L	17	Standard
|	Mo	98	36.9	35.7				ug/L	54	Standard
|	Ag	107	115.0	15.7				ug/L	137	Standard
|	Cd	111	6.0	44.4				mg/L	6	Standard
|	Cd	114	34.9	68.3				ug/L	20	Standard
>	In	115	760126.3	0.3				ug/L	755264	Standard
|	Sn	118	128.3	7.0				ug/L	138	Standard
|	Sb	123	139.5	19.0				ug/L	391	Standard
|	Ba	135	32.3	15.6				ug/L	32	Standard
|	Ce	140	23.3	32.7				ug/L	42	Standard
>	Tb	159	980123.2	0.4				ug/L	966827	Standard
|	Ho	165	10.0	50.0				ug/L	12	Standard
|	Tl	203	17.3	20.3				ug/L	19	Standard
|	Tl	205	43.3	6.7				ug/L	58	Standard
|	Pb	206	485.0	4.1				ug/L	464	Standard
|	Pb	207	405.3	3.3				ug/L	405	Standard
|	Pb	208	902.3	2.3				ug/L	876	Standard
|	U	238	5.0	20.0				ug/L	14	Standard
>	Bi	209	601397.7	0.6				ug/L	599146	Standard

Sample ID: Standard 1

Report Date/Time: Tuesday, February 28, 2017 10:45:12

Page 1

Approved: March 01, 2017

Na	23	6.7	173.2	mg/L	3	Standard
Mg	24	28.3	53.9	mg/L	30	Standard
K	39	16.7	62.4	mg/L	10	Standard
Ca	43	68.3	4.2	mg/L	83	Standard
Fe	54	22.5	64.4	mg/L	21	Standard
Fe	57	288.3	15.0	mg/L	240	Standard
Sc-1	45	42063.3	2.6	mg/L	41681	Standard
Cl	35	2.0	100.0	ug/L	2	Standard
Kr	83	2.3	24.7	ug/L	5	Standard
Br	81	1666.8	4.8	ug/L	1587	Standard
P	31	71.7	10.7	ug/L	50	Standard
S	34	20.0	66.1	ug/L	8	Standard
Sr	88	201.7	14.1	ug/L	198	Standard
C	12	36.7	56.8	mg/L	33	Standard
N	14	3.3	173.2	mg/L	0	Standard
Hg	202	6.7	86.6	mg/L	3	Standard
Dy	164	12.4	93.6	mg/L	6	Standard
Ho-1	165	10.0	50.0	mg/L	12	Standard
Er	166	20.0	100.0	mg/L	10	Standard
I	127	5781.1	1.9	mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72			
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: Standard 1

Report Date/Time: Tuesday, February 28, 2017 10:45:12

Page 2

Approved: March 01, 2017

[	Rb	85
[	Y	89
>	Rh	103
[	Mo	98
[	Ag	107
[	Cd	111
[	Cd	114
>	In	115
[	Sn	118
[	Sb	123
[	Ba	135
[	Ce	140
>	Tb	159
[	Ho	165
[	Tl	203
[	Tl	205
[	Pb	206
[	Pb	207
[	Pb	208
[	U	238
>	Bi	209
[	Na	23
[	Mg	24
[	K	39
[	Ca	43
[	Fe	54
[	Fe	57
>	Sc-1	45
[	Cl	35
[	Kr	83
[	Br	81
[	P	31
[	S	34
[	Sr	88
[	C	12
[	N	14
[	Hg	202
[	Dy	164
[	Ho-1	165
[	Er	166
[	I	127

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: Standard 1

Report Date/Time: Tuesday, February 28, 2017 10:45:12

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: Standard 2

Sample Date/Time: Tuesday, February 28, 2017 10:46:06

Number of Replicates: 3

Autosampler Position: 2

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	239368.7	2.9				ug/L	250104	Standard
|	Be	9	93.3	24.7				ug/L	7	Standard
|	Al	27	6543.1	4.2				ug/L	597	Standard
|	Sc	45	41155.9	2.9				ug/L	41681	Standard
|	Ti	47	97.7	3.9				ug/L	86	Standard
|	V	51	1963.9	6.0				ug/L	1740	Standard
|	Cr	52	7109.7	0.7				ug/L	7178	Standard
|	Cr	53	661.7	7.6				ug/L	573	Standard
|	Mn	55	3285.0	2.5				ug/L	3072	Standard
|	Co	59	800.7	6.2				ug/L	573	Standard
|	Ni	60	348.0	3.4				ug/L	264	Standard
|	Cu	65	626.7	7.0				ug/L	530	Standard
|	Zn	66	336.7	2.8				ug/L	252	Standard
>	Ge	72	626236.7	3.4				ug/L	641188	Standard
|	As	75	6.9	367.1				ug/L	-83	Standard
|	Se	82	20.4	32.8				ug/L	16	Standard
|	Se-1	77	121.0	4.1				ug/L	126	Standard
>	Ga	71	65.0	15.4				mg/L	70	Standard
|	Rb	85	38.3	19.9				ug/L	33	Standard
|	Y	89	474936.4	3.0				ug/L	493982	Standard
>	Rh	103	11.7	65.5				ug/L	17	Standard
|	Mo	98	357.3	5.1				ug/L	54	Standard
|	Ag	107	376.3	6.3				ug/L	137	Standard
|	Cd	111	96.2	13.3				mg/L	6	Standard
|	Cd	114	248.8	20.1				ug/L	20	Standard
>	In	115	718580.4	2.1				ug/L	755264	Standard
|	Sn	118	167.3	8.9				ug/L	138	Standard
|	Sb	123	326.5	5.4				ug/L	391	Standard
|	Ba	135	131.7	6.5				ug/L	32	Standard
|	Ce	140	26.7	28.6				ug/L	42	Standard
>	Tb	159	948156.0	1.8				ug/L	966827	Standard
|	Ho	165	11.7	24.7				ug/L	12	Standard
|	Tl	203	358.7	3.0				ug/L	19	Standard
|	Tl	205	775.0	2.3				ug/L	58	Standard
|	Pb	206	718.7	3.3				ug/L	464	Standard
|	Pb	207	629.7	9.6				ug/L	405	Standard
|	Pb	208	1341.4	1.4				ug/L	876	Standard
|	U	238	571.0	3.4				ug/L	14	Standard
>	Bi	209	573362.6	1.3				ug/L	599146	Standard

Sample ID: Standard 2

Report Date/Time: Tuesday, February 28, 2017 10:48:17

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	mg/L	3	Standard
Mg	24	26.7	47.2	mg/L	30	Standard
K	39	18.3	31.5	mg/L	10	Standard
Ca	43	68.3	27.7	mg/L	83	Standard
Fe	54	16.1	45.5	mg/L	21	Standard
Fe	57	281.7	5.7	mg/L	240	Standard
Sc-1	45	41155.9	2.9	mg/L	41681	Standard
Cl	35	2.0	173.2	ug/L	2	Standard
Kr	83	3.7	31.5	ug/L	5	Standard
Br	81	1416.7	7.4	ug/L	1587	Standard
P	31	55.0	36.4	ug/L	50	Standard
S	34	20.0	50.0	ug/L	8	Standard
Sr	88	236.7	19.2	ug/L	198	Standard
C	12	16.7	34.6	mg/L	33	Standard
N	14	3.3	173.2	mg/L	0	Standard
Hg	202	0.0		mg/L	3	Standard
Dy	164	9.8	104.1	mg/L	6	Standard
Ho-1	165	11.7	24.7	mg/L	12	Standard
Er	166	3.3	173.2	mg/L	10	Standard
I	127	5309.3	1.4	mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
> Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
> Ge	72			
As	75			
Se	82			
Se-1	77			
> Ga	71			

Sample ID: Standard 2

Report Date/Time: Tuesday, February 28, 2017 10:48:17

Page 2

Approved: March 01, 2017

[	Rb	85
[	Y	89
>	Rh	103
[	Mo	98
[	Ag	107
[	Cd	111
[	Cd	114
>	In	115
[	Sn	118
[	Sb	123
[	Ba	135
[	Ce	140
>	Tb	159
[	Ho	165
[	Tl	203
[	Tl	205
[	Pb	206
[	Pb	207
[	Pb	208
[	U	238
>	Bi	209
[	Na	23
[	Mg	24
[	K	39
[	Ca	43
[	Fe	54
[	Fe	57
>	Sc-1	45
[	Cl	35
[	Kr	83
[	Br	81
[	P	31
[	S	34
[	Sr	88
[	C	12
[	N	14
[	Hg	202
[	Dy	164
[	Ho-1	165
[	Er	166
[	I	127

QC Out of Limits

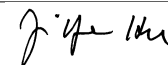
Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: Standard 2

Report Date/Time: Tuesday, February 28, 2017 10:48:17

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: Standard 3

Sample Date/Time: Tuesday, February 28, 2017 10:49:12

Number of Replicates: 3

Autosampler Position: 3

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	244522.6	1.5				ug/L	250104	Standard
|	Be	9	79441.1	2.2	50.0000	0.365	0.7	ug/L	7	Standard
|	Al	27	5955294.8	1.3	50.0000	0.313	0.6	ug/L	597	Standard
|	Sc	45	40490.7	0.8				ug/L	41681	Standard
|	Ti	47	17376.3	2.2	100.0000	3.049	3.0	ug/L	86	Standard
|	V	51	304505.9	2.2	50.0000	1.680	3.4	ug/L	1740	Standard
|	Cr	52	287410.9	1.7	50.0000	1.151	2.3	ug/L	7178	Standard
|	Cr	53	36706.1	2.3	50.0000	0.941	1.9	ug/L	573	Standard
|	Mn	55	463302.7	1.6	50.0000	0.958	1.9	ug/L	3072	Standard
|	Co	59	360447.2	0.8	50.0000	0.720	1.4	ug/L	573	Standard
|	Ni	60	76996.8	1.3	50.0000	1.067	2.1	ug/L	264	Standard
|	Cu	65	73927.9	1.0	50.0000	0.679	1.4	ug/L	530	Standard
|	Zn	66	42309.3	1.3	50.0000	0.246	0.5	ug/L	252	Standard
>	Ge	72	624119.6	1.6				ug/L	641188	Standard
|	As	75	42074.8	0.6	50.0000	0.504	1.0	ug/L	-83	Standard
|	Se	82	3640.7	1.8	50.0000	1.517	3.0	ug/L	16	Standard
|	Se-1	77	2740.6	1.9	50.0000	1.371	2.7	ug/L	126	Standard
>	Ga	71	75.0	23.1				mg/L	70	Standard
|	Rb	85	601.7	13.3				ug/L	33	Standard
|	Y	89	477436.1	1.1				ug/L	493982	Standard
>	Rh	103	28.3	36.7				ug/L	17	Standard
|	Mo	98	296118.2	2.1	100.0000	1.609	1.6	ug/L	54	Standard
|	Ag	107	258296.5	2.8	50.0000	1.258	2.5	ug/L	137	Standard
|	Cd	111	75875.2	2.6	50.0000	1.370	2.7	mg/L	6	Standard
|	Cd	114	210564.5	0.9	50.0000	0.511	1.0	ug/L	20	Standard
>	In	115	724075.8	1.6				ug/L	755264	Standard
|	Sn	118	46314.7	2.5	50.0000	1.160	2.3	ug/L	138	Standard
|	Sb	123	214498.7	2.1	50.0000	1.129	2.3	ug/L	391	Standard
|	Ba	135	85747.0	1.4	50.0000	1.002	2.0	ug/L	32	Standard
|	Ce	140	63.3	9.1				ug/L	42	Standard
>	Tb	159	965509.5	1.6				ug/L	966827	Standard
|	Ho	165	21.7	35.3				ug/L	12	Standard
|	Tl	203	316423.6	2.2	50.0000	0.931	1.9	ug/L	19	Standard
|	Tl	205	745928.3	1.6	50.0000	0.611	1.2	ug/L	58	Standard
|	Pb	206	249567.2	2.1	50.0000	0.913	1.8	ug/L	464	Standard
|	Pb	207	222918.5	2.4	50.0000	0.981	2.0	ug/L	405	Standard
|	Pb	208	486259.5	1.5	50.0000	0.401	0.8	ug/L	876	Standard
|	U	238	557193.2	2.3	50.0000	0.790	1.6	ug/L	14	Standard
>	Bi	209	574658.4	0.9				ug/L	599146	Standard

Sample ID: Standard 3

Report Date/Time: Tuesday, February 28, 2017 10:51:23

Page 1

Approved: March 01, 2017

Na	23	20.0	43.3	5.0000	2.369	47.4	mg/L	3	Standard
Mg	24	256.7	6.3	5.0000	0.321	6.4	mg/L	30	Standard
K	39	395.0	6.7	5.0000	0.337	6.7	mg/L	10	Standard
Ca	43	73.3	30.7	5.0000	18.335	366.7	mg/L	83	Standard
Fe	54	361.6	19.6	5.0000	0.995	19.9	mg/L	21	Standard
Fe	57	373.3	9.9	5.0000	1.870	37.4	mg/L	240	Standard
Sc-1	45	40490.7	0.8				mg/L	41681	Standard
Cl	35	3.3	34.6				ug/L	2	Standard
Kr	83	7.3	61.5				ug/L	5	Standard
Br	81	1353.4	2.8				ug/L	1587	Standard
P	31	36.7	20.8				ug/L	50	Standard
S	34	15.0	57.7				ug/L	8	Standard
Sr	88	238.3	11.6				ug/L	198	Standard
C	12	53.3	57.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	19.5	102.5				mg/L	6	Standard
Ho-1	165	21.7	35.3				mg/L	12	Standard
Er	166	10.0					mg/L	10	Standard
I	127	3770.5	3.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72			
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: Standard 3

Report Date/Time: Tuesday, February 28, 2017 10:51:23

Page 2

Approved: March 01, 2017

[	Rb	85
[	Y	89
>	Rh	103
[	Mo	98
[	Ag	107
[	Cd	111
[	Cd	114
>	In	115
[	Sn	118
[	Sb	123
[	Ba	135
[	Ce	140
>	Tb	159
[	Ho	165
[	Tl	203
[	Tl	205
[	Pb	206
[	Pb	207
[	Pb	208
[	U	238
>	Bi	209
[	Na	23
[	Mg	24
[	K	39
[	Ca	43
[	Fe	54
[	Fe	57
>	Sc-1	45
[	Cl	35
[	Kr	83
[	Br	81
[	P	31
[	S	34
[	Sr	88
[	C	12
[	N	14
[	Hg	202
[	Dy	164
[	Ho-1	165
[	Er	166
[	I	127

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: Standard 3

Report Date/Time: Tuesday, February 28, 2017 10:51:23

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: Standard 4

Sample Date/Time: Tuesday, February 28, 2017 10:52:18

Number of Replicates: 3

Autosampler Position: 4

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	257817.0	3.7				ug/L	250104	Standard
|	Be	9	167808.0	2.9	100.1133	2.428	2.4	ug/L	7	Standard
|	Al	27	12527051.9	1.3	99.9117	2.920	2.9	ug/L	597	Standard
|	Sc	45	41901.2	3.7				ug/L	41681	Standard
|	Ti	47	36784.6	2.0	200.0252	1.969	1.0	ug/L	86	Standard
|	V	51	632837.7	1.8	99.1155	2.442	2.5	ug/L	1740	Standard
|	Cr	52	596154.8	1.3	99.4877	2.864	2.9	ug/L	7178	Standard
|	Cr	53	75722.1	0.4	99.0506	2.469	2.5	ug/L	573	Standard
|	Mn	55	975068.5	1.1	99.7680	1.224	1.2	ug/L	3072	Standard
|	Co	59	759278.2	1.0	99.6962	2.155	2.2	ug/L	573	Standard
|	Ni	60	160724.1	1.4	99.2987	2.731	2.8	ug/L	264	Standard
|	Cu	65	154111.2	0.9	99.3316	2.425	2.4	ug/L	530	Standard
|	Zn	66	88719.4	1.5	99.6171	2.564	2.6	ug/L	252	Standard
>	Ge	72	661847.7	2.1				ug/L	641188	Standard
|	As	75	89106.2	1.1	99.9121	1.932	1.9	ug/L	-83	Standard
|	Se	82	7756.4	2.0	100.3336	2.084	2.1	ug/L	16	Standard
|	Se-1	77	5580.7	1.6	99.0481	3.496	3.5	ug/L	126	Standard
>	Ga	71	131.7	30.7				mg/L	70	Standard
|	Rb	85	493.3	1.2				ug/L	33	Standard
|	Y	89	507618.5	4.0				ug/L	493982	Standard
>	Rh	103	40.0	66.1				ug/L	17	Standard
|	Mo	98	626069.2	0.7	201.4710	4.487	2.2	ug/L	54	Standard
|	Ag	107	533228.9	1.2	99.5521	2.829	2.8	ug/L	137	Standard
|	Cd	111	159502.0	0.8	100.4500	2.747	2.7	mg/L	6	Standard
|	Cd	114	432607.5	0.6	99.3036	2.767	2.8	ug/L	20	Standard
>	In	115	754653.1	2.9				ug/L	755264	Standard
|	Sn	118	95305.1	0.8	99.4514	3.418	3.4	ug/L	138	Standard
|	Sb	123	447889.7	0.2	100.1216	2.785	2.8	ug/L	391	Standard
|	Ba	135	178492.2	0.2	99.9681	3.107	3.1	ug/L	32	Standard
|	Ce	140	501.7	8.6				ug/L	42	Standard
>	Tb	159	995005.2	3.5				ug/L	966827	Standard
|	Ho	165	50.0	36.1				ug/L	12	Standard
|	Tl	203	654411.2	1.3	99.7759	2.945	3.0	ug/L	19	Standard
|	Tl	205	1517528.9	1.3	98.9507	2.846	2.9	ug/L	58	Standard
|	Pb	206	517085.2	1.2	99.9097	2.779	2.8	ug/L	464	Standard
|	Pb	207	463413.7	0.8	100.0750	2.547	2.5	ug/L	405	Standard
|	Pb	208	1011554.0	1.1	100.1096	2.847	2.8	ug/L	876	Standard
|	U	238	1142301.8	2.0	99.3300	2.516	2.5	ug/L	14	Standard
>	Bi	209	597316.1	3.3				ug/L	599146	Standard

Sample ID: Standard 4

Report Date/Time: Tuesday, February 28, 2017 10:54:29

Page 1

Approved: March 01, 2017

Na	23	33.3	22.9	9.0532	1.881	20.8	mg/L	3	Standard
Mg	24	543.3	5.2	10.3922	0.356	3.4	mg/L	30	Standard
K	39	745.0	8.7	9.6409	0.802	8.3	mg/L	10	Standard
Ca	43	91.7	12.6	12.7558	4.867	38.2	mg/L	83	Standard
Fe	54	607.8	13.3	9.0482	1.030	11.4	mg/L	21	Standard
Fe	57	451.7	15.9	9.0344	3.241	35.9	mg/L	240	Standard
Sc-1	45	41901.2	3.7				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	3.0	33.3				ug/L	5	Standard
Br	81	1440.1	10.3				ug/L	1587	Standard
P	31	68.3	27.7				ug/L	50	Standard
S	34	18.3	126.0				ug/L	8	Standard
Sr	88	183.3	13.7				ug/L	198	Standard
C	12	36.7	83.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	15.4	79.7				mg/L	6	Standard
Ho-1	165	50.0	36.1				mg/L	12	Standard
Er	166	26.7	78.1				mg/L	10	Standard
I	127	5020.8	1.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72			
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: Standard 4

Report Date/Time: Tuesday, February 28, 2017 10:54:29

Page 2

Approved: March 01, 2017

[	Rb	85
[	Y	89
>	Rh	103
[	Mo	98
[	Ag	107
[	Cd	111
[	Cd	114
>	In	115
[	Sn	118
[	Sb	123
[	Ba	135
[	Ce	140
>	Tb	159
[	Ho	165
[	Tl	203
[	Tl	205
[	Pb	206
[	Pb	207
[	Pb	208
[	U	238
>	Bi	209
[	Na	23
[	Mg	24
[	K	39
[	Ca	43
[	Fe	54
[	Fe	57
>	Sc-1	45
[	Cl	35
[	Kr	83
[	Br	81
[	P	31
[	S	34
[	Sr	88
[	C	12
[	N	14
[	Hg	202
[	Dy	164
[	Ho-1	165
[	Er	166
[	I	127

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Corr. Coef.	Na	23	Correlation coefficient < 0.998
Corr. Coef.	Ca	43	Correlation coefficient < 0.998
Corr. Coef.	Fe	54	Correlation coefficient < 0.998

Sample ID: Standard 4

Report Date/Time: Tuesday, February 28, 2017 10:54:29

Page 3

Approved: March 01, 2017



Corr. Coef.

Fe

57

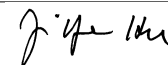
Correlation coefficient < 0.998

Sample ID: Standard 4

Report Date/Time: Tuesday, February 28, 2017 10:54:29

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 1

Sample Date/Time: Tuesday, February 28, 2017 10:55:24

Number of Replicates: 3

Autosampler Position: 201

Sample Description:

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	264583.7	3.6				ug/L	250104	Standard
|	Be	9	82631.4	0.9	48.0615	2.054	4.3	ug/L	7	Standard
|	Al	27	6345659.4	1.0	49.3101	1.281	2.6	ug/L	597	Standard
|	Sc	45	43759.8	1.7				ug/L	41681	Standard
|	Ti	47	18533.3	2.0	97.9329	1.416	1.4	ug/L	86	Standard
|	V	51	319640.8	1.5	48.6161	0.429	0.9	ug/L	1740	Standard
|	Cr	52	299357.0	1.4	48.0261	0.487	1.0	ug/L	7178	Standard
|	Cr	53	38345.2	4.1	48.3999	1.866	3.9	ug/L	573	Standard
|	Mn	55	488170.8	1.1	48.4958	0.550	1.1	ug/L	3072	Standard
|	Co	59	380883.1	1.3	48.6797	0.908	1.9	ug/L	573	Standard
|	Ni	60	80765.7	0.6	48.5044	0.314	0.6	ug/L	264	Standard
|	Cu	65	78323.0	2.4	48.9700	0.895	1.8	ug/L	530	Standard
|	Zn	66	44827.9	1.1	48.8414	0.330	0.7	ug/L	252	Standard
>	Ge	72	679392.9	0.8				ug/L	641188	Standard
|	As	75	44458.4	0.9	48.5729	0.178	0.4	ug/L	-83	Standard
|	Se	82	3929.2	0.7	49.3921	0.144	0.3	ug/L	16	Standard
|	Se-1	77	2946.0	1.9	49.8037	0.614	1.2	ug/L	126	Standard
>	Ga	71	96.7	21.5				mg/L	70	Standard
|	Rb	85	648.3	7.9				ug/L	33	Standard
|	Y	89	521346.8	1.1				ug/L	493982	Standard
>	Rh	103	35.0	62.3				ug/L	17	Standard
|	Mo	98	310095.2	0.1	97.3559	0.786	0.8	ug/L	54	Standard
|	Ag	107	267856.6	0.2	48.7772	0.291	0.6	ug/L	137	Standard
|	Cd	111	80948.4	0.3	49.7309	0.523	1.1	mg/L	6	Standard
|	Cd	114	218401.2	0.9	48.9052	0.486	1.0	ug/L	20	Standard
>	In	115	773132.6	0.7				ug/L	755264	Standard
|	Sn	118	47589.0	2.1	48.3719	0.928	1.9	ug/L	138	Standard
|	Sb	123	226144.1	0.8	49.3071	0.684	1.4	ug/L	391	Standard
|	Ba	135	89155.6	1.0	48.6997	0.771	1.6	ug/L	32	Standard
|	Ce	140	38.3	32.8				ug/L	42	Standard
>	Tb	159	1009303.7	1.0				ug/L	966827	Standard
|	Ho	165	35.0	42.9				ug/L	12	Standard
|	Tl	203	331545.6	1.4	48.6548	0.679	1.4	ug/L	19	Standard
|	Tl	205	773012.0	2.0	48.5126	0.458	0.9	ug/L	58	Standard
|	Pb	206	262192.2	1.7	48.7145	0.537	1.1	ug/L	464	Standard
|	Pb	207	235457.7	1.6	48.8982	0.554	1.1	ug/L	405	Standard
|	Pb	208	510822.1	0.4	48.6185	0.438	0.9	ug/L	876	Standard
|	U	238	574385.9	1.6	48.0829	0.629	1.3	ug/L	14	Standard
>	Bi	209	620194.1	1.2				ug/L	599146	Standard

Sample ID: QC Std 1

Report Date/Time: Tuesday, February 28, 2017 10:57:35

Page 1

Approved: March 01, 2017

Na	23	10.0	100.0	2.2756	2.728	119.9	mg/L	3	Standard
Mg	24	275.0	16.4	4.7506	0.788	16.6	mg/L	30	Standard
K	39	453.3	13.2	5.5083	0.665	12.1	mg/L	10	Standard
Ca	43	75.0	13.3	1.3331	5.625	421.9	mg/L	83	Standard
Fe	54	332.6	5.2	4.6320	0.339	7.3	mg/L	21	Standard
Fe	57	396.7	11.7	5.1479	2.716	52.8	mg/L	240	Standard
Sc-1	45	43759.8	1.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.7	86.6				ug/L	5	Standard
Br	81	1513.4	6.3				ug/L	1587	Standard
P	31	48.3	23.9				ug/L	50	Standard
S	34	13.3	57.3				ug/L	8	Standard
Sr	88	218.3	24.7				ug/L	198	Standard
C	12	53.3	60.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	22.2	92.4				mg/L	6	Standard
Ho-1	165	35.0	42.9				mg/L	12	Standard
Er	166	23.3	65.5				mg/L	10	Standard
I	127	3993.9	1.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	96.123		
Al	27	98.620		
Sc	45			
Ti	47	97.933		
V	51	97.232		
Cr	52	96.052		
Cr	53			
Mn	55	96.992		
Co	59	97.359		
Ni	60	97.009		
Cu	65	97.940		
Zn	66	97.683		
Ge	72		105.958	
As	75	97.146		
Se	82	98.784		
Se-1	77			
Ga	71			

Sample ID: QC Std 1

Report Date/Time: Tuesday, February 28, 2017 10:57:35

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	97.356	
[	Ag	107	97.554	
[	Cd	111	99.462	
[	Cd	114		
>	In	115		102.366
[	Sn	118	96.744	
[	Sb	123	98.614	
[	Ba	135	97.399	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	97.310	
[	Tl	205		
[	Pb	206	97.429	
[	Pb	207	97.796	
[	Pb	208	97.237	
[	U	238	96.166	
>	Bi	209		103.513
[	Na	23	45.512	
[	Mg	24	95.013	
[	K	39	110.167	
[	Ca	43	26.662	
[	Fe	54	92.641	
[	Fe	57	102.957	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 1	Na	23	
QC Std 1	K	39	
QC Std 1	Ca	43	

Sample ID: QC Std 1

Report Date/Time: Tuesday, February 28, 2017 10:57:35

Page 3

Approved: March 01, 2017

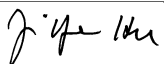


QC Std 1

Fe

57

Sample ID: QC Std 1
Report Date/Time: Tuesday, February 28, 2017 10:57:35
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 2

Sample Date/Time: Tuesday, February 28, 2017 10:58:31

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	263525.4	0.9				ug/L	250104	Standard
|	Be	9	33.3	82.6	0.0092	0.016	175.3	ug/L	7	Standard
|	Al	27	1731.8	66.1	0.0074	0.009	122.4	ug/L	597	Standard
|	Sc	45	44097.4	2.0				ug/L	41681	Standard
|	Ti	47	74.0	8.1	-0.0717	0.033	46.2	ug/L	86	Standard
|	V	51	1350.3	9.4	-0.0709	0.022	30.7	ug/L	1740	Standard
|	Cr	52	5951.8	0.6	-0.2456	0.009	3.6	ug/L	7178	Standard
|	Cr	53	560.0	14.0	-0.1596	0.092	57.9	ug/L	573	Standard
|	Mn	55	2577.9	2.7	-0.0500	0.006	11.2	ug/L	3072	Standard
|	Co	59	444.0	18.0	-0.0048	0.010	207.4	ug/L	573	Standard
|	Ni	60	261.0	3.7	-0.0210	0.006	28.1	ug/L	264	Standard
|	Cu	65	657.3	3.5	0.0340	0.011	33.2	ug/L	530	Standard
|	Zn	66	415.3	4.9	0.1020	0.019	18.8	ug/L	252	Standard
>	Ge	72	682916.6	1.2				ug/L	641188	Standard
|	As	75	-23.9	52.0	0.0164	0.013	81.7	ug/L	-83	Standard
|	Se	82	11.9	32.1	-0.0792	0.047	58.9	ug/L	16	Standard
|	Se-1	77	127.3	4.3	-0.0352	0.091	258.0	ug/L	126	Standard
>	Ga	71	66.7	43.3				mg/L	70	Standard
|	Rb	85	40.0	25.0				ug/L	33	Standard
|	Y	89	515183.1	1.3				ug/L	493982	Standard
>	Rh	103	13.3	21.7				ug/L	17	Standard
|	Mo	98	362.4	23.4	0.0929	0.026	28.5	ug/L	54	Standard
|	Ag	107	163.7	20.7	0.0061	0.006	98.6	ug/L	137	Standard
|	Cd	111	16.9	70.2	-0.0033	0.007	216.9	mg/L	6	Standard
|	Cd	114	70.1	37.1	0.0056	0.006	102.6	ug/L	20	Standard
>	In	115	773176.0	0.6				ug/L	755264	Standard
|	Sn	118	182.3	10.2	0.0522	0.020	37.5	ug/L	138	Standard
|	Sb	123	1381.1	14.8	0.2747	0.045	16.4	ug/L	391	Standard
|	Ba	135	57.0	20.2	0.0036	0.006	168.6	ug/L	32	Standard
|	Ce	140	18.3	41.7				ug/L	42	Standard
>	Tb	159	1009101.1	0.5				ug/L	966827	Standard
|	Ho	165	5.0	100.0				ug/L	12	Standard
|	Tl	203	67.3	84.5	0.0029	0.008	289.6	ug/L	19	Standard
|	Tl	205	153.3	79.6	0.0069	0.008	109.5	ug/L	58	Standard
|	Pb	206	568.0	5.3	0.0103	0.005	51.6	ug/L	464	Standard
|	Pb	207	468.0	5.6	0.0052	0.005	99.6	ug/L	405	Standard
|	Pb	208	1052.3	12.3	0.0114	0.012	104.9	ug/L	876	Standard
|	U	238	130.3	88.2	0.0091	0.010	104.2	ug/L	14	Standard
>	Bi	209	623835.3	0.3				ug/L	599146	Standard

Sample ID: QC Std 2

Report Date/Time: Tuesday, February 28, 2017 11:00:42

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	45.0	40.1	0.3226	0.350	108.6	mg/L	30	Standard
K	39	10.0		-0.1162	0.002	2.1	mg/L	10	Standard
Ca	43	51.7	40.3	-11.7437	12.062	102.7	mg/L	83	Standard
Fe	54	31.0	51.7	0.1992	0.223	111.8	mg/L	21	Standard
Fe	57	258.3	12.9	-2.3238	1.475	63.5	mg/L	240	Standard
Sc-1	45	44097.4	2.0				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	6.7	8.7				ug/L	5	Standard
Br	81	1306.7	21.2				ug/L	1587	Standard
P	31	63.3	25.4				ug/L	50	Standard
S	34	15.0	66.7				ug/L	8	Standard
Sr	88	210.0	14.3				ug/L	198	Standard
C	12	10.0	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	16.0	35.2				mg/L	6	Standard
Ho-1	165	5.0	100.0				mg/L	12	Standard
Er	166	13.3	43.3				mg/L	10	Standard
I	127	5250.9	2.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.508	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 2

Report Date/Time: Tuesday, February 28, 2017 11:00:42

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	102.372
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	104.121
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 2	Sb	123	
QC Std 2	Na	23	
QC Std 2	Mg	24	

Sample ID: QC Std 2

Report Date/Time: Tuesday, February 28, 2017 11:00:42

Page 3

Approved: March 01, 2017



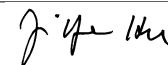
QC Std 2	K	39
QC Std 2	Ca	43
QC Std 2	Fe	54
QC Std 2	Fe	57

Sample ID: QC Std 2

Report Date/Time: Tuesday, February 28, 2017 11:00:42

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 3

Sample Date/Time: Tuesday, February 28, 2017 11:01:38

Number of Replicates: 3

Autosampler Position: 202

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	257710.1	1.3				ug/L	250104	Standard
|	Be	9	291.7	12.4	0.1640	0.024	14.4	ug/L	7	Standard
|	Al	27	630.0	3.6	-0.0011	0.000	11.1	ug/L	597	Standard
|	Sc	45	43507.4	0.4				ug/L	41681	Standard
|	Ti	47	58.0	14.9	-0.1521	0.050	33.2	ug/L	86	Standard
|	V	51	3762.4	3.8	0.3028	0.013	4.3	ug/L	1740	Standard
|	Cr	52	12032.1	2.4	0.7733	0.017	2.2	ug/L	7178	Standard
|	Cr	53	1246.7	11.3	0.7385	0.180	24.4	ug/L	573	Standard
|	Mn	55	6769.5	2.4	0.3750	0.011	2.8	ug/L	3072	Standard
|	Co	59	3144.7	2.1	0.3440	0.015	4.3	ug/L	573	Standard
|	Ni	60	2640.2	3.4	1.4250	0.054	3.8	ug/L	264	Standard
|	Cu	65	1746.1	3.1	0.7300	0.039	5.3	ug/L	530	Standard
|	Zn	66	5557.7	3.4	5.7889	0.110	1.9	ug/L	252	Standard
>	Ge	72	674690.8	1.6				ug/L	641188	Standard
|	As	75	294.8	10.2	0.3662	0.032	8.8	ug/L	-83	Standard
|	Se	82	44.0	10.6	0.3318	0.068	20.4	ug/L	16	Standard
|	Se-1	77	128.0	14.9	0.0067	0.361	5419.1	ug/L	126	Standard
>	Ga	71	73.3	37.6				mg/L	70	Standard
|	Rb	85	35.0	28.6				ug/L	33	Standard
|	Y	89	514136.4	2.0				ug/L	493982	Standard
>	Rh	103	30.0	16.7				ug/L	17	Standard
|	Mo	98	117.9	8.2	0.0171	0.003	18.9	ug/L	54	Standard
|	Ag	107	2118.1	2.2	0.3714	0.004	1.0	ug/L	137	Standard
|	Cd	111	358.2	3.4	0.2119	0.011	5.3	mg/L	6	Standard
|	Cd	114	1020.3	5.5	0.2239	0.013	5.8	ug/L	20	Standard
>	In	115	755012.9	1.7				ug/L	755264	Standard
|	Sn	118	112.7	10.2	-0.0162	0.010	62.0	ug/L	138	Standard
|	Sb	123	2051.1	4.1	0.4315	0.013	3.1	ug/L	391	Standard
|	Ba	135	1226.0	2.5	0.6589	0.028	4.3	ug/L	32	Standard
|	Ce	140	13.3	43.3				ug/L	42	Standard
>	Tb	159	995385.5	2.8				ug/L	966827	Standard
|	Ho	165	11.7	24.7				ug/L	12	Standard
|	Tl	203	493.7	1.9	0.0661	0.000	0.3	ug/L	19	Standard
|	Tl	205	1241.7	1.0	0.0760	0.001	1.7	ug/L	58	Standard
|	Pb	206	1505.1	4.7	0.1876	0.008	4.1	ug/L	464	Standard
|	Pb	207	1242.7	3.2	0.1691	0.007	4.3	ug/L	405	Standard
|	Pb	208	2793.8	1.7	0.1803	0.008	4.3	ug/L	876	Standard
|	U	238	4301.9	1.1	0.3614	0.004	1.2	ug/L	14	Standard
>	Bi	209	615154.9	2.2				ug/L	599146	Standard

Sample ID: QC Std 3

Report Date/Time: Tuesday, February 28, 2017 11:03:48

Page 1

Approved: March 01, 2017

Na	23	3.3	173.2	0.4447	1.598	359.4	mg/L	3	Standard
Mg	24	18.3	56.8	-0.1843	0.203	110.1	mg/L	30	Standard
K	39	8.3	124.9	-0.1362	0.132	97.3	mg/L	10	Standard
Ca	43	61.7	52.8	-5.8768	18.258	310.7	mg/L	83	Standard
Fe	54	22.7	33.8	0.0851	0.112	132.2	mg/L	21	Standard
Fe	57	253.3	9.7	-2.3875	1.302	54.5	mg/L	240	Standard
Sc-1	45	43507.4	0.4				mg/L	41681	Standard
Cl	35	2.7	43.3				ug/L	2	Standard
Kr	83	5.3	57.3				ug/L	5	Standard
Br	81	1503.4	2.3				ug/L	1587	Standard
P	31	68.3	18.4				ug/L	50	Standard
S	34	33.3	48.2				ug/L	8	Standard
Sr	88	215.0	18.6				ug/L	198	Standard
C	12	20.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.8	177.4				mg/L	6	Standard
Ho-1	165	11.7	24.7				mg/L	12	Standard
Er	166	3.3	173.2				mg/L	10	Standard
I	127	3950.5	4.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	81.985		
Al	27	-0.114		
Sc	45			
Ti	47			
V	51	75.710		
Cr	52	96.659		
Cr	53			
Mn	55	75.008		
Co	59	86.009		
Ni	60	89.065		
Cu	65	91.250		
Zn	66	92.623		
Ge	72		105.225	
As	75	91.561		
Se	82	82.958		
Se-1	77			
Ga	71			

Sample ID: QC Std 3

Report Date/Time: Tuesday, February 28, 2017 11:03:48

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98		
[	Ag	107	92.854	
[	Cd	111	88.274	
[	Cd	114		
>	In	115		99.967
[	Sn	118		
[	Sb	123	107.874	
[	Ba	135	87.857	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	82.620	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	90.140	
[	U	238	90.361	
>	Bi	209		102.672
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 3	Al	27	

Sample ID: QC Std 3

Report Date/Time: Tuesday, February 28, 2017 11:03:48

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 4

Sample Date/Time: Tuesday, February 28, 2017 11:04:43

Number of Replicates: 3

Autosampler Position: 203

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	260539.4	0.9				ug/L	250104	Standard
|	Be	9	55.0	133.9	0.0220	0.043	195.9	ug/L	7	Standard
|	Al	27	5758052.1	1.7	45.4131	0.935	2.1	ug/L	597	Standard
|	Sc	45	43589.3	0.7				ug/L	41681	Standard
|	Ti	47	17040.9	1.2	91.0552	1.073	1.2	ug/L	86	Standard
|	V	51	1501.4	26.9	-0.0443	0.062	140.9	ug/L	1740	Standard
|	Cr	52	7684.3	4.7	0.0589	0.060	101.1	ug/L	7178	Standard
|	Cr	53	870.0	12.6	0.2561	0.142	55.4	ug/L	573	Standard
|	Mn	55	4259.9	7.6	0.1244	0.032	26.0	ug/L	3072	Standard
|	Co	59	965.4	31.6	0.0636	0.039	62.0	ug/L	573	Standard
|	Ni	60	675.3	14.2	0.2342	0.058	24.8	ug/L	264	Standard
|	Cu	65	810.4	7.5	0.1384	0.038	27.5	ug/L	530	Standard
|	Zn	66	1159.7	3.6	0.9360	0.047	5.0	ug/L	252	Standard
>	Ge	72	671652.4	0.1				ug/L	641188	Standard
|	As	75	14.3	265.5	0.0581	0.042	72.4	ug/L	-83	Standard
|	Se	82	21.6	16.6	0.0474	0.045	95.6	ug/L	16	Standard
|	Se-1	77	122.7	6.5	-0.0811	0.142	175.1	ug/L	126	Standard
>	Ga	71	55.0	27.3				mg/L	70	Standard
|	Rb	85	640.0	4.1				ug/L	33	Standard
|	Y	89	518104.5	0.4				ug/L	493982	Standard
>	Rh	103	23.3	44.6				ug/L	17	Standard
|	Mo	98	287490.0	1.1	91.5051	0.725	0.8	ug/L	54	Standard
|	Ag	107	164.7	29.9	0.0067	0.009	137.6	ug/L	137	Standard
|	Cd	111	-90.2	26.6	-0.0698	0.015	21.3	mg/L	6	Standard
|	Cd	114	596.3	8.8	0.1253	0.012	9.9	ug/L	20	Standard
>	In	115	762553.1	0.4				ug/L	755264	Standard
|	Sn	118	138.0	4.0	0.0089	0.006	64.0	ug/L	138	Standard
|	Sb	123	466.9	16.9	0.0767	0.018	23.4	ug/L	391	Standard
|	Ba	135	76.7	78.5	0.0151	0.034	223.0	ug/L	32	Standard
|	Ce	140	916.7	11.0				ug/L	42	Standard
>	Tb	159	1013910.8	1.5				ug/L	966827	Standard
|	Ho	165	10.0					ug/L	12	Standard
|	Tl	203	148.7	154.6	0.0154	0.035	224.9	ug/L	19	Standard
|	Tl	205	340.0	161.7	0.0192	0.035	184.0	ug/L	58	Standard
|	Pb	206	681.0	28.6	0.0342	0.038	110.8	ug/L	464	Standard
|	Pb	207	615.3	30.8	0.0386	0.041	106.4	ug/L	405	Standard
|	Pb	208	1312.0	29.8	0.0389	0.039	99.9	ug/L	876	Standard
|	U	238	232.7	167.3	0.0182	0.033	182.9	ug/L	14	Standard
>	Bi	209	610448.9	0.7				ug/L	599146	Standard

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 11:06:53

Page 1

Approved: March 01, 2017

Na	23	31.7	9.1	8.2685	0.859	10.4	mg/L	3	Standard
Mg	24	583.3	10.3	10.7398	1.111	10.3	mg/L	30	Standard
K	39	400.0	2.5	4.8587	0.141	2.9	mg/L	10	Standard
Ca	43	121.7	18.5	27.5203	12.326	44.8	mg/L	83	Standard
Fe	54	694.4	1.3	9.9742	0.187	1.9	mg/L	21	Standard
Fe	57	456.7	2.3	8.3979	0.578	6.9	mg/L	240	Standard
Sc-1	45	43589.3	0.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	2.7	21.7				ug/L	5	Standard
Br	81	1503.4	9.7				ug/L	1587	Standard
P	31	66.7	11.5				ug/L	50	Standard
S	34	23.3	53.9				ug/L	8	Standard
Sr	88	216.7	27.9				ug/L	198	Standard
C	12	30.0	88.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	12.2	130.6				mg/L	6	Standard
Ho-1	165	10.0					mg/L	12	Standard
Er	166	23.3	65.5				mg/L	10	Standard
I	127	3373.7	3.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27	0.908		
Sc	45			
Ti	47	91.055		
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		104.751	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 11:06:53

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	91.505	
[	Ag	107		
[	Cd	111		
[	Cd	114		
>	In	115		100.965
[	Sn	118		
[	Sb	123		
[	Ba	135		
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203		
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208		
[	U	238		
>	Bi	209		101.887
[	Na	23	66.148	
[	Mg	24	214.796	
[	K	39	97.174	
[	Ca	43	183.468	
[	Fe	54	79.794	
[	Fe	57	67.183	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 4	Al	27	
QC Std 4	Na	23	
QC Std 4	Mg	24	

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 11:06:53

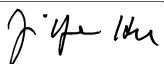
Page 3

Approved: March 01, 2017



QC Std 4	Ca	43
QC Std 4	Fe	54
QC Std 4	Fe	57

Sample ID: QC Std 4
Report Date/Time: Tuesday, February 28, 2017 11:06:53
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 5

Sample Date/Time: Tuesday, February 28, 2017 11:07:48

Number of Replicates: 3

Autosampler Position: 204

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	267841.7	0.7				ug/L	250104	Standard
|	Be	9	164142.8	1.5	94.2352	2.061	2.2	ug/L	7	Standard
|	Al	27	5733990.9	0.8	43.9890	0.516	1.2	ug/L	597	Standard
|	Sc	45	44089.1	1.0				ug/L	41681	Standard
|	Ti	47	18398.8	2.3	94.3390	3.628	3.8	ug/L	86	Standard
|	V	51	612292.0	0.4	90.5977	1.480	1.6	ug/L	1740	Standard
|	Cr	52	577731.7	1.3	91.0013	2.366	2.6	ug/L	7178	Standard
|	Cr	53	75430.6	1.0	93.1829	2.047	2.2	ug/L	573	Standard
|	Mn	55	928273.9	1.1	89.7385	2.285	2.5	ug/L	3072	Standard
|	Co	59	728443.6	1.5	90.3882	2.665	2.9	ug/L	573	Standard
|	Ni	60	155086.1	1.2	90.5265	2.292	2.5	ug/L	264	Standard
|	Cu	65	150548.0	1.1	91.6606	1.847	2.0	ug/L	530	Standard
|	Zn	66	87657.5	1.6	92.9822	2.173	2.3	ug/L	252	Standard
>	Ge	72	700330.0	1.5				ug/L	641188	Standard
|	As	75	87214.5	0.1	92.4147	1.490	1.6	ug/L	-83	Standard
|	Se	82	7576.5	0.7	92.6020	1.355	1.5	ug/L	16	Standard
|	Se-1	77	5668.1	0.7	94.9559	2.138	2.3	ug/L	126	Standard
>	Ga	71	165.0	22.9				mg/L	70	Standard
|	Rb	85	671.7	5.8				ug/L	33	Standard
|	Y	89	544380.8	3.4				ug/L	493982	Standard
>	Rh	103	51.7	36.6				ug/L	17	Standard
|	Mo	98	295818.0	0.7	91.4304	0.658	0.7	ug/L	54	Standard
|	Ag	107	464343.7	3.6	83.2685	3.182	3.8	ug/L	137	Standard
|	Cd	111	155225.0	0.3	93.9006	1.463	1.6	mg/L	6	Standard
|	Cd	114	409037.5	0.4	90.1831	0.830	0.9	ug/L	20	Standard
>	In	115	785336.5	1.3				ug/L	755264	Standard
|	Sn	118	139.7	7.7	0.0064	0.010	155.4	ug/L	138	Standard
|	Sb	123	436970.1	0.9	93.8265	1.855	2.0	ug/L	391	Standard
|	Ba	135	172146.1	0.5	92.6029	1.636	1.8	ug/L	32	Standard
|	Ce	140	88.3	19.9				ug/L	42	Standard
>	Tb	159	1056061.9	1.6				ug/L	966827	Standard
|	Ho	165	36.7	41.7				ug/L	12	Standard
|	Tl	203	642491.8	0.2	91.4962	1.934	2.1	ug/L	19	Standard
|	Tl	205	1493371.5	0.5	90.9464	1.438	1.6	ug/L	58	Standard
|	Pb	206	506087.3	0.9	91.3169	1.108	1.2	ug/L	464	Standard
|	Pb	207	455693.2	1.3	91.8955	0.724	0.8	ug/L	405	Standard
|	Pb	208	994453.9	0.5	91.9154	1.793	2.0	ug/L	876	Standard
|	U	238	1128437.1	2.1	91.6455	1.385	1.5	ug/L	14	Standard
>	Bi	209	639308.3	2.1				ug/L	599146	Standard

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 11:09:59

Page 1

Approved: March 01, 2017

Na	23	28.3	36.7	7.2495	2.820	38.9	mg/L	3	Standard
Mg	24	615.0	18.6	11.2324	2.259	20.1	mg/L	30	Standard
K	39	325.0	8.6	3.8529	0.310	8.0	mg/L	10	Standard
Ca	43	96.7	7.9	13.0081	4.777	36.7	mg/L	83	Standard
Fe	54	681.4	4.1	9.6662	0.309	3.2	mg/L	21	Standard
Fe	57	583.3	4.0	14.7747	0.972	6.6	mg/L	240	Standard
Sc-1	45	44089.1	1.0				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.7	83.3				ug/L	5	Standard
Br	81	1563.4	5.8				ug/L	1587	Standard
P	31	55.0	24.1				ug/L	50	Standard
S	34	20.0	75.0				ug/L	8	Standard
Sr	88	183.3	19.2				ug/L	198	Standard
C	12	46.7	75.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	9.7	103.3				mg/L	6	Standard
Ho-1	165	36.7	41.7				mg/L	12	Standard
Er	166	6.7	86.6				mg/L	10	Standard
I	127	3553.8	2.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	94.235		
Al	27	0.880		
Sc	45			
Ti	47	94.339		
V	51	90.598		
Cr	52	91.001		
Cr	53			
Mn	55	89.739		
Co	59	90.388		
Ni	60	90.526		
Cu	65	91.661		
Zn	66	92.982		
Ge	72		109.224	
As	75	92.415		
Se	82	92.602		
Se-1	77			
Ga	71			

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 11:09:59

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	91.430	
[	Ag	107	83.268	
[	Cd	111	93.901	
[	Cd	114		
>	In	115		103.982
[	Sn	118		
[	Sb	123	93.827	
[	Ba	135	92.603	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	91.496	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	91.915	
[	U	238	91.645	
>	Bi	209		106.703
[	Na	23	57.996	
[	Mg	24	224.648	
[	K	39	77.058	
[	Ca	43	86.721	
[	Fe	54	77.330	
[	Fe	57	118.197	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 5	Al	27	
QC Std 5	Na	23	
QC Std 5	Mg	24	

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 11:09:59

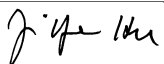
Page 3

Approved: March 01, 2017



QC Std 5	K	39
QC Std 5	Ca	43
QC Std 5	Fe	54

Sample ID: QC Std 5
Report Date/Time: Tuesday, February 28, 2017 11:09:59
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 11:10:55

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	260829.6	3.7				ug/L	250104	Standard
|	Be	9	84099.4	0.5	49.6190	1.991	4.0	ug/L	7	Standard
|	Al	27	6304809.4	2.3	49.6988	1.607	3.2	ug/L	597	Standard
|	Sc	45	43497.4	2.8				ug/L	41681	Standard
|	Ti	47	18294.4	1.7	97.7367	2.921	3.0	ug/L	86	Standard
|	V	51	321527.7	0.6	49.4500	1.421	2.9	ug/L	1740	Standard
|	Cr	52	301304.1	0.5	48.8939	1.372	2.8	ug/L	7178	Standard
|	Cr	53	38353.5	1.4	48.9461	0.744	1.5	ug/L	573	Standard
|	Mn	55	490872.9	1.3	49.3045	1.366	2.8	ug/L	3072	Standard
|	Co	59	384591.5	1.5	49.6912	1.402	2.8	ug/L	573	Standard
|	Ni	60	81566.3	1.2	49.5218	1.054	2.1	ug/L	264	Standard
|	Cu	65	78097.8	0.8	49.3650	0.782	1.6	ug/L	530	Standard
|	Zn	66	45149.2	0.7	49.7352	1.006	2.0	ug/L	252	Standard
>	Ge	72	672253.4	2.3				ug/L	641188	Standard
|	As	75	45508.4	1.3	50.2677	1.497	3.0	ug/L	-83	Standard
|	Se	82	4059.1	0.6	51.5940	1.201	2.3	ug/L	16	Standard
|	Se-1	77	2876.3	1.0	49.1249	0.698	1.4	ug/L	126	Standard
>	Ga	71	65.0	27.7				mg/L	70	Standard
|	Rb	85	681.7	7.8				ug/L	33	Standard
|	Y	89	521276.7	1.5				ug/L	493982	Standard
>	Rh	103	26.7	39.0				ug/L	17	Standard
|	Mo	98	318759.7	1.3	100.7078	2.795	2.8	ug/L	54	Standard
|	Ag	107	285916.7	1.0	52.3948	1.293	2.5	ug/L	137	Standard
|	Cd	111	82123.0	1.3	50.7671	1.238	2.4	mg/L	6	Standard
|	Cd	114	221483.1	0.6	49.8998	0.493	1.0	ug/L	20	Standard
>	In	115	768471.5	1.5				ug/L	755264	Standard
|	Sn	118	49011.5	1.0	50.1372	1.226	2.4	ug/L	138	Standard
|	Sb	123	230988.7	1.3	50.6807	1.407	2.8	ug/L	391	Standard
|	Ba	135	90500.2	1.1	49.7429	1.219	2.4	ug/L	32	Standard
|	Ce	140	63.3	25.4				ug/L	42	Standard
>	Tb	159	1021379.5	1.4				ug/L	966827	Standard
|	Ho	165	23.3	32.7				ug/L	12	Standard
|	Tl	203	338334.4	1.1	49.6414	1.044	2.1	ug/L	19	Standard
|	Tl	205	798518.6	2.3	50.1134	1.680	3.4	ug/L	58	Standard
|	Pb	206	266590.7	1.1	49.5262	1.057	2.1	ug/L	464	Standard
|	Pb	207	239880.8	1.0	49.8097	0.951	1.9	ug/L	405	Standard
|	Pb	208	523514.4	1.6	49.8196	1.314	2.6	ug/L	876	Standard
|	U	238	596315.6	1.7	49.9127	1.377	2.8	ug/L	14	Standard
>	Bi	209	620377.8	1.1				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:13:06

Page 1

Approved: March 01, 2017

Na	23	16.7	45.8	4.1737	2.266	54.3	mg/L	3	Standard
Mg	24	300.0	2.9	5.2800	0.292	5.5	mg/L	30	Standard
K	39	378.3	21.1	4.5762	0.901	19.7	mg/L	10	Standard
Ca	43	63.3	24.1	-5.0705	7.792	153.7	mg/L	83	Standard
Fe	54	312.5	5.6	4.3650	0.320	7.3	mg/L	21	Standard
Fe	57	403.3	12.2	5.6673	3.262	57.6	mg/L	240	Standard
Sc-1	45	43497.4	2.8				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	4.7	32.7				ug/L	5	Standard
Br	81	1656.8	7.2				ug/L	1587	Standard
P	31	40.0	21.7				ug/L	50	Standard
S	34	28.3	44.4				ug/L	8	Standard
Sr	88	213.3	4.9				ug/L	198	Standard
C	12	26.7	43.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	19.4	103.3				mg/L	6	Standard
Ho-1	165	23.3	32.7				mg/L	12	Standard
Er	166	13.3	43.3				mg/L	10	Standard
I	127	3885.5	4.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	99.238		
Al	27	99.398		
Sc	45			
Ti	47	97.737		
V	51	98.900		
Cr	52	97.788		
Cr	53			
Mn	55	98.609		
Co	59	99.382		
Ni	60	99.044		
Cu	65	98.730		
Zn	66	99.470		
Ge	72		104.845	
As	75	100.535		
Se	82	103.188		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:13:06

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	100.708	
[	Ag	107	104.790	
[	Cd	111	101.534	
[	Cd	114		
>	In	115		101.749
[	Sn	118	100.274	
[	Sb	123	101.361	
[	Ba	135	99.486	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	99.283	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	99.639	
[	U	238	99.825	
>	Bi	209		103.544
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:13:06

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 11:14:01

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	259590.8	4.2				ug/L	250104	Standard
|	Be	9	21.7	35.3	0.0027	0.005	182.7	ug/L	7	Standard
|	Al	27	845.0	1.2	0.0005	0.000	41.3	ug/L	597	Standard
|	Sc	45	42065.0	3.1				ug/L	41681	Standard
|	Ti	47	60.3	9.7	-0.1396	0.029	21.1	ug/L	86	Standard
|	V	51	1385.6	7.1	-0.0628	0.014	21.7	ug/L	1740	Standard
|	Cr	52	6111.2	2.2	-0.2053	0.021	10.3	ug/L	7178	Standard
|	Cr	53	551.7	9.3	-0.1591	0.072	45.5	ug/L	573	Standard
|	Mn	55	2387.5	2.8	-0.0656	0.005	7.5	ug/L	3072	Standard
|	Co	59	367.3	3.1	-0.0139	0.002	12.3	ug/L	573	Standard
|	Ni	60	235.3	8.4	-0.0344	0.013	38.6	ug/L	264	Standard
|	Cu	65	594.3	4.5	-0.0001	0.020	20295.4	ug/L	530	Standard
|	Zn	66	402.3	7.7	0.0940	0.031	33.2	ug/L	252	Standard
>	Ge	72	673345.6	0.9				ug/L	641188	Standard
|	As	75	-18.6	56.3	0.0218	0.011	52.1	ug/L	-83	Standard
|	Se	82	17.7	30.6	-0.0013	0.071	5652.1	ug/L	16	Standard
|	Se-1	77	121.3	9.6	-0.1090	0.229	209.8	ug/L	126	Standard
>	Ga	71	53.3	60.3				mg/L	70	Standard
|	Rb	85	40.0	21.7				ug/L	33	Standard
|	Y	89	518303.3	2.0				ug/L	493982	Standard
>	Rh	103	8.3	69.3				ug/L	17	Standard
|	Mo	98	303.0	26.2	0.0757	0.026	34.6	ug/L	54	Standard
|	Ag	107	163.7	6.7	0.0065	0.002	33.6	ug/L	137	Standard
|	Cd	111	10.6	25.4	-0.0071	0.002	23.9	mg/L	6	Standard
|	Cd	114	49.2	23.6	0.0011	0.003	256.0	ug/L	20	Standard
>	In	115	763610.8	1.1				ug/L	755264	Standard
|	Sn	118	155.3	1.9	0.0266	0.002	8.0	ug/L	138	Standard
|	Sb	123	1305.6	13.9	0.2615	0.037	14.1	ug/L	391	Standard
|	Ba	135	57.0	22.8	0.0041	0.007	181.2	ug/L	32	Standard
|	Ce	140	28.3	36.7				ug/L	42	Standard
>	Tb	159	1002079.1	2.1				ug/L	966827	Standard
|	Ho	165	13.3	43.3				ug/L	12	Standard
|	Tl	203	44.0	27.6	-0.0004	0.002	425.9	ug/L	19	Standard
|	Tl	205	115.0	24.2	0.0046	0.002	37.8	ug/L	58	Standard
|	Pb	206	506.7	5.2	0.0000	0.005	14554.9	ug/L	464	Standard
|	Pb	207	438.3	1.5	0.0000	0.001	1721.9	ug/L	405	Standard
|	Pb	208	983.0	3.7	0.0058	0.002	32.9	ug/L	876	Standard
|	U	238	60.3	20.7	0.0034	0.001	28.3	ug/L	14	Standard
>	Bi	209	617062.4	2.2				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:16:12

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	0.4649	0.817	175.8	mg/L	3	Standard
Mg	24	33.3	22.9	0.1288	0.157	122.2	mg/L	30	Standard
K	39	11.7	24.7	-0.0875	0.042	47.9	mg/L	10	Standard
Ca	43	85.0	20.4	8.6213	8.393	97.3	mg/L	83	Standard
Fe	54	39.1	23.3	0.3459	0.129	37.4	mg/L	21	Standard
Fe	57	328.3	6.2	2.2410	1.640	73.2	mg/L	240	Standard
Sc-1	45	42065.0	3.1				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	6.3	45.6				ug/L	5	Standard
Br	81	1473.4	13.3				ug/L	1587	Standard
P	31	56.7	10.2				ug/L	50	Standard
S	34	21.7	26.6				ug/L	8	Standard
Sr	88	230.0	13.6				ug/L	198	Standard
C	12	30.0	57.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.4	112.1				mg/L	6	Standard
Ho-1	165	13.3	43.3				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	5155.9	3.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		105.015	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:16:12

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	101.105
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	102.990
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 7	Sb	123	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:16:12

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: PBW 75 WG604063-02

Sample Date/Time: Tuesday, February 28, 2017 11:17:08

Number of Replicates: 3

Autosampler Position: 205

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	253110.4	1.7				ug/L	250104	Standard
|	Be	9	20.0	25.0	0.0019	0.003	168.5	ug/L	7	Standard
|	Al	27	5294.3	5.2	0.0368	0.002	5.2	ug/L	597	Standard
|	Sc	45	40405.5	2.4				ug/L	41681	Standard
|	Ti	47	50.3	13.5	-0.1822	0.033	18.2	ug/L	86	Standard
|	V	51	1405.9	2.5	-0.0506	0.004	8.0	ug/L	1740	Standard
|	Cr	52	6882.6	2.0	-0.0298	0.013	42.4	ug/L	7178	Standard
|	Cr	53	753.4	6.0	0.1421	0.041	29.0	ug/L	573	Standard
|	Mn	55	2886.6	1.4	-0.0031	0.003	90.1	ug/L	3072	Standard
|	Co	59	304.3	4.8	-0.0204	0.001	6.7	ug/L	573	Standard
|	Ni	60	295.7	1.4	0.0097	0.001	11.9	ug/L	264	Standard
|	Cu	65	557.7	6.2	-0.0085	0.027	317.0	ug/L	530	Standard
|	Zn	66	1166.7	5.9	0.9956	0.106	10.7	ug/L	252	Standard
>	Ge	72	646482.1	2.0				ug/L	641188	Standard
|	As	75	-45.7	47.9	-0.0098	0.024	247.5	ug/L	-83	Standard
|	Se	82	9.4	63.3	-0.1039	0.078	74.8	ug/L	16	Standard
|	Se-1	77	119.0	4.4	-0.0635	0.095	149.1	ug/L	126	Standard
>	Ga	71	45.0	48.4				mg/L	70	Standard
|	Rb	85	56.7	18.4				ug/L	33	Standard
|	Y	89	500257.3	3.0				ug/L	493982	Standard
>	Rh	103	20.0	109.0				ug/L	17	Standard
|	Mo	98	96.0	14.4	0.0106	0.004	38.1	ug/L	54	Standard
|	Ag	107	134.7	13.4	0.0020	0.004	191.6	ug/L	137	Standard
|	Cd	111	7.5	42.9	-0.0088	0.002	24.2	mg/L	6	Standard
|	Cd	114	242.6	12.0	0.0467	0.006	12.9	ug/L	20	Standard
>	In	115	739339.7	2.7				ug/L	755264	Standard
|	Sn	118	1642.1	1.3	1.6170	0.025	1.6	ug/L	138	Standard
|	Sb	123	253.3	29.3	0.0309	0.016	50.1	ug/L	391	Standard
|	Ba	135	68.0	17.3	0.0113	0.006	55.1	ug/L	32	Standard
|	Ce	140	101.7	12.4				ug/L	42	Standard
>	Tb	159	968606.6	2.1				ug/L	966827	Standard
|	Ho	165	11.7	65.5				ug/L	12	Standard
|	Tl	203	40.3	15.9	-0.0009	0.001	119.6	ug/L	19	Standard
|	Tl	205	103.3	32.9	0.0041	0.002	54.9	ug/L	58	Standard
|	Pb	206	488.7	1.9	-0.0011	0.003	309.6	ug/L	464	Standard
|	Pb	207	418.3	3.4	-0.0020	0.002	74.7	ug/L	405	Standard
|	Pb	208	931.7	3.8	0.0031	0.002	79.7	ug/L	876	Standard
|	U	238	15.0	26.7	-0.0004	0.000	85.6	ug/L	14	Standard
>	Bi	209	602279.1	1.7				ug/L	599146	Standard

Sample ID: PBW 75 WG604063-02

Report Date/Time: Tuesday, February 28, 2017 11:19:18

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	35.0	37.8	0.1910	0.279	146.3	mg/L	30	Standard
K	39	20.0	66.1	0.0300	0.173	578.1	mg/L	10	Standard
Ca	43	51.7	11.2	-9.3089	3.020	32.4	mg/L	83	Standard
Fe	54	9.6	3.9	-0.0970	0.008	8.4	mg/L	21	Standard
Fe	57	328.3	7.5	2.9426	1.188	40.4	mg/L	240	Standard
Sc-1	45	40405.5	2.4				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	3.3	17.3				ug/L	5	Standard
Br	81	1586.7	1.9				ug/L	1587	Standard
P	31	53.3	39.0				ug/L	50	Standard
S	34	30.0	44.1				ug/L	8	Standard
Sr	88	225.0	7.7				ug/L	198	Standard
C	12	23.3	24.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	22.7	66.9				mg/L	6	Standard
Ho-1	165	11.7	65.5				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	4397.3	0.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		101.202	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		100.826	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: PBW 75 WG604063-02

Report Date/Time: Tuesday, February 28, 2017 11:19:18

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	97.892
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	100.523
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: PBW 75 WG604063-02

Report Date/Time: Tuesday, February 28, 2017 11:19:18

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: LCSW 75 WG604063-03

Sample Date/Time: Tuesday, February 28, 2017 11:20:13

Number of Replicates: 3

Autosampler Position: 206

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	271267.0	1.2				ug/L	250104	Standard
|	Be	9	84448.0	0.6	47.8622	0.308	0.6	ug/L	7	Standard
|	Al	27	13008.9	4.8	0.0924	0.004	4.4	ug/L	597	Standard
|	Sc	45	45214.1	3.5				ug/L	41681	Standard
|	Ti	47	65.3	6.4	-0.1335	0.022	16.6	ug/L	86	Standard
|	V	51	323043.6	1.4	46.6163	0.838	1.8	ug/L	1740	Standard
|	Cr	52	307223.8	1.8	46.7419	1.081	2.3	ug/L	7178	Standard
|	Cr	53	39025.2	2.6	46.7191	1.420	3.0	ug/L	573	Standard
|	Mn	55	492200.4	0.6	46.3854	0.489	1.1	ug/L	3072	Standard
|	Co	59	380532.2	0.9	46.1451	0.598	1.3	ug/L	573	Standard
|	Ni	60	82551.6	1.4	47.0405	0.849	1.8	ug/L	264	Standard
|	Cu	65	79110.7	1.4	46.9250	0.873	1.9	ug/L	530	Standard
|	Zn	66	45306.0	2.3	46.8303	1.297	2.8	ug/L	252	Standard
>	Ge	72	715964.7	0.4				ug/L	641188	Standard
|	As	75	43941.7	1.6	45.5613	0.922	2.0	ug/L	-83	Standard
|	Se	82	3955.8	2.0	47.1780	1.101	2.3	ug/L	16	Standard
|	Se-1	77	2828.6	2.8	45.1764	1.265	2.8	ug/L	126	Standard
>	Ga	71	53.3	19.5				mg/L	70	Standard
|	Rb	85	70.0	21.4				ug/L	33	Standard
|	Y	89	546012.5	1.7				ug/L	493982	Standard
>	Rh	103	20.0	43.3				ug/L	17	Standard
|	Mo	98	118.8	12.1	0.0150	0.004	26.9	ug/L	54	Standard
|	Ag	107	271224.9	1.8	47.5494	1.357	2.9	ug/L	137	Standard
|	Cd	111	82178.8	1.3	48.5991	0.941	1.9	mg/L	6	Standard
|	Cd	114	215687.8	0.3	46.4911	0.480	1.0	ug/L	20	Standard
>	In	115	803217.2	1.3				ug/L	755264	Standard
|	Sn	118	186.3	6.4	0.0490	0.009	18.8	ug/L	138	Standard
|	Sb	123	220815.4	0.9	46.3442	0.853	1.8	ug/L	391	Standard
|	Ba	135	88341.1	0.9	46.4476	0.667	1.4	ug/L	32	Standard
|	Ce	140	83.3	25.0				ug/L	42	Standard
>	Tb	159	1048087.4	2.2				ug/L	966827	Standard
|	Ho	165	20.0	0.0				ug/L	12	Standard
|	Tl	203	343987.6	1.0	47.9756	0.923	1.9	ug/L	19	Standard
|	Tl	205	799532.3	0.8	47.6875	0.350	0.7	ug/L	58	Standard
|	Pb	206	270092.2	0.7	47.6898	0.562	1.2	ug/L	464	Standard
|	Pb	207	234968.0	1.0	46.3702	0.734	1.6	ug/L	405	Standard
|	Pb	208	517783.0	1.1	46.8267	0.506	1.1	ug/L	876	Standard
|	U	238	562447.8	2.1	44.7396	0.512	1.1	ug/L	14	Standard
>	Bi	209	652642.2	1.3				ug/L	599146	Standard

Sample ID: LCSW 75 WG604063-03

Report Date/Time: Tuesday, February 28, 2017 11:22:24

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	30.0	44.1	0.0154	0.233	1515.3	mg/L	30	Standard
K	39	15.0	33.3	-0.0574	0.065	112.3	mg/L	10	Standard
Ca	43	66.7	31.2	-4.4703	11.494	257.1	mg/L	83	Standard
Fe	54	24.6	50.8	0.0968	0.164	169.4	mg/L	21	Standard
Fe	57	283.3	5.4	-1.3647	0.279	20.4	mg/L	240	Standard
Sc-1	45	45214.1	3.5				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.3	58.1				ug/L	5	Standard
Br	81	1816.8	15.1				ug/L	1587	Standard
P	31	66.7	18.9				ug/L	50	Standard
S	34	20.0	25.0				ug/L	8	Standard
Sr	88	225.0	18.2				ug/L	198	Standard
C	12	43.3	53.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	18.7	54.7				mg/L	6	Standard
Ho-1	165	20.0	0.0				mg/L	12	Standard
Er	166	26.7	21.7				mg/L	10	Standard
I	127	4048.9	2.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		108.462	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		111.662	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: LCSW 75 WG604063-03

Report Date/Time: Tuesday, February 28, 2017 11:22:24

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	106.349
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	108.929
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: LCSW 75 WG604063-03

Report Date/Time: Tuesday, February 28, 2017 11:22:24

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126204 WG604063-01

Sample Date/Time: Tuesday, February 28, 2017 11:23:19

Number of Replicates: 3

Autosampler Position: 207

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	301063.8	1.6				ug/L	250104	Standard
|	Be	9	33.3	22.9	0.0068	0.004	57.9	ug/L	7	Standard
|	Al	27	79443807.6	2.2	542.4577	20.183	3.7	ug/L	597	Standard
|	Sc	45	45825.9	1.8				ug/L	41681	Standard
|	Ti	47	139.7	2.2	0.3216	0.034	10.5	ug/L	86	Standard
|	V	51	-2517.7	28.5	-0.6835	0.117	17.1	ug/L	1740	Standard
|	Cr	52	246753.0	2.1	41.7140	1.860	4.5	ug/L	7178	Standard
|	Cr	53	51444.2	7.2	69.1056	6.558	9.5	ug/L	573	Standard
|	Mn	55	100096089.4	1.7	10581.8226	390.368	3.7	ug/L	3072	Standard
|	Co	59	51048.5	2.1	6.8478	0.309	4.5	ug/L	573	Standard
|	Ni	60	64797.3	0.9	41.1151	0.773	1.9	ug/L	264	Standard
|	Cu	65	2590.9	2.1	1.3486	0.076	5.6	ug/L	530	Standard
|	Zn	66	3026.3	1.0	3.1602	0.092	2.9	ug/L	252	Standard
>	Ge	72	642781.9	2.5				ug/L	641188	Standard
|	As	75	151.7	127.3	0.2149	0.221	102.6	ug/L	-83	Standard
|	Se	82	232.8	10.0	2.8828	0.345	12.0	ug/L	16	Standard
|	Se-1	77	5881.1	10.8	107.8533	14.323	13.3	ug/L	126	Standard
>	Ga	71	813.4	3.7				mg/L	70	Standard
|	Rb	85	12626.9	3.9				ug/L	33	Standard
|	Y	89	532288.9	1.9				ug/L	493982	Standard
>	Rh	103	2880.3	3.2				ug/L	17	Standard
|	Mo	98	2139.6	3.0	0.6950	0.026	3.8	ug/L	54	Standard
|	Ag	107	181.0	8.2	0.0114	0.002	20.0	ug/L	137	Standard
|	Cd	111	952.9	1.5	0.6102	0.012	1.9	mg/L	6	Standard
|	Cd	114	2528.6	1.1	0.5932	0.010	1.7	ug/L	20	Standard
>	In	115	725777.2	1.7				ug/L	755264	Standard
|	Sn	118	184.7	6.0	0.0668	0.011	17.0	ug/L	138	Standard
|	Sb	123	1426.3	7.8	0.3052	0.031	10.2	ug/L	391	Standard
|	Ba	135	950738.4	1.2	553.6108	14.560	2.6	ug/L	32	Standard
|	Ce	140	5549.4	6.3				ug/L	42	Standard
>	Tb	159	1081822.6	1.1				ug/L	966827	Standard
|	Ho	165	61.7	33.8				ug/L	12	Standard
|	Tl	203	1658.8	27.5	0.2732	0.075	27.4	ug/L	19	Standard
|	Tl	205	3797.2	31.9	0.2715	0.085	31.4	ug/L	58	Standard
|	Pb	206	1906.5	2.6	0.3141	0.012	3.7	ug/L	464	Standard
|	Pb	207	1605.8	4.1	0.2932	0.014	4.8	ug/L	405	Standard
|	Pb	208	3864.2	4.4	0.3360	0.017	4.9	ug/L	876	Standard
|	U	238	34891.1	2.0	3.3635	0.097	2.9	ug/L	14	Standard
>	Bi	209	538404.0	1.0				ug/L	599146	Standard

Sample ID: L1702126204 WG604063-01

Report Date/Time: Tuesday, February 28, 2017 11:25:29

Page 1

Approved: March 01, 2017

Na	23	1581.7	10.3	414.9884	43.098	10.4	mg/L	3	Standard
Mg	24	7365.1	4.9	135.0332	7.985	5.9	mg/L	30	Standard
K	39	451.7	14.4	5.2355	0.771	14.7	mg/L	10	Standard
Ca	43	1503.4	4.8	758.6655	38.508	5.1	mg/L	83	Standard
Fe	54	93.1	28.2	1.0561	0.371	35.2	mg/L	21	Standard
Fe	57	2748.6	7.8	123.0776	9.969	8.1	mg/L	240	Standard
Sc-1	45	45825.9	1.8				mg/L	41681	Standard
Cl	35	3.3	69.3				ug/L	2	Standard
Kr	83	4.7	32.7				ug/L	5	Standard
Br	81	90918.7	0.9				ug/L	1587	Standard
P	31	86.7	33.8				ug/L	50	Standard
S	34	38.3	39.8				ug/L	8	Standard
Sr	88	510.0	8.0				ug/L	198	Standard
C	12	60.0	72.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	33.3	61.6				mg/L	6	Standard
Ho-1	165	61.7	33.8				mg/L	12	Standard
Er	166	70.0	42.9				mg/L	10	Standard
I	127	619095.3	9.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		120.376	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		100.249	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126204 WG604063-01

Report Date/Time: Tuesday, February 28, 2017 11:25:29

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	96.096
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.862
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702126204 WG604063-01

Report Date/Time: Tuesday, February 28, 2017 11:25:29

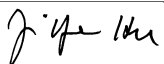
Page 3

Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702126204 WG604063-01
Report Date/Time: Tuesday, February 28, 2017 11:25:29
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702126204S WG604063-04

Sample Date/Time: Tuesday, February 28, 2017 11:26:23

Number of Replicates: 3

Autosampler Position: 208

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	299482.8	1.4				ug/L	250104	Standard
|	Be	9	86151.1	3.2	44.2386	1.862	4.2	ug/L	7	Standard
|	Al	27	84932596.6	2.4	582.8577	16.096	2.8	ug/L	597	Standard
|	Sc	45	45523.3	1.0				ug/L	41681	Standard
|	Ti	47	146.7	4.9	0.3787	0.054	14.2	ug/L	86	Standard
|	V	51	307590.7	2.4	50.5449	1.798	3.6	ug/L	1740	Standard
|	Cr	52	535924.3	1.9	94.0087	3.082	3.3	ug/L	7178	Standard
|	Cr	53	90660.5	1.9	124.9528	3.085	2.5	ug/L	573	Standard
|	Mn	55	104563962.4	1.2	11289.1402	249.105	2.2	ug/L	3072	Standard
|	Co	59	392475.7	1.5	54.1805	1.466	2.7	ug/L	573	Standard
|	Ni	60	137739.6	1.2	89.4876	1.990	2.2	ug/L	264	Standard
|	Cu	65	66887.3	1.1	45.1404	1.040	2.3	ug/L	530	Standard
|	Zn	66	39840.7	1.7	46.8702	1.355	2.9	ug/L	252	Standard
>	Ge	72	629172.7	1.5				ug/L	641188	Standard
|	As	75	40789.0	0.1	48.1281	0.668	1.4	ug/L	-83	Standard
|	Se	82	3715.4	1.7	50.4484	1.382	2.7	ug/L	16	Standard
|	Se-1	77	9237.1	3.0	174.0512	3.999	2.3	ug/L	126	Standard
>	Ga	71	850.0	3.3				mg/L	70	Standard
|	Rb	85	12423.4	0.9				ug/L	33	Standard
|	Y	89	514106.3	3.4				ug/L	493982	Standard
>	Rh	103	3020.3	4.6				ug/L	17	Standard
|	Mo	98	2153.8	2.8	0.7046	0.006	0.8	ug/L	54	Standard
|	Ag	107	226297.5	1.0	44.2113	0.893	2.0	ug/L	137	Standard
|	Cd	111	70335.8	1.8	46.3642	1.419	3.1	mg/L	6	Standard
|	Cd	114	188730.2	1.0	45.3391	0.733	1.6	ug/L	20	Standard
>	In	115	720820.1	2.6				ug/L	755264	Standard
|	Sn	118	179.0	8.8	0.0618	0.014	22.2	ug/L	138	Standard
|	Sb	123	198489.8	1.8	46.4330	1.360	2.9	ug/L	391	Standard
|	Ba	135	1071622.8	1.4	628.3120	12.921	2.1	ug/L	32	Standard
|	Ce	140	5979.5	2.1				ug/L	42	Standard
>	Tb	159	1079494.1	2.4				ug/L	966827	Standard
|	Ho	165	83.3	9.2				ug/L	12	Standard
|	Tl	203	300738.8	0.9	51.0526	1.460	2.9	ug/L	19	Standard
|	Tl	205	693537.4	1.8	50.3634	2.027	4.0	ug/L	58	Standard
|	Pb	206	225345.5	0.9	48.4363	1.498	3.1	ug/L	464	Standard
|	Pb	207	190985.9	0.9	45.8743	1.203	2.6	ug/L	405	Standard
|	Pb	208	467019.8	1.2	51.4232	1.620	3.2	ug/L	876	Standard
|	U	238	641904.7	0.9	62.1558	1.500	2.4	ug/L	14	Standard
>	Bi	209	536406.5	2.9				ug/L	599146	Standard

Sample ID: L1702126204S WG604063-04

Report Date/Time: Tuesday, February 28, 2017 11:28:34

Page 1

Approved: March 01, 2017

Na	23	1668.4	4.7	440.6489	22.473	5.1	mg/L	3	Standard
Mg	24	7930.4	0.7	146.3523	2.226	1.5	mg/L	30	Standard
K	39	481.7	10.4	5.6432	0.667	11.8	mg/L	10	Standard
Ca	43	1481.7	6.5	752.5123	55.863	7.4	mg/L	83	Standard
Fe	54	95.5	6.1	1.0967	0.070	6.4	mg/L	21	Standard
Fe	57	2880.3	4.2	130.7758	7.545	5.8	mg/L	240	Standard
Sc-1	45	45523.3	1.0				mg/L	41681	Standard
Cl	35	4.7	24.7				ug/L	2	Standard
Kr	83	4.0	66.1				ug/L	5	Standard
Br	81	92230.0	3.1				ug/L	1587	Standard
P	31	78.3	9.8				ug/L	50	Standard
S	34	25.0	20.0				ug/L	8	Standard
Sr	88	463.3	17.9				ug/L	198	Standard
C	12	56.7	36.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	87.9	51.6				mg/L	6	Standard
Ho-1	165	83.3	9.2				mg/L	12	Standard
Er	166	43.3	26.6				mg/L	10	Standard
I	127	675589.2	7.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		119.744	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		98.126	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126204S WG604063-04

Report Date/Time: Tuesday, February 28, 2017 11:28:34

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	95.439
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.529
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Cr 53 Upper, S, EEE	Cr	53	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702126204S WG604063-04

Report Date/Time: Tuesday, February 28, 2017 11:28:34

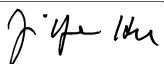
Page 3

Approved: March 01, 2017



Se-1 77 Upper, S, EEE Se-1 77
Ba 135 Upper, S, EEE Ba 135

Sample ID: L1702126204S WG604063-04
Report Date/Time: Tuesday, February 28, 2017 11:28:34
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702126204SD WG604063-05

Sample Date/Time: Tuesday, February 28, 2017 11:29:28

Number of Replicates: 3

Autosampler Position: 209

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	290732.2	2.4				ug/L	250104	Standard
|	Be	9	89931.2	2.6	47.5557	0.590	1.2	ug/L	7	Standard
|	Al	27	88362383.4	2.5	624.6004	8.733	1.4	ug/L	597	Standard
|	Sc	45	45481.5	1.4				ug/L	41681	Standard
|	Ti	47	153.0	1.7	0.4483	0.024	5.4	ug/L	86	Standard
|	V	51	321428.8	2.7	54.8503	1.245	2.3	ug/L	1740	Standard
|	Cr	52	563913.6	1.3	102.7961	0.851	0.8	ug/L	7178	Standard
|	Cr	53	95533.6	1.6	136.8043	3.460	2.5	ug/L	573	Standard
|	Mn	55	109908345.6	1.4	12318.8348	55.894	0.5	ug/L	3072	Standard
|	Co	59	407690.7	1.2	58.4307	0.256	0.4	ug/L	573	Standard
|	Ni	60	143977.2	1.0	97.1277	0.739	0.8	ug/L	264	Standard
|	Cu	65	69446.5	1.4	48.6845	0.337	0.7	ug/L	530	Standard
|	Zn	66	40878.7	1.7	49.9454	0.409	0.8	ug/L	252	Standard
>	Ge	72	605921.1	0.9				ug/L	641188	Standard
|	As	75	42252.1	1.9	51.7544	0.487	0.9	ug/L	-83	Standard
|	Se	82	3738.4	2.2	52.7017	0.703	1.3	ug/L	16	Standard
|	Se-1	77	9711.4	2.1	190.2419	4.342	2.3	ug/L	126	Standard
>	Ga	71	830.0	1.8				mg/L	70	Standard
|	Rb	85	12945.5	3.2				ug/L	33	Standard
|	Y	89	487504.2	1.1				ug/L	493982	Standard
>	Rh	103	3035.3	2.6				ug/L	17	Standard
|	Mo	98	2290.5	2.6	0.7756	0.030	3.9	ug/L	54	Standard
|	Ag	107	234399.6	0.7	47.2597	0.913	1.9	ug/L	137	Standard
|	Cd	111	72331.6	0.9	49.1989	0.940	1.9	mg/L	6	Standard
|	Cd	114	194942.3	0.4	48.3288	0.597	1.2	ug/L	20	Standard
>	In	115	698367.5	1.2				ug/L	755264	Standard
|	Sn	118	205.3	3.9	0.0980	0.009	9.5	ug/L	138	Standard
|	Sb	123	203438.5	1.4	49.1113	1.210	2.5	ug/L	391	Standard
|	Ba	135	1126596.0	0.4	681.6577	10.275	1.5	ug/L	32	Standard
|	Ce	140	6179.6	3.6				ug/L	42	Standard
>	Tb	159	1048008.7	0.6				ug/L	966827	Standard
|	Ho	165	96.7	26.5				ug/L	12	Standard
|	Tl	203	307867.6	1.7	54.2490	0.893	1.6	ug/L	19	Standard
|	Tl	205	702972.9	3.1	52.9713	1.266	2.4	ug/L	58	Standard
|	Pb	206	231765.7	1.4	51.7131	0.693	1.3	ug/L	464	Standard
|	Pb	207	197383.9	1.7	49.2208	0.718	1.5	ug/L	405	Standard
|	Pb	208	478820.9	0.9	54.7299	0.438	0.8	ug/L	876	Standard
|	U	238	653888.4	0.6	65.7291	0.599	0.9	ug/L	14	Standard
>	Bi	209	516506.3	0.9				ug/L	599146	Standard

Sample ID: L1702126204SD WG604063-05

Report Date/Time: Tuesday, February 28, 2017 11:31:39

Page 1

Approved: March 01, 2017

Na	23	1725.1	6.6	456.1569	32.985	7.2	mg/L	3	Standard
Mg	24	8505.7	1.9	157.1391	1.993	1.3	mg/L	30	Standard
K	39	550.0	5.1	6.4819	0.400	6.2	mg/L	10	Standard
Ca	43	1566.7	7.9	798.7010	67.961	8.5	mg/L	83	Standard
Fe	54	78.8	22.4	0.8650	0.265	30.7	mg/L	21	Standard
Fe	57	2982.0	1.3	136.0451	0.484	0.4	mg/L	240	Standard
Sc-1	45	45481.5	1.4				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	8.0	21.7				ug/L	5	Standard
Br	81	104442.2	2.4				ug/L	1587	Standard
P	31	55.0	36.4				ug/L	50	Standard
S	34	41.7	54.1				ug/L	8	Standard
Sr	88	438.3	2.6				ug/L	198	Standard
C	12	83.3	42.1				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	83.5	28.9				mg/L	6	Standard
Ho-1	165	96.7	26.5				mg/L	12	Standard
Er	166	66.7	34.6				mg/L	10	Standard
I	127	734226.2	7.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		116.245	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.500	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126204SD WG604063-05

Report Date/Time: Tuesday, February 28, 2017 11:31:39

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	92.467
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	86.207
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Cr 52 Upper, S, EEE	Cr	52	
Cr 53 Upper, S, EEE	Cr	53	

Sample ID: L1702126204SD WG604063-05

Report Date/Time: Tuesday, February 28, 2017 11:31:39

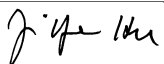
Page 3

Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702126204SD WG604063-05
Report Date/Time: Tuesday, February 28, 2017 11:31:39
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702120101

Sample Date/Time: Tuesday, February 28, 2017 11:32:34

Number of Replicates: 3

Autosampler Position: 210

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	259420.8	1.8				ug/L	250104	Standard
|	Be	9	90.0	106.0	0.0425	0.055	130.1	ug/L	7	Standard
|	Al	27	6173171.5	2.7	48.8895	0.578	1.2	ug/L	597	Standard
|	Sc	45	42673.4	3.5				ug/L	41681	Standard
|	Ti	47	958.0	3.0	6.0669	0.338	5.6	ug/L	86	Standard
|	V	51	-913.7	180.1	-0.4514	0.319	70.6	ug/L	1740	Standard
|	Cr	52	42329.1	4.9	7.7101	0.292	3.8	ug/L	7178	Standard
|	Cr	53	42638.9	24.3	69.1906	15.634	22.6	ug/L	573	Standard
|	Mn	55	695513.2	21.7	88.8749	19.099	21.5	ug/L	3072	Standard
|	Co	59	23631.4	1.7	3.8191	0.123	3.2	ug/L	573	Standard
|	Ni	60	19133.7	1.1	14.6196	0.272	1.9	ug/L	264	Standard
|	Cu	65	4099.6	4.8	2.9357	0.150	5.1	ug/L	530	Standard
|	Zn	66	19110.7	0.9	26.5558	0.402	1.5	ug/L	252	Standard
>	Ge	72	529633.2	2.2				ug/L	641188	Standard
|	As	75	-4160.7	5.2	-5.7815	0.196	3.4	ug/L	-83	Standard
|	Se	82	-1791.0	4.1	-29.2406	0.989	3.4	ug/L	16	Standard
|	Se-1	77	5606.4	10.7	124.7091	10.883	8.7	ug/L	126	Standard
>	Ga	71	370.0	21.7				mg/L	70	Standard
|	Rb	85	41714.0	0.9				ug/L	33	Standard
|	Y	89	418833.5	0.7				ug/L	493982	Standard
>	Rh	103	1243.4	12.1				ug/L	17	Standard
|	Mo	98	7547.5	1.5	2.9289	0.104	3.5	ug/L	54	Standard
|	Ag	107	192.7	23.8	0.0199	0.010	51.8	ug/L	137	Standard
|	Cd	111	203.6	11.7	0.1419	0.018	12.5	mg/L	6	Standard
|	Cd	114	510.6	6.2	0.1322	0.010	7.4	ug/L	20	Standard
>	In	115	621487.9	2.1				ug/L	755264	Standard
|	Sn	118	162.7	6.8	0.0725	0.013	17.8	ug/L	138	Standard
|	Sb	123	1806.6	5.7	0.4636	0.026	5.6	ug/L	391	Standard
|	Ba	135	141953.6	1.0	96.5154	2.662	2.8	ug/L	32	Standard
|	Ce	140	956.7	5.3				ug/L	42	Standard
>	Tb	159	913190.4	3.6				ug/L	966827	Standard
|	Ho	165	26.7	43.3				ug/L	12	Standard
|	Tl	203	1113.0	24.8	0.2026	0.058	28.5	ug/L	19	Standard
|	Tl	205	2458.5	20.2	0.1952	0.045	23.1	ug/L	58	Standard
|	Pb	206	686.0	8.6	0.0685	0.017	25.2	ug/L	464	Standard
|	Pb	207	579.0	6.8	0.0624	0.015	23.4	ug/L	405	Standard
|	Pb	208	1294.0	3.8	0.0693	0.010	14.5	ug/L	876	Standard
|	U	238	6859.6	2.7	0.7315	0.003	0.4	ug/L	14	Standard
>	Bi	209	485723.1	2.6				ug/L	599146	Standard

Sample ID: L1702120101

Report Date/Time: Tuesday, February 28, 2017 11:34:44

Page 1

Approved: March 01, 2017

Na	23	71.7	46.5	19.8404	9.819	49.5	mg/L	3	Standard
Mg	24	76271.5	1.6	1507.4528	50.862	3.4	mg/L	30	Standard
K	39	210.0	14.9	2.4926	0.399	16.0	mg/L	10	Standard
Ca	43	88.3	8.6	10.1245	5.942	58.7	mg/L	83	Standard
Fe	54	51.6	5.9	0.5266	0.035	6.7	mg/L	21	Standard
Fe	57	613.3	11.7	17.3643	2.722	15.7	mg/L	240	Standard
Sc-1	45	42673.4	3.5				mg/L	41681	Standard
Cl	35	3.3	69.3				ug/L	2	Standard
Kr	83	6.3	9.1				ug/L	5	Standard
Br	81	55397.8	0.7				ug/L	1587	Standard
P	31	85.0	29.4				ug/L	50	Standard
S	34	28.3	27.0				ug/L	8	Standard
Sr	88	320.0	12.2				ug/L	198	Standard
C	12	486.7	24.8				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	16.7	91.7				mg/L	3	Standard
Dy	164	34.8	14.3				mg/L	6	Standard
Ho-1	165	26.7	43.3				mg/L	12	Standard
Er	166	40.0	50.0				mg/L	10	Standard
I	127	751905.9	5.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		103.725	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		82.602	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702120101

Report Date/Time: Tuesday, February 28, 2017 11:34:44

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	82.287
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	81.069
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	
As 75 Lower	As	75	
Se 82 Lower	Se	82	

Sample ID: L1702120101

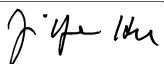
Report Date/Time: Tuesday, February 28, 2017 11:34:44

Page 3

Approved: March 01, 2017



Sample ID: L1702120101
Report Date/Time: Tuesday, February 28, 2017 11:34:44
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702120301

Sample Date/Time: Tuesday, February 28, 2017 11:35:39

Number of Replicates: 3

Autosampler Position: 211

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	280692.0	2.2				ug/L	250104	Standard
|	Be	9	145.0	9.1	0.0692	0.007	10.0	ug/L	7	Standard
|	Al	27	16372814.9	1.8	119.9072	3.710	3.1	ug/L	597	Standard
|	Sc	45	44135.9	3.9				ug/L	41681	Standard
|	Ti	47	774.7	5.6	4.6944	0.198	4.2	ug/L	86	Standard
|	V	51	-2906.4	37.4	-0.8353	0.209	25.0	ug/L	1740	Standard
|	Cr	52	45486.5	2.7	8.1665	0.172	2.1	ug/L	7178	Standard
|	Cr	53	59884.9	4.6	95.6148	1.724	1.8	ug/L	573	Standard
|	Mn	55	2611568.4	1.2	327.3363	11.544	3.5	ug/L	3072	Standard
|	Co	59	40090.3	1.1	6.3770	0.240	3.8	ug/L	573	Standard
|	Ni	60	24405.3	1.1	18.2825	0.596	3.3	ug/L	264	Standard
|	Cu	65	6690.5	3.1	4.9089	0.027	0.6	ug/L	530	Standard
|	Zn	66	104812.7	1.4	143.9666	3.743	2.6	ug/L	252	Standard
>	Ge	72	541749.5	3.3				ug/L	641188	Standard
|	As	75	-4658.3	10.4	-6.3260	0.485	7.7	ug/L	-83	Standard
|	Se	82	-1880.2	10.6	-29.9546	2.218	7.4	ug/L	16	Standard
|	Se-1	77	6512.7	5.0	142.0629	2.631	1.9	ug/L	126	Standard
>	Ga	71	380.0	13.2				mg/L	70	Standard
|	Rb	85	41702.3	3.1				ug/L	33	Standard
|	Y	89	431195.1	5.6				ug/L	493982	Standard
>	Rh	103	1755.1	18.2				ug/L	17	Standard
|	Mo	98	7709.3	2.6	2.8965	0.080	2.8	ug/L	54	Standard
|	Ag	107	156.3	2.9	0.0106	0.002	17.7	ug/L	137	Standard
|	Cd	111	478.0	8.2	0.3397	0.014	4.0	mg/L	6	Standard
|	Cd	114	1298.0	7.7	0.3399	0.019	5.6	ug/L	20	Standard
>	In	115	642047.6	4.7				ug/L	755264	Standard
|	Sn	118	202.3	8.2	0.1144	0.011	9.3	ug/L	138	Standard
|	Sb	123	1876.1	5.1	0.4662	0.011	2.3	ug/L	391	Standard
|	Ba	135	225367.2	1.3	148.4796	6.458	4.3	ug/L	32	Standard
|	Ce	140	14840.6	1.5				ug/L	42	Standard
>	Tb	159	953639.1	4.9				ug/L	966827	Standard
|	Ho	165	301.7	2.5				ug/L	12	Standard
|	Tl	203	644.7	14.8	0.1117	0.022	19.7	ug/L	19	Standard
|	Tl	205	1460.1	15.5	0.1122	0.020	18.1	ug/L	58	Standard
|	Pb	206	1290.1	0.5	0.2054	0.011	5.2	ug/L	464	Standard
|	Pb	207	1068.0	1.3	0.1861	0.007	3.8	ug/L	405	Standard
|	Pb	208	2500.4	1.8	0.2096	0.011	5.4	ug/L	876	Standard
|	U	238	5868.5	1.4	0.6125	0.026	4.3	ug/L	14	Standard
>	Bi	209	496618.9	3.8				ug/L	599146	Standard

Sample ID: L1702120301

Report Date/Time: Tuesday, February 28, 2017 11:37:50

Page 1

Approved: March 01, 2017

Na	23	131.7	11.6	35.5029	4.820	13.6	mg/L	3	Standard
Mg	24	76356.9	1.0	1459.6906	62.750	4.3	mg/L	30	Standard
K	39	193.3	15.2	2.2026	0.447	20.3	mg/L	10	Standard
Ca	43	103.3	7.4	16.7226	5.916	35.4	mg/L	83	Standard
Fe	54	113.4	8.9	1.4050	0.211	15.0	mg/L	21	Standard
Fe	57	706.7	9.0	21.3334	4.699	22.0	mg/L	240	Standard
Sc-1	45	44135.9	3.9				mg/L	41681	Standard
Cl	35	2.7	114.6				ug/L	2	Standard
Kr	83	6.3	32.9				ug/L	5	Standard
Br	81	57525.9	6.2				ug/L	1587	Standard
P	31	88.3	16.3				ug/L	50	Standard
S	34	21.7	35.3				ug/L	8	Standard
Sr	88	298.3	5.9				ug/L	198	Standard
C	12	666.7	14.8				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	16.7	34.6				mg/L	3	Standard
Dy	164	373.7	12.1				mg/L	6	Standard
Ho-1	165	301.7	2.5				mg/L	12	Standard
Er	166	270.0	32.9				mg/L	10	Standard
I	127	745087.3	9.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		112.230	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.491	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702120301

Report Date/Time: Tuesday, February 28, 2017 11:37:50

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	85.010
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	82.888
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702120301

Report Date/Time: Tuesday, February 28, 2017 11:37:50

Page 3

Approved: March 01, 2017

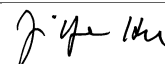


Zn 66 Upper, S, EEE	Zn	66
As 75 Lower	As	75
Se 82 Lower	Se	82
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702120301

Report Date/Time: Tuesday, February 28, 2017 11:37:50

Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702120301PS WG604209-01

Sample Date/Time: Tuesday, February 28, 2017 11:38:45

Number of Replicates: 3

Autosampler Position: 212

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	270095.0	5.0				ug/L	250104	Standard
|	Be	9	81314.4	2.4	46.3789	3.055	6.6	ug/L	7	Standard
|	Al	27	15302861.6	0.4	116.6214	5.945	5.1	ug/L	597	Standard
|	Sc	45	44112.5	0.2				ug/L	41681	Standard
|	Ti	47	771.0	4.5	4.6404	0.197	4.3	ug/L	86	Standard
|	V	51	285802.0	0.9	54.2398	1.217	2.2	ug/L	1740	Standard
|	Cr	52	303519.7	0.8	61.0502	1.713	2.8	ug/L	7178	Standard
|	Cr	53	91794.0	2.1	146.2680	6.000	4.1	ug/L	573	Standard
|	Mn	55	2891389.0	0.7	360.1625	9.703	2.7	ug/L	3072	Standard
|	Co	59	347333.9	1.5	55.3709	1.908	3.4	ug/L	573	Standard
|	Ni	60	87781.3	2.1	65.8188	2.711	4.1	ug/L	264	Standard
|	Cu	65	65804.3	0.9	51.3320	1.504	2.9	ug/L	530	Standard
|	Zn	66	134540.1	1.4	183.7891	6.158	3.4	ug/L	252	Standard
>	Ge	72	544966.9	2.0				ug/L	641188	Standard
|	As	75	31276.8	1.3	42.6156	0.933	2.2	ug/L	-83	Standard
|	Se	82	1051.2	20.3	16.2853	3.029	18.6	ug/L	16	Standard
|	Se-1	77	8439.7	2.0	183.8269	7.264	4.0	ug/L	126	Standard
>	Ga	71	326.7	7.7				mg/L	70	Standard
|	Rb	85	39986.0	1.6				ug/L	33	Standard
|	Y	89	435520.7	2.0				ug/L	493982	Standard
>	Rh	103	1950.1	11.9				ug/L	17	Standard
|	Mo	98	7259.7	3.7	2.7329	0.133	4.9	ug/L	54	Standard
|	Ag	107	200618.1	2.0	44.1204	1.245	2.8	ug/L	137	Standard
|	Cd	111	60370.7	0.7	44.7895	0.789	1.8	mg/L	6	Standard
|	Cd	114	166608.8	0.2	45.0530	0.432	1.0	ug/L	20	Standard
>	In	115	640234.6	1.1				ug/L	755264	Standard
|	Sn	118	209.3	5.9	0.1240	0.017	13.8	ug/L	138	Standard
|	Sb	123	176627.5	1.5	46.5075	1.120	2.4	ug/L	391	Standard
|	Ba	135	289288.4	1.7	190.9198	5.040	2.6	ug/L	32	Standard
|	Ce	140	14161.6	2.9				ug/L	42	Standard
>	Tb	159	970095.9	0.2				ug/L	966827	Standard
|	Ho	165	296.7	7.0				ug/L	12	Standard
|	Tl	203	269443.5	1.7	49.0380	1.259	2.6	ug/L	19	Standard
|	Tl	205	622543.2	1.9	48.4577	1.286	2.7	ug/L	58	Standard
|	Pb	206	208011.7	1.5	47.9314	1.199	2.5	ug/L	464	Standard
|	Pb	207	183643.5	1.9	47.2977	1.364	2.9	ug/L	405	Standard
|	Pb	208	424695.7	1.0	50.1290	0.959	1.9	ug/L	876	Standard
|	U	238	559033.4	1.3	58.0367	1.187	2.0	ug/L	14	Standard
>	Bi	209	500142.5	1.0				ug/L	599146	Standard

Sample ID: L1702120301PS WG604209-01

Report Date/Time: Tuesday, February 28, 2017 11:40:55

Page 1

Approved: March 01, 2017

Na	23	106.7	32.9	28.6235	9.579	33.5	mg/L	3	Standard
Mg	24	73724.0	1.7	1408.5790	25.678	1.8	mg/L	30	Standard
K	39	168.3	16.4	1.8785	0.344	18.3	mg/L	10	Standard
Ca	43	91.7	31.0	10.1929	15.711	154.1	mg/L	83	Standard
Fe	54	111.4	13.6	1.3713	0.219	15.9	mg/L	21	Standard
Fe	57	663.3	4.9	18.9635	1.651	8.7	mg/L	240	Standard
Sc-1	45	44112.5	0.2				mg/L	41681	Standard
Cl	35	3.3	91.7				ug/L	2	Standard
Kr	83	7.3	28.4				ug/L	5	Standard
Br	81	55130.2	2.3				ug/L	1587	Standard
P	31	65.0	35.3				ug/L	50	Standard
S	34	20.0	0.0				ug/L	8	Standard
Sr	88	318.3	9.1				ug/L	198	Standard
C	12	366.7	24.4				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	336.4	8.6				mg/L	6	Standard
Ho-1	165	296.7	7.0				mg/L	12	Standard
Er	166	283.3	10.8				mg/L	10	Standard
I	127	714067.1	9.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		107.993	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.993	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702120301PS WG604209-01

Report Date/Time: Tuesday, February 28, 2017 11:40:55

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	84.770
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	83.476
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Cr 53 Upper, S, EEE	Cr	53	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702120301PS WG604209-01

Report Date/Time: Tuesday, February 28, 2017 11:40:55

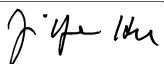
Page 3

Approved: March 01, 2017



Zn 66 Upper, S, EEE	Zn	66
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702120301PS WG604209-01
Report Date/Time: Tuesday, February 28, 2017 11:40:55
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702120301SDL WG604209-02

Sample Date/Time: Tuesday, February 28, 2017 11:41:50

Number of Replicates: 3

Autosampler Position: 213

Sample Description: 5

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	255790.6	3.0				ug/L	250104	Standard
|	Be	9	55.0	27.3	0.0229	0.009	41.5	ug/L	7	Standard
|	Al	27	3091685.6	0.9	24.8468	0.786	3.2	ug/L	597	Standard
|	Sc	45	42763.6	1.8				ug/L	41681	Standard
|	Ti	47	225.0	4.4	1.0373	0.090	8.6	ug/L	86	Standard
|	V	51	-2638.1	19.5	-0.7825	0.094	12.0	ug/L	1740	Standard
|	Cr	52	14567.7	1.2	1.7880	0.050	2.8	ug/L	7178	Standard
|	Cr	53	27648.6	3.7	43.7378	2.357	5.4	ug/L	573	Standard
|	Mn	55	494396.3	0.8	61.7284	1.375	2.2	ug/L	3072	Standard
|	Co	59	8389.7	2.1	1.2864	0.050	3.9	ug/L	573	Standard
|	Ni	60	5028.2	1.2	3.6265	0.092	2.5	ug/L	264	Standard
|	Cu	65	2084.8	2.2	1.2710	0.059	4.7	ug/L	530	Standard
|	Zn	66	23311.6	0.3	31.7568	0.576	1.8	ug/L	252	Standard
>	Ge	72	541397.1	1.6				ug/L	641188	Standard
|	As	75	-234.1	31.8	-0.2795	0.108	38.6	ug/L	-83	Standard
|	Se	82	-122.0	17.3	-2.1643	0.368	17.0	ug/L	16	Standard
|	Se-1	77	2100.1	5.4	44.3522	3.298	7.4	ug/L	126	Standard
>	Ga	71	118.3	20.0				mg/L	70	Standard
|	Rb	85	8288.9	3.8				ug/L	33	Standard
|	Y	89	408474.8	0.9				ug/L	493982	Standard
>	Rh	103	641.7	6.8				ug/L	17	Standard
|	Mo	98	1507.2	3.1	0.5568	0.022	4.0	ug/L	54	Standard
|	Ag	107	1637.9	160.9	0.3411	0.587	172.2	ug/L	137	Standard
|	Cd	111	100.7	4.8	0.0619	0.004	5.8	mg/L	6	Standard
|	Cd	114	456.3	26.3	0.1146	0.033	28.6	ug/L	20	Standard
>	In	115	633611.8	1.5				ug/L	755264	Standard
|	Sn	118	1567.4	12.3	1.8136	0.211	11.6	ug/L	138	Standard
|	Sb	123	851.3	16.3	0.1997	0.033	16.7	ug/L	391	Standard
|	Ba	135	46338.1	0.8	30.8752	0.242	0.8	ug/L	32	Standard
|	Ce	140	3093.6	3.2				ug/L	42	Standard
>	Tb	159	947577.5	1.7				ug/L	966827	Standard
|	Ho	165	55.0	32.8				ug/L	12	Standard
|	Tl	203	328.7	4.0	0.0517	0.003	6.7	ug/L	19	Standard
|	Tl	205	751.7	11.2	0.0548	0.007	12.4	ug/L	58	Standard
|	Pb	206	740.0	2.0	0.0728	0.007	9.2	ug/L	464	Standard
|	Pb	207	627.3	4.7	0.0672	0.010	15.5	ug/L	405	Standard
|	Pb	208	1462.0	3.0	0.0812	0.008	10.2	ug/L	876	Standard
|	U	238	1245.1	3.4	0.1251	0.006	5.2	ug/L	14	Standard
>	Bi	209	510144.8	2.0				ug/L	599146	Standard

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:44:01

Page 1

Approved: March 01, 2017

Na	23	20.0	25.0	5.1408	1.356	26.4	mg/L	3	Standard
Mg	24	14658.8	1.5	288.5914	9.753	3.4	mg/L	30	Standard
K	39	73.3	20.8	0.7098	0.188	26.5	mg/L	10	Standard
Ca	43	80.0	16.5	5.2385	8.409	160.5	mg/L	83	Standard
Fe	54	29.2	44.6	0.1921	0.205	106.8	mg/L	21	Standard
Fe	57	396.7	8.2	5.6405	2.157	38.2	mg/L	240	Standard
Sc-1	45	42763.6	1.8				mg/L	41681	Standard
Cl	35	3.3	91.7				ug/L	2	Standard
Kr	83	3.3	62.4				ug/L	5	Standard
Br	81	11864.6	2.6				ug/L	1587	Standard
P	31	71.7	10.7				ug/L	50	Standard
S	34	33.3	17.3				ug/L	8	Standard
Sr	88	268.3	4.3				ug/L	198	Standard
C	12	120.0	44.1				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	63.2	47.3				mg/L	6	Standard
Ho-1	165	55.0	32.8				mg/L	12	Standard
Er	166	73.3	55.1				mg/L	10	Standard
I	127	187463.8	4.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		102.274	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.437	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:44:01

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.893
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.145
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	
Se 82 Lower	Se	82	

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:44:01

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702120301SDL WG604209-02

Sample Date/Time: Tuesday, February 28, 2017 11:44:56

Number of Replicates: 3

Autosampler Position: 214

Sample Description: 25

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	355202.4	2.8				ug/L	250104	Standard
|	Be	9	15.0	66.7	-0.0038	0.004	107.7	ug/L	7	Standard
|	Al	27	133830.9	48.3	0.7647	0.367	48.0	ug/L	597	Standard
|	Sc	45	63765.8	4.6				ug/L	41681	Standard
|	Ti	47	93.3	5.1	-0.0366	0.014	38.2	ug/L	86	Standard
|	V	51	273.9	112.6	-0.2398	0.042	17.5	ug/L	1740	Standard
|	Cr	52	5476.7	9.8	-0.4439	0.085	19.1	ug/L	7178	Standard
|	Cr	53	6864.9	9.1	6.7204	0.763	11.4	ug/L	573	Standard
|	Mn	55	25503.9	31.4	1.9034	0.739	38.8	ug/L	3072	Standard
|	Co	59	838.7	13.1	0.0312	0.014	45.1	ug/L	573	Standard
|	Ni	60	415.7	9.1	0.0388	0.029	75.8	ug/L	264	Standard
|	Cu	65	883.0	8.3	0.0999	0.025	24.5	ug/L	530	Standard
|	Zn	66	1400.1	5.2	0.9741	0.138	14.2	ug/L	252	Standard
>	Ge	72	790784.7	6.3				ug/L	641188	Standard
|	As	75	0.9	7049.7	0.0446	0.057	127.3	ug/L	-83	Standard
|	Se	82	6.3	231.2	-0.1533	0.168	109.7	ug/L	16	Standard
|	Se-1	77	533.3	12.1	5.8395	0.996	17.1	ug/L	126	Standard
>	Ga	71	73.3	7.9				mg/L	70	Standard
|	Rb	85	430.0	16.0				ug/L	33	Standard
|	Y	89	632892.7	3.4				ug/L	493982	Standard
>	Rh	103	333.3	7.1				ug/L	17	Standard
|	Mo	98	76.9	22.1	-0.0021	0.004	180.2	ug/L	54	Standard
|	Ag	107	150.7	21.6	-0.0024	0.004	173.2	ug/L	137	Standard
|	Cd	111	11.2	41.9	-0.0083	0.002	25.2	mg/L	6	Standard
|	Cd	114	40.6	55.2	-0.0030	0.004	128.6	ug/L	20	Standard
>	In	115	992665.3	5.2				ug/L	755264	Standard
|	Sn	118	102.0	25.7	-0.0529	0.020	37.5	ug/L	138	Standard
|	Sb	123	134.2	19.1	-0.0038	0.004	115.3	ug/L	391	Standard
|	Ba	135	2356.9	39.6	0.9771	0.396	40.5	ug/L	32	Standard
|	Ce	140	196.7	46.1				ug/L	42	Standard
>	Tb	159	1447718.1	2.8				ug/L	966827	Standard
|	Ho	165	16.7	96.4				ug/L	12	Standard
|	Tl	203	248.7	25.6	0.0231	0.009	39.0	ug/L	19	Standard
|	Tl	205	578.3	20.5	0.0273	0.007	27.3	ug/L	58	Standard
|	Pb	206	686.0	6.2	0.0098	0.009	93.1	ug/L	464	Standard
|	Pb	207	539.3	6.0	0.0002	0.007	3855.2	ug/L	405	Standard
|	Pb	208	1304.0	1.7	0.0133	0.003	22.6	ug/L	876	Standard
|	U	238	124.7	93.4	0.0071	0.008	120.2	ug/L	14	Standard
>	Bi	209	759023.5	4.5				ug/L	599146	Standard

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:47:07

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.1512	0.566	374.2	mg/L	3	Standard
Mg	24	698.4	37.3	8.6297	3.088	35.8	mg/L	30	Standard
K	39	25.0	34.6	-0.0246	0.075	302.8	mg/L	10	Standard
Ca	43	75.0	11.5	-11.8096	2.623	22.2	mg/L	83	Standard
Fe	54	19.3	25.9	-0.0554	0.044	79.0	mg/L	21	Standard
Fe	57	350.0	3.8	-3.1310	1.011	32.3	mg/L	240	Standard
Sc-1	45	63765.8	4.6				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	5.0	87.2				ug/L	5	Standard
Br	81	1156.7	23.6				ug/L	1587	Standard
P	31	46.7	24.7				ug/L	50	Standard
S	34	16.7	96.4				ug/L	8	Standard
Sr	88	281.7	22.2				ug/L	198	Standard
C	12	20.0	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	32.1	47.6				mg/L	6	Standard
Ho-1	165	16.7	96.4				mg/L	12	Standard
Er	166	26.7	78.1				mg/L	10	Standard
I	127	15524.8	20.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		142.022	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		123.331	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:47:07

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	131.433
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	126.684
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Cr 52 Lower	Cr	52	
Ge 72 Int Std for sample	Ge	72	Rerun sample

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:47:07

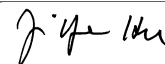
Page 3

Approved: March 01, 2017



In 115 Int Std for sample	In	115	Rerun sample
Bi 209 Int Std for sample	Bi	209	Rerun sample

Sample ID: L1702120301SDL WG604209-02
Report Date/Time: Tuesday, February 28, 2017 11:47:07
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 11:48:02

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	258139.4	2.1				ug/L	250104	Standard
|	Be	9	83151.0	2.7	49.5317	1.517	3.1	ug/L	7	Standard
|	Al	27	5794730.4	3.5	46.1192	0.981	2.1	ug/L	597	Standard
|	Sc	45	45444.8	3.3				ug/L	41681	Standard
|	Ti	47	18630.5	3.2	112.2853	3.176	2.8	ug/L	86	Standard
|	V	51	306097.9	2.8	53.0937	1.237	2.3	ug/L	1740	Standard
|	Cr	52	285369.5	2.6	52.2904	1.125	2.2	ug/L	7178	Standard
|	Cr	53	39849.1	4.1	57.5042	2.486	4.3	ug/L	573	Standard
|	Mn	55	460023.0	2.8	52.1113	1.244	2.4	ug/L	3072	Standard
|	Co	59	354023.0	2.8	51.5729	1.199	2.3	ug/L	573	Standard
|	Ni	60	75803.2	1.7	51.9023	0.519	1.0	ug/L	264	Standard
|	Cu	65	72581.9	3.1	51.7496	1.373	2.7	ug/L	530	Standard
|	Zn	66	40092.0	2.1	49.7979	0.806	1.6	ug/L	252	Standard
>	Ge	72	596009.6	0.8				ug/L	641188	Standard
|	As	75	38686.6	2.1	48.1781	0.665	1.4	ug/L	-83	Standard
|	Se	82	3224.0	3.0	46.1768	1.066	2.3	ug/L	16	Standard
|	Se-1	77	2709.9	2.5	52.3364	1.347	2.6	ug/L	126	Standard
>	Ga	71	73.3	14.2				mg/L	70	Standard
|	Rb	85	636.7	4.8				ug/L	33	Standard
|	Y	89	425407.1	2.7				ug/L	493982	Standard
>	Rh	103	320.0	5.6				ug/L	17	Standard
|	Mo	98	262849.3	3.6	91.7423	1.556	1.7	ug/L	54	Standard
|	Ag	107	239962.1	2.6	48.5867	0.333	0.7	ug/L	137	Standard
|	Cd	111	69236.7	3.2	47.2909	0.698	1.5	mg/L	6	Standard
|	Cd	114	193755.6	4.1	48.2323	1.050	2.2	ug/L	20	Standard
>	In	115	695252.1	1.9				ug/L	755264	Standard
|	Sn	118	43106.6	3.7	48.7156	0.999	2.1	ug/L	138	Standard
|	Sb	123	201815.0	1.8	48.9292	0.144	0.3	ug/L	391	Standard
|	Ba	135	85555.3	2.5	51.9625	0.317	0.6	ug/L	32	Standard
|	Ce	140	55.0	9.1				ug/L	42	Standard
>	Tb	159	997102.6	2.9				ug/L	966827	Standard
|	Ho	165	28.3	10.2				ug/L	12	Standard
|	Tl	203	312955.2	2.4	50.3827	0.303	0.6	ug/L	19	Standard
|	Tl	205	739536.6	3.9	50.9109	1.027	2.0	ug/L	58	Standard
|	Pb	206	243624.5	2.5	49.6615	0.586	1.2	ug/L	464	Standard
|	Pb	207	218689.7	2.8	49.8240	0.582	1.2	ug/L	405	Standard
|	Pb	208	482021.8	3.0	50.3282	0.757	1.5	ug/L	876	Standard
|	U	238	562527.6	2.8	51.6593	0.651	1.3	ug/L	14	Standard
>	Bi	209	565284.1	1.9				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:50:13

Page 1

Approved: March 01, 2017

Na	23	11.7	49.5	2.5864	1.473	56.9	mg/L	3	Standard
Mg	24	350.0	3.8	5.9634	0.450	7.5	mg/L	30	Standard
K	39	613.3	6.2	7.2547	0.223	3.1	mg/L	10	Standard
Ca	43	78.3	26.6	1.6267	11.599	713.0	mg/L	83	Standard
Fe	54	282.8	15.2	3.7606	0.736	19.6	mg/L	21	Standard
Fe	57	413.3	6.7	5.1827	0.776	15.0	mg/L	240	Standard
Sc-1	45	45444.8	3.3				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	7.0	14.3				ug/L	5	Standard
Br	81	1340.1	15.1				ug/L	1587	Standard
P	31	53.3	23.6				ug/L	50	Standard
S	34	28.3	71.3				ug/L	8	Standard
Sr	88	275.0	14.9				ug/L	198	Standard
C	12	20.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	10.0					mg/L	3	Standard
Dy	164	18.9	53.0				mg/L	6	Standard
Ho-1	165	28.3	10.2				mg/L	12	Standard
Er	166	23.3	24.7				mg/L	10	Standard
I	127	12420.1	11.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	99.063		
Al	27	92.238		
Sc	45			
Ti	47	112.285		
V	51	106.187		
Cr	52	104.581		
Cr	53			
Mn	55	104.223		
Co	59	103.146		
Ni	60	103.805		
Cu	65	103.499		
Zn	66	99.596		
Ge	72		92.954	
As	75	96.356		
Se	82	92.354		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:50:13

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	91.742	
[	Ag	107	97.173	
[	Cd	111	94.582	
[	Cd	114		
>	In	115		92.054
[	Sn	118	97.431	
[	Sb	123	97.858	
[	Ba	135	103.925	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	100.765	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	100.656	
[	U	238	103.319	
>	Bi	209		94.348
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Ti	47	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:50:13

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 11:51:07

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	252188.1	0.3				ug/L	250104	Standard
|	Be	9	30.0	44.1	0.0080	0.008	101.2	ug/L	7	Standard
|	Al	27	2922.2	126.4	0.0177	0.030	170.7	ug/L	597	Standard
|	Sc	45	44826.2	0.8				ug/L	41681	Standard
|	Ti	47	86.7	13.5	0.0690	0.066	96.0	ug/L	86	Standard
|	V	51	843.8	14.9	-0.1272	0.023	17.9	ug/L	1740	Standard
|	Cr	52	6440.0	5.4	0.0056	0.065	1168.9	ug/L	7178	Standard
|	Cr	53	3233.7	6.7	3.9299	0.281	7.2	ug/L	573	Standard
|	Mn	55	24101.3	151.3	2.4716	4.199	169.9	ug/L	3072	Standard
|	Co	59	776.7	75.9	0.0535	0.087	162.2	ug/L	573	Standard
|	Ni	60	285.7	62.0	0.0214	0.123	572.2	ug/L	264	Standard
|	Cu	65	847.7	13.8	0.2394	0.082	34.4	ug/L	530	Standard
|	Zn	66	548.0	32.9	0.3436	0.226	65.7	ug/L	252	Standard
>	Ge	72	587431.1	1.3				ug/L	641188	Standard
|	As	75	31.7	242.7	0.0824	0.096	117.0	ug/L	-83	Standard
|	Se	82	28.9	17.5	0.1946	0.079	40.7	ug/L	16	Standard
|	Se-1	77	293.7	6.9	3.7294	0.397	10.6	ug/L	126	Standard
>	Ga	71	66.7	21.7				mg/L	70	Standard
|	Rb	85	111.7	50.9				ug/L	33	Standard
|	Y	89	421680.0	1.7				ug/L	493982	Standard
>	Rh	103	335.0	20.9				ug/L	17	Standard
|	Mo	98	259.4	32.3	0.0715	0.029	40.8	ug/L	54	Standard
|	Ag	107	203.7	57.5	0.0184	0.024	131.6	ug/L	137	Standard
|	Cd	111	30.0	134.6	0.0073	0.028	387.6	mg/L	6	Standard
|	Cd	114	100.0	113.8	0.0153	0.029	188.6	ug/L	20	Standard
>	In	115	680634.2	1.3				ug/L	755264	Standard
|	Sn	118	124.0	8.1	0.0099	0.012	125.4	ug/L	138	Standard
|	Sb	123	1067.9	15.0	0.2384	0.043	18.0	ug/L	391	Standard
|	Ba	135	141.3	118.1	0.0602	0.103	172.0	ug/L	32	Standard
|	Ce	140	30.0	28.9				ug/L	42	Standard
>	Tb	159	969957.5	0.2				ug/L	966827	Standard
|	Ho	165	16.7	62.4				ug/L	12	Standard
|	Tl	203	134.0	76.3	0.0147	0.016	110.7	ug/L	19	Standard
|	Tl	205	295.0	70.8	0.0178	0.014	80.0	ug/L	58	Standard
|	Pb	206	489.3	10.1	0.0061	0.009	144.0	ug/L	464	Standard
|	Pb	207	423.7	11.0	0.0060	0.010	159.1	ug/L	405	Standard
|	Pb	208	911.7	13.0	0.0079	0.011	144.8	ug/L	876	Standard
|	U	238	91.3	85.1	0.0067	0.007	105.2	ug/L	14	Standard
>	Bi	209	559605.7	1.5				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:53:18

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0294	0.777	2638.4	mg/L	3	Standard
Mg	24	41.7	18.3	0.2433	0.138	56.7	mg/L	30	Standard
K	39	20.0	25.0	0.0055	0.060	1107.7	mg/L	10	Standard
Ca	43	60.0	30.0	-7.7778	9.976	128.3	mg/L	83	Standard
Fe	54	29.3	17.5	0.1699	0.071	41.8	mg/L	21	Standard
Fe	57	341.7	11.8	1.7934	2.219	123.7	mg/L	240	Standard
Sc-1	45	44826.2	0.8				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	4.0	25.0				ug/L	5	Standard
Br	81	1503.4	13.1				ug/L	1587	Standard
P	31	71.7	24.5				ug/L	50	Standard
S	34	35.0	51.5				ug/L	8	Standard
Sr	88	233.3	11.8				ug/L	198	Standard
C	12	26.7	21.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	10.0	100.0				mg/L	3	Standard
Dy	164	22.9	23.5				mg/L	6	Standard
Ho-1	165	16.7	62.4				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	10472.0	3.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		91.616	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:53:18

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.119
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.401
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 7	Mn	55	
QC Std 7	Sb	123	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:53:18

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702125001

Sample Date/Time: Tuesday, February 28, 2017 11:54:14

Number of Replicates: 3

Autosampler Position: 215

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	273098.7	6.2				ug/L	250104	Standard
|	Be	9	2546.9	3.3	1.4262	0.072	5.1	ug/L	7	Standard
|	Al	27	6976717.7	6.6	52.4915	1.103	2.1	ug/L	597	Standard
|	Sc	45	48547.9	6.5				ug/L	41681	Standard
|	Ti	47	1970.8	7.1	10.7171	0.275	2.6	ug/L	86	Standard
|	V	51	6178.1	3.1	0.7347	0.036	4.9	ug/L	1740	Standard
|	Cr	52	16184.3	6.3	1.6254	0.010	0.6	ug/L	7178	Standard
|	Cr	53	6171.3	5.8	7.6166	0.634	8.3	ug/L	573	Standard
|	Mn	55	3509559.2	7.6	374.3886	3.725	1.0	ug/L	3072	Standard
|	Co	59	468873.9	7.3	64.0236	0.470	0.7	ug/L	573	Standard
|	Ni	60	66980.7	8.1	42.9317	0.586	1.4	ug/L	264	Standard
|	Cu	65	9027.4	5.6	5.7023	0.089	1.6	ug/L	530	Standard
|	Zn	66	168355.2	7.0	197.0195	2.079	1.1	ug/L	252	Standard
>	Ge	72	635872.5	6.7				ug/L	641188	Standard
|	As	75	863.6	9.1	1.0491	0.055	5.2	ug/L	-83	Standard
|	Se	82	113.8	4.6	1.3096	0.030	2.3	ug/L	16	Standard
|	Se-1	77	406.7	4.0	5.4193	0.356	6.6	ug/L	126	Standard
>	Ga	71	448.3	6.8				mg/L	70	Standard
|	Rb	85	10974.0	7.4				ug/L	33	Standard
|	Y	89	500753.6	5.9				ug/L	493982	Standard
>	Rh	103	293.3	9.4				ug/L	17	Standard
|	Mo	98	397.0	10.3	0.1122	0.008	7.1	ug/L	54	Standard
|	Ag	107	276.3	6.2	0.0302	0.005	15.9	ug/L	137	Standard
|	Cd	111	581.5	5.7	0.3681	0.004	1.2	mg/L	6	Standard
|	Cd	114	1724.9	6.6	0.4028	0.022	5.4	ug/L	20	Standard
>	In	115	723494.6	4.6				ug/L	755264	Standard
|	Sn	118	256.0	10.6	0.1447	0.018	12.5	ug/L	138	Standard
|	Sb	123	950.2	10.0	0.1954	0.027	13.6	ug/L	391	Standard
|	Ba	135	35427.4	5.3	20.6581	0.217	1.0	ug/L	32	Standard
|	Ce	140	66089.1	5.1				ug/L	42	Standard
>	Tb	159	1022541.1	3.2				ug/L	966827	Standard
|	Ho	165	2571.9	2.0				ug/L	12	Standard
|	Tl	203	219.7	29.9	0.0266	0.009	33.7	ug/L	19	Standard
|	Tl	205	560.0	26.8	0.0340	0.009	25.5	ug/L	58	Standard
|	Pb	206	8288.6	5.7	1.5197	0.045	3.0	ug/L	464	Standard
|	Pb	207	6840.2	6.5	1.3969	0.038	2.7	ug/L	405	Standard
|	Pb	208	15686.5	4.3	1.4769	0.015	1.0	ug/L	876	Standard
|	U	238	1240.1	7.7	0.1072	0.012	11.0	ug/L	14	Standard
>	Bi	209	592573.4	3.9				ug/L	599146	Standard

Sample ID: L1702125001

Report Date/Time: Tuesday, February 28, 2017 11:56:25

Page 1

Approved: March 01, 2017

Na	23	33.3	31.2	7.8997	3.063	38.8	mg/L	3	Standard
Mg	24	936.7	2.6	15.7552	0.654	4.1	mg/L	30	Standard
K	39	275.0	1.8	2.9171	0.254	8.7	mg/L	10	Standard
Ca	43	78.3	40.5	-1.6683	13.016	780.2	mg/L	83	Standard
Fe	54	152.5	9.8	1.7773	0.285	16.0	mg/L	21	Standard
Fe	57	391.7	6.0	2.8408	1.150	40.5	mg/L	240	Standard
Sc-1	45	48547.9	6.5				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	8.0	12.5				ug/L	5	Standard
Br	81	7385.1	2.6				ug/L	1587	Standard
P	31	76.7	42.4				ug/L	50	Standard
S	34	31.7	48.2				ug/L	8	Standard
Sr	88	263.3	18.0				ug/L	198	Standard
C	12	70.0	14.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	3823.8	3.2				mg/L	6	Standard
Ho-1	165	2571.9	2.0				mg/L	12	Standard
Er	166	2436.9	11.4				mg/L	10	Standard
I	127	50719.8	3.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		109.194	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		99.171	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125001

Report Date/Time: Tuesday, February 28, 2017 11:56:25

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	95.794
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	98.903
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Mn 55 Upper, S, EEE	Mn	55	
Zn 66 Upper, S, EEE	Zn	66	

Sample ID: L1702125001

Report Date/Time: Tuesday, February 28, 2017 11:56:25

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702125304

Sample Date/Time: Tuesday, February 28, 2017 11:57:19

Number of Replicates: 3

Autosampler Position: 216

Sample Description: 1

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	416284.0	1.8				ug/L	250104	Standard
|	Be	9	31.7	24.1	0.0014	0.003	186.0	ug/L	7	Standard
|	Al	27	42941305.5	1.3	212.0526	6.603	3.1	ug/L	597	Standard
|	Sc	45	41259.4	0.7				ug/L	41681	Standard
|	Ti	47	865.4	4.2	5.5206	0.204	3.7	ug/L	86	Standard
|	V	51	280.5	351.9	-0.2205	0.197	89.5	ug/L	1740	Standard
|	Cr	52	19143.8	1.7	2.8826	0.089	3.1	ug/L	7178	Standard
|	Cr	53	41226.0	3.2	68.1213	1.573	2.3	ug/L	573	Standard
|	Mn	55	25044428.8	1.3	3260.9751	63.537	1.9	ug/L	3072	Standard
|	Co	59	54956.5	0.8	9.0990	0.159	1.7	ug/L	573	Standard
|	Ni	60	134679.6	2.8	105.5826	4.013	3.8	ug/L	264	Standard
|	Cu	65	6183.9	3.0	4.6982	0.197	4.2	ug/L	530	Standard
|	Zn	66	14759.9	1.4	20.7475	0.432	2.1	ug/L	252	Standard
>	Ge	72	521613.0	1.1				ug/L	641188	Standard
|	As	75	3847.1	14.2	5.5179	0.836	15.2	ug/L	-83	Standard
|	Se	82	384.5	5.3	6.0993	0.403	6.6	ug/L	16	Standard
|	Se-1	77	17018.2	2.9	389.5546	7.859	2.0	ug/L	126	Standard
>	Ga	71	1071.7	5.4				mg/L	70	Standard
|	Rb	85	961107.8	1.0				ug/L	33	Standard
|	Y	89	436115.4	1.8				ug/L	493982	Standard
>	Rh	103	2105.1	8.7				ug/L	17	Standard
|	Mo	98	2461.0	1.6	1.0391	0.020	1.9	ug/L	54	Standard
|	Ag	107	159.0	6.5	0.0160	0.002	14.2	ug/L	137	Standard
|	Cd	111	24.5	4.8	0.0070	0.001	18.6	mg/L	6	Standard
|	Cd	114	76.5	49.4	0.0133	0.011	85.1	ug/L	20	Standard
>	In	115	563722.4	1.5				ug/L	755264	Standard
|	Sn	118	194.0	5.1	0.1376	0.017	12.4	ug/L	138	Standard
|	Sb	123	1251.9	0.9	0.3480	0.006	1.8	ug/L	391	Standard
|	Ba	135	13060319.9	1.0	9789.4707	71.230	0.7	ug/L	32	Standard
|	Ce	140	1118.4	7.4				ug/L	42	Standard
>	Tb	159	932273.4	1.6				ug/L	966827	Standard
|	Ho	165	23.3	53.9				ug/L	12	Standard
|	Tl	203	192.7	15.8	0.0331	0.007	20.9	ug/L	19	Standard
|	Tl	205	516.7	21.5	0.0433	0.011	24.3	ug/L	58	Standard
|	Pb	206	531.7	2.2	0.0451	0.004	8.9	ug/L	464	Standard
|	Pb	207	440.3	0.8	0.0378	0.002	4.3	ug/L	405	Standard
|	Pb	208	1113.0	4.9	0.0616	0.009	14.6	ug/L	876	Standard
|	U	238	2984.0	1.2	0.3513	0.002	0.7	ug/L	14	Standard
>	Bi	209	438957.7	1.5				ug/L	599146	Standard

Sample ID: L1702125304

Report Date/Time: Tuesday, February 28, 2017 11:59:30

Page 1

Approved: March 01, 2017

Na	23	4217.3	3.8	1229.4223	38.325	3.1	mg/L	3	Standard
Mg	24	3558.8	2.4	72.1804	1.502	2.1	mg/L	30	Standard
K	39	9898.2	4.8	133.0768	5.425	4.1	mg/L	10	Standard
Ca	43	3983.9	0.6	2311.2529	25.186	1.1	mg/L	83	Standard
Fe	54	410.0	15.3	6.1321	1.016	16.6	mg/L	21	Standard
Fe	57	7008.3	1.5	377.7489	8.516	2.3	mg/L	240	Standard
Sc-1	45	41259.4	0.7				mg/L	41681	Standard
Cl	35	2.7	114.6				ug/L	2	Standard
Kr	83	7.0	24.7				ug/L	5	Standard
Br	81	97721.3	4.9				ug/L	1587	Standard
P	31	95.0	19.0				ug/L	50	Standard
S	34	28.3	66.8				ug/L	8	Standard
Sr	88	453.3	2.8				ug/L	198	Standard
C	12	370.0	27.4				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	16.7	91.7				mg/L	3	Standard
Dy	164	41.7	27.3				mg/L	6	Standard
Ho-1	165	23.3	53.9				mg/L	12	Standard
Er	166	33.3	17.3				mg/L	10	Standard
I	127	467145.7	14.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		166.445	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		81.351	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125304

Report Date/Time: Tuesday, February 28, 2017 11:59:30

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	74.639
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	73.264
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702125304

Report Date/Time: Tuesday, February 28, 2017 11:59:30

Page 3

Approved: March 01, 2017



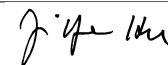
Ni 60 Upper, S, EEE	Ni	60
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702125304

Report Date/Time: Tuesday, February 28, 2017 11:59:30

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702125306

Sample Date/Time: Tuesday, February 28, 2017 12:00:25

Number of Replicates: 3

Autosampler Position: 217

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	455345.6	1.8				ug/L	250104	Standard
|	Be	9	40.0	45.1	0.0033	0.006	190.7	ug/L	7	Standard
|	Al	27	224786.4	10.9	1.0093	0.123	12.1	ug/L	597	Standard
|	Sc	45	41658.9	0.7				ug/L	41681	Standard
|	Ti	47	822.4	2.1	4.9148	0.029	0.6	ug/L	86	Standard
|	V	51	27152.4	4.0	4.8382	0.145	3.0	ug/L	1740	Standard
|	Cr	52	36284.2	6.2	6.1288	0.342	5.6	ug/L	7178	Standard
|	Cr	53	39494.8	3.9	61.6251	1.523	2.5	ug/L	573	Standard
|	Mn	55	21374.2	89.8	2.3103	2.321	100.5	ug/L	3072	Standard
|	Co	59	33167.3	2.3	5.1662	0.101	2.0	ug/L	573	Standard
|	Ni	60	1186610.1	2.1	880.7274	8.821	1.0	ug/L	264	Standard
|	Cu	65	4213.6	1.7	2.8931	0.105	3.6	ug/L	530	Standard
|	Zn	66	14664.1	1.2	19.4707	0.216	1.1	ug/L	252	Standard
>	Ge	72	551591.1	1.6				ug/L	641188	Standard
|	As	75	7364.6	4.8	9.9503	0.622	6.3	ug/L	-83	Standard
|	Se	82	351.3	9.3	5.2328	0.427	8.2	ug/L	16	Standard
|	Se-1	77	12252.0	3.1	264.4682	4.174	1.6	ug/L	126	Standard
>	Ga	71	7215.1	3.1				mg/L	70	Standard
|	Rb	85	2995075.3	2.8				ug/L	33	Standard
|	Y	89	444038.9	2.7				ug/L	493982	Standard
>	Rh	103	1035.0	10.6				ug/L	17	Standard
|	Mo	98	10480.3	2.4	4.1299	0.066	1.6	ug/L	54	Standard
|	Ag	107	158.7	12.3	0.0127	0.004	33.1	ug/L	137	Standard
|	Cd	111	28.1	40.5	0.0081	0.009	106.3	mg/L	6	Standard
|	Cd	114	208.6	8.5	0.0488	0.005	10.8	ug/L	20	Standard
>	In	115	612931.1	0.9				ug/L	755264	Standard
|	Sn	118	985.0	4.9	1.1325	0.053	4.7	ug/L	138	Standard
|	Sb	123	785.0	17.4	0.1892	0.036	18.8	ug/L	391	Standard
|	Ba	135	2517118.8	1.5	1735.0769	10.897	0.6	ug/L	32	Standard
|	Ce	140	63.3	16.4				ug/L	42	Standard
>	Tb	159	959344.1	1.9				ug/L	966827	Standard
|	Ho	165	10.0					ug/L	12	Standard
|	Tl	203	85.3	6.0	0.0092	0.001	12.3	ug/L	19	Standard
|	Tl	205	215.0	30.2	0.0147	0.005	33.9	ug/L	58	Standard
|	Pb	206	771.4	4.7	0.0900	0.011	12.3	ug/L	464	Standard
|	Pb	207	657.3	5.8	0.0843	0.010	12.4	ug/L	405	Standard
|	Pb	208	1567.7	2.2	0.1039	0.002	2.3	ug/L	876	Standard
|	U	238	76.3	28.8	0.0065	0.002	34.8	ug/L	14	Standard
>	Bi	209	482214.9	1.4				ug/L	599146	Standard

Sample ID: L1702125306

Report Date/Time: Tuesday, February 28, 2017 12:02:36

Page 1

Approved: March 01, 2017

Na	23	3680.4	9.0	1062.5874	93.258	8.8	mg/L	3	Standard
Mg	24	2113.5	2.4	42.2362	1.061	2.5	mg/L	30	Standard
K	39	8664.1	0.2	115.3630	0.998	0.9	mg/L	10	Standard
Ca	43	3445.4	3.5	1973.8900	72.541	3.7	mg/L	83	Standard
Fe	54	52.1	44.0	0.5543	0.356	64.3	mg/L	21	Standard
Fe	57	6363.0	2.1	338.0285	5.759	1.7	mg/L	240	Standard
Sc-1	45	41658.9	0.7				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	6.0					ug/L	5	Standard
Br	81	60936.0	6.5				ug/L	1587	Standard
P	31	80.0	16.5				ug/L	50	Standard
S	34	33.3	34.6				ug/L	8	Standard
Sr	88	405.0	7.7				ug/L	198	Standard
C	12	1390.1	7.5				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	66.7	60.6				mg/L	3	Standard
Dy	164	8.9	107.2				mg/L	6	Standard
Ho-1	165	10.0					mg/L	12	Standard
Er	166	23.3	49.5				mg/L	10	Standard
I	127	71011.1	2.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		182.063	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		86.026	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125306

Report Date/Time: Tuesday, February 28, 2017 12:02:36

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	81.155
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	80.484
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Ni 60 Upper, S, EEE	Ni	60	
Se-1 77 Upper, S, EEE	Se-1	77	

Sample ID: L1702125306

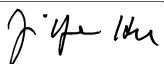
Report Date/Time: Tuesday, February 28, 2017 12:02:36

Page 3

Approved: March 01, 2017



Sample ID: L1702125306
Report Date/Time: Tuesday, February 28, 2017 12:02:36
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702125601

Sample Date/Time: Tuesday, February 28, 2017 12:03:30

Number of Replicates: 3

Autosampler Position: 218

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	259998.9	1.7				ug/L	250104	Standard
|	Be	9	416.7	3.9	0.2363	0.013	5.5	ug/L	7	Standard
|	Al	27	4015354.2	0.5	31.7372	0.608	1.9	ug/L	597	Standard
|	Sc	45	46543.1	2.1				ug/L	41681	Standard
|	Ti	47	3455.1	2.1	21.0741	0.402	1.9	ug/L	86	Standard
|	V	51	14725.0	7.5	2.3738	0.296	12.5	ug/L	1740	Standard
|	Cr	52	26672.8	2.9	3.9366	0.310	7.9	ug/L	7178	Standard
|	Cr	53	27411.6	11.0	40.5659	5.588	13.8	ug/L	573	Standard
|	Mn	55	5325257.5	1.7	624.8680	19.846	3.2	ug/L	3072	Standard
|	Co	59	33995.1	2.4	5.0454	0.091	1.8	ug/L	573	Standard
|	Ni	60	5691.4	4.0	3.8503	0.165	4.3	ug/L	264	Standard
|	Cu	65	9512.7	1.8	6.6592	0.126	1.9	ug/L	530	Standard
|	Zn	66	38614.8	3.4	49.3847	0.685	1.4	ug/L	252	Standard
>	Ge	72	578901.6	3.5				ug/L	641188	Standard
|	As	75	5877.4	3.7	7.5715	0.019	0.3	ug/L	-83	Standard
|	Se	82	70.2	20.6	0.8152	0.233	28.6	ug/L	16	Standard
|	Se-1	77	1729.1	24.6	33.8178	10.159	30.0	ug/L	126	Standard
>	Ga	71	1383.4	2.7				mg/L	70	Standard
|	Rb	85	15089.2	4.2				ug/L	33	Standard
|	Y	89	454800.7	3.7				ug/L	493982	Standard
>	Rh	103	75.0	29.1				ug/L	17	Standard
|	Mo	98	1053.9	1.8	0.3576	0.012	3.2	ug/L	54	Standard
|	Ag	107	336.0	9.1	0.0463	0.007	15.0	ug/L	137	Standard
|	Cd	111	104.3	11.9	0.0594	0.005	9.1	mg/L	6	Standard
|	Cd	114	320.0	17.2	0.0718	0.014	20.2	ug/L	20	Standard
>	In	115	676609.0	4.3				ug/L	755264	Standard
|	Sn	118	311.3	4.9	0.2290	0.015	6.6	ug/L	138	Standard
|	Sb	123	16566.7	3.0	4.1045	0.066	1.6	ug/L	391	Standard
|	Ba	135	36183.5	3.1	22.5783	0.489	2.2	ug/L	32	Standard
|	Ce	140	235522.4	2.9				ug/L	42	Standard
>	Tb	159	981078.7	4.1				ug/L	966827	Standard
|	Ho	165	3423.7	3.7				ug/L	12	Standard
|	Tl	203	178.3	10.2	0.0221	0.002	10.0	ug/L	19	Standard
|	Tl	205	391.7	7.0	0.0247	0.002	8.1	ug/L	58	Standard
|	Pb	206	11649.1	3.4	2.3115	0.032	1.4	ug/L	464	Standard
|	Pb	207	9642.7	2.2	2.1350	0.025	1.2	ug/L	405	Standard
|	Pb	208	22063.0	2.5	2.2461	0.013	0.6	ug/L	876	Standard
|	U	238	3404.7	2.2	0.3146	0.005	1.7	ug/L	14	Standard
>	Bi	209	558876.7	2.7				ug/L	599146	Standard

Sample ID: L1702125601

Report Date/Time: Tuesday, February 28, 2017 12:05:41

Page 1

Approved: March 01, 2017

Na	23	20.0	43.3	4.7264	2.322	49.1	mg/L	3	Standard
Mg	24	1745.1	2.5	31.0787	0.860	2.8	mg/L	30	Standard
K	39	243.3	7.2	2.6622	0.166	6.2	mg/L	10	Standard
Ca	43	71.7	21.3	-2.8010	8.693	310.4	mg/L	83	Standard
Fe	54	497.3	11.0	6.6117	0.805	12.2	mg/L	21	Standard
Fe	57	536.7	8.9	10.8747	2.829	26.0	mg/L	240	Standard
Sc-1	45	46543.1	2.1				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	5.3	10.8				ug/L	5	Standard
Br	81	6304.6	7.0				ug/L	1587	Standard
P	31	75.0	6.7				ug/L	50	Standard
S	34	38.3	15.1				ug/L	8	Standard
Sr	88	271.7	20.7				ug/L	198	Standard
C	12	120.0	25.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	90.0	22.2				mg/L	3	Standard
Dy	164	5407.1	2.1				mg/L	6	Standard
Ho-1	165	3423.7	3.7				mg/L	12	Standard
Er	166	2726.9	13.8				mg/L	10	Standard
I	127	13280.8	5.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		103.956	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		90.286	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125601

Report Date/Time: Tuesday, February 28, 2017 12:05:41

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	89.586
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.279
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702125601

Report Date/Time: Tuesday, February 28, 2017 12:05:41

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702125901

Sample Date/Time: Tuesday, February 28, 2017 12:06:36

Number of Replicates: 3

Autosampler Position: 219

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	260361.6	1.5				ug/L	250104	Standard
|	Be	9	78.3	7.4	0.0360	0.004	11.3	ug/L	7	Standard
|	Al	27	5021467.3	2.0	39.6327	0.937	2.4	ug/L	597	Standard
|	Sc	45	46429.4	1.7				ug/L	41681	Standard
|	Ti	47	1723.4	13.5	9.9661	1.527	15.3	ug/L	86	Standard
|	V	51	4376.7	12.6	0.4850	0.088	18.2	ug/L	1740	Standard
|	Cr	52	16851.4	1.3	1.9361	0.013	0.7	ug/L	7178	Standard
|	Cr	53	9426.3	11.9	12.9289	1.797	13.9	ug/L	573	Standard
|	Mn	55	16560920.8	1.4	1884.4704	24.486	1.3	ug/L	3072	Standard
|	Co	59	4384.0	2.8	0.5774	0.019	3.3	ug/L	573	Standard
|	Ni	60	2853.6	3.0	1.7804	0.050	2.8	ug/L	264	Standard
|	Cu	65	2231.8	0.5	1.2230	0.023	1.9	ug/L	530	Standard
|	Zn	66	46108.4	1.9	57.2541	1.134	2.0	ug/L	252	Standard
>	Ge	72	596785.1	1.2				ug/L	641188	Standard
|	As	75	2858.9	5.8	3.5970	0.248	6.9	ug/L	-83	Standard
|	Se	82	44.5	22.6	0.4111	0.137	33.3	ug/L	16	Standard
|	Se-1	77	628.3	9.1	10.3811	1.289	12.4	ug/L	126	Standard
>	Ga	71	518.3	12.7				mg/L	70	Standard
|	Rb	85	8410.7	6.3				ug/L	33	Standard
|	Y	89	437940.8	2.1				ug/L	493982	Standard
>	Rh	103	76.7	22.9				ug/L	17	Standard
|	Mo	98	567.3	7.2	0.1751	0.012	6.8	ug/L	54	Standard
|	Ag	107	326.3	4.6	0.0417	0.002	5.8	ug/L	137	Standard
|	Cd	111	472.3	5.9	0.3056	0.016	5.4	mg/L	6	Standard
|	Cd	114	1318.1	6.1	0.3147	0.019	6.0	ug/L	20	Standard
>	In	115	702652.5	1.1				ug/L	755264	Standard
|	Sn	118	323.3	2.1	0.2289	0.004	1.9	ug/L	138	Standard
|	Sb	123	884.7	8.4	0.1856	0.015	8.3	ug/L	391	Standard
|	Ba	135	89626.3	1.3	53.8679	0.532	1.0	ug/L	32	Standard
|	Ce	140	15157.6	8.4				ug/L	42	Standard
>	Tb	159	1013034.1	1.0				ug/L	966827	Standard
|	Ho	165	183.3	22.0				ug/L	12	Standard
|	Tl	203	104.0	1.7	0.0095	0.000	2.5	ug/L	19	Standard
|	Tl	205	275.0	13.7	0.0159	0.003	16.4	ug/L	58	Standard
|	Pb	206	2621.6	2.6	0.4300	0.009	2.1	ug/L	464	Standard
|	Pb	207	2096.5	4.2	0.3773	0.016	4.2	ug/L	405	Standard
|	Pb	208	4843.0	2.9	0.4082	0.011	2.7	ug/L	876	Standard
|	U	238	1375.1	2.0	0.1221	0.001	0.9	ug/L	14	Standard
>	Bi	209	576724.7	1.1				ug/L	599146	Standard

Sample ID: L1702125901

Report Date/Time: Tuesday, February 28, 2017 12:08:47

Page 1

Approved: March 01, 2017

Na	23	45.0	48.4	11.1766	5.611	50.2	mg/L	3	Standard
Mg	24	438.3	2.6	7.4215	0.241	3.3	mg/L	30	Standard
K	39	161.7	10.9	1.6926	0.202	11.9	mg/L	10	Standard
Ca	43	100.0	13.2	12.1035	7.588	62.7	mg/L	83	Standard
Fe	54	269.6	4.9	3.4754	0.124	3.6	mg/L	21	Standard
Fe	57	460.0	12.0	7.0658	2.533	35.8	mg/L	240	Standard
Sc-1	45	46429.4	1.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	2.7	43.3				ug/L	5	Standard
Br	81	6251.3	5.9				ug/L	1587	Standard
P	31	66.7	22.9				ug/L	50	Standard
S	34	38.3	27.2				ug/L	8	Standard
Sr	88	271.7	25.8				ug/L	198	Standard
C	12	103.3	27.9				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	361.4	22.6				mg/L	6	Standard
Ho-1	165	183.3	22.0				mg/L	12	Standard
Er	166	250.0	55.0				mg/L	10	Standard
I	127	209469.6	5.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		104.102	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		93.075	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125901

Report Date/Time: Tuesday, February 28, 2017 12:08:47

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	93.034
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	96.258
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702125901

Report Date/Time: Tuesday, February 28, 2017 12:08:47

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126001

Sample Date/Time: Tuesday, February 28, 2017 12:09:41

Number of Replicates: 3

Autosampler Position: 220

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	251430.2	3.0				ug/L	250104	Standard
|	Be	9	475.0	26.4	0.2795	0.071	25.5	ug/L	7	Standard
|	Al	27	1483377.1	5.8	12.1122	0.392	3.2	ug/L	597	Standard
|	Sc	45	46441.2	4.7				ug/L	41681	Standard
|	Ti	47	6671.5	3.5	41.0536	0.541	1.3	ug/L	86	Standard
|	V	51	53720.2	3.0	9.3556	0.084	0.9	ug/L	1740	Standard
|	Cr	52	39957.3	3.8	6.4844	0.141	2.2	ug/L	7178	Standard
|	Cr	53	15134.2	3.6	21.9226	0.455	2.1	ug/L	573	Standard
|	Mn	55	2178914.5	9.0	254.8121	18.111	7.1	ug/L	3072	Standard
|	Co	59	19442.5	4.4	2.8546	0.088	3.1	ug/L	573	Standard
|	Ni	60	5433.3	3.6	3.6612	0.087	2.4	ug/L	264	Standard
|	Cu	65	19193.8	2.6	13.7988	0.052	0.4	ug/L	530	Standard
|	Zn	66	24792.6	4.4	31.5324	0.679	2.2	ug/L	252	Standard
>	Ge	72	579545.6	2.3				ug/L	641188	Standard
|	As	75	16831.4	3.5	21.5771	0.248	1.1	ug/L	-83	Standard
|	Se	82	92.0	4.7	1.1346	0.090	7.9	ug/L	16	Standard
|	Se-1	77	668.0	3.9	11.5676	0.330	2.9	ug/L	126	Standard
>	Ga	71	2503.5	8.4				mg/L	70	Standard
|	Rb	85	27533.3	1.5				ug/L	33	Standard
|	Y	89	457140.2	2.7				ug/L	493982	Standard
>	Rh	103	68.3	11.2				ug/L	17	Standard
|	Mo	98	1166.8	4.2	0.4000	0.016	3.9	ug/L	54	Standard
|	Ag	107	723.0	8.4	0.1277	0.014	11.3	ug/L	137	Standard
|	Cd	111	67.5	13.5	0.0340	0.006	18.3	mg/L	6	Standard
|	Cd	114	184.6	1.4	0.0374	0.002	4.4	ug/L	20	Standard
>	In	115	673140.8	3.0				ug/L	755264	Standard
|	Sn	118	263.3	8.4	0.1753	0.034	19.6	ug/L	138	Standard
|	Sb	123	121035.9	3.1	30.2982	0.273	0.9	ug/L	391	Standard
|	Ba	135	35979.7	3.6	22.5578	0.572	2.5	ug/L	32	Standard
|	Ce	140	383084.0	4.0				ug/L	42	Standard
>	Tb	159	982675.4	1.3				ug/L	966827	Standard
|	Ho	165	3243.7	2.4				ug/L	12	Standard
|	Tl	203	274.7	12.6	0.0387	0.005	13.0	ug/L	19	Standard
|	Tl	205	590.0	4.5	0.0394	0.002	4.6	ug/L	58	Standard
|	Pb	206	19787.6	2.4	4.0828	0.059	1.5	ug/L	464	Standard
|	Pb	207	15946.7	4.1	3.6699	0.063	1.7	ug/L	405	Standard
|	Pb	208	36701.4	3.6	3.8791	0.048	1.2	ug/L	876	Standard
|	U	238	31108.6	2.0	2.9517	0.016	0.6	ug/L	14	Standard
>	Bi	209	546911.8	2.6				ug/L	599146	Standard

Sample ID: L1702126001

Report Date/Time: Tuesday, February 28, 2017 12:11:52

Page 1

Approved: March 01, 2017

Na	23	8.3	69.3	1.6490	1.391	84.3	mg/L	3	Standard
Mg	24	3635.4	2.1	65.5175	1.796	2.7	mg/L	30	Standard
K	39	278.3	5.2	3.0899	0.116	3.7	mg/L	10	Standard
Ca	43	58.3	21.6	-9.8269	6.350	64.6	mg/L	83	Standard
Fe	54	297.2	7.8	3.8613	0.329	8.5	mg/L	21	Standard
Fe	57	366.7	7.0	2.4236	1.139	47.0	mg/L	240	Standard
Sc-1	45	46441.2	4.7				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	4.7	24.7				ug/L	5	Standard
Br	81	10036.7	9.6				ug/L	1587	Standard
P	31	76.7	10.0				ug/L	50	Standard
S	34	33.3	22.9				ug/L	8	Standard
Sr	88	261.7	6.1				ug/L	198	Standard
C	12	70.0	28.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	436.7	13.4				mg/L	3	Standard
Dy	164	4955.1	4.3				mg/L	6	Standard
Ho-1	165	3243.7	2.4				mg/L	12	Standard
Er	166	2973.6	2.6				mg/L	10	Standard
I	127	14110.0	15.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		100.530	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		90.386	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126001

Report Date/Time: Tuesday, February 28, 2017 12:11:52

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	89.127
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	91.282
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702126001

Report Date/Time: Tuesday, February 28, 2017 12:11:52

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126101

Sample Date/Time: Tuesday, February 28, 2017 12:12:46

Number of Replicates: 3

Autosampler Position: 221

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	252401.8	1.0				ug/L	250104	Standard
|	Be	9	31.7	32.9	0.0090	0.006	69.9	ug/L	7	Standard
|	Al	27	12364498.6	0.5	100.6727	1.562	1.6	ug/L	597	Standard
|	Sc	45	45354.5	0.8				ug/L	41681	Standard
|	Ti	47	115.0	8.3	0.2578	0.068	26.3	ug/L	86	Standard
|	V	51	1281.8	20.6	-0.0450	0.050	111.4	ug/L	1740	Standard
|	Cr	52	8545.1	3.9	0.4377	0.053	12.1	ug/L	7178	Standard
|	Cr	53	5721.1	18.2	7.7838	1.475	19.0	ug/L	573	Standard
|	Mn	55	16296965.9	1.8	1920.8415	24.620	1.3	ug/L	3072	Standard
|	Co	59	2435.5	0.9	0.3062	0.006	1.9	ug/L	573	Standard
|	Ni	60	2114.8	2.9	1.3254	0.027	2.0	ug/L	264	Standard
|	Cu	65	1059.7	0.9	0.4094	0.007	1.8	ug/L	530	Standard
|	Zn	66	2207.5	3.2	2.5050	0.065	2.6	ug/L	252	Standard
>	Ge	72	576133.3	1.2				ug/L	641188	Standard
|	As	75	1058.5	7.6	1.4045	0.096	6.8	ug/L	-83	Standard
|	Se	82	255.4	8.8	3.5753	0.322	9.0	ug/L	16	Standard
|	Se-1	77	934.7	4.8	17.2079	0.776	4.5	ug/L	126	Standard
>	Ga	71	110.0	20.8				mg/L	70	Standard
|	Rb	85	33872.9	4.6				ug/L	33	Standard
|	Y	89	428275.9	1.4				ug/L	493982	Standard
>	Rh	103	195.0	2.6				ug/L	17	Standard
|	Mo	98	187.5	3.8	0.0471	0.003	6.1	ug/L	54	Standard
|	Ag	107	122.7	5.8	0.0021	0.002	75.0	ug/L	137	Standard
|	Cd	111	29.8	11.7	0.0074	0.002	33.1	mg/L	6	Standard
|	Cd	114	99.7	39.6	0.0157	0.010	65.9	ug/L	20	Standard
>	In	115	670213.6	0.4				ug/L	755264	Standard
|	Sn	118	198.7	8.6	0.0998	0.019	19.2	ug/L	138	Standard
|	Sb	123	253.6	5.8	0.0372	0.003	9.4	ug/L	391	Standard
|	Ba	135	1238461.4	0.7	780.7288	3.511	0.4	ug/L	32	Standard
|	Ce	140	225.0	34.9				ug/L	42	Standard
>	Tb	159	1015403.1	0.9				ug/L	966827	Standard
|	Ho	165	20.0	43.3				ug/L	12	Standard
|	Tl	203	629.7	34.0	0.0978	0.034	35.3	ug/L	19	Standard
|	Tl	205	1440.1	40.0	0.0998	0.040	39.8	ug/L	58	Standard
|	Pb	206	518.7	5.3	0.0150	0.007	46.9	ug/L	464	Standard
|	Pb	207	458.3	1.7	0.0167	0.001	3.6	ug/L	405	Standard
|	Pb	208	974.3	2.0	0.0172	0.002	11.1	ug/L	876	Standard
|	U	238	106.7	5.5	0.0084	0.001	6.1	ug/L	14	Standard
>	Bi	209	545879.0	1.2				ug/L	599146	Standard

Sample ID: L1702126101

Report Date/Time: Tuesday, February 28, 2017 12:14:57

Page 1

Approved: March 01, 2017

Na	23	161.7	24.0	42.3923	10.146	23.9	mg/L	3	Standard
Mg	24	2910.3	2.8	53.5562	1.116	2.1	mg/L	30	Standard
K	39	163.3	4.7	1.7591	0.081	4.6	mg/L	10	Standard
Ca	43	188.3	22.1	60.7123	22.286	36.7	mg/L	83	Standard
Fe	54	1742.6	2.9	24.4111	0.900	3.7	mg/L	21	Standard
Fe	57	1063.4	10.1	38.4205	5.086	13.2	mg/L	240	Standard
Sc-1	45	45354.5	0.8				mg/L	41681	Standard
Cl	35	3.3	69.3				ug/L	2	Standard
Kr	83	7.7	58.8				ug/L	5	Standard
Br	81	74014.0	5.3				ug/L	1587	Standard
P	31	66.7	15.6				ug/L	50	Standard
S	34	41.7	36.7				ug/L	8	Standard
Sr	88	261.7	7.7				ug/L	198	Standard
C	12	36.7	15.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.5	186.3				mg/L	6	Standard
Ho-1	165	20.0	43.3				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	79374.9	13.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		100.919	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		89.854	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126101

Report Date/Time: Tuesday, February 28, 2017 12:14:57

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	88.739
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	91.110
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Mn 55 Upper, S, EEE	Mn	55	
Ba 135 Upper, S, EEE	Ba	135	

Sample ID: L1702126101

Report Date/Time: Tuesday, February 28, 2017 12:14:57

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126102

Sample Date/Time: Tuesday, February 28, 2017 12:15:52

Number of Replicates: 3

Autosampler Position: 222

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	255659.3	3.9				ug/L	250104	Standard
|	Be	9	23.3	12.4	0.0038	0.002	52.0	ug/L	7	Standard
|	Al	27	694497.2	4.3	5.5756	0.045	0.8	ug/L	597	Standard
|	Sc	45	45688.9	3.9				ug/L	41681	Standard
|	Ti	47	114.0	7.5	0.2403	0.085	35.3	ug/L	86	Standard
|	V	51	7446.9	3.3	1.0427	0.039	3.7	ug/L	1740	Standard
|	Cr	52	9477.6	4.7	0.5847	0.006	1.0	ug/L	7178	Standard
|	Cr	53	2970.3	3.5	3.5446	0.067	1.9	ug/L	573	Standard
|	Mn	55	28809.2	10.8	3.0235	0.269	8.9	ug/L	3072	Standard
|	Co	59	1003.7	3.0	0.0875	0.007	8.5	ug/L	573	Standard
|	Ni	60	971.4	2.5	0.5011	0.039	7.8	ug/L	264	Standard
|	Cu	65	2138.8	3.3	1.1824	0.029	2.5	ug/L	530	Standard
|	Zn	66	2009.5	5.7	2.2011	0.096	4.4	ug/L	252	Standard
>	Ge	72	587088.9	5.0				ug/L	641188	Standard
|	As	75	843.9	9.2	1.1070	0.053	4.8	ug/L	-83	Standard
|	Se	82	37.1	10.8	0.3150	0.061	19.5	ug/L	16	Standard
|	Se-1	77	316.0	5.9	4.2127	0.700	16.6	ug/L	126	Standard
>	Ga	71	85.0	17.6				mg/L	70	Standard
|	Rb	85	11576.1	3.1				ug/L	33	Standard
|	Y	89	430965.2	4.2				ug/L	493982	Standard
>	Rh	103	95.0	45.0				ug/L	17	Standard
|	Mo	98	4569.8	3.6	1.6029	0.034	2.1	ug/L	54	Standard
|	Ag	107	110.3	8.9	-0.0010	0.001	113.9	ug/L	137	Standard
|	Cd	111	12.8	46.0	-0.0047	0.004	94.0	mg/L	6	Standard
|	Cd	114	43.4	18.2	0.0010	0.003	261.5	ug/L	20	Standard
>	In	115	683640.7	5.0				ug/L	755264	Standard
|	Sn	118	183.3	17.8	0.0772	0.033	42.4	ug/L	138	Standard
|	Sb	123	1230.8	6.6	0.2769	0.009	3.1	ug/L	391	Standard
|	Ba	135	131952.2	4.7	81.5360	0.653	0.8	ug/L	32	Standard
|	Ce	140	520.0	8.5				ug/L	42	Standard
>	Tb	159	1003074.1	5.0				ug/L	966827	Standard
|	Ho	165	33.3	43.3				ug/L	12	Standard
|	Tl	203	74.0	17.6	0.0053	0.003	53.9	ug/L	19	Standard
|	Tl	205	200.0	15.6	0.0115	0.003	23.7	ug/L	58	Standard
|	Pb	206	571.0	15.7	0.0239	0.012	49.8	ug/L	464	Standard
|	Pb	207	454.3	9.7	0.0142	0.006	41.6	ug/L	405	Standard
|	Pb	208	1078.7	5.1	0.0269	0.004	13.1	ug/L	876	Standard
|	U	238	1823.8	4.5	0.1694	0.002	1.4	ug/L	14	Standard
>	Bi	209	553674.9	5.8				ug/L	599146	Standard

Sample ID: L1702126102

Report Date/Time: Tuesday, February 28, 2017 12:18:03

Page 1

Approved: March 01, 2017

Na	23	10.0	100.0	2.1149	2.618	123.8	mg/L	3	Standard
Mg	24	3595.4	3.3	65.8198	0.512	0.8	mg/L	30	Standard
K	39	105.0	24.7	1.0441	0.370	35.5	mg/L	10	Standard
Ca	43	63.3	24.1	-6.4146	9.575	149.3	mg/L	83	Standard
Fe	54	29.3	44.2	0.1596	0.168	105.2	mg/L	21	Standard
Fe	57	386.7	5.4	3.7404	1.024	27.4	mg/L	240	Standard
Sc-1	45	45688.9	3.9				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	6.3	50.8				ug/L	5	Standard
Br	81	6791.5	4.6				ug/L	1587	Standard
P	31	86.7	29.0				ug/L	50	Standard
S	34	33.3	17.3				ug/L	8	Standard
Sr	88	298.3	17.9				ug/L	198	Standard
C	12	36.7	68.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	29.0	32.8				mg/L	6	Standard
Ho-1	165	33.3	43.3				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	36624.3	4.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		102.221	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		91.563	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126102

Report Date/Time: Tuesday, February 28, 2017 12:18:03

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.517
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	92.411
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

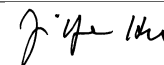
Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702126102

Report Date/Time: Tuesday, February 28, 2017 12:18:03

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126103

Sample Date/Time: Tuesday, February 28, 2017 12:18:57

Number of Replicates: 3

Autosampler Position: 223

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	266835.9	0.6				ug/L	250104	Standard
|	Be	9	31.7	24.1	0.0080	0.004	53.9	ug/L	7	Standard
|	Al	27	14775.5	1.7	0.1076	0.003	2.4	ug/L	597	Standard
|	Sc	45	45658.7	3.0				ug/L	41681	Standard
|	Ti	47	55.7	9.9	-0.1307	0.035	26.5	ug/L	86	Standard
|	V	51	1262.7	7.1	-0.0595	0.020	32.8	ug/L	1740	Standard
|	Cr	52	10200.8	2.0	0.6645	0.045	6.7	ug/L	7178	Standard
|	Cr	53	3075.3	2.7	3.5645	0.210	5.9	ug/L	573	Standard
|	Mn	55	8595.8	1.8	0.6587	0.034	5.1	ug/L	3072	Standard
|	Co	59	583.3	2.3	0.0225	0.003	13.6	ug/L	573	Standard
|	Ni	60	363.7	3.6	0.0685	0.004	6.1	ug/L	264	Standard
|	Cu	65	1521.1	1.7	0.6980	0.018	2.6	ug/L	530	Standard
|	Zn	66	1123.7	2.7	1.0333	0.045	4.3	ug/L	252	Standard
>	Ge	72	605209.0	2.0				ug/L	641188	Standard
|	As	75	-33.2	124.9	0.0020	0.050	2442.0	ug/L	-83	Standard
|	Se	82	16.8	9.8	0.0110	0.023	210.7	ug/L	16	Standard
|	Se-1	77	227.0	11.3	2.2349	0.555	24.8	ug/L	126	Standard
>	Ga	71	51.7	20.1				mg/L	70	Standard
|	Rb	85	151.7	3.8				ug/L	33	Standard
|	Y	89	440362.7	2.0				ug/L	493982	Standard
>	Rh	103	80.0	6.3				ug/L	17	Standard
|	Mo	98	46.9	10.7	-0.0047	0.002	32.8	ug/L	54	Standard
|	Ag	107	129.0	1.3	0.0020	0.001	33.7	ug/L	137	Standard
|	Cd	111	13.3	15.7	-0.0047	0.002	33.2	mg/L	6	Standard
|	Cd	114	50.1	19.9	0.0022	0.002	105.6	ug/L	20	Standard
>	In	115	705183.7	2.0				ug/L	755264	Standard
|	Sn	118	183.0	4.8	0.0709	0.013	17.8	ug/L	138	Standard
|	Sb	123	105.8	17.1	-0.0013	0.004	297.6	ug/L	391	Standard
|	Ba	135	199.7	5.8	0.0921	0.005	5.7	ug/L	32	Standard
|	Ce	140	53.3	42.3				ug/L	42	Standard
>	Tb	159	1013048.1	2.6				ug/L	966827	Standard
|	Ho	165	8.3	69.3				ug/L	12	Standard
|	Tl	203	60.3	5.8	0.0025	0.000	16.1	ug/L	19	Standard
|	Tl	205	145.0	29.5	0.0071	0.003	42.6	ug/L	58	Standard
|	Pb	206	490.0	6.8	0.0024	0.005	209.9	ug/L	464	Standard
|	Pb	207	401.7	3.0	-0.0025	0.002	96.0	ug/L	405	Standard
|	Pb	208	943.3	3.7	0.0075	0.002	27.0	ug/L	876	Standard
|	U	238	28.7	10.7	0.0009	0.000	32.7	ug/L	14	Standard
>	Bi	209	581759.1	1.6				ug/L	599146	Standard

Sample ID: L1702126103

Report Date/Time: Tuesday, February 28, 2017 12:21:08

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	0.4148	0.773	186.4	mg/L	3	Standard
Mg	24	35.0	28.6	0.1048	0.172	164.3	mg/L	30	Standard
K	39	25.0	52.9	0.0644	0.170	264.2	mg/L	10	Standard
Ca	43	61.7	33.8	-7.5450	11.086	146.9	mg/L	83	Standard
Fe	54	27.5	74.9	0.1436	0.302	210.4	mg/L	21	Standard
Fe	57	335.0	10.4	1.1028	1.352	122.6	mg/L	240	Standard
Sc-1	45	45658.7	3.0				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	5.3	28.6				ug/L	5	Standard
Br	81	1793.4	13.5				ug/L	1587	Standard
P	31	71.7	8.1				ug/L	50	Standard
S	34	36.7	41.7				ug/L	8	Standard
Sr	88	255.0	7.1				ug/L	198	Standard
C	12	16.7	91.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	22.4	66.2				mg/L	6	Standard
Ho-1	165	8.3	69.3				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	6243.0	4.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		106.690	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.389	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126103

Report Date/Time: Tuesday, February 28, 2017 12:21:08

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	93.369
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	97.098
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

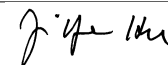
Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702126103

Report Date/Time: Tuesday, February 28, 2017 12:21:08

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126104

Sample Date/Time: Tuesday, February 28, 2017 12:22:02

Number of Replicates: 3

Autosampler Position: 224

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	338300.3	0.9				ug/L	250104	Standard
|	Be	9	51.7	14.8	0.0132	0.004	27.7	ug/L	7	Standard
|	Al	27	176664129.3	1.4	1073.1590	14.594	1.4	ug/L	597	Standard
|	Sc	45	44787.8	2.4				ug/L	41681	Standard
|	Ti	47	332.0	11.0	1.7523	0.296	16.9	ug/L	86	Standard
|	V	51	-5151.4	29.3	-1.2660	0.294	23.2	ug/L	1740	Standard
|	Cr	52	17007.5	2.1	2.2890	0.066	2.9	ug/L	7178	Standard
|	Cr	53	57745.2	7.4	92.0994	4.663	5.1	ug/L	573	Standard
|	Mn	55	37711531.2	1.7	4727.2667	43.732	0.9	ug/L	3072	Standard
|	Co	59	21749.9	1.7	3.4291	0.072	2.1	ug/L	573	Standard
|	Ni	60	53771.3	1.4	40.4869	1.609	4.0	ug/L	264	Standard
|	Cu	65	6955.6	2.0	5.1176	0.034	0.7	ug/L	530	Standard
|	Zn	66	4003.2	2.5	5.1616	0.282	5.5	ug/L	252	Standard
>	Ge	72	541852.1	2.6				ug/L	641188	Standard
|	As	75	-850.5	8.0	-1.1223	0.097	8.6	ug/L	-83	Standard
|	Se	82	353.7	6.7	5.3813	0.506	9.4	ug/L	16	Standard
|	Se-1	77	23455.2	6.9	517.2568	22.823	4.4	ug/L	126	Standard
>	Ga	71	1251.7	9.9				mg/L	70	Standard
|	Rb	85	160249.8	1.7				ug/L	33	Standard
|	Y	89	444041.9	3.7				ug/L	493982	Standard
>	Rh	103	8220.6	2.5				ug/L	17	Standard
|	Mo	98	122.7	13.9	0.0314	0.009	30.1	ug/L	54	Standard
|	Ag	107	227.7	2.2	0.0323	0.004	12.0	ug/L	137	Standard
|	Cd	111	36.8	11.9	0.0169	0.004	23.3	mg/L	6	Standard
|	Cd	114	99.2	27.8	0.0196	0.007	34.7	ug/L	20	Standard
>	In	115	573767.4	4.8				ug/L	755264	Standard
|	Sn	118	217.3	4.3	0.1649	0.006	3.6	ug/L	138	Standard
|	Sb	123	2079.8	4.4	0.5865	0.055	9.5	ug/L	391	Standard
|	Ba	135	18520007.7	1.4	13656.5737	599.161	4.4	ug/L	32	Standard
|	Ce	140	6268.0	1.4				ug/L	42	Standard
>	Tb	159	991849.5	3.4				ug/L	966827	Standard
|	Ho	165	143.3	17.2				ug/L	12	Standard
|	Tl	203	373.0	18.9	0.0824	0.019	23.6	ug/L	19	Standard
|	Tl	205	828.4	33.3	0.0825	0.031	37.3	ug/L	58	Standard
|	Pb	206	1067.7	2.4	0.2282	0.005	2.0	ug/L	464	Standard
|	Pb	207	854.7	4.8	0.1973	0.015	7.5	ug/L	405	Standard
|	Pb	208	2536.4	3.1	0.3049	0.023	7.6	ug/L	876	Standard
|	U	238	592.7	4.1	0.0790	0.006	7.5	ug/L	14	Standard
>	Bi	209	381844.1	3.6				ug/L	599146	Standard

Sample ID: L1702126104

Report Date/Time: Tuesday, February 28, 2017 12:24:13

Page 1

Approved: March 01, 2017

Na	23	4180.6	3.7	1123.0183	40.489	3.6	mg/L	3	Standard
Mg	24	13724.5	2.8	258.0227	12.889	5.0	mg/L	30	Standard
K	39	1270.1	4.8	15.5151	0.458	3.0	mg/L	10	Standard
Ca	43	3393.7	2.7	1805.1191	34.869	1.9	mg/L	83	Standard
Fe	54	205.4	15.7	2.7017	0.516	19.1	mg/L	21	Standard
Fe	57	6778.2	0.9	334.9303	8.813	2.6	mg/L	240	Standard
Sc-1	45	44787.8	2.4				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	8.7	35.3				ug/L	5	Standard
Br	81	147589.2	3.4				ug/L	1587	Standard
P	31	75.0	30.6				ug/L	50	Standard
S	34	18.3	41.7				ug/L	8	Standard
Sr	88	683.3	12.6				ug/L	198	Standard
C	12	40.0	43.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	10.0					mg/L	3	Standard
Dy	164	175.7	20.4				mg/L	6	Standard
Ho-1	165	143.3	17.2				mg/L	12	Standard
Er	166	160.0	27.2				mg/L	10	Standard
I	127	572022.6	14.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		135.264	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.507	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126104

Report Date/Time: Tuesday, February 28, 2017 12:24:13

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	75.969
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	63.731
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702126104

Report Date/Time: Tuesday, February 28, 2017 12:24:13

Page 3

Approved: March 01, 2017

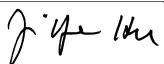


Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702126104

Report Date/Time: Tuesday, February 28, 2017 12:24:13

Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 12:25:09

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	274319.4	3.3				ug/L	250104	Standard
|	Be	9	87554.0	2.7	49.0746	0.323	0.7	ug/L	7	Standard
|	Al	27	6189266.7	2.9	46.3639	0.427	0.9	ug/L	597	Standard
|	Sc	45	47557.9	0.3				ug/L	41681	Standard
|	Ti	47	19650.4	0.8	117.4944	0.354	0.3	ug/L	86	Standard
|	V	51	316524.9	1.6	54.4630	0.524	1.0	ug/L	1740	Standard
|	Cr	52	299194.4	1.6	54.4267	0.644	1.2	ug/L	7178	Standard
|	Cr	53	49177.2	13.0	70.5360	8.766	12.4	ug/L	573	Standard
|	Mn	55	478792.5	1.0	53.8079	0.111	0.2	ug/L	3072	Standard
|	Co	59	367435.6	0.4	53.0970	0.317	0.6	ug/L	573	Standard
|	Ni	60	78224.1	1.6	53.1285	0.611	1.1	ug/L	264	Standard
|	Cu	65	73775.2	0.2	52.1807	0.470	0.9	ug/L	530	Standard
|	Zn	66	40996.4	1.1	50.5126	0.342	0.7	ug/L	252	Standard
>	Ge	72	600909.5	0.8				ug/L	641188	Standard
|	As	75	39445.4	0.6	48.7254	0.197	0.4	ug/L	-83	Standard
|	Se	82	3294.1	2.1	46.8023	0.775	1.7	ug/L	16	Standard
|	Se-1	77	3818.2	20.0	73.9770	14.697	19.9	ug/L	126	Standard
>	Ga	71	141.7	34.6				mg/L	70	Standard
|	Rb	85	536.7	19.6				ug/L	33	Standard
|	Y	89	431842.8	0.7				ug/L	493982	Standard
>	Rh	103	50.0	36.1				ug/L	17	Standard
|	Mo	98	262947.3	1.4	89.9214	1.380	1.5	ug/L	54	Standard
|	Ag	107	242455.8	1.4	48.0935	0.791	1.6	ug/L	137	Standard
|	Cd	111	70935.7	1.6	47.4647	0.293	0.6	mg/L	6	Standard
|	Cd	114	198396.2	1.0	48.3931	0.715	1.5	ug/L	20	Standard
>	In	115	709843.5	1.9				ug/L	755264	Standard
|	Sn	118	45425.3	1.2	50.3048	0.950	1.9	ug/L	138	Standard
|	Sb	123	205853.0	1.3	48.8861	0.474	1.0	ug/L	391	Standard
|	Ba	135	87662.9	0.6	52.1608	0.673	1.3	ug/L	32	Standard
|	Ce	140	55.0	18.2				ug/L	42	Standard
>	Tb	159	1020984.5	1.2				ug/L	966827	Standard
|	Ho	165	23.3	86.6				ug/L	12	Standard
|	Tl	203	318548.4	1.2	49.9637	0.157	0.3	ug/L	19	Standard
|	Tl	205	742545.1	2.1	49.8115	0.837	1.7	ug/L	58	Standard
|	Pb	206	249150.6	0.9	49.4817	0.282	0.6	ug/L	464	Standard
|	Pb	207	223099.1	1.4	49.5236	0.603	1.2	ug/L	405	Standard
|	Pb	208	486372.5	0.8	49.4786	0.379	0.8	ug/L	876	Standard
|	U	238	545408.1	0.5	48.8059	0.807	1.7	ug/L	14	Standard
>	Bi	209	580254.1	1.3				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:27:20

Page 1

Approved: March 01, 2017

Na	23	10.0		2.0525	0.009	0.4	mg/L	3	Standard
Mg	24	368.3	7.5	5.9898	0.477	8.0	mg/L	30	Standard
K	39	633.3	14.8	7.1588	1.081	15.1	mg/L	10	Standard
Ca	43	85.0	25.6	3.0989	11.103	358.3	mg/L	83	Standard
Fe	54	301.1	11.1	3.8143	0.454	11.9	mg/L	21	Standard
Fe	57	478.3	3.2	7.4260	0.692	9.3	mg/L	240	Standard
Sc-1	45	47557.9	0.3				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	6.3	32.9				ug/L	5	Standard
Br	81	2907.0	28.4				ug/L	1587	Standard
P	31	81.7	28.9				ug/L	50	Standard
S	34	31.7	65.7				ug/L	8	Standard
Sr	88	276.7	6.8				ug/L	198	Standard
C	12	30.0	33.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	12.4	100.1				mg/L	6	Standard
Ho-1	165	23.3	86.6				mg/L	12	Standard
Er	166	20.0	100.0				mg/L	10	Standard
I	127	26675.4	58.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	98.149		
Al	27	92.728		
Sc	45			
Ti	47	117.494		
V	51	108.926		
Cr	52	108.853		
Cr	53			
Mn	55	107.616		
Co	59	106.194		
Ni	60	106.257		
Cu	65	104.361		
Zn	66	101.025		
Ge	72		93.718	
As	75	97.451		
Se	82	93.605		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:27:20

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	89.921	
[	Ag	107	96.187	
[	Cd	111	94.929	
[	Cd	114		
>	In	115		93.986
[	Sn	118	100.610	
[	Sb	123	97.772	
[	Ba	135	104.322	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	99.927	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	98.957	
[	U	238	97.612	
>	Bi	209		96.847
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Ti	47	
QC Std 6	Mo	98	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:27:20

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 12:28:14

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	255071.2	1.8				ug/L	250104	Standard
|	Be	9	20.0	90.1	0.0017	0.011	631.6	ug/L	7	Standard
|	Al	27	2545.2	36.4	0.0144	0.008	53.5	ug/L	597	Standard
|	Sc	45	44689.1	0.6				ug/L	41681	Standard
|	Ti	47	47.0	18.9	-0.1668	0.057	34.4	ug/L	86	Standard
|	V	51	1082.6	19.4	-0.0800	0.040	50.5	ug/L	1740	Standard
|	Cr	52	6454.4	0.9	0.0387	0.026	67.1	ug/L	7178	Standard
|	Cr	53	4399.0	12.6	5.8328	0.944	16.2	ug/L	573	Standard
|	Mn	55	3141.7	7.9	0.0661	0.035	52.9	ug/L	3072	Standard
|	Co	59	490.0	0.2	0.0130	0.001	7.9	ug/L	573	Standard
|	Ni	60	156.0	8.4	-0.0660	0.011	16.5	ug/L	264	Standard
|	Cu	65	538.7	9.6	0.0244	0.042	173.3	ug/L	530	Standard
|	Zn	66	314.3	4.5	0.0573	0.014	24.0	ug/L	252	Standard
>	Ge	72	573363.3	1.5				ug/L	641188	Standard
|	As	75	26.8	83.0	0.0771	0.029	37.5	ug/L	-83	Standard
|	Se	82	16.0	13.8	0.0117	0.033	284.1	ug/L	16	Standard
|	Se-1	77	452.3	15.6	7.2141	1.606	22.3	ug/L	126	Standard
>	Ga	71	50.0	10.0				mg/L	70	Standard
|	Rb	85	86.7	18.5				ug/L	33	Standard
|	Y	89	412716.1	2.5				ug/L	493982	Standard
>	Rh	103	48.3	26.0				ug/L	17	Standard
|	Mo	98	204.5	34.3	0.0540	0.027	49.6	ug/L	54	Standard
|	Ag	107	134.3	15.2	0.0047	0.005	99.1	ug/L	137	Standard
|	Cd	111	8.7	34.1	-0.0074	0.002	29.3	mg/L	6	Standard
|	Cd	114	32.6	39.1	-0.0016	0.003	213.4	ug/L	20	Standard
>	In	115	665988.2	1.7				ug/L	755264	Standard
|	Sn	118	151.3	11.0	0.0452	0.017	36.9	ug/L	138	Standard
|	Sb	123	856.4	14.9	0.1900	0.029	15.1	ug/L	391	Standard
|	Ba	135	148.0	71.9	0.0671	0.069	102.8	ug/L	32	Standard
|	Ce	140	20.0	25.0				ug/L	42	Standard
>	Tb	159	978805.9	2.7				ug/L	966827	Standard
|	Ho	165	11.7	65.5				ug/L	12	Standard
|	Tl	203	133.7	27.1	0.0149	0.006	42.2	ug/L	19	Standard
|	Tl	205	251.7	39.5	0.0150	0.007	48.4	ug/L	58	Standard
|	Pb	206	468.7	1.3	0.0021	0.003	134.0	ug/L	464	Standard
|	Pb	207	414.0	0.9	0.0040	0.002	58.7	ug/L	405	Standard
|	Pb	208	863.7	0.4	0.0031	0.001	37.9	ug/L	876	Standard
|	U	238	67.7	31.6	0.0046	0.002	45.4	ug/L	14	Standard
>	Bi	209	558684.1	1.6				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:30:25

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0313	0.774	2467.7	mg/L	3	Standard
Mg	24	33.3	31.2	0.0898	0.200	223.3	mg/L	30	Standard
K	39	25.0	20.0	0.0685	0.061	89.1	mg/L	10	Standard
Ca	43	53.3	19.5	-11.3570	5.656	49.8	mg/L	83	Standard
Fe	54	24.2	23.3	0.0979	0.083	84.5	mg/L	21	Standard
Fe	57	388.3	5.2	4.2553	1.004	23.6	mg/L	240	Standard
Sc-1	45	44689.1	0.6				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.0	50.0				ug/L	5	Standard
Br	81	1640.1	13.0				ug/L	1587	Standard
P	31	93.3	8.2				ug/L	50	Standard
S	34	33.3	8.7				ug/L	8	Standard
Sr	88	281.7	11.4				ug/L	198	Standard
C	12	6.7	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	15.2	70.4				mg/L	6	Standard
Ho-1	165	11.7	65.5				mg/L	12	Standard
Er	166	30.0	66.7				mg/L	10	Standard
I	127	9109.4	7.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		89.422	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:30:25

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	88.179
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.247
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:30:25

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126105

Sample Date/Time: Tuesday, February 28, 2017 12:31:21

Number of Replicates: 3

Autosampler Position: 225

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	620227.4	1.0				ug/L	250104	Standard
|	Be	9	55.0	48.1	0.0034	0.007	197.0	ug/L	7	Standard
|	Al	27	9889040.8	2.5	32.7559	0.532	1.6	ug/L	597	Standard
|	Sc	45	47292.0	0.6				ug/L	41681	Standard
|	Ti	47	369.3	6.8	1.7290	0.089	5.1	ug/L	86	Standard
|	V	51	-271.5	401.8	-0.3199	0.182	57.0	ug/L	1740	Standard
|	Cr	52	18221.3	2.0	2.1337	0.039	1.8	ug/L	7178	Standard
|	Cr	53	29639.0	5.2	41.7094	0.976	2.3	ug/L	573	Standard
|	Mn	55	11295090.5	2.4	1262.7691	6.926	0.5	ug/L	3072	Standard
|	Co	59	14970.4	2.9	2.0814	0.030	1.4	ug/L	573	Standard
|	Ni	60	97481.7	1.9	65.5619	1.383	2.1	ug/L	264	Standard
|	Cu	65	3723.5	2.2	2.2468	0.059	2.6	ug/L	530	Standard
|	Zn	66	2554.2	2.6	2.7853	0.111	4.0	ug/L	252	Standard
>	Ge	72	607413.0	2.9				ug/L	641188	Standard
|	As	75	7397.6	3.1	9.0741	0.028	0.3	ug/L	-83	Standard
|	Se	82	443.2	8.4	6.0261	0.341	5.7	ug/L	16	Standard
|	Se-1	77	8045.5	3.2	156.8211	2.644	1.7	ug/L	126	Standard
>	Ga	71	1830.1	5.9				mg/L	70	Standard
|	Rb	85	3620872.9	3.2				ug/L	33	Standard
|	Y	89	479851.8	4.6				ug/L	493982	Standard
>	Rh	103	1046.7	4.4				ug/L	17	Standard
|	Mo	98	6790.5	5.6	2.3691	0.077	3.3	ug/L	54	Standard
|	Ag	107	165.3	12.6	0.0100	0.003	34.3	ug/L	137	Standard
|	Cd	111	32.6	13.4	0.0088	0.003	36.1	mg/L	6	Standard
|	Cd	114	96.4	12.0	0.0141	0.002	17.4	ug/L	20	Standard
>	In	115	689500.0	2.9				ug/L	755264	Standard
|	Sn	118	195.0	2.4	0.0892	0.003	3.7	ug/L	138	Standard
|	Sb	123	677.0	8.2	0.1389	0.010	7.2	ug/L	391	Standard
|	Ba	135	2703386.9	2.3	1656.7919	10.504	0.6	ug/L	32	Standard
|	Ce	140	891.7	4.8				ug/L	42	Standard
>	Tb	159	1064372.0	2.1				ug/L	966827	Standard
|	Ho	165	55.0	50.6				ug/L	12	Standard
|	Tl	203	198.0	25.5	0.0271	0.010	35.2	ug/L	19	Standard
|	Tl	205	483.3	36.2	0.0330	0.014	41.8	ug/L	58	Standard
|	Pb	206	662.3	2.7	0.0491	0.003	7.1	ug/L	464	Standard
|	Pb	207	534.7	7.9	0.0381	0.010	25.5	ug/L	405	Standard
|	Pb	208	1275.4	1.5	0.0536	0.005	9.1	ug/L	876	Standard
|	U	238	3885.2	2.0	0.3778	0.008	2.0	ug/L	14	Standard
>	Bi	209	531620.6	2.3				ug/L	599146	Standard

Sample ID: L1702126105

Report Date/Time: Tuesday, February 28, 2017 12:33:32

Page 1

Approved: March 01, 2017

Na	23	2788.6	4.0	709.2362	31.755	4.5	mg/L	3	Standard
Mg	24	2378.5	6.2	41.8723	2.770	6.6	mg/L	30	Standard
K	39	11741.2	5.3	137.7701	7.675	5.6	mg/L	10	Standard
Ca	43	2358.5	3.4	1174.0888	37.643	3.2	mg/L	83	Standard
Fe	54	155.4	19.6	1.8576	0.404	21.7	mg/L	21	Standard
Fe	57	5014.2	1.8	229.8066	4.896	2.1	mg/L	240	Standard
Sc-1	45	47292.0	0.6				mg/L	41681	Standard
Cl	35	2.7	43.3				ug/L	2	Standard
Kr	83	2.7	43.3				ug/L	5	Standard
Br	81	83403.0	6.8				ug/L	1587	Standard
P	31	95.0	9.1				ug/L	50	Standard
S	34	35.0	14.3				ug/L	8	Standard
Sr	88	355.0	5.6				ug/L	198	Standard
C	12	240.0	33.1				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	13.3	43.3				mg/L	3	Standard
Dy	164	27.6	4.6				mg/L	6	Standard
Ho-1	165	55.0	50.6				mg/L	12	Standard
Er	166	50.0	52.9				mg/L	10	Standard
I	127	191148.6	11.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		247.988	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.732	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126105

Report Date/Time: Tuesday, February 28, 2017 12:33:32

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	91.293
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	88.730
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Mn 55 Upper, S, EEE	Mn	55	
Se-1 77 Upper, S, EEE	Se-1	77	

Sample ID: L1702126105

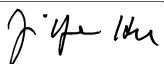
Report Date/Time: Tuesday, February 28, 2017 12:33:32

Page 3

Approved: March 01, 2017



Sample ID: L1702126105
Report Date/Time: Tuesday, February 28, 2017 12:33:32
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702126201

Sample Date/Time: Tuesday, February 28, 2017 12:34:27

Number of Replicates: 3

Autosampler Position: 226

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
[>	Li	6	297155.9	1.2				ug/L	250104	Standard
|	Be	9	28.3	27.0	0.0044	0.004	91.3	ug/L	7	Standard
|	Al	27	46773513.1	1.5	323.4678	4.259	1.3	ug/L	597	Standard
|	Sc	45	47688.3	2.6				ug/L	41681	Standard
|	Ti	47	130.0	9.3	0.3207	0.073	22.8	ug/L	86	Standard
|	V	51	-3139.7	30.1	-0.8216	0.164	20.0	ug/L	1740	Standard
|	Cr	52	143790.8	0.8	25.6271	0.219	0.9	ug/L	7178	Standard
|	Cr	53	42161.9	1.0	60.6206	0.667	1.1	ug/L	573	Standard
|	Mn	55	28954043.7	1.1	3284.7740	36.931	1.1	ug/L	3072	Standard
|	Co	59	27142.6	0.8	3.8805	0.031	0.8	ug/L	573	Standard
|	Ni	60	33760.9	1.9	22.9180	0.459	2.0	ug/L	264	Standard
|	Cu	65	1688.1	4.2	0.8291	0.050	6.0	ug/L	530	Standard
|	Zn	66	2926.9	1.4	3.2941	0.048	1.4	ug/L	252	Standard
[>	Ge	72	598608.2	0.1				ug/L	641188	Standard
|	As	75	700.8	21.1	0.9104	0.183	20.1	ug/L	-83	Standard
|	Se	82	150.4	6.7	1.9285	0.147	7.6	ug/L	16	Standard
|	Se-1	77	4147.2	3.4	80.9392	2.830	3.5	ug/L	126	Standard
[>	Ga	71	291.7	21.3				mg/L	70	Standard
|	Rb	85	11160.8	4.1				ug/L	33	Standard
|	Y	89	455079.6	1.8				ug/L	493982	Standard
[>	Rh	103	1058.4	9.9				ug/L	17	Standard
|	Mo	98	1214.3	2.6	0.4044	0.012	3.0	ug/L	54	Standard
|	Ag	107	139.0	11.1	0.0045	0.003	73.0	ug/L	137	Standard
|	Cd	111	42.8	18.7	0.0157	0.006	35.9	mg/L	6	Standard
|	Cd	114	108.2	19.6	0.0169	0.005	31.9	ug/L	20	Standard
[>	In	115	693318.8	0.6				ug/L	755264	Standard
|	Sn	118	191.7	7.4	0.0841	0.016	18.5	ug/L	138	Standard
|	Sb	123	285.8	3.5	0.0429	0.003	5.9	ug/L	391	Standard
|	Ba	135	562170.4	0.9	342.5879	4.889	1.4	ug/L	32	Standard
|	Ce	140	2678.6	0.6				ug/L	42	Standard
[>	Tb	159	1050001.4	1.3				ug/L	966827	Standard
|	Ho	165	26.7	10.8				ug/L	12	Standard
|	Tl	203	360.3	3.3	0.0526	0.002	3.3	ug/L	19	Standard
|	Tl	205	840.0	7.8	0.0567	0.004	7.2	ug/L	58	Standard
|	Pb	206	856.0	2.7	0.0847	0.005	5.3	ug/L	464	Standard
|	Pb	207	685.3	2.2	0.0690	0.004	6.5	ug/L	405	Standard
|	Pb	208	1567.0	4.6	0.0800	0.009	11.6	ug/L	876	Standard
|	U	238	7619.9	1.2	0.7169	0.012	1.6	ug/L	14	Standard
[>	Bi	209	550591.7	0.9				ug/L	599146	Standard

Sample ID: L1702126201

Report Date/Time: Tuesday, February 28, 2017 12:36:37

Page 1

Approved: March 01, 2017

Na	23	1023.4	4.4	257.8864	13.349	5.2	mg/L	3	Standard
Mg	24	3487.1	5.4	61.1440	3.869	6.3	mg/L	30	Standard
K	39	491.7	6.8	5.4843	0.238	4.3	mg/L	10	Standard
Ca	43	851.7	3.4	394.8587	22.703	5.7	mg/L	83	Standard
Fe	54	210.5	17.2	2.5933	0.552	21.3	mg/L	21	Standard
Fe	57	1850.1	8.3	74.0783	8.280	11.2	mg/L	240	Standard
Sc-1	45	47688.3	2.6				mg/L	41681	Standard
Cl	35	2.7	86.6				ug/L	2	Standard
Kr	83	4.0	0.0				ug/L	5	Standard
Br	81	39976.0	3.0				ug/L	1587	Standard
P	31	88.3	17.3				ug/L	50	Standard
S	34	33.3	62.5				ug/L	8	Standard
Sr	88	361.7	5.8				ug/L	198	Standard
C	12	23.3	24.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	70.3	46.4				mg/L	6	Standard
Ho-1	165	26.7	10.8				mg/L	12	Standard
Er	166	63.3	24.1				mg/L	10	Standard
I	127	156385.5	9.0				mg/L	5503	Standard

QC Calculated Values

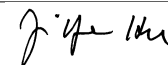
Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		118.813	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		93.359	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126201

Report Date/Time: Tuesday, February 28, 2017 12:36:37

Page 2

Approved: March 01, 2017



[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	91.798
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	91.896
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702126201

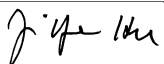
Report Date/Time: Tuesday, February 28, 2017 12:36:37

Page 3

Approved: March 01, 2017



Sample ID: L1702126201
Report Date/Time: Tuesday, February 28, 2017 12:36:37
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702126202

Sample Date/Time: Tuesday, February 28, 2017 12:37:31

Number of Replicates: 3

Autosampler Position: 227

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	387205.5	1.0				ug/L	250104	Standard
|	Be	9	18.3	41.7	-0.0030	0.003	99.9	ug/L	7	Standard
|	Al	27	92916110.7	1.9	493.2079	13.979	2.8	ug/L	597	Standard
|	Sc	45	41869.4	0.5				ug/L	41681	Standard
|	Ti	47	251.0	6.3	1.2502	0.095	7.6	ug/L	86	Standard
|	V	51	-4158.5	2.1	-1.0945	0.023	2.1	ug/L	1740	Standard
|	Cr	52	13357.9	1.1	1.6057	0.054	3.4	ug/L	7178	Standard
|	Cr	53	41760.9	4.8	68.1083	2.830	4.2	ug/L	573	Standard
|	Mn	55	106772931.0	1.2	13723.4383	259.385	1.9	ug/L	3072	Standard
|	Co	59	53393.9	1.1	8.7232	0.161	1.8	ug/L	573	Standard
|	Ni	60	75042.2	3.8	57.9872	2.680	4.6	ug/L	264	Standard
|	Cu	65	7112.3	4.0	5.3850	0.285	5.3	ug/L	530	Standard
|	Zn	66	11963.1	3.7	16.5288	0.703	4.3	ug/L	252	Standard
>	Ge	72	528453.5	0.9				ug/L	641188	Standard
|	As	75	-512.4	31.0	-0.6756	0.218	32.3	ug/L	-83	Standard
|	Se	82	361.6	25.4	5.6511	1.543	27.3	ug/L	16	Standard
|	Se-1	77	17045.9	5.1	385.0625	16.688	4.3	ug/L	126	Standard
>	Ga	71	766.7	5.3				mg/L	70	Standard
|	Rb	85	74687.0	1.8				ug/L	33	Standard
|	Y	89	436332.6	1.3				ug/L	493982	Standard
>	Rh	103	5004.2	5.8				ug/L	17	Standard
|	Mo	98	2017.1	1.7	0.8248	0.019	2.3	ug/L	54	Standard
|	Ag	107	184.0	4.1	0.0210	0.002	7.4	ug/L	137	Standard
|	Cd	111	124.0	2.0	0.0881	0.003	3.0	mg/L	6	Standard
|	Cd	114	341.7	10.7	0.0921	0.011	12.0	ug/L	20	Standard
>	In	115	579139.9	0.7				ug/L	755264	Standard
|	Sn	118	184.0	7.7	0.1166	0.018	15.4	ug/L	138	Standard
|	Sb	123	1132.5	6.4	0.3033	0.023	7.7	ug/L	391	Standard
|	Ba	135	22229820.4	2.0	16219.7327	412.276	2.5	ug/L	32	Standard
|	Ce	140	1225.0	4.7				ug/L	42	Standard
>	Tb	159	990294.6	1.5				ug/L	966827	Standard
|	Ho	165	23.3	32.7				ug/L	12	Standard
|	Tl	203	323.0	9.1	0.0645	0.007	11.3	ug/L	19	Standard
|	Tl	205	695.0	30.6	0.0632	0.021	33.1	ug/L	58	Standard
|	Pb	206	506.7	10.6	0.0474	0.016	34.0	ug/L	464	Standard
|	Pb	207	426.0	4.5	0.0418	0.005	12.7	ug/L	405	Standard
|	Pb	208	1141.7	1.2	0.0756	0.004	4.7	ug/L	876	Standard
|	U	238	20557.9	2.2	2.5905	0.066	2.5	ug/L	14	Standard
>	Bi	209	411796.4	1.0				ug/L	599146	Standard

Sample ID: L1702126202

Report Date/Time: Tuesday, February 28, 2017 12:39:42

Page 1

Approved: March 01, 2017

Na	23	4345.6	0.7	1248.5632	8.423	0.7	mg/L	3	Standard
Mg	24	12366.7	2.1	248.4781	4.049	1.6	mg/L	30	Standard
K	39	3557.1	3.6	46.9753	1.501	3.2	mg/L	10	Standard
Ca	43	3452.1	2.6	1967.5830	53.317	2.7	mg/L	83	Standard
Fe	54	499.5	10.4	7.4079	0.823	11.1	mg/L	21	Standard
Fe	57	7153.4	4.9	379.9484	17.459	4.6	mg/L	240	Standard
Sc-1	45	41869.4	0.5				mg/L	41681	Standard
Cl	35	2.0	0.0				ug/L	2	Standard
Kr	83	5.7	20.4				ug/L	5	Standard
Br	81	212970.1	2.2				ug/L	1587	Standard
P	31	75.0	40.6				ug/L	50	Standard
S	34	31.7	39.7				ug/L	8	Standard
Sr	88	628.3	13.0				ug/L	198	Standard
C	12	50.0	52.9				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	31.6	19.2				mg/L	6	Standard
Ho-1	165	23.3	32.7				mg/L	12	Standard
Er	166	36.7	15.7				mg/L	10	Standard
I	127	648644.4	10.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		154.818	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		82.418	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126202

Report Date/Time: Tuesday, February 28, 2017 12:39:42

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.680
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	68.731
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702126202

Report Date/Time: Tuesday, February 28, 2017 12:39:42

Page 3

Approved: March 01, 2017

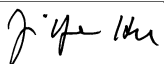


Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702126202

Report Date/Time: Tuesday, February 28, 2017 12:39:42

Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702126203

Sample Date/Time: Tuesday, February 28, 2017 12:40:37

Number of Replicates: 3

Autosampler Position: 228

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	286177.4	0.7				ug/L	250104	Standard
|	Be	9	45.0	50.9	0.0139	0.012	87.5	ug/L	7	Standard
|	Al	27	36718685.7	0.4	263.6662	0.773	0.3	ug/L	597	Standard
|	Sc	45	46529.7	0.3				ug/L	41681	Standard
|	Ti	47	100.0	2.6	0.1380	0.020	14.7	ug/L	86	Standard
|	V	51	-2370.3	14.9	-0.6871	0.064	9.4	ug/L	1740	Standard
|	Cr	52	111953.8	1.1	19.6144	0.220	1.1	ug/L	7178	Standard
|	Cr	53	39451.3	2.9	56.4837	1.932	3.4	ug/L	573	Standard
|	Mn	55	47211685.9	2.1	5338.6016	105.648	2.0	ug/L	3072	Standard
|	Co	59	27379.1	1.8	3.9019	0.079	2.0	ug/L	573	Standard
|	Ni	60	31552.8	1.6	21.3368	0.362	1.7	ug/L	264	Standard
|	Cu	65	1661.4	0.9	0.8063	0.020	2.5	ug/L	530	Standard
|	Zn	66	2082.8	1.6	2.2343	0.045	2.0	ug/L	252	Standard
>	Ge	72	600588.2	0.9				ug/L	641188	Standard
|	As	75	349.5	73.3	0.4723	0.315	66.6	ug/L	-83	Standard
|	Se	82	102.3	16.6	1.2338	0.239	19.4	ug/L	16	Standard
|	Se-1	77	4212.9	7.5	81.9883	6.463	7.9	ug/L	126	Standard
>	Ga	71	380.0	12.6				mg/L	70	Standard
|	Rb	85	7205.0	4.5				ug/L	33	Standard
|	Y	89	436389.7	2.7				ug/L	493982	Standard
>	Rh	103	726.7	10.7				ug/L	17	Standard
|	Mo	98	768.9	0.8	0.2491	0.005	2.0	ug/L	54	Standard
|	Ag	107	139.3	1.8	0.0046	0.001	12.1	ug/L	137	Standard
|	Cd	111	134.0	6.8	0.0784	0.007	9.3	mg/L	6	Standard
|	Cd	114	411.8	5.3	0.0930	0.005	5.7	ug/L	20	Standard
>	In	115	691694.7	1.1				ug/L	755264	Standard
|	Sn	118	180.0	30.2	0.0712	0.061	85.6	ug/L	138	Standard
|	Sb	123	209.8	5.6	0.0246	0.003	11.3	ug/L	391	Standard
|	Ba	135	374590.0	0.3	228.8132	3.181	1.4	ug/L	32	Standard
|	Ce	140	1381.7	2.4				ug/L	42	Standard
>	Tb	159	1068444.0	1.7				ug/L	966827	Standard
|	Ho	165	46.7	22.3				ug/L	12	Standard
|	Tl	203	419.0	14.3	0.0616	0.011	17.2	ug/L	19	Standard
|	Tl	205	923.4	18.5	0.0620	0.013	20.5	ug/L	58	Standard
|	Pb	206	662.7	2.6	0.0426	0.004	10.4	ug/L	464	Standard
|	Pb	207	547.0	7.1	0.0351	0.010	27.3	ug/L	405	Standard
|	Pb	208	1228.0	1.2	0.0420	0.000	1.1	ug/L	876	Standard
|	U	238	11629.1	1.5	1.0824	0.005	0.4	ug/L	14	Standard
>	Bi	209	556905.1	1.1				ug/L	599146	Standard

Sample ID: L1702126203

Report Date/Time: Tuesday, February 28, 2017 12:42:48

Page 1

Approved: March 01, 2017

Na	23	758.4	6.6	195.6425	12.599	6.4	mg/L	3	Standard
Mg	24	2908.6	1.1	52.1668	0.732	1.4	mg/L	30	Standard
K	39	478.3	6.7	5.4722	0.392	7.2	mg/L	10	Standard
Ca	43	651.7	16.2	300.6568	55.124	18.3	mg/L	83	Standard
Fe	54	122.3	16.6	1.4364	0.276	19.2	mg/L	21	Standard
Fe	57	1556.7	3.8	61.6506	3.143	5.1	mg/L	240	Standard
Sc-1	45	46529.7	0.3				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	5.7	81.5				ug/L	5	Standard
Br	81	30995.0	1.3				ug/L	1587	Standard
P	31	85.0	35.8				ug/L	50	Standard
S	34	28.3	53.9				ug/L	8	Standard
Sr	88	328.3	15.6				ug/L	198	Standard
C	12	40.0	25.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	37.4	0.7				mg/L	6	Standard
Ho-1	165	46.7	22.3				mg/L	12	Standard
Er	166	53.3	10.8				mg/L	10	Standard
I	127	207760.0	1.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		114.424	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		93.668	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126203

Report Date/Time: Tuesday, February 28, 2017 12:42:48

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	91.583
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	92.950
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702126203

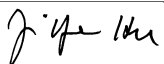
Report Date/Time: Tuesday, February 28, 2017 12:42:48

Page 3

Approved: March 01, 2017



Sample ID: L1702126203
Report Date/Time: Tuesday, February 28, 2017 12:42:48
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 12:43:44

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	260423.0	2.1				ug/L	250104	Standard
|	Be	9	82254.3	0.0	48.5715	0.998	2.1	ug/L	7	Standard
|	Al	27	5866536.6	0.7	46.3039	1.271	2.7	ug/L	597	Standard
|	Sc	45	47148.3	1.4				ug/L	41681	Standard
|	Ti	47	19040.0	0.7	113.5446	0.730	0.6	ug/L	86	Standard
|	V	51	308463.4	1.3	52.9347	0.172	0.3	ug/L	1740	Standard
|	Cr	52	290030.8	1.0	52.5880	0.340	0.6	ug/L	7178	Standard
|	Cr	53	45095.4	3.4	64.4957	2.695	4.2	ug/L	573	Standard
|	Mn	55	502363.7	9.5	56.3479	5.635	10.0	ug/L	3072	Standard
|	Co	59	362041.3	0.9	52.1842	0.406	0.8	ug/L	573	Standard
|	Ni	60	76963.3	1.4	52.1391	0.665	1.3	ug/L	264	Standard
|	Cu	65	72618.3	0.4	51.2284	0.731	1.4	ug/L	530	Standard
|	Zn	66	40320.2	0.7	49.5519	0.704	1.4	ug/L	252	Standard
>	Ge	72	602431.5	1.0				ug/L	641188	Standard
|	As	75	38609.3	0.7	47.5768	0.698	1.5	ug/L	-83	Standard
|	Se	82	3201.2	0.4	45.3666	0.585	1.3	ug/L	16	Standard
|	Se-1	77	3260.7	5.4	62.7572	4.037	6.4	ug/L	126	Standard
>	Ga	71	90.0	40.1				mg/L	70	Standard
|	Rb	85	653.3	8.2				ug/L	33	Standard
|	Y	89	423007.3	1.0				ug/L	493982	Standard
>	Rh	103	43.3	58.1				ug/L	17	Standard
|	Mo	98	252012.3	1.8	88.2523	0.473	0.5	ug/L	54	Standard
|	Ag	107	234175.5	0.7	47.5713	0.328	0.7	ug/L	137	Standard
|	Cd	111	68451.3	1.7	46.9070	0.182	0.4	mg/L	6	Standard
|	Cd	114	192344.9	0.8	48.0514	0.792	1.6	ug/L	20	Standard
>	In	115	693068.5	1.4				ug/L	755264	Standard
|	Sn	118	43289.1	1.1	49.0890	0.370	0.8	ug/L	138	Standard
|	Sb	123	201254.0	0.7	48.9507	0.567	1.2	ug/L	391	Standard
|	Ba	135	86713.5	2.0	52.8362	0.692	1.3	ug/L	32	Standard
|	Ce	140	83.3	18.3				ug/L	42	Standard
>	Tb	159	1028560.3	1.2				ug/L	966827	Standard
|	Ho	165	25.0	72.1				ug/L	12	Standard
|	Tl	203	313499.0	1.2	49.0561	0.737	1.5	ug/L	19	Standard
|	Tl	205	732140.1	0.3	49.0009	0.760	1.6	ug/L	58	Standard
|	Pb	206	246929.9	1.6	48.9188	0.413	0.8	ug/L	464	Standard
|	Pb	207	220089.7	0.9	48.7365	0.412	0.8	ug/L	405	Standard
|	Pb	208	474747.0	1.2	48.1777	0.709	1.5	ug/L	876	Standard
|	U	238	515055.4	1.6	45.9744	0.748	1.6	ug/L	14	Standard
>	Bi	209	581663.6	1.3				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:45:55

Page 1

Approved: March 01, 2017

Na	23	33.3	37.7	8.0351	3.254	40.5	mg/L	3	Standard
Mg	24	298.3	25.2	4.7864	1.279	26.7	mg/L	30	Standard
K	39	705.0	4.7	8.0732	0.484	6.0	mg/L	10	Standard
Ca	43	73.3	21.9	-2.4643	8.735	354.4	mg/L	83	Standard
Fe	54	283.5	18.1	3.6096	0.709	19.7	mg/L	21	Standard
Fe	57	516.7	1.5	9.5134	0.038	0.4	mg/L	240	Standard
Sc-1	45	47148.3	1.4				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	6.7	22.9				ug/L	5	Standard
Br	81	2146.8	5.9				ug/L	1587	Standard
P	31	80.0	62.5				ug/L	50	Standard
S	34	25.0	40.0				ug/L	8	Standard
Sr	88	310.0	10.1				ug/L	198	Standard
C	12	13.3	43.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.4	5.9				mg/L	6	Standard
Ho-1	165	25.0	72.1				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	14058.5	27.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	97.143		
Al	27	92.608		
Sc	45			
Ti	47	113.545		
V	51	105.869		
Cr	52	105.176		
Cr	53			
Mn	55	112.696		
Co	59	104.368		
Ni	60	104.278		
Cu	65	102.457		
Zn	66	99.104		
Ge	72		93.955	
As	75	95.154		
Se	82	90.733		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:45:55

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	88.252	
[	Ag	107	95.143	
[	Cd	111	93.814	
[	Cd	114		
>	In	115		91.765
[	Sn	118	98.178	
[	Sb	123	97.901	
[	Ba	135	105.672	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	98.112	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	96.355	
[	U	238	91.949	
>	Bi	209		97.082
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Ti	47	
QC Std 6	Mn	55	
QC Std 6	Mo	98	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:45:55

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 12:46:50

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	258041.2	2.3				ug/L	250104	Standard
|	Be	9	23.3	12.4	0.0037	0.002	51.8	ug/L	7	Standard
|	Al	27	2196.8	27.7	0.0114	0.005	44.8	ug/L	597	Standard
|	Sc	45	46986.1	2.2				ug/L	41681	Standard
|	Ti	47	46.0	9.5	-0.1880	0.028	15.0	ug/L	86	Standard
|	V	51	648.6	38.9	-0.1649	0.044	26.9	ug/L	1740	Standard
|	Cr	52	6547.7	0.3	-0.0089	0.008	85.0	ug/L	7178	Standard
|	Cr	53	5994.5	6.5	7.7859	0.602	7.7	ug/L	573	Standard
|	Mn	55	3970.5	15.9	0.1397	0.071	50.7	ug/L	3072	Standard
|	Co	59	424.0	3.3	-0.0003	0.002	706.8	ug/L	573	Standard
|	Ni	60	155.3	7.6	-0.0723	0.008	11.5	ug/L	264	Standard
|	Cu	65	585.3	3.8	0.0365	0.013	37.0	ug/L	530	Standard
|	Zn	66	336.0	4.2	0.0631	0.017	26.2	ug/L	252	Standard
>	Ge	72	604436.5	0.9				ug/L	641188	Standard
|	As	75	-75.1	61.8	-0.0498	0.057	114.4	ug/L	-83	Standard
|	Se	82	14.5	55.8	-0.0225	0.113	502.0	ug/L	16	Standard
|	Se-1	77	485.3	7.4	7.3740	0.793	10.8	ug/L	126	Standard
>	Ga	71	80.0	25.0				mg/L	70	Standard
|	Rb	85	81.7	38.9				ug/L	33	Standard
|	Y	89	429347.5	3.3				ug/L	493982	Standard
>	Rh	103	30.0	92.8				ug/L	17	Standard
|	Mo	98	197.2	28.6	0.0481	0.020	42.2	ug/L	54	Standard
|	Ag	107	138.3	24.4	0.0042	0.006	151.7	ug/L	137	Standard
|	Cd	111	11.7	37.0	-0.0056	0.003	50.6	mg/L	6	Standard
|	Cd	114	42.7	6.4	0.0005	0.001	106.7	ug/L	20	Standard
>	In	115	695460.1	1.4				ug/L	755264	Standard
|	Sn	118	148.7	4.1	0.0347	0.004	12.9	ug/L	138	Standard
|	Sb	123	926.2	12.9	0.1979	0.028	14.2	ug/L	391	Standard
|	Ba	135	106.3	45.3	0.0372	0.030	79.6	ug/L	32	Standard
|	Ce	140	35.0	0.0				ug/L	42	Standard
>	Tb	159	1017828.2	2.1				ug/L	966827	Standard
|	Ho	165	13.3	43.3				ug/L	12	Standard
|	Tl	203	75.3	6.0	0.0049	0.001	16.4	ug/L	19	Standard
|	Tl	205	183.3	23.2	0.0098	0.003	30.0	ug/L	58	Standard
|	Pb	206	473.3	6.6	-0.0001	0.006	5602.8	ug/L	464	Standard
|	Pb	207	422.3	1.9	0.0028	0.003	91.0	ug/L	405	Standard
|	Pb	208	904.0	3.7	0.0043	0.004	84.6	ug/L	876	Standard
|	U	238	57.3	11.2	0.0035	0.001	15.8	ug/L	14	Standard
>	Bi	209	577168.4	0.8				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:49:00

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	0.3793	0.743	195.9	mg/L	3	Standard
Mg	24	35.0	49.5	0.0898	0.314	350.1	mg/L	30	Standard
K	39	15.0	0.0	-0.0648	0.004	6.0	mg/L	10	Standard
Ca	43	38.3	37.7	-20.4400	8.002	39.1	mg/L	83	Standard
Fe	54	34.3	28.3	0.2214	0.142	64.1	mg/L	21	Standard
Fe	57	353.3	5.4	1.5651	1.325	84.6	mg/L	240	Standard
Sc-1	45	46986.1	2.2				mg/L	41681	Standard
Cl	35	2.0	0.0				ug/L	2	Standard
Kr	83	4.7	86.6				ug/L	5	Standard
Br	81	1430.1	3.2				ug/L	1587	Standard
P	31	70.0	21.4				ug/L	50	Standard
S	34	33.3	52.7				ug/L	8	Standard
Sr	88	266.7	15.7				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	12.5	51.6				mg/L	6	Standard
Ho-1	165	13.3	43.3				mg/L	12	Standard
Er	166	16.7	91.7				mg/L	10	Standard
I	127	9251.2	4.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.268	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:49:00

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	92.082
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	96.332
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:49:00

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 8

Sample Date/Time: Tuesday, February 28, 2017 12:58:21

Number of Replicates: 3

Autosampler Position: 202

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	244358.4	1.7				ug/L	250104	Standard
|	Be	9	293.3	11.1	0.1741	0.017	10.0	ug/L	7	Standard
|	Al	27	890.0	3.9	0.0013	0.000	23.4	ug/L	597	Standard
|	Sc	45	44784.4	1.1				ug/L	41681	Standard
|	Ti	47	45.0	7.7	-0.1774	0.025	14.2	ug/L	86	Standard
|	V	51	3510.3	1.5	0.3643	0.014	3.8	ug/L	1740	Standard
|	Cr	52	12661.3	1.9	1.2658	0.025	2.0	ug/L	7178	Standard
|	Cr	53	4065.5	1.9	5.3605	0.120	2.2	ug/L	573	Standard
|	Mn	55	6587.4	0.8	0.4796	0.011	2.4	ug/L	3072	Standard
|	Co	59	2934.0	3.0	0.3869	0.019	4.9	ug/L	573	Standard
|	Ni	60	2315.2	1.9	1.4880	0.045	3.0	ug/L	264	Standard
|	Cu	65	1510.1	4.1	0.7572	0.033	4.4	ug/L	530	Standard
|	Zn	66	4686.7	0.6	5.7870	0.086	1.5	ug/L	252	Standard
>	Ge	72	569305.0	1.2				ug/L	641188	Standard
|	As	75	295.8	16.1	0.4276	0.062	14.5	ug/L	-83	Standard
|	Se	82	45.5	10.6	0.4588	0.077	16.8	ug/L	16	Standard
|	Se-1	77	263.3	12.6	3.2774	0.646	19.7	ug/L	126	Standard
>	Ga	71	50.0	0.0				mg/L	70	Standard
|	Rb	85	43.3	6.7				ug/L	33	Standard
|	Y	89	393740.9	1.2				ug/L	493982	Standard
>	Rh	103	30.0	0.0				ug/L	17	Standard
|	Mo	98	44.6	12.2	-0.0042	0.002	47.7	ug/L	54	Standard
|	Ag	107	1673.1	4.5	0.3380	0.011	3.3	ug/L	137	Standard
|	Cd	111	283.6	5.5	0.1931	0.009	4.9	mg/L	6	Standard
|	Cd	114	874.3	4.6	0.2224	0.013	5.8	ug/L	20	Standard
>	In	115	651395.7	1.5				ug/L	755264	Standard
|	Sn	118	91.0	2.2	-0.0236	0.004	15.1	ug/L	138	Standard
|	Sb	123	1595.2	2.9	0.3864	0.011	2.9	ug/L	391	Standard
|	Ba	135	1133.0	3.5	0.7076	0.032	4.5	ug/L	32	Standard
|	Ce	140	23.3	32.7				ug/L	42	Standard
>	Tb	159	972576.7	1.5				ug/L	966827	Standard
|	Ho	165	8.3	69.3				ug/L	12	Standard
|	Tl	203	494.3	4.0	0.0751	0.003	4.6	ug/L	19	Standard
|	Tl	205	1088.4	6.2	0.0746	0.005	6.1	ug/L	58	Standard
|	Pb	206	1305.1	1.4	0.1800	0.005	2.8	ug/L	464	Standard
|	Pb	207	1116.7	3.3	0.1711	0.008	4.5	ug/L	405	Standard
|	Pb	208	2540.8	1.8	0.1856	0.005	2.7	ug/L	876	Standard
|	U	238	3879.5	3.6	0.3656	0.012	3.3	ug/L	14	Standard
>	Bi	209	548330.1	0.4				ug/L	599146	Standard

Sample ID: QC Std 8

Report Date/Time: Tuesday, February 28, 2017 13:00:32

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0355	0.766	2158.9	mg/L	3	Standard
Mg	24	33.3	17.3	0.0879	0.111	125.7	mg/L	30	Standard
K	39	21.7	35.3	0.0261	0.092	352.6	mg/L	10	Standard
Ca	43	48.3	11.9	-14.1309	3.219	22.8	mg/L	83	Standard
Fe	54	36.2	34.9	0.2700	0.185	68.4	mg/L	21	Standard
Fe	57	433.3	13.4	6.5399	2.981	45.6	mg/L	240	Standard
Sc-1	45	44784.4	1.1				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	5.0	34.6				ug/L	5	Standard
Br	81	1443.4	3.8				ug/L	1587	Standard
P	31	63.3	43.5				ug/L	50	Standard
S	34	20.0	50.0				ug/L	8	Standard
Sr	88	275.0	9.4				ug/L	198	Standard
C	12	23.3	65.5				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	12.4	119.6				mg/L	6	Standard
Ho-1	165	8.3	69.3				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	4594.0	4.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	87.064		
Al	27			
Sc	45			
Ti	47			
V	51	91.080		
Cr	52	158.227		
Cr	53			
Mn	55	95.911		
Co	59	96.715		
Ni	60	93.001		
Cu	65	94.645		
Zn	66	92.592		
Ge	72		88.789	
As	75	106.910		
Se	82	114.699		
Se-1	77			
Ga	71			

Sample ID: QC Std 8

Report Date/Time: Tuesday, February 28, 2017 13:00:32

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98		
	Ag	107	84.488	
	Cd	111	80.477	
	Cd	114		
>	In	115		86.247
	Sn	118		
	Sb	123	96.606	
[	Ba	135	94.352	
[	Ce	140		
>	Tb	159		
[	Ho	165		
	Tl	203	93.889	
	Tl	205		
	Pb	206		
	Pb	207		
	Pb	208	92.819	
	U	238	91.400	
>	Bi	209		91.519
[	Na	23		
[	Mg	24		
	K	39		
	Ca	43		
	Fe	54		
	Fe	57		
>	Sc-1	45		
	Cl	35		
	Kr	83		
	Br	81		
	P	31		
	S	34		
	Sr	88		
	C	12		
	N	14		
	Hg	202		
	Dy	164		
	Ho-1	165		
	Er	166		
	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 8	Cr	52	

Sample ID: QC Std 8

Report Date/Time: Tuesday, February 28, 2017 13:00:32

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126102PS WG604209-03

Sample Date/Time: Tuesday, February 28, 2017 13:13:00

Number of Replicates: 3

Autosampler Position: 229

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	259089.8	4.8				ug/L	250104	Standard
|	Be	9	86516.3	1.0	51.4067	2.183	4.2	ug/L	7	Standard
|	Al	27	725579.5	0.8	5.7594	0.330	5.7	ug/L	597	Standard
|	Sc	45	47746.9	4.2				ug/L	41681	Standard
|	Ti	47	119.3	11.7	0.2472	0.065	26.1	ug/L	86	Standard
|	V	51	325545.3	1.8	55.6327	1.139	2.0	ug/L	1740	Standard
|	Cr	52	299520.0	1.6	54.1038	1.269	2.3	ug/L	7178	Standard
|	Cr	53	40965.4	4.0	58.1994	0.480	0.8	ug/L	573	Standard
|	Mn	55	515314.5	4.2	57.6174	4.678	8.1	ug/L	3072	Standard
|	Co	59	370020.5	0.6	53.1229	2.148	4.0	ug/L	573	Standard
|	Ni	60	79380.4	0.4	53.5699	2.256	4.2	ug/L	264	Standard
|	Cu	65	75851.1	1.3	53.3082	2.287	4.3	ug/L	530	Standard
|	Zn	66	43261.7	1.4	52.9623	1.688	3.2	ug/L	252	Standard
>	Ge	72	605433.0	3.8				ug/L	641188	Standard
|	As	75	40685.5	0.2	49.9311	2.035	4.1	ug/L	-83	Standard
|	Se	82	3261.8	2.2	46.0653	2.810	6.1	ug/L	16	Standard
|	Se-1	77	2688.9	2.7	51.1198	2.466	4.8	ug/L	126	Standard
>	Ga	71	103.3	45.0				mg/L	70	Standard
|	Rb	85	12138.2	1.7				ug/L	33	Standard
|	Y	89	420492.1	4.4				ug/L	493982	Standard
>	Rh	103	80.0	33.1				ug/L	17	Standard
|	Mo	98	4416.6	0.2	1.5517	0.053	3.4	ug/L	54	Standard
|	Ag	107	219410.0	1.0	45.3114	1.968	4.3	ug/L	137	Standard
|	Cd	111	69103.6	1.0	48.1455	2.096	4.4	mg/L	6	Standard
|	Cd	114	190719.4	2.4	48.4465	2.731	5.6	ug/L	20	Standard
>	In	115	682342.7	3.3				ug/L	755264	Standard
|	Sn	118	210.0	6.1	0.1089	0.013	12.0	ug/L	138	Standard
|	Sb	123	209189.4	1.3	51.7284	2.355	4.6	ug/L	391	Standard
|	Ba	135	224347.9	1.2	139.0314	6.314	4.5	ug/L	32	Standard
|	Ce	140	501.7	4.5				ug/L	42	Standard
>	Tb	159	1007556.0	4.0				ug/L	966827	Standard
|	Ho	165	56.7	25.5				ug/L	12	Standard
|	Tl	203	314317.2	0.6	50.9282	2.574	5.1	ug/L	19	Standard
|	Tl	205	735101.5	1.2	50.9376	2.505	4.9	ug/L	58	Standard
|	Pb	206	247694.3	0.5	50.8105	2.331	4.6	ug/L	464	Standard
|	Pb	207	220342.1	1.1	50.5101	2.025	4.0	ug/L	405	Standard
|	Pb	208	480465.9	1.1	50.4661	1.685	3.3	ug/L	876	Standard
|	U	238	535958.9	2.2	49.4962	1.066	2.2	ug/L	14	Standard
>	Bi	209	562517.8	4.3				ug/L	599146	Standard

Sample ID: L1702126102PS WG604209-03

Report Date/Time: Tuesday, February 28, 2017 13:15:11

Page 1

Approved: March 01, 2017

Na	23	10.0	100.0	1.9756	2.428	122.9	mg/L	3	Standard
Mg	24	3598.8	2.3	63.0529	1.895	3.0	mg/L	30	Standard
K	39	76.7	26.4	0.6575	0.271	41.2	mg/L	10	Standard
Ca	43	76.7	27.2	-1.5411	9.048	587.1	mg/L	83	Standard
Fe	54	33.3	15.0	0.1996	0.074	37.0	mg/L	21	Standard
Fe	57	425.0	20.4	4.8343	4.641	96.0	mg/L	240	Standard
Sc-1	45	47746.9	4.2				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	5.0	87.2				ug/L	5	Standard
Br	81	5461.0	8.5				ug/L	1587	Standard
P	31	73.3	37.6				ug/L	50	Standard
S	34	40.0	25.0				ug/L	8	Standard
Sr	88	243.3	10.1				ug/L	198	Standard
C	12	46.7	65.5				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	28.6	71.8				mg/L	6	Standard
Ho-1	165	56.7	25.5				mg/L	12	Standard
Er	166	30.0	66.7				mg/L	10	Standard
I	127	35987.7	1.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		103.593	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.424	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126102PS WG604209-03

Report Date/Time: Tuesday, February 28, 2017 13:15:11

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.345
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.887
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Ba 135 Upper, S, EEE	Ba	135	

Sample ID: L1702126102PS WG604209-03

Report Date/Time: Tuesday, February 28, 2017 13:15:11

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126102SDL WG604209-04

Sample Date/Time: Tuesday, February 28, 2017 13:16:05

Number of Replicates: 3

Autosampler Position: 230

Sample Description: 5

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	236141.8	2.7				ug/L	250104	Standard
|	Be	9	56.7	22.2	0.0268	0.009	34.1	ug/L	7	Standard
|	Al	27	156630.7	22.5	1.3629	0.348	25.5	ug/L	597	Standard
|	Sc	45	43124.6	1.4				ug/L	41681	Standard
|	Ti	47	55.3	27.2	-0.1018	0.106	103.7	ug/L	86	Standard
|	V	51	2545.2	3.3	0.2004	0.025	12.2	ug/L	1740	Standard
|	Cr	52	6920.9	0.9	0.1747	0.042	24.1	ug/L	7178	Standard
|	Cr	53	2610.2	3.9	3.2315	0.120	3.7	ug/L	573	Standard
|	Mn	55	18110.2	103.7	1.9457	2.381	122.4	ug/L	3072	Standard
|	Co	59	506.0	20.0	0.0182	0.018	97.7	ug/L	573	Standard
|	Ni	60	352.7	15.1	0.0833	0.045	54.3	ug/L	264	Standard
|	Cu	65	829.4	1.8	0.2620	0.024	9.2	ug/L	530	Standard
|	Zn	66	1052.4	1.8	1.0632	0.050	4.7	ug/L	252	Standard
>	Ge	72	554967.3	2.3				ug/L	641188	Standard
|	As	75	155.1	6.9	0.2494	0.010	3.8	ug/L	-83	Standard
|	Se	82	20.3	28.7	0.0858	0.089	103.2	ug/L	16	Standard
|	Se-1	77	209.3	1.7	2.2577	0.141	6.2	ug/L	126	Standard
>	Ga	71	65.0	13.3				mg/L	70	Standard
|	Rb	85	2333.5	6.2				ug/L	33	Standard
|	Y	89	383363.8	1.9				ug/L	493982	Standard
>	Rh	103	38.3	15.1				ug/L	17	Standard
|	Mo	98	844.8	3.5	0.3003	0.017	5.7	ug/L	54	Standard
|	Ag	107	143.7	3.6	0.0079	0.001	15.6	ug/L	137	Standard
|	Cd	111	11.2	13.6	-0.0053	0.001	20.1	mg/L	6	Standard
|	Cd	114	218.2	7.4	0.0491	0.005	9.7	ug/L	20	Standard
>	In	115	639083.8	1.8				ug/L	755264	Standard
|	Sn	118	1805.8	3.4	2.0930	0.069	3.3	ug/L	138	Standard
|	Sb	123	781.8	18.2	0.1800	0.040	22.4	ug/L	391	Standard
|	Ba	135	26268.8	0.9	17.3435	0.359	2.1	ug/L	32	Standard
|	Ce	140	131.7	15.3				ug/L	42	Standard
>	Tb	159	953121.5	2.4				ug/L	966827	Standard
|	Ho	165	10.0	50.0				ug/L	12	Standard
|	Tl	203	45.3	18.5	0.0007	0.002	209.4	ug/L	19	Standard
|	Tl	205	115.0	79.8	0.0058	0.007	118.4	ug/L	58	Standard
|	Pb	206	490.3	0.3	0.0106	0.002	19.1	ug/L	464	Standard
|	Pb	207	440.3	8.9	0.0142	0.010	70.6	ug/L	405	Standard
|	Pb	208	993.0	5.9	0.0210	0.008	39.3	ug/L	876	Standard
|	U	238	499.3	41.2	0.0468	0.021	44.6	ug/L	14	Standard
>	Bi	209	537246.9	1.6				ug/L	599146	Standard

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:18:16

Page 1

Approved: March 01, 2017

Na	23	5.0	100.0	0.9308	1.416	152.1	mg/L	3	Standard
Mg	24	676.7	10.4	12.6943	1.411	11.1	mg/L	30	Standard
K	39	31.7	24.1	0.1655	0.097	58.5	mg/L	10	Standard
Ca	43	55.0	32.8	-9.3785	10.048	107.1	mg/L	83	Standard
Fe	54	37.6	30.6	0.3115	0.177	56.8	mg/L	21	Standard
Fe	57	383.3	4.9	4.7192	1.003	21.3	mg/L	240	Standard
Sc-1	45	43124.6	1.4				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	8.3	30.2				ug/L	5	Standard
Br	81	2013.5	2.8				ug/L	1587	Standard
P	31	63.3	24.1				ug/L	50	Standard
S	34	33.3	22.9				ug/L	8	Standard
Sr	88	266.7	8.5				ug/L	198	Standard
C	12	26.7	57.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	8.4	193.0				mg/L	6	Standard
Ho-1	165	10.0	50.0				mg/L	12	Standard
Er	166	33.3	75.5				mg/L	10	Standard
I	127	11334.2	3.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		94.418	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		86.553	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:18:16

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	84.617
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.669
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:18:16

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126102SDL WG604209-04

Sample Date/Time: Tuesday, February 28, 2017 13:19:10

Number of Replicates: 3

Autosampler Position: 231

Sample Description: 25

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	230446.1	1.4				ug/L	250104	Standard
|	Be	9	25.0	20.0	0.0064	0.003	49.2	ug/L	7	Standard
|	Al	27	26985.7	0.7	0.2345	0.003	1.4	ug/L	597	Standard
|	Sc	45	42300.6	1.5				ug/L	41681	Standard
|	Ti	47	30.3	14.9	-0.2604	0.030	11.4	ug/L	86	Standard
|	V	51	1572.4	14.4	0.0261	0.048	185.6	ug/L	1740	Standard
|	Cr	52	6343.0	0.9	0.0915	0.022	23.7	ug/L	7178	Standard
|	Cr	53	2053.5	4.9	2.4395	0.107	4.4	ug/L	573	Standard
|	Mn	55	2600.6	0.8	0.0203	0.006	27.9	ug/L	3072	Standard
|	Co	59	339.0	5.6	-0.0068	0.004	62.2	ug/L	573	Standard
|	Ni	60	182.3	5.5	-0.0394	0.009	22.5	ug/L	264	Standard
|	Cu	65	556.0	8.4	0.0623	0.041	65.6	ug/L	530	Standard
|	Zn	66	776.7	4.3	0.7204	0.069	9.5	ug/L	252	Standard
>	Ge	72	540801.1	2.2				ug/L	641188	Standard
|	As	75	20.8	219.3	0.0715	0.062	87.2	ug/L	-83	Standard
|	Se	82	14.1	36.8	-0.0036	0.085	2317.0	ug/L	16	Standard
|	Se-1	77	194.0	2.7	2.0350	0.132	6.5	ug/L	126	Standard
>	Ga	71	35.0	24.7				mg/L	70	Standard
|	Rb	85	480.0	8.1				ug/L	33	Standard
|	Y	89	374351.1	2.1				ug/L	493982	Standard
>	Rh	103	41.7	48.5				ug/L	17	Standard
|	Mo	98	184.1	4.8	0.0518	0.005	9.8	ug/L	54	Standard
|	Ag	107	115.3	7.4	0.0026	0.001	51.2	ug/L	137	Standard
|	Cd	111	5.1	11.2	-0.0097	0.000	5.0	mg/L	6	Standard
|	Cd	114	258.3	15.7	0.0625	0.010	16.8	ug/L	20	Standard
>	In	115	615496.7	2.4				ug/L	755264	Standard
|	Sn	118	2052.8	10.2	2.4922	0.224	9.0	ug/L	138	Standard
|	Sb	123	173.4	18.5	0.0208	0.008	36.9	ug/L	391	Standard
|	Ba	135	5050.5	2.8	3.4399	0.080	2.3	ug/L	32	Standard
|	Ce	140	38.3	19.9				ug/L	42	Standard
>	Tb	159	928307.2	1.6				ug/L	966827	Standard
|	Ho	165	18.3	41.7				ug/L	12	Standard
|	Tl	203	19.3	41.8	-0.0037	0.001	36.1	ug/L	19	Standard
|	Tl	205	46.7	22.3	0.0008	0.001	91.0	ug/L	58	Standard
|	Pb	206	419.3	6.0	-0.0035	0.007	203.0	ug/L	464	Standard
|	Pb	207	339.7	2.6	-0.0091	0.001	7.2	ug/L	405	Standard
|	Pb	208	821.0	1.1	0.0031	0.002	49.8	ug/L	876	Standard
|	U	238	66.0	15.2	0.0048	0.001	20.8	ug/L	14	Standard
>	Bi	209	530929.5	1.9				ug/L	599146	Standard

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:21:21

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0054	0.819	15199.9	mg/L	3	Standard
Mg	24	138.3	19.9	2.2198	0.561	25.3	mg/L	30	Standard
K	39	36.7	39.4	0.2410	0.194	80.5	mg/L	10	Standard
Ca	43	40.0	25.0	-17.3333	6.105	35.2	mg/L	83	Standard
Fe	54	29.6	16.4	0.1988	0.067	33.9	mg/L	21	Standard
Fe	57	420.0	4.8	7.1386	1.355	19.0	mg/L	240	Standard
Sc-1	45	42300.6	1.5				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	5.0	20.0				ug/L	5	Standard
Br	81	1340.1	3.3				ug/L	1587	Standard
P	31	80.0	33.1				ug/L	50	Standard
S	34	26.7	84.5				ug/L	8	Standard
Sr	88	220.0	17.2				ug/L	198	Standard
C	12	13.3	114.6				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	9.2	111.3				mg/L	6	Standard
Ho-1	165	18.3	41.7				mg/L	12	Standard
Er	166	16.7	34.6				mg/L	10	Standard
I	127	5896.1	0.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		92.140	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.344	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:21:21

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	81.494
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	88.614
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:21:21

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 4

Sample Date/Time: Tuesday, February 28, 2017 13:22:16

Number of Replicates: 3

Autosampler Position: 203

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	259410.6	3.8				ug/L	250104	Standard
|	Be	9	23.3	44.6	0.0036	0.006	177.8	ug/L	7	Standard
|	Al	27	5356498.3	3.5	42.4529	1.736	4.1	ug/L	597	Standard
|	Sc	45	47310.5	3.4				ug/L	41681	Standard
|	Ti	47	17431.0	3.3	102.0429	3.579	3.5	ug/L	86	Standard
|	V	51	1250.2	10.7	-0.0650	0.018	27.6	ug/L	1740	Standard
|	Cr	52	7566.6	5.2	0.1584	0.054	34.2	ug/L	7178	Standard
|	Cr	53	1665.1	6.3	1.4955	0.157	10.5	ug/L	573	Standard
|	Mn	55	3966.9	4.2	0.1328	0.017	12.9	ug/L	3072	Standard
|	Co	59	818.4	2.2	0.0547	0.002	2.9	ug/L	573	Standard
|	Ni	60	593.0	7.5	0.2180	0.023	10.5	ug/L	264	Standard
|	Cu	65	777.4	6.9	0.1642	0.030	18.4	ug/L	530	Standard
|	Zn	66	1082.7	2.9	0.9654	0.068	7.0	ug/L	252	Standard
>	Ge	72	613516.8	2.3				ug/L	641188	Standard
|	As	75	-31.9	175.7	0.0026	0.069	2603.3	ug/L	-83	Standard
|	Se	82	13.6	48.8	-0.0379	0.092	242.4	ug/L	16	Standard
|	Se-1	77	190.3	6.8	1.4491	0.168	11.6	ug/L	126	Standard
>	Ga	71	78.3	9.8				mg/L	70	Standard
|	Rb	85	565.0	4.4				ug/L	33	Standard
|	Y	89	429969.6	1.5				ug/L	493982	Standard
>	Rh	103	41.7	13.9				ug/L	17	Standard
|	Mo	98	228595.7	2.6	79.7500	2.063	2.6	ug/L	54	Standard
|	Ag	107	128.0	8.7	0.0022	0.002	98.5	ug/L	137	Standard
|	Cd	111	-1.6	462.1	-0.0147	0.005	33.2	mg/L	6	Standard
|	Cd	114	663.3	13.3	0.1550	0.022	14.0	ug/L	20	Standard
>	In	115	695695.1	0.4				ug/L	755264	Standard
|	Sn	118	126.0	8.4	0.0090	0.012	132.2	ug/L	138	Standard
|	Sb	123	425.7	14.3	0.0766	0.015	19.8	ug/L	391	Standard
|	Ba	135	42.0	8.2	-0.0020	0.002	103.5	ug/L	32	Standard
|	Ce	140	870.0	3.0				ug/L	42	Standard
>	Tb	159	1034354.2	1.2				ug/L	966827	Standard
|	Ho	165	6.7	43.3				ug/L	12	Standard
|	Tl	203	22.3	5.2	-0.0034	0.000	6.5	ug/L	19	Standard
|	Tl	205	66.7	17.3	0.0019	0.001	40.8	ug/L	58	Standard
|	Pb	206	535.3	6.0	0.0129	0.008	59.5	ug/L	464	Standard
|	Pb	207	431.3	1.9	0.0053	0.001	24.5	ug/L	405	Standard
|	Pb	208	1017.0	2.9	0.0164	0.004	21.9	ug/L	876	Standard
|	U	238	25.7	23.5	0.0006	0.001	84.8	ug/L	14	Standard
>	Bi	209	574285.2	1.4				ug/L	599146	Standard

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 13:24:27

Page 1

Approved: March 01, 2017

Na	23	36.7	7.9	8.8646	0.944	10.6	mg/L	3	Standard
Mg	24	700.0	10.6	11.9288	1.163	9.7	mg/L	30	Standard
K	39	606.7	8.3	6.8815	0.462	6.7	mg/L	10	Standard
Ca	43	80.0	33.1	1.0892	14.747	1353.9	mg/L	83	Standard
Fe	54	549.6	13.4	7.2200	1.132	15.7	mg/L	21	Standard
Fe	57	580.0	5.2	12.5622	2.050	16.3	mg/L	240	Standard
Sc-1	45	47310.5	3.4				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.7	68.9				ug/L	5	Standard
Br	81	1353.4	7.2				ug/L	1587	Standard
P	31	78.3	57.2				ug/L	50	Standard
S	34	35.0	37.8				ug/L	8	Standard
Sr	88	325.0	2.7				ug/L	198	Standard
C	12	13.3	114.6				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	19.4	51.7				mg/L	6	Standard
Ho-1	165	6.7	43.3				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	3180.3	3.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27	0.849		
Sc	45			
Ti	47	102.043		
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		95.684	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 13:24:27

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	79.750	
[	Ag	107		
[	Cd	111		
[	Cd	114		
>	In	115		92.113
[	Sn	118		
[	Sb	123		
[	Ba	135		
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203		
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208		
[	U	238		
>	Bi	209		95.851
[	Na	23	70.917	
[	Mg	24	238.577	
[	K	39	137.630	
[	Ca	43	7.261	
[	Fe	54	57.760	
[	Fe	57	100.497	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 4	Al	27	
QC Std 4	Mo	98	
QC Std 4	Na	23	

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 13:24:27

Page 3

Approved: March 01, 2017



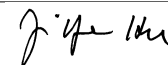
QC Std 4	Mg	24
QC Std 4	K	39
QC Std 4	Ca	43
QC Std 4	Fe	54

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 13:24:27

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 5

Sample Date/Time: Tuesday, February 28, 2017 13:25:21

Number of Replicates: 3

Autosampler Position: 204

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	269337.8	0.2				ug/L	250104	Standard
|	Be	9	162860.9	2.3	92.9738	2.380	2.6	ug/L	7	Standard
|	Al	27	5656993.0	1.5	43.1565	0.765	1.8	ug/L	597	Standard
|	Sc	45	47726.7	1.4				ug/L	41681	Standard
|	Ti	47	20011.2	1.6	114.7826	2.827	2.5	ug/L	86	Standard
|	V	51	610003.4	1.3	100.9364	2.298	2.3	ug/L	1740	Standard
|	Cr	52	566033.3	0.6	99.7783	1.509	1.5	ug/L	7178	Standard
|	Cr	53	75782.4	0.8	104.7492	0.380	0.4	ug/L	573	Standard
|	Mn	55	918185.0	0.2	99.2484	1.017	1.0	ug/L	3072	Standard
|	Co	59	713092.0	0.8	98.9081	1.577	1.6	ug/L	573	Standard
|	Ni	60	151917.2	1.0	99.1393	1.630	1.6	ug/L	264	Standard
|	Cu	65	143983.3	1.1	98.0247	1.825	1.9	ug/L	530	Standard
|	Zn	66	81928.9	0.2	97.1624	0.930	1.0	ug/L	252	Standard
>	Ge	72	626430.5	0.9				ug/L	641188	Standard
|	As	75	77171.0	0.6	91.4083	0.818	0.9	ug/L	-83	Standard
|	Se	82	6436.9	0.3	87.9356	0.597	0.7	ug/L	16	Standard
|	Se-1	77	5095.9	0.4	95.4390	1.314	1.4	ug/L	126	Standard
>	Ga	71	146.7	15.4				mg/L	70	Standard
|	Rb	85	646.7	14.3				ug/L	33	Standard
|	Y	89	438509.0	1.2				ug/L	493982	Standard
>	Rh	103	48.3	11.9				ug/L	17	Standard
|	Mo	98	246318.8	2.4	83.8797	3.127	3.7	ug/L	54	Standard
|	Ag	107	436973.4	1.9	86.3282	2.787	3.2	ug/L	137	Standard
|	Cd	111	136101.7	1.4	90.6964	2.404	2.7	mg/L	6	Standard
|	Cd	114	371824.6	1.1	90.3110	2.194	2.4	ug/L	20	Standard
>	In	115	712981.1	1.4				ug/L	755264	Standard
|	Sn	118	173.3	7.6	0.0578	0.012	20.7	ug/L	138	Standard
|	Sb	123	402698.1	0.6	95.2460	1.892	2.0	ug/L	391	Standard
|	Ba	135	169472.2	1.0	100.4199	1.968	2.0	ug/L	32	Standard
|	Ce	140	108.3	17.5				ug/L	42	Standard
>	Tb	159	1042651.4	0.8				ug/L	966827	Standard
|	Ho	165	40.0	33.1				ug/L	12	Standard
|	Tl	203	611722.6	1.8	94.7120	1.201	1.3	ug/L	19	Standard
|	Tl	205	1417833.9	1.7	93.8826	0.816	0.9	ug/L	58	Standard
|	Pb	206	480093.7	1.9	94.1958	1.284	1.4	ug/L	464	Standard
|	Pb	207	429929.5	1.1	94.2830	0.523	0.6	ug/L	405	Standard
|	Pb	208	951645.7	1.1	95.6392	0.663	0.7	ug/L	876	Standard
|	U	238	1057666.4	2.5	93.4062	1.646	1.8	ug/L	14	Standard
>	Bi	209	587832.5	0.8				ug/L	599146	Standard

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 13:27:32

Page 1

Approved: March 01, 2017

Na	23	36.7	20.8	8.7548	1.829	20.9	mg/L	3	Standard
Mg	24	708.3	5.9	11.9709	0.637	5.3	mg/L	30	Standard
K	39	571.7	10.7	6.4103	0.633	9.9	mg/L	10	Standard
Ca	43	96.7	13.0	8.9665	7.091	79.1	mg/L	83	Standard
Fe	54	658.0	6.8	8.5936	0.506	5.9	mg/L	21	Standard
Fe	57	581.7	12.5	12.3939	3.886	31.4	mg/L	240	Standard
Sc-1	45	47726.7	1.4				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	5.7	36.7				ug/L	5	Standard
Br	81	1560.1	5.6				ug/L	1587	Standard
P	31	65.0	23.1				ug/L	50	Standard
S	34	41.7	34.6				ug/L	8	Standard
Sr	88	241.7	8.4				ug/L	198	Standard
C	12	50.0	0.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	10.0	100.0				mg/L	3	Standard
Dy	164	12.4	50.0				mg/L	6	Standard
Ho-1	165	40.0	33.1				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	3920.5	5.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	92.974		
Al	27	0.863		
Sc	45			
Ti	47	114.783		
V	51	100.936		
Cr	52	99.778		
Cr	53			
Mn	55	99.248		
Co	59	98.908		
Ni	60	99.139		
Cu	65	98.025		
Zn	66	97.162		
Ge	72		97.698	
As	75	91.408		
Se	82	87.936		
Se-1	77			
Ga	71			

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 13:27:32

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	83.880	
[	Ag	107	86.328	
[	Cd	111	90.696	
[	Cd	114		
>	In	115		94.402
[	Sn	118		
[	Sb	123	95.246	
[	Ba	135	100.420	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	94.712	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	95.639	
[	U	238	93.406	
>	Bi	209		98.112
[	Na	23	70.038	
[	Mg	24	239.419	
[	K	39	128.207	
[	Ca	43	59.777	
[	Fe	54	68.749	
[	Fe	57	99.151	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 5	Al	27	
QC Std 5	Na	23	
QC Std 5	Mg	24	

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 13:27:32

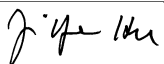
Page 3

Approved: March 01, 2017



QC Std 5	K	39
QC Std 5	Ca	43
QC Std 5	Fe	54
QC Std 5	Fe	57

Sample ID: QC Std 5
Report Date/Time: Tuesday, February 28, 2017 13:27:32
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 13:28:29

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	254449.4	2.2				ug/L	250104	Standard
|	Be	9	81032.8	0.9	48.9815	1.520	3.1	ug/L	7	Standard
|	Al	27	5855255.6	0.7	47.2944	0.916	1.9	ug/L	597	Standard
|	Sc	45	45433.0	1.4				ug/L	41681	Standard
|	Ti	47	18765.6	0.8	113.7715	2.326	2.0	ug/L	86	Standard
|	V	51	306905.5	0.6	53.5451	0.640	1.2	ug/L	1740	Standard
|	Cr	52	289026.1	0.7	53.2888	0.413	0.8	ug/L	7178	Standard
|	Cr	53	37454.6	2.3	54.3115	1.577	2.9	ug/L	573	Standard
|	Mn	55	462741.0	0.9	52.7270	0.677	1.3	ug/L	3072	Standard
|	Co	59	355063.1	0.3	52.0263	0.617	1.2	ug/L	573	Standard
|	Ni	60	75603.8	0.7	52.0682	0.877	1.7	ug/L	264	Standard
|	Cu	65	71083.0	0.5	50.9692	0.392	0.8	ug/L	530	Standard
|	Zn	66	39921.9	0.6	49.8729	0.393	0.8	ug/L	252	Standard
>	Ge	72	592653.0	1.2				ug/L	641188	Standard
|	As	75	37695.4	0.2	47.2176	0.556	1.2	ug/L	-83	Standard
|	Se	82	3181.6	2.1	45.8320	0.831	1.8	ug/L	16	Standard
|	Se-1	77	2507.9	2.5	48.5474	0.841	1.7	ug/L	126	Standard
>	Ga	71	60.0	28.9				mg/L	70	Standard
|	Rb	85	721.7	25.0				ug/L	33	Standard
|	Y	89	420209.6	3.2				ug/L	493982	Standard
>	Rh	103	30.0	44.1				ug/L	17	Standard
|	Mo	98	251075.1	1.0	88.0565	2.467	2.8	ug/L	54	Standard
|	Ag	107	232351.0	0.3	47.2655	1.152	2.4	ug/L	137	Standard
|	Cd	111	68650.1	0.1	47.1110	1.067	2.3	mg/L	6	Standard
|	Cd	114	192606.1	0.6	48.1774	1.079	2.2	ug/L	20	Standard
>	In	115	692335.2	2.4				ug/L	755264	Standard
|	Sn	118	42990.6	1.0	48.8184	1.317	2.7	ug/L	138	Standard
|	Sb	123	200907.8	0.7	48.9299	1.077	2.2	ug/L	391	Standard
|	Ba	135	86023.9	0.7	52.4859	0.944	1.8	ug/L	32	Standard
|	Ce	140	55.0	72.2				ug/L	42	Standard
>	Tb	159	1003282.2	0.8				ug/L	966827	Standard
|	Ho	165	18.3	56.8				ug/L	12	Standard
|	Tl	203	308667.2	1.6	50.0424	1.865	3.7	ug/L	19	Standard
|	Tl	205	722265.7	2.8	50.0887	2.431	4.9	ug/L	58	Standard
|	Pb	206	240902.0	1.5	49.4512	1.824	3.7	ug/L	464	Standard
|	Pb	207	215071.4	0.3	49.3366	1.183	2.4	ug/L	405	Standard
|	Pb	208	470370.4	0.7	49.4511	1.362	2.8	ug/L	876	Standard
|	U	238	528135.0	0.9	48.8374	1.407	2.9	ug/L	14	Standard
>	Bi	209	561658.0	2.1				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 13:30:40

Page 1

Approved: March 01, 2017

Na	23	11.7	89.2	2.6344	2.773	105.3	mg/L	3	Standard
Mg	24	321.7	10.6	5.4246	0.547	10.1	mg/L	30	Standard
K	39	630.0	0.8	7.4659	0.076	1.0	mg/L	10	Standard
Ca	43	63.3	25.4	-6.5316	8.280	126.8	mg/L	83	Standard
Fe	54	272.8	3.6	3.6052	0.162	4.5	mg/L	21	Standard
Fe	57	515.0	4.9	10.3934	1.422	13.7	mg/L	240	Standard
Sc-1	45	45433.0	1.4				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	5.7	20.4				ug/L	5	Standard
Br	81	1336.7	20.4				ug/L	1587	Standard
P	31	70.0	37.1				ug/L	50	Standard
S	34	23.3	49.5				ug/L	8	Standard
Sr	88	283.3	22.2				ug/L	198	Standard
C	12	30.0	57.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	19.4	49.2				mg/L	6	Standard
Ho-1	165	18.3	56.8				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	3428.7	2.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	97.963		
Al	27	94.589		
Sc	45			
Ti	47	113.771		
V	51	107.090		
Cr	52	106.578		
Cr	53			
Mn	55	105.454		
Co	59	104.053		
Ni	60	104.136		
Cu	65	101.938		
Zn	66	99.746		
Ge	72		92.430	
As	75	94.435		
Se	82	91.664		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 13:30:40

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	88.057	
[	Ag	107	94.531	
[	Cd	111	94.222	
[	Cd	114		
>	In	115		91.668
[	Sn	118	97.637	
[	Sb	123	97.860	
[	Ba	135	104.972	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	100.085	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	98.902	
[	U	238	97.675	
>	Bi	209		93.743
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Ti	47	
QC Std 6	Mo	98	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 13:30:40

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 13:31:35

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	239986.4	2.5				ug/L	250104	Standard
|	Be	9	20.0	86.6	0.0027	0.012	423.8	ug/L	7	Standard
|	Al	27	916.7	48.5	0.0018	0.004	231.2	ug/L	597	Standard
|	Sc	45	43467.3	3.0				ug/L	41681	Standard
|	Ti	47	46.7	2.5	-0.1559	0.004	2.3	ug/L	86	Standard
|	V	51	1229.4	6.1	-0.0438	0.011	25.5	ug/L	1740	Standard
|	Cr	52	6011.9	1.4	0.0052	0.027	521.2	ug/L	7178	Standard
|	Cr	53	1321.7	4.4	1.2276	0.035	2.9	ug/L	573	Standard
|	Mn	55	2310.5	0.6	-0.0202	0.009	45.9	ug/L	3072	Standard
|	Co	59	416.0	7.6	0.0048	0.007	150.4	ug/L	573	Standard
|	Ni	60	130.3	5.4	-0.0801	0.008	10.6	ug/L	264	Standard
|	Cu	65	521.3	2.9	0.0287	0.005	16.4	ug/L	530	Standard
|	Zn	66	306.3	7.1	0.0653	0.036	54.7	ug/L	252	Standard
>	Ge	72	548827.3	3.7				ug/L	641188	Standard
|	As	75	4.0	1078.0	0.0482	0.060	124.3	ug/L	-83	Standard
|	Se	82	20.9	6.9	0.0999	0.031	31.2	ug/L	16	Standard
|	Se-1	77	174.3	6.6	1.5408	0.222	14.4	ug/L	126	Standard
>	Ga	71	71.7	26.4				mg/L	70	Standard
|	Rb	85	60.0	14.4				ug/L	33	Standard
|	Y	89	391555.0	3.3				ug/L	493982	Standard
>	Rh	103	28.3	20.4				ug/L	17	Standard
|	Mo	98	227.1	23.1	0.0649	0.021	32.0	ug/L	54	Standard
|	Ag	107	124.0	13.0	0.0034	0.004	112.6	ug/L	137	Standard
|	Cd	111	7.0	8.5	-0.0085	0.001	6.6	mg/L	6	Standard
|	Cd	114	44.7	13.4	0.0019	0.002	88.3	ug/L	20	Standard
>	In	115	644477.8	2.9				ug/L	755264	Standard
|	Sn	118	135.7	6.6	0.0324	0.014	42.8	ug/L	138	Standard
|	Sb	123	1109.1	19.1	0.2630	0.048	18.3	ug/L	391	Standard
|	Ba	135	41.0	8.4	-0.0006	0.002	370.4	ug/L	32	Standard
|	Ce	140	35.0	42.9				ug/L	42	Standard
>	Tb	159	936489.5	2.3				ug/L	966827	Standard
|	Ho	165	15.0	33.3				ug/L	12	Standard
|	Tl	203	43.3	57.3	0.0006	0.005	813.8	ug/L	19	Standard
|	Tl	205	108.3	26.2	0.0054	0.002	43.1	ug/L	58	Standard
|	Pb	206	446.0	3.1	0.0023	0.005	217.1	ug/L	464	Standard
|	Pb	207	369.3	2.2	-0.0018	0.004	239.1	ug/L	405	Standard
|	Pb	208	888.3	2.5	0.0107	0.004	42.0	ug/L	876	Standard
|	U	238	64.3	59.2	0.0046	0.004	83.6	ug/L	14	Standard
>	Bi	209	530775.7	2.9				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 13:33:45

Page 1

Approved: March 01, 2017

Na	23	5.0	100.0	0.9346	1.423	152.2	mg/L	3	Standard
Mg	24	35.0	14.3	0.1407	0.110	77.9	mg/L	30	Standard
K	39	16.7	45.8	-0.0294	0.098	333.0	mg/L	10	Standard
Ca	43	50.0	34.6	-12.4204	9.660	77.8	mg/L	83	Standard
Fe	54	21.1	75.2	0.0577	0.222	384.1	mg/L	21	Standard
Fe	57	405.0	7.5	5.7165	1.612	28.2	mg/L	240	Standard
Sc-1	45	43467.3	3.0				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	6.3	32.9				ug/L	5	Standard
Br	81	1293.4	5.3				ug/L	1587	Standard
P	31	76.7	3.8				ug/L	50	Standard
S	34	36.7	34.3				ug/L	8	Standard
Sr	88	263.3	20.5				ug/L	198	Standard
C	12	13.3	114.6				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.5	105.0				mg/L	6	Standard
Ho-1	165	15.0	33.3				mg/L	12	Standard
Er	166	10.0					mg/L	10	Standard
I	127	4437.3	1.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		85.595	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 13:33:45

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	85.331
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	88.589
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 7	Sb	123	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 13:33:45

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: PBW A9 WG604424-02

Sample Date/Time: Tuesday, February 28, 2017 14:21:34

Number of Replicates: 3

Autosampler Position: 232

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	269943.8	1.4				ug/L	250104	Standard
|	Be	9	13.3	43.3	-0.0027	0.003	123.4	ug/L	7	Standard
|	Al	27	8891.0	7.8	0.0615	0.005	8.7	ug/L	597	Standard
|	Sc	45	47352.2	0.3				ug/L	41681	Standard
|	Ti	47	42.3	15.7	-0.2169	0.037	17.1	ug/L	86	Standard
|	V	51	1813.7	6.9	0.0271	0.023	85.1	ug/L	1740	Standard
|	Cr	52	9417.6	1.5	0.4754	0.023	4.8	ug/L	7178	Standard
|	Cr	53	1696.8	3.0	1.5108	0.061	4.0	ug/L	573	Standard
|	Mn	55	3890.8	4.2	0.1191	0.016	13.4	ug/L	3072	Standard
|	Co	59	365.3	8.3	-0.0101	0.005	45.4	ug/L	573	Standard
|	Ni	60	274.7	4.2	0.0035	0.006	177.0	ug/L	264	Standard
|	Cu	65	542.3	2.8	-0.0041	0.010	252.9	ug/L	530	Standard
|	Zn	66	1225.4	4.2	1.1202	0.069	6.1	ug/L	252	Standard
>	Ge	72	620932.8	0.8				ug/L	641188	Standard
|	As	75	-2.8	1407.0	0.0387	0.048	124.0	ug/L	-83	Standard
|	Se	82	21.3	34.2	0.0668	0.102	152.5	ug/L	16	Standard
|	Se-1	77	146.0	4.8	0.5494	0.131	23.9	ug/L	126	Standard
>	Ga	71	46.7	6.2				mg/L	70	Standard
|	Rb	85	56.7	10.2				ug/L	33	Standard
|	Y	89	435639.5	1.1				ug/L	493982	Standard
>	Rh	103	23.3	81.1				ug/L	17	Standard
|	Mo	98	53.5	21.6	-0.0025	0.004	148.1	ug/L	54	Standard
|	Ag	107	106.3	14.4	-0.0025	0.003	134.4	ug/L	137	Standard
|	Cd	111	7.9	21.8	-0.0083	0.001	14.2	mg/L	6	Standard
|	Cd	114	137.4	18.0	0.0236	0.006	26.6	ug/L	20	Standard
>	In	115	706174.0	1.6				ug/L	755264	Standard
|	Sn	118	843.7	8.0	0.8080	0.078	9.7	ug/L	138	Standard
|	Sb	123	379.8	33.1	0.0638	0.029	44.9	ug/L	391	Standard
|	Ba	135	99.0	6.3	0.0317	0.003	11.0	ug/L	32	Standard
|	Ce	140	81.7	15.4				ug/L	42	Standard
>	Tb	159	1018665.7	2.6				ug/L	966827	Standard
|	Ho	165	25.0	34.6				ug/L	12	Standard
|	Tl	203	28.3	14.7	-0.0026	0.001	29.1	ug/L	19	Standard
|	Tl	205	48.3	51.0	0.0005	0.002	288.8	ug/L	58	Standard
|	Pb	206	519.3	10.1	0.0070	0.008	117.7	ug/L	464	Standard
|	Pb	207	408.0	4.9	-0.0021	0.005	220.9	ug/L	405	Standard
|	Pb	208	924.3	4.8	0.0045	0.002	47.6	ug/L	876	Standard
|	U	238	17.3	39.3	-0.0002	0.001	317.4	ug/L	14	Standard
>	Bi	209	588510.4	2.6				ug/L	599146	Standard

Sample ID: PBW A9 WG604424-02

Report Date/Time: Tuesday, February 28, 2017 14:23:45

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	18.3	78.7	-0.2133	0.257	120.7	mg/L	30	Standard
K	39	25.0	72.1	0.0508	0.211	414.9	mg/L	10	Standard
Ca	43	28.3	27.0	-25.8495	3.935	15.2	mg/L	83	Standard
Fe	54	24.2	35.4	0.0792	0.115	145.5	mg/L	21	Standard
Fe	57	366.7	3.9	2.0629	0.674	32.7	mg/L	240	Standard
Sc-1	45	47352.2	0.3				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	6.3	9.1				ug/L	5	Standard
Br	81	1870.1	6.5				ug/L	1587	Standard
P	31	53.3	28.6				ug/L	50	Standard
S	34	21.7	26.6				ug/L	8	Standard
Sr	88	265.0	17.3				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	9.5	105.4				mg/L	6	Standard
Ho-1	165	25.0	34.6				mg/L	12	Standard
Er	166	10.0	173.2				mg/L	10	Standard
I	127	4077.2	1.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		107.933	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		96.841	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: PBW A9 WG604424-02

Report Date/Time: Tuesday, February 28, 2017 14:23:45

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	93.500
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	98.225
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: PBW A9 WG604424-02

Report Date/Time: Tuesday, February 28, 2017 14:23:45

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: LCSW A9 WG604424-03

Sample Date/Time: Tuesday, February 28, 2017 14:24:40

Number of Replicates: 3

Autosampler Position: 233

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	269229.3	0.3				ug/L	250104	Standard
|	Be	9	90338.6	2.5	51.5858	1.227	2.4	ug/L	7	Standard
|	Al	27	13542.7	2.3	0.0972	0.002	2.3	ug/L	597	Standard
|	Sc	45	47932.4	3.0				ug/L	41681	Standard
|	Ti	47	55.7	14.0	-0.1513	0.042	27.5	ug/L	86	Standard
|	V	51	337169.9	0.5	54.1015	0.202	0.4	ug/L	1740	Standard
|	Cr	52	320352.8	1.6	54.3435	0.797	1.5	ug/L	7178	Standard
|	Cr	53	41475.0	1.5	55.3237	1.028	1.9	ug/L	573	Standard
|	Mn	55	509319.0	1.2	53.3773	0.829	1.6	ug/L	3072	Standard
|	Co	59	390646.8	1.0	52.6413	0.481	0.9	ug/L	573	Standard
|	Ni	60	83938.9	0.4	53.1660	0.373	0.7	ug/L	264	Standard
|	Cu	65	79384.5	1.6	52.3592	0.771	1.5	ug/L	530	Standard
|	Zn	66	43783.5	0.7	50.3066	0.313	0.6	ug/L	252	Standard
>	Ge	72	644388.0	0.8				ug/L	641188	Standard
|	As	75	41033.5	0.7	47.2682	0.177	0.4	ug/L	-83	Standard
|	Se	82	3434.1	1.6	45.4935	0.418	0.9	ug/L	16	Standard
|	Se-1	77	2726.2	2.2	48.5433	1.244	2.6	ug/L	126	Standard
>	Ga	71	63.3	29.9				mg/L	70	Standard
|	Rb	85	83.3	15.1				ug/L	33	Standard
|	Y	89	452449.8	0.9				ug/L	493982	Standard
>	Rh	103	43.3	24.0				ug/L	17	Standard
|	Mo	98	43.0	14.5	-0.0065	0.002	28.9	ug/L	54	Standard
|	Ag	107	240706.8	2.1	46.5708	0.191	0.4	ug/L	137	Standard
|	Cd	111	74867.5	1.1	48.8733	0.408	0.8	mg/L	6	Standard
|	Cd	114	203544.6	1.9	48.4273	0.099	0.2	ug/L	20	Standard
>	In	115	727616.0	1.7				ug/L	755264	Standard
|	Sn	118	205.3	5.6	0.0886	0.009	10.1	ug/L	138	Standard
|	Sb	123	210304.0	1.5	48.7217	0.552	1.1	ug/L	391	Standard
|	Ba	135	90528.0	1.7	52.5411	0.126	0.2	ug/L	32	Standard
|	Ce	140	133.3	16.9				ug/L	42	Standard
>	Tb	159	1035738.9	1.2				ug/L	966827	Standard
|	Ho	165	16.7	17.3				ug/L	12	Standard
|	Tl	203	342193.8	1.3	51.9081	0.269	0.5	ug/L	19	Standard
|	Tl	205	790480.4	1.4	51.2836	0.179	0.3	ug/L	58	Standard
|	Pb	206	267913.2	2.0	51.4570	0.286	0.6	ug/L	464	Standard
|	Pb	207	229632.2	2.1	49.2917	0.247	0.5	ug/L	405	Standard
|	Pb	208	516016.2	1.7	50.7660	0.080	0.2	ug/L	876	Standard
|	U	238	554349.5	2.3	47.9638	0.336	0.7	ug/L	14	Standard
>	Bi	209	599993.4	1.6				ug/L	599146	Standard

Sample ID: LCSW A9 WG604424-03

Report Date/Time: Tuesday, February 28, 2017 14:26:51

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	35.0	37.8	0.0805	0.246	305.9	mg/L	30	Standard
K	39	8.3	69.3	-0.1451	0.068	47.2	mg/L	10	Standard
Ca	43	43.3	58.1	-18.6058	12.082	64.9	mg/L	83	Standard
Fe	54	32.9	25.9	0.1932	0.123	63.7	mg/L	21	Standard
Fe	57	365.0	6.8	1.7576	0.856	48.7	mg/L	240	Standard
Sc-1	45	47932.4	3.0				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	5.0	34.6				ug/L	5	Standard
Br	81	1886.8	11.9				ug/L	1587	Standard
P	31	70.0	51.5				ug/L	50	Standard
S	34	31.7	50.8				ug/L	8	Standard
Sr	88	293.3	17.7				ug/L	198	Standard
C	12	13.3	43.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	12.4	50.0				mg/L	6	Standard
Ho-1	165	16.7	17.3				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	3980.5	2.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		107.647	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		100.499	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: LCSW A9 WG604424-03

Report Date/Time: Tuesday, February 28, 2017 14:26:51

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	96.339
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	100.141
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: LCSW A9 WG604424-03

Report Date/Time: Tuesday, February 28, 2017 14:26:51

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: F BLANK WG604263-02

Sample Date/Time: Tuesday, February 28, 2017 14:27:45

Number of Replicates: 3

Autosampler Position: 234

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	269277.0	1.3				ug/L	250104	Standard
|	Be	9	18.3	15.7	0.0002	0.002	819.7	ug/L	7	Standard
|	Al	27	10877.2	1.0	0.0768	0.000	0.4	ug/L	597	Standard
|	Sc	45	46922.6	1.2				ug/L	41681	Standard
|	Ti	47	45.0	11.5	-0.2084	0.027	13.0	ug/L	86	Standard
|	V	51	1753.8	7.2	0.0093	0.023	252.9	ug/L	1740	Standard
|	Cr	52	10641.4	2.5	0.6443	0.037	5.7	ug/L	7178	Standard
|	Cr	53	1491.7	2.6	1.1669	0.067	5.7	ug/L	573	Standard
|	Mn	55	3969.9	2.5	0.1163	0.015	12.7	ug/L	3072	Standard
|	Co	59	431.7	1.0	-0.0025	0.000	18.9	ug/L	573	Standard
|	Ni	60	291.3	4.9	0.0095	0.010	107.5	ug/L	264	Standard
|	Cu	65	1242.4	4.5	0.4558	0.044	9.6	ug/L	530	Standard
|	Zn	66	1776.1	1.9	1.7245	0.058	3.4	ug/L	252	Standard
>	Ge	72	638035.0	1.3				ug/L	641188	Standard
|	As	75	14.0	150.2	0.0586	0.024	41.5	ug/L	-83	Standard
|	Se	82	13.3	12.0	-0.0484	0.021	43.3	ug/L	16	Standard
|	Se-1	77	153.7	5.8	0.6174	0.144	23.3	ug/L	126	Standard
>	Ga	71	43.3	6.7				mg/L	70	Standard
|	Rb	85	71.7	8.1				ug/L	33	Standard
|	Y	89	445721.3	2.2				ug/L	493982	Standard
>	Rh	103	23.3	49.5				ug/L	17	Standard
|	Mo	98	32.4	16.2	-0.0100	0.002	15.0	ug/L	54	Standard
|	Ag	107	136.0	16.7	0.0026	0.004	148.9	ug/L	137	Standard
|	Cd	111	7.3	20.9	-0.0089	0.001	9.8	mg/L	6	Standard
|	Cd	114	42.2	57.9	-0.0001	0.005	3961.2	ug/L	20	Standard
>	In	115	726369.1	2.8				ug/L	755264	Standard
|	Sn	118	165.7	8.2	0.0460	0.013	27.3	ug/L	138	Standard
|	Sb	123	992.6	16.0	0.2033	0.030	14.7	ug/L	391	Standard
|	Ba	135	168.3	5.1	0.0705	0.006	8.8	ug/L	32	Standard
|	Ce	140	51.7	55.0				ug/L	42	Standard
>	Tb	159	1028179.6	1.6				ug/L	966827	Standard
|	Ho	165	11.7	107.9				ug/L	12	Standard
|	Tl	203	55.3	59.8	0.0015	0.005	328.1	ug/L	19	Standard
|	Tl	205	135.0	53.8	0.0062	0.005	76.2	ug/L	58	Standard
|	Pb	206	1098.7	5.2	0.1194	0.010	8.1	ug/L	464	Standard
|	Pb	207	910.7	3.7	0.1068	0.007	6.5	ug/L	405	Standard
|	Pb	208	2105.4	2.4	0.1219	0.004	2.9	ug/L	876	Standard
|	U	238	89.7	27.7	0.0062	0.002	34.6	ug/L	14	Standard
>	Bi	209	592038.9	0.7				ug/L	599146	Standard

Sample ID: F BLANK WG604263-02

Report Date/Time: Tuesday, February 28, 2017 14:29:55

Page 1

Approved: March 01, 2017

Na	23	3.3	173.2	0.3884	1.501	386.4	mg/L	3	Standard
Mg	24	63.3	35.6	0.5953	0.394	66.2	mg/L	30	Standard
K	39	15.0	57.7	-0.0643	0.103	160.5	mg/L	10	Standard
Ca	43	53.3	10.8	-12.7520	2.803	22.0	mg/L	83	Standard
Fe	54	24.2	42.0	0.0821	0.143	173.7	mg/L	21	Standard
Fe	57	355.0	21.3	1.6312	3.577	219.3	mg/L	240	Standard
Sc-1	45	46922.6	1.2				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	4.7	32.7				ug/L	5	Standard
Br	81	1490.1	8.4				ug/L	1587	Standard
P	31	68.3	21.1				ug/L	50	Standard
S	34	33.3	8.7				ug/L	8	Standard
Sr	88	258.3	25.2				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	2.2	229.6				mg/L	6	Standard
Ho-1	165	11.7	107.9				mg/L	12	Standard
Er	166	23.3	65.5				mg/L	10	Standard
I	127	3830.5	3.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		107.666	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		99.508	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: F BLANK WG604263-02

Report Date/Time: Tuesday, February 28, 2017 14:29:55

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	96.174
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	98.814
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: F BLANK WG604263-02

Report Date/Time: Tuesday, February 28, 2017 14:29:55

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132403 WG604424-01

Sample Date/Time: Tuesday, February 28, 2017 14:30:50

Number of Replicates: 3

Autosampler Position: 235

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	479527.7	2.4				ug/L	250104	Standard
|	Be	9	130.0	7.7	0.0314	0.003	10.1	ug/L	7	Standard
|	Al	27	122381584.1	1.3	524.7459	18.712	3.6	ug/L	597	Standard
|	Sc	45	41114.1	2.3				ug/L	41681	Standard
|	Ti	47	299.3	8.8	1.5215	0.180	11.8	ug/L	86	Standard
|	V	51	-6644.0	28.9	-1.5438	0.358	23.2	ug/L	1740	Standard
|	Cr	52	14317.8	1.1	1.7206	0.038	2.2	ug/L	7178	Standard
|	Cr	53	45851.1	6.5	72.6670	4.454	6.1	ug/L	573	Standard
|	Mn	55	73685870.8	0.4	9195.1811	85.536	0.9	ug/L	3072	Standard
|	Co	59	24030.0	0.5	3.7772	0.042	1.1	ug/L	573	Standard
|	Ni	60	60274.4	3.5	45.1781	1.761	3.9	ug/L	264	Standard
|	Cu	65	8989.7	1.8	6.6924	0.087	1.3	ug/L	530	Standard
|	Zn	66	4562.0	1.0	5.8983	0.094	1.6	ug/L	252	Standard
>	Ge	72	544255.5	0.6				ug/L	641188	Standard
|	As	75	-1082.9	79.6	-1.4316	1.172	81.9	ug/L	-83	Standard
|	Se	82	438.9	24.1	6.6967	1.701	25.4	ug/L	16	Standard
|	Se-1	77	21968.6	7.5	482.4668	34.923	7.2	ug/L	126	Standard
>	Ga	71	843.4	18.3				mg/L	70	Standard
|	Rb	85	282824.5	2.3				ug/L	33	Standard
|	Y	89	456198.0	0.9				ug/L	493982	Standard
>	Rh	103	6913.2	1.0				ug/L	17	Standard
|	Mo	98	109.9	27.7	0.0255	0.013	51.0	ug/L	54	Standard
|	Ag	107	204.0	14.1	0.0261	0.007	27.8	ug/L	137	Standard
|	Cd	111	35.5	33.6	0.0156	0.010	63.3	mg/L	6	Standard
|	Cd	114	89.8	18.6	0.0169	0.005	30.6	ug/L	20	Standard
>	In	115	576775.6	0.4				ug/L	755264	Standard
|	Sn	118	193.3	12.2	0.1305	0.033	25.5	ug/L	138	Standard
|	Sb	123	1600.6	5.9	0.4414	0.027	6.1	ug/L	391	Standard
|	Ba	135	33917176.4	0.3	24846.5168	133.183	0.5	ug/L	32	Standard
|	Ce	140	6776.5	2.3				ug/L	42	Standard
>	Tb	159	1008966.7	1.8				ug/L	966827	Standard
|	Ho	165	250.0	17.3				ug/L	12	Standard
|	Tl	203	333.0	32.6	0.0692	0.025	36.6	ug/L	19	Standard
|	Tl	205	748.4	30.7	0.0705	0.023	32.4	ug/L	58	Standard
|	Pb	206	552.0	9.3	0.0652	0.016	24.2	ug/L	464	Standard
|	Pb	207	493.7	9.1	0.0682	0.016	22.9	ug/L	405	Standard
|	Pb	208	1305.4	8.0	0.1053	0.017	15.8	ug/L	876	Standard
|	U	238	64.0	41.1	0.0066	0.003	50.7	ug/L	14	Standard
>	Bi	209	398672.7	0.7				ug/L	599146	Standard

Sample ID: L1702132403 WG604424-01

Report Date/Time: Tuesday, February 28, 2017 14:33:00

Page 1

Approved: March 01, 2017

Na	23	4859.1	6.8	1420.9198	69.389	4.9	mg/L	3	Standard
Mg	24	14820.6	2.2	303.4420	6.784	2.2	mg/L	30	Standard
K	39	3210.3	6.0	43.1564	2.313	5.4	mg/L	10	Standard
Ca	43	3955.5	1.1	2303.4839	59.157	2.6	mg/L	83	Standard
Fe	54	455.3	6.1	6.8639	0.548	8.0	mg/L	21	Standard
Fe	57	8439.0	5.2	459.5289	14.278	3.1	mg/L	240	Standard
Sc-1	45	41114.1	2.3				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	7.3	28.4				ug/L	5	Standard
Br	81	228207.8	4.3				ug/L	1587	Standard
P	31	63.3	9.1				ug/L	50	Standard
S	34	26.7	10.8				ug/L	8	Standard
Sr	88	653.3	4.2				ug/L	198	Standard
C	12	66.7	22.9				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	260.1	7.4				mg/L	6	Standard
Ho-1	165	250.0	17.3				mg/L	12	Standard
Er	166	206.7	37.0				mg/L	10	Standard
I	127	362154.4	5.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		191.732	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.882	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132403 WG604424-01

Report Date/Time: Tuesday, February 28, 2017 14:33:00

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.367
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	66.540
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702132403 WG604424-01

Report Date/Time: Tuesday, February 28, 2017 14:33:00

Page 3

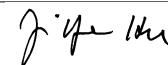
Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702132403 WG604424-01
Report Date/Time: Tuesday, February 28, 2017 14:33:00
Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132404S WG604424-04

Sample Date/Time: Tuesday, February 28, 2017 14:33:55

Number of Replicates: 3

Autosampler Position: 236

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	472260.8	0.9				ug/L	250104	Standard
|	Be	9	79665.6	1.7	25.9309	0.516	2.0	ug/L	7	Standard
|	Al	27	125808086.5	0.2	547.4636	5.415	1.0	ug/L	597	Standard
|	Sc	45	40318.6	1.7				ug/L	41681	Standard
|	Ti	47	317.3	1.2	1.6365	0.072	4.4	ug/L	86	Standard
|	V	51	288750.2	2.0	54.7318	0.552	1.0	ug/L	1740	Standard
|	Cr	52	279415.3	1.7	56.0301	0.758	1.4	ug/L	7178	Standard
|	Cr	53	83667.3	3.9	132.9867	1.893	1.4	ug/L	573	Standard
|	Mn	55	75774070.9	1.5	9434.4714	130.544	1.4	ug/L	3072	Standard
|	Co	59	345130.2	1.6	54.9423	0.667	1.2	ug/L	573	Standard
|	Ni	60	127011.1	0.5	95.1874	1.977	2.1	ug/L	264	Standard
|	Cu	65	67048.7	1.2	52.2426	0.720	1.4	ug/L	530	Standard
|	Zn	66	37600.3	0.9	51.0468	0.998	2.0	ug/L	252	Standard
>	Ge	72	545581.5	2.6				ug/L	641188	Standard
|	As	75	37166.5	1.6	50.5919	1.796	3.5	ug/L	-83	Standard
|	Se	82	3419.9	2.3	53.5952	2.601	4.9	ug/L	16	Standard
|	Se-1	77	25565.9	5.8	560.2667	19.513	3.5	ug/L	126	Standard
>	Ga	71	875.0	5.6				mg/L	70	Standard
|	Rb	85	288236.8	2.4				ug/L	33	Standard
|	Y	89	450506.5	3.6				ug/L	493982	Standard
>	Rh	103	6971.6	3.6				ug/L	17	Standard
|	Mo	98	140.7	8.3	0.0385	0.004	10.9	ug/L	54	Standard
|	Ag	107	195783.3	1.3	47.9084	0.392	0.8	ug/L	137	Standard
|	Cd	111	58779.3	0.8	48.5283	0.762	1.6	mg/L	6	Standard
|	Cd	114	154001.5	0.7	46.3462	0.937	2.0	ug/L	20	Standard
>	In	115	575394.6	2.1				ug/L	755264	Standard
|	Sn	118	208.0	10.7	0.1509	0.027	17.6	ug/L	138	Standard
|	Sb	123	170801.2	1.5	50.0402	0.337	0.7	ug/L	391	Standard
|	Ba	135	35053224.5	0.1	25747.4352	525.836	2.0	ug/L	32	Standard
|	Ce	140	7441.8	2.5				ug/L	42	Standard
>	Tb	159	999728.0	1.7				ug/L	966827	Standard
|	Ho	165	231.7	11.9				ug/L	12	Standard
|	Tl	203	235048.2	0.9	55.1634	0.080	0.1	ug/L	19	Standard
|	Tl	205	532780.1	1.5	53.4769	0.623	1.2	ug/L	58	Standard
|	Pb	206	171408.1	0.3	50.9393	0.369	0.7	ug/L	464	Standard
|	Pb	207	145123.4	0.8	48.1997	0.478	1.0	ug/L	405	Standard
|	Pb	208	397820.9	1.0	60.5713	0.188	0.3	ug/L	876	Standard
|	U	238	590572.3	1.5	79.0629	0.721	0.9	ug/L	14	Standard
>	Bi	209	387798.8	1.0				ug/L	599146	Standard

Sample ID: L1702132404S WG604424-04

Report Date/Time: Tuesday, February 28, 2017 14:36:06

Page 1

Approved: March 01, 2017

Na	23	4939.1	4.5	1473.9883	69.227	4.7	mg/L	3	Standard
Mg	24	14663.8	3.7	306.2679	15.864	5.2	mg/L	30	Standard
K	39	3103.7	3.0	42.5626	1.875	4.4	mg/L	10	Standard
Ca	43	3867.2	2.3	2296.4136	87.193	3.8	mg/L	83	Standard
Fe	54	426.5	13.8	6.5307	0.842	12.9	mg/L	21	Standard
Fe	57	8775.9	1.9	488.4785	4.670	1.0	mg/L	240	Standard
Sc-1	45	40318.6	1.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	9.7	6.0				ug/L	5	Standard
Br	81	249164.6	4.4				ug/L	1587	Standard
P	31	91.7	20.7				ug/L	50	Standard
S	34	30.0	33.3				ug/L	8	Standard
Sr	88	763.4	8.8				ug/L	198	Standard
C	12	50.0	34.6				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	289.0	16.8				mg/L	6	Standard
Ho-1	165	231.7	11.9				mg/L	12	Standard
Er	166	230.0	44.1				mg/L	10	Standard
I	127	361312.9	7.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		188.826	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		85.089	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132404S WG604424-04

Report Date/Time: Tuesday, February 28, 2017 14:36:06

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.185
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.725
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
Cr 53 Upper, S, EEE	Cr	53	

Sample ID: L1702132404S WG604424-04

Report Date/Time: Tuesday, February 28, 2017 14:36:06

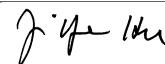
Page 3

Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702132404S WG604424-04
Report Date/Time: Tuesday, February 28, 2017 14:36:06
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702132405SD WG604424-05

Sample Date/Time: Tuesday, February 28, 2017 14:37:01

Number of Replicates: 3

Autosampler Position: 237

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	468511.9	2.0				ug/L	250104	Standard
|	Be	9	78102.5	1.7	25.6285	0.534	2.1	ug/L	7	Standard
|	Al	27	119643819.4	2.2	524.8253	10.300	2.0	ug/L	597	Standard
|	Sc	45	40251.7	1.9				ug/L	41681	Standard
|	Ti	47	259.0	5.7	1.2093	0.101	8.3	ug/L	86	Standard
|	V	51	281054.0	1.5	51.9865	0.233	0.4	ug/L	1740	Standard
|	Cr	52	273583.5	1.4	53.4927	0.282	0.5	ug/L	7178	Standard
|	Cr	53	85093.4	3.2	132.0601	3.680	2.8	ug/L	573	Standard
|	Mn	55	73623047.4	0.6	8947.6145	100.156	1.1	ug/L	3072	Standard
|	Co	59	336447.2	0.6	52.2773	0.314	0.6	ug/L	573	Standard
|	Ni	60	126895.5	0.1	92.8123	1.050	1.1	ug/L	264	Standard
|	Cu	65	66128.0	0.7	50.2769	0.180	0.4	ug/L	530	Standard
|	Zn	66	37046.2	1.0	49.0710	0.019	0.0	ug/L	252	Standard
>	Ge	72	558854.3	1.1				ug/L	641188	Standard
|	As	75	35376.0	2.1	46.9853	0.569	1.2	ug/L	-83	Standard
|	Se	82	3235.0	1.3	49.4421	1.057	2.1	ug/L	16	Standard
|	Se-1	77	24956.5	3.0	534.0718	14.231	2.7	ug/L	126	Standard
>	Ga	71	883.4	6.0				mg/L	70	Standard
|	Rb	85	280375.9	1.8				ug/L	33	Standard
|	Y	89	461880.7	1.7				ug/L	493982	Standard
>	Rh	103	7518.5	2.3				ug/L	17	Standard
|	Mo	98	144.8	4.9	0.0390	0.003	8.3	ug/L	54	Standard
|	Ag	107	191807.5	0.6	45.9415	0.584	1.3	ug/L	137	Standard
|	Cd	111	57645.9	1.3	46.5807	0.814	1.7	mg/L	6	Standard
|	Cd	114	149572.6	1.5	44.0538	0.850	1.9	ug/L	20	Standard
>	In	115	587797.8	0.7				ug/L	755264	Standard
|	Sn	118	268.3	6.7	0.2261	0.026	11.6	ug/L	138	Standard
|	Sb	123	167907.6	0.6	48.1518	0.610	1.3	ug/L	391	Standard
|	Ba	135	34305416.2	0.7	24660.6036	309.799	1.3	ug/L	32	Standard
|	Ce	140	7760.3	2.3				ug/L	42	Standard
>	Tb	159	1011786.2	1.3				ug/L	966827	Standard
|	Ho	165	266.7	9.6				ug/L	12	Standard
|	Tl	203	229381.1	1.0	53.7570	0.436	0.8	ug/L	19	Standard
|	Tl	205	520918.4	1.7	52.2096	0.472	0.9	ug/L	58	Standard
|	Pb	206	168847.3	1.0	50.1030	0.268	0.5	ug/L	464	Standard
|	Pb	207	142600.3	1.2	47.2897	0.183	0.4	ug/L	405	Standard
|	Pb	208	381406.1	1.2	57.9844	0.182	0.3	ug/L	876	Standard
|	U	238	560236.7	2.1	74.8881	0.448	0.6	ug/L	14	Standard
>	Bi	209	388370.9	1.5				ug/L	599146	Standard

Sample ID: L1702132405SD WG604424-05

Report Date/Time: Tuesday, February 28, 2017 14:39:11

Page 1

Approved: March 01, 2017

Na	23	4705.7	1.9	1406.9574	47.548	3.4	mg/L	3	Standard
Mg	24	13823.0	3.0	288.9638	3.140	1.1	mg/L	30	Standard
K	39	2945.3	2.4	40.4461	1.597	3.9	mg/L	10	Standard
Ca	43	3940.5	5.2	2344.6389	138.160	5.9	mg/L	83	Standard
Fe	54	406.1	14.9	6.2383	1.082	17.3	mg/L	21	Standard
Fe	57	8203.9	2.7	456.4024	9.753	2.1	mg/L	240	Standard
Sc-1	45	40251.7	1.9				mg/L	41681	Standard
Cl	35	2.0	0.0				ug/L	2	Standard
Kr	83	6.3	32.9				ug/L	5	Standard
Br	81	227054.1	4.4				ug/L	1587	Standard
P	31	75.0	34.6				ug/L	50	Standard
S	34	51.7	29.6				ug/L	8	Standard
Sr	88	686.7	3.7				ug/L	198	Standard
C	12	70.0	14.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	329.0	5.7				mg/L	6	Standard
Ho-1	165	266.7	9.6				mg/L	12	Standard
Er	166	230.0	26.4				mg/L	10	Standard
I	127	349544.5	6.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		187.327	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		87.159	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132405SD WG604424-05

Report Date/Time: Tuesday, February 28, 2017 14:39:11

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.827
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.821
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
Cr 53 Upper, S, EEE	Cr	53	

Sample ID: L1702132405SD WG604424-05

Report Date/Time: Tuesday, February 28, 2017 14:39:11

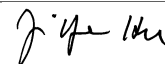
Page 3

Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702132405SD WG604424-05
Report Date/Time: Tuesday, February 28, 2017 14:39:11
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702131902

Sample Date/Time: Tuesday, February 28, 2017 14:40:06

Number of Replicates: 3

Autosampler Position: 238

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	267718.0	3.5				ug/L	250104	Standard
|	Be	9	31.7	39.7	0.0079	0.007	93.1	ug/L	7	Standard
|	Al	27	61510.3	22.1	0.4640	0.086	18.6	ug/L	597	Standard
|	Sc	45	46003.1	2.0				ug/L	41681	Standard
|	Ti	47	158.0	21.4	0.4563	0.180	39.5	ug/L	86	Standard
|	V	51	5954.2	7.9	0.7245	0.096	13.3	ug/L	1740	Standard
|	Cr	52	24893.8	3.7	3.2752	0.086	2.6	ug/L	7178	Standard
|	Cr	53	31331.3	16.5	43.2619	6.583	15.2	ug/L	573	Standard
|	Mn	55	15663.2	51.5	1.4026	0.846	60.3	ug/L	3072	Standard
|	Co	59	8384.0	3.6	1.1163	0.022	2.0	ug/L	573	Standard
|	Ni	60	30777.2	2.5	20.1876	0.237	1.2	ug/L	264	Standard
|	Cu	65	507382.8	2.5	350.5847	3.417	1.0	ug/L	530	Standard
|	Zn	66	8389.3	0.9	9.7572	0.118	1.2	ug/L	252	Standard
>	Ge	72	618831.1	1.8				ug/L	641188	Standard
|	As	75	695.1	10.9	0.8762	0.101	11.5	ug/L	-83	Standard
|	Se	82	118.5	10.3	1.4169	0.194	13.7	ug/L	16	Standard
|	Se-1	77	4370.0	23.6	82.3470	18.607	22.6	ug/L	126	Standard
>	Ga	71	308.3	20.0				mg/L	70	Standard
|	Rb	85	8113.8	0.4				ug/L	33	Standard
|	Y	89	444649.2	1.3				ug/L	493982	Standard
>	Rh	103	210.0	10.4				ug/L	17	Standard
|	Mo	98	33220.0	1.0	11.7626	0.230	2.0	ug/L	54	Standard
|	Ag	107	140.7	14.6	0.0052	0.004	73.2	ug/L	137	Standard
|	Cd	111	10.5	80.6	-0.0064	0.006	88.7	mg/L	6	Standard
|	Cd	114	145.9	20.3	0.0267	0.007	25.5	ug/L	20	Standard
>	In	115	684559.7	1.8				ug/L	755264	Standard
|	Sn	118	213.3	6.7	0.1121	0.019	17.4	ug/L	138	Standard
|	Sb	123	435.9	1.1	0.0808	0.001	1.4	ug/L	391	Standard
|	Ba	135	46023.7	6.7	28.3648	1.444	5.1	ug/L	32	Standard
|	Ce	140	190.0	16.4				ug/L	42	Standard
>	Tb	159	1024457.0	1.4				ug/L	966827	Standard
|	Ho	165	18.3	41.7				ug/L	12	Standard
|	Tl	203	416.3	41.8	0.0617	0.028	45.3	ug/L	19	Standard
|	Tl	205	966.7	39.9	0.0655	0.026	40.4	ug/L	58	Standard
|	Pb	206	47981.2	1.0	9.9619	0.088	0.9	ug/L	464	Standard
|	Pb	207	40093.0	1.5	9.3002	0.114	1.2	ug/L	405	Standard
|	Pb	208	89593.8	0.8	9.5292	0.040	0.4	ug/L	876	Standard
|	U	238	129.7	10.2	0.0105	0.001	10.7	ug/L	14	Standard
>	Bi	209	550864.0	1.2				ug/L	599146	Standard

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 14:42:17

Page 1

Approved: March 01, 2017

Na	23	1085.0	8.5	283.6602	28.171	9.9	mg/L	3	Standard
Mg	24	403.3	6.2	6.8498	0.364	5.3	mg/L	30	Standard
K	39	328.3	15.3	3.7337	0.689	18.5	mg/L	10	Standard
Ca	43	1028.4	2.5	504.1769	18.591	3.7	mg/L	83	Standard
Fe	54	30.5	46.9	0.1742	0.193	111.0	mg/L	21	Standard
Fe	57	2223.5	4.6	96.1752	6.410	6.7	mg/L	240	Standard
Sc-1	45	46003.1	2.0				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	5.3	65.8				ug/L	5	Standard
Br	81	17096.3	6.6				ug/L	1587	Standard
P	31	86.7	17.6				ug/L	50	Standard
S	34	31.7	63.8				ug/L	8	Standard
Sr	88	308.3	12.2				ug/L	198	Standard
C	12	43.3	13.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	83.3	25.0				mg/L	3	Standard
Dy	164	15.7	102.2				mg/L	6	Standard
Ho-1	165	18.3	41.7				mg/L	12	Standard
Er	166	20.0	86.6				mg/L	10	Standard
I	127	49960.3	23.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		107.043	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		96.513	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 14:42:17

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.638
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	91.942
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Cu 65 Upper, S, EEE	Cu	65	

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 14:42:17

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702125302

Sample Date/Time: Tuesday, February 28, 2017 14:43:12

Number of Replicates: 3

Autosampler Position: 239

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	376957.3	1.5				ug/L	250104	Standard
|	Be	9	21.7	26.6	-0.0014	0.002	175.2	ug/L	7	Standard
|	Al	27	23053.1	21.5	0.1197	0.029	24.0	ug/L	597	Standard
|	Sc	45	44727.7	3.9				ug/L	41681	Standard
|	Ti	47	436.7	8.9	2.1486	0.239	11.1	ug/L	86	Standard
|	V	51	41614.8	1.7	6.8922	0.128	1.9	ug/L	1740	Standard
|	Cr	52	33613.9	2.1	5.0078	0.148	3.0	ug/L	7178	Standard
|	Cr	53	38719.7	8.7	55.1570	4.813	8.7	ug/L	573	Standard
|	Mn	55	9985.4	21.9	0.8176	0.245	30.0	ug/L	3072	Standard
|	Co	59	20777.2	2.4	2.9327	0.076	2.6	ug/L	573	Standard
|	Ni	60	1766874.4	3.1	1199.1972	39.528	3.3	ug/L	264	Standard
|	Cu	65	4154.2	4.1	2.5697	0.121	4.7	ug/L	530	Standard
|	Zn	66	2910.3	3.3	3.2455	0.130	4.0	ug/L	252	Standard
>	Ge	72	603290.0	0.4				ug/L	641188	Standard
|	As	75	3556.7	9.4	4.4155	0.427	9.7	ug/L	-83	Standard
|	Se	82	329.3	4.0	4.4551	0.202	4.5	ug/L	16	Standard
|	Se-1	77	9777.5	11.3	192.3591	21.537	11.2	ug/L	126	Standard
>	Ga	71	1325.1	10.4				mg/L	70	Standard
|	Rb	85	1136237.9	2.1				ug/L	33	Standard
|	Y	89	447041.0	0.9				ug/L	493982	Standard
>	Rh	103	726.7	17.0				ug/L	17	Standard
|	Mo	98	7263.4	1.4	2.6390	0.058	2.2	ug/L	54	Standard
|	Ag	107	197.7	48.2	0.0182	0.020	109.3	ug/L	137	Standard
|	Cd	111	32.6	104.8	0.0096	0.024	251.8	mg/L	6	Standard
|	Cd	114	97.1	53.1	0.0152	0.013	87.2	ug/L	20	Standard
>	In	115	663034.3	0.8				ug/L	755264	Standard
|	Sn	118	295.3	9.0	0.2171	0.029	13.2	ug/L	138	Standard
|	Sb	123	359.3	27.5	0.0647	0.024	37.9	ug/L	391	Standard
|	Ba	135	2530737.7	1.6	1612.8962	38.261	2.4	ug/L	32	Standard
|	Ce	140	81.7	36.9				ug/L	42	Standard
>	Tb	159	1035348.5	0.8				ug/L	966827	Standard
|	Ho	165	5.0	0.0				ug/L	12	Standard
|	Tl	203	164.7	33.3	0.0223	0.010	43.2	ug/L	19	Standard
|	Tl	205	446.7	34.3	0.0314	0.012	36.8	ug/L	58	Standard
|	Pb	206	507.7	9.6	0.0199	0.011	53.1	ug/L	464	Standard
|	Pb	207	426.0	1.2	0.0159	0.001	9.3	ug/L	405	Standard
|	Pb	208	965.3	6.3	0.0233	0.007	28.7	ug/L	876	Standard
|	U	238	61.3	108.4	0.0045	0.007	148.8	ug/L	14	Standard
>	Bi	209	511044.1	0.6				ug/L	599146	Standard

Sample ID: L1702125302

Report Date/Time: Tuesday, February 28, 2017 14:45:23

Page 1

Approved: March 01, 2017

Na	23	3063.6	5.3	825.7754	74.775	9.1	mg/L	3	Standard
Mg	24	1476.7	6.2	27.2842	0.812	3.0	mg/L	30	Standard
K	39	4975.8	7.4	61.6703	5.479	8.9	mg/L	10	Standard
Ca	43	2776.9	3.0	1472.6844	58.877	4.0	mg/L	83	Standard
Fe	54	52.3	48.1	0.5084	0.378	74.3	mg/L	21	Standard
Fe	57	5959.5	7.9	293.8008	35.927	12.2	mg/L	240	Standard
Sc-1	45	44727.7	3.9				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	5.3	39.0				ug/L	5	Standard
Br	81	56107.1	3.0				ug/L	1587	Standard
P	31	73.3	25.8				ug/L	50	Standard
S	34	36.7	34.3				ug/L	8	Standard
Sr	88	375.0	6.1				ug/L	198	Standard
C	12	760.0	7.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	60.0	60.1				mg/L	3	Standard
Dy	164	8.9	6.2				mg/L	6	Standard
Ho-1	165	5.0	0.0				mg/L	12	Standard
Er	166	23.3	49.5				mg/L	10	Standard
I	127	92616.7	8.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		150.720	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.089	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125302

Report Date/Time: Tuesday, February 28, 2017 14:45:23

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	87.788
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.295
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Ni 60 Upper, S, EEE	Ni	60	
Se-1 77 Upper, S, EEE	Se-1	77	

Sample ID: L1702125302

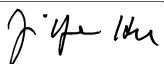
Report Date/Time: Tuesday, February 28, 2017 14:45:23

Page 3

Approved: March 01, 2017



Sample ID: L1702125302
Report Date/Time: Tuesday, February 28, 2017 14:45:23
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702125302PS WG604489-01

Sample Date/Time: Tuesday, February 28, 2017 14:46:17

Number of Replicates: 3

Autosampler Position: 240

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	359889.7	1.6				ug/L	250104	Standard
|	Be	9	92474.7	0.6	39.5054	0.395	1.0	ug/L	7	Standard
|	Al	27	58516.9	114.1	0.3308	0.387	117.1	ug/L	597	Standard
|	Sc	45	43193.2	2.1				ug/L	41681	Standard
|	Ti	47	458.0	6.1	2.3202	0.181	7.8	ug/L	86	Standard
|	V	51	389907.4	1.8	67.9605	0.390	0.6	ug/L	1740	Standard
|	Cr	52	345276.3	0.9	63.7705	0.343	0.5	ug/L	7178	Standard
|	Cr	53	74318.5	1.9	108.3969	1.077	1.0	ug/L	573	Standard
|	Mn	55	536783.2	5.2	61.0787	2.739	4.5	ug/L	3072	Standard
|	Co	59	410412.4	0.7	60.0289	0.691	1.2	ug/L	573	Standard
|	Ni	60	1861955.2	1.4	1283.9038	12.605	1.0	ug/L	264	Standard
|	Cu	65	78274.3	1.1	56.0527	0.362	0.6	ug/L	530	Standard
|	Zn	66	42819.1	1.5	53.4115	0.537	1.0	ug/L	252	Standard
>	Ge	72	593796.8	1.2				ug/L	641188	Standard
|	As	75	50069.6	2.5	62.5757	1.255	2.0	ug/L	-83	Standard
|	Se	82	4119.0	2.2	59.2907	1.418	2.4	ug/L	16	Standard
|	Se-1	77	11668.8	0.9	233.7618	1.136	0.5	ug/L	126	Standard
>	Ga	71	1341.7	4.0				mg/L	70	Standard
|	Rb	85	1150608.0	1.9				ug/L	33	Standard
|	Y	89	437927.0	0.4				ug/L	493982	Standard
>	Rh	103	755.0	3.3				ug/L	17	Standard
|	Mo	98	7328.9	0.8	2.7622	0.028	1.0	ug/L	54	Standard
|	Ag	107	225227.5	1.3	49.5956	0.358	0.7	ug/L	137	Standard
|	Cd	111	73186.9	1.0	54.3714	0.495	0.9	mg/L	6	Standard
|	Cd	114	190413.3	1.9	51.5558	0.229	0.4	ug/L	20	Standard
>	In	115	639389.5	1.8				ug/L	755264	Standard
|	Sn	118	350.7	6.0	0.2985	0.025	8.5	ug/L	138	Standard
|	Sb	123	205986.9	1.2	54.3098	0.330	0.6	ug/L	391	Standard
|	Ba	135	2664740.4	1.0	1761.0425	13.661	0.8	ug/L	32	Standard
|	Ce	140	105.0	17.2				ug/L	42	Standard
>	Tb	159	994105.3	0.6				ug/L	966827	Standard
|	Ho	165	35.0	14.3				ug/L	12	Standard
|	Tl	203	319861.7	1.3	58.7267	0.210	0.4	ug/L	19	Standard
|	Tl	205	734245.6	1.4	57.6553	0.356	0.6	ug/L	58	Standard
|	Pb	206	243935.4	1.0	56.7213	0.112	0.2	ug/L	464	Standard
|	Pb	207	215455.2	0.9	55.9956	0.344	0.6	ug/L	405	Standard
|	Pb	208	478298.1	0.4	56.9700	0.439	0.8	ug/L	876	Standard
|	U	238	562781.6	0.6	58.9459	0.563	1.0	ug/L	14	Standard
>	Bi	209	495699.8	1.0				ug/L	599146	Standard

Sample ID: L1702125302PS WG604489-01

Report Date/Time: Tuesday, February 28, 2017 14:48:27

Page 1

Approved: March 01, 2017

Na	23	3078.6	4.1	857.0416	17.139	2.0	mg/L	3	Standard
Mg	24	1493.4	1.1	28.6245	0.917	3.2	mg/L	30	Standard
K	39	4804.1	2.7	61.5764	0.748	1.2	mg/L	10	Standard
Ca	43	2866.9	3.5	1577.3771	90.233	5.7	mg/L	83	Standard
Fe	54	46.3	37.2	0.4356	0.244	55.9	mg/L	21	Standard
Fe	57	5732.8	3.7	291.7425	12.858	4.4	mg/L	240	Standard
Sc-1	45	43193.2	2.1				mg/L	41681	Standard
Cl	35	4.0	0.0				ug/L	2	Standard
Kr	83	6.7	22.9				ug/L	5	Standard
Br	81	57502.4	4.7				ug/L	1587	Standard
P	31	80.0	21.7				ug/L	50	Standard
S	34	35.0	42.9				ug/L	8	Standard
Sr	88	361.7	5.6				ug/L	198	Standard
C	12	883.4	10.5				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	86.7	17.6				mg/L	3	Standard
Dy	164	26.0	57.3				mg/L	6	Standard
Ho-1	165	35.0	14.3				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	74009.8	9.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		143.896	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		92.609	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125302PS WG604489-01

Report Date/Time: Tuesday, February 28, 2017 14:48:27

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	84.658
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	82.734
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Cr 53 Upper, S, EEE	Cr	53	
Ni 60 Upper, S, EEE	Ni	60	

Sample ID: L1702125302PS WG604489-01

Report Date/Time: Tuesday, February 28, 2017 14:48:27

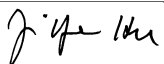
Page 3

Approved: March 01, 2017



Se-1 77 Upper, S, EEE Se-1 77
Ba 135 Upper, S, EEE Ba 135

Sample ID: L1702125302PS WG604489-01
Report Date/Time: Tuesday, February 28, 2017 14:48:27
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702125302SDL WG604489-02

Sample Date/Time: Tuesday, February 28, 2017 14:49:22

Number of Replicates: 3

Autosampler Position: 241

Sample Description: 5

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	260212.9	2.3				ug/L	250104	Standard
|	Be	9	18.3	68.6	0.0006	0.007	1280.4	ug/L	7	Standard
|	Al	27	8166.1	61.9	0.0590	0.042	71.1	ug/L	597	Standard
|	Sc	45	45118.9	5.0				ug/L	41681	Standard
|	Ti	47	79.0	6.7	0.0260	0.054	206.9	ug/L	86	Standard
|	V	51	8083.3	10.4	1.1641	0.191	16.4	ug/L	1740	Standard
|	Cr	52	15715.8	1.4	1.7871	0.145	8.1	ug/L	7178	Standard
|	Cr	53	20348.7	4.2	29.5515	2.131	7.2	ug/L	573	Standard
|	Mn	55	14538.1	132.6	1.4413	2.356	163.5	ug/L	3072	Standard
|	Co	59	4305.6	5.8	0.5805	0.065	11.3	ug/L	573	Standard
|	Ni	60	361247.5	2.2	253.2024	16.487	6.5	ug/L	264	Standard
|	Cu	65	1316.7	8.8	0.5892	0.128	21.7	ug/L	530	Standard
|	Zn	66	1517.4	6.0	1.5878	0.185	11.7	ug/L	252	Standard
>	Ge	72	584927.2	4.3				ug/L	641188	Standard
|	As	75	736.7	13.1	0.9766	0.119	12.2	ug/L	-83	Standard
|	Se	82	80.4	15.7	0.9526	0.193	20.2	ug/L	16	Standard
|	Se-1	77	3103.7	3.3	61.5509	3.816	6.2	ug/L	126	Standard
>	Ga	71	351.7	7.2				mg/L	70	Standard
|	Rb	85	208795.9	2.1				ug/L	33	Standard
|	Y	89	388120.9	3.7				ug/L	493982	Standard
>	Rh	103	158.3	22.8				ug/L	17	Standard
|	Mo	98	1271.4	4.0	0.4774	0.039	8.2	ug/L	54	Standard
|	Ag	107	135.3	15.2	0.0070	0.005	66.0	ug/L	137	Standard
|	Cd	111	9.0	28.0	-0.0067	0.002	33.2	mg/L	6	Standard
|	Cd	114	250.6	3.5	0.0599	0.004	6.2	ug/L	20	Standard
>	In	115	621007.9	4.8				ug/L	755264	Standard
|	Sn	118	1780.8	8.9	2.1230	0.094	4.4	ug/L	138	Standard
|	Sb	123	488.4	12.1	0.1063	0.017	16.2	ug/L	391	Standard
|	Ba	135	444457.2	2.9	303.1104	23.264	7.7	ug/L	32	Standard
|	Ce	140	38.3	19.9				ug/L	42	Standard
>	Tb	159	961570.8	3.8				ug/L	966827	Standard
|	Ho	165	6.7	86.6				ug/L	12	Standard
|	Tl	203	56.3	31.8	0.0032	0.004	117.1	ug/L	19	Standard
|	Tl	205	153.3	16.1	0.0091	0.002	25.6	ug/L	58	Standard
|	Pb	206	445.3	6.0	0.0059	0.005	84.7	ug/L	464	Standard
|	Pb	207	377.0	4.4	0.0038	0.008	212.7	ug/L	405	Standard
|	Pb	208	849.3	5.4	0.0099	0.001	13.3	ug/L	876	Standard
|	U	238	62.7	10.3	0.0047	0.001	13.1	ug/L	14	Standard
>	Bi	209	510878.8	4.7				ug/L	599146	Standard

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:51:33

Page 1

Approved: March 01, 2017

Na	23	588.3	11.6	157.2508	25.638	16.3	mg/L	3	Standard
Mg	24	270.0	15.8	4.4938	0.632	14.1	mg/L	30	Standard
K	39	1213.4	4.2	14.7173	0.578	3.9	mg/L	10	Standard
Ca	43	598.3	2.9	282.8086	8.163	2.9	mg/L	83	Standard
Fe	54	24.0	41.1	0.0968	0.158	162.8	mg/L	21	Standard
Fe	57	1548.4	14.5	63.8156	12.288	19.3	mg/L	240	Standard
Sc-1	45	45118.9	5.0				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	6.0	16.7				ug/L	5	Standard
Br	81	11928.0	6.1				ug/L	1587	Standard
P	31	48.3	33.3				ug/L	50	Standard
S	34	30.0	60.1				ug/L	8	Standard
Sr	88	328.3	12.3				ug/L	198	Standard
C	12	130.0	53.8				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	10.0	100.0				mg/L	3	Standard
Dy	164	9.0	118.6				mg/L	6	Standard
Ho-1	165	6.7	86.6				mg/L	12	Standard
Er	166	20.0	86.6				mg/L	10	Standard
I	127	20368.7	0.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		104.042	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		91.226	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:51:33

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	82.224
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.268
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Ni 60 Upper, S, EEE	Ni	60	
Ba 135 Upper, S, EEE	Ba	135	

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:51:33

Page 3

Approved: March 01, 2017

Method 6020 - Summary Report

Sample ID: L1702125302SDL WG604489-02

Sample Date/Time: Tuesday, February 28, 2017 14:52:27

Number of Replicates: 3

Autosampler Position: 242

Sample Description: 25

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	228798.1	1.5				ug/L	250104	Standard
|	Be	9	28.3	27.0	0.0088	0.005	59.5	ug/L	7	Standard
|	Al	27	2525.2	6.6	0.0165	0.002	10.9	ug/L	597	Standard
|	Sc	45	43407.1	2.7				ug/L	41681	Standard
|	Ti	47	41.7	10.8	-0.2017	0.030	15.0	ug/L	86	Standard
|	V	51	2291.2	12.3	0.1368	0.051	37.5	ug/L	1740	Standard
|	Cr	52	11466.3	0.9	1.0047	0.004	0.4	ug/L	7178	Standard
|	Cr	53	13764.6	6.7	19.9922	1.534	7.7	ug/L	573	Standard
|	Mn	55	2191.2	2.5	-0.0480	0.007	15.6	ug/L	3072	Standard
|	Co	59	1231.4	5.2	0.1245	0.009	7.3	ug/L	573	Standard
|	Ni	60	82465.8	1.2	58.4390	0.438	0.8	ug/L	264	Standard
|	Cu	65	708.3	2.0	0.1483	0.008	5.7	ug/L	530	Standard
|	Zn	66	842.0	1.2	0.7385	0.021	2.8	ug/L	252	Standard
>	Ge	72	576106.1	0.8				ug/L	641188	Standard
|	As	75	82.5	47.4	0.1487	0.051	34.3	ug/L	-83	Standard
|	Se	82	29.0	17.5	0.2045	0.078	38.1	ug/L	16	Standard
|	Se-1	77	1629.8	3.5	31.7023	1.108	3.5	ug/L	126	Standard
>	Ga	71	165.0	13.9				mg/L	70	Standard
|	Rb	85	45668.8	3.5				ug/L	33	Standard
|	Y	89	384732.5	1.6				ug/L	493982	Standard
>	Rh	103	50.0	55.7				ug/L	17	Standard
|	Mo	98	286.8	9.2	0.0932	0.010	10.8	ug/L	54	Standard
|	Ag	107	112.0	23.3	0.0021	0.006	269.0	ug/L	137	Standard
|	Cd	111	8.3	37.0	-0.0072	0.002	31.7	mg/L	6	Standard
|	Cd	114	211.8	14.5	0.0500	0.008	16.7	ug/L	20	Standard
>	In	115	610334.9	1.9				ug/L	755264	Standard
|	Sn	118	2168.8	9.7	2.6673	0.277	10.4	ug/L	138	Standard
|	Sb	123	116.8	21.5	0.0056	0.006	112.7	ug/L	391	Standard
|	Ba	135	95637.3	2.2	66.1804	0.777	1.2	ug/L	32	Standard
|	Ce	140	26.7	57.3				ug/L	42	Standard
>	Tb	159	908925.7	2.3				ug/L	966827	Standard
|	Ho	165	10.0	50.0				ug/L	12	Standard
|	Tl	203	42.7	10.8	0.0007	0.001	122.2	ug/L	19	Standard
|	Tl	205	91.7	13.7	0.0044	0.001	20.8	ug/L	58	Standard
|	Pb	206	411.0	4.0	-0.0018	0.004	219.2	ug/L	464	Standard
|	Pb	207	346.0	5.6	-0.0042	0.004	92.3	ug/L	405	Standard
|	Pb	208	757.7	4.3	-0.0006	0.003	454.0	ug/L	876	Standard
|	U	238	8.0	76.0	-0.0009	0.001	69.5	ug/L	14	Standard
>	Bi	209	510210.6	1.4				ug/L	599146	Standard

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:54:38

Page 1

Approved: March 01, 2017

Na	23	131.7	14.4	36.0592	5.472	15.2	mg/L	3	Standard
Mg	24	95.0		1.3063	0.051	3.9	mg/L	30	Standard
K	39	245.0	19.5	2.8856	0.531	18.4	mg/L	10	Standard
Ca	43	203.3	16.4	73.5713	17.268	23.5	mg/L	83	Standard
Fe	54	22.4	13.2	0.0833	0.050	60.2	mg/L	21	Standard
Fe	57	656.7	4.4	19.1738	1.105	5.8	mg/L	240	Standard
Sc-1	45	43407.1	2.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.7	68.9				ug/L	5	Standard
Br	81	3963.9	3.9				ug/L	1587	Standard
P	31	53.3	19.5				ug/L	50	Standard
S	34	35.0	37.8				ug/L	8	Standard
Sr	88	270.0	0.0				ug/L	198	Standard
C	12	40.0	43.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	6.3	93.2				mg/L	6	Standard
Ho-1	165	10.0	50.0				mg/L	12	Standard
Er	166	6.7	86.6				mg/L	10	Standard
I	127	10216.8	2.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		91.481	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		89.850	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:54:38

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	80.811
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.156
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

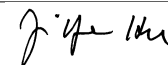
Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:54:38

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 14:55:35

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	226330.0	1.9				ug/L	250104	Standard
|	Be	9	73948.4	0.5	50.2398	0.707	1.4	ug/L	7	Standard
|	Al	27	5193016.8	0.7	47.1522	0.624	1.3	ug/L	597	Standard
|	Sc	45	45214.1	2.7				ug/L	41681	Standard
|	Ti	47	18662.8	2.1	110.3149	3.062	2.8	ug/L	86	Standard
|	V	51	303176.2	2.3	51.5713	1.545	3.0	ug/L	1740	Standard
|	Cr	52	286228.8	2.2	51.4312	1.930	3.8	ug/L	7178	Standard
|	Cr	53	41244.4	3.6	58.4113	3.329	5.7	ug/L	573	Standard
|	Mn	55	465797.5	1.9	51.7474	1.078	2.1	ug/L	3072	Standard
|	Co	59	363322.6	1.6	51.9157	1.402	2.7	ug/L	573	Standard
|	Ni	60	77085.6	1.9	51.7607	0.934	1.8	ug/L	264	Standard
|	Cu	65	73107.6	1.0	51.1159	0.583	1.1	ug/L	530	Standard
|	Zn	66	40970.0	0.6	49.9093	0.678	1.4	ug/L	252	Standard
>	Ge	72	607840.0	1.9				ug/L	641188	Standard
|	As	75	39744.5	1.5	48.5373	0.225	0.5	ug/L	-83	Standard
|	Se	82	3366.9	0.8	47.3034	0.596	1.3	ug/L	16	Standard
|	Se-1	77	3224.3	2.9	61.4771	3.055	5.0	ug/L	126	Standard
>	Ga	71	101.7	36.3				mg/L	70	Standard
|	Rb	85	590.0	3.7				ug/L	33	Standard
|	Y	89	408830.8	0.8				ug/L	493982	Standard
>	Rh	103	36.7	28.4				ug/L	17	Standard
|	Mo	98	240708.8	0.3	92.7652	1.408	1.5	ug/L	54	Standard
|	Ag	107	210715.7	1.5	47.0950	0.126	0.3	ug/L	137	Standard
|	Cd	111	61368.4	0.8	46.2763	0.531	1.1	mg/L	6	Standard
|	Cd	114	178110.0	2.5	48.9496	0.877	1.8	ug/L	20	Standard
>	In	115	629919.8	1.8				ug/L	755264	Standard
|	Sn	118	40403.8	2.0	50.4195	1.209	2.4	ug/L	138	Standard
|	Sb	123	187985.1	0.5	50.3114	0.697	1.4	ug/L	391	Standard
|	Ba	135	79844.2	1.1	53.5346	0.650	1.2	ug/L	32	Standard
|	Ce	140	58.3	40.5				ug/L	42	Standard
>	Tb	159	908572.7	1.2				ug/L	966827	Standard
|	Ho	165	30.0	28.9				ug/L	12	Standard
|	Tl	203	283948.1	1.7	49.4565	0.366	0.7	ug/L	19	Standard
|	Tl	205	662738.9	2.3	49.3652	0.277	0.6	ug/L	58	Standard
|	Pb	206	224304.3	1.2	49.4697	0.434	0.9	ug/L	464	Standard
|	Pb	207	201488.4	1.4	49.6687	0.493	1.0	ug/L	405	Standard
|	Pb	208	430993.8	1.5	48.6861	0.348	0.7	ug/L	876	Standard
|	U	238	427858.6	2.3	42.5071	0.182	0.4	ug/L	14	Standard
>	Bi	209	522541.2	1.8				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 14:57:45

Page 1

Approved: March 01, 2017

Na	23	15.0	66.7	3.5346	2.667	75.5	mg/L	3	Standard
Mg	24	305.0	1.6	5.1521	0.245	4.8	mg/L	30	Standard
K	39	600.0	10.9	7.1229	0.614	8.6	mg/L	10	Standard
Ca	43	58.3	39.6	-9.0149	12.329	136.8	mg/L	83	Standard
Fe	54	321.1	3.7	4.3068	0.049	1.1	mg/L	21	Standard
Fe	57	570.0	3.0	13.3616	1.650	12.3	mg/L	240	Standard
Sc-1	45	45214.1	2.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.3	53.3				ug/L	5	Standard
Br	81	1913.5	9.4				ug/L	1587	Standard
P	31	76.7	15.1				ug/L	50	Standard
S	34	23.3	68.9				ug/L	8	Standard
Sr	88	230.0	13.2				ug/L	198	Standard
C	12	16.7	34.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	9.5	8.7				mg/L	6	Standard
Ho-1	165	30.0	28.9				mg/L	12	Standard
Er	166	10.0	173.2				mg/L	10	Standard
I	127	5324.3	2.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	100.480		
Al	27	94.304		
Sc	45			
Ti	47	110.315		
V	51	103.143		
Cr	52	102.862		
Cr	53			
Mn	55	103.495		
Co	59	103.831		
Ni	60	103.521		
Cu	65	102.232		
Zn	66	99.819		
Ge	72		94.799	
As	75	97.075		
Se	82	94.607		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 14:57:45

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	92.765	
[	Ag	107	94.190	
[	Cd	111	92.553	
[	Cd	114		
>	In	115		83.404
[	Sn	118	100.839	
[	Sb	123	100.623	
[	Ba	135	107.069	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	98.913	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	97.372	
[	U	238	85.014	
>	Bi	209		87.214
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Ti	47	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 14:57:45

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 14:58:40

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	240704.6	4.6				ug/L	250104	Standard
|	Be	9	31.7	9.1	0.0100	0.003	25.6	ug/L	7	Standard
|	Al	27	1495.1	18.0	0.0066	0.002	32.1	ug/L	597	Standard
|	Sc	45	47738.5	3.0				ug/L	41681	Standard
|	Ti	47	34.3	10.2	-0.2772	0.023	8.3	ug/L	86	Standard
|	V	51	783.6	36.2	-0.1552	0.043	27.7	ug/L	1740	Standard
|	Cr	52	7151.7	2.0	-0.0243	0.009	38.1	ug/L	7178	Standard
|	Cr	53	6993.3	8.1	8.2689	0.926	11.2	ug/L	573	Standard
|	Mn	55	3139.3	6.9	0.0123	0.017	134.9	ug/L	3072	Standard
|	Co	59	457.7	3.8	-0.0018	0.003	196.2	ug/L	573	Standard
|	Ni	60	201.3	24.4	-0.0540	0.032	59.5	ug/L	264	Standard
|	Cu	65	577.7	2.1	-0.0081	0.012	152.3	ug/L	530	Standard
|	Zn	66	344.7	4.0	0.0332	0.019	56.8	ug/L	252	Standard
>	Ge	72	668658.2	2.2				ug/L	641188	Standard
|	As	75	-56.7	67.1	-0.0206	0.042	203.8	ug/L	-83	Standard
|	Se	82	13.8	10.6	-0.0510	0.015	29.8	ug/L	16	Standard
|	Se-1	77	654.7	3.0	9.4840	0.137	1.4	ug/L	126	Standard
>	Ga	71	100.0	36.1				mg/L	70	Standard
|	Rb	85	113.3	105.3				ug/L	33	Standard
|	Y	89	461596.0	4.8				ug/L	493982	Standard
>	Rh	103	25.0	34.6				ug/L	17	Standard
|	Mo	98	223.8	28.6	0.0580	0.021	36.6	ug/L	54	Standard
|	Ag	107	147.7	36.2	0.0066	0.011	171.0	ug/L	137	Standard
|	Cd	111	15.7	68.6	-0.0028	0.008	272.8	mg/L	6	Standard
|	Cd	114	54.4	73.8	0.0037	0.010	279.8	ug/L	20	Standard
>	In	115	687258.1	2.3				ug/L	755264	Standard
|	Sn	118	145.3	12.7	0.0328	0.020	59.7	ug/L	138	Standard
|	Sb	123	927.1	15.0	0.2014	0.038	18.7	ug/L	391	Standard
|	Ba	135	119.7	96.6	0.0465	0.072	155.2	ug/L	32	Standard
|	Ce	140	16.7	45.8				ug/L	42	Standard
>	Tb	159	961634.6	1.0				ug/L	966827	Standard
|	Ho	165	10.0	50.0				ug/L	12	Standard
|	Tl	203	83.3	48.7	0.0064	0.006	100.5	ug/L	19	Standard
|	Tl	205	185.0	30.1	0.0101	0.004	37.4	ug/L	58	Standard
|	Pb	206	469.0	5.6	0.0009	0.005	548.7	ug/L	464	Standard
|	Pb	207	398.7	7.5	-0.0007	0.007	914.6	ug/L	405	Standard
|	Pb	208	874.0	2.0	0.0030	0.002	63.9	ug/L	876	Standard
|	U	238	61.0	81.6	0.0039	0.005	116.7	ug/L	14	Standard
>	Bi	209	565860.3	0.4				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:00:51

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	45.0	11.1	0.2550	0.087	34.2	mg/L	30	Standard
K	39	21.7	48.0	0.0122	0.126	1031.3	mg/L	10	Standard
Ca	43	36.7	28.4	-21.7574	5.149	23.7	mg/L	83	Standard
Fe	54	31.1	34.5	0.1671	0.141	84.3	mg/L	21	Standard
Fe	57	465.0	6.5	6.6990	1.514	22.6	mg/L	240	Standard
Sc-1	45	47738.5	3.0				mg/L	41681	Standard
Cl	35	2.7	114.6				ug/L	2	Standard
Kr	83	5.0	40.0				ug/L	5	Standard
Br	81	1973.5	6.3				ug/L	1587	Standard
P	31	66.7	30.3				ug/L	50	Standard
S	34	25.0	34.6				ug/L	8	Standard
Sr	88	241.7	12.5				ug/L	198	Standard
C	12	6.7	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	10.0	100.0				mg/L	3	Standard
Dy	164	15.7	181.1				mg/L	6	Standard
Ho-1	165	10.0	50.0				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	6824.9	0.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		104.284	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:00:51

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.996
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	94.444
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 7	Sb	123	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:00:51

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132401

Sample Date/Time: Tuesday, February 28, 2017 15:01:47

Number of Replicates: 3

Autosampler Position: 243

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	237546.1	3.9				ug/L	250104	Standard
|	Be	9	23.3	44.6	0.0047	0.006	129.6	ug/L	7	Standard
|	Al	27	16151.9	3.1	0.1338	0.009	6.4	ug/L	597	Standard
|	Sc	45	48646.3	2.4				ug/L	41681	Standard
|	Ti	47	61.3	27.9	-0.1232	0.103	83.4	ug/L	86	Standard
|	V	51	509.4	53.0	-0.1962	0.041	20.8	ug/L	1740	Standard
|	Cr	52	11708.9	0.4	0.7805	0.046	5.8	ug/L	7178	Standard
|	Cr	53	8972.7	1.5	11.0974	0.203	1.8	ug/L	573	Standard
|	Mn	55	8250.2	1.1	0.5499	0.013	2.3	ug/L	3072	Standard
|	Co	59	470.0	5.7	0.0012	0.004	348.2	ug/L	573	Standard
|	Ni	60	655.7	3.3	0.2327	0.008	3.5	ug/L	264	Standard
|	Cu	65	2595.6	2.4	1.3198	0.030	2.3	ug/L	530	Standard
|	Zn	66	1096.7	1.9	0.8984	0.035	3.9	ug/L	252	Standard
>	Ge	72	654511.5	2.6				ug/L	641188	Standard
|	As	75	33.0	25.3	0.0797	0.010	12.5	ug/L	-83	Standard
|	Se	82	22.7	8.6	0.0695	0.018	26.4	ug/L	16	Standard
|	Se-1	77	557.0	6.0	7.9476	0.567	7.1	ug/L	126	Standard
>	Ga	71	85.0	23.5				mg/L	70	Standard
|	Rb	85	453.3	11.3				ug/L	33	Standard
|	Y	89	452401.2	2.7				ug/L	493982	Standard
>	Rh	103	28.3	81.5				ug/L	17	Standard
|	Mo	98	75.5	4.6	0.0062	0.001	23.8	ug/L	54	Standard
|	Ag	107	117.3	3.4	0.0006	0.000	65.5	ug/L	137	Standard
|	Cd	111	6.6	23.3	-0.0091	0.001	11.3	mg/L	6	Standard
|	Cd	114	28.4	64.9	-0.0028	0.005	172.1	ug/L	20	Standard
>	In	115	678159.6	1.8				ug/L	755264	Standard
|	Sn	118	183.7	14.1	0.0797	0.030	37.8	ug/L	138	Standard
|	Sb	123	318.1	22.7	0.0527	0.019	36.6	ug/L	391	Standard
|	Ba	135	458.0	4.9	0.2578	0.009	3.5	ug/L	32	Standard
|	Ce	140	76.7	49.4				ug/L	42	Standard
>	Tb	159	959777.7	0.6				ug/L	966827	Standard
|	Ho	165	16.7	17.3				ug/L	12	Standard
|	Tl	203	54.3	8.7	0.0019	0.001	43.9	ug/L	19	Standard
|	Tl	205	123.3	15.3	0.0060	0.001	22.0	ug/L	58	Standard
|	Pb	206	462.3	2.9	0.0007	0.003	467.5	ug/L	464	Standard
|	Pb	207	404.0	3.3	0.0016	0.003	209.2	ug/L	405	Standard
|	Pb	208	880.7	2.3	0.0048	0.003	60.1	ug/L	876	Standard
|	U	238	10.0	34.6	-0.0008	0.000	43.1	ug/L	14	Standard
>	Bi	209	559096.3	0.8				ug/L	599146	Standard

Sample ID: L1702132401

Report Date/Time: Tuesday, February 28, 2017 15:03:58

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0768	0.695	904.4	mg/L	3	Standard
Mg	24	28.3	10.2	-0.0491	0.044	89.0	mg/L	30	Standard
K	39	20.0	66.1	-0.0161	0.144	891.3	mg/L	10	Standard
Ca	43	58.3	40.5	-11.0530	12.455	112.7	mg/L	83	Standard
Fe	54	44.4	52.2	0.3353	0.305	91.0	mg/L	21	Standard
Fe	57	428.3	19.0	4.4850	3.556	79.3	mg/L	240	Standard
Sc-1	45	48646.3	2.4				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	4.7	44.6				ug/L	5	Standard
Br	81	1760.1	5.9				ug/L	1587	Standard
P	31	68.3	22.4				ug/L	50	Standard
S	34	38.3	7.5				ug/L	8	Standard
Sr	88	275.0	14.4				ug/L	198	Standard
C	12	13.3	43.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	5.7	88.2				mg/L	6	Standard
Ho-1	165	16.7	17.3				mg/L	12	Standard
Er	166	20.0	132.3				mg/L	10	Standard
I	127	5384.3	8.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		94.979	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		102.078	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132401

Report Date/Time: Tuesday, February 28, 2017 15:03:58

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	89.791
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.316
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702132401

Report Date/Time: Tuesday, February 28, 2017 15:03:58

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132402

Sample Date/Time: Tuesday, February 28, 2017 15:04:52

Number of Replicates: 3

Autosampler Position: 244

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	516158.5	1.0				ug/L	250104	Standard
|	Be	9	85.0	10.2	0.0151	0.003	18.6	ug/L	7	Standard
|	Al	27	114737660.3	3.2	456.9229	18.891	4.1	ug/L	597	Standard
|	Sc	45	41373.1	3.8				ug/L	41681	Standard
|	Ti	47	353.3	14.4	1.8323	0.296	16.2	ug/L	86	Standard
|	V	51	-7445.8	16.0	-1.6699	0.208	12.5	ug/L	1740	Standard
|	Cr	52	13840.3	2.5	1.5687	0.028	1.8	ug/L	7178	Standard
|	Cr	53	45894.8	9.2	71.3072	5.546	7.8	ug/L	573	Standard
|	Mn	55	79674187.6	2.7	9753.9495	127.321	1.3	ug/L	3072	Standard
|	Co	59	27311.3	2.2	4.2188	0.042	1.0	ug/L	573	Standard
|	Ni	60	68714.6	3.1	50.5425	0.776	1.5	ug/L	264	Standard
|	Cu	65	10295.2	1.4	7.5675	0.075	1.0	ug/L	530	Standard
|	Zn	66	5831.5	1.1	7.4871	0.065	0.9	ug/L	252	Standard
>	Ge	72	554695.8	1.6				ug/L	641188	Standard
|	As	75	-1414.7	39.6	-1.8417	0.717	39.0	ug/L	-83	Standard
|	Se	82	321.4	43.8	4.7664	2.264	47.5	ug/L	16	Standard
|	Se-1	77	21280.3	7.2	458.2400	25.756	5.6	ug/L	126	Standard
>	Ga	71	816.7	10.8				mg/L	70	Standard
|	Rb	85	336132.2	3.5				ug/L	33	Standard
|	Y	89	452803.8	1.3				ug/L	493982	Standard
>	Rh	103	7221.7	3.3				ug/L	17	Standard
|	Mo	98	160.6	22.4	0.0461	0.014	30.6	ug/L	54	Standard
|	Ag	107	212.7	4.7	0.0279	0.003	11.4	ug/L	137	Standard
|	Cd	111	25.4	8.3	0.0072	0.002	28.8	mg/L	6	Standard
|	Cd	114	69.1	51.2	0.0105	0.011	100.7	ug/L	20	Standard
>	In	115	581018.3	1.5				ug/L	755264	Standard
|	Sn	118	219.3	7.3	0.1637	0.018	11.2	ug/L	138	Standard
|	Sb	123	1643.5	10.8	0.4511	0.059	13.1	ug/L	391	Standard
|	Ba	135	37280743.1	1.5	27110.7276	14.757	0.1	ug/L	32	Standard
|	Ce	140	2693.6	4.6				ug/L	42	Standard
>	Tb	159	993351.0	0.4				ug/L	966827	Standard
|	Ho	165	100.0	39.1				ug/L	12	Standard
|	Tl	203	261.7	25.2	0.0547	0.016	29.0	ug/L	19	Standard
|	Tl	205	576.7	14.9	0.0554	0.009	16.2	ug/L	58	Standard
|	Pb	206	511.0	12.9	0.0578	0.021	35.5	ug/L	464	Standard
|	Pb	207	433.3	4.3	0.0529	0.006	12.1	ug/L	405	Standard
|	Pb	208	1113.3	7.7	0.0818	0.014	16.9	ug/L	876	Standard
|	U	238	71.7	49.7	0.0079	0.005	59.9	ug/L	14	Standard
>	Bi	209	386950.6	0.5				ug/L	599146	Standard

Sample ID: L1702132402

Report Date/Time: Tuesday, February 28, 2017 15:07:03

Page 1

Approved: March 01, 2017

Na	23	4802.4	2.9	1397.8866	71.985	5.1	mg/L	3	Standard
Mg	24	15024.1	3.1	306.1427	20.568	6.7	mg/L	30	Standard
K	39	4340.6	10.6	58.0061	4.545	7.8	mg/L	10	Standard
Ca	43	4240.6	4.4	2459.3039	169.362	6.9	mg/L	83	Standard
Fe	54	525.4	13.3	7.8983	1.029	13.0	mg/L	21	Standard
Fe	57	9071.1	5.7	492.3843	28.584	5.8	mg/L	240	Standard
Sc-1	45	41373.1	3.8				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	7.3	39.4				ug/L	5	Standard
Br	81	237591.0	7.1				ug/L	1587	Standard
P	31	80.0	10.8				ug/L	50	Standard
S	34	30.0	33.3				ug/L	8	Standard
Sr	88	723.4	10.6				ug/L	198	Standard
C	12	46.7	53.9				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	151.1	20.9				mg/L	6	Standard
Ho-1	165	100.0	39.1				mg/L	12	Standard
Er	166	116.7	13.1				mg/L	10	Standard
I	127	367304.2	10.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		206.378	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		86.511	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132402

Report Date/Time: Tuesday, February 28, 2017 15:07:03

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.929
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.584
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702132402

Report Date/Time: Tuesday, February 28, 2017 15:07:03

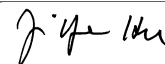
Page 3

Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702132402
Report Date/Time: Tuesday, February 28, 2017 15:07:03
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702132406

Sample Date/Time: Tuesday, February 28, 2017 15:07:57

Number of Replicates: 3

Autosampler Position: 245

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	241900.9	9.0				ug/L	250104	Standard
|	Be	9	20.0	50.0	0.0027	0.007	250.4	ug/L	7	Standard
|	Al	27	24253.8	29.2	0.1984	0.052	26.1	ug/L	597	Standard
|	Sc	45	48641.4	5.1				ug/L	41681	Standard
|	Ti	47	53.7	13.1	-0.1808	0.036	19.9	ug/L	86	Standard
|	V	51	84.0	744.6	-0.2644	0.095	35.9	ug/L	1740	Standard
|	Cr	52	14181.3	7.1	1.0878	0.145	13.3	ug/L	7178	Standard
|	Cr	53	20066.7	10.8	24.6274	2.557	10.4	ug/L	573	Standard
|	Mn	55	42446.4	109.2	3.8837	4.571	117.7	ug/L	3072	Standard
|	Co	59	647.7	46.4	0.0206	0.038	183.5	ug/L	573	Standard
|	Ni	60	1091.4	71.1	0.4726	0.461	97.5	ug/L	264	Standard
|	Cu	65	1700.4	7.2	0.6818	0.071	10.5	ug/L	530	Standard
|	Zn	66	1570.4	3.8	1.3536	0.055	4.1	ug/L	252	Standard
>	Ge	72	686661.2	0.8				ug/L	641188	Standard
|	As	75	86.8	123.2	0.1363	0.116	85.0	ug/L	-83	Standard
|	Se	82	26.2	6.1	0.0989	0.018	17.9	ug/L	16	Standard
|	Se-1	77	2250.8	17.6	37.0597	6.610	17.8	ug/L	126	Standard
>	Ga	71	228.3	7.0				mg/L	70	Standard
|	Rb	85	336.7	79.7				ug/L	33	Standard
|	Y	89	469446.1	3.1				ug/L	493982	Standard
>	Rh	103	20.0	50.0				ug/L	17	Standard
|	Mo	98	103.8	43.8	0.0162	0.016	100.1	ug/L	54	Standard
|	Ag	107	159.7	38.4	0.0094	0.013	136.2	ug/L	137	Standard
|	Cd	111	17.9	86.9	-0.0012	0.011	930.4	mg/L	6	Standard
|	Cd	114	55.5	78.5	0.0040	0.011	276.9	ug/L	20	Standard
>	In	115	680350.7	3.9				ug/L	755264	Standard
|	Sn	118	166.7	2.3	0.0594	0.004	6.7	ug/L	138	Standard
|	Sb	123	184.1	31.0	0.0193	0.015	77.3	ug/L	391	Standard
|	Ba	135	5338.4	109.0	3.2676	3.622	110.8	ug/L	32	Standard
|	Ce	140	195.0	20.0				ug/L	42	Standard
>	Tb	159	933104.7	1.8				ug/L	966827	Standard
|	Ho	165	6.7	43.3				ug/L	12	Standard
|	Tl	203	223.3	19.5	0.0293	0.006	22.1	ug/L	19	Standard
|	Tl	205	576.7	23.3	0.0374	0.009	23.5	ug/L	58	Standard
|	Pb	206	542.7	1.9	0.0174	0.005	26.7	ug/L	464	Standard
|	Pb	207	461.3	6.2	0.0148	0.006	42.6	ug/L	405	Standard
|	Pb	208	1017.7	6.0	0.0193	0.005	28.2	ug/L	876	Standard
|	U	238	42.3	54.7	0.0022	0.002	96.2	ug/L	14	Standard
>	Bi	209	559081.2	2.2				ug/L	599146	Standard

Sample ID: L1702132406

Report Date/Time: Tuesday, February 28, 2017 15:10:08

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0569	0.729	1281.0	mg/L	3	Standard
Mg	24	51.7	22.3	0.3507	0.151	43.1	mg/L	30	Standard
K	39	16.7	45.8	-0.0541	0.077	142.7	mg/L	10	Standard
Ca	43	38.3	30.1	-21.3205	5.351	25.1	mg/L	83	Standard
Fe	54	37.5	15.7	0.2479	0.097	39.2	mg/L	21	Standard
Fe	57	396.7	19.3	3.0313	3.723	122.8	mg/L	240	Standard
Sc-1	45	48641.4	5.1				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	4.7	24.7				ug/L	5	Standard
Br	81	4937.5	28.8				ug/L	1587	Standard
P	31	65.0	13.3				ug/L	50	Standard
S	34	33.3	48.2				ug/L	8	Standard
Sr	88	255.0	17.4				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	19.4	50.4				mg/L	6	Standard
Ho-1	165	6.7	43.3				mg/L	12	Standard
Er	166	13.3	43.3				mg/L	10	Standard
I	127	32129.7	49.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		96.720	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		107.092	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132406

Report Date/Time: Tuesday, February 28, 2017 15:10:08

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.081
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.313
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702132406

Report Date/Time: Tuesday, February 28, 2017 15:10:08

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132407

Sample Date/Time: Tuesday, February 28, 2017 15:11:02

Number of Replicates: 3

Autosampler Position: 246

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	491155.8	3.3				ug/L	250104	Standard
|	Be	9	95.0	24.1	0.0193	0.006	32.0	ug/L	7	Standard
|	Al	27	118377439.4	2.6	495.3622	5.414	1.1	ug/L	597	Standard
|	Sc	45	40537.5	1.3				ug/L	41681	Standard
|	Ti	47	276.0	5.3	1.3311	0.133	10.0	ug/L	86	Standard
|	V	51	-7551.6	10.3	-1.6897	0.152	9.0	ug/L	1740	Standard
|	Cr	52	13955.1	3.0	1.5873	0.012	0.8	ug/L	7178	Standard
|	Cr	53	50129.9	9.3	77.8199	5.495	7.1	ug/L	573	Standard
|	Mn	55	81248709.2	2.2	9932.5821	86.936	0.9	ug/L	3072	Standard
|	Co	59	28586.9	0.4	4.4135	0.105	2.4	ug/L	573	Standard
|	Ni	60	72816.2	1.1	53.5214	1.806	3.4	ug/L	264	Standard
|	Cu	65	10334.5	1.2	7.5867	0.130	1.7	ug/L	530	Standard
|	Zn	66	6659.8	1.3	8.5876	0.137	1.6	ug/L	252	Standard
>	Ge	72	555599.9	2.6				ug/L	641188	Standard
|	As	75	-1263.3	51.4	-1.6361	0.854	52.2	ug/L	-83	Standard
|	Se	82	367.9	26.0	5.4667	1.572	28.8	ug/L	16	Standard
|	Se-1	77	22550.1	6.5	484.9232	20.691	4.3	ug/L	126	Standard
>	Ga	71	833.4	11.3				mg/L	70	Standard
|	Rb	85	317381.6	3.0				ug/L	33	Standard
|	Y	89	452209.1	3.9				ug/L	493982	Standard
>	Rh	103	7333.4	4.8				ug/L	17	Standard
|	Mo	98	197.4	26.8	0.0612	0.020	32.5	ug/L	54	Standard
|	Ag	107	238.7	24.0	0.0338	0.012	36.6	ug/L	137	Standard
|	Cd	111	34.7	67.2	0.0144	0.018	126.1	mg/L	6	Standard
|	Cd	114	113.8	51.7	0.0235	0.017	70.5	ug/L	20	Standard
>	In	115	582015.1	2.5				ug/L	755264	Standard
|	Sn	118	230.0	2.6	0.1777	0.005	2.9	ug/L	138	Standard
|	Sb	123	1411.5	4.2	0.3825	0.018	4.7	ug/L	391	Standard
|	Ba	135	33653028.1	1.3	24437.8644	495.761	2.0	ug/L	32	Standard
|	Ce	140	1280.1	4.1				ug/L	42	Standard
>	Tb	159	999381.7	2.2				ug/L	966827	Standard
|	Ho	165	138.3	22.1				ug/L	12	Standard
|	Tl	203	223.7	19.8	0.0461	0.011	23.9	ug/L	19	Standard
|	Tl	205	510.0	18.2	0.0492	0.010	21.2	ug/L	58	Standard
|	Pb	206	480.3	5.1	0.0497	0.009	18.6	ug/L	464	Standard
|	Pb	207	425.3	6.4	0.0512	0.007	14.5	ug/L	405	Standard
|	Pb	208	1067.3	3.1	0.0760	0.008	9.9	ug/L	876	Standard
|	U	238	136.0	18.4	0.0166	0.003	18.0	ug/L	14	Standard
>	Bi	209	384106.3	2.2				ug/L	599146	Standard

Sample ID: L1702132407

Report Date/Time: Tuesday, February 28, 2017 15:13:13

Page 1

Approved: March 01, 2017

Na	23	4859.1	2.3	1442.2631	42.242	2.9	mg/L	3	Standard
Mg	24	14028.2	2.5	291.2647	8.340	2.9	mg/L	30	Standard
K	39	3905.5	5.4	53.3331	3.418	6.4	mg/L	10	Standard
Ca	43	4090.6	3.2	2416.7496	47.485	2.0	mg/L	83	Standard
Fe	54	508.3	15.5	7.7907	1.184	15.2	mg/L	21	Standard
Fe	57	9142.8	1.4	506.8028	11.367	2.2	mg/L	240	Standard
Sc-1	45	40537.5	1.3				mg/L	41681	Standard
Cl	35	2.7	43.3				ug/L	2	Standard
Kr	83	8.3	36.7				ug/L	5	Standard
Br	81	251898.0	3.2				ug/L	1587	Standard
P	31	85.0	27.0				ug/L	50	Standard
S	34	41.7	45.4				ug/L	8	Standard
Sr	88	663.3	8.7				ug/L	198	Standard
C	12	50.0	20.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	156.8	30.8				mg/L	6	Standard
Ho-1	165	138.3	22.1				mg/L	12	Standard
Er	166	136.7	29.6				mg/L	10	Standard
I	127	372696.1	10.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		196.381	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		86.652	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132407

Report Date/Time: Tuesday, February 28, 2017 15:13:13

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.061
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.109
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702132407

Report Date/Time: Tuesday, February 28, 2017 15:13:13

Page 3

Approved: March 01, 2017

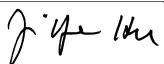


Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702132407

Report Date/Time: Tuesday, February 28, 2017 15:13:13

Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702132701

Sample Date/Time: Tuesday, February 28, 2017 15:14:08

Number of Replicates: 3

Autosampler Position: 247

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	250695.7	5.3				ug/L	250104	Standard
|	Be	9	115.0	24.2	0.0598	0.014	22.8	ug/L	7	Standard
|	Al	27	47888630.9	4.4	392.6709	4.249	1.1	ug/L	597	Standard
|	Sc	45	46977.7	2.2				ug/L	41681	Standard
|	Ti	47	2336.2	1.2	12.9687	0.182	1.4	ug/L	86	Standard
|	V	51	20777.9	1.1	3.1651	0.045	1.4	ug/L	1740	Standard
|	Cr	52	20356.7	3.7	2.4064	0.127	5.3	ug/L	7178	Standard
|	Cr	53	14465.4	21.6	19.2501	4.313	22.4	ug/L	573	Standard
|	Mn	55	15710125.5	1.7	1700.2688	25.109	1.5	ug/L	3072	Standard
|	Co	59	28000.9	2.1	3.8184	0.077	2.0	ug/L	573	Standard
|	Ni	60	122122.6	1.6	79.5282	1.214	1.5	ug/L	264	Standard
|	Cu	65	16893.1	0.9	11.1480	0.096	0.9	ug/L	530	Standard
|	Zn	66	82601.9	1.0	97.8042	1.024	1.0	ug/L	252	Standard
>	Ge	72	627413.6	0.2				ug/L	641188	Standard
|	As	75	5976.0	0.7	7.1061	0.037	0.5	ug/L	-83	Standard
|	Se	82	188.3	5.6	2.3467	0.140	6.0	ug/L	16	Standard
|	Se-1	77	3923.5	30.2	72.8099	22.581	31.0	ug/L	126	Standard
>	Ga	71	1950.1	3.7				mg/L	70	Standard
|	Rb	85	99556.0	1.2				ug/L	33	Standard
|	Y	89	455921.1	1.9				ug/L	493982	Standard
>	Rh	103	523.3	11.9				ug/L	17	Standard
|	Mo	98	1277.7	1.1	0.4784	0.012	2.5	ug/L	54	Standard
|	Ag	107	257.0	8.8	0.0345	0.004	12.6	ug/L	137	Standard
|	Cd	111	78.3	23.9	0.0461	0.014	29.6	mg/L	6	Standard
|	Cd	114	245.8	5.0	0.0584	0.003	4.8	ug/L	20	Standard
>	In	115	621507.4	1.3				ug/L	755264	Standard
|	Sn	118	405.0	9.9	0.3801	0.055	14.4	ug/L	138	Standard
|	Sb	123	623.2	1.7	0.1426	0.005	3.6	ug/L	391	Standard
|	Ba	135	3150536.0	2.1	2141.7205	25.073	1.2	ug/L	32	Standard
|	Ce	140	19949.8	1.2				ug/L	42	Standard
>	Tb	159	975345.6	0.9				ug/L	966827	Standard
|	Ho	165	508.3	7.4				ug/L	12	Standard
|	Tl	203	309.3	7.8	0.0516	0.004	8.1	ug/L	19	Standard
|	Tl	205	750.0	4.4	0.0581	0.002	3.8	ug/L	58	Standard
|	Pb	206	4672.1	2.5	1.0278	0.035	3.4	ug/L	464	Standard
|	Pb	207	3881.5	2.6	0.9507	0.033	3.5	ug/L	405	Standard
|	Pb	208	8581.0	2.2	0.9674	0.019	2.0	ug/L	876	Standard
|	U	238	119339.2	1.1	12.8917	0.244	1.9	ug/L	14	Standard
>	Bi	209	480593.7	0.8				ug/L	599146	Standard

Sample ID: L1702132701

Report Date/Time: Tuesday, February 28, 2017 15:16:18

Page 1

Approved: March 01, 2017

Na	23	2993.6	0.9	766.6167	16.261	2.1	mg/L	3	Standard
Mg	24	855.0	4.4	14.8097	0.738	5.0	mg/L	30	Standard
K	39	518.3	14.5	5.8986	0.966	16.4	mg/L	10	Standard
Ca	43	3128.7	5.2	1582.7993	109.217	6.9	mg/L	83	Standard
Fe	54	389.1	17.9	5.0743	1.018	20.1	mg/L	21	Standard
Fe	57	6187.9	1.7	289.3595	2.140	0.7	mg/L	240	Standard
Sc-1	45	46977.7	2.2				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	4.0	50.0				ug/L	5	Standard
Br	81	11787.9	5.2				ug/L	1587	Standard
P	31	88.3	6.5				ug/L	50	Standard
S	34	46.7	30.9				ug/L	8	Standard
Sr	88	330.0	12.1				ug/L	198	Standard
C	12	106.7	51.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	193.3	35.2				mg/L	3	Standard
Dy	164	735.1	13.1				mg/L	6	Standard
Ho-1	165	508.3	7.4				mg/L	12	Standard
Er	166	520.0	14.5				mg/L	10	Standard
I	127	83522.1	12.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		100.237	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		97.852	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132701

Report Date/Time: Tuesday, February 28, 2017 15:16:18

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	82.290
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	80.213
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Mn 55 Upper, S, EEE	Mn	55	
Ba 135 Upper, S, EEE	Ba	135	

Sample ID: L1702132701

Report Date/Time: Tuesday, February 28, 2017 15:16:18

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132702

Sample Date/Time: Tuesday, February 28, 2017 15:17:13

Number of Replicates: 3

Autosampler Position: 248

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	233724.0	0.8				ug/L	250104	Standard
|	Be	9	16.7	34.6	0.0007	0.004	544.1	ug/L	7	Standard
|	Al	27	10666791.7	1.0	93.7813	0.792	0.8	ug/L	597	Standard
|	Sc	45	48046.1	1.0				ug/L	41681	Standard
|	Ti	47	84.0	12.5	-0.0344	0.055	159.3	ug/L	86	Standard
|	V	51	-419.5	176.3	-0.3380	0.108	32.1	ug/L	1740	Standard
|	Cr	52	13982.1	1.4	0.9889	0.034	3.4	ug/L	7178	Standard
|	Cr	53	22535.1	7.8	26.9329	2.178	8.1	ug/L	573	Standard
|	Mn	55	204481.4	1.2	19.3211	0.198	1.0	ug/L	3072	Standard
|	Co	59	2197.8	1.6	0.2087	0.005	2.4	ug/L	573	Standard
|	Ni	60	44175.0	0.9	25.3883	0.161	0.6	ug/L	264	Standard
|	Cu	65	1231.4	3.5	0.3670	0.028	7.5	ug/L	530	Standard
|	Zn	66	1737.8	1.5	1.4798	0.031	2.1	ug/L	252	Standard
>	Ge	72	707559.9	0.3				ug/L	641188	Standard
|	As	75	443.8	28.7	0.5074	0.134	26.4	ug/L	-83	Standard
|	Se	82	48.5	15.2	0.3600	0.089	24.6	ug/L	16	Standard
|	Se-1	77	2180.8	3.4	34.7430	1.159	3.3	ug/L	126	Standard
>	Ga	71	193.3	10.5				mg/L	70	Standard
|	Rb	85	108378.0	1.7				ug/L	33	Standard
|	Y	89	473151.5	1.1				ug/L	493982	Standard
>	Rh	103	95.0	60.7				ug/L	17	Standard
|	Mo	98	622.8	2.7	0.2090	0.007	3.2	ug/L	54	Standard
|	Ag	107	119.3	7.8	0.0018	0.002	107.9	ug/L	137	Standard
|	Cd	111	9.2	50.0	-0.0070	0.003	47.3	mg/L	6	Standard
|	Cd	114	48.0	39.1	0.0025	0.005	196.1	ug/L	20	Standard
>	In	115	657936.9	0.2				ug/L	755264	Standard
|	Sn	118	200.3	4.9	0.1062	0.011	10.8	ug/L	138	Standard
|	Sb	123	247.9	5.3	0.0369	0.004	9.6	ug/L	391	Standard
|	Ba	135	153612.4	0.1	98.6213	0.293	0.3	ug/L	32	Standard
|	Ce	140	116.7	12.4				ug/L	42	Standard
>	Tb	159	921730.2	1.7				ug/L	966827	Standard
|	Ho	165	11.7	107.9				ug/L	12	Standard
|	Tl	203	62.3	30.5	0.0037	0.003	88.1	ug/L	19	Standard
|	Tl	205	143.3	29.7	0.0079	0.003	39.8	ug/L	58	Standard
|	Pb	206	445.3	5.0	0.0021	0.005	240.7	ug/L	464	Standard
|	Pb	207	397.7	5.8	0.0050	0.005	105.3	ug/L	405	Standard
|	Pb	208	846.0	2.4	0.0059	0.002	35.9	ug/L	876	Standard
|	U	238	3407.7	2.5	0.3316	0.007	2.1	ug/L	14	Standard
>	Bi	209	530763.8	0.4				ug/L	599146	Standard

Sample ID: L1702132702

Report Date/Time: Tuesday, February 28, 2017 15:19:24

Page 1

Approved: March 01, 2017

Na	23	125.0	48.7	30.9188	15.440	49.9	mg/L	3	Standard
Mg	24	900.0	4.2	15.2533	0.612	4.0	mg/L	30	Standard
K	39	628.3	5.8	7.0273	0.425	6.0	mg/L	10	Standard
Ca	43	205.0	14.8	63.4149	14.663	23.1	mg/L	83	Standard
Fe	54	24.6	41.5	0.0793	0.134	169.4	mg/L	21	Standard
Fe	57	703.4	20.6	18.0315	6.892	38.2	mg/L	240	Standard
Sc-1	45	48046.1	1.0				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.3	66.6				ug/L	5	Standard
Br	81	7175.0	1.4				ug/L	1587	Standard
P	31	53.3	39.0				ug/L	50	Standard
S	34	33.3	8.7				ug/L	8	Standard
Sr	88	215.0	4.7				ug/L	198	Standard
C	12	20.0	50.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	16.0	72.9				mg/L	6	Standard
Ho-1	165	11.7	107.9				mg/L	12	Standard
Er	166	13.3	43.3				mg/L	10	Standard
I	127	23570.1	8.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		93.451	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		110.351	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132702

Report Date/Time: Tuesday, February 28, 2017 15:19:24

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	87.113
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	88.587
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702132702

Report Date/Time: Tuesday, February 28, 2017 15:19:24

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702138801

Sample Date/Time: Tuesday, February 28, 2017 15:20:18

Number of Replicates: 3

Autosampler Position: 249

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	411788.8	3.6				ug/L	250104	Standard
|	Be	9	40.0	33.1	0.0046	0.005	99.4	ug/L	7	Standard
|	Al	27	132455862.4	4.0	660.9620	7.168	1.1	ug/L	597	Standard
|	Sc	45	42170.3	2.0				ug/L	41681	Standard
|	Ti	47	195.0	5.2	0.7359	0.039	5.3	ug/L	86	Standard
|	V	51	-8490.0	31.0	-1.7728	0.432	24.4	ug/L	1740	Standard
|	Cr	52	15505.3	2.2	1.7345	0.013	0.8	ug/L	7178	Standard
|	Cr	53	50357.3	8.9	73.9876	4.749	6.4	ug/L	573	Standard
|	Mn	55	66933244.5	2.7	7752.0818	276.311	3.6	ug/L	3072	Standard
|	Co	59	34446.1	3.5	5.0459	0.233	4.6	ug/L	573	Standard
|	Ni	60	72877.3	3.8	50.7336	2.816	5.6	ug/L	264	Standard
|	Cu	65	8556.4	2.7	5.8688	0.244	4.2	ug/L	530	Standard
|	Zn	66	6728.2	2.8	8.2032	0.321	3.9	ug/L	252	Standard
>	Ge	72	586643.4	2.7				ug/L	641188	Standard
|	As	75	-860.2	87.0	-1.0300	0.922	89.5	ug/L	-83	Standard
|	Se	82	480.7	21.1	6.8322	1.693	24.8	ug/L	16	Standard
|	Se-1	77	21093.1	10.3	428.9916	33.316	7.8	ug/L	126	Standard
>	Ga	71	1105.0	15.3				mg/L	70	Standard
|	Rb	85	144528.0	2.5				ug/L	33	Standard
|	Y	89	457749.2	4.1				ug/L	493982	Standard
>	Rh	103	7483.5	3.2				ug/L	17	Standard
|	Mo	98	467.0	7.2	0.1645	0.007	4.2	ug/L	54	Standard
|	Ag	107	203.7	7.8	0.0234	0.006	24.7	ug/L	137	Standard
|	Cd	111	36.7	25.2	0.0147	0.006	41.2	mg/L	6	Standard
|	Cd	114	94.3	43.3	0.0164	0.011	67.0	ug/L	20	Standard
>	In	115	611343.4	4.4				ug/L	755264	Standard
|	Sn	118	210.7	2.2	0.1380	0.007	5.2	ug/L	138	Standard
|	Sb	123	1868.4	2.2	0.4897	0.031	6.3	ug/L	391	Standard
|	Ba	135	23215324.0	2.2	16068.1331	854.219	5.3	ug/L	32	Standard
|	Ce	140	17371.6	1.0				ug/L	42	Standard
>	Tb	159	1052565.7	3.7				ug/L	966827	Standard
|	Ho	165	135.0	6.4				ug/L	12	Standard
|	Tl	203	515.7	4.0	0.1074	0.005	4.8	ug/L	19	Standard
|	Tl	205	1231.7	7.6	0.1145	0.013	11.7	ug/L	58	Standard
|	Pb	206	1709.8	3.0	0.3861	0.009	2.2	ug/L	464	Standard
|	Pb	207	1350.7	3.3	0.3329	0.007	2.2	ug/L	405	Standard
|	Pb	208	3585.5	1.9	0.4283	0.010	2.4	ug/L	876	Standard
|	U	238	3447.4	3.7	0.4344	0.016	3.8	ug/L	14	Standard
>	Bi	209	410591.4	3.8				ug/L	599146	Standard

Sample ID: L1702138801

Report Date/Time: Tuesday, February 28, 2017 15:22:28

Page 1

Approved: March 01, 2017

Na	23	4102.2	3.2	1170.2041	30.705	2.6	mg/L	3	Standard
Mg	24	13144.0	1.2	262.3180	5.630	2.1	mg/L	30	Standard
K	39	1726.8	14.4	22.5585	3.647	16.2	mg/L	10	Standard
Ca	43	3590.4	3.1	2034.4713	102.624	5.0	mg/L	83	Standard
Fe	54	161.8	10.9	2.2163	0.308	13.9	mg/L	21	Standard
Fe	57	8602.4	3.2	457.1192	23.924	5.2	mg/L	240	Standard
Sc-1	45	42170.3	2.0				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	3.7	15.7				ug/L	5	Standard
Br	81	199043.0	3.1				ug/L	1587	Standard
P	31	81.7	3.5				ug/L	50	Standard
S	34	30.0	16.7				ug/L	8	Standard
Sr	88	613.3	6.6				ug/L	198	Standard
C	12	50.0	40.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	210.1	26.3				mg/L	6	Standard
Ho-1	165	135.0	6.4				mg/L	12	Standard
Er	166	136.7	42.9				mg/L	10	Standard
I	127	330873.7	12.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		164.647	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		91.493	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702138801

Report Date/Time: Tuesday, February 28, 2017 15:22:28

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	80.944
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	68.529
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702138801

Report Date/Time: Tuesday, February 28, 2017 15:22:28

Page 3

Approved: March 01, 2017



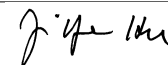
Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702138801

Report Date/Time: Tuesday, February 28, 2017 15:22:28

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702138802

Sample Date/Time: Tuesday, February 28, 2017 15:23:22

Number of Replicates: 3

Autosampler Position: 250

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	455919.6	0.5				ug/L	250104	Standard
|	Be	9	48.3	36.3	0.0060	0.006	97.2	ug/L	7	Standard
|	Al	27	115897187.7	1.7	522.4107	10.684	2.0	ug/L	597	Standard
|	Sc	45	41642.2	4.0				ug/L	41681	Standard
|	Ti	47	261.0	8.3	1.1701	0.109	9.3	ug/L	86	Standard
|	V	51	-6411.6	3.0	-1.4329	0.015	1.1	ug/L	1740	Standard
|	Cr	52	14732.2	0.4	1.6385	0.043	2.6	ug/L	7178	Standard
|	Cr	53	48883.9	4.9	73.1734	2.318	3.2	ug/L	573	Standard
|	Mn	55	34882453.0	0.6	4112.1716	61.146	1.5	ug/L	3072	Standard
|	Co	59	31058.8	0.5	4.6261	0.107	2.3	ug/L	573	Standard
|	Ni	60	61832.3	1.1	43.7828	1.268	2.9	ug/L	264	Standard
|	Cu	65	9794.8	0.5	6.9003	0.095	1.4	ug/L	530	Standard
|	Zn	66	6262.6	0.6	7.7535	0.107	1.4	ug/L	252	Standard
>	Ge	72	576173.6	1.8				ug/L	641188	Standard
|	As	75	-500.9	68.0	-0.5998	0.429	71.5	ug/L	-83	Standard
|	Se	82	14.9	756.4	0.0138	1.699	12292.8	ug/L	16	Standard
|	Se-1	77	18728.6	4.7	388.0068	11.535	3.0	ug/L	126	Standard
>	Ga	71	785.0	13.4				mg/L	70	Standard
|	Rb	85	182562.1	2.7				ug/L	33	Standard
|	Y	89	446931.1	2.1				ug/L	493982	Standard
>	Rh	103	8620.8	1.6				ug/L	17	Standard
|	Mo	98	2702.9	3.0	1.0674	0.025	2.3	ug/L	54	Standard
|	Ag	107	206.0	10.0	0.0244	0.005	21.3	ug/L	137	Standard
|	Cd	111	22.5	45.5	0.0041	0.008	200.4	mg/L	6	Standard
|	Cd	114	71.0	29.9	0.0103	0.006	58.8	ug/L	20	Standard
>	In	115	602914.9	0.8				ug/L	755264	Standard
|	Sn	118	213.0	8.8	0.1448	0.026	18.1	ug/L	138	Standard
|	Sb	123	1378.5	3.7	0.3590	0.014	3.9	ug/L	391	Standard
|	Ba	135	38587318.3	0.3	27042.6477	174.715	0.6	ug/L	32	Standard
|	Ce	140	2058.5	8.3				ug/L	42	Standard
>	Tb	159	1016986.1	1.0				ug/L	966827	Standard
|	Ho	165	61.7	24.8				ug/L	12	Standard
|	Tl	203	143.0	7.4	0.0270	0.003	9.6	ug/L	19	Standard
|	Tl	205	338.3	6.2	0.0317	0.002	6.4	ug/L	58	Standard
|	Pb	206	440.3	5.1	0.0378	0.007	18.8	ug/L	464	Standard
|	Pb	207	396.3	2.5	0.0417	0.003	8.3	ug/L	405	Standard
|	Pb	208	979.7	5.9	0.0627	0.009	14.2	ug/L	876	Standard
|	U	238	961.4	2.3	0.1284	0.003	2.0	ug/L	14	Standard
>	Bi	209	383577.3	0.3				ug/L	599146	Standard

Sample ID: L1702138802

Report Date/Time: Tuesday, February 28, 2017 15:25:33

Page 1

Approved: March 01, 2017

Na	23	3662.1	4.5	1058.2677	42.911	4.1	mg/L	3	Standard
Mg	24	16856.0	1.3	341.1761	16.517	4.8	mg/L	30	Standard
K	39	1925.1	4.8	25.4796	1.560	6.1	mg/L	10	Standard
Ca	43	3153.7	1.1	1805.8104	70.059	3.9	mg/L	83	Standard
Fe	54	473.1	9.2	7.0489	0.736	10.4	mg/L	21	Standard
Fe	57	7618.6	3.0	408.4659	20.324	5.0	mg/L	240	Standard
Sc-1	45	41642.2	4.0				mg/L	41681	Standard
Cl	35	2.7	43.3				ug/L	2	Standard
Kr	83	7.7	15.1				ug/L	5	Standard
Br	81	194059.4	3.8				ug/L	1587	Standard
P	31	78.3	16.1				ug/L	50	Standard
S	34	38.3	7.5				ug/L	8	Standard
Sr	88	725.0	3.2				ug/L	198	Standard
C	12	26.7	114.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	56.6	28.4				mg/L	6	Standard
Ho-1	165	61.7	24.8				mg/L	12	Standard
Er	166	70.0	37.8				mg/L	10	Standard
I	127	317296.5	5.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		182.292	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		89.860	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702138802

Report Date/Time: Tuesday, February 28, 2017 15:25:33

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	79.828
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.021
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702138802

Report Date/Time: Tuesday, February 28, 2017 15:25:33

Page 3

Approved: March 01, 2017



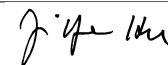
Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702138802

Report Date/Time: Tuesday, February 28, 2017 15:25:33

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702138803

Sample Date/Time: Tuesday, February 28, 2017 15:26:27

Number of Replicates: 3

Autosampler Position: 251

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	503502.9	0.7				ug/L	250104	Standard
|	Be	9	68.3	41.6	0.0106	0.009	83.1	ug/L	7	Standard
|	Al	27	106611523.1	2.7	435.1595	13.583	3.1	ug/L	597	Standard
|	Sc	45	40896.8	2.8				ug/L	41681	Standard
|	Ti	47	283.0	7.6	1.3348	0.164	12.3	ug/L	86	Standard
|	V	51	-8181.0	23.8	-1.7771	0.381	21.4	ug/L	1740	Standard
|	Cr	52	14110.2	0.5	1.5550	0.040	2.6	ug/L	7178	Standard
|	Cr	53	53215.0	2.5	80.9043	3.612	4.5	ug/L	573	Standard
|	Mn	55	76530710.7	2.1	9147.9081	364.057	4.0	ug/L	3072	Standard
|	Co	59	27680.3	1.2	4.1732	0.116	2.8	ug/L	573	Standard
|	Ni	60	69689.6	1.4	50.0324	0.898	1.8	ug/L	264	Standard
|	Cu	65	9556.0	1.6	6.8209	0.235	3.4	ug/L	530	Standard
|	Zn	66	5281.9	0.4	6.5780	0.154	2.3	ug/L	252	Standard
>	Ge	72	568463.2	2.0				ug/L	641188	Standard
|	As	75	-943.7	94.5	-1.2024	1.175	97.7	ug/L	-83	Standard
|	Se	82	362.9	37.4	5.2285	1.941	37.1	ug/L	16	Standard
|	Se-1	77	22029.4	5.0	463.5872	31.803	6.9	ug/L	126	Standard
>	Ga	71	838.4	7.4				mg/L	70	Standard
|	Rb	85	352601.3	4.6				ug/L	33	Standard
|	Y	89	449272.2	0.8				ug/L	493982	Standard
>	Rh	103	6934.9	2.1				ug/L	17	Standard
|	Mo	98	156.5	12.2	0.0432	0.008	18.9	ug/L	54	Standard
|	Ag	107	201.0	9.7	0.0240	0.005	21.2	ug/L	137	Standard
|	Cd	111	23.8	29.5	0.0053	0.005	100.5	mg/L	6	Standard
|	Cd	114	74.5	37.4	0.0116	0.008	71.0	ug/L	20	Standard
>	In	115	593729.4	1.2				ug/L	755264	Standard
|	Sn	118	205.3	15.5	0.1392	0.045	32.3	ug/L	138	Standard
|	Sb	123	1038.3	1.3	0.2684	0.007	2.7	ug/L	391	Standard
|	Ba	135	32899067.0	2.1	23418.2452	757.456	3.2	ug/L	32	Standard
|	Ce	140	1495.1	4.7				ug/L	42	Standard
>	Tb	159	1016038.3	0.8				ug/L	966827	Standard
|	Ho	165	156.7	12.1				ug/L	12	Standard
|	Tl	203	99.3	15.1	0.0158	0.003	20.3	ug/L	19	Standard
|	Tl	205	220.0	26.2	0.0189	0.005	27.6	ug/L	58	Standard
|	Pb	206	402.7	8.4	0.0223	0.010	46.3	ug/L	464	Standard
|	Pb	207	346.0	2.6	0.0207	0.002	7.7	ug/L	405	Standard
|	Pb	208	919.0	2.7	0.0484	0.001	2.3	ug/L	876	Standard
|	U	238	43.3	4.8	0.0040	0.000	9.3	ug/L	14	Standard
>	Bi	209	397371.9	1.9				ug/L	599146	Standard

Sample ID: L1702138803

Report Date/Time: Tuesday, February 28, 2017 15:28:38

Page 1

Approved: March 01, 2017

Na	23	4288.9	1.3	1261.9313	18.917	1.5	mg/L	3	Standard
Mg	24	13587.8	1.4	279.7996	11.536	4.1	mg/L	30	Standard
K	39	4877.5	4.2	66.0302	0.942	1.4	mg/L	10	Standard
Ca	43	3735.5	1.8	2185.0559	65.696	3.0	mg/L	83	Standard
Fe	54	483.4	21.3	7.3350	1.624	22.1	mg/L	21	Standard
Fe	57	8922.6	1.9	489.8258	12.040	2.5	mg/L	240	Standard
Sc-1	45	40896.8	2.8				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	6.3	9.1				ug/L	5	Standard
Br	81	243931.6	5.4				ug/L	1587	Standard
P	31	100.0	13.2				ug/L	50	Standard
S	34	36.7	34.3				ug/L	8	Standard
Sr	88	681.7	4.0				ug/L	198	Standard
C	12	46.7	32.7				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	157.3	36.6				mg/L	6	Standard
Ho-1	165	156.7	12.1				mg/L	12	Standard
Er	166	126.7	12.1				mg/L	10	Standard
I	127	381801.3	7.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		201.318	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		88.658	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702138803

Report Date/Time: Tuesday, February 28, 2017 15:28:38

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	78.612
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	66.323
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702138803

Report Date/Time: Tuesday, February 28, 2017 15:28:38

Page 3

Approved: March 01, 2017



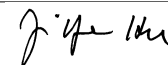
Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702138803

Report Date/Time: Tuesday, February 28, 2017 15:28:38

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702138804

Sample Date/Time: Tuesday, February 28, 2017 15:29:33

Number of Replicates: 3

Autosampler Position: 252

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

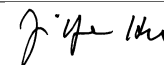
IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	515934.5	1.1				ug/L	250104	Standard
|	Be	9	61.7	33.8	0.0082	0.006	78.8	ug/L	7	Standard
|	Al	27	111742443.8	4.0	445.0254	15.640	3.5	ug/L	597	Standard
|	Sc	45	39028.5	2.1				ug/L	41681	Standard
|	Ti	47	304.7	10.6	1.4762	0.197	13.4	ug/L	86	Standard
|	V	51	-8972.3	14.9	-1.9250	0.271	14.1	ug/L	1740	Standard
|	Cr	52	14228.7	1.7	1.5869	0.040	2.5	ug/L	7178	Standard
|	Cr	53	55673.9	4.2	84.9034	3.149	3.7	ug/L	573	Standard
|	Mn	55	80252608.1	1.0	9619.5935	102.070	1.1	ug/L	3072	Standard
|	Co	59	29334.0	1.9	4.4390	0.010	0.2	ug/L	573	Standard
|	Ni	60	73912.9	1.5	53.2428	0.825	1.5	ug/L	264	Standard
|	Cu	65	10310.8	3.0	7.4103	0.089	1.2	ug/L	530	Standard
|	Zn	66	5301.9	0.8	6.6261	0.144	2.2	ug/L	252	Standard
>	Ge	72	566660.2	2.0				ug/L	641188	Standard
|	As	75	-1145.3	35.8	-1.4560	0.538	37.0	ug/L	-83	Standard
|	Se	82	315.3	34.6	4.5612	1.715	37.6	ug/L	16	Standard
|	Se-1	77	23372.0	3.8	493.0559	12.855	2.6	ug/L	126	Standard
>	Ga	71	940.0	11.7				mg/L	70	Standard
|	Rb	85	371535.4	1.0				ug/L	33	Standard
|	Y	89	451065.9	2.9				ug/L	493982	Standard
>	Rh	103	7255.1	0.7				ug/L	17	Standard
|	Mo	98	176.7	12.9	0.0524	0.008	16.0	ug/L	54	Standard
|	Ag	107	214.7	9.6	0.0279	0.004	14.9	ug/L	137	Standard
|	Cd	111	17.1	23.7	0.0002	0.003	1400.4	mg/L	6	Standard
|	Cd	114	92.0	22.7	0.0172	0.006	37.4	ug/L	20	Standard
>	In	115	584815.9	1.7				ug/L	755264	Standard
|	Sn	118	236.7	8.1	0.1850	0.020	11.0	ug/L	138	Standard
|	Sb	123	1064.6	1.6	0.2805	0.009	3.3	ug/L	391	Standard
|	Ba	135	33874456.5	0.4	24477.5753	332.687	1.4	ug/L	32	Standard
|	Ce	140	1598.4	2.2				ug/L	42	Standard
>	Tb	159	990954.1	1.2				ug/L	966827	Standard
|	Ho	165	138.3	24.1				ug/L	12	Standard
|	Tl	203	102.0	2.9	0.0171	0.000	2.7	ug/L	19	Standard
|	Tl	205	206.7	7.4	0.0182	0.002	8.4	ug/L	58	Standard
|	Pb	206	500.0	4.9	0.0548	0.007	13.0	ug/L	464	Standard
|	Pb	207	426.7	4.6	0.0511	0.008	15.3	ug/L	405	Standard
|	Pb	208	1102.3	0.3	0.0806	0.002	3.0	ug/L	876	Standard
|	U	238	55.7	20.0	0.0058	0.002	27.2	ug/L	14	Standard
>	Bi	209	385942.4	1.2				ug/L	599146	Standard

Sample ID: L1702138804

Report Date/Time: Tuesday, February 28, 2017 15:31:44

Page 1

Approved: March 01, 2017



Na	23	4397.3	3.7	1355.2161	31.670	2.3	mg/L	3	Standard
Mg	24	14118.3	4.8	304.5264	15.665	5.1	mg/L	30	Standard
K	39	4922.5	5.6	69.9355	5.307	7.6	mg/L	10	Standard
Ca	43	3983.9	4.6	2444.9356	73.612	3.0	mg/L	83	Standard
Fe	54	496.5	5.6	7.9171	0.499	6.3	mg/L	21	Standard
Fe	57	9176.1	1.8	528.9847	9.242	1.7	mg/L	240	Standard
Sc-1	45	39028.5	2.1				mg/L	41681	Standard
Cl	35	2.0	0.0				ug/L	2	Standard
Kr	83	5.7	10.2				ug/L	5	Standard
Br	81	261784.4	3.9				ug/L	1587	Standard
P	31	71.7	4.0				ug/L	50	Standard
S	34	33.3	74.0				ug/L	8	Standard
Sr	88	696.7	11.6				ug/L	198	Standard
C	12	43.3	13.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	190.6	25.0				mg/L	6	Standard
Ho-1	165	138.3	24.1				mg/L	12	Standard
Er	166	126.7	44.9				mg/L	10	Standard
I	127	385117.0	6.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		206.288	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		88.377	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702138804

Report Date/Time: Tuesday, February 28, 2017 15:31:44

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.432
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.415
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702138804

Report Date/Time: Tuesday, February 28, 2017 15:31:44

Page 3

Approved: March 01, 2017



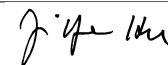
Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702138804

Report Date/Time: Tuesday, February 28, 2017 15:31:44

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 15:32:40

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	203217.8	6.8				ug/L	250104	Standard
|	Be	9	63028.1	8.4	47.6558	1.502	3.2	ug/L	7	Standard
|	Al	27	4536500.0	8.0	45.8519	1.392	3.0	ug/L	597	Standard
|	Sc	45	43666.2	1.6				ug/L	41681	Standard
|	Ti	47	18708.2	2.4	101.6455	2.206	2.2	ug/L	86	Standard
|	V	51	294712.6	3.8	46.0583	1.306	2.8	ug/L	1740	Standard
|	Cr	52	280499.4	3.8	46.2097	1.467	3.2	ug/L	7178	Standard
|	Cr	53	55783.3	10.7	72.7705	7.077	9.7	ug/L	573	Standard
|	Mn	55	456788.5	3.9	46.6294	1.516	3.3	ug/L	3072	Standard
|	Co	59	356690.7	3.2	46.8542	1.236	2.6	ug/L	573	Standard
|	Ni	60	76035.4	3.3	46.9289	1.124	2.4	ug/L	264	Standard
|	Cu	65	73764.5	2.1	47.4049	1.145	2.4	ug/L	530	Standard
|	Zn	66	41045.6	3.7	45.9457	1.388	3.0	ug/L	252	Standard
>	Ge	72	660909.6	1.3				ug/L	641188	Standard
|	As	75	40640.4	3.9	45.6412	1.471	3.2	ug/L	-83	Standard
|	Se	82	3486.8	3.0	45.0365	1.249	2.8	ug/L	16	Standard
|	Se-1	77	5289.3	12.1	93.7787	10.602	11.3	ug/L	126	Standard
>	Ga	71	263.3	30.4				mg/L	70	Standard
|	Rb	85	636.7	11.1				ug/L	33	Standard
|	Y	89	450618.0	0.8				ug/L	493982	Standard
>	Rh	103	45.0	22.2				ug/L	17	Standard
|	Mo	98	242667.8	2.7	95.3342	0.569	0.6	ug/L	54	Standard
|	Ag	107	206363.5	3.8	47.0154	0.747	1.6	ug/L	137	Standard
|	Cd	111	56318.1	5.4	43.2745	1.372	3.2	mg/L	6	Standard
|	Cd	114	161740.9	5.0	45.3054	1.291	2.8	ug/L	20	Standard
>	In	115	617790.9	2.3				ug/L	755264	Standard
|	Sn	118	37900.1	4.7	48.1956	1.377	2.9	ug/L	138	Standard
|	Sb	123	173366.4	3.8	47.2925	0.975	2.1	ug/L	391	Standard
|	Ba	135	73531.9	4.3	50.2476	1.080	2.1	ug/L	32	Standard
|	Ce	140	51.7	47.7				ug/L	42	Standard
>	Tb	159	852042.2	1.1				ug/L	966827	Standard
|	Ho	165	18.3	41.7				ug/L	12	Standard
|	Tl	203	259683.1	3.3	47.4721	0.638	1.3	ug/L	19	Standard
|	Tl	205	607378.9	4.5	47.4789	1.103	2.3	ug/L	58	Standard
|	Pb	206	203156.6	3.4	47.0184	0.615	1.3	ug/L	464	Standard
|	Pb	207	181957.0	4.2	47.0633	0.915	1.9	ug/L	405	Standard
|	Pb	208	383951.5	4.1	45.5096	0.858	1.9	ug/L	876	Standard
|	U	238	339174.0	2.9	35.3720	0.378	1.1	ug/L	14	Standard
>	Bi	209	497785.3	2.4				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:34:51

Page 1

Approved: March 01, 2017

Na	23	15.0	66.7	3.6610	2.793	76.3	mg/L	3	Standard
Mg	24	300.0	18.9	5.2478	1.061	20.2	mg/L	30	Standard
K	39	561.7	14.7	6.9074	1.054	15.3	mg/L	10	Standard
Ca	43	56.7	35.7	-8.8113	11.383	129.2	mg/L	83	Standard
Fe	54	288.2	16.6	3.9947	0.768	19.2	mg/L	21	Standard
Fe	57	551.7	3.7	13.4009	1.184	8.8	mg/L	240	Standard
Sc-1	45	43666.2	1.6				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.3	69.3				ug/L	5	Standard
Br	81	6574.8	22.6				ug/L	1587	Standard
P	31	60.0	25.0				ug/L	50	Standard
S	34	30.0	16.7				ug/L	8	Standard
Sr	88	226.7	13.3				ug/L	198	Standard
C	12	13.3	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	9.5	107.6				mg/L	6	Standard
Ho-1	165	18.3	41.7				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	34627.2	40.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
> Li	6			
Be	9	95.312		
Al	27	91.704		
Sc	45			
Ti	47	101.646		
V	51	92.117		
Cr	52	92.419		
Cr	53			
Mn	55	93.259		
Co	59	93.708		
Ni	60	93.858		
Cu	65	94.810		
Zn	66	91.891		
> Ge	72		103.076	
As	75	91.282		
Se	82	90.073		
Se-1	77			
> Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:34:51

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	95.334	
[	Ag	107	94.031	
[	Cd	111	86.549	
[	Cd	114		
>	In	115		81.798
[	Sn	118	96.391	
[	Sb	123	94.585	
[	Ba	135	100.495	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	94.944	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	91.019	
[	U	238	70.744	
>	Bi	209		83.082
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:34:51

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 15:35:46

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	178653.9	1.4				ug/L	250104	Standard
|	Be	9	46.7	83.2	0.0297	0.033	111.3	ug/L	7	Standard
|	Al	27	26077.9	150.5	0.2918	0.448	153.5	ug/L	597	Standard
|	Sc	45	40402.2	3.2				ug/L	41681	Standard
|	Ti	47	36.7	13.7	-0.2531	0.029	11.4	ug/L	86	Standard
|	V	51	195.8	261.9	-0.2442	0.085	34.8	ug/L	1740	Standard
|	Cr	52	7000.3	2.5	0.0203	0.040	195.7	ug/L	7178	Standard
|	Cr	53	14917.3	3.0	19.7672	0.708	3.6	ug/L	573	Standard
|	Mn	55	16687.6	132.9	1.4960	2.400	160.4	ug/L	3072	Standard
|	Co	59	329.0	13.3	-0.0160	0.006	39.8	ug/L	573	Standard
|	Ni	60	192.0	18.9	-0.0529	0.024	45.1	ug/L	264	Standard
|	Cu	65	519.0	4.8	-0.0261	0.013	48.2	ug/L	530	Standard
|	Zn	66	312.7	4.3	0.0180	0.014	75.3	ug/L	252	Standard
>	Ge	72	631047.3	1.3				ug/L	641188	Standard
|	As	75	43.4	152.0	0.0938	0.078	82.7	ug/L	-83	Standard
|	Se	82	18.1	31.0	0.0182	0.079	434.1	ug/L	16	Standard
|	Se-1	77	1824.8	11.6	32.4653	4.144	12.8	ug/L	126	Standard
>	Ga	71	176.7	4.3				mg/L	70	Standard
|	Rb	85	393.3	142.4				ug/L	33	Standard
|	Y	89	439436.4	0.4				ug/L	493982	Standard
>	Rh	103	21.7	74.2				ug/L	17	Standard
|	Mo	98	274.3	85.2	0.0964	0.101	104.4	ug/L	54	Standard
|	Ag	107	187.3	60.9	0.0227	0.029	125.9	ug/L	137	Standard
|	Cd	111	26.3	108.6	0.0084	0.024	286.4	mg/L	6	Standard
|	Cd	114	91.4	101.8	0.0177	0.029	161.2	ug/L	20	Standard
>	In	115	569550.9	2.0				ug/L	755264	Standard
|	Sn	118	136.0	19.2	0.0546	0.037	68.1	ug/L	138	Standard
|	Sb	123	750.0	10.8	0.1957	0.027	13.8	ug/L	391	Standard
|	Ba	135	25367.7	172.8	18.9153	32.729	173.0	ug/L	32	Standard
|	Ce	140	31.7	39.7				ug/L	42	Standard
>	Tb	159	786704.5	0.8				ug/L	966827	Standard
|	Ho	165	8.3	69.3				ug/L	12	Standard
|	Tl	203	197.0	87.1	0.0309	0.033	106.5	ug/L	19	Standard
|	Tl	205	443.3	99.1	0.0338	0.036	106.6	ug/L	58	Standard
|	Pb	206	475.7	27.5	0.0211	0.032	149.4	ug/L	464	Standard
|	Pb	207	376.3	32.7	0.0109	0.033	307.2	ug/L	405	Standard
|	Pb	208	835.7	21.6	0.0159	0.022	139.9	ug/L	876	Standard
|	U	238	91.7	125.0	0.0083	0.013	150.3	ug/L	14	Standard
>	Bi	209	473682.2	0.6				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:37:56

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	0.0132	0.851	6453.2	mg/L	3	Standard
Mg	24	30.0	76.4	0.0805	0.470	583.4	mg/L	30	Standard
K	39	20.0	25.0	0.0327	0.066	202.7	mg/L	10	Standard
Ca	43	35.0	37.8	-19.4472	7.388	38.0	mg/L	83	Standard
Fe	54	28.1	21.0	0.1953	0.084	42.8	mg/L	21	Standard
Fe	57	418.3	14.6	8.1318	3.550	43.7	mg/L	240	Standard
Sc-1	45	40402.2	3.2				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	3.0	33.3				ug/L	5	Standard
Br	81	3510.4	10.9				ug/L	1587	Standard
P	31	173.3	100.9				ug/L	50	Standard
S	34	20.0	66.1				ug/L	8	Standard
Sr	88	181.7	7.9				ug/L	198	Standard
C	12	16.7	69.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	6.0	100.7				mg/L	6	Standard
Ho-1	165	8.3	69.3				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	16265.5	12.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		98.418	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:37:56

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	75.411
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	79.060
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

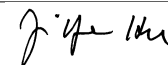
Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 7	Mn	55	
In 115 Int Std for QC Std	In	115	Rerun sample
QC Std 7	Ba	135	

Sample ID: QC Std 7

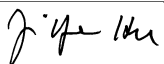
Report Date/Time: Tuesday, February 28, 2017 15:37:56

Page 3

Approved: March 01, 2017



Sample ID: QC Std 7
Report Date/Time: Tuesday, February 28, 2017 15:37:56
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702131902

Sample Date/Time: Tuesday, February 28, 2017 15:46:33

Number of Replicates: 3

Autosampler Position: 253

Sample Description: 100

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	150034.3	1.3				ug/L	250104	Standard
|	Be	9	16.7	17.3	0.0068	0.003	46.1	ug/L	7	Standard
|	Al	27	1260.1	5.2	0.0111	0.001	9.6	ug/L	597	Standard
|	Sc	45	36186.5	0.3				ug/L	41681	Standard
|	Ti	47	29.0	6.9	-0.2845	0.013	4.6	ug/L	86	Standard
|	V	51	147.0	80.3	-0.2506	0.021	8.3	ug/L	1740	Standard
|	Cr	52	5862.5	0.9	-0.1038	0.022	21.6	ug/L	7178	Standard
|	Cr	53	8742.5	5.8	12.1345	1.004	8.3	ug/L	573	Standard
|	Mn	55	1985.5	3.5	-0.0768	0.005	6.1	ug/L	3072	Standard
|	Co	59	293.7	6.5	-0.0179	0.002	12.8	ug/L	573	Standard
|	Ni	60	356.7	4.2	0.0711	0.006	9.0	ug/L	264	Standard
|	Cu	65	5519.0	0.5	3.6456	0.066	1.8	ug/L	530	Standard
|	Zn	66	836.0	5.0	0.7103	0.059	8.3	ug/L	252	Standard
>	Ge	72	587293.9	1.9				ug/L	641188	Standard
|	As	75	-24.9	218.7	0.0117	0.069	591.0	ug/L	-83	Standard
|	Se	82	12.5	23.0	-0.0451	0.045	99.8	ug/L	16	Standard
|	Se-1	77	898.7	0.6	16.1089	0.352	2.2	ug/L	126	Standard
>	Ga	71	100.0	13.2				mg/L	70	Standard
|	Rb	85	91.7	20.7				ug/L	33	Standard
|	Y	89	396659.8	2.0				ug/L	493982	Standard
>	Rh	103	11.7	65.5				ug/L	17	Standard
|	Mo	98	295.7	5.0	0.1210	0.007	5.9	ug/L	54	Standard
|	Ag	107	92.7	8.7	0.0021	0.002	115.1	ug/L	137	Standard
|	Cd	111	6.6	14.8	-0.0074	0.001	11.9	mg/L	6	Standard
|	Cd	114	193.9	6.9	0.0562	0.004	7.7	ug/L	20	Standard
>	In	115	506102.2	1.0				ug/L	755264	Standard
|	Sn	118	1596.1	8.0	2.3526	0.217	9.2	ug/L	138	Standard
|	Sb	123	76.0	23.7	-0.0013	0.006	451.1	ug/L	391	Standard
|	Ba	135	372.0	3.3	0.2830	0.008	2.8	ug/L	32	Standard
|	Ce	140	18.3	56.8				ug/L	42	Standard
>	Tb	159	719973.9	1.8				ug/L	966827	Standard
|	Ho	165	16.7	17.3				ug/L	12	Standard
|	Tl	203	44.7	12.7	0.0023	0.001	49.1	ug/L	19	Standard
|	Tl	205	70.0	14.3	0.0036	0.001	21.2	ug/L	58	Standard
|	Pb	206	733.7	3.3	0.0986	0.005	4.8	ug/L	464	Standard
|	Pb	207	608.0	5.6	0.0874	0.007	7.7	ug/L	405	Standard
|	Pb	208	1339.4	2.8	0.0926	0.008	8.6	ug/L	876	Standard
|	U	238	2.3	24.7	-0.0014	0.000	4.4	ug/L	14	Standard
>	Bi	209	437995.9	2.1				ug/L	599146	Standard

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 15:48:43

Page 1

Approved: March 01, 2017

Na	23	16.7	34.6	5.0677	1.930	38.1	mg/L	3	Standard
Mg	24	21.7	26.6	-0.0353	0.133	377.2	mg/L	30	Standard
K	39	41.7	13.9	0.3978	0.090	22.6	mg/L	10	Standard
Ca	43	61.7	40.8	1.0760	16.891	1569.7	mg/L	83	Standard
Fe	54	23.0	43.6	0.1579	0.177	112.3	mg/L	21	Standard
Fe	57	398.3	26.5	9.6238	6.722	69.8	mg/L	240	Standard
Sc-1	45	36186.5	0.3				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	3.7	68.6				ug/L	5	Standard
Br	81	2130.1	4.9				ug/L	1587	Standard
P	31	30.0	16.7				ug/L	50	Standard
S	34	20.0	0.0				ug/L	8	Standard
Sr	88	225.0	9.7				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	2.7	219.6				mg/L	6	Standard
Ho-1	165	16.7	17.3				mg/L	12	Standard
Er	166	13.3	43.3				mg/L	10	Standard
I	127	9783.2	3.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		59.989	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		91.595	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 15:48:43

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	67.010
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	73.103
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 15:48:43

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 15:49:40

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	173856.9	1.4				ug/L	250104	Standard
|	Be	9	55248.9	0.3	48.8614	0.678	1.4	ug/L	7	Standard
|	Al	27	3845834.4	0.8	45.4539	0.269	0.6	ug/L	597	Standard
|	Sc	45	40544.2	0.5				ug/L	41681	Standard
|	Ti	47	18071.8	1.4	99.0014	0.954	1.0	ug/L	86	Standard
|	V	51	287396.4	1.4	45.2983	0.701	1.5	ug/L	1740	Standard
|	Cr	52	266721.7	1.0	44.2668	0.470	1.1	ug/L	7178	Standard
|	Cr	53	39944.3	0.6	52.3401	0.194	0.4	ug/L	573	Standard
|	Mn	55	441075.8	1.1	45.4032	0.427	0.9	ug/L	3072	Standard
|	Co	59	355187.5	1.4	47.0519	0.273	0.6	ug/L	573	Standard
|	Ni	60	76027.0	1.4	47.3258	0.432	0.9	ug/L	264	Standard
|	Cu	65	75730.8	1.7	49.0864	0.549	1.1	ug/L	530	Standard
|	Zn	66	41574.3	1.0	46.9431	0.110	0.2	ug/L	252	Standard
>	Ge	72	655373.9	0.8				ug/L	641188	Standard
|	As	75	42050.7	1.2	47.6267	0.280	0.6	ug/L	-83	Standard
|	Se	82	3672.5	1.3	47.8495	0.455	1.0	ug/L	16	Standard
|	Se-1	77	3349.0	3.0	59.1089	2.117	3.6	ug/L	126	Standard
>	Ga	71	88.3	21.4				mg/L	70	Standard
|	Rb	85	638.3	6.8				ug/L	33	Standard
|	Y	89	448553.5	1.3				ug/L	493982	Standard
>	Rh	103	35.0	24.7				ug/L	17	Standard
|	Mo	98	250993.6	0.4	106.2727	1.617	1.5	ug/L	54	Standard
|	Ag	107	208115.2	0.4	51.1115	0.797	1.6	ug/L	137	Standard
|	Cd	111	53543.8	0.9	44.3606	0.819	1.8	mg/L	6	Standard
|	Cd	114	152946.9	1.6	46.1867	0.924	2.0	ug/L	20	Standard
>	In	115	573333.3	1.3				ug/L	755264	Standard
|	Sn	118	35885.8	2.0	49.1946	1.085	2.2	ug/L	138	Standard
|	Sb	123	162685.5	1.1	47.8324	0.695	1.5	ug/L	391	Standard
|	Ba	135	71258.5	1.0	52.4938	0.980	1.9	ug/L	32	Standard
|	Ce	140	46.7	44.6				ug/L	42	Standard
>	Tb	159	777484.1	1.2				ug/L	966827	Standard
|	Ho	165	16.7	69.3				ug/L	12	Standard
|	Tl	203	253755.8	1.1	49.1210	0.667	1.4	ug/L	19	Standard
|	Tl	205	590848.1	1.4	48.9171	0.785	1.6	ug/L	58	Standard
|	Pb	206	198394.5	1.0	48.6248	0.593	1.2	ug/L	464	Standard
|	Pb	207	178149.3	0.9	48.8030	0.561	1.1	ug/L	405	Standard
|	Pb	208	374893.1	1.8	47.0628	0.963	2.0	ug/L	876	Standard
|	U	238	315125.0	1.8	34.7977	0.712	2.0	ug/L	14	Standard
>	Bi	209	470163.4	0.3				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:51:50

Page 1

Approved: March 01, 2017

Na	23	5.0	100.0	1.0105	1.493	147.7	mg/L	3	Standard
Mg	24	256.7	15.1	4.8005	0.837	17.4	mg/L	30	Standard
K	39	575.0	2.6	7.6414	0.242	3.2	mg/L	10	Standard
Ca	43	46.7	52.9	-12.4186	14.721	118.5	mg/L	83	Standard
Fe	54	379.2	9.5	5.7503	0.542	9.4	mg/L	21	Standard
Fe	57	588.3	10.8	17.7518	3.716	20.9	mg/L	240	Standard
Sc-1	45	40544.2	0.5				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	2.7	21.7				ug/L	5	Standard
Br	81	2303.5	5.6				ug/L	1587	Standard
P	31	61.7	9.4				ug/L	50	Standard
S	34	33.3	22.9				ug/L	8	Standard
Sr	88	183.3	9.6				ug/L	198	Standard
C	12	20.0	50.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	23.0	24.5				mg/L	6	Standard
Ho-1	165	16.7	69.3				mg/L	12	Standard
Er	166	6.7	86.6				mg/L	10	Standard
I	127	6883.2	4.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	97.723		
Al	27	90.908		
Sc	45			
Ti	47	99.001		
V	51	90.597		
Cr	52	88.534		
Cr	53			
Mn	55	90.806		
Co	59	94.104		
Ni	60	94.652		
Cu	65	98.173		
Zn	66	93.886		
Ge	72		102.212	
As	75	95.253		
Se	82	95.699		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:51:50

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	106.273	
[	Ag	107	102.223	
[	Cd	111	88.721	
[	Cd	114		
>	In	115		75.912
[	Sn	118	98.389	
[	Sb	123	95.665	
[	Ba	135	104.988	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	98.242	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	94.126	
[	U	238	69.595	
>	Bi	209		78.472
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cr	52	
QC Std 6	Cd	111	
In 115 Int Std for QC Std	In	115	Rerun sample

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:51:50

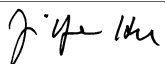
Page 3

Approved: March 01, 2017



QC Std 6 U 238
Bi 209 Int Std for QC Std Bi 209 Rerun sample

Sample ID: QC Std 6
Report Date/Time: Tuesday, February 28, 2017 15:51:50
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 15:52:45

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	170295.2	1.6				ug/L	250104	Standard
|	Be	9	21.7	48.0	0.0094	0.010	102.6	ug/L	7	Standard
|	Al	27	1080.0	10.4	0.0069	0.001	20.6	ug/L	597	Standard
|	Sc	45	39691.9	1.4				ug/L	41681	Standard
|	Ti	47	33.3	6.2	-0.2739	0.012	4.3	ug/L	86	Standard
|	V	51	1351.3	16.2	-0.0561	0.035	62.0	ug/L	1740	Standard
|	Cr	52	6476.1	2.4	-0.0832	0.017	20.2	ug/L	7178	Standard
|	Cr	53	6031.2	6.0	7.3918	0.433	5.9	ug/L	573	Standard
|	Mn	55	2528.5	1.0	-0.0367	0.005	13.9	ug/L	3072	Standard
|	Co	59	311.0	1.4	-0.0188	0.001	4.3	ug/L	573	Standard
|	Ni	60	145.7	12.3	-0.0839	0.011	12.9	ug/L	264	Standard
|	Cu	65	558.3	1.8	-0.0027	0.006	216.9	ug/L	530	Standard
|	Zn	66	321.0	1.1	0.0245	0.006	25.1	ug/L	252	Standard
>	Ge	72	636821.6	1.0				ug/L	641188	Standard
|	As	75	22.7	392.0	0.0693	0.104	150.5	ug/L	-83	Standard
|	Se	82	14.6	23.8	-0.0316	0.045	142.2	ug/L	16	Standard
|	Se-1	77	630.7	3.8	9.6242	0.574	6.0	ug/L	126	Standard
>	Ga	71	80.0	12.5				mg/L	70	Standard
|	Rb	85	53.3	14.3				ug/L	33	Standard
|	Y	89	445431.2	0.7				ug/L	493982	Standard
>	Rh	103	15.0	120.2				ug/L	17	Standard
|	Mo	98	176.7	22.4	0.0566	0.019	32.8	ug/L	54	Standard
|	Ag	107	117.0	16.0	0.0059	0.005	77.8	ug/L	137	Standard
|	Cd	111	7.4	62.4	-0.0073	0.004	52.7	mg/L	6	Standard
|	Cd	114	30.3	34.3	-0.0006	0.003	529.0	ug/L	20	Standard
>	In	115	555685.5	1.6				ug/L	755264	Standard
|	Sn	118	114.0	11.6	0.0281	0.020	72.4	ug/L	138	Standard
|	Sb	123	723.8	21.3	0.1929	0.046	23.6	ug/L	391	Standard
|	Ba	135	44.0	15.9	0.0060	0.005	89.4	ug/L	32	Standard
|	Ce	140	23.3	24.7				ug/L	42	Standard
>	Tb	159	761727.8	2.0				ug/L	966827	Standard
|	Ho	165	5.0	0.0				ug/L	12	Standard
|	Tl	203	40.7	8.6	0.0010	0.001	62.1	ug/L	19	Standard
|	Tl	205	80.0	22.5	0.0040	0.001	35.3	ug/L	58	Standard
|	Pb	206	398.0	2.0	0.0038	0.001	33.6	ug/L	464	Standard
|	Pb	207	319.7	5.3	-0.0031	0.006	183.0	ug/L	405	Standard
|	Pb	208	700.0	1.9	0.0005	0.001	218.5	ug/L	876	Standard
|	U	238	31.0	42.2	0.0017	0.001	80.6	ug/L	14	Standard
>	Bi	209	466140.9	2.3				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:54:56

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	13.3	43.3	-0.2563	0.124	48.3	mg/L	30	Standard
K	39	25.0	34.6	0.1089	0.125	114.8	mg/L	10	Standard
Ca	43	35.0	37.8	-18.8698	8.362	44.3	mg/L	83	Standard
Fe	54	34.7	61.9	0.3139	0.355	113.0	mg/L	21	Standard
Fe	57	448.3	23.6	10.2414	5.788	56.5	mg/L	240	Standard
Sc-1	45	39691.9	1.4				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	1.3	114.6				ug/L	5	Standard
Br	81	2263.5	6.8				ug/L	1587	Standard
P	31	58.3	39.6				ug/L	50	Standard
S	34	21.7	35.3				ug/L	8	Standard
Sr	88	198.3	11.6				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	26.0	21.8				mg/L	6	Standard
Ho-1	165	5.0	0.0				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	7712.0	4.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		99.319	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:54:56

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	73.575
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	77.801
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
In 115 Int Std for QC Std	In	115	Rerun sample
Bi 209 Int Std for QC Std	Bi	209	Rerun sample

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:54:56

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 4

Sample Date/Time: Tuesday, February 28, 2017 15:55:54

Number of Replicates: 3

Autosampler Position: 203

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	174458.7	0.6				ug/L	250104	Standard
|	Be	9	13.3	21.7	0.0015	0.003	173.3	ug/L	7	Standard
|	Al	27	3615840.3	1.4	42.5844	0.354	0.8	ug/L	597	Standard
|	Sc	45	40230.0	1.3				ug/L	41681	Standard
|	Ti	47	16660.5	2.5	93.1400	1.558	1.7	ug/L	86	Standard
|	V	51	1308.2	14.8	-0.0646	0.033	50.8	ug/L	1740	Standard
|	Cr	52	7620.6	0.7	0.1072	0.027	25.4	ug/L	7178	Standard
|	Cr	53	4632.4	5.4	5.4294	0.441	8.1	ug/L	573	Standard
|	Mn	55	6805.0	65.9	0.4095	0.461	112.7	ug/L	3072	Standard
|	Co	59	725.0	3.6	0.0368	0.002	5.6	ug/L	573	Standard
|	Ni	60	693.3	8.2	0.2645	0.031	11.9	ug/L	264	Standard
|	Cu	65	834.0	3.8	0.1784	0.030	17.0	ug/L	530	Standard
|	Zn	66	867.0	2.8	0.6555	0.020	3.1	ug/L	252	Standard
>	Ge	72	642025.3	1.7				ug/L	641188	Standard
|	As	75	8.1	1122.3	0.0504	0.105	208.8	ug/L	-83	Standard
|	Se	82	18.2	18.1	0.0157	0.041	260.9	ug/L	16	Standard
|	Se-1	77	523.7	5.0	7.5286	0.629	8.4	ug/L	126	Standard
>	Ga	71	105.0	17.2				mg/L	70	Standard
|	Rb	85	668.3	12.3				ug/L	33	Standard
|	Y	89	444202.4	0.2				ug/L	493982	Standard
>	Rh	103	16.7	45.8				ug/L	17	Standard
|	Mo	98	227751.0	2.5	97.9195	0.883	0.9	ug/L	54	Standard
|	Ag	107	108.0	24.5	0.0033	0.007	213.3	ug/L	137	Standard
|	Cd	111	-22.5	19.6	-0.0325	0.004	10.8	mg/L	6	Standard
|	Cd	114	646.8	8.1	0.1885	0.019	9.9	ug/L	20	Standard
>	In	115	564490.6	1.6				ug/L	755264	Standard
|	Sn	118	120.3	6.3	0.0343	0.010	28.2	ug/L	138	Standard
|	Sb	123	315.6	18.6	0.0676	0.017	24.8	ug/L	391	Standard
|	Ba	135	173.7	130.9	0.1008	0.167	165.4	ug/L	32	Standard
|	Ce	140	781.7	10.1				ug/L	42	Standard
>	Tb	159	780914.7	0.9				ug/L	966827	Standard
|	Ho	165	5.0	100.0				ug/L	12	Standard
|	Tl	203	35.3	30.3	0.0000	0.002	15284.9	ug/L	19	Standard
|	Tl	205	85.0	31.1	0.0046	0.002	51.4	ug/L	58	Standard
|	Pb	206	445.0	3.0	0.0164	0.004	23.7	ug/L	464	Standard
|	Pb	207	386.3	4.2	0.0162	0.006	37.0	ug/L	405	Standard
|	Pb	208	767.3	4.8	0.0098	0.004	40.8	ug/L	876	Standard
|	U	238	7.7	19.9	-0.0008	0.000	21.6	ug/L	14	Standard
>	Bi	209	462385.2	1.4				ug/L	599146	Standard

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 15:58:05

Page 1

Approved: March 01, 2017

Na	23	30.0	44.1	8.4709	3.860	45.6	mg/L	3	Standard
Mg	24	571.7	5.8	11.4485	0.856	7.5	mg/L	30	Standard
K	39	545.0	9.7	7.2938	0.815	11.2	mg/L	10	Standard
Ca	43	80.0	22.5	7.9276	10.422	131.5	mg/L	83	Standard
Fe	54	881.2	6.8	13.8151	1.101	8.0	mg/L	21	Standard
Fe	57	733.4	6.1	26.3868	3.141	11.9	mg/L	240	Standard
Sc-1	45	40230.0	1.3				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	5.0	20.0				ug/L	5	Standard
Br	81	2183.5	7.7				ug/L	1587	Standard
P	31	45.0	29.4				ug/L	50	Standard
S	34	40.0	25.0				ug/L	8	Standard
Sr	88	211.7	9.5				ug/L	198	Standard
C	12	16.7	91.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	-0.5	173.2				mg/L	6	Standard
Ho-1	165	5.0	100.0				mg/L	12	Standard
Er	166	10.0	173.2				mg/L	10	Standard
I	127	7370.1	2.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27	0.852		
Sc	45			
Ti	47	93.140		
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		100.131	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 15:58:05

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	97.920	
[	Ag	107		
[	Cd	111		
[	Cd	114		
>	In	115		74.741
[	Sn	118		
[	Sb	123		
[	Ba	135		
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203		
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208		
[	U	238		
>	Bi	209		77.174
[	Na	23	67.767	
[	Mg	24	228.970	
[	K	39	145.876	
[	Ca	43	52.851	
[	Fe	54	110.521	
[	Fe	57	211.094	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 4	Al	27	
QC Std 4	Mn	55	
In 115 Int Std for QC Std	In	115	Rerun sample

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 15:58:05

Page 3

Approved: March 01, 2017



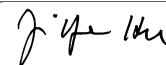
Bi 209 Int Std for QC Std	Bi	209	Rerun sample
QC Std 4	Na	23	
QC Std 4	Mg	24	
QC Std 4	K	39	
QC Std 4	Ca	43	
QC Std 4	Fe	57	

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 15:58:05

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 5

Sample Date/Time: Tuesday, February 28, 2017 15:58:59

Number of Replicates: 3

Autosampler Position: 204

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	194790.0	3.2				ug/L	250104	Standard
|	Be	9	125668.0	4.3	99.1713	1.059	1.1	ug/L	7	Standard
|	Al	27	4079745.2	6.7	43.0057	1.733	4.0	ug/L	597	Standard
|	Sc	45	43256.7	1.1				ug/L	41681	Standard
|	Ti	47	19753.9	3.7	106.0267	3.009	2.8	ug/L	86	Standard
|	V	51	585322.4	4.5	90.6186	2.905	3.2	ug/L	1740	Standard
|	Cr	52	551617.6	4.6	90.9030	2.983	3.3	ug/L	7178	Standard
|	Cr	53	76010.3	3.5	98.2964	1.886	1.9	ug/L	573	Standard
|	Mn	55	901895.1	2.6	91.2405	1.383	1.5	ug/L	3072	Standard
|	Co	59	721375.8	2.8	93.6608	1.287	1.4	ug/L	573	Standard
|	Ni	60	155154.2	3.1	94.7768	1.994	2.1	ug/L	264	Standard
|	Cu	65	151273.9	3.0	96.4026	1.836	1.9	ug/L	530	Standard
|	Zn	66	84535.6	2.7	93.8429	1.529	1.6	ug/L	252	Standard
>	Ge	72	669064.5	1.8				ug/L	641188	Standard
|	As	75	84509.8	2.4	93.7193	1.730	1.8	ug/L	-83	Standard
|	Se	82	7304.0	2.2	93.4309	0.913	1.0	ug/L	16	Standard
|	Se-1	77	6099.2	3.4	107.2278	3.704	3.5	ug/L	126	Standard
>	Ga	71	198.3	6.3				mg/L	70	Standard
|	Rb	85	675.0	12.6				ug/L	33	Standard
|	Y	89	461352.3	2.2				ug/L	493982	Standard
>	Rh	103	55.0	15.7				ug/L	17	Standard
|	Mo	98	239356.4	2.0	95.0027	2.049	2.2	ug/L	54	Standard
|	Ag	107	408316.1	2.2	94.0132	1.333	1.4	ug/L	137	Standard
|	Cd	111	113201.6	4.1	87.8923	1.944	2.2	mg/L	6	Standard
|	Cd	114	316489.5	4.8	89.5448	1.647	1.8	ug/L	20	Standard
>	In	115	611791.8	3.6				ug/L	755264	Standard
|	Sn	118	127.0	12.4	0.0297	0.018	59.2	ug/L	138	Standard
|	Sb	123	350861.9	3.1	96.7055	0.974	1.0	ug/L	391	Standard
|	Ba	135	147845.3	4.1	102.0739	1.795	1.8	ug/L	32	Standard
|	Ce	140	90.0	9.6				ug/L	42	Standard
>	Tb	159	833458.7	3.5				ug/L	966827	Standard
|	Ho	165	46.7	27.0				ug/L	12	Standard
|	Tl	203	519083.0	3.4	94.8856	1.044	1.1	ug/L	19	Standard
|	Tl	205	1209032.2	3.7	94.5145	1.414	1.5	ug/L	58	Standard
|	Pb	206	408958.5	3.6	94.7296	0.919	1.0	ug/L	464	Standard
|	Pb	207	369191.1	3.2	95.5895	0.527	0.6	ug/L	405	Standard
|	Pb	208	781998.3	3.4	92.7804	1.119	1.2	ug/L	876	Standard
|	U	238	669690.5	4.5	69.8143	1.391	2.0	ug/L	14	Standard
>	Bi	209	497857.7	2.7				ug/L	599146	Standard

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 16:01:10

Page 1

Approved: March 01, 2017

Na	23	30.0	50.0	7.8938	4.233	53.6	mg/L	3	Standard
Mg	24	588.3	8.8	10.9358	1.128	10.3	mg/L	30	Standard
K	39	506.7	16.1	6.2611	0.969	15.5	mg/L	10	Standard
Ca	43	61.7	4.7	-5.6949	1.820	32.0	mg/L	83	Standard
Fe	54	828.0	7.2	12.0393	0.975	8.1	mg/L	21	Standard
Fe	57	731.7	12.2	23.3024	4.607	19.8	mg/L	240	Standard
Sc-1	45	43256.7	1.1				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	2.0	86.6				ug/L	5	Standard
Br	81	2493.5	2.4				ug/L	1587	Standard
P	31	45.0	11.1				ug/L	50	Standard
S	34	26.7	28.6				ug/L	8	Standard
Sr	88	225.0	13.5				ug/L	198	Standard
C	12	13.3	114.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	13.3	43.3				mg/L	3	Standard
Dy	164	16.2	91.5				mg/L	6	Standard
Ho-1	165	46.7	27.0				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	9176.1	2.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	99.171		
Al	27	0.860		
Sc	45			
Ti	47	106.027		
V	51	90.619		
Cr	52	90.903		
Cr	53			
Mn	55	91.241		
Co	59	93.661		
Ni	60	94.777		
Cu	65	96.403		
Zn	66	93.843		
Ge	72		104.348	
As	75	93.719		
Se	82	93.431		
Se-1	77			
Ga	71			

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 16:01:10

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	95.003	
[	Ag	107	94.013	
[	Cd	111	87.892	
[	Cd	114		
>	In	115		81.004
[	Sn	118		
[	Sb	123	96.705	
[	Ba	135	102.074	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	94.886	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	92.780	
[	U	238	69.814	
>	Bi	209		83.095
[	Na	23	63.151	
[	Mg	24	218.716	
[	K	39	125.222	
[	Ca	43	-37.966	
[	Fe	54	96.314	
[	Fe	57	186.419	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 5	Al	27	
QC Std 5	U	238	
QC Std 5	Na	23	

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 16:01:10

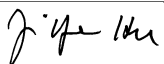
Page 3

Approved: March 01, 2017



QC Std 5	Mg	24
QC Std 5	K	39
QC Std 5	Ca	43
QC Std 5	Fe	57

Sample ID: QC Std 5
Report Date/Time: Tuesday, February 28, 2017 16:01:10
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 16:02:07

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	195364.9	1.3				ug/L	250104	Standard
|	Be	9	63151.4	1.8	49.7074	1.468	3.0	ug/L	7	Standard
|	Al	27	4517497.8	0.4	47.5155	0.440	0.9	ug/L	597	Standard
|	Sc	45	43106.2	0.8				ug/L	41681	Standard
|	Ti	47	19693.1	0.9	104.8073	1.158	1.1	ug/L	86	Standard
|	V	51	310969.4	1.5	47.6157	0.787	1.7	ug/L	1740	Standard
|	Cr	52	291236.6	1.2	47.0188	0.805	1.7	ug/L	7178	Standard
|	Cr	53	40171.5	2.2	51.1068	1.492	2.9	ug/L	573	Standard
|	Mn	55	480916.7	3.2	48.0962	1.534	3.2	ug/L	3072	Standard
|	Co	59	382891.2	1.8	49.2675	0.984	2.0	ug/L	573	Standard
|	Ni	60	81603.9	1.8	49.3464	1.115	2.3	ug/L	264	Standard
|	Cu	65	79216.2	1.4	49.8769	0.887	1.8	ug/L	530	Standard
|	Zn	66	43786.5	1.3	48.0286	0.874	1.8	ug/L	252	Standard
>	Ge	72	674810.9	0.6				ug/L	641188	Standard
|	As	75	43618.8	1.6	47.9813	0.821	1.7	ug/L	-83	Standard
|	Se	82	3874.0	2.0	49.0298	1.167	2.4	ug/L	16	Standard
|	Se-1	77	3264.0	0.6	55.8222	0.382	0.7	ug/L	126	Standard
>	Ga	71	105.0	9.5				mg/L	70	Standard
|	Rb	85	685.0	7.6				ug/L	33	Standard
|	Y	89	461392.1	1.2				ug/L	493982	Standard
>	Rh	103	36.7	43.8				ug/L	17	Standard
|	Mo	98	261756.4	0.4	103.2869	1.262	1.2	ug/L	54	Standard
|	Ag	107	220302.8	1.1	50.4251	1.042	2.1	ug/L	137	Standard
|	Cd	111	57963.0	0.7	44.7550	0.761	1.7	mg/L	6	Standard
|	Cd	114	169221.5	1.1	47.6258	0.844	1.8	ug/L	20	Standard
>	In	115	615171.0	1.0				ug/L	755264	Standard
|	Sn	118	39453.3	1.5	50.4144	1.290	2.6	ug/L	138	Standard
|	Sb	123	179251.8	0.7	49.1213	0.852	1.7	ug/L	391	Standard
|	Ba	135	85971.2	19.3	59.0622	11.731	19.9	ug/L	32	Standard
|	Ce	140	53.3	19.5				ug/L	42	Standard
>	Tb	159	832514.5	0.9				ug/L	966827	Standard
|	Ho	165	16.7	45.8				ug/L	12	Standard
|	Tl	203	272640.1	1.3	49.7761	1.194	2.4	ug/L	19	Standard
|	Tl	205	639786.4	1.2	49.9566	1.126	2.3	ug/L	58	Standard
|	Pb	206	214223.7	1.7	49.5224	1.362	2.8	ug/L	464	Standard
|	Pb	207	191548.8	2.0	49.4941	1.506	3.0	ug/L	405	Standard
|	Pb	208	406236.6	1.0	48.0980	0.966	2.0	ug/L	876	Standard
|	U	238	344787.3	2.1	35.9100	1.130	3.1	ug/L	14	Standard
>	Bi	209	498578.3	1.1				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:04:18

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0142	0.803	5676.2	mg/L	3	Standard
Mg	24	275.0	12.7	4.8357	0.644	13.3	mg/L	30	Standard
K	39	508.3	2.3	6.3130	0.174	2.8	mg/L	10	Standard
Ca	43	60.0	25.0	-6.4863	8.716	134.4	mg/L	83	Standard
Fe	54	374.8	15.6	5.3311	0.879	16.5	mg/L	21	Standard
Fe	57	555.0	4.5	13.9509	1.172	8.4	mg/L	240	Standard
Sc-1	45	43106.2	0.8				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	5.3	28.6				ug/L	5	Standard
Br	81	2216.8	2.6				ug/L	1587	Standard
P	31	58.3	4.9				ug/L	50	Standard
S	34	38.3	19.9				ug/L	8	Standard
Sr	88	218.3	34.7				ug/L	198	Standard
C	12	10.0	173.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	39.5	66.7				mg/L	6	Standard
Ho-1	165	16.7	45.8				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	6241.3	1.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	99.415		
Al	27	95.031		
Sc	45			
Ti	47	104.807		
V	51	95.231		
Cr	52	94.038		
Cr	53			
Mn	55	96.192		
Co	59	98.535		
Ni	60	98.693		
Cu	65	99.754		
Zn	66	96.057		
Ge	72		105.244	
As	75	95.963		
Se	82	98.060		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:04:18

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	103.287	
[	Ag	107	100.850	
[	Cd	111	89.510	
[	Cd	114		
>	In	115		81.451
[	Sn	118	100.829	
[	Sb	123	98.243	
[	Ba	135	118.124	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	99.552	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	96.196	
[	U	238	71.820	
>	Bi	209		83.215
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	Ba	135	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:04:18

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 16:05:13

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	190218.5	1.6				ug/L	250104	Standard
|	Be	9	18.3	41.7	0.0046	0.006	134.9	ug/L	7	Standard
|	Al	27	1041.7	20.6	0.0051	0.003	49.4	ug/L	597	Standard
|	Sc	45	42648.3	0.7				ug/L	41681	Standard
|	Ti	47	33.0	13.9	-0.2842	0.024	8.3	ug/L	86	Standard
|	V	51	1329.5	18.0	-0.0693	0.037	53.1	ug/L	1740	Standard
|	Cr	52	6844.2	3.0	-0.0720	0.030	41.7	ug/L	7178	Standard
|	Cr	53	4442.3	1.3	4.9454	0.113	2.3	ug/L	573	Standard
|	Mn	55	2556.2	1.2	-0.0459	0.003	7.2	ug/L	3072	Standard
|	Co	59	339.0	3.2	-0.0171	0.001	8.3	ug/L	573	Standard
|	Ni	60	165.0	1.6	-0.0762	0.002	3.0	ug/L	264	Standard
|	Cu	65	575.7	5.7	-0.0083	0.021	255.0	ug/L	530	Standard
|	Zn	66	315.0	6.3	0.0011	0.023	2059.0	ug/L	252	Standard
>	Ge	72	666448.5	0.7				ug/L	641188	Standard
|	As	75	-77.2	78.8	-0.0433	0.067	155.5	ug/L	-83	Standard
|	Se	82	16.7	19.8	-0.0125	0.041	330.4	ug/L	16	Standard
|	Se-1	77	451.3	2.6	5.8597	0.218	3.7	ug/L	126	Standard
>	Ga	71	81.7	28.9				mg/L	70	Standard
|	Rb	85	46.7	43.3				ug/L	33	Standard
|	Y	89	460237.8	1.2				ug/L	493982	Standard
>	Rh	103	10.0	50.0				ug/L	17	Standard
|	Mo	98	233.9	28.1	0.0739	0.027	36.4	ug/L	54	Standard
|	Ag	107	109.0	9.7	0.0019	0.002	127.6	ug/L	137	Standard
|	Cd	111	7.0	7.0	-0.0081	0.000	5.0	mg/L	6	Standard
|	Cd	114	38.2	40.6	0.0009	0.004	482.1	ug/L	20	Standard
>	In	115	599786.2	0.4				ug/L	755264	Standard
|	Sn	118	128.3	8.5	0.0349	0.014	41.0	ug/L	138	Standard
|	Sb	123	979.2	19.2	0.2486	0.052	20.8	ug/L	391	Standard
|	Ba	135	45.3	8.4	0.0044	0.003	59.1	ug/L	32	Standard
|	Ce	140	23.3	12.4				ug/L	42	Standard
>	Tb	159	808775.7	0.8				ug/L	966827	Standard
|	Ho	165	13.3	78.1				ug/L	12	Standard
|	Tl	203	44.7	25.2	0.0013	0.002	158.0	ug/L	19	Standard
|	Tl	205	120.0	56.1	0.0069	0.005	77.4	ug/L	58	Standard
|	Pb	206	432.0	4.4	0.0066	0.004	63.9	ug/L	464	Standard
|	Pb	207	355.7	8.0	0.0016	0.007	426.9	ug/L	405	Standard
|	Pb	208	756.3	4.6	0.0025	0.004	161.0	ug/L	876	Standard
|	U	238	46.7	101.3	0.0032	0.005	154.6	ug/L	14	Standard
>	Bi	209	491975.6	0.6				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:07:24

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	26.7	43.3	-0.0116	0.233	2006.2	mg/L	30	Standard
K	39	20.0	25.0	0.0181	0.064	353.4	mg/L	10	Standard
Ca	43	50.0	45.8	-11.8745	13.026	109.7	mg/L	83	Standard
Fe	54	26.1	28.6	0.1440	0.115	79.8	mg/L	21	Standard
Fe	57	426.7	5.9	7.3024	1.345	18.4	mg/L	240	Standard
Sc-1	45	42648.3	0.7				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	3.0	66.7				ug/L	5	Standard
Br	81	2116.8	2.1				ug/L	1587	Standard
P	31	51.7	24.4				ug/L	50	Standard
S	34	28.3	44.4				ug/L	8	Standard
Sr	88	215.0	10.1				ug/L	198	Standard
C	12	13.3	43.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	15.7	76.2				mg/L	6	Standard
Ho-1	165	13.3	78.1				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	7210.0	2.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.940	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:07:24

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	79.414
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	82.113
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
In 115 Int Std for QC Std	In	115	Rerun sample
QC Std 7	Sb	123	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:07:24

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: PBW 71 WG604422-02

Sample Date/Time: Tuesday, February 28, 2017 16:09:20

Number of Replicates: 3

Autosampler Position: 301

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	210768.8	3.7				ug/L	250104	Standard
|	Be	9	36.7	68.6	0.0168	0.019	111.0	ug/L	7	Standard
|	Al	27	7778.2	146.5	0.0699	0.111	159.5	ug/L	597	Standard
|	Sc	45	44298.0	3.2				ug/L	41681	Standard
|	Ti	47	34.3	31.1	-0.2775	0.055	20.0	ug/L	86	Standard
|	V	51	-955.9	73.5	-0.4243	0.107	25.2	ug/L	1740	Standard
|	Cr	52	7976.1	3.7	0.1169	0.032	27.4	ug/L	7178	Standard
|	Cr	53	15291.1	9.9	19.1278	1.644	8.6	ug/L	573	Standard
|	Mn	55	8612.6	105.0	0.5710	0.921	161.3	ug/L	3072	Standard
|	Co	59	414.3	44.2	-0.0073	0.024	324.6	ug/L	573	Standard
|	Ni	60	189.0	37.7	-0.0614	0.044	71.4	ug/L	264	Standard
|	Cu	65	629.7	5.0	0.0262	0.021	78.5	ug/L	530	Standard
|	Zn	66	2690.2	4.7	2.6556	0.091	3.4	ug/L	252	Standard
>	Ge	72	666821.2	1.7				ug/L	641188	Standard
|	As	75	-94.1	123.1	-0.0613	0.126	206.1	ug/L	-83	Standard
|	Se	82	12.5	38.1	-0.0667	0.061	91.7	ug/L	16	Standard
|	Se-1	77	993.0	10.4	15.5961	1.580	10.1	ug/L	126	Standard
>	Ga	71	108.3	34.9				mg/L	70	Standard
|	Rb	85	73.3	17.2				ug/L	33	Standard
|	Y	89	463175.3	3.0				ug/L	493982	Standard
>	Rh	103	20.0	90.1				ug/L	17	Standard
|	Mo	98	98.5	18.5	0.0172	0.007	41.0	ug/L	54	Standard
|	Ag	107	123.0	16.9	0.0038	0.005	121.8	ug/L	137	Standard
|	Cd	111	6.5	46.4	-0.0087	0.002	26.4	mg/L	6	Standard
|	Cd	114	43.6	59.4	0.0019	0.007	381.4	ug/L	20	Standard
>	In	115	629580.4	2.3				ug/L	755264	Standard
|	Sn	118	114.0	9.2	0.0090	0.013	148.4	ug/L	138	Standard
|	Sb	123	340.5	22.6	0.0643	0.018	28.7	ug/L	391	Standard
|	Ba	135	350.7	148.3	0.2076	0.348	167.8	ug/L	32	Standard
|	Ce	140	30.0	16.7				ug/L	42	Standard
>	Tb	159	853405.2	3.1				ug/L	966827	Standard
|	Ho	165	13.3	57.3				ug/L	12	Standard
|	Tl	203	276.7	20.1	0.0428	0.011	26.0	ug/L	19	Standard
|	Tl	205	668.3	22.2	0.0488	0.013	25.7	ug/L	58	Standard
|	Pb	206	520.0	4.3	0.0234	0.005	21.3	ug/L	464	Standard
|	Pb	207	465.7	4.0	0.0266	0.004	13.3	ug/L	405	Standard
|	Pb	208	984.0	2.8	0.0262	0.006	23.8	ug/L	876	Standard
|	U	238	16.0	81.7	-0.0001	0.001	2163.9	ug/L	14	Standard
>	Bi	209	508300.5	2.7				ug/L	599146	Standard

Sample ID: PBW 71 WG604422-02

Report Date/Time: Tuesday, February 28, 2017 16:11:30

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	23.3	61.9	-0.0987	0.264	268.0	mg/L	30	Standard
K	39	15.0	57.7	-0.0529	0.111	209.9	mg/L	10	Standard
Ca	43	38.3	49.4	-19.1061	11.297	59.1	mg/L	83	Standard
Fe	54	27.6	55.1	0.1559	0.237	151.7	mg/L	21	Standard
Fe	57	465.0	1.1	8.4671	1.047	12.4	mg/L	240	Standard
Sc-1	45	44298.0	3.2				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	6.0	16.7				ug/L	5	Standard
Br	81	2200.2	7.0				ug/L	1587	Standard
P	31	48.3	26.0				ug/L	50	Standard
S	34	33.3	22.9				ug/L	8	Standard
Sr	88	198.3	5.2				ug/L	198	Standard
C	12	13.3	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	6.3	186.3				mg/L	6	Standard
Ho-1	165	13.3	57.3				mg/L	12	Standard
Er	166	6.7	86.6				mg/L	10	Standard
I	127	9139.4	2.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		84.273	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.998	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: PBW 71 WG604422-02

Report Date/Time: Tuesday, February 28, 2017 16:11:30

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.359
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	84.838
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	

Sample ID: PBW 71 WG604422-02

Report Date/Time: Tuesday, February 28, 2017 16:11:30

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: LCSW 71 WG604422-03

Sample Date/Time: Tuesday, February 28, 2017 16:12:25

Number of Replicates: 3

Autosampler Position: 302

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	224389.5	1.1				ug/L	250104	Standard
|	Be	9	685.0	9.8	0.4589	0.041	9.0	ug/L	7	Standard
|	Al	27	93511.1	2.6	0.8504	0.030	3.6	ug/L	597	Standard
|	Sc	45	46350.8	1.6				ug/L	41681	Standard
|	Ti	47	1995.1	1.9	10.3795	0.251	2.4	ug/L	86	Standard
|	V	51	55964.5	0.5	8.4853	0.077	0.9	ug/L	1740	Standard
|	Cr	52	36753.2	1.0	4.9686	0.091	1.8	ug/L	7178	Standard
|	Cr	53	33587.3	5.3	43.3036	2.394	5.5	ug/L	573	Standard
|	Mn	55	48866.0	0.9	4.6934	0.051	1.1	ug/L	3072	Standard
|	Co	59	15172.9	0.5	1.9258	0.015	0.8	ug/L	573	Standard
|	Ni	60	7880.7	0.3	4.6841	0.033	0.7	ug/L	264	Standard
|	Cu	65	7998.1	0.7	4.7798	0.037	0.8	ug/L	530	Standard
|	Zn	66	9290.2	1.6	10.0836	0.218	2.2	ug/L	252	Standard
>	Ge	72	663810.5	0.6				ug/L	641188	Standard
|	As	75	3012.9	6.0	3.4077	0.183	5.4	ug/L	-83	Standard
|	Se	82	270.1	4.6	3.2641	0.179	5.5	ug/L	16	Standard
|	Se-1	77	1948.8	5.0	32.9906	1.859	5.6	ug/L	126	Standard
>	Ga	71	96.7	7.9				mg/L	70	Standard
|	Rb	85	121.7	13.2				ug/L	33	Standard
|	Y	89	453951.0	2.5				ug/L	493982	Standard
>	Rh	103	36.7	31.5				ug/L	17	Standard
|	Mo	98	24890.6	0.8	9.4035	0.073	0.8	ug/L	54	Standard
|	Ag	107	16356.2	0.7	3.5694	0.029	0.8	ug/L	137	Standard
|	Cd	111	558.6	3.8	0.4001	0.012	3.0	mg/L	6	Standard
|	Cd	114	2557.3	2.4	0.6805	0.018	2.6	ug/L	20	Standard
>	In	115	641230.9	1.5				ug/L	755264	Standard
|	Sn	118	8123.5	1.5	9.8501	0.139	1.4	ug/L	138	Standard
|	Sb	123	41983.5	1.0	11.0171	0.197	1.8	ug/L	391	Standard
|	Ba	135	14873.3	0.7	9.7741	0.141	1.4	ug/L	32	Standard
|	Ce	140	28.3	53.9				ug/L	42	Standard
>	Tb	159	882626.1	2.4				ug/L	966827	Standard
|	Ho	165	8.3	34.6				ug/L	12	Standard
|	Tl	203	26799.7	1.5	4.6817	0.044	0.9	ug/L	19	Standard
|	Tl	205	63517.9	1.2	4.7500	0.061	1.3	ug/L	58	Standard
|	Pb	206	21388.4	1.6	4.6514	0.021	0.4	ug/L	464	Standard
|	Pb	207	19105.7	1.3	4.6471	0.049	1.0	ug/L	405	Standard
|	Pb	208	40497.6	0.4	4.5148	0.059	1.3	ug/L	876	Standard
|	U	238	5.7	36.7	-0.0011	0.000	17.8	ug/L	14	Standard
>	Bi	209	520284.2	1.4				ug/L	599146	Standard

Sample ID: LCSW 71 WG604422-03

Report Date/Time: Tuesday, February 28, 2017 16:14:36

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0522	0.738	1413.5	mg/L	3	Standard
Mg	24	70.0	21.4	0.7309	0.253	34.6	mg/L	30	Standard
K	39	75.0	23.1	0.6554	0.198	30.2	mg/L	10	Standard
Ca	43	41.7	30.2	-18.5480	6.554	35.3	mg/L	83	Standard
Fe	54	26.0	59.2	0.1088	0.208	191.3	mg/L	21	Standard
Fe	57	446.7	10.2	6.4310	1.916	29.8	mg/L	240	Standard
Sc-1	45	46350.8	1.6				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	4.3	13.3				ug/L	5	Standard
Br	81	2363.5	10.9				ug/L	1587	Standard
P	31	61.7	40.0				ug/L	50	Standard
S	34	25.0	20.0				ug/L	8	Standard
Sr	88	241.7	2.4				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	19.7	50.8				mg/L	6	Standard
Ho-1	165	8.3	34.6				mg/L	12	Standard
Er	166	6.7	86.6				mg/L	10	Standard
I	127	9191.1	1.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		89.719	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.528	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: LCSW 71 WG604422-03

Report Date/Time: Tuesday, February 28, 2017 16:14:36

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	84.902
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	86.838
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: LCSW 71 WG604422-03

Report Date/Time: Tuesday, February 28, 2017 16:14:36

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: F BLANK WG604265-01

Sample Date/Time: Tuesday, February 28, 2017 16:15:31

Number of Replicates: 3

Autosampler Position: 303

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	217584.7	1.5				ug/L	250104	Standard
|	Be	9	28.3	44.4	0.0097	0.009	89.1	ug/L	7	Standard
|	Al	27	1440.1	37.0	0.0074	0.005	64.9	ug/L	597	Standard
|	Sc	45	45867.7	2.2				ug/L	41681	Standard
|	Ti	47	32.0	26.7	-0.2945	0.047	15.9	ug/L	86	Standard
|	V	51	-2076.1	16.8	-0.5902	0.053	9.0	ug/L	1740	Standard
|	Cr	52	8866.3	1.2	0.2208	0.018	8.3	ug/L	7178	Standard
|	Cr	53	19404.1	0.9	23.7557	0.454	1.9	ug/L	573	Standard
|	Mn	55	3475.7	3.0	0.0367	0.006	15.9	ug/L	3072	Standard
|	Co	59	334.3	4.8	-0.0190	0.003	13.2	ug/L	573	Standard
|	Ni	60	195.0	6.9	-0.0614	0.010	15.5	ug/L	264	Standard
|	Cu	65	645.7	2.5	0.0238	0.012	48.6	ug/L	530	Standard
|	Zn	66	1504.7	3.7	1.2802	0.082	6.4	ug/L	252	Standard
>	Ge	72	687930.0	1.4				ug/L	641188	Standard
|	As	75	-51.2	48.5	-0.0127	0.026	203.5	ug/L	-83	Standard
|	Se	82	14.2	31.7	-0.0504	0.056	111.8	ug/L	16	Standard
|	Se-1	77	1203.7	5.0	18.7493	1.241	6.6	ug/L	126	Standard
>	Ga	71	93.3	3.1				mg/L	70	Standard
|	Rb	85	53.3	28.6				ug/L	33	Standard
|	Y	89	459064.2	2.1				ug/L	493982	Standard
>	Rh	103	21.7	35.3				ug/L	17	Standard
|	Mo	98	60.0	25.0	0.0016	0.006	348.8	ug/L	54	Standard
|	Ag	107	126.0	7.6	0.0036	0.002	55.5	ug/L	137	Standard
|	Cd	111	9.6	52.6	-0.0066	0.004	55.9	mg/L	6	Standard
|	Cd	114	26.3	19.5	-0.0031	0.001	44.7	ug/L	20	Standard
>	In	115	649271.3	0.3				ug/L	755264	Standard
|	Sn	118	139.0	4.4	0.0350	0.007	21.2	ug/L	138	Standard
|	Sb	123	157.0	23.0	0.0142	0.009	66.4	ug/L	391	Standard
|	Ba	135	66.0	27.4	0.0154	0.012	76.0	ug/L	32	Standard
|	Ce	140	36.7	28.4				ug/L	42	Standard
>	Tb	159	878728.5	0.3				ug/L	966827	Standard
|	Ho	165	8.3	91.7				ug/L	12	Standard
|	Tl	203	224.3	14.4	0.0318	0.006	17.6	ug/L	19	Standard
|	Tl	205	568.3	10.1	0.0394	0.004	11.0	ug/L	58	Standard
|	Pb	206	701.3	3.0	0.0589	0.004	7.6	ug/L	464	Standard
|	Pb	207	595.3	5.7	0.0541	0.009	15.8	ug/L	405	Standard
|	Pb	208	1352.0	5.5	0.0633	0.008	13.3	ug/L	876	Standard
|	U	238	28.7	164.2	0.0011	0.005	411.5	ug/L	14	Standard
>	Bi	209	527039.5	0.4				ug/L	599146	Standard

Sample ID: F BLANK WG604265-01

Report Date/Time: Tuesday, February 28, 2017 16:17:41

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	195.0	34.7	3.0612	1.323	43.2	mg/L	30	Standard
K	39	31.7	32.9	0.1427	0.132	92.3	mg/L	10	Standard
Ca	43	26.7	96.2	-26.2748	13.458	51.2	mg/L	83	Standard
Fe	54	25.7	30.4	0.1108	0.108	97.6	mg/L	21	Standard
Fe	57	476.7	7.9	8.1956	1.706	20.8	mg/L	240	Standard
Sc-1	45	45867.7	2.2				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.0	66.7				ug/L	5	Standard
Br	81	2223.5	9.6				ug/L	1587	Standard
P	31	53.3	14.3				ug/L	50	Standard
S	34	36.7	39.4				ug/L	8	Standard
Sr	88	225.0	21.9				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	-0.6	86.6				mg/L	6	Standard
Ho-1	165	8.3	91.7				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	7895.4	1.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		86.998	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		107.290	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: F BLANK WG604265-01

Report Date/Time: Tuesday, February 28, 2017 16:17:41

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	85.966
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	87.965
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	

Sample ID: F BLANK WG604265-01

Report Date/Time: Tuesday, February 28, 2017 16:17:41

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: F BLANK WG604265-02

Sample Date/Time: Tuesday, February 28, 2017 16:18:36

Number of Replicates: 3

Autosampler Position: 304

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	214901.7	0.6				ug/L	250104	Standard
|	Be	9	25.0	20.0	0.0076	0.003	45.5	ug/L	7	Standard
|	Al	27	1603.4	56.5	0.0091	0.009	93.5	ug/L	597	Standard
|	Sc	45	45260.8	0.9				ug/L	41681	Standard
|	Ti	47	31.0	14.8	-0.2955	0.024	8.0	ug/L	86	Standard
|	V	51	-3015.4	8.9	-0.7454	0.040	5.4	ug/L	1740	Standard
|	Cr	52	9067.4	1.1	0.2968	0.014	4.9	ug/L	7178	Standard
|	Cr	53	22919.0	5.4	29.0800	1.882	6.5	ug/L	573	Standard
|	Mn	55	3067.0	4.4	0.0053	0.012	219.7	ug/L	3072	Standard
|	Co	59	336.3	12.8	-0.0175	0.006	33.1	ug/L	573	Standard
|	Ni	60	188.0	9.6	-0.0624	0.011	18.0	ug/L	264	Standard
|	Cu	65	601.3	6.3	0.0072	0.025	343.6	ug/L	530	Standard
|	Zn	66	1172.0	3.1	0.9565	0.051	5.3	ug/L	252	Standard
>	Ge	72	668277.4	0.9				ug/L	641188	Standard
|	As	75	-59.8	122.4	-0.0245	0.082	333.3	ug/L	-83	Standard
|	Se	82	15.5	40.7	-0.0278	0.083	297.4	ug/L	16	Standard
|	Se-1	77	1175.4	9.5	18.8634	2.190	11.6	ug/L	126	Standard
>	Ga	71	93.3	13.5				mg/L	70	Standard
|	Rb	85	65.0	7.7				ug/L	33	Standard
|	Y	89	456261.1	1.9				ug/L	493982	Standard
>	Rh	103	21.7	35.3				ug/L	17	Standard
|	Mo	98	49.9	8.0	-0.0016	0.002	94.6	ug/L	54	Standard
|	Ag	107	119.3	6.8	0.0029	0.002	65.4	ug/L	137	Standard
|	Cd	111	7.6	40.2	-0.0079	0.002	29.6	mg/L	6	Standard
|	Cd	114	37.5	48.6	0.0002	0.005	2505.3	ug/L	20	Standard
>	In	115	631286.5	0.7				ug/L	755264	Standard
|	Sn	118	155.7	17.1	0.0605	0.032	53.0	ug/L	138	Standard
|	Sb	123	115.7	8.7	0.0043	0.003	63.7	ug/L	391	Standard
|	Ba	135	66.7	8.7	0.0171	0.004	20.9	ug/L	32	Standard
|	Ce	140	31.7	24.1				ug/L	42	Standard
>	Tb	159	867803.9	0.7				ug/L	966827	Standard
|	Ho	165	16.7	86.6				ug/L	12	Standard
|	Tl	203	209.0	31.8	0.0300	0.012	39.9	ug/L	19	Standard
|	Tl	205	503.3	18.1	0.0355	0.007	19.9	ug/L	58	Standard
|	Pb	206	691.7	7.7	0.0604	0.013	21.0	ug/L	464	Standard
|	Pb	207	613.7	4.8	0.0622	0.008	12.8	ug/L	405	Standard
|	Pb	208	1317.4	7.4	0.0630	0.012	18.9	ug/L	876	Standard
|	U	238	64.7	167.8	0.0049	0.011	226.4	ug/L	14	Standard
>	Bi	209	514689.8	0.7				ug/L	599146	Standard

Sample ID: F BLANK WG604265-02

Report Date/Time: Tuesday, February 28, 2017 16:20:46

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0374	0.763	2043.2	mg/L	3	Standard
Mg	24	36.7	28.4	0.1441	0.198	137.7	mg/L	30	Standard
K	39	23.3	44.6	0.0450	0.131	291.0	mg/L	10	Standard
Ca	43	45.0	33.3	-16.2510	7.894	48.6	mg/L	83	Standard
Fe	54	22.8	78.1	0.0749	0.255	340.6	mg/L	21	Standard
Fe	57	498.3	3.2	9.6301	0.593	6.2	mg/L	240	Standard
Sc-1	45	45260.8	0.9				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.0	33.3				ug/L	5	Standard
Br	81	2403.5	9.4				ug/L	1587	Standard
P	31	78.3	22.4				ug/L	50	Standard
S	34	31.7	24.1				ug/L	8	Standard
Sr	88	251.7	8.0				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	16.0	32.7				mg/L	6	Standard
Ho-1	165	16.7	86.6				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	7451.8	1.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		85.925	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		104.225	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: F BLANK WG604265-02

Report Date/Time: Tuesday, February 28, 2017 16:20:46

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.585
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.904
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	

Sample ID: F BLANK WG604265-02

Report Date/Time: Tuesday, February 28, 2017 16:20:46

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702134702 WG604422-01

Sample Date/Time: Tuesday, February 28, 2017 16:21:41

Number of Replicates: 3

Autosampler Position: 305

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	218743.2	2.2				ug/L	250104	Standard
|	Be	9	20.0	50.0	0.0039	0.007	188.5	ug/L	7	Standard
|	Al	27	36766.2	0.7	0.3393	0.006	1.8	ug/L	597	Standard
|	Sc	45	45369.5	2.1				ug/L	41681	Standard
|	Ti	47	34.3	16.0	-0.2812	0.029	10.4	ug/L	86	Standard
|	V	51	-2857.8	24.1	-0.7120	0.106	14.9	ug/L	1740	Standard
|	Cr	52	147059.0	1.7	22.8647	0.331	1.4	ug/L	7178	Standard
|	Cr	53	35695.4	4.7	44.7962	2.207	4.9	ug/L	573	Standard
|	Mn	55	5028.5	0.9	0.1941	0.003	1.7	ug/L	3072	Standard
|	Co	59	466.0	5.5	-0.0019	0.003	172.0	ug/L	573	Standard
|	Ni	60	448.0	5.7	0.0913	0.015	16.9	ug/L	264	Standard
|	Cu	65	759.4	0.7	0.0983	0.003	2.5	ug/L	530	Standard
|	Zn	66	1878.8	1.3	1.7014	0.033	2.0	ug/L	252	Standard
>	Ge	72	682410.6	0.3				ug/L	641188	Standard
|	As	75	-143.0	32.9	-0.1133	0.052	45.5	ug/L	-83	Standard
|	Se	82	22.1	34.2	0.0503	0.094	187.1	ug/L	16	Standard
|	Se-1	77	1120.7	1.7	17.4509	0.348	2.0	ug/L	126	Standard
>	Ga	71	86.7	13.3				mg/L	70	Standard
|	Rb	85	26067.4	1.4				ug/L	33	Standard
|	Y	89	462626.2	1.7				ug/L	493982	Standard
>	Rh	103	10.0	50.0				ug/L	17	Standard
|	Mo	98	17267.6	1.2	6.4298	0.114	1.8	ug/L	54	Standard
|	Ag	107	149.3	7.0	0.0087	0.003	30.5	ug/L	137	Standard
|	Cd	111	13.7	13.9	-0.0036	0.001	40.4	mg/L	6	Standard
|	Cd	114	101.1	8.8	0.0168	0.002	12.9	ug/L	20	Standard
>	In	115	649939.8	1.2				ug/L	755264	Standard
|	Sn	118	144.3	10.0	0.0413	0.017	41.0	ug/L	138	Standard
|	Sb	123	120.5	16.5	0.0046	0.005	106.1	ug/L	391	Standard
|	Ba	135	873.7	4.9	0.5403	0.022	4.1	ug/L	32	Standard
|	Ce	140	73.3	17.2				ug/L	42	Standard
>	Tb	159	879474.9	1.1				ug/L	966827	Standard
|	Ho	165	23.3	53.9				ug/L	12	Standard
|	Tl	203	169.7	5.3	0.0225	0.002	7.8	ug/L	19	Standard
|	Tl	205	383.3	17.7	0.0258	0.005	20.1	ug/L	58	Standard
|	Pb	206	779.7	3.0	0.0767	0.004	5.5	ug/L	464	Standard
|	Pb	207	669.3	4.4	0.0729	0.006	8.8	ug/L	405	Standard
|	Pb	208	1402.4	2.9	0.0697	0.005	7.6	ug/L	876	Standard
|	U	238	54.0	17.7	0.0036	0.001	25.1	ug/L	14	Standard
>	Bi	209	524868.5	0.6				ug/L	599146	Standard

Sample ID: L1702134702 WG604422-01

Report Date/Time: Tuesday, February 28, 2017 16:23:52

Page 1

Approved: March 01, 2017

Na	23	6.7	86.6	1.2694	1.513	119.2	mg/L	3	Standard
Mg	24	166.7	35.8	2.5509	1.077	42.2	mg/L	30	Standard
K	39	133.3	18.9	1.3905	0.297	21.4	mg/L	10	Standard
Ca	43	33.3	60.6	-22.5686	10.613	47.0	mg/L	83	Standard
Fe	54	32.2	36.6	0.2073	0.172	82.8	mg/L	21	Standard
Fe	57	476.7	8.9	8.5024	2.681	31.5	mg/L	240	Standard
Sc-1	45	45369.5	2.1				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	4.7	32.7				ug/L	5	Standard
Br	81	2083.5	3.9				ug/L	1587	Standard
P	31	73.3	27.6				ug/L	50	Standard
S	34	45.0	19.2				ug/L	8	Standard
Sr	88	221.7	10.7				ug/L	198	Standard
C	12	20.0	0.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	48.7	53.2				mg/L	6	Standard
Ho-1	165	23.3	53.9				mg/L	12	Standard
Er	166	26.7	43.3				mg/L	10	Standard
I	127	7076.7	3.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		87.461	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.429	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702134702 WG604422-01

Report Date/Time: Tuesday, February 28, 2017 16:23:52

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	86.055
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	87.603
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	

Sample ID: L1702134702 WG604422-01

Report Date/Time: Tuesday, February 28, 2017 16:23:52

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702134702S WG604422-04

Sample Date/Time: Tuesday, February 28, 2017 16:24:46

Number of Replicates: 3

Autosampler Position: 306

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	237206.7	2.8				ug/L	250104	Standard
|	Be	9	746.7	6.4	0.4736	0.023	4.9	ug/L	7	Standard
|	Al	27	135360.6	2.9	1.1665	0.009	0.7	ug/L	597	Standard
|	Sc	45	47367.3	2.1				ug/L	41681	Standard
|	Ti	47	2070.5	4.8	10.4616	0.675	6.5	ug/L	86	Standard
|	V	51	58428.5	2.6	8.6024	0.313	3.6	ug/L	1740	Standard
|	Cr	52	174489.9	1.8	27.2944	0.724	2.7	ug/L	7178	Standard
|	Cr	53	47280.3	2.4	59.4845	1.904	3.2	ug/L	573	Standard
|	Mn	55	52308.8	2.3	4.8884	0.169	3.5	ug/L	3072	Standard
|	Co	59	15342.8	2.0	1.8890	0.059	3.1	ug/L	573	Standard
|	Ni	60	8380.3	1.1	4.8402	0.118	2.4	ug/L	264	Standard
|	Cu	65	8339.3	1.1	4.8424	0.161	3.3	ug/L	530	Standard
|	Zn	66	9963.6	1.3	10.5116	0.341	3.2	ug/L	252	Standard
>	Ge	72	684098.4	1.9				ug/L	641188	Standard
|	As	75	3142.3	3.0	3.4491	0.093	2.7	ug/L	-83	Standard
|	Se	82	301.7	2.7	3.5562	0.105	3.0	ug/L	16	Standard
|	Se-1	77	1908.1	5.1	31.2129	1.068	3.4	ug/L	126	Standard
>	Ga	71	91.7	34.6				mg/L	70	Standard
|	Rb	85	24805.3	0.7				ug/L	33	Standard
|	Y	89	467833.9	4.1				ug/L	493982	Standard
>	Rh	103	43.3	46.6				ug/L	17	Standard
|	Mo	98	41582.5	0.5	15.0493	0.501	3.3	ug/L	54	Standard
|	Ag	107	16974.8	1.1	3.5462	0.148	4.2	ug/L	137	Standard
|	Cd	111	618.4	1.1	0.4249	0.015	3.5	mg/L	6	Standard
|	Cd	114	2612.7	8.2	0.6641	0.037	5.5	ug/L	20	Standard
>	In	115	670319.2	3.0				ug/L	755264	Standard
|	Sn	118	8359.0	1.9	9.7023	0.462	4.8	ug/L	138	Standard
|	Sb	123	43806.0	0.8	11.0006	0.291	2.6	ug/L	391	Standard
|	Ba	135	16294.8	1.1	10.2498	0.327	3.2	ug/L	32	Standard
|	Ce	140	88.3	8.6				ug/L	42	Standard
>	Tb	159	911325.5	2.3				ug/L	966827	Standard
|	Ho	165	21.7	81.0				ug/L	12	Standard
|	Tl	203	27700.6	1.2	4.7027	0.128	2.7	ug/L	19	Standard
|	Tl	205	64873.6	1.1	4.7148	0.151	3.2	ug/L	58	Standard
|	Pb	206	21922.2	1.3	4.6329	0.133	2.9	ug/L	464	Standard
|	Pb	207	19860.0	0.2	4.6950	0.112	2.4	ug/L	405	Standard
|	Pb	208	42674.3	1.6	4.6248	0.131	2.8	ug/L	876	Standard
|	U	238	47.7	26.6	0.0029	0.001	43.4	ug/L	14	Standard
>	Bi	209	535559.2	2.1				ug/L	599146	Standard

Sample ID: L1702134702S WG604422-04

Report Date/Time: Tuesday, February 28, 2017 16:26:57

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0644	0.716	1111.9	mg/L	3	Standard
Mg	24	215.0	14.1	3.2853	0.520	15.8	mg/L	30	Standard
K	39	220.0	18.6	2.3412	0.498	21.3	mg/L	10	Standard
Ca	43	53.3	47.2	-12.9679	13.182	101.7	mg/L	83	Standard
Fe	54	27.0	37.2	0.1151	0.128	110.9	mg/L	21	Standard
Fe	57	403.3	15.5	3.8832	3.333	85.8	mg/L	240	Standard
Sc-1	45	47367.3	2.1				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	5.0	20.0				ug/L	5	Standard
Br	81	2170.2	7.6				ug/L	1587	Standard
P	31	81.7	14.1				ug/L	50	Standard
S	34	31.7	18.2				ug/L	8	Standard
Sr	88	195.0	20.4				ug/L	198	Standard
C	12	13.3	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	28.7	57.9				mg/L	6	Standard
Ho-1	165	21.7	81.0				mg/L	12	Standard
Er	166	26.7	78.1				mg/L	10	Standard
I	127	7136.7	3.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		94.843	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.692	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702134702S WG604422-04

Report Date/Time: Tuesday, February 28, 2017 16:26:57

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	88.753
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.387
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702134702S WG604422-04

Report Date/Time: Tuesday, February 28, 2017 16:26:57

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702134702SD WG604422-05

Sample Date/Time: Tuesday, February 28, 2017 16:27:52

Number of Replicates: 3

Autosampler Position: 307

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	233040.7	2.1				ug/L	250104	Standard
|	Be	9	680.0	15.7	0.4391	0.076	17.4	ug/L	7	Standard
|	Al	27	141751.7	1.2	1.2440	0.013	1.0	ug/L	597	Standard
|	Sc	45	46277.2	0.3				ug/L	41681	Standard
|	Ti	47	2118.8	2.7	10.6982	0.351	3.3	ug/L	86	Standard
|	V	51	59457.8	0.2	8.7461	0.057	0.7	ug/L	1740	Standard
|	Cr	52	180581.4	0.4	28.2504	0.106	0.4	ug/L	7178	Standard
|	Cr	53	50295.0	1.8	63.2461	1.257	2.0	ug/L	573	Standard
|	Mn	55	53351.8	0.3	4.9846	0.029	0.6	ug/L	3072	Standard
|	Co	59	16122.9	0.6	1.9853	0.016	0.8	ug/L	573	Standard
|	Ni	60	8789.9	2.6	5.0782	0.134	2.6	ug/L	264	Standard
|	Cu	65	8673.1	1.5	5.0434	0.091	1.8	ug/L	530	Standard
|	Zn	66	10278.2	1.2	10.8380	0.155	1.4	ug/L	252	Standard
>	Ge	72	684852.9	0.5				ug/L	641188	Standard
|	As	75	3483.6	2.4	3.8146	0.085	2.2	ug/L	-83	Standard
|	Se	82	303.9	5.7	3.5788	0.201	5.6	ug/L	16	Standard
|	Se-1	77	2035.5	4.1	33.4267	1.570	4.7	ug/L	126	Standard
>	Ga	71	80.0	16.5				mg/L	70	Standard
|	Rb	85	26110.8	2.3				ug/L	33	Standard
|	Y	89	452883.4	1.8				ug/L	493982	Standard
>	Rh	103	38.3	27.2				ug/L	17	Standard
|	Mo	98	43525.3	0.1	16.0128	0.245	1.5	ug/L	54	Standard
|	Ag	107	17340.9	2.1	3.6831	0.124	3.4	ug/L	137	Standard
|	Cd	111	614.5	4.5	0.4294	0.021	5.0	mg/L	6	Standard
|	Cd	114	2878.5	5.6	0.7466	0.053	7.1	ug/L	20	Standard
>	In	115	659132.1	1.5				ug/L	755264	Standard
|	Sn	118	8329.6	0.7	9.8269	0.214	2.2	ug/L	138	Standard
|	Sb	123	45275.1	1.6	11.5587	0.193	1.7	ug/L	391	Standard
|	Ba	135	17147.0	4.5	10.9609	0.335	3.1	ug/L	32	Standard
|	Ce	140	98.3	25.1				ug/L	42	Standard
>	Tb	159	913412.5	1.5				ug/L	966827	Standard
|	Ho	165	35.0	14.3				ug/L	12	Standard
|	Tl	203	28499.8	1.4	4.8370	0.082	1.7	ug/L	19	Standard
|	Tl	205	67205.4	1.4	4.8826	0.107	2.2	ug/L	58	Standard
|	Pb	206	23065.5	1.8	4.8771	0.003	0.1	ug/L	464	Standard
|	Pb	207	20577.6	1.0	4.8664	0.046	0.9	ug/L	405	Standard
|	Pb	208	43714.2	1.3	4.7379	0.028	0.6	ug/L	876	Standard
|	U	238	48.0	12.5	0.0030	0.001	22.5	ug/L	14	Standard
>	Bi	209	535620.0	1.9				ug/L	599146	Standard

Sample ID: L1702134702SD WG604422-05

Report Date/Time: Tuesday, February 28, 2017 16:30:03

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	0.3898	0.752	192.8	mg/L	3	Standard
Mg	24	211.7	13.6	3.3177	0.539	16.3	mg/L	30	Standard
K	39	215.0	15.2	2.3403	0.395	16.9	mg/L	10	Standard
Ca	43	23.3	12.4	-28.1407	1.542	5.5	mg/L	83	Standard
Fe	54	45.3	16.5	0.3796	0.103	27.1	mg/L	21	Standard
Fe	57	438.3	3.7	6.0674	0.735	12.1	mg/L	240	Standard
Sc-1	45	46277.2	0.3				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	3.7	56.8				ug/L	5	Standard
Br	81	2130.1	4.1				ug/L	1587	Standard
P	31	71.7	35.1				ug/L	50	Standard
S	34	41.7	54.1				ug/L	8	Standard
Sr	88	266.7	15.3				ug/L	198	Standard
C	12	20.0	50.0				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	28.9	70.9				mg/L	6	Standard
Ho-1	165	35.0	14.3				mg/L	12	Standard
Er	166	23.3	65.5				mg/L	10	Standard
I	127	7391.8	1.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		93.178	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.810	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702134702SD WG604422-05

Report Date/Time: Tuesday, February 28, 2017 16:30:03

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	87.272
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.397
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

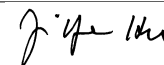
Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702134702SD WG604422-05

Report Date/Time: Tuesday, February 28, 2017 16:30:03

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702136701

Sample Date/Time: Tuesday, February 28, 2017 16:30:58

Number of Replicates: 3

Autosampler Position: 308

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	221412.8	0.7				ug/L	250104	Standard
|	Be	9	15.0	88.2	0.0001	0.009	7202.9	ug/L	7	Standard
|	Al	27	1241.7	7.5	0.0054	0.001	15.1	ug/L	597	Standard
|	Sc	45	46613.3	3.1				ug/L	41681	Standard
|	Ti	47	31.7	6.6	-0.2957	0.011	3.7	ug/L	86	Standard
|	V	51	729.4	27.3	-0.1657	0.031	18.5	ug/L	1740	Standard
|	Cr	52	7613.6	3.2	0.0243	0.047	191.7	ug/L	7178	Standard
|	Cr	53	9222.8	11.6	10.8928	1.323	12.1	ug/L	573	Standard
|	Mn	55	3172.0	0.8	0.0085	0.004	42.6	ug/L	3072	Standard
|	Co	59	377.7	0.6	-0.0133	0.000	0.5	ug/L	573	Standard
|	Ni	60	373.0	9.8	0.0458	0.022	49.0	ug/L	264	Standard
|	Cu	65	680.3	5.6	0.0477	0.026	54.3	ug/L	530	Standard
|	Zn	66	13686.5	3.7	14.5659	0.621	4.3	ug/L	252	Standard
>	Ge	72	684125.5	0.5				ug/L	641188	Standard
|	As	75	4.4	3237.8	0.0467	0.155	332.1	ug/L	-83	Standard
|	Se	82	36.9	23.5	0.2350	0.107	45.6	ug/L	16	Standard
|	Se-1	77	955.7	5.4	14.5065	0.969	6.7	ug/L	126	Standard
>	Ga	71	83.3	45.0				mg/L	70	Standard
|	Rb	85	11627.8	3.9				ug/L	33	Standard
|	Y	89	469541.3	0.6				ug/L	493982	Standard
>	Rh	103	26.7	60.3				ug/L	17	Standard
|	Mo	98	273.9	2.2	0.0804	0.003	4.1	ug/L	54	Standard
|	Ag	107	104.0	6.7	-0.0014	0.001	94.9	ug/L	137	Standard
|	Cd	111	6.6	39.8	-0.0089	0.002	21.4	mg/L	6	Standard
|	Cd	114	37.6	53.2	-0.0002	0.005	2213.2	ug/L	20	Standard
>	In	115	657219.4	1.1				ug/L	755264	Standard
|	Sn	118	151.7	9.0	0.0481	0.016	33.0	ug/L	138	Standard
|	Sb	123	80.3	20.0	-0.0060	0.004	65.3	ug/L	391	Standard
|	Ba	135	6996.6	2.8	4.4705	0.115	2.6	ug/L	32	Standard
|	Ce	140	28.3	27.0				ug/L	42	Standard
>	Tb	159	891927.7	1.2				ug/L	966827	Standard
|	Ho	165	10.0	132.3				ug/L	12	Standard
|	Tl	203	160.0	7.6	0.0199	0.002	9.1	ug/L	19	Standard
|	Tl	205	341.7	16.6	0.0219	0.004	17.2	ug/L	58	Standard
|	Pb	206	4865.1	3.6	0.9427	0.050	5.3	ug/L	464	Standard
|	Pb	207	4101.2	2.9	0.8858	0.041	4.6	ug/L	405	Standard
|	Pb	208	8951.0	3.2	0.8892	0.043	4.8	ug/L	876	Standard
|	U	238	4.0	25.0	-0.0013	0.000	7.2	ug/L	14	Standard
>	Bi	209	541660.4	1.8				ug/L	599146	Standard

Sample ID: L1702136701

Report Date/Time: Tuesday, February 28, 2017 16:33:08

Page 1

Approved: March 01, 2017

Na	23	15.0	0.0	3.3970	0.117	3.4	mg/L	3	Standard
Mg	24	248.3	18.0	3.9595	0.860	21.7	mg/L	30	Standard
K	39	655.0	11.9	7.5866	1.123	14.8	mg/L	10	Standard
Ca	43	51.7	36.6	-13.5722	9.347	68.9	mg/L	83	Standard
Fe	54	27.5	42.9	0.1286	0.161	125.0	mg/L	21	Standard
Fe	57	416.7	12.9	4.8129	2.391	49.7	mg/L	240	Standard
Sc-1	45	46613.3	3.1				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	3.7	31.5				ug/L	5	Standard
Br	81	2550.2	2.7				ug/L	1587	Standard
P	31	45.0	40.1				ug/L	50	Standard
S	34	23.3	12.4				ug/L	8	Standard
Sr	88	206.7	1.4				ug/L	198	Standard
C	12	16.7	34.6				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	15.9	92.7				mg/L	6	Standard
Ho-1	165	10.0	132.3				mg/L	12	Standard
Er	166	16.7	91.7				mg/L	10	Standard
I	127	9329.5	5.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		88.528	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.697	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702136701

Report Date/Time: Tuesday, February 28, 2017 16:33:08

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	87.018
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	90.405
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702136701

Report Date/Time: Tuesday, February 28, 2017 16:33:08

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702136701PS WG604447-01

Sample Date/Time: Tuesday, February 28, 2017 16:34:02

Number of Replicates: 3

Autosampler Position: 309

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	222843.8	1.7				ug/L	250104	Standard
|	Be	9	69226.1	0.7	47.7695	1.054	2.2	ug/L	7	Standard
|	Al	27	1445.1	13.3	0.0071	0.002	21.7	ug/L	597	Standard
|	Sc	45	45947.9	2.3				ug/L	41681	Standard
|	Ti	47	39.7	26.7	-0.2528	0.054	21.4	ug/L	86	Standard
|	V	51	315254.0	1.1	47.8601	0.652	1.4	ug/L	1740	Standard
|	Cr	52	297295.8	0.8	47.6037	0.953	2.0	ug/L	7178	Standard
|	Cr	53	46315.7	1.0	58.5457	1.334	2.3	ug/L	573	Standard
|	Mn	55	489126.1	0.9	48.5066	0.992	2.0	ug/L	3072	Standard
|	Co	59	387569.0	1.0	49.4464	1.014	2.1	ug/L	573	Standard
|	Ni	60	81757.7	0.9	49.0183	1.084	2.2	ug/L	264	Standard
|	Cu	65	80160.2	0.5	50.0432	0.890	1.8	ug/L	530	Standard
|	Zn	66	57340.3	0.6	62.4647	1.161	1.9	ug/L	252	Standard
>	Ge	72	680667.9	1.3				ug/L	641188	Standard
|	As	75	42391.3	0.7	46.2331	0.415	0.9	ug/L	-83	Standard
|	Se	82	3700.3	0.7	46.4149	0.281	0.6	ug/L	16	Standard
|	Se-1	77	3634.8	2.6	61.8570	0.884	1.4	ug/L	126	Standard
>	Ga	71	136.7	20.1				mg/L	70	Standard
|	Rb	85	11904.7	3.1				ug/L	33	Standard
|	Y	89	469881.7	2.0				ug/L	493982	Standard
>	Rh	103	48.3	33.3				ug/L	17	Standard
|	Mo	98	254.3	9.4	0.0735	0.006	8.5	ug/L	54	Standard
|	Ag	107	212672.5	1.8	45.8369	0.493	1.1	ug/L	137	Standard
|	Cd	111	60024.0	1.4	43.6470	0.668	1.5	mg/L	6	Standard
|	Cd	114	169245.3	2.3	44.8505	0.191	0.4	ug/L	20	Standard
>	In	115	653307.4	2.7				ug/L	755264	Standard
|	Sn	118	125.7	12.3	0.0176	0.015	83.9	ug/L	138	Standard
|	Sb	123	186403.3	0.4	48.1130	1.100	2.3	ug/L	391	Standard
|	Ba	135	85816.0	0.4	55.5009	1.539	2.8	ug/L	32	Standard
|	Ce	140	38.3	7.5				ug/L	42	Standard
>	Tb	159	890873.4	3.5				ug/L	966827	Standard
|	Ho	165	15.0	33.3				ug/L	12	Standard
|	Tl	203	277094.2	0.7	47.2720	0.822	1.7	ug/L	19	Standard
|	Tl	205	646861.5	1.5	47.1970	0.974	2.1	ug/L	58	Standard
|	Pb	206	222049.8	1.4	47.9584	0.734	1.5	ug/L	464	Standard
|	Pb	207	199526.0	1.4	48.1702	1.016	2.1	ug/L	405	Standard
|	Pb	208	426248.8	1.0	47.1570	0.803	1.7	ug/L	876	Standard
|	U	238	372939.3	1.9	36.2878	0.432	1.2	ug/L	14	Standard
>	Bi	209	533618.9	2.4				ug/L	599146	Standard

Sample ID: L1702136701PS WG604447-01

Report Date/Time: Tuesday, February 28, 2017 16:36:13

Page 1

Approved: March 01, 2017

Na	23	15.0	88.2	3.3992	3.334	98.1	mg/L	3	Standard
Mg	24	328.3	14.1	5.4824	0.820	15.0	mg/L	30	Standard
K	39	706.7	0.8	8.3089	0.172	2.1	mg/L	10	Standard
Ca	43	58.3	32.5	-9.6448	9.201	95.4	mg/L	83	Standard
Fe	54	30.0	52.0	0.1669	0.206	123.3	mg/L	21	Standard
Fe	57	516.7	10.7	10.1494	2.273	22.4	mg/L	240	Standard
Sc-1	45	45947.9	2.3				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	4.7	81.1				ug/L	5	Standard
Br	81	2516.9	9.7				ug/L	1587	Standard
P	31	61.7	32.8				ug/L	50	Standard
S	34	26.7	10.8				ug/L	8	Standard
Sr	88	216.7	30.1				ug/L	198	Standard
C	12	13.3	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	12.7	46.9				mg/L	6	Standard
Ho-1	165	15.0	33.3				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	9314.5	3.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		89.101	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.157	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702136701PS WG604447-01

Report Date/Time: Tuesday, February 28, 2017 16:36:13

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	86.500
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.063
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702136701PS WG604447-01

Report Date/Time: Tuesday, February 28, 2017 16:36:13

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702136701SDL WG604447-02

Sample Date/Time: Tuesday, February 28, 2017 16:37:08

Number of Replicates: 3

Autosampler Position: 310

Sample Description: 250

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	194810.0	2.8				ug/L	250104	Standard
|	Be	9	30.0	16.7	0.0134	0.004	28.9	ug/L	7	Standard
|	Al	27	1440.1	88.7	0.0092	0.014	151.3	ug/L	597	Standard
|	Sc	45	41608.7	2.1				ug/L	41681	Standard
|	Ti	47	23.7	14.8	-0.3279	0.021	6.4	ug/L	86	Standard
|	V	51	538.5	49.4	-0.1886	0.043	22.7	ug/L	1740	Standard
|	Cr	52	7037.6	0.3	0.0218	0.013	58.1	ug/L	7178	Standard
|	Cr	53	6839.9	4.7	8.5475	0.328	3.8	ug/L	573	Standard
|	Mn	55	2348.9	27.5	-0.0540	0.073	134.8	ug/L	3072	Standard
|	Co	59	275.3	4.7	-0.0235	0.002	8.8	ug/L	573	Standard
|	Ni	60	192.3	6.2	-0.0532	0.009	17.5	ug/L	264	Standard
|	Cu	65	673.7	4.8	0.0770	0.018	23.9	ug/L	530	Standard
|	Zn	66	3657.8	1.7	3.9530	0.082	2.1	ug/L	252	Standard
>	Ge	72	633615.5	1.3				ug/L	641188	Standard
|	As	75	-114.2	32.5	-0.0916	0.044	48.3	ug/L	-83	Standard
|	Se	82	18.1	20.3	0.0165	0.047	283.6	ug/L	16	Standard
|	Se-1	77	561.0	3.7	8.3577	0.257	3.1	ug/L	126	Standard
>	Ga	71	70.0	18.9				mg/L	70	Standard
|	Rb	85	2210.2	5.9				ug/L	33	Standard
|	Y	89	436312.8	1.9				ug/L	493982	Standard
>	Rh	103	38.3	32.8				ug/L	17	Standard
|	Mo	98	117.6	74.5	0.0274	0.037	134.7	ug/L	54	Standard
|	Ag	107	158.3	49.0	0.0138	0.019	138.2	ug/L	137	Standard
|	Cd	111	20.2	80.9	0.0025	0.013	526.9	mg/L	6	Standard
|	Cd	114	263.3	22.8	0.0664	0.019	28.1	ug/L	20	Standard
>	In	115	597306.3	2.3				ug/L	755264	Standard
|	Sn	118	1615.8	4.5	1.9976	0.066	3.3	ug/L	138	Standard
|	Sb	123	440.1	15.0	0.0980	0.021	21.9	ug/L	391	Standard
|	Ba	135	2484.0	79.6	1.7479	1.448	82.8	ug/L	32	Standard
|	Ce	140	25.0	72.1				ug/L	42	Standard
>	Tb	159	824232.9	1.4				ug/L	966827	Standard
|	Ho	165	11.7	49.5				ug/L	12	Standard
|	Tl	203	153.0	32.7	0.0207	0.009	43.4	ug/L	19	Standard
|	Tl	205	381.7	20.3	0.0268	0.006	22.0	ug/L	58	Standard
|	Pb	206	1344.1	4.1	0.2130	0.012	5.7	ug/L	464	Standard
|	Pb	207	1150.7	2.4	0.2029	0.006	3.2	ug/L	405	Standard
|	Pb	208	2528.1	2.1	0.2082	0.006	2.7	ug/L	876	Standard
|	U	238	35.3	49.9	0.0019	0.002	93.0	ug/L	14	Standard
>	Bi	209	504131.7	0.2				ug/L	599146	Standard

Sample ID: L1702136701SDL WG604447-02

Report Date/Time: Tuesday, February 28, 2017 16:39:19

Page 1

Approved: March 01, 2017

Na	23	3.3	173.2	0.5059	1.704	336.8	mg/L	3	Standard
Mg	24	65.0	7.7	0.7762	0.073	9.4	mg/L	30	Standard
K	39	140.0	9.4	1.6305	0.208	12.8	mg/L	10	Standard
Ca	43	35.0	14.3	-19.9539	2.673	13.4	mg/L	83	Standard
Fe	54	19.4	50.4	0.0485	0.145	298.0	mg/L	21	Standard
Fe	57	403.3	7.3	6.5913	1.753	26.6	mg/L	240	Standard
Sc-1	45	41608.7	2.1				mg/L	41681	Standard
Cl	35	2.0	0.0				ug/L	2	Standard
Kr	83	3.7	15.7				ug/L	5	Standard
Br	81	1853.4	15.8				ug/L	1587	Standard
P	31	38.3	41.9				ug/L	50	Standard
S	34	35.0	42.9				ug/L	8	Standard
Sr	88	203.3	20.5				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.7	108.3				mg/L	6	Standard
Ho-1	165	11.7	49.5				mg/L	12	Standard
Er	166	6.7	173.2				mg/L	10	Standard
I	127	6238.0	2.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		77.892	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		98.819	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702136701SDL WG604447-02

Report Date/Time: Tuesday, February 28, 2017 16:39:19

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	79.086
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	84.142
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702136701SDL WG604447-02

Report Date/Time: Tuesday, February 28, 2017 16:39:19

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 16:40:15

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	196009.1	3.5				ug/L	250104	Standard
|	Be	9	62674.7	6.7	49.1452	2.429	4.9	ug/L	7	Standard
|	Al	27	4434390.3	2.5	46.5011	1.033	2.2	ug/L	597	Standard
|	Sc	45	43708.0	4.6				ug/L	41681	Standard
|	Ti	47	19618.0	1.7	105.3768	0.499	0.5	ug/L	86	Standard
|	V	51	308243.1	2.0	47.6340	0.461	1.0	ug/L	1740	Standard
|	Cr	52	287574.1	2.0	46.8512	0.548	1.2	ug/L	7178	Standard
|	Cr	53	38702.7	3.1	49.6568	0.743	1.5	ug/L	573	Standard
|	Mn	55	473351.2	2.5	47.7731	0.572	1.2	ug/L	3072	Standard
|	Co	59	377810.7	2.0	49.0623	0.576	1.2	ug/L	573	Standard
|	Ni	60	80620.9	0.8	49.2075	0.780	1.6	ug/L	264	Standard
|	Cu	65	78432.9	1.9	49.8382	0.295	0.6	ug/L	530	Standard
|	Zn	66	42881.3	1.2	47.4704	0.725	1.5	ug/L	252	Standard
>	Ge	72	668616.0	1.8				ug/L	641188	Standard
|	As	75	43095.9	2.7	47.8436	0.967	2.0	ug/L	-83	Standard
|	Se	82	3820.5	4.2	48.7892	1.613	3.3	ug/L	16	Standard
|	Se-1	77	3093.3	3.1	53.2910	1.272	2.4	ug/L	126	Standard
>	Ga	71	115.0	8.7				mg/L	70	Standard
|	Rb	85	645.0	8.6				ug/L	33	Standard
|	Y	89	453097.6	1.4				ug/L	493982	Standard
>	Rh	103	43.3	6.7				ug/L	17	Standard
|	Mo	98	258458.5	1.6	103.2272	0.069	0.1	ug/L	54	Standard
|	Ag	107	210812.5	2.0	48.8358	0.472	1.0	ug/L	137	Standard
|	Cd	111	57219.8	3.1	44.7103	0.678	1.5	mg/L	6	Standard
|	Cd	114	163305.7	2.1	46.5171	0.185	0.4	ug/L	20	Standard
>	In	115	607726.0	1.7				ug/L	755264	Standard
|	Sn	118	38429.7	1.9	49.6964	0.132	0.3	ug/L	138	Standard
|	Sb	123	176032.1	2.2	48.8210	0.322	0.7	ug/L	391	Standard
|	Ba	135	74597.2	2.2	51.8331	0.354	0.7	ug/L	32	Standard
|	Ce	140	68.3	11.2				ug/L	42	Standard
>	Tb	159	822058.9	1.3				ug/L	966827	Standard
|	Ho	165	25.0	20.0				ug/L	12	Standard
|	Tl	203	267489.7	1.9	49.2119	0.750	1.5	ug/L	19	Standard
|	Tl	205	625713.3	1.2	49.2363	0.573	1.2	ug/L	58	Standard
|	Pb	206	208736.9	1.7	48.6225	0.568	1.2	ug/L	464	Standard
|	Pb	207	187885.3	1.7	48.9179	0.638	1.3	ug/L	405	Standard
|	Pb	208	399793.1	2.2	47.6988	0.746	1.6	ug/L	876	Standard
|	U	238	342172.3	1.7	35.9113	0.562	1.6	ug/L	14	Standard
>	Bi	209	494699.8	1.5				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:42:26

Page 1

Approved: March 01, 2017

Na	23	15.0	33.3	3.6319	1.245	34.3	mg/L	3	Standard
Mg	24	305.0	16.4	5.3630	1.121	20.9	mg/L	30	Standard
K	39	546.7	17.8	6.7525	1.496	22.1	mg/L	10	Standard
Ca	43	50.0	45.8	-12.2288	13.444	109.9	mg/L	83	Standard
Fe	54	390.9	15.3	5.4906	0.853	15.5	mg/L	21	Standard
Fe	57	548.3	3.7	13.1993	0.271	2.1	mg/L	240	Standard
Sc-1	45	43708.0	4.6				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	5.0	34.6				ug/L	5	Standard
Br	81	2000.1	1.5				ug/L	1587	Standard
P	31	56.7	36.7				ug/L	50	Standard
S	34	31.7	24.1				ug/L	8	Standard
Sr	88	215.0	8.1				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	16.2	38.3				mg/L	6	Standard
Ho-1	165	25.0	20.0				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	5352.6	5.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	98.290		
Al	27	93.002		
Sc	45			
Ti	47	105.377		
V	51	95.268		
Cr	52	93.702		
Cr	53			
Mn	55	95.546		
Co	59	98.125		
Ni	60	98.415		
Cu	65	99.676		
Zn	66	94.941		
Ge	72		104.278	
As	75	95.687		
Se	82	97.578		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:42:26

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	103.227	
[	Ag	107	97.672	
[	Cd	111	89.421	
[	Cd	114		
>	In	115		80.465
[	Sn	118	99.393	
[	Sb	123	97.642	
[	Ba	135	103.666	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	98.424	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	95.398	
[	U	238	71.823	
>	Bi	209		82.568
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:42:26

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 16:43:21

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	186368.1	2.9				ug/L	250104	Standard
|	Be	9	41.7	59.2	0.0243	0.021	85.3	ug/L	7	Standard
|	Al	27	1230.1	66.4	0.0075	0.009	122.4	ug/L	597	Standard
|	Sc	45	42043.3	1.2				ug/L	41681	Standard
|	Ti	47	39.7	27.0	-0.2412	0.063	26.3	ug/L	86	Standard
|	V	51	1536.7	25.4	-0.0300	0.063	209.3	ug/L	1740	Standard
|	Cr	52	6827.2	3.2	-0.0412	0.051	124.0	ug/L	7178	Standard
|	Cr	53	2753.6	1.7	2.8375	0.082	2.9	ug/L	573	Standard
|	Mn	55	2169.2	3.9	-0.0788	0.012	14.6	ug/L	3072	Standard
|	Co	59	346.7	20.2	-0.0147	0.010	69.6	ug/L	573	Standard
|	Ni	60	208.0	11.3	-0.0459	0.017	36.7	ug/L	264	Standard
|	Cu	65	596.7	1.7	0.0163	0.006	36.4	ug/L	530	Standard
|	Zn	66	244.7	4.9	-0.0698	0.010	13.8	ug/L	252	Standard
>	Ge	72	647716.4	1.8				ug/L	641188	Standard
|	As	75	-39.7	38.6	-0.0032	0.018	547.9	ug/L	-83	Standard
|	Se	82	6.6	37.3	-0.1412	0.031	22.0	ug/L	16	Standard
|	Se-1	77	293.7	1.9	3.1712	0.069	2.2	ug/L	126	Standard
>	Ga	71	73.3	15.7				mg/L	70	Standard
|	Rb	85	28.3	53.9				ug/L	33	Standard
|	Y	89	451391.8	2.7				ug/L	493982	Standard
>	Rh	103	21.7	35.3				ug/L	17	Standard
|	Mo	98	185.5	21.5	0.0560	0.015	26.8	ug/L	54	Standard
|	Ag	107	121.3	3.3	0.0055	0.001	26.4	ug/L	137	Standard
|	Cd	111	12.1	80.5	-0.0038	0.008	215.2	mg/L	6	Standard
|	Cd	114	38.6	38.3	0.0013	0.004	327.2	ug/L	20	Standard
>	In	115	584667.8	1.9				ug/L	755264	Standard
|	Sn	118	113.0	12.4	0.0187	0.020	106.0	ug/L	138	Standard
|	Sb	123	733.3	10.9	0.1853	0.027	14.5	ug/L	391	Standard
|	Ba	135	33.7	9.5	-0.0032	0.002	61.0	ug/L	32	Standard
|	Ce	140	18.3	15.7				ug/L	42	Standard
>	Tb	159	797777.0	2.2				ug/L	966827	Standard
|	Ho	165	6.7	43.3				ug/L	12	Standard
|	Tl	203	39.3	53.5	0.0005	0.004	835.5	ug/L	19	Standard
|	Tl	205	76.7	46.3	0.0036	0.003	82.7	ug/L	58	Standard
|	Pb	206	385.3	2.1	-0.0028	0.003	119.4	ug/L	464	Standard
|	Pb	207	330.7	4.0	-0.0034	0.004	109.0	ug/L	405	Standard
|	Pb	208	748.7	3.9	0.0032	0.005	144.9	ug/L	876	Standard
|	U	238	71.7	100.8	0.0061	0.008	130.2	ug/L	14	Standard
>	Bi	209	483748.5	1.5				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:45:32

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0072	0.815	11380.9	mg/L	3	Standard
Mg	24	40.0	43.3	0.2597	0.336	129.3	mg/L	30	Standard
K	39	28.3	62.0	0.1340	0.235	175.7	mg/L	10	Standard
Ca	43	20.0	25.0	-28.8382	2.905	10.1	mg/L	83	Standard
Fe	54	37.5	33.3	0.3234	0.191	59.0	mg/L	21	Standard
Fe	57	468.3	4.0	9.9373	1.166	11.7	mg/L	240	Standard
Sc-1	45	42043.3	1.2				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.0	50.0				ug/L	5	Standard
Br	81	1923.5	10.5				ug/L	1587	Standard
P	31	58.3	35.7				ug/L	50	Standard
S	34	33.3	75.5				ug/L	8	Standard
Sr	88	231.7	11.1				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	13.2	44.9				mg/L	6	Standard
Ho-1	165	6.7	43.3				mg/L	12	Standard
Er	166	3.3	173.2				mg/L	10	Standard
I	127	6483.1	7.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		101.018	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:45:32

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.412
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	80.740
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
In 115 Int Std for QC Std	In	115	Rerun sample

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:45:32

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702136801

Sample Date/Time: Tuesday, February 28, 2017 16:46:28

Number of Replicates: 3

Autosampler Position: 311

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	214182.2	4.9				ug/L	250104	Standard
|	Be	9	8.3	69.3	-0.0043	0.004	94.4	ug/L	7	Standard
|	Al	27	1031.7	10.0	0.0037	0.001	19.5	ug/L	597	Standard
|	Sc	45	45424.7	3.5				ug/L	41681	Standard
|	Ti	47	31.3	24.4	-0.2923	0.042	14.2	ug/L	86	Standard
|	V	51	1845.0	34.9	0.0123	0.100	811.0	ug/L	1740	Standard
|	Cr	52	8059.5	7.1	0.1386	0.095	68.9	ug/L	7178	Standard
|	Cr	53	5441.0	8.6	6.2889	0.617	9.8	ug/L	573	Standard
|	Mn	55	2627.9	2.7	-0.0372	0.008	22.5	ug/L	3072	Standard
|	Co	59	452.3	5.7	-0.0020	0.003	154.6	ug/L	573	Standard
|	Ni	60	602.0	2.0	0.1942	0.008	3.9	ug/L	264	Standard
|	Cu	65	893.0	1.6	0.1984	0.006	3.2	ug/L	530	Standard
|	Zn	66	1449.1	1.5	1.2778	0.017	1.4	ug/L	252	Standard
>	Ge	72	663134.1	0.5				ug/L	641188	Standard
|	As	75	-5.3	1053.9	0.0364	0.063	173.0	ug/L	-83	Standard
|	Se	82	40.9	18.6	0.3016	0.100	33.0	ug/L	16	Standard
|	Se-1	77	732.0	6.1	10.9840	0.811	7.4	ug/L	126	Standard
>	Ga	71	116.7	31.0				mg/L	70	Standard
|	Rb	85	10068.3	3.3				ug/L	33	Standard
|	Y	89	459229.6	1.3				ug/L	493982	Standard
>	Rh	103	35.0	49.5				ug/L	17	Standard
|	Mo	98	605.8	4.1	0.2111	0.007	3.4	ug/L	54	Standard
|	Ag	107	109.3	6.1	0.0006	0.001	237.3	ug/L	137	Standard
|	Cd	111	6.6	17.3	-0.0087	0.001	8.9	mg/L	6	Standard
|	Cd	114	32.0	31.9	-0.0014	0.003	205.1	ug/L	20	Standard
>	In	115	633913.6	1.6				ug/L	755264	Standard
|	Sn	118	112.3	12.0	0.0058	0.015	254.6	ug/L	138	Standard
|	Sb	123	268.7	24.9	0.0447	0.017	37.5	ug/L	391	Standard
|	Ba	135	12302.3	1.2	8.1732	0.115	1.4	ug/L	32	Standard
|	Ce	140	25.0	20.0				ug/L	42	Standard
>	Tb	159	878026.3	3.3				ug/L	966827	Standard
|	Ho	165	5.0	0.0				ug/L	12	Standard
|	Tl	203	170.7	13.5	0.0231	0.004	19.1	ug/L	19	Standard
|	Tl	205	413.3	10.4	0.0285	0.004	13.1	ug/L	58	Standard
|	Pb	206	1385.1	1.6	0.2140	0.010	4.7	ug/L	464	Standard
|	Pb	207	1161.4	2.5	0.1976	0.006	2.9	ug/L	405	Standard
|	Pb	208	2569.8	1.3	0.2049	0.003	1.4	ug/L	876	Standard
|	U	238	10.0	34.6	-0.0007	0.000	47.8	ug/L	14	Standard
>	Bi	209	518108.5	1.7				ug/L	599146	Standard

Sample ID: L1702136801

Report Date/Time: Tuesday, February 28, 2017 16:48:39

Page 1

Approved: March 01, 2017

Na	23	18.3	95.8	4.3267	4.658	107.7	mg/L	3	Standard
Mg	24	301.7	5.8	5.0714	0.520	10.2	mg/L	30	Standard
K	39	610.0	2.2	7.2253	0.182	2.5	mg/L	10	Standard
Ca	43	53.3	30.1	-11.9864	7.848	65.5	mg/L	83	Standard
Fe	54	47.7	42.9	0.4261	0.298	69.9	mg/L	21	Standard
Fe	57	500.0	8.7	9.6016	1.433	14.9	mg/L	240	Standard
Sc-1	45	45424.7	3.5				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	5.0	40.0				ug/L	5	Standard
Br	81	2990.3	2.7				ug/L	1587	Standard
P	31	65.0	33.5				ug/L	50	Standard
S	34	38.3	27.2				ug/L	8	Standard
Sr	88	181.7	19.5				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	6.7	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	12.7	119.6				mg/L	6	Standard
Ho-1	165	5.0	0.0				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	23974.0	7.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		85.637	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.423	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702136801

Report Date/Time: Tuesday, February 28, 2017 16:48:39

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.933
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	86.475
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702136801

Report Date/Time: Tuesday, February 28, 2017 16:48:39

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 16:49:35

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	206646.7	2.1				ug/L	250104	Standard
|	Be	9	63231.7	2.7	47.0418	0.808	1.7	ug/L	7	Standard
|	Al	27	4580256.9	1.3	45.5507	0.805	1.8	ug/L	597	Standard
|	Sc	45	45170.6	1.7				ug/L	41681	Standard
|	Ti	47	19752.2	1.2	102.6527	1.243	1.2	ug/L	86	Standard
|	V	51	313566.4	1.2	46.8859	0.591	1.3	ug/L	1740	Standard
|	Cr	52	292794.7	1.5	46.1414	0.789	1.7	ug/L	7178	Standard
|	Cr	53	38490.5	3.1	47.7632	1.585	3.3	ug/L	573	Standard
|	Mn	55	485336.4	0.3	47.3993	0.233	0.5	ug/L	3072	Standard
|	Co	59	382910.6	0.8	48.1153	0.440	0.9	ug/L	573	Standard
|	Ni	60	81415.5	0.8	48.0739	0.455	0.9	ug/L	264	Standard
|	Cu	65	78908.6	1.3	48.5098	0.703	1.4	ug/L	530	Standard
|	Zn	66	43569.2	0.9	46.6604	0.436	0.9	ug/L	252	Standard
>	Ge	72	690959.1	0.2				ug/L	641188	Standard
|	As	75	43378.4	1.0	46.6017	0.477	1.0	ug/L	-83	Standard
|	Se	82	3784.2	1.6	46.7602	0.822	1.8	ug/L	16	Standard
|	Se-1	77	3050.6	2.0	50.7543	1.068	2.1	ug/L	126	Standard
>	Ga	71	108.3	37.6				mg/L	70	Standard
|	Rb	85	651.7	5.9				ug/L	33	Standard
|	Y	89	475948.8	1.1				ug/L	493982	Standard
>	Rh	103	25.0	20.0				ug/L	17	Standard
|	Mo	98	257328.2	0.8	98.4548	1.029	1.0	ug/L	54	Standard
|	Ag	107	213543.8	1.2	47.3901	0.728	1.5	ug/L	137	Standard
|	Cd	111	57707.3	1.4	43.2031	0.729	1.7	mg/L	6	Standard
|	Cd	114	167539.5	2.6	45.7197	1.256	2.7	ug/L	20	Standard
>	In	115	634399.5	0.4				ug/L	755264	Standard
|	Sn	118	39467.7	2.9	48.8953	1.577	3.2	ug/L	138	Standard
|	Sb	123	179287.9	1.9	47.6375	1.028	2.2	ug/L	391	Standard
|	Ba	135	76334.8	0.5	50.8137	0.434	0.9	ug/L	32	Standard
|	Ce	140	56.7	20.4				ug/L	42	Standard
>	Tb	159	862431.5	0.7				ug/L	966827	Standard
|	Ho	165	33.3	56.8				ug/L	12	Standard
|	Tl	203	272968.1	1.1	47.8245	1.051	2.2	ug/L	19	Standard
|	Tl	205	635838.0	2.2	47.6489	1.551	3.3	ug/L	58	Standard
|	Pb	206	214138.7	1.2	47.5002	1.077	2.3	ug/L	464	Standard
|	Pb	207	192656.1	0.7	47.7645	0.854	1.8	ug/L	405	Standard
|	Pb	208	408628.3	0.9	46.4259	0.889	1.9	ug/L	876	Standard
|	U	238	348697.6	0.7	34.8489	0.638	1.8	ug/L	14	Standard
>	Bi	209	519540.0	1.1				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:51:46

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0279	0.780	2790.8	mg/L	3	Standard
Mg	24	296.7	12.0	5.0015	0.709	14.2	mg/L	30	Standard
K	39	625.0	2.1	7.4503	0.223	3.0	mg/L	10	Standard
Ca	43	33.3	43.3	-22.3865	8.046	35.9	mg/L	83	Standard
Fe	54	357.8	10.5	4.8359	0.555	11.5	mg/L	21	Standard
Fe	57	585.0	7.4	14.1287	2.130	15.1	mg/L	240	Standard
Sc-1	45	45170.6	1.7				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	5.3	28.6				ug/L	5	Standard
Br	81	1923.5	7.3				ug/L	1587	Standard
P	31	56.7	39.8				ug/L	50	Standard
S	34	35.0	37.8				ug/L	8	Standard
Sr	88	193.3	6.0				ug/L	198	Standard
C	12	20.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	18.7	108.2				mg/L	6	Standard
Ho-1	165	33.3	56.8				mg/L	12	Standard
Er	166	26.7	57.3				mg/L	10	Standard
I	127	5327.6	9.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	94.084		
Al	27	91.101		
Sc	45			
Ti	47	102.653		
V	51	93.772		
Cr	52	92.283		
Cr	53			
Mn	55	94.799		
Co	59	96.231		
Ni	60	96.148		
Cu	65	97.020		
Zn	66	93.321		
Ge	72		107.762	
As	75	93.203		
Se	82	93.520		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:51:46

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	98.455	
[	Ag	107	94.780	
[	Cd	111	86.406	
[	Cd	114		
>	In	115		83.997
[	Sn	118	97.791	
[	Sb	123	95.275	
[	Ba	135	101.627	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	95.649	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	92.852	
[	U	238	69.698	
>	Bi	209		86.713
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:51:46

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 16:52:40

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	196411.6	1.1				ug/L	250104	Standard
|	Be	9	26.7	39.0	0.0106	0.008	75.6	ug/L	7	Standard
|	Al	27	728.4	9.8	0.0015	0.001	45.5	ug/L	597	Standard
|	Sc	45	44114.1	0.9				ug/L	41681	Standard
|	Ti	47	29.7	9.7	-0.3055	0.015	5.0	ug/L	86	Standard
|	V	51	1655.2	8.0	-0.0239	0.020	82.0	ug/L	1740	Standard
|	Cr	52	6717.2	0.8	-0.1167	0.010	8.3	ug/L	7178	Standard
|	Cr	53	2341.8	4.3	2.1293	0.136	6.4	ug/L	573	Standard
|	Mn	55	2067.5	2.0	-0.1001	0.004	3.6	ug/L	3072	Standard
|	Co	59	318.7	3.8	-0.0206	0.002	8.1	ug/L	573	Standard
|	Ni	60	190.0	5.0	-0.0633	0.005	8.7	ug/L	264	Standard
|	Cu	65	602.3	4.6	0.0008	0.018	2258.7	ug/L	530	Standard
|	Zn	66	266.3	5.1	-0.0595	0.016	26.7	ug/L	252	Standard
>	Ge	72	680655.2	0.3				ug/L	641188	Standard
|	As	75	-102.0	26.6	-0.0689	0.030	43.0	ug/L	-83	Standard
|	Se	82	12.5	12.9	-0.0699	0.020	28.7	ug/L	16	Standard
|	Se-1	77	264.3	4.9	2.3896	0.223	9.3	ug/L	126	Standard
>	Ga	71	106.7	7.2				mg/L	70	Standard
|	Rb	85	41.7	38.6				ug/L	33	Standard
|	Y	89	478567.8	1.3				ug/L	493982	Standard
>	Rh	103	18.3	41.7				ug/L	17	Standard
|	Mo	98	196.9	13.1	0.0579	0.012	20.1	ug/L	54	Standard
|	Ag	107	126.0	6.8	0.0055	0.002	43.1	ug/L	137	Standard
|	Cd	111	9.7	57.2	-0.0060	0.004	72.1	mg/L	6	Standard
|	Cd	114	36.9	61.9	0.0004	0.006	1786.4	ug/L	20	Standard
>	In	115	608297.1	1.8				ug/L	755264	Standard
|	Sn	118	115.7	2.5	0.0162	0.005	30.5	ug/L	138	Standard
|	Sb	123	717.4	14.9	0.1720	0.026	15.0	ug/L	391	Standard
|	Ba	135	32.3	17.6	-0.0051	0.004	74.9	ug/L	32	Standard
|	Ce	140	20.0	66.1				ug/L	42	Standard
>	Tb	159	829132.4	2.0				ug/L	966827	Standard
|	Ho	165	8.3	34.6				ug/L	12	Standard
|	Tl	203	35.0	42.3	-0.0006	0.003	416.7	ug/L	19	Standard
|	Tl	205	71.7	20.1	0.0029	0.001	36.8	ug/L	58	Standard
|	Pb	206	388.7	2.8	-0.0055	0.002	32.8	ug/L	464	Standard
|	Pb	207	351.3	5.4	-0.0015	0.004	271.8	ug/L	405	Standard
|	Pb	208	739.7	6.6	-0.0014	0.005	363.6	ug/L	876	Standard
|	U	238	33.3	21.7	0.0017	0.001	41.3	ug/L	14	Standard
>	Bi	209	502844.7	0.9				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:54:51

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	15.0	33.3	-0.2530	0.097	38.3	mg/L	30	Standard
K	39	16.7	45.8	-0.0320	0.097	303.1	mg/L	10	Standard
Ca	43	40.0	12.5	-18.3537	2.571	14.0	mg/L	83	Standard
Fe	54	26.4	47.4	0.1350	0.184	136.3	mg/L	21	Standard
Fe	57	441.7	8.0	7.3262	1.969	26.9	mg/L	240	Standard
Sc-1	45	44114.1	0.9				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	2.0	50.0				ug/L	5	Standard
Br	81	1696.8	4.8				ug/L	1587	Standard
P	31	51.7	48.7				ug/L	50	Standard
S	34	28.3	20.4				ug/L	8	Standard
Sr	88	201.7	3.8				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	19.5	102.5				mg/L	6	Standard
Ho-1	165	8.3	34.6				mg/L	12	Standard
Er	166	10.0					mg/L	10	Standard
I	127	6318.0	4.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.155	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:54:51

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	80.541
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	83.927
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:54:51

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: PBS 28 WG604395-02

Sample Date/Time: Tuesday, February 28, 2017 16:55:47

Number of Replicates: 3

Autosampler Position: 312

Sample Description: 50

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	192438.3	2.8				ug/L	250104	Standard
|	Be	9	11.7	49.5	-0.0009	0.005	559.9	ug/L	7	Standard
|	Al	27	8470.7	1.6	0.0843	0.001	1.7	ug/L	597	Standard
|	Sc	45	44160.9	1.1				ug/L	41681	Standard
|	Ti	47	36.3	15.2	-0.2683	0.028	10.6	ug/L	86	Standard
|	V	51	1632.5	13.1	-0.0247	0.034	139.6	ug/L	1740	Standard
|	Cr	52	9834.2	0.7	0.4114	0.013	3.3	ug/L	7178	Standard
|	Cr	53	3073.6	3.9	3.1075	0.154	5.0	ug/L	573	Standard
|	Mn	55	4018.9	2.7	0.0987	0.011	11.3	ug/L	3072	Standard
|	Co	59	302.7	6.0	-0.0223	0.002	10.3	ug/L	573	Standard
|	Ni	60	310.3	5.4	0.0111	0.011	100.1	ug/L	264	Standard
|	Cu	65	660.0	2.2	0.0412	0.009	21.2	ug/L	530	Standard
|	Zn	66	1585.7	1.5	1.4031	0.019	1.3	ug/L	252	Standard
>	Ge	72	673869.8	0.7				ug/L	641188	Standard
|	As	75	-58.9	57.0	-0.0226	0.037	162.7	ug/L	-83	Standard
|	Se	82	17.0	28.7	-0.0121	0.061	502.3	ug/L	16	Standard
|	Se-1	77	259.7	1.6	2.3541	0.104	4.4	ug/L	126	Standard
>	Ga	71	100.0	18.0				mg/L	70	Standard
|	Rb	85	88.3	43.2				ug/L	33	Standard
|	Y	89	470554.4	1.4				ug/L	493982	Standard
>	Rh	103	25.0	34.6				ug/L	17	Standard
|	Mo	98	89.1	11.7	0.0152	0.004	26.9	ug/L	54	Standard
|	Ag	107	109.7	8.2	0.0020	0.002	102.6	ug/L	137	Standard
|	Cd	111	9.9	20.3	-0.0058	0.002	28.1	mg/L	6	Standard
|	Cd	114	33.0	30.9	-0.0006	0.003	490.0	ug/L	20	Standard
>	In	115	599527.2	0.5				ug/L	755264	Standard
|	Sn	118	138.3	9.8	0.0481	0.018	36.9	ug/L	138	Standard
|	Sb	123	235.0	26.3	0.0395	0.017	44.0	ug/L	391	Standard
|	Ba	135	105.3	17.9	0.0467	0.013	27.7	ug/L	32	Standard
|	Ce	140	68.3	25.7				ug/L	42	Standard
>	Tb	159	825487.6	0.3				ug/L	966827	Standard
|	Ho	165	5.0	100.0				ug/L	12	Standard
|	Tl	203	23.3	55.1	-0.0027	0.002	88.1	ug/L	19	Standard
|	Tl	205	53.3	44.3	0.0015	0.002	122.4	ug/L	58	Standard
|	Pb	206	479.3	2.7	0.0158	0.003	19.6	ug/L	464	Standard
|	Pb	207	400.0	2.6	0.0115	0.003	28.6	ug/L	405	Standard
|	Pb	208	903.7	4.3	0.0184	0.005	28.6	ug/L	876	Standard
|	U	238	10.7	61.0	-0.0006	0.001	112.4	ug/L	14	Standard
>	Bi	209	500434.9	1.0				ug/L	599146	Standard

Sample ID: PBS 28 WG604395-02

Report Date/Time: Tuesday, February 28, 2017 16:57:58

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	33.3	22.9	0.0964	0.144	149.1	mg/L	30	Standard
K	39	25.0	34.6	0.0724	0.109	150.9	mg/L	10	Standard
Ca	43	36.7	41.7	-20.1387	8.629	42.8	mg/L	83	Standard
Fe	54	34.4	25.5	0.2513	0.128	51.0	mg/L	21	Standard
Fe	57	451.7	17.2	7.7950	3.814	48.9	mg/L	240	Standard
Sc-1	45	44160.9	1.1				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	3.0	33.3				ug/L	5	Standard
Br	81	1990.1	5.8				ug/L	1587	Standard
P	31	48.3	39.2				ug/L	50	Standard
S	34	31.7	91.2				ug/L	8	Standard
Sr	88	186.7	1.5				ug/L	198	Standard
C	12	6.7	173.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	12.4	43.3				mg/L	6	Standard
Ho-1	165	5.0	100.0				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	7173.4	2.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		76.943	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		105.097	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: PBS 28 WG604395-02

Report Date/Time: Tuesday, February 28, 2017 16:57:58

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	79.380
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	83.525
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: PBS 28 WG604395-02

Report Date/Time: Tuesday, February 28, 2017 16:57:58

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: LCSS 28 WG604395-03

Sample Date/Time: Tuesday, February 28, 2017 16:58:52

Number of Replicates: 3

Autosampler Position: 313

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	187128.5	0.6				ug/L	250104	Standard
|	Be	9	29974.6	1.1	24.6226	0.420	1.7	ug/L	7	Standard
|	Al	27	7546.9	5.9	0.0767	0.004	5.8	ug/L	597	Standard
|	Sc	45	43373.7	0.3				ug/L	41681	Standard
|	Ti	47	34.3	39.8	-0.2754	0.075	27.2	ug/L	86	Standard
|	V	51	151266.1	0.9	23.4827	0.436	1.9	ug/L	1740	Standard
|	Cr	52	147916.2	1.0	23.7666	0.508	2.1	ug/L	7178	Standard
|	Cr	53	20785.9	1.6	26.5542	0.630	2.4	ug/L	573	Standard
|	Mn	55	232188.3	0.9	23.5278	0.475	2.0	ug/L	3072	Standard
|	Co	59	185832.0	0.7	24.3551	0.419	1.7	ug/L	573	Standard
|	Ni	60	40264.4	0.9	24.7421	0.421	1.7	ug/L	264	Standard
|	Cu	65	39399.5	0.8	25.1122	0.368	1.5	ug/L	530	Standard
|	Zn	66	21766.6	0.8	24.1750	0.382	1.6	ug/L	252	Standard
>	Ge	72	661725.9	1.1				ug/L	641188	Standard
|	As	75	21161.6	1.5	23.7632	0.595	2.5	ug/L	-83	Standard
|	Se	82	1835.0	2.6	23.5673	0.765	3.2	ug/L	16	Standard
|	Se-1	77	1605.1	2.4	26.8577	0.533	2.0	ug/L	126	Standard
>	Ga	71	85.0	25.6				mg/L	70	Standard
|	Rb	85	81.7	9.4				ug/L	33	Standard
|	Y	89	462843.1	0.3				ug/L	493982	Standard
>	Rh	103	33.3	60.6				ug/L	17	Standard
|	Mo	98	113.8	83.5	0.0256	0.038	150.2	ug/L	54	Standard
|	Ag	107	102211.6	0.9	24.2720	0.244	1.0	ug/L	137	Standard
|	Cd	111	27815.4	1.2	22.2906	0.574	2.6	mg/L	6	Standard
|	Cd	114	77147.4	0.3	22.5359	0.448	2.0	ug/L	20	Standard
>	In	115	592630.0	1.7				ug/L	755264	Standard
|	Sn	118	132.7	14.6	0.0425	0.024	56.1	ug/L	138	Standard
|	Sb	123	83918.3	0.6	23.8593	0.417	1.7	ug/L	391	Standard
|	Ba	135	36384.0	0.6	25.9187	0.537	2.1	ug/L	32	Standard
|	Ce	140	73.3	25.8				ug/L	42	Standard
>	Tb	159	812806.4	2.9				ug/L	966827	Standard
|	Ho	165	13.3	21.7				ug/L	12	Standard
|	Tl	203	136186.3	0.3	25.0686	0.836	3.3	ug/L	19	Standard
|	Tl	205	321185.4	0.9	25.2828	0.582	2.3	ug/L	58	Standard
|	Pb	206	105668.5	0.4	24.5820	0.727	3.0	ug/L	464	Standard
|	Pb	207	92131.6	0.6	23.9557	0.748	3.1	ug/L	405	Standard
|	Pb	208	198344.5	1.2	23.6322	0.628	2.7	ug/L	876	Standard
|	U	238	162932.7	0.5	17.1083	0.487	2.8	ug/L	14	Standard
>	Bi	209	494703.4	3.2				ug/L	599146	Standard

Sample ID: LCSS 28 WG604395-03

Report Date/Time: Tuesday, February 28, 2017 17:01:03

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	21.7	58.1	-0.1186	0.244	205.8	mg/L	30	Standard
K	39	26.7	39.0	0.0996	0.134	134.6	mg/L	10	Standard
Ca	43	33.3	17.3	-21.7102	3.198	14.7	mg/L	83	Standard
Fe	54	36.4	23.0	0.2885	0.122	42.4	mg/L	21	Standard
Fe	57	436.7	3.5	7.4511	0.886	11.9	mg/L	240	Standard
Sc-1	45	43373.7	0.3				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.3	34.6				ug/L	5	Standard
Br	81	2566.9	5.3				ug/L	1587	Standard
P	31	45.0	22.2				ug/L	50	Standard
S	34	30.0	86.6				ug/L	8	Standard
Sr	88	191.7	21.1				ug/L	198	Standard
C	12	6.7	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.5	107.6				mg/L	6	Standard
Ho-1	165	13.3	21.7				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	5571.0	3.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		74.820	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.203	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: LCSS 28 WG604395-03

Report Date/Time: Tuesday, February 28, 2017 17:01:03

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	78.467
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	82.568
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: LCSS 28 WG604395-03

Report Date/Time: Tuesday, February 28, 2017 17:01:03

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702124801 WG604395-01

Sample Date/Time: Tuesday, February 28, 2017 17:01:58

Number of Replicates: 3

Autosampler Position: 314

Sample Description: 1

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	204940.9	3.1				ug/L	250104	Standard
|	Be	9	3410.4	8.3	2.5461	0.138	5.4	ug/L	7	Standard
|	Al	27	10310739.0	4.7	103.3500	1.923	1.9	ug/L	597	Standard
|	Sc	45	53925.9	3.8				ug/L	41681	Standard
|	Ti	47	57465.5	2.7	305.9492	5.610	1.8	ug/L	86	Standard
|	V	51	282707.4	2.7	43.1524	0.728	1.7	ug/L	1740	Standard
|	Cr	52	325090.2	3.0	52.4864	1.025	2.0	ug/L	7178	Standard
|	Cr	53	42633.3	4.0	54.1420	1.624	3.0	ug/L	573	Standard
|	Mn	55	11539924.2	2.9	1158.2366	23.001	2.0	ug/L	3072	Standard
|	Co	59	423628.8	2.8	54.3774	1.050	1.9	ug/L	573	Standard
|	Ni	60	69696.0	1.7	42.0138	0.378	0.9	ug/L	264	Standard
|	Cu	65	95968.1	2.2	60.3512	0.815	1.4	ug/L	530	Standard
|	Zn	66	453735.8	2.0	499.7259	6.343	1.3	ug/L	252	Standard
>	Ge	72	676432.7	1.1				ug/L	641188	Standard
|	As	75	10617.9	1.7	11.6830	0.078	0.7	ug/L	-83	Standard
|	Se	82	199.3	4.0	2.3012	0.128	5.6	ug/L	16	Standard
|	Se-1	77	415.3	2.9	5.1006	0.220	4.3	ug/L	126	Standard
>	Ga	71	27072.5	2.2				mg/L	70	Standard
|	Rb	85	268681.3	0.4				ug/L	33	Standard
|	Y	89	824816.0	0.5				ug/L	493982	Standard
>	Rh	103	80.0	43.8				ug/L	17	Standard
|	Mo	98	3089.5	3.4	1.2317	0.011	0.9	ug/L	54	Standard
|	Ag	107	18781.6	1.4	4.3958	0.089	2.0	ug/L	137	Standard
|	Cd	111	6625.1	3.6	5.2419	0.027	0.5	mg/L	6	Standard
|	Cd	114	19194.4	3.2	5.5410	0.125	2.3	ug/L	20	Standard
>	In	115	598837.8	3.3				ug/L	755264	Standard
|	Sn	118	164.0	9.8	0.0827	0.029	34.7	ug/L	138	Standard
|	Sb	123	398.8	14.9	0.0854	0.013	15.7	ug/L	391	Standard
|	Ba	135	467483.3	2.6	329.8693	3.110	0.9	ug/L	32	Standard
|	Ce	140	1466940.2	3.1				ug/L	42	Standard
>	Tb	159	884339.2	2.7				ug/L	966827	Standard
|	Ho	165	25474.8	3.8				ug/L	12	Standard
|	Tl	203	1736.1	4.4	0.3123	0.008	2.5	ug/L	19	Standard
|	Tl	205	4005.5	5.3	0.3124	0.011	3.5	ug/L	58	Standard
|	Pb	206	350386.6	2.7	81.6638	0.500	0.6	ug/L	464	Standard
|	Pb	207	287078.6	2.5	74.7766	0.367	0.5	ug/L	405	Standard
|	Pb	208	637626.9	3.1	76.1089	1.012	1.3	ug/L	876	Standard
|	U	238	23530.6	4.2	2.4668	0.055	2.2	ug/L	14	Standard
>	Bi	209	494756.3	2.1				ug/L	599146	Standard

Sample ID: L1702124801 WG604395-01

Report Date/Time: Tuesday, February 28, 2017 17:04:09

Page 1

Approved: March 01, 2017

Na	23	98.3	39.5	21.5646	8.834	41.0	mg/L	3	Standard
Mg	24	43.3	37.1	0.1402	0.257	183.2	mg/L	30	Standard
K	39	385.0	6.0	3.7343	0.365	9.8	mg/L	10	Standard
Ca	43	210.0	4.8	54.6116	7.941	14.5	mg/L	83	Standard
Fe	54	3365.8	4.0	39.8112	1.088	2.7	mg/L	21	Standard
Fe	57	1523.4	3.0	49.6242	2.438	4.9	mg/L	240	Standard
Sc-1	45	53925.9	3.8				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	2.3	24.7				ug/L	5	Standard
Br	81	2323.5	4.2				ug/L	1587	Standard
P	31	50.0	20.0				ug/L	50	Standard
S	34	40.0	45.1				ug/L	8	Standard
Sr	88	196.7	6.4				ug/L	198	Standard
C	12	30.0	57.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	1880.1	7.4				mg/L	3	Standard
Dy	164	39289.2	0.5				mg/L	6	Standard
Ho-1	165	25474.8	3.8				mg/L	12	Standard
Er	166	24663.4	4.9				mg/L	10	Standard
I	127	13752.9	2.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		81.942	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		105.497	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124801 WG604395-01

Report Date/Time: Tuesday, February 28, 2017 17:04:09

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	79.289
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	82.577
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Ti 47 Upper, S, EEE	Ti	47	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702124801 WG604395-01

Report Date/Time: Tuesday, February 28, 2017 17:04:09

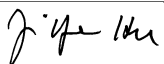
Page 3

Approved: March 01, 2017



Zn 66 Upper, S, EEE	Zn	66
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702124801 WG604395-01
Report Date/Time: Tuesday, February 28, 2017 17:04:09
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702124801S WG604395-04

Sample Date/Time: Tuesday, February 28, 2017 17:05:04

Number of Replicates: 3

Autosampler Position: 315

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	216467.5	2.1				ug/L	250104	Standard
|	Be	9	34626.2	1.3	24.5973	0.772	3.1	ug/L	7	Standard
|	Al	27	12417761.6	1.8	117.8876	1.161	1.0	ug/L	597	Standard
|	Sc	45	54929.4	2.4				ug/L	41681	Standard
|	Ti	47	40661.2	0.6	212.0026	1.751	0.8	ug/L	86	Standard
|	V	51	395704.7	1.3	59.2914	0.437	0.7	ug/L	1740	Standard
|	Cr	52	395586.6	1.5	62.8229	0.586	0.9	ug/L	7178	Standard
|	Cr	53	50853.6	2.4	63.4424	1.535	2.4	ug/L	573	Standard
|	Mn	55	11825911.4	1.6	1163.0809	8.030	0.7	ug/L	3072	Standard
|	Co	59	457108.7	1.1	57.5003	0.205	0.4	ug/L	573	Standard
|	Ni	60	97307.1	0.8	57.5430	0.050	0.1	ug/L	264	Standard
|	Cu	65	109571.5	0.9	67.5663	0.198	0.3	ug/L	530	Standard
|	Zn	66	268099.8	0.2	289.1988	2.196	0.8	ug/L	252	Standard
>	Ge	72	690350.5	0.9				ug/L	641188	Standard
|	As	75	29419.3	1.1	31.6471	0.279	0.9	ug/L	-83	Standard
|	Se	82	1876.9	0.8	23.1008	0.396	1.7	ug/L	16	Standard
|	Se-1	77	1670.4	2.6	26.7867	0.622	2.3	ug/L	126	Standard
>	Ga	71	22902.3	2.1				mg/L	70	Standard
|	Rb	85	216313.5	1.8				ug/L	33	Standard
|	Y	89	813162.8	0.7				ug/L	493982	Standard
>	Rh	103	70.0	43.4				ug/L	17	Standard
|	Mo	98	2824.3	0.4	1.0725	0.042	3.9	ug/L	54	Standard
|	Ag	107	108970.8	0.9	24.4480	0.768	3.1	ug/L	137	Standard
|	Cd	111	30657.0	1.4	23.2049	0.636	2.7	mg/L	6	Standard
|	Cd	114	84886.7	3.9	23.4181	0.948	4.0	ug/L	20	Standard
>	In	115	627662.4	3.5				ug/L	755264	Standard
|	Sn	118	149.7	5.8	0.0546	0.017	32.0	ug/L	138	Standard
|	Sb	123	1892.0	2.7	0.4821	0.016	3.4	ug/L	391	Standard
|	Ba	135	424934.2	1.5	286.2460	10.278	3.6	ug/L	32	Standard
|	Ce	140	1477406.7	2.0				ug/L	42	Standard
>	Tb	159	917315.1	3.1				ug/L	966827	Standard
|	Ho	165	24731.8	1.8				ug/L	12	Standard
|	Tl	203	139194.5	1.3	24.6574	0.420	1.7	ug/L	19	Standard
|	Tl	205	325200.0	1.4	24.6413	0.509	2.1	ug/L	58	Standard
|	Pb	206	321068.8	1.3	72.0747	1.747	2.4	ug/L	464	Standard
|	Pb	207	270292.4	1.0	67.8123	1.581	2.3	ug/L	405	Standard
|	Pb	208	590036.3	0.9	67.8367	1.440	2.1	ug/L	876	Standard
|	U	238	188522.5	1.8	19.0501	0.222	1.2	ug/L	14	Standard
>	Bi	209	513823.1	2.5				ug/L	599146	Standard

Sample ID: L1702124801S WG604395-04

Report Date/Time: Tuesday, February 28, 2017 17:07:14

Page 1

Approved: March 01, 2017

Na	23	95.0	29.3	20.3552	6.109	30.0	mg/L	3	Standard
Mg	24	33.3	31.2	-0.0254	0.174	683.0	mg/L	30	Standard
K	39	268.3	14.1	2.4790	0.435	17.6	mg/L	10	Standard
Ca	43	186.7	5.6	42.4375	6.409	15.1	mg/L	83	Standard
Fe	54	3229.5	2.0	37.4907	1.068	2.8	mg/L	21	Standard
Fe	57	1536.7	2.0	48.9564	1.009	2.1	mg/L	240	Standard
Sc-1	45	54929.4	2.4				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	2.3	65.5				ug/L	5	Standard
Br	81	2090.1	7.4				ug/L	1587	Standard
P	31	63.3	19.9				ug/L	50	Standard
S	34	30.0	44.1				ug/L	8	Standard
Sr	88	198.3	6.3				ug/L	198	Standard
C	12	23.3	24.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	640.0	9.5				mg/L	3	Standard
Dy	164	38757.8	1.8				mg/L	6	Standard
Ho-1	165	24731.8	1.8				mg/L	12	Standard
Er	166	23895.5	3.2				mg/L	10	Standard
I	127	9599.7	4.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		86.551	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		107.667	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124801S WG604395-04

Report Date/Time: Tuesday, February 28, 2017 17:07:14

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.105
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.759
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Ti 47 Upper, S, EEE	Ti	47	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702124801S WG604395-04

Report Date/Time: Tuesday, February 28, 2017 17:07:14

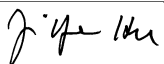
Page 3

Approved: March 01, 2017



Zn 66 Upper, S, EEE	Zn	66
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702124801S WG604395-04
Report Date/Time: Tuesday, February 28, 2017 17:07:14
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702124801SD WG604395-05

Sample Date/Time: Tuesday, February 28, 2017 17:08:09

Number of Replicates: 3

Autosampler Position: 316

Sample Description: 1

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	219652.4	0.7				ug/L	250104	Standard
|	Be	9	34908.5	3.2	24.4263	0.676	2.8	ug/L	7	Standard
|	Al	27	8573549.0	2.5	80.2054	1.975	2.5	ug/L	597	Standard
|	Sc	45	55722.3	0.6				ug/L	41681	Standard
|	Ti	47	51472.6	0.8	265.6688	1.153	0.4	ug/L	86	Standard
|	V	51	433481.3	1.5	64.2941	0.716	1.1	ug/L	1740	Standard
|	Cr	52	446992.6	1.2	70.3884	0.697	1.0	ug/L	7178	Standard
|	Cr	53	57465.5	1.9	71.0402	1.109	1.6	ug/L	573	Standard
|	Mn	55	10079046.2	1.1	980.8799	5.129	0.5	ug/L	3072	Standard
|	Co	59	461463.8	0.6	57.4413	0.211	0.4	ug/L	573	Standard
|	Ni	60	106776.6	1.4	62.4953	0.545	0.9	ug/L	264	Standard
|	Cu	65	119989.6	1.0	73.2469	0.384	0.5	ug/L	530	Standard
|	Zn	66	309320.1	1.2	330.1991	2.317	0.7	ug/L	252	Standard
>	Ge	72	697650.5	0.5				ug/L	641188	Standard
|	As	75	30024.0	1.2	31.9581	0.199	0.6	ug/L	-83	Standard
|	Se	82	1867.0	4.3	22.7336	1.043	4.6	ug/L	16	Standard
|	Se-1	77	1574.1	2.0	24.8256	0.553	2.2	ug/L	126	Standard
>	Ga	71	25194.3	0.7				mg/L	70	Standard
|	Rb	85	229458.5	2.6				ug/L	33	Standard
|	Y	89	790645.5	2.2				ug/L	493982	Standard
>	Rh	103	68.3	11.2				ug/L	17	Standard
|	Mo	98	3653.1	1.7	1.3629	0.023	1.7	ug/L	54	Standard
|	Ag	107	110429.6	0.4	24.2452	0.044	0.2	ug/L	137	Standard
|	Cd	111	30774.5	0.9	22.7979	0.173	0.8	mg/L	6	Standard
|	Cd	114	86436.7	1.3	23.3429	0.372	1.6	ug/L	20	Standard
>	In	115	640918.2	0.3				ug/L	755264	Standard
|	Sn	118	156.7	15.8	0.0590	0.031	52.4	ug/L	138	Standard
|	Sb	123	1527.9	0.8	0.3754	0.002	0.5	ug/L	391	Standard
|	Ba	135	375691.0	1.0	247.6503	3.117	1.3	ug/L	32	Standard
|	Ce	140	1323836.0	0.6				ug/L	42	Standard
>	Tb	159	945768.8	1.2				ug/L	966827	Standard
|	Ho	165	23486.5	2.0				ug/L	12	Standard
|	Tl	203	142233.8	0.5	24.5361	0.240	1.0	ug/L	19	Standard
|	Tl	205	330892.9	1.3	24.4155	0.407	1.7	ug/L	58	Standard
|	Pb	206	399161.6	1.8	87.2661	1.387	1.6	ug/L	464	Standard
|	Pb	207	334625.9	1.7	81.7673	1.771	2.2	ug/L	405	Standard
|	Pb	208	738367.0	1.0	82.6817	1.271	1.5	ug/L	876	Standard
|	U	238	194693.5	1.8	19.1602	0.352	1.8	ug/L	14	Standard
>	Bi	209	527536.3	1.1				ug/L	599146	Standard

Sample ID: L1702124801SD WG604395-05

Report Date/Time: Tuesday, February 28, 2017 17:10:20

Page 1

Approved: March 01, 2017

Na	23	56.7	31.0	11.7522	3.740	31.8	mg/L	3	Standard
Mg	24	41.7	50.0	0.0903	0.314	348.3	mg/L	30	Standard
K	39	331.7	7.1	3.0664	0.242	7.9	mg/L	10	Standard
Ca	43	150.0	11.5	25.1410	7.598	30.2	mg/L	83	Standard
Fe	54	3454.3	1.9	39.5317	0.828	2.1	mg/L	21	Standard
Fe	57	1560.1	6.7	49.0131	4.725	9.6	mg/L	240	Standard
Sc-1	45	55722.3	0.6				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	3.7	31.5				ug/L	5	Standard
Br	81	2250.2	10.8				ug/L	1587	Standard
P	31	63.3	9.1				ug/L	50	Standard
S	34	38.3	37.7				ug/L	8	Standard
Sr	88	215.0	20.3				ug/L	198	Standard
C	12	26.7	78.1				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	606.7	13.3				mg/L	3	Standard
Dy	164	36151.7	1.7				mg/L	6	Standard
Ho-1	165	23486.5	2.0				mg/L	12	Standard
Er	166	22630.2	1.9				mg/L	10	Standard
I	127	10490.3	1.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		87.825	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		108.806	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124801SD WG604395-05

Report Date/Time: Tuesday, February 28, 2017 17:10:20

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	84.860
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	88.048
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Ti 47 Upper, S, EEE	Ti	47	
Mn 55 Upper, S, EEE	Mn	55	
Zn 66 Upper, S, EEE	Zn	66	

Sample ID: L1702124801SD WG604395-05

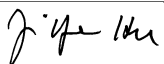
Report Date/Time: Tuesday, February 28, 2017 17:10:20

Page 3

Approved: March 01, 2017



Sample ID: L1702124801SD WG604395-05
Report Date/Time: Tuesday, February 28, 2017 17:10:20
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702124901

Sample Date/Time: Tuesday, February 28, 2017 17:11:14

Number of Replicates: 3

Autosampler Position: 317

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	217887.7	2.2				ug/L	250104	Standard
|	Be	9	6921.6	9.0	4.8699	0.340	7.0	ug/L	7	Standard
|	Al	27	36923914.7	3.5	348.1706	4.716	1.4	ug/L	597	Standard
|	Sc	45	53688.4	5.0				ug/L	41681	Standard
|	Ti	47	51379.4	4.3	295.2993	6.180	2.1	ug/L	86	Standard
|	V	51	268989.1	4.2	44.3408	1.220	2.8	ug/L	1740	Standard
|	Cr	52	245712.3	3.9	42.6132	1.037	2.4	ug/L	7178	Standard
|	Cr	53	31122.0	4.4	42.4836	0.506	1.2	ug/L	573	Standard
|	Mn	55	17715175.9	3.8	1920.1284	43.961	2.3	ug/L	3072	Standard
|	Co	59	121789.8	2.9	16.8421	0.431	2.6	ug/L	573	Standard
|	Ni	60	90651.9	3.1	59.0859	1.514	2.6	ug/L	264	Standard
|	Cu	65	74520.6	3.3	50.5436	1.014	2.0	ug/L	530	Standard
|	Zn	66	263464.4	3.2	313.2131	6.950	2.2	ug/L	252	Standard
>	Ge	72	626621.4	3.8				ug/L	641188	Standard
|	As	75	18563.8	4.0	22.0152	0.471	2.1	ug/L	-83	Standard
|	Se	82	332.6	0.5	4.3305	0.160	3.7	ug/L	16	Standard
|	Se-1	77	464.0	5.0	6.6175	0.191	2.9	ug/L	126	Standard
>	Ga	71	18027.4	5.2				mg/L	70	Standard
|	Rb	85	184058.6	3.1				ug/L	33	Standard
|	Y	89	888735.6	2.5				ug/L	493982	Standard
>	Rh	103	266.7	4.3				ug/L	17	Standard
|	Mo	98	8181.2	4.2	3.4300	0.053	1.5	ug/L	54	Standard
|	Ag	107	22517.4	2.4	5.4888	0.063	1.1	ug/L	137	Standard
|	Cd	111	1142.2	7.4	0.9285	0.043	4.6	mg/L	6	Standard
|	Cd	114	3099.0	1.5	0.9230	0.034	3.7	ug/L	20	Standard
>	In	115	575443.6	3.0				ug/L	755264	Standard
|	Sn	118	297.7	2.7	0.2740	0.002	0.8	ug/L	138	Standard
|	Sb	123	182.1	12.6	0.0269	0.008	29.6	ug/L	391	Standard
|	Ba	135	466778.6	4.4	342.6181	5.767	1.7	ug/L	32	Standard
|	Ce	140	1653844.6	4.5				ug/L	42	Standard
>	Tb	159	904827.6	2.8				ug/L	966827	Standard
|	Ho	165	32296.1	3.5				ug/L	12	Standard
|	Tl	203	1734.8	2.3	0.3312	0.010	3.1	ug/L	19	Standard
|	Tl	205	4167.2	6.6	0.3444	0.011	3.3	ug/L	58	Standard
|	Pb	206	284882.9	4.4	70.2974	0.586	0.8	ug/L	464	Standard
|	Pb	207	233336.4	4.8	64.3388	0.697	1.1	ug/L	405	Standard
|	Pb	208	518015.3	3.8	65.4774	0.547	0.8	ug/L	876	Standard
|	U	238	38213.8	1.9	4.2474	0.110	2.6	ug/L	14	Standard
>	Bi	209	467252.6	4.2				ug/L	599146	Standard

Sample ID: L1702124901

Report Date/Time: Tuesday, February 28, 2017 17:13:24

Page 1

Approved: March 01, 2017

Na	23	658.3	9.1	147.0115	9.252	6.3	mg/L	3	Standard
Mg	24	81.7	25.5	0.7414	0.304	41.1	mg/L	30	Standard
K	39	386.7	3.3	3.7673	0.232	6.2	mg/L	10	Standard
Ca	43	760.0	5.4	304.7784	21.908	7.2	mg/L	83	Standard
Fe	54	3246.3	8.7	38.5171	1.915	5.0	mg/L	21	Standard
Fe	57	2553.5	3.8	94.4347	4.580	4.8	mg/L	240	Standard
Sc-1	45	53688.4	5.0				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	5.0	20.0				ug/L	5	Standard
Br	81	2666.9	8.8				ug/L	1587	Standard
P	31	58.3	19.8				ug/L	50	Standard
S	34	35.0	49.5				ug/L	8	Standard
Sr	88	208.3	25.0				ug/L	198	Standard
C	12	70.0	37.8				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	600.0	8.3				mg/L	3	Standard
Dy	164	46576.5	2.2				mg/L	6	Standard
Ho-1	165	32296.1	3.5				mg/L	12	Standard
Er	166	32494.8	1.7				mg/L	10	Standard
I	127	26140.9	3.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		87.119	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		97.728	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124901

Report Date/Time: Tuesday, February 28, 2017 17:13:24

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.191
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	77.986
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Ti 47 Upper, S, EEE	Ti	47	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702124901

Report Date/Time: Tuesday, February 28, 2017 17:13:24

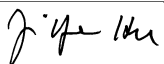
Page 3

Approved: March 01, 2017



Zn 66 Upper, S, EEE	Zn	66
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702124901
Report Date/Time: Tuesday, February 28, 2017 17:13:24
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702124901PS WG604524-01

Sample Date/Time: Tuesday, February 28, 2017 17:14:19

Number of Replicates: 3

Autosampler Position: 318

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	221944.7	2.9				ug/L	250104	Standard
|	Be	9	71339.3	1.9	49.4337	1.194	2.4	ug/L	7	Standard
|	Al	27	36219428.5	1.7	335.4462	5.687	1.7	ug/L	597	Standard
|	Sc	45	53415.7	1.3				ug/L	41681	Standard
|	Ti	47	49595.1	2.5	282.8264	2.949	1.0	ug/L	86	Standard
|	V	51	558188.1	2.4	91.5851	0.802	0.9	ug/L	1740	Standard
|	Cr	52	512249.9	3.0	89.4302	0.488	0.5	ug/L	7178	Standard
|	Cr	53	64915.5	2.8	88.8696	0.367	0.4	ug/L	573	Standard
|	Mn	55	17682906.5	3.2	1901.2661	24.862	1.3	ug/L	3072	Standard
|	Co	59	475790.0	3.0	65.4319	0.734	1.1	ug/L	573	Standard
|	Ni	60	162247.0	3.2	105.0202	0.978	0.9	ug/L	264	Standard
|	Cu	65	142642.7	2.9	96.3104	0.833	0.9	ug/L	530	Standard
|	Zn	66	295523.1	2.9	348.5235	3.636	1.0	ug/L	252	Standard
>	Ge	72	631560.4	2.9				ug/L	641188	Standard
|	As	75	58316.6	4.3	68.5061	1.251	1.8	ug/L	-83	Standard
|	Se	82	3712.0	6.3	50.1669	1.756	3.5	ug/L	16	Standard
|	Se-1	77	3054.0	4.9	55.7902	1.632	2.9	ug/L	126	Standard
>	Ga	71	17405.0	2.4				mg/L	70	Standard
|	Rb	85	177807.0	4.6				ug/L	33	Standard
|	Y	89	872415.9	3.8				ug/L	493982	Standard
>	Rh	103	285.0	7.6				ug/L	17	Standard
|	Mo	98	7938.2	2.9	3.2820	0.115	3.5	ug/L	54	Standard
|	Ag	107	212718.0	3.5	51.3057	1.062	2.1	ug/L	137	Standard
|	Cd	111	56181.5	2.5	45.7160	0.452	1.0	mg/L	6	Standard
|	Cd	114	154603.6	3.1	45.8528	0.681	1.5	ug/L	20	Standard
>	In	115	583784.8	3.4				ug/L	755264	Standard
|	Sn	118	311.7	7.8	0.2868	0.023	8.1	ug/L	138	Standard
|	Sb	123	171469.4	2.7	49.5196	0.750	1.5	ug/L	391	Standard
|	Ba	135	529235.1	2.2	383.1444	7.427	1.9	ug/L	32	Standard
|	Ce	140	1632965.2	1.4				ug/L	42	Standard
>	Tb	159	936523.0	1.5				ug/L	966827	Standard
|	Ho	165	31815.0	2.1				ug/L	12	Standard
|	Tl	203	263712.3	1.7	50.4939	0.780	1.5	ug/L	19	Standard
|	Tl	205	615774.1	0.8	50.4278	0.373	0.7	ug/L	58	Standard
|	Pb	206	482148.6	1.7	117.0186	1.590	1.4	ug/L	464	Standard
|	Pb	207	409368.7	1.5	111.0438	1.563	1.4	ug/L	405	Standard
|	Pb	208	894063.4	0.8	111.1424	1.403	1.3	ug/L	876	Standard
|	U	238	416133.3	0.7	45.4558	0.668	1.5	ug/L	14	Standard
>	Bi	209	475321.0	1.0				ug/L	599146	Standard

Sample ID: L1702124901PS WG604524-01

Report Date/Time: Tuesday, February 28, 2017 17:16:30

Page 1

Approved: March 01, 2017

Na	23	663.3	8.8	149.0181	13.916	9.3	mg/L	3	Standard
Mg	24	61.7	9.4	0.4332	0.085	19.7	mg/L	30	Standard
K	39	346.7	9.8	3.3676	0.389	11.5	mg/L	10	Standard
Ca	43	755.0	8.7	304.1089	33.940	11.2	mg/L	83	Standard
Fe	54	3112.5	6.5	37.1307	2.124	5.7	mg/L	21	Standard
Fe	57	2525.2	1.6	93.6789	2.480	2.6	mg/L	240	Standard
Sc-1	45	53415.7	1.3				mg/L	41681	Standard
Cl	35	2.7	43.3				ug/L	2	Standard
Kr	83	6.0	44.1				ug/L	5	Standard
Br	81	2886.9	7.0				ug/L	1587	Standard
P	31	60.0	16.7				ug/L	50	Standard
S	34	25.0	60.0				ug/L	8	Standard
Sr	88	226.7	32.1				ug/L	198	Standard
C	12	36.7	87.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	530.0	5.7				mg/L	3	Standard
Dy	164	46086.4	3.3				mg/L	6	Standard
Ho-1	165	31815.0	2.1				mg/L	12	Standard
Er	166	31836.8	2.5				mg/L	10	Standard
I	127	25766.9	3.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		88.741	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		98.498	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124901PS WG604524-01

Report Date/Time: Tuesday, February 28, 2017 17:16:30

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.295
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	79.333
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Ti 47 Upper, S, EEE	Ti	47	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702124901PS WG604524-01

Report Date/Time: Tuesday, February 28, 2017 17:16:30

Page 3

Approved: March 01, 2017



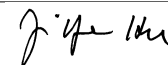
Ni 60 Upper, S, EEE	Ni	60
Zn 66 Upper, S, EEE	Zn	66
Ba 135 Upper, S, EEE	Ba	135
Pb 206 Upper, S, EEE	Pb	206
Pb 207 Upper, S, EEE	Pb	207
Pb 208 Upper, S, EEE	Pb	208

Sample ID: L1702124901PS WG604524-01

Report Date/Time: Tuesday, February 28, 2017 17:16:30

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702124901SDL WG604524-02

Sample Date/Time: Tuesday, February 28, 2017 17:17:25

Number of Replicates: 3

Autosampler Position: 319

Sample Description: 5

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	201678.6	1.7				ug/L	250104	Standard
|	Be	9	1436.7	3.5	1.0852	0.035	3.2	ug/L	7	Standard
|	Al	27	7352415.1	1.0	74.9176	0.784	1.0	ug/L	597	Standard
|	Sc	45	44625.6	1.3				ug/L	41681	Standard
|	Ti	47	10119.4	1.0	57.9796	0.554	1.0	ug/L	86	Standard
|	V	51	54648.8	1.9	8.8172	0.222	2.5	ug/L	1740	Standard
|	Cr	52	54294.8	1.7	8.4966	0.213	2.5	ug/L	7178	Standard
|	Cr	53	7170.0	4.7	9.1472	0.444	4.9	ug/L	573	Standard
|	Mn	55	3553624.0	0.7	386.1271	4.368	1.1	ug/L	3072	Standard
|	Co	59	25003.3	0.9	3.4190	0.054	1.6	ug/L	573	Standard
|	Ni	60	18636.1	2.3	12.0420	0.333	2.8	ug/L	264	Standard
|	Cu	65	15948.7	1.2	10.5536	0.187	1.8	ug/L	530	Standard
|	Zn	66	56751.8	1.6	67.3971	1.461	2.2	ug/L	252	Standard
>	Ge	72	624585.9	0.7				ug/L	641188	Standard
|	As	75	3707.8	1.6	4.4452	0.091	2.0	ug/L	-83	Standard
|	Se	82	85.2	16.9	0.9427	0.204	21.7	ug/L	16	Standard
|	Se-1	77	242.7	6.9	2.3932	0.351	14.7	ug/L	126	Standard
>	Ga	71	3735.5	3.0				mg/L	70	Standard
|	Rb	85	35185.8	0.5				ug/L	33	Standard
|	Y	89	511704.8	2.1				ug/L	493982	Standard
>	Rh	103	81.7	24.7				ug/L	17	Standard
|	Mo	98	1620.2	1.7	0.6589	0.011	1.7	ug/L	54	Standard
|	Ag	107	4771.8	2.7	1.1377	0.030	2.7	ug/L	137	Standard
|	Cd	111	231.9	3.0	0.1768	0.008	4.7	mg/L	6	Standard
|	Cd	114	817.0	4.9	0.2345	0.016	7.0	ug/L	20	Standard
>	In	115	578769.7	1.8				ug/L	755264	Standard
|	Sn	118	1541.4	4.9	1.9645	0.078	4.0	ug/L	138	Standard
|	Sb	123	420.0	18.7	0.0957	0.022	23.3	ug/L	391	Standard
|	Ba	135	94077.2	1.4	68.6574	0.766	1.1	ug/L	32	Standard
|	Ce	140	343460.5	2.3				ug/L	42	Standard
>	Tb	159	858022.8	0.5				ug/L	966827	Standard
|	Ho	165	6349.7	0.7				ug/L	12	Standard
|	Tl	203	390.3	8.6	0.0661	0.006	9.5	ug/L	19	Standard
|	Tl	205	866.7	8.1	0.0668	0.006	9.1	ug/L	58	Standard
|	Pb	206	58393.7	1.2	13.7660	0.298	2.2	ug/L	464	Standard
|	Pb	207	47710.7	2.2	12.5664	0.391	3.1	ug/L	405	Standard
|	Pb	208	106252.1	1.3	12.8289	0.291	2.3	ug/L	876	Standard
|	U	238	7297.1	1.7	0.7772	0.022	2.8	ug/L	14	Standard
>	Bi	209	486464.9	1.0				ug/L	599146	Standard

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:19:35

Page 1

Approved: March 01, 2017

Na	23	116.7	17.8	30.9689	5.484	17.7	mg/L	3	Standard
Mg	24	26.7	92.5	-0.0389	0.458	1176.2	mg/L	30	Standard
K	39	105.0	19.0	1.0665	0.254	23.8	mg/L	10	Standard
Ca	43	181.7	1.6	58.7324	1.900	3.2	mg/L	83	Standard
Fe	54	702.5	1.8	9.8528	0.046	0.5	mg/L	21	Standard
Fe	57	830.0	4.2	27.2382	2.326	8.5	mg/L	240	Standard
Sc-1	45	44625.6	1.3				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	3.7	41.7				ug/L	5	Standard
Br	81	1810.1	3.3				ug/L	1587	Standard
P	31	48.3	21.5				ug/L	50	Standard
S	34	40.0	12.5				ug/L	8	Standard
Sr	88	256.7	36.8				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	113.3	20.4				mg/L	3	Standard
Dy	164	8895.0	3.0				mg/L	6	Standard
Ho-1	165	6349.7	0.7				mg/L	12	Standard
Er	166	6147.9	4.3				mg/L	10	Standard
I	127	9781.5	3.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		80.638	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		97.411	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:19:35

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.631
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	81.193
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:19:35

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 17:20:31

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	215630.3	1.1				ug/L	250104	Standard
|	Be	9	66924.2	2.1	47.7110	0.486	1.0	ug/L	7	Standard
|	Al	27	4903843.8	2.2	46.7253	0.607	1.3	ug/L	597	Standard
|	Sc	45	46518.0	2.3				ug/L	41681	Standard
|	Ti	47	20641.7	1.6	105.9486	2.921	2.8	ug/L	86	Standard
|	V	51	324498.5	2.1	47.9223	1.611	3.4	ug/L	1740	Standard
|	Cr	52	305352.3	1.4	47.5545	1.307	2.7	ug/L	7178	Standard
|	Cr	53	38871.5	1.3	47.6290	1.260	2.6	ug/L	573	Standard
|	Mn	55	496145.4	1.3	47.8514	1.246	2.6	ug/L	3072	Standard
|	Co	59	395632.0	1.3	49.0925	1.246	2.5	ug/L	573	Standard
|	Ni	60	84215.8	1.2	49.1085	1.231	2.5	ug/L	264	Standard
|	Cu	65	81517.0	1.0	49.4927	1.169	2.4	ug/L	530	Standard
|	Zn	66	44156.9	0.5	46.6938	0.718	1.5	ug/L	252	Standard
>	Ge	72	699869.9	1.3				ug/L	641188	Standard
|	As	75	44171.8	0.9	46.8586	1.045	2.2	ug/L	-83	Standard
|	Se	82	3813.7	2.2	46.5364	1.545	3.3	ug/L	16	Standard
|	Se-1	77	2954.3	2.6	48.4201	0.629	1.3	ug/L	126	Standard
>	Ga	71	106.7	17.7				mg/L	70	Standard
|	Rb	85	690.0	10.0				ug/L	33	Standard
|	Y	89	480081.1	1.1				ug/L	493982	Standard
>	Rh	103	48.3	31.6				ug/L	17	Standard
|	Mo	98	261044.0	0.3	98.1722	1.736	1.8	ug/L	54	Standard
|	Ag	107	216729.3	1.4	47.2805	1.345	2.8	ug/L	137	Standard
|	Cd	111	59361.6	0.4	43.6831	0.818	1.9	mg/L	6	Standard
|	Cd	114	171657.4	1.3	46.0461	1.157	2.5	ug/L	20	Standard
>	In	115	645518.9	1.6				ug/L	755264	Standard
|	Sn	118	40391.5	2.7	49.1962	2.071	4.2	ug/L	138	Standard
|	Sb	123	182736.0	1.1	47.7255	1.066	2.2	ug/L	391	Standard
|	Ba	135	78152.4	1.1	51.1401	1.325	2.6	ug/L	32	Standard
|	Ce	140	95.0	38.0				ug/L	42	Standard
>	Tb	159	903079.7	1.5				ug/L	966827	Standard
|	Ho	165	15.0	33.3				ug/L	12	Standard
|	Tl	203	278419.4	1.3	48.7709	1.139	2.3	ug/L	19	Standard
|	Tl	205	643961.1	1.2	48.2384	0.484	1.0	ug/L	58	Standard
|	Pb	206	218566.4	1.5	48.4758	1.226	2.5	ug/L	464	Standard
|	Pb	207	195955.7	0.7	48.5741	0.790	1.6	ug/L	405	Standard
|	Pb	208	416797.5	0.5	47.3444	0.596	1.3	ug/L	876	Standard
|	U	238	362710.1	0.4	36.2400	0.331	0.9	ug/L	14	Standard
>	Bi	209	519634.7	1.0				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:22:42

Page 1

Approved: March 01, 2017

Na	23	11.7	65.5	2.5574	2.041	79.8	mg/L	3	Standard
Mg	24	285.0	9.3	4.6348	0.592	12.8	mg/L	30	Standard
K	39	660.0	5.3	7.6491	0.518	6.8	mg/L	10	Standard
Ca	43	36.7	7.9	-21.2155	1.633	7.7	mg/L	83	Standard
Fe	54	378.4	10.4	4.9708	0.535	10.8	mg/L	21	Standard
Fe	57	530.0	6.6	10.5569	2.320	22.0	mg/L	240	Standard
Sc-1	45	46518.0	2.3				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.7	41.7				ug/L	5	Standard
Br	81	1916.8	9.1				ug/L	1587	Standard
P	31	73.3	7.9				ug/L	50	Standard
S	34	40.0	33.1				ug/L	8	Standard
Sr	88	216.7	15.0				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	10.0	100.0				mg/L	3	Standard
Dy	164	16.0	67.7				mg/L	6	Standard
Ho-1	165	15.0	33.3				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	4954.1	3.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	95.422		
Al	27	93.451		
Sc	45			
Ti	47	105.949		
V	51	95.845		
Cr	52	95.109		
Cr	53			
Mn	55	95.703		
Co	59	98.185		
Ni	60	98.217		
Cu	65	98.985		
Zn	66	93.388		
Ge	72		109.152	
As	75	93.717		
Se	82	93.073		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:22:42

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	98.172	
[	Ag	107	94.561	
[	Cd	111	87.366	
[	Cd	114		
>	In	115		85.469
[	Sn	118	98.392	
[	Sb	123	95.451	
[	Ba	135	102.280	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	97.542	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	94.689	
[	U	238	72.480	
>	Bi	209		86.729
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:22:42

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 17:23:36

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	200302.6	2.7				ug/L	250104	Standard
|	Be	9	40.0	25.0	0.0206	0.008	40.9	ug/L	7	Standard
|	Al	27	4709.3	75.9	0.0426	0.037	87.6	ug/L	597	Standard
|	Sc	45	43276.7	2.5				ug/L	41681	Standard
|	Ti	47	33.0	16.9	-0.2761	0.031	11.2	ug/L	86	Standard
|	V	51	1647.6	7.1	-0.0079	0.021	264.8	ug/L	1740	Standard
|	Cr	52	6857.2	1.4	-0.0178	0.007	38.9	ug/L	7178	Standard
|	Cr	53	1231.7	1.9	0.8121	0.052	6.4	ug/L	573	Standard
|	Mn	55	4269.0	53.4	0.1489	0.244	163.5	ug/L	3072	Standard
|	Co	59	385.0	11.5	-0.0088	0.006	73.7	ug/L	573	Standard
|	Ni	60	188.3	8.1	-0.0565	0.011	19.9	ug/L	264	Standard
|	Cu	65	643.3	7.9	0.0536	0.029	53.8	ug/L	530	Standard
|	Zn	66	282.0	6.8	-0.0217	0.018	84.6	ug/L	252	Standard
>	Ge	72	637646.5	1.3				ug/L	641188	Standard
|	As	75	-31.2	83.7	0.0062	0.030	483.9	ug/L	-83	Standard
|	Se	82	11.6	12.8	-0.0722	0.019	25.8	ug/L	16	Standard
|	Se-1	77	173.7	11.0	1.0001	0.401	40.1	ug/L	126	Standard
>	Ga	71	70.0	28.6				mg/L	70	Standard
|	Rb	85	85.0	59.7				ug/L	33	Standard
|	Y	89	450013.6	0.5				ug/L	493982	Standard
>	Rh	103	30.0	66.7				ug/L	17	Standard
|	Mo	98	203.1	17.8	0.0621	0.013	21.6	ug/L	54	Standard
|	Ag	107	162.0	38.7	0.0147	0.015	99.5	ug/L	137	Standard
|	Cd	111	18.7	80.7	0.0013	0.012	897.5	mg/L	6	Standard
|	Cd	114	70.2	45.5	0.0103	0.009	88.1	ug/L	20	Standard
>	In	115	593109.8	1.8				ug/L	755264	Standard
|	Sn	118	117.7	8.1	0.0225	0.010	46.2	ug/L	138	Standard
|	Sb	123	783.2	16.9	0.1964	0.040	20.3	ug/L	391	Standard
|	Ba	135	677.0	153.0	0.4514	0.731	161.9	ug/L	32	Standard
|	Ce	140	188.3	111.8				ug/L	42	Standard
>	Tb	159	827936.6	0.7				ug/L	966827	Standard
|	Ho	165	15.0	88.2				ug/L	12	Standard
|	Tl	203	80.7	83.4	0.0081	0.013	156.1	ug/L	19	Standard
|	Tl	205	173.3	83.4	0.0112	0.012	103.7	ug/L	58	Standard
|	Pb	206	425.0	18.1	0.0054	0.019	345.4	ug/L	464	Standard
|	Pb	207	389.3	9.6	0.0109	0.011	96.2	ug/L	405	Standard
|	Pb	208	805.0	12.5	0.0088	0.013	144.7	ug/L	876	Standard
|	U	238	81.7	58.4	0.0070	0.005	73.2	ug/L	14	Standard
>	Bi	209	490033.9	0.7				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:25:47

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	21.7	58.1	-0.1156	0.248	214.4	mg/L	30	Standard
K	39	38.3	60.2	0.2506	0.298	118.9	mg/L	10	Standard
Ca	43	41.7	13.9	-16.9145	3.754	22.2	mg/L	83	Standard
Fe	54	20.9	70.0	0.0644	0.222	344.2	mg/L	21	Standard
Fe	57	433.3	6.6	7.3136	1.126	15.4	mg/L	240	Standard
Sc-1	45	43276.7	2.5				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	4.0	25.0				ug/L	5	Standard
Br	81	1760.1	2.5				ug/L	1587	Standard
P	31	60.0	36.3				ug/L	50	Standard
S	34	28.3	27.0				ug/L	8	Standard
Sr	88	206.7	14.6				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	15.4	79.5				mg/L	6	Standard
Ho-1	165	15.0	88.2				mg/L	12	Standard
Er	166	26.7	57.3				mg/L	10	Standard
I	127	6704.8	8.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		99.448	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:25:47

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	78.530
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	81.789
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
In 115 Int Std for QC Std	In	115	Rerun sample
QC Std 7	Ba	135	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:25:47

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702124901SDL WG604524-02

Sample Date/Time: Tuesday, February 28, 2017 17:26:43

Number of Replicates: 3

Autosampler Position: 320

Sample Description: 25

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	197964.9	0.1				ug/L	250104	Standard
|	Be	9	281.7	11.5	0.2085	0.025	12.1	ug/L	7	Standard
|	Al	27	1323189.3	0.9	13.7293	0.123	0.9	ug/L	597	Standard
|	Sc	45	45071.9	1.0				ug/L	41681	Standard
|	Ti	47	1995.8	2.0	10.7536	0.259	2.4	ug/L	86	Standard
|	V	51	11969.0	0.9	1.6614	0.034	2.0	ug/L	1740	Standard
|	Cr	52	15763.2	1.7	1.5248	0.025	1.7	ug/L	7178	Standard
|	Cr	53	2213.5	1.4	2.1359	0.027	1.3	ug/L	573	Standard
|	Mn	55	649759.7	1.8	68.4517	1.714	2.5	ug/L	3072	Standard
|	Co	59	5146.9	2.4	0.6359	0.022	3.4	ug/L	573	Standard
|	Ni	60	3869.8	0.6	2.2913	0.021	0.9	ug/L	264	Standard
|	Cu	65	3713.8	3.3	2.0986	0.073	3.5	ug/L	530	Standard
|	Zn	66	12324.3	0.6	13.9645	0.202	1.4	ug/L	252	Standard
>	Ge	72	641885.8	0.8				ug/L	641188	Standard
|	As	75	699.2	6.0	0.8500	0.046	5.5	ug/L	-83	Standard
|	Se	82	27.1	21.3	0.1352	0.080	58.9	ug/L	16	Standard
|	Se-1	77	174.3	7.2	0.9889	0.261	26.4	ug/L	126	Standard
>	Ga	71	700.0	6.5				mg/L	70	Standard
|	Rb	85	7286.8	3.9				ug/L	33	Standard
|	Y	89	451641.7	1.4				ug/L	493982	Standard
>	Rh	103	26.7	47.2				ug/L	17	Standard
|	Mo	98	347.6	1.5	0.1238	0.004	3.3	ug/L	54	Standard
|	Ag	107	1045.7	1.6	0.2288	0.005	2.2	ug/L	137	Standard
|	Cd	111	53.6	27.6	0.0298	0.011	37.2	mg/L	6	Standard
|	Cd	114	318.4	20.2	0.0842	0.018	21.0	ug/L	20	Standard
>	In	115	583513.2	2.6				ug/L	755264	Standard
|	Sn	118	1800.4	4.9	2.3009	0.185	8.0	ug/L	138	Standard
|	Sb	123	94.2	16.9	0.0006	0.004	699.2	ug/L	391	Standard
|	Ba	135	18189.9	0.4	13.1494	0.331	2.5	ug/L	32	Standard
|	Ce	140	67439.8	3.0				ug/L	42	Standard
>	Tb	159	843317.6	2.9				ug/L	966827	Standard
|	Ho	165	1233.4	5.7				ug/L	12	Standard
|	Tl	203	78.7	13.7	0.0074	0.002	31.1	ug/L	19	Standard
|	Tl	205	206.7	22.0	0.0135	0.003	23.8	ug/L	58	Standard
|	Pb	206	11866.6	0.8	2.6544	0.080	3.0	ug/L	464	Standard
|	Pb	207	9559.0	1.0	2.3837	0.084	3.5	ug/L	405	Standard
|	Pb	208	21383.3	1.0	2.4489	0.077	3.2	ug/L	876	Standard
|	U	238	1408.1	2.2	0.1450	0.004	2.7	ug/L	14	Standard
>	Bi	209	498567.6	2.4				ug/L	599146	Standard

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:28:54

Page 1

Approved: March 01, 2017

Na	23	30.0	28.9	7.5200	2.236	29.7	mg/L	3	Standard
Mg	24	23.3	53.9	-0.1018	0.240	235.5	mg/L	30	Standard
K	39	40.0	78.1	0.2520	0.388	153.9	mg/L	10	Standard
Ca	43	56.7	27.0	-9.8118	8.164	83.2	mg/L	83	Standard
Fe	54	139.2	7.0	1.7328	0.128	7.4	mg/L	21	Standard
Fe	57	541.7	10.8	11.9768	3.117	26.0	mg/L	240	Standard
Sc-1	45	45071.9	1.0				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.0	66.7				ug/L	5	Standard
Br	81	1563.4	12.3				ug/L	1587	Standard
P	31	55.0	32.8				ug/L	50	Standard
S	34	33.3	22.9				ug/L	8	Standard
Sr	88	230.0	13.0				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	20.0	50.0				mg/L	3	Standard
Dy	164	1655.6	5.2				mg/L	6	Standard
Ho-1	165	1233.4	5.7				mg/L	12	Standard
Er	166	1136.7	6.0				mg/L	10	Standard
I	127	5981.2	2.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		79.153	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		100.109	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:28:54

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.259
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	83.213
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:28:54

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 4

Sample Date/Time: Tuesday, February 28, 2017 17:29:49

Number of Replicates: 3

Autosampler Position: 203

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	215453.4	4.9				ug/L	250104	Standard
|	Be	9	20.0	43.3	0.0042	0.007	158.4	ug/L	7	Standard
|	Al	27	4590262.8	4.8	43.7809	0.717	1.6	ug/L	597	Standard
|	Sc	45	46140.3	5.1				ug/L	41681	Standard
|	Ti	47	20102.7	2.4	108.4709	2.895	2.7	ug/L	86	Standard
|	V	51	1400.3	9.4	-0.0574	0.027	47.5	ug/L	1740	Standard
|	Cr	52	8708.8	2.0	0.2428	0.049	20.3	ug/L	7178	Standard
|	Cr	53	2218.5	11.8	2.0289	0.253	12.5	ug/L	573	Standard
|	Mn	55	4269.6	1.8	0.1293	0.011	8.3	ug/L	3072	Standard
|	Co	59	602.7	1.8	0.0174	0.001	7.9	ug/L	573	Standard
|	Ni	60	677.3	3.3	0.2395	0.025	10.4	ug/L	264	Standard
|	Cu	65	855.0	7.6	0.1711	0.024	14.0	ug/L	530	Standard
|	Zn	66	797.0	2.0	0.5413	0.012	2.3	ug/L	252	Standard
>	Ge	72	665919.2	3.3				ug/L	641188	Standard
|	As	75	-10.5	158.8	0.0305	0.019	62.1	ug/L	-83	Standard
|	Se	82	16.6	7.4	-0.0137	0.022	162.1	ug/L	16	Standard
|	Se-1	77	299.7	15.5	3.1176	0.671	21.5	ug/L	126	Standard
>	Ga	71	126.7	23.1				mg/L	70	Standard
|	Rb	85	663.3	9.4				ug/L	33	Standard
|	Y	89	448588.8	3.4				ug/L	493982	Standard
>	Rh	103	16.7	17.3				ug/L	17	Standard
|	Mo	98	240387.7	0.9	92.2510	2.476	2.7	ug/L	54	Standard
|	Ag	107	134.3	18.5	0.0063	0.007	103.7	ug/L	137	Standard
|	Cd	111	48.2	35.5	0.0225	0.012	54.6	mg/L	6	Standard
|	Cd	114	836.7	3.8	0.2191	0.013	5.7	ug/L	20	Standard
>	In	115	632851.4	3.4				ug/L	755264	Standard
|	Sn	118	122.7	17.4	0.0192	0.028	144.5	ug/L	138	Standard
|	Sb	123	263.9	18.3	0.0435	0.010	24.0	ug/L	391	Standard
|	Ba	135	129.7	18.7	0.0588	0.014	24.1	ug/L	32	Standard
|	Ce	140	325.0	4.1				ug/L	42	Standard
>	Tb	159	900708.2	4.1				ug/L	966827	Standard
|	Ho	165	21.7	133.2				ug/L	12	Standard
|	Tl	203	197.0	4.2	0.0280	0.002	6.2	ug/L	19	Standard
|	Tl	205	485.0	10.9	0.0343	0.005	14.0	ug/L	58	Standard
|	Pb	206	1568.4	4.5	0.2584	0.005	1.8	ug/L	464	Standard
|	Pb	207	1357.4	3.5	0.2500	0.004	1.4	ug/L	405	Standard
|	Pb	208	2956.4	3.4	0.2527	0.005	2.1	ug/L	876	Standard
|	U	238	16.0	62.5	-0.0001	0.001	1673.7	ug/L	14	Standard
>	Bi	209	512702.2	3.9				ug/L	599146	Standard

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 17:32:00

Page 1

Approved: March 01, 2017

Na	23	48.3	15.8	12.2168	2.595	21.2	mg/L	3	Standard
Mg	24	656.7	7.8	11.4527	0.514	4.5	mg/L	30	Standard
K	39	585.0	8.9	6.8099	0.617	9.1	mg/L	10	Standard
Ca	43	80.0	22.5	2.1971	11.474	522.2	mg/L	83	Standard
Fe	54	792.5	4.8	10.7741	0.176	1.6	mg/L	21	Standard
Fe	57	726.7	3.4	20.7041	2.812	13.6	mg/L	240	Standard
Sc-1	45	46140.3	5.1				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	4.0	50.0				ug/L	5	Standard
Br	81	1890.1	8.7				ug/L	1587	Standard
P	31	68.3	15.2				ug/L	50	Standard
S	34	25.0	69.3				ug/L	8	Standard
Sr	88	218.3	10.3				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	6.7	173.2				mg/L	0	Standard
Hg	202	23.3	24.7				mg/L	3	Standard
Dy	164	13.0	40.1				mg/L	6	Standard
Ho-1	165	21.7	133.2				mg/L	12	Standard
Er	166	6.7	173.2				mg/L	10	Standard
I	127	4907.5	0.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27	0.876		
Sc	45			
Ti	47	108.471		
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.857	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 17:32:00

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	92.251	
[	Ag	107		
[	Cd	111		
[	Cd	114		
>	In	115		83.792
[	Sn	118		
[	Sb	123		
[	Ba	135		
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203		
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208		
[	U	238		
>	Bi	209		85.572
[	Na	23	97.735	
[	Mg	24	229.054	
[	K	39	136.197	
[	Ca	43	14.648	
[	Fe	54	86.193	
[	Fe	57	165.633	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 4	Al	27	
QC Std 4	Mg	24	
QC Std 4	K	39	

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 17:32:00

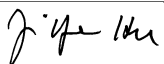
Page 3

Approved: March 01, 2017



QC Std 4	Ca	43
QC Std 4	Fe	57

Sample ID: QC Std 4
Report Date/Time: Tuesday, February 28, 2017 17:32:00
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 5

Sample Date/Time: Tuesday, February 28, 2017 17:32:54

Number of Replicates: 3

Autosampler Position: 204

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	238713.1	2.4				ug/L	250104	Standard
|	Be	9	152891.2	2.5	98.4764	0.685	0.7	ug/L	7	Standard
|	Al	27	5341474.1	3.0	45.9739	0.635	1.4	ug/L	597	Standard
|	Sc	45	47974.2	0.9				ug/L	41681	Standard
|	Ti	47	21756.3	1.7	116.0148	1.312	1.1	ug/L	86	Standard
|	V	51	654510.4	2.1	100.6724	0.859	0.9	ug/L	1740	Standard
|	Cr	52	605555.3	2.0	99.2266	0.889	0.9	ug/L	7178	Standard
|	Cr	53	82832.6	2.7	106.4503	1.440	1.4	ug/L	573	Standard
|	Mn	55	991812.3	2.2	99.6638	0.778	0.8	ug/L	3072	Standard
|	Co	59	773364.0	2.0	99.7197	0.880	0.9	ug/L	573	Standard
|	Ni	60	164167.0	2.7	99.5833	0.646	0.6	ug/L	264	Standard
|	Cu	65	157379.0	1.8	99.6128	1.030	1.0	ug/L	530	Standard
|	Zn	66	90613.2	2.2	99.9104	0.960	1.0	ug/L	252	Standard
>	Ge	72	673897.4	2.8				ug/L	641188	Standard
|	As	75	86682.4	1.7	95.4623	1.631	1.7	ug/L	-83	Standard
|	Se	82	7386.1	1.0	93.8408	1.821	1.9	ug/L	16	Standard
|	Se-1	77	6173.9	1.5	107.8062	2.643	2.5	ug/L	126	Standard
>	Ga	71	180.0	21.7				mg/L	70	Standard
|	Rb	85	708.4	17.4				ug/L	33	Standard
|	Y	89	462457.4	2.4				ug/L	493982	Standard
>	Rh	103	60.0	46.4				ug/L	17	Standard
|	Mo	98	254777.6	2.2	94.0880	0.688	0.7	ug/L	54	Standard
|	Ag	107	260759.9	3.3	55.8499	0.587	1.1	ug/L	137	Standard
|	Cd	111	127121.9	1.8	91.8787	0.375	0.4	mg/L	6	Standard
|	Cd	114	352616.3	0.5	92.9182	2.160	2.3	ug/L	20	Standard
>	In	115	657257.9	2.2				ug/L	755264	Standard
|	Sn	118	243.7	6.4	0.1585	0.018	11.4	ug/L	138	Standard
|	Sb	123	388260.1	2.1	99.6018	0.161	0.2	ug/L	391	Standard
|	Ba	135	162280.0	1.9	104.3016	0.777	0.7	ug/L	32	Standard
|	Ce	140	180.0	14.4				ug/L	42	Standard
>	Tb	159	951928.3	2.4				ug/L	966827	Standard
|	Ho	165	43.3	17.6				ug/L	12	Standard
|	Tl	203	570438.1	1.6	97.2924	1.041	1.1	ug/L	19	Standard
|	Tl	205	1331875.8	1.0	97.1651	1.964	2.0	ug/L	58	Standard
|	Pb	206	451366.2	1.3	97.5655	1.417	1.5	ug/L	464	Standard
|	Pb	207	407060.9	1.0	98.3471	1.527	1.6	ug/L	405	Standard
|	Pb	208	877519.0	1.6	97.1479	1.202	1.2	ug/L	876	Standard
|	U	238	824714.4	2.5	80.2230	0.486	0.6	ug/L	14	Standard
>	Bi	209	533729.6	2.5				ug/L	599146	Standard

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 17:35:05

Page 1

Approved: March 01, 2017

Na	23	28.3	56.7	6.6096	4.000	60.5	mg/L	3	Standard
Mg	24	738.4	6.9	12.4422	1.004	8.1	mg/L	30	Standard
K	39	650.0	12.4	7.2855	0.894	12.3	mg/L	10	Standard
Ca	43	91.7	22.0	6.1427	10.487	170.7	mg/L	83	Standard
Fe	54	820.3	9.5	10.7259	1.100	10.3	mg/L	21	Standard
Fe	57	703.3	2.5	18.0997	1.157	6.4	mg/L	240	Standard
Sc-1	45	47974.2	0.9				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.7	63.0				ug/L	5	Standard
Br	81	1910.1	3.2				ug/L	1587	Standard
P	31	61.7	30.7				ug/L	50	Standard
S	34	30.0	28.9				ug/L	8	Standard
Sr	88	261.7	12.7				ug/L	198	Standard
C	12	23.3	49.5				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	15.9	34.6				mg/L	6	Standard
Ho-1	165	43.3	17.6				mg/L	12	Standard
Er	166	16.7	34.6				mg/L	10	Standard
I	127	4444.0	1.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	98.476		
Al	27	0.919		
Sc	45			
Ti	47	116.015		
V	51	100.672		
Cr	52	99.227		
Cr	53			
Mn	55	99.664		
Co	59	99.720		
Ni	60	99.583		
Cu	65	99.613		
Zn	66	99.910		
Ge	72		105.101	
As	75	95.462		
Se	82	93.841		
Se-1	77			
Ga	71			

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 17:35:05

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	94.088	
[	Ag	107	55.850	
[	Cd	111	91.879	
[	Cd	114		
>	In	115		87.024
[	Sn	118		
[	Sb	123	99.602	
[	Ba	135	104.302	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	97.292	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	97.148	
[	U	238	80.223	
>	Bi	209		89.082
[	Na	23	52.877	
[	Mg	24	248.843	
[	K	39	145.710	
[	Ca	43	40.951	
[	Fe	54	85.807	
[	Fe	57	144.797	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 5	Al	27	
QC Std 5	Ag	107	
QC Std 5	Na	23	

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 17:35:05

Page 3

Approved: March 01, 2017



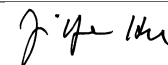
QC Std 5	Mg	24
QC Std 5	K	39
QC Std 5	Ca	43
QC Std 5	Fe	57

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 17:35:05

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 17:36:57

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	230298.8	1.0				ug/L	250104	Standard
|	Be	9	70776.7	3.0	47.2502	1.494	3.2	ug/L	7	Standard
|	Al	27	5144496.6	2.4	45.9029	1.259	2.7	ug/L	597	Standard
|	Sc	45	49226.5	1.9				ug/L	41681	Standard
|	Ti	47	20972.2	0.6	105.3601	1.401	1.3	ug/L	86	Standard
|	V	51	329180.8	2.0	47.5812	1.288	2.7	ug/L	1740	Standard
|	Cr	52	309698.0	1.1	47.2006	0.874	1.9	ug/L	7178	Standard
|	Cr	53	40803.2	3.3	48.9666	2.031	4.1	ug/L	573	Standard
|	Mn	55	509204.8	0.1	48.0698	0.325	0.7	ug/L	3072	Standard
|	Co	59	399830.0	0.8	48.5604	0.599	1.2	ug/L	573	Standard
|	Ni	60	84922.4	1.5	48.4706	1.052	2.2	ug/L	264	Standard
|	Cu	65	82178.9	0.4	48.8323	0.558	1.1	ug/L	530	Standard
|	Zn	66	44946.9	1.6	46.5253	0.973	2.1	ug/L	252	Standard
>	Ge	72	714913.2	0.8				ug/L	641188	Standard
|	As	75	44247.1	0.3	45.9448	0.445	1.0	ug/L	-83	Standard
|	Se	82	3871.8	2.0	46.2399	1.089	2.4	ug/L	16	Standard
|	Se-1	77	3045.3	1.9	48.8945	1.325	2.7	ug/L	126	Standard
>	Ga	71	118.3	23.3				mg/L	70	Standard
|	Rb	85	576.7	8.7				ug/L	33	Standard
|	Y	89	494293.3	1.8				ug/L	493982	Standard
>	Rh	103	43.3	6.7				ug/L	17	Standard
|	Mo	98	265487.8	1.0	97.2104	0.990	1.0	ug/L	54	Standard
|	Ag	107	219450.3	2.2	46.6062	1.025	2.2	ug/L	137	Standard
|	Cd	111	60897.7	2.1	43.6302	0.833	1.9	mg/L	6	Standard
|	Cd	114	174520.0	3.0	45.5762	1.350	3.0	ug/L	20	Standard
>	In	115	662885.6	0.4				ug/L	755264	Standard
|	Sn	118	40976.7	2.0	48.5778	0.862	1.8	ug/L	138	Standard
|	Sb	123	187156.0	1.2	47.5890	0.493	1.0	ug/L	391	Standard
|	Ba	135	80050.6	1.2	50.9961	0.544	1.1	ug/L	32	Standard
|	Ce	140	66.7	4.3				ug/L	42	Standard
>	Tb	159	925890.6	1.6				ug/L	966827	Standard
|	Ho	165	25.0	40.0				ug/L	12	Standard
|	Tl	203	281502.5	1.2	48.1034	0.753	1.6	ug/L	19	Standard
|	Tl	205	660242.7	1.6	48.2541	0.961	2.0	ug/L	58	Standard
|	Pb	206	221230.6	1.2	47.8613	0.505	1.1	ug/L	464	Standard
|	Pb	207	197914.7	1.3	47.8576	0.564	1.2	ug/L	405	Standard
|	Pb	208	424189.1	1.3	47.0082	0.858	1.8	ug/L	876	Standard
|	U	238	376274.5	0.8	36.6788	0.526	1.4	ug/L	14	Standard
>	Bi	209	532620.9	0.7				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:39:08

Page 1

Approved: March 01, 2017

Na	23	13.3	43.3	2.8000	1.488	53.2	mg/L	3	Standard
Mg	24	341.7	4.2	5.3105	0.144	2.7	mg/L	30	Standard
K	39	620.0	9.3	6.7573	0.611	9.0	mg/L	10	Standard
Ca	43	48.3	21.5	-16.4458	5.617	34.2	mg/L	83	Standard
Fe	54	389.4	4.8	4.8290	0.298	6.2	mg/L	21	Standard
Fe	57	583.3	5.5	11.5847	1.546	13.3	mg/L	240	Standard
Sc-1	45	49226.5	1.9				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	7.3	34.3				ug/L	5	Standard
Br	81	2086.8	5.7				ug/L	1587	Standard
P	31	81.7	35.3				ug/L	50	Standard
S	34	43.3	13.3				ug/L	8	Standard
Sr	88	186.7	22.8				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	5.5	196.1				mg/L	6	Standard
Ho-1	165	25.0	40.0				mg/L	12	Standard
Er	166	23.3	89.2				mg/L	10	Standard
I	127	4535.7	2.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	94.500		
Al	27	91.806		
Sc	45			
Ti	47	105.360		
V	51	95.162		
Cr	52	94.401		
Cr	53			
Mn	55	96.140		
Co	59	97.121		
Ni	60	96.941		
Cu	65	97.665		
Zn	66	93.051		
Ge	72		111.498	
As	75	91.890		
Se	82	92.480		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:39:08

Page 2

Approved: March 01, 2017



[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	97.210	
[	Ag	107	93.212	
[	Cd	111	87.260	
[	Cd	114		
>	In	115		87.769
[	Sn	118	97.156	
[	Sb	123	95.178	
[	Ba	135	101.992	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	96.207	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	94.016	
[	U	238	73.358	
>	Bi	209		88.897
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:39:08

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 17:40:03

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	211820.6	1.7				ug/L	250104	Standard
|	Be	9	35.0	14.3	0.0152	0.004	26.7	ug/L	7	Standard
|	Al	27	1005.0	25.6	0.0036	0.003	73.2	ug/L	597	Standard
|	Sc	45	46115.1	2.0				ug/L	41681	Standard
|	Ti	47	34.7	18.5	-0.2807	0.032	11.5	ug/L	86	Standard
|	V	51	1687.4	12.6	-0.0211	0.032	153.7	ug/L	1740	Standard
|	Cr	52	7141.0	1.6	-0.0572	0.026	44.6	ug/L	7178	Standard
|	Cr	53	1391.7	1.3	0.8951	0.039	4.3	ug/L	573	Standard
|	Mn	55	2211.2	4.1	-0.0876	0.011	12.1	ug/L	3072	Standard
|	Co	59	340.7	3.0	-0.0182	0.002	8.8	ug/L	573	Standard
|	Ni	60	195.3	8.2	-0.0611	0.010	15.9	ug/L	264	Standard
|	Cu	65	614.0	5.6	0.0046	0.017	378.2	ug/L	530	Standard
|	Zn	66	283.7	5.1	-0.0432	0.019	43.6	ug/L	252	Standard
>	Ge	72	686644.2	1.1				ug/L	641188	Standard
|	As	75	-33.3	146.2	0.0063	0.052	835.4	ug/L	-83	Standard
|	Se	82	16.9	8.5	-0.0172	0.016	95.9	ug/L	16	Standard
|	Se-1	77	205.0	7.2	1.3117	0.266	20.3	ug/L	126	Standard
>	Ga	71	66.7	8.7				mg/L	70	Standard
|	Rb	85	31.7	24.1				ug/L	33	Standard
|	Y	89	476664.0	1.1				ug/L	493982	Standard
>	Rh	103	25.0	52.9				ug/L	17	Standard
|	Mo	98	213.8	12.9	0.0614	0.011	17.7	ug/L	54	Standard
|	Ag	107	142.7	11.4	0.0081	0.004	43.6	ug/L	137	Standard
|	Cd	111	10.7	46.8	-0.0056	0.004	67.6	mg/L	6	Standard
|	Cd	114	35.1	65.7	-0.0005	0.006	1353.5	ug/L	20	Standard
>	In	115	631289.1	0.4				ug/L	755264	Standard
|	Sn	118	120.3	5.5	0.0165	0.008	47.4	ug/L	138	Standard
|	Sb	123	812.4	14.4	0.1904	0.030	16.0	ug/L	391	Standard
|	Ba	135	35.3	28.6	-0.0039	0.007	176.4	ug/L	32	Standard
|	Ce	140	26.7	28.6				ug/L	42	Standard
>	Tb	159	873158.4	1.5				ug/L	966827	Standard
|	Ho	165	15.0	88.2				ug/L	12	Standard
|	Tl	203	76.3	26.2	0.0066	0.004	53.7	ug/L	19	Standard
|	Tl	205	145.0	24.9	0.0084	0.003	33.1	ug/L	58	Standard
|	Pb	206	427.7	6.1	0.0016	0.005	317.9	ug/L	464	Standard
|	Pb	207	364.0	2.5	0.0001	0.002	4281.8	ug/L	405	Standard
|	Pb	208	802.7	5.0	0.0043	0.004	96.6	ug/L	876	Standard
|	U	238	48.0	59.8	0.0032	0.003	91.6	ug/L	14	Standard
>	Bi	209	512282.8	0.9				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:42:14

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	0.3963	0.758	191.2	mg/L	3	Standard
Mg	24	28.3	66.8	-0.0241	0.340	1409.0	mg/L	30	Standard
K	39	21.7	35.3	0.0188	0.091	482.9	mg/L	10	Standard
Ca	43	38.3	27.2	-20.2180	5.256	26.0	mg/L	83	Standard
Fe	54	34.3	38.2	0.2313	0.194	84.0	mg/L	21	Standard
Fe	57	421.7	14.8	5.3440	3.443	64.4	mg/L	240	Standard
Sc-1	45	46115.1	2.0				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	5.7	10.2				ug/L	5	Standard
Br	81	1990.1	10.9				ug/L	1587	Standard
P	31	60.0	30.0				ug/L	50	Standard
S	34	35.0	51.5				ug/L	8	Standard
Sr	88	245.0	6.1				ug/L	198	Standard
C	12	10.0	173.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	13.2	41.7				mg/L	6	Standard
Ho-1	165	15.0	88.2				mg/L	12	Standard
Er	166	3.3	173.2				mg/L	10	Standard
I	127	5862.8	1.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		107.089	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:42:14

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.585
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.502
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:42:14

Page 3

Approved: March 01, 2017



2.4 General Chemistry Data

2.4.1 Hexavalent Chromium Data

2.4.1.1 Summary Data

Lab Report #: L17021201

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021201-01	PrePrep Method: N/A	Instrument: UV-2600
Client ID: LH18/24-SP650-6418-GRAB	Prep Method: 7196A	Prep Date: N/A
Matrix: Water	Analytical Method: 7196A	Cal Date: 12/08/2016 08:20
Workgroup #: WG603982	Analyst: ADG	Run Date: 02/23/2017 11:15
Collect Date: 02/22/2017 10:00	Dilution: 1	File ID: 00.1702231115-06
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Chromium, Hexavalent	18540-29-9	0.0100	U,H1	0.0200	0.0100	0.00500
U,H1	Not detected; Sample analysis performed past holding time.					

2.4.1.2 QC Summary Data

Example Calculations for Visible Spectrophotometric Methods

Linear Calibration Model

Step 1 - Retrieve Curve Data from ICAL

m = slope of the linear equation
 b = intercept from the linear equation
 y = instrument response as absorbance or OD
 x = concentration of analyte (mg/L)
 $y = mx + b$

Step 2: Calculate the instrument concentration, x

Where:

$$x = (y - b)/m$$

Step 3: Solve for analyte concentration in sample, Cx

$$Cx = (x) (D)$$

Example Calculation (LCS):

Value of m from plot:	7.809
Value of b from plot:	0.0004135
Absorbance of unknown from quantitation report (y):	0.31
Calculated concentration (x):	0.03964483
Dilution factor (D):	1.00
Concentration of analyte in sample, Cy:	0.0396 mg/L

SmartChem Autoanalyzer - Quadratic Calibration for Chloride and Sulfate

Step 1 - Retrieve Curve Data from Smartchem ICAL

A, B, C = constants from the ICAL quadratic regression

x = instrument response as absorbance or OD

y = concentration of analyte (mg/L)

Step 2: Calculate the instrument concentration, y

Where:

$$y = Ax^2 + Bx + C$$

Step 3: Solve for analyte concentration in sample, Cy

$$Cy = (y) (D)$$

Example Calculation (LCS):

Value of A from plot:	101.2796
Value of B from plot:	318.9056
Value of C from plot:	-2.2712
Absorbance of unknown from quantitation report (x):	0.1583
Calculated concentration (y):	50.7495108
Dilution factor (D):	1.00
Concentration of analyte in sample, Cy:	50.75 mg/L

Microbac Laboratories Inc.

Data Checklist

Date: 23-FEB-2017
 Analyst: ADG
 Analyst: NA
 Method: CR-6
 Instrument: UV-2600
 Curve Workgroup: NA
 Runlog ID: _____
 Analytical Workgroups: WG603982

Calibration/Linearity	02/23/17
Second Source Check	
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	ADG
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
27-FEB-2017

April Greene

Secondary Reviewer:
28-FEB-2017

Dennis Johnson



Analytical Method: 7196A
Login Number: L17021201

AAB#: WG603982

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6418-GRAB	01	02/22/17					02/23/2017	1.1	1	*	02/23/17	1.1	1	*

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17021201 Work Group: WG603982
 Blank File ID: 00.1702231115-03 Blank Sample ID: WG603982-01
 Prep Date: 02/23/17 11:15 Instrument ID: UV-2600
 Analyzed Date: 02/23/17 11:15 Method: 7196A
 Analyst: ADG

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG603982-02	00.1702231115-04	02/23/17 11:15	
LCS2	WG603982-03	00.1702231115-05	02/23/17 11:15	
LH18/24-SP650-6418-GRAB	L17021201-01	00.1702231115-06	02/23/17 11:15	
DUP	WG603982-05	00.1702231115-08	02/23/17 11:15	

Report Name: BLANK_SUMMARY
 PDF File ID: 5176376
 Report generated 02/28/2017 09:34



Login Number: L17021201 Prep Date: 02/23/17 11:15 Sample ID: WG603982-01
Instrument ID: UV-2600 Run Date: 02/23/17 11:15 Prep Method: 7196A
File ID: 00.1702231115-03 Analyst: ADG Method: 7196A
Workgroup (AAB#): WG603982 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: UV-260-07-FEB-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Chromium, Hexavalent	0.00500	0.0200	0.00500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 5176377
28-FEB-2017 09:34



Login Number: L17021201 Analyst: ADG Prep Method: 7196A
 Instrument ID: UV-2600 Matrix: Water Method: 7196A
 Workgroup (AAB#): WG603982 Units: mg/L
 QC Key: DOD4 Lot #: STD79927
 Sample ID: WG603982-02 LCS File ID: 00.1702231115-04 Run Date: 02/23/2017 11:15
 Sample ID: WG603982-03 LCS2 File ID: 00.1702231115-05 Run Date: 02/23/2017 11:15

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Chromium, Hexavalent	0.100	0.102	102	0.100	0.102	102	0.491	90 - 110	20	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5176378
 Report generated: 02/28/2017 09:34



2.4.1.3 Raw Data

wg594062

Curves

Parameter: CR-6 ^{low} ~~low~~ _{12/21/16}

Spectrophotometer: UV-2600

Calibration (Curve) standard stock: Std 77969 Std 77970

Concentration: 50mg/L 5mg/L

Recipe for preparation of curve standards found in:

SOP: 52186 Revision: 22 Page: 12

Second Source Stock: 78032 (concentration: 2)

Daily Preparation: 5(2)/100

concentration = 0.1

Calibration Standards (mg/L)	Volume (mL)	Cell Size (cm)	Wavelength (nm)	Absorbance
0.2	100	5cm	540	0.792
0.1	100	5cm	540	0.423
0.05	100	5cm	540	0.197
0.02	100	5cm	540	0.078
0.01	100	5cm	540	0.041
0	100	5cm	SP	0.001
2nd Source (0.1)			540	0.412

Analyst: Jimmy Morris

Date/Time: 12/21/16 8:20

DCN#122579



Microbac Laboratories Inc.
INITIAL CALIBRATION

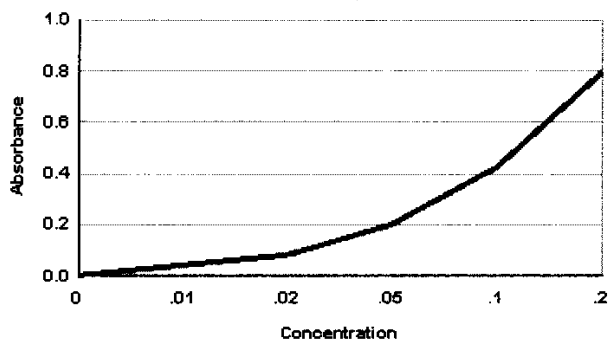
Workgroup: WG594062
Analytical Method: 3500CR
Instrument ID: UV-2600

Analyst: TMM
Initial Calibration Date: 12/08/2016

Analyte: **CHROMIUM, HEXAVALENT**
Number of Points: 6
Slope: 3.99171
Y-Intercept: 0.00252535
Coef. Of Correlation (R^2): 0.998739
Coef. Of Correlation (R): 0.999369

Concentration X	Absorbance Y	X^2	$X * Y$	Y-Fitted (mX^2+B)
0.00	0.00100	0.00	0.00	0.00252535
0.0100	0.0410	0.000100	0.000410	0.0424424
0.0200	0.0780	0.000400	0.00156	0.0823594
0.0500	0.197	0.00250	0.00985	0.202111
0.100	0.423	0.0100	0.0423	0.401696
0.200	0.792	0.0400	0.158	0.800866

Curve Fit



WG_ICAL_CAL_WET - Modified 03/06/2008
Report generated 12/08/2016 09:20



Microbac Laboratories Inc.
ALTERNATE SOURCE REPORT

Workgroup #: WG594062Instrument ID: UV-2600File ID: 00.1612080820-07Run Date: 12/08/2016CCV ID: WG594062-07Run Time: 08:20Units: mg/LAnalyst: TMMAnalyte: CHROMIUM, HEXAVALENT Cal ID: UV-260 - 08-DEC-16 08:20:06

Analyte	Expected	Found	RF	%D	Q
Chromium, Hexavalent	.1	0.103	4.12	3.0	

* Exceeds %D Limit

CCC Calibration Check Compounds

SPCC System Performance Check Compounds

WET_WG_SSCV - Modified 03/06/2008
Report generated 12/08/2016 09:20



CHROMIUM (6)

(cr6)

Standard Methods 3500 Cr-D (18th, 19th), 3500Cr-B(20th)

SPEC: UV-2600

SOP K2186 Rev. # 22

SW846 7196A

Curve ID: 12-846

CCV: 79338

LCS: 79917

Spike: 7800

RGT 39314

Matrix: liquid (mg/L)

Daily dilution: 165/100

Daily dilution: 10(2)/100

Daily dilution: 0.250/100

RGT 77969

Soil (mg/Kg)

Daily dilution: 20.05

Daily dilution: 20.1

Daily dilution: 20.1

COA 18997

Sample	Volume (mL)	pH adj. to 2 ± 0.5	Dilution	Cell size (cm)	Absorbance @ 540 nm
CCV: mg/L(1 cm)	100				
CCV: <u>0.09</u> mg/L(5 cm)	100	/		<u>5cm</u>	<u>0.212</u>
Blank/CCB:	100	/		<u>5cm</u>	<u>0.002</u>
LCS: <u>0.1</u> ppm	100	/		<u>5cm</u>	<u>0.409</u>
LCSDUP: <u>0.1</u> ppm	100	/		<u>5cm</u>	<u>0.411</u>
<u>1201-01</u>	100	/		<u>5cm</u>	<u>0.006</u>
<u>1203-01</u>	100	/		<u>5cm</u>	<u>0.007</u>
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
DUP: <u>1201-01</u>	100	/		<u>5cm</u>	<u>0.005</u>
MS: (<u>0.1</u>) <u>1201-01</u>	100	/		<u>5cm</u>	<u>0.414</u>
MSD: ()	100				
CCV: (1 cm)	100				
CCV: <u>0.1</u> (5 cm)	100	/		<u>5cm</u>	<u>0.212</u>
CCB: <u>0</u>	100	/		<u>5cm</u>	<u>0.003</u>

Analyst: April Greene

Date/Time: 2/23/17 1:11:5

SW846 7196 (Dup and/or MS every 10 samples)

SM3500 Cr (Dup and MS/MSD every 20 samples)

Received in lab out of total

DCN#124169



Microbac Laboratories Inc.
SAMPLE REPORT

Workgroup: WG603982Analyst: ADGAnalyte: CHROMIUM, HEXAVALENTDate: 02/23/2017

Sample ID	I Vol	F Vol	Response	Slope	Y Intercept	Anal. Conc.	Rep. Conc.	Dil	Units
WG603982-01	100	100	0.00200	3.992	0.002525	-0.00013161	-0.00013161	1	mg/L
WG603982-02	100	100	0.409	3.992	0.002525	0.10183	0.10183	1	mg/L
WG603982-03	100	100	0.411	3.992	0.002525	0.10233	0.10233	1	mg/L
L17021201-01	100	100	0.00600	3.992	0.002525	0.00087047	ND	1	mg/L
WG603982-04	100	100	0.00600	3.992	0.002525	0.00087047	0.00087047	1	mg/L
L17021203-01	100	100	0.00700	3.992	0.002525	0.0011210	ND	1	mg/L
WG603982-05	100	100	0.00500	3.992	0.002525	0.00061995	0.00061995	1	mg/L
WG603982-06	100	100	0.414	3.992	0.002525	0.10308	0.10308	1	mg/L

UV_SAMPLE_REPORT - Modified 03/06/2008

Report generated 02/27/2017 10:42

Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

00843512

Workgroup #: WG604295 Instrument ID: UV-2600
File ID: 00.1702231115-01 Run Date: 02/23/2017
CCV ID: WG604295-01 Run Time: 11:15
Units: mg/L Analyst: ADG
Analyte: CHROMIUM, HEXAVALENT Cal ID: UV-260 - 07-FEB-17

Analyte	Expected	Found	RF	%D	Q
Chromium, Hexavalent	.05	0.0525	4.24	5.0	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 02/27/2017 10:40



Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

00843513

Workgroup #: WG604295 Instrument ID: UV-2600
File ID: 00.1702231115-10 Run Date: 02/23/2017
CCV ID: WG604295-03 Run Time: 11:15
Units: mg/L Analyst: ADG
Analyte: CHROMIUM, HEXAVALENT Cal ID: UV-260 - 07-FEB-17

Analyte	Expected	Found	RF	%D	Q
Chromium, Hexavalent	.05	0.0525	4.24	5.0	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008
Report generated 02/27/2017 10:40



3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
March 9, 2017

001 - BIO-CHEM TESTING WVDEP 220	002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental	004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES	006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES	008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND	AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER	ADG - APRIL D. GREENE
ALS - ADRIANE L. STEED	AWE - ANDREW W. ESSIG
AZH - AFTER HOURS	BJO - BRIAN J. OGDEN
BLG - BRENDA L. GREENWALT	BNB - Brandi N. Bentley
BRG - BRENDA R. GREGORY	CAS - Craig A. Smith
CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER	CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL	CV - Carl Volkman
DAK - DEAN A. KETELSEN	DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG	DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER	DLP - DOROTHY L. PAYNE
DSM - DAVID S. MOSSOR	DTG - DOMINIC T. GEHRET
ECL - ERIC C. LAWSON	EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER	FJB - FRANCES J. BOLDEN
JDH - JUSTIN D. HESSON	JDS - JARED D. SMITH
JKP - JACQUELINE K. PARSONS	JLD - JESSICA L. DELONG
JST - JOSHUA S. TAYLOR	JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES
JYH - JI Y. HU	KAK - KATHY A. KIRBY
KDD - Katelyn D. Daley	KEB - KATIE E. BARNES
KHR - KIM H. RHODES	KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON	KRP - KATHY R. PARSONS
LJH - Lacey J. Hendershot	LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA	LSJ - LAURA S. JONES
MAP - MARLA A. PORTER	MBK - MORGAN B. KNOWLTON
MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE	REK - BOB E. KYER
RLB - BOB BUCHANAN	RNP - RICK N. PETTY
SAV - SARAH A. VANDENBERG	SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY	TB - TODD BOYLE
TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT	

List of Valid Qualifiers

March 09, 2017

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
>,H1	Result is greater than the associated numerical value. Sample analysis performed past holding time.
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample receipt exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
FP1	Did not ignite.
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample receipt exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentatively identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL)
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound



List of Valid Qualifiers

March 09, 2017

Qualkey: DOD

TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.
TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample receipt exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below



CHAIN OF CUSTODY

Name Of Lab Shipping To: MICROBAC (740) 373-4071 ATTN: STEPHANIE MOSSBURG

Project: AECOM LONGHORN ARMY AMMIN. PLANT (LHAAP) GROUNDWATER TREATMENT PLANT (GWTP) KARNACK, TEXAS		Project No.: 60256135.GWTP HRUMAR16
Job: GROUNDWATER TREATMENT PLANT MONTHLY EFFLUENT SAMPLES		
Prepared By: Scott Beesinger		P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	NO. OF CONTAINERS	Analyses						Remarks (Preservatives, etc.)	Lab I.D.#	
					VOLATILES	PERCHLORATE METHOD 6850	SILVER, SELENIUM, LEAD, BARIUM	HEXAVALENT CHROMIUM	1, 4 - DIOXANE				
LH18/24-SP650-6418-Grab	Water	02/22/17 / 10:00		3	X							HCL	
LH18/24-SP650-6418-Grab	Water	02/22/17 / 10:00		4	X	X	X	X				NONE	
LH18/24-SP650-6418-Grab	Water	02/22/17 / 10:00		1		X						HNO3	
Trip Blank	Water	02/22/17		2	X							HCL	

STANDARD TURN AROUND TIME

Additional Remarks:	
Relinquished By: <i>[Signature]</i>	Received By:
Date: 02/22/17 Time: 15:00	Date: _____ Time: _____
Relinquished By:	Received By:
Date: _____ Time: _____	Date: _____ Time: _____

For Lab Use Only	
Received At Lab By:	Date: _____ Time: _____
Airbill No.:	Date: _____ Time: _____
Seal No.:	Condition:
Temp of Container:	Date: _____ Time: _____
Microbac OVD Received: 02/23/2017 09:39 By: BRENDA GREGORY 221000097406	
Remarks:	

Brenda Gregory

COOLER TEMP >6° C LOG

Cooler ID 706

SAMPLE ID	Bottle 1 °C	Bottle 2 °C	Bottle 3 °C	Bottle 4 °C	Bottle 5 °C	Bottle 6 °C

CAD 2/23/17

pH Lot # H193124

SAMPLE ID	Bottle 1	Bottle 2	Bottle 3	Bottle 4	Bottle 5	Bottle 6

PRESERVATIVE EXCEPTIONS

NONE AS NOTED

CAD 2/23/17

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17021201

Account: 2551

Project: 2551.096

Samples: 2

Due Date: 14-MAR-2017

Samplenum Container ID Products

L17021201-01 871129

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	23-FEB-2017 11:01	BRG		
2	ANALYZ	V1	ORG4	23-FEB-2017 12:46	TMB	BRG	
3	STORE	ORG4	A1	09-MAR-2017 07:22	CLS	AWE	

Comments:Products cancelled.

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	23-FEB-2017 11:01	BRG		
2	ANALYZ	V1	ORG4	23-FEB-2017 12:46	TMB	BRG	
3	STORE	ORG4	A1	09-MAR-2017 07:22	CLS	AWE	

Comments:Products cancelled.

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	23-FEB-2017 11:01	BRG		
2	ANALYZ	V1	ORG4	23-FEB-2017 12:46	TMB	BRG	
3	STORE	ORG4	A1	09-MAR-2017 07:22	CLS	AWE	

Comments:Products cancelled.

Samplenum Container ID Products

L17021201-01 871130

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	23-FEB-2017 11:01	BRG		
2	PREP	W1	EXT	24-FEB-2017 15:47	JDH	CLS	

Comments:Products cancelled.

3	DISP	EXT	DISP	01-MAR-2017 12:16	BJO	BJO	
---	------	-----	------	-------------------	-----	-----	--

Comments:Products cancelled.

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER		23-FEB-2017 11:01	BRG		

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login



Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17021201

Account: 2551

Project: 2551.096

Samples: 2

Due Date: 14-MAR-2017

Samplenum **Container ID** **Products**
L17021201-01 8711131 AG-MS PB-MS SE BA-MS

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	23-FEB-2017 11:01	BRG		
2	PREP	W1	DIG	23-FEB-2017 11:31	AC	BRG	
3	ANALYZ*	DIG	METALS	24-FEB-2017 12:34	KKB	AC	

**Sample extract/digestate/leachate*

Samplenum **Container ID** **Products**
L17021201-01 8711132 826-SPE 827-DIOXANE CR-6

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	23-FEB-2017 11:01	BRG		
2	ANALYZ	W1	WET	23-FEB-2017 11:06	DCM	CLS	
3	STORE	WET	A1	24-FEB-2017 08:00	CLS	ADG	

Samplenum **Container ID** **Products**
L17021201-02 8711133 826-SPE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	23-FEB-2017 11:01	BRG		
2	ANALYZ	V1	ORG4	23-FEB-2017 12:46	TMB	BRG	
3	STORE	ORG4	A1	09-MAR-2017 07:22	CLS	AWE	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	23-FEB-2017 11:01	BRG		
2	ANALYZ	V1	ORG4	23-FEB-2017 12:46	TMB	BRG	
3	STORE	ORG4	A1	09-MAR-2017 07:22	CLS	AWE	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login



NELAP Addendum - January 4, 2016

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVD NELAP Scope of Accreditation:

Heat of Combustion (BTU)
 Total Halide by Bomb Combustion (TX)
 Particle Sizing - 200 Mesh (PS200)
 Specific Gravity/Density (SPGRAV)
 Total Residual Chlorine (CL-TRL)
 Total Volatile Solids (all forms) (TVS)
 Total Coliform Bacteria (all methods)
 Fecal Coliform Bacteria (all methods)
 Sulfite (SO₃)
 Propionaldehyde (HPLC-UV)

SOLID AND HAZARDOUS CHEMICALS

Nitrogen, Ammonia by Method 350.1
 Chromium, Hexavalent, Leachable by SM3500 Cr-B 2009
 Phenolics, Total by Method 420.1
 ASTM D3987-06

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVD HPLC02/HPLC-UV

Nitroglycerin
 Acetic acid
 Butyric acid
 Lactic acid
 Propionic acid
 Pyruvic acid

OVD MSS01/GC-MS

1,4-Phenylenediamine
 1-Methylnaphthalene
 1,4-Dioxane
 Atrazine
 Benzaldehyde
 Biphenyl
 Caprolactam
 Hexamethylphosphoramide (HMPA)
 Pentachlorobenzene
 Pentachloroethane

NELAP Accreditation by Laboratory SOP**NONPOTABLE WATER**OVD MSV01/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVD HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

OVD HPLC12/HPLC/UV

Acetate
Formate

OVD RSK01/GC-FID

Acetylene
Propane

OVD K9305/ISE

Fluoroborate

SOLID AND HAZARDOUS CHEMICALSOVD MSS01/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP**SOLID AND HAZARDOUS CHEMICALS**OVD MSV01/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)

Laboratory Report Number: L17021202

Linda Raabe
AECOM Technical Services, Inc.
1950 N Stemmons FWY
Dallas, TX 75207

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Adriane Steed – Client Services Specialist
(740) 373-4071
Adriane.Steed@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on March 02 2017



Leslie Bucina – Managing Director

State of Origin: TX
Accrediting Authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: DOD Ver 4.1



Microbac Laboratories * Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 * T: (740) 373-4071 F: (740) 373-4835 * www.microbac.com

Lab Report #: L17021202

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00113730	I	4.0		1Z4016632210154876	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	NA

**Lab Report #:** L17021202**Lab Project #:** 2551.096**Project Name:** Longhorn Army Ammunition**Lab Contact:** Adriane Steed**Samples Received**

Client ID	Laboratory ID	Date Collected	Date Received
LH18/24-SP650-6419-GRAB	L17021202-01	02/22/2017 10:00	02/23/2017 09:39

Microbac REPORT L17021202
PREPARED FOR AECOM Technical Services, Inc.
WORK ID:

1.0 Summary Data	5
1.1 Narratives	6
1.2 Certificate of Analysis	25
2.0 Full Sample Data Package	27
2.1 General Chemistry Data	28
2.1.1 Ammonia Data	29
2.1.1.1 Summary Data	30
2.1.1.2 QC Summary Data	32
2.1.1.3 Raw Data	39
2.1.2 Orthophosphate Data	47
2.1.2.1 Summary Data	48
2.1.2.2 QC Summary Data	50
2.1.2.3 Raw Data	57
2.1.3 Total Organic Carbon Data	65
2.1.3.1 Summary Data	66
2.1.3.2 QC Summary Data	68
2.1.3.3 Raw Data	75
3.0 Attachments	99

1.0 Summary Data

1.1 Narratives



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	NH3
Prep Batch Number(s):	WG604659	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Deanna Hesson		Conventional Lab Supervisor	2017-03-02 19:39:26



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	NH3
Prep Batch Number(s):	WG604659	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):	X				
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	NH3
Prep Batch Number(s):	WG604659	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	X				
Were MS/MSD analyzed at the appropriate frequency?	X				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
Were MS/MSD RPDs within laboratory QC limits?	X				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	X				
Were analytical duplicates analyzed at the appropriate frequency?	X				
Were RPDs or relative standard deviations within the laboratory QC limits?	X				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?			X		
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	NH3
Prep Batch Number(s):	WG604659	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)			X		
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)			X		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions			X		
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	NH3
Prep Batch Number(s):	WG604659	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)	X				
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	NH3
Prep Batch Number(s):	WG604659	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604017	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Deanna Hesson		Conventional Lab Supervisor	2017-03-02 19:37:35



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604017	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):	X				
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604017	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	X				
Were MS/MSD analyzed at the appropriate frequency?	X				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
Were MS/MSD RPDs within laboratory QC limits?	X				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	X				
Were analytical duplicates analyzed at the appropriate frequency?	X				
Were RPDs or relative standard deviations within the laboratory QC limits?	X				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?			X		
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604017	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)			X		
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)			X		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions			X		
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604017	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)	X				
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604017	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	TOC
Prep Batch Number(s):	WG603983	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Deanna Hesson		Conventional Lab Supervisor	2017-03-02 19:41:43



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	TOC
Prep Batch Number(s):	WG603983	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):	X				
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	TOC
Prep Batch Number(s):	WG603983	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	X				
Were MS/MSD analyzed at the appropriate frequency?	X				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
Were MS/MSD RPDs within laboratory QC limits?	X				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	X				
Were analytical duplicates analyzed at the appropriate frequency?	X				
Were RPDs or relative standard deviations within the laboratory QC limits?	X				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?			X		
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	TOC
Prep Batch Number(s):	WG603983	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)			X		
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)			X		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions			X		
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	TOC
Prep Batch Number(s):	WG603983	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)	X				
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021202
Project Name:		Method:	TOC
Prep Batch Number(s):	WG603983	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-02 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

1.2 Certificate of Analysis

Lab Report #: L17021202
 Lab Project #: 2551.096
 Project Name: Longhorn Army Ammunition
 Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021202-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: LH18/24-SP650-6419-GRAB	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 03/01/2017 14:11
Workgroup #: WG604659	Analyst: TB	Run Date: 03/01/2017 15:38
Collect Date: 02/22/2017 10:00	Dilution: 25	File ID: S2170301002.072
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Nitrogen, Ammonia	7664-41-7	51.8		5.00	2.50	1.25

Certificate of Analysis

Sample #: L17021202-01	PrePrep Method: N/A	Instrument: UV-2600
Client ID: LH18/24-SP650-6419-GRAB	Prep Method: 365.2	Prep Date: N/A
Matrix: Water	Analytical Method: 365.2	Cal Date: 12/08/2016 13:50
Workgroup #: WG604017	Analyst: ADG	Run Date: 02/23/2017 15:25
Collect Date: 02/22/2017 10:00	Dilution: 5	File ID: 00.1702231525-06
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Orthophosphate	14265-44-2	4.33		0.500	0.250	0.125

Certificate of Analysis

Sample #: L17021202-01	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: LH18/24-SP650-6419-GRAB	Prep Method: 415.1	Prep Date: N/A
Matrix: Water	Analytical Method: 415.1	Cal Date: 02/10/2017 10:25
Workgroup #: WG603983	Analyst: DCM	Run Date: 02/23/2017 16:13
Collect Date: 02/22/2017 10:00	Dilution: 10	File ID: TC02232017.011
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Total Organic Carbon	TOC	462		20.0	10.0	5.00

2.0 Full Sample Data Package

2.1 General Chemistry Data

2.1.1 Ammonia Data

2.1.1.1 Summary Data

Lab Report #: L17021202

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021202-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: LH18/24-SP650-6419-GRAB	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 03/01/2017 14:11
Workgroup #: WG604659	Analyst: TB	Run Date: 03/01/2017 15:38
Collect Date: 02/22/2017 10:00	Dilution: 25	File ID: S2170301002.072
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Nitrogen, Ammonia	7664-41-7	51.8		5.00	2.50	1.25

2.1.1.2 QC Summary Data

Example Calculations for Visible Spectrophotometric Methods

Linear Calibration Model

Step 1 - Retrieve Curve Data from ICAL

m = slope of the linear equation
 b = intercept from the linear equation
 y = instrument response as absorbance or OD
 x = concentration of analyte (mg/L)
 $y = mx + b$

Step 2: Calculate the instrument concentration, x

Where:

$$x = (y - b)/m$$

Step 3: Solve for analyte concentration in sample, Cx

$$Cx = (x) (D)$$

Example Calculation (LCS):

Value of m from plot:	7.809
Value of b from plot:	0.0004135
Absorbance of unknown from quantitation report (y):	0.31
Calculated concentration (x):	0.03964483
Dilution factor (D):	1.00
Concentration of analyte in sample, Cy:	0.0396 mg/L

SmartChem Autoanalyzer - Quadratic Calibration for Chloride and Sulfate

Step 1 - Retrieve Curve Data from Smartchem ICAL

A, B, C = constants from the ICAL quadratic regression

x = instrument response as absorbance or OD

y = concentration of analyte (mg/L)

Step 2: Calculate the instrument concentration, y

Where:

$$y = Ax^2 + Bx + C$$

Step 3: Solve for analyte concentration in sample, Cy

$$Cy = (y) (D)$$

Example Calculation (LCS):

Value of A from plot:	101.2796
Value of B from plot:	318.9056
Value of C from plot:	-2.2712
Absorbance of unknown from quantitation report (x):	0.1583
Calculated concentration (y):	50.7495108
Dilution factor (D):	1.00
Concentration of analyte in sample, Cy:	50.75 mg/L

Microbac Laboratories Inc.

Data Checklist

Date: 01-MAR-2017
 Analyst: TB
 Analyst: NA
 Method: NH3
 Instrument: SC2
 Curve Workgroup: NA
 Runlog ID: _____
 Analytical Workgroups: WG604662 WG604659

Calibration/Linearity	03/01/2017
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	TB
Secondary Reviewer	
Comments	

Primary Reviewer:
01-MAR-2017

Secondary Reviewer:

Todd Boyle



Analytical Method: 350.1
Login Number: L17021202

AAB#: WG604659

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6419-GRAB	01	02/22/17					03/01/2017	7.2	28		03/01/17	7.2	28	

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17021202 Work Group: WG604659
 Blank File ID: S2170301002.059 Blank Sample ID: WG604659-01
 Prep Date: 03/01/17 14:59 Instrument ID: SMARTCHEM2
 Analyzed Date: 03/01/17 14:59 Method: 350.1
 Analyst: TB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG604659-02	S2170301002.012	03/01/17 14:16	01
LH18/24-SP650-6419-GRAB	L17021202-01	S2170301002.072	03/01/17 15:38	DL01
DUP	WG604659-06	S2170301002.074	03/01/17 15:42	DL02

Report Name: BLANK_SUMMARY
 PDF File ID: 5180554
 Report generated 03/02/2017 13:14



Login Number: L17021202 Prep Date: 03/01/17 14:59 Sample ID: WG604659-01
 Instrument ID: SMARTCHEM2 Run Date: 03/01/17 14:59 Prep Method: 350.1
 File ID: S2170301002.059 Analyst: TB Method: 350.1
 Workgroup (AAB#): WG604659 Matrix: Water Units: mg/L
 Contract #: _____ Cal ID: SMARTC-01-MAR-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrogen, Ammonia	0.0500	0.200	0.0500	1	U

DL Method Detection Limit
 LOQ Reporting/Practical Quantitation Limit
 ND Analyte Not detected at or above reporting limit
 * |Analyte concentration| > 1/2 RL

Report Name: BLANK
 PDF ID: 5180555
 02-MAR-2017 13:14



Login Number: L17021202 Run Date: 03/01/2017 Sample ID: WG604659-02
 Instrument ID: SMARTCHEM2 Run Time: 14:16 Prep Method: 350.1
 File ID: S2170301002.012 Analyst: TB Method: 350.1
 Workgroup (AAB#): WG604659 Matrix: Water Units: mg/L
 QC Key: DOD4 Lot#: STD80299 Cal ID: SMARTC-01-MAR-17

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrogen, Ammonia	2.00	1.91	95.6	90 - 110	

LCS - Modified 03/06/2008
 PDF File ID: 5180556
 Report generated: 03/02/2017 13:14



2.1.1.3 Raw Data

SMARTCHEM RUN LOG
(smartchem2, smartchem3)

WORKGROUP: WG604659

662

Daily Check

- Lamp On
 - Probe Rinse Full
 - DI Water > 1/2 Full
 - Wash Solution > 1/2 Full
 - NO3 Reagent bottle connected / purged
 - NO3 pH adj to pH 5-9
 - Syringe filter lot # _____
 - pH paper Lot #: _____
- WBL Run
 - Reagents Full
 - Dilution H₂O Full
 - Waste Container Check

- 1) Workgroup _____
Plan # _____
- 2) Workgroup _____
Plan # _____
- 3) Workgroup _____
Plan # _____
- Instrument: SC1 SC2

Analyte	1	2	3
	NH ₃		
	Dilution		
SC Prepared Curve			
Position			
1-1	ICW		
1-2	BK		
1-3	LLS		
1-4	LLSDUP	BK	
1-5	2-1202-01	Auto 45	
1-6	1210-04		
1-7	1257-02		
1-8	1299-01	150	
1-9	1302-02	Auto 45	
1-10	1327-01		
1-11	1408-03		
1-12	1472-03		
1-13	04		
1-14	1475-01		
1-15	02		
1-16	3-16-01		
1-17	-02		
1-18	-03		
1-19	-04		
1-20	DND 1302-02		
1-21	MS 1302-02		
1-22	MS 1475-01		
2-1	BK		
2-2	LLS		
2-3	LLSDUP		

Position	Analyte	1	2	3
2-4	2-1456-34			
2-5	36			
2-6	38			
2-7	1458-01			
2-8	04			
2-9	05	MS		
2-10	06	MSD		
2-11	13			
2-12	16			
2-13	19			
2-14	22			
2-15	25			
2-16	28			
2-17	31			
2-18	DUP 1456-34			
2-19	MS			
2-20	BK WG604659-01			
2-21				
2-22				
2-23				
2-24				
2-25				
2-26				
3-1				
3-2				

NOTES:
 * Run NO2 std on NO3 runs
 * LCSD must be run if no MS or Duplicate
 *MS(10% sample): NO3, TKN, NH3, PHOS

DCN#124279



SMARTCHEM RUN LOG
(smartchem2, smartchem3)

WORKGROUP: WG604659

Analyte	1	2	3
Position			
3-3			
3-4			
3-5			
3-6			
3-7			
3-8			
3-9			
3-10			
3-11			
3-12			
3-13			
3-14			
3-15			

Analyte	1	2	3
Position			
3-16			
3-17			
3-18			
3-19			
3-20			
3-21			
3-22			
3-23			
3-24			
3-25			
3-26			
3-27			
3-28			

Chloride	EPA 325.2/SM 4500-Cl E-2000
Nitrate-Nitrite	EPA 353.2/SM 4500-NO3 F-2000
Alkalinity	EPA 310.2
Sulfate	EPA 375.4/SM 426C (15 th)/SM4500-504 E-1997

Ammonia	EPA 350.1/SM 4500-NH3 B-1997
TKN	EPA 351.2
Phos	EPA 365.4

Analyte	NH ₃	AA	Reagents
SOP & Revision			
Curve Stock (SC made)	SK 80467		39214
NO2 STD			39421
ICV	SK 80370		38596
CCV	SK 80468		
LCS	SK 80369	SK 80369	
MS	TS 3/1/17 Dilution	SK 80299 0.1(100)/10 = 1.0	

Comments: _____

Analyst: Tommy Orange

Date: 3/1/17

DCN#124279



AMMONIA DISTILLATION LOG

SOP K3501 Revision # 24

LCS: STD 80299

SPIKE: STD 80299

WATER (mg/L)

DAILY DIL. 8(100)/1280 = 2
46(100)/4022

DAILY DIL. 0.4(100)/402
1

SOIL (mg/Kg)

* All Distillate are at a Final Volume of 40 mL.

RGT 39370
RGT 39399

SAMPLE	VOLUME DISTILLED (mL or g)	CHLORINE PRESENT?	pH ADJUSTED 9.5 ± 0.2	COMMENTS	
BLANK	40	NO	yes		
LCS()	40	NO			
02-1202-01	40	NO	|		
02-1210-04	40	NO			
02-1257-02	40	NO			
02-1299-01	40	NO			
02-1302-02	40	NO			
02-1327-01	40	NO			
02-1408-03	40	NO			
02-1472-03	40	NO			
-04	40	NO			
02-1475-01	40	yes			
02	40	NO			
03-016-01	40	NO			CT1
-02	40	NO			CT1
-03	40	NO			CT1
04	40	NO			CT1
DUP 02-1302-02	40	NO		yes	
MS 02-1302-02	40	NO			
MS 02-1475-01	40	yes		L	

Analyst: [Signature]

Date/Time: 03-01-17 / 1015

*MS required on 10% of samples (EPA 350.1)
*MS/MS required on each set of 20 samples (SM4500)

MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WNH3 -Unit [mg/L] -EPA 350.1/SM4500-NH3 AMMONIA

Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
DIL-1	RBL	0.000	0.0444	0.00		2:02:54 PM
DIL-1	RBL	0.000	0.0453	0.00		2:03:12 PM
DIL-1	RBL	0.000	0.0437	0.00		2:04:42 PM
DIL-1	Std-1	0.000	-0.0002	0.00	INV	2:05:00 PM
SR5-1	Std-2	0.030	0.0080	0.00		2:06:30 PM
SR5-2	Std-3	0.094	0.0243	0.00		2:06:48 PM
SR5-3	Std-4	0.600	0.1474	0.00		2:08:37 PM
SR5-4	Std-5	1.050	0.2621	0.00		2:08:54 PM
SR5-5	Std-6	2.100	0.5245	0.00		2:10:43 PM
ST-1	Std-7	3.000	0.7416	0.00		2:11:00 PM
ST-3	1CCV (1.5 mg/L)	1.507	0.3741	100.47		2:12:31 PM
ST-2	2CCB (0 mg/L)	-0.024	-0.0053	0.00	INV,><,LL	2:12:49 PM
1	ICV	1.435	0.3563	0.00		2:14:37 PM
2	WG604659-01 BLK	× 0.060	0.0154	0.00		2:14:55 PM
3	WG604659-02 LCS	1.912	0.4745	0.00		2:16:25 PM
4	WG604659-03 LCS DUB	-0.031	-0.0071	0.00	INV,><,LL	2:16:43 PM
5	L17021202-01	× 18.971	4.7026	0.00	><,LH	2:18:13 PM
6	L17021210-04	0.217	0.0544	0.00		2:18:31 PM
7	L17021257-02	0.149	0.0376	0.00		2:20:01 PM
8	L17021299-01 (50)	× 3.505	0.8694	0.00	><,LH	2:20:19 PM
9	L17021302-02	× 7.287	1.8066	0.00	EPL,><,LH	2:21:49 PM
10	L17021327-01	1.708	0.4238	0.00		2:22:07 PM
ST-3	1CCV (1.5 mg/L)	1.472	0.3654	98.13		2:23:37 PM
ST-2	2CCB (0 mg/L)	-0.025	-0.0055	0.00	INV,><,LL	2:23:55 PM
11	L17021408-03	0.139	0.0350	0.00		2:25:25 PM
12	L17021472-03	0.350	0.0872	0.00		2:25:43 PM
13	L17021472-04	0.298	0.0745	0.00		2:27:13 PM
14	L17021475-01	1.402	0.3480	0.00		2:28:43 PM
15	L17021475-02	0.109	0.0275	0.00		2:29:37 PM
16	L17030016-01	0.111	0.0280	0.00		2:30:31 PM
17	L17030016-02	0.179	0.0449	0.00		2:31:25 PM
18	L17030016-03	0.123	0.0311	0.00		2:32:19 PM

Report Date :03/01/2017 Run Date :3/1/2017 Operator : SMARTCHEM2 Plan # :20170301002
 Plan Description : NH3-A2-TB/03/01/2017

MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WNH3 -Unit [mg/L] - EPA 350.1/SM4500-NH3 AMMONIA

Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
19	L17030016-04	0.126	0.0318	0.00		2:33:13 PM
20	WG604659-06 DUP	× 7.018	1.7400	0.00	><,LH	2:34:07 PM
ST-3	1CCV (1.5 mg/L)	1.503	0.3732	100.23		2:35:01 PM
ST-2	2CCB (0 mg/L)	-0.012	-0.0025	0.00	INV,><,LL	2:35:55 PM
21	WG604659-07 MS	× 8.325	2.0639	0.00	EPL,><,LH	2:36:49 PM
22	WG604659-08 MS	2.263	0.5614	0.00		2:37:43 PM
23	7B ID 23 Blk ^{WG 604662} WG 604 -01	-0.029	-0.0067	0.00	INV,><,LL	2:38:37 PM
24	3/1/17 ID 24 US -02	1.898	0.4710	0.00		2:39:31 PM
25	ID 25 ^{USDP} -03	1.907	0.4733	0.00		2:40:25 PM
ST-3	1CCV (1.5 mg/L)	1.526	0.3787	101.71		2:41:19 PM
ST-2	2CCB (0 mg/L)	-0.014	-0.0030	0.00	INV,><,LL	2:42:13 PM
26	L17021456-34	-0.025	-0.0057	0.00	INV,><,LL	2:43:07 PM
27	L17021456-36	-0.025	-0.0055	0.00	INV,><,LL	2:44:01 PM
28	L17021456-38	-0.025	-0.0056	0.00	INV,><,LL	2:44:55 PM
29	L17021458-01	-0.006	-0.0010	0.00	INV,><,LL	2:45:49 PM
30	L17021458-04	-0.010	-0.0020	0.00	INV,><,LL	2:46:43 PM
31	L17021458-05	1.044	0.2593	0.00		2:47:37 PM
32	L17021458-06	1.036	0.2573	0.00		2:48:31 PM
33	L17021458-13	-0.021	-0.0045	0.00	INV,><,LL	2:49:25 PM
34	L17021458-16	-0.005	-0.0007	0.00	INV,><,LL	2:50:19 PM
35	L17021458-19	-0.015	-0.0031	0.00	INV,><,LL	2:51:13 PM
ST-3	1CCV (1.5 mg/L)	1.559	0.3869	103.91		2:52:07 PM
ST-2	2CCB (0 mg/L)	-0.010	-0.0020	0.00	INV,><,LL	2:53:01 PM
36	L17021458-22	0.017	0.0047	0.00		2:53:55 PM
37	L17021458-25	-0.021	-0.0047	0.00	INV,><,LL	2:54:49 PM
38	L17021458-28	-0.021	-0.0047	0.00	INV,><,LL	2:55:43 PM
39	L17021458-31	-0.021	-0.0047	0.00	INV,><,LL	2:56:37 PM
40	WG604662-06	-0.023	-0.0052	0.00	INV,><,LL	2:57:31 PM
41	7B WG604662-09 ^{OT}	-0.027	-0.0060	0.00	INV,><,LL	2:59:01 PM
42	3/1/17 ID 42 ^{WG 604659-01} Blk	0.031	0.0082	0.00		2:59:19 PM
43	ID 43	-0.029	-0.0067	0.00	INV,><,LL	3:01:07 PM
44	ID 44	-0.025	-0.0055	0.00	INV,><,LL	3:01:25 PM

Report Date :03/01/2017 Run Date :3/1/2017 Operator : SMARTCHEM2 Plan # :20170301002
 Plan Description : NH3-A2-TB/03/01/2017

MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WNH3 -Unit [mg/L] - EPA 350.1/SM4500-NH3 AMMONIA

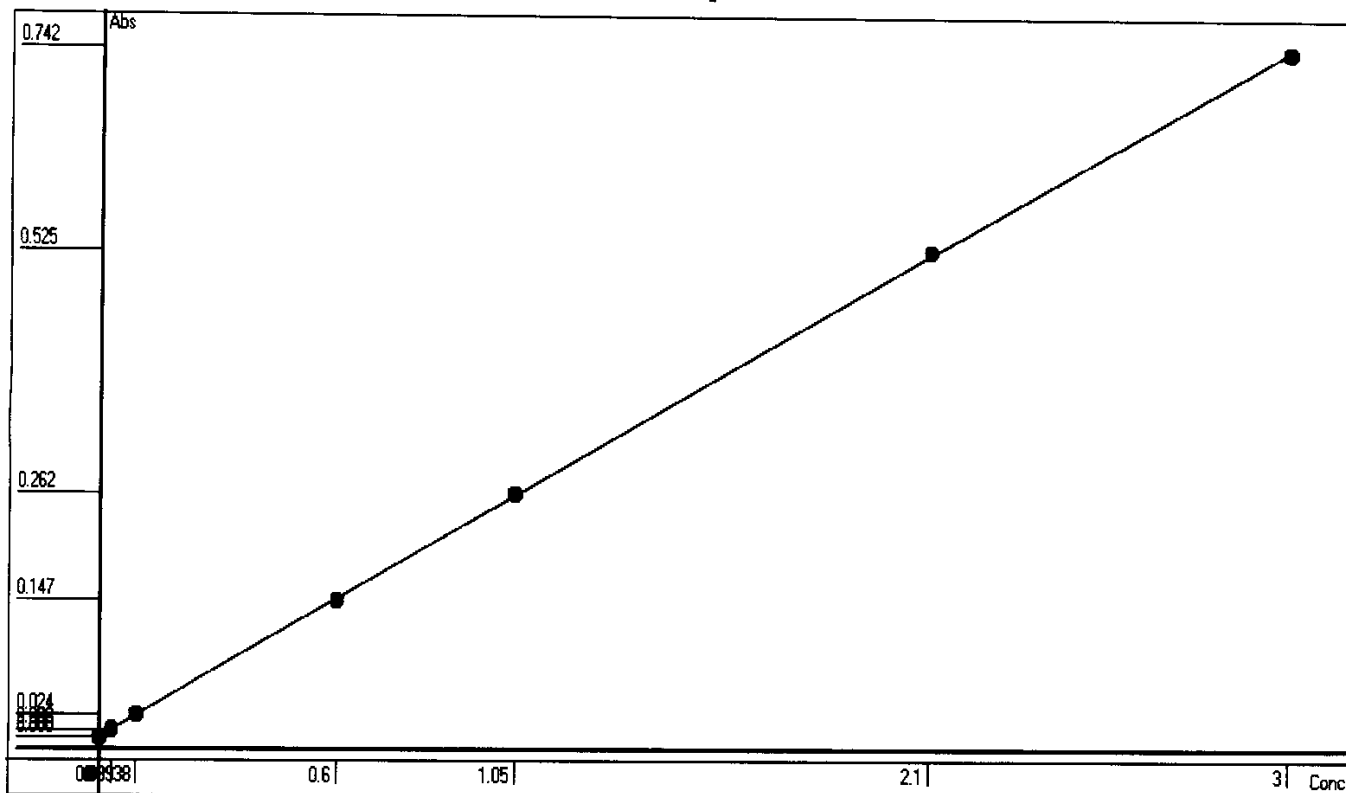
Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
45	ID 45	-0.023	-0.0051	0.00	INV,><,LL	3:02:55 PM
ST-3	1CCV (1.5 mg/L)	1.522	0.3777	101.44		3:03:13 PM
ST-2	2CCB (0 mg/L)	-0.006	-0.0008	0.00	INV,><,LL	3:05:01 PM
5-[1/2]	L17021202-01 (5)	× 10.327	1.2804	0.00	><,LH	3:17:12 PM
8-[1/2]	L17021299-01 (50)	3.326	0.4128	0.00	LH	3:19:00 PM
9-[1/2]	L17021302-02	× 6.742	0.8361	0.00	><,LH	3:20:47 PM
20-[1/2]	WG604659-06 DUP	× 6.548	0.8120	0.00	><,LH	3:22:36 PM
21-[1/2]	WG604659-07 MS	× 7.694	0.9540	0.00	><,LH	3:24:24 PM
ST-3	1CCV (1.5 mg/L)	1.572	0.3903	104.83		3:24:24 PM
ST-2	2CCB (0 mg/L)	0.000	0.0006	0.00		3:26:12 PM
5-[1/5]	L17021202-01 (5)	10.360	0.5141	0.00	LH	3:38:32 PM
9-[1/5]	L17021302-02	6.741	0.3347	0.00	LH	3:40:20 PM
20-[1/5]	WG604659-06 DUP	6.609	0.3282	0.00	LH	3:42:08 PM
21-[1/5]	WG604659-07 MS	7.691	0.3818	0.00	LH	3:43:56 PM
ST-3	1CCV (1.5 mg/L)	1.600	0.3970	106.63		3:43:56 PM
ST-2	2CCB (0 mg/L)	0.006	0.0020	0.00		3:45:26 PM

Report Date :03/01/2017 Run Date :3/1/2017 Operator : SMARTCHEM2 Plan # :20170301002
 Plan Description : NH3-A2-TB/03/01/2017

Calibrant Report - WNH3 -

Calib Lot #:010104 Exp Date:6/17/2020 User:Westco Scientific

Plan # : 20170301002 Description : [NH3-A2-TB/03/01/2017] Unit



Point	OD	Conc	Recalc Conc	% Error
1	-0.0002	0	-0.0029	-0.29
2	0.0080	0.03	0.0302	0.67
3	0.0243	0.0938	0.0959	2.24
4	0.1473	0.6	0.5922	-1.30
5	0.2621	1.05	1.0554	0.51
6	0.5245	2.1	2.1141	0.67
7	0.7416	3	2.9900	-0.33

Conc= +4.0347*Abso -0.0021 R²=1.0000

RBL
0.044
0

Report Date 3/1/2017 Run Date 3/1/2017

2.1.2 Orthophosphate Data

2.1.2.1 Summary Data

Lab Report #: L17021202

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021202-01	PrePrep Method: N/A	Instrument: UV-2600
Client ID: LH18/24-SP650-6419-GRAB	Prep Method: 365.2	Prep Date: N/A
Matrix: Water	Analytical Method: 365.2	Cal Date: 12/08/2016 13:50
Workgroup #: WG604017	Analyst: ADG	Run Date: 02/23/2017 15:25
Collect Date: 02/22/2017 10:00	Dilution: 5	File ID: 00.1702231525-06
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Orthophosphate	14265-44-2	4.33		0.500	0.250	0.125

2.1.2.2 QC Summary Data

Example Calculations for Visible Spectrophotometric Methods

Linear Calibration Model

Step 1 - Retrieve Curve Data from ICAL

m = slope of the linear equation
 b = intercept from the linear equation
 y = instrument response as absorbance or OD
 x = concentration of analyte (mg/L)
 $y = mx + b$

Step 2: Calculate the instrument concentration, x

Where:

$$x = (y - b)/m$$

Step 3: Solve for analyte concentration in sample, Cx

$$C_x = (x) (D)$$

Example Calculation (LCS):

Value of m from plot:	7.809
Value of b from plot:	0.0004135
Absorbance of unknown from quantitation report (y):	0.31
Calculated concentration (x):	0.03964483
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	0.0396 mg/L

SmartChem Autoanalyzer - Quadratic Calibration for Chloride and Sulfate

Step 1 - Retrieve Curve Data from Smartchem ICAL

A, B, C = constants from the ICAL quadratic regression

x = instrument response as absorbance or OD

y = concentration of analyte (mg/L)

Step 2: Calculate the instrument concentration, y

Where:

$$y = Ax^2 + Bx + C$$

Step 3: Solve for analyte concentration in sample, C_y

$$C_y = (y) (D)$$

Example Calculation (LCS):

Value of A from plot:	101.2796
Value of B from plot:	318.9056
Value of C from plot:	-2.2712
Absorbance of unknown from quantitation report (x):	0.1583
Calculated concentration (y):	50.7495108
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	50.75 mg/L

Microbac Laboratories Inc.

Data Checklist

Date: 23-FEB-2017
 Analyst: ADG
 Analyst: NA
 Method: PO4
 Instrument: UV-2600
 Curve Workgroup: NA
 Runlog ID: _____
 Analytical Workgroups: WG604017

Calibration/Linearity	02/23/17
Second Source Check	
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	ADG
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
27-FEB-2017

April Greene

Secondary Reviewer:
28-FEB-2017

Denna Johnson



Analytical Method: 365.2
Login Number: L17021202

AAB#: WG604017

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6419-GRAB	01	02/22/17					02/23/2017	1.2	2		02/23/17	1.2	2	

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17021202 Work Group: WG604017
 Blank File ID: 00.1702231525-03 Blank Sample ID: WG604017-01
 Prep Date: 02/23/17 15:25 Instrument ID: UV-2600
 Analyzed Date: 02/23/17 15:25 Method: 365.2
 Analyst: ADG

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG604017-02	00.1702231525-04	02/23/17 15:25	
LCS2	WG604017-03	00.1702231525-05	02/23/17 15:25	
LH18/24-SP650-6419-GRAB	L17021202-01	00.1702231525-06	02/23/17 15:25	
DUP	WG604017-05	00.1702231525-07	02/23/17 15:25	

Report Name: BLANK_SUMMARY
 PDF File ID: 5176372
 Report generated 02/28/2017 09:34



Login Number: L17021202 Prep Date: 02/23/17 15:25 Sample ID: WG604017-01
 Instrument ID: UV-2600 Run Date: 02/23/17 15:25 Prep Method: 365.2
 File ID: 00.1702231525-03 Analyst: ADG Method: 365.2
 Workgroup (AAB#): WG604017 Matrix: Water Units: mg/L
 Contract #: _____ Cal ID: UV-260-07-FEB-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Orthophosphate	0.0250	0.100	0.0250	1	U

DL Method Detection Limit
 LOQ Reporting/Practical Quantitation Limit
 ND Analyte Not detected at or above reporting limit
 * |Analyte concentration| > 1/2 RL

Report Name: BLANK
 PDF ID: 5176373
 28-FEB-2017 09:34



Login Number: L17021202 Analyst: ADG Prep Method: 365.2
 Instrument ID: UV-2600 Matrix: Water Method: 365.2
 Workgroup (AAB#): WG604017 Units: mg/L
 QC Key: DOD4 Lot #: STD80505
 Sample ID: WG604017-02 LCS File ID: 00.1702231525-04 Run Date: 02/23/2017 15:25
 Sample ID: WG604017-03 LCS2 File ID: 00.1702231525-05 Run Date: 02/23/2017 15:25

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Orthophosphate	1.00	0.968	96.8	1.00	0.982	98.2	1.48	90 - 110	20	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5176374
 Report generated: 02/28/2017 09:34



2.1.2.3 Raw Data

Curves

Parameter: P04

Spectrophotometer: UV-2600

Calibration (Curve) standard stock: 75790

Concentration: 1000 mg/L

Recipe for preparation of curve standards found in:

SOP: K3653 Revision: _____ Page: 9

Second Source Stock: Std 79302 (concentration: 10)

Daily Preparation: 1000/100

concentration = 10.0

Calibration Standards (mg/L)	Volume (mL)	Cell Size (cm)	Wavelength (nm)	Absorbance
Std 1 1.0	50	1cm	880	0.634
0.7				0.440
0.5				0.323
0.2				0.130
0.1				0.067
0.05				0.038
0.00				0.010
2nd Source 1.0				0.629
				Ag 12/8/14

Analyst: Paul Greene

Date/Time: 12/8/14 @ 1350

DCN#122607



Microbac Laboratories Inc.
INITIAL CALIBRATION

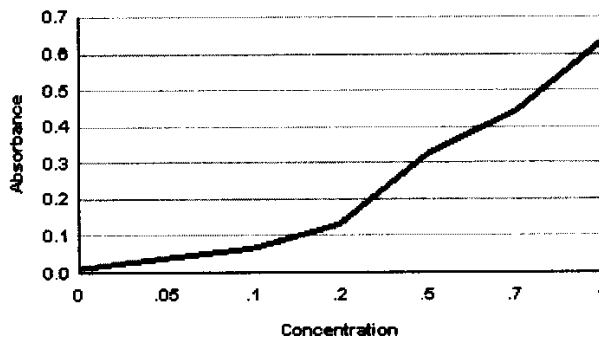
Workgroup: WG594148
Analytical Method: 300
Instrument ID: DV-2600

Analyst: ADG
Initial Calibration Date: 12/08/2016

Analyte: ORTHOPHOSPHATE
Number of Points: 7
Slope: 0.625244
Y-Intercept: 0.00680397
Coef. Of Correlation (R^2): 0.999835
Coef. Of Correlation (R): 0.999918

Concentration X	Absorbance Y	X^2	$X * Y$	Y-Fitted (mX^2+B)
0.00	0.0100	0.00	0.00	0.00680397
0.0500	0.0380	0.00250	0.00190	0.0380662
0.100	0.0670	0.0100	0.00670	0.0693284
0.200	0.130	0.0400	0.0260	0.131853
0.500	0.323	0.250	0.162	0.319426
0.700	0.440	0.490	0.308	0.444475
1.00	0.634	1.00	0.634	0.632048

Curve Fit



WG_ICAL_CAL_WET - Modified 03/06/2008
Report generated 12/08/2016 14:41



Microbac Laboratories Inc.
ALTERNATE SOURCE REPORT

Workgroup #: WG594148
 File ID: 00.1612081350-08
 CCV ID: WG594148-08
 Units: mg/L
 Analyte: ORTHOPHOSPHATE

Instrument ID: UV-2600
 Run Date: 12/08/2016
 Run Time: 13:50
 Analyst: ADG
 Cal ID: UV-260 - 08-DEC-16 13:50:07

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	1	0.995	0.629	0.5	

* Exceeds %D Limit

CCC Calibration Check Compounds
 SPCC System Performance Check Compounds

WET_WG_SSCV - Modified 03/06/2008
 Report generated 12/08/2016 14:40



WORKGROUP: WG604017

Orthophosphate
(orthophosphate1)

EPA 365.2 / SM4500-P E
SOP K3653 Rev 18
Color Reagent Chemicals
39094
38720
35086
00A 17313

CCV: 80504 LCS: 80505 Spike: 80502
Daily Dilution: 5(+)/50 Daily Dilution: 10(10)/100 Daily Dilution: 2(10)/50
Daily Dilution: = 0.5 Daily Dilution: 21.0 Daily Dilution: 20.4
Spectrophotometer: UV-2200 Curve ID: 12-8-14

SAMPLE	VOLUME	PH < 8.2	DILUTION	ABSORBANCE @ 880 nm
CCV: mg/L	50	/		0.003 0.325
BLK/CCB:	50	/		0.325 0.003
LCS: ppm	50	/		0.612
LCSD: ppm	50	/		0.421
1202-01	50	/		1.223
-01	50	/	115	0.548
01	50	/	110	0.280
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
DUP: 1202-01	50	/	115	0.549
MS: () 1202-01	50	/	115	0.578
MSD: ()	50			
CCV: ()	50	/		0.328
CCB:	50	/	115	0.328 0.005

Analyst: April Greene Date / Time: 2/23/17 1:02:55

DCN#124173



Microbac Laboratories Inc.
SAMPLE REPORT

Workgroup: WG604017
Analyte: ORTHOPHOSPHATE

Analyst: ADG
Date: 02/23/2017

Sample ID	I Vol	F Vol	Response	Slope	Y Intercept	Anal. Conc.	Rep. Conc.	Dil	Units
WG604017-01	50	50	0.00300	0.6252	0.006804	-0.0060840	-0.0060840	1	mg/L
WG604017-02	50	50	0.612	0.6252	0.006804	0.96794	0.96794	1	mg/L
WG604017-03	50	50	0.621	0.6252	0.006804	0.98233	0.98233	1	mg/L
L17021202-01	50	50	0.548	0.6252	0.006804	0.86558	4.3279	5	mg/L
WG604017-04	50	50	0.548	0.6252	0.006804	0.86558	4.3279	5	mg/L
WG604017-05	50	50	0.549	0.6252	0.006804	0.86718	4.3359	5	mg/L
WG604017-06	50	50	0.578	0.6252	0.006804	0.91356	4.5678	5	mg/L

UV_SAMPLE_REPORT - Modified 03/06/2008

Report generated 02/27/2017 10:36

Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

00843587

Workgroup #: WG604293
File ID: 00.1702231525-01
CCV ID: WG604293-01
Units: mg/L
Analyte: ORTHOPHOSPHATE

Instrument ID: UV-2600
Run Date: 02/23/2017
Run Time: 15:25
Analyst: ADG
Cal ID: UV-260 - 07-FEB-17

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	.5	0.509	0.650	1.8	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 02/27/2017 10:35



Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

00843588

Workgroup #: WG604293
File ID: 00.1702231525-09
CCV ID: WG604293-03
Units: mg/L
Analyte: ORTHOPHOSPHATE

Instrument ID: UV-2600
Run Date: 02/23/2017
Run Time: 15:25
Analyst: ADG
Cal ID: UV-260 - 07-FEB-17

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	.5	0.514	0.656	2.8	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008
Report generated 02/27/2017 10:35



2.1.3 Total Organic Carbon Data

2.1.3.1 Summary Data

Lab Report #: L17021202

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021202-01	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: LH18/24-SP650-6419-GRAB	Prep Method: 415.1	Prep Date: N/A
Matrix: Water	Analytical Method: 415.1	Cal Date: 02/10/2017 10:25
Workgroup #: WG603983	Analyst: DCM	Run Date: 02/23/2017 16:13
Collect Date: 02/22/2017 10:00	Dilution: 10	File ID: TC02232017.011
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Total Organic Carbon	TOC	462		20.0	10.0	5.00

2.1.3.2 QC Summary Data

**Total Organic Carbon Example Calculations
(Direct Readout Parameter)**

$$(\text{Readout})/(\text{dilution}) = \text{mg/L}$$

where:

Readout = direct readout from the instrument

dilution = dilution in decimal form (ex. 1/5 dilution = 0.2)

Microbac Laboratories Inc.

Data Checklist

Date: 23-FEB-2017
 Analyst: DCM
 Analyst: NA
 Method: TOC
 Instrument: TOC-VWP
 Curve Workgroup: NA
 Runlog ID: _____
 Analytical Workgroups: WG603983

Calibration/Linearity	02-10-2017
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DCM
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
24-FEB-2017



Secondary Reviewer:
28-FEB-2017




Analytical Method: 415.1
Login Number: L17021202

AAB#: WG603983

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6419-GRAB	01	02/22/17					02/23/2017	1.3	28		02/23/17	1.3	28	

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17021202 Work Group: WG603983
 Blank File ID: TC02232017.004 Blank Sample ID: WG603983-01
 Prep Date: 02/23/17 12:39 Instrument ID: TOC-VWP
 Analyzed Date: 02/23/17 12:39 Method: 415.1
 Analyst: DCM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG603983-02	TC02232017.005	02/23/17 12:58	01
LCS2	WG603983-03	TC02232017.006	02/23/17 13:19	01
LH18/24-SP650-6419-GRAB	L17021202-01	TC02232017.011	02/23/17 16:13	DL01
DUP	WG603983-05	TC02232017.012	02/23/17 16:36	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5175053
 Report generated 02/27/2017 12:53



Login Number: L17021202 Prep Date: 02/23/17 12:39 Sample ID: WG603983-01
 Instrument ID: TOC-VWP Run Date: 02/23/17 12:39 Prep Method: 415.1
 File ID: TC02232017.004 Analyst: DCM Method: 415.1
 Workgroup (AAB#): WG603983 Matrix: Water Units: mg/L
 Contract #: _____ Cal ID: TOC-VW-10-FEB-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	2.00	0.500	1	U

DL Method Detection Limit
 LOQ Reporting/Practical Quantitation Limit
 ND Analyte Not detected at or above reporting limit
 * |Analyte concentration| > 1/2 RL

Report Name: BLANK
 PDF ID: 5175054
 27-FEB-2017 12:53



Login Number: L17021202 Analyst: DCM Prep Method: 415.1
 Instrument ID: TOC-VWP Matrix: Water Method: 415.1
 Workgroup (AAB#): WG603983 Units: mg/L
 QC Key: DOD4 Lot #: STD77870
 Sample ID: WG603983-02 LCS File ID: TC02232017.005 Run Date: 02/23/2017 12:58
 Sample ID: WG603983-03 LCS2 File ID: TC02232017.006 Run Date: 02/23/2017 13:19

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	24.4	97.6	25.0	24.3	97.3	0.369	85 - 115	15	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5175055
 Report generated: 02/27/2017 12:53



2.1.3.3 Raw Data

Curve

WG 602411
WG 602476
WG 602481
2/11/17

Total Organic Carbon

MAKE DAILY

CCV (TOC): $(5/200)(1000) = 25\text{mg/L}$ LCS (TOC): $(5/200)(1000) = 25\text{mg/L}$

CCV (TIC): $(5/200)(1000) = 25\text{mg/L}$ MS (TOC): _____

Calibration Curve Date: _____ Reagent: RCR 38944
RCR 37673

SM5310-C : Matrix 2 WG _____ SOP: K 4151 Rev. 18 *2/11/17*
 EPA 415.1/9060A(mod): Matrix 1 WG _____ Instrument: Shimadzu TOC-VWP/ASI

- drain reservoir filled
- ASI water bottle full
- dilution water bottle full

- DAILY CHECK
- 3rd bottle full
 - sufficient gas
 - sufficient persulfate

- sufficient acid waste container

Position	Sample ID	Dilution	Position	Sample ID	Dilution	Position	Sample ID	Dilution
1	TC Curve		26	TC Curve		51		
2	TC ICV		27	Std 79318		52	See SOP	
3	TIC Curve		28			53	for point	
4	TIC ICV		29	TIC Curve		54	preparation	
5			30	Std 80415		55		
6			31			56		
7			32			57		
8			33	TOC (TC)		58		
9			34	ICV		59		
10			35	Std 77870		60	5/200 (1000) = 25	
11			36			61		
12			37	TIC ICV		62		
13			38	Std 80416		63		
14			39			64		
15			40			65		
16			41			66		
17			42			67		
18			43			68		
19	all points		44	analyzed in duplicate		69		
20			45			70		
21			46			71		
22			47			72		
23			48			73		
24			49			74		
25			50			75		

Analyst: David Merckli Date/Time: 2/10/17

DCN#123915



	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TC	TCCURVE		Complete	2/10/2017 10:29:51 A	0, 1, 2, 3, 4, 5
2	TC	TOC ICV	TC:23.90mg/L	Complete	2/10/2017 10:47:48 A	6
3	IC	TICCURVE		Complete	2/10/2017 3:55:41 PM	0, 1, 2, 3, 4, 5
4	IC	TIC CURVE	IC:24.27mg/L	Complete	2/10/2017 4:12:07 PM	6
5	TC		TC:0.000mg/L	Complete	2/10/2017 4:31:41 PM	7
6	IC	TOC/TIC	IC:8.571mg/L	Complete	2/10/2017 4:42:05 PM	7
7	TC	TOC/TIC	TC:32.10mg/L	Complete	2/10/2017 5:01:02 PM	7

2/12/2017 11:18:36 AM

CURVES-02-10-2017.132

Instr. Information

System
DetectorTOCVW ASI
Wet Chemical

Cal. Curve

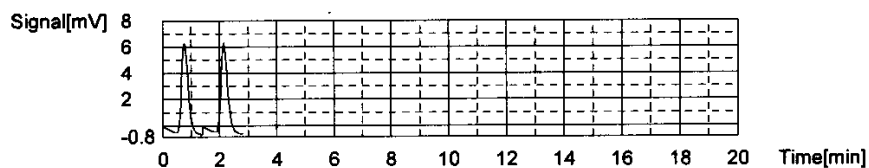
Sample Name: TCCURVE
 Sample ID: Untitled
 Cal. Curve: TCCURVE-02-10-2017.2017_02_10_09_32_59.cal
 Status: Completed

Type	Anal.
Standard	TC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	10.83	500uL	1	*****		2/10/2017 9:36:31 AM
2	10.82	500uL	1	*****		2/10/2017 9:40:05 AM

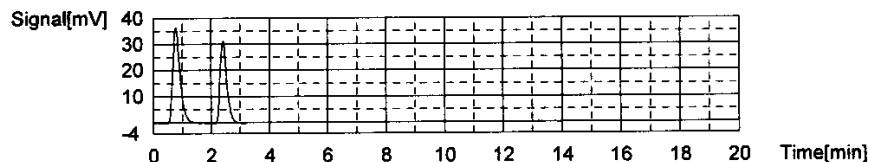
Acid Add. 0.000%
 Mean Area 10.82



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	64.31	500uL	1	*****		2/10/2017 9:45:28 AM
2	51.52	500uL	1	*****		2/10/2017 9:49:19 AM

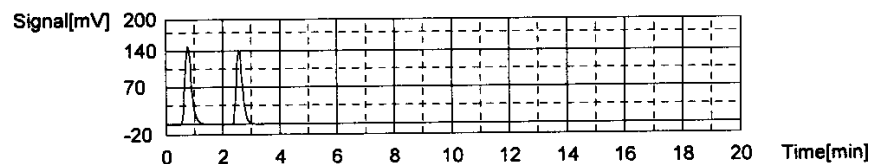
Acid Add. 0.000%
 Mean Area 57.92



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	238.4	500uL	1	*****		2/10/2017 9:55:04 AM
2	216.3	500uL	1	*****		2/10/2017 9:58:58 AM

Acid Add. 0.000%
 Mean Area 227.4

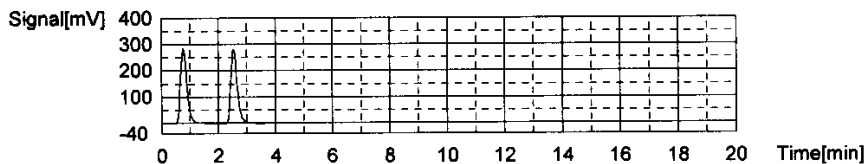


Conc: 10.00mg/L

1/6

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	442.5	500uL	1	*****		2/10/2017 10:04:41 AM
2	437.9	500uL	1	*****		2/10/2017 10:08:48 AM

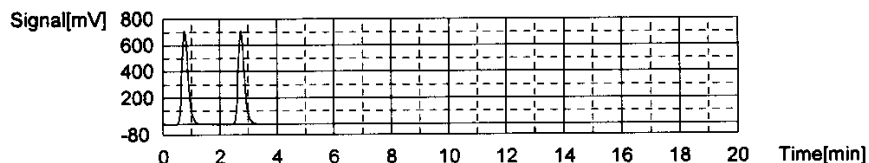
Acid Add. 0.000%
Mean Area 440.2



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1091	500uL	1	*****		2/10/2017 10:14:47 AM
2	1092	500uL	1	*****		2/10/2017 10:19:05 AM

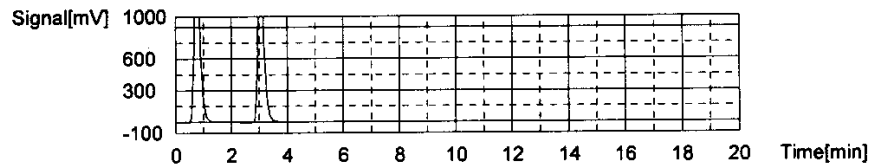
Acid Add. 0.000%
Mean Area 1092



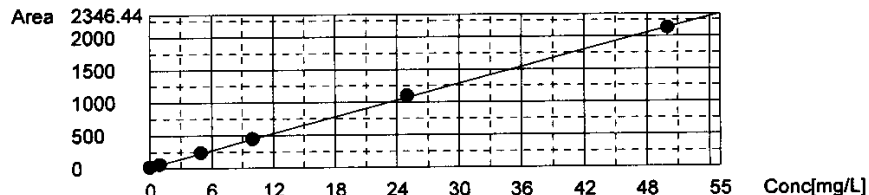
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	2132	500uL	1	*H*****		2/10/2017 10:25:19 AM
2	2118	500uL	1	*H*****		2/10/2017 10:29:51 AM

Acid Add. 0.000%
Mean Area 2125



Slope: 42.33
Intercept 16.87
r² 0.999887
Zero Shift No



Sample

Sample Name: TOC ICV
Sample ID: Untitled
Origin: TCCURVE-02-10-2017.2017_02_10_09_32_59.cal
Status: Completed
Chk. Result

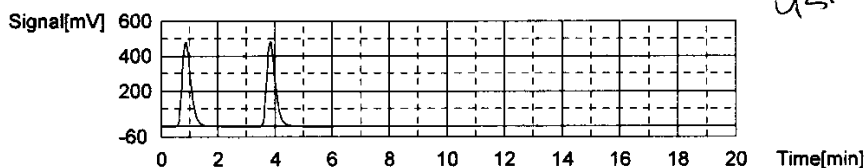
Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:23.90mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1029	23.91mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/10/2017 10:42:11 AM
2	1028	23.89mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/10/2017 10:47:48 AM

Mean Area 1029
Mean Conc. 23.90mg/L



Q5.6%

Cal. Curve

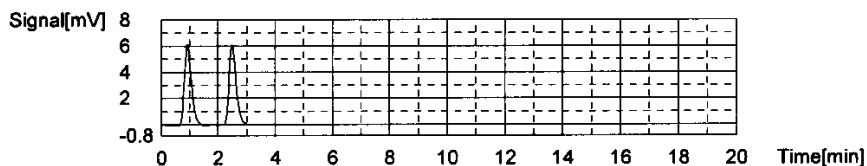
Sample Name: TICCURVE
Sample ID: Untitled
Cal. Curve: TICCURVE-02-10-2017.2017_02_10_14_45_10.cal
Status: Completed

Type	Anal.
Standard	TC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	10.59	500uL	1	*****		2/10/2017 2:49:09 PM
2	10.43	500uL	1	*****		2/10/2017 2:53:06 PM

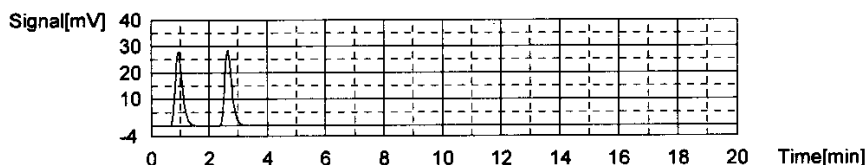
Acid Add. 3.000%
Mean Area 10.51



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	48.13	500uL	1	*****		2/10/2017 3:00:24 PM
2	49.13	500uL	1	*****		2/10/2017 3:04:41 PM

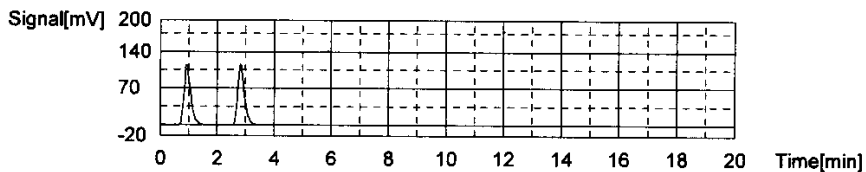
Acid Add. 3.000%
Mean Area 48.63



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	189.0	500uL	1	*****		2/10/2017 3:12:24 PM
2	190.1	500uL	1	*****		2/10/2017 3:16:55 PM

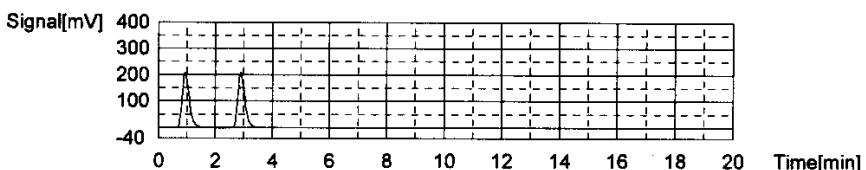
Acid Add. 3.000%
Mean Area 189.6



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	360.6	500ul	1	*****		2/10/2017 3:24:47 PM
2	362.2	500ul	1	*****		2/10/2017 3:29:24 PM

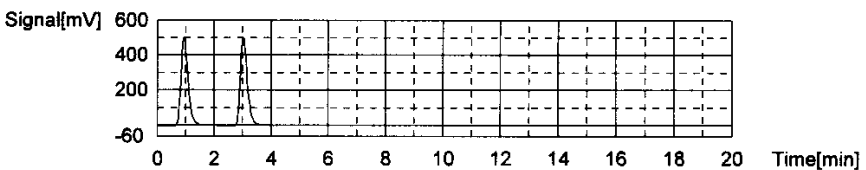
Acid Add. 3.000%
Mean Area 361.4



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	859.3	500ul	1	*****		2/10/2017 3:37:23 PM
2	856.9	500ul	1	*****		2/10/2017 3:42:16 PM

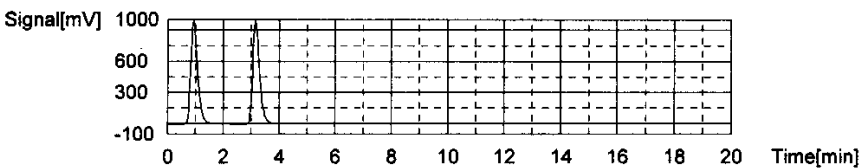
Acid Add. 3.000%
Mean Area 858.1



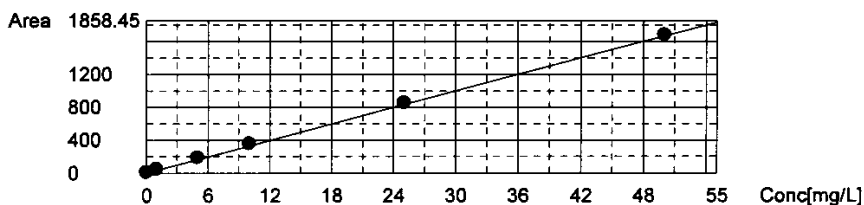
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1690	500ul	1	*****		2/10/2017 3:50:31 PM
2	1689	500ul	1	*****		2/10/2017 3:55:41 PM

Acid Add. 3.000%
Mean Area 1690



Slope: 33.49
Intercept: 0.000
r^2: 0.999919
Zero Shift: Yes



Sample

2/12/2017 11:18:36 AM

CURVES-02-10-2017.132

Sample Name: TIC CURVE
 Sample ID: Untitled
 Origin: TICCURVE-02-10-2017.2017_02_10_14_45_10.cal
 Status: Completed
 Chk. Result:

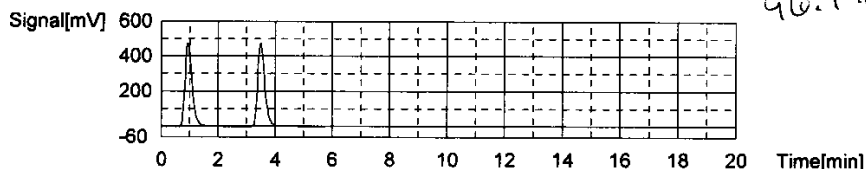
Type	Anal.	Dil.	Result
Unknown	IC	1.000	IC:24.27mg/L

1. Det

Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	810.5	24.20mg/L	500uL	1	1	TICCURVE-02-10-2017.2017_02_10_14_45	2/10/2017 4:06:15 PM
2	814.6	24.33mg/L	500uL	1	1	TICCURVE-02-10-2017.2017_02_10_14_45	2/10/2017 4:12:07 PM

Mean Area 812.5
 Mean Conc. 24.27mg/L



Sample

Sample Name: Untitled
 Sample ID: Untitled
 Origin: TCCURVE-02-10-2017.2017_02_10_14_14_25.cal
 Status: Completed
 Chk. Result:

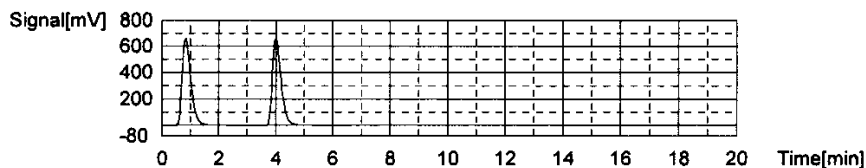
Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:0.000mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1406	0.000mg/L	500uL	1	1	TCCURVE-02-10-2017.2017_02_10_14_14	2/10/2017 4:25:42 PM
2	1411	0.000mg/L	500uL	1	1	TCCURVE-02-10-2017.2017_02_10_14_14	2/10/2017 4:31:41 PM

Mean Area 1409
 Mean Conc. 0.000mg/L



Sample

Sample Name: TOC/TIC
 Sample ID: Untitled
 Origin: TICCURVE-02-10-2017.2017_02_10_14_45_10.cal
 Status: Completed
 Chk. Result:

2/12/2017 11:18:36 AM

CURVES-02-10-2017.132

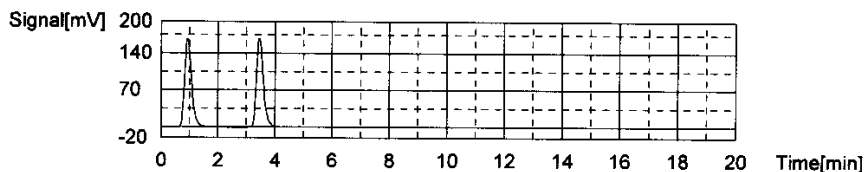
Type	Anal.	Dil.	Result
Unknown	IC	1.000	IC:8.571mg/L

1. Det

Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	286.8	8.565mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	2/10/2017 4:37:09 PM
2	287.2	8.577mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	2/10/2017 4:42:05 PM

Mean Area 287.0
Mean Conc. 8.571mg/L



Sample

Sample Name: TOC/TIC
Sample ID: Untitled
Origin: TCCURVE-02-10-2017.2017_02_10_09_32_59.cal
Status: Completed
Chk. Result:

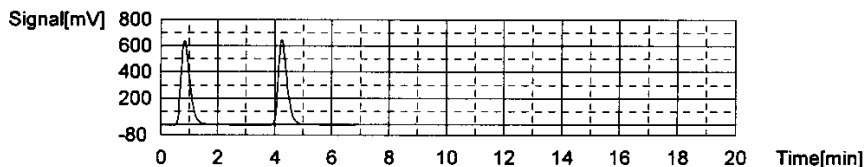
Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:32.10mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1378	32.16mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_59	2/10/2017 4:55:07 PM
2	1373	32.04mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_59	2/10/2017 5:01:02 PM

Mean Area 1376
Mean Conc. 32.10mg/L



WORKGROUP: WG603983

Total Organic Carbon

MAKE DAILY

CCV (TOC): Std 79381
 $(5/200)(1000) = 25\text{mg/L}$

LCS (TOC): Std 77870
 $(5/200)(1000) = 25\text{mg/L}$

CCV (TIC): Std 80416
 $(5/200)(1000) = 25\text{mg/L}$

MS (TOC): Std 77870
 $0.4(\text{umol})/40 = 10$

Calibration Curve Date: 2/16/17

Reagent: RGT 39272
RGT 39266

SM5310-C : Matrix 2 WG 603983

EPA 415.1/9060A(mod): Matrix 1 WG _____ SOP: K 4151 Rev. 19

Instrument: Shimadza TOC-VWP/ASI

- | | | |
|--|---|---|
| <input checked="" type="checkbox"/> drain reservoir filled | <input checked="" type="checkbox"/> DAILY CHECK | <input checked="" type="checkbox"/> sufficient acid |
| <input checked="" type="checkbox"/> ASI water bottle full | <input checked="" type="checkbox"/> 3 rd bottle full | <input checked="" type="checkbox"/> waste container |
| <input checked="" type="checkbox"/> dilution water bottle full | <input checked="" type="checkbox"/> sufficient gas | |
| | <input checked="" type="checkbox"/> sufficient persulfate | |

Position	Sample ID	Dilution	Position	Sample ID	Dilution	Position	Sample ID	Dilution
1	TIC		26			51		
2	TOC/TIC		27			52		
3	CCV		28			53		
4	Blk		29			54		
5	LCS		30			55		
6	LCS/DUP		31			56		
7	02-1162-01		32			57		
8	C2	1/2	33			58		
9	C3		34			59		
10	C4		35			60		
11	G2-1202-01	1/2	36			61		
12	DUP 02-1162-01		37			62		
13	MS 02-1162-01		38			63		
14	CCV		39			64		
15	CCB		40			65		
* 16	02-1216-01	1/200	41			66		
17	CCV		42			67		
18	CCB		43			68		
19			44			69		
20			45			70		
21			46			71		
22			47			72		
23			48			73		
24			49			74		
25			50			75		

Analyst: David Mervelle Date/Time: 2/23/17

* Sample diluted for turbidity

DCN#124170



	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TOC	TIC	TOC:1.469mg/L TC:24.95mg/L IC:23.48mg/L	Comple	2/23/2017 12:06:35 P	1
2	TOC	TOC/TIC	TOC:24.95mg/L TC:32.91mg/L IC:7.967mg/L	Comple	2/23/2017 12:22:06 P	2
3	TOC	CCV	!!Error!! TOC:24.11mg/L TC:23.77mg/L IC:-0.3377mg/L	Comple	2/23/2017 12:34:16 P	3
4	TOC	WG603983-01 BLK	!!Error!! TOC:0.09618mg/L TC:-0.1529mg/L IC:-0.2490mg/L	Comple	2/23/2017 12:50:35 P	0
5	TOC	WG603983-02 LCS	!!Error!! TOC:24.41mg/L TC:24.04mg/L IC:-0.3681mg/L	Comple	2/23/2017 1:11:27 PM	5
6	TOC	WG603983-03 LCSDUP	!!Error!! TOC:24.32mg/L TC:23.96mg/L IC:-0.3623mg/L	Comple	2/23/2017 1:32:13 PM	6
7	TOC	L17021162-01	TOC:3.740mg/L TC:13.40mg/L IC:9.660mg/L	Comple	2/23/2017 1:53:49 PM	7
8	TOC	L17021162-02 (2)	TOC:4.602mg/L TC:41.68mg/L IC:37.08mg/L	Comple	2/23/2017 2:56:21 PM	8
9	TOC	L17021162-03	TOC:6.660mg/L TC:27.09mg/L IC:20.43mg/L	Comple	2/23/2017 3:18:36 PM	9
10	TOC	L17021162-04	TOC:3.231mg/L TC:12.79mg/L IC:9.554mg/L	Comple	2/23/2017 3:40:02 PM	10
11	TOC	L17021202-01 (10)	TOC:46.24mg/L TC:46.72mg/L IC:0.4875mg/L	Comple	2/23/2017 4:28:37 PM	11
12	TOC	WG603983-05 DUP	TOC:3.256mg/L TC:10.12mg/L IC:6.867mg/L	Comple	2/23/2017 4:49:40 PM	12
13	TOC	WG603983-06 MS	TOC:14.94mg/L TC:17.41mg/L IC:2.466mg/L	Comple	2/23/2017 5:10:41 PM	13
14	TOC	CCV	!!Error!! TOC:24.38mg/L TC:24.06mg/L IC:-0.3223mg/L	Comple	2/23/2017 5:22:51 PM	14
15	TOC	CCB	!!Error!! TOC:0.1184mg/L TC:-0.1537mg/L IC:-0.2721mg/L	Comple	2/23/2017 5:31:45 PM	0
16	TOC	L17021216-01 (200)	!!Error!! TOC:36.62mg/L TC:36.36mg/L IC:-0.2520mg/L	Comple	2/23/2017 5:57:39 PM	16
17	TOC	CCV	!!Error!! TOC:24.08mg/L TC:23.75mg/L IC:-0.3289mg/L	Comple	2/23/2017 6:09:49 PM	17
18	TOC	CCB	!!Error!! TOC:0.1219mg/L TC:-0.1499mg/L IC:-0.2718mg/L	Comple	2/23/2017 6:18:41 PM	0

2/24/2017 7:32:34 AM

1/1

Instr. Information

System TOCVW ASI
 Detector Wet Chemical

Sample

Sample Name: TIC
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017.met
 Status: Completed
 Chk. Result

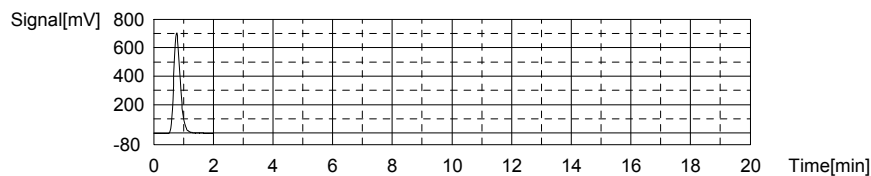
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.469mg/L TC:24.95mg/L IC:23.48mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1073	24.95mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 12:01:12 PM

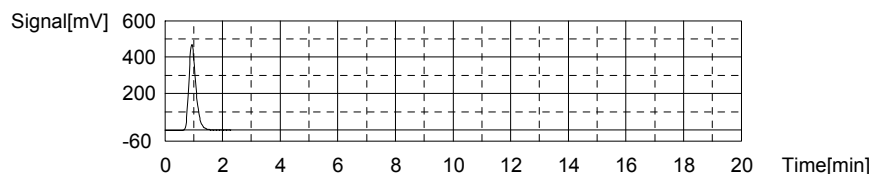
Mean Area 1073
 Mean Conc. 24.95mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	804.8	23.48mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45	2/23/2017 12:06:35 PM

Mean Area 804.8
 Mean Conc. 23.48mg/L



Sample

Sample Name: TOC/TIC
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017.met
 Status: Completed
 Chk. Result

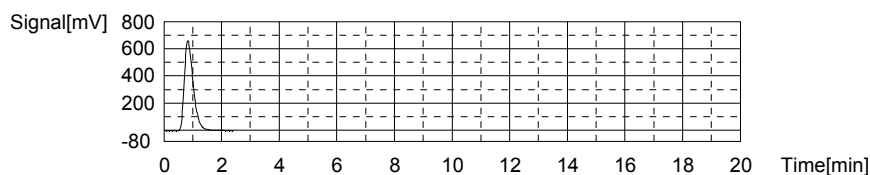
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:24.95mg/L TC:32.91mg/L IC:7.967mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1410	32.91mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 12:17:12 PM

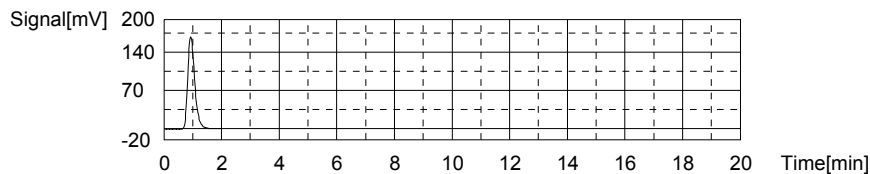
Mean Area 1410
Mean Conc. 32.91mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	285.2	7.967mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_12	12/23/2017 12:22:06 PM

Mean Area 285.2
Mean Conc. 7.967mg/L



Sample

Sample Name: CCV
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

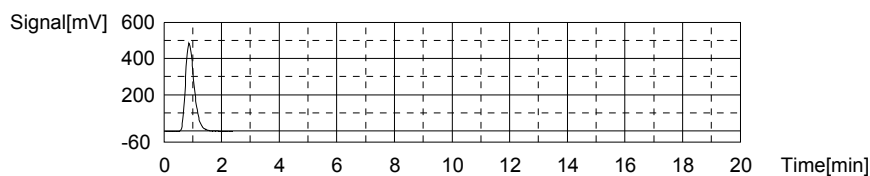
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.11mg/L TC:23.77mg/L IC:-0.3377mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1023	23.77mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 12:29:55 PM

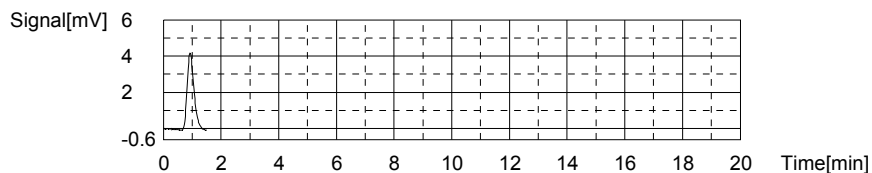
Mean Area 1023
Mean Conc. 23.77mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.108	-0.3377mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_12	12/23/2017 12:34:16 PM

Mean Area 7.108
 Mean Conc. -0.3377mg/L



Sample

Sample Name: WG603983-01 BLK
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017A.met
 Status: Completed
 Chk. Result

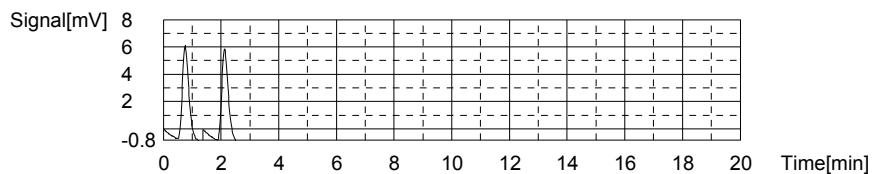
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.09618mg/L TC:-0.1529mg/L IC:-0.2490mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.45	-0.1516mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 12:39:16 PM
2	10.34	-0.1542mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 12:42:46 PM

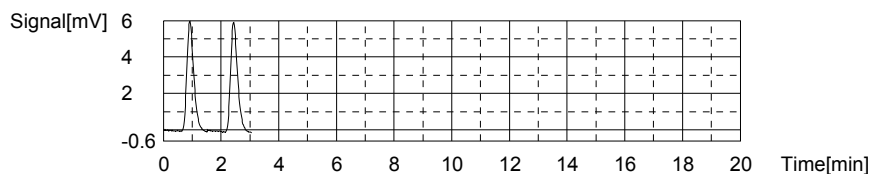
Mean Area 10.40
 Mean Conc. -0.1529mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.06	-0.2495mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_12	12/23/2017 12:46:38 PM
2	10.09	-0.2486mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_12	12/23/2017 12:50:35 PM

Mean Area 10.07
 Mean Conc. -0.2490mg/L



Sample

Sample Name: WG603983-02 LCS
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017A.met
 Status: Completed
 Chk. Result

2/24/2017 7:32:38 AM

02-23-2017-TOC-DCM.I32

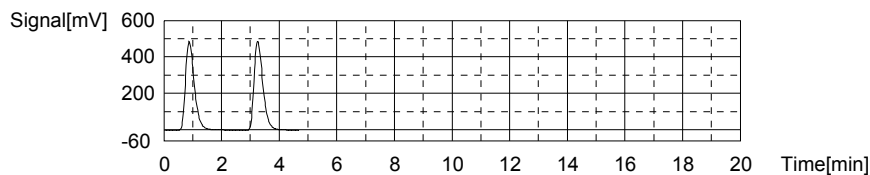
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.41mg/L TC:24.04mg/L IC:-0.3681mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1034	24.03mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 12:58:24 PM
2	1035	24.06mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 1:02:57 PM

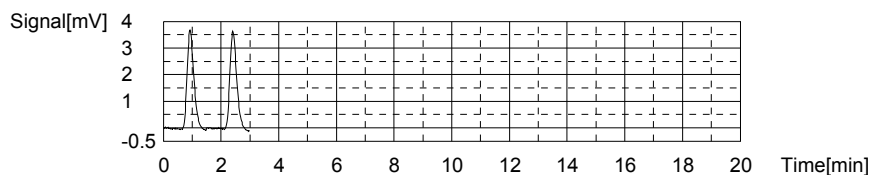
Mean Area 1035
Mean Conc. 24.04mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.148	-0.3663mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_12	2/23/2017 1:07:18 PM
2	6.026	-0.3700mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_12	2/23/2017 1:11:27 PM

Mean Area 6.087
Mean Conc. -0.3681mg/L



Sample

Sample Name: WG603983-03 LCS DUP
Sample ID: <Untitled>
Origin: TOC-02-10-2017A.met
Status: Completed
Chk. Result

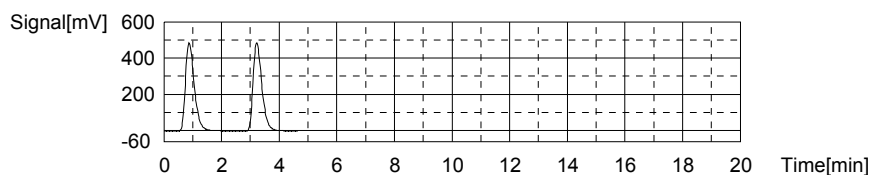
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.32mg/L TC:23.96mg/L IC:-0.3623mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1035	24.06mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 1:19:15 PM
2	1027	23.87mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 1:23:48 PM

Mean Area 1031
Mean Conc. 23.96mg/L



Anal.: IC

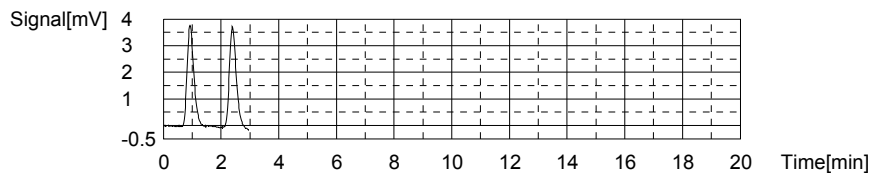
4/13

2/24/2017 7:32:38 AM

02-23-2017-TOC-DCM.132

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.263	-0.3629mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 1:28:07 PM
2	6.303	-0.3617mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 1:32:13 PM

Mean Area 6.283
Mean Conc. -0.3623mg/L



Sample

Sample Name: L17021162-01
Sample ID: <Untitled>
Origin: TOC-02-10-2017A.met
Status: Completed
Chk. Result

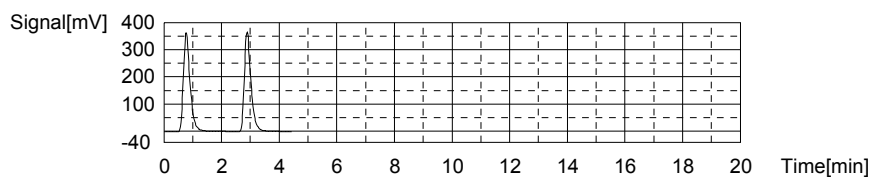
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.740mg/L TC:13.40mg/L IC:9.660mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	581.1	13.33mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 1:39:46 PM
2	587.0	13.47mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 1:44:20 PM

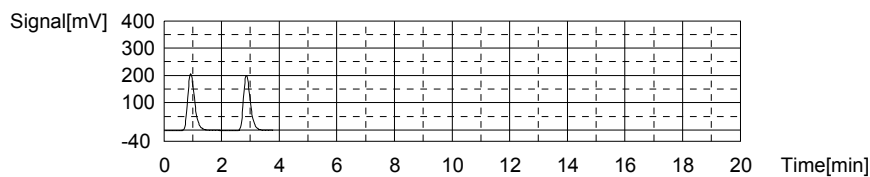
Mean Area 584.0
Mean Conc. 13.40mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	347.2	9.819mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 1:49:13 PM
2	336.6	9.502mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 1:53:49 PM

Mean Area 341.9
Mean Conc. 9.660mg/L



Sample

5/13

2/24/2017 7:32:38 AM

02-23-2017-TOC-DCM.I32

Sample Name: L17021162-02
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017A.met
 Status: Completed
 Chk. Result

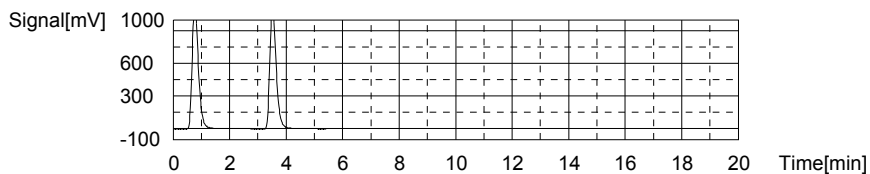
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.602mg/L TC:41.68mg/L IC:37.08mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1775	41.54mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 2:39:59 PM
2	1787	41.82mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 2:45:53 PM

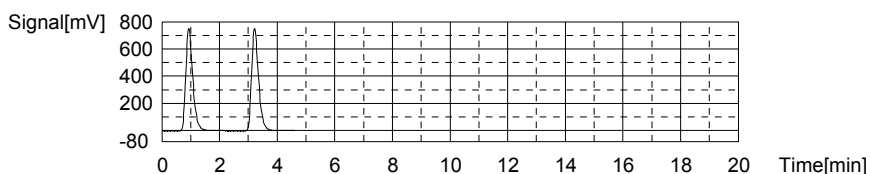
Mean Area 1781
 Mean Conc. 41.68mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1264	37.20mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_12	2/23/2017 2:51:15 PM
2	1256	36.96mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_12	2/23/2017 2:56:21 PM

Mean Area 1260
 Mean Conc. 37.08mg/L



Sample

Sample Name: L17021162-03
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017A.met
 Status: Completed
 Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:6.660mg/L TC:27.09mg/L IC:20.43mg/L

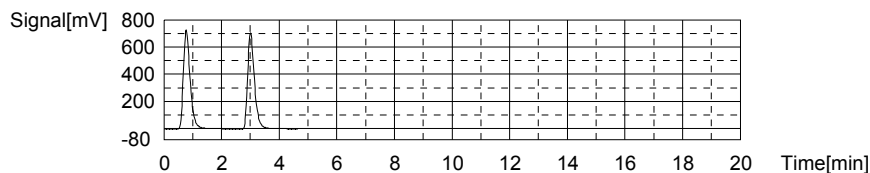
1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1175	27.36mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 3:04:02 PM
2	1152	26.82mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 3:08:51 PM

6/13

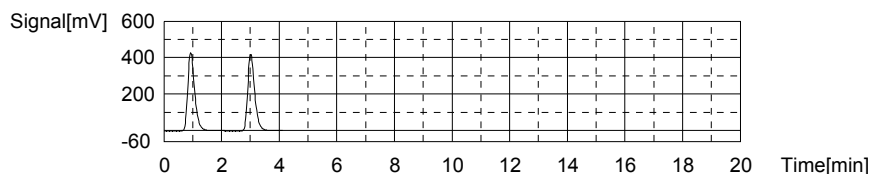
Mean Area 1164
Mean Conc. 27.09mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	707.9	20.59mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 3:13:54 PM
2	697.2	20.27mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 3:18:36 PM

Mean Area 702.5
Mean Conc. 20.43mg/L



Sample

Sample Name: L17021162-04
Sample ID: <Untitled>
Origin: TOC-02-10-2017A.met
Status: Completed
Chk. Result

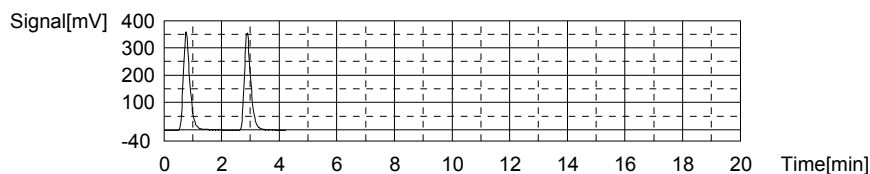
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.231mg/L TC:12.79mg/L IC:9.554mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	562.3	12.89mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32	5/2/23/2017 3:26:10 PM
2	553.7	12.68mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32	5/2/23/2017 3:30:37 PM

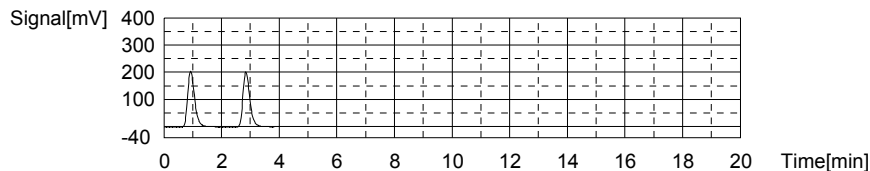
Mean Area 558.0
Mean Conc. 12.79mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	340.3	9.613mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 3:35:29 PM
2	336.4	9.496mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 3:40:02 PM

Mean Area 338.4
Mean Conc. 9.554mg/L



Sample

Sample Name: L17021202-01 (10)
Sample ID: <Untitled>
Origin: TOC-02-10-2017A.met
Status: Completed
Chk. Result

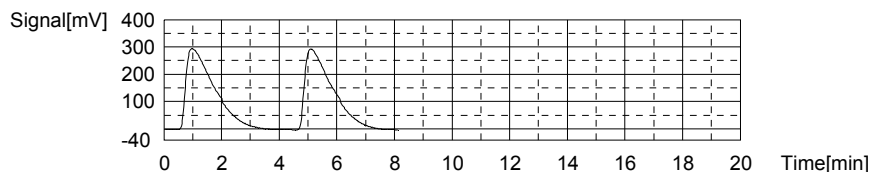
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:46.24mg/L TC:46.72mg/L IC:0.4875mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2014	47.19mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 4:13:38 PM
2	1975	46.26mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 4:19:54 PM

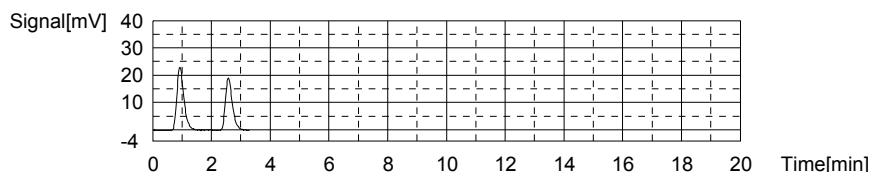
Mean Area 1995
Mean Conc. 46.72mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	38.05	0.5864mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_12	12/23/2017 4:24:23 PM
2	31.43	0.3887mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_12	12/23/2017 4:28:37 PM

Mean Area 34.74
Mean Conc. 0.4875mg/L



Sample

Sample Name: WG603983-05 DUP
Sample ID: <Untitled>
Origin: TOC-02-10-2017A.met
Status: Completed
Chk. Result

2/24/2017 7:32:38 AM

02-23-2017-TOC-DCM.I32

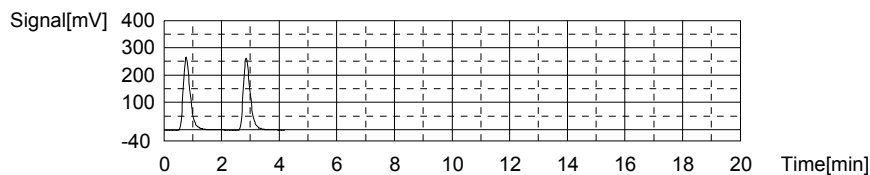
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.256mg/L TC:10.12mg/L IC:6.867mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	448.1	10.19mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 4:36:09 PM
2	442.5	10.06mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 4:40:31 PM

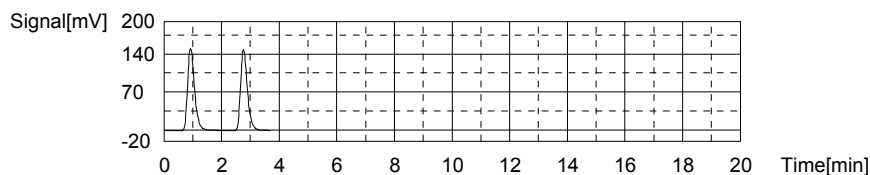
Mean Area 445.3
Mean Conc. 10.12mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	250.4	6.928mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_12	12/23/2017 4:45:11 PM
2	246.3	6.805mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_12	12/23/2017 4:49:40 PM

Mean Area 248.4
Mean Conc. 6.867mg/L



Sample

Sample Name: WG603983-06 MS
Sample ID: <Untitled>
Origin: TOC-02-10-2017A.met
Status: Completed
Chk. Result

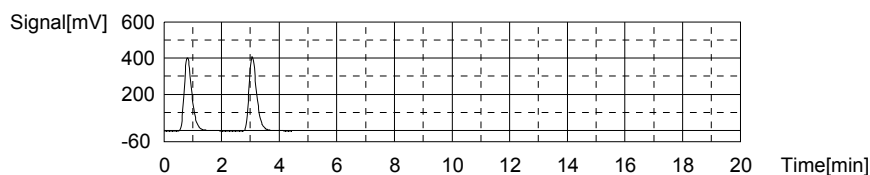
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:14.94mg/L TC:17.41mg/L IC:2.466mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	749.8	17.32mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 4:57:21 PM
2	757.7	17.50mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 5:01:54 PM

Mean Area 753.8
Mean Conc. 17.41mg/L



Anal.: IC

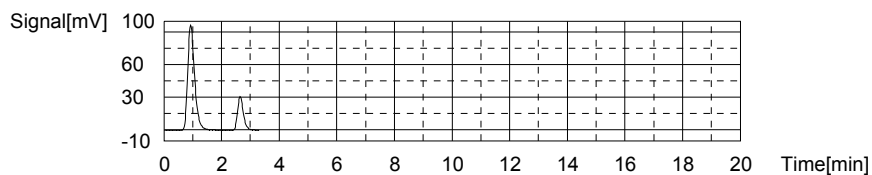
9/13

2/24/2017 7:32:38 AM

02-23-2017-TOC-DCM.I32

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	158.8	4.192mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 5:06:33 PM
2	43.17	0.7393mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 5:10:41 PM

Mean Area 101.0
Mean Conc. 2.466mg/L



Sample

Sample Name: CCV
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

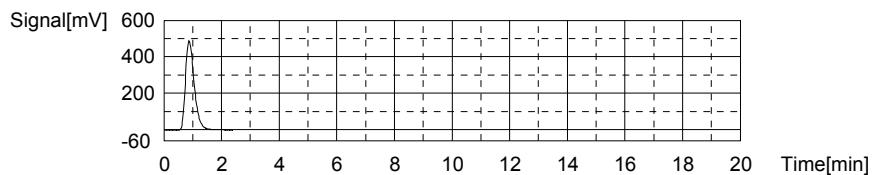
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.38mg/L TC:24.06mg/L IC:-0.3223mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1035	24.06mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_5	12/23/2017 5:18:30 PM

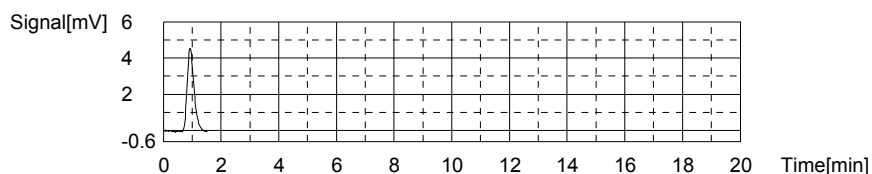
Mean Area 1035
Mean Conc. 24.06mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.623	-0.3223mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 5:22:51 PM

Mean Area 7.623
Mean Conc. -0.3223mg/L



Sample

Sample Name: CCB
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

10/13

2/24/2017 7:32:38 AM

02-23-2017-TOC-DCM.t32

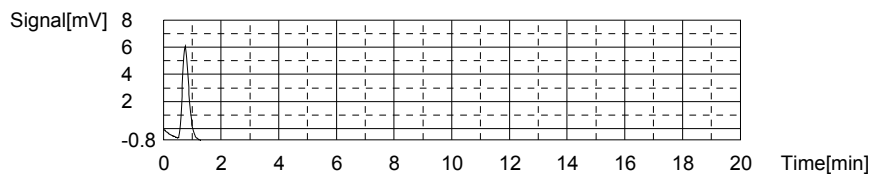
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1184mg/L TC:-0.1537mg/L IC:-0.2721mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.36	-0.1537mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 5:27:51 PM

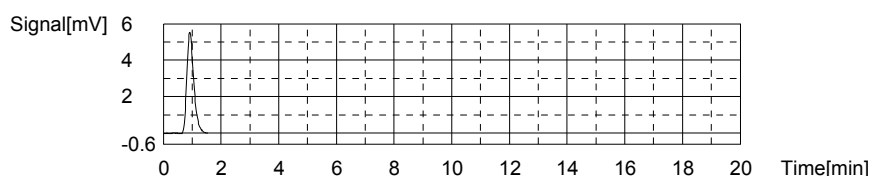
Mean Area 10.36
Mean Conc. -0.1537mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.303	-0.2721mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_12	2/23/2017 5:31:45 PM

Mean Area 9.303
Mean Conc. -0.2721mg/L



Sample

Sample Name: L17021216-01 (200)
Sample ID: <Untitled>
Origin: TOC-02-10-2017A.met
Status: Completed
Chk. Result

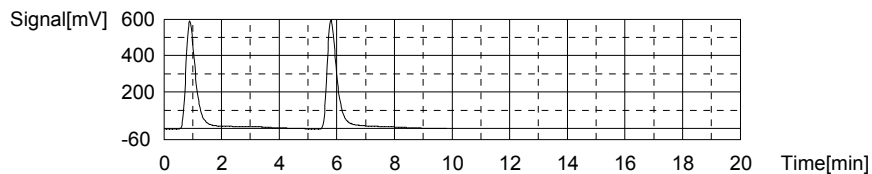
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:36.62mg/L TC:36.36mg/L IC:-0.2520mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1526	35.66mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 5:42:05 PM
2	1586	37.07mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/23/2017 5:49:17 PM

Mean Area 1556
Mean Conc. 36.36mg/L



Anal.: IC

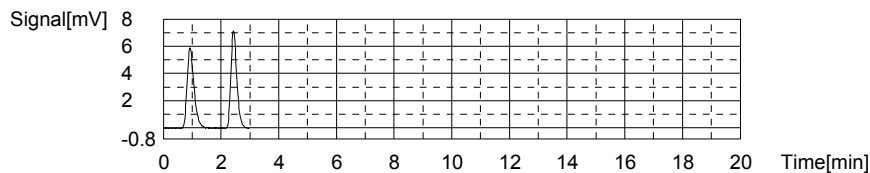
11/13

2/24/2017 7:32:38 AM

02-23-2017-TOC-DCM.I32

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.841	-0.2560mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 5:53:38 PM
2	10.11	-0.2480mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 5:57:39 PM

Mean Area 9.976
Mean Conc. -0.2520mg/L



Sample

Sample Name: CCV
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result: Completed

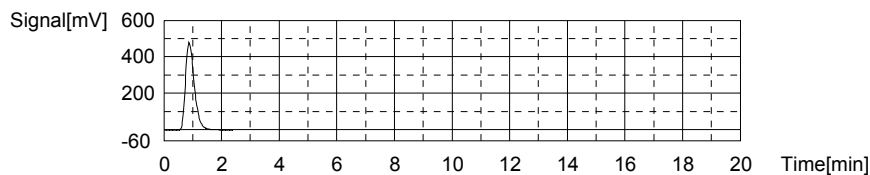
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.08mg/L TC:23.75mg/L IC:-0.3289mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1022	23.75mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 6:05:28 PM

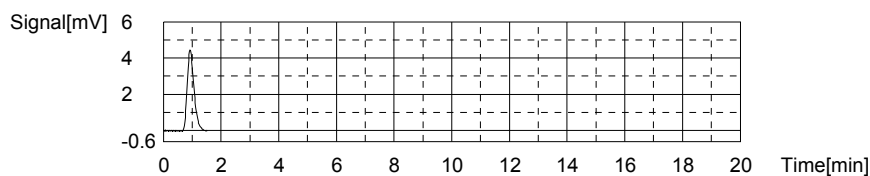
Mean Area 1022
Mean Conc. 23.75mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.402	-0.3289mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 6:09:49 PM

Mean Area 7.402
Mean Conc. -0.3289mg/L



Sample

Sample Name: CCB
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result: Completed

12/13

2/24/2017 7:32:38 AM

02-23-2017-TOC-DCM.t32

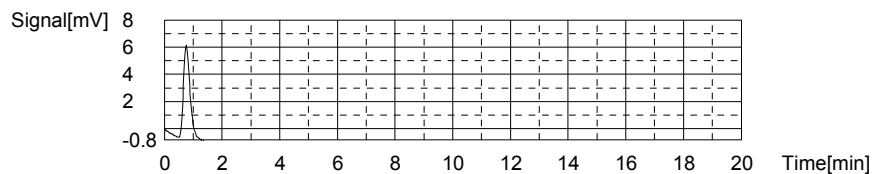
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1219mg/L TC:-0.1499mg/L IC:-0.2718mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	10.52	-0.1499mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	12/23/2017 6:14:49 PM

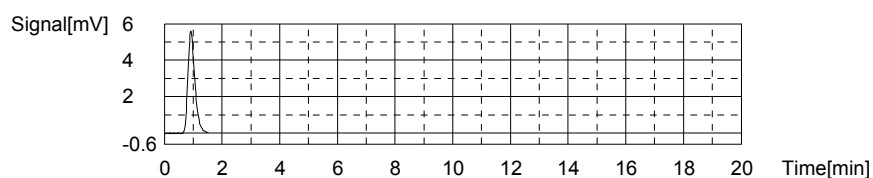
Mean Area 10.52
Mean Conc. -0.1499mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.312	-0.2718mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/23/2017 6:18:41 PM

Mean Area 9.312
Mean Conc. -0.2718mg/L



13/13

3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
March 2, 2017

001 - BIO-CHEM TESTING WVDEP 220	002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental	004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES	006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES	008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND	AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER	ADG - APRIL D. GREENE
ALS - ADRIANE L. STEED	AWE - ANDREW W. ESSIG
AZH - AFTER HOURS	BJO - BRIAN J. OGDEN
BLG - BRENDA L. GREENWALT	BNB - Brandi N. Bentley
BRG - BRENDA R. GREGORY	CAS - Craig A. Smith
CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER	CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL	CV - Carl Volkman
DAK - DEAN A. KETELSEN	DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG	DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER	DLP - DOROTHY L. PAYNE
DSM - DAVID S. MOSSOR	DTG - DOMINIC T. GEHRET
ECL - ERIC C. LAWSON	EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER	FJB - FRANCES J. BOLDEN
JDH - JUSTIN D. HESSON	JDS - JARED D. SMITH
JKP - JACQUELINE K. PARSONS	JLD - JESSICA L. DELONG
JST - JOSHUA S. TAYLOR	JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES
JYH - JI Y. HU	KAK - KATHY A. KIRBY
KDD - Katelyn D. Daley	KEB - KATIE E. BARNES
KHR - KIM H. RHODES	KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON	KRP - KATHY R. PARSONS
LJH - Lacey J. Hendershot	LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA	LSJ - LAURA S. JONES
MAP - MARLA A. PORTER	MBK - MORGAN B. KNOWLTON
MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE	REK - BOB E. KYER
RLB - BOB BUCHANAN	RNP - RICK N. PETTY
SAV - SARAH A. VANDENBERG	SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY	TB - TODD BOYLE
TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT	

List of Valid Qualifiers

March 02, 2017

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
>,H1	Result is greater than the associated numerical value. Sample analysis performed past holding time.
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample receipt exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
FP1	Did not ignite.
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample receipt exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentatively identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL)
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound



List of Valid Qualifiers

March 02, 2017

Qualkey: DOD

TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.
TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample receipt exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below



CHAIN OF CUSTODY

Name Of Lab Shipping To: MICROBAC (740) 373-4071 ATTN: STEPHANIE MOSSBURG

Project: AECOM
 LONGHORN ARMY AMMN. PLANT (LHAAP)
 GROUNDWATER TREATMENT PLANT (GWTP)
 KARNACK, TEXAS
 Project No.
 60256135.GWTP
 HRJUMAR16

GROUNDWATER TREATMENT PLANT
 WEEKLY SAMPLES

Prepared By:
 Scott Beesinger
 P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. Of Containers	Analyses			Remarks (Preservatives, etc.)	Lab I.D.#
					AMMONIA-N	ORTHO-PHOSPHATE	TOTAL ORGANIC CARBON		
LH18/24-SP650-6419-Grab	Water	02/22/17 / 10:00		2	X			H2SO4	
LH18/24-SP650-6419-Grab	Water	02/22/17 / 10:00		1	X			NONE	

Additional Remarks: Standard TAT on all parameters

Send results to Linda Raabe at linda.raabe@aecom.com or call at 210-253-7518

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
<i>[Signature]</i>	02/22/17	15:00									

Received At Lab By:

For Lab Use Only

Date	Time	Airbill No.	Date	Time	Temp of Container	Seal No.	Condition

Microbac OVD
 Received: 02/23/2017 09:39
 By: BRENDA GREGORY
 221000057408

[Signature]

(Word) S:\1-oes\Forms\Chain of Custody - BiWeekly

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17021202

Account: 2551

Project: 2551.096

Samples: 1

Due Date: 06-MAR-2017

Samplenum **Container ID** **Products**
L17021202-01 871134 PO4

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	WET	23-FEB-2017 11:11	BRG		
2	STORE	WET	A1	24-FEB-2017 08:00	CLS	ADG	

Samplenum **Container ID** **Products**
L17021202-01 871135 TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	23-FEB-2017 11:11	BRG		<2
2	ANALYZ	W1	WET	23-FEB-2017 11:57	DCM	CLS	
3	STORE	WET	A1	01-MAR-2017 12:40	BRG	DLP	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	23-FEB-2017 11:11	BRG		<2

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login



NELAP Addendum - January 4, 2016

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVD NELAP Scope of Accreditation:

Heat of Combustion (BTU)
 Total Halide by Bomb Combustion (TX)
 Particle Sizing - 200 Mesh (PS200)
 Specific Gravity/Density (SPGRAV)
 Total Residual Chlorine (CL-TRL)
 Total Volatile Solids (all forms) (TVS)
 Total Coliform Bacteria (all methods)
 Fecal Coliform Bacteria (all methods)
 Sulfite (SO₃)
 Propionaldehyde (HPLC-UV)

SOLID AND HAZARDOUS CHEMICALS

Nitrogen, Ammonia by Method 350.1
 Chromium, Hexavalent, Leachable by SM3500 Cr-B 2009
 Phenolics, Total by Method 420.1
 ASTM D3987-06

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVD HPLC02/HPLC-UV

Nitroglycerin
 Acetic acid
 Butyric acid
 Lactic acid
 Propionic acid
 Pyruvic acid

OVD MSS01/GC-MS

1,4-Phenylenediamine
 1-Methylnaphthalene
 1,4-Dioxane
 Atrazine
 Benzaldehyde
 Biphenyl
 Caprolactam
 Hexamethylphosphoramide (HMPA)
 Pentachlorobenzene
 Pentachloroethane

NELAP Accreditation by Laboratory SOP**NONPOTABLE WATER**OVD MSV01/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVD HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

OVD HPLC12/HPLC/UV

Acetate
Formate

OVD RSK01/GC-FID

Acetylene
Propane

OVD K9305/ISE

Fluoroborate

SOLID AND HAZARDOUS CHEMICALSOVD MSS01/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP**SOLID AND HAZARDOUS CHEMICALS**OVD MSV01/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)



Laboratory Report Number: L17021203

Linda Raabe
AECOM Technical Services, Inc.
1950 N Stemmons FWY
Dallas, TX 75207

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Adriane Steed – Client Services Specialist
(740) 373-4071
Adriane.Steed@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on March 06 2017



Leslie Bucina – Managing Director

State of Origin: TX
Accrediting Authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: DOD Ver 4.1



Microbac Laboratories * Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 * T: (740) 373-4071 F: (740) 373-4835 * www.microbac.com



Lab Report #: L17021203

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

The following discrepancies were noted:

Discrepancy	Resolution
No COC received. Containers received: CR-6, Metals (AG, SE) and 6850. Sample ID: LH18/24-SP140-7418/Grab (2/22 @ 10:00) per labels. BRG	Please log per container. ALS
Sample ID: LH18/24-SP140-7418-Grab (2/22 @ 10:00). Sample was received at lab for CR-6 within hold at 9:39. Sample was logged out of hold. BRG	Client notified. Please proceed with analysis. ALS

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00113730	I	4.0		1Z4016632210154876	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	No
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	NA

**Lab Report #:** L17021203**Lab Project #:** 2551.096**Project Name:** Longhorn Army Ammunition**Lab Contact:** Adriane Steed**Samples Received**

Client ID	Laboratory ID	Date Collected	Date Received
LH18/24-SP140-7418-GRAB	L17021203-01	02/22/2017 10:00	02/23/2017 09:39

Microbac REPORT L17021203
PREPARED FOR AECOM Technical Services, Inc.
WORK ID:

1.0 Summary Data	5
1.1 Narratives	6
1.2 Certificate of Analysis	25
2.0 Full Sample Data Package	30
2.1 Metals Data	31
2.1.1 Metals I C P Data	32
2.1.1.1 Summary Data	33
2.1.1.2 QC Summary Data	36
2.1.1.3 Raw Data	72
2.1.2 Metals ICP-MS Data	291
2.1.2.1 Summary Data	292
2.1.2.2 QC Summary Data	295
2.1.2.3 Raw Data	327
2.2 General Chemistry Data	716
2.2.1 Hexavalent Chromium Data	717
2.2.1.1 Summary Data	718
2.2.1.2 QC Summary Data	721
2.2.1.3 Raw Data	728
3.0 Attachments	736

1.0 Summary Data

1.1 Narratives



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6010
Prep Batch Number(s):	604065	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Kerri Buck			2017-03-06 15:59:18



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6010
Prep Batch Number(s):	604065	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification	X				
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports	X				
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):	X				
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6010
Prep Batch Number(s):	604065	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?			X		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			X		
Were MS/MSD analyzed at the appropriate frequency?			X		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
Were MS/MSD RPDs within laboratory QC limits?			X		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			X		
Were analytical duplicates analyzed at the appropriate frequency?			X		
Were RPDs or relative standard deviations within the laboratory QC limits?			X		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6010
Prep Batch Number(s):	604065	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?					
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?		X			ER#1
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?	X				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6010
Prep Batch Number(s):	604065	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6010
Prep Batch Number(s):	604065	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

ER#1 - The low level initial calibration verification analyzed on 27-Feb-2017 at 15:16 yielded a noncompliant recovery for selenium. Client sample 01 along with the batch QA/QC samples was reanalyzed on a later calibration which was compliant for selenium. The low level continuing calibration verification analyzed on 28-Feb-2017 at 22:05 yielded a noncompliant high recovery for selenium. However, since all client samples were non-detect for selenium, no further action was required with permission of the project chemist.



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6020
Prep Batch Number(s):	604063	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a. if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Kerri Buck	<i>Kerri Buck</i>		2017-03-06 16:01:38



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6020
Prep Batch Number(s):	604063	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification	X				
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports	X				
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6020
Prep Batch Number(s):	604063	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?			X		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			X		
Were MS/MSD analyzed at the appropriate frequency?			X		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
Were MS/MSD RPDs within laboratory QC limits?			X		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			X		
Were analytical duplicates analyzed at the appropriate frequency?			X		
Were RPDs or relative standard deviations within the laboratory QC limits?			X		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6020
Prep Batch Number(s):	604063	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?					
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?	X				
Were ion abundance data within the method-required QC limits?	X				
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?	X				
Raw data (NELAC Section 5.5.10)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?	X				
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?	X				
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6020
Prep Batch Number(s):	604063	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	6020
Prep Batch Number(s):	604063	Reviewer Name:	Kerri Buck
LRC Date:	2017-03-06 00:00:00		

below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	CR-6
Prep Batch Number(s):	WG603982	Reviewer Name:	Deanna Hesson
LRC Date:	2017-02-28 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a. if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Deanna Hesson		Conventional Lab Supervisor	2017-02-28 14:43:58



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	CR-6
Prep Batch Number(s):	WG603982	Reviewer Name:	Deanna Hesson
LRC Date:	2017-02-28 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?		X			
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):	X				
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	CR-6
Prep Batch Number(s):	WG603982	Reviewer Name:	Deanna Hesson
LRC Date:	2017-02-28 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	X				
Were MS/MSD analyzed at the appropriate frequency?	X				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
Were MS/MSD RPDs within laboratory QC limits?	X				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	X				
Were analytical duplicates analyzed at the appropriate frequency?	X				
Were RPDs or relative standard deviations within the laboratory QC limits?	X				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?			X		
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	CR-6
Prep Batch Number(s):	WG603982	Reviewer Name:	Deanna Hesson
LRC Date:	2017-02-28 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)			X		
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)			X		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions			X		
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	CR-6
Prep Batch Number(s):	WG603982	Reviewer Name:	Deanna Hesson
LRC Date:	2017-02-28 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)	X				
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17021203
Project Name:		Method:	CR-6
Prep Batch Number(s):	WG603982	Reviewer Name:	Deanna Hesson
LRC Date:	2017-02-28 00:00:00		

below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

The sample was recieved past the hold time of 24 hours. The sample was analyzed out of hold.

1.2 Certificate of Analysis

Lab Report #: L17021203
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021203-01	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: LH18/24-SP140-7418-GRAB	Prep Method: 3015	Prep Date: 02/24/2017 09:13
Matrix: Water	Analytical Method: 6010C	Cal Date: 02/28/2017 15:34
Workgroup #: WG604140	Analyst: KKB	Run Date: 02/28/2017 18:43
Collect Date: 02/22/2017 10:00	Dilution: 1	File ID: T4.022817.184317
Sample Tag: 02	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Selenium, Total	7782-49-2	0.0800	U	0.0800	0.0800	0.0400
U	Analyte was not detected. The concentration is below the reported LOD.					

Lab Report #: L17021203
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021203-01	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: LH18/24-SP140-7418-GRAB	Prep Method: 3015	Prep Date: 02/24/2017 08:46
Matrix: Water	Analytical Method: 6020A	Cal Date: 02/28/2017 10:52
Workgroup #: WG604209	Analyst: JYH	Run Date: 02/28/2017 11:35
Collect Date: 02/22/2017 10:00	Dilution: 1	File ID: NI.022817.113539
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Silver, Total	7440-22-4	0.00100	U	0.00200	0.00100	0.000500
U	Analyte was not detected. The concentration is below the reported LOD.					

Lab Report #: L17021203
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021203-01	PrePrep Method: N/A	Instrument: UV-2600
Client ID: LH18/24-SP140-7418-GRAB	Prep Method: 7196A	Prep Date: N/A
Matrix: Water	Analytical Method: 7196A	Cal Date: 12/08/2016 08:20
Workgroup #: WG603982	Analyst: ADG	Run Date: 02/23/2017 11:15
Collect Date: 02/22/2017 10:00	Dilution: 1	File ID: 00.1702231115-07
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Chromium, Hexavalent	18540-29-9	0.0100	U,H1	0.0200	0.0100	0.00500
U,H1	Not detected; Sample analysis performed past holding time.					

2.0 Full Sample Data Package

2.1 Metals Data

2.1.1 Metals I C P Data

2.1.1.1 Summary Data

Lab Report #: L17021203

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021203-01	PrePrep Method: N/A	Instrument: ICP-THERMO4
Client ID: LH18/24-SP140-7418-GRAB	Prep Method: 3015	Prep Date: 02/24/2017 09:13
Matrix: Water	Analytical Method: 6010C	Cal Date: 02/28/2017 15:34
Workgroup #: WG604140	Analyst: KKB	Run Date: 02/28/2017 18:43
Collect Date: 02/22/2017 10:00	Dilution: 1	File ID: T4.022817.184317
Sample Tag: 02	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Selenium, Total	7782-49-2	0.0800	U	0.0800	0.0800	0.0400
U	Analyte was not detected. The concentration is below the reported LOD.					

2.1.1.2 QC Summary Data

Example 6010 Calculations

Thermo Scientific iCAP

1.0 Initial Calibration (ICAL) Parameters

For a multi-point calibration, the system performs linear regression from data consisting of a blank and four standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system in ug/mL (ppm)

Vf = Final volume (mL)

Vi = Initial volume (mL)

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in ug/mL (mg/L)

Example:

0.1

50

50

1

0.1

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system (mg/L) (ppm)

Vf = Final volume (mL)

Vi = Initial weight (g)

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in ug/g (mg/kg)

Example:

0.1

50

1

1

5

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:

Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

$Cdry$ = Concentration calculated as dry weight (mg/kg)

Example:

5

80

6.25

Workgroup: WG604065
 Analyst: AC
 Spike Analyst: AC
 Run Date: 02/24/2017 09:13
 Method: 3015
 Balance: BAL019
 Instrument: MW-1
 Instrument Start: 02/24/2017 09:12

SOP: ME407 Revison 19
 Spike Solution: STD80130
 Spike Witness: VC
 HNO3 Lot #: COA19483
 HCL Lot #: COA19441
 ICP FILTERS LOT#R6EA4780RGT38286
 TEFLON CHIPS-D1069103 LoRGT35873
 cent tubes- lot# 2291600RGT38882
 40 & 50 ML. DIGESTION TUCOA19487

	SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG604065-02	BLANK	1	40 mL	50 mL	204.451 g	204.45 g		
2	WG604065-03	LCS	1	40 mL	50 mL	212.05 g	212.045 g	5 mL	
3	L17021170-02	SAMP	1	1 mL	50 mL	204.519 g	204.512 g		03/03/17
4	L17021170-05	SAMP	1	1 mL	50 mL	207.419 g	207.406 g		03/03/17
5	L17021191-01	SAMP	1	40 mL	50 mL	206.551 g	206.535 g		03/02/17
6	L17021191-02	SAMP	1	40 mL	50 mL	205.221 g	205.219 g		03/02/17
7	L17021191-03	SAMP	1	40 mL	50 mL	206.379 g	206.368 g		03/02/17
8	L17021191-04	SAMP	1	40 mL	50 mL	207.659 g	207.644 g		03/02/17
9	L17021191-05	SAMP	1	40 mL	50 mL	206.562 g	206.542 g		03/02/17
10	L17021191-06	SAMP	1	40 mL	50 mL	204.507 g	204.491 g		03/02/17
11	L17021201-01	SAMP	1	40 mL	50 mL	204.804 g	204.793 g		03/06/17
12	L17021203-01	SAMP	1	40 mL	50 mL	204.386 g	204.374 g		03/06/17
13	L17021250-01	SAMP	1	40 mL	50 mL	205.312 g	205.307 g		03/06/17
14	L17021253-04	SAMP	1	40 mL	50 mL	204.913 g	204.892 g		03/03/17
15	L17021253-06	SAMP	1	40 mL	50 mL	204.658 g	204.645 g		03/03/17
16	L17021256-01	SAMP	1	40 mL	50 mL	206.022 g	206.01 g		03/06/17
17	L17021259-01	SAMP	1	40 mL	50 mL	206.044 g	206.027 g		03/06/17
18	L17021261-01	SAMP	1	40 mL	50 mL	206.029 g	206.011 g		03/06/17
19	L17021261-02	SAMP	1	40 mL	50 mL	204.083 g	204.062 g		03/06/17
20	L17021261-03	SAMP	1	40 mL	50 mL	206.681 g	206.667 g		03/06/17
21	L17021261-04	SAMP	1	40 mL	50 mL	204.748 g	204.721 g		03/06/17
22	WG604065-01	REF	1	40 mL	50 mL	207.428 g	207.404 g		
23	L17021261-05	SAMP	1	40 mL	50 mL	207.428 g	207.404 g		03/06/17
24	WG604065-04	MS	1	40 mL	50 mL	211.075 g	211.047 g	5 mL	
25	WG604065-05	MSD	1	40 mL	50 mL	211.147 g	211.138 g	5 mL	

L17021201-01	Filtered Digestate
L17021203-01	Filtered Digestate
L17021250-01	Filtered Digestate
L17021253-04	Filtered Digestate
L17021253-06	Filtered Digestate
L17021256-01	Filtered Digestate

MW_DIG - Modified 09/30/2009
 PDF ID: 5172457
 Report generated: 02/24/2017 11:07



Analyst: Amber R. Cochran

SOP: _____
Spike Solution: [Signature]
Reviewer: _____
Spike Witness: _____

Method:
Balance:
Instrument:
Instrument Start:



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 022817T4.2R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____

Calibration Std: STD80661 ICV Std: STD80660 Post Spike: STD80131
 ICSA: STD80691 ICSAB: STD80650 Int. Std: RGT37691
 CCV: ST80466 LLCCV: COA19158 Tuning Sol: _____
 Stannous: _____ Hydroxylamine: _____

Workgroups: 604474,604140,604317,604329

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	T4.022817.151905	WG604624-01	Calibration Point		1		02/28/17 15:19
2	T4.022817.152254	WG604624-02	Calibration Point		1		02/28/17 15:22
3	T4.022817.152643	WG604624-03	Calibration Point		1		02/28/17 15:26
4	T4.022817.153033	WG604624-04	Calibration Point		1		02/28/17 15:30
5	T4.022817.153410	WG604624-05	Calibration Point		1		02/28/17 15:34
6	T4.022817.153742	WG604624-06	Initial Calibration Verification		1		02/28/17 15:37
7	T4.022817.154202	WG604624-07	Initial Calib Blank		1		02/28/17 15:42
8	T4.022817.154551	WG604624-08	LLICV		1		02/28/17 15:45
9	T4.022817.154939	WG604624-09	Low Level Initial Calibration V		1		02/28/17 15:49
10	T4.022817.155328	WG604624-10	Low Level Initial Calibration V		1		02/28/17 15:53
11	T4.022817.155716	WG604624-11	Interference Check		1		02/28/17 15:57
12	T4.022817.160103	WG604624-12	Interference Check		1		02/28/17 16:01
13	T4.022817.160445	WG604624-13	CCV		1		02/28/17 16:04
14	T4.022817.160821	WG604624-14	CCB		1		02/28/17 16:08
15	T4.022817.162946	WG604422-02	Method/Prep Blank	5/50	1		02/28/17 16:29
16	T4.022817.163335	WG604422-03	Laboratory Control S	5/50	1		02/28/17 16:33
17	T4.022817.163717	WG604263-01	Fluid Blank 1		1		02/28/17 16:37
18	T4.022817.164107	WG604265-01	Fluid Blank 1		1		02/28/17 16:41
19	T4.022817.164456	WG604265-02	Fluid Blank 2		1		02/28/17 16:44
20	T4.022817.164846	L17021319-01	60500-SSP0330-SSP1330	5/50	1		02/28/17 16:48
21	T4.022817.165234	WG604422-01	Reference Sample		1	L17021347-02	02/28/17 16:52
22	T4.022817.165619	WG604422-04	Matrix Spike	5/50	1	L17021347-02	02/28/17 16:56
23	T4.022817.165959	WG604422-05	Matrix Spike Duplica	5/50	1	L17021347-02	02/28/17 16:59
24	T4.022817.170338	L17021352-01	J7B1258-01	5/50	1		02/28/17 17:03
25	T4.022817.170734	WG604624-15	CCV		1		02/28/17 17:07
26	T4.022817.171109	WG604624-16	CCB		1		02/28/17 17:11
27	T4.022817.171500	L17021352-02	J7B1258-01		1		02/28/17 17:15
28	T4.022817.171853	L17021352-03	J7B1258-02		1		02/28/17 17:18
29	T4.022817.172245	L17021352-04	J7B1258-03		1		02/28/17 17:22
30	T4.022817.172638	L17021352-05	J7B1258-04	5/50	1		02/28/17 17:26
31	T4.022817.173026	L17021352-06	J7B1258-04		1		02/28/17 17:30
32	T4.022817.173418	L17021352-07	J7B1258-05		1		02/28/17 17:34
33	T4.022817.173811	L17021352-08	J7B1258-06		1		02/28/17 17:38
34	T4.022817.174205	L17021352-09	J7B1258-07		1		02/28/17 17:42

Page: 1 Approved: March 01, 2017

Sam H. Rhodes

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 022817T4.2R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD80661 ICV Std: STD80660 Post Spike: STD80131
 ICSA: STD80691 ICSAB: STD80650 Int. Std: RGT37691
 CCV: ST80466 LLCCV: COA19158 Tuning Sol: _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 604474,604140,604317,604329Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	T4.022817.174600	L17021352-10	J7B1258-08	5/50	1		02/28/17 17:46
36	T4.022817.174954	L17021352-11	J7B1258-08		1		02/28/17 17:49
37	T4.022817.175349	WG604624-17	CCV		1		02/28/17 17:53
38	T4.022817.175725	WG604624-18	CCB		1		02/28/17 17:57
39	T4.022817.180116	L17021352-12	J7B1258-09	5/50	1		02/28/17 18:01
40	T4.022817.180509	WG604474-01	Post Digestion Spike		1	L17021352-12	02/28/17 18:05
41	T4.022817.180900	WG604474-02	Serial Dilution		5	L17021352-12	02/28/17 18:09
42	T4.022817.181248	L17021352-13	J7B1258-09		1		02/28/17 18:12
43	T4.022817.181641	L17021367-01	KAISER 9 BAGS	5/50	1		02/28/17 18:16
44	T4.022817.182027	L17021368-01	AWV 24 BAGS	5/50	1		02/28/17 18:20
45	T4.022817.182418	WG604624-19	CCV		1		02/28/17 18:24
46	T4.022817.182755	WG604624-20	CCB		1		02/28/17 18:27
47	T4.022817.183149	WG604065-02	Method/Prep Blank	40/50	1		02/28/17 18:31
48	T4.022817.183539	WG604065-03	Laboratory Control S	40/50	1		02/28/17 18:35
49	T4.022817.183922	L17021201-01	LH18/24-SP650-6418-GRAB	40/50	1		02/28/17 18:39
50	T4.022817.184317	L17021203-01	LH18/24-SP140-7418-GRAB	40/50	1		02/28/17 18:43
51	T4.022817.184711	WG604140-03	Post Digestion Spike		1	L17021203-01	02/28/17 18:47
52	T4.022817.185100	WG604140-04	Serial Dilution		5	L17021203-01	02/28/17 18:51
53	T4.022817.185456	L17021253-04	PZ104-GW-022217		10		02/28/17 18:54
54	T4.022817.185843	L17021253-06	PZ105-GW-022317		10		02/28/17 18:58
55	T4.022817.190232	WG604624-21	CCV		1		02/28/17 19:02
56	T4.022817.190608	WG604624-22	CCB		1		02/28/17 19:06
57	T4.022817.191000	WG604065-01	Reference Sample		1	L17021261-05	02/28/17 19:10
58	T4.022817.191354	WG604065-04	Matrix Spike	40/50	1	L17021261-05	02/28/17 19:13
59	T4.022817.191744	WG604065-05	Matrix Spike Duplica	40/50	1	L17021261-05	02/28/17 19:17
60	T4.022817.192136	WG604624-23	CCV		1		02/28/17 19:21
61	T4.022817.192513	WG604624-24	CCB		1		02/28/17 19:25
62	T4.022817.192903	WG604236-02	Method/Prep Blank	40/50	1		02/28/17 19:29
63	T4.022817.193252	WG604236-03	Laboratory Control S	40/50	1		02/28/17 19:32
64	T4.022817.193635	WG603954-01	Fluid Blank 1		1		02/28/17 19:36
65	T4.022817.194024	WG603954-02	Fluid Blank 1		1		02/28/17 19:40
66	T4.022817.194414	L17021197-01	K7B0767-01	5/50	1		02/28/17 19:44
67	T4.022817.194800	L17021200-01	K7B0765-01	5/50	1		02/28/17 19:48
68	T4.022817.195144	L17021200-02	K7B0765-02	5/50	1		02/28/17 19:51

Page: 2 Approved: March 01, 2017

Sam H. Rhodes

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-THERMO4 Dataset: 022817T4.2R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD80661 ICV Std: STD80660 Post Spike: STD80131
 ICSA: STD80691 ICSAB: STD80650 Int. Std: RGT37691
 CCV: ST80466 LLCCV: COA19158 Tuning Sol: _____
 Stannous: _____ Hydroxylamine: _____

Workgroups: 604474,604140,604317,604329

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	T4.022817.195526	L17021228-01	J7B1157-01	5/50	1		02/28/17 19:55
70	T4.022817.195913	L17021228-02	J7B1157-02	5/50	1		02/28/17 19:59
71	T4.022817.200259	L17021324-02	MW35-GW-022317	40/50	2		02/28/17 20:02
72	T4.022817.200712	WG604624-25	CCV		1		02/28/17 20:07
73	T4.022817.201048	WG604624-26	CCB		1		02/28/17 20:10
74	T4.022817.201438	WG604236-01	Reference Sample		2	L17021324-03	02/28/17 20:14
75	T4.022817.201851	WG604236-04	Matrix Spike	40/50	2	L17021324-03	02/28/17 20:18
76	T4.022817.202257	WG604236-05	Matrix Spike Duplica	40/50	2	L17021324-03	02/28/17 20:22
77	T4.022817.202703	L17021334-01	91701-A03-WQ-W0010	40/50	1		02/28/17 20:27
78	T4.022817.203052	L17021346-01	FQC-WW04-W0017	40/50	1		02/28/17 20:30
79	T4.022817.203440	L17021346-02	FQC-WW06-W0018	40/50	1		02/28/17 20:34
80	T4.022817.203829	L17021353-01	46004-G23-WQ-W0032	40/50	1		02/28/17 20:38
81	T4.022817.204218	L17021353-02	46004-G37-WQ-W0061	40/50	1		02/28/17 20:42
82	T4.022817.204607	L17021353-03	46013-G086-WQ-W0107	40/50	1		02/28/17 20:46
83	T4.022817.204958	WG604624-27	CCV		1		02/28/17 20:49
84	T4.022817.205335	WG604624-28	CCB		1		02/28/17 20:53
85	T4.022817.205724	L17021353-04	46013-G105-WQ-W0132	40/50	1		02/28/17 20:57
86	T4.022817.210114	WG604317-03	Post Digestion Spike		1	L17021353-04	02/28/17 21:01
87	T4.022817.210456	WG604317-04	Serial Dilution		5	L17021353-04	02/28/17 21:04
88	T4.022817.210846	WG604624-29	CCV		1		02/28/17 21:08
89	T4.022817.211224	WG604624-30	CCB		1		02/28/17 21:12
90	T4.022817.211614	WG604286-02	Method/Prep Blank	40/50	1		02/28/17 21:16
91	T4.022817.212004	WG604286-03	Laboratory Control S	40/50	1		02/28/17 21:20
92	T4.022817.212346	L17021327-01	BSUMP-SW-0222317	40/50	10		02/28/17 21:23
93	T4.022817.212733	WG604329-03	Post Digestion Spike		10	L17021327-01	02/28/17 21:27
94	T4.022817.213115	WG604329-04	Serial Dilution		50	L17021327-01	02/28/17 21:31
95	T4.022817.213502	L17021327-01	BSUMP-SW-0222317	40/50	1		02/28/17 21:35
96	T4.022817.213855	WG604286-01	Reference Sample		1	L17021327-02	02/28/17 21:38
97	T4.022817.214242	WG604286-04	Matrix Spike	40/50	1	L17021327-02	02/28/17 21:42
98	T4.022817.214624	WG604286-05	Matrix Spike Duplica	40/50	1	L17021327-02	02/28/17 21:46
99	T4.022817.215005	L17021253-02	PZ101-GW-022217	40/50	10		02/28/17 21:50
100	T4.022817.215355	WG604624-31	CCV		1		02/28/17 21:53
101	T4.022817.215732	WG604624-32	CCB		1		02/28/17 21:57
102	T4.022817.220122	WG604624-33	LLCCV		1		02/28/17 22:01

Page: 3 Approved: March 01, 2017

Sam H. Rhodes

Microbac Laboratories Inc.

Instrument Run Log

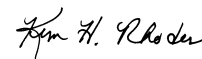
Instrument: ICP-THERMO4 Dataset: 022817T4.2R.TXT
 Analyst1: KKB Analyst2: N/A
 Method: 200.7/6010B/6010C SOP: ME600G Rev: 8
 Maintenance Log ID: _____
 Calibration Std: STD80661 ICV Std: STD80660 Post Spike: STD80131
 ICSA: STD80691 ICSAB: STD80650 Int. Std: RGT37691
 CCV: ST80466 LLCCV: COA19158 Tuning Sol : _____
 Stannous : _____ Hydroxylamine : _____

Workgroups: 604474,604140,604317,604329

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
103	T4.022817.220511	WG604624-34	Low Level Continuing Calibra		1		02/28/17 22:05
104	T4.022817.220900	WG604624-35	Low Level Continuing Calibra		1		02/28/17 22:09
105	T4.022817.221248	WG604624-36	Interference Check		1		02/28/17 22:12
106	T4.022817.221636	WG604624-37	Interference Check		1		02/28/17 22:16
107	T4.022817.222017	WG604624-38	CCV		1		02/28/17 22:20
108	T4.022817.222355	WG604624-39	CCB		1		02/28/17 22:23

Page: 4 Approved: March 01, 2017




Microbac Laboratories Inc.

Data Checklist

Date: 28-FEB-2017
 Analyst: KKB
 Analyst: NA
 Method: 6010B/6010C/200.7
 Instrument: ICP-THERMO4
 Curve Workgroup: 604624
 Runlog ID: 80709
 Analytical Workgroups: 604474,604140,604317,604329

Add'l WGs	
STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	X
Client Forms	X
Level X	
Level 3	1324,1253,1327
Level 4	1319,1201,1203,1334,1346,1353
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	KKB
Secondary Reviewer	KHR
Comments	

Primary Reviewer:
01-MAR-2017

Secondary Reviewer:
01-MAR-2017

Ki K Beck

Lyn H. Rhodes



Analytical Method:6010C
Login Number:L17021203

AAB#:WG604140

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP140-7418-GRAB	01	02/22/17					02/24/2017	2	180		02/28/17	6.4	180	

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17021203 Work Group: WG604140
 Blank File ID: T4.022817.183149 Blank Sample ID: WG604065-02
 Prep Date: 02/24/17 09:13 Instrument ID: ICP-THERMO4
 Analyzed Date: 02/28/17 18:31 Method: 6010C
 Analyst: KKB

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG604065-03	T4.022717.160649	02/27/17 16:06	01
LCS	WG604065-03	T4.022817.183539	02/28/17 18:35	02
LH18/24-SP140-7418-GRAB	L17021203-01	T4.022817.184317	02/28/17 18:43	02

Report Name: BLANK_SUMMARY
 PDF File ID: 5178881
 Report generated 03/01/2017 11:58



Login Number: L17021203 Prep Date: 02/24/17 09:13 Sample ID: WG604065-02
 Instrument ID: ICP-THERMO4 Run Date: 02/28/17 18:31 Prep Method: 3015
 File ID: T4.022817.183149 Analyst: KKB Method: 6010C
 Workgroup (AAB#): WG604140 Matrix: Water Units: mg/L
 Contract #: _____ Cal ID: ICP-TH-28-FEB-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Selenium, Total	0.0400	0.0800	0.0400	1	U

DL Method Detection Limit
 LOQ Reporting/Practical Quantitation Limit
 ND Analyte Not detected at or above reporting limit
 * |Analyte concentration| > 1/2 RL

Report Name: BLANK
 PDF ID: 5178882
 01-MAR-2017 11:58



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604065-03
Instrument ID: ICP-THERMO4 Run Time: 18:35 Prep Method: 3015
File ID: T4.022817.183539 Analyst: KKB Method: 6010C
Workgroup (AAB#): WG604140 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD80130 Cal ID: ICP-TH-28-FEB-17

Analytes	Expected	Found	% Rec	LCS Limits	Q
Selenium, Total	0.250	0.237	94.7	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 5178883
Report generated: 03/01/2017 11:58



Loginnum: L17021203 Cal ID: ICP-THERMO4- Worknum: WG604140
 Instrument ID: ICP-THERMO4 Contract #: _____ Method: 6010C
 Parent ID: WG604065-01 File ID: T4.022817.191000 Dil: 1 Matrix: WATER
 Sample ID: WG604065-04 MS File ID: T4.022817.191354 Dil: 1 Units: mg/L
 Sample ID: WG604065-05 MSD File ID: T4.022817.191744 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Selenium, Dissolved	ND	0.250	0.209	83.5	0.250	0.228	91.1	8.77	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

Microbac Laboratories Inc.
Serial Dilution Report

Login: L17021203 **Worknum:** WG604140
Instrument: ICP-THERMO4 **Method:** 6010C
Serial Dil: WG604140-04 **File ID:** T4.022817.185100 **Dil:** 5 **Units:** ug/L
Sample: L17021203-01 **File ID:** T4.022817.184317 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Selenium	2.05		ND	U		

U = Result is below MDL.

F = Result is greater than or equal to MDL and less than the RL.

X = Result is greater than or equal to RL and less than 25 times the MDL.

E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 25 times the MDL.

SERIAL_DIL - Modified 09/22/2008

PDF File ID: 5178878

03/01/2017 11:58



Sample Login ID: L17021203 Worknum: WG604140
 Instrument ID: ICP-THERMO4 Method: 6010C
 Post Spike ID: WG604140-03 File ID: T4.022817.184711 Dil: 1 Units: ug/L
 Sample ID: L17021203-01 File ID: T4.022817.184317 Dil: 1 Matrix: Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
SELENIUM	189		0	U	200	94.3	75 - 125	

N = % Recovery exceeds control limits

F = Result is between MDL and RL

U = Sample result is below MDL. A value of zero is used in the calculation



Microbac Laboratories Inc.
Initial Calibration Summary

00843684

Login: L17021203 Workgroup (AAB#): WG604140
 Analytical Method: 6010C Instrument ID: ICP-THERMO4
 ICAL Worknum: WG604624 Initial Calibration Date: 28-FEB-2017 15:34

	WG604624-01		WG604624-02		WG604624-03		WG604624-04		WG604624-05		R	Q
	Conc	INT	Conc	INT	Conc	INT	Conc	INT	Conc	INT		
SELENIUM	0	0	NA	NA	.008	0.000100	.4	0.00467	.8	0.00948	.999585	

INT = Instrument intensity
 R = Coefficient of correlation
 Q = Data Qualifier
 * = Out of Compliance; R < 0.995

INT_CAL_ICP - Modified 03/06/2008
 PDF File ID: 5178887
 Report generated: 01-MAR-2017 11:58



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604624-07
Instrument ID: ICP-THERMO4 Run Time: 15:42 Method: 6010C
File ID: T4.022817.154202 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG604140 Cal ID: ICP-THERI - 28-FEB-17
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
SELENIUM	.032	.064	.032	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604624-14
Instrument ID: ICP-THERMO4 Run Time: 16:08 Method: 6010C
File ID: T4.022817.160821 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG604140 Cal ID: ICP-TH - 28-FEB-17
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Selenium	0.0320	0.0640	0.0320	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5178892
Report generated 03/01/2017 11:59



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604624-20
Instrument ID: ICP-THERMO4 Run Time: 18:27 Method: 6010C
File ID: T4.022817.182755 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG604140 Cal ID: ICP-TH - 28-FEB-17
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Selenium	0.0320	0.0640	0.0320	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5178892
Report generated 03/01/2017 11:59



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604624-22
 Instrument ID: ICP-THERMO4 Run Time: 19:06 Method: 6010C
 File ID: T4.022817.190608 Analyst: KKB Units: mg/L
 Workgroup (AAB#): WG604140 Cal ID: ICP-TH - 28-FEB-17
 Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Selenium	0.0320	0.0640	0.0320	U

U = Result is less than MDL.
 F = Result is between MDL and RL.
 * = Result is above RL.

CCB - Modified 03/05/2008
 PDF File ID: 5178892
 Report generated 03/01/2017 11:59



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604624-06
Instrument ID: ICP-THERMO4 Run Time: 15:37 Method: 6010C
File ID: T4.022817.153742 Analyst: KKB Units: mg/L
Workgroup (AAB#): WG604140 Cal ID: ICP-TH - 28-FEB-17
QC Key: DOD4

Analyte	Expected	Found	%REC	LIMITS	Q
Selenium	.4	0.408	102	90 - 110	

* Exceeds LIMITS Limit



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604624-13
 Instrument ID: ICP-THERMO4 Run Time: 16:04 Method: 6010C
 File ID: T4.022817.160445 Analyst: KKB QC Key: DOD4
 Workgroup (AAB#): WG604140 Cal ID: ICP-TH - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Selenium	0.400	0.400	mg/L	100	90 - 110	

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
 PDF File ID: 5178891
 Report generated 03/01/2017 11:59



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604624-19
 Instrument ID: ICP-THERMO4 Run Time: 18:24 Method: 6010C
 File ID: T4.022817.182418 Analyst: KKB QC Key: DOD4
 Workgroup (AAB#): WG604140 Cal ID: ICP-TH - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Selenium	0.400	0.404	mg/L	101	90 - 110	

* Exceeds LIMITS Criteria

CCV - Modified 03/05/2008
 PDF File ID: 5178891
 Report generated 03/01/2017 11:59



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604624-21
Instrument ID: ICP-THERMO4 Run Time: 19:02 Method: 6010C
File ID: T4.022817.190232 Analyst: KKB QC Key: DOD4
Workgroup (AAB#): WG604140 Cal ID: ICP-TH - 28-FEB-17
Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Selenium	0.400	0.411	mg/L	103	90 - 110	

* Exceeds LIMITS Criteria



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604624-09
 Instrument ID: ICP-THERMO4 Run Time: 15:49 Method: 6010C
 File ID: T4.022817.154939 Analyst: KKB QC Key: DOD4
 Workgroup (AAB#): WG604140 Cal ID: ICP-TH - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Selenium	0.0160	0.0172	mg/L	107	70 - 130	

* Exceeds LIMITS Criteria



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604624-34
 Instrument ID: ICP-THERMO4 Run Time: 22:05 Method: 6010C
 File ID: T4.022817.220511 Analyst: KKB QC Key: DOD4
 Workgroup (AAB#): WG604140 Cal ID: ICP-TH - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Selenium	0.0160	0.0220	mg/L	137	70 - 130	*

* Exceeds LIMITS Criteria



Login number: L17021203
Instrument ID: ICP-THERMO4
Sol. A: WG604624-11
Sol. AB: WG604624-12

File ID: T4.022817.155716
File ID: T4.022817.160103

Workgroup (AAB#): WG604140
Method: 6010C
Units: mg/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Selenium	NS	0.0000100	NS	0.250	0.236	94.4	

NS = Not spiked

* = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.

= Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.



Login Number: L17021203
 Instrument ID: ICP-THERMO4

Date: 01/04/2017
 Method: 6010C

Analyte	Wave Length	AG	AL	AS	B	BA
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0.0000410	0	0	0
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0.0145	0	-0.0000800
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0	0	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	0.000378	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	-0.000289	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0.0000140	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	-0.0000120	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0
ZINC	206.20	0	0.0000320	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
 PDF File ID: 5178886
 Report generated: 03/01/2017 11:58



Login Number: L17021203
 Instrument ID: ICP-THERMO4

Date: 01/04/2017
 Method: 6010C

Analyte	Wave Length	BE	CA	CD	CO	CR
ALUMINUM	308.20	0	0	0	-0.000820	0
ANTIMONY	206.80	0	0	0	0	0.0260
ARSENIC	189.00	0	0	0	0	-0.00730
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0	0	0.00343	0
CADMIUM	228.80	0	0	0	-0.00390	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	-0.000200
COPPER	224.70	0	0	0	0.0000770	-0.00100
IRON	261.10	0	0	0	0	-0.00100
LEAD	220.30	0	0	0	-0.0000130	-0.000132
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0.0000500
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	-0.000860	0
PHOSPHORUS	214.90	0	0	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0.00000500	0	0	0
THALLIUM	190.80	0	0	0	0.00240	0.000276
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	-0.00350
ZINC	206.20	0	0	0	0	-0.00180
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
 PDF File ID: 5178886
 Report generated: 03/01/2017 11:58



Login Number: L17021203
 Instrument ID: ICP-THERMO4

Date: 01/04/2017
 Method: 6010C

Analyte	Wave Length	CU	FE	K	LI	MG
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0.0000560	0	0	0
ARSENIC	189.00	0	-0.0000490	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0.000648	0	0	0
CADMIUM	228.80	0	-0.00000500	0	0	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0.0000400	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0	0.00139	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0.000609	0	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0.0000220
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0.0000420	0	0	0
PHOSPHORUS	214.90	0.0390	0.000900	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	-0.000118	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	-0.000200	0	0	0
VANADIUM	292.40	0	0.0000700	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
 PDF File ID: 5178886
 Report generated: 03/01/2017 11:58



Login Number: L17021203

Date: 01/04/2017

Instrument ID: ICP-THERMO4

Method: 6010C

Analyte	Wave Length	MN	MO	NA	NI	P
ALUMINUM	308.20	0	0.0163	0	0	0
ANTIMONY	206.80	0	0.000910	0	-0.00190	0
ARSENIC	189.00	0	0.000139	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	-0.00190	0	0	0
CADMIUM	228.80	0	0.0000320	0	-0.000770	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0.000360	0	0	0	0
COBALT	228.60	0	-0.00200	0	0.000100	0
COPPER	224.70	0	0.00160	0	-0.0123	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	-0.000610	0	0.000110	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	-0.00290	-0.0230	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0.0000300	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0.00710	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0.000600	0.000580	0	0	0
SILICON	212.40	0	-0.354	0	0	0
SILVER	328.10	0	-0.0000100	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0.00100	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	-0.000153	0	0	0
VANADIUM	292.40	-0.000200	-0.00160	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
 PDF File ID: 5178886
 Report generated: 03/01/2017 11:58



Login Number: L17021203

Date: 01/04/2017

Instrument ID: ICP-THERMO4

Method: 6010C

Analyte	Wave Length	PB	SB	SE	SI	SN
ALUMINUM	308.20	0	0	0	0	0
ANTIMONY	206.80	0	0	0	0	-0.0320
ARSENIC	189.00	0	0	0	0	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	0	0	0	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0	0	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0	0	0	0
COBALT	228.60	0	0	0	0	0
COPPER	224.70	0.00440	0	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	0	0	0	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	0	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0	0	0	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0	0	0	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	0	0	0	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	0	0	0	0
TIN	189.90	0	0	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
 PDF File ID: 5178886
 Report generated: 03/01/2017 11:58



Login Number: L17021203
 Instrument ID: ICP-THERMO4

Date: 01/04/2017
 Method: 6010C

Analyte	Wave Length	SR	TI	TL	V	ZN
ALUMINUM	308.20	0	0	0	0.0720	0
ANTIMONY	206.80	0	0.000500	0	-0.00360	0
ARSENIC	189.00	0	0	0	0.000107	0
BARIUM	455.40	0	0	0	0	0
BERYLLIUM	313.10	0	-0.00000700	0	0.000990	0
BORON	249.60	0	0	0	0	0
CADMIUM	228.80	0	0	0	0.000102	0
CALCIUM	422.60	0	0	0	0	0
CHROMIUM	267.70	0	0.0000550	0	0	0
COBALT	228.60	0	0.00170	0	0.0000200	0
COPPER	224.70	0	0.000269	0	0	0
IRON	261.10	0	0	0	0	0
LEAD	220.30	0	0	0	-0.000126	0
LITHIUM	670.70	0	0	0	0	0
MAGNESIUM	279.10	0	-0.00290	0	0	0
MANGANESE	257.60	0	0	0	0	0
MOLYBDENUM	202.00	0	0	0	-0.000110	0
NICKEL	231.60	0	0	0	0	0
PHOSPHORUS	214.90	0	0	0	-0.00100	0
POTASSIUM	766.40	0	0	0	0	0
SELENIUM	196.10	0	0	0	0	0
SILICON	212.40	0	0	0	0	0
SILVER	328.10	0	-0.000720	0	-0.000260	0
SODIUM	589.50	0	0	0	0	0
STRONTIUM	407.70	0	0	0	0	0
THALLIUM	190.80	0	-0.00100	0	-0.0420	0
TIN	189.90	0	-0.00190	0	0	0
TITANIUM	337.20	0	0	0	0	0
VANADIUM	292.40	0	0.000820	0	0	0
ZINC	206.20	0	0	0	0	0
ZIRCONIUM	339.10	0	0	0	0	0

CORR_FACTORS - Modified 03/05/2008
 PDF File ID: 5178886
 Report generated: 03/01/2017 11:58



Login Number: L17021203
 Instrument ID: ICP-THERMO4

Date: 01/04/2017
 Method: 6010C

Analyte	Wave Length	ZR
ALUMINUM	308.20	0
ANTIMONY	206.80	0
ARSENIC	189.00	0
BARIUM	455.40	0
BERYLLIUM	313.10	0
BORON	249.60	0
CADMIUM	228.80	0
CALCIUM	422.60	0
CHROMIUM	267.70	0
COBALT	228.60	0
COPPER	224.70	0
IRON	261.10	0
LEAD	220.30	0
LITHIUM	670.70	0
MAGNESIUM	279.10	0
MANGANESE	257.60	0
MOLYBDENUM	202.00	0
NICKEL	231.60	0
PHOSPHORUS	214.90	0
POTASSIUM	766.40	0
SELENIUM	196.10	0
SILICON	212.40	0
SILVER	328.10	0
SODIUM	589.50	0
STRONTIUM	407.70	0
THALLIUM	190.80	0
TIN	189.90	0
TITANIUM	337.20	0
VANADIUM	292.40	0
ZINC	206.20	0
ZIRCONIUM	339.10	0

CORR_FACTORS - Modified 03/05/2008
 PDF File ID: 5178886
 Report generated: 03/01/2017 11:58



Login Number: L17021203 Date: 01/24/2017
Instrument ID: ICP-THERMO4 Method: 6010C

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Aluminum	10.00	900.0
Antimony	20.00	45.0
Arsenic	10.00	45.0
Barium	10.00	45.0
Beryllium	10.00	1.8
Boron	20.00	45.0
Cadmium	20.00	4.5
Calcium	8.00	270.0
Chromium	20.00	36.0
Cobalt	20.00	45.0
Copper	20.00	180.0
Iron	8.00	720.0
Lead	20.00	225.0
Lithium	8.00	36.0
Magnesium	8.00	900.0
Manganese	10.00	36.0
Molybdenum	20.00	27.0
Nickel	20.00	90.0
Phosphorus	20.00	180.0
Potassium	8.00	360.0
Selenium	20.00	90.0
Silicon	20.00	36.0
Silver	10.00	4.5
Sodium	8.00	270.0
Strontium	8.00	9.0
Thallium	20.00	18.0
Tin	20.00	45.0
Titanium	8.00	45.0
Vanadium	20.00	27.0
Zinc	20.00	45.0
Zirconium	10.00	45.0

Comments:

All analytes passed acceptance criteria at the specified concentration.



2.1.1.3 Raw Data

Element, Wavelength and Order	Date of Fit	Date of Cal.	Type of Fit	Weighting	A0	A1	A2	n (Exponent)
Ag 328.068 {103}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.000191	0.039142	0.000000	1.000000
Al 308.215 {109}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000859	0.009242	0.000000	1.000000
As 189.042 {478}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000063	0.020472	0.000000	1.000000
B 249.678 {135}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000147	0.012714	0.000000	1.000000
Ba 455.403 {74}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.010149	1.510536	0.000000	1.000000
Be 313.107 {108}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.000190	0.710201	0.000000	1.000000
Ca 422.673 {80}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000174	0.032220	0.000000	1.000000
Cd 228.802 {447}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000489	0.398467	0.000000	1.000000
Co 228.616 {447}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000218	0.304358	0.000000	1.000000
Cr 267.716 {126}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000067	0.034764	0.000000	1.000000
Cu 224.700 {450}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.000739	0.093188	0.000000	1.000000
Fe 261.187 {129}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.000105	0.012762	0.000000	1.000000
K 766.490 {44}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.008582	0.028297	0.000000	1.000000
Li 670.784 {50}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.003483	0.545738	0.000000	1.000000
Mg 279.079 {121}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.000103	0.002771	0.000000	1.000000
Mn 257.610 {131}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000701	0.130463	0.000000	1.000000
Mo 202.030 {467}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000053	0.110868	0.000000	1.000000
Na 589.592 {57}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.002704	0.077392	0.000000	1.000000
Ni 231.604 {446}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.000653	0.081977	0.000000	1.000000
P 214.914 {457}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.000066	0.009904	0.000000	1.000000
Pb 220.353 {453}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000103	0.051112	0.000000	1.000000
Sb 206.833 {463}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000350	0.021828	0.000000	1.000000
Se 196.090 {472}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.000002	0.011797	0.000000	1.000000
Si 212.412 {459}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000359	0.027296	0.000000	1.000000
Sn 189.989 {477}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000113	0.060101	0.000000	1.000000
Sr 407.771 {83}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.001865	2.377915	0.000000	1.000000
Ti 337.280 {100}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.000912	0.083409	0.000000	1.000000
Tl 190.856 {477}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.000137	0.015068	0.000000	1.000000
V 292.402 {115}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000037	0.049453	0.000000	1.000000
Y 224.306 {450}* Y 360.073 {94}* Y 377.433 {89}*	<not fit> <not fit> <not fit>	<Never Calibrated> <Never Calibrated> <Never Calibrated>	Linear Linear Linear	1/Conc 1/Conc 1/Conc	0.000000 0.000000 0.000000	0.000000 0.000000 0.000000	0.000000 0.000000 0.000000	1.000000 1.000000 1.000000
Zn 206.200 {463}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	0.000413	0.392017	0.000000	1.000000
Zr 339.198 {99}	2/28/2017 15:37:38	2/28/2017 15:37:38	Linear	1/Conc	-0.003310	0.000495	0.000000	1.000000

Approved: March 01, 2017

K. K. Buck

Element, Wavelength and Order	Correlation	Std Error of Est	Predicted MDL	Predicted MQL	Status	Reslope		QC Norm	
						Slope	Y-int	Slope factor	Offset
Ag 328.068 {103}	0.999788	0.000002	0.002082	0.006940	OK.	1.000000	0.000000	1	0
Al 308.215 {109}	0.999469	0.000019	0.006779	0.022595	OK.	1.000000	0.000000	1	0
As 189.042 {478}	0.999991	0.000000	0.005124	0.017079	OK.	1.000000	0.000000	1	0
B 249.678 {135}	0.999900	0.000001	0.003051	0.010169	OK.	1.000000	0.000000	1	0
Ba 455.403 {74}	0.999989	0.000045	0.000645	0.002150	OK.	1.000000	0.000000	1	0
Be 313.107 {108}	0.999968	0.000002	0.000079	0.000264	OK.	1.000000	0.000000	1	0
Ca 422.673 {80}	0.999981	0.000013	0.022221	0.074069	OK.	1.000000	0.000000	1	0
Cd 228.802 {447}	0.999986	0.000001	0.000407	0.001356	OK.	1.000000	0.000000	1	0
Co 228.616 {447}	0.999973	0.000003	0.000621	0.002069	OK.	1.000000	0.000000	1	0
Cr 267.716 {126}	0.999603	0.000003	0.001362	0.004540	OK.	1.000000	0.000000	1	0
Cu 224.700 {450}	0.999844	0.000005	0.002275	0.007585	OK.	1.000000	0.000000	1	0
Fe 261.187 {129}	0.999996	0.000001	0.016676	0.055588	OK.	1.000000	0.000000	1	0
K 766.490 {44}	0.999928	0.000108	0.072810	0.242701	OK.	1.000000	0.000000	1	0
Li 670.784 {50}	0.999930	0.000064	0.003980	0.013265	OK.	1.000000	0.000000	1	0
Mg 279.079 {121}	0.999859	0.000005	0.077468	0.258226	OK.	1.000000	0.000000	1	0
Mn 257.610 {131}	0.999923	0.000005	0.002034	0.006781	OK.	1.000000	0.000000	1	0
Mo 202.030 {467}	0.999987	0.000004	0.000872	0.002906	OK.	1.000000	0.000000	1	0
Na 589.592 {57}	0.999955	0.000232	0.025931	0.086435	OK.	1.000000	0.000000	1	0
Ni 231.604 {446}	0.999389	0.000009	0.002176	0.007254	OK.	1.000000	0.000000	1	0
P 214.914 {457}	0.999953	0.000006	0.011923	0.039742	OK.	1.000000	0.000000	1	0
Pb 220.353 {453}	0.998902	0.000008	0.005365	0.017882	OK.	1.000000	0.000000	1	0
Sb 206.833 {463}	0.999844	0.000003	0.007685	0.025618	OK.	1.000000	0.000000	1	0
Se 196.090 {472}	0.999585	0.000001	0.011734	0.039114	OK.	1.000000	0.000000	1	0
Si 212.412 {459}	0.999993	0.000003	0.004156	0.013852	OK.	1.000000	0.000000	1	0
Sn 189.989 {477}	0.999980	0.000002	0.001466	0.004885	OK.	1.000000	0.000000	1	0
Sr 407.771 {83}	0.999992	0.000060	0.000306	0.001020	OK.	1.000000	0.000000	1	0
Ti 337.280 {100}	0.999654	0.000014	0.004836	0.016121	OK.	1.000000	0.000000	1	0
Tl 190.856 {477}	0.995723	0.000006	0.007739	0.025797	OK.	1.000000	0.000000	1	0
V 292.402 {115}	0.999978	0.000002	0.001064	0.003546	OK.	1.000000	0.000000	1	0
Y 224.306 {450}	0.000000	0.000000	-1.000000	-1.000000	Warnin	1.000000	0.000000	1	0
Y 360.073 {94}	0.000000	0.000000	-1.000000	-1.000000	Warnin	1.000000	0.000000	1	0
Y 377.433 {89}	0.000000	0.000000	-1.000000	-1.000000	Warnin	1.000000	0.000000	1	0
Zn 206.200 {463}	0.999996	0.000007	0.000298	0.000992	OK.	1.000000	0.000000	1	0
Zr 339.198 {99}	0.358860	0.000008	1.115381	3.717936	OK.	1.000000	0.000000	1	0

Approved: March 01, 2017

K. K. Buck

Sample Name: S0 Acquired: 2/28/2017 15:19:05 Type: Cal
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: IR Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00019	.00086	.00006	.00015	.01015	-.00019	.00017
Stddev	.00006	.00005	.00001	.00003	.00041	.00002	.00025
%RSD	29.295	5.2897	21.786	21.048	4.0578	9.1658	142.41

#1	-.00025	.00081	.00008	.00014	.01052	-.00021	-.00006
#2	-.00014	.00087	.00006	.00012	.01021	-.00018	.00015
#3	-.00018	.00089	.00005	.00018	.00971	-.00018	.00043

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00049	.00022	.00007	-.00074	-.00011	.00858	-.00348
Stddev	.00009	.00010	.00002	.00008	.00014	.00135	.00165
%RSD	19.060	45.587	25.074	10.654	136.84	15.685	47.303

#1	.00052	.00028	.00007	-.00068	.00004	.00721	-.00518
#2	.00056	.00027	.00005	-.00083	-.00024	.00864	-.00337
#3	.00038	.00010	.00008	-.00071	-.00012	.00990	-.00189

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00010	.00070	.00005	-.00271	-.00065	-.00007	.00010
Stddev	.00008	.00042	.00004	.00223	.00010	.00005	.00015
%RSD	81.535	60.122	74.341	82.402	15.071	78.246	146.91

#1	-.00001	.00023	.00002	-.00147	-.00074	-.00011	.00005
#2	-.00016	.00103	.00010	-.00137	-.00067	-.00001	.00027
#3	-.00014	.00085	.00004	-.00529	-.00055	-.00007	-.00002

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00035	-.00000	.00036	.00011	.00186	-.00091	-.00014
Stddev	.00011	.00009	.00005	.00005	.00062	.00037	.00004
%RSD	32.645	3695.6	12.784	41.137	33.250	40.104	28.085

#1	.00031	-.00007	.00040	.00011	.00232	-.00075	-.00010
#2	.00026	-.00004	.00031	.00016	.00212	-.00066	-.00014
#3	.00048	.00010	.00037	.00007	.00116	-.00133	-.00018

Approved: March 01, 2017

K. K. Buck

Sample Name: S0 Acquired: 2/28/2017 15:19:05 Type: Cal
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: IR Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	V_2924	Zn2062	Zr3391
Units	Cts/S	Cts/S	Cts/S
Avg	.00004	.00041	-.00331
Stddev	.00002	.00009	.00028
%RSD	56.050	22.150	8.6011

#1	.00002	.00050	-.00313
#2	.00006	.00032	-.00316
#3	.00003	.00041	-.00364

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5165.8	72756.	8942.6
Stddev	14.9	126.	30.7
%RSD	.28904	.17257	.34312

#1	5173.9	72738.	8968.7
#2	5174.9	72890.	8908.8
#3	5148.6	72641.	8950.2

Approved: March 01, 2017

Ki K Buck

Sample Name: S1 Acquired: 2/28/2017 15:22:54 Type: Cal
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: IR Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	Ba4554	Be3131	Ca4226	Cd2288	Co2286
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00003	.00172	.02239	.00009	.00276	.00064	.00067
Stddev	.00007	.00012	.00061	.00002	.00060	.00005	.00004
%RSD	252.89	6.7313	2.7281	24.722	21.588	7.5568	6.4123

#1	.00005	.00161	.02292	.00010	.00333	.00060	.00063
#2	-.00006	.00172	.02172	.00006	.00214	.00070	.00071
#3	-.00007	.00184	.02252	.00010	.00280	.00063	.00066

Elem	Cr2677	Cu2247	Fe2611	K_7664	Mn2576	Mo2020	Na5895
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00014	-.00034	.00031	.02149	.00132	.00101	.03070
Stddev	.00005	.00009	.00041	.00215	.00002	.00007	.00052
%RSD	36.127	25.664	129.75	10.025	1.8258	6.7415	1.7022

#1	.00012	-.00028	.00031	.02300	.00132	.00108	.03029
#2	.00011	-.00030	-.00009	.02244	.00129	.00094	.03129
#3	.00020	-.00044	.00072	.01902	.00134	.00101	.03053

Elem	Ni2316	P_2149	Pb2203	Sb2068	Si2124	Sn1899	Sr4077
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00055	.00069	.00012	.00062	.00136	.00065	.02168
Stddev	.00006	.00004	.00010	.00004	.00008	.00005	.00013
%RSD	10.282	6.0980	80.215	6.1601	5.5883	7.4159	.6092

#1	-.00052	.00068	.00023	.00066	.00143	.00062	.02161
#2	-.00061	.00066	.00003	.00060	.00136	.00063	.02161
#3	-.00051	.00074	.00011	.00060	.00128	.00071	.02183

Elem	Ti3372	V_2924	Zn2062	Zr3391
Units	Cts/S	Cts/S	Cts/S	Cts/S
Avg	-.00010	.00044	.00359	-.00348
Stddev	.00038	.00005	.00010	.00004
%RSD	391.99	11.224	2.7307	1.1875

#1	-.00020	.00043	.00353	-.00351
#2	.00032	.00039	.00371	-.00350
#3	-.00041	.00049	.00354	-.00343

Approved: March 01, 2017

Ki K Buck

Sample Name: S1 Acquired: 2/28/2017 15:22:54 Type: Cal
Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: IR Corr. Factor: 1.000000
User: KKB Custom ID1: Custom ID2: Custom ID3:
Comment:

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5107.2	70196.	8677.0
Stddev	8.4	417.	65.3
%RSD	.16511	.59372	.75273
#1	5116.1	70215.	8752.2
#2	5099.3	69771.	8644.4
#3	5106.2	70604.	8634.4

Approved: March 01, 2017

Ki K Buck

Sample Name: S2 Acquired: 2/28/2017 15:26:43 Type: Cal
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: IR Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00010	.00296	.00019	.00026	.03539	.00038	.00508
Stddev	.00010	.00004	.00002	.00004	.00136	.00003	.00080
%RSD	98.576	1.3400	10.618	13.835	3.8308	6.5273	15.695

#1	-.00001	.00293	.00017	.00028	.03671	.00039	.00594
#2	.00018	.00300	.00019	.00022	.03545	.00040	.00436
#3	.00012	.00295	.00021	.00029	.03400	.00036	.00494

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00081	.00127	.00030	.00018	.00072	.03398	.00385
Stddev	.00009	.00007	.00004	.00019	.00016	.00180	.00077
%RSD	11.334	5.1314	13.206	105.76	21.670	5.3074	20.058

#1	.00071	.00120	.00032	.00034	.00088	.03334	.00351
#2	.00088	.00128	.00031	-.00003	.00057	.03601	.00474
#3	.00084	.00133	.00025	.00023	.00071	.03258	.00331

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00044	.00164	.00189	.06638	-.00000	.00157	.00053
Stddev	.00014	.00018	.00003	.00098	.00007	.00004	.00013
%RSD	32.902	10.922	1.7284	1.4805	2403.2	2.8555	25.323

#1	.00060	.00178	.00191	.06580	-.00005	.00160	.00069
#2	.00040	.00144	.00191	.06752	-.00004	.00160	.00045
#3	.00032	.00169	.00185	.06583	.00008	.00152	.00046

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.00080	.00010	.00236	.00107	.04084	.00084	-.00016
Stddev	.00006	.00005	.00006	.00001	.00055	.00031	.00006
%RSD	7.8830	47.187	2.5964	1.0018	1.3504	36.881	38.718

#1	.00084	.00006	.00230	.00106	.04114	.00052	-.00022
#2	.00072	.00015	.00241	.00107	.04021	.00086	-.00018
#3	.00082	.00010	.00238	.00108	.04118	.00114	-.00009

Approved: March 01, 2017

Ki K Buck

Sample Name: S2 Acquired: 2/28/2017 15:26:43 Type: Cal
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: IR Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	V_2924	Zn2062	Zr3391
Units	Cts/S	Cts/S	Cts/S
Avg	.00086	.00682	-.00316
Stddev	.00003	.00003	.00052
%RSD	3.5283	.51243	16.383

#1	.00088	.00683	-.00351
#2	.00086	.00678	-.00341
#3	.00082	.00685	-.00257

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5086.5	71278.	8708.3
Stddev	15.8	208.	25.4
%RSD	.30991	.29202	.29190

#1	5090.0	71278.	8737.6
#2	5100.2	71070.	8695.6
#3	5069.2	71486.	8691.8

Approved: March 01, 2017

Ki K Buck

Sample Name: S3 Acquired: 2/28/2017 15:30:33 Type: Cal
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: IR Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.01531	.09521	.00817	.00639	1.5132	.03563	.32017
Stddev	.00025	.00013	.00001	.00001	.0051	.00013	.00084
%RSD	1.6651	.14126	.13684	.16757	.33820	.36811	.26132

#1	.01534	.09512	.00818	.00638	1.5153	.03573	.31983
#2	.01504	.09515	.00816	.00640	1.5074	.03548	.31955
#3	.01554	.09536	.00818	.00639	1.5169	.03566	.32112

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02225	.06113	.01735	.04622	.05076	1.4150	.54117
Stddev	.00010	.00008	.00004	.00011	.00046	.0039	.00107
%RSD	.44753	.12310	.23413	.23661	.90423	.27473	.19838

#1	.02223	.06120	.01732	.04634	.05042	1.4188	.53998
#2	.02216	.06114	.01739	.04613	.05128	1.4110	.54149
#3	.02236	.06105	.01732	.04617	.05058	1.4151	.54205

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02754	.06573	.11068	3.8579	.04058	.09793	.02593
Stddev	.00023	.00016	.00029	.0184	.00021	.00025	.00012
%RSD	.82151	.23970	.26293	.47562	.51607	.26027	.44591

#1	.02731	.06556	.11051	3.8728	.04036	.09821	.02603
#2	.02776	.06587	.11101	3.8374	.04060	.09772	.02595
#3	.02755	.06577	.11051	3.8635	.04078	.09787	.02580

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.02589	.00467	.12654	.06013	2.3698	.08160	.00696
Stddev	.00012	.00010	.00031	.00016	.0070	.00028	.00008
%RSD	.47607	2.0694	.24656	.26409	.29408	.34211	1.2177

#1	.02602	.00474	.12683	.05999	2.3698	.08131	.00686
#2	.02588	.00456	.12659	.06030	2.3629	.08164	.00702
#3	.02578	.00470	.12621	.06009	2.3768	.08186	.00699

Approved: March 01, 2017

K. K. Buck

Sample Name: S3 Acquired: 2/28/2017 15:30:33 Type: Cal
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: IR Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	V_2924	Zn2062	Zr3391
Units	Cts/S	Cts/S	Cts/S
Avg	.04894	.39080	-.00273
Stddev	.00015	.00049	.00023
%RSD	.31419	.12577	8.3970

#1	.04885	.39028	-.00298
#2	.04886	.39085	-.00269
#3	.04912	.39126	-.00253

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4976.5	69301.	8708.1
Stddev	15.1	271.	31.1
%RSD	.30416	.39151	.35660

#1	4992.8	69609.	8672.6
#2	4973.8	69196.	8730.1
#3	4962.9	69097.	8721.6

Approved: March 01, 2017

<i>Ki K Buck</i>

Sample Name: S4 Acquired: 2/28/2017 15:34:10 Type: Cal
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: IR Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.03104	.18549	.01638	.01288	3.0375	.07263	.64703
Stddev	.00016	.00048	.00005	.00004	.0026	.00010	.00086
%RSD	.50516	.25927	.33194	.33329	.08534	.13531	.13247

#1	.03115	.18556	.01632	.01283	3.0363	.07271	.64773
#2	.03111	.18593	.01642	.01289	3.0404	.07267	.64607
#3	.03086	.18497	.01640	.01292	3.0357	.07252	.64728

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.04409	.12158	.03509	.09235	.10213	2.8425	1.0905
Stddev	.00018	.00027	.00006	.00024	.00073	.0059	.0031
%RSD	.41091	.22359	.17711	.26404	.71312	.20611	.28103

#1	.04427	.12128	.03514	.09237	.10165	2.8460	1.0879
#2	.04391	.12163	.03511	.09209	.10178	2.8357	1.0939
#3	.04409	.12181	.03502	.09258	.10297	2.8457	1.0896

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.05504	.13140	.22186	7.7359	.08130	.19982	.05162
Stddev	.00057	.00129	.00021	.0301	.00008	.00057	.00023
%RSD	1.0419	.98308	.09383	.38846	.10035	.28587	.44383

#1	.05521	.12995	.22192	7.7461	.08139	.19960	.05160
#2	.05551	.13242	.22163	7.7595	.08130	.19939	.05140
#3	.05440	.13182	.22204	7.7021	.08123	.20046	.05185

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S	Cts/S
Avg	.05188	.00948	.25467	.12000	4.7662	.16600	.01361
Stddev	.00013	.00008	.00051	.00023	.0063	.00014	.00003
%RSD	.24411	.88703	.19892	.19303	.13156	.08371	.22543

#1	.05182	.00949	.25451	.11998	4.7590	.16589	.01364
#2	.05180	.00939	.25427	.11978	4.7691	.16594	.01361
#3	.05203	.00955	.25524	.12024	4.7705	.16615	.01358

Approved: March 01, 2017

K. K. Buck

Sample Name: S4 Acquired: 2/28/2017 15:34:10 Type: Cal
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: IR Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	V_2924	Zn2062	Zr3391
Units	Cts/S	Cts/S	Cts/S
Avg	.09911	.78521	-.00237
Stddev	.00017	.00290	.00026
%RSD	.17287	.36894	11.056

#1	.09928	.78378	-.00235
#2	.09911	.78332	-.00212
#3	.09894	.78855	-.00264

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4968.9	67586.	8550.3
Stddev	19.6	294.	99.0
%RSD	.39450	.43505	1.1579

#1	4958.6	67258.	8438.5
#2	4991.5	67673.	8585.5
#3	4956.6	67826.	8626.9

Approved: March 01, 2017

Ki K Buck

Sample Name: ICV Acquired: 2/28/2017 15:37:42 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40014	10.066	.41047	.49718	1.0013	.05056	10.114
Stddev	.00241	.031	.00699	.00307	.0047	.00010	.056
%RSD	.60275	.30633	1.7027	.61650	.46852	.20458	.55105

#1	.40274	10.091	.40267	.49544	.99628	.05045	10.056
#2	.39798	10.076	.41258	.49537	1.0020	.05064	10.118
#3	.39970	10.031	.41616	.50072	1.0056	.05061	10.167

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05049	.20161	.50118	.50637	4.0357	50.109	.99455
Stddev	.00017	.00106	.00156	.00222	.0112	.183	.00394
%RSD	.34473	.52572	.31085	.43931	.27658	.36611	.39623

#1	.05061	.20216	.50226	.50409	4.0412	49.902	.99151
#2	.05057	.20227	.49940	.50854	4.0229	50.251	.99315
#3	.05029	.20038	.50189	.50649	4.0431	50.173	.99900

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.9981	.50004	F .94433	49.836	.50414	10.018	.50532
Stddev	.0289	.00052	.00144	.130	.00293	.020	.00318
%RSD	.28867	.10435	.15293	.26062	.58151	.19829	.62846

#1	9.9749	.50061	.94362	49.769	.50210	10.041	.50450
#2	9.9889	.49992	.94599	49.754	.50750	10.006	.50264
#3	10.030	.49958	.94337	49.986	.50283	10.008	.50882

Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value			1.0000				
Range			-5.0000%				

Approved: March 01, 2017

Ki K Buck

Sample Name: ICV Acquired: 2/28/2017 15:37:42 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2133	.40820	4.8992	1.0158	1.0008	.98869	.51041
Stddev	.0062	.00528	.0106	.0028	.0037	.00757	.00215
%RSD	.51027	1.2923	.21687	.27933	.36641	.76589	.42027

#1	1.2182	.40524	4.8964	1.0189	.99675	.99253	.51289
#2	1.2153	.40506	4.9109	1.0149	1.0018	.97997	.50928
#3	1.2063	.41429	4.8902	1.0135	1.0039	.99357	.50907

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.99315	1.0092	F .79245
Stddev	.00411	.0020	.55823
%RSD	.41334	.19778	70.444

#1	.99773	1.0112	.50665
#2	.98981	1.0073	.43498
#3	.99191	1.0091	1.4357

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-5.0000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4913.1	68499.	8642.6
Stddev	41.5	456.	112.0
%RSD	.84469	.66608	1.2959

#1	4887.1	68898.	8513.4
#2	4961.0	68596.	8701.2
#3	4891.2	68001.	8713.1

Approved: March 01, 2017

Ki K Buck

Sample Name: ICB Acquired: 2/28/2017 15:42:02 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00037	.00072	.00101	.00439	-0.00040	-0.00003	-0.01012
Stddev	.00143	.00351	.00245	.00130	.00037	.00005	.01265
%RSD	388.52	490.82	241.46	29.671	92.068	157.28	124.99

#1	-0.00165	-0.00320	-0.00077	.00403	-0.00018	-0.00004	.00146
#2	-0.00063	.00177	.00001	.00330	-0.00083	.00002	-.02362
#3	.00117	.00358	.00381	.00583	-0.00019	-0.00008	-.00820

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00023	-0.00074	-0.00153	-0.00032	.00474	.17372	-0.00441
Stddev	.00030	.00066	.00074	.00144	.01079	.05293	.00414
%RSD	127.80	89.213	48.773	454.55	227.77	30.468	93.854

#1	-0.00057	-0.00092	-0.00094	-0.00074	.01082	.13367	.00037
#2	-0.00015	-0.00001	-0.00236	.00129	.01111	.23372	-.00676
#3	.00001	-0.00129	-0.00128	-0.00150	-0.00772	.15376	-.00683

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.02805	-0.00174	.00042	-0.00034	.00106	.00823	-0.00461
Stddev	.09075	.00224	.00068	.02856	.00114	.00399	.00249
%RSD	323.57	128.28	161.65	8398.6	107.25	48.470	54.040

#1	-.01269	-0.00325	.00119	.02234	.00059	.00797	-.00339
#2	.05405	.00083	.00017	-.03242	.00235	.01234	-.00747
#3	-.12549	-0.00281	-0.00010	.00906	.00023	.00438	-.00296

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: ICB Acquired: 2/28/2017 15:42:02 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00627	.00750	-.00113	-.00039	.00006	.00209	-.00303
Stddev	.00946	.00715	.00258	.00043	.00028	.00182	.00209
%RSD	150.92	95.284	228.43	110.42	473.76	87.248	68.899

#1	.01556	.00661	-.00406	.00009	.00028	.00004	-.00535
#2	.00661	.01506	.00080	-.00073	-.00025	.00353	-.00243
#3	-.00336	.00084	-.00013	-.00054	.00015	.00270	-.00131

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00016	.00001	F .18309
Stddev	.00029	.00004	.51720
%RSD	185.55	309.93	282.48

#1	-.00012	-.00003	-.00150
#2	.00014	.00004	-.21648
#3	.00046	.00003	.76726

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5057.7	70472.	8642.7
Stddev	10.4	259.	56.7
%RSD	.20557	.36807	.65633

#1	5059.1	70648.	8672.7
#2	5046.7	70594.	8678.0
#3	5067.4	70174.	8577.2

Approved: March 01, 2017

Ki K Buck

Sample Name: LLICV Acquired: 2/28/2017 15:45:51 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00793	.17976	.00740	.07859	.00790	.00165	.42721
Stddev	.00317	.00684	.00346	.00315	.00017	.00005	.01594
%RSD	40.009	3.8041	46.733	4.0021	2.1796	2.7233	3.7311

#1	.01018	.17440	.00736	.08222	.00778	.00161	.40901
#2	.00931	.18746	.01088	.07677	.00810	.00165	.43868
#3	.00430	.17742	.00396	.07678	.00783	.00170	.43395

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00076	.00385	.00298	.00607	.07889	.89030	.07909
Stddev	.00016	.00021	.00060	.00127	.01166	.00242	.00385
%RSD	21.220	5.3858	20.170	20.927	14.782	.27162	4.8664

#1	.00066	.00388	.00265	.00717	.09144	.88921	.08346
#2	.00068	.00363	.00262	.00468	.07681	.88861	.07760
#3	.00095	.00404	.00367	.00637	.06840	.89307	.07620

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.37815	.00889	.00826	.42652	.01761	.81737	.00792
Stddev	.08321	.00244	.00036	.02297	.00075	.00606	.00192
%RSD	22.005	27.479	4.3116	5.3855	4.2756	.74154	24.227

#1	.28257	.01002	.00867	.43258	.01841	.82100	.00574
#2	.41735	.00609	.00808	.44586	.01692	.82074	.00937
#3	.43451	.01057	.00802	.40113	.01749	.81037	.00863

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: LLICV Acquired: 2/28/2017 15:45:51 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08448	.02466	.74649	.41746	.04213	.02828	.17731
Stddev	.00191	.01593	.00572	.00190	.00033	.00217	.00485
%RSD	2.2590	64.594	.76677	.45403	.77390	7.6572	2.7348

#1	.08361	.04073	.74047	.41830	.04244	.03077	.17396
#2	.08667	.02438	.74713	.41879	.04216	.02683	.17509
#3	.08316	.00887	.75187	.41529	.04179	.02724	.18287

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00842	.01804	F 121.62
Stddev	.00027	.00005	.87
%RSD	3.2221	.28494	.71152

#1	.00811	.01798	121.45
#2	.00856	.01806	120.85
#3	.00860	.01807	122.56

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5089.8	71666.	8662.8
Stddev	9.9	379.	47.7
%RSD	.19546	.52900	.55025

#1	5086.5	72074.	8670.6
#2	5081.9	71599.	8706.1
#3	5100.9	71325.	8611.7

Approved: March 01, 2017

Ki K Buck

Sample Name: LLICV Acquired: 2/28/2017 15:49:39 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00851	.18029	.00564	.07506	.00800	.00160	.40912
Stddev	.00111	.00270	.00440	.00184	.00022	.00003	.00541
%RSD	13.089	1.5000	78.088	2.4453	2.8042	1.6518	1.3235

#1	.00781	.18306	.00248	.07315	.00804	.00161	.41422
#2	.00792	.17766	.00377	.07522	.00776	.00162	.40970
#3	.00979	.18016	.01066	.07681	.00821	.00157	.40344

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00088	.00385	.00177	.00540	.07482	.92064	.08006
Stddev	.00037	.00025	.00108	.00287	.01231	.02177	.00164
%RSD	42.118	6.5326	60.716	53.148	16.454	2.3643	2.0451

#1	.00065	.00414	.00297	.00679	.06659	.91244	.07963
#2	.00131	.00375	.00088	.00210	.08897	.94532	.08187
#3	.00068	.00367	.00147	.00730	.06889	.90416	.07868

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.46128	.00725	.00860	.42256	.01688	.80698	.00818
Stddev	.01234	.00110	.00034	.00119	.00168	.01585	.00367
%RSD	2.6755	15.152	3.9152	.28082	9.9701	1.9636	44.805

#1	.47384	.00694	.00883	.42313	.01792	.79795	.01133
#2	.44916	.00634	.00876	.42336	.01778	.79772	.00416
#3	.46085	.00847	.00822	.42120	.01494	.82528	.00906

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: LLICV Acquired: 2/28/2017 15:49:39 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08495	.01716	.74103	.41514	.04149	.02716	.16833
Stddev	.00654	.00139	.00313	.00361	.00021	.00327	.00393
%RSD	7.7001	8.0806	.42221	.86976	.51640	12.048	2.3376

#1	.07817	.01858	.74302	.41422	.04143	.02339	.17243
#2	.08545	.01582	.73742	.41912	.04173	.02928	.16458
#3	.09123	.01707	.74264	.41208	.04132	.02881	.16797

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00906	.01773	F 120.39
Stddev	.00079	.00028	2.29
%RSD	8.6870	1.5576	1.9035

#1	.00987	.01803	122.03
#2	.00830	.01749	117.77
#3	.00901	.01766	121.36

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5057.4	70714.	8629.8
Stddev	8.4	131.	104.8
%RSD	.16542	.18555	1.2143

#1	5047.8	70807.	8526.1
#2	5063.2	70770.	8735.7
#3	5061.1	70564.	8627.6

Approved: March 01, 2017

Ki K Buck

Sample Name: LLICV Acquired: 2/28/2017 15:53:28 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00897	.22691	.01422	.09492	.01001	.00198	.50847
Stddev	.00050	.00331	.00245	.00116	.00061	.00005	.01552
%RSD	5.5267	1.4600	17.204	1.2178	6.0696	2.6140	3.0515

#1	.00912	.22945	.01164	.09612	.01015	.00197	.49726
#2	.00938	.22811	.01451	.09382	.01053	.00193	.52618
#3	.00842	.22316	.01650	.09483	.00934	.00203	.50198

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00082	.00520	.00429	.00493	.11356	1.1107	.10120
Stddev	.00016	.00058	.00035	.00119	.02117	.0787	.00139
%RSD	19.237	11.211	8.2530	24.156	18.644	7.0831	1.3696

#1	.00089	.00584	.00454	.00356	.13467	1.0821	.10098
#2	.00064	.00470	.00389	.00570	.09232	1.0503	.10269
#3	.00094	.00505	.00444	.00552	.11370	1.1997	.09994

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50107	.01025	.01043	.50747	.02293	1.0119	.00830
Stddev	.06006	.00092	.00022	.03036	.00174	.0138	.00302
%RSD	11.986	8.9874	2.1017	5.9830	7.5700	1.3676	36.380

#1	.44743	.01061	.01018	.47244	.02310	1.0206	.01094
#2	.48981	.00920	.01059	.52386	.02111	.99596	.00895
#3	.56596	.01094	.01052	.52611	.02457	1.0192	.00501

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: LLICV Acquired: 2/28/2017 15:53:28 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10877	.01358	.93012	.51771	.05166	.03482	.21239
Stddev	.00561	.00854	.00544	.00074	.00015	.00433	.00253
%RSD	5.1579	62.878	.58443	.14256	.28981	12.438	1.1898

#1	.11523	.02181	.93054	.51796	.05150	.03514	.20951
#2	.10511	.00476	.92449	.51830	.05180	.03898	.21342
#3	.10598	.01416	.93533	.51688	.05167	.03034	.21424

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.01078	.02196	F 151.58
Stddev	.00044	.00020	1.88
%RSD	4.1138	.89143	1.2432

#1	.01028	.02213	153.34
#2	.01094	.02201	149.59
#3	.01112	.02175	151.82

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5140.5	70908.	8533.2
Stddev	14.1	479.	8.6
%RSD	.27512	.67592	.10070

#1	5145.5	71453.	8529.2
#2	5124.6	70552.	8527.3
#3	5151.5	70720.	8543.0

Approved: March 01, 2017

Ki K Buck

Sample Name: ICSA Acquired: 2/28/2017 15:57:16 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0001	249.63	.00298	.01029	-0.0042	-0.0007	233.45
Stddev	.00212	.32	.00557	.00169	.00074	.00004	.34
%RSD	32593.	.12757	186.81	16.435	174.18	57.987	.14533

#1	-0.00227	249.98	.00218	.01156	-0.00046	-0.00010	233.06
#2	.00031	249.54	.00891	.00837	.00033	-0.00007	233.56
#3	.00194	249.36	-0.00214	.01093	-0.00114	-0.00003	233.71

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0012	-0.0081	-0.00276	.00013	99.211	.05614	.00830
Stddev	.00014	.00048	.00256	.00257	.279	.04385	.00477
%RSD	118.60	58.485	92.877	2044.9	.28161	78.116	57.538

#1	-0.00004	-0.00136	.00012	-0.00128	99.025	.04194	.00723
#2	-0.00028	-0.00050	-0.00362	.00309	99.532	.10533	.01351
#3	-0.00003	-0.00058	-0.00479	-0.00143	99.074	.02115	.00414

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	255.99	-0.00162	-0.00067	.00993	-0.00383	.06472	-0.00004
Stddev	.14	.00081	.00082	.02411	.00197	.01595	.00529
%RSD	.05276	50.095	121.69	242.75	51.403	24.642	14134.

#1	256.15	-0.00112	-0.00101	.00702	-0.00419	.05518	-0.00084
#2	255.89	-0.00255	.00026	-0.01259	-0.00170	.05585	-0.00488
#3	255.94	-0.00118	-0.00127	.03537	-0.00559	.08314	.00561

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: ICSA Acquired: 2/28/2017 15:57:16 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00376	.00001	.01148	.00100	.00120	.00071	-.00460
Stddev	.00887	.00414	.00098	.00085	.00024	.00579	.00290
%RSD	235.90	28985.	8.5480	85.199	19.831	820.97	63.062

#1	.01305	.00100	.01238	.00194	.00148	.00155	-.00787
#2	-.00464	.00357	.01043	.00073	.00106	.00602	-.00360
#3	.00288	-.00453	.01163	.00031	.00107	-.00546	-.00233

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00135	-.00684	F -15.675
Stddev	.00090	.00013	1.055
%RSD	66.611	1.9395	6.7287

#1	.00126	-.00697	-15.592
#2	.00050	-.00670	-14.665
#3	.00229	-.00684	-16.769

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.02000
Low Limit			-.02000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4694.8	63972.	8502.8
Stddev	18.1	155.	35.0
%RSD	.38518	.24216	.41124

#1	4686.9	63985.	8539.4
#2	4682.1	63811.	8469.7
#3	4715.5	64120.	8499.2

Approved: March 01, 2017

Ki K Buck

Sample Name: ICSAB Acquired: 2/28/2017 16:01:03 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50313	244.26	.23809	.50437	.24738	.25400	230.92
Stddev	.00437	.11	.00270	.00116	.00063	.00034	.22
%RSD	.86847	.04306	1.1328	.22936	.25309	.13300	.09616

#1	.50649	244.16	.23890	.50404	.24806	.25433	230.82
#2	.50470	244.37	.24029	.50565	.24727	.25366	230.76
#3	.49819	244.25	.23508	.50341	.24682	.25402	231.17

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.45454	.23610	.24197	.24673	97.592	5.2484	.00601
Stddev	.00047	.00086	.00187	.00340	.166	.0533	.00374
%RSD	.10421	.36391	.77101	1.3788	.17044	1.0148	62.193

#1	.45408	.23701	.24087	.24732	97.784	5.3088	.01024
#2	.45502	.23599	.24092	.24979	97.489	5.2082	.00461
#3	.45451	.23530	.24413	.24307	97.502	5.2282	.00317

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	250.86	.24224	.00025	5.1111	.47105	-.01394	.47997
Stddev	.31	.00152	.00075	.0213	.00158	.01038	.00634
%RSD	.12306	.62560	300.28	.41719	.33636	74.502	1.3212

#1	251.04	.24398	.00093	5.0869	.46929	-.02426	.48709
#2	250.50	.24123	-.00055	5.1270	.47238	-.00350	.47791
#3	251.03	.24150	.00037	5.1193	.47147	-.01405	.47492

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: ICSAB Acquired: 2/28/2017 16:01:03 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49117	.23645	.01011	.48265	.00117	.00010	.44185
Stddev	.00921	.00480	.00643	.00125	.00040	.00410	.00448
%RSD	1.8745	2.0281	63.557	.25975	33.895	3961.8	1.0138

#1	.50174	.24013	.01555	.48223	.00084	.00423	.44406
#2	.48688	.23820	.01177	.48166	.00106	.00005	.44480
#3	.48490	.23103	.00302	.48406	.00161	-.00398	.43670

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.24798	.46506	F -15.187
Stddev	.00090	.00041	.324
%RSD	.36335	.08788	2.1329

#1	.24898	.46529	-14.895
#2	.24723	.46458	-15.536
#3	.24772	.46530	-15.131

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.02500
Low Limit			-.02500

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4693.6	64437.	8430.9
Stddev	8.9	135.	18.7
%RSD	.18938	.20905	.22180

#1	4702.2	64299.	8412.3
#2	4684.5	64569.	8430.8
#3	4694.2	64444.	8449.7

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 16:04:45 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.39796	10.227	.40089	.50097	1.0131	.05008	10.110
Stddev	.00274	.031	.00474	.00231	.0029	.00016	.030
%RSD	.68942	.30283	1.1829	.46074	.28522	.31926	.30173

#1	.40059	10.233	.39595	.49839	1.0156	.05015	10.102
#2	.39818	10.194	.40541	.50165	1.0139	.04990	10.143
#3	.39512	10.255	.40131	.50286	1.0100	.05020	10.084

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05020	.20195	.50546	.50514	4.0401	50.659	1.0129
Stddev	.00003	.00015	.00153	.00464	.0167	.118	.0045
%RSD	.05637	.07476	.30362	.91807	.41210	.23329	.44537

#1	.05020	.20205	.50376	.50954	4.0513	50.795	1.0157
#2	.05023	.20202	.50587	.50030	4.0481	50.602	1.0153
#3	.05018	.20178	.50675	.50558	4.0210	50.580	1.0077

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.195	.50362	1.0015	50.268	.50869	9.9447	.50846
Stddev	.156	.00296	.0005	.130	.00038	.0208	.00114
%RSD	1.5325	.58797	.04622	.25807	.07470	.20871	.22439

#1	10.214	.50453	1.0010	50.320	.50899	9.9233	.50978
#2	10.341	.50601	1.0020	50.363	.50826	9.9459	.50775
#3	10.030	.50031	1.0016	50.120	.50882	9.9648	.50786

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 16:04:45 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2054	.40016	5.0191	1.0024	1.0127	1.0027	.51493
Stddev	.0082	.01213	.0143	.0039	.0036	.0077	.00803
%RSD	.67665	3.0315	.28511	.38371	.35882	.76563	1.5598

#1	1.1964	.38732	5.0026	.99930	1.0161	1.0094	.50666
#2	1.2073	.40174	5.0266	1.0067	1.0131	.99430	.52270
#3	1.2124	.41142	5.0280	1.0012	1.0089	1.0044	.51543

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0070	1.0049	F -.04165
Stddev	.0019	.0010	.15252
%RSD	.18968	.09808	366.23

#1	1.0048	1.0040	-.18800
#2	1.0084	1.0048	-.05331
#3	1.0077	1.0059	.11637

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4983.2	68898.	8586.4
Stddev	13.4	275.	25.0
%RSD	.26793	.39900	.29163

#1	4985.6	68586.	8564.8
#2	4968.8	69106.	8613.8
#3	4995.2	69001.	8580.5

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 16:08:21 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00089	-0.00107	-0.00074	.00072	-0.00037	.00006	-0.00128
Stddev	.00089	.00598	.00174	.00101	.00091	.00004	.00338
%RSD	100.29	559.87	236.51	139.66	248.19	56.157	264.04

#1	-0.00066	.00459	-0.00197	.00188	.00068	.00005	-.00427
#2	-0.00188	-0.00047	-0.00150	.00018	-0.00079	.00004	.00238
#3	-0.00014	-0.00733	.00126	.00010	-0.00099	.00011	-.00195

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00036	.00025	-0.00133	.00210	.00443	.08838	-0.00037
Stddev	.00022	.00038	.00086	.00138	.00604	.06381	.00335
%RSD	61.546	149.83	64.548	65.896	136.33	72.200	893.64

#1	-0.00011	.00067	-0.00158	.00279	.01051	.13588	-.00235
#2	-0.00044	-0.00005	-0.00205	.00300	-0.00156	.11340	-.00227
#3	-0.00052	.00013	-0.00038	.00051	.00433	.01585	.00349

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.09951	.00011	.00052	-0.02610	-0.00200	.00424	-0.00054
Stddev	.02155	.00154	.00032	.02120	.00094	.01091	.00334
%RSD	21.656	1373.6	61.189	81.214	46.979	257.40	620.94

#1	-.11166	.00044	.00022	-.02006	-.00217	.00274	-.00148
#2	-.07463	.00146	.00047	-.00858	-.00099	-.00584	-.00331
#3	-.11224	-.00157	.00085	-.04967	-.00284	.01582	.00318

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

K. K. Buck

Sample Name: CCB Acquired: 2/28/2017 16:08:21 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00207	-0.00211	-0.00412	-0.00034	-0.00008	.00074	-0.00205
Stddev	.00454	.00263	.00193	.00072	.00013	.00193	.00585
%RSD	219.24	124.58	46.922	213.61	151.82	260.45	285.48

#1	-0.00579	-0.00015	-0.00592	-0.00108	-0.00007	.00280	-0.00637
#2	-0.00341	-0.00510	-0.00208	-0.00030	-0.00022	.00044	-0.00438
#3	.00299	-0.00108	-0.00436	.00036	.00003	-.00102	.00460

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00042	-0.00063	F 1.1395
Stddev	.00066	.00018	1.2202
%RSD	159.28	28.900	107.08

#1	-0.00007	-0.00046	1.2699
#2	.00117	-0.00082	-.14064
#3	.00015	-0.00060	2.2893

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5127.3	71491.	8703.6
Stddev	11.8	163.	68.9
%RSD	.22987	.22747	.79159

#1	5134.1	71677.	8693.3
#2	5113.7	71377.	8640.4
#3	5134.2	71419.	8777.0

Approved: March 01, 2017

Ki K Buck

Sample Name: PBW 71 Acquired: 2/28/2017 16:29:46 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604422-02

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00039	.00135	-.00241	.00105	-.00035	.00001	-.00597	-.00030
Stddev	.00084	.00514	.00649	.00135	.00031	.00003	.00467	.00012
%RSD	216.44	379.89	269.65	128.50	89.972	210.97	78.192	39.261

#1	-.00040	.00653	.00419	.00224	.00001	-.00002	-.00159	-.00042
#2	.00127	-.00375	-.00879	.00134	-.00048	.00003	-.00543	-.00020
#3	.00029	.00128	-.00262	-.00042	-.00058	.00003	-.01088	-.00026

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00059	-.00077	.00165	.00879	.10997	-.00222	-.01301	.00050
Stddev	.00025	.00034	.00142	.02106	.08966	.00242	.06267	.00175
%RSD	42.454	44.693	85.709	239.62	81.529	108.98	481.85	352.36

#1	-.00087	-.00040	.00311	.00182	.01977	-.00435	.02901	-.00105
#2	-.00044	-.00082	.00158	-.00790	.19908	.00041	-.08503	.00240
#3	-.00044	-.00108	.00027	.03245	.11108	-.00271	.01700	.00014

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00029	-.02741	.00179	-.00368	-.00395	.00004	.00343	.00304
Stddev	.00084	.03447	.00140	.01033	.00595	.00303	.00264	.00194
%RSD	285.63	125.73	78.032	280.72	150.62	7408.7	77.070	63.932

#1	-.00013	-.06717	.00154	-.01552	-.00790	-.00313	.00594	.00507
#2	.00126	-.00902	.00054	.00349	.00289	.00292	.00368	.00120
#3	-.00025	-.00604	.00330	.00099	-.00683	.00034	.00067	.00286

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

Ki K Buck

Sample Name: PBW 71 Acquired: 2/28/2017 16:29:46 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604422-02

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00024	-.00018	.00293	-.00675	.00063	.00115	.53688
Stddev	.00150	.00031	.00101	.00625	.00055	.00024	1.2566
%RSD	615.40	171.76	34.412	92.638	87.690	20.837	234.06

#1	.00029	-.00049	.00255	-.01126	.00010	.00099	.61306
#2	.00171	-.00019	.00407	-.00938	.00059	.00143	-.75612
#3	-.00128	.00014	.00216	.00039	.00120	.00103	1.7537

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5029.3	70569.	8447.4
Stddev	2.7	54.	46.5
%RSD	.05394	.07626	.55007

#1	5028.1	70507.	8483.6
#2	5032.4	70606.	8463.6
#3	5027.4	70593.	8395.0

Approved: March 01, 2017

Ki K Buck

Sample Name: LCSW 71 Acquired: 2/28/2017 16:33:35 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604422-03

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19786	5.1677	.19286	.92755	.50254	.02421	5.0512	.02460
Stddev	.00073	.0268	.00272	.00181	.00155	.00017	.0185	.00039
%RSD	.36955	.51796	1.4112	.19488	.30750	.71098	.36549	1.5941

#1	.19752	5.1540	.19077	.92886	.50421	.02414	5.0536	.02423
#2	.19870	5.1986	.19594	.92829	.50226	.02408	5.0317	.02501
#3	.19736	5.1507	.19188	.92549	.50116	.02440	5.0684	.02456

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10046	.24718	.25185	2.0451	24.996	.50789	5.0286	.25136
Stddev	.00022	.00088	.00074	.0121	.183	.00126	.0395	.00196
%RSD	.22186	.35694	.29550	.58988	.73065	.24728	.78463	.77883

#1	.10023	.24717	.25204	2.0558	25.006	.50688	5.0642	.25103
#2	.10068	.24807	.25247	2.0475	25.173	.50930	4.9862	.24960
#3	.10047	.24631	.25102	2.0320	24.808	.50750	5.0354	.25347

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50183	25.083	.25288	4.7593	.25018	.58693	.19311	2.4647
Stddev	.00085	.021	.00217	.0163	.00371	.00148	.00356	.0047
%RSD	.16920	.08346	.85633	.34206	1.4821	.25239	1.8422	.19154

#1	.50217	25.059	.25451	4.7615	.24670	.58616	.19705	2.4701
#2	.50246	25.092	.25370	4.7743	.25408	.58600	.19217	2.4617
#3	.50087	25.098	.25042	4.7420	.24977	.58864	.19013	2.4623

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Approved: March 01, 2017

K. K. Buck

Sample Name: LCSW 71 Acquired: 2/28/2017 16:33:35 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604422-03

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49955	.50265	.49076	.25309	.49791	.49063	.84859
Stddev	.00036	.00114	.01072	.00094	.00080	.00107	1.3031
%RSD	.07188	.22772	2.1834	.37263	.15975	.21756	153.56
#1	.49920	.50233	.49213	.25259	.49754	.49178	-.37154
#2	.49953	.50393	.50072	.25418	.49737	.48967	2.2213
#3	.49992	.50171	.47942	.25251	.49883	.49045	.69604

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4970.1	69541.	8567.5
Stddev	12.4	232.	40.1
%RSD	.24911	.33305	.46777
#1	4959.4	69774.	8575.7
#2	4967.3	69537.	8524.0
#3	4983.7	69311.	8602.9

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 16:37:17 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604263-01

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00099	.03599	-0.00034	.00196	-0.00047	-0.00003	-0.00402	-0.00023
Stddev	.00112	.00512	.00171	.00297	.00040	.00002	.01872	.00015
%RSD	113.68	14.223	497.35	151.20	84.828	56.552	466.21	66.716

#1	.00028	.03102	.00155	.00539	-0.00079	-0.00001	-0.00921	-0.00018
#2	-0.00138	.04125	-0.00082	.00027	-0.00002	-0.00004	.01676	-0.00040
#3	-0.00186	.03570	-0.00176	.00023	-0.00059	-0.00005	-0.01959	-0.00010

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00023	.00023	.00213	.00373	.10074	-0.00387	-0.05077	.00173
Stddev	.00012	.00038	.00162	.00537	.06893	.00203	.08980	.00107
%RSD	53.201	161.61	76.279	144.11	68.422	52.362	176.86	62.000

#1	-0.00011	.00065	.00374	.00939	.18032	-0.00616	-.15442	.00079
#2	-0.00022	.00012	.00049	.00308	.06007	-0.00319	.00365	.00150
#3	-0.00035	-.00007	.00215	-.00129	.06182	-0.00228	-.00155	.00290

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00054	.58451	-0.00062	.00185	.00056	-0.00342	-0.00659	.00698
Stddev	.00025	.02176	.00149	.01054	.00496	.00244	.00553	.00040
%RSD	46.653	3.7226	241.06	569.52	891.54	71.497	83.874	5.7129

#1	.00083	.57657	-0.00027	-.01008	-0.00497	-0.00086	-.00522	.00676
#2	.00044	.56783	.00067	.00571	.00465	-0.00366	-.00187	.00674
#3	.00035	.60912	-0.00226	.00992	.00198	-0.00573	-.01267	.00744

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 16:37:17 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604263-01

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00060	-.00006	.00070	-.00044	.00027	.00307	.75376
Stddev	.00122	.00004	.00102	.00279	.00094	.00012	.58162
%RSD	204.56	68.128	145.85	630.92	351.46	3.9213	77.163

#1	.00152	-.00003	.00136	.00009	.00020	.00296	.16312
#2	.00107	-.00011	.00121	-.00346	-.00063	.00306	1.3259
#3	-.00079	-.00004	-.00048	.00204	.00124	.00320	.77221

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5179.3	72669.	8679.5
Stddev	7.2	341.	37.3
%RSD	.13933	.46935	.43031

#1	5171.0	72722.	8645.1
#2	5182.8	72304.	8674.2
#3	5184.1	72980.	8719.2

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 16:41:07 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604265-01

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00111	.01265	.00174	.00044	-0.00017	-0.00009	.02509	-0.00005
Stddev	.00044	.00039	.00123	.00137	.00011	.00005	.00903	.00026
%RSD	39.474	3.0662	70.296	312.16	62.068	51.626	36.006	513.40

#1	-0.00075	.01232	.00300	.00202	-0.00025	-0.00014	.03107	-0.00018
#2	-0.00099	.01254	.00055	-0.00039	-0.00020	-0.00004	.02950	.00025
#3	-0.00160	.01308	.00169	-0.00031	-0.00005	-0.00009	.01470	-0.00023

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00019	-0.00211	-0.00082	.01064	.11189	-0.00016	.05829	-0.00180
Stddev	.00026	.00073	.00051	.01260	.05386	.00460	.05925	.00191
%RSD	137.56	34.436	61.887	118.47	48.136	2892.4	101.63	106.23

#1	-0.00006	-0.00294	-0.00029	.02464	.04983	-0.00513	.07881	-0.00303
#2	-0.00002	-0.00183	-0.00085	.00706	.14635	.00073	-0.00848	.00040
#3	-0.00049	-0.00157	-0.00130	.00021	.13950	.00393	.10456	-0.00279

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00045	139.50	.00090	-0.00787	-0.00109	.00629	-0.00037	.00717
Stddev	.00018	.35	.00173	.01297	.00419	.00453	.00270	.00425
%RSD	39.759	.25055	191.65	164.81	384.18	72.092	732.37	59.269

#1	.00058	139.57	-0.00042	-0.00576	-0.00592	.01148	-0.00348	.00227
#2	.00025	139.12	.00026	-0.02177	.00126	.00315	.00104	.00988
#3	.00053	139.81	.00286	.00391	.00139	.00423	.00134	.00937

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 16:41:07 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604265-01

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00131	-0.00018	-0.00001	-0.00049	.00037	.00590	.09102
Stddev	.00069	.00013	.00615	.00261	.00026	.00020	.28864
%RSD	52.808	68.962	64430.	535.50	70.865	3.3254	317.11

#1	.00101	-0.00008	.00024	-0.00055	.00029	.00604	-.04387
#2	.00210	-0.00032	-0.00628	-0.00307	.00066	.00598	-.10548
#3	.00082	-0.00014	.00601	.00216	.00015	.00567	.42241

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4949.6	68172.	8609.2
Stddev	6.6	54.	43.8
%RSD	.13307	.07959	.50900

#1	4943.4	68110.	8581.3
#2	4949.0	68210.	8659.7
#3	4956.5	68195.	8586.6

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK2 Acquired: 2/28/2017 16:44:56 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604265-02

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00018	.00266	-.00175	-.00011	-.00042	.00002	.01183	-.00006
Stddev	.00032	.00827	.00314	.00189	.00072	.00004	.00582	.00047
%RSD	173.86	310.99	180.18	1791.0	170.75	257.52	49.161	740.94

#1	.00020	.00773	.00183	-.00131	-.00094	-.00003	.00572	-.00002
#2	.00050	.00712	-.00298	-.00108	-.00072	.00004	.01730	.00039
#3	-.00014	-.00688	-.00409	.00207	.00040	.00005	.01247	-.00056

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00003	-.00135	.00104	.00284	.11359	-.00321	.01584	-.00148
Stddev	.00064	.00075	.00127	.01241	.07318	.00076	.02943	.00109
%RSD	2210.5	55.818	121.67	436.22	64.419	23.620	185.87	73.521

#1	-.00057	-.00055	-.00033	.01466	.10318	-.00401	.02304	-.00078
#2	-.00020	-.00145	.00217	.00395	.19142	-.00312	.04100	-.00273
#3	.00068	-.00205	.00129	-.01008	.04618	-.00250	-.01653	-.00093

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00026	.09408	.00021	-.00939	.00101	-.00238	.00031	.00189
Stddev	.00080	.03197	.00080	.00993	.00699	.00342	.01260	.00179
%RSD	310.27	33.986	383.20	105.75	688.72	143.88	4091.4	94.618

#1	.00066	.08848	-.00060	-.00388	.00086	-.00568	.01484	-.00017
#2	-.00067	.12849	.00022	-.02085	-.00590	.00115	-.00628	.00287
#3	.00078	.06528	.00101	-.00344	.00808	-.00261	-.00763	.00299

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Approved: March 01, 2017

K. K. Buck

Sample Name: FBLK2 Acquired: 2/28/2017 16:44:56 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604265-02

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00033	-.00023	.00423	-.00756	.00103	.00276	.23085
Stddev	.00088	.00045	.00428	.00066	.00076	.00017	.24099
%RSD	263.63	195.40	101.25	8.7349	73.217	6.0214	104.40

#1	.00134	.00014	.00069	-.00726	.00117	.00280	.01642
#2	-.00025	-.00072	.00300	-.00832	.00172	.00291	.18446
#3	-.00010	-.00010	.00899	-.00710	.00022	.00258	.49166

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5104.7	72039.	8653.5
Stddev	14.3	417.	31.2
%RSD	.28016	.57818	.36062

#1	5121.2	72226.	8653.0
#2	5096.8	71561.	8622.5
#3	5096.0	72328.	8684.9

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702131901 Acquired: 2/28/2017 16:48:46 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00028	.13434	.00094	.18697	.03594	-.00001	189.39	.00102
Stddev	.00188	.00936	.00241	.00291	.00037	.00008	.23	.00038
%RSD	668.10	6.9689	255.73	1.5580	1.0246	542.53	.12297	37.533

#1	.00188	.14060	.00332	.18763	.03576	.00000	189.42	.00059
#2	-.00150	.13884	-.00150	.18949	.03637	-.00010	189.61	.00114
#3	-.00123	.12358	.00101	.18378	.03570	.00005	189.15	.00132

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00008	.00023	.05815	.01399	1.1573	.00707	3.2412	.19966
Stddev	.00040	.00049	.00244	.01222	.0277	.00397	.0814	.00425
%RSD	518.40	211.11	4.2015	87.337	2.3888	56.141	2.5102	2.1305

#1	-.00037	.00014	.05747	.02503	1.1261	.00254	3.1808	.19803
#2	.00019	-.00020	.05613	.00087	1.1785	.00992	3.2091	.20449
#3	.00041	.00076	.06087	.01607	1.1675	.00874	3.3337	.19647

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00444	6.6570	.00214	.04743	-.00301	.00306	.00124	1.5418
Stddev	.00045	.0290	.00254	.00492	.00251	.00651	.00636	.0058
%RSD	10.110	.43482	118.91	10.370	83.335	212.99	511.53	.37398

#1	.00477	6.6327	-.00075	.04496	-.00537	-.00444	-.00222	1.5364
#2	.00393	6.6890	.00405	.04424	-.00038	.00730	-.00263	1.5411
#3	.00461	6.6492	.00311	.05310	-.00329	.00631	.00858	1.5479

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702131901 Acquired: 2/28/2017 16:48:46 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00121	.14828	-.01676	-.00639	.00161	.01016	.50492
Stddev	.00048	.00022	.00253	.00392	.00081	.00011	.59009
%RSD	39.586	.14752	15.072	61.371	50.018	1.0896	116.87

#1	.00071	.14853	-.01925	-.00186	.00252	.01016	.72077
#2	.00166	.14812	-.01420	-.00856	.00133	.01027	-.16270
#3	.00125	.14819	-.01683	-.00875	.00098	.01005	.95671

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4842.8	67594.	8510.3
Stddev	30.9	346.	54.5
%RSD	.63858	.51116	.64098

#1	4807.2	67907.	8561.8
#2	4858.4	67653.	8453.2
#3	4862.8	67223.	8515.9

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702134702 Acquired: 2/28/2017 16:52:34 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604422-01

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00030	.14377	.00867	.11601	.02518	-.00000	50.128	-.00005
Stddev	.00112	.00592	.00338	.00366	.00034	.00004	.278	.00002
%RSD	375.45	4.1166	38.964	3.1551	1.3450	1896.0	.55455	51.023

#1	.00028	.14324	.00984	.12020	.02548	-.00003	50.282	-.00006
#2	-.00082	.14994	.01130	.11439	.02526	.00005	49.807	-.00006
#3	.00143	.13813	.00486	.11344	.02481	-.00003	50.296	-.00002

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00062	1.2000	.00635	.01484	50.355	.02403	1.8116	.00751
Stddev	.00035	.0033	.00106	.00502	.130	.00206	.0447	.00065
%RSD	56.752	.27345	16.649	33.820	.25783	8.5695	2.4657	8.5890

#1	.00100	1.1963	.00721	.01963	50.441	.02523	1.8584	.00735
#2	.00030	1.2022	.00667	.00962	50.205	.02165	1.7693	.00696
#3	.00056	1.2017	.00517	.01529	50.418	.02521	1.8072	.00822

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.33115	140.75	.00529	.00110	.00454	-.00915	.01026	4.8127
Stddev	.00160	.61	.00167	.00640	.00349	.00478	.00138	.0108
%RSD	.48385	.43084	31.455	582.59	76.697	52.255	13.483	.22415

#1	.32984	140.87	.00591	.00849	.00056	-.01317	.00884	4.8047
#2	.33068	140.09	.00656	-.00281	.00700	-.00386	.01035	4.8084
#3	.33293	141.29	.00341	-.00238	.00608	-.01043	.01160	4.8250

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702134702 Acquired: 2/28/2017 16:52:34 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604422-01

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00025	.05296	-0.00036	-0.00617	.00209	.01509	.36323
Stddev	.00102	.00050	.00413	.00254	.00106	.00017	.48351
%RSD	408.31	.94096	1135.5	41.202	50.844	1.1392	133.11

#1	.00082	.05296	.00233	-.00546	.00311	.01490	.75096
#2	.00087	.05247	.00169	-.00405	.00098	.01523	-.17853
#3	-.00093	.05346	-.00512	-.00899	.00219	.01515	.51727

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4948.5	67973.	8636.1
Stddev	3.3	288.	49.4
%RSD	.06722	.42416	.57202

#1	4946.9	68184.	8598.7
#2	4946.3	67645.	8692.1
#3	4952.3	68091.	8617.4

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702134702MS Acquired: 2/28/2017 16:56:19 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604422-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20006	4.9968	.21309	1.0833	.52937	.02526	55.075	.02477
Stddev	.00106	.0029	.00326	.0087	.00064	.00003	.039	.00048
%RSD	.53058	.05706	1.5286	.80700	.12022	.12611	.07164	1.9501

#1	.19939	4.9994	.21504	1.0846	.52865	.02527	55.104	.02531
#2	.20128	4.9937	.20933	1.0739	.52965	.02529	55.030	.02436
#3	.19950	4.9973	.21490	1.0913	.52983	.02523	55.090	.02466

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10028	1.4594	.25495	2.0080	75.579	.52276	6.7738	.25644
Stddev	.00080	.0022	.00058	.0194	.171	.00356	.0823	.00108
%RSD	.80182	.14798	.22776	.96842	.22652	.68172	1.2148	.42276

#1	.10107	1.4569	.25429	1.9999	75.430	.51929	6.8676	.25696
#2	.10030	1.4609	.25520	1.9940	75.540	.52256	6.7141	.25717
#3	.09946	1.4603	.25537	2.0302	75.766	.52641	6.7396	.25520

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.83753	164.72	.25350	4.9998	.25096	.58537	.20828	7.3472
Stddev	.00137	.10	.00105	.0105	.00298	.00522	.00500	.0083
%RSD	.16317	.06324	.41479	.20921	1.1862	.89159	2.4026	.11322

#1	.83804	164.60	.25230	5.0099	.25330	.58084	.20596	7.3424
#2	.83856	164.80	.25423	5.0006	.25198	.59107	.21402	7.3568
#3	.83598	164.76	.25398	4.9890	.24761	.58419	.20485	7.3425

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702134702MS Acquired: 2/28/2017 16:56:19 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604422-04

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49839	.55206	.50039	.23991	.50958	.51215	.64957
Stddev	.00317	.00055	.00142	.00510	.00263	.00082	1.4890
%RSD	.63672	.10025	.28317	2.1267	.51702	.15914	229.23
#1	.50144	.55145	.50079	.24223	.51118	.51294	-1.0692
#2	.49862	.55253	.49881	.24344	.51101	.51132	1.5464
#3	.49510	.55219	.50156	.23406	.50654	.51219	1.4715

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4827.1	66578.	8532.4
Stddev	6.3	146.	29.3
%RSD	.13017	.21864	.34360
#1	4833.9	66594.	8561.1
#2	4825.8	66716.	8533.7
#3	4821.6	66426.	8502.5

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702134702MSD Acquired: 2/28/2017 16:59:59 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604422-05

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19729	4.9937	.20933	1.0796	.52686	.02523	55.018	.02476
Stddev	.00322	.0093	.00363	.0068	.00160	.00014	.174	.00025
%RSD	1.6346	.18712	1.7337	.62870	.30336	.55501	.31578	.99887

#1	.19995	5.0035	.20516	1.0862	.52531	.02524	54.825	.02500
#2	.19822	4.9925	.21178	1.0800	.52850	.02509	55.067	.02476
#3	.19371	4.9850	.21106	1.0727	.52677	.02537	55.162	.02451

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10038	1.4531	.25263	1.9907	75.493	.52699	6.7284	.25407
Stddev	.00038	.0006	.00191	.0157	.253	.00453	.0888	.00210
%RSD	.38189	.04028	.75502	.79019	.33554	.85896	1.3193	.82483

#1	.10078	1.4534	.25153	2.0038	75.360	.52414	6.6639	.25563
#2	.10036	1.4535	.25153	1.9733	75.785	.53221	6.8297	.25490
#3	.10001	1.4525	.25484	1.9949	75.334	.52462	6.6917	.25169

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.83776	164.89	.25595	4.9861	.24663	.59025	.20303	7.3094
Stddev	.00167	.51	.00292	.0035	.00313	.00395	.01234	.0132
%RSD	.19949	.31134	1.1395	.07104	1.2681	.66930	6.0793	.18029

#1	.83633	164.38	.25898	4.9820	.24701	.58668	.21450	7.3191
#2	.83960	164.89	.25317	4.9882	.24956	.58956	.20463	7.3146
#3	.83736	165.41	.25571	4.9881	.24334	.59449	.18997	7.2944

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702134702MSD Acquired: 2/28/2017 16:59:59 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604422-05

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49603	.55241	.49226	.24399	.51121	.51057	1.4398
Stddev	.00166	.00113	.00716	.00189	.00095	.00034	1.5427
%RSD	.33533	.20383	1.4546	.77550	.18505	.06713	107.15
#1	.49413	.55114	.49455	.24324	.51044	.51089	-.31839
#2	.49720	.55329	.49799	.24259	.51094	.51062	2.5673
#3	.49677	.55280	.48423	.24614	.51227	.51021	2.0704

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4825.8	66318.	8458.1
Stddev	4.8	99.	21.4
%RSD	.09887	.14932	.25311
#1	4831.1	66425.	8449.0
#2	4821.9	66230.	8482.6
#3	4824.4	66300.	8442.8

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135201 Acquired: 2/28/2017 17:03:38 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00043	.03658	.00602	.77460	.00631	-.00008	41.971
Stddev	.00253	.00813	.00088	.00293	.00051	.00009	.178
%RSD	595.72	22.232	14.654	.37792	8.1023	113.02	.42443

#1	.00184	.04203	.00659	.77538	.00663	-.00005	42.169
#2	-.00250	.02723	.00501	.77706	.00572	-.00019	41.823
#3	.00194	.04047	.00647	.77136	.00658	-.00001	41.920

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00032	-.00004	.07216	.00013	.01974	2.3855	.00604
Stddev	.00016	.00079	.00070	.00318	.01017	.1416	.00163
%RSD	50.254	1978.8	.97698	2475.7	51.511	5.9362	26.977

#1	-.00045	.00018	.07207	.00300	.01199	2.2282	.00718
#2	-.00037	-.00092	.07290	.00068	.03125	2.5029	.00676
#3	-.00014	.00062	.07150	-.00329	.01598	2.4254	.00417

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	21.344	.00055	.01423	F 338.72	.00094	.02458	-.00156
Stddev	.128	.00157	.00066	1.57	.00089	.00345	.00398
%RSD	.60158	283.82	4.6124	.46426	94.238	14.041	254.42

#1	21.489	.00219	.01433	340.52	.00018	.02061	.00274
#2	21.295	.00041	.01483	338.02	.00191	.02678	-.00231
#3	21.247	-.00094	.01353	337.62	.00073	.02637	-.00511

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-.50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135201 Acquired: 2/28/2017 17:03:38 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00648	.01878	.24509	.00094	.55152	.00238	-.00426
Stddev	.00538	.01539	.00149	.00100	.00158	.00642	.00187
%RSD	83.000	81.924	.60688	106.84	.28580	270.06	43.830

#1	.01236	.02649	.24680	-.00006	.55299	.00244	-.00263
#2	.00180	.02880	.24411	.00195	.54986	-.00407	-.00630
#3	.00528	.00106	.24436	.00093	.55171	.00876	-.00386

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00762	.00301	F -.27321
Stddev	.00095	.00014	.62312
%RSD	12.473	4.7881	228.07

#1	.00778	.00302	.04225
#2	.00660	.00316	-.99098
#3	.00848	.00287	.12909

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4754.6	65386.	8420.3
Stddev	19.2	47.	29.8
%RSD	.40382	.07125	.35366

#1	4743.3	65343.	8389.1
#2	4776.8	65379.	8423.3
#3	4743.7	65436.	8448.5

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 17:07:34 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40155	10.222	.40329	.50777	1.0181	.05060	10.178
Stddev	.00283	.008	.00684	.00565	.0040	.00010	.055
%RSD	.70411	.07909	1.6969	1.1136	.38794	.19896	.54193

#1	.39918	10.229	.39821	.50681	1.0165	.05050	10.128
#2	.40468	10.225	.40058	.51384	1.0152	.05062	10.168
#3	.40079	10.213	.41107	.50266	1.0226	.05070	10.237

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05046	.20447	.50941	.51398	4.0807	51.027	1.0229
Stddev	.00024	.00082	.00218	.00183	.0256	.337	.0085
%RSD	.48210	.40325	.42722	.35667	.62806	.66040	.83295

#1	.05025	.20442	.50693	.51267	4.0629	50.939	1.0156
#2	.05073	.20533	.51036	.51320	4.0690	50.744	1.0209
#3	.05041	.20368	.51096	.51608	4.1100	51.400	1.0323

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.260	.50473	1.0136	50.609	.51190	10.104	.51315
Stddev	.143	.00438	.0004	.219	.00096	.022	.00425
%RSD	1.3928	.86864	.04001	.43267	.18780	.21449	.82835

#1	10.303	.50424	1.0131	50.438	.51150	10.104	.51416
#2	10.101	.50061	1.0139	50.534	.51120	10.083	.50849
#3	10.377	.50934	1.0138	50.856	.51300	10.126	.51681

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 17:07:34 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2188	.40645	5.0707	1.0160	1.0180	1.0056	.51623
Stddev	.0073	.01179	.0055	.0030	.0063	.0109	.00968
%RSD	.59924	2.8995	.10861	.29850	.61595	1.0847	1.8748

#1	1.2234	.39345	5.0651	1.0125	1.0129	.99560	.50688
#2	1.2227	.40948	5.0709	1.0179	1.0160	1.0040	.52621
#3	1.2104	.41643	5.0762	1.0176	1.0250	1.0172	.51562

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0119	1.0170	F -.03659
Stddev	.0037	.0023	.34459
%RSD	.37044	.22457	941.86

#1	1.0099	1.0144	-.43448
#2	1.0163	1.0187	.16096
#3	1.0096	1.0177	.16376

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5003.1	69008.	8634.1
Stddev	7.4	483.	42.0
%RSD	.14856	.70019	.48668

#1	5000.3	69545.	8613.2
#2	5011.5	68609.	8682.5
#3	4997.5	68869.	8606.7

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 17:11:09 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00027	-.00127	.00057	.00369	.00010	.00011	.00424
Stddev	.00009	.00457	.00416	.00185	.00077	.00003	.02693
%RSD	33.777	359.01	725.08	50.201	789.84	24.791	634.79

#1	.00034	-.00645	.00535	.00349	-.00002	.00012	.01769
#2	.00017	.00223	-.00226	.00562	.00093	.00008	-.02677
#3	.00029	.00039	-.00138	.00194	-.00061	.00012	.02180

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00010	.00015	-.00185	-.00026	.01802	.16708	-.00103
Stddev	.00036	.00036	.00051	.00085	.01739	.07241	.00218
%RSD	370.15	239.94	27.709	324.90	96.492	43.341	212.62

#1	.00031	.00026	-.00244	-.00079	.02306	.18427	.00102
#2	.00031	-.00025	-.00159	-.00071	-.00133	.22935	-.00078
#3	-.00032	.00044	-.00152	.00072	.03234	.08762	-.00333

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01628	.00000	.00016	.02042	-.00059	.00684	-.00051
Stddev	.04597	.00099	.00050	.02225	.00179	.00934	.00711
%RSD	282.36	49449.	319.58	108.96	305.23	136.62	1408.0

#1	.04104	.00012	-.00033	.02785	-.00266	.01694	-.00648
#2	.04457	-.00105	.00012	-.00459	.00053	-.00149	-.00240
#3	-.03677	.00093	.00067	.03800	.00036	.00507	.00736

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

K. K. Buck

Sample Name: CCB Acquired: 2/28/2017 17:11:09 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Ti1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00170	-.00620	.00176	-.00078	-.00002	.00233	.00314
Stddev	.00174	.00930	.00471	.00134	.00056	.00149	.00283
%RSD	102.20	149.99	267.01	171.77	3136.0	63.790	90.087

#1	.00025	-.01209	.00702	-.00155	-.00032	.00326	.00091
#2	.00123	-.01103	-.00208	-.00157	.00063	.00062	.00632
#3	.00362	.00452	.00035	.00077	-.00036	.00311	.00219

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00110	-.00077	F .76607
Stddev	.00018	.00013	.66405
%RSD	16.158	17.104	86.683

#1	.00094	-.00064	.24784
#2	.00108	-.00091	.53576
#3	.00129	-.00077	1.5146

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5033.5	70294.	8539.2
Stddev	9.5	198.	37.3
%RSD	.18931	.28166	.43674

#1	5039.8	70457.	8534.1
#2	5038.2	70350.	8504.8
#3	5022.5	70074.	8578.9

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135202 Acquired: 2/28/2017 17:15:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00055	185.15	.06213	6.8899	.08879	F -0.00062	17.764
Stddev	.00225	.26	.00465	.0183	.00051	.00007	.009
%RSD	410.13	.14120	7.4904	.26505	.57840	11.194	.05261

#1	-0.00057	185.45	.06255	6.9082	.08884	-0.00070	17.767
#2	-0.00279	184.99	.05729	6.8899	.08825	-0.00056	17.771
#3	.00171	185.02	.06657	6.8716	.08927	-0.00059	17.753

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit						1.8000	
Low Limit						-0.00050	

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00023	.00090	.78456	.00065	.04163	17.567	.00522
Stddev	.00003	.00058	.00104	.00161	.01055	.134	.00214
%RSD	12.784	63.821	.13284	245.57	25.349	.76516	40.977

#1	.00023	.00054	.78493	.00198	.03051	17.444	.00318
#2	.00027	.00060	.78338	.00112	.04287	17.547	.00504
#3	.00021	.00156	.78536	-.00113	.05150	17.710	.00744

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02442	.00160	.13159	F 1873.7	-.00299	.19562	.00652
Stddev	.05341	.00064	.00125	7.6	.00095	.01174	.00689
%RSD	218.74	39.828	.94713	.40416	31.746	6.0011	105.64

#1	.03077	.00234	.13295	1881.7	-.00268	.20281	.00175
#2	.07436	.00122	.13129	1872.9	-.00223	.20198	.01441
#3	-.03188	.00125	.13052	1866.6	-.00405	.18208	.00339

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-.50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135202 Acquired: 2/28/2017 17:15:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01316	.23169	2.8193	-0.0029	.49043	.00134	.00514
Stddev	.00607	.01975	.0037	.00065	.00081	.00368	.00706
%RSD	46.141	8.5238	.13228	225.79	.16453	274.46	137.26

#1	.00648	.20988	2.8226	.00046	.49052	-.00250	.01055
#2	.01833	.24837	2.8199	-.00071	.49119	.00483	-.00284
#3	.01466	.23680	2.8152	-.00062	.48958	.00170	.00772

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.63511	-.00471	F -.77567
Stddev	.00149	.00034	1.6537
%RSD	.23475	7.2113	213.19

#1	.63661	-.00484	-1.4038
#2	.63509	-.00432	-2.0233
#3	.63363	-.00496	1.1001

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4442.5	59235.	8288.1
Stddev	11.5	195.	56.1
%RSD	.25791	.32851	.67732

#1	4429.6	59406.	8335.8
#2	4451.4	59024.	8302.3
#3	4446.6	59277.	8226.2

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135203 Acquired: 2/28/2017 17:18:53 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00085	136.75	.03985	4.8125	.07049	-0.00046	19.374
Stddev	.00241	.36	.00536	.0194	.00023	.00010	.041
%RSD	282.53	.26514	13.460	.40248	.32867	21.308	.20927

#1	.00072	136.35	.03425	4.8340	.07043	-0.00058	19.378
#2	-0.00362	137.06	.04495	4.8074	.07075	-0.00041	19.412
#3	.00035	136.86	.04035	4.7963	.07030	-0.00041	19.332

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00020	.00099	.67872	.00066	.06329	42.508	.02161
Stddev	.00049	.00052	.00295	.00266	.00356	.246	.00316
%RSD	245.56	52.919	.43469	401.33	5.6311	.57772	14.638

#1	-0.00044	.00073	.67543	-0.00226	.06693	42.225	.01933
#2	-0.00051	.00159	.68114	.00131	.05980	42.628	.02027
#3	.00036	.00064	.67960	.00293	.06314	42.670	.02522

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01378	.00106	.11226	F 1725.6	-0.00098	.10013	.00567
Stddev	.01542	.00060	.00066	24.0	.00073	.00977	.00356
%RSD	111.92	56.934	.58451	1.3885	74.262	9.7566	62.799

#1	.03147	.00145	.11160	1745.4	-0.00181	.08952	.00781
#2	.00672	.00136	.11227	1732.4	-0.00051	.10211	.00156
#3	.00316	.00036	.11291	1698.9	-0.00060	.10876	.00765

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135203 Acquired: 2/28/2017 17:18:53 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01337	.18213	3.9693	.00409	.42528	.00411	.01262
Stddev	.00401	.00668	.0176	.00066	.00093	.00167	.00501
%RSD	29.984	3.6704	.44360	16.014	.21968	40.535	39.715

#1	.01770	.18436	3.9497	.00334	.42421	.00603	.01045
#2	.00978	.17462	3.9745	.00455	.42570	.00325	.01835
#3	.01263	.18742	3.9837	.00438	.42592	.00306	.00905

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.50713	.00001	F -.90649
Stddev	.00136	.00002	.19564
%RSD	.26727	326.86	21.582

#1	.50748	-.00001	-.72867
#2	.50828	.00003	-.87472
#3	.50564	.00001	-1.1161

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4519.6	60200.	8381.7
Stddev	23.1	278.	7.0
%RSD	.51141	.46229	.08401

#1	4493.6	60491.	8375.0
#2	4538.0	59937.	8381.0
#3	4527.1	60172.	8389.0

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135204 Acquired: 2/28/2017 17:22:45 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00084	91.824	.02690	3.7158	.05743	-0.00036	25.609
Stddev	.00166	.322	.00341	.0168	.00108	.00007	.058
%RSD	197.78	.35052	12.689	.45294	1.8815	19.468	.22595

#1	-.00122	91.522	.02667	3.6974	.05619	-.00030	25.665
#2	.00098	92.162	.03043	3.7193	.05807	-.00035	25.613
#3	-.00227	91.787	.02361	3.7305	.05804	-.00044	25.550

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00020	.00119	.66569	-0.00081	.02492	67.027	.02497
Stddev	.00042	.00106	.00146	.00173	.01245	.240	.00247
%RSD	207.15	88.645	.21934	213.64	49.954	.35872	9.9022

#1	-.00068	.00215	.66437	-.00081	.01286	66.753	.02213
#2	-.00002	.00137	.66726	.00092	.03772	67.122	.02660
#3	.00010	.00006	.66546	-.00254	.02419	67.205	.02619

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00829	-0.00071	.10444	F 1567.1	-0.00258	.03712	.00382
Stddev	.04598	.00072	.00037	21.1	.00098	.00954	.00232
%RSD	554.66	100.82	.35606	1.3479	38.102	25.707	60.763

#1	.04336	-.00074	.10409	1579.8	-.00171	.04616	.00115
#2	-.04474	-.00142	.10483	1542.7	-.00365	.02714	.00491
#3	-.02349	.00002	.10441	1578.8	-.00239	.03807	.00539

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135204 Acquired: 2/28/2017 17:22:45 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00542	.15984	4.6624	.00008	.42117	.00459	.00833
Stddev	.00686	.00907	.0169	.00178	.00051	.00285	.00615
%RSD	126.53	5.6772	.36233	2165.3	.12066	62.126	73.803

#1	-.00082	.16968	4.6763	.00192	.42084	.00666	.00462
#2	.00432	.15802	4.6673	-.00163	.42175	.00134	.01542
#3	.01276	.15181	4.6436	-.00005	.42091	.00579	.00494

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.40961	-.00143	F -1.4404
Stddev	.00071	.00018	.6085
%RSD	.17243	12.844	42.241

#1	.40893	-.00162	-1.2786
#2	.41034	-.00125	-.92927
#3	.40955	-.00142	-2.1135

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4507.3	60672.	8440.7
Stddev	11.3	427.	27.0
%RSD	.25059	.70303	.32030

#1	4517.4	61063.	8457.7
#2	4509.5	60737.	8454.9
#3	4495.1	60217.	8409.5

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135205 Acquired: 2/28/2017 17:26:38 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00023	.11372	.00323	.24741	.01141	-.00002	102.11
Stddev	.00205	.00213	.00428	.00306	.00025	.00001	.18
%RSD	879.07	1.8757	132.34	1.2367	2.2144	70.310	.17259

#1	.00046	.11129	.00817	.24689	.01167	-.00002	102.28
#2	.00138	.11526	.00093	.25070	.01140	-.00004	102.12
#3	-.00254	.11462	.00060	.24464	.01117	-.00001	101.93

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00013	.00015	.07396	.00286	.00854	10.706	.00798
Stddev	.00039	.00047	.00086	.00091	.01277	.021	.00160
%RSD	306.47	313.51	1.1586	31.685	149.45	.19429	19.991

#1	.00014	-.00023	.07423	.00315	.01885	10.698	.00982
#2	.00005	.00000	.07465	.00359	-.00574	10.691	.00692
#3	-.00057	.00067	.07300	.00185	.01253	10.730	.00721

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06363	-.00015	.01196	220.88	-.00132	-.00439	-.00253
Stddev	.06304	.00087	.00009	.04	.00010	.00861	.00439
%RSD	99.079	571.68	.73829	.01950	7.7198	196.02	173.39

#1	.12237	.00078	.01204	220.92	-.00127	.00443	-.00153
#2	.07148	-.00029	.01186	220.83	-.00125	-.00484	-.00734
#3	-.00297	-.00094	.01199	220.90	-.00144	-.01278	.00127

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135205 Acquired: 2/28/2017 17:26:38 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00611	.01497	1.0183	.00129	.50291	-.00793	.00047
Stddev	.00402	.01759	.0010	.00047	.00269	.00416	.00422
%RSD	65.792	117.56	.09720	36.836	.53421	52.456	893.82

#1	.00598	.03448	1.0189	.00074	.50408	-.00997	.00457
#2	.00215	.01011	1.0188	.00160	.49984	-.00314	.00070
#3	.01019	.00031	1.0172	.00152	.50482	-.01066	-.00386

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.01302	.00217	F -.50548
Stddev	.00041	.00017	.82817
%RSD	3.1715	7.7072	163.84

#1	.01254	.00236	-1.3766
#2	.01329	.00207	.27169
#3	.01322	.00208	-.41150

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4816.4	66037.	8388.3
Stddev	28.3	275.	20.6
%RSD	.58683	.41629	.24541

#1	4784.1	66336.	8368.1
#2	4828.5	65980.	8387.6
#3	4836.6	65796.	8409.2

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135206 Acquired: 2/28/2017 17:30:26 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00093	65.947	.01209	2.6984	.05934	-.00028	43.639
Stddev	.00107	.162	.00391	.0077	.00034	.00008	.146
%RSD	114.92	.24575	32.342	.28530	.57298	28.337	.33548

#1	.00182	66.042	.00760	2.6899	.05965	-.00027	43.804
#2	.00124	66.038	.01475	2.7050	.05940	-.00037	43.524
#3	-.00026	65.759	.01392	2.7002	.05898	-.00021	43.589

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00001	.00044	.58478	.00118	.01305	86.500	.03211
Stddev	.00011	.00023	.00172	.00150	.01442	.137	.00156
%RSD	2127.7	50.676	.29434	127.17	110.45	.15849	4.8652

#1	.00011	.00025	.58596	.00086	.00445	86.407	.03042
#2	-.00011	.00069	.58557	.00281	.02970	86.435	.03243
#3	.00001	.00039	.58280	-.00013	.00502	86.657	.03350

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00070	-.00241	.09619	F 1393.4	-.00030	.02813	-.00216
Stddev	.04117	.00084	.00107	22.0	.00121	.01114	.00667
%RSD	5895.9	34.822	1.1089	1.5819	401.22	39.601	308.65

#1	.04806	-.00144	.09606	1387.0	.00107	.03039	-.00986
#2	-.02646	-.00291	.09731	1375.3	-.00076	.03797	.00197
#3	-.01951	-.00289	.09519	1418.0	-.00122	.01603	.00140

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-.50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135206 Acquired: 2/28/2017 17:30:26 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00549	.12964	3.3520	.00014	.49690	.00195	-.00040
Stddev	.00484	.01253	.0096	.00143	.00081	.00030	.00393
%RSD	88.175	9.6622	.28671	992.40	.16260	15.424	970.71

#1	.00136	.12623	3.3414	.00151	.49737	.00223	.00254
#2	.00430	.14353	3.3602	.00026	.49736	.00198	-.00487
#3	.01082	.11918	3.3543	-.00134	.49597	.00163	.00111

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.23610	-.00060	F -.79357
Stddev	.00062	.00015	1.0829
%RSD	.26429	25.045	136.46

#1	.23681	-.00075	.08404
#2	.23566	-.00045	-2.0038
#3	.23583	-.00061	-.46100

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4570.8	61264.	8388.5
Stddev	43.9	270.	43.3
%RSD	.95960	.44060	.51568

#1	4527.1	61576.	8432.2
#2	4570.5	61100.	8387.7
#3	4614.8	61117.	8345.7

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135207 Acquired: 2/28/2017 17:34:18 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00116	14.452	.00451	1.0448	.07023	-.00017	69.270
Stddev	.00238	.027	.00207	.0016	.00072	.00007	.074
%RSD	205.12	.18876	46.025	.15561	1.0209	38.614	.10719

#1	.00113	14.480	.00557	1.0463	.06950	-.00025	69.352
#2	.00355	14.449	.00583	1.0430	.07027	-.00015	69.251
#3	-.00120	14.426	.00212	1.0449	.07093	-.00012	69.208

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -.00066	.00079	.51983	.00035	.01873	98.151	.04085
Stddev	.00043	.00018	.00030	.00250	.00947	.234	.00123
%RSD	65.223	22.404	.05682	724.95	50.583	.23851	2.9999

#1	-.00116	.00062	.51949	-.00222	.02535	98.218	.04180
#2	-.00039	.00077	.52005	.00048	.02296	97.890	.04128
#3	-.00044	.00097	.51993	.00278	.00788	98.343	.03947

Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	4.5000						
Low Limit	-.00050						

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05039	.00160	.08588	F 1205.8	-.00034	.00641	.00289
Stddev	.13577	.00047	.00079	14.8	.00181	.00357	.00357
%RSD	269.41	29.404	.92333	1.2283	532.01	55.686	123.65

#1	-.07306	.00212	.08678	1190.5	-.00184	.00915	-.00086
#2	.02845	.00121	.08531	1220.0	-.00086	.00771	.00625
#3	.19580	.00146	.08553	1206.9	.00167	.00237	.00327

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-.50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135207 Acquired: 2/28/2017 17:34:18 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00902	.08768	9.6404	.00008	.58318	-.00361	-.00175
Stddev	.00697	.00563	.0162	.00076	.00109	.00405	.00609
%RSD	77.222	6.4244	.16846	974.42	.18727	112.36	347.83

#1	.00728	.08339	9.6307	.00047	.58442	.00105	-.00195
#2	.01670	.08560	9.6592	-.00080	.58238	-.00634	.00444
#3	.00309	.09406	9.6314	.00056	.58274	-.00553	-.00774

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.13307	.00231	.57626
Stddev	.00205	.00012	1.2717
%RSD	1.5385	5.1095	220.68

#1	.13504	.00217	-.17806
#2	.13095	.00238	-.13769
#3	.13322	.00237	2.0445

Check ?	Chk Pass	Chk Pass	Chk Pass
High Limit			
Low Limit			

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4688.4	63035.	8605.5
Stddev	.9	116.	16.5
%RSD	.01879	.18329	.19146

#1	4688.5	63127.	8587.5
#2	4689.2	62905.	8609.4
#3	4687.4	63072.	8619.7

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135208 Acquired: 2/28/2017 17:38:11 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00184	.39032	.00566	.03949	.09027	-0.00010	149.03
Stddev	.00087	.00223	.00232	.00245	.00060	.00003	.13
%RSD	47.367	.57134	41.040	6.2170	.65988	24.473	.09020

#1	-0.00281	.39239	.00620	.03682	.09086	-0.00011	148.90
#2	-0.00161	.39062	.00766	.04000	.08967	-0.00008	149.04
#3	-0.00111	.38796	.00311	.04165	.09029	-0.00013	149.16

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00001	.00102	.47119	.00112	.00440	130.06	.10707
Stddev	.00012	.00075	.00242	.00157	.01293	.30	.00310
%RSD	1090.6	73.597	.51364	139.90	293.95	.22963	2.8947

#1	.00001	.00171	.47263	.00096	.00713	130.29	.10882
#2	-0.00014	.00113	.47254	-0.00036	-0.00968	129.72	.10891
#3	.00009	.00022	.46839	.00276	.01574	130.16	.10350

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.01917	.00068	.08152	F 1012.7	-0.00010	.00165	-.00416
Stddev	.07057	.00175	.00019	7.8	.00154	.01478	.00492
%RSD	368.10	256.09	.23078	.77122	1559.6	896.31	118.29

#1	-0.05274	-0.00092	.08159	1013.4	.00130	-0.00528	-.00647
#2	.06192	.00256	.08130	1004.5	-0.00176	-0.00840	.00149
#3	-0.06670	.00041	.08165	1020.1	.00017	.01862	-.00751

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135208 Acquired: 2/28/2017 17:38:11 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00052	.03133	5.7453	.00025	1.3354	-0.01370	-0.00107
Stddev	.00625	.00832	.0178	.00026	.0019	.00103	.00486
%RSD	1208.9	26.566	.31028	106.16	.14139	7.4901	455.76

#1	-.00663	.02431	5.7506	.00023	1.3373	-.01386	-.00443
#2	.00322	.04053	5.7598	.00051	1.3335	-.01464	.00451
#3	.00496	.02917	5.7254	-.00001	1.3355	-.01261	-.00328

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.01777	.00805	F -.50562
Stddev	.00058	.00025	.83701
%RSD	3.2836	3.1272	165.54

#1	.01719	.00799	-.79940
#2	.01835	.00783	-1.1561
#3	.01776	.00833	.43867

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4602.8	62709.	8524.3
Stddev	6.3	144.	38.6
%RSD	.13609	.22945	.45338

#1	4603.9	62857.	8551.7
#2	4608.4	62570.	8541.1
#3	4596.0	62701.	8480.1

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135209 Acquired: 2/28/2017 17:42:05 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00108	.09740	.00166	.04056	.10663	-.00008	176.75
Stddev	.00079	.00663	.00374	.00078	.00028	.00010	.62
%RSD	73.315	6.8031	224.97	1.9282	.25920	123.92	.35068

#1	-.00150	.10174	-.00092	.04140	.10632	-.00015	177.39
#2	-.00017	.10068	.00594	.03986	.10671	-.00013	176.15
#3	-.00158	.08977	-.00004	.04040	.10686	.00003	176.70

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00004	.00034	.51528	.00283	.00630	159.32	.12044
Stddev	.00044	.00032	.00023	.00193	.01459	.69	.00115
%RSD	1022.2	95.880	.04559	68.414	231.80	.43082	.95269

#1	.00038	.00046	.51506	.00477	.00683	159.60	.12176
#2	.00021	-.00003	.51525	.00091	-.00856	158.53	.11972
#3	-.00046	.00057	.51553	.00279	.02061	159.81	.11983

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01334	-.00114	.07757	F 878.49	-.00108	-.00297	-.00104
Stddev	.03270	.00287	.00081	.77	.00028	.00655	.00164
%RSD	245.11	252.08	1.0444	.08747	25.532	220.55	157.36

#1	.02473	.00067	.07685	877.76	-.00139	.00216	-.00089
#2	.03882	.00036	.07741	879.29	-.00086	-.00072	-.00276
#3	-.02353	-.00445	.07844	878.41	-.00099	-.01036	.00052

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-.50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135209 Acquired: 2/28/2017 17:42:05 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00138	.03137	3.7317	.00096	1.4583	-.01420	-.00303
Stddev	.00497	.00019	.0044	.00123	.0027	.00410	.00234
%RSD	360.34	.59222	.11791	128.55	.18512	28.877	77.142

#1	.00163	.03120	3.7279	-.00018	1.4614	-.01840	-.00569
#2	-.00371	.03157	3.7306	.00227	1.4565	-.01020	-.00206
#3	.00622	.03133	3.7365	.00078	1.4571	-.01401	-.00133

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.01218	.00750	F -.53483
Stddev	.00050	.00011	.28261
%RSD	4.1036	1.5013	52.842

#1	.01276	.00748	-.27625
#2	.01186	.00762	-.83652
#3	.01193	.00739	-.49171

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4582.9	62709.	8392.0
Stddev	8.5	184.	86.4
%RSD	.18599	.29327	1.0300

#1	4591.2	62628.	8359.0
#2	4574.2	62919.	8490.1
#3	4583.3	62579.	8327.0

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135210 Acquired: 2/28/2017 17:46:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00019	.58748	.00313	.32587	.01286	-.00001	51.520
Stddev	.00129	.00718	.00155	.00094	.00060	.00005	.241
%RSD	692.53	1.2215	49.589	.28841	4.6615	1028.2	.46854

#1	-.00127	.58516	.00185	.32585	.01335	-.00006	51.530
#2	.00115	.58175	.00269	.32683	.01305	.00005	51.274
#3	.00068	.59553	.00486	.32495	.01219	-.00001	51.756

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00009	.00423	.30536	.00186	.06527	16.403	.03827
Stddev	.00018	.00045	.00110	.00121	.01237	.058	.00456
%RSD	186.79	10.588	.36180	65.058	18.947	.35364	11.914

#1	.00028	.00443	.30531	.00314	.06113	16.347	.03318
#2	.00007	.00372	.30428	.00172	.05551	16.400	.04197
#3	-.00007	.00455	.30649	.00073	.07918	16.463	.03967

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	19.510	.00920	.02798	F 273.82	.00077	.01332	.00364
Stddev	.246	.00147	.00159	4.03	.00138	.01306	.00247
%RSD	1.2589	15.978	5.6801	1.4700	180.30	98.080	67.719

#1	19.415	.00945	.02969	272.18	.00236	.02667	.00090
#2	19.326	.01053	.02654	270.88	.00009	.01270	.00434
#3	19.789	.00762	.02772	278.41	-.00015	.00058	.00569

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-.50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135210 Acquired: 2/28/2017 17:46:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00327	.03141	8.9437	.00017	.71188	.00429	-.00735
Stddev	.00245	.01129	.0313	.00059	.00251	.00185	.00857
%RSD	74.808	35.932	.34961	352.98	.35295	43.029	116.55

#1	.00476	.03554	8.9776	.00084	.71383	.00639	.00174
#2	.00045	.04006	8.9160	-.00006	.70905	.00357	-.01527
#3	.00460	.01864	8.9376	-.00028	.71277	.00292	-.00853

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.03810	.00393	F -.59062
Stddev	.00028	.00016	.63143
%RSD	.73075	4.1052	106.91

#1	.03816	.00375	-1.1902
#2	.03779	.00399	-.65005
#3	.03834	.00405	.06842

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4872.6	66924.	8499.1
Stddev	7.3	51.	52.8
%RSD	.14936	.07676	.62123

#1	4864.2	66892.	8492.7
#2	4877.0	66983.	8554.8
#3	4876.7	66897.	8449.8

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135211 Acquired: 2/28/2017 17:49:54 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00185	3.7929	.08061	1.1200	.06292	F -0.00123	60.371
Stddev	.00157	.0131	.00499	.0024	.00089	.00004	.179
%RSD	84.965	.34613	6.1887	.21191	1.4081	3.0243	.29627

#1	-0.00158	3.7931	.07880	1.1209	.06301	-0.00119	60.289
#2	-0.00353	3.7796	.08625	1.1218	.06199	-0.00122	60.249
#3	-0.00042	3.8059	.07678	1.1173	.06376	-0.00127	60.577

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit						1.8000	
Low Limit						-0.00050	

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00004	.00187	2.2806	.00214	-0.00550	148.64	.22946
Stddev	.00022	.00047	.0085	.00065	.01771	.42	.00324
%RSD	563.83	25.132	.37232	30.624	322.10	.28266	1.4135

#1	.00011	.00142	2.2878	.00284	-.00896	148.56	.23032
#2	.00021	.00185	2.2826	.00203	.01369	148.27	.22587
#3	-.00021	.00236	2.2712	.00154	-.02122	149.10	.23218

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.96454	-0.00117	.24236	F 1567.4	.00074	.04919	-0.00001
Stddev	.04181	.00286	.00012	8.7	.00141	.00563	.00075
%RSD	4.3342	244.37	.04981	.55463	191.97	11.452	13317.

#1	.94256	.00099	.24246	1574.8	.00179	.05568	.00078
#2	1.0128	-.00441	.24223	1569.5	.00130	.04566	-.00071
#3	.93831	-.00009	.24240	1557.8	-.00087	.04622	-.00009

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-0.50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135211 Acquired: 2/28/2017 17:49:54 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00697	.18580	2.3648	-.00034	.90186	.00020	.02724
Stddev	.00182	.00651	.0031	.00084	.00126	.00307	.00636
%RSD	26.077	3.5038	.13236	247.72	.13939	1527.8	23.334

#1	-.00647	.18275	2.3677	-.00068	.90073	-.00122	.03371
#2	-.00545	.19328	2.3615	.00062	.90162	-.00190	.02700
#3	-.00898	.18138	2.3653	-.00095	.90321	.00372	.02100

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.3968	.00853	.07309
Stddev	.0002	.00018	.95524
%RSD	.01276	2.1486	1307.0

#1	1.3970	.00834	1.1672
#2	1.3967	.00855	-.59488
#3	1.3967	.00870	-.35310

Check ?	Chk Pass	Chk Pass	Chk Pass
High Limit			
Low Limit			

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4533.0	61345.	8664.7
Stddev	33.1	149.	42.8
%RSD	.73085	.24277	.49408

#1	4563.6	61414.	8646.1
#2	4537.6	61174.	8713.6
#3	4497.8	61446.	8634.3

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 17:53:49 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40444	10.347	.40649	.51537	1.0304	.05112	10.249
Stddev	.00026	.029	.00496	.00473	.0015	.00022	.027
%RSD	.06410	.28366	1.2195	.91683	.14342	.42988	.26300

#1	.40419	10.375	.40169	.51615	1.0289	.05136	10.217
#2	.40471	10.349	.40619	.51965	1.0319	.05092	10.265
#3	.40443	10.316	.41159	.51030	1.0305	.05109	10.263

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05043	.20374	.51162	.51333	4.0604	51.992	1.0431
Stddev	.00058	.00032	.00095	.00352	.0312	.227	.0053
%RSD	1.1525	.15641	.18637	.68655	.76826	.43667	.50761

#1	.05053	.20395	.51052	.51640	4.0501	51.730	1.0439
#2	.04981	.20337	.51225	.50948	4.0954	52.128	1.0374
#3	.05096	.20389	.51209	.51412	4.0356	52.118	1.0479

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	10.149	.50725	1.0116	51.366	.51455	10.139	.51653
Stddev	.012	.00346	.0008	.100	.00055	.029	.00510
%RSD	.11332	.68151	.07481	.19510	.10643	.28736	.98735

#1	10.146	.50344	1.0116	51.480	.51451	10.154	.52196
#2	10.139	.51019	1.0108	51.293	.51511	10.157	.51185
#3	10.162	.50812	1.0123	51.324	.51402	10.105	.51577

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 17:53:49 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Ti1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2287	.40232	5.1011	1.0183	1.0269	1.0015	.52053
Stddev	.0052	.00252	.0039	.0017	.0021	.0052	.00659
%RSD	.42208	.62552	.07634	.16849	.20617	.51965	1.2653

#1	1.2337	.40130	5.1017	1.0202	1.0247	.99900	.52244
#2	1.2233	.40519	5.1047	1.0178	1.0289	1.0074	.51320
#3	1.2290	.40048	5.0970	1.0168	1.0273	.99795	.52596

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0178	1.0160	F 1.1726
Stddev	.0035	.0003	.1981
%RSD	.33948	.02881	16.893

#1	1.0194	1.0162	1.1808
#2	1.0139	1.0157	.97052
#3	1.0203	1.0162	1.3664

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5002.7	69083.	8537.7
Stddev	20.0	283.	36.0
%RSD	.39898	.40967	.42210

#1	5025.5	69181.	8570.0
#2	4994.4	69303.	8544.4
#3	4988.2	68763.	8498.8

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 17:57:25 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00049	-0.00372	.00285	.00720	-0.00052	.00006	-0.02193
Stddev	.00092	.00488	.00292	.00092	.00052	.00007	.01970
%RSD	188.76	131.24	102.60	12.751	99.478	118.85	89.858

#1	-0.00007	-0.00327	.00456	.00653	-0.00033	.00010	-0.04466
#2	.00015	.00092	.00451	.00824	-0.00012	-0.00002	-0.00969
#3	-0.00154	-0.00880	-0.00053	.00682	-0.00110	.00011	-0.01144

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -0.00059	.00011	-0.00092	.00051	.00019	.35074	-0.00223
Stddev	.00042	.00033	.00048	.00315	.00351	.08064	.00145
%RSD	71.717	311.33	51.801	622.18	1892.8	22.991	65.242

#1	-0.00106	-0.00027	-0.00146	.00404	.00364	.26907	-0.00177
#2	-0.00043	.00024	-0.00054	-0.00198	.00029	.43031	-0.00386
#3	-0.00027	.00035	-0.00077	-0.00055	-0.00337	.35283	-0.00106

Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	.00050						
Low Limit	-0.00050						

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02139	.00003	.00026	.34477	.00062	-0.00054	-0.00331
Stddev	.04398	.00376	.00087	.04167	.00271	.00601	.00501
%RSD	205.64	13380.	334.60	12.085	437.27	1121.7	151.66

#1	-0.01648	-0.00432	.00124	.37102	-0.00097	.00550	.00244
#2	.06962	.00211	-0.00043	.29673	.00375	-0.00058	-0.00554
#3	.01102	.00229	-0.00002	.36657	-0.00092	-0.00652	-0.00682

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 17:57:25 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00020	.00511	-.00077	-.00086	.00002	.00028	.00411
Stddev	.00022	.01486	.00258	.00129	.00023	.00165	.00333
%RSD	107.23	291.08	336.50	150.55	972.57	593.29	81.215

#1	-.00001	-.00375	.00048	.00029	-.00019	-.00161	.00704
#2	.00019	.02226	.00095	-.00225	-.00002	.00143	.00048
#3	.00043	-.00320	-.00374	-.00061	.00028	.00102	.00481

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00027	-.00064	F .89286
Stddev	.00087	.00035	.55575
%RSD	320.84	54.512	62.244

#1	-.00070	-.00028	1.4505
#2	.00097	-.00066	.88907
#3	.00054	-.00098	.33901

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5069.6	71120.	8442.0
Stddev	16.6	104.	14.7
%RSD	.32805	.14646	.17387

#1	5059.7	71013.	8450.5
#2	5060.3	71222.	8425.1
#3	5088.8	71126.	8450.5

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135212 Acquired: 2/28/2017 18:01:16 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00136	.00692	.01665	.57939	.03541	-0.00013	59.630
Stddev	.00054	.00295	.00535	.00239	.00042	.00007	.205
%RSD	39.615	42.660	32.131	.41243	1.1810	57.334	.34437

#1	-0.00075	.01030	.02157	.57664	.03503	-0.00009	59.809
#2	-0.00176	.00486	.01095	.58099	.03534	-0.00021	59.406
#3	-0.00157	.00559	.01743	.58054	.03586	-0.00008	59.675

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00036	.00062	.01075	.00032	.01403	.86241	.01079
Stddev	.00004	.00060	.00198	.00069	.00520	.06289	.00228
%RSD	11.991	97.449	18.400	219.02	37.070	7.2924	21.120

#1	.00041	.00017	.00941	.00111	.01748	.84423	.01317
#2	.00033	.00039	.00983	-0.00000	.00805	.93238	.01058
#3	.00036	.00130	.01303	-0.00016	.01655	.81061	.00863

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	14.791	-0.00208	.00893	F 390.01	.00416	.12596	.00086
Stddev	.069	.00076	.00054	2.26	.00197	.00544	.00141
%RSD	.46686	36.419	5.9984	.57869	47.305	4.3173	165.32

#1	14.790	-0.00290	.00926	392.23	.00263	.12066	.00169
#2	14.722	-0.00191	.00923	390.07	.00638	.13153	-0.00078
#3	14.860	-0.00142	.00832	387.72	.00346	.12570	.00165

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135212 Acquired: 2/28/2017 18:01:16 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00511	.02533	6.3312	.00059	.89336	.00032	.00093
Stddev	.00595	.00859	.0079	.00111	.00188	.00271	.00160
%RSD	116.47	33.915	.12457	186.65	.21011	853.51	171.53

#1	.00880	.02705	6.3361	.00069	.89428	.00280	.00174
#2	-.00175	.01601	6.3354	.00165	.89120	.00072	.00198
#3	.00828	.03293	6.3221	-.00056	.89460	-.00257	-.00091

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.09817	.00348	F -.55588
Stddev	.00066	.00018	.47528
%RSD	.67688	5.2032	85.500

#1	.09741	.00328	-.03739
#2	.09847	.00352	-.65934
#3	.09863	.00363	-.97091

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4790.9	65998.	8562.6
Stddev	7.6	96.	46.7
%RSD	.15773	.14556	.54526

#1	4797.8	66101.	8549.3
#2	4782.8	65981.	8614.5
#3	4792.1	65911.	8524.0

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135212PS Acquired: 2/28/2017 18:05:09 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604474-01

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19714	4.7066	.21669	1.4722	.52848	.02493	58.823
Stddev	.00212	.0133	.00248	.0051	.00049	.00004	.165
%RSD	1.0740	.28278	1.1458	.34626	.09353	.15907	.28094

#1	.19958	4.7141	.21436	1.4776	.52866	.02494	58.900
#2	.19602	4.7145	.21930	1.4675	.52887	.02497	58.633
#3	.19581	4.6912	.21641	1.4715	.52793	.02489	58.935

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02446	.09802	.25579	.24517	1.9382	26.805	.51770
Stddev	.00019	.00024	.00102	.00115	.0052	.105	.00066
%RSD	.76935	.24580	.39964	.46823	.26774	.39347	.12747

#1	.02428	.09800	.25677	.24489	1.9411	26.684	.51813
#2	.02466	.09778	.25473	.24644	1.9322	26.849	.51803
#3	.02443	.09827	.25585	.24419	1.9412	26.881	.51694

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.239	.24275	.50395	F 377.97	.24767	5.0976	.23303
Stddev	.022	.00222	.00089	1.03	.00246	.0183	.00463
%RSD	.12332	.91339	.17746	.27226	.99313	.35951	1.9860

#1	18.217	.24474	.50496	376.79	.24874	5.1115	.23221
#2	18.239	.24036	.50359	378.69	.24941	5.0768	.22886
#3	18.262	.24316	.50329	378.43	.24485	5.1046	.23801

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135212PS Acquired: 2/28/2017 18:05:09 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604474-01

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.58884	.22227	8.1660	.48417	1.3015	.48597	.23321
Stddev	.00296	.00865	.0083	.00102	.0018	.00090	.00435
%RSD	.50346	3.8939	.10190	.21110	.14115	.18444	1.8633

#1	.58664	.22054	8.1725	.48400	1.3001	.48518	.22833
#2	.58768	.23166	8.1566	.48526	1.3009	.48695	.23468
#3	.59221	.21461	8.1690	.48323	1.3036	.48578	.23664

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.58872	.49286	.09397
Stddev	.00083	.00075	1.2034
%RSD	.14085	.15169	1280.6

#1	.58862	.49365	-8.1645
#2	.58794	.49216	1.4583
#3	.58959	.49276	-3.5995

Check ?	Chk Pass	Chk Pass	Chk Pass
High Limit			
Low Limit			

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4763.8	65890.	8371.1
Stddev	8.1	63.	80.5
%RSD	.17034	.09546	.96193

#1	4758.6	65922.	8326.4
#2	4773.2	65930.	8464.0
#3	4759.6	65817.	8322.8

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135212SDL Acquired: 2/28/2017 18:09:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 5 Custom ID2: Custom ID3:
 Comment: WG604474-02

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00044	-0.00065	.00388	.12116	.00647	-0.00004	11.731	-0.00036
Stddev	.00048	.00611	.00098	.00125	.00028	.00004	.018	.00020
%RSD	108.63	936.50	25.145	1.0343	4.3569	110.81	.15166	55.117

#1	.00010	-.00659	.00499	.12260	.00656	-.00008	11.750	-.00035
#2	-.00061	.00562	.00351	.12047	.00670	-.00000	11.729	-.00017
#3	-.00081	-.00099	.00315	.12040	.00615	-.00002	11.714	-.00057

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00009	.00073	.00088	.00363	.36816	.00362	2.8646	-0.0141
Stddev	.00034	.00113	.00111	.01347	.07288	.00143	.0269	.00207
%RSD	378.61	153.31	125.98	371.06	19.796	39.595	.93877	147.43

#1	-.00048	-.00024	.00083	-.01192	.44840	.00517	2.8338	-.00126
#2	.00005	.00047	-.00020	.01154	.30607	.00235	2.8836	.00059
#3	.00015	.00197	.00201	.01127	.34999	.00333	2.8763	-.00355

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00213	80.738	.00022	.03525	-0.00098	.00470	.00469	1.2477
Stddev	.00075	.303	.00105	.01115	.00583	.01290	.00395	.0089
%RSD	35.366	.37483	469.36	31.630	592.48	274.39	84.280	.71679

#1	.00257	80.678	.00139	.04401	.00430	.00657	.00879	1.2373
#2	.00126	81.065	-.00065	.02270	-.00723	.01656	.00438	1.2525
#3	.00256	80.469	-.00006	.03904	-.00002	-.00903	.00090	1.2531

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135212SDL Acquired: 2/28/2017 18:09:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 5 Custom ID2: Custom ID3:
 Comment: WG604474-02

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00134	.17339	.00271	.00380	.01971	.00068	.31314
Stddev	.00083	.00058	.00356	.00800	.00155	.00018	1.3799
%RSD	61.722	.33276	130.96	210.64	7.8527	25.595	440.67

#1	.00052	.17390	-.00132	.01009	.02049	.00050	.98940
#2	.00133	.17351	.00405	.00651	.02071	.00085	-1.2744
#3	.00218	.17276	.00541	-.00520	.01793	.00070	1.2245

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5050.0	70923.	8622.3
Stddev	8.9	239.	69.7
%RSD	.17595	.33683	.80840

#1	5053.9	71189.	8672.0
#2	5056.2	70729.	8542.6
#3	5039.8	70850.	8652.3

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135213 Acquired: 2/28/2017 18:12:48 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00136	191.58	.04104	4.7000	.54746	-0.00039	28.983
Stddev	.00176	.52	.00118	.0153	.00178	.00005	.126
%RSD	129.49	.26947	2.8788	.32575	.32503	12.248	.43505

#1	-0.00026	192.07	.03983	4.7065	.54809	-0.00037	29.075
#2	-0.00042	191.63	.04109	4.7111	.54883	-0.00036	29.034
#3	-0.00338	191.04	.04220	4.6826	.54545	-0.00045	28.839

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00014	.00143	.52163	.00022	.07444	4.9191	.04271
Stddev	.00016	.00026	.00133	.00094	.01188	.1638	.00217
%RSD	116.39	17.803	.25558	424.03	15.961	3.3302	5.0895

#1	-0.00000	.00114	.52273	-0.00082	.08486	4.7309	.04288
#2	.00011	.00161	.52203	.00048	.06150	4.9974	.04479
#3	.00032	.00155	.52015	.00101	.07695	5.0291	.04046

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.03544	-0.00057	.09312	F 2048.1	-0.00138	.11385	.00483
Stddev	.06868	.00029	.00065	20.8	.00131	.00848	.00208
%RSD	193.79	50.640	.69451	1.0175	94.479	7.4457	43.195

#1	.01467	-0.00072	.09315	2062.7	-0.00266	.12354	.00348
#2	-0.00726	-0.00024	.09375	2057.3	-0.00004	.11024	.00723
#3	-.11374	-0.00074	.09245	2024.2	-0.00145	.10778	.00377

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135213 Acquired: 2/28/2017 18:12:48 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00847	.26207	3.8013	.00361	1.3402	.00192	.00578
Stddev	.00729	.00276	.0030	.00211	.0032	.00381	.00401
%RSD	86.111	1.0514	.07818	58.493	.23680	198.56	69.367

#1	.01330	.26061	3.7984	.00310	1.3421	-.00248	.00732
#2	.00008	.26525	3.8044	.00594	1.3420	.00396	.00123
#3	.01202	.26035	3.8011	.00181	1.3366	.00428	.00879

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.44918	-.00038	F -1.4225
Stddev	.00206	.00034	.2359
%RSD	.45926	87.601	16.582

#1	.45005	-.00015	-1.1788
#2	.44682	-.00023	-1.6496
#3	.45066	-.00077	-1.4392

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4401.2	58846.	8108.5
Stddev	3.1	334.	6.3
%RSD	.06947	.56686	.07759

#1	4404.7	58490.	8104.3
#2	4399.6	58896.	8105.6
#3	4399.2	59151.	8115.7

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702136701 Acquired: 2/28/2017 18:16:41 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00063	.01589	-.00006	.03621	.23694	.00006	244.01
Stddev	.00142	.00392	.00202	.00190	.00146	.00004	.28
%RSD	227.71	24.692	3557.8	5.2375	.61699	66.517	.11348

#1	-.00226	.01196	.00214	.03402	.23789	.00002	244.01
#2	.00006	.01589	-.00182	.03743	.23526	.00006	243.73
#3	.00033	.01981	-.00050	.03717	.23767	.00010	244.28

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00043	.00056	-.00135	.00961	-.00302	286.70	.04748
Stddev	.00036	.00028	.00024	.00064	.00802	1.47	.00197
%RSD	82.633	50.618	17.569	6.6997	265.53	.51393	4.1586

#1	.00077	.00061	-.00155	.00989	-.00709	288.38	.04845
#2	.00047	.00025	-.00109	.00887	.00622	285.66	.04879
#3	.00006	.00082	-.00143	.01006	-.00818	286.05	.04521

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.09303	-.00066	.00510	261.15	-.00080	.04796	.04443
Stddev	.10544	.00096	.00056	.72	.00016	.00849	.00602
%RSD	113.35	144.67	10.952	.27718	19.403	17.694	13.544

#1	.02487	.00039	.00450	260.75	-.00067	.05628	.03992
#2	-.12563	-.00149	.00561	260.72	-.00098	.04827	.04211
#3	-.17831	-.00088	.00519	261.98	-.00076	.03932	.05127

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702136701 Acquired: 2/28/2017 18:16:41 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00555	.01260	.08165	.00270	.26955	-.01775	-.00758
Stddev	.00271	.01363	.00337	.00044	.00053	.00128	.00428
%RSD	48.729	108.20	4.1220	16.212	.19585	7.2375	56.451

#1	.00577	.02394	.07902	.00317	.26919	-.01923	-.00497
#2	.00814	-.00252	.08050	.00263	.26932	-.01691	-.00525
#3	.00274	.01637	.08544	.00231	.27016	-.01711	-.01252

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00100	.77379	F -.36752
Stddev	.00093	.00168	.52137
%RSD	93.707	.21728	141.86

#1	.00052	.77572	-.25714
#2	.00207	.77304	.08982
#3	.00040	.77262	-.93523

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4599.4	64266.	8220.3
Stddev	2.2	201.	80.3
%RSD	.04718	.31285	.97702

#1	4599.4	64127.	8135.0
#2	4601.6	64497.	8294.4
#3	4597.3	64176.	8231.6

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702136801 Acquired: 2/28/2017 18:20:27 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00236	.02565	.00117	.01599	.39795	-0.00004	F 427.47
Stddev	.00218	.00653	.00133	.00068	.00045	.00008	1.69
%RSD	92.138	25.455	114.35	4.2560	.11360	206.30	.39453

#1	-0.00486	.02682	.00113	.01537	.39839	-0.00008	429.12
#2	-0.00090	.03151	.00252	.01588	.39749	.00005	427.55
#3	-0.00133	.01861	-0.00015	.01672	.39797	-0.00008	425.75

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00030	.00027	-0.00078	.01208	.01416	245.43	.05532
Stddev	.00051	.00032	.00070	.00016	.00459	.46	.00463
%RSD	169.06	120.48	89.710	1.3395	32.408	.18723	8.3633

#1	.00016	.00048	-0.00145	.01192	.01479	245.80	.05005
#2	.00088	-0.00010	-0.00083	.01224	.00929	244.91	.05872
#3	-0.00012	.00043	-0.00006	.01209	.01840	245.58	.05719

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01414	-0.00087	.01197	266.18	-0.00023	.04313	.00979
Stddev	.07528	.00111	.00036	1.33	.00033	.00449	.00377
%RSD	532.54	128.09	2.9871	.50082	146.77	10.408	38.516

#1	-0.04154	.00008	.01209	267.45	.00014	.04742	.01296
#2	-0.01583	-0.00059	.01224	266.30	-0.00051	.04351	.01080
#3	.09978	-0.00209	.01156	264.79	-0.00031	.03847	.00562

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702136801 Acquired: 2/28/2017 18:20:27 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00225	.01426	.22544	.00126	.49037	F -.03187	-.00798
Stddev	.01073	.00760	.01145	.00125	.00055	.00118	.00336
%RSD	476.56	53.303	5.0785	99.576	.11237	3.6954	42.066

#1	-.01014	.01272	.23741	.00130	.49097	-.03318	-.00943
#2	.00823	.02251	.22432	-.00002	.49026	-.03089	-.01036
#3	.00866	.00755	.21459	.00249	.48989	-.03154	-.00414

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit						36.000	
Low Limit						-.03000	

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	-.00025	.02196	F -.81889
Stddev	.00032	.00032	.79250
%RSD	130.72	1.4716	96.777

#1	-.00061	.02177	-1.1060
#2	-.00016	.02233	-1.4279
#3	.00002	.02177	.07714

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4525.0	63736.	8218.6
Stddev	16.0	175.	28.2
%RSD	.35279	.27416	.34368

#1	4537.1	63833.	8192.0
#2	4506.9	63842.	8248.3
#3	4531.1	63535.	8215.6

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 18:24:18 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40075	10.315	.40217	.50326	1.0237	.05085	10.185
Stddev	.00091	.032	.00420	.00225	.0016	.00023	.068
%RSD	.22673	.30571	1.0454	.44766	.15432	.45171	.66722

#1	.40067	10.351	.40678	.50076	1.0247	.05104	10.258
#2	.39988	10.292	.39854	.50512	1.0246	.05093	10.170
#3	.40169	10.302	.40120	.50392	1.0219	.05060	10.125

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05053	.20342	.51058	.51232	3.9815	52.588	1.0473
Stddev	.00038	.00111	.00041	.00200	.0289	.104	.0071
%RSD	.75714	.54508	.08013	.39028	.72619	.19828	.67737

#1	.05034	.20391	.51079	.51075	3.9497	52.587	1.0549
#2	.05029	.20420	.51084	.51163	4.0062	52.693	1.0409
#3	.05098	.20215	.51011	.51457	3.9884	52.484	1.0461

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.9513	.49933	1.0094	51.254	.50809	10.077	.51653
Stddev	.0339	.00183	.0024	.253	.00224	.009	.00468
%RSD	.34089	.36657	.24014	.49394	.44112	.08668	.90641

#1	9.9380	.50123	1.0077	51.522	.50776	10.085	.52069
#2	9.9260	.49758	1.0122	51.218	.50603	10.068	.51146
#3	9.9899	.49918	1.0084	51.020	.51048	10.080	.51742

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 18:24:18 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Ti1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2375	.40364	5.0850	1.0059	1.0232	.99612	.50339
Stddev	.0124	.01250	.0046	.0007	.0022	.00828	.00331
%RSD	1.0042	3.0962	.09100	.06939	.21184	.83154	.65676

#1	1.2506	.41698	5.0814	1.0066	1.0257	.98781	.50687
#2	1.2259	.40177	5.0833	1.0053	1.0226	1.0044	.50302
#3	1.2361	.39219	5.0902	1.0058	1.0215	.99617	.50028

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0120	1.0038	F .63936
Stddev	.0027	.0006	.53317
%RSD	.26268	.05620	83.390

#1	1.0091	1.0033	.29177
#2	1.0144	1.0038	.37310
#3	1.0123	1.0044	1.2532

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4908.0	68900.	8320.0
Stddev	1.6	92.	40.2
%RSD	.03203	.13397	.48314

#1	4906.2	68942.	8288.9
#2	4908.8	68794.	8305.8
#3	4909.0	68964.	8365.4

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 18:27:55 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00044	-.01176	.00118	.00135	.00058	.00004	.00478
Stddev	.00031	.00862	.00318	.00219	.00057	.00004	.00680
%RSD	71.267	73.247	268.90	161.84	98.297	117.08	142.26

#1	-.00036	-.01826	-.00100	.00350	.00003	.00001	.00575
#2	-.00079	-.01504	.00482	-.00088	.00054	.00002	.01104
#3	-.00017	-.00199	-.00028	.00145	.00117	.00009	-.00245

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00011	.00007	-.00237	.00238	-.00201	.38234	.00103
Stddev	.00027	.00042	.00141	.00049	.00859	.04676	.00316
%RSD	236.35	637.14	59.569	20.648	427.92	12.230	308.11

#1	.00002	-.00040	-.00278	.00265	-.00130	.40396	.00218
#2	-.00042	.00041	-.00080	.00181	.00621	.41439	-.00255
#3	.00006	.00019	-.00352	.00268	-.01093	.32868	.00345

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00938	-.00050	.00032	.21520	.00105	.00258	F -.00628
Stddev	.13747	.00020	.00040	.03081	.00195	.00297	.00122
%RSD	1464.9	39.207	124.47	14.317	185.36	115.16	19.464

#1	.02259	-.00065	.00077	.21500	.00118	.00031	-.00714
#2	-.16003	-.00028	.00017	.18448	.00293	.00594	-.00488
#3	.10928	-.00058	.00001	.24610	-.00096	.00148	-.00681

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							.00500
Low Limit							-.00500

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 18:27:55 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00726	-.00561	.00027	-.00038	-.00015	.00729	.00128
Stddev	.00288	.00683	.00086	.00123	.00021	.00235	.00580
%RSD	39.718	121.78	316.00	321.34	141.22	32.206	453.84

#1	.00678	-.00034	.00112	-.00148	.00008	.00802	.00786
#2	.01035	-.01333	-.00060	.00094	-.00032	.00466	-.00308
#3	.00464	-.00315	.00029	-.00060	-.00020	.00918	-.00095

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00064	-.00079	F .81780
Stddev	.00041	.00027	1.6758
%RSD	64.609	34.302	204.92

#1	.00078	-.00069	-.79730
#2	.00096	-.00109	.70228
#3	.00017	-.00058	2.5484

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4972.6	70837.	8274.6
Stddev	6.1	275.	27.0
%RSD	.12324	.38813	.32571

#1	4965.7	71069.	8305.7
#2	4977.2	70533.	8257.8
#3	4974.9	70909.	8260.3

Approved: March 01, 2017

Ki K Buck

Sample Name: PBW A3 Acquired: 2/28/2017 18:31:49 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-02

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00026	-0.01274	-0.00032	.00216	.00094	.00010	-0.01087
Stddev	.00135	.00747	.00587	.00206	.00024	.00005	.01563
%RSD	516.57	58.608	1815.1	95.226	25.279	45.071	143.79

#1	-0.00038	-0.00992	-0.00557	.00004	.00073	.00005	.00380
#2	-0.00155	-0.02121	-0.00141	.00415	.00120	.00013	-.02732
#3	.00114	-0.00710	.00601	.00229	.00089	.00013	-.00909

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00009	-0.00002	-0.00176	.00058	-0.00607	.35592	-0.00293
Stddev	.00010	.00067	.00088	.00238	.00459	.03918	.00608
%RSD	110.73	2999.6	50.254	410.93	75.624	11.007	207.64

#1	.00008	.00045	-.00202	-.00005	-.00330	.39512	.00359
#2	.00020	-.00079	-.00248	.00321	-.00354	.35588	-.00843
#3	-.00000	.00027	-.00077	-.00142	-.01137	.31677	-.00394

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00505	-0.00087	.00092	.20646	.00076	-0.00291	-0.00280
Stddev	.03322	.00215	.00096	.02950	.00119	.01232	.00622
%RSD	658.31	246.37	104.31	14.287	155.61	423.99	221.84

#1	.01708	-.00260	-.00017	.22233	.00055	-.01315	.00346
#2	.01102	.00154	.00166	.22463	-.00031	.01076	-.00290
#3	-.04325	-.00156	.00128	.17243	.00205	-.00633	-.00897

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: PBW A3 Acquired: 2/28/2017 18:31:49 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-02

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00514	-.00281	-.00006	.00039	-.00008	.00140	-.00304
Stddev	.00821	.00612	.00417	.00110	.00026	.00263	.00589
%RSD	159.68	217.53	7041.2	280.93	338.56	187.55	193.66

#1	.00856	-.00309	-.00124	.00088	-.00011	.00398	-.00882
#2	-.00423	-.00879	.00457	-.00087	-.00033	-.00128	.00295
#3	.01108	.00344	-.00351	.00116	.00020	.00150	-.00326

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	-.00038	.00032	F -.71137
Stddev	.00057	.00016	.20135
%RSD	149.15	50.229	28.305

#1	-.00103	.00014	-.90707
#2	-.00001	.00044	-.50481
#3	-.00010	.00037	-.72222

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4972.7	71644.	8250.2
Stddev	15.6	277.	24.7
%RSD	.31443	.38703	.29979

#1	4989.3	71893.	8277.9
#2	4970.7	71694.	8242.4
#3	4958.2	71345.	8230.3

Approved: March 01, 2017

K. K. Buck

Sample Name: LCSW A3 Acquired: 2/28/2017 18:35:39 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-03

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19573	5.0659	.19240	.90567	.50227	.02435	4.9882
Stddev	.00072	.0013	.00348	.00280	.00100	.00002	.0106
%RSD	.36666	.02484	1.8072	.30958	.19874	.06554	.21236

#1	.19645	5.0662	.19234	.90323	.50188	.02434	4.9794
#2	.19501	5.0645	.18896	.90873	.50341	.02435	4.9853
#3	.19573	5.0670	.19591	.90506	.50153	.02437	5.0000

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02423	.10063	.24681	.25021	1.9544	25.610	.51610
Stddev	.00021	.00035	.00032	.00171	.0219	.096	.00186
%RSD	.88620	.34400	.12781	.68433	1.1205	.37630	.36065

#1	.02403	.10099	.24666	.24830	1.9791	25.514	.51460
#2	.02419	.10030	.24717	.25071	1.9468	25.707	.51551
#3	.02446	.10060	.24660	.25161	1.9373	25.610	.51818

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8605	.24604	.49594	25.110	.24919	4.7662	.25049
Stddev	.0974	.00120	.00174	.045	.00090	.0124	.00384
%RSD	2.0042	.48761	.35106	.17970	.36168	.26069	1.5344

#1	4.8754	.24690	.49397	25.152	.24936	4.7519	.24606
#2	4.7565	.24655	.49724	25.116	.24822	4.7723	.25248
#3	4.9496	.24467	.49662	25.062	.25000	4.7745	.25294

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

<i>Ki K Buck</i>

Sample Name: LCSW A3 Acquired: 2/28/2017 18:35:39 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-03

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.59892	.18942	2.4772	.49244	.50090	.48675	.24149
Stddev	.00618	.00866	.0093	.00236	.00042	.00102	.00146
%RSD	1.0315	4.5695	.37568	.47864	.08441	.20874	.60267

#1	.59695	.18463	2.4664	.49011	.50043	.48600	.24297
#2	.60585	.19941	2.4830	.49482	.50125	.48790	.24006
#3	.59398	.18422	2.4821	.49240	.50103	.48634	.24144

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.49110	.47896	F -.08812
Stddev	.00171	.00121	.69060
%RSD	.34831	.25255	783.72

#1	.48968	.47784	.54119
#2	.49300	.47880	.02139
#3	.49062	.48024	-.82693

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4907.7	69659.	8249.9
Stddev	14.5	118.	54.5
%RSD	.29486	.16884	.66003

#1	4891.0	69793.	8312.4
#2	4914.8	69615.	8212.8
#3	4917.2	69571.	8224.4

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120101 Acquired: 2/28/2017 18:39:22 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00094	.03864	.00256	.14476	.18418	.00005	69.876
Stddev	.00137	.00054	.00493	.00261	.00098	.00006	.078
%RSD	145.14	1.4010	192.56	1.8052	.53417	117.61	.11204

#1	.00054	.03920	-.00301	.14177	.18441	.00009	69.965
#2	-.00122	.03812	.00635	.14659	.18310	-.00002	69.845
#3	-.00215	.03861	.00434	.14593	.18503	.00007	69.818

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00002	.00785	.00527	.00353	.25685	6.8923	.02478
Stddev	.00046	.00074	.00014	.00078	.01108	.2075	.00271
%RSD	1857.3	9.4770	2.6265	22.029	4.3152	3.0102	10.926

#1	.00049	.00859	.00511	.00438	.25517	6.6939	.02551
#2	.00002	.00710	.00535	.00286	.24671	6.8752	.02705
#3	-.00043	.00785	.00535	.00335	.26868	7.1078	.02178

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.9792	.14242	.00681	F 1790.3	.02199	4.0794	-.00139
Stddev	.0179	.00189	.00035	35.9	.00039	.0180	.00292
%RSD	.17888	1.3259	5.1973	2.0061	1.7901	.44064	210.40

#1	9.9654	.14159	.00683	1823.2	.02232	4.0906	-.00332
#2	9.9994	.14458	.00716	1752.0	.02211	4.0889	.00197
#3	9.9729	.14108	.00645	1795.7	.02155	4.0587	-.00282

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-.50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120101 Acquired: 2/28/2017 18:39:22 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01358	-.00389	3.5321	.00016	3.6731	-.00202	-.00709
Stddev	.00392	.01479	.0117	.00176	.0117	.00277	.00585
%RSD	28.858	380.50	.33160	1073.6	.31816	136.71	82.594

#1	.01579	.00059	3.5198	.00082	3.6842	.00113	-.00444
#2	.01590	-.02039	3.5432	-.00183	3.6609	-.00317	-.00302
#3	.00906	.00815	3.5332	.00150	3.6743	-.00403	-.01380

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00116	.07326	F -1.6544
Stddev	.00152	.00022	.8788
%RSD	130.87	.30197	53.117

#1	.00164	.07304	-2.5482
#2	-.00054	.07325	-.79145
#3	.00238	.07348	-1.6236

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4313.4	58762.	8194.1
Stddev	19.5	401.	100.8
%RSD	.45116	.68251	1.2302

#1	4333.3	58797.	8131.5
#2	4312.4	59145.	8310.4
#3	4294.4	58345.	8140.5

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120301 Acquired: 2/28/2017 18:43:17 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00177	.14676	.00489	.14260	.28726	.00008	102.28
Stddev	.00058	.00380	.00270	.00125	.00128	.00009	.37
%RSD	32.515	2.5896	55.132	.87793	.44605	104.75	.36336

#1	-.00209	.14484	.00688	.14338	.28848	.00017	102.63
#2	-.00111	.14430	.00182	.14326	.28593	-.00000	101.89
#3	-.00212	.15114	.00597	.14115	.28736	.00008	102.32

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00099	.01137	.00755	.00835	3.0251	6.5849	.02194
Stddev	.00016	.00005	.00052	.00245	.0213	.0781	.00501
%RSD	16.015	.46503	6.8981	29.374	.70257	1.1868	22.840

#1	.00093	.01140	.00752	.00586	3.0028	6.5082	.02769
#2	.00116	.01139	.00809	.00844	3.0451	6.5821	.01961
#3	.00086	.01130	.00705	.01076	3.0273	6.6645	.01852

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	24.581	.54855	.00591	F 1672.4	.02974	1.9732	-.00311
Stddev	.015	.00442	.00074	26.6	.00168	.0066	.00319
%RSD	.05981	.80634	12.500	1.5905	5.6391	.33284	102.78

#1	24.596	.55303	.00562	1697.3	.02781	1.9707	-.00222
#2	24.580	.54418	.00536	1644.4	.03068	1.9683	-.00665
#3	24.566	.54845	.00675	1675.5	.03074	1.9807	-.00045

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-.50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120301 Acquired: 2/28/2017 18:43:17 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00361	.00205	6.1943	.00083	4.0477	-.00338	-.00663
Stddev	.00550	.00802	.0114	.00022	.0163	.00265	.00403
%RSD	152.25	391.59	.18359	27.205	.40157	78.354	60.770

#1	.00968	-.00631	6.1852	.00059	4.0552	-.00264	-.00996
#2	-.00103	.00276	6.1907	.00086	4.0291	-.00118	-.00776
#3	.00218	.00969	6.2071	.00103	4.0590	-.00633	-.00215

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00135	.30848	F -2.5471
Stddev	.00100	.00050	.7053
%RSD	73.763	.16255	27.689

#1	.00223	.30792	-2.1041
#2	.00157	.30890	-3.3604
#3	.00027	.30862	-2.1768

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4303.5	58507.	8075.8
Stddev	9.8	157.	45.3
%RSD	.22813	.26879	.56091

#1	4299.1	58564.	8032.8
#2	4314.7	58628.	8123.1
#3	4296.6	58329.	8071.5

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120301PS Acquired: 2/28/2017 18:47:11 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604140-03

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20741	4.4777	.20500	1.0754	.75486	.02618	97.102
Stddev	.00153	.0196	.00569	.0019	.00140	.00001	.049
%RSD	.73713	.43706	2.7740	.17940	.18489	.04720	.05027

#1	.20860	4.4900	.20131	1.0735	.75339	.02618	97.046
#2	.20795	4.4551	.20214	1.0753	.75616	.02617	97.135
#3	.20569	4.4879	.21155	1.0774	.75502	.02619	97.125

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02539	.10571	.25789	.24749	4.6196	34.152	.55603
Stddev	.00043	.00093	.00055	.00201	.0444	.250	.00363
%RSD	1.6994	.88430	.21426	.81370	.96037	.73345	.65237

#1	.02579	.10602	.25795	.24953	4.5725	33.865	.55885
#2	.02545	.10645	.25731	.24743	4.6256	34.325	.55730
#3	.02493	.10466	.25841	.24551	4.6606	34.266	.55194

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	27.027	.73203	.49659	F 1586.6	.26244	6.9566	.22912
Stddev	.070	.00349	.00163	11.9	.00278	.0570	.00035
%RSD	.25986	.47707	.32845	.75240	1.0586	.81946	.15148

#1	27.076	.72880	.49709	1575.3	.26456	6.9496	.22880
#2	27.058	.73156	.49792	1585.4	.26348	7.0168	.22907
#3	26.947	.73574	.49477	1599.1	.25930	6.9034	.22948

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120301PS Acquired: 2/28/2017 18:47:11 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604140-03

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.61035	.18859	8.0468	.47325	4.1403	.48113	.21027
Stddev	.00159	.00363	.0580	.00278	.0065	.00968	.00095
%RSD	.26072	1.9233	.72143	.58806	.15583	2.0121	.44970

#1	.60995	.18926	8.0610	.47264	4.1363	.48709	.21048
#2	.61210	.18468	8.0964	.47629	4.1478	.48634	.20923
#3	.60900	.19184	7.9830	.47083	4.1369	.46996	.21109

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.51019	.76093	F -1.4366
Stddev	.00080	.00449	.7250
%RSD	.15739	.59053	50.470

#1	.51111	.76258	-.60338
#2	.50965	.76437	-1.9240
#3	.50980	.75585	-1.7823

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4299.0	58541.	8019.4
Stddev	13.5	218.	34.6
%RSD	.31511	.37255	.43127

#1	4312.5	58656.	8052.1
#2	4285.4	58678.	8022.7
#3	4299.1	58290.	7983.2

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120301SDL Acquired: 2/28/2017 18:51:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 5 Custom ID2: Custom ID3:
 Comment: WG604140-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00324	.02774	.00016	.03023	.05719	.00008	20.698
Stddev	.00147	.00114	.00603	.00212	.00028	.00004	.061
%RSD	45.287	4.0983	3836.9	6.9984	.48879	51.497	.29233

#1	-.00169	.02644	.00127	.03174	.05717	.00012	20.766
#2	-.00461	.02818	-.00635	.03115	.05692	.00007	20.678
#3	-.00341	.02858	.00555	.02781	.05748	.00004	20.650

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00034	.00224	-.00034	.00299	.61360	1.6585	.00430
Stddev	.00037	.00014	.00052	.00134	.01921	.0640	.00140
%RSD	109.16	6.0602	149.80	44.728	3.1302	3.8616	32.558

#1	-.00040	.00228	-.00092	.00445	.59179	1.6426	.00580
#2	.00006	.00209	-.00018	.00269	.62796	1.6039	.00302
#3	-.00067	.00236	.00007	.00183	.62106	1.7290	.00410

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.9314	.10976	.00205	F 449.20	.00572	.38980	-.00160
Stddev	.0771	.00188	.00032	4.45	.00092	.00033	.00351
%RSD	1.5638	1.7123	15.702	.99050	16.038	.08531	220.19

#1	4.9780	.11106	.00169	452.13	.00605	.39008	-.00162
#2	4.8424	.11061	.00229	444.08	.00643	.38990	-.00510
#3	4.9739	.10760	.00219	451.39	.00468	.38943	.00193

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-.50000			

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120301SDL Acquired: 2/28/2017 18:51:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 5 Custom ID2: Custom ID3:
 Comment: WG604140-04

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00905	-.00914	1.2221	.00030	.79780	-.00112	.00030
Stddev	.00248	.00934	.0045	.00082	.00072	.00192	.00029
%RSD	27.394	102.19	.36728	274.39	.09021	171.68	99.352

#1	.01079	-.00249	1.2229	-.00041	.79714	.00053	.00059
#2	.00621	-.01983	1.2262	.00119	.79856	-.00066	.00001
#3	.01014	-.00511	1.2173	.00011	.79769	-.00323	.00029

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	-.00003	.06125	F -1.5455
Stddev	.00098	.00040	1.4309
%RSD	2854.6	.64837	92.587

#1	.00021	.06148	-1.9975
#2	.00080	.06148	-2.6959
#3	-.00112	.06079	.05684

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4769.0	65845.	8287.5
Stddev	7.7	161.	49.9
%RSD	.16153	.24423	.60191

#1	4774.7	65935.	8232.6
#2	4760.3	65659.	8330.1
#3	4772.1	65940.	8299.7

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702125304 Acquired: 2/28/2017 18:54:56 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00014	-0.00253	.00362	.00675	1.5745	-0.00003	F 327.38
Stddev	.00098	.00159	.00544	.00114	.0040	.00005	.37
%RSD	711.12	62.714	150.43	16.822	.25517	195.87	.11361

#1	.00021	-.00411	.00787	.00806	1.5701	.00003	327.27
#2	-.00088	-.00094	-.00251	.00600	1.5781	-.00003	327.80
#3	.00108	-.00254	.00549	.00620	1.5751	-.00007	327.08

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00052	.00135	-0.00249	.00472	2.4375	22.233	.08161
Stddev	.00052	.00014	.00066	.00170	.0121	.166	.00167
%RSD	100.19	10.593	26.385	36.119	.49606	.74631	2.0502

#1	.00085	.00135	-.00236	.00668	2.4257	22.057	.07976
#2	.00079	.00149	-.00320	.00364	2.4369	22.254	.08203
#3	-.00008	.00120	-.00190	.00383	2.4499	22.387	.08303

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.9853	.51833	.00064	11.515	.01056	.01798	.00075
Stddev	.0996	.00258	.00040	.030	.00108	.00716	.00073
%RSD	1.4261	.49800	61.924	.26237	10.247	39.821	97.459

#1	7.0673	.51548	.00043	11.519	.00947	.01263	.00094
#2	6.8744	.51901	.00040	11.543	.01056	.02612	-.00006
#3	7.0142	.52050	.00110	11.483	.01164	.01520	.00138

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702125304 Acquired: 2/28/2017 18:54:56 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00506	-.00148	.30082	.00102	1.4405	-.02019	-.00025
Stddev	.00159	.00444	.00047	.00059	.0029	.00391	.00662
%RSD	31.514	299.42	.15500	57.217	.20196	19.390	2610.6

#1	.00456	.00237	.30109	.00169	1.4372	-.02187	-.00522
#2	.00377	-.00048	.30028	.00081	1.4428	-.01571	.00727
#3	.00684	-.00634	.30108	.00057	1.4413	-.02298	-.00281

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00052	.00172	F -.73320
Stddev	.00092	.00010	.84752
%RSD	177.28	5.8223	115.59

#1	.00158	.00167	-.77073
#2	.00006	.00183	-1.5613
#3	-.00008	.00165	.13246

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4897.7	69839.	8629.8
Stddev	14.8	200.	66.9
%RSD	.30178	.28642	.77471

#1	4913.4	69995.	8696.7
#2	4895.7	69908.	8629.8
#3	4884.1	69613.	8562.9

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702125306 Acquired: 2/28/2017 18:58:43 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0125	.01758	.00084	.00573	.29461	.00002	F 290.33
Stddev	.00060	.00277	.00541	.00364	.00092	.00006	1.16
%RSD	48.337	15.760	641.58	63.451	.31375	274.51	.39885

#1	-0.0194	.01988	-0.0100	.00532	.29431	.00004	290.50
#2	-0.0101	.01834	.00694	.00956	.29565	-.00005	291.39
#3	-0.0080	.01450	-0.0341	.00232	.29388	.00007	289.09

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00025	.00038	-0.0063	.00580	.00363	19.100	.08858
Stddev	.00012	.00022	.00045	.00092	.00651	.080	.00257
%RSD	47.472	57.684	71.229	15.767	179.37	.41947	2.8985

#1	.00011	.00061	-0.0049	.00475	.00230	19.169	.08562
#2	.00033	.00038	-0.0027	.00624	-.00211	19.012	.09000
#3	.00029	.00016	-0.0114	.00641	.01070	19.118	.09013

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.06786	-0.0042	.00121	7.1908	.16430	.02152	-0.0028
Stddev	.05115	.00221	.00022	.0554	.00055	.00376	.00326
%RSD	75.372	520.61	18.366	.77057	.33523	17.474	1147.5

#1	.12415	-0.00265	.00103	7.2039	.16406	.02038	-0.00404
#2	.02424	-0.00039	.00146	7.2385	.16391	.02571	.00189
#3	.05519	.00177	.00114	7.1300	.16493	.01845	.00129

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702125306 Acquired: 2/28/2017 18:58:43 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00376	.00327	.29297	.00214	.64444	-.01882	-.00522
Stddev	.00532	.00878	.00207	.00124	.00012	.00165	.00283
%RSD	141.56	268.55	.70595	58.038	.01937	8.7909	54.144

#1	-.00201	-.00089	.29137	.00351	.64449	-.01693	-.00839
#2	.00046	-.00266	.29223	.00185	.64430	-.01997	-.00296
#3	-.00974	.01336	.29531	.00107	.64453	-.01957	-.00430

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00144	.00206	.42104
Stddev	.00087	.00011	.91317
%RSD	60.539	5.3359	216.88

#1	.00063	.00202	1.4159
#2	.00134	.00197	-.37895
#3	.00237	.00218	.22615

Check ?	Chk Pass	Chk Pass	Chk Pass
High Limit			
Low Limit			

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4914.3	70080.	8569.4
Stddev	10.0	165.	50.5
%RSD	.20297	.23600	.58877

#1	4925.4	70250.	8511.9
#2	4911.6	70071.	8606.1
#3	4906.0	69919.	8590.3

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 19:02:32 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40925	10.258	.41120	.50346	1.0315	.05111	10.301
Stddev	.00384	.019	.00479	.00419	.0016	.00006	.027
%RSD	.93948	.18752	1.1644	.83207	.15802	.11170	.25957

#1	.40593	10.247	.40844	.50191	1.0334	.05113	10.330
#2	.41347	10.280	.41672	.50821	1.0309	.05116	10.297
#3	.40836	10.247	.40843	.50027	1.0303	.05105	10.277

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05088	.20497	.51380	.51630	3.9458	52.342	1.0703
Stddev	.00054	.00041	.00296	.00114	.0271	.219	.0026
%RSD	1.0650	.19887	.57682	.22052	.68787	.41760	.23812

#1	.05094	.20518	.51386	.51720	3.9577	52.578	1.0679
#2	.05031	.20450	.51673	.51668	3.9148	52.302	1.0700
#3	.05138	.20523	.51081	.51502	3.9650	52.147	1.0729

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.9582	.49938	1.0131	51.990	.51098	10.224	.52158
Stddev	.0466	.00076	.0010	.139	.00226	.028	.00612
%RSD	.46843	.15161	.09467	.26681	.44192	.27722	1.1732

#1	9.9087	.49950	1.0122	51.951	.51340	10.254	.51896
#2	9.9643	.49857	1.0141	51.875	.50893	10.221	.52858
#3	10.001	.50007	1.0131	52.144	.51062	10.197	.51721

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 19:02:32 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2526	.41082	5.1189	1.0153	1.0289	.98336	.50426
Stddev	.0026	.00212	.0131	.0020	.0005	.00535	.00624
%RSD	.20390	.51573	.25542	.19553	.05214	.54362	1.2371

#1	1.2528	.41189	5.1211	1.0174	1.0287	.98150	.49891
#2	1.2499	.40837	5.1308	1.0134	1.0296	.98939	.50274
#3	1.2550	.41218	5.1049	1.0152	1.0286	.97920	.51111

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0112	1.0056	F 1.1218
Stddev	.0016	.0016	.5202
%RSD	.15585	.16315	46.376

#1	1.0127	1.0037	.64850
#2	1.0113	1.0064	1.6788
#3	1.0096	1.0066	1.0380

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4906.1	67973.	8136.5
Stddev	16.7	71.	39.6
%RSD	.34018	.10440	.48701

#1	4921.3	68026.	8090.8
#2	4908.7	67893.	8161.6
#3	4888.3	68001.	8157.1

Approved: March 01, 2017

K: K Buck

Sample Name: CCB Acquired: 2/28/2017 19:06:08 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00180	-0.01223	-0.00256	.00378	.00057	.00013	-0.00467
Stddev	.00098	.00442	.00621	.00146	.00031	.00005	.01059
%RSD	54.618	36.153	242.64	38.645	54.229	42.664	226.55

#1	-0.00127	-0.01159	-0.00552	.00211	.00053	.00009	-0.00939
#2	-0.00119	-0.01693	.00457	.00482	.00090	.00019	.00745
#3	-0.00293	-0.00816	-0.00673	.00440	.00028	.00010	-0.01209

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00037	-0.00034	-0.00098	-0.00022	.00602	.27526	.00054
Stddev	.00022	.00064	.00116	.00363	.00787	.01820	.00276
%RSD	59.070	189.78	117.86	1654.5	130.68	6.6108	514.51

#1	.00038	-0.00012	-0.00112	.00274	.00740	.28085	.00159
#2	.00057	-0.00105	.00024	-0.00427	-0.00244	.29000	.00262
#3	.00014	.00016	-0.00207	.00088	.01311	.25492	-0.00260

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00326	-0.00100	.00135	.24365	-0.00116	.00303	.00115
Stddev	.04498	.00131	.00071	.02144	.00091	.01456	.00303
%RSD	1377.8	130.33	52.481	8.7990	77.893	479.70	263.38

#1	.04272	-0.00047	.00183	.22885	-0.00213	.00299	-0.00158
#2	-0.00535	-0.00250	.00167	.26823	-0.00101	-0.01150	.00061
#3	-0.04717	-0.00005	.00053	.23385	-0.00034	.01761	.00441

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

K. K. Buck

Sample Name: CCB Acquired: 2/28/2017 19:06:08 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0131	-0.0332	.00188	-0.0052	.00015	.00342	-0.0094
Stddev	.00463	.00984	.00545	.00038	.00017	.00106	.00729
%RSD	353.63	296.67	289.71	73.097	111.30	31.078	776.28

#1	-0.0335	.00615	-0.0088	-0.0065	.00016	.00267	-0.0066
#2	-0.0457	-0.0262	-0.0163	-0.0082	.00032	.00464	.00621
#3	.00399	-0.01349	.00815	-0.0009	-0.0002	.00295	-0.0837

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00015	-0.0072	F .05692
Stddev	.00089	.00013	.48543
%RSD	580.55	18.049	852.87

#1	.00087	-0.0085	-0.50350
#2	-0.0085	-0.0070	.34667
#3	.00044	-0.0060	.32758

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4984.7	70762.	8311.2
Stddev	7.9	107.	38.1
%RSD	.15928	.15117	.45784

#1	4993.5	70810.	8267.3
#2	4978.2	70837.	8334.2
#3	4982.3	70640.	8332.2

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702126105 Acquired: 2/28/2017 19:10:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-01

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00344	.03117	.01976	.08244	2.9076	.00022	F 1172.9
Stddev	.00055	.01017	.00562	.00495	.0038	.00005	8.7
%RSD	15.985	32.625	28.444	6.0044	.13093	23.423	.74591

#1	-0.00373	.02872	.01352	.08810	2.9107	.00017	1180.5
#2	-0.00378	.04235	.02442	.08026	2.9088	.00028	1174.7
#3	-0.00280	.02246	.02133	.07895	2.9034	.00021	1163.3

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00306	.00083	-0.00039	.01677	4.9829	232.25	1.2875
Stddev	.00049	.00019	.00085	.00113	.0128	.45	.0041
%RSD	15.912	22.863	218.38	6.7254	.25642	.19267	.31647

#1	.00362	.00079	-0.00112	.01782	4.9961	232.73	1.2841
#2	.00279	.00104	-0.00059	.01691	4.9821	232.16	1.2863
#3	.00276	.00067	.00054	.01558	4.9705	231.85	1.2920

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.552	2.1053	.00703	71.700	.06444	.04970	.00272
Stddev	.054	.0056	.00029	.102	.00231	.01415	.00518
%RSD	.39611	.26594	4.1491	.14264	3.5776	28.462	190.42

#1	13.557	2.1048	.00727	71.714	.06630	.06434	-.00251
#2	13.496	2.1111	.00671	71.795	.06516	.03610	.00785
#3	13.603	2.0999	.00712	71.592	.06186	.04866	.00282

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702126105 Acquired: 2/28/2017 19:10:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-01

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00965	F -0.02512	2.5516	.00280	5.8888	F -0.07436	-0.00840
Stddev	.00271	.01944	.0100	.00106	.0076	.00607	.00997
%RSD	28.061	77.368	.39328	37.904	.12839	8.1609	118.65

#1	-0.00654	-0.04751	2.5510	.00260	5.8948	-0.08045	-0.01982
#2	-0.01088	-0.01263	2.5419	.00395	5.8914	-0.07431	-0.00398
#3	-0.01152	-0.01522	2.5620	.00186	5.8803	-0.06831	-0.00141

Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit		90.000				36.000	
Low Limit		-0.01000				-0.03000	

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	-0.00080	.00090	F -2.4714
Stddev	.00117	.00008	.7421
%RSD	146.45	8.9623	30.029

#1	-0.00160	.00087	-3.3217
#2	.00054	.00084	-1.9544
#3	-0.00133	.00099	-2.1380

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-0.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4350.2	61296.	8162.9
Stddev	16.6	267.	21.7
%RSD	.38182	.43547	.26537

#1	4365.1	61342.	8139.9
#2	4353.2	61537.	8165.7
#3	4332.3	61009.	8183.0

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702126105MS Acquired: 2/28/2017 19:13:54 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20999	4.5847	.22859	1.0342	3.4763	.02476	F 1179.7
Stddev	.00097	.0205	.00108	.0019	.0061	.00012	13.8
%RSD	.46272	.44733	.47197	.18004	.17489	.47500	1.1737

#1	.21028	4.5978	.22886	1.0351	3.4824	.02465	1163.8
#2	.21079	4.5611	.22740	1.0354	3.4703	.02473	1189.3
#3	.20891	4.5952	.22951	1.0320	3.4761	.02488	1186.0

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02874	.09530	.24121	.25470	6.9136	261.87	1.8794
Stddev	.00037	.00065	.00152	.00312	.0081	.80	.0020
%RSD	1.2879	.68245	.63132	1.2232	.11658	.30514	.10441

#1	.02916	.09469	.24081	.25785	6.9131	262.41	1.8816
#2	.02850	.09599	.23993	.25463	6.9219	260.95	1.8789
#3	.02855	.09522	.24290	.25162	6.9059	262.25	1.8778

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.449	2.3787	.49583	99.426	.29621	5.1330	.23202
Stddev	.088	.0050	.00089	.117	.00151	.0060	.00839
%RSD	.47469	.21231	.17864	.11736	.51088	.11610	3.6155

#1	18.349	2.3766	.49558	99.308	.29691	5.1382	.23856
#2	18.484	2.3751	.49509	99.428	.29724	5.1343	.23495
#3	18.513	2.3845	.49681	99.542	.29447	5.1265	.22256

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702126105MS Acquired: 2/28/2017 19:13:54 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-04

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.60985	.16696	5.2611	.46700	6.5307	.40625	.20508
Stddev	.00285	.01201	.0024	.00117	.0210	.00847	.00615
%RSD	.46750	7.1930	.04617	.25104	.32150	2.0850	2.9995

#1	.61035	.17421	5.2616	.46590	6.5509	.41434	.20872
#2	.60678	.17357	5.2633	.46686	6.5090	.39744	.19798
#3	.61242	.15309	5.2585	.46823	6.5321	.40697	.20855

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.49690	.46005	F -2.4403
Stddev	.00190	.00104	.6887
%RSD	.38303	.22632	28.222

#1	.49683	.45913	-2.2097
#2	.49504	.45984	-1.8965
#3	.49884	.46118	-3.2147

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4325.8	60590.	8007.6
Stddev	3.2	112.	18.3
%RSD	.07374	.18503	.22861

#1	4323.2	60717.	8023.9
#2	4329.4	60547.	8011.2
#3	4324.8	60506.	7987.8

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702126105MSD Acquired: 2/28/2017 19:17:44 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-05

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.21044	4.5722	.22855	1.0333	3.5011	.02466	F 1196.2
Stddev	.00148	.0053	.00613	.0040	.0067	.00009	14.3
%RSD	.70233	.11669	2.6837	.39094	.19289	.37737	1.1988

#1	.21198	4.5781	.23559	1.0380	3.4945	.02459	1185.2
#2	.20903	4.5678	.22433	1.0307	3.5007	.02477	1191.0
#3	.21033	4.5707	.22574	1.0314	3.5080	.02463	1212.4

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02874	.09517	.24079	.25570	6.9649	264.96	1.8877
Stddev	.00002	.00024	.00164	.00107	.0469	.71	.0083
%RSD	.06762	.25101	.68047	.41798	.67307	.26894	.44100

#1	.02873	.09493	.24085	.25556	6.9160	264.17	1.8840
#2	.02876	.09541	.24240	.25472	7.0094	265.18	1.8820
#3	.02872	.09519	.23912	.25684	6.9692	265.54	1.8973

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.485	2.3830	.49815	99.731	.29721	5.1275	.23106
Stddev	.085	.0023	.00042	.189	.00246	.0166	.00586
%RSD	.46224	.09464	.08443	.18925	.82697	.32297	2.5376

#1	18.387	2.3839	.49768	99.610	.29459	5.1090	.23581
#2	18.524	2.3805	.49849	99.634	.29758	5.1324	.22451
#3	18.544	2.3847	.49828	99.948	.29946	5.1411	.23288

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702126105MSD Acquired: 2/28/2017 19:17:44 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604065-05

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.60632	.18228	5.2908	.46527	6.5926	.39677	.20470
Stddev	.01277	.00921	.0073	.00048	.0159	.00258	.00365
%RSD	2.1055	5.0553	.13777	.10349	.24183	.64948	1.7836

#1	.61850	.17460	5.2960	.46572	6.5753	.39471	.20379
#2	.60740	.19250	5.2940	.46533	6.5958	.39593	.20873
#3	.59304	.17974	5.2825	.46477	6.6067	.39966	.20160

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.49442	.46092	F -3.1097
Stddev	.00108	.00093	.6277
%RSD	.21936	.20149	20.186

#1	.49320	.45986	-2.8833
#2	.49527	.46134	-3.8192
#3	.49479	.46157	-2.6266

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4340.0	60748.	7984.7
Stddev	4.3	51.	71.9
%RSD	.09824	.08475	.90018

#1	4335.3	60745.	8063.3
#2	4341.1	60698.	7968.3
#3	4343.7	60801.	7922.4

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 19:21:36 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40617	10.216	.40452	.50323	1.0299	.05065	10.341
Stddev	.00468	.012	.00355	.00353	.0019	.00006	.029
%RSD	1.1529	.11748	.87846	.70123	.18068	.11921	.28202

#1	.40302	10.205	.40768	.50672	1.0278	.05072	10.307
#2	.41155	10.213	.40520	.49966	1.0313	.05062	10.353
#3	.40394	10.229	.40067	.50329	1.0306	.05062	10.362

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05059	.20381	.50769	.51369	3.9185	53.063	1.0711
Stddev	.00034	.00049	.00193	.00302	.0172	.168	.0065
%RSD	.67726	.23894	.38070	.58882	.43950	.31644	.60556

#1	.05024	.20412	.50897	.51215	3.8987	52.877	1.0691
#2	.05060	.20325	.50547	.51174	3.9296	53.204	1.0784
#3	.05093	.20406	.50864	.51717	3.9273	53.107	1.0659

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.9421	.49318	1.0097	52.163	.51057	10.096	.51460
Stddev	.0564	.00249	.0037	.082	.00097	.035	.00156
%RSD	.56701	.50568	.36313	.15757	.19035	.34464	.30367

#1	9.8837	.49074	1.0139	52.094	.51052	10.135	.51535
#2	9.9962	.49572	1.0078	52.254	.50963	10.067	.51280
#3	9.9465	.49309	1.0074	52.142	.51157	10.088	.51564

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 19:21:36 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2298	.39416	5.0820	1.0103	1.0278	.98889	.50813
Stddev	.0034	.01301	.0106	.0028	.0032	.01141	.01339
%RSD	.27272	3.3006	.20880	.27343	.31127	1.1536	2.6353

#1	1.2327	.40903	5.0914	1.0109	1.0242	.97669	.51441
#2	1.2261	.38859	5.0705	1.0073	1.0287	.99069	.49276
#3	1.2305	.38486	5.0842	1.0127	1.0304	.99929	.51723

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0074	1.0033	F .45891
Stddev	.0018	.0013	.22777
%RSD	.18203	.12877	49.632

#1	1.0090	1.0043	.72183
#2	1.0054	1.0018	.32198
#3	1.0077	1.0037	.33291

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4903.3	68632.	8155.8
Stddev	16.3	98.	45.8
%RSD	.33228	.14350	.56103

#1	4906.2	68536.	8205.0
#2	4918.0	68627.	8148.0
#3	4885.8	68733.	8114.5

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 19:25:13 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00140	-0.01616	-0.00162	.00202	-0.00007	.00005	.00008	-0.00020
Stddev	.00013	.00217	.00581	.00127	.00112	.00004	.02902	.00044
%RSD	9.2946	13.456	358.46	62.725	1580.5	73.471	36355.	219.12

#1	-0.00150	-0.01367	.00507	.00080	-0.00061	.00002	.03227	-0.00069
#2	-0.00144	-0.01713	-0.00447	.00193	-0.00082	.00004	-0.00795	.00017
#3	-0.00125	-0.01768	-0.00546	.00333	.00122	.00009	-0.02407	-0.00008

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00025	-0.00105	-0.00005	-0.01714	.43343	.00036	-0.04471	.00013
Stddev	.00029	.00103	.00070	.02798	.03165	.00530	.05296	.00161
%RSD	115.33	98.074	1407.5	163.28	7.3015	1472.8	118.45	1251.7

#1	-0.00023	-0.00073	-0.00086	-0.04941	.40411	.00012	.01354	-0.00139
#2	.00003	-0.00220	.00043	-0.00248	.42919	-0.00482	-0.05772	-0.00003
#3	-0.00054	-0.00022	.00028	.00047	.46698	.00578	-0.08996	.00181

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00053	.13912	.00064	.00737	-0.00314	.00171	.00599	.00402
Stddev	.00045	.01912	.00054	.00888	.00094	.00233	.00943	.00351
%RSD	85.235	13.746	83.131	120.40	30.005	135.81	157.43	87.161

#1	.00046	.11716	.00026	.00363	-0.00366	.00008	.00527	.00204
#2	.00101	.15208	.00042	.00098	-0.00372	.00068	.01575	.00807
#3	.00012	.14814	.00126	.01751	-0.00205	.00438	-0.00306	.00196

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

K. K. Buck

Sample Name: CCB Acquired: 2/28/2017 19:25:13 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00041	-.00018	.00333	.00067	.00091	-.00063	-.00014
Stddev	.00056	.00036	.00339	.00331	.00107	.00022	.84070
%RSD	137.77	196.36	101.64	494.62	117.94	35.063	601680.

#1	-.00024	.00016	.00294	-.00315	.00212	-.00089	.84042
#2	.00073	-.00015	.00016	.00243	.00050	-.00055	.00014
#3	.00074	-.00056	.00690	.00273	.00010	-.00047	-.84097

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4914.5	70154.	8041.3
Stddev	31.2	222.	31.2
%RSD	.63515	.31676	.38826

#1	4926.0	70310.	8021.7
#2	4879.2	70252.	8077.3
#3	4938.3	69899.	8024.9

Approved: March 01, 2017

Ki K Buck

Sample Name: PBW 8A Acquired: 2/28/2017 19:29:03 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604236-02

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0062	-0.01385	-0.00286	.00189	.00045	.00007	-0.00864
Stddev	.00021	.00498	.00142	.00130	.00065	.00006	.00461
%RSD	33.269	35.953	49.429	68.534	143.89	82.027	53.315

#1	-0.0065	-0.01340	-0.00132	.00319	.00112	.00013	-0.00332
#2	-0.0040	-0.01905	-0.00316	.00190	.00040	.00004	-0.01131
#3	-0.0081	-0.00912	-0.00411	.00059	-0.00017	.00003	-0.01129

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0024	-0.0011	-0.00105	.00036	.02521	.28430	.00033
Stddev	.00053	.00044	.00115	.00110	.00857	.04301	.00176
%RSD	219.97	400.13	108.84	303.18	34.006	15.128	531.21

#1	-0.0054	.00037	.00027	.00149	.02301	.33144	-0.00123
#2	-0.0055	-0.0022	-0.00181	.00033	.01795	.24720	-0.00002
#3	.00037	-0.00048	-0.00162	-0.00072	.03466	.27426	.00224

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02028	.00026	.00056	.12531	.00080	-0.00482	.00026
Stddev	.03355	.00127	.00068	.01324	.00178	.00861	.00726
%RSD	165.47	487.55	120.64	10.568	222.91	178.67	2827.2

#1	-0.00298	.00131	.00132	.11276	-0.00040	-0.01060	.00842
#2	.00507	-0.00115	.00002	.13915	-0.00005	.00508	-0.00217
#3	.05874	.00061	.00035	.12403	.00285	-0.00893	-0.00548

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: PBW 8A Acquired: 2/28/2017 19:29:03 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604236-02

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00120	-0.00076	.00022	.00077	-0.00017	.00328	-0.00296
Stddev	.00142	.00253	.00220	.00122	.00007	.00251	.00858
%RSD	118.26	332.91	990.94	158.75	44.304	76.664	289.94

#1	.00214	.00138	.00084	.00217	-0.00008	.00434	-0.00334
#2	.00190	-0.00010	-0.00222	-0.00004	-0.00020	.00041	.00580
#3	-0.00043	-0.00355	.00205	.00017	-0.00022	.00510	-0.1133

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00037	.00052	F -.32856
Stddev	.00049	.00020	1.2494
%RSD	133.18	38.596	380.27

#1	.00085	.00055	-.31058
#2	.00038	.00031	.91176
#3	-0.00013	.00071	-1.5869

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-0.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5015.3	71617.	8132.6
Stddev	20.6	176.	64.2
%RSD	.41116	.24623	.78943

#1	5039.0	71486.	8083.1
#2	5005.4	71548.	8205.1
#3	5001.5	71817.	8109.5

Approved: March 01, 2017

Ki K Buck

Sample Name: LCSW 8A Acquired: 2/28/2017 19:32:52 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604236-03

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19879	5.1504	.19473	.91923	.51352	.02466	5.1043	.02471
Stddev	.00061	.0068	.00351	.00047	.00321	.00010	.0424	.00033
%RSD	.30602	.13195	1.8038	.05162	.62563	.41226	.83056	1.3480

#1	.19908	5.1501	.19503	.91936	.51188	.02455	5.0772	.02475
#2	.19809	5.1437	.19808	.91870	.51146	.02468	5.0825	.02502
#3	.19921	5.1573	.19107	.91963	.51722	.02475	5.1531	.02436

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10190	.24938	.25454	1.9636	26.209	.53111	4.9563	.24669
Stddev	.00030	.00148	.00215	.0434	.094	.00067	.0811	.00245
%RSD	.29681	.59253	.84364	2.2084	.35764	.12620	1.6357	.99470

#1	.10191	.25087	.25625	1.9736	26.266	.53035	5.0199	.24946
#2	.10160	.24935	.25213	1.9161	26.101	.53136	4.8650	.24478
#3	.10220	.24791	.25525	2.0011	26.261	.53162	4.9839	.24584

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50277	25.988	.25290	4.8457	.25687	.60033	.19204	2.5004
Stddev	.00079	.106	.00225	.0123	.00235	.00586	.00860	.0018
%RSD	.15780	.40698	.89006	.25306	.91631	.97534	4.4782	.07169

#1	.50368	25.991	.25102	4.8428	.25696	.59364	.18422	2.4983
#2	.50240	25.881	.25539	4.8592	.25448	.60278	.19063	2.5017
#3	.50223	26.093	.25228	4.8352	.25918	.60456	.20125	2.5011

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Approved: March 01, 2017

Ki K Buck

Sample Name: LCSW 8A Acquired: 2/28/2017 19:32:52 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604236-03

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49814	.51014	.49423	.24866	.49723	.48790	1.0805
Stddev	.00212	.00155	.00429	.00322	.00109	.00111	.6713
%RSD	.42468	.30294	.86730	1.2936	.21963	.22758	62.133
#1	.49987	.51097	.49767	.25033	.49602	.48901	.48520
#2	.49877	.50836	.48943	.25070	.49814	.48679	.94808
#3	.49578	.51109	.49561	.24495	.49755	.48791	1.8081

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4885.2	69215.	8056.4
Stddev	16.6	127.	26.3
%RSD	.34046	.18368	.32659
#1	4883.7	69333.	8046.0
#2	4869.3	69233.	8086.4
#3	4902.5	69080.	8036.9

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 19:36:35 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG603954-01

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00109	-0.00530	.00080	.00345	.00147	.00009	-0.00115	-0.00020
Stddev	.00078	.00462	.00414	.00147	.00042	.00003	.01695	.00024
%RSD	71.505	87.073	515.14	42.643	28.867	28.644	1477.4	121.46

#1	-0.00126	-0.00818	-0.00361	.00247	.00110	.00009	.01482	.00006
#2	-0.00178	-0.00776	.00143	.00273	.00193	.00012	-0.01894	-0.00042
#3	-0.00024	.00002	.00459	.00514	.00137	.00007	.00068	-0.00024

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00013	-0.00074	.00110	-0.01547	.42484	-0.00059	-0.04607	.00029
Stddev	.00038	.00109	.00226	.01288	.03801	.00124	.01941	.00088
%RSD	295.16	147.81	205.87	83.248	8.9479	212.58	42.123	307.13

#1	-0.00052	-0.00183	.00333	-.03012	.46872	-.00194	-.02368	.00077
#2	-0.00011	.00035	-.00119	-.00593	.40199	.00050	-.05656	.00081
#3	.00024	-.00073	.00115	-.01036	.40381	-.00032	-.05798	-.00073

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00091	144.04	-0.00221	-0.00323	-0.00334	.00683	.00120	.00232
Stddev	.00019	.08	.00158	.00171	.00191	.00559	.00541	.00148
%RSD	20.851	.05510	71.670	52.801	57.156	81.912	449.43	63.826

#1	.00113	143.95	-.00177	-.00128	-.00493	.00613	-.00500	.00271
#2	.00078	144.06	-.00396	-.00398	-.00122	.00161	.00367	.00068
#3	.00083	144.11	-.00089	-.00444	-.00386	.01273	.00495	.00356

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 19:36:35 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG603954-01

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00093	.00009	.00690	-.00701	.00051	.00321	.58976
Stddev	.00129	.00026	.00386	.00474	.00080	.00016	.67781
%RSD	137.92	287.53	55.955	67.544	157.29	4.9498	114.93

#1	.00077	-.00004	.00258	-.00234	-.00039	.00335	.84393
#2	-.00026	.00039	.01002	-.00690	.00116	.00304	-.17840
#3	.00229	-.00008	.00810	-.01181	.00076	.00325	1.1037

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4813.5	67479.	7967.4
Stddev	11.4	146.	89.6
%RSD	.23785	.21690	1.1250

#1	4815.4	67496.	7919.1
#2	4801.2	67616.	8070.8
#3	4823.9	67325.	7912.3

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 19:40:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG603954-02

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00170	-0.00636	-0.00223	-0.00069	.00223	.00000	.34485
Stddev	.00084	.00312	.00048	.00176	.00045	.00004	.30951
%RSD	49.085	49.084	21.491	254.11	20.249	1768.4	89.753

#1	-0.00118	-0.00564	-0.00168	-0.00209	.00216	-0.00004	.14895
#2	-0.00266	-0.00977	-0.00246	.00129	.00271	.00004	.70167
#3	-0.00126	-0.00365	-0.00255	-0.00128	.00182	.00001	.18393

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00015	.00042	-0.00102	-0.00031	.00808	.44359	-0.00164
Stddev	.00045	.00072	.00031	.00112	.00715	.05482	.00373
%RSD	303.30	169.49	29.933	358.19	88.565	12.358	228.00

#1	-0.00035	-0.00007	-0.00084	-0.00028	.00185	.38101	-0.00580
#2	.00028	.00125	-0.00138	-0.00145	.01589	.48309	-0.00051
#3	.00051	.00009	-0.00086	.00079	.00649	.46666	.00140

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00435	.00064	.00073	143.06	-0.00066	.00544	F -.00539
Stddev	.06348	.00138	.00062	.41	.00131	.00699	.00445
%RSD	1460.7	216.95	84.586	.28562	197.82	128.55	82.648

#1	.04835	-0.00092	.00010	143.21	-0.00089	-0.00259	-0.01037
#2	.03311	.00170	.00134	142.60	.00075	.00875	-0.00177
#3	-.06842	.00114	.00076	143.38	-0.00185	.01016	-0.00403

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							225.00
Low Limit							-0.00500

Approved: March 01, 2017

Ki K Buck

Sample Name: FBLK1 Acquired: 2/28/2017 19:40:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG603954-02

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00279	-.00342	.00435	.00127	.00255	-.00121	-.00081
Stddev	.00973	.00538	.00094	.00064	.00129	.00390	.00421
%RSD	348.34	156.99	21.670	50.003	50.524	322.93	522.52

#1	.01032	-.00724	.00331	.00124	.00159	-.00516	.00375
#2	.00625	.00272	.00515	.00192	.00401	.00264	-.00161
#3	-.00819	-.00575	.00458	.00065	.00204	-.00111	-.00456

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00100	.01953	.05010
Stddev	.00080	.00012	1.0904
%RSD	79.920	.63402	2176.4

#1	.00008	.01947	.98179
#2	.00141	.01967	.31776
#3	.00150	.01944	-1.1492

Check ?	Chk Pass	Chk Pass	Chk Pass
High Limit			
Low Limit			

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4825.0	68005.	8072.7
Stddev	17.9	147.	37.1
%RSD	.37120	.21623	.45937

#1	4843.3	68011.	8034.1
#2	4824.1	67855.	8108.0
#3	4807.5	68149.	8076.1

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702119701 Acquired: 2/28/2017 19:44:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00062	.00591	.00199	.08149	.04001	.00003	1.5322
Stddev	.00118	.00974	.00282	.00007	.00035	.00005	.0182
%RSD	189.83	164.80	141.46	.08102	.87873	156.50	1.1901

#1	-.00191	-.00534	-.00123	.08141	.03962	.00000	1.5158
#2	.00039	.01163	.00322	.08152	.04012	.00001	1.5518
#3	-.00033	.01144	.00399	.08153	.04030	.00009	1.5288

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00023	.00474	-.00085	.68811	.72238	.59746	.00189
Stddev	.00015	.00025	.00027	.00253	.01958	.07887	.00126
%RSD	64.152	5.2755	31.545	.36742	2.7098	13.201	66.847

#1	.00007	.00503	-.00076	.68979	.69991	.58960	.00291
#2	.00036	.00457	-.00064	.68520	.73572	.52282	.00229
#3	.00027	.00463	-.00115	.68933	.73151	.67997	.00048

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.17843	5.2769	.00101	133.63	.02704	F -.17328	-.00218
Stddev	.01179	.0102	.00076	.22	.00069	.00300	.00829
%RSD	6.6100	.19282	75.100	.16294	2.5553	1.7339	380.49

#1	.19188	5.2750	.00178	133.69	.02661	-.17129	-.00562
#2	.17353	5.2678	.00027	133.40	.02668	-.17183	.00728
#3	.16987	5.2879	.00097	133.82	.02784	-.17674	-.00820

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit						180.00	
Low Limit						-.10000	

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702119701 Acquired: 2/28/2017 19:44:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00054	-.00171	.41810	.00094	.00278	.00185	.00278
Stddev	.00522	.00231	.00236	.00054	.00043	.00205	.00533
%RSD	971.78	135.06	.56428	57.815	15.604	110.92	191.62

#1	.00592	-.00243	.42061	.00110	.00295	.00045	.00720
#2	-.00449	.00087	.41775	.00034	.00228	.00420	.00429
#3	.00018	-.00358	.41593	.00139	.00310	.00089	-.00314

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00063	.51179	F -.41996
Stddev	.00065	.00163	.07271
%RSD	103.25	.31860	17.314

#1	.00138	.51021	-.35683
#2	.00026	.51169	-.40360
#3	.00024	.51346	-.49946

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4954.9	69488.	8286.1
Stddev	10.4	271.	27.1
%RSD	.20967	.39039	.32744

#1	4943.0	69545.	8254.9
#2	4960.5	69193.	8303.6
#3	4961.4	69727.	8299.9

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120001 Acquired: 2/28/2017 19:48:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0016	.28881	.00301	.01523	.51921	.00003	23.318	.00092
Stddev	.00058	.00223	.00225	.00196	.00052	.00002	.060	.00017
%RSD	356.80	.77142	74.810	12.842	.10037	49.090	.25745	18.214

#1	.00013	.29026	.00463	.01360	.51861	.00001	23.249	.00111
#2	-.00083	.28624	.00044	.01468	.51942	.00004	23.349	.00086
#3	.00021	.28993	.00396	.01740	.51959	.00004	23.357	.00080

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.31076	-.00163	.00409	.05601	.51989	.00065	3.4109	1.1864
Stddev	.00060	.00034	.00110	.00124	.01013	.00228	.0088	.0022
%RSD	.19229	20.743	26.950	2.2199	1.9491	348.60	.25734	.18485

#1	.31114	-.00151	.00501	.05522	.50840	.00224	3.4206	1.1847
#2	.31007	-.00201	.00287	.05745	.52757	.00168	3.4035	1.1889
#3	.31107	-.00137	.00440	.05537	.52368	-.00196	3.4087	1.1857

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00339	10.975	.00139	2.4679	.00576	-.01734	.01726	.73212
Stddev	.00040	.070	.00131	.0112	.00140	.00182	.01274	.00095
%RSD	11.931	.63912	94.796	.45294	24.275	10.509	73.809	.12910

#1	.00375	10.897	.00037	2.4753	.00488	-.01524	.01949	.73116
#2	.00295	10.996	.00287	2.4733	.00504	-.01845	.00356	.73217
#3	.00347	11.032	.00092	2.4550	.00738	-.01834	.02874	.73304

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702120001 Acquired: 2/28/2017 19:48:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00444	.69404	.01544	-.00317	.00052	36.925	43.959
Stddev	.00133	.00083	.00274	.00087	.00061	.021	.829
%RSD	29.910	.11890	17.762	27.537	117.60	.05612	1.8866

#1	.00294	.69309	.01254	-.00409	.00002	36.937	44.867
#2	.00547	.69452	.01799	-.00235	.00035	36.901	43.769
#3	.00493	.69452	.01579	-.00308	.00120	36.937	43.241

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5239.9	75094.	8908.6
Stddev	18.9	402.	53.5
%RSD	.36106	.53500	.60101

#1	5251.6	75322.	8970.1
#2	5250.0	75331.	8872.9
#3	5218.1	74631.	8882.7

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120002 Acquired: 2/28/2017 19:51:44 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00167	1.4207	.00587	.02102	.54415	.00005	133.30
Stddev	.00058	.0036	.00131	.00225	.00178	.00003	.26
%RSD	34.614	.25619	22.288	10.699	.32757	65.510	.19850

#1	-0.00147	1.4249	.00664	.01961	.54454	.00005	133.20
#2	-0.00122	1.4190	.00436	.01984	.54570	.00002	133.60
#3	-0.00232	1.4182	.00661	.02362	.54221	.00008	133.10

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00247	.67162	.00119	.00377	.12138	.81005	.00070
Stddev	.00036	.00202	.00083	.00135	.01055	.06270	.00035
%RSD	14.647	.30017	69.968	35.945	8.6887	7.7398	49.646

#1	.00225	.67365	.00082	.00503	.13356	.82451	.00089
#2	.00288	.67159	.00213	.00234	.11533	.86425	.00092
#3	.00226	.66962	.00060	.00392	.11525	.74138	.00030

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	6.7300	1.6175	.00449	6.1905	-0.0022	27.724	-0.0026
Stddev	.0768	.0033	.00052	.0090	.00097	.109	.00289
%RSD	1.1406	.20296	11.557	.14521	445.16	.39346	1115.1

#1	6.7172	1.6138	.00395	6.1986	-0.00127	27.781	.00292
#2	6.6605	1.6200	.00454	6.1808	-0.00005	27.793	-0.00273
#3	6.8124	1.6187	.00499	6.1919	.00066	27.598	-0.00097

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702120002 Acquired: 2/28/2017 19:51:44 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -.02345	.01983	.92457	.00549	1.3768	.01237	-.01108
Stddev	.00398	.00103	.00481	.00139	.0046	.00445	.00594
%RSD	16.980	5.1990	.51985	25.291	.33361	35.965	53.612

#1	-.02793	.01884	.92620	.00389	1.3760	.00778	-.01506
#2	-.02210	.02089	.91916	.00619	1.3818	.01666	-.01393
#3	-.02032	.01975	.92834	.00639	1.3727	.01266	-.00425

Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	45.000						
Low Limit	-.02000						

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00040	F 105.44	9.8648
Stddev	.00021	.23	.6738
%RSD	50.882	.21888	6.8304

#1	.00020	105.71	10.548
#2	.00061	105.27	9.8463
#3	.00039	105.36	9.2004

Check ?	Chk Pass	Chk Fail	Chk Pass
High Limit		45.000	
Low Limit		-.01000	

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5094.1	73020.	8763.9
Stddev	32.9	74.	23.0
%RSD	.64564	.10102	.26193

#1	5091.0	73046.	8790.1
#2	5128.4	72937.	8754.4
#3	5062.8	73077.	8747.3

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702122801 Acquired: 2/28/2017 19:55:26 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00048	.04302	.00130	.03718	.00262	.00004	53.830
Stddev	.00024	.00441	.00184	.00193	.00035	.00005	.123
%RSD	50.638	10.260	140.94	5.1861	13.271	114.57	.22896

#1	-.00064	.04247	.00341	.03828	.00223	-.00000	53.842
#2	-.00060	.03890	.00048	.03831	.00290	.00010	53.702
#3	-.00020	.04768	.00003	.03496	.00273	.00004	53.947

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00005	.02078	.09163	.09143	.29391	13.476	.00129
Stddev	.00016	.00007	.00174	.00149	.01731	.047	.00663
%RSD	313.66	.32329	1.9027	1.6351	5.8907	.35172	515.27

#1	.00001	.02073	.09084	.08998	.30529	13.421	-.00134
#2	.00023	.02086	.09042	.09296	.27398	13.497	.00883
#3	-.00008	.02076	.09363	.09134	.30245	13.509	-.00363

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.5848	1.4232	.00063	169.27	.12954	-.01601	-.00404
Stddev	.0173	.0042	.00107	.51	.00233	.01043	.00321
%RSD	1.0890	.29385	169.84	.30322	1.7976	65.169	79.405

#1	1.5919	1.4223	.00186	169.18	.12700	-.00787	-.00759
#2	1.5651	1.4277	.00005	168.81	.13158	-.01239	-.00317
#3	1.5974	1.4195	-.00002	169.83	.13003	-.02777	-.00135

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702122801 Acquired: 2/28/2017 19:55:26 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00342	.00303	1.1790	.00175	.13605	.00088	-.00413
Stddev	.00239	.01091	.0029	.00018	.00027	.00155	.00452
%RSD	69.848	359.96	.24325	10.559	.19656	175.89	109.43

#1	.00569	.00014	1.1803	.00168	.13580	.00063	-.00324
#2	.00364	-.00614	1.1810	.00161	.13633	.00254	-.00012
#3	.00093	.01509	1.1757	.00196	.13602	-.00053	-.00903

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	-.00021	5.7300	F -.44261
Stddev	.00010	.0046	1.4940
%RSD	49.681	.07965	337.54

#1	-.00031	5.7330	-2.1659
#2	-.00010	5.7248	.35049
#3	-.00021	5.7323	.48759

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4825.8	67695.	8220.5
Stddev	9.7	253.	49.5
%RSD	.20037	.37319	.60260

#1	4820.6	67985.	8188.6
#2	4836.9	67575.	8277.6
#3	4819.7	67525.	8195.3

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702122802 Acquired: 2/28/2017 19:59:13 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00116	.05499	.00080	.03417	.00238	.00001	55.105
Stddev	.00055	.00246	.00488	.00128	.00004	.00007	.058
%RSD	47.632	4.4779	611.35	3.7519	1.5180	581.71	.10507

#1	-0.00140	.05260	-0.00116	.03559	.00234	.00008	55.114
#2	-0.00155	.05752	-0.00279	.03382	.00240	.00003	55.158
#3	-0.00053	.05485	.00635	.03310	.00240	-0.00007	55.043

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00023	.02041	.07940	.07761	.31099	13.719	.00003
Stddev	.00025	.00033	.00025	.00228	.00302	.069	.00340
%RSD	109.90	1.6295	.31890	2.9360	.97263	.50599	12181.

#1	-0.00003	.02007	.07911	.07566	.30896	13.655	.00299
#2	.00047	.02074	.07956	.07706	.30955	13.793	-0.00369
#3	.00025	.02041	.07953	.08012	.31447	13.710	.00078

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.6466	1.4784	.00094	174.44	.12280	-0.2323	F -.00544
Stddev	.0731	.0047	.00050	.26	.00212	.00359	.00431
%RSD	4.4370	.32064	52.819	.14792	1.7265	15.466	79.260

#1	1.6150	1.4755	.00056	174.31	.12035	-0.2215	-0.01018
#2	1.5947	1.4839	.00075	174.28	.12392	-0.2724	-0.00435
#3	1.7302	1.4760	.00150	174.74	.12412	-0.2030	-0.00177

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							225.00
Low Limit							-0.00500

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702122802 Acquired: 2/28/2017 19:59:13 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00607	.00199	1.2107	.00066	.14541	-.00231	-.00036
Stddev	.00806	.00265	.0016	.00094	.00021	.00542	.00466
%RSD	132.77	132.75	.13309	142.52	.14419	234.95	1280.7

#1	-.00187	.00420	1.2089	.00005	.14519	.00120	-.00525
#2	.01425	.00273	1.2118	.00019	.14560	.00043	.00014
#3	.00584	-.00094	1.2115	.00174	.14543	-.00856	.00402

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	-.00034	5.3102	.68098
Stddev	.00060	.0119	1.4696
%RSD	176.26	.22478	215.80

#1	-.00038	5.3030	2.1428
#2	.00028	5.3035	-.79627
#3	-.00092	5.3239	.69645

Check ?	Chk Pass	Chk Pass	Chk Pass
High Limit			
Low Limit			

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4783.3	67999.	8155.3
Stddev	24.2	307.	31.9
%RSD	.50528	.45209	.39069

#1	4809.4	67724.	8159.7
#2	4778.6	68331.	8121.5
#3	4761.7	67943.	8184.8

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132402 Acquired: 2/28/2017 20:02:59 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -0.00435	-0.00626	.01141	.05351	24.267	.00039	F 1213.1
Stddev	.00208	.00743	.00708	.00203	.276	.00007	6.1
%RSD	47.764	118.68	62.065	3.8017	1.1368	17.706	.50024

#1	-0.00655	-0.00272	.00384	.05377	23.961	.00047	1207.1
#2	-0.00409	-0.00126	.01253	.05540	24.498	.00036	1213.2
#3	-0.00242	-0.01479	.01787	.05136	24.342	.00034	1219.2

Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit	5.0000						270.00
Low Limit	-.00400						-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00493	.00605	-0.00081	.01964	17.100	62.985	.61388
Stddev	.00046	.00023	.00085	.00217	.128	.483	.00453
%RSD	9.2863	3.7760	104.99	11.070	.74735	.76699	.73824

#1	.00497	.00622	-.00118	.02152	16.954	62.431	.61152
#2	.00445	.00579	-.00141	.02015	17.157	63.313	.61911
#3	.00537	.00615	.00016	.01726	17.190	63.213	.61102

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	87.136	8.2027	.00250	258.89	-.00522	.03051	.00234
Stddev	.332	.0082	.00061	.34	.00030	.01040	.00723
%RSD	.38059	.09947	24.502	.13002	5.7630	34.097	308.94

#1	86.810	8.1946	.00306	258.80	-.00512	.03211	.01011
#2	87.124	8.2109	.00260	259.26	-.00498	.01940	-.00420
#3	87.473	8.2025	.00185	258.61	-.00556	.04002	.00111

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132402 Acquired: 2/28/2017 20:02:59 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00102	F -.03161	2.2107	.00261	F 26.359	F -.07882	.00629
Stddev	.01533	.00335	.0135	.00216	.353	.00289	.01003
%RSD	1506.7	10.593	.61154	83.015	1.3405	3.6640	159.42

#1	.01872	-.03151	2.1950	.00357	26.026	-.07818	-.00429
#2	-.00767	-.03502	2.2187	.00013	26.321	-.08197	.01566
#3	-.00800	-.02832	2.2182	.00412	26.729	-.07630	.00751

Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Fail	Chk Fail	Chk Pass
High Limit		90.000			9.0000	36.000	
Low Limit		-.01000			-.01000	-.03000	

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00065	.00178	F -5.4898
Stddev	.00091	.00029	1.3956
%RSD	141.13	16.426	25.422

#1	.00019	.00212	-6.5234
#2	.00006	.00160	-3.9023
#3	.00170	.00163	-6.0436

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4215.7	58851.	7667.8
Stddev	19.9	153.	41.0
%RSD	.47261	.25924	.53535

#1	4202.1	59002.	7711.8
#2	4206.4	58854.	7630.5
#3	4238.6	58697.	7661.2

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 20:07:12 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40659	10.383	.41036	.50064	1.0374	.05161	10.381
Stddev	.00077	.018	.00064	.00160	.0048	.00029	.053
%RSD	.18948	.17333	.15672	.31954	.46334	.57042	.51505

#1	.40598	10.364	.41100	.49930	1.0331	.05194	10.372
#2	.40746	10.399	.40971	.50241	1.0365	.05137	10.333
#3	.40635	10.387	.41037	.50022	1.0426	.05152	10.439

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05026	.20478	.51621	.51746	3.9227	53.422	1.0757
Stddev	.00022	.00076	.00224	.00261	.0227	.292	.0102
%RSD	.44735	.37271	.43473	.50436	.57909	.54649	.94598

#1	.05021	.20560	.51867	.51966	3.8987	53.215	1.0851
#2	.05051	.20408	.51427	.51814	3.9255	53.295	1.0649
#3	.05007	.20466	.51570	.51457	3.9438	53.756	1.0772

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.9347	.49557	1.0112	52.196	.51071	10.256	.52234
Stddev	.1578	.00207	.0002	.281	.00333	.017	.00700
%RSD	1.5881	.41767	.02359	.53853	.65233	.16826	1.3399

#1	9.7533	.49643	1.0113	51.947	.50737	10.245	.52785
#2	10.012	.49321	1.0109	52.139	.51403	10.247	.51446
#3	10.039	.49708	1.0114	52.500	.51074	10.276	.52470

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 20:07:12 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2465	.39708	5.1172	1.0161	1.0361	.99233	.50322
Stddev	.0034	.01248	.0075	.0019	.0040	.00962	.00199
%RSD	.27378	3.1435	.14557	.19036	.38210	.96943	.39588

#1	1.2445	.38345	5.1094	1.0142	1.0338	.98613	.50218
#2	1.2504	.39984	5.1242	1.0181	1.0338	.98745	.50552
#3	1.2444	.40795	5.1181	1.0161	1.0407	1.0034	.50197

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0170	1.0040	F 1.4130
Stddev	.0035	.0009	.6034
%RSD	.34127	.09270	42.702

#1	1.0186	1.0049	1.4557
#2	1.0130	1.0031	1.9938
#3	1.0194	1.0040	.78935

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4920.4	67892.	8109.4
Stddev	8.0	416.	101.6
%RSD	.16177	.61242	1.2530

#1	4912.9	67814.	8177.3
#2	4919.5	67521.	8158.3
#3	4928.8	68341.	7992.6

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 20:10:48 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00054	-0.01517	-0.00172	-0.00010	.00067	.00010	.00451
Stddev	.00214	.00439	.00301	.00170	.00028	.00000	.00802
%RSD	399.28	28.926	175.09	1692.2	41.451	1.6049	177.93

#1	-0.00284	-0.01032	-0.00335	.00069	.00075	.00010	.01287
#2	-0.00018	-0.01632	.00175	.00106	.00091	.00010	-0.00312
#3	.00141	-0.01886	-0.00355	-0.00205	.00037	.00010	.00376

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00009	.00041	-0.00167	.00095	.01711	.22255	-0.00331
Stddev	.00020	.00081	.00125	.00030	.00696	.14184	.00345
%RSD	215.45	200.09	75.088	31.284	40.689	63.733	104.23

#1	-0.00031	.00125	-0.00196	.00081	.01467	.30680	.00029
#2	.00009	-0.00037	-0.00276	.00129	.02496	.30205	-0.00660
#3	-0.00006	.00034	-0.00030	.00075	.01170	.05879	-0.00363

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.02193	-0.00024	.00030	.12181	.00150	.00492	F -0.00542
Stddev	.03388	.00076	.00090	.06434	.00046	.00457	.00324
%RSD	154.45	315.05	301.77	52.816	30.482	92.738	59.651

#1	-0.05844	.00028	.00100	.19117	.00118	-0.00003	-0.00571
#2	.00849	.00012	.00061	.06408	.00203	.00897	-0.00205
#3	-0.01585	-0.00112	-0.00072	.11019	.00130	.00584	-0.00851

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							.00500
Low Limit							-0.00500

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 20:10:48 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00125	.00760	.00263	-.00053	.00007	.00161	-.00330
Stddev	.00794	.00668	.00129	.00029	.00015	.00254	.00678
%RSD	635.85	87.816	48.959	54.399	214.76	157.61	205.41

#1	.00058	.00169	.00148	-.00085	.00018	.00214	-.01087
#2	-.00634	.00627	.00238	-.00033	.00014	-.00115	-.00121
#3	.00951	.01485	.00402	-.00039	-.00010	.00385	.00219

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00068	-.00066	F -.17235
Stddev	.00065	.00023	.87165
%RSD	95.623	34.700	505.74

#1	.00084	-.00048	.41617
#2	.00124	-.00059	.24049
#3	-.00004	-.00092	-1.1737

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4957.0	70208.	8016.2
Stddev	11.8	376.	36.3
%RSD	.23724	.53485	.45227

#1	4968.9	70632.	8033.0
#2	4945.4	70073.	8041.0
#3	4956.8	69918.	7974.6

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132403 Acquired: 2/28/2017 20:14:38 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-01

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00318	-0.00045	.01050	.04938	23.841	.00035	F 1213.1
Stddev	.00054	.00582	.00425	.00130	.467	.00011	17.9
%RSD	16.865	1301.2	40.447	2.6427	1.9597	32.269	1.4779

#1	-0.00257	-0.00508	.00809	.05078	23.312	.00034	1214.9
#2	-0.00341	-0.00235	.00800	.04819	24.197	.00024	1194.4
#3	-0.00356	.00609	.01540	.04916	24.015	.00047	1230.1

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00480	.00589	-0.00030	.01914	16.118	44.932	.52538
Stddev	.00031	.00087	.00137	.00043	.145	.371	.00429
%RSD	6.4876	14.726	465.76	2.2502	.90092	.82487	.81745

#1	.00448	.00489	.00079	.01872	15.952	44.505	.52067
#2	.00482	.00642	.00016	.01911	16.181	45.130	.52640
#3	.00510	.00637	-0.00184	.01958	16.222	45.162	.52908

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	95.958	7.8408	.00140	249.02	-0.00335	.03499	.00292
Stddev	.246	.0368	.00035	.80	.00108	.01060	.00351
%RSD	.25662	.46888	25.080	.32250	32.272	30.308	120.39

#1	95.989	7.8059	.00133	248.60	-0.00437	.04273	.00067
#2	95.698	7.8374	.00177	248.51	-0.00347	.02290	.00112
#3	96.188	7.8792	.00108	249.94	-0.00222	.03934	.00696

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132403 Acquired: 2/28/2017 20:14:38 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-01

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00291	F -.02255	1.9511	.00076	F 27.865	F -.07561	.00363
Stddev	.00674	.01483	.0076	.00051	.339	.00642	.00365
%RSD	231.93	65.756	.39120	67.750	1.2167	8.4957	100.53

#1	.00987	-.02317	1.9428	.00133	27.546	-.07509	.00615
#2	-.00358	-.00742	1.9577	.00034	28.221	-.08228	-.00056
#3	.00242	-.03706	1.9529	.00060	27.827	-.06947	.00530

Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Fail	Chk Fail	Chk Pass
High Limit		90.000			9.0000	36.000	
Low Limit		-.01000			-.01000	-.03000	

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00174	.00052	F -5.5239
Stddev	.00123	.00018	.7399
%RSD	70.811	34.321	13.395

#1	.00202	.00033	-5.5403
#2	.00039	.00069	-4.7759
#3	.00281	.00055	-6.2555

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4175.0	58250.	7626.6
Stddev	15.8	134.	53.1
%RSD	.37918	.22946	.69579

#1	4157.1	58396.	7680.1
#2	4187.0	58219.	7625.9
#3	4181.1	58134.	7573.9

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132404MS Acquired: 2/28/2017 20:18:51 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09952	2.1933	.11537	.51334	23.942	.01252	F 1224.7
Stddev	.00327	.0004	.01303	.00860	.243	.00002	1.2
%RSD	3.2831	.02044	11.295	1.6748	1.0133	.16162	.09573

#1	.09601	2.1930	.10797	.51785	23.676	.01254	1226.0
#2	.10006	2.1939	.13041	.51874	23.999	.01251	1224.4
#3	.10248	2.1931	.10772	.50342	24.151	.01251	1223.8

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01740	.05278	.11891	.13649	16.953	58.793	.80284
Stddev	.00024	.00023	.00199	.00452	.081	.176	.00159
%RSD	1.3667	.43309	1.6720	3.3115	.47564	.29945	.19840

#1	.01762	.05263	.12067	.13147	16.980	58.996	.80101
#2	.01744	.05267	.11675	.14023	17.017	58.684	.80395
#3	.01715	.05304	.11931	.13776	16.863	58.699	.80354

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	97.338	7.8961	.24375	260.83	.10825	2.5532	.11875
Stddev	.524	.0046	.00117	.41	.00175	.0177	.00499
%RSD	.53875	.05855	.48057	.15858	1.6167	.69490	4.2003

#1	96.803	7.8989	.24241	260.36	.10624	2.5374	.11621
#2	97.360	7.8987	.24462	261.13	.10944	2.5724	.11554
#3	97.852	7.8908	.24421	261.01	.10907	2.5499	.12449

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132404MS Acquired: 2/28/2017 20:18:51 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-04

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.30336	.05527	3.2427	.22950	F 28.179	.16110	.10607
Stddev	.00715	.00832	.0118	.00171	.117	.00525	.00428
%RSD	2.3558	15.056	.36393	.74424	.41412	3.2571	4.0316

#1	.30649	.05855	3.2305	.22765	28.044	.16403	.10825
#2	.29519	.06146	3.2540	.23101	28.236	.16423	.10115
#3	.30842	.04581	3.2436	.22984	28.256	.15504	.10882

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit					9.0000		
Low Limit					-.01000		

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.24176	.22561	F -6.8702
Stddev	.00091	.00079	1.1323
%RSD	.37646	.35102	16.482

#1	.24280	.22483	-5.8742
#2	.24132	.22641	-8.1018
#3	.24115	.22559	-6.6347

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4145.4	58513.	7584.5
Stddev	12.8	96.	57.6
%RSD	.30994	.16416	.75879

#1	4131.5	58415.	7632.3
#2	4147.7	58607.	7600.6
#3	4156.9	58517.	7520.7

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132405MSD Acquired: 2/28/2017 20:22:57 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-05

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10242	2.2454	.11154	.52402	24.394	.01279	F 1219.5
Stddev	.00121	.0122	.00333	.00571	.379	.00011	5.2
%RSD	1.1836	.54471	2.9816	1.0898	1.5534	.83683	.42287

#1	.10120	2.2567	.10783	.53039	24.349	.01291	1219.3
#2	.10362	2.2324	.11253	.52234	24.040	.01276	1214.4
#3	.10244	2.2470	.11425	.51935	24.794	.01270	1224.7

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01812	.05332	.12113	.14112	17.255	60.456	.81971
Stddev	.00050	.00073	.00046	.00196	.099	.405	.00439
%RSD	2.7843	1.3741	.38102	1.3857	.57087	.66921	.53501

#1	.01755	.05312	.12080	.14129	17.151	59.996	.81590
#2	.01828	.05271	.12166	.14298	17.346	60.759	.81874
#3	.01852	.05413	.12094	.13908	17.269	60.612	.82450

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	98.457	8.0277	.24939	265.51	.11232	2.6250	.12194
Stddev	.151	.0079	.00027	.75	.00057	.0039	.00445
%RSD	.15290	.09788	.10732	.28248	.51096	.14805	3.6467

#1	98.323	8.0202	.24932	264.77	.11277	2.6215	.11696
#2	98.620	8.0270	.24968	265.50	.11253	2.6243	.12338
#3	98.428	8.0359	.24916	266.27	.11168	2.6292	.12549

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132405MSD Acquired: 2/28/2017 20:22:57 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 2 Custom ID2: Custom ID3:
 Comment: WG604236-05

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.30908	.05559	3.3193	.23556	F 28.869	.15815	.11238
Stddev	.00403	.01231	.0106	.00041	.162	.00553	.00590
%RSD	1.3051	22.151	.32000	.17317	.56225	3.4956	5.2482

#1	.30781	.04151	3.3119	.23573	28.826	.15969	.10585
#2	.30584	.06432	3.3145	.23585	28.732	.16275	.11398
#3	.31360	.06095	3.3314	.23509	29.048	.15201	.11732

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass
High Limit					9.0000		
Low Limit					-.01000		

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.24847	.22991	F -4.9501
Stddev	.00176	.00110	1.5266
%RSD	.70852	.47630	30.840

#1	.24985	.22872	-3.4645
#2	.24908	.23013	-4.8711
#3	.24649	.23088	-6.5146

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4212.6	59243.	7546.8
Stddev	2.5	252.	36.2
%RSD	.05990	.42462	.47990

#1	4212.0	58958.	7578.3
#2	4210.4	59432.	7555.0
#3	4215.4	59340.	7507.2

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702133401 Acquired: 2/28/2017 20:27:03 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00160	.08425	-0.00449	.01111	.00214	.00008	.67319	.00020
Stddev	.00238	.00466	.00368	.00155	.00065	.00002	.02202	.00039
%RSD	148.56	5.5328	81.856	13.908	30.326	26.454	3.2704	193.34

#1	-0.00283	.08585	-0.00137	.00986	.00143	.00009	.66132	-0.00025
#2	-0.00312	.08790	-0.00356	.01064	.00270	.00009	.69859	.00040
#3	.00114	.07900	-0.00854	.01284	.00229	.00005	.65966	.00046

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00012	-0.00063	.01426	.09051	.34126	.00328	.12006	.00251
Stddev	.00013	.00024	.00139	.00692	.02985	.00165	.01945	.00118
%RSD	110.71	37.542	9.7620	7.6425	8.7464	50.527	16.197	46.944

#1	-0.00027	-0.00089	.01276	.09065	.37571	.00230	.09872	.00387
#2	.00000	-0.00059	.01451	.08353	.32488	.00234	.12466	.00178
#3	-0.00010	-0.00042	.01551	.09736	.32318	.00519	.13679	.00189

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00105	.35112	.00282	.00410	-0.00120	.00098	.01010	.18999
Stddev	.00031	.01409	.00238	.00211	.00576	.00340	.00643	.00325
%RSD	29.368	4.0134	84.360	51.411	477.81	347.17	63.690	1.7109

#1	.00129	.35273	.00309	.00242	-0.00783	-0.00295	.00583	.18651
#2	.00114	.36434	.00032	.00342	.00255	.00288	.00697	.19048
#3	.00070	.33630	.00505	.00647	.00167	.00302	.01750	.19296

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702133401 Acquired: 2/28/2017 20:27:03 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00114	.00251	.00602	-.00011	.00081	.00679	1.1027
Stddev	.00154	.00017	.00152	.00694	.00075	.00027	.6520
%RSD	135.70	6.8895	25.204	6125.3	93.531	4.0008	59.132

#1	.00074	.00234	.00771	.00720	.00161	.00684	.54641
#2	.00284	.00269	.00557	-.00093	.00069	.00650	.94137
#3	-.00017	.00249	.00478	-.00661	.00012	.00703	1.8202

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5082.2	73069.	8253.5
Stddev	38.6	85.	50.6
%RSD	.76024	.11623	.61355

#1	5115.7	72979.	8204.7
#2	5090.9	73080.	8305.8
#3	5040.0	73148.	8249.8

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702134601 Acquired: 2/28/2017 20:30:52 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0010	69.094	.07226	.05600	.59958	.00348	150.56
Stddev	.00118	.243	.00310	.00168	.00218	.00006	.49
%RSD	1227.6	.35212	4.2854	2.9989	.36351	1.6595	.32403

#1	-.00137	68.858	.06907	.05604	.59827	.00347	150.15
#2	.00011	69.344	.07247	.05430	.60210	.00344	151.10
#3	.00097	69.080	.07525	.05766	.59838	.00355	150.42

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01867	.03520	.09318	1.8542	55.746	14.532	.04662
Stddev	.00002	.00017	.00074	.0009	.297	.088	.00153
%RSD	.10493	.49084	.79328	.04779	.53343	.60306	3.2796

#1	.01864	.03532	.09398	1.8538	55.477	14.435	.04838
#2	.01867	.03529	.09252	1.8537	56.065	14.605	.04584
#3	.01868	.03501	.09305	1.8552	55.697	14.557	.04564

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	30.224	1.4017	.00312	F 295.72	.12204	69.861	.31234
Stddev	.217	.0038	.00018	3.41	.00121	.113	.00227
%RSD	.71960	.27167	5.6795	1.1544	.99329	.16131	.72732

#1	29.978	1.4006	.00309	291.78	.12136	69.961	.31147
#2	30.391	1.4060	.00296	297.50	.12344	69.883	.31491
#3	30.302	1.3986	.00331	297.87	.12132	69.739	.31063

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-50000			

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702134601 Acquired: 2/28/2017 20:30:52 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00909	.00320	F 69.461	.03927	.43038	.86127	-.00203
Stddev	.00720	.00950	.023	.00213	.00137	.01081	.00242
%RSD	79.228	296.53	.03333	5.4259	.31819	1.2553	119.17

#1	.01735	.01158	69.487	.03803	.42921	.84952	-.00190
#2	.00575	.00515	69.453	.04174	.43188	.86350	-.00452
#3	.00416	-.00712	69.443	.03805	.43004	.87080	.00032

Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit			36.000				
Low Limit			-1.0000				

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.10048	1.1044	F 150.72
Stddev	.00062	.0008	2.26
%RSD	.61291	.07666	1.5002

#1	.09990	1.1054	148.11
#2	.10042	1.1038	151.95
#3	.10113	1.1041	152.11

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4845.8	67115.	8333.6
Stddev	4.7	192.	44.6
%RSD	.09716	.28672	.53547

#1	4840.4	66901.	8383.0
#2	4849.2	67272.	8296.2
#3	4847.7	67173.	8321.6

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702134602 Acquired: 2/28/2017 20:34:40 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0166	54.488	.09307	.05619	.51076	.00241	69.495
Stddev	.00362	.182	.00037	.00182	.00094	.00004	.016
%RSD	217.85	.33351	.39975	3.2412	.18396	1.4751	.02328

#1	.00244	54.396	.09318	.05504	.51179	.00243	69.478
#2	-.00299	54.697	.09338	.05524	.50994	.00237	69.499
#3	-.00443	54.370	.09266	.05829	.51056	.00243	69.509

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01593	.03058	.06582	1.4454	59.675	12.334	.03284
Stddev	.00017	.00072	.00184	.0016	.183	.023	.00202
%RSD	1.0673	2.3612	2.7944	.11337	.30591	.18702	6.1514

#1	.01574	.03140	.06590	1.4437	59.813	12.307	.03218
#2	.01607	.03030	.06762	1.4455	59.744	12.344	.03511
#3	.01596	.03004	.06395	1.4470	59.468	12.350	.03124

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	18.970	1.2529	.00672	F 402.33	.09421	109.24	.27904
Stddev	.090	.0045	.00040	3.35	.00136	.03	.00339
%RSD	.47542	.36188	5.9317	.83374	1.4463	.03009	1.2151

#1	18.876	1.2543	.00714	398.47	.09264	109.23	.27956
#2	18.978	1.2565	.00635	404.58	.09509	109.21	.27542
#3	19.055	1.2478	.00667	403.93	.09490	109.28	.28214

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				270.00			
Low Limit				-50000			

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702134602 Acquired: 2/28/2017 20:34:40 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00971	-.00121	F 68.716	.02479	.22886	.81478	-.00310
Stddev	.00752	.00085	.066	.00174	.00029	.00716	.00064
%RSD	77.471	69.581	.09610	7.0247	.12561	.87916	20.705

#1	.00245	-.00029	68.649	.02278	.22913	.81857	-.00245
#2	.01747	-.00141	68.718	.02592	.22889	.81925	-.00311
#3	.00922	-.00195	68.781	.02566	.22855	.80651	-.00373

Check ?	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit			36.000				
Low Limit			-1.0000				

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.07085	.91571	F 130.69
Stddev	.00108	.00033	.56
%RSD	1.5178	.03603	.43184

#1	.07197	.91547	130.25
#2	.06983	.91609	130.50
#3	.07075	.91557	131.33

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4833.3	67013.	8221.1
Stddev	10.6	324.	23.3
%RSD	.21898	.48279	.28298

#1	4837.1	66988.	8218.6
#2	4821.4	66703.	8199.2
#3	4841.5	67348.	8245.5

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135301 Acquired: 2/28/2017 20:38:29 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00010	.25988	-0.00096	.00936	.00372	.00007	1.9142	.00021
Stddev	.00107	.00764	.00289	.00194	.00067	.00004	.0184	.00009
%RSD	1091.0	2.9410	299.61	20.717	18.016	51.181	.96234	44.605

#1	.00068	.25610	-.00237	.00892	.00446	.00010	1.9214	.00029
#2	.00035	.26868	-.00287	.00768	.00316	.00007	1.9279	.00011
#3	-.00132	.25487	.00236	.01148	.00353	.00003	1.8933	.00023

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00001	-0.00117	.01913	.22934	.35549	.00335	.32922	.00529
Stddev	.00054	.00071	.00043	.01924	.01485	.00238	.04038	.00060
%RSD	3977.4	61.186	2.2665	8.3894	4.1781	70.917	12.266	11.431

#1	.00038	-.00129	.01877	.24962	.35895	.00136	.28663	.00476
#2	.00021	-.00040	.01961	.22708	.33921	.00272	.33407	.00516
#3	-.00063	-.00181	.01900	.21134	.36831	.00599	.36695	.00595

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00038	.41573	.00222	.02985	-.00042	-.00416	.01043	.43290
Stddev	.00032	.02206	.00133	.00811	.00341	.00737	.00974	.00094
%RSD	84.393	5.3057	59.787	27.184	810.88	177.31	93.405	.21790

#1	.00001	.44119	.00095	.03889	-.00409	.00432	.01792	.43390
#2	.00059	.40385	.00360	.02744	.00264	-.00905	-.00058	.43202
#3	.00052	.40217	.00213	.02321	.00018	-.00775	.01396	.43279

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702135301 Acquired: 2/28/2017 20:38:29 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00102	.00381	.01343	-.00912	.00157	.01437	.23101
Stddev	.00126	.00018	.00211	.00441	.00029	.00016	.36592
%RSD	123.77	4.6448	15.711	48.336	18.664	1.1331	158.40

#1	.00060	.00394	.01356	-.01330	.00129	.01430	.13753
#2	.00002	.00388	.01548	-.00952	.00187	.01425	-.07910
#3	.00243	.00361	.01126	-.00452	.00154	.01455	.63460

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5037.7	72546.	8198.4
Stddev	1.1	305.	43.1
%RSD	.02188	.42072	.52562

#1	5037.8	72735.	8172.1
#2	5038.7	72710.	8248.2
#3	5036.5	72194.	8175.1

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135302 Acquired: 2/28/2017 20:42:18 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00154	.37725	-0.00040	.01036	.00382	.00016	1.5097	.00017
Stddev	.00160	.01020	.00289	.00208	.00025	.00013	.0270	.00024
%RSD	103.60	2.7039	726.97	20.127	6.4945	80.591	1.7849	142.80

#1	-0.00282	.38330	.00200	.00835	.00354	.00006	1.5189	.00005
#2	.00025	.38297	-0.00360	.01022	.00395	.00011	1.5309	.00045
#3	-0.00205	.36547	.00041	.01251	.00399	.00030	1.4794	.00001

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00001	-0.00046	.07048	.28919	.35774	-0.00048	.14101	.00466
Stddev	.00031	.00058	.00064	.01492	.01551	.00464	.08451	.00152
%RSD	3746.2	127.93	.90836	5.1606	4.3352	963.53	59.936	32.725

#1	-0.00037	.00010	.07121	.27324	.33983	.00033	.23365	.00640
#2	.00017	-0.00107	.07023	.30281	.36709	-0.00548	.06813	.00396
#3	.00018	-0.00040	.07001	.29153	.36628	.00370	.12124	.00360

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00061	.36649	.00075	.01598	.00083	-0.00240	-0.00659	.66880
Stddev	.00050	.01283	.00042	.00956	.00367	.00394	.00583	.00308
%RSD	81.852	3.4995	55.901	59.854	440.44	164.64	88.467	.46005

#1	.00057	.37766	.00100	.02176	.00344	-0.00436	-0.00029	.67032
#2	.00013	.35249	.00099	.00494	-0.00337	.00214	-0.01181	.67082
#3	.00112	.36932	.00027	.02124	.00243	-0.00497	-0.00768	.66526

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135302 Acquired: 2/28/2017 20:42:18 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00179	.00368	.01347	.00271	.00077	.03118	1.6013
Stddev	.00047	.00009	.00175	.00177	.00103	.00032	1.0493
%RSD	26.390	2.3385	12.996	65.301	134.43	1.0277	65.524

#1	.00170	.00372	.01483	.00072	.00177	.03155	.55336
#2	.00229	.00358	.01150	.00331	-.00030	.03098	2.6519
#3	.00136	.00374	.01410	.00410	.00084	.03101	1.5988

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5038.5	72888.	8119.2
Stddev	2.7	245.	70.7
%RSD	.05350	.33654	.87017

#1	5037.6	72609.	8050.6
#2	5041.5	72985.	8191.8
#3	5036.4	73069.	8115.1

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135303 Acquired: 2/28/2017 20:46:07 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00041	.09764	-.00352	.00861	.00166	.00011	.44229
Stddev	.00141	.00268	.00070	.00303	.00028	.00009	.03243
%RSD	347.31	2.7440	19.933	35.178	16.590	87.366	7.3323

#1	-.00007	.09635	-.00282	.01069	.00140	.00021	.46368
#2	-.00071	.10072	-.00422	.00514	.00195	.00008	.40497
#3	.00200	.09585	-.00352	.01000	.00163	.00003	.45821

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00019	-.00014	-.00036	.01745	.09047	.18410	-.00246
Stddev	.00013	.00037	.00079	.00140	.01844	.02206	.00177
%RSD	66.304	259.85	217.90	8.0536	20.384	11.984	72.052

#1	.00014	.00017	.00030	.01624	.09229	.20810	-.00451
#2	.00010	-.00005	-.00015	.01899	.07118	.17952	-.00144
#3	.00034	-.00054	-.00123	.01711	.10793	.16469	-.00144

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08433	.00176	.00009	.16494	.00062	-.01106	.00283
Stddev	.00712	.00055	.00038	.01001	.00192	.00844	.00367
%RSD	8.4439	31.243	445.23	6.0691	310.56	76.267	129.37

#1	.09219	.00113	.00050	.16292	.00063	-.00298	.00351
#2	.07830	.00206	-.00026	.17581	.00253	-.01040	-.00112
#3	.08250	.00211	.00002	.15609	-.00131	-.01981	.00612

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135303 Acquired: 2/28/2017 20:46:07 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00016	.00200	.22372	.00063	.00142	.00698	-.00024
Stddev	.00268	.00804	.00170	.00110	.00004	.00596	.00224
%RSD	1678.5	402.47	.75906	175.85	2.7469	85.384	931.82

#1	.00201	-.00682	.22347	-.00064	.00138	.00113	.00096
#2	-.00315	.00891	.22215	.00137	.00146	.01304	.00114
#3	.00066	.00390	.22552	.00115	.00143	.00677	-.00283

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00083	.00467	F -.04870
Stddev	.00051	.00026	1.3729
%RSD	61.905	5.5055	2819.3

#1	.00026	.00474	-.75285
#2	.00097	.00438	1.5335
#3	.00126	.00488	-.92670

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5115.8	73287.	8094.1
Stddev	18.3	214.	87.7
%RSD	.35781	.29255	1.0839

#1	5094.8	73360.	7997.4
#2	5123.8	73046.	8168.7
#3	5128.7	73455.	8116.0

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 20:49:58 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40449	10.260	.41283	.50141	1.0438	.05155	10.403
Stddev	.00293	.019	.00644	.00373	.0057	.00007	.035
%RSD	.72398	.18866	1.5609	.74353	.54820	.13220	.33318

#1	.40353	10.244	.41691	.50452	1.0374	.05159	10.379
#2	.40778	10.254	.40540	.49728	1.0458	.05159	10.387
#3	.40217	10.282	.41618	.50242	1.0483	.05147	10.443

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05015	.20475	.51548	.51296	3.9009	53.795	1.0896
Stddev	.00071	.00081	.00126	.00404	.0260	.083	.0098
%RSD	1.4123	.39683	.24352	.78816	.66762	.15370	.89460

#1	.05011	.20502	.51653	.51262	3.9106	53.739	1.0791
#2	.04946	.20384	.51583	.50910	3.9207	53.755	1.0915
#3	.05088	.20539	.51409	.51716	3.8714	53.890	1.0983

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.8433	.49088	1.0135	52.925	.51380	10.237	.52329
Stddev	.0468	.00389	.0015	.311	.00365	.039	.00178
%RSD	.47500	.79236	.14939	.58777	.70952	.37878	.34009

#1	9.8134	.48648	1.0153	52.566	.51607	10.260	.52183
#2	9.8195	.49386	1.0127	53.093	.50960	10.259	.52278
#3	9.8972	.49230	1.0126	53.115	.51574	10.192	.52528

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 20:49:58 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2440	.40552	5.1324	1.0155	1.0377	.99121	.50672
Stddev	.0051	.01632	.0091	.0036	.0025	.00453	.00794
%RSD	.41125	4.0250	.17760	.35629	.24341	.45745	1.5670

#1	1.2486	.42365	5.1350	1.0188	1.0348	.98881	.49938
#2	1.2385	.40095	5.1222	1.0116	1.0395	.98839	.50564
#3	1.2449	.39198	5.1399	1.0161	1.0387	.99644	.51515

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0163	1.0058	F .67518
Stddev	.0013	.0013	.38877
%RSD	.12991	.12871	57.581

#1	1.0150	1.0069	.34876
#2	1.0176	1.0044	1.1053
#3	1.0163	1.0062	.57149

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5015.3	70032.	8234.0
Stddev	10.7	122.	64.7
%RSD	.21282	.17486	.78586

#1	5015.4	70095.	8211.4
#2	5025.9	69891.	8307.0
#3	5004.5	70111.	8183.7

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 20:53:35 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00042	-0.01766	.00193	.00087	.00041	.00009	.00540
Stddev	.00125	.00590	.00436	.00160	.00040	.00003	.01720
%RSD	295.53	33.421	226.54	184.52	99.070	30.142	318.85

#1	-0.00116	-0.02022	-0.00070	.00272	.00008	.00009	.02469
#2	-0.00114	-0.01091	.00696	-0.00011	.00086	.00006	-0.00017
#3	.00102	-0.02185	-0.00049	-0.00001	.00029	.00012	-0.00834

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00044	-0.00042	-0.00083	.00164	.00490	.20542	-0.00192
Stddev	.00040	.00005	.00060	.00108	.01610	.05916	.00504
%RSD	90.097	12.490	72.302	65.923	328.57	28.802	262.15

#1	-0.00071	-0.00047	-0.00079	.00277	.01447	.19845	-0.00288
#2	-0.00063	-0.00037	-0.00146	.00062	-.01369	.15004	-0.00642
#3	.00002	-0.00043	-0.00025	.00153	.01392	.26775	.00353

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.01417	-0.00168	-0.00064	.08536	-0.00048	.00174	-0.00214
Stddev	.05243	.00059	.00026	.03219	.00120	.00766	.00209
%RSD	370.05	35.080	40.345	37.706	251.50	441.16	97.810

#1	.00392	-0.00228	-0.00094	.12248	-0.00123	-0.00692	.00021
#2	-.07325	-0.00166	-0.00053	.06526	.00090	.00448	-0.00379
#3	.02682	-0.00110	-0.00046	.06834	-0.00110	.00764	-0.00285

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

K. K. Buck

Sample Name: CCB Acquired: 2/28/2017 20:53:35 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00130	.00910	-0.00136	.00047	-0.00002	.00343	-0.00142
Stddev	.00959	.00341	.00211	.00063	.00024	.00276	.00718
%RSD	736.79	37.468	155.60	134.08	1003.4	80.592	505.85

#1	.00435	.00735	.00079	.00119	-0.00008	.00040	-0.00725
#2	.00899	.00692	-0.00143	-0.00000	.00024	.00582	-0.00361
#3	-0.00944	.01303	-0.00343	.00023	-0.00024	.00407	.00660

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00049	-0.00027	F .26741
Stddev	.00046	.00011	1.0141
%RSD	93.334	40.558	379.24

#1	.00052	-0.00026	1.2724
#2	.00093	-0.00017	.28547
#3	.00002	-0.00039	-0.75563

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-0.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5026.0	71464.	8079.0
Stddev	15.8	95.	20.3
%RSD	.31469	.13243	.25110

#1	5035.0	71517.	8099.4
#2	5007.8	71355.	8058.9
#3	5035.4	71521.	8078.8

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135304 Acquired: 2/28/2017 20:57:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00075	.15885	-.00194	.00894	.00196	.00008	.71178	.00004
Stddev	.00235	.00360	.00556	.00209	.00049	.00001	.02889	.00020
%RSD	314.32	2.2673	286.05	23.368	24.754	8.8292	4.0591	481.61

#1	-.00123	.16091	.00033	.00733	.00172	.00009	.74170	.00000
#2	-.00283	.15469	-.00828	.01130	.00252	.00008	.68404	.00026
#3	.00181	.16095	.00212	.00818	.00165	.00009	.70960	-.00014

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00009	-.00026	.03436	.16758	.17031	.00144	.03190	.00056
Stddev	.00053	.00104	.00060	.01190	.03668	.00405	.06781	.00226
%RSD	606.70	399.11	1.7382	7.1008	21.539	280.91	212.60	405.78

#1	.00017	.00077	.03483	.17931	.20950	.00236	-.02221	-.00193
#2	-.00069	-.00024	.03457	.16790	.16461	-.00299	.10797	.00114
#3	.00027	-.00130	.03369	.15552	.13681	.00495	.00994	.00247

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00075	.16760	.00224	-.00754	.00307	.00011	.00983	.31455
Stddev	.00045	.00264	.00057	.00751	.00480	.00649	.00463	.00288
%RSD	59.853	1.5768	25.273	99.616	156.47	5963.2	47.085	.91576

#1	.00127	.16910	.00252	.00111	.00836	.00750	.01412	.31738
#2	.00044	.16455	.00262	-.01237	.00185	-.00469	.00493	.31162
#3	.00055	.16916	.00159	-.01135	-.00100	-.00249	.01042	.31466

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135304 Acquired: 2/28/2017 20:57:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00026	.00240	.00846	-.00868	.00026	.01476	.04948
Stddev	.00058	.00034	.00567	.00119	.00060	.00008	1.7970
%RSD	222.13	14.362	67.062	13.682	235.28	.50846	3631.9

#1	.00007	.00214	.00871	-.00967	.00090	.01472	-.27974
#2	-.00020	.00279	.00267	-.00736	-.00030	.01471	-1.5602
#3	.00091	.00227	.01401	-.00901	.00017	.01485	1.9883

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5028.4	72239.	8075.7
Stddev	31.9	222.	26.2
%RSD	.63434	.30662	.32419

#1	4997.9	72488.	8098.2
#2	5025.7	72163.	8047.0
#3	5061.5	72066.	8082.1

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135304PS Acquired: 2/28/2017 21:01:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604317-03

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19427	5.2067	.19118	.90446	.50961	.02452	5.6716	.02428
Stddev	.00099	.0229	.00303	.00716	.00110	.00007	.0161	.00027
%RSD	.50722	.43900	1.5840	.79162	.21548	.27933	.28443	1.0928

#1	.19344	5.2215	.18771	.91031	.50845	.02452	5.6825	.02458
#2	.19536	5.2183	.19332	.90659	.51063	.02445	5.6792	.02408
#3	.19401	5.1804	.19250	.89648	.50974	.02459	5.6530	.02419

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.10025	.24789	.27823	2.0328	26.244	.53313	4.8388	.23806
Stddev	.00079	.00018	.00055	.0170	.072	.00409	.0363	.00354
%RSD	.78617	.07221	.19763	.83896	.27512	.76741	.75090	1.4855

#1	.10083	.24773	.27761	2.0157	26.163	.53443	4.8757	.24013
#2	.10057	.24809	.27844	2.0498	26.267	.53641	4.8378	.23398
#3	.09935	.24786	.27864	2.0328	26.301	.52854	4.8030	.24008

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49489	25.754	.24761	4.7849	.25743	.59664	.19018	2.7426
Stddev	.00112	.033	.00175	.0164	.00305	.00223	.00219	.0061
%RSD	.22649	.12721	.70745	.34312	1.1852	.37436	1.1520	.22398

#1	.49596	25.723	.24866	4.7715	.25882	.59620	.18774	2.7484
#2	.49499	25.788	.24858	4.7799	.25953	.59907	.19198	2.7432
#3	.49372	25.751	.24559	4.8032	.25393	.59466	.19081	2.7361

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702135304PS Acquired: 2/28/2017 21:01:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604317-03

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49073	.50677	.48595	.24350	.48998	.49018	.40475
Stddev	.00069	.00122	.00651	.00428	.00067	.00108	.50984
%RSD	.14109	.24169	1.3401	1.7563	.13638	.22018	125.96
#1	.49149	.50546	.48836	.24827	.48921	.49085	-.18126
#2	.49053	.50696	.49092	.24222	.49036	.49076	.74656
#3	.49015	.50788	.47858	.24000	.49037	.48894	.64895

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4932.6	70286.	8082.7
Stddev	11.2	62.	15.8
%RSD	.22680	.08779	.19606
#1	4919.8	70348.	8072.7
#2	4937.4	70225.	8074.5
#3	4940.7	70283.	8101.0

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135304SDL Acquired: 2/28/2017 21:04:56 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 5 Custom ID2: Custom ID3:
 Comment: WG604317-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00048	.02011	.00277	.00095	.00077	.00007	.11320
Stddev	.00222	.00269	.00153	.00251	.00032	.00001	.01424
%RSD	464.49	13.350	55.321	265.37	41.349	20.586	12.580

#1	-.00043	.01708	.00158	.00252	.00101	.00008	.10290
#2	-.00272	.02109	.00449	.00227	.00041	.00005	.12945
#3	.00172	.02217	.00223	-.00195	.00090	.00007	.10724

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00007	-.00016	-.00123	.00834	.04134	.12868	-.00374
Stddev	.00034	.00032	.00065	.00037	.01497	.04172	.00350
%RSD	511.94	194.92	53.218	4.3807	36.200	32.422	93.541

#1	-.00032	.00020	-.00076	.00798	.03874	.10814	-.00356
#2	.00029	-.00028	-.00095	.00871	.02785	.10121	-.00033
#3	.00023	-.00041	-.00198	.00833	.05744	.17669	-.00732

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00382	.00058	-.00046	.06707	-.00014	.00154	.00356
Stddev	.01177	.00116	.00048	.02032	.00042	.00427	.00430
%RSD	307.81	200.79	104.19	30.296	301.61	276.96	120.64

#1	.00769	-.00055	-.00043	.08964	.00006	-.00337	.00114
#2	.01318	.00177	-.00095	.05025	.00015	.00361	.00102
#3	-.00939	.00051	.00000	.06130	-.00062	.00439	.00852

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702135304SDL Acquired: 2/28/2017 21:04:56 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 5 Custom ID2: Custom ID3:
 Comment: WG604317-04

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00618	-0.00344	.06055	.00160	.00049	.00447	-0.00276
Stddev	.00691	.00378	.00095	.00102	.00007	.00204	.00771
%RSD	111.85	109.81	1.5765	63.715	13.784	45.713	278.80

#1	-.01411	-.00743	.05960	.00043	.00043	.00665	-.00936
#2	-.00138	-.00297	.06054	.00205	.00048	.00414	.00571
#3	-.00305	.00008	.06151	.00232	.00057	.00261	-.00464

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00006	.00388	F -.14915
Stddev	.00072	.00005	1.7783
%RSD	1290.1	1.3409	1192.3

#1	.00009	.00389	1.2308
#2	.00075	.00393	-2.1561
#3	-.00068	.00382	.47786

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5192.1	74167.	8394.1
Stddev	10.6	351.	39.6
%RSD	.20413	.47374	.47168

#1	5195.1	74489.	8400.6
#2	5180.3	74219.	8351.7
#3	5200.8	73792.	8430.1

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 21:08:46 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40866	10.298	.40830	.50648	1.0402	.05146	10.356
Stddev	.00427	.027	.00386	.00417	.0031	.00012	.033
%RSD	1.0440	.26387	.94483	.82298	.30160	.23115	.32102

#1	.41244	10.302	.40874	.50937	1.0407	.05148	10.374
#2	.40404	10.269	.41192	.50837	1.0369	.05133	10.318
#3	.40951	10.322	.40424	.50170	1.0431	.05156	10.377

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05040	.20387	.51392	.51557	3.8847	53.835	1.0876
Stddev	.00034	.00041	.00055	.00108	.0175	.142	.0037
%RSD	.66862	.20085	.10733	.21026	.45125	.26368	.33796

#1	.05003	.20402	.51380	.51680	3.8704	53.880	1.0844
#2	.05046	.20417	.51344	.51474	3.9042	53.676	1.0868
#3	.05070	.20340	.51452	.51517	3.8795	53.948	1.0916

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.8278	.49026	1.0114	52.694	.51002	10.239	.52149
Stddev	.0726	.00179	.0004	.164	.00114	.031	.01024
%RSD	.73882	.36551	.04329	.31129	.22325	.29859	1.9640

#1	9.9103	.49222	1.0109	52.626	.50871	10.273	.52014
#2	9.7734	.48870	1.0117	52.576	.51059	10.232	.51200
#3	9.7997	.48986	1.0116	52.882	.51076	10.213	.53234

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 21:08:46 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2464	.40121	5.1130	1.0151	1.0350	.99038	.51486
Stddev	.0080	.00601	.0084	.0014	.0031	.00852	.00697
%RSD	.64010	1.4972	.16398	.14316	.29502	.86054	1.3545

#1	1.2373	.40163	5.1222	1.0136	1.0337	.98543	.51699
#2	1.2499	.40699	5.1057	1.0165	1.0329	.98548	.50706
#3	1.2520	.39500	5.1112	1.0151	1.0385	1.0002	.52051

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0137	1.0048	F -.41466
Stddev	.0023	.0004	.34468
%RSD	.23013	.03880	83.125

#1	1.0160	1.0052	-.29120
#2	1.0137	1.0045	-.14871
#3	1.0114	1.0046	-.80406

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4895.5	67878.	7996.1
Stddev	19.8	116.	35.2
%RSD	.40474	.17084	.44008

#1	4875.3	67819.	8001.5
#2	4914.9	68012.	8028.2
#3	4896.2	67804.	7958.5

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 21:12:24 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00231	-0.00682	.00027	.00275	.00074	.00014	-0.00666
Stddev	.00024	.00247	.00201	.00361	.00093	.00003	.02227
%RSD	10.539	36.226	750.63	130.99	124.98	21.612	334.28

#1	-0.00207	-0.00421	.00173	.00670	.00145	.00016	-0.00161
#2	-0.00230	-0.00912	-0.00202	.00194	-0.00031	.00011	.01265
#3	-0.00256	-0.00713	.00109	-0.00037	.00108	.00015	-0.03103

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00005	-0.00025	-0.00161	-0.00023	-0.00217	.16841	.00156
Stddev	.00032	.00021	.00091	.00179	.00697	.01525	.00314
%RSD	640.57	87.472	56.534	768.39	320.74	9.0566	201.49

#1	-0.00003	-0.00026	-0.00253	.00042	.00575	.18431	-0.00203
#2	.00040	-0.00002	-0.00071	-0.00226	-0.00736	.16700	.00382
#3	-0.00022	-0.00045	-0.00159	.00114	-0.00491	.15391	.00288

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.02683	-0.00038	-0.00001	.08353	-0.00114	.00837	.00146
Stddev	.03128	.00258	.00025	.00901	.00080	.00262	.00182
%RSD	116.57	681.85	2426.7	10.781	70.263	31.275	124.27

#1	.00096	.00160	-0.00029	.09296	-0.00206	.01139	.00001
#2	-0.06071	-0.00329	.00021	.07502	-0.00072	.00693	.00087
#3	-0.02075	.00055	.00005	.08259	-0.00064	.00679	.00351

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 21:12:24 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00097	.00599	.00132	-0.00017	-0.00001	.00034	-0.00257
Stddev	.00215	.01049	.00250	.00031	.00018	.00190	.00475
%RSD	221.22	174.98	188.33	184.60	3147.3	560.63	184.93

#1	-0.00057	.01400	-0.00142	.00010	-0.00000	-0.00034	-0.00773
#2	.00095	.00986	.00193	-0.00052	.00017	-0.00113	.00161
#3	-0.00329	-0.00588	.00346	-0.00009	-0.00019	.00249	-0.00158

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00009	-0.00046	F -0.04558
Stddev	.00142	.00007	.47582
%RSD	1567.6	15.944	1044.0

#1	.00057	-0.00045	-0.40721
#2	-0.00150	-0.00053	-0.22298
#3	.00121	-0.00039	.49346

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-0.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4956.7	70324.	7998.8
Stddev	5.3	165.	46.8
%RSD	.10754	.23437	.58474

#1	4961.9	70222.	8051.9
#2	4957.0	70514.	7981.1
#3	4951.2	70236.	7963.5

Approved: March 01, 2017

Ki K Buck

Sample Name: PBW AF Acquired: 2/28/2017 21:16:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-02

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00048	-.01531	-.00248	-.00014	.00098	.00007	-.01144	.00039
Stddev	.00217	.00176	.00491	.00319	.00030	.00005	.01593	.00017
%RSD	451.24	11.485	198.34	2255.6	30.591	78.707	139.20	44.608

#1	.00264	-.01700	.00230	-.00376	.00130	.00001	-.01996	.00029
#2	-.00170	-.01543	-.00752	.00228	.00091	.00007	-.02130	.00059
#3	.00050	-.01349	-.00221	.00105	.00071	.00012	.00693	.00029

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00048	-.00013	.00067	.00795	.15066	-.00399	.03668	-.00073
Stddev	.00018	.00088	.00180	.01513	.06223	.00182	.03027	.00192
%RSD	38.419	700.52	268.47	190.28	41.307	45.493	82.522	263.38

#1	-.00043	.00038	.00051	.01630	.08075	-.00340	.03839	.00114
#2	-.00032	.00038	.00255	-.00951	.20002	-.00254	.06606	-.00064
#3	-.00068	-.00114	-.00105	.01707	.17120	-.00603	.00560	-.00270

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00020	.06521	-.00088	-.00681	-.00250	.00035	-.00403	.00199
Stddev	.00047	.01110	.00084	.00916	.00396	.00282	.00085	.00352
%RSD	237.70	17.018	95.176	134.55	158.44	807.29	21.046	176.66

#1	-.00005	.05461	.00003	-.00078	-.00291	.00307	-.00461	.00098
#2	-.00010	.07675	-.00163	-.00230	-.00623	.00053	-.00443	-.00091
#3	.00074	.06427	-.00104	-.01735	.00165	-.00255	-.00306	.00591

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit								
Low Limit								

Approved: March 01, 2017

Ki K Buck

Sample Name: PBW AF Acquired: 2/28/2017 21:16:14 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-02

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00150	-.00020	.00253	-.00719	.00050	.00026	.13060
Stddev	.00011	.00025	.00104	.00288	.00112	.00030	.92244
%RSD	7.6566	124.72	41.064	39.982	226.07	114.57	706.28

#1	.00158	.00009	.00345	-.00571	.00176	.00055	.30801
#2	.00154	-.00035	.00274	-.00536	-.00038	.00028	.95145
#3	.00137	-.00034	.00140	-.01051	.00011	-.00005	-.86765

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4948.3	70995.	7900.7
Stddev	10.0	460.	34.7
%RSD	.20124	.64730	.43860

#1	4957.2	71483.	7861.4
#2	4950.1	70570.	7914.3
#3	4937.5	70930.	7926.6

Approved: March 01, 2017

Ki K Buck

Sample Name: LCSW AF Acquired: 2/28/2017 21:20:04 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-03

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19696	5.1041	.19194	.90474	.51252	.02448	5.0843
Stddev	.00172	.0050	.00453	.00135	.00086	.00004	.0177
%RSD	.87328	.09743	2.3614	.14970	.16774	.14921	.34871

#1	.19514	5.1080	.19714	.90617	.51160	.02444	5.0638
#2	.19717	5.0985	.18885	.90458	.51331	.02450	5.0954
#3	.19856	5.1057	.18983	.90347	.51266	.02450	5.0936

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02428	.10058	.24869	.25049	1.9005	26.340	.54199
Stddev	.00034	.00027	.00212	.00227	.0259	.108	.00200
%RSD	1.3938	.26959	.85257	.90796	1.3630	.40847	.36816

#1	.02414	.10087	.25064	.25006	1.8902	26.218	.54192
#2	.02404	.10054	.24643	.24846	1.9300	26.385	.54003
#3	.02467	.10033	.24900	.25295	1.8813	26.418	.54402

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	4.8679	.24043	.49864	25.834	.24904	4.8085	.25557
Stddev	.0571	.00095	.00131	.132	.00246	.0096	.00484
%RSD	1.1727	.39395	.26214	.51018	.98901	.19906	1.8931

#1	4.9087	.24013	.49927	25.732	.24627	4.8061	.25002
#2	4.8925	.24149	.49714	25.983	.24985	4.8004	.25884
#3	4.8027	.23967	.49951	25.787	.25099	4.8191	.25786

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: LCSW AF Acquired: 2/28/2017 21:20:04 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-03

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.60573	.19278	2.4909	.49424	.50792	.49045	.24034
Stddev	.00851	.00448	.0073	.00138	.00126	.00435	.00586
%RSD	1.4047	2.3218	.29525	.27877	.24832	.88666	2.4377

#1	.60755	.19687	2.4989	.49422	.50654	.49547	.24263
#2	.61318	.18800	2.4844	.49563	.50902	.48772	.23368
#3	.59646	.19346	2.4895	.49288	.50819	.48816	.24470

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.49192	.47919	F -.33808
Stddev	.00029	.00184	.45527
%RSD	.05985	.38319	134.66

#1	.49162	.48009	.15602
#2	.49193	.47708	-.74058
#3	.49221	.48040	-.42969

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4878.2	69238.	7901.2
Stddev	9.6	261.	59.3
%RSD	.19667	.37642	.75060

#1	4867.2	69387.	7933.9
#2	4883.4	69389.	7832.8
#3	4884.2	68937.	7937.0

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701 Acquired: 2/28/2017 21:23:46 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00179	.11815	.00346	.00694	.40148	.00011	F 279.17
Stddev	.00078	.00515	.00278	.00100	.00116	.00007	1.13
%RSD	43.600	4.3582	80.353	14.397	.28913	57.741	.40494

#1	-.00093	.11872	.00232	.00595	.40245	.00006	280.36
#2	-.00246	.12298	.00144	.00692	.40019	.00019	278.11
#3	-.00197	.11273	.00663	.00795	.40179	.00009	279.04

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00032	.00011	.00011	.00551	1.3569	1.2557	.01421
Stddev	.00032	.00013	.00058	.00224	.0197	.0434	.00155
%RSD	99.674	114.97	521.01	40.618	1.4504	3.4529	10.906

#1	.00012	.00001	.00012	.00323	1.3597	1.2450	.01520
#2	.00016	.00007	.00069	.00560	1.3360	1.3034	.01502
#3	.00070	.00026	-.00047	.00770	1.3751	1.2186	.01243

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.1335	.33258	.00063	3.4258	.00728	.09110	.00069
Stddev	.0267	.00213	.00010	.0437	.00201	.00431	.00152
%RSD	.29222	.64044	15.355	1.2758	27.657	4.7318	220.19

#1	9.1038	.33460	.00074	3.4723	.00711	.09592	-.00097
#2	9.1556	.33036	.00056	3.3855	.00535	.08763	.00104
#3	9.1409	.33277	.00057	3.4197	.00936	.08975	.00201

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701 Acquired: 2/28/2017 21:23:46 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.0091	-0.0073	1.6167	.00186	.34034	-0.02057	-0.00100
Stddev	.00810	.01786	.0042	.00236	.00087	.00326	.00502
%RSD	888.94	231.13	.25910	126.74	.25573	15.871	501.94

#1	-0.00836	-0.02439	1.6119	.00236	.33980	-0.02341	-0.00667
#2	.00771	-0.00991	1.6184	-0.00071	.33988	-0.02130	.00289
#3	-0.00207	.01112	1.6197	.00394	.34135	-0.01700	.00078

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00105	.02593	F -.72854
Stddev	.00055	.00002	.75508
%RSD	52.156	.08744	103.64

#1	.00168	.02594	-1.5771
#2	.00071	.02590	-.13074
#3	.00075	.02594	-.47776

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4864.4	68640.	8102.8
Stddev	5.3	321.	7.5
%RSD	.10868	.46762	.09233

#1	4858.3	68956.	8095.1
#2	4866.9	68315.	8110.0
#3	4867.9	68648.	8103.3

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701PS Acquired: 2/28/2017 21:27:33 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment: WG604329-03

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.20311	5.0463	.20159	.99571	.90480	.02514	F 278.07
Stddev	.00227	.0071	.00114	.00525	.00428	.00004	1.36
%RSD	1.1191	.14046	.56734	.52757	.47265	.15580	.48940

#1	.20384	5.0476	.20045	1.0011	.90905	.02516	279.58
#2	.20057	5.0387	.20158	.99549	.90484	.02517	277.70
#3	.20494	5.0526	.20274	.99058	.90050	.02510	276.93

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit							270.00
Low Limit							-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.02496	.09759	.24591	.25064	3.2309	28.137	.55147
Stddev	.00032	.00034	.00117	.00150	.0066	.043	.00380
%RSD	1.2776	.35282	.47647	.59672	.20532	.15307	.68919

#1	.02530	.09799	.24726	.24989	3.2295	28.164	.54859
#2	.02489	.09735	.24521	.24968	3.2381	28.160	.55578
#3	.02468	.09744	.24526	.25237	3.2250	28.087	.55004

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	13.784	.57117	.48933	29.569	.24896	5.2352	.24385
Stddev	.020	.00378	.00068	.122	.00171	.0252	.00561
%RSD	.14549	.66104	.13962	.41212	.68609	.48107	2.3004

#1	13.764	.57492	.49005	29.709	.24814	5.2527	.24975
#2	13.804	.56737	.48868	29.488	.24782	5.2466	.23859
#3	13.784	.57121	.48927	29.510	.25093	5.2063	.24320

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701PS Acquired: 2/28/2017 21:27:33 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment: WG604329-03

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.60754	.19211	4.1285	.48584	.83777	.45947	.24468
Stddev	.01138	.00286	.0201	.00190	.00393	.00246	.00313
%RSD	1.8736	1.4879	.48646	.39188	.46874	.53600	1.2780

#1	.61814	.19408	4.1502	.48668	.84193	.45881	.24391
#2	.59551	.19343	4.1105	.48719	.83726	.45739	.24201
#3	.60898	.18883	4.1249	.48366	.83412	.46219	.24812

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.49114	.50142	F -.34451
Stddev	.00122	.00225	1.1320
%RSD	.24829	.44867	328.57

#1	.48974	.50390	.41033
#2	.49184	.50088	-1.6461
#3	.49186	.49950	.20221

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4831.9	67679.	8168.5
Stddev	15.0	347.	38.1
%RSD	.31041	.51227	.46656

#1	4818.0	68066.	8161.7
#2	4847.8	67577.	8209.5
#3	4829.9	67396.	8134.2

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701SDL Acquired: 2/28/2017 21:31:15 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 50 Custom ID2: Custom ID3:
 Comment: WG604329-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00138	.01923	.00212	.00369	.08142	.00010	58.702
Stddev	.00123	.00320	.00420	.00139	.00040	.00005	.069
%RSD	88.883	16.621	198.03	37.525	.49480	50.988	.11719

#1	-.00011	.02179	-.00034	.00222	.08098	.00012	58.697
#2	-.00147	.01565	-.00026	.00388	.08178	.00013	58.635
#3	-.00257	.02025	.00697	.00498	.08148	.00004	58.773

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00002	.00015	-.00140	.00310	.28357	.34566	-.00006
Stddev	.00053	.00027	.00068	.00350	.00858	.01550	.00470
%RSD	2411.3	174.44	48.776	113.04	3.0244	4.4832	8456.1

#1	-.00039	.00034	-.00062	-.00011	.28632	.34760	.00449
#2	.00059	-.00015	-.00165	.00256	.29043	.36009	.00023
#3	-.00026	.00027	-.00191	.00683	.27395	.32928	-.00489

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.8125	.06707	.00093	.71965	.00053	.02275	.00184
Stddev	.1358	.00273	.00072	.02081	.00161	.00901	.00075
%RSD	7.4939	4.0738	77.039	2.8923	302.60	39.622	40.927

#1	1.7019	.06975	.00172	.72256	.00239	.02146	.00097
#2	1.7715	.06429	.00075	.69753	-.00051	.03234	.00225
#3	1.9641	.06717	.00032	.73885	-.00029	.01445	.00229

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701SDL Acquired: 2/28/2017 21:31:15 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 50 Custom ID2: Custom ID3:
 Comment: WG604329-04

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00559	.00066	.31906	.00229	.06836	-.00278	.00667
Stddev	.00523	.00224	.00160	.00077	.00026	.00085	.00552
%RSD	93.481	336.98	.50044	33.590	.37963	30.764	82.700

#1	.00908	.00269	.31728	.00220	.06822	-.00185	.00726
#2	-.00042	-.00174	.32036	.00157	.06820	-.00296	.00088
#3	.00811	.00104	.31954	.00310	.06866	-.00353	.01188

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00041	.00790	F -.66672
Stddev	.00047	.00028	.33355
%RSD	115.66	3.5069	50.028

#1	.00002	.00780	-.65437
#2	.00027	.00821	-1.0063
#3	.00094	.00768	-.33952

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5033.6	71102.	8201.8
Stddev	10.3	160.	44.5
%RSD	.20506	.22559	.54203

#1	5045.3	71259.	8250.3
#2	5029.5	71107.	8192.2
#3	5025.9	70939.	8163.0

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701 Acquired: 2/28/2017 21:35:02 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -0.00438	1.1576	.01998	.08562	4.1113	.00053	F 1379.8
Stddev	.00189	.0003	.00643	.00155	.0077	.00010	16.9
%RSD	43.212	.02883	32.189	1.8090	.18649	18.733	1.2257

#1	-.00613	1.1577	.02089	.08637	4.1031	.00057	1361.3
#2	-.00465	1.1572	.02591	.08664	4.1183	.00059	1383.7
#3	-.00237	1.1578	.01314	.08383	4.1126	.00041	1394.5

Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
High Limit	5.0000						270.00
Low Limit	-.00400						-.10000

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00511	.00287	.00158	.04101	13.314	12.027	.14238
Stddev	.00044	.00032	.00054	.00251	.016	.102	.00432
%RSD	8.6104	11.209	34.421	6.1194	.11968	.85198	3.0361

#1	.00467	.00322	.00100	.04327	13.298	11.940	.13739
#2	.00510	.00282	.00208	.03831	13.314	12.002	.14489
#3	.00555	.00259	.00166	.04146	13.330	12.140	.14487

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	86.117	3.2605	.00484	35.451	.08049	.87521	.00896
Stddev	.446	.0016	.00134	.070	.00047	.02838	.01002
%RSD	.51768	.04788	27.675	.19731	.58019	3.2431	111.79

#1	86.507	3.2593	.00431	35.480	.08060	.89729	-.00157
#2	85.631	3.2599	.00636	35.371	.08088	.88515	.01009
#3	86.212	3.2622	.00384	35.501	.07997	.84319	.01836

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132701 Acquired: 2/28/2017 21:35:02 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00622	F -0.03167	16.891	.00263	3.4623	F -0.07205	-0.00886
Stddev	.00913	.01496	.012	.00084	.0096	.00302	.00587
%RSD	146.84	47.224	.07126	31.970	.27705	4.1937	66.305

#1	-.01499	-.02319	16.901	.00238	3.4519	-.06857	-.00476
#2	-.00688	-.04894	16.895	.00356	3.4709	-.07351	-.00623
#3	.00323	-.02288	16.878	.00194	3.4641	-.07406	-.01558

Check ?	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass
High Limit		90.000				36.000	
Low Limit		-.01000				-.03000	

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00837	.24435	F -.76021
Stddev	.00043	.00013	.22041
%RSD	5.1578	.05286	28.993

#1	.00883	.24449	-1.0040
#2	.00831	.24425	-.70174
#3	.00798	.24430	-.57493

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4221.5	59502.	7790.5
Stddev	12.0	227.	65.8
%RSD	.28473	.38225	.84485

#1	4232.7	59293.	7856.9
#2	4223.1	59469.	7725.2
#3	4208.8	59744.	7789.5

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132702 Acquired: 2/28/2017 21:38:55 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-01

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00035	-0.00791	.00181	.01391	.20439	.00013	133.08	.00017
Stddev	.00071	.00368	.00122	.00208	.00029	.00002	.29	.00046
%RSD	203.45	46.503	67.771	14.985	.14427	13.026	.21620	274.02

#1	-0.00048	-0.00368	.00041	.01344	.20445	.00013	133.31	.00011
#2	-0.00098	-0.00976	.00231	.01619	.20407	.00015	133.17	-0.00026
#3	.00042	-0.01030	.00270	.01210	.20465	.00012	132.76	.00066

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00017	-0.00068	.00328	.00625	10.650	.04349	20.762	.03873
Stddev	.00018	.00083	.00168	.03000	.095	.00331	.090	.00288
%RSD	107.96	120.91	51.263	480.01	.89370	7.6020	.43162	7.4468

#1	.00012	-0.00092	.00284	-.01993	10.739	.04588	20.862	.04197
#2	.00001	-.00137	.00514	-.00031	10.550	.03971	20.733	.03643
#3	.00037	.00023	.00186	.03899	10.661	.04486	20.690	.03780

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00198	32.221	.05109	.00049	.00114	.00022	.01424	2.7570
Stddev	.00044	.078	.00123	.00991	.00240	.00217	.00904	.0040
%RSD	22.036	.24065	2.4013	2024.1	209.82	999.14	63.435	.14403

#1	.00211	32.250	.05212	.00661	-.00159	.00270	.00606	2.7563
#2	.00149	32.280	.04973	.00579	.00214	-.00126	.01272	2.7535
#3	.00232	32.133	.05143	-.01094	.00289	-.00079	.02394	2.7613

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702132702 Acquired: 2/28/2017 21:38:55 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-01

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00030	.49392	-.00604	.00148	-.00037	.00209	.80713
Stddev	.00044	.00073	.00244	.00168	.00079	.00039	1.3118
%RSD	146.17	.14770	40.364	112.89	211.79	18.715	162.52

#1	.00029	.49308	-.00698	-.00026	.00040	.00247	.06697
#2	.00075	.49444	-.00327	.00308	-.00117	.00168	2.3217
#3	-.00013	.49423	-.00786	.00163	-.00035	.00213	.03271

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4844.8	69241.	8045.0
Stddev	4.7	312.	38.1
%RSD	.09630	.45038	.47304

#1	4847.5	69597.	8001.2
#2	4839.5	69107.	8063.3
#3	4847.5	69018.	8070.4

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132702MS Acquired: 2/28/2017 21:42:42 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-04

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19859	4.9308	.20105	.93969	.70244	.02509	131.83	.02479
Stddev	.00058	.0163	.00401	.00411	.00203	.00002	.34	.00007
%RSD	.29380	.33147	1.9951	.43751	.28874	.08200	.25619	.29017

#1	.19799	4.9349	.19951	.93497	.70014	.02507	131.47	.02479
#2	.19916	4.9447	.20560	.94168	.70323	.02509	131.89	.02486
#3	.19862	4.9128	.19803	.94243	.70395	.02511	132.14	.02472

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09798	.24613	.24871	1.8665	36.732	.57812	24.355	.26947
Stddev	.00021	.00167	.00226	.0120	.131	.00311	.132	.00189
%RSD	.21049	.68024	.90676	.64330	.35677	.53800	.54107	.70210

#1	.09774	.24695	.24684	1.8741	36.733	.57488	24.212	.26730
#2	.09810	.24724	.24808	1.8727	36.601	.58109	24.473	.27034
#3	.09809	.24421	.25121	1.8526	36.863	.57838	24.379	.27077

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50095	56.727	.28957	5.0340	.24577	.60895	.19646	5.2950
Stddev	.00127	.166	.00057	.0168	.00208	.00638	.00838	.0163
%RSD	.25449	.29267	.19586	.33432	.84836	1.0485	4.2664	.30748

#1	.50012	56.537	.29001	5.0263	.24450	.60212	.18680	5.2773
#2	.50030	56.801	.28978	5.0225	.24463	.60998	.20075	5.2981
#3	.50242	56.843	.28893	5.0533	.24817	.61476	.20183	5.3094

Check ? **Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass**
 High Limit
 Low Limit

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702132702MS Acquired: 2/28/2017 21:42:42 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-04

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48772	.97714	.47604	.23614	.49499	.47155	.38046
Stddev	.00226	.00138	.00168	.00212	.00282	.00195	1.5394
%RSD	.46407	.14149	.35224	.89911	.57026	.41316	404.62
#1	.48540	.97560	.47754	.23792	.49582	.46961	-.87663
#2	.48992	.97826	.47423	.23671	.49731	.47155	-.07939
#3	.48785	.97758	.47633	.23379	.49185	.47350	2.0974

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4836.4	68405.	8055.6
Stddev	23.5	164.	9.0
%RSD	.48561	.23993	.11133
#1	4810.9	68487.	8053.7
#2	4841.2	68216.	8065.3
#3	4857.2	68512.	8047.7

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132702MSD Acquired: 2/28/2017 21:46:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-05

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.19978	4.9290	.20278	.94786	.70772	.02505	133.61	.02456
Stddev	.00464	.0108	.00357	.00315	.00081	.00008	.27	.00013
%RSD	2.3231	.21852	1.7594	.33280	.11390	.31374	.20294	.52578

#1	.19462	4.9348	.20088	.94437	.70680	.02509	133.32	.02454
#2	.20362	4.9355	.20690	.94872	.70809	.02510	133.68	.02444
#3	.20110	4.9165	.20057	.95050	.70827	.02496	133.84	.02469

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09760	.24847	.24775	1.9052	36.798	.57690	24.821	.27383
Stddev	.00059	.00062	.00178	.0274	.041	.00220	.113	.00223
%RSD	.60348	.24966	.71980	1.4390	.11155	.38051	.45694	.81478

#1	.09799	.24883	.24671	1.8967	36.841	.57814	24.847	.27240
#2	.09692	.24775	.24981	1.8830	36.759	.57819	24.920	.27640
#3	.09789	.24883	.24673	1.9358	36.795	.57437	24.697	.27269

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49861	57.332	.29233	5.0527	.24247	.60478	.19491	5.3378
Stddev	.00059	.056	.00077	.0242	.00422	.00347	.00839	.0113
%RSD	.11741	.09790	.26435	.47795	1.7387	.57450	4.3041	.21196

#1	.49874	57.396	.29319	5.0730	.24733	.60650	.18651	5.3502
#2	.49797	57.292	.29170	5.0590	.23980	.60705	.20328	5.3352
#3	.49912	57.309	.29210	5.0260	.24027	.60078	.19494	5.3281

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702132702MSD Acquired: 2/28/2017 21:46:24 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment: WG604286-05

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.48771	.98553	.47219	.23303	.49468	.47375	.50550
Stddev	.00096	.00166	.00317	.00512	.00145	.00183	1.3880
%RSD	.19752	.16852	.67122	2.1966	.29232	.38610	274.59
#1	.48660	.98545	.47107	.23699	.49623	.47482	1.8178
#2	.48820	.98391	.47576	.23486	.49337	.47479	.64624
#3	.48833	.98723	.46973	.22725	.49445	.47164	-.94756

Check ? Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass Chk Pass
 High Limit
 Low Limit

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4871.8	69077.	8205.1
Stddev	2.3	74.	60.0
%RSD	.04714	.10643	.73117
#1	4874.4	69061.	8215.1
#2	4870.1	69158.	8140.8
#3	4871.0	69013.	8259.5

Approved: March 01, 2017

Ki K Buck

Sample Name: L1702125302 Acquired: 2/28/2017 21:50:05 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226	Cd2288
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00177	.00077	.00183	.00697	.28737	-0.00002	243.32	.00041
Stddev	.00132	.00439	.00301	.00441	.00073	.00000	.96	.00035
%RSD	74.671	571.68	164.67	63.279	.25275	9.3133	.39288	84.526

#1	-0.00292	.00551	-0.00109	.00513	.28709	-0.00003	244.03	.00009
#2	-0.00032	-0.00315	.00493	.01200	.28820	-0.00002	243.71	.00078
#3	-0.00208	-0.00006	.00164	.00377	.28683	-0.00002	242.24	.00037

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707	Mg2790	Mn2576
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00017	-0.00173	.00466	.01132	10.341	.04113	-0.05303	-0.00059
Stddev	.00064	.00018	.00128	.00891	.020	.00516	.06231	.00125
%RSD	379.95	10.598	27.538	78.647	.19771	12.557	117.51	212.38

#1	.00042	-0.00160	.00615	.01991	10.325	.03953	-0.02596	.00051
#2	-0.00008	-0.00194	.00397	.01193	10.364	.03696	-0.00883	-0.00033
#3	-0.00084	-0.00166	.00387	.00213	10.333	.04691	-0.12430	-0.00194

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Elem	Mo2020	Na5895	Ni2316	P_2149	Pb2203	Sb2068	Se1960	Si2124
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00126	4.8199	.24066	.02198	-0.00081	.00260	.00061	.24377
Stddev	.00033	.0522	.00065	.01015	.00697	.00481	.01545	.00250
%RSD	26.191	1.0831	.27151	46.174	864.75	184.67	2520.1	1.0249

#1	.00093	4.8696	.24088	.01039	.00685	.00783	-0.00094	.24117
#2	.00159	4.8246	.24118	.02926	-0.00679	-0.00163	.01678	.24398
#3	.00127	4.7655	.23993	.02631	-0.00248	.00161	-0.01401	.24616

Check ? **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass** **Chk Pass**
 High Limit
 Low Limit

Approved: March 01, 2017

K. K. Buck

Sample Name: L1702125302 Acquired: 2/28/2017 21:50:05 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: 10 Custom ID2: Custom ID3:
 Comment:

Elem	Sn1899	Sr4077	Ti3372	Ti1908	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00256	.40916	-.01399	.00220	.00137	.00264	.60828
Stddev	.00031	.00083	.00324	.00968	.00047	.00016	.34404
%RSD	12.261	.20203	23.183	438.89	33.984	6.2027	56.559

#1	.00243	.40989	-.01771	-.00065	.00137	.00253	.97377
#2	.00233	.40932	-.01171	-.00572	.00183	.00255	.29071
#3	.00292	.40826	-.01256	.01299	.00090	.00282	.56037

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4997.7	71071.	8339.0
Stddev	10.3	103.	52.7
%RSD	.20592	.14480	.63240

#1	4997.7	70974.	8284.3
#2	5008.0	71060.	8343.2
#3	4987.5	71179.	8389.5

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 21:53:55 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40437	10.220	.40739	.49699	1.0436	.05128	10.381
Stddev	.00133	.038	.00325	.00412	.0015	.00011	.011
%RSD	.32869	.37190	.79807	.82835	.14098	.21667	.10163

#1	.40563	10.264	.41008	.50063	1.0453	.05137	10.379
#2	.40449	10.200	.40831	.49781	1.0432	.05116	10.392
#3	.40298	10.196	.40377	.49252	1.0424	.05132	10.371

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05071	.20408	.51181	.51384	3.8499	54.042	F 1.1026
Stddev	.00035	.00078	.00064	.00125	.0104	.109	.0031
%RSD	.68113	.38230	.12466	.24324	.26956	.20123	.28320

#1	.05060	.20359	.51109	.51255	3.8556	53.920	1.0994
#2	.05109	.20367	.51229	.51505	3.8379	54.077	1.1030
#3	.05042	.20498	.51204	.51393	3.8563	54.128	1.1056

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value							1.0000
Range							10.000%

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.8833	.48957	1.0100	53.067	.51035	10.176	.51801
Stddev	.1364	.00263	.0013	.095	.00231	.007	.00365
%RSD	1.3799	.53700	.13124	.17911	.45232	.06709	.70458

#1	9.7261	.48892	1.0114	53.166	.50772	10.171	.51999
#2	9.9529	.49247	1.0098	53.058	.51203	10.184	.52024
#3	9.9707	.48733	1.0088	52.976	.51130	10.173	.51380

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

K. K. Buck

Sample Name: CCV Acquired: 2/28/2017 21:53:55 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2408	.39957	5.1097	1.0115	1.0350	.98039	.50471
Stddev	.0051	.00716	.0023	.0018	.0017	.00126	.00527
%RSD	.41295	1.7907	.04435	.18201	.15898	.12835	1.0446

#1	1.2453	.39187	5.1073	1.0113	1.0361	.97971	.50849
#2	1.2419	.40080	5.1098	1.0098	1.0358	.97961	.50695
#3	1.2352	.40602	5.1119	1.0135	1.0331	.98184	.49869

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0105	1.0013	F 1.3332
Stddev	.0033	.0006	1.4324
%RSD	.32667	.05742	107.45

#1	1.0143	1.0008	-.25216
#2	1.0081	1.0019	1.7173
#3	1.0091	1.0011	2.5344

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4829.2	68080.	7896.7
Stddev	17.2	291.	43.6
%RSD	.35652	.42776	.55170

#1	4849.1	67753.	7890.9
#2	4819.0	68175.	7856.3
#3	4819.5	68311.	7942.9

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 21:57:32 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00011	-0.01408	-0.00133	.00366	.00050	.00014	-0.02016
Stddev	.00112	.00764	.00434	.00230	.00013	.00005	.02457
%RSD	1015.1	54.301	325.60	62.671	26.638	32.344	121.84

#1	.00105	-.02117	-.00475	.00499	.00037	.00013	-.00036
#2	-.00021	-.00598	.00355	.00101	.00064	.00019	-.04766
#3	-.00118	-.01508	-.00281	.00499	.00050	.00010	-.01248

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00024	.00014	-0.00136	.00081	.00470	.22559	.00103
Stddev	.00046	.00031	.00119	.00110	.03376	.04537	.00196
%RSD	192.24	219.63	87.266	136.57	718.27	20.113	188.94

#1	.00060	.00011	-.00188	.00204	-.01305	.26725	.00297
#2	-.00028	.00047	-.00000	.00045	.04363	.17724	.00108
#3	.00041	-.00016	-.00221	-.00007	-.01648	.23228	-.00094

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.01382	-0.00134	.00028	.08010	-0.00282	.00651	.00125
Stddev	.08568	.00061	.00075	.00782	.00121	.00551	.00431
%RSD	619.81	45.972	263.22	9.7648	42.854	84.648	344.92

#1	-.07111	-.00171	.00100	.07812	-.00225	.01287	-.00098
#2	.08468	-.00167	.00034	.08872	-.00199	.00327	.00621
#3	-.05504	-.00063	-.00049	.07345	-.00420	.00339	-.00149

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

K. K. Buck

Sample Name: CCB Acquired: 2/28/2017 21:57:32 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00570	.00258	.00327	-.00056	.00017	.00252	-.00034
Stddev	.00312	.00276	.00241	.00145	.00012	.00320	.00364
%RSD	54.786	106.82	73.698	260.52	70.206	126.94	1070.0

#1	.00258	.00105	.00165	-.00071	.00012	.00615	.00370
#2	.00568	.00093	.00604	-.00192	.00031	.00131	-.00335
#3	.00883	.00577	.00212	.00096	.00009	.00010	-.00137

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	-.00007	-.00051	F .46491
Stddev	.00055	.00031	.86455
%RSD	804.49	60.960	185.96

#1	.00009	-.00028	.01971
#2	.00038	-.00038	1.4613
#3	-.00068	-.00086	-.08631

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4871.3	69636.	7773.5
Stddev	7.6	271.	39.0
%RSD	.15625	.38976	.50230

#1	4875.5	69923.	7732.4
#2	4875.9	69384.	7778.0
#3	4862.5	69601.	7810.1

Approved: March 01, 2017

Ki K Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:01:22 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00688	.16565	.00731	.07382	.00898	.00172	.44247
Stddev	.00024	.00256	.00031	.00093	.00062	.00004	.01596
%RSD	3.5589	1.5462	4.2390	1.2648	6.9386	2.2465	3.6068

#1	.00678	.16758	.00767	.07438	.00830	.00167	.45270
#2	.00716	.16663	.00710	.07435	.00952	.00174	.42408
#3	.00671	.16275	.00717	.07275	.00913	.00174	.45063

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00091	.00386	.00145	.00437	.07923	1.0031	.08907
Stddev	.00021	.00016	.00140	.00087	.00174	.0708	.00092
%RSD	23.064	4.0982	96.535	19.900	2.1924	7.0626	1.0279

#1	.00088	.00400	.00093	.00352	.07910	1.0784	.08959
#2	.00072	.00387	.00038	.00433	.07756	.99314	.08960
#3	.00114	.00369	.00303	.00525	.08103	.93777	.08801

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40656	.00897	.00856	.47310	.01681	.81756	.00500
Stddev	.01133	.00320	.00076	.02982	.00053	.00692	.00467
%RSD	2.7873	35.713	8.8584	6.3038	3.1578	.84676	93.266

#1	.40350	.00676	.00828	.50715	.01691	.81619	.00082
#2	.39707	.01264	.00942	.45161	.01728	.81143	.00415
#3	.41911	.00750	.00799	.46054	.01623	.82507	.01004

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:01:22 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.08672	.02039	.75474	.41467	.04224	.02437	.16652
Stddev	.00266	.00746	.00690	.00154	.00042	.00136	.00615
%RSD	3.0660	36.586	.91357	.37155	1.0057	5.5934	3.6954

#1	.08810	.01994	.75427	.41380	.04199	.02399	.17336
#2	.08841	.02807	.74809	.41376	.04201	.02324	.16476
#3	.08366	.01316	.76186	.41645	.04273	.02588	.16144

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00805	.02033	F 131.12
Stddev	.00089	.00026	1.07
%RSD	11.069	1.2769	.81766

#1	.00713	.02003	130.76
#2	.00813	.02043	132.32
#3	.00890	.02053	130.27

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4960.2	70093.	7880.2
Stddev	16.7	194.	10.1
%RSD	.33766	.27710	.12863

#1	4941.6	69997.	7874.7
#2	4964.8	70317.	7891.9
#3	4974.1	69966.	7874.0

Approved: March 01, 2017

Ki K Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:05:11 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00803	.16846	.00830	.07664	.00894	.00173	.41599
Stddev	.00106	.00385	.00299	.00261	.00112	.00003	.01282
%RSD	13.154	2.2832	36.062	3.4044	12.499	1.5731	3.0828

#1	.00803	.16789	.00491	.07773	.00973	.00171	.42845
#2	.00697	.16493	.00942	.07366	.00944	.00171	.40283
#3	.00908	.17256	.01057	.07853	.00766	.00176	.41670

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00100	.00415	.00247	.00402	.08490	.97741	.08755
Stddev	.00022	.00027	.00160	.00095	.00337	.05739	.00125
%RSD	21.909	6.4887	64.887	23.656	3.9639	5.8716	1.4273

#1	.00077	.00396	.00319	.00358	.08728	.98803	.08640
#2	.00120	.00404	.00358	.00511	.08637	.91545	.08888
#3	.00102	.00446	.00063	.00336	.08105	1.0287	.08736

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.42651	.00827	.00825	.46708	.01611	.82615	.00681
Stddev	.02396	.00036	.00025	.00966	.00028	.02333	.00412
%RSD	5.6185	4.3053	3.0879	2.0690	1.7344	2.8245	60.489

#1	.43192	.00830	.00796	.45629	.01621	.85252	.00687
#2	.40030	.00861	.00838	.47495	.01579	.81778	.00266
#3	.44731	.00790	.00841	.47000	.01632	.80816	.01091

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

K. K. Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:05:11 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Ti1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.09350	.02199	.76060	.41715	.04224	.02470	.17492
Stddev	.00748	.00606	.00460	.00081	.00062	.00394	.00449
%RSD	8.0016	27.548	.60493	.19364	1.4725	15.975	2.5678

#1	.09640	.02813	.76590	.41786	.04293	.02894	.17050
#2	.08500	.01602	.75826	.41733	.04206	.02400	.17477
#3	.09910	.02182	.75763	.41627	.04173	.02115	.17948

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00851	.01814	F 130.52
Stddev	.00049	.00024	.21
%RSD	5.7099	1.3478	.15793

#1	.00903	.01842	130.53
#2	.00844	.01805	130.31
#3	.00807	.01795	130.72

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	5007.5	71415.	8084.9
Stddev	17.5	519.	56.0
%RSD	.35023	.72709	.69227

#1	5027.6	71429.	8106.2
#2	5000.0	71928.	8127.1
#3	4995.0	70890.	8021.4

Approved: March 01, 2017

Ki K Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:09:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.01098	.21136	.00841	.09373	.01065	.00214	.54434
Stddev	.00320	.00413	.00547	.00132	.00045	.00003	.01178
%RSD	29.145	1.9521	65.009	1.4126	4.2602	1.2909	2.1645

#1	.00916	.20988	.00866	.09488	.01041	.00215	.55506
#2	.00910	.21602	.01376	.09404	.01118	.00216	.53172
#3	.01467	.20818	.00283	.09229	.01037	.00211	.54625

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00088	.00557	.00330	.00471	.09669	1.2148	.10855
Stddev	.00012	.00011	.00061	.00204	.02664	.0285	.00350
%RSD	13.547	1.9612	18.555	43.274	27.556	2.3472	3.2240

#1	.00086	.00563	.00401	.00317	.12132	1.2085	.10656
#2	.00077	.00544	.00299	.00702	.06841	1.2459	.10649
#3	.00101	.00563	.00291	.00394	.10035	1.1899	.11259

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.51134	.00757	.01031	.60560	.02013	1.0150	.00799
Stddev	.10685	.00221	.00075	.04421	.00168	.0142	.00418
%RSD	20.896	29.270	7.3146	7.3003	8.3421	1.3958	52.384

#1	.43969	.00992	.01004	.64418	.01830	1.0282	.00528
#2	.46017	.00552	.01116	.61526	.02161	1.0169	.00587
#3	.63415	.00726	.00973	.55736	.02047	1.0000	.01281

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

K. K. Buck

Sample Name: LLCCV Acquired: 2/28/2017 22:09:00 Type: Unk
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.11573	.02640	.93528	.51577	.05301	.03166	.20771
Stddev	.00333	.00391	.00319	.00105	.00061	.00516	.00548
%RSD	2.8776	14.810	.34069	.20283	1.1599	16.302	2.6366

#1	.11735	.03028	.93882	.51528	.05371	.02651	.20152
#2	.11190	.02246	.93263	.51697	.05257	.03162	.20970
#3	.11794	.02646	.93439	.51505	.05273	.03684	.21191

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.01126	.02434	F 163.50
Stddev	.00083	.00028	.79
%RSD	7.3499	1.1435	.48489

#1	.01098	.02446	163.79
#2	.01220	.02453	164.10
#3	.01062	.02402	162.60

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			45.000
Low Limit			-.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4939.6	69953.	7921.1
Stddev	15.3	306.	23.6
%RSD	.31022	.43720	.29736

#1	4932.5	69961.	7928.3
#2	4957.2	70255.	7894.8
#3	4929.1	69644.	7940.2

Approved: March 01, 2017

Ki K Buck

Sample Name: ICSA Acquired: 2/28/2017 22:12:48 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	F -.00695	243.69	.00218	.00317	.00005	.00009	237.01
Stddev	.00138	.55	.00060	.00210	.00078	.00002	1.10
%RSD	19.839	.22684	27.324	66.245	1692.8	17.693	.46245

#1	-.00829	243.66	.00233	.00358	-.00085	.00008	237.47
#2	-.00554	244.25	.00152	.00504	.00055	.00009	237.80
#3	-.00701	243.15	.00269	.00090	.00044	.00011	235.76

Check ?	Chk Fail	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit	.00400						
Low Limit	-.00400						

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00004	-.00081	-.00305	F .02398	91.207	.16888	.00320
Stddev	.00031	.00011	.00058	.00126	.517	.04536	.00512
%RSD	742.31	13.139	18.941	5.2695	.56659	26.860	159.92

#1	-.00031	-.00075	-.00372	.02306	90.830	.15150	.00313
#2	.00030	-.00093	-.00274	.02345	91.796	.22036	.00836
#3	-.00012	-.00075	-.00270	.02542	90.995	.13478	-.00188

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Fail	Chk Pass	Chk Pass	Chk Pass
High Limit				.00400			
Low Limit				-.00400			

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	240.24	.00049	-.00000	.05475	-.00215	.05740	.00275
Stddev	1.63	.00097	.00017	.01288	.00161	.01712	.00220
%RSD	.67813	197.89	3598.5	23.515	74.850	29.825	80.007

#1	241.65	-.00056	-.00008	.06765	-.00134	.03777	.00339
#2	240.61	.00067	.00019	.05472	-.00110	.06925	.00456
#3	238.46	.00136	-.00012	.04190	-.00400	.06518	.00030

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: ICSA Acquired: 2/28/2017 22:12:48 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00468	-.00659	.00568	.00062	.00116	-.00041	.00430
Stddev	.00443	.01464	.00215	.00126	.00025	.00179	.00438
%RSD	94.532	222.14	37.811	203.36	21.566	433.92	101.89

#1	.00691	-.01023	.00754	-.00035	.00122	-.00206	-.00009
#2	-.00041	-.01907	.00617	.00204	.00137	-.00067	.00431
#3	.00756	.00953	.00333	.00017	.00089	.00149	.00867

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00383	.00047	F -17.180
Stddev	.00011	.00018	.580
%RSD	2.7916	37.793	3.3756

#1	.00392	.00062	-17.583
#2	.00371	.00027	-16.516
#3	.00385	.00052	-17.442

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.02000
Low Limit			-.02000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4572.6	63273.	7734.3
Stddev	14.6	287.	13.5
%RSD	.31986	.45369	.17441

#1	4571.3	63598.	7729.1
#2	4558.7	63055.	7724.2
#3	4587.9	63165.	7749.6

Approved: March 01, 2017

K. K. Buck

Sample Name: ICSAB Acquired: 2/28/2017 22:16:36 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.49812	242.66	.24015	.48711	.25205	.25688	237.14
Stddev	.00338	.36	.00173	.00333	.00027	.00046	1.35
%RSD	.67860	.14917	.72072	.68402	.10647	.18095	.56892

#1	.49478	242.93	.23824	.48731	.25174	.25643	235.68
#2	.50154	242.25	.24162	.49033	.25215	.25736	237.39
#3	.49804	242.81	.24058	.48368	.25224	.25685	238.34

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.45833	.23552	.24467	.27213	90.887	5.5957	.00474
Stddev	.00091	.00037	.00068	.00194	.175	.1026	.00324
%RSD	.19766	.15569	.27672	.71231	.19248	1.8330	68.216

#1	.45935	.23521	.24389	.27330	90.815	5.5094	.00359
#2	.45804	.23593	.24503	.26989	90.760	5.5685	.00840
#3	.45761	.23543	.24509	.27319	91.087	5.7091	.00225

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	238.61	.23059	.00025	5.3768	.46483	-.00569	.48043
Stddev	1.19	.00104	.00164	.0420	.00223	.01062	.00365
%RSD	.50046	.45225	645.44	.78073	.47878	186.66	.75915

#1	237.23	.23070	-.00070	5.3532	.46350	.00549	.47834
#2	239.25	.23157	.00215	5.3520	.46740	-.00691	.48464
#3	239.35	.22950	-.00069	5.4253	.46359	-.01565	.47831

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: ICSAB Acquired: 2/28/2017 22:16:36 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.50150	.22822	.00890	.47679	.00124	-.00066	.44078
Stddev	.00231	.01448	.00358	.00185	.00019	.00347	.00908
%RSD	.46122	6.3438	40.279	.38705	15.235	527.21	2.0590

#1	.50345	.21252	.00804	.47658	.00126	-.00466	.44581
#2	.49895	.24105	.01283	.47873	.00141	.00158	.43030
#3	.50210	.23108	.00582	.47506	.00104	.00110	.44622

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.24773	.45273	F -17.305
Stddev	.00036	.00131	.792
%RSD	.14332	.28941	4.5779

#1	.24804	.45346	-18.216
#2	.24734	.45352	-16.919
#3	.24781	.45122	-16.779

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.02500
Low Limit			-.02500

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4551.9	63189.	7661.2
Stddev	2.1	356.	10.7
%RSD	.04540	.56361	.13915

#1	4553.1	63543.	7664.2
#2	4553.1	62831.	7670.1
#3	4549.5	63193.	7649.4

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 22:20:17 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.40418	10.215	.40298	.49544	1.0378	.05112	10.359
Stddev	.00160	.012	.00489	.00315	.0041	.00012	.057
%RSD	.39550	.11782	1.2135	.63619	.39827	.23320	.55454

#1	.40276	10.201	.40544	.49212	1.0348	.05098	10.328
#2	.40387	10.219	.39735	.49582	1.0425	.05119	10.426
#3	.40591	10.224	.40615	.49839	1.0362	.05118	10.325

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.05038	.20441	.51047	.51850	3.8439	54.112	F 1.1008
Stddev	.00031	.00053	.00355	.00474	.0274	.170	.0050
%RSD	.61061	.25993	.69580	.91377	.71219	.31348	.45093

#1	.05031	.20477	.51079	.51319	3.8465	54.248	1.0967
#2	.05012	.20380	.50677	.52003	3.8698	54.167	1.1063
#3	.05072	.20467	.51385	.52229	3.8153	53.922	1.0994

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Fail
Value							1.0000
Range							10.000%

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	9.7446	.48550	1.0101	53.024	.50953	10.167	.51960
Stddev	.0601	.00390	.0002	.172	.00075	.017	.00200
%RSD	.61705	.80234	.02245	.32520	.14781	.16923	.38438

#1	9.8062	.48510	1.0100	52.876	.51039	10.155	.52103
#2	9.7413	.48959	1.0104	53.213	.50912	10.160	.51732
#3	9.6861	.48183	1.0100	52.982	.50907	10.187	.52044

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCV Acquired: 2/28/2017 22:20:17 Type: QC
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	1.2447	.40334	5.1161	1.0095	1.0316	.97856	.50475
Stddev	.0082	.01527	.0058	.0023	.0040	.00293	.00401
%RSD	.65865	3.7870	.11276	.22486	.38581	.29895	.79367

#1	1.2354	.38570	5.1116	1.0085	1.0290	.97587	.50675
#2	1.2507	.41252	5.1139	1.0079	1.0362	.97813	.50736
#3	1.2480	.41178	5.1226	1.0121	1.0297	.98167	.50014

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
Value							
Range							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	1.0059	.99373	F .28357
Stddev	.0034	.00129	.55652
%RSD	.33458	.12938	196.25

#1	1.0021	.99315	.88650
#2	1.0082	.99284	.17465
#3	1.0076	.99521	-.21043

Check ?	Chk Pass	Chk Pass	Chk Fail
Value			1.0000
Range			-10.000%

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4822.8	67149.	7725.1
Stddev	14.7	258.	91.5
%RSD	.30465	.38473	1.1841

#1	4816.5	66938.	7626.2
#2	4812.4	67071.	7806.7
#3	4839.6	67437.	7742.4

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 22:23:55 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Ag3280	Al3082	As1890	B_2496	Ba4554	Be3131	Ca4226
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.00086	-.01560	-.00314	.00021	.00028	.00007	.00674
Stddev	.00065	.00303	.00557	.00287	.00022	.00005	.01795
%RSD	75.769	19.422	177.69	1355.0	80.622	75.246	266.39

#1	-.00013	-.01301	-.00064	-.00148	.00053	.00009	.01273
#2	-.00106	-.01487	.00075	-.00141	.00016	.00010	.02092
#3	-.00138	-.01893	-.00952	.00353	.00014	.00001	-.01344

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Cd2288	Co2286	Cr2677	Cu2247	Fe2611	K_7664	Li6707
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	.00024	-.00007	-.00203	.00099	-.00399	.13962	-.00096
Stddev	.00027	.00055	.00107	.00120	.01224	.05546	.00329
%RSD	113.29	755.77	52.564	121.95	306.87	39.721	341.91

#1	-.00004	-.00046	-.00311	.00234	-.01702	.07558	.00211
#2	.00027	.00055	-.00098	.00060	.00727	.17138	-.00443
#3	.00050	-.00031	-.00201	.00002	-.00222	.17191	-.00056

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	Mg2790	Mn2576	Mo2020	Na5895	Ni2316	P_2149	Pb2203
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-.01843	.00077	.00058	.02947	.00011	.00032	-.00368
Stddev	.07495	.00250	.00059	.01064	.00036	.00741	.00451
%RSD	406.72	324.88	100.38	36.117	333.70	2310.6	122.78

#1	-.07040	-.00003	-.00001	.04132	.00024	-.00191	.00096
#2	.06748	.00358	.00060	.02634	-.00030	-.00571	-.00806
#3	-.05237	-.00124	.00116	.02074	.00039	.00858	-.00392

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Approved: March 01, 2017

Ki K Buck

Sample Name: CCB Acquired: 2/28/2017 22:23:55 Type: Blank
 Method: ICP-THERMO4_6010_200.7WATER_3YLINES(v273) Mode: CONC Corr. Factor: 1.000000
 User: KKB Custom ID1: Custom ID2: Custom ID3:
 Comment:

Elem	Sb2068	Se1960	Si2124	Sn1899	Sr4077	Ti3372	Tl1908
Units	ppm	ppm	ppm	ppm	ppm	ppm	ppm
Avg	-0.00044	.00239	.00044	.00011	.00007	-0.00048	-0.00572
Stddev	.00248	.00559	.00601	.00080	.00006	.00166	.00379
%RSD	559.50	233.74	1371.2	728.41	89.448	346.15	66.268

#1	-0.00330	.00085	.00444	-0.00082	.00014	-0.00061	-0.00954
#2	.00082	.00859	.00334	.00058	.00004	-0.00207	-0.00196
#3	.00115	-0.00227	-0.00647	.00056	.00003	.00124	-0.00565

Check ?	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass	Chk Pass
High Limit							
Low Limit							

Elem	V_2924	Zn2062	Zr3391
Units	ppm	ppm	ppm
Avg	.00008	-0.00064	F -1.1750
Stddev	.00077	.00018	1.0986
%RSD	922.23	28.211	93.494

#1	-0.00080	-0.00084	-0.79258
#2	.00061	-0.00051	-0.31878
#3	.00044	-0.00057	-2.4137

Check ?	Chk Pass	Chk Pass	Chk Fail
High Limit			.04000
Low Limit			-0.04000

Int. Std.	Y_2243	Y_3600	Y_3774
Units	Cts/S	Cts/S	Cts/S
Avg	4960.2	70929.	7978.7
Stddev	9.3	387.	61.7
%RSD	.18830	.54598	.77357

#1	4968.5	71317.	8010.4
#2	4962.1	70928.	7907.5
#3	4950.1	70542.	8018.0

Approved: March 01, 2017

Ki K Buck

2.1.2 Metals ICP-MS Data

2.1.2.1 Summary Data

Lab Report #: L17021203

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021203-01	PrePrep Method: N/A	Instrument: ICP-MS2
Client ID: LH18/24-SP140-7418-GRAB	Prep Method: 3015	Prep Date: 02/24/2017 08:46
Matrix: Water	Analytical Method: 6020A	Cal Date: 02/28/2017 10:52
Workgroup #: WG604209	Analyst: JYH	Run Date: 02/28/2017 11:35
Collect Date: 02/22/2017 10:00	Dilution: 1	File ID: NI.022817.113539
Sample Tag: 01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Silver, Total	7440-22-4	0.00100	U	0.00200	0.00100	0.000500
U	Analyte was not detected. The concentration is below the reported LOD.					

2.1.2.2 QC Summary Data

Example 6020 Calculations
Perkin Elmer NexION 300X

1.0 Initial Calibration (ICAL) Parameters

The system performs linear regression from data consisting of a blank and three standards.

2.0 Calculating the concentration (C) of an element in water using data from prep log, run log, and quantitation report (note:the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Final volume

Vi = Initial volume

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in (ug/L)

Example:

0.1

100

40

1

0.25

3.0 Calculating the concentration (C) of an element in soil using data from prep log, run log, and quantitation report (note: the data system performs this calculation automatically when correction factors have been entered):

$$Cx = Cs \times \frac{Vf}{Vi} \times D$$

Where:

Cs = Concentration computed by the data system (ug/L)

Vf = Final volume

Vi = Initial volume

D = Dilution factor as a multiplier (10X = 10)

Cx = Concentration of element in (ug/kg)

Example:

0.1

200

0.5

1

40

4.0 Adjusting the concentration to dry weight:

$$Cdry = \frac{Cx \times 100}{Px}$$

Where:

Cx = Concentration calculated as received (wet basis)

Px = Percent solids of sample (%wt)

$Cdry$ = Concentration calculated as dry weight (ug/kg)

Example:

40

80

50

50 ug/kg = 0.050 mg/kg

Perkin Elmer NexION ICP/MS

STANDARDS KEY

QC Std 1 - ICV

QC Std 2 - ICB

QC Std 3 - LLICV

QC Std 4 - ICSA

QC Std 5 - ICSAB

QC Std 6 - CCV

QC Std 7 - CCB

QC Std 8 - LLCCV

Calibration Solutions

Analyte	Stock Conc. (mg/L)	S1 (mg/L)	S2 (mg/L)	S3 (mg/L)	S4 (mg/L)
Al	10	0	0.00005	0.05	0.1
Sb	10	0	0.00005	0.05	0.1
As	10	0	0.00005	0.05	0.1
Ba	10	0	0.00005	0.05	0.1
Be	10	0	0.00005	0.05	0.1
Ca	1000	0	0.005	5	10
Cd	10	0	0.0005	0.05	0.1
Cr	10	0	0.0005	0.05	0.1
Co	10	0	0.0005	0.05	0.1
Cu	10	0	0.0005	0.05	0.1
Fe	1000	0	0.005	5	10
Pb	10	0	0.00005	0.05	0.1
Mg	1000	0	0.005	5	10
Mn	10	0	0.00005	0.05	0.1
Ni	10	0	0.00005	0.05	0.1
K	1000	0	0.005	5	10
Se	10	0	0.00005	0.05	0.1
Ag	10	0	0.00005	0.05	0.1
Na	1000	0	0.005	5	10
Tl	10	0	0.00005	0.05	0.1
V	10	0	0.00005	0.05	0.1
U	1000	0	0.00005	0.05	0.1
Zn	10	0	0.00005	0.05	0.1

Workgroup: WG604063
 Analyst: VC
 Spike Analyst: VC
 Run Date: 02/24/2017 08:46
 Method: 3015
 Balance: BAL016
 Instrument: MW-3
 Instrument Start: 02/24/2017 08:52

SOP: ME407 Revision 19
 Spike Solution: STD78216
 Spike Witness: ERP
 HNO3 Lot #: COA19483
 40 & 50 ML. DIGESTION TU COA19487
 MS Filters- fisher-Lot# RRGT38288

SAMPLE #	Type	Matrix	Initial Amount	Final Volume	Initial Vessel Wt	Final Vessel Wt	Spike Amount	Due Date
1	WG604063-02	BLANK	1	20 mL	50 mL	184.957 g	184.95 g	
2	WG604063-03	LCS	1	20 mL	50 mL	186.033 g	186.017 g	.25 mL
3	L17021201-01	SAMP	1	20 mL	50 mL	182.437 g	182.418 g	03/06/17
4	L17021203-01	SAMP	1	20 mL	50 mL	185.269 g	185.248 g	03/06/17
5	L17021250-01	SAMP	1	20 mL	50 mL	183.086 g	182.996 g	03/06/17
6	L17021253-04	SAMP	1	20 mL	50 mL	183.685 g	183.605 g	03/03/17
7	L17021253-06	SAMP	1	20 mL	50 mL	185.188 g	185.128 g	03/03/17
8	L17021256-01	SAMP	1	20 mL	50 mL	185.194 g	185.045 g	03/06/17
9	L17021259-01	SAMP	1	20 mL	50 mL	183.773 g	183.724 g	03/06/17
10	L17021260-01	SAMP	1	20 mL	50 mL	186.171 g	186.116 g	03/06/17
11	L17021261-01	SAMP	1	20 mL	50 mL	183.41 g	183.39 g	03/06/17
12	L17021261-02	SAMP	1	20 mL	50 mL	182.679 g	182.66 g	03/06/17
13	L17021261-03	SAMP	1	20 mL	50 mL	184.182 g	184.16 g	03/06/17
14	L17021261-04	SAMP	1	20 mL	50 mL	184.092 g	184.077 g	03/06/17
15	L17021261-05	SAMP	1	20 mL	50 mL	185.619 g	185.606 g	03/06/17
16	L17021262-01	SAMP	1	20 mL	50 mL	184.529 g	184.514 g	03/06/17
17	L17021262-02	SAMP	1	20 mL	50 mL	185.025 g	185.014 g	03/06/17
18	L17021262-03	SAMP	1	20 mL	50 mL	184.899 g	184.889 g	03/06/17
19	WG604063-01	REF	1	20 mL	50 mL	182.708 g	182.685 g	
20	L17021262-04	SAMP	1	20 mL	50 mL	182.708 g	182.685 g	03/06/17
21	WG604063-04	MS	1	20 mL	50 mL	184.003 g	183.993 g	.25 mL
22	WG604063-05	MSD	1	20 mL	50 mL	184.692 g	184.68 g	.25 mL

L17021253-04	FILTERED DIGESTATE
L17021253-06	FILTERED DIGESTATE
L17021256-01	FILTERED DIGESTATE
L17021260-01	FILTERED DIGESTATE

Analyst: Veeha Collier

Reviewer: Erin Patten



Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-MS2 Dataset: 022817A.REP

Analyst1: JYH Analyst2: N/A

Method: 6020/6020A/200.8 SOP: ME700A Rev: 3

Maintenance Log ID: _____

Calibration Std: STD80374 ICV Std: STD80372 Post Spike: STD79415

ICSA: STD80378 IC SAB: STD80375 Int. Std: RGT39300

CCV: STD80373 LLCCV: STD80377 Tuning Sol : STD80381

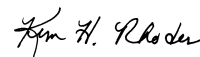
Stannous : _____ Hydroxylamine : _____

Workgroups: 604209,604489,604447,604524

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
1	NI.022817.103956	Blank	Blank		1		02/28/17 10:39
2	NI.022817.104301	WG604488-01	Calibration Point		1		02/28/17 10:43
3	NI.022817.104606	WG604488-02	Calibration Point		1		02/28/17 10:46
4	NI.022817.104912	WG604488-03	Calibration Point		1		02/28/17 10:49
5	NI.022817.105218	WG604488-04	Calibration Point		1		02/28/17 10:52
6	NI.022817.105524	WG604488-05	Initial Calibration Verification		1		02/28/17 10:55
7	NI.022817.105831	WG604488-06	Initial Calib Blank		1		02/28/17 10:58
8	NI.022817.110138	WG604488-07	Low Level Initial Calibration V		1		02/28/17 11:01
9	NI.022817.110443	WG604488-08	Interference Check		1		02/28/17 11:04
10	NI.022817.110748	WG604488-09	Interference Check		1		02/28/17 11:07
11	NI.022817.111055	WG604488-10	CCV		1		02/28/17 11:10
12	NI.022817.111401	WG604488-11	CCB		1		02/28/17 11:14
13	NI.022817.111708	WG604063-02	Method/Prep Blank	20/50	1		02/28/17 11:17
14	NI.022817.112013	WG604063-03	Laboratory Control S	20/50	1		02/28/17 11:20
15	NI.022817.112319	WG604063-01	Reference Sample		1	L17021262-04	02/28/17 11:23
16	NI.022817.112623	WG604063-04	Matrix Spike	20/50	1	L17021262-04	02/28/17 11:26
17	NI.022817.112928	WG604063-05	Matrix Spike Duplica	20/50	1	L17021262-04	02/28/17 11:29
18	NI.022817.113234	L17021201-01	LH18/24-SP650-6418-GRAB	20/50	1		02/28/17 11:32
19	NI.022817.113539	L17021203-01	LH18/24-SP140-7418-GRAB	20/50	1		02/28/17 11:35
20	NI.022817.113845	WG604209-01	Post Digestion Spike		1	L17021203-01	02/28/17 11:38
21	NI.022817.114150	WG604209-02	Serial Dilution		5	L17021203-01	02/28/17 11:41
22	NI.022817.114456	WG604209-02	Serial Dilution		25	L17021203-01	02/28/17 11:44
23	NI.022817.114802	WG604488-12	CCV		1		02/28/17 11:48
24	NI.022817.115107	WG604488-13	CCB		1		02/28/17 11:51
25	NI.022817.115414	L17021250-01	INS-WL02-022217	20/50	1		02/28/17 11:54
26	NI.022817.115719	L17021253-04	PZ104-GW-022217	20/50	1		02/28/17 11:57
27	NI.022817.120025	L17021253-06	PZ105-GW-022317	20/50	1		02/28/17 12:00
28	NI.022817.120330	L17021256-01	INS-WL03-022217	20/50	1		02/28/17 12:03
29	NI.022817.120636	L17021259-01	INS-WL01-022217	20/50	1		02/28/17 12:06
30	NI.022817.120941	L17021260-01	INS-WL04-022217	20/50	1		02/28/17 12:09
31	NI.022817.121246	L17021261-01	MW31-GW-022117	20/50	1		02/28/17 12:12
32	NI.022817.121552	L17021261-02	MW32-GW-022117	20/50	1		02/28/17 12:15
33	NI.022817.121857	L17021261-03	TCF-EB01-022117	20/50	1		02/28/17 12:18
34	NI.022817.122202	L17021261-04	MW28-GW-022217	20/50	1		02/28/17 12:22

Page: 1 Approved: March 01, 2017




Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-MS2 Dataset: 022817A.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A/200.8 SOP: ME700A Rev: 3
 Maintenance Log ID: _____
 Calibration Std: STD80374 ICV Std: STD80372 Post Spike: STD79415
 ICSA: STD80378 ICSAB: STD80375 Int. Std: RGT39300
 CCV: STD80373 LLCV: STD80377 Tuning Sol : STD80381
 Stannous : _____ Hydroxylamine : _____

Workgroups: 604209,604489,604447,604524

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
35	NI.022817.122509	WG604488-14	CCV		1		02/28/17 12:25
36	NI.022817.122814	WG604488-15	CCB		1		02/28/17 12:28
37	NI.022817.123121	L17021261-05	SW01-022217	20/50	1		02/28/17 12:31
38	NI.022817.123427	L17021262-01	MW39-GW-022017	20/50	1		02/28/17 12:34
39	NI.022817.123731	L17021262-02	MW37-GW-022017	20/50	1		02/28/17 12:37
40	NI.022817.124037	L17021262-03	MW36-GW-022117	20/50	1		02/28/17 12:40
41	NI.022817.124344	WG604488-16	CCV		1		02/28/17 12:43
42	NI.022817.124650	WG604488-17	CCB		1		02/28/17 12:46
43	NI.022817.125821	WG604488-18	Low Level Continuing Calibra		1		02/28/17 12:58
44	NI.022817.131300	WG604209-03	Post Digestion Spike		1	L17021261-02	02/28/17 13:13
45	NI.022817.131605	WG604209-04	Serial Dilution		5	L17021261-02	02/28/17 13:16
46	NI.022817.131910	WG604209-04	Serial Dilution		25	L17021261-02	02/28/17 13:19
47	NI.022817.132216	WG604488-19	Interference Check		1		02/28/17 13:22
48	NI.022817.132521	WG604488-20	Interference Check		1		02/28/17 13:25
49	NI.022817.132829	WG604488-21	CCV		1		02/28/17 13:28
50	NI.022817.133135	WG604488-22	CCB		1		02/28/17 13:31
51	NI.022817.142134	WG604424-02	Method/Prep Blank	20/50	1		02/28/17 14:21
52	NI.022817.142440	WG604424-03	Laboratory Control S	20/50	1		02/28/17 14:24
53	NI.022817.142745	WG604263-02	Fluid Blank 2		1		02/28/17 14:27
54	NI.022817.143050	WG604424-01	Reference Sample		1	L17021324-03	02/28/17 14:30
55	NI.022817.143355	WG604424-04	Matrix Spike	20/50	1	L17021324-03	02/28/17 14:33
56	NI.022817.143701	WG604424-05	Matrix Spike Duplica	20/50	1	L17021324-03	02/28/17 14:37
57	NI.022817.144006	L17021319-02	60500-SSP0330-SSP1330	20/50	1		02/28/17 14:40
58	NI.022817.144312	L17021253-02	PZ101-GW-022217	20/50	1		02/28/17 14:43
59	NI.022817.144617	WG604489-01	Post Digestion Spike		1	L17021253-02	02/28/17 14:46
60	NI.022817.144922	WG604489-02	Serial Dilution		5	L17021253-02	02/28/17 14:49
61	NI.022817.145227	WG604489-02	Serial Dilution		25	L17021253-02	02/28/17 14:52
62	NI.022817.145535	WG604488-23	CCV		1		02/28/17 14:55
63	NI.022817.145840	WG604488-24	CCB		1		02/28/17 14:58
64	NI.022817.150147	L17021324-01	TCF-EB01-022317	20/50	1		02/28/17 15:01
65	NI.022817.150452	L17021324-02	MW35-GW-022317	20/50	1		02/28/17 15:04
66	NI.022817.150757	L17021324-06	TCF-EB02-022317	20/50	1		02/28/17 15:07
67	NI.022817.151102	L17021324-07	MW21-GW-022317	20/50	1		02/28/17 15:11
68	NI.022817.151408	L17021327-01	BSUMP-SW-0222317	20/50	1		02/28/17 15:14

Page: 2 Approved: March 01, 2017

Sam H. Rhodes

Microbac Laboratories Inc.

Instrument Run Log

Instrument: ICP-MS2 Dataset: 022817A.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A/200.8 SOP: ME700A Rev: 3
 Maintenance Log ID: _____
 Calibration Std: STD80374 ICV Std: STD80372 Post Spike: STD79415
 ICSA: STD80378 ICSAB: STD80375 Int. Std: RGT39300
 CCV: STD80373 LLCCV: STD80377 Tuning Sol : STD80381
 Stannous : _____ Hydroxylamine : _____

Workgroups: 604209,604489,604447,604524

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
69	NI.022817.151713	L17021327-02	BSUMP-SW-0222317	20/50	1		02/28/17 15:17
70	NI.022817.152018	L17021388-01	MW23-GW-022417	20/50	1		02/28/17 15:20
71	NI.022817.152322	L17021388-02	MW34-GW-022417	20/50	1		02/28/17 15:23
72	NI.022817.152627	L17021388-03	MW01-GW-022417	20/50	1		02/28/17 15:26
73	NI.022817.152933	L17021388-04	MW01-GW-022417D	20/50	1		02/28/17 15:29
74	NI.022817.153240	WG604488-25	CCV		1		02/28/17 15:32
75	NI.022817.153546	WG604488-26	CCB		1		02/28/17 15:35
76	NI.022817.154633	L17021319-02	60500-SSP0330-SSP1330	20/50	100		02/28/17 15:46
77	NI.022817.154940	WG604488-27	CCV		1		02/28/17 15:49
78	NI.022817.155245	WG604488-28	CCB		1		02/28/17 15:52
79	NI.022817.155554	WG604488-29	Interference Check		1		02/28/17 15:55
80	NI.022817.155859	WG604488-30	Interference Check		1		02/28/17 15:58
81	NI.022817.160207	WG604488-31	CCV		1		02/28/17 16:02
82	NI.022817.160513	WG604488-32	CCB		1		02/28/17 16:05
83	NI.022817.160920	WG604422-02	Method/Prep Blank	5/50	50		02/28/17 16:09
84	NI.022817.161225	WG604422-03	Laboratory Control S	5/50	50		02/28/17 16:12
85	NI.022817.161531	WG604265-01	Fluid Blank 1		50		02/28/17 16:15
86	NI.022817.161836	WG604265-02	Fluid Blank 2		50		02/28/17 16:18
87	NI.022817.162141	WG604422-01	Reference Sample		50	L17021347-02	02/28/17 16:21
88	NI.022817.162446	WG604422-04	Matrix Spike	5/50	50	L17021347-02	02/28/17 16:24
89	NI.022817.162752	WG604422-05	Matrix Spike Duplica	5/50	50	L17021347-02	02/28/17 16:27
90	NI.022817.163058	L17021367-01	KAISER 9 BAGS	5/50	50		02/28/17 16:30
91	NI.022817.163402	WG604447-01	Post Digestion Spike		50	L17021367-01	02/28/17 16:34
92	NI.022817.163708	WG604447-02	Serial Dilution		250	L17021367-01	02/28/17 16:37
93	NI.022817.164015	WG604488-33	CCV		1		02/28/17 16:40
94	NI.022817.164321	WG604488-34	CCB		1		02/28/17 16:43
95	NI.022817.164628	L17021368-01	AWV 24 BAGS	5/50	50		02/28/17 16:46
96	NI.022817.164935	WG604488-35	CCV		1		02/28/17 16:49
97	NI.022817.165240	WG604488-36	CCB		1		02/28/17 16:52
98	NI.022817.165547	WG604395-02	Method/Prep Blank	.25/100	50		02/28/17 16:55
99	NI.022817.165852	WG604395-03	Laboratory Control S	.25/100	1		02/28/17 16:58
100	NI.022817.170158	L17021248-01	INS-WS01-022117		1	WG604395-01	02/28/17 17:01
101	NI.022817.170504	WG604395-04	Matrix Spike	.252/100	1	L17021248-01	02/28/17 17:05
102	NI.022817.170809	WG604395-05	Matrix Spike Duplica	.255/100	1	L17021248-01	02/28/17 17:08

Page: 3 Approved: March 01, 2017

Sam H. Rhodes

Microbac Laboratories Inc.

Instrument Run Log

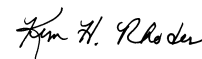
Instrument: ICP-MS2 Dataset: 022817A.REP
 Analyst1: JYH Analyst2: N/A
 Method: 6020/6020A/200.8 SOP: ME700A Rev: 3
 Maintenance Log ID: _____
 Calibration Std: STD80374 ICV Std: STD80372 Post Spike: STD79415
 ICSA: STD80378 ICSAB: STD80375 Int. Std: RGT39300
 CCV: STD80373 LLCCV: STD80377 Tuning Sol : STD80381
 Stannous : _____ Hydroxylamine : _____

Workgroups: 604209,604489,604447,604524

Comments:

Seq.	File ID	Sample	ID	Prep	Dil	Reference	Date/Time
103	NI.022817.171114	L17021249-01	INS-WS01-022217	.256/100	1		02/28/17 17:11
104	NI.022817.171419	WG604524-01	Post Digestion Spike		1	L17021249-01	02/28/17 17:14
105	NI.022817.171725	WG604524-02	Serial Dilution		5	L17021249-01	02/28/17 17:17
106	NI.022817.172031	WG604488-37	CCV		1		02/28/17 17:20
107	NI.022817.172336	WG604488-38	CCB		1		02/28/17 17:23
108	NI.022817.172643	WG604524-02	Serial Dilution		25	L17021249-01	02/28/17 17:26
109	NI.022817.172949	WG604488-39	Interference Check		1		02/28/17 17:29
110	NI.022817.173254	WG604488-40	Interference Check		1		02/28/17 17:32
111	NI.022817.173657	WG604488-41	CCV		1		02/28/17 17:36
112	NI.022817.174003	WG604488-42	CCB		1		02/28/17 17:40

Page: 4 Approved: March 01, 2017




Microbac Laboratories Inc.

Data Checklist

Date: 28-FEB-2017
 Analyst: JYH
 Analyst: NA
 Method: 6020/6020A/200.8
 Instrument: ICP-MS2
 Curve Workgroup: 604488
 Runlog ID: 80692
 Analytical Workgroups: 604209,604489,604447,604524

STD ID#s on Runlog	X
Calibration/Linearity	X
ICV/CCV	X
ICV RSD < 3% (EPA 200.7 only)	
ICB/CCB	X
ICSA/ICSAB	X
CRI	
Blank/LCS	X
MS/MSD	X
Post Spike/Serial Dilution	X
Upload Results	X
Data Qualifiers	
Generate PDF Instrument Data	X
Sign/Annotate PDF Data	X
Upload Curve Data	X
Workgroup Forms	X
Case Narrative	1201,1203,1250,1253,1256,1260 1261,1262,1263,1319,1324,1327 1388,1248,1249,1259
Client Forms	
Level X	
Level 3	1250,1253,1256,1259,1260,1261 1262,1263,1324,1327,1388,1248,1249
Level 4	1201,1203,1319
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	JYH
Secondary Reviewer	KHR
Comments	

Primary Reviewer:

Secondary Reviewer:
01-MAR-2017



Analytical Method:6020A
Login Number:L17021203

AAB#:WG604209

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP140-7418-GRAB	01	02/22/17					02/24/2017	1.9	180		02/28/17	6.1	180	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5177665
Report generated 02/28/2017 14:05



METHOD BLANK SUMMARY

Login Number: L17021203 Work Group: WG604209
 Blank File ID: NI.022817.111708 Blank Sample ID: WG604063-02
 Prep Date: 02/24/17 08:46 Instrument ID: ICP-MS2
 Analyzed Date: 02/28/17 11:17 Method: 6020A
 Analyst: JYH

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG604063-03	NI.022817.112013	02/28/17 11:20	01
LH18/24-SP140-7418-GRAB	L17021203-01	NI.022817.113539	02/28/17 11:35	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5177666
 Report generated 02/28/2017 14:05



Login Number: L17021203 Prep Date: 02/24/17 08:46 Sample ID: WG604063-02
 Instrument ID: ICP-MS2 Run Date: 02/28/17 11:17 Prep Method: 3015
 File ID: NI.022817.111708 Analyst: JYH Method: 6020A
 Workgroup (AAB#): WG604209 Matrix: Water Units: mg/L
 Contract #: _____ Cal ID: ICP-MS - _____

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Silver, Total	0.000500	0.00200	0.000500	1	U

DL Method Detection Limit
 LOQ Reporting/Practical Quantitation Limit
 ND Analyte Not detected at or above reporting limit
 * |Analyte concentration| > 1/2 RL

Report Name: BLANK
 PDF ID: 5177667
 28-FEB-2017 14:05



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604063-03
Instrument ID: ICP-MS2 Run Time: 11:20 Prep Method: 3015
File ID: NI.022817.112013 Analyst: JYH Method: 6020A
Workgroup (AAB#): WG604209 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD78216 Cal ID: ICP-MS -

Analytes	Expected	Found	% Rec	LCS Limits	Q
Silver, Total	0.125	0.119	95.1	80 - 120	

LCS - Modified 03/06/2008
PDF File ID: 5177668
Report generated: 02/28/2017 14:05



Loginnum: L17021203 Cal ID: ICP-MS2- Worknum: WG604209
 Instrument ID: ICP-MS2 Contract #: _____ Method: 6020A
 Parent ID: WG604063-01 File ID: NI.022817.112319 Dil: 1 Matrix: WATER
 Sample ID: WG604063-04 MS File ID: NI.022817.112623 Dil: 1 Units: mg/L
 Sample ID: WG604063-05 MSD File ID: NI.022817.112928 Dil: 1

Analyte	Parent	MS Spiked	MS Found	MS %Rec	MSD Spiked	MSD Found	MSD %Rec	%RPD	%Rec Limits	RPD Limit	Q
Silver	ND	0.125	0.111	88.4	0.125	0.118	94.5	6.67	80 - 120	20	

* FAILS %REC LIMIT

FAILS RPD LIMIT

NOTE: This is an internal quality control sample.

Microbac Laboratories Inc.
Serial Dilution Report

Login: L17021203 **Worknum:** WG604209
Instrument: ICP-MS2 **Method:** 6020A
Serial Dil: WG604209-02 **File ID:** NI.022817.114150 **Dil:** 5 **Units:** ug/L
Sample: L17021203-01 **File ID:** NI.022817.113539 **Dil:** 1

Analyte	Sample	Qual	Serial Dil	Qual	% Diff	Q
Silver	ND	U	1.71	F	16000.00	

U = Result is below MDL.

F = Result is greater than or equal to MDL and less than the RL.

X = Result is greater than or equal to RL and less than 100 times the MDL.

E = %D exceeds control limit of 10% and initial sample result is greater than or equal to 100 times the MDL.

SERIAL_DIL - Modified 09/22/2008

PDF File ID: 5177663

02/28/2017 14:05



Sample Login ID: L17021203

Worknum: WG604209

Instrument ID: ICP-MS2

Method: 6020A

Post Spike ID: WG604209-01

File ID: NI.022817.113845

Dil: 1

Units: ug/L

Sample ID: L17021203-01

File ID: NI.022817.113539

Dil: 1

Matrix: Water

Analyte	Post Spike Result	C	Sample Result	C	Spike Added(SA)	% R	Control Limit %R	Q
SILVER	44.1		0	U	50	88.2	75 - 125	

N = % Recovery exceeds control limits

F = Result is between MDL and RL

U = Sample result is below MDL. A value of zero is used in the calculation



Login: L17021203 Workgroup (AAB#): WG604209
 Analytical Method: 6020A Instrument ID: ICP-MS2
 ICAL Worknum: WG604488 Initial Calibration Date: 28-FEB-2017 10:52

	WG604488-01		WG604488-02		WG604488-03		WG604488-04		R	Q
	Conc	INT	Conc	INT	Conc	INT	Conc	INT		
SILVER	0	115	.4	376	50	258000	100	533000	.99999	

INT = Instrument intensity
 R = Coefficient of correlation
 Q = Data Qualifier
 * = Out of Compliance; R < 0.995



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-06
Instrument ID: ICP-MS2 Run Time: 10:58 Method: 6020A
File ID: NI.022817.105831 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG604209 Cal ID: ICP-MS2 - 28-FEB-17
Matrix: WATER

Analytes	MDL	RDL	Concentration	Qualifier
SILVER	.2	.8	.2	U

U = Result is less than 2 x MDL
F = Result is between MDL and 2 x MDL
* = Result is above 2 x MDL



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-11
Instrument ID: ICP-MS2 Run Time: 11:14 Method: 6020A
File ID: NI.022817.111401 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Silver	0.200	0.800	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5177677
Report generated 02/28/2017 14:05



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-13
Instrument ID: ICP-MS2 Run Time: 11:51 Method: 6020A
File ID: NI.022817.115107 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Silver	0.200	0.800	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-17
Instrument ID: ICP-MS2 Run Time: 12:46 Method: 6020A
File ID: NI.022817.124650 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Silver	0.200	0.800	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-22
Instrument ID: ICP-MS2 Run Time: 13:31 Method: 6020A
File ID: NI.022817.133135 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Silver	0.200	0.800	0.200	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.

CCB - Modified 03/05/2008
PDF File ID: 5177677
Report generated 02/28/2017 14:05



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-05
Instrument ID: ICP-MS2 Run Time: 10:55 Method: 6020A
File ID: NI.022817.105524 Analyst: JYH Units: ug/L
Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
QC Key: DOD4

Analyte	Expected	Found	%REC	LIMITS	Q
Silver	50	48.8	97.6	90 - 110	

* Exceeds LIMITS Limit



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-10
 Instrument ID: ICP-MS2 Run Time: 11:10 Method: 6020A
 File ID: NI.022817.111055 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Silver	0.0500	0.0524	mg/L	105	90 - 110	

* Exceeds LIMITS Criteria



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-12
 Instrument ID: ICP-MS2 Run Time: 11:48 Method: 6020A
 File ID: NI.022817.114802 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Silver	0.0500	0.0486	mg/L	97.2	90 - 110	

* Exceeds LIMITS Criteria



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-16
 Instrument ID: ICP-MS2 Run Time: 12:43 Method: 6020A
 File ID: NI.022817.124344 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Silver	0.0500	0.0476	mg/L	95.1	90 - 110	

* Exceeds LIMITS Criteria



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-21
 Instrument ID: ICP-MS2 Run Time: 13:28 Method: 6020A
 File ID: NI.022817.132829 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Silver	0.0500	0.0473	mg/L	94.5	90 - 110	

* Exceeds LIMITS Criteria



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-07
 Instrument ID: ICP-MS2 Run Time: 11:01 Method: 6020A
 File ID: NI.022817.110138 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Silver	0.400	0.371	ug/L	92.9	70 - 130	

* Exceeds LIMITS Criteria



Login Number: L17021203 Run Date: 02/28/2017 Sample ID: WG604488-18
 Instrument ID: ICP-MS2 Run Time: 12:58 Method: 6020A
 File ID: NI.022817.125821 Analyst: JYH QC Key: DOD4
 Workgroup (AAB#): WG604209 Cal ID: ICP-MS - 28-FEB-17
 Matrix: WATER

Analyte	Expected	Found	UNITS	%REC	LIMITS	Q
Silver	0.400	0.338	ug/L	84.5	70 - 130	

* Exceeds LIMITS Criteria



Login number: L17021203
Instrument ID: ICP-MS2
Sol. A: WG604488-08
Sol. AB: WG604488-09

File ID: NI.022817.110443
File ID: NI.022817.110748

Workgroup (AAB#): WG604209
Method: 6020A
Units: ug/L
Matrix: Water

ANALYTE	Sol. A			Sol. AB			Q
	True	Found	%Recovery	True	Found	%Recovery	
Silver	NS	0.00670	NS	100	83.3	83.3	

NS = Not spiked

* = Recovery of spiked element is outside acceptance limit of 80% - 120% of true value.

= Result for unspiked element is outside the acceptance limits of (+/-) the project reporting limit (RL).

+ = Result for unspiked element is outside the acceptance limits of (+/-) 2 times the project method detection limit (MDL). This criteria is only applicable to specific QAPPs.



INTERNAL STANDARD REPORT

Login: L17021203 Analytical Method: 6020
 Analytical Workgroup: WG604209 Matrix: 1
 Instrument: ICP-MS2 Analyst: JYH
 ICAL Date: 28-FEB-2017 10:43

Sample	Type	Run Date	BISMUTH	GERMANIUM	INDIUM
			% Rec	% Rec	% Rec
L17021203-01	SAMP	28-FEB-2017 11:35	82.888	84.491	85.01
L17021261-02	SAMP	28-FEB-2017 12:15	92.411	91.563	90.517
WG604063-02	BLANK	28-FEB-2017 11:17	100.523	100.826	97.892
WG604063-03	LCS	28-FEB-2017 11:20	108.929	111.662	106.349
WG604209-01	PSPK	28-FEB-2017 11:38	83.476	84.993	84.77
WG604209-02	SERIAL	28-FEB-2017 11:41	85.145	84.437	83.893
WG604209-03	PSPK	28-FEB-2017 13:13	93.887	94.424	90.345
WG604209-04	SERIAL	28-FEB-2017 13:16	89.669	86.553	84.617
WG604488-05	ICV	28-FEB-2017 10:55	103.513	105.958	102.366
WG604488-06	ICB	28-FEB-2017 10:58	104.121	106.508	102.372
WG604488-07	LLICV	28-FEB-2017 11:01	102.672	105.225	99.967
WG604488-08	ICS	28-FEB-2017 11:04	101.887	104.751	100.965
WG604488-09	ICS	28-FEB-2017 11:07	106.703	109.224	103.982
WG604488-10	CCV	28-FEB-2017 11:10	103.544	104.845	101.749
WG604488-11	CCB	28-FEB-2017 11:14	102.99	105.015	101.105
WG604488-12	CCV	28-FEB-2017 11:48	94.348	92.954	92.054
WG604488-13	CCB	28-FEB-2017 11:51	93.401	91.616	90.119
WG604488-16	CCV	28-FEB-2017 12:43	97.082	93.955	91.765
WG604488-17	CCB	28-FEB-2017 12:46	96.332	94.268	92.082
WG604488-18	LLCCV	28-FEB-2017 12:58	91.519	88.789	86.247
WG604488-19	ICS	28-FEB-2017 13:22	95.851	95.684	92.113
WG604488-20	ICS	28-FEB-2017 13:25	98.112	97.698	94.402
WG604488-21	CCV	28-FEB-2017 13:28	93.743	92.43	91.668
WG604488-22	CCB	28-FEB-2017 13:31	88.589	85.595	85.331

Acceptance criteria: 30% - 120% Underlined recoveries are out of range
 Acceptance criteria for CCVs and CCBs for method SW846-6020: 80% - 120%

INT_STD_ICPMS - Modified 07/28/2010
 PDF File ID: 5177671
 Report generated: 02/28/2017 14:05



Login Number: L17021203 Date: 01/24/2017
Instrument ID: ICP-MS2 Method: 6020A

Analyte	Integration Time (Sec.)	Concentration (ug/L)
Antimony	1.00	100.0
Arsenic	1.00	100.0
Barium	1.00	100.0
Cadmium	1.00	100.0
Chromium	1.00	100.0
Cobalt	1.00	100.0
Copper	1.00	100.0
Lead	1.00	100.0
Manganese	1.00	100.0
Nickel	1.00	100.0
Selenium	1.00	100.0
Silver	1.00	100.0
Thallium	1.00	100.0
Uranium	1.00	100.0
Vanadium	1.00	100.0
Zinc	1.00	100.0

Comments:

All analytes passed acceptance criteria at the specified concentration.



2.1.2.3 Raw Data

MassCal File Name

Mass Calibration File Name Default.tun
 MassCal File Path C:\NexlONData\MassCal\Default.tun
 Peak Search Window: 1.00

Sample Information

Sample Date/Time: Tuesday, February 28, 2017 10:18:14

Mass Calibration and Resolution

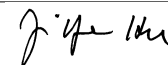
Analyte	E Mass	Meas Mass	Mass C DAC Val	Res DAC Value	Meas Peak W	Custom Res
Li	7.016	7.025	1315	2026	0.694	
Mg	23.985	23.975	4506	2021	0.700	
Co	58.933	58.925	11684	2022	0.705	
In	114.904	114.875	22855	2028	0.701	
U	238.050	238.075	47453	2046	0.704	

Relative Std. Dev.

Mass	Meas. Intens.	RSD
5.525		15.767
5.575		11.749
5.625		8.578
5.675		3.891
5.725		3.740
5.775		4.141
5.825		4.513
5.875		3.415
5.925		4.581
5.975		3.967
6.025		3.353
6.075		4.887
6.125		3.578
6.175		4.191
6.225		4.783
6.275		5.176
6.325		7.618
6.375		41.691
6.425		47.507
6.475		72.436
6.525		28.331
6.575		20.163
6.625		8.810
6.675		2.531
6.725		4.518
6.775		3.679
6.825		3.138

Report Date/Time: Tuesday, February 28, 2017 10:21:25
 Page 1

Approved: March 01, 2017



6.875	4.685
6.925	4.528
6.975	5.099
7.025	4.791
7.075	4.701
7.125	4.380
7.175	3.599
7.225	2.107
7.275	3.937
7.325	5.943
7.375	4.871
7.425	30.822
7.475	34.233
7.525	79.756
7.575	47.140
7.625	93.541
7.675	104.583
7.725	37.268
7.775	76.697
7.825	60.990
7.875	79.756
7.925	73.193
7.975	23.570
8.025	51.349
8.075	49.215
8.125	74.154
8.175	22.822
8.225	47.507
8.275	69.722
8.325	30.901
8.375	33.535
8.425	63.949
8.475	76.697
22.525	136.931
22.575	30.619
22.625	39.123
22.675	39.510
22.725	61.443
22.775	61.435
22.825	22.122
22.875	49.743
22.925	21.858
22.975	22.276
23.025	21.123
23.075	30.322
23.125	38.221
23.175	23.981

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 2

Approved: March 01, 2017



23.225	31.439
23.275	69.027
23.325	24.786
23.375	36.444
23.425	33.756
23.475	18.288
23.525	3.352
23.575	2.528
23.625	3.442
23.675	3.247
23.725	2.950
23.775	3.173
23.825	2.383
23.875	1.926
23.925	2.402
23.975	2.469
24.025	2.304
24.075	3.217
24.125	2.920
24.175	3.437
24.225	1.858
24.275	10.849
24.325	34.494
24.375	45.175
24.425	25.513
24.475	6.870
24.525	4.371
24.575	4.760
24.625	3.334
24.675	3.747
24.725	4.084
24.775	3.823
24.825	4.410
24.875	4.179
24.925	3.727
24.975	4.529
25.025	4.017
25.075	3.867
25.125	4.840
25.175	4.236
25.225	6.860
25.275	30.842
25.325	36.780
25.375	34.468
25.425	33.433
25.475	14.945
57.525	14.218

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 3

Approved: March 01, 2017



57.575	7.532
57.625	7.170
57.675	4.042
57.725	3.146
57.775	3.937
57.825	3.346
57.875	4.814
57.925	2.020
57.975	4.256
58.025	3.855
58.075	3.188
58.125	3.888
58.175	3.306
58.225	4.133
58.275	7.209
58.325	23.936
58.375	41.247
58.425	14.663
58.475	17.907
58.525	3.764
58.575	6.639
58.625	4.251
58.675	3.491
58.725	4.448
58.775	4.650
58.825	3.199
58.875	4.307
58.925	4.727
58.975	4.942
59.025	3.024
59.075	4.680
59.125	3.820
59.175	4.724
59.225	3.971
59.275	9.422
59.325	18.744
59.375	51.446
59.425	47.650
59.475	21.317
59.525	6.613
59.575	11.607
59.625	2.094
59.675	5.955
59.725	2.948
59.775	4.693
59.825	6.737
59.875	5.143

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 4

Approved: March 01, 2017



59.925	5.590
59.975	6.686
60.025	5.684
60.075	6.681
60.125	4.660
60.175	4.295
60.225	2.625
60.275	10.538
60.325	34.810
60.375	50.461
60.425	33.535
60.475	45.913
113.525	10.677
113.575	6.687
113.625	5.287
113.675	6.633
113.725	4.829
113.775	5.144
113.825	3.834
113.875	4.634
113.925	4.277
113.975	4.624
114.025	4.694
114.075	3.828
114.125	4.030
114.175	5.582
114.225	2.694
114.275	12.487
114.325	9.878
114.375	29.780
114.425	8.488
114.475	5.234
114.525	3.548
114.575	6.390
114.625	5.676
114.675	4.747
114.725	5.182
114.775	4.671
114.825	5.038
114.875	4.804
114.925	5.002
114.975	4.711
115.025	4.809
115.075	3.912
115.125	5.503
115.175	3.747
115.225	3.335

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 5

Approved: March 01, 2017



115.275	4.967
115.325	15.002
115.375	35.551
115.425	46.022
115.475	22.247
115.525	20.662
115.575	9.872
115.625	2.768
115.675	8.982
115.725	5.977
115.775	6.170
115.825	7.477
115.875	4.645
115.925	5.799
115.975	3.164
116.025	4.311
116.075	6.162
116.125	4.684
116.175	2.672
116.225	10.190
116.275	23.435
116.325	19.016
116.375	28.287
116.425	28.464
116.475	56.519
236.525	
236.575	23.516
236.625	30.043
236.675	20.000
236.725	12.163
236.775	23.598
236.825	26.082
236.875	26.791
236.925	15.111
236.975	4.980
237.025	19.542
237.075	22.482
237.125	14.203
237.175	15.247
237.225	21.246
237.275	34.237
237.325	13.363
237.375	18.757
237.425	15.589
237.475	31.111
237.525	23.254
237.575	11.152

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 6

Approved: March 01, 2017



237.625	7.994
237.675	9.766
237.725	4.393
237.775	3.804
237.825	4.476
237.875	4.439
237.925	4.014
237.975	3.952
238.025	4.378
238.075	4.345
238.125	4.357
238.175	4.400
238.225	4.520
238.275	4.365
238.325	3.942
238.375	6.402
238.425	3.561
238.475	3.613
238.525	8.320
238.575	16.174
238.625	35.059
238.675	13.046
238.725	18.951
238.775	34.115
238.825	26.854
238.875	12.748
238.925	23.837
238.975	9.109
239.025	24.191
239.075	20.917
239.125	7.434
239.175	14.677
239.225	19.845
239.275	14.974
239.325	21.120
239.375	11.106
239.425	13.737
239.475	17.459

Report Date/Time: Tuesday, February 28, 2017 10:21:25
Page 7

Approved: March 01, 2017



SmartTune Wizard - Summary

Optimization Summary

SmartTune file: C:\NexIONData\Wizard\SmartTune\ESI SmartTune Fullmicrobac.swz

Start Time: 2/28/2017 10:24:17 AM

End Time: 2/28/2017 10:26:30 AM

Daily Performance Check - [Passed] Optimum value(s): N/A

Obtained Intensity (Be 9.0122): 10319.71

Obtained Intensity (Mg 23.985): 106647.20

Obtained Intensity (In 114.904): 88238.89

Obtained Intensity (U 238.05): 112576.52

Obtained Intensity (Bkgd 220): 0.27

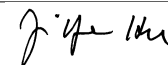
Obtained Formula (CeO 155.9 / Ce 139.905): 0.014 (=3518.28 / 243648.09)

Obtained Formula (Ce++ 69.9527 / Ce 139.905): 0.004 (=1010.70 / 243648.09)

Report Date/Time: Tuesday, February 28, 2017 10:26:30

Page 1

Approved: March 01, 2017



SmartTune Wizard - Details

Optimization Details

SmartTune file: C:\NexIONData\Wizard\SmartTune\ESI SmartTune Fullmicrobac.swz

Optimization Status

Start Time: 2/28/2017 10:24:17 AM

Daily Performance Check

Optimization Settings:

Method: C:\NexIONData\Method\ESI Daily Performance.mth.
Intensity Criterion: Be 9.0122 > 2000
Intensity Criterion: Mg 23.985 > 15000
Intensity Criterion: In 114.904 > 40000
Intensity Criterion: U 238.05 > 30000
Intensity Criterion: Bkgd 220 <= 5
Formula Criterion: CeO 155.9 / Ce 139.905 <= 0.025
Formula Criterion: Ce++ 69.9527 / Ce 139.905 <= 0.03

Optimization Results:

Initial Try

Obtained Intensity (Be 9.0122): 10319.71
Obtained Intensity (Mg 23.985): 106647.20
Obtained Intensity (In 114.904): 88238.89
Obtained Intensity (U 238.05): 112576.52
Obtained Intensity (Bkgd 220): 0.27
Obtained Formula (CeO 155.9 / Ce 139.905): 0.014 (=3518.28 / 243648.09)
Obtained Formula (Ce++ 69.9527 / Ce 139.905): 0.004 (=1010.70 / 243648.09)

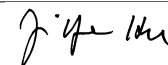
[Passed] Optimum value(s): N/A

End Time: 2/28/2017 10:26:30 AM

Report Date/Time: Tuesday, February 28, 2017 10:26:30

Page 2

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: Blank

Sample Date/Time: Tuesday, February 28, 2017 10:39:56

Number of Replicates: 3

Autosampler Position: 1

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	250103.6	3.1				ug/L		Standard
|	Be	9	6.7	43.3				ug/L		Standard
|	Al	27	596.7	3.8				ug/L		Standard
|	Sc	45	41680.6	0.6				ug/L		Standard
|	Ti	47	85.7	1.8				ug/L		Standard
|	V	51	1740.0	7.1				ug/L		Standard
|	Cr	52	7178.0	4.2				ug/L		Standard
|	Cr	53	573.3	7.0				ug/L		Standard
|	Mn	55	3072.3	4.2				ug/L		Standard
|	Co	59	572.7	3.1				ug/L		Standard
|	Ni	60	263.7	5.6				ug/L		Standard
|	Cu	65	530.3	4.6				ug/L		Standard
|	Zn	66	252.0	4.6				ug/L		Standard
>	Ge	72	641188.2	1.8				ug/L		Standard
|	As	75	-83.0	32.4				ug/L		Standard
|	Se	82	15.6	19.4				ug/L		Standard
|	Se-1	77	126.0	7.7				ug/L		Standard
>	Ga	71	70.0	28.6				mg/L		Standard
|	Rb	85	33.3	17.3				ug/L		Standard
|	Y	89	493982.0	2.6				ug/L		Standard
>	Rh	103	16.7	34.6				ug/L		Standard
|	Mo	98	53.9	11.8				ug/L		Standard
|	Ag	107	137.0	11.7				ug/L		Standard
|	Cd	111	5.6	27.4				mg/L		Standard
|	Cd	114	19.6	60.7				ug/L		Standard
>	In	115	755264.4	2.4				ug/L		Standard
|	Sn	118	137.7	11.6				ug/L		Standard
|	Sb	123	391.3	20.3				ug/L		Standard
|	Ba	135	31.7	10.2				ug/L		Standard
|	Ce	140	41.7	18.3				ug/L		Standard
>	Tb	159	966827.3	1.5				ug/L		Standard
|	Ho	165	11.7	49.5				ug/L		Standard
|	Tl	203	19.3	20.9				ug/L		Standard
|	Tl	205	58.3	4.9				ug/L		Standard
|	Pb	206	463.7	9.8				ug/L		Standard
|	Pb	207	405.3	5.4				ug/L		Standard
|	Pb	208	876.3	5.4				ug/L		Standard
|	U	238	13.7	54.9				ug/L		Standard
>	Bi	209	599145.9	1.6				ug/L		Standard

Sample ID: Blank

Report Date/Time: Tuesday, February 28, 2017 10:42:06

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	mg/L	Standard
Mg	24	30.0	33.3	mg/L	Standard
K	39	10.0	50.0	mg/L	Standard
Ca	43	83.3	19.3	mg/L	Standard
Fe	54	21.3	26.2	mg/L	Standard
Fe	57	240.0	5.5	mg/L	Standard
Sc-1	45	41680.6	0.6	mg/L	Standard
Cl	35	2.0	0.0	ug/L	Standard
Kr	83	5.3	60.3	ug/L	Standard
Br	81	1586.7	4.2	ug/L	Standard
P	31	50.0	17.3	ug/L	Standard
S	34	8.3	91.7	ug/L	Standard
Sr	88	198.3	7.7	ug/L	Standard
C	12	33.3	69.3	mg/L	Standard
N	14	0.0		mg/L	Standard
Hg	202	3.3	173.2	mg/L	Standard
Dy	164	6.2	193.7	mg/L	Standard
Ho-1	165	11.7	49.5	mg/L	Standard
Er	166	10.0	173.2	mg/L	Standard
I	127	5502.7	1.8	mg/L	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
> Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
> Ge	72			
As	75			
Se	82			
Se-1	77			
> Ga	71			

Sample ID: Blank

Report Date/Time: Tuesday, February 28, 2017 10:42:06

Page 2

Approved: March 01, 2017



[	Rb	85
[	Y	89
>	Rh	103
[	Mo	98
[	Ag	107
[	Cd	111
[	Cd	114
>	In	115
[	Sn	118
[	Sb	123
[	Ba	135
[	Ce	140
>	Tb	159
[	Ho	165
[	Tl	203
[	Tl	205
[	Pb	206
[	Pb	207
[	Pb	208
[	U	238
>	Bi	209
[	Na	23
[	Mg	24
[	K	39
[	Ca	43
[	Fe	54
[	Fe	57
>	Sc-1	45
[	Cl	35
[	Kr	83
[	Br	81
[	P	31
[	S	34
[	Sr	88
[	C	12
[	N	14
[	Hg	202
[	Dy	164
[	Ho-1	165
[	Er	166
[	I	127

QC Out of Limits

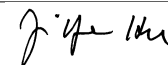
Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: Blank

Report Date/Time: Tuesday, February 28, 2017 10:42:06

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: Standard 1

Sample Date/Time: Tuesday, February 28, 2017 10:43:01

Number of Replicates: 3

Autosampler Position: 1

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	255210.3	2.0				ug/L	250104	Standard
|	Be	9	6.7	43.3				ug/L	7	Standard
|	Al	27	625.0	7.9				ug/L	597	Standard
|	Sc	45	42063.3	2.6				ug/L	41681	Standard
|	Ti	47	80.0	4.5				ug/L	86	Standard
|	V	51	1589.1	8.7				ug/L	1740	Standard
|	Cr	52	6954.3	1.0				ug/L	7178	Standard
|	Cr	53	705.0	11.7				ug/L	573	Standard
|	Mn	55	2874.3	3.2				ug/L	3072	Standard
|	Co	59	467.0	3.0				ug/L	573	Standard
|	Ni	60	284.3	2.3				ug/L	264	Standard
|	Cu	65	587.7	2.0				ug/L	530	Standard
|	Zn	66	283.3	4.8				ug/L	252	Standard
>	Ge	72	661329.7	1.4				ug/L	641188	Standard
|	As	75	-39.4	60.3				ug/L	-83	Standard
|	Se	82	20.1	16.7				ug/L	16	Standard
|	Se-1	77	128.3	6.5				ug/L	126	Standard
>	Ga	71	83.3	9.2				mg/L	70	Standard
|	Rb	85	33.3	34.6				ug/L	33	Standard
|	Y	89	505092.6	1.8				ug/L	493982	Standard
>	Rh	103	18.3	41.7				ug/L	17	Standard
|	Mo	98	36.9	35.7				ug/L	54	Standard
|	Ag	107	115.0	15.7				ug/L	137	Standard
|	Cd	111	6.0	44.4				mg/L	6	Standard
|	Cd	114	34.9	68.3				ug/L	20	Standard
>	In	115	760126.3	0.3				ug/L	755264	Standard
|	Sn	118	128.3	7.0				ug/L	138	Standard
|	Sb	123	139.5	19.0				ug/L	391	Standard
|	Ba	135	32.3	15.6				ug/L	32	Standard
|	Ce	140	23.3	32.7				ug/L	42	Standard
>	Tb	159	980123.2	0.4				ug/L	966827	Standard
|	Ho	165	10.0	50.0				ug/L	12	Standard
|	Tl	203	17.3	20.3				ug/L	19	Standard
|	Tl	205	43.3	6.7				ug/L	58	Standard
|	Pb	206	485.0	4.1				ug/L	464	Standard
|	Pb	207	405.3	3.3				ug/L	405	Standard
|	Pb	208	902.3	2.3				ug/L	876	Standard
|	U	238	5.0	20.0				ug/L	14	Standard
>	Bi	209	601397.7	0.6				ug/L	599146	Standard

Sample ID: Standard 1

Report Date/Time: Tuesday, February 28, 2017 10:45:12

Page 1

Approved: March 01, 2017

Na	23	6.7	173.2	mg/L	3	Standard
Mg	24	28.3	53.9	mg/L	30	Standard
K	39	16.7	62.4	mg/L	10	Standard
Ca	43	68.3	4.2	mg/L	83	Standard
Fe	54	22.5	64.4	mg/L	21	Standard
Fe	57	288.3	15.0	mg/L	240	Standard
Sc-1	45	42063.3	2.6	mg/L	41681	Standard
Cl	35	2.0	100.0	ug/L	2	Standard
Kr	83	2.3	24.7	ug/L	5	Standard
Br	81	1666.8	4.8	ug/L	1587	Standard
P	31	71.7	10.7	ug/L	50	Standard
S	34	20.0	66.1	ug/L	8	Standard
Sr	88	201.7	14.1	ug/L	198	Standard
C	12	36.7	56.8	mg/L	33	Standard
N	14	3.3	173.2	mg/L	0	Standard
Hg	202	6.7	86.6	mg/L	3	Standard
Dy	164	12.4	93.6	mg/L	6	Standard
Ho-1	165	10.0	50.0	mg/L	12	Standard
Er	166	20.0	100.0	mg/L	10	Standard
I	127	5781.1	1.9	mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72			
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: Standard 1

Report Date/Time: Tuesday, February 28, 2017 10:45:12

Page 2

Approved: March 01, 2017

[	Rb	85
[	Y	89
>	Rh	103
[	Mo	98
[	Ag	107
[	Cd	111
[	Cd	114
>	In	115
[	Sn	118
[	Sb	123
[	Ba	135
[	Ce	140
>	Tb	159
[	Ho	165
[	Tl	203
[	Tl	205
[	Pb	206
[	Pb	207
[	Pb	208
[	U	238
>	Bi	209
[	Na	23
[	Mg	24
[	K	39
[	Ca	43
[	Fe	54
[	Fe	57
>	Sc-1	45
[	Cl	35
[	Kr	83
[	Br	81
[	P	31
[	S	34
[	Sr	88
[	C	12
[	N	14
[	Hg	202
[	Dy	164
[	Ho-1	165
[	Er	166
[	I	127

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: Standard 1

Report Date/Time: Tuesday, February 28, 2017 10:45:12

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: Standard 2

Sample Date/Time: Tuesday, February 28, 2017 10:46:06

Number of Replicates: 3

Autosampler Position: 2

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	239368.7	2.9				ug/L	250104	Standard
|	Be	9	93.3	24.7				ug/L	7	Standard
|	Al	27	6543.1	4.2				ug/L	597	Standard
|	Sc	45	41155.9	2.9				ug/L	41681	Standard
|	Ti	47	97.7	3.9				ug/L	86	Standard
|	V	51	1963.9	6.0				ug/L	1740	Standard
|	Cr	52	7109.7	0.7				ug/L	7178	Standard
|	Cr	53	661.7	7.6				ug/L	573	Standard
|	Mn	55	3285.0	2.5				ug/L	3072	Standard
|	Co	59	800.7	6.2				ug/L	573	Standard
|	Ni	60	348.0	3.4				ug/L	264	Standard
|	Cu	65	626.7	7.0				ug/L	530	Standard
|	Zn	66	336.7	2.8				ug/L	252	Standard
>	Ge	72	626236.7	3.4				ug/L	641188	Standard
|	As	75	6.9	367.1				ug/L	-83	Standard
|	Se	82	20.4	32.8				ug/L	16	Standard
|	Se-1	77	121.0	4.1				ug/L	126	Standard
>	Ga	71	65.0	15.4				mg/L	70	Standard
|	Rb	85	38.3	19.9				ug/L	33	Standard
|	Y	89	474936.4	3.0				ug/L	493982	Standard
>	Rh	103	11.7	65.5				ug/L	17	Standard
|	Mo	98	357.3	5.1				ug/L	54	Standard
|	Ag	107	376.3	6.3				ug/L	137	Standard
|	Cd	111	96.2	13.3				mg/L	6	Standard
|	Cd	114	248.8	20.1				ug/L	20	Standard
>	In	115	718580.4	2.1				ug/L	755264	Standard
|	Sn	118	167.3	8.9				ug/L	138	Standard
|	Sb	123	326.5	5.4				ug/L	391	Standard
|	Ba	135	131.7	6.5				ug/L	32	Standard
|	Ce	140	26.7	28.6				ug/L	42	Standard
>	Tb	159	948156.0	1.8				ug/L	966827	Standard
|	Ho	165	11.7	24.7				ug/L	12	Standard
|	Tl	203	358.7	3.0				ug/L	19	Standard
|	Tl	205	775.0	2.3				ug/L	58	Standard
|	Pb	206	718.7	3.3				ug/L	464	Standard
|	Pb	207	629.7	9.6				ug/L	405	Standard
|	Pb	208	1341.4	1.4				ug/L	876	Standard
|	U	238	571.0	3.4				ug/L	14	Standard
>	Bi	209	573362.6	1.3				ug/L	599146	Standard

Sample ID: Standard 2

Report Date/Time: Tuesday, February 28, 2017 10:48:17

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	mg/L	3	Standard
Mg	24	26.7	47.2	mg/L	30	Standard
K	39	18.3	31.5	mg/L	10	Standard
Ca	43	68.3	27.7	mg/L	83	Standard
Fe	54	16.1	45.5	mg/L	21	Standard
Fe	57	281.7	5.7	mg/L	240	Standard
Sc-1	45	41155.9	2.9	mg/L	41681	Standard
Cl	35	2.0	173.2	ug/L	2	Standard
Kr	83	3.7	31.5	ug/L	5	Standard
Br	81	1416.7	7.4	ug/L	1587	Standard
P	31	55.0	36.4	ug/L	50	Standard
S	34	20.0	50.0	ug/L	8	Standard
Sr	88	236.7	19.2	ug/L	198	Standard
C	12	16.7	34.6	mg/L	33	Standard
N	14	3.3	173.2	mg/L	0	Standard
Hg	202	0.0		mg/L	3	Standard
Dy	164	9.8	104.1	mg/L	6	Standard
Ho-1	165	11.7	24.7	mg/L	12	Standard
Er	166	3.3	173.2	mg/L	10	Standard
I	127	5309.3	1.4	mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
> Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
> Ge	72			
As	75			
Se	82			
Se-1	77			
> Ga	71			

Sample ID: Standard 2

Report Date/Time: Tuesday, February 28, 2017 10:48:17

Page 2

Approved: March 01, 2017



[	Rb	85
[	Y	89
>	Rh	103
[	Mo	98
[	Ag	107
[	Cd	111
[	Cd	114
>	In	115
[	Sn	118
[	Sb	123
[	Ba	135
[	Ce	140
>	Tb	159
[	Ho	165
[	Tl	203
[	Tl	205
[	Pb	206
[	Pb	207
[	Pb	208
[	U	238
>	Bi	209
[	Na	23
[	Mg	24
[	K	39
[	Ca	43
[	Fe	54
[	Fe	57
>	Sc-1	45
[	Cl	35
[	Kr	83
[	Br	81
[	P	31
[	S	34
[	Sr	88
[	C	12
[	N	14
[	Hg	202
[	Dy	164
[	Ho-1	165
[	Er	166
[	I	127

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: Standard 2

Report Date/Time: Tuesday, February 28, 2017 10:48:17

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: Standard 3

Sample Date/Time: Tuesday, February 28, 2017 10:49:12

Number of Replicates: 3

Autosampler Position: 3

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	244522.6	1.5				ug/L	250104	Standard
|	Be	9	79441.1	2.2	50.0000	0.365	0.7	ug/L	7	Standard
|	Al	27	5955294.8	1.3	50.0000	0.313	0.6	ug/L	597	Standard
|	Sc	45	40490.7	0.8				ug/L	41681	Standard
|	Ti	47	17376.3	2.2	100.0000	3.049	3.0	ug/L	86	Standard
|	V	51	304505.9	2.2	50.0000	1.680	3.4	ug/L	1740	Standard
|	Cr	52	287410.9	1.7	50.0000	1.151	2.3	ug/L	7178	Standard
|	Cr	53	36706.1	2.3	50.0000	0.941	1.9	ug/L	573	Standard
|	Mn	55	463302.7	1.6	50.0000	0.958	1.9	ug/L	3072	Standard
|	Co	59	360447.2	0.8	50.0000	0.720	1.4	ug/L	573	Standard
|	Ni	60	76996.8	1.3	50.0000	1.067	2.1	ug/L	264	Standard
|	Cu	65	73927.9	1.0	50.0000	0.679	1.4	ug/L	530	Standard
|	Zn	66	42309.3	1.3	50.0000	0.246	0.5	ug/L	252	Standard
>	Ge	72	624119.6	1.6				ug/L	641188	Standard
|	As	75	42074.8	0.6	50.0000	0.504	1.0	ug/L	-83	Standard
|	Se	82	3640.7	1.8	50.0000	1.517	3.0	ug/L	16	Standard
|	Se-1	77	2740.6	1.9	50.0000	1.371	2.7	ug/L	126	Standard
>	Ga	71	75.0	23.1				mg/L	70	Standard
|	Rb	85	601.7	13.3				ug/L	33	Standard
|	Y	89	477436.1	1.1				ug/L	493982	Standard
>	Rh	103	28.3	36.7				ug/L	17	Standard
|	Mo	98	296118.2	2.1	100.0000	1.609	1.6	ug/L	54	Standard
|	Ag	107	258296.5	2.8	50.0000	1.258	2.5	ug/L	137	Standard
|	Cd	111	75875.2	2.6	50.0000	1.370	2.7	mg/L	6	Standard
|	Cd	114	210564.5	0.9	50.0000	0.511	1.0	ug/L	20	Standard
>	In	115	724075.8	1.6				ug/L	755264	Standard
|	Sn	118	46314.7	2.5	50.0000	1.160	2.3	ug/L	138	Standard
|	Sb	123	214498.7	2.1	50.0000	1.129	2.3	ug/L	391	Standard
|	Ba	135	85747.0	1.4	50.0000	1.002	2.0	ug/L	32	Standard
|	Ce	140	63.3	9.1				ug/L	42	Standard
>	Tb	159	965509.5	1.6				ug/L	966827	Standard
|	Ho	165	21.7	35.3				ug/L	12	Standard
|	Tl	203	316423.6	2.2	50.0000	0.931	1.9	ug/L	19	Standard
|	Tl	205	745928.3	1.6	50.0000	0.611	1.2	ug/L	58	Standard
|	Pb	206	249567.2	2.1	50.0000	0.913	1.8	ug/L	464	Standard
|	Pb	207	222918.5	2.4	50.0000	0.981	2.0	ug/L	405	Standard
|	Pb	208	486259.5	1.5	50.0000	0.401	0.8	ug/L	876	Standard
|	U	238	557193.2	2.3	50.0000	0.790	1.6	ug/L	14	Standard
>	Bi	209	574658.4	0.9				ug/L	599146	Standard

Sample ID: Standard 3

Report Date/Time: Tuesday, February 28, 2017 10:51:23

Page 1

Approved: March 01, 2017

Na	23	20.0	43.3	5.0000	2.369	47.4	mg/L	3	Standard
Mg	24	256.7	6.3	5.0000	0.321	6.4	mg/L	30	Standard
K	39	395.0	6.7	5.0000	0.337	6.7	mg/L	10	Standard
Ca	43	73.3	30.7	5.0000	18.335	366.7	mg/L	83	Standard
Fe	54	361.6	19.6	5.0000	0.995	19.9	mg/L	21	Standard
Fe	57	373.3	9.9	5.0000	1.870	37.4	mg/L	240	Standard
Sc-1	45	40490.7	0.8				mg/L	41681	Standard
Cl	35	3.3	34.6				ug/L	2	Standard
Kr	83	7.3	61.5				ug/L	5	Standard
Br	81	1353.4	2.8				ug/L	1587	Standard
P	31	36.7	20.8				ug/L	50	Standard
S	34	15.0	57.7				ug/L	8	Standard
Sr	88	238.3	11.6				ug/L	198	Standard
C	12	53.3	57.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	19.5	102.5				mg/L	6	Standard
Ho-1	165	21.7	35.3				mg/L	12	Standard
Er	166	10.0					mg/L	10	Standard
I	127	3770.5	3.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72			
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: Standard 3

Report Date/Time: Tuesday, February 28, 2017 10:51:23

Page 2

Approved: March 01, 2017

[	Rb	85
[	Y	89
>	Rh	103
[	Mo	98
[	Ag	107
[	Cd	111
[	Cd	114
>	In	115
[	Sn	118
[	Sb	123
[	Ba	135
[	Ce	140
>	Tb	159
[	Ho	165
[	Tl	203
[	Tl	205
[	Pb	206
[	Pb	207
[	Pb	208
[	U	238
>	Bi	209
[	Na	23
[	Mg	24
[	K	39
[	Ca	43
[	Fe	54
[	Fe	57
>	Sc-1	45
[	Cl	35
[	Kr	83
[	Br	81
[	P	31
[	S	34
[	Sr	88
[	C	12
[	N	14
[	Hg	202
[	Dy	164
[	Ho-1	165
[	Er	166
[	I	127

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: Standard 3

Report Date/Time: Tuesday, February 28, 2017 10:51:23

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: Standard 4

Sample Date/Time: Tuesday, February 28, 2017 10:52:18

Number of Replicates: 3

Autosampler Position: 4

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	257817.0	3.7				ug/L	250104	Standard
|	Be	9	167808.0	2.9	100.1133	2.428	2.4	ug/L	7	Standard
|	Al	27	12527051.9	1.3	99.9117	2.920	2.9	ug/L	597	Standard
|	Sc	45	41901.2	3.7				ug/L	41681	Standard
|	Ti	47	36784.6	2.0	200.0252	1.969	1.0	ug/L	86	Standard
|	V	51	632837.7	1.8	99.1155	2.442	2.5	ug/L	1740	Standard
|	Cr	52	596154.8	1.3	99.4877	2.864	2.9	ug/L	7178	Standard
|	Cr	53	75722.1	0.4	99.0506	2.469	2.5	ug/L	573	Standard
|	Mn	55	975068.5	1.1	99.7680	1.224	1.2	ug/L	3072	Standard
|	Co	59	759278.2	1.0	99.6962	2.155	2.2	ug/L	573	Standard
|	Ni	60	160724.1	1.4	99.2987	2.731	2.8	ug/L	264	Standard
|	Cu	65	154111.2	0.9	99.3316	2.425	2.4	ug/L	530	Standard
|	Zn	66	88719.4	1.5	99.6171	2.564	2.6	ug/L	252	Standard
>	Ge	72	661847.7	2.1				ug/L	641188	Standard
|	As	75	89106.2	1.1	99.9121	1.932	1.9	ug/L	-83	Standard
|	Se	82	7756.4	2.0	100.3336	2.084	2.1	ug/L	16	Standard
|	Se-1	77	5580.7	1.6	99.0481	3.496	3.5	ug/L	126	Standard
>	Ga	71	131.7	30.7				mg/L	70	Standard
|	Rb	85	493.3	1.2				ug/L	33	Standard
|	Y	89	507618.5	4.0				ug/L	493982	Standard
>	Rh	103	40.0	66.1				ug/L	17	Standard
|	Mo	98	626069.2	0.7	201.4710	4.487	2.2	ug/L	54	Standard
|	Ag	107	533228.9	1.2	99.5521	2.829	2.8	ug/L	137	Standard
|	Cd	111	159502.0	0.8	100.4500	2.747	2.7	mg/L	6	Standard
|	Cd	114	432607.5	0.6	99.3036	2.767	2.8	ug/L	20	Standard
>	In	115	754653.1	2.9				ug/L	755264	Standard
|	Sn	118	95305.1	0.8	99.4514	3.418	3.4	ug/L	138	Standard
|	Sb	123	447889.7	0.2	100.1216	2.785	2.8	ug/L	391	Standard
|	Ba	135	178492.2	0.2	99.9681	3.107	3.1	ug/L	32	Standard
|	Ce	140	501.7	8.6				ug/L	42	Standard
>	Tb	159	995005.2	3.5				ug/L	966827	Standard
|	Ho	165	50.0	36.1				ug/L	12	Standard
|	Tl	203	654411.2	1.3	99.7759	2.945	3.0	ug/L	19	Standard
|	Tl	205	1517528.9	1.3	98.9507	2.846	2.9	ug/L	58	Standard
|	Pb	206	517085.2	1.2	99.9097	2.779	2.8	ug/L	464	Standard
|	Pb	207	463413.7	0.8	100.0750	2.547	2.5	ug/L	405	Standard
|	Pb	208	1011554.0	1.1	100.1096	2.847	2.8	ug/L	876	Standard
|	U	238	1142301.8	2.0	99.3300	2.516	2.5	ug/L	14	Standard
>	Bi	209	597316.1	3.3				ug/L	599146	Standard

Sample ID: Standard 4

Report Date/Time: Tuesday, February 28, 2017 10:54:29

Page 1

Approved: March 01, 2017

Na	23	33.3	22.9	9.0532	1.881	20.8	mg/L	3	Standard
Mg	24	543.3	5.2	10.3922	0.356	3.4	mg/L	30	Standard
K	39	745.0	8.7	9.6409	0.802	8.3	mg/L	10	Standard
Ca	43	91.7	12.6	12.7558	4.867	38.2	mg/L	83	Standard
Fe	54	607.8	13.3	9.0482	1.030	11.4	mg/L	21	Standard
Fe	57	451.7	15.9	9.0344	3.241	35.9	mg/L	240	Standard
Sc-1	45	41901.2	3.7				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	3.0	33.3				ug/L	5	Standard
Br	81	1440.1	10.3				ug/L	1587	Standard
P	31	68.3	27.7				ug/L	50	Standard
S	34	18.3	126.0				ug/L	8	Standard
Sr	88	183.3	13.7				ug/L	198	Standard
C	12	36.7	83.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	15.4	79.7				mg/L	6	Standard
Ho-1	165	50.0	36.1				mg/L	12	Standard
Er	166	26.7	78.1				mg/L	10	Standard
I	127	5020.8	1.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72			
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: Standard 4

Report Date/Time: Tuesday, February 28, 2017 10:54:29

Page 2

Approved: March 01, 2017

[	Rb	85
[	Y	89
>	Rh	103
[	Mo	98
[	Ag	107
[	Cd	111
[	Cd	114
>	In	115
[	Sn	118
[	Sb	123
[	Ba	135
[	Ce	140
>	Tb	159
[	Ho	165
[	Tl	203
[	Tl	205
[	Pb	206
[	Pb	207
[	Pb	208
[	U	238
>	Bi	209
[	Na	23
[	Mg	24
[	K	39
[	Ca	43
[	Fe	54
[	Fe	57
>	Sc-1	45
[	Cl	35
[	Kr	83
[	Br	81
[	P	31
[	S	34
[	Sr	88
[	C	12
[	N	14
[	Hg	202
[	Dy	164
[	Ho-1	165
[	Er	166
[	I	127

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Corr. Coef.	Na	23	Correlation coefficient < 0.998
Corr. Coef.	Ca	43	Correlation coefficient < 0.998
Corr. Coef.	Fe	54	Correlation coefficient < 0.998

Sample ID: Standard 4

Report Date/Time: Tuesday, February 28, 2017 10:54:29

Page 3

Approved: March 01, 2017



Corr. Coef.

Fe

57

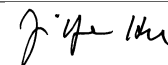
Correlation coefficient < 0.998

Sample ID: Standard 4

Report Date/Time: Tuesday, February 28, 2017 10:54:29

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 1

Sample Date/Time: Tuesday, February 28, 2017 10:55:24

Number of Replicates: 3

Autosampler Position: 201

Sample Description:

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	264583.7	3.6				ug/L	250104	Standard
|	Be	9	82631.4	0.9	48.0615	2.054	4.3	ug/L	7	Standard
|	Al	27	6345659.4	1.0	49.3101	1.281	2.6	ug/L	597	Standard
|	Sc	45	43759.8	1.7				ug/L	41681	Standard
|	Ti	47	18533.3	2.0	97.9329	1.416	1.4	ug/L	86	Standard
|	V	51	319640.8	1.5	48.6161	0.429	0.9	ug/L	1740	Standard
|	Cr	52	299357.0	1.4	48.0261	0.487	1.0	ug/L	7178	Standard
|	Cr	53	38345.2	4.1	48.3999	1.866	3.9	ug/L	573	Standard
|	Mn	55	488170.8	1.1	48.4958	0.550	1.1	ug/L	3072	Standard
|	Co	59	380883.1	1.3	48.6797	0.908	1.9	ug/L	573	Standard
|	Ni	60	80765.7	0.6	48.5044	0.314	0.6	ug/L	264	Standard
|	Cu	65	78323.0	2.4	48.9700	0.895	1.8	ug/L	530	Standard
|	Zn	66	44827.9	1.1	48.8414	0.330	0.7	ug/L	252	Standard
>	Ge	72	679392.9	0.8				ug/L	641188	Standard
|	As	75	44458.4	0.9	48.5729	0.178	0.4	ug/L	-83	Standard
|	Se	82	3929.2	0.7	49.3921	0.144	0.3	ug/L	16	Standard
|	Se-1	77	2946.0	1.9	49.8037	0.614	1.2	ug/L	126	Standard
>	Ga	71	96.7	21.5				mg/L	70	Standard
|	Rb	85	648.3	7.9				ug/L	33	Standard
|	Y	89	521346.8	1.1				ug/L	493982	Standard
>	Rh	103	35.0	62.3				ug/L	17	Standard
|	Mo	98	310095.2	0.1	97.3559	0.786	0.8	ug/L	54	Standard
|	Ag	107	267856.6	0.2	48.7772	0.291	0.6	ug/L	137	Standard
|	Cd	111	80948.4	0.3	49.7309	0.523	1.1	mg/L	6	Standard
|	Cd	114	218401.2	0.9	48.9052	0.486	1.0	ug/L	20	Standard
>	In	115	773132.6	0.7				ug/L	755264	Standard
|	Sn	118	47589.0	2.1	48.3719	0.928	1.9	ug/L	138	Standard
|	Sb	123	226144.1	0.8	49.3071	0.684	1.4	ug/L	391	Standard
|	Ba	135	89155.6	1.0	48.6997	0.771	1.6	ug/L	32	Standard
|	Ce	140	38.3	32.8				ug/L	42	Standard
>	Tb	159	1009303.7	1.0				ug/L	966827	Standard
|	Ho	165	35.0	42.9				ug/L	12	Standard
|	Tl	203	331545.6	1.4	48.6548	0.679	1.4	ug/L	19	Standard
|	Tl	205	773012.0	2.0	48.5126	0.458	0.9	ug/L	58	Standard
|	Pb	206	262192.2	1.7	48.7145	0.537	1.1	ug/L	464	Standard
|	Pb	207	235457.7	1.6	48.8982	0.554	1.1	ug/L	405	Standard
|	Pb	208	510822.1	0.4	48.6185	0.438	0.9	ug/L	876	Standard
|	U	238	574385.9	1.6	48.0829	0.629	1.3	ug/L	14	Standard
>	Bi	209	620194.1	1.2				ug/L	599146	Standard

Sample ID: QC Std 1

Report Date/Time: Tuesday, February 28, 2017 10:57:35

Page 1

Approved: March 01, 2017

Na	23	10.0	100.0	2.2756	2.728	119.9	mg/L	3	Standard
Mg	24	275.0	16.4	4.7506	0.788	16.6	mg/L	30	Standard
K	39	453.3	13.2	5.5083	0.665	12.1	mg/L	10	Standard
Ca	43	75.0	13.3	1.3331	5.625	421.9	mg/L	83	Standard
Fe	54	332.6	5.2	4.6320	0.339	7.3	mg/L	21	Standard
Fe	57	396.7	11.7	5.1479	2.716	52.8	mg/L	240	Standard
Sc-1	45	43759.8	1.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.7	86.6				ug/L	5	Standard
Br	81	1513.4	6.3				ug/L	1587	Standard
P	31	48.3	23.9				ug/L	50	Standard
S	34	13.3	57.3				ug/L	8	Standard
Sr	88	218.3	24.7				ug/L	198	Standard
C	12	53.3	60.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	22.2	92.4				mg/L	6	Standard
Ho-1	165	35.0	42.9				mg/L	12	Standard
Er	166	23.3	65.5				mg/L	10	Standard
I	127	3993.9	1.4				mg/L	5503	Standard

QC Calculated Values

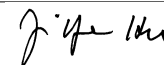
Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	96.123		
Al	27	98.620		
Sc	45			
Ti	47	97.933		
V	51	97.232		
Cr	52	96.052		
Cr	53			
Mn	55	96.992		
Co	59	97.359		
Ni	60	97.009		
Cu	65	97.940		
Zn	66	97.683		
Ge	72		105.958	
As	75	97.146		
Se	82	98.784		
Se-1	77			
Ga	71			

Sample ID: QC Std 1

Report Date/Time: Tuesday, February 28, 2017 10:57:35

Page 2

Approved: March 01, 2017



[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	97.356	
[	Ag	107	97.554	
[	Cd	111	99.462	
[	Cd	114		
>	In	115		102.366
[	Sn	118	96.744	
[	Sb	123	98.614	
[	Ba	135	97.399	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	97.310	
[	Tl	205		
[	Pb	206	97.429	
[	Pb	207	97.796	
[	Pb	208	97.237	
[	U	238	96.166	
>	Bi	209		103.513
[	Na	23	45.512	
[	Mg	24	95.013	
[	K	39	110.167	
[	Ca	43	26.662	
[	Fe	54	92.641	
[	Fe	57	102.957	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 1	Na	23	
QC Std 1	K	39	
QC Std 1	Ca	43	

Sample ID: QC Std 1

Report Date/Time: Tuesday, February 28, 2017 10:57:35

Page 3

Approved: March 01, 2017

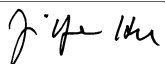


QC Std 1

Fe

57

Sample ID: QC Std 1
Report Date/Time: Tuesday, February 28, 2017 10:57:35
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 2

Sample Date/Time: Tuesday, February 28, 2017 10:58:31

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	263525.4	0.9				ug/L	250104	Standard
|	Be	9	33.3	82.6	0.0092	0.016	175.3	ug/L	7	Standard
|	Al	27	1731.8	66.1	0.0074	0.009	122.4	ug/L	597	Standard
|	Sc	45	44097.4	2.0				ug/L	41681	Standard
|	Ti	47	74.0	8.1	-0.0717	0.033	46.2	ug/L	86	Standard
|	V	51	1350.3	9.4	-0.0709	0.022	30.7	ug/L	1740	Standard
|	Cr	52	5951.8	0.6	-0.2456	0.009	3.6	ug/L	7178	Standard
|	Cr	53	560.0	14.0	-0.1596	0.092	57.9	ug/L	573	Standard
|	Mn	55	2577.9	2.7	-0.0500	0.006	11.2	ug/L	3072	Standard
|	Co	59	444.0	18.0	-0.0048	0.010	207.4	ug/L	573	Standard
|	Ni	60	261.0	3.7	-0.0210	0.006	28.1	ug/L	264	Standard
|	Cu	65	657.3	3.5	0.0340	0.011	33.2	ug/L	530	Standard
|	Zn	66	415.3	4.9	0.1020	0.019	18.8	ug/L	252	Standard
>	Ge	72	682916.6	1.2				ug/L	641188	Standard
|	As	75	-23.9	52.0	0.0164	0.013	81.7	ug/L	-83	Standard
|	Se	82	11.9	32.1	-0.0792	0.047	58.9	ug/L	16	Standard
|	Se-1	77	127.3	4.3	-0.0352	0.091	258.0	ug/L	126	Standard
>	Ga	71	66.7	43.3				mg/L	70	Standard
|	Rb	85	40.0	25.0				ug/L	33	Standard
|	Y	89	515183.1	1.3				ug/L	493982	Standard
>	Rh	103	13.3	21.7				ug/L	17	Standard
|	Mo	98	362.4	23.4	0.0929	0.026	28.5	ug/L	54	Standard
|	Ag	107	163.7	20.7	0.0061	0.006	98.6	ug/L	137	Standard
|	Cd	111	16.9	70.2	-0.0033	0.007	216.9	mg/L	6	Standard
|	Cd	114	70.1	37.1	0.0056	0.006	102.6	ug/L	20	Standard
>	In	115	773176.0	0.6				ug/L	755264	Standard
|	Sn	118	182.3	10.2	0.0522	0.020	37.5	ug/L	138	Standard
|	Sb	123	1381.1	14.8	0.2747	0.045	16.4	ug/L	391	Standard
|	Ba	135	57.0	20.2	0.0036	0.006	168.6	ug/L	32	Standard
|	Ce	140	18.3	41.7				ug/L	42	Standard
>	Tb	159	1009101.1	0.5				ug/L	966827	Standard
|	Ho	165	5.0	100.0				ug/L	12	Standard
|	Tl	203	67.3	84.5	0.0029	0.008	289.6	ug/L	19	Standard
|	Tl	205	153.3	79.6	0.0069	0.008	109.5	ug/L	58	Standard
|	Pb	206	568.0	5.3	0.0103	0.005	51.6	ug/L	464	Standard
|	Pb	207	468.0	5.6	0.0052	0.005	99.6	ug/L	405	Standard
|	Pb	208	1052.3	12.3	0.0114	0.012	104.9	ug/L	876	Standard
|	U	238	130.3	88.2	0.0091	0.010	104.2	ug/L	14	Standard
>	Bi	209	623835.3	0.3				ug/L	599146	Standard

Sample ID: QC Std 2

Report Date/Time: Tuesday, February 28, 2017 11:00:42

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	45.0	40.1	0.3226	0.350	108.6	mg/L	30	Standard
K	39	10.0		-0.1162	0.002	2.1	mg/L	10	Standard
Ca	43	51.7	40.3	-11.7437	12.062	102.7	mg/L	83	Standard
Fe	54	31.0	51.7	0.1992	0.223	111.8	mg/L	21	Standard
Fe	57	258.3	12.9	-2.3238	1.475	63.5	mg/L	240	Standard
Sc-1	45	44097.4	2.0				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	6.7	8.7				ug/L	5	Standard
Br	81	1306.7	21.2				ug/L	1587	Standard
P	31	63.3	25.4				ug/L	50	Standard
S	34	15.0	66.7				ug/L	8	Standard
Sr	88	210.0	14.3				ug/L	198	Standard
C	12	10.0	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	16.0	35.2				mg/L	6	Standard
Ho-1	165	5.0	100.0				mg/L	12	Standard
Er	166	13.3	43.3				mg/L	10	Standard
I	127	5250.9	2.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.508	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 2

Report Date/Time: Tuesday, February 28, 2017 11:00:42

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	102.372
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	104.121
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 2	Sb	123	
QC Std 2	Na	23	
QC Std 2	Mg	24	

Sample ID: QC Std 2

Report Date/Time: Tuesday, February 28, 2017 11:00:42

Page 3

Approved: March 01, 2017



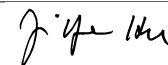
QC Std 2	K	39
QC Std 2	Ca	43
QC Std 2	Fe	54
QC Std 2	Fe	57

Sample ID: QC Std 2

Report Date/Time: Tuesday, February 28, 2017 11:00:42

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 3

Sample Date/Time: Tuesday, February 28, 2017 11:01:38

Number of Replicates: 3

Autosampler Position: 202

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	257710.1	1.3				ug/L	250104	Standard
|	Be	9	291.7	12.4	0.1640	0.024	14.4	ug/L	7	Standard
|	Al	27	630.0	3.6	-0.0011	0.000	11.1	ug/L	597	Standard
|	Sc	45	43507.4	0.4				ug/L	41681	Standard
|	Ti	47	58.0	14.9	-0.1521	0.050	33.2	ug/L	86	Standard
|	V	51	3762.4	3.8	0.3028	0.013	4.3	ug/L	1740	Standard
|	Cr	52	12032.1	2.4	0.7733	0.017	2.2	ug/L	7178	Standard
|	Cr	53	1246.7	11.3	0.7385	0.180	24.4	ug/L	573	Standard
|	Mn	55	6769.5	2.4	0.3750	0.011	2.8	ug/L	3072	Standard
|	Co	59	3144.7	2.1	0.3440	0.015	4.3	ug/L	573	Standard
|	Ni	60	2640.2	3.4	1.4250	0.054	3.8	ug/L	264	Standard
|	Cu	65	1746.1	3.1	0.7300	0.039	5.3	ug/L	530	Standard
|	Zn	66	5557.7	3.4	5.7889	0.110	1.9	ug/L	252	Standard
>	Ge	72	674690.8	1.6				ug/L	641188	Standard
|	As	75	294.8	10.2	0.3662	0.032	8.8	ug/L	-83	Standard
|	Se	82	44.0	10.6	0.3318	0.068	20.4	ug/L	16	Standard
|	Se-1	77	128.0	14.9	0.0067	0.361	5419.1	ug/L	126	Standard
>	Ga	71	73.3	37.6				mg/L	70	Standard
|	Rb	85	35.0	28.6				ug/L	33	Standard
|	Y	89	514136.4	2.0				ug/L	493982	Standard
>	Rh	103	30.0	16.7				ug/L	17	Standard
|	Mo	98	117.9	8.2	0.0171	0.003	18.9	ug/L	54	Standard
|	Ag	107	2118.1	2.2	0.3714	0.004	1.0	ug/L	137	Standard
|	Cd	111	358.2	3.4	0.2119	0.011	5.3	mg/L	6	Standard
|	Cd	114	1020.3	5.5	0.2239	0.013	5.8	ug/L	20	Standard
>	In	115	755012.9	1.7				ug/L	755264	Standard
|	Sn	118	112.7	10.2	-0.0162	0.010	62.0	ug/L	138	Standard
|	Sb	123	2051.1	4.1	0.4315	0.013	3.1	ug/L	391	Standard
|	Ba	135	1226.0	2.5	0.6589	0.028	4.3	ug/L	32	Standard
|	Ce	140	13.3	43.3				ug/L	42	Standard
>	Tb	159	995385.5	2.8				ug/L	966827	Standard
|	Ho	165	11.7	24.7				ug/L	12	Standard
|	Tl	203	493.7	1.9	0.0661	0.000	0.3	ug/L	19	Standard
|	Tl	205	1241.7	1.0	0.0760	0.001	1.7	ug/L	58	Standard
|	Pb	206	1505.1	4.7	0.1876	0.008	4.1	ug/L	464	Standard
|	Pb	207	1242.7	3.2	0.1691	0.007	4.3	ug/L	405	Standard
|	Pb	208	2793.8	1.7	0.1803	0.008	4.3	ug/L	876	Standard
|	U	238	4301.9	1.1	0.3614	0.004	1.2	ug/L	14	Standard
>	Bi	209	615154.9	2.2				ug/L	599146	Standard

Sample ID: QC Std 3

Report Date/Time: Tuesday, February 28, 2017 11:03:48

Page 1

Approved: March 01, 2017

Na	23	3.3	173.2	0.4447	1.598	359.4	mg/L	3	Standard
Mg	24	18.3	56.8	-0.1843	0.203	110.1	mg/L	30	Standard
K	39	8.3	124.9	-0.1362	0.132	97.3	mg/L	10	Standard
Ca	43	61.7	52.8	-5.8768	18.258	310.7	mg/L	83	Standard
Fe	54	22.7	33.8	0.0851	0.112	132.2	mg/L	21	Standard
Fe	57	253.3	9.7	-2.3875	1.302	54.5	mg/L	240	Standard
Sc-1	45	43507.4	0.4				mg/L	41681	Standard
Cl	35	2.7	43.3				ug/L	2	Standard
Kr	83	5.3	57.3				ug/L	5	Standard
Br	81	1503.4	2.3				ug/L	1587	Standard
P	31	68.3	18.4				ug/L	50	Standard
S	34	33.3	48.2				ug/L	8	Standard
Sr	88	215.0	18.6				ug/L	198	Standard
C	12	20.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.8	177.4				mg/L	6	Standard
Ho-1	165	11.7	24.7				mg/L	12	Standard
Er	166	3.3	173.2				mg/L	10	Standard
I	127	3950.5	4.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	81.985		
Al	27	-0.114		
Sc	45			
Ti	47			
V	51	75.710		
Cr	52	96.659		
Cr	53			
Mn	55	75.008		
Co	59	86.009		
Ni	60	89.065		
Cu	65	91.250		
Zn	66	92.623		
Ge	72		105.225	
As	75	91.561		
Se	82	82.958		
Se-1	77			
Ga	71			

Sample ID: QC Std 3

Report Date/Time: Tuesday, February 28, 2017 11:03:48

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98		
	Ag	107	92.854	
	Cd	111	88.274	
	Cd	114		
>	In	115		99.967
	Sn	118		
	Sb	123	107.874	
[	Ba	135	87.857	
[	Ce	140		
>	Tb	159		
[	Ho	165		
	Tl	203	82.620	
	Tl	205		
	Pb	206		
	Pb	207		
	Pb	208	90.140	
	U	238	90.361	
>	Bi	209		102.672
[	Na	23		
[	Mg	24		
	K	39		
	Ca	43		
	Fe	54		
	Fe	57		
>	Sc-1	45		
	Cl	35		
	Kr	83		
	Br	81		
	P	31		
	S	34		
	Sr	88		
	C	12		
	N	14		
	Hg	202		
	Dy	164		
	Ho-1	165		
	Er	166		
	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 3	Al	27	

Sample ID: QC Std 3

Report Date/Time: Tuesday, February 28, 2017 11:03:48

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 4

Sample Date/Time: Tuesday, February 28, 2017 11:04:43

Number of Replicates: 3

Autosampler Position: 203

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	260539.4	0.9				ug/L	250104	Standard
|	Be	9	55.0	133.9	0.0220	0.043	195.9	ug/L	7	Standard
|	Al	27	5758052.1	1.7	45.4131	0.935	2.1	ug/L	597	Standard
|	Sc	45	43589.3	0.7				ug/L	41681	Standard
|	Ti	47	17040.9	1.2	91.0552	1.073	1.2	ug/L	86	Standard
|	V	51	1501.4	26.9	-0.0443	0.062	140.9	ug/L	1740	Standard
|	Cr	52	7684.3	4.7	0.0589	0.060	101.1	ug/L	7178	Standard
|	Cr	53	870.0	12.6	0.2561	0.142	55.4	ug/L	573	Standard
|	Mn	55	4259.9	7.6	0.1244	0.032	26.0	ug/L	3072	Standard
|	Co	59	965.4	31.6	0.0636	0.039	62.0	ug/L	573	Standard
|	Ni	60	675.3	14.2	0.2342	0.058	24.8	ug/L	264	Standard
|	Cu	65	810.4	7.5	0.1384	0.038	27.5	ug/L	530	Standard
|	Zn	66	1159.7	3.6	0.9360	0.047	5.0	ug/L	252	Standard
>	Ge	72	671652.4	0.1				ug/L	641188	Standard
|	As	75	14.3	265.5	0.0581	0.042	72.4	ug/L	-83	Standard
|	Se	82	21.6	16.6	0.0474	0.045	95.6	ug/L	16	Standard
|	Se-1	77	122.7	6.5	-0.0811	0.142	175.1	ug/L	126	Standard
>	Ga	71	55.0	27.3				mg/L	70	Standard
|	Rb	85	640.0	4.1				ug/L	33	Standard
|	Y	89	518104.5	0.4				ug/L	493982	Standard
>	Rh	103	23.3	44.6				ug/L	17	Standard
|	Mo	98	287490.0	1.1	91.5051	0.725	0.8	ug/L	54	Standard
|	Ag	107	164.7	29.9	0.0067	0.009	137.6	ug/L	137	Standard
|	Cd	111	-90.2	26.6	-0.0698	0.015	21.3	mg/L	6	Standard
|	Cd	114	596.3	8.8	0.1253	0.012	9.9	ug/L	20	Standard
>	In	115	762553.1	0.4				ug/L	755264	Standard
|	Sn	118	138.0	4.0	0.0089	0.006	64.0	ug/L	138	Standard
|	Sb	123	466.9	16.9	0.0767	0.018	23.4	ug/L	391	Standard
|	Ba	135	76.7	78.5	0.0151	0.034	223.0	ug/L	32	Standard
|	Ce	140	916.7	11.0				ug/L	42	Standard
>	Tb	159	1013910.8	1.5				ug/L	966827	Standard
|	Ho	165	10.0					ug/L	12	Standard
|	Tl	203	148.7	154.6	0.0154	0.035	224.9	ug/L	19	Standard
|	Tl	205	340.0	161.7	0.0192	0.035	184.0	ug/L	58	Standard
|	Pb	206	681.0	28.6	0.0342	0.038	110.8	ug/L	464	Standard
|	Pb	207	615.3	30.8	0.0386	0.041	106.4	ug/L	405	Standard
|	Pb	208	1312.0	29.8	0.0389	0.039	99.9	ug/L	876	Standard
|	U	238	232.7	167.3	0.0182	0.033	182.9	ug/L	14	Standard
>	Bi	209	610448.9	0.7				ug/L	599146	Standard

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 11:06:53

Page 1

Approved: March 01, 2017

Na	23	31.7	9.1	8.2685	0.859	10.4	mg/L	3	Standard
Mg	24	583.3	10.3	10.7398	1.111	10.3	mg/L	30	Standard
K	39	400.0	2.5	4.8587	0.141	2.9	mg/L	10	Standard
Ca	43	121.7	18.5	27.5203	12.326	44.8	mg/L	83	Standard
Fe	54	694.4	1.3	9.9742	0.187	1.9	mg/L	21	Standard
Fe	57	456.7	2.3	8.3979	0.578	6.9	mg/L	240	Standard
Sc-1	45	43589.3	0.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	2.7	21.7				ug/L	5	Standard
Br	81	1503.4	9.7				ug/L	1587	Standard
P	31	66.7	11.5				ug/L	50	Standard
S	34	23.3	53.9				ug/L	8	Standard
Sr	88	216.7	27.9				ug/L	198	Standard
C	12	30.0	88.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	12.2	130.6				mg/L	6	Standard
Ho-1	165	10.0					mg/L	12	Standard
Er	166	23.3	65.5				mg/L	10	Standard
I	127	3373.7	3.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27	0.908		
Sc	45			
Ti	47	91.055		
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		104.751	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 11:06:53

Page 2

Approved: March 01, 2017



[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	91.505	
[	Ag	107		
[	Cd	111		
[	Cd	114		
>	In	115		100.965
[	Sn	118		
[	Sb	123		
[	Ba	135		
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203		
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208		
[	U	238		
>	Bi	209		101.887
[	Na	23	66.148	
[	Mg	24	214.796	
[	K	39	97.174	
[	Ca	43	183.468	
[	Fe	54	79.794	
[	Fe	57	67.183	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 4	Al	27	
QC Std 4	Na	23	
QC Std 4	Mg	24	

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 11:06:53

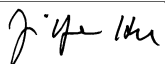
Page 3

Approved: March 01, 2017



QC Std 4	Ca	43
QC Std 4	Fe	54
QC Std 4	Fe	57

Sample ID: QC Std 4
Report Date/Time: Tuesday, February 28, 2017 11:06:53
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 5

Sample Date/Time: Tuesday, February 28, 2017 11:07:48

Number of Replicates: 3

Autosampler Position: 204

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	267841.7	0.7				ug/L	250104	Standard
|	Be	9	164142.8	1.5	94.2352	2.061	2.2	ug/L	7	Standard
|	Al	27	5733990.9	0.8	43.9890	0.516	1.2	ug/L	597	Standard
|	Sc	45	44089.1	1.0				ug/L	41681	Standard
|	Ti	47	18398.8	2.3	94.3390	3.628	3.8	ug/L	86	Standard
|	V	51	612292.0	0.4	90.5977	1.480	1.6	ug/L	1740	Standard
|	Cr	52	577731.7	1.3	91.0013	2.366	2.6	ug/L	7178	Standard
|	Cr	53	75430.6	1.0	93.1829	2.047	2.2	ug/L	573	Standard
|	Mn	55	928273.9	1.1	89.7385	2.285	2.5	ug/L	3072	Standard
|	Co	59	728443.6	1.5	90.3882	2.665	2.9	ug/L	573	Standard
|	Ni	60	155086.1	1.2	90.5265	2.292	2.5	ug/L	264	Standard
|	Cu	65	150548.0	1.1	91.6606	1.847	2.0	ug/L	530	Standard
|	Zn	66	87657.5	1.6	92.9822	2.173	2.3	ug/L	252	Standard
>	Ge	72	700330.0	1.5				ug/L	641188	Standard
|	As	75	87214.5	0.1	92.4147	1.490	1.6	ug/L	-83	Standard
|	Se	82	7576.5	0.7	92.6020	1.355	1.5	ug/L	16	Standard
|	Se-1	77	5668.1	0.7	94.9559	2.138	2.3	ug/L	126	Standard
>	Ga	71	165.0	22.9				mg/L	70	Standard
|	Rb	85	671.7	5.8				ug/L	33	Standard
|	Y	89	544380.8	3.4				ug/L	493982	Standard
>	Rh	103	51.7	36.6				ug/L	17	Standard
|	Mo	98	295818.0	0.7	91.4304	0.658	0.7	ug/L	54	Standard
|	Ag	107	464343.7	3.6	83.2685	3.182	3.8	ug/L	137	Standard
|	Cd	111	155225.0	0.3	93.9006	1.463	1.6	mg/L	6	Standard
|	Cd	114	409037.5	0.4	90.1831	0.830	0.9	ug/L	20	Standard
>	In	115	785336.5	1.3				ug/L	755264	Standard
|	Sn	118	139.7	7.7	0.0064	0.010	155.4	ug/L	138	Standard
|	Sb	123	436970.1	0.9	93.8265	1.855	2.0	ug/L	391	Standard
|	Ba	135	172146.1	0.5	92.6029	1.636	1.8	ug/L	32	Standard
|	Ce	140	88.3	19.9				ug/L	42	Standard
>	Tb	159	1056061.9	1.6				ug/L	966827	Standard
|	Ho	165	36.7	41.7				ug/L	12	Standard
|	Tl	203	642491.8	0.2	91.4962	1.934	2.1	ug/L	19	Standard
|	Tl	205	1493371.5	0.5	90.9464	1.438	1.6	ug/L	58	Standard
|	Pb	206	506087.3	0.9	91.3169	1.108	1.2	ug/L	464	Standard
|	Pb	207	455693.2	1.3	91.8955	0.724	0.8	ug/L	405	Standard
|	Pb	208	994453.9	0.5	91.9154	1.793	2.0	ug/L	876	Standard
|	U	238	1128437.1	2.1	91.6455	1.385	1.5	ug/L	14	Standard
>	Bi	209	639308.3	2.1				ug/L	599146	Standard

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 11:09:59

Page 1

Approved: March 01, 2017

Na	23	28.3	36.7	7.2495	2.820	38.9	mg/L	3	Standard
Mg	24	615.0	18.6	11.2324	2.259	20.1	mg/L	30	Standard
K	39	325.0	8.6	3.8529	0.310	8.0	mg/L	10	Standard
Ca	43	96.7	7.9	13.0081	4.777	36.7	mg/L	83	Standard
Fe	54	681.4	4.1	9.6662	0.309	3.2	mg/L	21	Standard
Fe	57	583.3	4.0	14.7747	0.972	6.6	mg/L	240	Standard
Sc-1	45	44089.1	1.0				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.7	83.3				ug/L	5	Standard
Br	81	1563.4	5.8				ug/L	1587	Standard
P	31	55.0	24.1				ug/L	50	Standard
S	34	20.0	75.0				ug/L	8	Standard
Sr	88	183.3	19.2				ug/L	198	Standard
C	12	46.7	75.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	9.7	103.3				mg/L	6	Standard
Ho-1	165	36.7	41.7				mg/L	12	Standard
Er	166	6.7	86.6				mg/L	10	Standard
I	127	3553.8	2.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	94.235		
Al	27	0.880		
Sc	45			
Ti	47	94.339		
V	51	90.598		
Cr	52	91.001		
Cr	53			
Mn	55	89.739		
Co	59	90.388		
Ni	60	90.526		
Cu	65	91.661		
Zn	66	92.982		
Ge	72		109.224	
As	75	92.415		
Se	82	92.602		
Se-1	77			
Ga	71			

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 11:09:59

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	91.430	
[	Ag	107	83.268	
[	Cd	111	93.901	
[	Cd	114		
>	In	115		103.982
[	Sn	118		
[	Sb	123	93.827	
[	Ba	135	92.603	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	91.496	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	91.915	
[	U	238	91.645	
>	Bi	209		106.703
[	Na	23	57.996	
[	Mg	24	224.648	
[	K	39	77.058	
[	Ca	43	86.721	
[	Fe	54	77.330	
[	Fe	57	118.197	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 5	Al	27	
QC Std 5	Na	23	
QC Std 5	Mg	24	

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 11:09:59

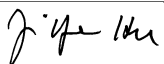
Page 3

Approved: March 01, 2017



QC Std 5	K	39
QC Std 5	Ca	43
QC Std 5	Fe	54

Sample ID: QC Std 5
Report Date/Time: Tuesday, February 28, 2017 11:09:59
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 11:10:55

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

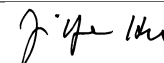
IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	260829.6	3.7				ug/L	250104	Standard
|	Be	9	84099.4	0.5	49.6190	1.991	4.0	ug/L	7	Standard
|	Al	27	6304809.4	2.3	49.6988	1.607	3.2	ug/L	597	Standard
|	Sc	45	43497.4	2.8				ug/L	41681	Standard
|	Ti	47	18294.4	1.7	97.7367	2.921	3.0	ug/L	86	Standard
|	V	51	321527.7	0.6	49.4500	1.421	2.9	ug/L	1740	Standard
|	Cr	52	301304.1	0.5	48.8939	1.372	2.8	ug/L	7178	Standard
|	Cr	53	38353.5	1.4	48.9461	0.744	1.5	ug/L	573	Standard
|	Mn	55	490872.9	1.3	49.3045	1.366	2.8	ug/L	3072	Standard
|	Co	59	384591.5	1.5	49.6912	1.402	2.8	ug/L	573	Standard
|	Ni	60	81566.3	1.2	49.5218	1.054	2.1	ug/L	264	Standard
|	Cu	65	78097.8	0.8	49.3650	0.782	1.6	ug/L	530	Standard
|	Zn	66	45149.2	0.7	49.7352	1.006	2.0	ug/L	252	Standard
>	Ge	72	672253.4	2.3				ug/L	641188	Standard
|	As	75	45508.4	1.3	50.2677	1.497	3.0	ug/L	-83	Standard
|	Se	82	4059.1	0.6	51.5940	1.201	2.3	ug/L	16	Standard
|	Se-1	77	2876.3	1.0	49.1249	0.698	1.4	ug/L	126	Standard
>	Ga	71	65.0	27.7				mg/L	70	Standard
|	Rb	85	681.7	7.8				ug/L	33	Standard
|	Y	89	521276.7	1.5				ug/L	493982	Standard
>	Rh	103	26.7	39.0				ug/L	17	Standard
|	Mo	98	318759.7	1.3	100.7078	2.795	2.8	ug/L	54	Standard
|	Ag	107	285916.7	1.0	52.3948	1.293	2.5	ug/L	137	Standard
|	Cd	111	82123.0	1.3	50.7671	1.238	2.4	mg/L	6	Standard
|	Cd	114	221483.1	0.6	49.8998	0.493	1.0	ug/L	20	Standard
>	In	115	768471.5	1.5				ug/L	755264	Standard
|	Sn	118	49011.5	1.0	50.1372	1.226	2.4	ug/L	138	Standard
|	Sb	123	230988.7	1.3	50.6807	1.407	2.8	ug/L	391	Standard
|	Ba	135	90500.2	1.1	49.7429	1.219	2.4	ug/L	32	Standard
|	Ce	140	63.3	25.4				ug/L	42	Standard
>	Tb	159	1021379.5	1.4				ug/L	966827	Standard
|	Ho	165	23.3	32.7				ug/L	12	Standard
|	Tl	203	338334.4	1.1	49.6414	1.044	2.1	ug/L	19	Standard
|	Tl	205	798518.6	2.3	50.1134	1.680	3.4	ug/L	58	Standard
|	Pb	206	266590.7	1.1	49.5262	1.057	2.1	ug/L	464	Standard
|	Pb	207	239880.8	1.0	49.8097	0.951	1.9	ug/L	405	Standard
|	Pb	208	523514.4	1.6	49.8196	1.314	2.6	ug/L	876	Standard
|	U	238	596315.6	1.7	49.9127	1.377	2.8	ug/L	14	Standard
>	Bi	209	620377.8	1.1				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:13:06

Page 1

Approved: March 01, 2017



Na	23	16.7	45.8	4.1737	2.266	54.3	mg/L	3	Standard
Mg	24	300.0	2.9	5.2800	0.292	5.5	mg/L	30	Standard
K	39	378.3	21.1	4.5762	0.901	19.7	mg/L	10	Standard
Ca	43	63.3	24.1	-5.0705	7.792	153.7	mg/L	83	Standard
Fe	54	312.5	5.6	4.3650	0.320	7.3	mg/L	21	Standard
Fe	57	403.3	12.2	5.6673	3.262	57.6	mg/L	240	Standard
Sc-1	45	43497.4	2.8				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	4.7	32.7				ug/L	5	Standard
Br	81	1656.8	7.2				ug/L	1587	Standard
P	31	40.0	21.7				ug/L	50	Standard
S	34	28.3	44.4				ug/L	8	Standard
Sr	88	213.3	4.9				ug/L	198	Standard
C	12	26.7	43.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	19.4	103.3				mg/L	6	Standard
Ho-1	165	23.3	32.7				mg/L	12	Standard
Er	166	13.3	43.3				mg/L	10	Standard
I	127	3885.5	4.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	99.238		
Al	27	99.398		
Sc	45			
Ti	47	97.737		
V	51	98.900		
Cr	52	97.788		
Cr	53			
Mn	55	98.609		
Co	59	99.382		
Ni	60	99.044		
Cu	65	98.730		
Zn	66	99.470		
Ge	72		104.845	
As	75	100.535		
Se	82	103.188		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:13:06

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	100.708	
[	Ag	107	104.790	
[	Cd	111	101.534	
[	Cd	114		
>	In	115		101.749
[	Sn	118	100.274	
[	Sb	123	101.361	
[	Ba	135	99.486	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	99.283	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	99.639	
[	U	238	99.825	
>	Bi	209		103.544
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:13:06

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 11:14:01

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	259590.8	4.2				ug/L	250104	Standard
|	Be	9	21.7	35.3	0.0027	0.005	182.7	ug/L	7	Standard
|	Al	27	845.0	1.2	0.0005	0.000	41.3	ug/L	597	Standard
|	Sc	45	42065.0	3.1				ug/L	41681	Standard
|	Ti	47	60.3	9.7	-0.1396	0.029	21.1	ug/L	86	Standard
|	V	51	1385.6	7.1	-0.0628	0.014	21.7	ug/L	1740	Standard
|	Cr	52	6111.2	2.2	-0.2053	0.021	10.3	ug/L	7178	Standard
|	Cr	53	551.7	9.3	-0.1591	0.072	45.5	ug/L	573	Standard
|	Mn	55	2387.5	2.8	-0.0656	0.005	7.5	ug/L	3072	Standard
|	Co	59	367.3	3.1	-0.0139	0.002	12.3	ug/L	573	Standard
|	Ni	60	235.3	8.4	-0.0344	0.013	38.6	ug/L	264	Standard
|	Cu	65	594.3	4.5	-0.0001	0.020	20295.4	ug/L	530	Standard
|	Zn	66	402.3	7.7	0.0940	0.031	33.2	ug/L	252	Standard
>	Ge	72	673345.6	0.9				ug/L	641188	Standard
|	As	75	-18.6	56.3	0.0218	0.011	52.1	ug/L	-83	Standard
|	Se	82	17.7	30.6	-0.0013	0.071	5652.1	ug/L	16	Standard
|	Se-1	77	121.3	9.6	-0.1090	0.229	209.8	ug/L	126	Standard
>	Ga	71	53.3	60.3				mg/L	70	Standard
|	Rb	85	40.0	21.7				ug/L	33	Standard
|	Y	89	518303.3	2.0				ug/L	493982	Standard
>	Rh	103	8.3	69.3				ug/L	17	Standard
|	Mo	98	303.0	26.2	0.0757	0.026	34.6	ug/L	54	Standard
|	Ag	107	163.7	6.7	0.0065	0.002	33.6	ug/L	137	Standard
|	Cd	111	10.6	25.4	-0.0071	0.002	23.9	mg/L	6	Standard
|	Cd	114	49.2	23.6	0.0011	0.003	256.0	ug/L	20	Standard
>	In	115	763610.8	1.1				ug/L	755264	Standard
|	Sn	118	155.3	1.9	0.0266	0.002	8.0	ug/L	138	Standard
|	Sb	123	1305.6	13.9	0.2615	0.037	14.1	ug/L	391	Standard
|	Ba	135	57.0	22.8	0.0041	0.007	181.2	ug/L	32	Standard
|	Ce	140	28.3	36.7				ug/L	42	Standard
>	Tb	159	1002079.1	2.1				ug/L	966827	Standard
|	Ho	165	13.3	43.3				ug/L	12	Standard
|	Tl	203	44.0	27.6	-0.0004	0.002	425.9	ug/L	19	Standard
|	Tl	205	115.0	24.2	0.0046	0.002	37.8	ug/L	58	Standard
|	Pb	206	506.7	5.2	0.0000	0.005	14554.9	ug/L	464	Standard
|	Pb	207	438.3	1.5	0.0000	0.001	1721.9	ug/L	405	Standard
|	Pb	208	983.0	3.7	0.0058	0.002	32.9	ug/L	876	Standard
|	U	238	60.3	20.7	0.0034	0.001	28.3	ug/L	14	Standard
>	Bi	209	617062.4	2.2				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:16:12

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	0.4649	0.817	175.8	mg/L	3	Standard
Mg	24	33.3	22.9	0.1288	0.157	122.2	mg/L	30	Standard
K	39	11.7	24.7	-0.0875	0.042	47.9	mg/L	10	Standard
Ca	43	85.0	20.4	8.6213	8.393	97.3	mg/L	83	Standard
Fe	54	39.1	23.3	0.3459	0.129	37.4	mg/L	21	Standard
Fe	57	328.3	6.2	2.2410	1.640	73.2	mg/L	240	Standard
Sc-1	45	42065.0	3.1				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	6.3	45.6				ug/L	5	Standard
Br	81	1473.4	13.3				ug/L	1587	Standard
P	31	56.7	10.2				ug/L	50	Standard
S	34	21.7	26.6				ug/L	8	Standard
Sr	88	230.0	13.6				ug/L	198	Standard
C	12	30.0	57.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.4	112.1				mg/L	6	Standard
Ho-1	165	13.3	43.3				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	5155.9	3.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		105.015	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:16:12

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	101.105
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	102.990
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 7	Sb	123	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:16:12

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: PBW 75 WG604063-02

Sample Date/Time: Tuesday, February 28, 2017 11:17:08

Number of Replicates: 3

Autosampler Position: 205

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	253110.4	1.7				ug/L	250104	Standard
|	Be	9	20.0	25.0	0.0019	0.003	168.5	ug/L	7	Standard
|	Al	27	5294.3	5.2	0.0368	0.002	5.2	ug/L	597	Standard
|	Sc	45	40405.5	2.4				ug/L	41681	Standard
|	Ti	47	50.3	13.5	-0.1822	0.033	18.2	ug/L	86	Standard
|	V	51	1405.9	2.5	-0.0506	0.004	8.0	ug/L	1740	Standard
|	Cr	52	6882.6	2.0	-0.0298	0.013	42.4	ug/L	7178	Standard
|	Cr	53	753.4	6.0	0.1421	0.041	29.0	ug/L	573	Standard
|	Mn	55	2886.6	1.4	-0.0031	0.003	90.1	ug/L	3072	Standard
|	Co	59	304.3	4.8	-0.0204	0.001	6.7	ug/L	573	Standard
|	Ni	60	295.7	1.4	0.0097	0.001	11.9	ug/L	264	Standard
|	Cu	65	557.7	6.2	-0.0085	0.027	317.0	ug/L	530	Standard
|	Zn	66	1166.7	5.9	0.9956	0.106	10.7	ug/L	252	Standard
>	Ge	72	646482.1	2.0				ug/L	641188	Standard
|	As	75	-45.7	47.9	-0.0098	0.024	247.5	ug/L	-83	Standard
|	Se	82	9.4	63.3	-0.1039	0.078	74.8	ug/L	16	Standard
|	Se-1	77	119.0	4.4	-0.0635	0.095	149.1	ug/L	126	Standard
>	Ga	71	45.0	48.4				mg/L	70	Standard
|	Rb	85	56.7	18.4				ug/L	33	Standard
|	Y	89	500257.3	3.0				ug/L	493982	Standard
>	Rh	103	20.0	109.0				ug/L	17	Standard
|	Mo	98	96.0	14.4	0.0106	0.004	38.1	ug/L	54	Standard
|	Ag	107	134.7	13.4	0.0020	0.004	191.6	ug/L	137	Standard
|	Cd	111	7.5	42.9	-0.0088	0.002	24.2	mg/L	6	Standard
|	Cd	114	242.6	12.0	0.0467	0.006	12.9	ug/L	20	Standard
>	In	115	739339.7	2.7				ug/L	755264	Standard
|	Sn	118	1642.1	1.3	1.6170	0.025	1.6	ug/L	138	Standard
|	Sb	123	253.3	29.3	0.0309	0.016	50.1	ug/L	391	Standard
|	Ba	135	68.0	17.3	0.0113	0.006	55.1	ug/L	32	Standard
|	Ce	140	101.7	12.4				ug/L	42	Standard
>	Tb	159	968606.6	2.1				ug/L	966827	Standard
|	Ho	165	11.7	65.5				ug/L	12	Standard
|	Tl	203	40.3	15.9	-0.0009	0.001	119.6	ug/L	19	Standard
|	Tl	205	103.3	32.9	0.0041	0.002	54.9	ug/L	58	Standard
|	Pb	206	488.7	1.9	-0.0011	0.003	309.6	ug/L	464	Standard
|	Pb	207	418.3	3.4	-0.0020	0.002	74.7	ug/L	405	Standard
|	Pb	208	931.7	3.8	0.0031	0.002	79.7	ug/L	876	Standard
|	U	238	15.0	26.7	-0.0004	0.000	85.6	ug/L	14	Standard
>	Bi	209	602279.1	1.7				ug/L	599146	Standard

Sample ID: PBW 75 WG604063-02

Report Date/Time: Tuesday, February 28, 2017 11:19:18

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	35.0	37.8	0.1910	0.279	146.3	mg/L	30	Standard
K	39	20.0	66.1	0.0300	0.173	578.1	mg/L	10	Standard
Ca	43	51.7	11.2	-9.3089	3.020	32.4	mg/L	83	Standard
Fe	54	9.6	3.9	-0.0970	0.008	8.4	mg/L	21	Standard
Fe	57	328.3	7.5	2.9426	1.188	40.4	mg/L	240	Standard
Sc-1	45	40405.5	2.4				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	3.3	17.3				ug/L	5	Standard
Br	81	1586.7	1.9				ug/L	1587	Standard
P	31	53.3	39.0				ug/L	50	Standard
S	34	30.0	44.1				ug/L	8	Standard
Sr	88	225.0	7.7				ug/L	198	Standard
C	12	23.3	24.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	22.7	66.9				mg/L	6	Standard
Ho-1	165	11.7	65.5				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	4397.3	0.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		101.202	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		100.826	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: PBW 75 WG604063-02

Report Date/Time: Tuesday, February 28, 2017 11:19:18

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	97.892
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	100.523
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: PBW 75 WG604063-02

Report Date/Time: Tuesday, February 28, 2017 11:19:18

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: LCSW 75 WG604063-03

Sample Date/Time: Tuesday, February 28, 2017 11:20:13

Number of Replicates: 3

Autosampler Position: 206

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	271267.0	1.2				ug/L	250104	Standard
|	Be	9	84448.0	0.6	47.8622	0.308	0.6	ug/L	7	Standard
|	Al	27	13008.9	4.8	0.0924	0.004	4.4	ug/L	597	Standard
|	Sc	45	45214.1	3.5				ug/L	41681	Standard
|	Ti	47	65.3	6.4	-0.1335	0.022	16.6	ug/L	86	Standard
|	V	51	323043.6	1.4	46.6163	0.838	1.8	ug/L	1740	Standard
|	Cr	52	307223.8	1.8	46.7419	1.081	2.3	ug/L	7178	Standard
|	Cr	53	39025.2	2.6	46.7191	1.420	3.0	ug/L	573	Standard
|	Mn	55	492200.4	0.6	46.3854	0.489	1.1	ug/L	3072	Standard
|	Co	59	380532.2	0.9	46.1451	0.598	1.3	ug/L	573	Standard
|	Ni	60	82551.6	1.4	47.0405	0.849	1.8	ug/L	264	Standard
|	Cu	65	79110.7	1.4	46.9250	0.873	1.9	ug/L	530	Standard
|	Zn	66	45306.0	2.3	46.8303	1.297	2.8	ug/L	252	Standard
>	Ge	72	715964.7	0.4				ug/L	641188	Standard
|	As	75	43941.7	1.6	45.5613	0.922	2.0	ug/L	-83	Standard
|	Se	82	3955.8	2.0	47.1780	1.101	2.3	ug/L	16	Standard
|	Se-1	77	2828.6	2.8	45.1764	1.265	2.8	ug/L	126	Standard
>	Ga	71	53.3	19.5				mg/L	70	Standard
|	Rb	85	70.0	21.4				ug/L	33	Standard
|	Y	89	546012.5	1.7				ug/L	493982	Standard
>	Rh	103	20.0	43.3				ug/L	17	Standard
|	Mo	98	118.8	12.1	0.0150	0.004	26.9	ug/L	54	Standard
|	Ag	107	271224.9	1.8	47.5494	1.357	2.9	ug/L	137	Standard
|	Cd	111	82178.8	1.3	48.5991	0.941	1.9	mg/L	6	Standard
|	Cd	114	215687.8	0.3	46.4911	0.480	1.0	ug/L	20	Standard
>	In	115	803217.2	1.3				ug/L	755264	Standard
|	Sn	118	186.3	6.4	0.0490	0.009	18.8	ug/L	138	Standard
|	Sb	123	220815.4	0.9	46.3442	0.853	1.8	ug/L	391	Standard
|	Ba	135	88341.1	0.9	46.4476	0.667	1.4	ug/L	32	Standard
|	Ce	140	83.3	25.0				ug/L	42	Standard
>	Tb	159	1048087.4	2.2				ug/L	966827	Standard
|	Ho	165	20.0	0.0				ug/L	12	Standard
|	Tl	203	343987.6	1.0	47.9756	0.923	1.9	ug/L	19	Standard
|	Tl	205	799532.3	0.8	47.6875	0.350	0.7	ug/L	58	Standard
|	Pb	206	270092.2	0.7	47.6898	0.562	1.2	ug/L	464	Standard
|	Pb	207	234968.0	1.0	46.3702	0.734	1.6	ug/L	405	Standard
|	Pb	208	517783.0	1.1	46.8267	0.506	1.1	ug/L	876	Standard
|	U	238	562447.8	2.1	44.7396	0.512	1.1	ug/L	14	Standard
>	Bi	209	652642.2	1.3				ug/L	599146	Standard

Sample ID: LCSW 75 WG604063-03

Report Date/Time: Tuesday, February 28, 2017 11:22:24

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	30.0	44.1	0.0154	0.233	1515.3	mg/L	30	Standard
K	39	15.0	33.3	-0.0574	0.065	112.3	mg/L	10	Standard
Ca	43	66.7	31.2	-4.4703	11.494	257.1	mg/L	83	Standard
Fe	54	24.6	50.8	0.0968	0.164	169.4	mg/L	21	Standard
Fe	57	283.3	5.4	-1.3647	0.279	20.4	mg/L	240	Standard
Sc-1	45	45214.1	3.5				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.3	58.1				ug/L	5	Standard
Br	81	1816.8	15.1				ug/L	1587	Standard
P	31	66.7	18.9				ug/L	50	Standard
S	34	20.0	25.0				ug/L	8	Standard
Sr	88	225.0	18.2				ug/L	198	Standard
C	12	43.3	53.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	18.7	54.7				mg/L	6	Standard
Ho-1	165	20.0	0.0				mg/L	12	Standard
Er	166	26.7	21.7				mg/L	10	Standard
I	127	4048.9	2.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		108.462	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		111.662	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: LCSW 75 WG604063-03

Report Date/Time: Tuesday, February 28, 2017 11:22:24

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	106.349
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	108.929
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

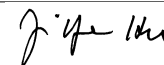
Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: LCSW 75 WG604063-03

Report Date/Time: Tuesday, February 28, 2017 11:22:24

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126204 WG604063-01

Sample Date/Time: Tuesday, February 28, 2017 11:23:19

Number of Replicates: 3

Autosampler Position: 207

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	301063.8	1.6				ug/L	250104	Standard
|	Be	9	33.3	22.9	0.0068	0.004	57.9	ug/L	7	Standard
|	Al	27	79443807.6	2.2	542.4577	20.183	3.7	ug/L	597	Standard
|	Sc	45	45825.9	1.8				ug/L	41681	Standard
|	Ti	47	139.7	2.2	0.3216	0.034	10.5	ug/L	86	Standard
|	V	51	-2517.7	28.5	-0.6835	0.117	17.1	ug/L	1740	Standard
|	Cr	52	246753.0	2.1	41.7140	1.860	4.5	ug/L	7178	Standard
|	Cr	53	51444.2	7.2	69.1056	6.558	9.5	ug/L	573	Standard
|	Mn	55	100096089.4	1.7	10581.8226	390.368	3.7	ug/L	3072	Standard
|	Co	59	51048.5	2.1	6.8478	0.309	4.5	ug/L	573	Standard
|	Ni	60	64797.3	0.9	41.1151	0.773	1.9	ug/L	264	Standard
|	Cu	65	2590.9	2.1	1.3486	0.076	5.6	ug/L	530	Standard
|	Zn	66	3026.3	1.0	3.1602	0.092	2.9	ug/L	252	Standard
>	Ge	72	642781.9	2.5				ug/L	641188	Standard
|	As	75	151.7	127.3	0.2149	0.221	102.6	ug/L	-83	Standard
|	Se	82	232.8	10.0	2.8828	0.345	12.0	ug/L	16	Standard
|	Se-1	77	5881.1	10.8	107.8533	14.323	13.3	ug/L	126	Standard
>	Ga	71	813.4	3.7				mg/L	70	Standard
|	Rb	85	12626.9	3.9				ug/L	33	Standard
|	Y	89	532288.9	1.9				ug/L	493982	Standard
>	Rh	103	2880.3	3.2				ug/L	17	Standard
|	Mo	98	2139.6	3.0	0.6950	0.026	3.8	ug/L	54	Standard
|	Ag	107	181.0	8.2	0.0114	0.002	20.0	ug/L	137	Standard
|	Cd	111	952.9	1.5	0.6102	0.012	1.9	mg/L	6	Standard
|	Cd	114	2528.6	1.1	0.5932	0.010	1.7	ug/L	20	Standard
>	In	115	725777.2	1.7				ug/L	755264	Standard
|	Sn	118	184.7	6.0	0.0668	0.011	17.0	ug/L	138	Standard
|	Sb	123	1426.3	7.8	0.3052	0.031	10.2	ug/L	391	Standard
|	Ba	135	950738.4	1.2	553.6108	14.560	2.6	ug/L	32	Standard
|	Ce	140	5549.4	6.3				ug/L	42	Standard
>	Tb	159	1081822.6	1.1				ug/L	966827	Standard
|	Ho	165	61.7	33.8				ug/L	12	Standard
|	Tl	203	1658.8	27.5	0.2732	0.075	27.4	ug/L	19	Standard
|	Tl	205	3797.2	31.9	0.2715	0.085	31.4	ug/L	58	Standard
|	Pb	206	1906.5	2.6	0.3141	0.012	3.7	ug/L	464	Standard
|	Pb	207	1605.8	4.1	0.2932	0.014	4.8	ug/L	405	Standard
|	Pb	208	3864.2	4.4	0.3360	0.017	4.9	ug/L	876	Standard
|	U	238	34891.1	2.0	3.3635	0.097	2.9	ug/L	14	Standard
>	Bi	209	538404.0	1.0				ug/L	599146	Standard

Sample ID: L1702126204 WG604063-01

Report Date/Time: Tuesday, February 28, 2017 11:25:29

Page 1

Approved: March 01, 2017

Na	23	1581.7	10.3	414.9884	43.098	10.4	mg/L	3	Standard
Mg	24	7365.1	4.9	135.0332	7.985	5.9	mg/L	30	Standard
K	39	451.7	14.4	5.2355	0.771	14.7	mg/L	10	Standard
Ca	43	1503.4	4.8	758.6655	38.508	5.1	mg/L	83	Standard
Fe	54	93.1	28.2	1.0561	0.371	35.2	mg/L	21	Standard
Fe	57	2748.6	7.8	123.0776	9.969	8.1	mg/L	240	Standard
Sc-1	45	45825.9	1.8				mg/L	41681	Standard
Cl	35	3.3	69.3				ug/L	2	Standard
Kr	83	4.7	32.7				ug/L	5	Standard
Br	81	90918.7	0.9				ug/L	1587	Standard
P	31	86.7	33.8				ug/L	50	Standard
S	34	38.3	39.8				ug/L	8	Standard
Sr	88	510.0	8.0				ug/L	198	Standard
C	12	60.0	72.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	33.3	61.6				mg/L	6	Standard
Ho-1	165	61.7	33.8				mg/L	12	Standard
Er	166	70.0	42.9				mg/L	10	Standard
I	127	619095.3	9.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		120.376	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		100.249	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126204 WG604063-01

Report Date/Time: Tuesday, February 28, 2017 11:25:29

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	96.096
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.862
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702126204 WG604063-01

Report Date/Time: Tuesday, February 28, 2017 11:25:29

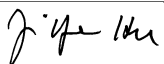
Page 3

Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702126204 WG604063-01
Report Date/Time: Tuesday, February 28, 2017 11:25:29
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702126204S WG604063-04

Sample Date/Time: Tuesday, February 28, 2017 11:26:23

Number of Replicates: 3

Autosampler Position: 208

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	299482.8	1.4				ug/L	250104	Standard
|	Be	9	86151.1	3.2	44.2386	1.862	4.2	ug/L	7	Standard
|	Al	27	84932596.6	2.4	582.8577	16.096	2.8	ug/L	597	Standard
|	Sc	45	45523.3	1.0				ug/L	41681	Standard
|	Ti	47	146.7	4.9	0.3787	0.054	14.2	ug/L	86	Standard
|	V	51	307590.7	2.4	50.5449	1.798	3.6	ug/L	1740	Standard
|	Cr	52	535924.3	1.9	94.0087	3.082	3.3	ug/L	7178	Standard
|	Cr	53	90660.5	1.9	124.9528	3.085	2.5	ug/L	573	Standard
|	Mn	55	104563962.4	1.2	11289.1402	249.105	2.2	ug/L	3072	Standard
|	Co	59	392475.7	1.5	54.1805	1.466	2.7	ug/L	573	Standard
|	Ni	60	137739.6	1.2	89.4876	1.990	2.2	ug/L	264	Standard
|	Cu	65	66887.3	1.1	45.1404	1.040	2.3	ug/L	530	Standard
|	Zn	66	39840.7	1.7	46.8702	1.355	2.9	ug/L	252	Standard
>	Ge	72	629172.7	1.5				ug/L	641188	Standard
|	As	75	40789.0	0.1	48.1281	0.668	1.4	ug/L	-83	Standard
|	Se	82	3715.4	1.7	50.4484	1.382	2.7	ug/L	16	Standard
|	Se-1	77	9237.1	3.0	174.0512	3.999	2.3	ug/L	126	Standard
>	Ga	71	850.0	3.3				mg/L	70	Standard
|	Rb	85	12423.4	0.9				ug/L	33	Standard
|	Y	89	514106.3	3.4				ug/L	493982	Standard
>	Rh	103	3020.3	4.6				ug/L	17	Standard
|	Mo	98	2153.8	2.8	0.7046	0.006	0.8	ug/L	54	Standard
|	Ag	107	226297.5	1.0	44.2113	0.893	2.0	ug/L	137	Standard
|	Cd	111	70335.8	1.8	46.3642	1.419	3.1	mg/L	6	Standard
|	Cd	114	188730.2	1.0	45.3391	0.733	1.6	ug/L	20	Standard
>	In	115	720820.1	2.6				ug/L	755264	Standard
|	Sn	118	179.0	8.8	0.0618	0.014	22.2	ug/L	138	Standard
|	Sb	123	198489.8	1.8	46.4330	1.360	2.9	ug/L	391	Standard
|	Ba	135	1071622.8	1.4	628.3120	12.921	2.1	ug/L	32	Standard
|	Ce	140	5979.5	2.1				ug/L	42	Standard
>	Tb	159	1079494.1	2.4				ug/L	966827	Standard
|	Ho	165	83.3	9.2				ug/L	12	Standard
|	Tl	203	300738.8	0.9	51.0526	1.460	2.9	ug/L	19	Standard
|	Tl	205	693537.4	1.8	50.3634	2.027	4.0	ug/L	58	Standard
|	Pb	206	225345.5	0.9	48.4363	1.498	3.1	ug/L	464	Standard
|	Pb	207	190985.9	0.9	45.8743	1.203	2.6	ug/L	405	Standard
|	Pb	208	467019.8	1.2	51.4232	1.620	3.2	ug/L	876	Standard
|	U	238	641904.7	0.9	62.1558	1.500	2.4	ug/L	14	Standard
>	Bi	209	536406.5	2.9				ug/L	599146	Standard

Sample ID: L1702126204S WG604063-04

Report Date/Time: Tuesday, February 28, 2017 11:28:34

Page 1

Approved: March 01, 2017

Na	23	1668.4	4.7	440.6489	22.473	5.1	mg/L	3	Standard
Mg	24	7930.4	0.7	146.3523	2.226	1.5	mg/L	30	Standard
K	39	481.7	10.4	5.6432	0.667	11.8	mg/L	10	Standard
Ca	43	1481.7	6.5	752.5123	55.863	7.4	mg/L	83	Standard
Fe	54	95.5	6.1	1.0967	0.070	6.4	mg/L	21	Standard
Fe	57	2880.3	4.2	130.7758	7.545	5.8	mg/L	240	Standard
Sc-1	45	45523.3	1.0				mg/L	41681	Standard
Cl	35	4.7	24.7				ug/L	2	Standard
Kr	83	4.0	66.1				ug/L	5	Standard
Br	81	92230.0	3.1				ug/L	1587	Standard
P	31	78.3	9.8				ug/L	50	Standard
S	34	25.0	20.0				ug/L	8	Standard
Sr	88	463.3	17.9				ug/L	198	Standard
C	12	56.7	36.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	87.9	51.6				mg/L	6	Standard
Ho-1	165	83.3	9.2				mg/L	12	Standard
Er	166	43.3	26.6				mg/L	10	Standard
I	127	675589.2	7.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		119.744	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		98.126	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126204S WG604063-04

Report Date/Time: Tuesday, February 28, 2017 11:28:34

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	95.439
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.529
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Cr 53 Upper, S, EEE	Cr	53	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702126204S WG604063-04

Report Date/Time: Tuesday, February 28, 2017 11:28:34

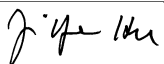
Page 3

Approved: March 01, 2017



Se-1 77 Upper, S, EEE Se-1 77
Ba 135 Upper, S, EEE Ba 135

Sample ID: L1702126204S WG604063-04
Report Date/Time: Tuesday, February 28, 2017 11:28:34
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702126204SD WG604063-05

Sample Date/Time: Tuesday, February 28, 2017 11:29:28

Number of Replicates: 3

Autosampler Position: 209

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	290732.2	2.4				ug/L	250104	Standard
|	Be	9	89931.2	2.6	47.5557	0.590	1.2	ug/L	7	Standard
|	Al	27	88362383.4	2.5	624.6004	8.733	1.4	ug/L	597	Standard
|	Sc	45	45481.5	1.4				ug/L	41681	Standard
|	Ti	47	153.0	1.7	0.4483	0.024	5.4	ug/L	86	Standard
|	V	51	321428.8	2.7	54.8503	1.245	2.3	ug/L	1740	Standard
|	Cr	52	563913.6	1.3	102.7961	0.851	0.8	ug/L	7178	Standard
|	Cr	53	95533.6	1.6	136.8043	3.460	2.5	ug/L	573	Standard
|	Mn	55	109908345.6	1.4	12318.8348	55.894	0.5	ug/L	3072	Standard
|	Co	59	407690.7	1.2	58.4307	0.256	0.4	ug/L	573	Standard
|	Ni	60	143977.2	1.0	97.1277	0.739	0.8	ug/L	264	Standard
|	Cu	65	69446.5	1.4	48.6845	0.337	0.7	ug/L	530	Standard
|	Zn	66	40878.7	1.7	49.9454	0.409	0.8	ug/L	252	Standard
>	Ge	72	605921.1	0.9				ug/L	641188	Standard
|	As	75	42252.1	1.9	51.7544	0.487	0.9	ug/L	-83	Standard
|	Se	82	3738.4	2.2	52.7017	0.703	1.3	ug/L	16	Standard
|	Se-1	77	9711.4	2.1	190.2419	4.342	2.3	ug/L	126	Standard
>	Ga	71	830.0	1.8				mg/L	70	Standard
|	Rb	85	12945.5	3.2				ug/L	33	Standard
|	Y	89	487504.2	1.1				ug/L	493982	Standard
>	Rh	103	3035.3	2.6				ug/L	17	Standard
|	Mo	98	2290.5	2.6	0.7756	0.030	3.9	ug/L	54	Standard
|	Ag	107	234399.6	0.7	47.2597	0.913	1.9	ug/L	137	Standard
|	Cd	111	72331.6	0.9	49.1989	0.940	1.9	mg/L	6	Standard
|	Cd	114	194942.3	0.4	48.3288	0.597	1.2	ug/L	20	Standard
>	In	115	698367.5	1.2				ug/L	755264	Standard
|	Sn	118	205.3	3.9	0.0980	0.009	9.5	ug/L	138	Standard
|	Sb	123	203438.5	1.4	49.1113	1.210	2.5	ug/L	391	Standard
|	Ba	135	1126596.0	0.4	681.6577	10.275	1.5	ug/L	32	Standard
|	Ce	140	6179.6	3.6				ug/L	42	Standard
>	Tb	159	1048008.7	0.6				ug/L	966827	Standard
|	Ho	165	96.7	26.5				ug/L	12	Standard
|	Tl	203	307867.6	1.7	54.2490	0.893	1.6	ug/L	19	Standard
|	Tl	205	702972.9	3.1	52.9713	1.266	2.4	ug/L	58	Standard
|	Pb	206	231765.7	1.4	51.7131	0.693	1.3	ug/L	464	Standard
|	Pb	207	197383.9	1.7	49.2208	0.718	1.5	ug/L	405	Standard
|	Pb	208	478820.9	0.9	54.7299	0.438	0.8	ug/L	876	Standard
|	U	238	653888.4	0.6	65.7291	0.599	0.9	ug/L	14	Standard
>	Bi	209	516506.3	0.9				ug/L	599146	Standard

Sample ID: L1702126204SD WG604063-05

Report Date/Time: Tuesday, February 28, 2017 11:31:39

Page 1

Approved: March 01, 2017

Na	23	1725.1	6.6	456.1569	32.985	7.2	mg/L	3	Standard
Mg	24	8505.7	1.9	157.1391	1.993	1.3	mg/L	30	Standard
K	39	550.0	5.1	6.4819	0.400	6.2	mg/L	10	Standard
Ca	43	1566.7	7.9	798.7010	67.961	8.5	mg/L	83	Standard
Fe	54	78.8	22.4	0.8650	0.265	30.7	mg/L	21	Standard
Fe	57	2982.0	1.3	136.0451	0.484	0.4	mg/L	240	Standard
Sc-1	45	45481.5	1.4				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	8.0	21.7				ug/L	5	Standard
Br	81	104442.2	2.4				ug/L	1587	Standard
P	31	55.0	36.4				ug/L	50	Standard
S	34	41.7	54.1				ug/L	8	Standard
Sr	88	438.3	2.6				ug/L	198	Standard
C	12	83.3	42.1				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	83.5	28.9				mg/L	6	Standard
Ho-1	165	96.7	26.5				mg/L	12	Standard
Er	166	66.7	34.6				mg/L	10	Standard
I	127	734226.2	7.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		116.245	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.500	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126204SD WG604063-05

Report Date/Time: Tuesday, February 28, 2017 11:31:39

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	92.467
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	86.207
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Cr 52 Upper, S, EEE	Cr	52	
Cr 53 Upper, S, EEE	Cr	53	

Sample ID: L1702126204SD WG604063-05

Report Date/Time: Tuesday, February 28, 2017 11:31:39

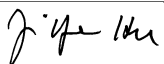
Page 3

Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702126204SD WG604063-05
Report Date/Time: Tuesday, February 28, 2017 11:31:39
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702120101

Sample Date/Time: Tuesday, February 28, 2017 11:32:34

Number of Replicates: 3

Autosampler Position: 210

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	259420.8	1.8				ug/L	250104	Standard
|	Be	9	90.0	106.0	0.0425	0.055	130.1	ug/L	7	Standard
|	Al	27	6173171.5	2.7	48.8895	0.578	1.2	ug/L	597	Standard
|	Sc	45	42673.4	3.5				ug/L	41681	Standard
|	Ti	47	958.0	3.0	6.0669	0.338	5.6	ug/L	86	Standard
|	V	51	-913.7	180.1	-0.4514	0.319	70.6	ug/L	1740	Standard
|	Cr	52	42329.1	4.9	7.7101	0.292	3.8	ug/L	7178	Standard
|	Cr	53	42638.9	24.3	69.1906	15.634	22.6	ug/L	573	Standard
|	Mn	55	695513.2	21.7	88.8749	19.099	21.5	ug/L	3072	Standard
|	Co	59	23631.4	1.7	3.8191	0.123	3.2	ug/L	573	Standard
|	Ni	60	19133.7	1.1	14.6196	0.272	1.9	ug/L	264	Standard
|	Cu	65	4099.6	4.8	2.9357	0.150	5.1	ug/L	530	Standard
|	Zn	66	19110.7	0.9	26.5558	0.402	1.5	ug/L	252	Standard
>	Ge	72	529633.2	2.2				ug/L	641188	Standard
|	As	75	-4160.7	5.2	-5.7815	0.196	3.4	ug/L	-83	Standard
|	Se	82	-1791.0	4.1	-29.2406	0.989	3.4	ug/L	16	Standard
|	Se-1	77	5606.4	10.7	124.7091	10.883	8.7	ug/L	126	Standard
>	Ga	71	370.0	21.7				mg/L	70	Standard
|	Rb	85	41714.0	0.9				ug/L	33	Standard
|	Y	89	418833.5	0.7				ug/L	493982	Standard
>	Rh	103	1243.4	12.1				ug/L	17	Standard
|	Mo	98	7547.5	1.5	2.9289	0.104	3.5	ug/L	54	Standard
|	Ag	107	192.7	23.8	0.0199	0.010	51.8	ug/L	137	Standard
|	Cd	111	203.6	11.7	0.1419	0.018	12.5	mg/L	6	Standard
|	Cd	114	510.6	6.2	0.1322	0.010	7.4	ug/L	20	Standard
>	In	115	621487.9	2.1				ug/L	755264	Standard
|	Sn	118	162.7	6.8	0.0725	0.013	17.8	ug/L	138	Standard
|	Sb	123	1806.6	5.7	0.4636	0.026	5.6	ug/L	391	Standard
|	Ba	135	141953.6	1.0	96.5154	2.662	2.8	ug/L	32	Standard
|	Ce	140	956.7	5.3				ug/L	42	Standard
>	Tb	159	913190.4	3.6				ug/L	966827	Standard
|	Ho	165	26.7	43.3				ug/L	12	Standard
|	Tl	203	1113.0	24.8	0.2026	0.058	28.5	ug/L	19	Standard
|	Tl	205	2458.5	20.2	0.1952	0.045	23.1	ug/L	58	Standard
|	Pb	206	686.0	8.6	0.0685	0.017	25.2	ug/L	464	Standard
|	Pb	207	579.0	6.8	0.0624	0.015	23.4	ug/L	405	Standard
|	Pb	208	1294.0	3.8	0.0693	0.010	14.5	ug/L	876	Standard
|	U	238	6859.6	2.7	0.7315	0.003	0.4	ug/L	14	Standard
>	Bi	209	485723.1	2.6				ug/L	599146	Standard

Sample ID: L1702120101

Report Date/Time: Tuesday, February 28, 2017 11:34:44

Page 1

Approved: March 01, 2017

Na	23	71.7	46.5	19.8404	9.819	49.5	mg/L	3	Standard
Mg	24	76271.5	1.6	1507.4528	50.862	3.4	mg/L	30	Standard
K	39	210.0	14.9	2.4926	0.399	16.0	mg/L	10	Standard
Ca	43	88.3	8.6	10.1245	5.942	58.7	mg/L	83	Standard
Fe	54	51.6	5.9	0.5266	0.035	6.7	mg/L	21	Standard
Fe	57	613.3	11.7	17.3643	2.722	15.7	mg/L	240	Standard
Sc-1	45	42673.4	3.5				mg/L	41681	Standard
Cl	35	3.3	69.3				ug/L	2	Standard
Kr	83	6.3	9.1				ug/L	5	Standard
Br	81	55397.8	0.7				ug/L	1587	Standard
P	31	85.0	29.4				ug/L	50	Standard
S	34	28.3	27.0				ug/L	8	Standard
Sr	88	320.0	12.2				ug/L	198	Standard
C	12	486.7	24.8				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	16.7	91.7				mg/L	3	Standard
Dy	164	34.8	14.3				mg/L	6	Standard
Ho-1	165	26.7	43.3				mg/L	12	Standard
Er	166	40.0	50.0				mg/L	10	Standard
I	127	751905.9	5.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		103.725	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		82.602	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702120101

Report Date/Time: Tuesday, February 28, 2017 11:34:44

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	82.287
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	81.069
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	
As 75 Lower	As	75	
Se 82 Lower	Se	82	

Sample ID: L1702120101

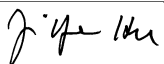
Report Date/Time: Tuesday, February 28, 2017 11:34:44

Page 3

Approved: March 01, 2017



Sample ID: L1702120101
Report Date/Time: Tuesday, February 28, 2017 11:34:44
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702120301

Sample Date/Time: Tuesday, February 28, 2017 11:35:39

Number of Replicates: 3

Autosampler Position: 211

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

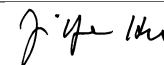
IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	280692.0	2.2				ug/L	250104	Standard
|	Be	9	145.0	9.1	0.0692	0.007	10.0	ug/L	7	Standard
|	Al	27	16372814.9	1.8	119.9072	3.710	3.1	ug/L	597	Standard
|	Sc	45	44135.9	3.9				ug/L	41681	Standard
|	Ti	47	774.7	5.6	4.6944	0.198	4.2	ug/L	86	Standard
|	V	51	-2906.4	37.4	-0.8353	0.209	25.0	ug/L	1740	Standard
|	Cr	52	45486.5	2.7	8.1665	0.172	2.1	ug/L	7178	Standard
|	Cr	53	59884.9	4.6	95.6148	1.724	1.8	ug/L	573	Standard
|	Mn	55	2611568.4	1.2	327.3363	11.544	3.5	ug/L	3072	Standard
|	Co	59	40090.3	1.1	6.3770	0.240	3.8	ug/L	573	Standard
|	Ni	60	24405.3	1.1	18.2825	0.596	3.3	ug/L	264	Standard
|	Cu	65	6690.5	3.1	4.9089	0.027	0.6	ug/L	530	Standard
|	Zn	66	104812.7	1.4	143.9666	3.743	2.6	ug/L	252	Standard
>	Ge	72	541749.5	3.3				ug/L	641188	Standard
|	As	75	-4658.3	10.4	-6.3260	0.485	7.7	ug/L	-83	Standard
|	Se	82	-1880.2	10.6	-29.9546	2.218	7.4	ug/L	16	Standard
|	Se-1	77	6512.7	5.0	142.0629	2.631	1.9	ug/L	126	Standard
>	Ga	71	380.0	13.2				mg/L	70	Standard
|	Rb	85	41702.3	3.1				ug/L	33	Standard
|	Y	89	431195.1	5.6				ug/L	493982	Standard
>	Rh	103	1755.1	18.2				ug/L	17	Standard
|	Mo	98	7709.3	2.6	2.8965	0.080	2.8	ug/L	54	Standard
|	Ag	107	156.3	2.9	0.0106	0.002	17.7	ug/L	137	Standard
|	Cd	111	478.0	8.2	0.3397	0.014	4.0	mg/L	6	Standard
|	Cd	114	1298.0	7.7	0.3399	0.019	5.6	ug/L	20	Standard
>	In	115	642047.6	4.7				ug/L	755264	Standard
|	Sn	118	202.3	8.2	0.1144	0.011	9.3	ug/L	138	Standard
|	Sb	123	1876.1	5.1	0.4662	0.011	2.3	ug/L	391	Standard
|	Ba	135	225367.2	1.3	148.4796	6.458	4.3	ug/L	32	Standard
|	Ce	140	14840.6	1.5				ug/L	42	Standard
>	Tb	159	953639.1	4.9				ug/L	966827	Standard
|	Ho	165	301.7	2.5				ug/L	12	Standard
|	Tl	203	644.7	14.8	0.1117	0.022	19.7	ug/L	19	Standard
|	Tl	205	1460.1	15.5	0.1122	0.020	18.1	ug/L	58	Standard
|	Pb	206	1290.1	0.5	0.2054	0.011	5.2	ug/L	464	Standard
|	Pb	207	1068.0	1.3	0.1861	0.007	3.8	ug/L	405	Standard
|	Pb	208	2500.4	1.8	0.2096	0.011	5.4	ug/L	876	Standard
|	U	238	5868.5	1.4	0.6125	0.026	4.3	ug/L	14	Standard
>	Bi	209	496618.9	3.8				ug/L	599146	Standard

Sample ID: L1702120301

Report Date/Time: Tuesday, February 28, 2017 11:37:50

Page 1

Approved: March 01, 2017



Na	23	131.7	11.6	35.5029	4.820	13.6	mg/L	3	Standard
Mg	24	76356.9	1.0	1459.6906	62.750	4.3	mg/L	30	Standard
K	39	193.3	15.2	2.2026	0.447	20.3	mg/L	10	Standard
Ca	43	103.3	7.4	16.7226	5.916	35.4	mg/L	83	Standard
Fe	54	113.4	8.9	1.4050	0.211	15.0	mg/L	21	Standard
Fe	57	706.7	9.0	21.3334	4.699	22.0	mg/L	240	Standard
Sc-1	45	44135.9	3.9				mg/L	41681	Standard
Cl	35	2.7	114.6				ug/L	2	Standard
Kr	83	6.3	32.9				ug/L	5	Standard
Br	81	57525.9	6.2				ug/L	1587	Standard
P	31	88.3	16.3				ug/L	50	Standard
S	34	21.7	35.3				ug/L	8	Standard
Sr	88	298.3	5.9				ug/L	198	Standard
C	12	666.7	14.8				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	16.7	34.6				mg/L	3	Standard
Dy	164	373.7	12.1				mg/L	6	Standard
Ho-1	165	301.7	2.5				mg/L	12	Standard
Er	166	270.0	32.9				mg/L	10	Standard
I	127	745087.3	9.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		112.230	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.491	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702120301

Report Date/Time: Tuesday, February 28, 2017 11:37:50

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	85.010
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	82.888
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702120301

Report Date/Time: Tuesday, February 28, 2017 11:37:50

Page 3

Approved: March 01, 2017



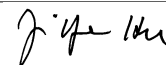
Zn 66 Upper, S, EEE	Zn	66
As 75 Lower	As	75
Se 82 Lower	Se	82
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702120301

Report Date/Time: Tuesday, February 28, 2017 11:37:50

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702120301PS WG604209-01

Sample Date/Time: Tuesday, February 28, 2017 11:38:45

Number of Replicates: 3

Autosampler Position: 212

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	270095.0	5.0				ug/L	250104	Standard
|	Be	9	81314.4	2.4	46.3789	3.055	6.6	ug/L	7	Standard
|	Al	27	15302861.6	0.4	116.6214	5.945	5.1	ug/L	597	Standard
|	Sc	45	44112.5	0.2				ug/L	41681	Standard
|	Ti	47	771.0	4.5	4.6404	0.197	4.3	ug/L	86	Standard
|	V	51	285802.0	0.9	54.2398	1.217	2.2	ug/L	1740	Standard
|	Cr	52	303519.7	0.8	61.0502	1.713	2.8	ug/L	7178	Standard
|	Cr	53	91794.0	2.1	146.2680	6.000	4.1	ug/L	573	Standard
|	Mn	55	2891389.0	0.7	360.1625	9.703	2.7	ug/L	3072	Standard
|	Co	59	347333.9	1.5	55.3709	1.908	3.4	ug/L	573	Standard
|	Ni	60	87781.3	2.1	65.8188	2.711	4.1	ug/L	264	Standard
|	Cu	65	65804.3	0.9	51.3320	1.504	2.9	ug/L	530	Standard
|	Zn	66	134540.1	1.4	183.7891	6.158	3.4	ug/L	252	Standard
>	Ge	72	544966.9	2.0				ug/L	641188	Standard
|	As	75	31276.8	1.3	42.6156	0.933	2.2	ug/L	-83	Standard
|	Se	82	1051.2	20.3	16.2853	3.029	18.6	ug/L	16	Standard
|	Se-1	77	8439.7	2.0	183.8269	7.264	4.0	ug/L	126	Standard
>	Ga	71	326.7	7.7				mg/L	70	Standard
|	Rb	85	39986.0	1.6				ug/L	33	Standard
|	Y	89	435520.7	2.0				ug/L	493982	Standard
>	Rh	103	1950.1	11.9				ug/L	17	Standard
|	Mo	98	7259.7	3.7	2.7329	0.133	4.9	ug/L	54	Standard
|	Ag	107	200618.1	2.0	44.1204	1.245	2.8	ug/L	137	Standard
|	Cd	111	60370.7	0.7	44.7895	0.789	1.8	mg/L	6	Standard
|	Cd	114	166608.8	0.2	45.0530	0.432	1.0	ug/L	20	Standard
>	In	115	640234.6	1.1				ug/L	755264	Standard
|	Sn	118	209.3	5.9	0.1240	0.017	13.8	ug/L	138	Standard
|	Sb	123	176627.5	1.5	46.5075	1.120	2.4	ug/L	391	Standard
|	Ba	135	289288.4	1.7	190.9198	5.040	2.6	ug/L	32	Standard
|	Ce	140	14161.6	2.9				ug/L	42	Standard
>	Tb	159	970095.9	0.2				ug/L	966827	Standard
|	Ho	165	296.7	7.0				ug/L	12	Standard
|	Tl	203	269443.5	1.7	49.0380	1.259	2.6	ug/L	19	Standard
|	Tl	205	622543.2	1.9	48.4577	1.286	2.7	ug/L	58	Standard
|	Pb	206	208011.7	1.5	47.9314	1.199	2.5	ug/L	464	Standard
|	Pb	207	183643.5	1.9	47.2977	1.364	2.9	ug/L	405	Standard
|	Pb	208	424695.7	1.0	50.1290	0.959	1.9	ug/L	876	Standard
|	U	238	559033.4	1.3	58.0367	1.187	2.0	ug/L	14	Standard
>	Bi	209	500142.5	1.0				ug/L	599146	Standard

Sample ID: L1702120301PS WG604209-01

Report Date/Time: Tuesday, February 28, 2017 11:40:55

Page 1

Approved: March 01, 2017

Na	23	106.7	32.9	28.6235	9.579	33.5	mg/L	3	Standard
Mg	24	73724.0	1.7	1408.5790	25.678	1.8	mg/L	30	Standard
K	39	168.3	16.4	1.8785	0.344	18.3	mg/L	10	Standard
Ca	43	91.7	31.0	10.1929	15.711	154.1	mg/L	83	Standard
Fe	54	111.4	13.6	1.3713	0.219	15.9	mg/L	21	Standard
Fe	57	663.3	4.9	18.9635	1.651	8.7	mg/L	240	Standard
Sc-1	45	44112.5	0.2				mg/L	41681	Standard
Cl	35	3.3	91.7				ug/L	2	Standard
Kr	83	7.3	28.4				ug/L	5	Standard
Br	81	55130.2	2.3				ug/L	1587	Standard
P	31	65.0	35.3				ug/L	50	Standard
S	34	20.0	0.0				ug/L	8	Standard
Sr	88	318.3	9.1				ug/L	198	Standard
C	12	366.7	24.4				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	336.4	8.6				mg/L	6	Standard
Ho-1	165	296.7	7.0				mg/L	12	Standard
Er	166	283.3	10.8				mg/L	10	Standard
I	127	714067.1	9.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		107.993	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.993	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702120301PS WG604209-01

Report Date/Time: Tuesday, February 28, 2017 11:40:55

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	84.770
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	83.476
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Cr 53 Upper, S, EEE	Cr	53	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702120301PS WG604209-01

Report Date/Time: Tuesday, February 28, 2017 11:40:55

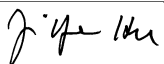
Page 3

Approved: March 01, 2017



Zn 66 Upper, S, EEE	Zn	66
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702120301PS WG604209-01
Report Date/Time: Tuesday, February 28, 2017 11:40:55
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702120301SDL WG604209-02

Sample Date/Time: Tuesday, February 28, 2017 11:41:50

Number of Replicates: 3

Autosampler Position: 213

Sample Description: 5

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	255790.6	3.0				ug/L	250104	Standard
|	Be	9	55.0	27.3	0.0229	0.009	41.5	ug/L	7	Standard
|	Al	27	3091685.6	0.9	24.8468	0.786	3.2	ug/L	597	Standard
|	Sc	45	42763.6	1.8				ug/L	41681	Standard
|	Ti	47	225.0	4.4	1.0373	0.090	8.6	ug/L	86	Standard
|	V	51	-2638.1	19.5	-0.7825	0.094	12.0	ug/L	1740	Standard
|	Cr	52	14567.7	1.2	1.7880	0.050	2.8	ug/L	7178	Standard
|	Cr	53	27648.6	3.7	43.7378	2.357	5.4	ug/L	573	Standard
|	Mn	55	494396.3	0.8	61.7284	1.375	2.2	ug/L	3072	Standard
|	Co	59	8389.7	2.1	1.2864	0.050	3.9	ug/L	573	Standard
|	Ni	60	5028.2	1.2	3.6265	0.092	2.5	ug/L	264	Standard
|	Cu	65	2084.8	2.2	1.2710	0.059	4.7	ug/L	530	Standard
|	Zn	66	23311.6	0.3	31.7568	0.576	1.8	ug/L	252	Standard
>	Ge	72	541397.1	1.6				ug/L	641188	Standard
|	As	75	-234.1	31.8	-0.2795	0.108	38.6	ug/L	-83	Standard
|	Se	82	-122.0	17.3	-2.1643	0.368	17.0	ug/L	16	Standard
|	Se-1	77	2100.1	5.4	44.3522	3.298	7.4	ug/L	126	Standard
>	Ga	71	118.3	20.0				mg/L	70	Standard
|	Rb	85	8288.9	3.8				ug/L	33	Standard
|	Y	89	408474.8	0.9				ug/L	493982	Standard
>	Rh	103	641.7	6.8				ug/L	17	Standard
|	Mo	98	1507.2	3.1	0.5568	0.022	4.0	ug/L	54	Standard
|	Ag	107	1637.9	160.9	0.3411	0.587	172.2	ug/L	137	Standard
|	Cd	111	100.7	4.8	0.0619	0.004	5.8	mg/L	6	Standard
|	Cd	114	456.3	26.3	0.1146	0.033	28.6	ug/L	20	Standard
>	In	115	633611.8	1.5				ug/L	755264	Standard
|	Sn	118	1567.4	12.3	1.8136	0.211	11.6	ug/L	138	Standard
|	Sb	123	851.3	16.3	0.1997	0.033	16.7	ug/L	391	Standard
|	Ba	135	46338.1	0.8	30.8752	0.242	0.8	ug/L	32	Standard
|	Ce	140	3093.6	3.2				ug/L	42	Standard
>	Tb	159	947577.5	1.7				ug/L	966827	Standard
|	Ho	165	55.0	32.8				ug/L	12	Standard
|	Tl	203	328.7	4.0	0.0517	0.003	6.7	ug/L	19	Standard
|	Tl	205	751.7	11.2	0.0548	0.007	12.4	ug/L	58	Standard
|	Pb	206	740.0	2.0	0.0728	0.007	9.2	ug/L	464	Standard
|	Pb	207	627.3	4.7	0.0672	0.010	15.5	ug/L	405	Standard
|	Pb	208	1462.0	3.0	0.0812	0.008	10.2	ug/L	876	Standard
|	U	238	1245.1	3.4	0.1251	0.006	5.2	ug/L	14	Standard
>	Bi	209	510144.8	2.0				ug/L	599146	Standard

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:44:01

Page 1

Approved: March 01, 2017

Na	23	20.0	25.0	5.1408	1.356	26.4	mg/L	3	Standard
Mg	24	14658.8	1.5	288.5914	9.753	3.4	mg/L	30	Standard
K	39	73.3	20.8	0.7098	0.188	26.5	mg/L	10	Standard
Ca	43	80.0	16.5	5.2385	8.409	160.5	mg/L	83	Standard
Fe	54	29.2	44.6	0.1921	0.205	106.8	mg/L	21	Standard
Fe	57	396.7	8.2	5.6405	2.157	38.2	mg/L	240	Standard
Sc-1	45	42763.6	1.8				mg/L	41681	Standard
Cl	35	3.3	91.7				ug/L	2	Standard
Kr	83	3.3	62.4				ug/L	5	Standard
Br	81	11864.6	2.6				ug/L	1587	Standard
P	31	71.7	10.7				ug/L	50	Standard
S	34	33.3	17.3				ug/L	8	Standard
Sr	88	268.3	4.3				ug/L	198	Standard
C	12	120.0	44.1				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	63.2	47.3				mg/L	6	Standard
Ho-1	165	55.0	32.8				mg/L	12	Standard
Er	166	73.3	55.1				mg/L	10	Standard
I	127	187463.8	4.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		102.274	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.437	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:44:01

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.893
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.145
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	
Se 82 Lower	Se	82	

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:44:01

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702120301SDL WG604209-02

Sample Date/Time: Tuesday, February 28, 2017 11:44:56

Number of Replicates: 3

Autosampler Position: 214

Sample Description: 25

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	355202.4	2.8				ug/L	250104	Standard
|	Be	9	15.0	66.7	-0.0038	0.004	107.7	ug/L	7	Standard
|	Al	27	133830.9	48.3	0.7647	0.367	48.0	ug/L	597	Standard
|	Sc	45	63765.8	4.6				ug/L	41681	Standard
|	Ti	47	93.3	5.1	-0.0366	0.014	38.2	ug/L	86	Standard
|	V	51	273.9	112.6	-0.2398	0.042	17.5	ug/L	1740	Standard
|	Cr	52	5476.7	9.8	-0.4439	0.085	19.1	ug/L	7178	Standard
|	Cr	53	6864.9	9.1	6.7204	0.763	11.4	ug/L	573	Standard
|	Mn	55	25503.9	31.4	1.9034	0.739	38.8	ug/L	3072	Standard
|	Co	59	838.7	13.1	0.0312	0.014	45.1	ug/L	573	Standard
|	Ni	60	415.7	9.1	0.0388	0.029	75.8	ug/L	264	Standard
|	Cu	65	883.0	8.3	0.0999	0.025	24.5	ug/L	530	Standard
|	Zn	66	1400.1	5.2	0.9741	0.138	14.2	ug/L	252	Standard
>	Ge	72	790784.7	6.3				ug/L	641188	Standard
|	As	75	0.9	7049.7	0.0446	0.057	127.3	ug/L	-83	Standard
|	Se	82	6.3	231.2	-0.1533	0.168	109.7	ug/L	16	Standard
|	Se-1	77	533.3	12.1	5.8395	0.996	17.1	ug/L	126	Standard
>	Ga	71	73.3	7.9				mg/L	70	Standard
|	Rb	85	430.0	16.0				ug/L	33	Standard
|	Y	89	632892.7	3.4				ug/L	493982	Standard
>	Rh	103	333.3	7.1				ug/L	17	Standard
|	Mo	98	76.9	22.1	-0.0021	0.004	180.2	ug/L	54	Standard
|	Ag	107	150.7	21.6	-0.0024	0.004	173.2	ug/L	137	Standard
|	Cd	111	11.2	41.9	-0.0083	0.002	25.2	mg/L	6	Standard
|	Cd	114	40.6	55.2	-0.0030	0.004	128.6	ug/L	20	Standard
>	In	115	992665.3	5.2				ug/L	755264	Standard
|	Sn	118	102.0	25.7	-0.0529	0.020	37.5	ug/L	138	Standard
|	Sb	123	134.2	19.1	-0.0038	0.004	115.3	ug/L	391	Standard
|	Ba	135	2356.9	39.6	0.9771	0.396	40.5	ug/L	32	Standard
|	Ce	140	196.7	46.1				ug/L	42	Standard
>	Tb	159	1447718.1	2.8				ug/L	966827	Standard
|	Ho	165	16.7	96.4				ug/L	12	Standard
|	Tl	203	248.7	25.6	0.0231	0.009	39.0	ug/L	19	Standard
|	Tl	205	578.3	20.5	0.0273	0.007	27.3	ug/L	58	Standard
|	Pb	206	686.0	6.2	0.0098	0.009	93.1	ug/L	464	Standard
|	Pb	207	539.3	6.0	0.0002	0.007	3855.2	ug/L	405	Standard
|	Pb	208	1304.0	1.7	0.0133	0.003	22.6	ug/L	876	Standard
|	U	238	124.7	93.4	0.0071	0.008	120.2	ug/L	14	Standard
>	Bi	209	759023.5	4.5				ug/L	599146	Standard

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:47:07

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.1512	0.566	374.2	mg/L	3	Standard
Mg	24	698.4	37.3	8.6297	3.088	35.8	mg/L	30	Standard
K	39	25.0	34.6	-0.0246	0.075	302.8	mg/L	10	Standard
Ca	43	75.0	11.5	-11.8096	2.623	22.2	mg/L	83	Standard
Fe	54	19.3	25.9	-0.0554	0.044	79.0	mg/L	21	Standard
Fe	57	350.0	3.8	-3.1310	1.011	32.3	mg/L	240	Standard
Sc-1	45	63765.8	4.6				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	5.0	87.2				ug/L	5	Standard
Br	81	1156.7	23.6				ug/L	1587	Standard
P	31	46.7	24.7				ug/L	50	Standard
S	34	16.7	96.4				ug/L	8	Standard
Sr	88	281.7	22.2				ug/L	198	Standard
C	12	20.0	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	32.1	47.6				mg/L	6	Standard
Ho-1	165	16.7	96.4				mg/L	12	Standard
Er	166	26.7	78.1				mg/L	10	Standard
I	127	15524.8	20.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		142.022	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		123.331	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:47:07

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	131.433
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	126.684
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Cr 52 Lower	Cr	52	
Ge 72 Int Std for sample	Ge	72	Rerun sample

Sample ID: L1702120301SDL WG604209-02

Report Date/Time: Tuesday, February 28, 2017 11:47:07

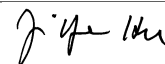
Page 3

Approved: March 01, 2017



In 115 Int Std for sample	In	115	Rerun sample
Bi 209 Int Std for sample	Bi	209	Rerun sample

Sample ID: L1702120301SDL WG604209-02
Report Date/Time: Tuesday, February 28, 2017 11:47:07
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 11:48:02

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	258139.4	2.1				ug/L	250104	Standard
|	Be	9	83151.0	2.7	49.5317	1.517	3.1	ug/L	7	Standard
|	Al	27	5794730.4	3.5	46.1192	0.981	2.1	ug/L	597	Standard
|	Sc	45	45444.8	3.3				ug/L	41681	Standard
|	Ti	47	18630.5	3.2	112.2853	3.176	2.8	ug/L	86	Standard
|	V	51	306097.9	2.8	53.0937	1.237	2.3	ug/L	1740	Standard
|	Cr	52	285369.5	2.6	52.2904	1.125	2.2	ug/L	7178	Standard
|	Cr	53	39849.1	4.1	57.5042	2.486	4.3	ug/L	573	Standard
|	Mn	55	460023.0	2.8	52.1113	1.244	2.4	ug/L	3072	Standard
|	Co	59	354023.0	2.8	51.5729	1.199	2.3	ug/L	573	Standard
|	Ni	60	75803.2	1.7	51.9023	0.519	1.0	ug/L	264	Standard
|	Cu	65	72581.9	3.1	51.7496	1.373	2.7	ug/L	530	Standard
|	Zn	66	40092.0	2.1	49.7979	0.806	1.6	ug/L	252	Standard
>	Ge	72	596009.6	0.8				ug/L	641188	Standard
|	As	75	38686.6	2.1	48.1781	0.665	1.4	ug/L	-83	Standard
|	Se	82	3224.0	3.0	46.1768	1.066	2.3	ug/L	16	Standard
|	Se-1	77	2709.9	2.5	52.3364	1.347	2.6	ug/L	126	Standard
>	Ga	71	73.3	14.2				mg/L	70	Standard
|	Rb	85	636.7	4.8				ug/L	33	Standard
|	Y	89	425407.1	2.7				ug/L	493982	Standard
>	Rh	103	320.0	5.6				ug/L	17	Standard
|	Mo	98	262849.3	3.6	91.7423	1.556	1.7	ug/L	54	Standard
|	Ag	107	239962.1	2.6	48.5867	0.333	0.7	ug/L	137	Standard
|	Cd	111	69236.7	3.2	47.2909	0.698	1.5	mg/L	6	Standard
|	Cd	114	193755.6	4.1	48.2323	1.050	2.2	ug/L	20	Standard
>	In	115	695252.1	1.9				ug/L	755264	Standard
|	Sn	118	43106.6	3.7	48.7156	0.999	2.1	ug/L	138	Standard
|	Sb	123	201815.0	1.8	48.9292	0.144	0.3	ug/L	391	Standard
|	Ba	135	85555.3	2.5	51.9625	0.317	0.6	ug/L	32	Standard
|	Ce	140	55.0	9.1				ug/L	42	Standard
>	Tb	159	997102.6	2.9				ug/L	966827	Standard
|	Ho	165	28.3	10.2				ug/L	12	Standard
|	Tl	203	312955.2	2.4	50.3827	0.303	0.6	ug/L	19	Standard
|	Tl	205	739536.6	3.9	50.9109	1.027	2.0	ug/L	58	Standard
|	Pb	206	243624.5	2.5	49.6615	0.586	1.2	ug/L	464	Standard
|	Pb	207	218689.7	2.8	49.8240	0.582	1.2	ug/L	405	Standard
|	Pb	208	482021.8	3.0	50.3282	0.757	1.5	ug/L	876	Standard
|	U	238	562527.6	2.8	51.6593	0.651	1.3	ug/L	14	Standard
>	Bi	209	565284.1	1.9				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:50:13

Page 1

Approved: March 01, 2017

Na	23	11.7	49.5	2.5864	1.473	56.9	mg/L	3	Standard
Mg	24	350.0	3.8	5.9634	0.450	7.5	mg/L	30	Standard
K	39	613.3	6.2	7.2547	0.223	3.1	mg/L	10	Standard
Ca	43	78.3	26.6	1.6267	11.599	713.0	mg/L	83	Standard
Fe	54	282.8	15.2	3.7606	0.736	19.6	mg/L	21	Standard
Fe	57	413.3	6.7	5.1827	0.776	15.0	mg/L	240	Standard
Sc-1	45	45444.8	3.3				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	7.0	14.3				ug/L	5	Standard
Br	81	1340.1	15.1				ug/L	1587	Standard
P	31	53.3	23.6				ug/L	50	Standard
S	34	28.3	71.3				ug/L	8	Standard
Sr	88	275.0	14.9				ug/L	198	Standard
C	12	20.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	10.0					mg/L	3	Standard
Dy	164	18.9	53.0				mg/L	6	Standard
Ho-1	165	28.3	10.2				mg/L	12	Standard
Er	166	23.3	24.7				mg/L	10	Standard
I	127	12420.1	11.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	99.063		
Al	27	92.238		
Sc	45			
Ti	47	112.285		
V	51	106.187		
Cr	52	104.581		
Cr	53			
Mn	55	104.223		
Co	59	103.146		
Ni	60	103.805		
Cu	65	103.499		
Zn	66	99.596		
Ge	72		92.954	
As	75	96.356		
Se	82	92.354		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:50:13

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	91.742	
[	Ag	107	97.173	
[	Cd	111	94.582	
[	Cd	114		
>	In	115		92.054
[	Sn	118	97.431	
[	Sb	123	97.858	
[	Ba	135	103.925	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	100.765	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	100.656	
[	U	238	103.319	
>	Bi	209		94.348
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Ti	47	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 11:50:13

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 11:51:07

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	252188.1	0.3				ug/L	250104	Standard
|	Be	9	30.0	44.1	0.0080	0.008	101.2	ug/L	7	Standard
|	Al	27	2922.2	126.4	0.0177	0.030	170.7	ug/L	597	Standard
|	Sc	45	44826.2	0.8				ug/L	41681	Standard
|	Ti	47	86.7	13.5	0.0690	0.066	96.0	ug/L	86	Standard
|	V	51	843.8	14.9	-0.1272	0.023	17.9	ug/L	1740	Standard
|	Cr	52	6440.0	5.4	0.0056	0.065	1168.9	ug/L	7178	Standard
|	Cr	53	3233.7	6.7	3.9299	0.281	7.2	ug/L	573	Standard
|	Mn	55	24101.3	151.3	2.4716	4.199	169.9	ug/L	3072	Standard
|	Co	59	776.7	75.9	0.0535	0.087	162.2	ug/L	573	Standard
|	Ni	60	285.7	62.0	0.0214	0.123	572.2	ug/L	264	Standard
|	Cu	65	847.7	13.8	0.2394	0.082	34.4	ug/L	530	Standard
|	Zn	66	548.0	32.9	0.3436	0.226	65.7	ug/L	252	Standard
>	Ge	72	587431.1	1.3				ug/L	641188	Standard
|	As	75	31.7	242.7	0.0824	0.096	117.0	ug/L	-83	Standard
|	Se	82	28.9	17.5	0.1946	0.079	40.7	ug/L	16	Standard
|	Se-1	77	293.7	6.9	3.7294	0.397	10.6	ug/L	126	Standard
>	Ga	71	66.7	21.7				mg/L	70	Standard
|	Rb	85	111.7	50.9				ug/L	33	Standard
|	Y	89	421680.0	1.7				ug/L	493982	Standard
>	Rh	103	335.0	20.9				ug/L	17	Standard
|	Mo	98	259.4	32.3	0.0715	0.029	40.8	ug/L	54	Standard
|	Ag	107	203.7	57.5	0.0184	0.024	131.6	ug/L	137	Standard
|	Cd	111	30.0	134.6	0.0073	0.028	387.6	mg/L	6	Standard
|	Cd	114	100.0	113.8	0.0153	0.029	188.6	ug/L	20	Standard
>	In	115	680634.2	1.3				ug/L	755264	Standard
|	Sn	118	124.0	8.1	0.0099	0.012	125.4	ug/L	138	Standard
|	Sb	123	1067.9	15.0	0.2384	0.043	18.0	ug/L	391	Standard
|	Ba	135	141.3	118.1	0.0602	0.103	172.0	ug/L	32	Standard
|	Ce	140	30.0	28.9				ug/L	42	Standard
>	Tb	159	969957.5	0.2				ug/L	966827	Standard
|	Ho	165	16.7	62.4				ug/L	12	Standard
|	Tl	203	134.0	76.3	0.0147	0.016	110.7	ug/L	19	Standard
|	Tl	205	295.0	70.8	0.0178	0.014	80.0	ug/L	58	Standard
|	Pb	206	489.3	10.1	0.0061	0.009	144.0	ug/L	464	Standard
|	Pb	207	423.7	11.0	0.0060	0.010	159.1	ug/L	405	Standard
|	Pb	208	911.7	13.0	0.0079	0.011	144.8	ug/L	876	Standard
|	U	238	91.3	85.1	0.0067	0.007	105.2	ug/L	14	Standard
>	Bi	209	559605.7	1.5				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:53:18

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0294	0.777	2638.4	mg/L	3	Standard
Mg	24	41.7	18.3	0.2433	0.138	56.7	mg/L	30	Standard
K	39	20.0	25.0	0.0055	0.060	1107.7	mg/L	10	Standard
Ca	43	60.0	30.0	-7.7778	9.976	128.3	mg/L	83	Standard
Fe	54	29.3	17.5	0.1699	0.071	41.8	mg/L	21	Standard
Fe	57	341.7	11.8	1.7934	2.219	123.7	mg/L	240	Standard
Sc-1	45	44826.2	0.8				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	4.0	25.0				ug/L	5	Standard
Br	81	1503.4	13.1				ug/L	1587	Standard
P	31	71.7	24.5				ug/L	50	Standard
S	34	35.0	51.5				ug/L	8	Standard
Sr	88	233.3	11.8				ug/L	198	Standard
C	12	26.7	21.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	10.0	100.0				mg/L	3	Standard
Dy	164	22.9	23.5				mg/L	6	Standard
Ho-1	165	16.7	62.4				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	10472.0	3.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		91.616	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:53:18

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.119
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.401
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 7	Mn	55	
QC Std 7	Sb	123	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 11:53:18

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702125001

Sample Date/Time: Tuesday, February 28, 2017 11:54:14

Number of Replicates: 3

Autosampler Position: 215

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	273098.7	6.2				ug/L	250104	Standard
|	Be	9	2546.9	3.3	1.4262	0.072	5.1	ug/L	7	Standard
|	Al	27	6976717.7	6.6	52.4915	1.103	2.1	ug/L	597	Standard
|	Sc	45	48547.9	6.5				ug/L	41681	Standard
|	Ti	47	1970.8	7.1	10.7171	0.275	2.6	ug/L	86	Standard
|	V	51	6178.1	3.1	0.7347	0.036	4.9	ug/L	1740	Standard
|	Cr	52	16184.3	6.3	1.6254	0.010	0.6	ug/L	7178	Standard
|	Cr	53	6171.3	5.8	7.6166	0.634	8.3	ug/L	573	Standard
|	Mn	55	3509559.2	7.6	374.3886	3.725	1.0	ug/L	3072	Standard
|	Co	59	468873.9	7.3	64.0236	0.470	0.7	ug/L	573	Standard
|	Ni	60	66980.7	8.1	42.9317	0.586	1.4	ug/L	264	Standard
|	Cu	65	9027.4	5.6	5.7023	0.089	1.6	ug/L	530	Standard
|	Zn	66	168355.2	7.0	197.0195	2.079	1.1	ug/L	252	Standard
>	Ge	72	635872.5	6.7				ug/L	641188	Standard
|	As	75	863.6	9.1	1.0491	0.055	5.2	ug/L	-83	Standard
|	Se	82	113.8	4.6	1.3096	0.030	2.3	ug/L	16	Standard
|	Se-1	77	406.7	4.0	5.4193	0.356	6.6	ug/L	126	Standard
>	Ga	71	448.3	6.8				mg/L	70	Standard
|	Rb	85	10974.0	7.4				ug/L	33	Standard
|	Y	89	500753.6	5.9				ug/L	493982	Standard
>	Rh	103	293.3	9.4				ug/L	17	Standard
|	Mo	98	397.0	10.3	0.1122	0.008	7.1	ug/L	54	Standard
|	Ag	107	276.3	6.2	0.0302	0.005	15.9	ug/L	137	Standard
|	Cd	111	581.5	5.7	0.3681	0.004	1.2	mg/L	6	Standard
|	Cd	114	1724.9	6.6	0.4028	0.022	5.4	ug/L	20	Standard
>	In	115	723494.6	4.6				ug/L	755264	Standard
|	Sn	118	256.0	10.6	0.1447	0.018	12.5	ug/L	138	Standard
|	Sb	123	950.2	10.0	0.1954	0.027	13.6	ug/L	391	Standard
|	Ba	135	35427.4	5.3	20.6581	0.217	1.0	ug/L	32	Standard
|	Ce	140	66089.1	5.1				ug/L	42	Standard
>	Tb	159	1022541.1	3.2				ug/L	966827	Standard
|	Ho	165	2571.9	2.0				ug/L	12	Standard
|	Tl	203	219.7	29.9	0.0266	0.009	33.7	ug/L	19	Standard
|	Tl	205	560.0	26.8	0.0340	0.009	25.5	ug/L	58	Standard
|	Pb	206	8288.6	5.7	1.5197	0.045	3.0	ug/L	464	Standard
|	Pb	207	6840.2	6.5	1.3969	0.038	2.7	ug/L	405	Standard
|	Pb	208	15686.5	4.3	1.4769	0.015	1.0	ug/L	876	Standard
|	U	238	1240.1	7.7	0.1072	0.012	11.0	ug/L	14	Standard
>	Bi	209	592573.4	3.9				ug/L	599146	Standard

Sample ID: L1702125001

Report Date/Time: Tuesday, February 28, 2017 11:56:25

Page 1

Approved: March 01, 2017

Na	23	33.3	31.2	7.8997	3.063	38.8	mg/L	3	Standard
Mg	24	936.7	2.6	15.7552	0.654	4.1	mg/L	30	Standard
K	39	275.0	1.8	2.9171	0.254	8.7	mg/L	10	Standard
Ca	43	78.3	40.5	-1.6683	13.016	780.2	mg/L	83	Standard
Fe	54	152.5	9.8	1.7773	0.285	16.0	mg/L	21	Standard
Fe	57	391.7	6.0	2.8408	1.150	40.5	mg/L	240	Standard
Sc-1	45	48547.9	6.5				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	8.0	12.5				ug/L	5	Standard
Br	81	7385.1	2.6				ug/L	1587	Standard
P	31	76.7	42.4				ug/L	50	Standard
S	34	31.7	48.2				ug/L	8	Standard
Sr	88	263.3	18.0				ug/L	198	Standard
C	12	70.0	14.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	3823.8	3.2				mg/L	6	Standard
Ho-1	165	2571.9	2.0				mg/L	12	Standard
Er	166	2436.9	11.4				mg/L	10	Standard
I	127	50719.8	3.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		109.194	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		99.171	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125001

Report Date/Time: Tuesday, February 28, 2017 11:56:25

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	95.794
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	98.903
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Mn 55 Upper, S, EEE	Mn	55	
Zn 66 Upper, S, EEE	Zn	66	

Sample ID: L1702125001

Report Date/Time: Tuesday, February 28, 2017 11:56:25

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702125304

Sample Date/Time: Tuesday, February 28, 2017 11:57:19

Number of Replicates: 3

Autosampler Position: 216

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	416284.0	1.8				ug/L	250104	Standard
|	Be	9	31.7	24.1	0.0014	0.003	186.0	ug/L	7	Standard
|	Al	27	42941305.5	1.3	212.0526	6.603	3.1	ug/L	597	Standard
|	Sc	45	41259.4	0.7				ug/L	41681	Standard
|	Ti	47	865.4	4.2	5.5206	0.204	3.7	ug/L	86	Standard
|	V	51	280.5	351.9	-0.2205	0.197	89.5	ug/L	1740	Standard
|	Cr	52	19143.8	1.7	2.8826	0.089	3.1	ug/L	7178	Standard
|	Cr	53	41226.0	3.2	68.1213	1.573	2.3	ug/L	573	Standard
|	Mn	55	25044428.8	1.3	3260.9751	63.537	1.9	ug/L	3072	Standard
|	Co	59	54956.5	0.8	9.0990	0.159	1.7	ug/L	573	Standard
|	Ni	60	134679.6	2.8	105.5826	4.013	3.8	ug/L	264	Standard
|	Cu	65	6183.9	3.0	4.6982	0.197	4.2	ug/L	530	Standard
|	Zn	66	14759.9	1.4	20.7475	0.432	2.1	ug/L	252	Standard
>	Ge	72	521613.0	1.1				ug/L	641188	Standard
|	As	75	3847.1	14.2	5.5179	0.836	15.2	ug/L	-83	Standard
|	Se	82	384.5	5.3	6.0993	0.403	6.6	ug/L	16	Standard
|	Se-1	77	17018.2	2.9	389.5546	7.859	2.0	ug/L	126	Standard
>	Ga	71	1071.7	5.4				mg/L	70	Standard
|	Rb	85	961107.8	1.0				ug/L	33	Standard
|	Y	89	436115.4	1.8				ug/L	493982	Standard
>	Rh	103	2105.1	8.7				ug/L	17	Standard
|	Mo	98	2461.0	1.6	1.0391	0.020	1.9	ug/L	54	Standard
|	Ag	107	159.0	6.5	0.0160	0.002	14.2	ug/L	137	Standard
|	Cd	111	24.5	4.8	0.0070	0.001	18.6	mg/L	6	Standard
|	Cd	114	76.5	49.4	0.0133	0.011	85.1	ug/L	20	Standard
>	In	115	563722.4	1.5				ug/L	755264	Standard
|	Sn	118	194.0	5.1	0.1376	0.017	12.4	ug/L	138	Standard
|	Sb	123	1251.9	0.9	0.3480	0.006	1.8	ug/L	391	Standard
|	Ba	135	13060319.9	1.0	9789.4707	71.230	0.7	ug/L	32	Standard
|	Ce	140	1118.4	7.4				ug/L	42	Standard
>	Tb	159	932273.4	1.6				ug/L	966827	Standard
|	Ho	165	23.3	53.9				ug/L	12	Standard
|	Tl	203	192.7	15.8	0.0331	0.007	20.9	ug/L	19	Standard
|	Tl	205	516.7	21.5	0.0433	0.011	24.3	ug/L	58	Standard
|	Pb	206	531.7	2.2	0.0451	0.004	8.9	ug/L	464	Standard
|	Pb	207	440.3	0.8	0.0378	0.002	4.3	ug/L	405	Standard
|	Pb	208	1113.0	4.9	0.0616	0.009	14.6	ug/L	876	Standard
|	U	238	2984.0	1.2	0.3513	0.002	0.7	ug/L	14	Standard
>	Bi	209	438957.7	1.5				ug/L	599146	Standard

Sample ID: L1702125304

Report Date/Time: Tuesday, February 28, 2017 11:59:30

Page 1

Approved: March 01, 2017

Na	23	4217.3	3.8	1229.4223	38.325	3.1	mg/L	3	Standard
Mg	24	3558.8	2.4	72.1804	1.502	2.1	mg/L	30	Standard
K	39	9898.2	4.8	133.0768	5.425	4.1	mg/L	10	Standard
Ca	43	3983.9	0.6	2311.2529	25.186	1.1	mg/L	83	Standard
Fe	54	410.0	15.3	6.1321	1.016	16.6	mg/L	21	Standard
Fe	57	7008.3	1.5	377.7489	8.516	2.3	mg/L	240	Standard
Sc-1	45	41259.4	0.7				mg/L	41681	Standard
Cl	35	2.7	114.6				ug/L	2	Standard
Kr	83	7.0	24.7				ug/L	5	Standard
Br	81	97721.3	4.9				ug/L	1587	Standard
P	31	95.0	19.0				ug/L	50	Standard
S	34	28.3	66.8				ug/L	8	Standard
Sr	88	453.3	2.8				ug/L	198	Standard
C	12	370.0	27.4				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	16.7	91.7				mg/L	3	Standard
Dy	164	41.7	27.3				mg/L	6	Standard
Ho-1	165	23.3	53.9				mg/L	12	Standard
Er	166	33.3	17.3				mg/L	10	Standard
I	127	467145.7	14.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		166.445	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		81.351	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125304

Report Date/Time: Tuesday, February 28, 2017 11:59:30

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	74.639
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	73.264
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702125304

Report Date/Time: Tuesday, February 28, 2017 11:59:30

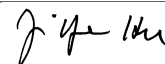
Page 3

Approved: March 01, 2017



Ni 60 Upper, S, EEE	Ni	60
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702125304
Report Date/Time: Tuesday, February 28, 2017 11:59:30
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702125306

Sample Date/Time: Tuesday, February 28, 2017 12:00:25

Number of Replicates: 3

Autosampler Position: 217

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	455345.6	1.8				ug/L	250104	Standard
|	Be	9	40.0	45.1	0.0033	0.006	190.7	ug/L	7	Standard
|	Al	27	224786.4	10.9	1.0093	0.123	12.1	ug/L	597	Standard
|	Sc	45	41658.9	0.7				ug/L	41681	Standard
|	Ti	47	822.4	2.1	4.9148	0.029	0.6	ug/L	86	Standard
|	V	51	27152.4	4.0	4.8382	0.145	3.0	ug/L	1740	Standard
|	Cr	52	36284.2	6.2	6.1288	0.342	5.6	ug/L	7178	Standard
|	Cr	53	39494.8	3.9	61.6251	1.523	2.5	ug/L	573	Standard
|	Mn	55	21374.2	89.8	2.3103	2.321	100.5	ug/L	3072	Standard
|	Co	59	33167.3	2.3	5.1662	0.101	2.0	ug/L	573	Standard
|	Ni	60	1186610.1	2.1	880.7274	8.821	1.0	ug/L	264	Standard
|	Cu	65	4213.6	1.7	2.8931	0.105	3.6	ug/L	530	Standard
|	Zn	66	14664.1	1.2	19.4707	0.216	1.1	ug/L	252	Standard
>	Ge	72	551591.1	1.6				ug/L	641188	Standard
|	As	75	7364.6	4.8	9.9503	0.622	6.3	ug/L	-83	Standard
|	Se	82	351.3	9.3	5.2328	0.427	8.2	ug/L	16	Standard
|	Se-1	77	12252.0	3.1	264.4682	4.174	1.6	ug/L	126	Standard
>	Ga	71	7215.1	3.1				mg/L	70	Standard
|	Rb	85	2995075.3	2.8				ug/L	33	Standard
|	Y	89	444038.9	2.7				ug/L	493982	Standard
>	Rh	103	1035.0	10.6				ug/L	17	Standard
|	Mo	98	10480.3	2.4	4.1299	0.066	1.6	ug/L	54	Standard
|	Ag	107	158.7	12.3	0.0127	0.004	33.1	ug/L	137	Standard
|	Cd	111	28.1	40.5	0.0081	0.009	106.3	mg/L	6	Standard
|	Cd	114	208.6	8.5	0.0488	0.005	10.8	ug/L	20	Standard
>	In	115	612931.1	0.9				ug/L	755264	Standard
|	Sn	118	985.0	4.9	1.1325	0.053	4.7	ug/L	138	Standard
|	Sb	123	785.0	17.4	0.1892	0.036	18.8	ug/L	391	Standard
|	Ba	135	2517118.8	1.5	1735.0769	10.897	0.6	ug/L	32	Standard
|	Ce	140	63.3	16.4				ug/L	42	Standard
>	Tb	159	959344.1	1.9				ug/L	966827	Standard
|	Ho	165	10.0					ug/L	12	Standard
|	Tl	203	85.3	6.0	0.0092	0.001	12.3	ug/L	19	Standard
|	Tl	205	215.0	30.2	0.0147	0.005	33.9	ug/L	58	Standard
|	Pb	206	771.4	4.7	0.0900	0.011	12.3	ug/L	464	Standard
|	Pb	207	657.3	5.8	0.0843	0.010	12.4	ug/L	405	Standard
|	Pb	208	1567.7	2.2	0.1039	0.002	2.3	ug/L	876	Standard
|	U	238	76.3	28.8	0.0065	0.002	34.8	ug/L	14	Standard
>	Bi	209	482214.9	1.4				ug/L	599146	Standard

Sample ID: L1702125306

Report Date/Time: Tuesday, February 28, 2017 12:02:36

Page 1

Approved: March 01, 2017

Na	23	3680.4	9.0	1062.5874	93.258	8.8	mg/L	3	Standard
Mg	24	2113.5	2.4	42.2362	1.061	2.5	mg/L	30	Standard
K	39	8664.1	0.2	115.3630	0.998	0.9	mg/L	10	Standard
Ca	43	3445.4	3.5	1973.8900	72.541	3.7	mg/L	83	Standard
Fe	54	52.1	44.0	0.5543	0.356	64.3	mg/L	21	Standard
Fe	57	6363.0	2.1	338.0285	5.759	1.7	mg/L	240	Standard
Sc-1	45	41658.9	0.7				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	6.0					ug/L	5	Standard
Br	81	60936.0	6.5				ug/L	1587	Standard
P	31	80.0	16.5				ug/L	50	Standard
S	34	33.3	34.6				ug/L	8	Standard
Sr	88	405.0	7.7				ug/L	198	Standard
C	12	1390.1	7.5				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	66.7	60.6				mg/L	3	Standard
Dy	164	8.9	107.2				mg/L	6	Standard
Ho-1	165	10.0					mg/L	12	Standard
Er	166	23.3	49.5				mg/L	10	Standard
I	127	71011.1	2.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		182.063	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		86.026	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125306

Report Date/Time: Tuesday, February 28, 2017 12:02:36

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	81.155
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	80.484
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Ni 60 Upper, S, EEE	Ni	60	
Se-1 77 Upper, S, EEE	Se-1	77	

Sample ID: L1702125306

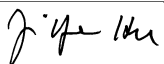
Report Date/Time: Tuesday, February 28, 2017 12:02:36

Page 3

Approved: March 01, 2017



Sample ID: L1702125306
Report Date/Time: Tuesday, February 28, 2017 12:02:36
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702125601

Sample Date/Time: Tuesday, February 28, 2017 12:03:30

Number of Replicates: 3

Autosampler Position: 218

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	259998.9	1.7				ug/L	250104	Standard
|	Be	9	416.7	3.9	0.2363	0.013	5.5	ug/L	7	Standard
|	Al	27	4015354.2	0.5	31.7372	0.608	1.9	ug/L	597	Standard
|	Sc	45	46543.1	2.1				ug/L	41681	Standard
|	Ti	47	3455.1	2.1	21.0741	0.402	1.9	ug/L	86	Standard
|	V	51	14725.0	7.5	2.3738	0.296	12.5	ug/L	1740	Standard
|	Cr	52	26672.8	2.9	3.9366	0.310	7.9	ug/L	7178	Standard
|	Cr	53	27411.6	11.0	40.5659	5.588	13.8	ug/L	573	Standard
|	Mn	55	5325257.5	1.7	624.8680	19.846	3.2	ug/L	3072	Standard
|	Co	59	33995.1	2.4	5.0454	0.091	1.8	ug/L	573	Standard
|	Ni	60	5691.4	4.0	3.8503	0.165	4.3	ug/L	264	Standard
|	Cu	65	9512.7	1.8	6.6592	0.126	1.9	ug/L	530	Standard
|	Zn	66	38614.8	3.4	49.3847	0.685	1.4	ug/L	252	Standard
>	Ge	72	578901.6	3.5				ug/L	641188	Standard
|	As	75	5877.4	3.7	7.5715	0.019	0.3	ug/L	-83	Standard
|	Se	82	70.2	20.6	0.8152	0.233	28.6	ug/L	16	Standard
|	Se-1	77	1729.1	24.6	33.8178	10.159	30.0	ug/L	126	Standard
>	Ga	71	1383.4	2.7				mg/L	70	Standard
|	Rb	85	15089.2	4.2				ug/L	33	Standard
|	Y	89	454800.7	3.7				ug/L	493982	Standard
>	Rh	103	75.0	29.1				ug/L	17	Standard
|	Mo	98	1053.9	1.8	0.3576	0.012	3.2	ug/L	54	Standard
|	Ag	107	336.0	9.1	0.0463	0.007	15.0	ug/L	137	Standard
|	Cd	111	104.3	11.9	0.0594	0.005	9.1	mg/L	6	Standard
|	Cd	114	320.0	17.2	0.0718	0.014	20.2	ug/L	20	Standard
>	In	115	676609.0	4.3				ug/L	755264	Standard
|	Sn	118	311.3	4.9	0.2290	0.015	6.6	ug/L	138	Standard
|	Sb	123	16566.7	3.0	4.1045	0.066	1.6	ug/L	391	Standard
|	Ba	135	36183.5	3.1	22.5783	0.489	2.2	ug/L	32	Standard
|	Ce	140	235522.4	2.9				ug/L	42	Standard
>	Tb	159	981078.7	4.1				ug/L	966827	Standard
|	Ho	165	3423.7	3.7				ug/L	12	Standard
|	Tl	203	178.3	10.2	0.0221	0.002	10.0	ug/L	19	Standard
|	Tl	205	391.7	7.0	0.0247	0.002	8.1	ug/L	58	Standard
|	Pb	206	11649.1	3.4	2.3115	0.032	1.4	ug/L	464	Standard
|	Pb	207	9642.7	2.2	2.1350	0.025	1.2	ug/L	405	Standard
|	Pb	208	22063.0	2.5	2.2461	0.013	0.6	ug/L	876	Standard
|	U	238	3404.7	2.2	0.3146	0.005	1.7	ug/L	14	Standard
>	Bi	209	558876.7	2.7				ug/L	599146	Standard

Sample ID: L1702125601

Report Date/Time: Tuesday, February 28, 2017 12:05:41

Page 1

Approved: March 01, 2017

Na	23	20.0	43.3	4.7264	2.322	49.1	mg/L	3	Standard
Mg	24	1745.1	2.5	31.0787	0.860	2.8	mg/L	30	Standard
K	39	243.3	7.2	2.6622	0.166	6.2	mg/L	10	Standard
Ca	43	71.7	21.3	-2.8010	8.693	310.4	mg/L	83	Standard
Fe	54	497.3	11.0	6.6117	0.805	12.2	mg/L	21	Standard
Fe	57	536.7	8.9	10.8747	2.829	26.0	mg/L	240	Standard
Sc-1	45	46543.1	2.1				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	5.3	10.8				ug/L	5	Standard
Br	81	6304.6	7.0				ug/L	1587	Standard
P	31	75.0	6.7				ug/L	50	Standard
S	34	38.3	15.1				ug/L	8	Standard
Sr	88	271.7	20.7				ug/L	198	Standard
C	12	120.0	25.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	90.0	22.2				mg/L	3	Standard
Dy	164	5407.1	2.1				mg/L	6	Standard
Ho-1	165	3423.7	3.7				mg/L	12	Standard
Er	166	2726.9	13.8				mg/L	10	Standard
I	127	13280.8	5.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		103.956	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		90.286	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125601

Report Date/Time: Tuesday, February 28, 2017 12:05:41

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	89.586
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.279
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702125601

Report Date/Time: Tuesday, February 28, 2017 12:05:41

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702125901

Sample Date/Time: Tuesday, February 28, 2017 12:06:36

Number of Replicates: 3

Autosampler Position: 219

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	260361.6	1.5				ug/L	250104	Standard
|	Be	9	78.3	7.4	0.0360	0.004	11.3	ug/L	7	Standard
|	Al	27	5021467.3	2.0	39.6327	0.937	2.4	ug/L	597	Standard
|	Sc	45	46429.4	1.7				ug/L	41681	Standard
|	Ti	47	1723.4	13.5	9.9661	1.527	15.3	ug/L	86	Standard
|	V	51	4376.7	12.6	0.4850	0.088	18.2	ug/L	1740	Standard
|	Cr	52	16851.4	1.3	1.9361	0.013	0.7	ug/L	7178	Standard
|	Cr	53	9426.3	11.9	12.9289	1.797	13.9	ug/L	573	Standard
|	Mn	55	16560920.8	1.4	1884.4704	24.486	1.3	ug/L	3072	Standard
|	Co	59	4384.0	2.8	0.5774	0.019	3.3	ug/L	573	Standard
|	Ni	60	2853.6	3.0	1.7804	0.050	2.8	ug/L	264	Standard
|	Cu	65	2231.8	0.5	1.2230	0.023	1.9	ug/L	530	Standard
|	Zn	66	46108.4	1.9	57.2541	1.134	2.0	ug/L	252	Standard
>	Ge	72	596785.1	1.2				ug/L	641188	Standard
|	As	75	2858.9	5.8	3.5970	0.248	6.9	ug/L	-83	Standard
|	Se	82	44.5	22.6	0.4111	0.137	33.3	ug/L	16	Standard
|	Se-1	77	628.3	9.1	10.3811	1.289	12.4	ug/L	126	Standard
>	Ga	71	518.3	12.7				mg/L	70	Standard
|	Rb	85	8410.7	6.3				ug/L	33	Standard
|	Y	89	437940.8	2.1				ug/L	493982	Standard
>	Rh	103	76.7	22.9				ug/L	17	Standard
|	Mo	98	567.3	7.2	0.1751	0.012	6.8	ug/L	54	Standard
|	Ag	107	326.3	4.6	0.0417	0.002	5.8	ug/L	137	Standard
|	Cd	111	472.3	5.9	0.3056	0.016	5.4	mg/L	6	Standard
|	Cd	114	1318.1	6.1	0.3147	0.019	6.0	ug/L	20	Standard
>	In	115	702652.5	1.1				ug/L	755264	Standard
|	Sn	118	323.3	2.1	0.2289	0.004	1.9	ug/L	138	Standard
|	Sb	123	884.7	8.4	0.1856	0.015	8.3	ug/L	391	Standard
|	Ba	135	89626.3	1.3	53.8679	0.532	1.0	ug/L	32	Standard
|	Ce	140	15157.6	8.4				ug/L	42	Standard
>	Tb	159	1013034.1	1.0				ug/L	966827	Standard
|	Ho	165	183.3	22.0				ug/L	12	Standard
|	Tl	203	104.0	1.7	0.0095	0.000	2.5	ug/L	19	Standard
|	Tl	205	275.0	13.7	0.0159	0.003	16.4	ug/L	58	Standard
|	Pb	206	2621.6	2.6	0.4300	0.009	2.1	ug/L	464	Standard
|	Pb	207	2096.5	4.2	0.3773	0.016	4.2	ug/L	405	Standard
|	Pb	208	4843.0	2.9	0.4082	0.011	2.7	ug/L	876	Standard
|	U	238	1375.1	2.0	0.1221	0.001	0.9	ug/L	14	Standard
>	Bi	209	576724.7	1.1				ug/L	599146	Standard

Sample ID: L1702125901

Report Date/Time: Tuesday, February 28, 2017 12:08:47

Page 1

Approved: March 01, 2017

Na	23	45.0	48.4	11.1766	5.611	50.2	mg/L	3	Standard
Mg	24	438.3	2.6	7.4215	0.241	3.3	mg/L	30	Standard
K	39	161.7	10.9	1.6926	0.202	11.9	mg/L	10	Standard
Ca	43	100.0	13.2	12.1035	7.588	62.7	mg/L	83	Standard
Fe	54	269.6	4.9	3.4754	0.124	3.6	mg/L	21	Standard
Fe	57	460.0	12.0	7.0658	2.533	35.8	mg/L	240	Standard
Sc-1	45	46429.4	1.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	2.7	43.3				ug/L	5	Standard
Br	81	6251.3	5.9				ug/L	1587	Standard
P	31	66.7	22.9				ug/L	50	Standard
S	34	38.3	27.2				ug/L	8	Standard
Sr	88	271.7	25.8				ug/L	198	Standard
C	12	103.3	27.9				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	361.4	22.6				mg/L	6	Standard
Ho-1	165	183.3	22.0				mg/L	12	Standard
Er	166	250.0	55.0				mg/L	10	Standard
I	127	209469.6	5.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		104.102	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		93.075	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125901

Report Date/Time: Tuesday, February 28, 2017 12:08:47

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	93.034
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	96.258
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702125901

Report Date/Time: Tuesday, February 28, 2017 12:08:47

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126001

Sample Date/Time: Tuesday, February 28, 2017 12:09:41

Number of Replicates: 3

Autosampler Position: 220

Sample Description: 1

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	251430.2	3.0				ug/L	250104	Standard
|	Be	9	475.0	26.4	0.2795	0.071	25.5	ug/L	7	Standard
|	Al	27	1483377.1	5.8	12.1122	0.392	3.2	ug/L	597	Standard
|	Sc	45	46441.2	4.7				ug/L	41681	Standard
|	Ti	47	6671.5	3.5	41.0536	0.541	1.3	ug/L	86	Standard
|	V	51	53720.2	3.0	9.3556	0.084	0.9	ug/L	1740	Standard
|	Cr	52	39957.3	3.8	6.4844	0.141	2.2	ug/L	7178	Standard
|	Cr	53	15134.2	3.6	21.9226	0.455	2.1	ug/L	573	Standard
|	Mn	55	2178914.5	9.0	254.8121	18.111	7.1	ug/L	3072	Standard
|	Co	59	19442.5	4.4	2.8546	0.088	3.1	ug/L	573	Standard
|	Ni	60	5433.3	3.6	3.6612	0.087	2.4	ug/L	264	Standard
|	Cu	65	19193.8	2.6	13.7988	0.052	0.4	ug/L	530	Standard
|	Zn	66	24792.6	4.4	31.5324	0.679	2.2	ug/L	252	Standard
>	Ge	72	579545.6	2.3				ug/L	641188	Standard
|	As	75	16831.4	3.5	21.5771	0.248	1.1	ug/L	-83	Standard
|	Se	82	92.0	4.7	1.1346	0.090	7.9	ug/L	16	Standard
|	Se-1	77	668.0	3.9	11.5676	0.330	2.9	ug/L	126	Standard
>	Ga	71	2503.5	8.4				mg/L	70	Standard
|	Rb	85	27533.3	1.5				ug/L	33	Standard
|	Y	89	457140.2	2.7				ug/L	493982	Standard
>	Rh	103	68.3	11.2				ug/L	17	Standard
|	Mo	98	1166.8	4.2	0.4000	0.016	3.9	ug/L	54	Standard
|	Ag	107	723.0	8.4	0.1277	0.014	11.3	ug/L	137	Standard
|	Cd	111	67.5	13.5	0.0340	0.006	18.3	mg/L	6	Standard
|	Cd	114	184.6	1.4	0.0374	0.002	4.4	ug/L	20	Standard
>	In	115	673140.8	3.0				ug/L	755264	Standard
|	Sn	118	263.3	8.4	0.1753	0.034	19.6	ug/L	138	Standard
|	Sb	123	121035.9	3.1	30.2982	0.273	0.9	ug/L	391	Standard
|	Ba	135	35979.7	3.6	22.5578	0.572	2.5	ug/L	32	Standard
|	Ce	140	383084.0	4.0				ug/L	42	Standard
>	Tb	159	982675.4	1.3				ug/L	966827	Standard
|	Ho	165	3243.7	2.4				ug/L	12	Standard
|	Tl	203	274.7	12.6	0.0387	0.005	13.0	ug/L	19	Standard
|	Tl	205	590.0	4.5	0.0394	0.002	4.6	ug/L	58	Standard
|	Pb	206	19787.6	2.4	4.0828	0.059	1.5	ug/L	464	Standard
|	Pb	207	15946.7	4.1	3.6699	0.063	1.7	ug/L	405	Standard
|	Pb	208	36701.4	3.6	3.8791	0.048	1.2	ug/L	876	Standard
|	U	238	31108.6	2.0	2.9517	0.016	0.6	ug/L	14	Standard
>	Bi	209	546911.8	2.6				ug/L	599146	Standard

Sample ID: L1702126001

Report Date/Time: Tuesday, February 28, 2017 12:11:52

Page 1

Approved: March 01, 2017

Na	23	8.3	69.3	1.6490	1.391	84.3	mg/L	3	Standard
Mg	24	3635.4	2.1	65.5175	1.796	2.7	mg/L	30	Standard
K	39	278.3	5.2	3.0899	0.116	3.7	mg/L	10	Standard
Ca	43	58.3	21.6	-9.8269	6.350	64.6	mg/L	83	Standard
Fe	54	297.2	7.8	3.8613	0.329	8.5	mg/L	21	Standard
Fe	57	366.7	7.0	2.4236	1.139	47.0	mg/L	240	Standard
Sc-1	45	46441.2	4.7				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	4.7	24.7				ug/L	5	Standard
Br	81	10036.7	9.6				ug/L	1587	Standard
P	31	76.7	10.0				ug/L	50	Standard
S	34	33.3	22.9				ug/L	8	Standard
Sr	88	261.7	6.1				ug/L	198	Standard
C	12	70.0	28.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	436.7	13.4				mg/L	3	Standard
Dy	164	4955.1	4.3				mg/L	6	Standard
Ho-1	165	3243.7	2.4				mg/L	12	Standard
Er	166	2973.6	2.6				mg/L	10	Standard
I	127	14110.0	15.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		100.530	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		90.386	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126001

Report Date/Time: Tuesday, February 28, 2017 12:11:52

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	89.127
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	91.282
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702126001

Report Date/Time: Tuesday, February 28, 2017 12:11:52

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126101

Sample Date/Time: Tuesday, February 28, 2017 12:12:46

Number of Replicates: 3

Autosampler Position: 221

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	252401.8	1.0				ug/L	250104	Standard
|	Be	9	31.7	32.9	0.0090	0.006	69.9	ug/L	7	Standard
|	Al	27	12364498.6	0.5	100.6727	1.562	1.6	ug/L	597	Standard
|	Sc	45	45354.5	0.8				ug/L	41681	Standard
|	Ti	47	115.0	8.3	0.2578	0.068	26.3	ug/L	86	Standard
|	V	51	1281.8	20.6	-0.0450	0.050	111.4	ug/L	1740	Standard
|	Cr	52	8545.1	3.9	0.4377	0.053	12.1	ug/L	7178	Standard
|	Cr	53	5721.1	18.2	7.7838	1.475	19.0	ug/L	573	Standard
|	Mn	55	16296965.9	1.8	1920.8415	24.620	1.3	ug/L	3072	Standard
|	Co	59	2435.5	0.9	0.3062	0.006	1.9	ug/L	573	Standard
|	Ni	60	2114.8	2.9	1.3254	0.027	2.0	ug/L	264	Standard
|	Cu	65	1059.7	0.9	0.4094	0.007	1.8	ug/L	530	Standard
|	Zn	66	2207.5	3.2	2.5050	0.065	2.6	ug/L	252	Standard
>	Ge	72	576133.3	1.2				ug/L	641188	Standard
|	As	75	1058.5	7.6	1.4045	0.096	6.8	ug/L	-83	Standard
|	Se	82	255.4	8.8	3.5753	0.322	9.0	ug/L	16	Standard
|	Se-1	77	934.7	4.8	17.2079	0.776	4.5	ug/L	126	Standard
>	Ga	71	110.0	20.8				mg/L	70	Standard
|	Rb	85	33872.9	4.6				ug/L	33	Standard
|	Y	89	428275.9	1.4				ug/L	493982	Standard
>	Rh	103	195.0	2.6				ug/L	17	Standard
|	Mo	98	187.5	3.8	0.0471	0.003	6.1	ug/L	54	Standard
|	Ag	107	122.7	5.8	0.0021	0.002	75.0	ug/L	137	Standard
|	Cd	111	29.8	11.7	0.0074	0.002	33.1	mg/L	6	Standard
|	Cd	114	99.7	39.6	0.0157	0.010	65.9	ug/L	20	Standard
>	In	115	670213.6	0.4				ug/L	755264	Standard
|	Sn	118	198.7	8.6	0.0998	0.019	19.2	ug/L	138	Standard
|	Sb	123	253.6	5.8	0.0372	0.003	9.4	ug/L	391	Standard
|	Ba	135	1238461.4	0.7	780.7288	3.511	0.4	ug/L	32	Standard
|	Ce	140	225.0	34.9				ug/L	42	Standard
>	Tb	159	1015403.1	0.9				ug/L	966827	Standard
|	Ho	165	20.0	43.3				ug/L	12	Standard
|	Tl	203	629.7	34.0	0.0978	0.034	35.3	ug/L	19	Standard
|	Tl	205	1440.1	40.0	0.0998	0.040	39.8	ug/L	58	Standard
|	Pb	206	518.7	5.3	0.0150	0.007	46.9	ug/L	464	Standard
|	Pb	207	458.3	1.7	0.0167	0.001	3.6	ug/L	405	Standard
|	Pb	208	974.3	2.0	0.0172	0.002	11.1	ug/L	876	Standard
|	U	238	106.7	5.5	0.0084	0.001	6.1	ug/L	14	Standard
>	Bi	209	545879.0	1.2				ug/L	599146	Standard

Sample ID: L1702126101

Report Date/Time: Tuesday, February 28, 2017 12:14:57

Page 1

Approved: March 01, 2017

Na	23	161.7	24.0	42.3923	10.146	23.9	mg/L	3	Standard
Mg	24	2910.3	2.8	53.5562	1.116	2.1	mg/L	30	Standard
K	39	163.3	4.7	1.7591	0.081	4.6	mg/L	10	Standard
Ca	43	188.3	22.1	60.7123	22.286	36.7	mg/L	83	Standard
Fe	54	1742.6	2.9	24.4111	0.900	3.7	mg/L	21	Standard
Fe	57	1063.4	10.1	38.4205	5.086	13.2	mg/L	240	Standard
Sc-1	45	45354.5	0.8				mg/L	41681	Standard
Cl	35	3.3	69.3				ug/L	2	Standard
Kr	83	7.7	58.8				ug/L	5	Standard
Br	81	74014.0	5.3				ug/L	1587	Standard
P	31	66.7	15.6				ug/L	50	Standard
S	34	41.7	36.7				ug/L	8	Standard
Sr	88	261.7	7.7				ug/L	198	Standard
C	12	36.7	15.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.5	186.3				mg/L	6	Standard
Ho-1	165	20.0	43.3				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	79374.9	13.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		100.919	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		89.854	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126101

Report Date/Time: Tuesday, February 28, 2017 12:14:57

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	88.739
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	91.110
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Mn 55 Upper, S, EEE	Mn	55	
Ba 135 Upper, S, EEE	Ba	135	

Sample ID: L1702126101

Report Date/Time: Tuesday, February 28, 2017 12:14:57

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126102

Sample Date/Time: Tuesday, February 28, 2017 12:15:52

Number of Replicates: 3

Autosampler Position: 222

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	255659.3	3.9				ug/L	250104	Standard
|	Be	9	23.3	12.4	0.0038	0.002	52.0	ug/L	7	Standard
|	Al	27	694497.2	4.3	5.5756	0.045	0.8	ug/L	597	Standard
|	Sc	45	45688.9	3.9				ug/L	41681	Standard
|	Ti	47	114.0	7.5	0.2403	0.085	35.3	ug/L	86	Standard
|	V	51	7446.9	3.3	1.0427	0.039	3.7	ug/L	1740	Standard
|	Cr	52	9477.6	4.7	0.5847	0.006	1.0	ug/L	7178	Standard
|	Cr	53	2970.3	3.5	3.5446	0.067	1.9	ug/L	573	Standard
|	Mn	55	28809.2	10.8	3.0235	0.269	8.9	ug/L	3072	Standard
|	Co	59	1003.7	3.0	0.0875	0.007	8.5	ug/L	573	Standard
|	Ni	60	971.4	2.5	0.5011	0.039	7.8	ug/L	264	Standard
|	Cu	65	2138.8	3.3	1.1824	0.029	2.5	ug/L	530	Standard
|	Zn	66	2009.5	5.7	2.2011	0.096	4.4	ug/L	252	Standard
>	Ge	72	587088.9	5.0				ug/L	641188	Standard
|	As	75	843.9	9.2	1.1070	0.053	4.8	ug/L	-83	Standard
|	Se	82	37.1	10.8	0.3150	0.061	19.5	ug/L	16	Standard
|	Se-1	77	316.0	5.9	4.2127	0.700	16.6	ug/L	126	Standard
>	Ga	71	85.0	17.6				mg/L	70	Standard
|	Rb	85	11576.1	3.1				ug/L	33	Standard
|	Y	89	430965.2	4.2				ug/L	493982	Standard
>	Rh	103	95.0	45.0				ug/L	17	Standard
|	Mo	98	4569.8	3.6	1.6029	0.034	2.1	ug/L	54	Standard
|	Ag	107	110.3	8.9	-0.0010	0.001	113.9	ug/L	137	Standard
|	Cd	111	12.8	46.0	-0.0047	0.004	94.0	mg/L	6	Standard
|	Cd	114	43.4	18.2	0.0010	0.003	261.5	ug/L	20	Standard
>	In	115	683640.7	5.0				ug/L	755264	Standard
|	Sn	118	183.3	17.8	0.0772	0.033	42.4	ug/L	138	Standard
|	Sb	123	1230.8	6.6	0.2769	0.009	3.1	ug/L	391	Standard
|	Ba	135	131952.2	4.7	81.5360	0.653	0.8	ug/L	32	Standard
|	Ce	140	520.0	8.5				ug/L	42	Standard
>	Tb	159	1003074.1	5.0				ug/L	966827	Standard
|	Ho	165	33.3	43.3				ug/L	12	Standard
|	Tl	203	74.0	17.6	0.0053	0.003	53.9	ug/L	19	Standard
|	Tl	205	200.0	15.6	0.0115	0.003	23.7	ug/L	58	Standard
|	Pb	206	571.0	15.7	0.0239	0.012	49.8	ug/L	464	Standard
|	Pb	207	454.3	9.7	0.0142	0.006	41.6	ug/L	405	Standard
|	Pb	208	1078.7	5.1	0.0269	0.004	13.1	ug/L	876	Standard
|	U	238	1823.8	4.5	0.1694	0.002	1.4	ug/L	14	Standard
>	Bi	209	553674.9	5.8				ug/L	599146	Standard

Sample ID: L1702126102

Report Date/Time: Tuesday, February 28, 2017 12:18:03

Page 1

Approved: March 01, 2017

Na	23	10.0	100.0	2.1149	2.618	123.8	mg/L	3	Standard
Mg	24	3595.4	3.3	65.8198	0.512	0.8	mg/L	30	Standard
K	39	105.0	24.7	1.0441	0.370	35.5	mg/L	10	Standard
Ca	43	63.3	24.1	-6.4146	9.575	149.3	mg/L	83	Standard
Fe	54	29.3	44.2	0.1596	0.168	105.2	mg/L	21	Standard
Fe	57	386.7	5.4	3.7404	1.024	27.4	mg/L	240	Standard
Sc-1	45	45688.9	3.9				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	6.3	50.8				ug/L	5	Standard
Br	81	6791.5	4.6				ug/L	1587	Standard
P	31	86.7	29.0				ug/L	50	Standard
S	34	33.3	17.3				ug/L	8	Standard
Sr	88	298.3	17.9				ug/L	198	Standard
C	12	36.7	68.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	29.0	32.8				mg/L	6	Standard
Ho-1	165	33.3	43.3				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	36624.3	4.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		102.221	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		91.563	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126102

Report Date/Time: Tuesday, February 28, 2017 12:18:03

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.517
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	92.411
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702126102

Report Date/Time: Tuesday, February 28, 2017 12:18:03

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126103

Sample Date/Time: Tuesday, February 28, 2017 12:18:57

Number of Replicates: 3

Autosampler Position: 223

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	266835.9	0.6				ug/L	250104	Standard
|	Be	9	31.7	24.1	0.0080	0.004	53.9	ug/L	7	Standard
|	Al	27	14775.5	1.7	0.1076	0.003	2.4	ug/L	597	Standard
|	Sc	45	45658.7	3.0				ug/L	41681	Standard
|	Ti	47	55.7	9.9	-0.1307	0.035	26.5	ug/L	86	Standard
|	V	51	1262.7	7.1	-0.0595	0.020	32.8	ug/L	1740	Standard
|	Cr	52	10200.8	2.0	0.6645	0.045	6.7	ug/L	7178	Standard
|	Cr	53	3075.3	2.7	3.5645	0.210	5.9	ug/L	573	Standard
|	Mn	55	8595.8	1.8	0.6587	0.034	5.1	ug/L	3072	Standard
|	Co	59	583.3	2.3	0.0225	0.003	13.6	ug/L	573	Standard
|	Ni	60	363.7	3.6	0.0685	0.004	6.1	ug/L	264	Standard
|	Cu	65	1521.1	1.7	0.6980	0.018	2.6	ug/L	530	Standard
|	Zn	66	1123.7	2.7	1.0333	0.045	4.3	ug/L	252	Standard
>	Ge	72	605209.0	2.0				ug/L	641188	Standard
|	As	75	-33.2	124.9	0.0020	0.050	2442.0	ug/L	-83	Standard
|	Se	82	16.8	9.8	0.0110	0.023	210.7	ug/L	16	Standard
|	Se-1	77	227.0	11.3	2.2349	0.555	24.8	ug/L	126	Standard
>	Ga	71	51.7	20.1				mg/L	70	Standard
|	Rb	85	151.7	3.8				ug/L	33	Standard
|	Y	89	440362.7	2.0				ug/L	493982	Standard
>	Rh	103	80.0	6.3				ug/L	17	Standard
|	Mo	98	46.9	10.7	-0.0047	0.002	32.8	ug/L	54	Standard
|	Ag	107	129.0	1.3	0.0020	0.001	33.7	ug/L	137	Standard
|	Cd	111	13.3	15.7	-0.0047	0.002	33.2	mg/L	6	Standard
|	Cd	114	50.1	19.9	0.0022	0.002	105.6	ug/L	20	Standard
>	In	115	705183.7	2.0				ug/L	755264	Standard
|	Sn	118	183.0	4.8	0.0709	0.013	17.8	ug/L	138	Standard
|	Sb	123	105.8	17.1	-0.0013	0.004	297.6	ug/L	391	Standard
|	Ba	135	199.7	5.8	0.0921	0.005	5.7	ug/L	32	Standard
|	Ce	140	53.3	42.3				ug/L	42	Standard
>	Tb	159	1013048.1	2.6				ug/L	966827	Standard
|	Ho	165	8.3	69.3				ug/L	12	Standard
|	Tl	203	60.3	5.8	0.0025	0.000	16.1	ug/L	19	Standard
|	Tl	205	145.0	29.5	0.0071	0.003	42.6	ug/L	58	Standard
|	Pb	206	490.0	6.8	0.0024	0.005	209.9	ug/L	464	Standard
|	Pb	207	401.7	3.0	-0.0025	0.002	96.0	ug/L	405	Standard
|	Pb	208	943.3	3.7	0.0075	0.002	27.0	ug/L	876	Standard
|	U	238	28.7	10.7	0.0009	0.000	32.7	ug/L	14	Standard
>	Bi	209	581759.1	1.6				ug/L	599146	Standard

Sample ID: L1702126103

Report Date/Time: Tuesday, February 28, 2017 12:21:08

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	0.4148	0.773	186.4	mg/L	3	Standard
Mg	24	35.0	28.6	0.1048	0.172	164.3	mg/L	30	Standard
K	39	25.0	52.9	0.0644	0.170	264.2	mg/L	10	Standard
Ca	43	61.7	33.8	-7.5450	11.086	146.9	mg/L	83	Standard
Fe	54	27.5	74.9	0.1436	0.302	210.4	mg/L	21	Standard
Fe	57	335.0	10.4	1.1028	1.352	122.6	mg/L	240	Standard
Sc-1	45	45658.7	3.0				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	5.3	28.6				ug/L	5	Standard
Br	81	1793.4	13.5				ug/L	1587	Standard
P	31	71.7	8.1				ug/L	50	Standard
S	34	36.7	41.7				ug/L	8	Standard
Sr	88	255.0	7.1				ug/L	198	Standard
C	12	16.7	91.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	22.4	66.2				mg/L	6	Standard
Ho-1	165	8.3	69.3				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	6243.0	4.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		106.690	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.389	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126103

Report Date/Time: Tuesday, February 28, 2017 12:21:08

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	93.369
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	97.098
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702126103

Report Date/Time: Tuesday, February 28, 2017 12:21:08

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126104

Sample Date/Time: Tuesday, February 28, 2017 12:22:02

Number of Replicates: 3

Autosampler Position: 224

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	338300.3	0.9				ug/L	250104	Standard
|	Be	9	51.7	14.8	0.0132	0.004	27.7	ug/L	7	Standard
|	Al	27	176664129.3	1.4	1073.1590	14.594	1.4	ug/L	597	Standard
|	Sc	45	44787.8	2.4				ug/L	41681	Standard
|	Ti	47	332.0	11.0	1.7523	0.296	16.9	ug/L	86	Standard
|	V	51	-5151.4	29.3	-1.2660	0.294	23.2	ug/L	1740	Standard
|	Cr	52	17007.5	2.1	2.2890	0.066	2.9	ug/L	7178	Standard
|	Cr	53	57745.2	7.4	92.0994	4.663	5.1	ug/L	573	Standard
|	Mn	55	37711531.2	1.7	4727.2667	43.732	0.9	ug/L	3072	Standard
|	Co	59	21749.9	1.7	3.4291	0.072	2.1	ug/L	573	Standard
|	Ni	60	53771.3	1.4	40.4869	1.609	4.0	ug/L	264	Standard
|	Cu	65	6955.6	2.0	5.1176	0.034	0.7	ug/L	530	Standard
|	Zn	66	4003.2	2.5	5.1616	0.282	5.5	ug/L	252	Standard
>	Ge	72	541852.1	2.6				ug/L	641188	Standard
|	As	75	-850.5	8.0	-1.1223	0.097	8.6	ug/L	-83	Standard
|	Se	82	353.7	6.7	5.3813	0.506	9.4	ug/L	16	Standard
|	Se-1	77	23455.2	6.9	517.2568	22.823	4.4	ug/L	126	Standard
>	Ga	71	1251.7	9.9				mg/L	70	Standard
|	Rb	85	160249.8	1.7				ug/L	33	Standard
|	Y	89	444041.9	3.7				ug/L	493982	Standard
>	Rh	103	8220.6	2.5				ug/L	17	Standard
|	Mo	98	122.7	13.9	0.0314	0.009	30.1	ug/L	54	Standard
|	Ag	107	227.7	2.2	0.0323	0.004	12.0	ug/L	137	Standard
|	Cd	111	36.8	11.9	0.0169	0.004	23.3	mg/L	6	Standard
|	Cd	114	99.2	27.8	0.0196	0.007	34.7	ug/L	20	Standard
>	In	115	573767.4	4.8				ug/L	755264	Standard
|	Sn	118	217.3	4.3	0.1649	0.006	3.6	ug/L	138	Standard
|	Sb	123	2079.8	4.4	0.5865	0.055	9.5	ug/L	391	Standard
|	Ba	135	18520007.7	1.4	13656.5737	599.161	4.4	ug/L	32	Standard
|	Ce	140	6268.0	1.4				ug/L	42	Standard
>	Tb	159	991849.5	3.4				ug/L	966827	Standard
|	Ho	165	143.3	17.2				ug/L	12	Standard
|	Tl	203	373.0	18.9	0.0824	0.019	23.6	ug/L	19	Standard
|	Tl	205	828.4	33.3	0.0825	0.031	37.3	ug/L	58	Standard
|	Pb	206	1067.7	2.4	0.2282	0.005	2.0	ug/L	464	Standard
|	Pb	207	854.7	4.8	0.1973	0.015	7.5	ug/L	405	Standard
|	Pb	208	2536.4	3.1	0.3049	0.023	7.6	ug/L	876	Standard
|	U	238	592.7	4.1	0.0790	0.006	7.5	ug/L	14	Standard
>	Bi	209	381844.1	3.6				ug/L	599146	Standard

Sample ID: L1702126104

Report Date/Time: Tuesday, February 28, 2017 12:24:13

Page 1

Approved: March 01, 2017

Na	23	4180.6	3.7	1123.0183	40.489	3.6	mg/L	3	Standard
Mg	24	13724.5	2.8	258.0227	12.889	5.0	mg/L	30	Standard
K	39	1270.1	4.8	15.5151	0.458	3.0	mg/L	10	Standard
Ca	43	3393.7	2.7	1805.1191	34.869	1.9	mg/L	83	Standard
Fe	54	205.4	15.7	2.7017	0.516	19.1	mg/L	21	Standard
Fe	57	6778.2	0.9	334.9303	8.813	2.6	mg/L	240	Standard
Sc-1	45	44787.8	2.4				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	8.7	35.3				ug/L	5	Standard
Br	81	147589.2	3.4				ug/L	1587	Standard
P	31	75.0	30.6				ug/L	50	Standard
S	34	18.3	41.7				ug/L	8	Standard
Sr	88	683.3	12.6				ug/L	198	Standard
C	12	40.0	43.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	10.0					mg/L	3	Standard
Dy	164	175.7	20.4				mg/L	6	Standard
Ho-1	165	143.3	17.2				mg/L	12	Standard
Er	166	160.0	27.2				mg/L	10	Standard
I	127	572022.6	14.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		135.264	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.507	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126104

Report Date/Time: Tuesday, February 28, 2017 12:24:13

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	75.969
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	63.731
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702126104

Report Date/Time: Tuesday, February 28, 2017 12:24:13

Page 3

Approved: March 01, 2017



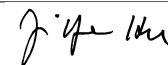
Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702126104

Report Date/Time: Tuesday, February 28, 2017 12:24:13

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 12:25:09

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	274319.4	3.3				ug/L	250104	Standard
|	Be	9	87554.0	2.7	49.0746	0.323	0.7	ug/L	7	Standard
|	Al	27	6189266.7	2.9	46.3639	0.427	0.9	ug/L	597	Standard
|	Sc	45	47557.9	0.3				ug/L	41681	Standard
|	Ti	47	19650.4	0.8	117.4944	0.354	0.3	ug/L	86	Standard
|	V	51	316524.9	1.6	54.4630	0.524	1.0	ug/L	1740	Standard
|	Cr	52	299194.4	1.6	54.4267	0.644	1.2	ug/L	7178	Standard
|	Cr	53	49177.2	13.0	70.5360	8.766	12.4	ug/L	573	Standard
|	Mn	55	478792.5	1.0	53.8079	0.111	0.2	ug/L	3072	Standard
|	Co	59	367435.6	0.4	53.0970	0.317	0.6	ug/L	573	Standard
|	Ni	60	78224.1	1.6	53.1285	0.611	1.1	ug/L	264	Standard
|	Cu	65	73775.2	0.2	52.1807	0.470	0.9	ug/L	530	Standard
|	Zn	66	40996.4	1.1	50.5126	0.342	0.7	ug/L	252	Standard
>	Ge	72	600909.5	0.8				ug/L	641188	Standard
|	As	75	39445.4	0.6	48.7254	0.197	0.4	ug/L	-83	Standard
|	Se	82	3294.1	2.1	46.8023	0.775	1.7	ug/L	16	Standard
|	Se-1	77	3818.2	20.0	73.9770	14.697	19.9	ug/L	126	Standard
>	Ga	71	141.7	34.6				mg/L	70	Standard
|	Rb	85	536.7	19.6				ug/L	33	Standard
|	Y	89	431842.8	0.7				ug/L	493982	Standard
>	Rh	103	50.0	36.1				ug/L	17	Standard
|	Mo	98	262947.3	1.4	89.9214	1.380	1.5	ug/L	54	Standard
|	Ag	107	242455.8	1.4	48.0935	0.791	1.6	ug/L	137	Standard
|	Cd	111	70935.7	1.6	47.4647	0.293	0.6	mg/L	6	Standard
|	Cd	114	198396.2	1.0	48.3931	0.715	1.5	ug/L	20	Standard
>	In	115	709843.5	1.9				ug/L	755264	Standard
|	Sn	118	45425.3	1.2	50.3048	0.950	1.9	ug/L	138	Standard
|	Sb	123	205853.0	1.3	48.8861	0.474	1.0	ug/L	391	Standard
|	Ba	135	87662.9	0.6	52.1608	0.673	1.3	ug/L	32	Standard
|	Ce	140	55.0	18.2				ug/L	42	Standard
>	Tb	159	1020984.5	1.2				ug/L	966827	Standard
|	Ho	165	23.3	86.6				ug/L	12	Standard
|	Tl	203	318548.4	1.2	49.9637	0.157	0.3	ug/L	19	Standard
|	Tl	205	742545.1	2.1	49.8115	0.837	1.7	ug/L	58	Standard
|	Pb	206	249150.6	0.9	49.4817	0.282	0.6	ug/L	464	Standard
|	Pb	207	223099.1	1.4	49.5236	0.603	1.2	ug/L	405	Standard
|	Pb	208	486372.5	0.8	49.4786	0.379	0.8	ug/L	876	Standard
|	U	238	545408.1	0.5	48.8059	0.807	1.7	ug/L	14	Standard
>	Bi	209	580254.1	1.3				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:27:20

Page 1

Approved: March 01, 2017

Na	23	10.0		2.0525	0.009	0.4	mg/L	3	Standard
Mg	24	368.3	7.5	5.9898	0.477	8.0	mg/L	30	Standard
K	39	633.3	14.8	7.1588	1.081	15.1	mg/L	10	Standard
Ca	43	85.0	25.6	3.0989	11.103	358.3	mg/L	83	Standard
Fe	54	301.1	11.1	3.8143	0.454	11.9	mg/L	21	Standard
Fe	57	478.3	3.2	7.4260	0.692	9.3	mg/L	240	Standard
Sc-1	45	47557.9	0.3				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	6.3	32.9				ug/L	5	Standard
Br	81	2907.0	28.4				ug/L	1587	Standard
P	31	81.7	28.9				ug/L	50	Standard
S	34	31.7	65.7				ug/L	8	Standard
Sr	88	276.7	6.8				ug/L	198	Standard
C	12	30.0	33.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	12.4	100.1				mg/L	6	Standard
Ho-1	165	23.3	86.6				mg/L	12	Standard
Er	166	20.0	100.0				mg/L	10	Standard
I	127	26675.4	58.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	98.149		
Al	27	92.728		
Sc	45			
Ti	47	117.494		
V	51	108.926		
Cr	52	108.853		
Cr	53			
Mn	55	107.616		
Co	59	106.194		
Ni	60	106.257		
Cu	65	104.361		
Zn	66	101.025		
Ge	72		93.718	
As	75	97.451		
Se	82	93.605		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:27:20

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	89.921	
[	Ag	107	96.187	
[	Cd	111	94.929	
[	Cd	114		
>	In	115		93.986
[	Sn	118	100.610	
[	Sb	123	97.772	
[	Ba	135	104.322	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	99.927	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	98.957	
[	U	238	97.612	
>	Bi	209		96.847
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Ti	47	
QC Std 6	Mo	98	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:27:20

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 12:28:14

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	255071.2	1.8				ug/L	250104	Standard
|	Be	9	20.0	90.1	0.0017	0.011	631.6	ug/L	7	Standard
|	Al	27	2545.2	36.4	0.0144	0.008	53.5	ug/L	597	Standard
|	Sc	45	44689.1	0.6				ug/L	41681	Standard
|	Ti	47	47.0	18.9	-0.1668	0.057	34.4	ug/L	86	Standard
|	V	51	1082.6	19.4	-0.0800	0.040	50.5	ug/L	1740	Standard
|	Cr	52	6454.4	0.9	0.0387	0.026	67.1	ug/L	7178	Standard
|	Cr	53	4399.0	12.6	5.8328	0.944	16.2	ug/L	573	Standard
|	Mn	55	3141.7	7.9	0.0661	0.035	52.9	ug/L	3072	Standard
|	Co	59	490.0	0.2	0.0130	0.001	7.9	ug/L	573	Standard
|	Ni	60	156.0	8.4	-0.0660	0.011	16.5	ug/L	264	Standard
|	Cu	65	538.7	9.6	0.0244	0.042	173.3	ug/L	530	Standard
|	Zn	66	314.3	4.5	0.0573	0.014	24.0	ug/L	252	Standard
>	Ge	72	573363.3	1.5				ug/L	641188	Standard
|	As	75	26.8	83.0	0.0771	0.029	37.5	ug/L	-83	Standard
|	Se	82	16.0	13.8	0.0117	0.033	284.1	ug/L	16	Standard
|	Se-1	77	452.3	15.6	7.2141	1.606	22.3	ug/L	126	Standard
>	Ga	71	50.0	10.0				mg/L	70	Standard
|	Rb	85	86.7	18.5				ug/L	33	Standard
|	Y	89	412716.1	2.5				ug/L	493982	Standard
>	Rh	103	48.3	26.0				ug/L	17	Standard
|	Mo	98	204.5	34.3	0.0540	0.027	49.6	ug/L	54	Standard
|	Ag	107	134.3	15.2	0.0047	0.005	99.1	ug/L	137	Standard
|	Cd	111	8.7	34.1	-0.0074	0.002	29.3	mg/L	6	Standard
|	Cd	114	32.6	39.1	-0.0016	0.003	213.4	ug/L	20	Standard
>	In	115	665988.2	1.7				ug/L	755264	Standard
|	Sn	118	151.3	11.0	0.0452	0.017	36.9	ug/L	138	Standard
|	Sb	123	856.4	14.9	0.1900	0.029	15.1	ug/L	391	Standard
|	Ba	135	148.0	71.9	0.0671	0.069	102.8	ug/L	32	Standard
|	Ce	140	20.0	25.0				ug/L	42	Standard
>	Tb	159	978805.9	2.7				ug/L	966827	Standard
|	Ho	165	11.7	65.5				ug/L	12	Standard
|	Tl	203	133.7	27.1	0.0149	0.006	42.2	ug/L	19	Standard
|	Tl	205	251.7	39.5	0.0150	0.007	48.4	ug/L	58	Standard
|	Pb	206	468.7	1.3	0.0021	0.003	134.0	ug/L	464	Standard
|	Pb	207	414.0	0.9	0.0040	0.002	58.7	ug/L	405	Standard
|	Pb	208	863.7	0.4	0.0031	0.001	37.9	ug/L	876	Standard
|	U	238	67.7	31.6	0.0046	0.002	45.4	ug/L	14	Standard
>	Bi	209	558684.1	1.6				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:30:25

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0313	0.774	2467.7	mg/L	3	Standard
Mg	24	33.3	31.2	0.0898	0.200	223.3	mg/L	30	Standard
K	39	25.0	20.0	0.0685	0.061	89.1	mg/L	10	Standard
Ca	43	53.3	19.5	-11.3570	5.656	49.8	mg/L	83	Standard
Fe	54	24.2	23.3	0.0979	0.083	84.5	mg/L	21	Standard
Fe	57	388.3	5.2	4.2553	1.004	23.6	mg/L	240	Standard
Sc-1	45	44689.1	0.6				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.0	50.0				ug/L	5	Standard
Br	81	1640.1	13.0				ug/L	1587	Standard
P	31	93.3	8.2				ug/L	50	Standard
S	34	33.3	8.7				ug/L	8	Standard
Sr	88	281.7	11.4				ug/L	198	Standard
C	12	6.7	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	15.2	70.4				mg/L	6	Standard
Ho-1	165	11.7	65.5				mg/L	12	Standard
Er	166	30.0	66.7				mg/L	10	Standard
I	127	9109.4	7.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		89.422	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:30:25

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	88.179
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.247
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

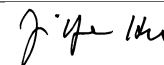
Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:30:25

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126105

Sample Date/Time: Tuesday, February 28, 2017 12:31:21

Number of Replicates: 3

Autosampler Position: 225

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	620227.4	1.0				ug/L	250104	Standard
|	Be	9	55.0	48.1	0.0034	0.007	197.0	ug/L	7	Standard
|	Al	27	9889040.8	2.5	32.7559	0.532	1.6	ug/L	597	Standard
|	Sc	45	47292.0	0.6				ug/L	41681	Standard
|	Ti	47	369.3	6.8	1.7290	0.089	5.1	ug/L	86	Standard
|	V	51	-271.5	401.8	-0.3199	0.182	57.0	ug/L	1740	Standard
|	Cr	52	18221.3	2.0	2.1337	0.039	1.8	ug/L	7178	Standard
|	Cr	53	29639.0	5.2	41.7094	0.976	2.3	ug/L	573	Standard
|	Mn	55	11295090.5	2.4	1262.7691	6.926	0.5	ug/L	3072	Standard
|	Co	59	14970.4	2.9	2.0814	0.030	1.4	ug/L	573	Standard
|	Ni	60	97481.7	1.9	65.5619	1.383	2.1	ug/L	264	Standard
|	Cu	65	3723.5	2.2	2.2468	0.059	2.6	ug/L	530	Standard
|	Zn	66	2554.2	2.6	2.7853	0.111	4.0	ug/L	252	Standard
>	Ge	72	607413.0	2.9				ug/L	641188	Standard
|	As	75	7397.6	3.1	9.0741	0.028	0.3	ug/L	-83	Standard
|	Se	82	443.2	8.4	6.0261	0.341	5.7	ug/L	16	Standard
|	Se-1	77	8045.5	3.2	156.8211	2.644	1.7	ug/L	126	Standard
>	Ga	71	1830.1	5.9				mg/L	70	Standard
|	Rb	85	3620872.9	3.2				ug/L	33	Standard
|	Y	89	479851.8	4.6				ug/L	493982	Standard
>	Rh	103	1046.7	4.4				ug/L	17	Standard
|	Mo	98	6790.5	5.6	2.3691	0.077	3.3	ug/L	54	Standard
|	Ag	107	165.3	12.6	0.0100	0.003	34.3	ug/L	137	Standard
|	Cd	111	32.6	13.4	0.0088	0.003	36.1	mg/L	6	Standard
|	Cd	114	96.4	12.0	0.0141	0.002	17.4	ug/L	20	Standard
>	In	115	689500.0	2.9				ug/L	755264	Standard
|	Sn	118	195.0	2.4	0.0892	0.003	3.7	ug/L	138	Standard
|	Sb	123	677.0	8.2	0.1389	0.010	7.2	ug/L	391	Standard
|	Ba	135	2703386.9	2.3	1656.7919	10.504	0.6	ug/L	32	Standard
|	Ce	140	891.7	4.8				ug/L	42	Standard
>	Tb	159	1064372.0	2.1				ug/L	966827	Standard
|	Ho	165	55.0	50.6				ug/L	12	Standard
|	Tl	203	198.0	25.5	0.0271	0.010	35.2	ug/L	19	Standard
|	Tl	205	483.3	36.2	0.0330	0.014	41.8	ug/L	58	Standard
|	Pb	206	662.3	2.7	0.0491	0.003	7.1	ug/L	464	Standard
|	Pb	207	534.7	7.9	0.0381	0.010	25.5	ug/L	405	Standard
|	Pb	208	1275.4	1.5	0.0536	0.005	9.1	ug/L	876	Standard
|	U	238	3885.2	2.0	0.3778	0.008	2.0	ug/L	14	Standard
>	Bi	209	531620.6	2.3				ug/L	599146	Standard

Sample ID: L1702126105

Report Date/Time: Tuesday, February 28, 2017 12:33:32

Page 1

Approved: March 01, 2017

Na	23	2788.6	4.0	709.2362	31.755	4.5	mg/L	3	Standard
Mg	24	2378.5	6.2	41.8723	2.770	6.6	mg/L	30	Standard
K	39	11741.2	5.3	137.7701	7.675	5.6	mg/L	10	Standard
Ca	43	2358.5	3.4	1174.0888	37.643	3.2	mg/L	83	Standard
Fe	54	155.4	19.6	1.8576	0.404	21.7	mg/L	21	Standard
Fe	57	5014.2	1.8	229.8066	4.896	2.1	mg/L	240	Standard
Sc-1	45	47292.0	0.6				mg/L	41681	Standard
Cl	35	2.7	43.3				ug/L	2	Standard
Kr	83	2.7	43.3				ug/L	5	Standard
Br	81	83403.0	6.8				ug/L	1587	Standard
P	31	95.0	9.1				ug/L	50	Standard
S	34	35.0	14.3				ug/L	8	Standard
Sr	88	355.0	5.6				ug/L	198	Standard
C	12	240.0	33.1				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	13.3	43.3				mg/L	3	Standard
Dy	164	27.6	4.6				mg/L	6	Standard
Ho-1	165	55.0	50.6				mg/L	12	Standard
Er	166	50.0	52.9				mg/L	10	Standard
I	127	191148.6	11.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		247.988	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.732	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126105

Report Date/Time: Tuesday, February 28, 2017 12:33:32

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	91.293
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	88.730
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Mn 55 Upper, S, EEE	Mn	55	
Se-1 77 Upper, S, EEE	Se-1	77	

Sample ID: L1702126105

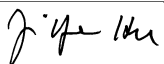
Report Date/Time: Tuesday, February 28, 2017 12:33:32

Page 3

Approved: March 01, 2017



Sample ID: L1702126105
Report Date/Time: Tuesday, February 28, 2017 12:33:32
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702126201

Sample Date/Time: Tuesday, February 28, 2017 12:34:27

Number of Replicates: 3

Autosampler Position: 226

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	297155.9	1.2				ug/L	250104	Standard
|	Be	9	28.3	27.0	0.0044	0.004	91.3	ug/L	7	Standard
|	Al	27	46773513.1	1.5	323.4678	4.259	1.3	ug/L	597	Standard
|	Sc	45	47688.3	2.6				ug/L	41681	Standard
|	Ti	47	130.0	9.3	0.3207	0.073	22.8	ug/L	86	Standard
|	V	51	-3139.7	30.1	-0.8216	0.164	20.0	ug/L	1740	Standard
|	Cr	52	143790.8	0.8	25.6271	0.219	0.9	ug/L	7178	Standard
|	Cr	53	42161.9	1.0	60.6206	0.667	1.1	ug/L	573	Standard
|	Mn	55	28954043.7	1.1	3284.7740	36.931	1.1	ug/L	3072	Standard
|	Co	59	27142.6	0.8	3.8805	0.031	0.8	ug/L	573	Standard
|	Ni	60	33760.9	1.9	22.9180	0.459	2.0	ug/L	264	Standard
|	Cu	65	1688.1	4.2	0.8291	0.050	6.0	ug/L	530	Standard
|	Zn	66	2926.9	1.4	3.2941	0.048	1.4	ug/L	252	Standard
>	Ge	72	598608.2	0.1				ug/L	641188	Standard
|	As	75	700.8	21.1	0.9104	0.183	20.1	ug/L	-83	Standard
|	Se	82	150.4	6.7	1.9285	0.147	7.6	ug/L	16	Standard
|	Se-1	77	4147.2	3.4	80.9392	2.830	3.5	ug/L	126	Standard
>	Ga	71	291.7	21.3				mg/L	70	Standard
|	Rb	85	11160.8	4.1				ug/L	33	Standard
|	Y	89	455079.6	1.8				ug/L	493982	Standard
>	Rh	103	1058.4	9.9				ug/L	17	Standard
|	Mo	98	1214.3	2.6	0.4044	0.012	3.0	ug/L	54	Standard
|	Ag	107	139.0	11.1	0.0045	0.003	73.0	ug/L	137	Standard
|	Cd	111	42.8	18.7	0.0157	0.006	35.9	mg/L	6	Standard
|	Cd	114	108.2	19.6	0.0169	0.005	31.9	ug/L	20	Standard
>	In	115	693318.8	0.6				ug/L	755264	Standard
|	Sn	118	191.7	7.4	0.0841	0.016	18.5	ug/L	138	Standard
|	Sb	123	285.8	3.5	0.0429	0.003	5.9	ug/L	391	Standard
|	Ba	135	562170.4	0.9	342.5879	4.889	1.4	ug/L	32	Standard
|	Ce	140	2678.6	0.6				ug/L	42	Standard
>	Tb	159	1050001.4	1.3				ug/L	966827	Standard
|	Ho	165	26.7	10.8				ug/L	12	Standard
|	Tl	203	360.3	3.3	0.0526	0.002	3.3	ug/L	19	Standard
|	Tl	205	840.0	7.8	0.0567	0.004	7.2	ug/L	58	Standard
|	Pb	206	856.0	2.7	0.0847	0.005	5.3	ug/L	464	Standard
|	Pb	207	685.3	2.2	0.0690	0.004	6.5	ug/L	405	Standard
|	Pb	208	1567.0	4.6	0.0800	0.009	11.6	ug/L	876	Standard
|	U	238	7619.9	1.2	0.7169	0.012	1.6	ug/L	14	Standard
>	Bi	209	550591.7	0.9				ug/L	599146	Standard

Sample ID: L1702126201

Report Date/Time: Tuesday, February 28, 2017 12:36:37

Page 1

Approved: March 01, 2017

Na	23	1023.4	4.4	257.8864	13.349	5.2	mg/L	3	Standard
Mg	24	3487.1	5.4	61.1440	3.869	6.3	mg/L	30	Standard
K	39	491.7	6.8	5.4843	0.238	4.3	mg/L	10	Standard
Ca	43	851.7	3.4	394.8587	22.703	5.7	mg/L	83	Standard
Fe	54	210.5	17.2	2.5933	0.552	21.3	mg/L	21	Standard
Fe	57	1850.1	8.3	74.0783	8.280	11.2	mg/L	240	Standard
Sc-1	45	47688.3	2.6				mg/L	41681	Standard
Cl	35	2.7	86.6				ug/L	2	Standard
Kr	83	4.0	0.0				ug/L	5	Standard
Br	81	39976.0	3.0				ug/L	1587	Standard
P	31	88.3	17.3				ug/L	50	Standard
S	34	33.3	62.5				ug/L	8	Standard
Sr	88	361.7	5.8				ug/L	198	Standard
C	12	23.3	24.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	70.3	46.4				mg/L	6	Standard
Ho-1	165	26.7	10.8				mg/L	12	Standard
Er	166	63.3	24.1				mg/L	10	Standard
I	127	156385.5	9.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		118.813	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		93.359	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126201

Report Date/Time: Tuesday, February 28, 2017 12:36:37

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	91.798
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	91.896
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702126201

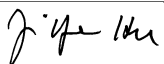
Report Date/Time: Tuesday, February 28, 2017 12:36:37

Page 3

Approved: March 01, 2017



Sample ID: L1702126201
Report Date/Time: Tuesday, February 28, 2017 12:36:37
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702126202

Sample Date/Time: Tuesday, February 28, 2017 12:37:31

Number of Replicates: 3

Autosampler Position: 227

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	387205.5	1.0				ug/L	250104	Standard
|	Be	9	18.3	41.7	-0.0030	0.003	99.9	ug/L	7	Standard
|	Al	27	92916110.7	1.9	493.2079	13.979	2.8	ug/L	597	Standard
|	Sc	45	41869.4	0.5				ug/L	41681	Standard
|	Ti	47	251.0	6.3	1.2502	0.095	7.6	ug/L	86	Standard
|	V	51	-4158.5	2.1	-1.0945	0.023	2.1	ug/L	1740	Standard
|	Cr	52	13357.9	1.1	1.6057	0.054	3.4	ug/L	7178	Standard
|	Cr	53	41760.9	4.8	68.1083	2.830	4.2	ug/L	573	Standard
|	Mn	55	106772931.0	1.2	13723.4383	259.385	1.9	ug/L	3072	Standard
|	Co	59	53393.9	1.1	8.7232	0.161	1.8	ug/L	573	Standard
|	Ni	60	75042.2	3.8	57.9872	2.680	4.6	ug/L	264	Standard
|	Cu	65	7112.3	4.0	5.3850	0.285	5.3	ug/L	530	Standard
|	Zn	66	11963.1	3.7	16.5288	0.703	4.3	ug/L	252	Standard
>	Ge	72	528453.5	0.9				ug/L	641188	Standard
|	As	75	-512.4	31.0	-0.6756	0.218	32.3	ug/L	-83	Standard
|	Se	82	361.6	25.4	5.6511	1.543	27.3	ug/L	16	Standard
|	Se-1	77	17045.9	5.1	385.0625	16.688	4.3	ug/L	126	Standard
>	Ga	71	766.7	5.3				mg/L	70	Standard
|	Rb	85	74687.0	1.8				ug/L	33	Standard
|	Y	89	436332.6	1.3				ug/L	493982	Standard
>	Rh	103	5004.2	5.8				ug/L	17	Standard
|	Mo	98	2017.1	1.7	0.8248	0.019	2.3	ug/L	54	Standard
|	Ag	107	184.0	4.1	0.0210	0.002	7.4	ug/L	137	Standard
|	Cd	111	124.0	2.0	0.0881	0.003	3.0	mg/L	6	Standard
|	Cd	114	341.7	10.7	0.0921	0.011	12.0	ug/L	20	Standard
>	In	115	579139.9	0.7				ug/L	755264	Standard
|	Sn	118	184.0	7.7	0.1166	0.018	15.4	ug/L	138	Standard
|	Sb	123	1132.5	6.4	0.3033	0.023	7.7	ug/L	391	Standard
|	Ba	135	22229820.4	2.0	16219.7327	412.276	2.5	ug/L	32	Standard
|	Ce	140	1225.0	4.7				ug/L	42	Standard
>	Tb	159	990294.6	1.5				ug/L	966827	Standard
|	Ho	165	23.3	32.7				ug/L	12	Standard
|	Tl	203	323.0	9.1	0.0645	0.007	11.3	ug/L	19	Standard
|	Tl	205	695.0	30.6	0.0632	0.021	33.1	ug/L	58	Standard
|	Pb	206	506.7	10.6	0.0474	0.016	34.0	ug/L	464	Standard
|	Pb	207	426.0	4.5	0.0418	0.005	12.7	ug/L	405	Standard
|	Pb	208	1141.7	1.2	0.0756	0.004	4.7	ug/L	876	Standard
|	U	238	20557.9	2.2	2.5905	0.066	2.5	ug/L	14	Standard
>	Bi	209	411796.4	1.0				ug/L	599146	Standard

Sample ID: L1702126202

Report Date/Time: Tuesday, February 28, 2017 12:39:42

Page 1

Approved: March 01, 2017

Na	23	4345.6	0.7	1248.5632	8.423	0.7	mg/L	3	Standard
Mg	24	12366.7	2.1	248.4781	4.049	1.6	mg/L	30	Standard
K	39	3557.1	3.6	46.9753	1.501	3.2	mg/L	10	Standard
Ca	43	3452.1	2.6	1967.5830	53.317	2.7	mg/L	83	Standard
Fe	54	499.5	10.4	7.4079	0.823	11.1	mg/L	21	Standard
Fe	57	7153.4	4.9	379.9484	17.459	4.6	mg/L	240	Standard
Sc-1	45	41869.4	0.5				mg/L	41681	Standard
Cl	35	2.0	0.0				ug/L	2	Standard
Kr	83	5.7	20.4				ug/L	5	Standard
Br	81	212970.1	2.2				ug/L	1587	Standard
P	31	75.0	40.6				ug/L	50	Standard
S	34	31.7	39.7				ug/L	8	Standard
Sr	88	628.3	13.0				ug/L	198	Standard
C	12	50.0	52.9				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	31.6	19.2				mg/L	6	Standard
Ho-1	165	23.3	32.7				mg/L	12	Standard
Er	166	36.7	15.7				mg/L	10	Standard
I	127	648644.4	10.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		154.818	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		82.418	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126202

Report Date/Time: Tuesday, February 28, 2017 12:39:42

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.680
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	68.731
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702126202

Report Date/Time: Tuesday, February 28, 2017 12:39:42

Page 3

Approved: March 01, 2017



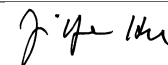
Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702126202

Report Date/Time: Tuesday, February 28, 2017 12:39:42

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126203

Sample Date/Time: Tuesday, February 28, 2017 12:40:37

Number of Replicates: 3

Autosampler Position: 228

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	286177.4	0.7				ug/L	250104	Standard
|	Be	9	45.0	50.9	0.0139	0.012	87.5	ug/L	7	Standard
|	Al	27	36718685.7	0.4	263.6662	0.773	0.3	ug/L	597	Standard
|	Sc	45	46529.7	0.3				ug/L	41681	Standard
|	Ti	47	100.0	2.6	0.1380	0.020	14.7	ug/L	86	Standard
|	V	51	-2370.3	14.9	-0.6871	0.064	9.4	ug/L	1740	Standard
|	Cr	52	111953.8	1.1	19.6144	0.220	1.1	ug/L	7178	Standard
|	Cr	53	39451.3	2.9	56.4837	1.932	3.4	ug/L	573	Standard
|	Mn	55	47211685.9	2.1	5338.6016	105.648	2.0	ug/L	3072	Standard
|	Co	59	27379.1	1.8	3.9019	0.079	2.0	ug/L	573	Standard
|	Ni	60	31552.8	1.6	21.3368	0.362	1.7	ug/L	264	Standard
|	Cu	65	1661.4	0.9	0.8063	0.020	2.5	ug/L	530	Standard
|	Zn	66	2082.8	1.6	2.2343	0.045	2.0	ug/L	252	Standard
>	Ge	72	600588.2	0.9				ug/L	641188	Standard
|	As	75	349.5	73.3	0.4723	0.315	66.6	ug/L	-83	Standard
|	Se	82	102.3	16.6	1.2338	0.239	19.4	ug/L	16	Standard
|	Se-1	77	4212.9	7.5	81.9883	6.463	7.9	ug/L	126	Standard
>	Ga	71	380.0	12.6				mg/L	70	Standard
|	Rb	85	7205.0	4.5				ug/L	33	Standard
|	Y	89	436389.7	2.7				ug/L	493982	Standard
>	Rh	103	726.7	10.7				ug/L	17	Standard
|	Mo	98	768.9	0.8	0.2491	0.005	2.0	ug/L	54	Standard
|	Ag	107	139.3	1.8	0.0046	0.001	12.1	ug/L	137	Standard
|	Cd	111	134.0	6.8	0.0784	0.007	9.3	mg/L	6	Standard
|	Cd	114	411.8	5.3	0.0930	0.005	5.7	ug/L	20	Standard
>	In	115	691694.7	1.1				ug/L	755264	Standard
|	Sn	118	180.0	30.2	0.0712	0.061	85.6	ug/L	138	Standard
|	Sb	123	209.8	5.6	0.0246	0.003	11.3	ug/L	391	Standard
|	Ba	135	374590.0	0.3	228.8132	3.181	1.4	ug/L	32	Standard
|	Ce	140	1381.7	2.4				ug/L	42	Standard
>	Tb	159	1068444.0	1.7				ug/L	966827	Standard
|	Ho	165	46.7	22.3				ug/L	12	Standard
|	Tl	203	419.0	14.3	0.0616	0.011	17.2	ug/L	19	Standard
|	Tl	205	923.4	18.5	0.0620	0.013	20.5	ug/L	58	Standard
|	Pb	206	662.7	2.6	0.0426	0.004	10.4	ug/L	464	Standard
|	Pb	207	547.0	7.1	0.0351	0.010	27.3	ug/L	405	Standard
|	Pb	208	1228.0	1.2	0.0420	0.000	1.1	ug/L	876	Standard
|	U	238	11629.1	1.5	1.0824	0.005	0.4	ug/L	14	Standard
>	Bi	209	556905.1	1.1				ug/L	599146	Standard

Sample ID: L1702126203

Report Date/Time: Tuesday, February 28, 2017 12:42:48

Page 1

Approved: March 01, 2017

Na	23	758.4	6.6	195.6425	12.599	6.4	mg/L	3	Standard
Mg	24	2908.6	1.1	52.1668	0.732	1.4	mg/L	30	Standard
K	39	478.3	6.7	5.4722	0.392	7.2	mg/L	10	Standard
Ca	43	651.7	16.2	300.6568	55.124	18.3	mg/L	83	Standard
Fe	54	122.3	16.6	1.4364	0.276	19.2	mg/L	21	Standard
Fe	57	1556.7	3.8	61.6506	3.143	5.1	mg/L	240	Standard
Sc-1	45	46529.7	0.3				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	5.7	81.5				ug/L	5	Standard
Br	81	30995.0	1.3				ug/L	1587	Standard
P	31	85.0	35.8				ug/L	50	Standard
S	34	28.3	53.9				ug/L	8	Standard
Sr	88	328.3	15.6				ug/L	198	Standard
C	12	40.0	25.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	37.4	0.7				mg/L	6	Standard
Ho-1	165	46.7	22.3				mg/L	12	Standard
Er	166	53.3	10.8				mg/L	10	Standard
I	127	207760.0	1.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		114.424	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		93.668	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126203

Report Date/Time: Tuesday, February 28, 2017 12:42:48

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	91.583
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	92.950
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702126203

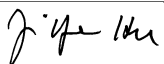
Report Date/Time: Tuesday, February 28, 2017 12:42:48

Page 3

Approved: March 01, 2017



Sample ID: L1702126203
Report Date/Time: Tuesday, February 28, 2017 12:42:48
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 12:43:44

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	260423.0	2.1				ug/L	250104	Standard
|	Be	9	82254.3	0.0	48.5715	0.998	2.1	ug/L	7	Standard
|	Al	27	5866536.6	0.7	46.3039	1.271	2.7	ug/L	597	Standard
|	Sc	45	47148.3	1.4				ug/L	41681	Standard
|	Ti	47	19040.0	0.7	113.5446	0.730	0.6	ug/L	86	Standard
|	V	51	308463.4	1.3	52.9347	0.172	0.3	ug/L	1740	Standard
|	Cr	52	290030.8	1.0	52.5880	0.340	0.6	ug/L	7178	Standard
|	Cr	53	45095.4	3.4	64.4957	2.695	4.2	ug/L	573	Standard
|	Mn	55	502363.7	9.5	56.3479	5.635	10.0	ug/L	3072	Standard
|	Co	59	362041.3	0.9	52.1842	0.406	0.8	ug/L	573	Standard
|	Ni	60	76963.3	1.4	52.1391	0.665	1.3	ug/L	264	Standard
|	Cu	65	72618.3	0.4	51.2284	0.731	1.4	ug/L	530	Standard
|	Zn	66	40320.2	0.7	49.5519	0.704	1.4	ug/L	252	Standard
>	Ge	72	602431.5	1.0				ug/L	641188	Standard
|	As	75	38609.3	0.7	47.5768	0.698	1.5	ug/L	-83	Standard
|	Se	82	3201.2	0.4	45.3666	0.585	1.3	ug/L	16	Standard
|	Se-1	77	3260.7	5.4	62.7572	4.037	6.4	ug/L	126	Standard
>	Ga	71	90.0	40.1				mg/L	70	Standard
|	Rb	85	653.3	8.2				ug/L	33	Standard
|	Y	89	423007.3	1.0				ug/L	493982	Standard
>	Rh	103	43.3	58.1				ug/L	17	Standard
|	Mo	98	252012.3	1.8	88.2523	0.473	0.5	ug/L	54	Standard
|	Ag	107	234175.5	0.7	47.5713	0.328	0.7	ug/L	137	Standard
|	Cd	111	68451.3	1.7	46.9070	0.182	0.4	mg/L	6	Standard
|	Cd	114	192344.9	0.8	48.0514	0.792	1.6	ug/L	20	Standard
>	In	115	693068.5	1.4				ug/L	755264	Standard
|	Sn	118	43289.1	1.1	49.0890	0.370	0.8	ug/L	138	Standard
|	Sb	123	201254.0	0.7	48.9507	0.567	1.2	ug/L	391	Standard
|	Ba	135	86713.5	2.0	52.8362	0.692	1.3	ug/L	32	Standard
|	Ce	140	83.3	18.3				ug/L	42	Standard
>	Tb	159	1028560.3	1.2				ug/L	966827	Standard
|	Ho	165	25.0	72.1				ug/L	12	Standard
|	Tl	203	313499.0	1.2	49.0561	0.737	1.5	ug/L	19	Standard
|	Tl	205	732140.1	0.3	49.0009	0.760	1.6	ug/L	58	Standard
|	Pb	206	246929.9	1.6	48.9188	0.413	0.8	ug/L	464	Standard
|	Pb	207	220089.7	0.9	48.7365	0.412	0.8	ug/L	405	Standard
|	Pb	208	474747.0	1.2	48.1777	0.709	1.5	ug/L	876	Standard
|	U	238	515055.4	1.6	45.9744	0.748	1.6	ug/L	14	Standard
>	Bi	209	581663.6	1.3				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:45:55

Page 1

Approved: March 01, 2017

Na	23	33.3	37.7	8.0351	3.254	40.5	mg/L	3	Standard
Mg	24	298.3	25.2	4.7864	1.279	26.7	mg/L	30	Standard
K	39	705.0	4.7	8.0732	0.484	6.0	mg/L	10	Standard
Ca	43	73.3	21.9	-2.4643	8.735	354.4	mg/L	83	Standard
Fe	54	283.5	18.1	3.6096	0.709	19.7	mg/L	21	Standard
Fe	57	516.7	1.5	9.5134	0.038	0.4	mg/L	240	Standard
Sc-1	45	47148.3	1.4				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	6.7	22.9				ug/L	5	Standard
Br	81	2146.8	5.9				ug/L	1587	Standard
P	31	80.0	62.5				ug/L	50	Standard
S	34	25.0	40.0				ug/L	8	Standard
Sr	88	310.0	10.1				ug/L	198	Standard
C	12	13.3	43.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.4	5.9				mg/L	6	Standard
Ho-1	165	25.0	72.1				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	14058.5	27.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	97.143		
Al	27	92.608		
Sc	45			
Ti	47	113.545		
V	51	105.869		
Cr	52	105.176		
Cr	53			
Mn	55	112.696		
Co	59	104.368		
Ni	60	104.278		
Cu	65	102.457		
Zn	66	99.104		
Ge	72		93.955	
As	75	95.154		
Se	82	90.733		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:45:55

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	88.252	
[	Ag	107	95.143	
[	Cd	111	93.814	
[	Cd	114		
>	In	115		91.765
[	Sn	118	98.178	
[	Sb	123	97.901	
[	Ba	135	105.672	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	98.112	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	96.355	
[	U	238	91.949	
>	Bi	209		97.082
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Ti	47	
QC Std 6	Mn	55	
QC Std 6	Mo	98	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 12:45:55

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 12:46:50

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	258041.2	2.3				ug/L	250104	Standard
|	Be	9	23.3	12.4	0.0037	0.002	51.8	ug/L	7	Standard
|	Al	27	2196.8	27.7	0.0114	0.005	44.8	ug/L	597	Standard
|	Sc	45	46986.1	2.2				ug/L	41681	Standard
|	Ti	47	46.0	9.5	-0.1880	0.028	15.0	ug/L	86	Standard
|	V	51	648.6	38.9	-0.1649	0.044	26.9	ug/L	1740	Standard
|	Cr	52	6547.7	0.3	-0.0089	0.008	85.0	ug/L	7178	Standard
|	Cr	53	5994.5	6.5	7.7859	0.602	7.7	ug/L	573	Standard
|	Mn	55	3970.5	15.9	0.1397	0.071	50.7	ug/L	3072	Standard
|	Co	59	424.0	3.3	-0.0003	0.002	706.8	ug/L	573	Standard
|	Ni	60	155.3	7.6	-0.0723	0.008	11.5	ug/L	264	Standard
|	Cu	65	585.3	3.8	0.0365	0.013	37.0	ug/L	530	Standard
|	Zn	66	336.0	4.2	0.0631	0.017	26.2	ug/L	252	Standard
>	Ge	72	604436.5	0.9				ug/L	641188	Standard
|	As	75	-75.1	61.8	-0.0498	0.057	114.4	ug/L	-83	Standard
|	Se	82	14.5	55.8	-0.0225	0.113	502.0	ug/L	16	Standard
|	Se-1	77	485.3	7.4	7.3740	0.793	10.8	ug/L	126	Standard
>	Ga	71	80.0	25.0				mg/L	70	Standard
|	Rb	85	81.7	38.9				ug/L	33	Standard
|	Y	89	429347.5	3.3				ug/L	493982	Standard
>	Rh	103	30.0	92.8				ug/L	17	Standard
|	Mo	98	197.2	28.6	0.0481	0.020	42.2	ug/L	54	Standard
|	Ag	107	138.3	24.4	0.0042	0.006	151.7	ug/L	137	Standard
|	Cd	111	11.7	37.0	-0.0056	0.003	50.6	mg/L	6	Standard
|	Cd	114	42.7	6.4	0.0005	0.001	106.7	ug/L	20	Standard
>	In	115	695460.1	1.4				ug/L	755264	Standard
|	Sn	118	148.7	4.1	0.0347	0.004	12.9	ug/L	138	Standard
|	Sb	123	926.2	12.9	0.1979	0.028	14.2	ug/L	391	Standard
|	Ba	135	106.3	45.3	0.0372	0.030	79.6	ug/L	32	Standard
|	Ce	140	35.0	0.0				ug/L	42	Standard
>	Tb	159	1017828.2	2.1				ug/L	966827	Standard
|	Ho	165	13.3	43.3				ug/L	12	Standard
|	Tl	203	75.3	6.0	0.0049	0.001	16.4	ug/L	19	Standard
|	Tl	205	183.3	23.2	0.0098	0.003	30.0	ug/L	58	Standard
|	Pb	206	473.3	6.6	-0.0001	0.006	5602.8	ug/L	464	Standard
|	Pb	207	422.3	1.9	0.0028	0.003	91.0	ug/L	405	Standard
|	Pb	208	904.0	3.7	0.0043	0.004	84.6	ug/L	876	Standard
|	U	238	57.3	11.2	0.0035	0.001	15.8	ug/L	14	Standard
>	Bi	209	577168.4	0.8				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:49:00

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	0.3793	0.743	195.9	mg/L	3	Standard
Mg	24	35.0	49.5	0.0898	0.314	350.1	mg/L	30	Standard
K	39	15.0	0.0	-0.0648	0.004	6.0	mg/L	10	Standard
Ca	43	38.3	37.7	-20.4400	8.002	39.1	mg/L	83	Standard
Fe	54	34.3	28.3	0.2214	0.142	64.1	mg/L	21	Standard
Fe	57	353.3	5.4	1.5651	1.325	84.6	mg/L	240	Standard
Sc-1	45	46986.1	2.2				mg/L	41681	Standard
Cl	35	2.0	0.0				ug/L	2	Standard
Kr	83	4.7	86.6				ug/L	5	Standard
Br	81	1430.1	3.2				ug/L	1587	Standard
P	31	70.0	21.4				ug/L	50	Standard
S	34	33.3	52.7				ug/L	8	Standard
Sr	88	266.7	15.7				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	12.5	51.6				mg/L	6	Standard
Ho-1	165	13.3	43.3				mg/L	12	Standard
Er	166	16.7	91.7				mg/L	10	Standard
I	127	9251.2	4.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.268	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:49:00

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	92.082
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	96.332
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 12:49:00

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 8

Sample Date/Time: Tuesday, February 28, 2017 12:58:21

Number of Replicates: 3

Autosampler Position: 202

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	244358.4	1.7				ug/L	250104	Standard
|	Be	9	293.3	11.1	0.1741	0.017	10.0	ug/L	7	Standard
|	Al	27	890.0	3.9	0.0013	0.000	23.4	ug/L	597	Standard
|	Sc	45	44784.4	1.1				ug/L	41681	Standard
|	Ti	47	45.0	7.7	-0.1774	0.025	14.2	ug/L	86	Standard
|	V	51	3510.3	1.5	0.3643	0.014	3.8	ug/L	1740	Standard
|	Cr	52	12661.3	1.9	1.2658	0.025	2.0	ug/L	7178	Standard
|	Cr	53	4065.5	1.9	5.3605	0.120	2.2	ug/L	573	Standard
|	Mn	55	6587.4	0.8	0.4796	0.011	2.4	ug/L	3072	Standard
|	Co	59	2934.0	3.0	0.3869	0.019	4.9	ug/L	573	Standard
|	Ni	60	2315.2	1.9	1.4880	0.045	3.0	ug/L	264	Standard
|	Cu	65	1510.1	4.1	0.7572	0.033	4.4	ug/L	530	Standard
|	Zn	66	4686.7	0.6	5.7870	0.086	1.5	ug/L	252	Standard
>	Ge	72	569305.0	1.2				ug/L	641188	Standard
|	As	75	295.8	16.1	0.4276	0.062	14.5	ug/L	-83	Standard
|	Se	82	45.5	10.6	0.4588	0.077	16.8	ug/L	16	Standard
|	Se-1	77	263.3	12.6	3.2774	0.646	19.7	ug/L	126	Standard
>	Ga	71	50.0	0.0				mg/L	70	Standard
|	Rb	85	43.3	6.7				ug/L	33	Standard
|	Y	89	393740.9	1.2				ug/L	493982	Standard
>	Rh	103	30.0	0.0				ug/L	17	Standard
|	Mo	98	44.6	12.2	-0.0042	0.002	47.7	ug/L	54	Standard
|	Ag	107	1673.1	4.5	0.3380	0.011	3.3	ug/L	137	Standard
|	Cd	111	283.6	5.5	0.1931	0.009	4.9	mg/L	6	Standard
|	Cd	114	874.3	4.6	0.2224	0.013	5.8	ug/L	20	Standard
>	In	115	651395.7	1.5				ug/L	755264	Standard
|	Sn	118	91.0	2.2	-0.0236	0.004	15.1	ug/L	138	Standard
|	Sb	123	1595.2	2.9	0.3864	0.011	2.9	ug/L	391	Standard
|	Ba	135	1133.0	3.5	0.7076	0.032	4.5	ug/L	32	Standard
|	Ce	140	23.3	32.7				ug/L	42	Standard
>	Tb	159	972576.7	1.5				ug/L	966827	Standard
|	Ho	165	8.3	69.3				ug/L	12	Standard
|	Tl	203	494.3	4.0	0.0751	0.003	4.6	ug/L	19	Standard
|	Tl	205	1088.4	6.2	0.0746	0.005	6.1	ug/L	58	Standard
|	Pb	206	1305.1	1.4	0.1800	0.005	2.8	ug/L	464	Standard
|	Pb	207	1116.7	3.3	0.1711	0.008	4.5	ug/L	405	Standard
|	Pb	208	2540.8	1.8	0.1856	0.005	2.7	ug/L	876	Standard
|	U	238	3879.5	3.6	0.3656	0.012	3.3	ug/L	14	Standard
>	Bi	209	548330.1	0.4				ug/L	599146	Standard

Sample ID: QC Std 8

Report Date/Time: Tuesday, February 28, 2017 13:00:32

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0355	0.766	2158.9	mg/L	3	Standard
Mg	24	33.3	17.3	0.0879	0.111	125.7	mg/L	30	Standard
K	39	21.7	35.3	0.0261	0.092	352.6	mg/L	10	Standard
Ca	43	48.3	11.9	-14.1309	3.219	22.8	mg/L	83	Standard
Fe	54	36.2	34.9	0.2700	0.185	68.4	mg/L	21	Standard
Fe	57	433.3	13.4	6.5399	2.981	45.6	mg/L	240	Standard
Sc-1	45	44784.4	1.1				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	5.0	34.6				ug/L	5	Standard
Br	81	1443.4	3.8				ug/L	1587	Standard
P	31	63.3	43.5				ug/L	50	Standard
S	34	20.0	50.0				ug/L	8	Standard
Sr	88	275.0	9.4				ug/L	198	Standard
C	12	23.3	65.5				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	12.4	119.6				mg/L	6	Standard
Ho-1	165	8.3	69.3				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	4594.0	4.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	87.064		
Al	27			
Sc	45			
Ti	47			
V	51	91.080		
Cr	52	158.227		
Cr	53			
Mn	55	95.911		
Co	59	96.715		
Ni	60	93.001		
Cu	65	94.645		
Zn	66	92.592		
Ge	72		88.789	
As	75	106.910		
Se	82	114.699		
Se-1	77			
Ga	71			

Sample ID: QC Std 8

Report Date/Time: Tuesday, February 28, 2017 13:00:32

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98		
[	Ag	107	84.488	
[	Cd	111	80.477	
[	Cd	114		
>	In	115		86.247
[	Sn	118		
[	Sb	123	96.606	
[	Ba	135	94.352	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	93.889	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	92.819	
[	U	238	91.400	
>	Bi	209		91.519
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 8	Cr	52	

Sample ID: QC Std 8

Report Date/Time: Tuesday, February 28, 2017 13:00:32

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126102PS WG604209-03

Sample Date/Time: Tuesday, February 28, 2017 13:13:00

Number of Replicates: 3

Autosampler Position: 229

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	259089.8	4.8				ug/L	250104	Standard
|	Be	9	86516.3	1.0	51.4067	2.183	4.2	ug/L	7	Standard
|	Al	27	725579.5	0.8	5.7594	0.330	5.7	ug/L	597	Standard
|	Sc	45	47746.9	4.2				ug/L	41681	Standard
|	Ti	47	119.3	11.7	0.2472	0.065	26.1	ug/L	86	Standard
|	V	51	325545.3	1.8	55.6327	1.139	2.0	ug/L	1740	Standard
|	Cr	52	299520.0	1.6	54.1038	1.269	2.3	ug/L	7178	Standard
|	Cr	53	40965.4	4.0	58.1994	0.480	0.8	ug/L	573	Standard
|	Mn	55	515314.5	4.2	57.6174	4.678	8.1	ug/L	3072	Standard
|	Co	59	370020.5	0.6	53.1229	2.148	4.0	ug/L	573	Standard
|	Ni	60	79380.4	0.4	53.5699	2.256	4.2	ug/L	264	Standard
|	Cu	65	75851.1	1.3	53.3082	2.287	4.3	ug/L	530	Standard
|	Zn	66	43261.7	1.4	52.9623	1.688	3.2	ug/L	252	Standard
>	Ge	72	605433.0	3.8				ug/L	641188	Standard
|	As	75	40685.5	0.2	49.9311	2.035	4.1	ug/L	-83	Standard
|	Se	82	3261.8	2.2	46.0653	2.810	6.1	ug/L	16	Standard
|	Se-1	77	2688.9	2.7	51.1198	2.466	4.8	ug/L	126	Standard
>	Ga	71	103.3	45.0				mg/L	70	Standard
|	Rb	85	12138.2	1.7				ug/L	33	Standard
|	Y	89	420492.1	4.4				ug/L	493982	Standard
>	Rh	103	80.0	33.1				ug/L	17	Standard
|	Mo	98	4416.6	0.2	1.5517	0.053	3.4	ug/L	54	Standard
|	Ag	107	219410.0	1.0	45.3114	1.968	4.3	ug/L	137	Standard
|	Cd	111	69103.6	1.0	48.1455	2.096	4.4	mg/L	6	Standard
|	Cd	114	190719.4	2.4	48.4465	2.731	5.6	ug/L	20	Standard
>	In	115	682342.7	3.3				ug/L	755264	Standard
|	Sn	118	210.0	6.1	0.1089	0.013	12.0	ug/L	138	Standard
|	Sb	123	209189.4	1.3	51.7284	2.355	4.6	ug/L	391	Standard
|	Ba	135	224347.9	1.2	139.0314	6.314	4.5	ug/L	32	Standard
|	Ce	140	501.7	4.5				ug/L	42	Standard
>	Tb	159	1007556.0	4.0				ug/L	966827	Standard
|	Ho	165	56.7	25.5				ug/L	12	Standard
|	Tl	203	314317.2	0.6	50.9282	2.574	5.1	ug/L	19	Standard
|	Tl	205	735101.5	1.2	50.9376	2.505	4.9	ug/L	58	Standard
|	Pb	206	247694.3	0.5	50.8105	2.331	4.6	ug/L	464	Standard
|	Pb	207	220342.1	1.1	50.5101	2.025	4.0	ug/L	405	Standard
|	Pb	208	480465.9	1.1	50.4661	1.685	3.3	ug/L	876	Standard
|	U	238	535958.9	2.2	49.4962	1.066	2.2	ug/L	14	Standard
>	Bi	209	562517.8	4.3				ug/L	599146	Standard

Sample ID: L1702126102PS WG604209-03

Report Date/Time: Tuesday, February 28, 2017 13:15:11

Page 1

Approved: March 01, 2017

Na	23	10.0	100.0	1.9756	2.428	122.9	mg/L	3	Standard
Mg	24	3598.8	2.3	63.0529	1.895	3.0	mg/L	30	Standard
K	39	76.7	26.4	0.6575	0.271	41.2	mg/L	10	Standard
Ca	43	76.7	27.2	-1.5411	9.048	587.1	mg/L	83	Standard
Fe	54	33.3	15.0	0.1996	0.074	37.0	mg/L	21	Standard
Fe	57	425.0	20.4	4.8343	4.641	96.0	mg/L	240	Standard
Sc-1	45	47746.9	4.2				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	5.0	87.2				ug/L	5	Standard
Br	81	5461.0	8.5				ug/L	1587	Standard
P	31	73.3	37.6				ug/L	50	Standard
S	34	40.0	25.0				ug/L	8	Standard
Sr	88	243.3	10.1				ug/L	198	Standard
C	12	46.7	65.5				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	28.6	71.8				mg/L	6	Standard
Ho-1	165	56.7	25.5				mg/L	12	Standard
Er	166	30.0	66.7				mg/L	10	Standard
I	127	35987.7	1.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		103.593	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.424	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126102PS WG604209-03

Report Date/Time: Tuesday, February 28, 2017 13:15:11

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.345
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.887
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Ba 135 Upper, S, EEE	Ba	135	

Sample ID: L1702126102PS WG604209-03

Report Date/Time: Tuesday, February 28, 2017 13:15:11

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126102SDL WG604209-04

Sample Date/Time: Tuesday, February 28, 2017 13:16:05

Number of Replicates: 3

Autosampler Position: 230

Sample Description: 5

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	236141.8	2.7				ug/L	250104	Standard
|	Be	9	56.7	22.2	0.0268	0.009	34.1	ug/L	7	Standard
|	Al	27	156630.7	22.5	1.3629	0.348	25.5	ug/L	597	Standard
|	Sc	45	43124.6	1.4				ug/L	41681	Standard
|	Ti	47	55.3	27.2	-0.1018	0.106	103.7	ug/L	86	Standard
|	V	51	2545.2	3.3	0.2004	0.025	12.2	ug/L	1740	Standard
|	Cr	52	6920.9	0.9	0.1747	0.042	24.1	ug/L	7178	Standard
|	Cr	53	2610.2	3.9	3.2315	0.120	3.7	ug/L	573	Standard
|	Mn	55	18110.2	103.7	1.9457	2.381	122.4	ug/L	3072	Standard
|	Co	59	506.0	20.0	0.0182	0.018	97.7	ug/L	573	Standard
|	Ni	60	352.7	15.1	0.0833	0.045	54.3	ug/L	264	Standard
|	Cu	65	829.4	1.8	0.2620	0.024	9.2	ug/L	530	Standard
|	Zn	66	1052.4	1.8	1.0632	0.050	4.7	ug/L	252	Standard
>	Ge	72	554967.3	2.3				ug/L	641188	Standard
|	As	75	155.1	6.9	0.2494	0.010	3.8	ug/L	-83	Standard
|	Se	82	20.3	28.7	0.0858	0.089	103.2	ug/L	16	Standard
|	Se-1	77	209.3	1.7	2.2577	0.141	6.2	ug/L	126	Standard
>	Ga	71	65.0	13.3				mg/L	70	Standard
|	Rb	85	2333.5	6.2				ug/L	33	Standard
|	Y	89	383363.8	1.9				ug/L	493982	Standard
>	Rh	103	38.3	15.1				ug/L	17	Standard
|	Mo	98	844.8	3.5	0.3003	0.017	5.7	ug/L	54	Standard
|	Ag	107	143.7	3.6	0.0079	0.001	15.6	ug/L	137	Standard
|	Cd	111	11.2	13.6	-0.0053	0.001	20.1	mg/L	6	Standard
|	Cd	114	218.2	7.4	0.0491	0.005	9.7	ug/L	20	Standard
>	In	115	639083.8	1.8				ug/L	755264	Standard
|	Sn	118	1805.8	3.4	2.0930	0.069	3.3	ug/L	138	Standard
|	Sb	123	781.8	18.2	0.1800	0.040	22.4	ug/L	391	Standard
|	Ba	135	26268.8	0.9	17.3435	0.359	2.1	ug/L	32	Standard
|	Ce	140	131.7	15.3				ug/L	42	Standard
>	Tb	159	953121.5	2.4				ug/L	966827	Standard
|	Ho	165	10.0	50.0				ug/L	12	Standard
|	Tl	203	45.3	18.5	0.0007	0.002	209.4	ug/L	19	Standard
|	Tl	205	115.0	79.8	0.0058	0.007	118.4	ug/L	58	Standard
|	Pb	206	490.3	0.3	0.0106	0.002	19.1	ug/L	464	Standard
|	Pb	207	440.3	8.9	0.0142	0.010	70.6	ug/L	405	Standard
|	Pb	208	993.0	5.9	0.0210	0.008	39.3	ug/L	876	Standard
|	U	238	499.3	41.2	0.0468	0.021	44.6	ug/L	14	Standard
>	Bi	209	537246.9	1.6				ug/L	599146	Standard

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:18:16

Page 1

Approved: March 01, 2017

Na	23	5.0	100.0	0.9308	1.416	152.1	mg/L	3	Standard
Mg	24	676.7	10.4	12.6943	1.411	11.1	mg/L	30	Standard
K	39	31.7	24.1	0.1655	0.097	58.5	mg/L	10	Standard
Ca	43	55.0	32.8	-9.3785	10.048	107.1	mg/L	83	Standard
Fe	54	37.6	30.6	0.3115	0.177	56.8	mg/L	21	Standard
Fe	57	383.3	4.9	4.7192	1.003	21.3	mg/L	240	Standard
Sc-1	45	43124.6	1.4				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	8.3	30.2				ug/L	5	Standard
Br	81	2013.5	2.8				ug/L	1587	Standard
P	31	63.3	24.1				ug/L	50	Standard
S	34	33.3	22.9				ug/L	8	Standard
Sr	88	266.7	8.5				ug/L	198	Standard
C	12	26.7	57.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	8.4	193.0				mg/L	6	Standard
Ho-1	165	10.0	50.0				mg/L	12	Standard
Er	166	33.3	75.5				mg/L	10	Standard
I	127	11334.2	3.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		94.418	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		86.553	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:18:16

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	84.617
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.669
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:18:16

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702126102SDL WG604209-04

Sample Date/Time: Tuesday, February 28, 2017 13:19:10

Number of Replicates: 3

Autosampler Position: 231

Sample Description: 25

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	230446.1	1.4				ug/L	250104	Standard
|	Be	9	25.0	20.0	0.0064	0.003	49.2	ug/L	7	Standard
|	Al	27	26985.7	0.7	0.2345	0.003	1.4	ug/L	597	Standard
|	Sc	45	42300.6	1.5				ug/L	41681	Standard
|	Ti	47	30.3	14.9	-0.2604	0.030	11.4	ug/L	86	Standard
|	V	51	1572.4	14.4	0.0261	0.048	185.6	ug/L	1740	Standard
|	Cr	52	6343.0	0.9	0.0915	0.022	23.7	ug/L	7178	Standard
|	Cr	53	2053.5	4.9	2.4395	0.107	4.4	ug/L	573	Standard
|	Mn	55	2600.6	0.8	0.0203	0.006	27.9	ug/L	3072	Standard
|	Co	59	339.0	5.6	-0.0068	0.004	62.2	ug/L	573	Standard
|	Ni	60	182.3	5.5	-0.0394	0.009	22.5	ug/L	264	Standard
|	Cu	65	556.0	8.4	0.0623	0.041	65.6	ug/L	530	Standard
|	Zn	66	776.7	4.3	0.7204	0.069	9.5	ug/L	252	Standard
>	Ge	72	540801.1	2.2				ug/L	641188	Standard
|	As	75	20.8	219.3	0.0715	0.062	87.2	ug/L	-83	Standard
|	Se	82	14.1	36.8	-0.0036	0.085	2317.0	ug/L	16	Standard
|	Se-1	77	194.0	2.7	2.0350	0.132	6.5	ug/L	126	Standard
>	Ga	71	35.0	24.7				mg/L	70	Standard
|	Rb	85	480.0	8.1				ug/L	33	Standard
|	Y	89	374351.1	2.1				ug/L	493982	Standard
>	Rh	103	41.7	48.5				ug/L	17	Standard
|	Mo	98	184.1	4.8	0.0518	0.005	9.8	ug/L	54	Standard
|	Ag	107	115.3	7.4	0.0026	0.001	51.2	ug/L	137	Standard
|	Cd	111	5.1	11.2	-0.0097	0.000	5.0	mg/L	6	Standard
|	Cd	114	258.3	15.7	0.0625	0.010	16.8	ug/L	20	Standard
>	In	115	615496.7	2.4				ug/L	755264	Standard
|	Sn	118	2052.8	10.2	2.4922	0.224	9.0	ug/L	138	Standard
|	Sb	123	173.4	18.5	0.0208	0.008	36.9	ug/L	391	Standard
|	Ba	135	5050.5	2.8	3.4399	0.080	2.3	ug/L	32	Standard
|	Ce	140	38.3	19.9				ug/L	42	Standard
>	Tb	159	928307.2	1.6				ug/L	966827	Standard
|	Ho	165	18.3	41.7				ug/L	12	Standard
|	Tl	203	19.3	41.8	-0.0037	0.001	36.1	ug/L	19	Standard
|	Tl	205	46.7	22.3	0.0008	0.001	91.0	ug/L	58	Standard
|	Pb	206	419.3	6.0	-0.0035	0.007	203.0	ug/L	464	Standard
|	Pb	207	339.7	2.6	-0.0091	0.001	7.2	ug/L	405	Standard
|	Pb	208	821.0	1.1	0.0031	0.002	49.8	ug/L	876	Standard
|	U	238	66.0	15.2	0.0048	0.001	20.8	ug/L	14	Standard
>	Bi	209	530929.5	1.9				ug/L	599146	Standard

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:21:21

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0054	0.819	15199.9	mg/L	3	Standard
Mg	24	138.3	19.9	2.2198	0.561	25.3	mg/L	30	Standard
K	39	36.7	39.4	0.2410	0.194	80.5	mg/L	10	Standard
Ca	43	40.0	25.0	-17.3333	6.105	35.2	mg/L	83	Standard
Fe	54	29.6	16.4	0.1988	0.067	33.9	mg/L	21	Standard
Fe	57	420.0	4.8	7.1386	1.355	19.0	mg/L	240	Standard
Sc-1	45	42300.6	1.5				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	5.0	20.0				ug/L	5	Standard
Br	81	1340.1	3.3				ug/L	1587	Standard
P	31	80.0	33.1				ug/L	50	Standard
S	34	26.7	84.5				ug/L	8	Standard
Sr	88	220.0	17.2				ug/L	198	Standard
C	12	13.3	114.6				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	9.2	111.3				mg/L	6	Standard
Ho-1	165	18.3	41.7				mg/L	12	Standard
Er	166	16.7	34.6				mg/L	10	Standard
I	127	5896.1	0.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		92.140	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.344	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:21:21

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	81.494
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	88.614
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702126102SDL WG604209-04

Report Date/Time: Tuesday, February 28, 2017 13:21:21

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 4

Sample Date/Time: Tuesday, February 28, 2017 13:22:16

Number of Replicates: 3

Autosampler Position: 203

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	259410.6	3.8				ug/L	250104	Standard
|	Be	9	23.3	44.6	0.0036	0.006	177.8	ug/L	7	Standard
|	Al	27	5356498.3	3.5	42.4529	1.736	4.1	ug/L	597	Standard
|	Sc	45	47310.5	3.4				ug/L	41681	Standard
|	Ti	47	17431.0	3.3	102.0429	3.579	3.5	ug/L	86	Standard
|	V	51	1250.2	10.7	-0.0650	0.018	27.6	ug/L	1740	Standard
|	Cr	52	7566.6	5.2	0.1584	0.054	34.2	ug/L	7178	Standard
|	Cr	53	1665.1	6.3	1.4955	0.157	10.5	ug/L	573	Standard
|	Mn	55	3966.9	4.2	0.1328	0.017	12.9	ug/L	3072	Standard
|	Co	59	818.4	2.2	0.0547	0.002	2.9	ug/L	573	Standard
|	Ni	60	593.0	7.5	0.2180	0.023	10.5	ug/L	264	Standard
|	Cu	65	777.4	6.9	0.1642	0.030	18.4	ug/L	530	Standard
|	Zn	66	1082.7	2.9	0.9654	0.068	7.0	ug/L	252	Standard
>	Ge	72	613516.8	2.3				ug/L	641188	Standard
|	As	75	-31.9	175.7	0.0026	0.069	2603.3	ug/L	-83	Standard
|	Se	82	13.6	48.8	-0.0379	0.092	242.4	ug/L	16	Standard
|	Se-1	77	190.3	6.8	1.4491	0.168	11.6	ug/L	126	Standard
>	Ga	71	78.3	9.8				mg/L	70	Standard
|	Rb	85	565.0	4.4				ug/L	33	Standard
|	Y	89	429969.6	1.5				ug/L	493982	Standard
>	Rh	103	41.7	13.9				ug/L	17	Standard
|	Mo	98	228595.7	2.6	79.7500	2.063	2.6	ug/L	54	Standard
|	Ag	107	128.0	8.7	0.0022	0.002	98.5	ug/L	137	Standard
|	Cd	111	-1.6	462.1	-0.0147	0.005	33.2	mg/L	6	Standard
|	Cd	114	663.3	13.3	0.1550	0.022	14.0	ug/L	20	Standard
>	In	115	695695.1	0.4				ug/L	755264	Standard
|	Sn	118	126.0	8.4	0.0090	0.012	132.2	ug/L	138	Standard
|	Sb	123	425.7	14.3	0.0766	0.015	19.8	ug/L	391	Standard
|	Ba	135	42.0	8.2	-0.0020	0.002	103.5	ug/L	32	Standard
|	Ce	140	870.0	3.0				ug/L	42	Standard
>	Tb	159	1034354.2	1.2				ug/L	966827	Standard
|	Ho	165	6.7	43.3				ug/L	12	Standard
|	Tl	203	22.3	5.2	-0.0034	0.000	6.5	ug/L	19	Standard
|	Tl	205	66.7	17.3	0.0019	0.001	40.8	ug/L	58	Standard
|	Pb	206	535.3	6.0	0.0129	0.008	59.5	ug/L	464	Standard
|	Pb	207	431.3	1.9	0.0053	0.001	24.5	ug/L	405	Standard
|	Pb	208	1017.0	2.9	0.0164	0.004	21.9	ug/L	876	Standard
|	U	238	25.7	23.5	0.0006	0.001	84.8	ug/L	14	Standard
>	Bi	209	574285.2	1.4				ug/L	599146	Standard

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 13:24:27

Page 1

Approved: March 01, 2017

Na	23	36.7	7.9	8.8646	0.944	10.6	mg/L	3	Standard
Mg	24	700.0	10.6	11.9288	1.163	9.7	mg/L	30	Standard
K	39	606.7	8.3	6.8815	0.462	6.7	mg/L	10	Standard
Ca	43	80.0	33.1	1.0892	14.747	1353.9	mg/L	83	Standard
Fe	54	549.6	13.4	7.2200	1.132	15.7	mg/L	21	Standard
Fe	57	580.0	5.2	12.5622	2.050	16.3	mg/L	240	Standard
Sc-1	45	47310.5	3.4				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.7	68.9				ug/L	5	Standard
Br	81	1353.4	7.2				ug/L	1587	Standard
P	31	78.3	57.2				ug/L	50	Standard
S	34	35.0	37.8				ug/L	8	Standard
Sr	88	325.0	2.7				ug/L	198	Standard
C	12	13.3	114.6				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	19.4	51.7				mg/L	6	Standard
Ho-1	165	6.7	43.3				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	3180.3	3.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27	0.849		
Sc	45			
Ti	47	102.043		
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		95.684	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 13:24:27

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	79.750	
[	Ag	107		
[	Cd	111		
[	Cd	114		
>	In	115		92.113
[	Sn	118		
[	Sb	123		
[	Ba	135		
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203		
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208		
[	U	238		
>	Bi	209		95.851
[	Na	23	70.917	
[	Mg	24	238.577	
[	K	39	137.630	
[	Ca	43	7.261	
[	Fe	54	57.760	
[	Fe	57	100.497	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 4	Al	27	
QC Std 4	Mo	98	
QC Std 4	Na	23	

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 13:24:27

Page 3

Approved: March 01, 2017



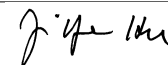
QC Std 4	Mg	24
QC Std 4	K	39
QC Std 4	Ca	43
QC Std 4	Fe	54

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 13:24:27

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 5

Sample Date/Time: Tuesday, February 28, 2017 13:25:21

Number of Replicates: 3

Autosampler Position: 204

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	269337.8	0.2				ug/L	250104	Standard
|	Be	9	162860.9	2.3	92.9738	2.380	2.6	ug/L	7	Standard
|	Al	27	5656993.0	1.5	43.1565	0.765	1.8	ug/L	597	Standard
|	Sc	45	47726.7	1.4				ug/L	41681	Standard
|	Ti	47	20011.2	1.6	114.7826	2.827	2.5	ug/L	86	Standard
|	V	51	610003.4	1.3	100.9364	2.298	2.3	ug/L	1740	Standard
|	Cr	52	566033.3	0.6	99.7783	1.509	1.5	ug/L	7178	Standard
|	Cr	53	75782.4	0.8	104.7492	0.380	0.4	ug/L	573	Standard
|	Mn	55	918185.0	0.2	99.2484	1.017	1.0	ug/L	3072	Standard
|	Co	59	713092.0	0.8	98.9081	1.577	1.6	ug/L	573	Standard
|	Ni	60	151917.2	1.0	99.1393	1.630	1.6	ug/L	264	Standard
|	Cu	65	143983.3	1.1	98.0247	1.825	1.9	ug/L	530	Standard
|	Zn	66	81928.9	0.2	97.1624	0.930	1.0	ug/L	252	Standard
>	Ge	72	626430.5	0.9				ug/L	641188	Standard
|	As	75	77171.0	0.6	91.4083	0.818	0.9	ug/L	-83	Standard
|	Se	82	6436.9	0.3	87.9356	0.597	0.7	ug/L	16	Standard
|	Se-1	77	5095.9	0.4	95.4390	1.314	1.4	ug/L	126	Standard
>	Ga	71	146.7	15.4				mg/L	70	Standard
|	Rb	85	646.7	14.3				ug/L	33	Standard
|	Y	89	438509.0	1.2				ug/L	493982	Standard
>	Rh	103	48.3	11.9				ug/L	17	Standard
|	Mo	98	246318.8	2.4	83.8797	3.127	3.7	ug/L	54	Standard
|	Ag	107	436973.4	1.9	86.3282	2.787	3.2	ug/L	137	Standard
|	Cd	111	136101.7	1.4	90.6964	2.404	2.7	mg/L	6	Standard
|	Cd	114	371824.6	1.1	90.3110	2.194	2.4	ug/L	20	Standard
>	In	115	712981.1	1.4				ug/L	755264	Standard
|	Sn	118	173.3	7.6	0.0578	0.012	20.7	ug/L	138	Standard
|	Sb	123	402698.1	0.6	95.2460	1.892	2.0	ug/L	391	Standard
|	Ba	135	169472.2	1.0	100.4199	1.968	2.0	ug/L	32	Standard
|	Ce	140	108.3	17.5				ug/L	42	Standard
>	Tb	159	1042651.4	0.8				ug/L	966827	Standard
|	Ho	165	40.0	33.1				ug/L	12	Standard
|	Tl	203	611722.6	1.8	94.7120	1.201	1.3	ug/L	19	Standard
|	Tl	205	1417833.9	1.7	93.8826	0.816	0.9	ug/L	58	Standard
|	Pb	206	480093.7	1.9	94.1958	1.284	1.4	ug/L	464	Standard
|	Pb	207	429929.5	1.1	94.2830	0.523	0.6	ug/L	405	Standard
|	Pb	208	951645.7	1.1	95.6392	0.663	0.7	ug/L	876	Standard
|	U	238	1057666.4	2.5	93.4062	1.646	1.8	ug/L	14	Standard
>	Bi	209	587832.5	0.8				ug/L	599146	Standard

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 13:27:32

Page 1

Approved: March 01, 2017

Na	23	36.7	20.8	8.7548	1.829	20.9	mg/L	3	Standard
Mg	24	708.3	5.9	11.9709	0.637	5.3	mg/L	30	Standard
K	39	571.7	10.7	6.4103	0.633	9.9	mg/L	10	Standard
Ca	43	96.7	13.0	8.9665	7.091	79.1	mg/L	83	Standard
Fe	54	658.0	6.8	8.5936	0.506	5.9	mg/L	21	Standard
Fe	57	581.7	12.5	12.3939	3.886	31.4	mg/L	240	Standard
Sc-1	45	47726.7	1.4				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	5.7	36.7				ug/L	5	Standard
Br	81	1560.1	5.6				ug/L	1587	Standard
P	31	65.0	23.1				ug/L	50	Standard
S	34	41.7	34.6				ug/L	8	Standard
Sr	88	241.7	8.4				ug/L	198	Standard
C	12	50.0	0.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	10.0	100.0				mg/L	3	Standard
Dy	164	12.4	50.0				mg/L	6	Standard
Ho-1	165	40.0	33.1				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	3920.5	5.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	92.974		
Al	27	0.863		
Sc	45			
Ti	47	114.783		
V	51	100.936		
Cr	52	99.778		
Cr	53			
Mn	55	99.248		
Co	59	98.908		
Ni	60	99.139		
Cu	65	98.025		
Zn	66	97.162		
Ge	72		97.698	
As	75	91.408		
Se	82	87.936		
Se-1	77			
Ga	71			

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 13:27:32

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	83.880	
[	Ag	107	86.328	
[	Cd	111	90.696	
[	Cd	114		
>	In	115		94.402
[	Sn	118		
[	Sb	123	95.246	
[	Ba	135	100.420	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	94.712	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	95.639	
[	U	238	93.406	
>	Bi	209		98.112
[	Na	23	70.038	
[	Mg	24	239.419	
[	K	39	128.207	
[	Ca	43	59.777	
[	Fe	54	68.749	
[	Fe	57	99.151	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 5	Al	27	
QC Std 5	Na	23	
QC Std 5	Mg	24	

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 13:27:32

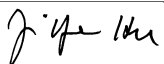
Page 3

Approved: March 01, 2017



QC Std 5	K	39
QC Std 5	Ca	43
QC Std 5	Fe	54
QC Std 5	Fe	57

Sample ID: QC Std 5
Report Date/Time: Tuesday, February 28, 2017 13:27:32
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 13:28:29

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	254449.4	2.2				ug/L	250104	Standard
|	Be	9	81032.8	0.9	48.9815	1.520	3.1	ug/L	7	Standard
|	Al	27	5855255.6	0.7	47.2944	0.916	1.9	ug/L	597	Standard
|	Sc	45	45433.0	1.4				ug/L	41681	Standard
|	Ti	47	18765.6	0.8	113.7715	2.326	2.0	ug/L	86	Standard
|	V	51	306905.5	0.6	53.5451	0.640	1.2	ug/L	1740	Standard
|	Cr	52	289026.1	0.7	53.2888	0.413	0.8	ug/L	7178	Standard
|	Cr	53	37454.6	2.3	54.3115	1.577	2.9	ug/L	573	Standard
|	Mn	55	462741.0	0.9	52.7270	0.677	1.3	ug/L	3072	Standard
|	Co	59	355063.1	0.3	52.0263	0.617	1.2	ug/L	573	Standard
|	Ni	60	75603.8	0.7	52.0682	0.877	1.7	ug/L	264	Standard
|	Cu	65	71083.0	0.5	50.9692	0.392	0.8	ug/L	530	Standard
|	Zn	66	39921.9	0.6	49.8729	0.393	0.8	ug/L	252	Standard
>	Ge	72	592653.0	1.2				ug/L	641188	Standard
|	As	75	37695.4	0.2	47.2176	0.556	1.2	ug/L	-83	Standard
|	Se	82	3181.6	2.1	45.8320	0.831	1.8	ug/L	16	Standard
|	Se-1	77	2507.9	2.5	48.5474	0.841	1.7	ug/L	126	Standard
>	Ga	71	60.0	28.9				mg/L	70	Standard
|	Rb	85	721.7	25.0				ug/L	33	Standard
|	Y	89	420209.6	3.2				ug/L	493982	Standard
>	Rh	103	30.0	44.1				ug/L	17	Standard
|	Mo	98	251075.1	1.0	88.0565	2.467	2.8	ug/L	54	Standard
|	Ag	107	232351.0	0.3	47.2655	1.152	2.4	ug/L	137	Standard
|	Cd	111	68650.1	0.1	47.1110	1.067	2.3	mg/L	6	Standard
|	Cd	114	192606.1	0.6	48.1774	1.079	2.2	ug/L	20	Standard
>	In	115	692335.2	2.4				ug/L	755264	Standard
|	Sn	118	42990.6	1.0	48.8184	1.317	2.7	ug/L	138	Standard
|	Sb	123	200907.8	0.7	48.9299	1.077	2.2	ug/L	391	Standard
|	Ba	135	86023.9	0.7	52.4859	0.944	1.8	ug/L	32	Standard
|	Ce	140	55.0	72.2				ug/L	42	Standard
>	Tb	159	1003282.2	0.8				ug/L	966827	Standard
|	Ho	165	18.3	56.8				ug/L	12	Standard
|	Tl	203	308667.2	1.6	50.0424	1.865	3.7	ug/L	19	Standard
|	Tl	205	722265.7	2.8	50.0887	2.431	4.9	ug/L	58	Standard
|	Pb	206	240902.0	1.5	49.4512	1.824	3.7	ug/L	464	Standard
|	Pb	207	215071.4	0.3	49.3366	1.183	2.4	ug/L	405	Standard
|	Pb	208	470370.4	0.7	49.4511	1.362	2.8	ug/L	876	Standard
|	U	238	528135.0	0.9	48.8374	1.407	2.9	ug/L	14	Standard
>	Bi	209	561658.0	2.1				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 13:30:40

Page 1

Approved: March 01, 2017

Na	23	11.7	89.2	2.6344	2.773	105.3	mg/L	3	Standard
Mg	24	321.7	10.6	5.4246	0.547	10.1	mg/L	30	Standard
K	39	630.0	0.8	7.4659	0.076	1.0	mg/L	10	Standard
Ca	43	63.3	25.4	-6.5316	8.280	126.8	mg/L	83	Standard
Fe	54	272.8	3.6	3.6052	0.162	4.5	mg/L	21	Standard
Fe	57	515.0	4.9	10.3934	1.422	13.7	mg/L	240	Standard
Sc-1	45	45433.0	1.4				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	5.7	20.4				ug/L	5	Standard
Br	81	1336.7	20.4				ug/L	1587	Standard
P	31	70.0	37.1				ug/L	50	Standard
S	34	23.3	49.5				ug/L	8	Standard
Sr	88	283.3	22.2				ug/L	198	Standard
C	12	30.0	57.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	19.4	49.2				mg/L	6	Standard
Ho-1	165	18.3	56.8				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	3428.7	2.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	97.963		
Al	27	94.589		
Sc	45			
Ti	47	113.771		
V	51	107.090		
Cr	52	106.578		
Cr	53			
Mn	55	105.454		
Co	59	104.053		
Ni	60	104.136		
Cu	65	101.938		
Zn	66	99.746		
Ge	72		92.430	
As	75	94.435		
Se	82	91.664		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 13:30:40

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	88.057	
[	Ag	107	94.531	
[	Cd	111	94.222	
[	Cd	114		
>	In	115		91.668
[	Sn	118	97.637	
[	Sb	123	97.860	
[	Ba	135	104.972	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	100.085	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	98.902	
[	U	238	97.675	
>	Bi	209		93.743
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Ti	47	
QC Std 6	Mo	98	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 13:30:40

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 13:31:35

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	239986.4	2.5				ug/L	250104	Standard
|	Be	9	20.0	86.6	0.0027	0.012	423.8	ug/L	7	Standard
|	Al	27	916.7	48.5	0.0018	0.004	231.2	ug/L	597	Standard
|	Sc	45	43467.3	3.0				ug/L	41681	Standard
|	Ti	47	46.7	2.5	-0.1559	0.004	2.3	ug/L	86	Standard
|	V	51	1229.4	6.1	-0.0438	0.011	25.5	ug/L	1740	Standard
|	Cr	52	6011.9	1.4	0.0052	0.027	521.2	ug/L	7178	Standard
|	Cr	53	1321.7	4.4	1.2276	0.035	2.9	ug/L	573	Standard
|	Mn	55	2310.5	0.6	-0.0202	0.009	45.9	ug/L	3072	Standard
|	Co	59	416.0	7.6	0.0048	0.007	150.4	ug/L	573	Standard
|	Ni	60	130.3	5.4	-0.0801	0.008	10.6	ug/L	264	Standard
|	Cu	65	521.3	2.9	0.0287	0.005	16.4	ug/L	530	Standard
|	Zn	66	306.3	7.1	0.0653	0.036	54.7	ug/L	252	Standard
>	Ge	72	548827.3	3.7				ug/L	641188	Standard
|	As	75	4.0	1078.0	0.0482	0.060	124.3	ug/L	-83	Standard
|	Se	82	20.9	6.9	0.0999	0.031	31.2	ug/L	16	Standard
|	Se-1	77	174.3	6.6	1.5408	0.222	14.4	ug/L	126	Standard
>	Ga	71	71.7	26.4				mg/L	70	Standard
|	Rb	85	60.0	14.4				ug/L	33	Standard
|	Y	89	391555.0	3.3				ug/L	493982	Standard
>	Rh	103	28.3	20.4				ug/L	17	Standard
|	Mo	98	227.1	23.1	0.0649	0.021	32.0	ug/L	54	Standard
|	Ag	107	124.0	13.0	0.0034	0.004	112.6	ug/L	137	Standard
|	Cd	111	7.0	8.5	-0.0085	0.001	6.6	mg/L	6	Standard
|	Cd	114	44.7	13.4	0.0019	0.002	88.3	ug/L	20	Standard
>	In	115	644477.8	2.9				ug/L	755264	Standard
|	Sn	118	135.7	6.6	0.0324	0.014	42.8	ug/L	138	Standard
|	Sb	123	1109.1	19.1	0.2630	0.048	18.3	ug/L	391	Standard
|	Ba	135	41.0	8.4	-0.0006	0.002	370.4	ug/L	32	Standard
|	Ce	140	35.0	42.9				ug/L	42	Standard
>	Tb	159	936489.5	2.3				ug/L	966827	Standard
|	Ho	165	15.0	33.3				ug/L	12	Standard
|	Tl	203	43.3	57.3	0.0006	0.005	813.8	ug/L	19	Standard
|	Tl	205	108.3	26.2	0.0054	0.002	43.1	ug/L	58	Standard
|	Pb	206	446.0	3.1	0.0023	0.005	217.1	ug/L	464	Standard
|	Pb	207	369.3	2.2	-0.0018	0.004	239.1	ug/L	405	Standard
|	Pb	208	888.3	2.5	0.0107	0.004	42.0	ug/L	876	Standard
|	U	238	64.3	59.2	0.0046	0.004	83.6	ug/L	14	Standard
>	Bi	209	530775.7	2.9				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 13:33:45

Page 1

Approved: March 01, 2017

Na	23	5.0	100.0	0.9346	1.423	152.2	mg/L	3	Standard
Mg	24	35.0	14.3	0.1407	0.110	77.9	mg/L	30	Standard
K	39	16.7	45.8	-0.0294	0.098	333.0	mg/L	10	Standard
Ca	43	50.0	34.6	-12.4204	9.660	77.8	mg/L	83	Standard
Fe	54	21.1	75.2	0.0577	0.222	384.1	mg/L	21	Standard
Fe	57	405.0	7.5	5.7165	1.612	28.2	mg/L	240	Standard
Sc-1	45	43467.3	3.0				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	6.3	32.9				ug/L	5	Standard
Br	81	1293.4	5.3				ug/L	1587	Standard
P	31	76.7	3.8				ug/L	50	Standard
S	34	36.7	34.3				ug/L	8	Standard
Sr	88	263.3	20.5				ug/L	198	Standard
C	12	13.3	114.6				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.5	105.0				mg/L	6	Standard
Ho-1	165	15.0	33.3				mg/L	12	Standard
Er	166	10.0					mg/L	10	Standard
I	127	4437.3	1.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		85.595	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 13:33:45

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	85.331
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	88.589
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 7	Sb	123	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 13:33:45

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: PBW A9 WG604424-02

Sample Date/Time: Tuesday, February 28, 2017 14:21:34

Number of Replicates: 3

Autosampler Position: 232

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	269943.8	1.4				ug/L	250104	Standard
|	Be	9	13.3	43.3	-0.0027	0.003	123.4	ug/L	7	Standard
|	Al	27	8891.0	7.8	0.0615	0.005	8.7	ug/L	597	Standard
|	Sc	45	47352.2	0.3				ug/L	41681	Standard
|	Ti	47	42.3	15.7	-0.2169	0.037	17.1	ug/L	86	Standard
|	V	51	1813.7	6.9	0.0271	0.023	85.1	ug/L	1740	Standard
|	Cr	52	9417.6	1.5	0.4754	0.023	4.8	ug/L	7178	Standard
|	Cr	53	1696.8	3.0	1.5108	0.061	4.0	ug/L	573	Standard
|	Mn	55	3890.8	4.2	0.1191	0.016	13.4	ug/L	3072	Standard
|	Co	59	365.3	8.3	-0.0101	0.005	45.4	ug/L	573	Standard
|	Ni	60	274.7	4.2	0.0035	0.006	177.0	ug/L	264	Standard
|	Cu	65	542.3	2.8	-0.0041	0.010	252.9	ug/L	530	Standard
|	Zn	66	1225.4	4.2	1.1202	0.069	6.1	ug/L	252	Standard
>	Ge	72	620932.8	0.8				ug/L	641188	Standard
|	As	75	-2.8	1407.0	0.0387	0.048	124.0	ug/L	-83	Standard
|	Se	82	21.3	34.2	0.0668	0.102	152.5	ug/L	16	Standard
|	Se-1	77	146.0	4.8	0.5494	0.131	23.9	ug/L	126	Standard
>	Ga	71	46.7	6.2				mg/L	70	Standard
|	Rb	85	56.7	10.2				ug/L	33	Standard
|	Y	89	435639.5	1.1				ug/L	493982	Standard
>	Rh	103	23.3	81.1				ug/L	17	Standard
|	Mo	98	53.5	21.6	-0.0025	0.004	148.1	ug/L	54	Standard
|	Ag	107	106.3	14.4	-0.0025	0.003	134.4	ug/L	137	Standard
|	Cd	111	7.9	21.8	-0.0083	0.001	14.2	mg/L	6	Standard
|	Cd	114	137.4	18.0	0.0236	0.006	26.6	ug/L	20	Standard
>	In	115	706174.0	1.6				ug/L	755264	Standard
|	Sn	118	843.7	8.0	0.8080	0.078	9.7	ug/L	138	Standard
|	Sb	123	379.8	33.1	0.0638	0.029	44.9	ug/L	391	Standard
|	Ba	135	99.0	6.3	0.0317	0.003	11.0	ug/L	32	Standard
|	Ce	140	81.7	15.4				ug/L	42	Standard
>	Tb	159	1018665.7	2.6				ug/L	966827	Standard
|	Ho	165	25.0	34.6				ug/L	12	Standard
|	Tl	203	28.3	14.7	-0.0026	0.001	29.1	ug/L	19	Standard
|	Tl	205	48.3	51.0	0.0005	0.002	288.8	ug/L	58	Standard
|	Pb	206	519.3	10.1	0.0070	0.008	117.7	ug/L	464	Standard
|	Pb	207	408.0	4.9	-0.0021	0.005	220.9	ug/L	405	Standard
|	Pb	208	924.3	4.8	0.0045	0.002	47.6	ug/L	876	Standard
|	U	238	17.3	39.3	-0.0002	0.001	317.4	ug/L	14	Standard
>	Bi	209	588510.4	2.6				ug/L	599146	Standard

Sample ID: PBW A9 WG604424-02

Report Date/Time: Tuesday, February 28, 2017 14:23:45

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	18.3	78.7	-0.2133	0.257	120.7	mg/L	30	Standard
K	39	25.0	72.1	0.0508	0.211	414.9	mg/L	10	Standard
Ca	43	28.3	27.0	-25.8495	3.935	15.2	mg/L	83	Standard
Fe	54	24.2	35.4	0.0792	0.115	145.5	mg/L	21	Standard
Fe	57	366.7	3.9	2.0629	0.674	32.7	mg/L	240	Standard
Sc-1	45	47352.2	0.3				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	6.3	9.1				ug/L	5	Standard
Br	81	1870.1	6.5				ug/L	1587	Standard
P	31	53.3	28.6				ug/L	50	Standard
S	34	21.7	26.6				ug/L	8	Standard
Sr	88	265.0	17.3				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	173.2				mg/L	3	Standard
Dy	164	9.5	105.4				mg/L	6	Standard
Ho-1	165	25.0	34.6				mg/L	12	Standard
Er	166	10.0	173.2				mg/L	10	Standard
I	127	4077.2	1.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		107.933	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		96.841	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: PBW A9 WG604424-02

Report Date/Time: Tuesday, February 28, 2017 14:23:45

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	93.500
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	98.225
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: PBW A9 WG604424-02

Report Date/Time: Tuesday, February 28, 2017 14:23:45

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: LCSW A9 WG604424-03

Sample Date/Time: Tuesday, February 28, 2017 14:24:40

Number of Replicates: 3

Autosampler Position: 233

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	269229.3	0.3				ug/L	250104	Standard
|	Be	9	90338.6	2.5	51.5858	1.227	2.4	ug/L	7	Standard
|	Al	27	13542.7	2.3	0.0972	0.002	2.3	ug/L	597	Standard
|	Sc	45	47932.4	3.0				ug/L	41681	Standard
|	Ti	47	55.7	14.0	-0.1513	0.042	27.5	ug/L	86	Standard
|	V	51	337169.9	0.5	54.1015	0.202	0.4	ug/L	1740	Standard
|	Cr	52	320352.8	1.6	54.3435	0.797	1.5	ug/L	7178	Standard
|	Cr	53	41475.0	1.5	55.3237	1.028	1.9	ug/L	573	Standard
|	Mn	55	509319.0	1.2	53.3773	0.829	1.6	ug/L	3072	Standard
|	Co	59	390646.8	1.0	52.6413	0.481	0.9	ug/L	573	Standard
|	Ni	60	83938.9	0.4	53.1660	0.373	0.7	ug/L	264	Standard
|	Cu	65	79384.5	1.6	52.3592	0.771	1.5	ug/L	530	Standard
|	Zn	66	43783.5	0.7	50.3066	0.313	0.6	ug/L	252	Standard
>	Ge	72	644388.0	0.8				ug/L	641188	Standard
|	As	75	41033.5	0.7	47.2682	0.177	0.4	ug/L	-83	Standard
|	Se	82	3434.1	1.6	45.4935	0.418	0.9	ug/L	16	Standard
|	Se-1	77	2726.2	2.2	48.5433	1.244	2.6	ug/L	126	Standard
>	Ga	71	63.3	29.9				mg/L	70	Standard
|	Rb	85	83.3	15.1				ug/L	33	Standard
|	Y	89	452449.8	0.9				ug/L	493982	Standard
>	Rh	103	43.3	24.0				ug/L	17	Standard
|	Mo	98	43.0	14.5	-0.0065	0.002	28.9	ug/L	54	Standard
|	Ag	107	240706.8	2.1	46.5708	0.191	0.4	ug/L	137	Standard
|	Cd	111	74867.5	1.1	48.8733	0.408	0.8	mg/L	6	Standard
|	Cd	114	203544.6	1.9	48.4273	0.099	0.2	ug/L	20	Standard
>	In	115	727616.0	1.7				ug/L	755264	Standard
|	Sn	118	205.3	5.6	0.0886	0.009	10.1	ug/L	138	Standard
|	Sb	123	210304.0	1.5	48.7217	0.552	1.1	ug/L	391	Standard
|	Ba	135	90528.0	1.7	52.5411	0.126	0.2	ug/L	32	Standard
|	Ce	140	133.3	16.9				ug/L	42	Standard
>	Tb	159	1035738.9	1.2				ug/L	966827	Standard
|	Ho	165	16.7	17.3				ug/L	12	Standard
|	Tl	203	342193.8	1.3	51.9081	0.269	0.5	ug/L	19	Standard
|	Tl	205	790480.4	1.4	51.2836	0.179	0.3	ug/L	58	Standard
|	Pb	206	267913.2	2.0	51.4570	0.286	0.6	ug/L	464	Standard
|	Pb	207	229632.2	2.1	49.2917	0.247	0.5	ug/L	405	Standard
|	Pb	208	516016.2	1.7	50.7660	0.080	0.2	ug/L	876	Standard
|	U	238	554349.5	2.3	47.9638	0.336	0.7	ug/L	14	Standard
>	Bi	209	599993.4	1.6				ug/L	599146	Standard

Sample ID: LCSW A9 WG604424-03

Report Date/Time: Tuesday, February 28, 2017 14:26:51

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	35.0	37.8	0.0805	0.246	305.9	mg/L	30	Standard
K	39	8.3	69.3	-0.1451	0.068	47.2	mg/L	10	Standard
Ca	43	43.3	58.1	-18.6058	12.082	64.9	mg/L	83	Standard
Fe	54	32.9	25.9	0.1932	0.123	63.7	mg/L	21	Standard
Fe	57	365.0	6.8	1.7576	0.856	48.7	mg/L	240	Standard
Sc-1	45	47932.4	3.0				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	5.0	34.6				ug/L	5	Standard
Br	81	1886.8	11.9				ug/L	1587	Standard
P	31	70.0	51.5				ug/L	50	Standard
S	34	31.7	50.8				ug/L	8	Standard
Sr	88	293.3	17.7				ug/L	198	Standard
C	12	13.3	43.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	12.4	50.0				mg/L	6	Standard
Ho-1	165	16.7	17.3				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	3980.5	2.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		107.647	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		100.499	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: LCSW A9 WG604424-03

Report Date/Time: Tuesday, February 28, 2017 14:26:51

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	96.339
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	100.141
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: LCSW A9 WG604424-03

Report Date/Time: Tuesday, February 28, 2017 14:26:51

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: F BLANK WG604263-02

Sample Date/Time: Tuesday, February 28, 2017 14:27:45

Number of Replicates: 3

Autosampler Position: 234

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
[>	Li	6	269277.0	1.3				ug/L	250104	Standard
|	Be	9	18.3	15.7	0.0002	0.002	819.7	ug/L	7	Standard
|	Al	27	10877.2	1.0	0.0768	0.000	0.4	ug/L	597	Standard
|	Sc	45	46922.6	1.2				ug/L	41681	Standard
|	Ti	47	45.0	11.5	-0.2084	0.027	13.0	ug/L	86	Standard
|	V	51	1753.8	7.2	0.0093	0.023	252.9	ug/L	1740	Standard
|	Cr	52	10641.4	2.5	0.6443	0.037	5.7	ug/L	7178	Standard
|	Cr	53	1491.7	2.6	1.1669	0.067	5.7	ug/L	573	Standard
|	Mn	55	3969.9	2.5	0.1163	0.015	12.7	ug/L	3072	Standard
|	Co	59	431.7	1.0	-0.0025	0.000	18.9	ug/L	573	Standard
|	Ni	60	291.3	4.9	0.0095	0.010	107.5	ug/L	264	Standard
|	Cu	65	1242.4	4.5	0.4558	0.044	9.6	ug/L	530	Standard
|	Zn	66	1776.1	1.9	1.7245	0.058	3.4	ug/L	252	Standard
[>	Ge	72	638035.0	1.3				ug/L	641188	Standard
|	As	75	14.0	150.2	0.0586	0.024	41.5	ug/L	-83	Standard
|	Se	82	13.3	12.0	-0.0484	0.021	43.3	ug/L	16	Standard
|	Se-1	77	153.7	5.8	0.6174	0.144	23.3	ug/L	126	Standard
[>	Ga	71	43.3	6.7				mg/L	70	Standard
|	Rb	85	71.7	8.1				ug/L	33	Standard
|	Y	89	445721.3	2.2				ug/L	493982	Standard
[>	Rh	103	23.3	49.5				ug/L	17	Standard
|	Mo	98	32.4	16.2	-0.0100	0.002	15.0	ug/L	54	Standard
|	Ag	107	136.0	16.7	0.0026	0.004	148.9	ug/L	137	Standard
|	Cd	111	7.3	20.9	-0.0089	0.001	9.8	mg/L	6	Standard
|	Cd	114	42.2	57.9	-0.0001	0.005	3961.2	ug/L	20	Standard
[>	In	115	726369.1	2.8				ug/L	755264	Standard
|	Sn	118	165.7	8.2	0.0460	0.013	27.3	ug/L	138	Standard
|	Sb	123	992.6	16.0	0.2033	0.030	14.7	ug/L	391	Standard
|	Ba	135	168.3	5.1	0.0705	0.006	8.8	ug/L	32	Standard
|	Ce	140	51.7	55.0				ug/L	42	Standard
[>	Tb	159	1028179.6	1.6				ug/L	966827	Standard
|	Ho	165	11.7	107.9				ug/L	12	Standard
|	Tl	203	55.3	59.8	0.0015	0.005	328.1	ug/L	19	Standard
|	Tl	205	135.0	53.8	0.0062	0.005	76.2	ug/L	58	Standard
|	Pb	206	1098.7	5.2	0.1194	0.010	8.1	ug/L	464	Standard
|	Pb	207	910.7	3.7	0.1068	0.007	6.5	ug/L	405	Standard
|	Pb	208	2105.4	2.4	0.1219	0.004	2.9	ug/L	876	Standard
|	U	238	89.7	27.7	0.0062	0.002	34.6	ug/L	14	Standard
[>	Bi	209	592038.9	0.7				ug/L	599146	Standard

Sample ID: F BLANK WG604263-02

Report Date/Time: Tuesday, February 28, 2017 14:29:55

Page 1

Approved: March 01, 2017

Na	23	3.3	173.2	0.3884	1.501	386.4	mg/L	3	Standard
Mg	24	63.3	35.6	0.5953	0.394	66.2	mg/L	30	Standard
K	39	15.0	57.7	-0.0643	0.103	160.5	mg/L	10	Standard
Ca	43	53.3	10.8	-12.7520	2.803	22.0	mg/L	83	Standard
Fe	54	24.2	42.0	0.0821	0.143	173.7	mg/L	21	Standard
Fe	57	355.0	21.3	1.6312	3.577	219.3	mg/L	240	Standard
Sc-1	45	46922.6	1.2				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	4.7	32.7				ug/L	5	Standard
Br	81	1490.1	8.4				ug/L	1587	Standard
P	31	68.3	21.1				ug/L	50	Standard
S	34	33.3	8.7				ug/L	8	Standard
Sr	88	258.3	25.2				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	2.2	229.6				mg/L	6	Standard
Ho-1	165	11.7	107.9				mg/L	12	Standard
Er	166	23.3	65.5				mg/L	10	Standard
I	127	3830.5	3.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		107.666	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		99.508	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: F BLANK WG604263-02

Report Date/Time: Tuesday, February 28, 2017 14:29:55

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	96.174
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	98.814
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: F BLANK WG604263-02

Report Date/Time: Tuesday, February 28, 2017 14:29:55

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132403 WG604424-01

Sample Date/Time: Tuesday, February 28, 2017 14:30:50

Number of Replicates: 3

Autosampler Position: 235

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	479527.7	2.4				ug/L	250104	Standard
|	Be	9	130.0	7.7	0.0314	0.003	10.1	ug/L	7	Standard
|	Al	27	122381584.1	1.3	524.7459	18.712	3.6	ug/L	597	Standard
|	Sc	45	41114.1	2.3				ug/L	41681	Standard
|	Ti	47	299.3	8.8	1.5215	0.180	11.8	ug/L	86	Standard
|	V	51	-6644.0	28.9	-1.5438	0.358	23.2	ug/L	1740	Standard
|	Cr	52	14317.8	1.1	1.7206	0.038	2.2	ug/L	7178	Standard
|	Cr	53	45851.1	6.5	72.6670	4.454	6.1	ug/L	573	Standard
|	Mn	55	73685870.8	0.4	9195.1811	85.536	0.9	ug/L	3072	Standard
|	Co	59	24030.0	0.5	3.7772	0.042	1.1	ug/L	573	Standard
|	Ni	60	60274.4	3.5	45.1781	1.761	3.9	ug/L	264	Standard
|	Cu	65	8989.7	1.8	6.6924	0.087	1.3	ug/L	530	Standard
|	Zn	66	4562.0	1.0	5.8983	0.094	1.6	ug/L	252	Standard
>	Ge	72	544255.5	0.6				ug/L	641188	Standard
|	As	75	-1082.9	79.6	-1.4316	1.172	81.9	ug/L	-83	Standard
|	Se	82	438.9	24.1	6.6967	1.701	25.4	ug/L	16	Standard
|	Se-1	77	21968.6	7.5	482.4668	34.923	7.2	ug/L	126	Standard
>	Ga	71	843.4	18.3				mg/L	70	Standard
|	Rb	85	282824.5	2.3				ug/L	33	Standard
|	Y	89	456198.0	0.9				ug/L	493982	Standard
>	Rh	103	6913.2	1.0				ug/L	17	Standard
|	Mo	98	109.9	27.7	0.0255	0.013	51.0	ug/L	54	Standard
|	Ag	107	204.0	14.1	0.0261	0.007	27.8	ug/L	137	Standard
|	Cd	111	35.5	33.6	0.0156	0.010	63.3	mg/L	6	Standard
|	Cd	114	89.8	18.6	0.0169	0.005	30.6	ug/L	20	Standard
>	In	115	576775.6	0.4				ug/L	755264	Standard
|	Sn	118	193.3	12.2	0.1305	0.033	25.5	ug/L	138	Standard
|	Sb	123	1600.6	5.9	0.4414	0.027	6.1	ug/L	391	Standard
|	Ba	135	33917176.4	0.3	24846.5168	133.183	0.5	ug/L	32	Standard
|	Ce	140	6776.5	2.3				ug/L	42	Standard
>	Tb	159	1008966.7	1.8				ug/L	966827	Standard
|	Ho	165	250.0	17.3				ug/L	12	Standard
|	Tl	203	333.0	32.6	0.0692	0.025	36.6	ug/L	19	Standard
|	Tl	205	748.4	30.7	0.0705	0.023	32.4	ug/L	58	Standard
|	Pb	206	552.0	9.3	0.0652	0.016	24.2	ug/L	464	Standard
|	Pb	207	493.7	9.1	0.0682	0.016	22.9	ug/L	405	Standard
|	Pb	208	1305.4	8.0	0.1053	0.017	15.8	ug/L	876	Standard
|	U	238	64.0	41.1	0.0066	0.003	50.7	ug/L	14	Standard
>	Bi	209	398672.7	0.7				ug/L	599146	Standard

Sample ID: L1702132403 WG604424-01

Report Date/Time: Tuesday, February 28, 2017 14:33:00

Page 1

Approved: March 01, 2017

Na	23	4859.1	6.8	1420.9198	69.389	4.9	mg/L	3	Standard
Mg	24	14820.6	2.2	303.4420	6.784	2.2	mg/L	30	Standard
K	39	3210.3	6.0	43.1564	2.313	5.4	mg/L	10	Standard
Ca	43	3955.5	1.1	2303.4839	59.157	2.6	mg/L	83	Standard
Fe	54	455.3	6.1	6.8639	0.548	8.0	mg/L	21	Standard
Fe	57	8439.0	5.2	459.5289	14.278	3.1	mg/L	240	Standard
Sc-1	45	41114.1	2.3				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	7.3	28.4				ug/L	5	Standard
Br	81	228207.8	4.3				ug/L	1587	Standard
P	31	63.3	9.1				ug/L	50	Standard
S	34	26.7	10.8				ug/L	8	Standard
Sr	88	653.3	4.2				ug/L	198	Standard
C	12	66.7	22.9				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	260.1	7.4				mg/L	6	Standard
Ho-1	165	250.0	17.3				mg/L	12	Standard
Er	166	206.7	37.0				mg/L	10	Standard
I	127	362154.4	5.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		191.732	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		84.882	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132403 WG604424-01

Report Date/Time: Tuesday, February 28, 2017 14:33:00

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.367
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	66.540
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702132403 WG604424-01

Report Date/Time: Tuesday, February 28, 2017 14:33:00

Page 3

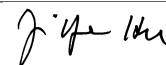
Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702132403 WG604424-01
Report Date/Time: Tuesday, February 28, 2017 14:33:00
Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132404S WG604424-04

Sample Date/Time: Tuesday, February 28, 2017 14:33:55

Number of Replicates: 3

Autosampler Position: 236

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	472260.8	0.9				ug/L	250104	Standard
|	Be	9	79665.6	1.7	25.9309	0.516	2.0	ug/L	7	Standard
|	Al	27	125808086.5	0.2	547.4636	5.415	1.0	ug/L	597	Standard
|	Sc	45	40318.6	1.7				ug/L	41681	Standard
|	Ti	47	317.3	1.2	1.6365	0.072	4.4	ug/L	86	Standard
|	V	51	288750.2	2.0	54.7318	0.552	1.0	ug/L	1740	Standard
|	Cr	52	279415.3	1.7	56.0301	0.758	1.4	ug/L	7178	Standard
|	Cr	53	83667.3	3.9	132.9867	1.893	1.4	ug/L	573	Standard
|	Mn	55	75774070.9	1.5	9434.4714	130.544	1.4	ug/L	3072	Standard
|	Co	59	345130.2	1.6	54.9423	0.667	1.2	ug/L	573	Standard
|	Ni	60	127011.1	0.5	95.1874	1.977	2.1	ug/L	264	Standard
|	Cu	65	67048.7	1.2	52.2426	0.720	1.4	ug/L	530	Standard
|	Zn	66	37600.3	0.9	51.0468	0.998	2.0	ug/L	252	Standard
>	Ge	72	545581.5	2.6				ug/L	641188	Standard
|	As	75	37166.5	1.6	50.5919	1.796	3.5	ug/L	-83	Standard
|	Se	82	3419.9	2.3	53.5952	2.601	4.9	ug/L	16	Standard
|	Se-1	77	25565.9	5.8	560.2667	19.513	3.5	ug/L	126	Standard
>	Ga	71	875.0	5.6				mg/L	70	Standard
|	Rb	85	288236.8	2.4				ug/L	33	Standard
|	Y	89	450506.5	3.6				ug/L	493982	Standard
>	Rh	103	6971.6	3.6				ug/L	17	Standard
|	Mo	98	140.7	8.3	0.0385	0.004	10.9	ug/L	54	Standard
|	Ag	107	195783.3	1.3	47.9084	0.392	0.8	ug/L	137	Standard
|	Cd	111	58779.3	0.8	48.5283	0.762	1.6	mg/L	6	Standard
|	Cd	114	154001.5	0.7	46.3462	0.937	2.0	ug/L	20	Standard
>	In	115	575394.6	2.1				ug/L	755264	Standard
|	Sn	118	208.0	10.7	0.1509	0.027	17.6	ug/L	138	Standard
|	Sb	123	170801.2	1.5	50.0402	0.337	0.7	ug/L	391	Standard
|	Ba	135	35053224.5	0.1	25747.4352	525.836	2.0	ug/L	32	Standard
|	Ce	140	7441.8	2.5				ug/L	42	Standard
>	Tb	159	999728.0	1.7				ug/L	966827	Standard
|	Ho	165	231.7	11.9				ug/L	12	Standard
|	Tl	203	235048.2	0.9	55.1634	0.080	0.1	ug/L	19	Standard
|	Tl	205	532780.1	1.5	53.4769	0.623	1.2	ug/L	58	Standard
|	Pb	206	171408.1	0.3	50.9393	0.369	0.7	ug/L	464	Standard
|	Pb	207	145123.4	0.8	48.1997	0.478	1.0	ug/L	405	Standard
|	Pb	208	397820.9	1.0	60.5713	0.188	0.3	ug/L	876	Standard
|	U	238	590572.3	1.5	79.0629	0.721	0.9	ug/L	14	Standard
>	Bi	209	387798.8	1.0				ug/L	599146	Standard

Sample ID: L1702132404S WG604424-04

Report Date/Time: Tuesday, February 28, 2017 14:36:06

Page 1

Approved: March 01, 2017

Na	23	4939.1	4.5	1473.9883	69.227	4.7	mg/L	3	Standard
Mg	24	14663.8	3.7	306.2679	15.864	5.2	mg/L	30	Standard
K	39	3103.7	3.0	42.5626	1.875	4.4	mg/L	10	Standard
Ca	43	3867.2	2.3	2296.4136	87.193	3.8	mg/L	83	Standard
Fe	54	426.5	13.8	6.5307	0.842	12.9	mg/L	21	Standard
Fe	57	8775.9	1.9	488.4785	4.670	1.0	mg/L	240	Standard
Sc-1	45	40318.6	1.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	9.7	6.0				ug/L	5	Standard
Br	81	249164.6	4.4				ug/L	1587	Standard
P	31	91.7	20.7				ug/L	50	Standard
S	34	30.0	33.3				ug/L	8	Standard
Sr	88	763.4	8.8				ug/L	198	Standard
C	12	50.0	34.6				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	289.0	16.8				mg/L	6	Standard
Ho-1	165	231.7	11.9				mg/L	12	Standard
Er	166	230.0	44.1				mg/L	10	Standard
I	127	361312.9	7.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		188.826	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		85.089	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132404S WG604424-04

Report Date/Time: Tuesday, February 28, 2017 14:36:06

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.185
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.725
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

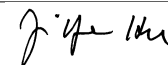
Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
Cr 53 Upper, S, EEE	Cr	53	

Sample ID: L1702132404S WG604424-04

Report Date/Time: Tuesday, February 28, 2017 14:36:06

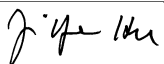
Page 3

Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702132404S WG604424-04
Report Date/Time: Tuesday, February 28, 2017 14:36:06
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702132405SD WG604424-05

Sample Date/Time: Tuesday, February 28, 2017 14:37:01

Number of Replicates: 3

Autosampler Position: 237

Sample Description: 1

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	468511.9	2.0				ug/L	250104	Standard
|	Be	9	78102.5	1.7	25.6285	0.534	2.1	ug/L	7	Standard
|	Al	27	119643819.4	2.2	524.8253	10.300	2.0	ug/L	597	Standard
|	Sc	45	40251.7	1.9				ug/L	41681	Standard
|	Ti	47	259.0	5.7	1.2093	0.101	8.3	ug/L	86	Standard
|	V	51	281054.0	1.5	51.9865	0.233	0.4	ug/L	1740	Standard
|	Cr	52	273583.5	1.4	53.4927	0.282	0.5	ug/L	7178	Standard
|	Cr	53	85093.4	3.2	132.0601	3.680	2.8	ug/L	573	Standard
|	Mn	55	73623047.4	0.6	8947.6145	100.156	1.1	ug/L	3072	Standard
|	Co	59	336447.2	0.6	52.2773	0.314	0.6	ug/L	573	Standard
|	Ni	60	126895.5	0.1	92.8123	1.050	1.1	ug/L	264	Standard
|	Cu	65	66128.0	0.7	50.2769	0.180	0.4	ug/L	530	Standard
|	Zn	66	37046.2	1.0	49.0710	0.019	0.0	ug/L	252	Standard
>	Ge	72	558854.3	1.1				ug/L	641188	Standard
|	As	75	35376.0	2.1	46.9853	0.569	1.2	ug/L	-83	Standard
|	Se	82	3235.0	1.3	49.4421	1.057	2.1	ug/L	16	Standard
|	Se-1	77	24956.5	3.0	534.0718	14.231	2.7	ug/L	126	Standard
>	Ga	71	883.4	6.0				mg/L	70	Standard
|	Rb	85	280375.9	1.8				ug/L	33	Standard
|	Y	89	461880.7	1.7				ug/L	493982	Standard
>	Rh	103	7518.5	2.3				ug/L	17	Standard
|	Mo	98	144.8	4.9	0.0390	0.003	8.3	ug/L	54	Standard
|	Ag	107	191807.5	0.6	45.9415	0.584	1.3	ug/L	137	Standard
|	Cd	111	57645.9	1.3	46.5807	0.814	1.7	mg/L	6	Standard
|	Cd	114	149572.6	1.5	44.0538	0.850	1.9	ug/L	20	Standard
>	In	115	587797.8	0.7				ug/L	755264	Standard
|	Sn	118	268.3	6.7	0.2261	0.026	11.6	ug/L	138	Standard
|	Sb	123	167907.6	0.6	48.1518	0.610	1.3	ug/L	391	Standard
|	Ba	135	34305416.2	0.7	24660.6036	309.799	1.3	ug/L	32	Standard
|	Ce	140	7760.3	2.3				ug/L	42	Standard
>	Tb	159	1011786.2	1.3				ug/L	966827	Standard
|	Ho	165	266.7	9.6				ug/L	12	Standard
|	Tl	203	229381.1	1.0	53.7570	0.436	0.8	ug/L	19	Standard
|	Tl	205	520918.4	1.7	52.2096	0.472	0.9	ug/L	58	Standard
|	Pb	206	168847.3	1.0	50.1030	0.268	0.5	ug/L	464	Standard
|	Pb	207	142600.3	1.2	47.2897	0.183	0.4	ug/L	405	Standard
|	Pb	208	381406.1	1.2	57.9844	0.182	0.3	ug/L	876	Standard
|	U	238	560236.7	2.1	74.8881	0.448	0.6	ug/L	14	Standard
>	Bi	209	388370.9	1.5				ug/L	599146	Standard

Sample ID: L1702132405SD WG604424-05

Report Date/Time: Tuesday, February 28, 2017 14:39:11

Page 1

Approved: March 01, 2017

Na	23	4705.7	1.9	1406.9574	47.548	3.4	mg/L	3	Standard
Mg	24	13823.0	3.0	288.9638	3.140	1.1	mg/L	30	Standard
K	39	2945.3	2.4	40.4461	1.597	3.9	mg/L	10	Standard
Ca	43	3940.5	5.2	2344.6389	138.160	5.9	mg/L	83	Standard
Fe	54	406.1	14.9	6.2383	1.082	17.3	mg/L	21	Standard
Fe	57	8203.9	2.7	456.4024	9.753	2.1	mg/L	240	Standard
Sc-1	45	40251.7	1.9				mg/L	41681	Standard
Cl	35	2.0	0.0				ug/L	2	Standard
Kr	83	6.3	32.9				ug/L	5	Standard
Br	81	227054.1	4.4				ug/L	1587	Standard
P	31	75.0	34.6				ug/L	50	Standard
S	34	51.7	29.6				ug/L	8	Standard
Sr	88	686.7	3.7				ug/L	198	Standard
C	12	70.0	14.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	329.0	5.7				mg/L	6	Standard
Ho-1	165	266.7	9.6				mg/L	12	Standard
Er	166	230.0	26.4				mg/L	10	Standard
I	127	349544.5	6.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		187.327	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		87.159	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132405SD WG604424-05

Report Date/Time: Tuesday, February 28, 2017 14:39:11

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.827
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.821
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
Cr 53 Upper, S, EEE	Cr	53	

Sample ID: L1702132405SD WG604424-05

Report Date/Time: Tuesday, February 28, 2017 14:39:11

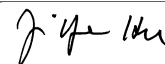
Page 3

Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702132405SD WG604424-05
Report Date/Time: Tuesday, February 28, 2017 14:39:11
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702131902

Sample Date/Time: Tuesday, February 28, 2017 14:40:06

Number of Replicates: 3

Autosampler Position: 238

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	267718.0	3.5				ug/L	250104	Standard
|	Be	9	31.7	39.7	0.0079	0.007	93.1	ug/L	7	Standard
|	Al	27	61510.3	22.1	0.4640	0.086	18.6	ug/L	597	Standard
|	Sc	45	46003.1	2.0				ug/L	41681	Standard
|	Ti	47	158.0	21.4	0.4563	0.180	39.5	ug/L	86	Standard
|	V	51	5954.2	7.9	0.7245	0.096	13.3	ug/L	1740	Standard
|	Cr	52	24893.8	3.7	3.2752	0.086	2.6	ug/L	7178	Standard
|	Cr	53	31331.3	16.5	43.2619	6.583	15.2	ug/L	573	Standard
|	Mn	55	15663.2	51.5	1.4026	0.846	60.3	ug/L	3072	Standard
|	Co	59	8384.0	3.6	1.1163	0.022	2.0	ug/L	573	Standard
|	Ni	60	30777.2	2.5	20.1876	0.237	1.2	ug/L	264	Standard
|	Cu	65	507382.8	2.5	350.5847	3.417	1.0	ug/L	530	Standard
|	Zn	66	8389.3	0.9	9.7572	0.118	1.2	ug/L	252	Standard
>	Ge	72	618831.1	1.8				ug/L	641188	Standard
|	As	75	695.1	10.9	0.8762	0.101	11.5	ug/L	-83	Standard
|	Se	82	118.5	10.3	1.4169	0.194	13.7	ug/L	16	Standard
|	Se-1	77	4370.0	23.6	82.3470	18.607	22.6	ug/L	126	Standard
>	Ga	71	308.3	20.0				mg/L	70	Standard
|	Rb	85	8113.8	0.4				ug/L	33	Standard
|	Y	89	444649.2	1.3				ug/L	493982	Standard
>	Rh	103	210.0	10.4				ug/L	17	Standard
|	Mo	98	33220.0	1.0	11.7626	0.230	2.0	ug/L	54	Standard
|	Ag	107	140.7	14.6	0.0052	0.004	73.2	ug/L	137	Standard
|	Cd	111	10.5	80.6	-0.0064	0.006	88.7	mg/L	6	Standard
|	Cd	114	145.9	20.3	0.0267	0.007	25.5	ug/L	20	Standard
>	In	115	684559.7	1.8				ug/L	755264	Standard
|	Sn	118	213.3	6.7	0.1121	0.019	17.4	ug/L	138	Standard
|	Sb	123	435.9	1.1	0.0808	0.001	1.4	ug/L	391	Standard
|	Ba	135	46023.7	6.7	28.3648	1.444	5.1	ug/L	32	Standard
|	Ce	140	190.0	16.4				ug/L	42	Standard
>	Tb	159	1024457.0	1.4				ug/L	966827	Standard
|	Ho	165	18.3	41.7				ug/L	12	Standard
|	Tl	203	416.3	41.8	0.0617	0.028	45.3	ug/L	19	Standard
|	Tl	205	966.7	39.9	0.0655	0.026	40.4	ug/L	58	Standard
|	Pb	206	47981.2	1.0	9.9619	0.088	0.9	ug/L	464	Standard
|	Pb	207	40093.0	1.5	9.3002	0.114	1.2	ug/L	405	Standard
|	Pb	208	89593.8	0.8	9.5292	0.040	0.4	ug/L	876	Standard
|	U	238	129.7	10.2	0.0105	0.001	10.7	ug/L	14	Standard
>	Bi	209	550864.0	1.2				ug/L	599146	Standard

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 14:42:17

Page 1

Approved: March 01, 2017

Na	23	1085.0	8.5	283.6602	28.171	9.9	mg/L	3	Standard
Mg	24	403.3	6.2	6.8498	0.364	5.3	mg/L	30	Standard
K	39	328.3	15.3	3.7337	0.689	18.5	mg/L	10	Standard
Ca	43	1028.4	2.5	504.1769	18.591	3.7	mg/L	83	Standard
Fe	54	30.5	46.9	0.1742	0.193	111.0	mg/L	21	Standard
Fe	57	2223.5	4.6	96.1752	6.410	6.7	mg/L	240	Standard
Sc-1	45	46003.1	2.0				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	5.3	65.8				ug/L	5	Standard
Br	81	17096.3	6.6				ug/L	1587	Standard
P	31	86.7	17.6				ug/L	50	Standard
S	34	31.7	63.8				ug/L	8	Standard
Sr	88	308.3	12.2				ug/L	198	Standard
C	12	43.3	13.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	83.3	25.0				mg/L	3	Standard
Dy	164	15.7	102.2				mg/L	6	Standard
Ho-1	165	18.3	41.7				mg/L	12	Standard
Er	166	20.0	86.6				mg/L	10	Standard
I	127	49960.3	23.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		107.043	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		96.513	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 14:42:17

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.638
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	91.942
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Cu 65 Upper, S, EEE	Cu	65	

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 14:42:17

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702125302

Sample Date/Time: Tuesday, February 28, 2017 14:43:12

Number of Replicates: 3

Autosampler Position: 239

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	376957.3	1.5				ug/L	250104	Standard
|	Be	9	21.7	26.6	-0.0014	0.002	175.2	ug/L	7	Standard
|	Al	27	23053.1	21.5	0.1197	0.029	24.0	ug/L	597	Standard
|	Sc	45	44727.7	3.9				ug/L	41681	Standard
|	Ti	47	436.7	8.9	2.1486	0.239	11.1	ug/L	86	Standard
|	V	51	41614.8	1.7	6.8922	0.128	1.9	ug/L	1740	Standard
|	Cr	52	33613.9	2.1	5.0078	0.148	3.0	ug/L	7178	Standard
|	Cr	53	38719.7	8.7	55.1570	4.813	8.7	ug/L	573	Standard
|	Mn	55	9985.4	21.9	0.8176	0.245	30.0	ug/L	3072	Standard
|	Co	59	20777.2	2.4	2.9327	0.076	2.6	ug/L	573	Standard
|	Ni	60	1766874.4	3.1	1199.1972	39.528	3.3	ug/L	264	Standard
|	Cu	65	4154.2	4.1	2.5697	0.121	4.7	ug/L	530	Standard
|	Zn	66	2910.3	3.3	3.2455	0.130	4.0	ug/L	252	Standard
>	Ge	72	603290.0	0.4				ug/L	641188	Standard
|	As	75	3556.7	9.4	4.4155	0.427	9.7	ug/L	-83	Standard
|	Se	82	329.3	4.0	4.4551	0.202	4.5	ug/L	16	Standard
|	Se-1	77	9777.5	11.3	192.3591	21.537	11.2	ug/L	126	Standard
>	Ga	71	1325.1	10.4				mg/L	70	Standard
|	Rb	85	1136237.9	2.1				ug/L	33	Standard
|	Y	89	447041.0	0.9				ug/L	493982	Standard
>	Rh	103	726.7	17.0				ug/L	17	Standard
|	Mo	98	7263.4	1.4	2.6390	0.058	2.2	ug/L	54	Standard
|	Ag	107	197.7	48.2	0.0182	0.020	109.3	ug/L	137	Standard
|	Cd	111	32.6	104.8	0.0096	0.024	251.8	mg/L	6	Standard
|	Cd	114	97.1	53.1	0.0152	0.013	87.2	ug/L	20	Standard
>	In	115	663034.3	0.8				ug/L	755264	Standard
|	Sn	118	295.3	9.0	0.2171	0.029	13.2	ug/L	138	Standard
|	Sb	123	359.3	27.5	0.0647	0.024	37.9	ug/L	391	Standard
|	Ba	135	2530737.7	1.6	1612.8962	38.261	2.4	ug/L	32	Standard
|	Ce	140	81.7	36.9				ug/L	42	Standard
>	Tb	159	1035348.5	0.8				ug/L	966827	Standard
|	Ho	165	5.0	0.0				ug/L	12	Standard
|	Tl	203	164.7	33.3	0.0223	0.010	43.2	ug/L	19	Standard
|	Tl	205	446.7	34.3	0.0314	0.012	36.8	ug/L	58	Standard
|	Pb	206	507.7	9.6	0.0199	0.011	53.1	ug/L	464	Standard
|	Pb	207	426.0	1.2	0.0159	0.001	9.3	ug/L	405	Standard
|	Pb	208	965.3	6.3	0.0233	0.007	28.7	ug/L	876	Standard
|	U	238	61.3	108.4	0.0045	0.007	148.8	ug/L	14	Standard
>	Bi	209	511044.1	0.6				ug/L	599146	Standard

Sample ID: L1702125302

Report Date/Time: Tuesday, February 28, 2017 14:45:23

Page 1

Approved: March 01, 2017

Na	23	3063.6	5.3	825.7754	74.775	9.1	mg/L	3	Standard
Mg	24	1476.7	6.2	27.2842	0.812	3.0	mg/L	30	Standard
K	39	4975.8	7.4	61.6703	5.479	8.9	mg/L	10	Standard
Ca	43	2776.9	3.0	1472.6844	58.877	4.0	mg/L	83	Standard
Fe	54	52.3	48.1	0.5084	0.378	74.3	mg/L	21	Standard
Fe	57	5959.5	7.9	293.8008	35.927	12.2	mg/L	240	Standard
Sc-1	45	44727.7	3.9				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	5.3	39.0				ug/L	5	Standard
Br	81	56107.1	3.0				ug/L	1587	Standard
P	31	73.3	25.8				ug/L	50	Standard
S	34	36.7	34.3				ug/L	8	Standard
Sr	88	375.0	6.1				ug/L	198	Standard
C	12	760.0	7.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	60.0	60.1				mg/L	3	Standard
Dy	164	8.9	6.2				mg/L	6	Standard
Ho-1	165	5.0	0.0				mg/L	12	Standard
Er	166	23.3	49.5				mg/L	10	Standard
I	127	92616.7	8.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		150.720	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		94.089	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125302

Report Date/Time: Tuesday, February 28, 2017 14:45:23

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	87.788
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.295
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Ni 60 Upper, S, EEE	Ni	60	
Se-1 77 Upper, S, EEE	Se-1	77	

Sample ID: L1702125302

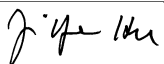
Report Date/Time: Tuesday, February 28, 2017 14:45:23

Page 3

Approved: March 01, 2017



Sample ID: L1702125302
Report Date/Time: Tuesday, February 28, 2017 14:45:23
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702125302PS WG604489-01

Sample Date/Time: Tuesday, February 28, 2017 14:46:17

Number of Replicates: 3

Autosampler Position: 240

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	359889.7	1.6				ug/L	250104	Standard
|	Be	9	92474.7	0.6	39.5054	0.395	1.0	ug/L	7	Standard
|	Al	27	58516.9	114.1	0.3308	0.387	117.1	ug/L	597	Standard
|	Sc	45	43193.2	2.1				ug/L	41681	Standard
|	Ti	47	458.0	6.1	2.3202	0.181	7.8	ug/L	86	Standard
|	V	51	389907.4	1.8	67.9605	0.390	0.6	ug/L	1740	Standard
|	Cr	52	345276.3	0.9	63.7705	0.343	0.5	ug/L	7178	Standard
|	Cr	53	74318.5	1.9	108.3969	1.077	1.0	ug/L	573	Standard
|	Mn	55	536783.2	5.2	61.0787	2.739	4.5	ug/L	3072	Standard
|	Co	59	410412.4	0.7	60.0289	0.691	1.2	ug/L	573	Standard
|	Ni	60	1861955.2	1.4	1283.9038	12.605	1.0	ug/L	264	Standard
|	Cu	65	78274.3	1.1	56.0527	0.362	0.6	ug/L	530	Standard
|	Zn	66	42819.1	1.5	53.4115	0.537	1.0	ug/L	252	Standard
>	Ge	72	593796.8	1.2				ug/L	641188	Standard
|	As	75	50069.6	2.5	62.5757	1.255	2.0	ug/L	-83	Standard
|	Se	82	4119.0	2.2	59.2907	1.418	2.4	ug/L	16	Standard
|	Se-1	77	11668.8	0.9	233.7618	1.136	0.5	ug/L	126	Standard
>	Ga	71	1341.7	4.0				mg/L	70	Standard
|	Rb	85	1150608.0	1.9				ug/L	33	Standard
|	Y	89	437927.0	0.4				ug/L	493982	Standard
>	Rh	103	755.0	3.3				ug/L	17	Standard
|	Mo	98	7328.9	0.8	2.7622	0.028	1.0	ug/L	54	Standard
|	Ag	107	225227.5	1.3	49.5956	0.358	0.7	ug/L	137	Standard
|	Cd	111	73186.9	1.0	54.3714	0.495	0.9	mg/L	6	Standard
|	Cd	114	190413.3	1.9	51.5558	0.229	0.4	ug/L	20	Standard
>	In	115	639389.5	1.8				ug/L	755264	Standard
|	Sn	118	350.7	6.0	0.2985	0.025	8.5	ug/L	138	Standard
|	Sb	123	205986.9	1.2	54.3098	0.330	0.6	ug/L	391	Standard
|	Ba	135	2664740.4	1.0	1761.0425	13.661	0.8	ug/L	32	Standard
|	Ce	140	105.0	17.2				ug/L	42	Standard
>	Tb	159	994105.3	0.6				ug/L	966827	Standard
|	Ho	165	35.0	14.3				ug/L	12	Standard
|	Tl	203	319861.7	1.3	58.7267	0.210	0.4	ug/L	19	Standard
|	Tl	205	734245.6	1.4	57.6553	0.356	0.6	ug/L	58	Standard
|	Pb	206	243935.4	1.0	56.7213	0.112	0.2	ug/L	464	Standard
|	Pb	207	215455.2	0.9	55.9956	0.344	0.6	ug/L	405	Standard
|	Pb	208	478298.1	0.4	56.9700	0.439	0.8	ug/L	876	Standard
|	U	238	562781.6	0.6	58.9459	0.563	1.0	ug/L	14	Standard
>	Bi	209	495699.8	1.0				ug/L	599146	Standard

Sample ID: L1702125302PS WG604489-01

Report Date/Time: Tuesday, February 28, 2017 14:48:27

Page 1

Approved: March 01, 2017

Na	23	3078.6	4.1	857.0416	17.139	2.0	mg/L	3	Standard
Mg	24	1493.4	1.1	28.6245	0.917	3.2	mg/L	30	Standard
K	39	4804.1	2.7	61.5764	0.748	1.2	mg/L	10	Standard
Ca	43	2866.9	3.5	1577.3771	90.233	5.7	mg/L	83	Standard
Fe	54	46.3	37.2	0.4356	0.244	55.9	mg/L	21	Standard
Fe	57	5732.8	3.7	291.7425	12.858	4.4	mg/L	240	Standard
Sc-1	45	43193.2	2.1				mg/L	41681	Standard
Cl	35	4.0	0.0				ug/L	2	Standard
Kr	83	6.7	22.9				ug/L	5	Standard
Br	81	57502.4	4.7				ug/L	1587	Standard
P	31	80.0	21.7				ug/L	50	Standard
S	34	35.0	42.9				ug/L	8	Standard
Sr	88	361.7	5.6				ug/L	198	Standard
C	12	883.4	10.5				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	86.7	17.6				mg/L	3	Standard
Dy	164	26.0	57.3				mg/L	6	Standard
Ho-1	165	35.0	14.3				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	74009.8	9.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		143.896	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		92.609	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125302PS WG604489-01

Report Date/Time: Tuesday, February 28, 2017 14:48:27

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	84.658
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	82.734
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Cr 53 Upper, S, EEE	Cr	53	
Ni 60 Upper, S, EEE	Ni	60	

Sample ID: L1702125302PS WG604489-01

Report Date/Time: Tuesday, February 28, 2017 14:48:27

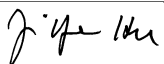
Page 3

Approved: March 01, 2017



Se-1 77 Upper, S, EEE Se-1 77
Ba 135 Upper, S, EEE Ba 135

Sample ID: L1702125302PS WG604489-01
Report Date/Time: Tuesday, February 28, 2017 14:48:27
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702125302SDL WG604489-02

Sample Date/Time: Tuesday, February 28, 2017 14:49:22

Number of Replicates: 3

Autosampler Position: 241

Sample Description: 5

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	260212.9	2.3				ug/L	250104	Standard
|	Be	9	18.3	68.6	0.0006	0.007	1280.4	ug/L	7	Standard
|	Al	27	8166.1	61.9	0.0590	0.042	71.1	ug/L	597	Standard
|	Sc	45	45118.9	5.0				ug/L	41681	Standard
|	Ti	47	79.0	6.7	0.0260	0.054	206.9	ug/L	86	Standard
|	V	51	8083.3	10.4	1.1641	0.191	16.4	ug/L	1740	Standard
|	Cr	52	15715.8	1.4	1.7871	0.145	8.1	ug/L	7178	Standard
|	Cr	53	20348.7	4.2	29.5515	2.131	7.2	ug/L	573	Standard
|	Mn	55	14538.1	132.6	1.4413	2.356	163.5	ug/L	3072	Standard
|	Co	59	4305.6	5.8	0.5805	0.065	11.3	ug/L	573	Standard
|	Ni	60	361247.5	2.2	253.2024	16.487	6.5	ug/L	264	Standard
|	Cu	65	1316.7	8.8	0.5892	0.128	21.7	ug/L	530	Standard
|	Zn	66	1517.4	6.0	1.5878	0.185	11.7	ug/L	252	Standard
>	Ge	72	584927.2	4.3				ug/L	641188	Standard
|	As	75	736.7	13.1	0.9766	0.119	12.2	ug/L	-83	Standard
|	Se	82	80.4	15.7	0.9526	0.193	20.2	ug/L	16	Standard
|	Se-1	77	3103.7	3.3	61.5509	3.816	6.2	ug/L	126	Standard
>	Ga	71	351.7	7.2				mg/L	70	Standard
|	Rb	85	208795.9	2.1				ug/L	33	Standard
|	Y	89	388120.9	3.7				ug/L	493982	Standard
>	Rh	103	158.3	22.8				ug/L	17	Standard
|	Mo	98	1271.4	4.0	0.4774	0.039	8.2	ug/L	54	Standard
|	Ag	107	135.3	15.2	0.0070	0.005	66.0	ug/L	137	Standard
|	Cd	111	9.0	28.0	-0.0067	0.002	33.2	mg/L	6	Standard
|	Cd	114	250.6	3.5	0.0599	0.004	6.2	ug/L	20	Standard
>	In	115	621007.9	4.8				ug/L	755264	Standard
|	Sn	118	1780.8	8.9	2.1230	0.094	4.4	ug/L	138	Standard
|	Sb	123	488.4	12.1	0.1063	0.017	16.2	ug/L	391	Standard
|	Ba	135	444457.2	2.9	303.1104	23.264	7.7	ug/L	32	Standard
|	Ce	140	38.3	19.9				ug/L	42	Standard
>	Tb	159	961570.8	3.8				ug/L	966827	Standard
|	Ho	165	6.7	86.6				ug/L	12	Standard
|	Tl	203	56.3	31.8	0.0032	0.004	117.1	ug/L	19	Standard
|	Tl	205	153.3	16.1	0.0091	0.002	25.6	ug/L	58	Standard
|	Pb	206	445.3	6.0	0.0059	0.005	84.7	ug/L	464	Standard
|	Pb	207	377.0	4.4	0.0038	0.008	212.7	ug/L	405	Standard
|	Pb	208	849.3	5.4	0.0099	0.001	13.3	ug/L	876	Standard
|	U	238	62.7	10.3	0.0047	0.001	13.1	ug/L	14	Standard
>	Bi	209	510878.8	4.7				ug/L	599146	Standard

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:51:33

Page 1

Approved: March 01, 2017

Na	23	588.3	11.6	157.2508	25.638	16.3	mg/L	3	Standard
Mg	24	270.0	15.8	4.4938	0.632	14.1	mg/L	30	Standard
K	39	1213.4	4.2	14.7173	0.578	3.9	mg/L	10	Standard
Ca	43	598.3	2.9	282.8086	8.163	2.9	mg/L	83	Standard
Fe	54	24.0	41.1	0.0968	0.158	162.8	mg/L	21	Standard
Fe	57	1548.4	14.5	63.8156	12.288	19.3	mg/L	240	Standard
Sc-1	45	45118.9	5.0				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	6.0	16.7				ug/L	5	Standard
Br	81	11928.0	6.1				ug/L	1587	Standard
P	31	48.3	33.3				ug/L	50	Standard
S	34	30.0	60.1				ug/L	8	Standard
Sr	88	328.3	12.3				ug/L	198	Standard
C	12	130.0	53.8				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	10.0	100.0				mg/L	3	Standard
Dy	164	9.0	118.6				mg/L	6	Standard
Ho-1	165	6.7	86.6				mg/L	12	Standard
Er	166	20.0	86.6				mg/L	10	Standard
I	127	20368.7	0.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		104.042	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		91.226	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:51:33

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	82.224
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.268
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Ni 60 Upper, S, EEE	Ni	60	
Ba 135 Upper, S, EEE	Ba	135	

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:51:33

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702125302SDL WG604489-02

Sample Date/Time: Tuesday, February 28, 2017 14:52:27

Number of Replicates: 3

Autosampler Position: 242

Sample Description: 25

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	228798.1	1.5				ug/L	250104	Standard
|	Be	9	28.3	27.0	0.0088	0.005	59.5	ug/L	7	Standard
|	Al	27	2525.2	6.6	0.0165	0.002	10.9	ug/L	597	Standard
|	Sc	45	43407.1	2.7				ug/L	41681	Standard
|	Ti	47	41.7	10.8	-0.2017	0.030	15.0	ug/L	86	Standard
|	V	51	2291.2	12.3	0.1368	0.051	37.5	ug/L	1740	Standard
|	Cr	52	11466.3	0.9	1.0047	0.004	0.4	ug/L	7178	Standard
|	Cr	53	13764.6	6.7	19.9922	1.534	7.7	ug/L	573	Standard
|	Mn	55	2191.2	2.5	-0.0480	0.007	15.6	ug/L	3072	Standard
|	Co	59	1231.4	5.2	0.1245	0.009	7.3	ug/L	573	Standard
|	Ni	60	82465.8	1.2	58.4390	0.438	0.8	ug/L	264	Standard
|	Cu	65	708.3	2.0	0.1483	0.008	5.7	ug/L	530	Standard
|	Zn	66	842.0	1.2	0.7385	0.021	2.8	ug/L	252	Standard
>	Ge	72	576106.1	0.8				ug/L	641188	Standard
|	As	75	82.5	47.4	0.1487	0.051	34.3	ug/L	-83	Standard
|	Se	82	29.0	17.5	0.2045	0.078	38.1	ug/L	16	Standard
|	Se-1	77	1629.8	3.5	31.7023	1.108	3.5	ug/L	126	Standard
>	Ga	71	165.0	13.9				mg/L	70	Standard
|	Rb	85	45668.8	3.5				ug/L	33	Standard
|	Y	89	384732.5	1.6				ug/L	493982	Standard
>	Rh	103	50.0	55.7				ug/L	17	Standard
|	Mo	98	286.8	9.2	0.0932	0.010	10.8	ug/L	54	Standard
|	Ag	107	112.0	23.3	0.0021	0.006	269.0	ug/L	137	Standard
|	Cd	111	8.3	37.0	-0.0072	0.002	31.7	mg/L	6	Standard
|	Cd	114	211.8	14.5	0.0500	0.008	16.7	ug/L	20	Standard
>	In	115	610334.9	1.9				ug/L	755264	Standard
|	Sn	118	2168.8	9.7	2.6673	0.277	10.4	ug/L	138	Standard
|	Sb	123	116.8	21.5	0.0056	0.006	112.7	ug/L	391	Standard
|	Ba	135	95637.3	2.2	66.1804	0.777	1.2	ug/L	32	Standard
|	Ce	140	26.7	57.3				ug/L	42	Standard
>	Tb	159	908925.7	2.3				ug/L	966827	Standard
|	Ho	165	10.0	50.0				ug/L	12	Standard
|	Tl	203	42.7	10.8	0.0007	0.001	122.2	ug/L	19	Standard
|	Tl	205	91.7	13.7	0.0044	0.001	20.8	ug/L	58	Standard
|	Pb	206	411.0	4.0	-0.0018	0.004	219.2	ug/L	464	Standard
|	Pb	207	346.0	5.6	-0.0042	0.004	92.3	ug/L	405	Standard
|	Pb	208	757.7	4.3	-0.0006	0.003	454.0	ug/L	876	Standard
|	U	238	8.0	76.0	-0.0009	0.001	69.5	ug/L	14	Standard
>	Bi	209	510210.6	1.4				ug/L	599146	Standard

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:54:38

Page 1

Approved: March 01, 2017

Na	23	131.7	14.4	36.0592	5.472	15.2	mg/L	3	Standard
Mg	24	95.0		1.3063	0.051	3.9	mg/L	30	Standard
K	39	245.0	19.5	2.8856	0.531	18.4	mg/L	10	Standard
Ca	43	203.3	16.4	73.5713	17.268	23.5	mg/L	83	Standard
Fe	54	22.4	13.2	0.0833	0.050	60.2	mg/L	21	Standard
Fe	57	656.7	4.4	19.1738	1.105	5.8	mg/L	240	Standard
Sc-1	45	43407.1	2.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.7	68.9				ug/L	5	Standard
Br	81	3963.9	3.9				ug/L	1587	Standard
P	31	53.3	19.5				ug/L	50	Standard
S	34	35.0	37.8				ug/L	8	Standard
Sr	88	270.0	0.0				ug/L	198	Standard
C	12	40.0	43.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	6.3	93.2				mg/L	6	Standard
Ho-1	165	10.0	50.0				mg/L	12	Standard
Er	166	6.7	86.6				mg/L	10	Standard
I	127	10216.8	2.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		91.481	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		89.850	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:54:38

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	80.811
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.156
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

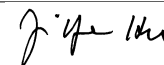
Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702125302SDL WG604489-02

Report Date/Time: Tuesday, February 28, 2017 14:54:38

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 14:55:35

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	226330.0	1.9				ug/L	250104	Standard
|	Be	9	73948.4	0.5	50.2398	0.707	1.4	ug/L	7	Standard
|	Al	27	5193016.8	0.7	47.1522	0.624	1.3	ug/L	597	Standard
|	Sc	45	45214.1	2.7				ug/L	41681	Standard
|	Ti	47	18662.8	2.1	110.3149	3.062	2.8	ug/L	86	Standard
|	V	51	303176.2	2.3	51.5713	1.545	3.0	ug/L	1740	Standard
|	Cr	52	286228.8	2.2	51.4312	1.930	3.8	ug/L	7178	Standard
|	Cr	53	41244.4	3.6	58.4113	3.329	5.7	ug/L	573	Standard
|	Mn	55	465797.5	1.9	51.7474	1.078	2.1	ug/L	3072	Standard
|	Co	59	363322.6	1.6	51.9157	1.402	2.7	ug/L	573	Standard
|	Ni	60	77085.6	1.9	51.7607	0.934	1.8	ug/L	264	Standard
|	Cu	65	73107.6	1.0	51.1159	0.583	1.1	ug/L	530	Standard
|	Zn	66	40970.0	0.6	49.9093	0.678	1.4	ug/L	252	Standard
>	Ge	72	607840.0	1.9				ug/L	641188	Standard
|	As	75	39744.5	1.5	48.5373	0.225	0.5	ug/L	-83	Standard
|	Se	82	3366.9	0.8	47.3034	0.596	1.3	ug/L	16	Standard
|	Se-1	77	3224.3	2.9	61.4771	3.055	5.0	ug/L	126	Standard
>	Ga	71	101.7	36.3				mg/L	70	Standard
|	Rb	85	590.0	3.7				ug/L	33	Standard
|	Y	89	408830.8	0.8				ug/L	493982	Standard
>	Rh	103	36.7	28.4				ug/L	17	Standard
|	Mo	98	240708.8	0.3	92.7652	1.408	1.5	ug/L	54	Standard
|	Ag	107	210715.7	1.5	47.0950	0.126	0.3	ug/L	137	Standard
|	Cd	111	61368.4	0.8	46.2763	0.531	1.1	mg/L	6	Standard
|	Cd	114	178110.0	2.5	48.9496	0.877	1.8	ug/L	20	Standard
>	In	115	629919.8	1.8				ug/L	755264	Standard
|	Sn	118	40403.8	2.0	50.4195	1.209	2.4	ug/L	138	Standard
|	Sb	123	187985.1	0.5	50.3114	0.697	1.4	ug/L	391	Standard
|	Ba	135	79844.2	1.1	53.5346	0.650	1.2	ug/L	32	Standard
|	Ce	140	58.3	40.5				ug/L	42	Standard
>	Tb	159	908572.7	1.2				ug/L	966827	Standard
|	Ho	165	30.0	28.9				ug/L	12	Standard
|	Tl	203	283948.1	1.7	49.4565	0.366	0.7	ug/L	19	Standard
|	Tl	205	662738.9	2.3	49.3652	0.277	0.6	ug/L	58	Standard
|	Pb	206	224304.3	1.2	49.4697	0.434	0.9	ug/L	464	Standard
|	Pb	207	201488.4	1.4	49.6687	0.493	1.0	ug/L	405	Standard
|	Pb	208	430993.8	1.5	48.6861	0.348	0.7	ug/L	876	Standard
|	U	238	427858.6	2.3	42.5071	0.182	0.4	ug/L	14	Standard
>	Bi	209	522541.2	1.8				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 14:57:45

Page 1

Approved: March 01, 2017

Na	23	15.0	66.7	3.5346	2.667	75.5	mg/L	3	Standard
Mg	24	305.0	1.6	5.1521	0.245	4.8	mg/L	30	Standard
K	39	600.0	10.9	7.1229	0.614	8.6	mg/L	10	Standard
Ca	43	58.3	39.6	-9.0149	12.329	136.8	mg/L	83	Standard
Fe	54	321.1	3.7	4.3068	0.049	1.1	mg/L	21	Standard
Fe	57	570.0	3.0	13.3616	1.650	12.3	mg/L	240	Standard
Sc-1	45	45214.1	2.7				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.3	53.3				ug/L	5	Standard
Br	81	1913.5	9.4				ug/L	1587	Standard
P	31	76.7	15.1				ug/L	50	Standard
S	34	23.3	68.9				ug/L	8	Standard
Sr	88	230.0	13.2				ug/L	198	Standard
C	12	16.7	34.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	9.5	8.7				mg/L	6	Standard
Ho-1	165	30.0	28.9				mg/L	12	Standard
Er	166	10.0	173.2				mg/L	10	Standard
I	127	5324.3	2.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	100.480		
Al	27	94.304		
Sc	45			
Ti	47	110.315		
V	51	103.143		
Cr	52	102.862		
Cr	53			
Mn	55	103.495		
Co	59	103.831		
Ni	60	103.521		
Cu	65	102.232		
Zn	66	99.819		
Ge	72		94.799	
As	75	97.075		
Se	82	94.607		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 14:57:45

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	92.765	
[	Ag	107	94.190	
[	Cd	111	92.553	
[	Cd	114		
>	In	115		83.404
[	Sn	118	100.839	
[	Sb	123	100.623	
[	Ba	135	107.069	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	98.913	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	97.372	
[	U	238	85.014	
>	Bi	209		87.214
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Ti	47	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 14:57:45

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 14:58:40

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	240704.6	4.6				ug/L	250104	Standard
|	Be	9	31.7	9.1	0.0100	0.003	25.6	ug/L	7	Standard
|	Al	27	1495.1	18.0	0.0066	0.002	32.1	ug/L	597	Standard
|	Sc	45	47738.5	3.0				ug/L	41681	Standard
|	Ti	47	34.3	10.2	-0.2772	0.023	8.3	ug/L	86	Standard
|	V	51	783.6	36.2	-0.1552	0.043	27.7	ug/L	1740	Standard
|	Cr	52	7151.7	2.0	-0.0243	0.009	38.1	ug/L	7178	Standard
|	Cr	53	6993.3	8.1	8.2689	0.926	11.2	ug/L	573	Standard
|	Mn	55	3139.3	6.9	0.0123	0.017	134.9	ug/L	3072	Standard
|	Co	59	457.7	3.8	-0.0018	0.003	196.2	ug/L	573	Standard
|	Ni	60	201.3	24.4	-0.0540	0.032	59.5	ug/L	264	Standard
|	Cu	65	577.7	2.1	-0.0081	0.012	152.3	ug/L	530	Standard
|	Zn	66	344.7	4.0	0.0332	0.019	56.8	ug/L	252	Standard
>	Ge	72	668658.2	2.2				ug/L	641188	Standard
|	As	75	-56.7	67.1	-0.0206	0.042	203.8	ug/L	-83	Standard
|	Se	82	13.8	10.6	-0.0510	0.015	29.8	ug/L	16	Standard
|	Se-1	77	654.7	3.0	9.4840	0.137	1.4	ug/L	126	Standard
>	Ga	71	100.0	36.1				mg/L	70	Standard
|	Rb	85	113.3	105.3				ug/L	33	Standard
|	Y	89	461596.0	4.8				ug/L	493982	Standard
>	Rh	103	25.0	34.6				ug/L	17	Standard
|	Mo	98	223.8	28.6	0.0580	0.021	36.6	ug/L	54	Standard
|	Ag	107	147.7	36.2	0.0066	0.011	171.0	ug/L	137	Standard
|	Cd	111	15.7	68.6	-0.0028	0.008	272.8	mg/L	6	Standard
|	Cd	114	54.4	73.8	0.0037	0.010	279.8	ug/L	20	Standard
>	In	115	687258.1	2.3				ug/L	755264	Standard
|	Sn	118	145.3	12.7	0.0328	0.020	59.7	ug/L	138	Standard
|	Sb	123	927.1	15.0	0.2014	0.038	18.7	ug/L	391	Standard
|	Ba	135	119.7	96.6	0.0465	0.072	155.2	ug/L	32	Standard
|	Ce	140	16.7	45.8				ug/L	42	Standard
>	Tb	159	961634.6	1.0				ug/L	966827	Standard
|	Ho	165	10.0	50.0				ug/L	12	Standard
|	Tl	203	83.3	48.7	0.0064	0.006	100.5	ug/L	19	Standard
|	Tl	205	185.0	30.1	0.0101	0.004	37.4	ug/L	58	Standard
|	Pb	206	469.0	5.6	0.0009	0.005	548.7	ug/L	464	Standard
|	Pb	207	398.7	7.5	-0.0007	0.007	914.6	ug/L	405	Standard
|	Pb	208	874.0	2.0	0.0030	0.002	63.9	ug/L	876	Standard
|	U	238	61.0	81.6	0.0039	0.005	116.7	ug/L	14	Standard
>	Bi	209	565860.3	0.4				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:00:51

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	45.0	11.1	0.2550	0.087	34.2	mg/L	30	Standard
K	39	21.7	48.0	0.0122	0.126	1031.3	mg/L	10	Standard
Ca	43	36.7	28.4	-21.7574	5.149	23.7	mg/L	83	Standard
Fe	54	31.1	34.5	0.1671	0.141	84.3	mg/L	21	Standard
Fe	57	465.0	6.5	6.6990	1.514	22.6	mg/L	240	Standard
Sc-1	45	47738.5	3.0				mg/L	41681	Standard
Cl	35	2.7	114.6				ug/L	2	Standard
Kr	83	5.0	40.0				ug/L	5	Standard
Br	81	1973.5	6.3				ug/L	1587	Standard
P	31	66.7	30.3				ug/L	50	Standard
S	34	25.0	34.6				ug/L	8	Standard
Sr	88	241.7	12.5				ug/L	198	Standard
C	12	6.7	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	10.0	100.0				mg/L	3	Standard
Dy	164	15.7	181.1				mg/L	6	Standard
Ho-1	165	10.0	50.0				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	6824.9	0.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		104.284	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:00:51

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.996
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	94.444
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 7	Sb	123	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:00:51

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132401

Sample Date/Time: Tuesday, February 28, 2017 15:01:47

Number of Replicates: 3

Autosampler Position: 243

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	237546.1	3.9				ug/L	250104	Standard
|	Be	9	23.3	44.6	0.0047	0.006	129.6	ug/L	7	Standard
|	Al	27	16151.9	3.1	0.1338	0.009	6.4	ug/L	597	Standard
|	Sc	45	48646.3	2.4				ug/L	41681	Standard
|	Ti	47	61.3	27.9	-0.1232	0.103	83.4	ug/L	86	Standard
|	V	51	509.4	53.0	-0.1962	0.041	20.8	ug/L	1740	Standard
|	Cr	52	11708.9	0.4	0.7805	0.046	5.8	ug/L	7178	Standard
|	Cr	53	8972.7	1.5	11.0974	0.203	1.8	ug/L	573	Standard
|	Mn	55	8250.2	1.1	0.5499	0.013	2.3	ug/L	3072	Standard
|	Co	59	470.0	5.7	0.0012	0.004	348.2	ug/L	573	Standard
|	Ni	60	655.7	3.3	0.2327	0.008	3.5	ug/L	264	Standard
|	Cu	65	2595.6	2.4	1.3198	0.030	2.3	ug/L	530	Standard
|	Zn	66	1096.7	1.9	0.8984	0.035	3.9	ug/L	252	Standard
>	Ge	72	654511.5	2.6				ug/L	641188	Standard
|	As	75	33.0	25.3	0.0797	0.010	12.5	ug/L	-83	Standard
|	Se	82	22.7	8.6	0.0695	0.018	26.4	ug/L	16	Standard
|	Se-1	77	557.0	6.0	7.9476	0.567	7.1	ug/L	126	Standard
>	Ga	71	85.0	23.5				mg/L	70	Standard
|	Rb	85	453.3	11.3				ug/L	33	Standard
|	Y	89	452401.2	2.7				ug/L	493982	Standard
>	Rh	103	28.3	81.5				ug/L	17	Standard
|	Mo	98	75.5	4.6	0.0062	0.001	23.8	ug/L	54	Standard
|	Ag	107	117.3	3.4	0.0006	0.000	65.5	ug/L	137	Standard
|	Cd	111	6.6	23.3	-0.0091	0.001	11.3	mg/L	6	Standard
|	Cd	114	28.4	64.9	-0.0028	0.005	172.1	ug/L	20	Standard
>	In	115	678159.6	1.8				ug/L	755264	Standard
|	Sn	118	183.7	14.1	0.0797	0.030	37.8	ug/L	138	Standard
|	Sb	123	318.1	22.7	0.0527	0.019	36.6	ug/L	391	Standard
|	Ba	135	458.0	4.9	0.2578	0.009	3.5	ug/L	32	Standard
|	Ce	140	76.7	49.4				ug/L	42	Standard
>	Tb	159	959777.7	0.6				ug/L	966827	Standard
|	Ho	165	16.7	17.3				ug/L	12	Standard
|	Tl	203	54.3	8.7	0.0019	0.001	43.9	ug/L	19	Standard
|	Tl	205	123.3	15.3	0.0060	0.001	22.0	ug/L	58	Standard
|	Pb	206	462.3	2.9	0.0007	0.003	467.5	ug/L	464	Standard
|	Pb	207	404.0	3.3	0.0016	0.003	209.2	ug/L	405	Standard
|	Pb	208	880.7	2.3	0.0048	0.003	60.1	ug/L	876	Standard
|	U	238	10.0	34.6	-0.0008	0.000	43.1	ug/L	14	Standard
>	Bi	209	559096.3	0.8				ug/L	599146	Standard

Sample ID: L1702132401

Report Date/Time: Tuesday, February 28, 2017 15:03:58

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0768	0.695	904.4	mg/L	3	Standard
Mg	24	28.3	10.2	-0.0491	0.044	89.0	mg/L	30	Standard
K	39	20.0	66.1	-0.0161	0.144	891.3	mg/L	10	Standard
Ca	43	58.3	40.5	-11.0530	12.455	112.7	mg/L	83	Standard
Fe	54	44.4	52.2	0.3353	0.305	91.0	mg/L	21	Standard
Fe	57	428.3	19.0	4.4850	3.556	79.3	mg/L	240	Standard
Sc-1	45	48646.3	2.4				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	4.7	44.6				ug/L	5	Standard
Br	81	1760.1	5.9				ug/L	1587	Standard
P	31	68.3	22.4				ug/L	50	Standard
S	34	38.3	7.5				ug/L	8	Standard
Sr	88	275.0	14.4				ug/L	198	Standard
C	12	13.3	43.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	5.7	88.2				mg/L	6	Standard
Ho-1	165	16.7	17.3				mg/L	12	Standard
Er	166	20.0	132.3				mg/L	10	Standard
I	127	5384.3	8.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		94.979	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		102.078	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132401

Report Date/Time: Tuesday, February 28, 2017 15:03:58

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	89.791
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.316
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702132401

Report Date/Time: Tuesday, February 28, 2017 15:03:58

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132402

Sample Date/Time: Tuesday, February 28, 2017 15:04:52

Number of Replicates: 3

Autosampler Position: 244

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	516158.5	1.0				ug/L	250104	Standard
|	Be	9	85.0	10.2	0.0151	0.003	18.6	ug/L	7	Standard
|	Al	27	114737660.3	3.2	456.9229	18.891	4.1	ug/L	597	Standard
|	Sc	45	41373.1	3.8				ug/L	41681	Standard
|	Ti	47	353.3	14.4	1.8323	0.296	16.2	ug/L	86	Standard
|	V	51	-7445.8	16.0	-1.6699	0.208	12.5	ug/L	1740	Standard
|	Cr	52	13840.3	2.5	1.5687	0.028	1.8	ug/L	7178	Standard
|	Cr	53	45894.8	9.2	71.3072	5.546	7.8	ug/L	573	Standard
|	Mn	55	79674187.6	2.7	9753.9495	127.321	1.3	ug/L	3072	Standard
|	Co	59	27311.3	2.2	4.2188	0.042	1.0	ug/L	573	Standard
|	Ni	60	68714.6	3.1	50.5425	0.776	1.5	ug/L	264	Standard
|	Cu	65	10295.2	1.4	7.5675	0.075	1.0	ug/L	530	Standard
|	Zn	66	5831.5	1.1	7.4871	0.065	0.9	ug/L	252	Standard
>	Ge	72	554695.8	1.6				ug/L	641188	Standard
|	As	75	-1414.7	39.6	-1.8417	0.717	39.0	ug/L	-83	Standard
|	Se	82	321.4	43.8	4.7664	2.264	47.5	ug/L	16	Standard
|	Se-1	77	21280.3	7.2	458.2400	25.756	5.6	ug/L	126	Standard
>	Ga	71	816.7	10.8				mg/L	70	Standard
|	Rb	85	336132.2	3.5				ug/L	33	Standard
|	Y	89	452803.8	1.3				ug/L	493982	Standard
>	Rh	103	7221.7	3.3				ug/L	17	Standard
|	Mo	98	160.6	22.4	0.0461	0.014	30.6	ug/L	54	Standard
|	Ag	107	212.7	4.7	0.0279	0.003	11.4	ug/L	137	Standard
|	Cd	111	25.4	8.3	0.0072	0.002	28.8	mg/L	6	Standard
|	Cd	114	69.1	51.2	0.0105	0.011	100.7	ug/L	20	Standard
>	In	115	581018.3	1.5				ug/L	755264	Standard
|	Sn	118	219.3	7.3	0.1637	0.018	11.2	ug/L	138	Standard
|	Sb	123	1643.5	10.8	0.4511	0.059	13.1	ug/L	391	Standard
|	Ba	135	37280743.1	1.5	27110.7276	14.757	0.1	ug/L	32	Standard
|	Ce	140	2693.6	4.6				ug/L	42	Standard
>	Tb	159	993351.0	0.4				ug/L	966827	Standard
|	Ho	165	100.0	39.1				ug/L	12	Standard
|	Tl	203	261.7	25.2	0.0547	0.016	29.0	ug/L	19	Standard
|	Tl	205	576.7	14.9	0.0554	0.009	16.2	ug/L	58	Standard
|	Pb	206	511.0	12.9	0.0578	0.021	35.5	ug/L	464	Standard
|	Pb	207	433.3	4.3	0.0529	0.006	12.1	ug/L	405	Standard
|	Pb	208	1113.3	7.7	0.0818	0.014	16.9	ug/L	876	Standard
|	U	238	71.7	49.7	0.0079	0.005	59.9	ug/L	14	Standard
>	Bi	209	386950.6	0.5				ug/L	599146	Standard

Sample ID: L1702132402

Report Date/Time: Tuesday, February 28, 2017 15:07:03

Page 1

Approved: March 01, 2017

Na	23	4802.4	2.9	1397.8866	71.985	5.1	mg/L	3	Standard
Mg	24	15024.1	3.1	306.1427	20.568	6.7	mg/L	30	Standard
K	39	4340.6	10.6	58.0061	4.545	7.8	mg/L	10	Standard
Ca	43	4240.6	4.4	2459.3039	169.362	6.9	mg/L	83	Standard
Fe	54	525.4	13.3	7.8983	1.029	13.0	mg/L	21	Standard
Fe	57	9071.1	5.7	492.3843	28.584	5.8	mg/L	240	Standard
Sc-1	45	41373.1	3.8				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	7.3	39.4				ug/L	5	Standard
Br	81	237591.0	7.1				ug/L	1587	Standard
P	31	80.0	10.8				ug/L	50	Standard
S	34	30.0	33.3				ug/L	8	Standard
Sr	88	723.4	10.6				ug/L	198	Standard
C	12	46.7	53.9				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	151.1	20.9				mg/L	6	Standard
Ho-1	165	100.0	39.1				mg/L	12	Standard
Er	166	116.7	13.1				mg/L	10	Standard
I	127	367304.2	10.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		206.378	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		86.511	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132402

Report Date/Time: Tuesday, February 28, 2017 15:07:03

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.929
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.584
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702132402

Report Date/Time: Tuesday, February 28, 2017 15:07:03

Page 3

Approved: March 01, 2017



Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702132402

Report Date/Time: Tuesday, February 28, 2017 15:07:03

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132406

Sample Date/Time: Tuesday, February 28, 2017 15:07:57

Number of Replicates: 3

Autosampler Position: 245

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	241900.9	9.0				ug/L	250104	Standard
|	Be	9	20.0	50.0	0.0027	0.007	250.4	ug/L	7	Standard
|	Al	27	24253.8	29.2	0.1984	0.052	26.1	ug/L	597	Standard
|	Sc	45	48641.4	5.1				ug/L	41681	Standard
|	Ti	47	53.7	13.1	-0.1808	0.036	19.9	ug/L	86	Standard
|	V	51	84.0	744.6	-0.2644	0.095	35.9	ug/L	1740	Standard
|	Cr	52	14181.3	7.1	1.0878	0.145	13.3	ug/L	7178	Standard
|	Cr	53	20066.7	10.8	24.6274	2.557	10.4	ug/L	573	Standard
|	Mn	55	42446.4	109.2	3.8837	4.571	117.7	ug/L	3072	Standard
|	Co	59	647.7	46.4	0.0206	0.038	183.5	ug/L	573	Standard
|	Ni	60	1091.4	71.1	0.4726	0.461	97.5	ug/L	264	Standard
|	Cu	65	1700.4	7.2	0.6818	0.071	10.5	ug/L	530	Standard
|	Zn	66	1570.4	3.8	1.3536	0.055	4.1	ug/L	252	Standard
>	Ge	72	686661.2	0.8				ug/L	641188	Standard
|	As	75	86.8	123.2	0.1363	0.116	85.0	ug/L	-83	Standard
|	Se	82	26.2	6.1	0.0989	0.018	17.9	ug/L	16	Standard
|	Se-1	77	2250.8	17.6	37.0597	6.610	17.8	ug/L	126	Standard
>	Ga	71	228.3	7.0				mg/L	70	Standard
|	Rb	85	336.7	79.7				ug/L	33	Standard
|	Y	89	469446.1	3.1				ug/L	493982	Standard
>	Rh	103	20.0	50.0				ug/L	17	Standard
|	Mo	98	103.8	43.8	0.0162	0.016	100.1	ug/L	54	Standard
|	Ag	107	159.7	38.4	0.0094	0.013	136.2	ug/L	137	Standard
|	Cd	111	17.9	86.9	-0.0012	0.011	930.4	mg/L	6	Standard
|	Cd	114	55.5	78.5	0.0040	0.011	276.9	ug/L	20	Standard
>	In	115	680350.7	3.9				ug/L	755264	Standard
|	Sn	118	166.7	2.3	0.0594	0.004	6.7	ug/L	138	Standard
|	Sb	123	184.1	31.0	0.0193	0.015	77.3	ug/L	391	Standard
|	Ba	135	5338.4	109.0	3.2676	3.622	110.8	ug/L	32	Standard
|	Ce	140	195.0	20.0				ug/L	42	Standard
>	Tb	159	933104.7	1.8				ug/L	966827	Standard
|	Ho	165	6.7	43.3				ug/L	12	Standard
|	Tl	203	223.3	19.5	0.0293	0.006	22.1	ug/L	19	Standard
|	Tl	205	576.7	23.3	0.0374	0.009	23.5	ug/L	58	Standard
|	Pb	206	542.7	1.9	0.0174	0.005	26.7	ug/L	464	Standard
|	Pb	207	461.3	6.2	0.0148	0.006	42.6	ug/L	405	Standard
|	Pb	208	1017.7	6.0	0.0193	0.005	28.2	ug/L	876	Standard
|	U	238	42.3	54.7	0.0022	0.002	96.2	ug/L	14	Standard
>	Bi	209	559081.2	2.2				ug/L	599146	Standard

Sample ID: L1702132406

Report Date/Time: Tuesday, February 28, 2017 15:10:08

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0569	0.729	1281.0	mg/L	3	Standard
Mg	24	51.7	22.3	0.3507	0.151	43.1	mg/L	30	Standard
K	39	16.7	45.8	-0.0541	0.077	142.7	mg/L	10	Standard
Ca	43	38.3	30.1	-21.3205	5.351	25.1	mg/L	83	Standard
Fe	54	37.5	15.7	0.2479	0.097	39.2	mg/L	21	Standard
Fe	57	396.7	19.3	3.0313	3.723	122.8	mg/L	240	Standard
Sc-1	45	48641.4	5.1				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	4.7	24.7				ug/L	5	Standard
Br	81	4937.5	28.8				ug/L	1587	Standard
P	31	65.0	13.3				ug/L	50	Standard
S	34	33.3	48.2				ug/L	8	Standard
Sr	88	255.0	17.4				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	19.4	50.4				mg/L	6	Standard
Ho-1	165	6.7	43.3				mg/L	12	Standard
Er	166	13.3	43.3				mg/L	10	Standard
I	127	32129.7	49.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		96.720	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		107.092	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132406

Report Date/Time: Tuesday, February 28, 2017 15:10:08

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	90.081
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	93.313
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702132406

Report Date/Time: Tuesday, February 28, 2017 15:10:08

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132407

Sample Date/Time: Tuesday, February 28, 2017 15:11:02

Number of Replicates: 3

Autosampler Position: 246

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	491155.8	3.3				ug/L	250104	Standard
|	Be	9	95.0	24.1	0.0193	0.006	32.0	ug/L	7	Standard
|	Al	27	118377439.4	2.6	495.3622	5.414	1.1	ug/L	597	Standard
|	Sc	45	40537.5	1.3				ug/L	41681	Standard
|	Ti	47	276.0	5.3	1.3311	0.133	10.0	ug/L	86	Standard
|	V	51	-7551.6	10.3	-1.6897	0.152	9.0	ug/L	1740	Standard
|	Cr	52	13955.1	3.0	1.5873	0.012	0.8	ug/L	7178	Standard
|	Cr	53	50129.9	9.3	77.8199	5.495	7.1	ug/L	573	Standard
|	Mn	55	81248709.2	2.2	9932.5821	86.936	0.9	ug/L	3072	Standard
|	Co	59	28586.9	0.4	4.4135	0.105	2.4	ug/L	573	Standard
|	Ni	60	72816.2	1.1	53.5214	1.806	3.4	ug/L	264	Standard
|	Cu	65	10334.5	1.2	7.5867	0.130	1.7	ug/L	530	Standard
|	Zn	66	6659.8	1.3	8.5876	0.137	1.6	ug/L	252	Standard
>	Ge	72	555599.9	2.6				ug/L	641188	Standard
|	As	75	-1263.3	51.4	-1.6361	0.854	52.2	ug/L	-83	Standard
|	Se	82	367.9	26.0	5.4667	1.572	28.8	ug/L	16	Standard
|	Se-1	77	22550.1	6.5	484.9232	20.691	4.3	ug/L	126	Standard
>	Ga	71	833.4	11.3				mg/L	70	Standard
|	Rb	85	317381.6	3.0				ug/L	33	Standard
|	Y	89	452209.1	3.9				ug/L	493982	Standard
>	Rh	103	7333.4	4.8				ug/L	17	Standard
|	Mo	98	197.4	26.8	0.0612	0.020	32.5	ug/L	54	Standard
|	Ag	107	238.7	24.0	0.0338	0.012	36.6	ug/L	137	Standard
|	Cd	111	34.7	67.2	0.0144	0.018	126.1	mg/L	6	Standard
|	Cd	114	113.8	51.7	0.0235	0.017	70.5	ug/L	20	Standard
>	In	115	582015.1	2.5				ug/L	755264	Standard
|	Sn	118	230.0	2.6	0.1777	0.005	2.9	ug/L	138	Standard
|	Sb	123	1411.5	4.2	0.3825	0.018	4.7	ug/L	391	Standard
|	Ba	135	33653028.1	1.3	24437.8644	495.761	2.0	ug/L	32	Standard
|	Ce	140	1280.1	4.1				ug/L	42	Standard
>	Tb	159	999381.7	2.2				ug/L	966827	Standard
|	Ho	165	138.3	22.1				ug/L	12	Standard
|	Tl	203	223.7	19.8	0.0461	0.011	23.9	ug/L	19	Standard
|	Tl	205	510.0	18.2	0.0492	0.010	21.2	ug/L	58	Standard
|	Pb	206	480.3	5.1	0.0497	0.009	18.6	ug/L	464	Standard
|	Pb	207	425.3	6.4	0.0512	0.007	14.5	ug/L	405	Standard
|	Pb	208	1067.3	3.1	0.0760	0.008	9.9	ug/L	876	Standard
|	U	238	136.0	18.4	0.0166	0.003	18.0	ug/L	14	Standard
>	Bi	209	384106.3	2.2				ug/L	599146	Standard

Sample ID: L1702132407

Report Date/Time: Tuesday, February 28, 2017 15:13:13

Page 1

Approved: March 01, 2017

Na	23	4859.1	2.3	1442.2631	42.242	2.9	mg/L	3	Standard
Mg	24	14028.2	2.5	291.2647	8.340	2.9	mg/L	30	Standard
K	39	3905.5	5.4	53.3331	3.418	6.4	mg/L	10	Standard
Ca	43	4090.6	3.2	2416.7496	47.485	2.0	mg/L	83	Standard
Fe	54	508.3	15.5	7.7907	1.184	15.2	mg/L	21	Standard
Fe	57	9142.8	1.4	506.8028	11.367	2.2	mg/L	240	Standard
Sc-1	45	40537.5	1.3				mg/L	41681	Standard
Cl	35	2.7	43.3				ug/L	2	Standard
Kr	83	8.3	36.7				ug/L	5	Standard
Br	81	251898.0	3.2				ug/L	1587	Standard
P	31	85.0	27.0				ug/L	50	Standard
S	34	41.7	45.4				ug/L	8	Standard
Sr	88	663.3	8.7				ug/L	198	Standard
C	12	50.0	20.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	156.8	30.8				mg/L	6	Standard
Ho-1	165	138.3	22.1				mg/L	12	Standard
Er	166	136.7	29.6				mg/L	10	Standard
I	127	372696.1	10.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		196.381	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		86.652	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132407

Report Date/Time: Tuesday, February 28, 2017 15:13:13

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.061
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.109
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702132407

Report Date/Time: Tuesday, February 28, 2017 15:13:13

Page 3

Approved: March 01, 2017



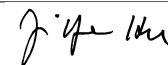
Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702132407

Report Date/Time: Tuesday, February 28, 2017 15:13:13

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132701

Sample Date/Time: Tuesday, February 28, 2017 15:14:08

Number of Replicates: 3

Autosampler Position: 247

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	250695.7	5.3				ug/L	250104	Standard
|	Be	9	115.0	24.2	0.0598	0.014	22.8	ug/L	7	Standard
|	Al	27	47888630.9	4.4	392.6709	4.249	1.1	ug/L	597	Standard
|	Sc	45	46977.7	2.2				ug/L	41681	Standard
|	Ti	47	2336.2	1.2	12.9687	0.182	1.4	ug/L	86	Standard
|	V	51	20777.9	1.1	3.1651	0.045	1.4	ug/L	1740	Standard
|	Cr	52	20356.7	3.7	2.4064	0.127	5.3	ug/L	7178	Standard
|	Cr	53	14465.4	21.6	19.2501	4.313	22.4	ug/L	573	Standard
|	Mn	55	15710125.5	1.7	1700.2688	25.109	1.5	ug/L	3072	Standard
|	Co	59	28000.9	2.1	3.8184	0.077	2.0	ug/L	573	Standard
|	Ni	60	122122.6	1.6	79.5282	1.214	1.5	ug/L	264	Standard
|	Cu	65	16893.1	0.9	11.1480	0.096	0.9	ug/L	530	Standard
|	Zn	66	82601.9	1.0	97.8042	1.024	1.0	ug/L	252	Standard
>	Ge	72	627413.6	0.2				ug/L	641188	Standard
|	As	75	5976.0	0.7	7.1061	0.037	0.5	ug/L	-83	Standard
|	Se	82	188.3	5.6	2.3467	0.140	6.0	ug/L	16	Standard
|	Se-1	77	3923.5	30.2	72.8099	22.581	31.0	ug/L	126	Standard
>	Ga	71	1950.1	3.7				mg/L	70	Standard
|	Rb	85	99556.0	1.2				ug/L	33	Standard
|	Y	89	455921.1	1.9				ug/L	493982	Standard
>	Rh	103	523.3	11.9				ug/L	17	Standard
|	Mo	98	1277.7	1.1	0.4784	0.012	2.5	ug/L	54	Standard
|	Ag	107	257.0	8.8	0.0345	0.004	12.6	ug/L	137	Standard
|	Cd	111	78.3	23.9	0.0461	0.014	29.6	mg/L	6	Standard
|	Cd	114	245.8	5.0	0.0584	0.003	4.8	ug/L	20	Standard
>	In	115	621507.4	1.3				ug/L	755264	Standard
|	Sn	118	405.0	9.9	0.3801	0.055	14.4	ug/L	138	Standard
|	Sb	123	623.2	1.7	0.1426	0.005	3.6	ug/L	391	Standard
|	Ba	135	3150536.0	2.1	2141.7205	25.073	1.2	ug/L	32	Standard
|	Ce	140	19949.8	1.2				ug/L	42	Standard
>	Tb	159	975345.6	0.9				ug/L	966827	Standard
|	Ho	165	508.3	7.4				ug/L	12	Standard
|	Tl	203	309.3	7.8	0.0516	0.004	8.1	ug/L	19	Standard
|	Tl	205	750.0	4.4	0.0581	0.002	3.8	ug/L	58	Standard
|	Pb	206	4672.1	2.5	1.0278	0.035	3.4	ug/L	464	Standard
|	Pb	207	3881.5	2.6	0.9507	0.033	3.5	ug/L	405	Standard
|	Pb	208	8581.0	2.2	0.9674	0.019	2.0	ug/L	876	Standard
|	U	238	119339.2	1.1	12.8917	0.244	1.9	ug/L	14	Standard
>	Bi	209	480593.7	0.8				ug/L	599146	Standard

Sample ID: L1702132701

Report Date/Time: Tuesday, February 28, 2017 15:16:18

Page 1

Approved: March 01, 2017

Na	23	2993.6	0.9	766.6167	16.261	2.1	mg/L	3	Standard
Mg	24	855.0	4.4	14.8097	0.738	5.0	mg/L	30	Standard
K	39	518.3	14.5	5.8986	0.966	16.4	mg/L	10	Standard
Ca	43	3128.7	5.2	1582.7993	109.217	6.9	mg/L	83	Standard
Fe	54	389.1	17.9	5.0743	1.018	20.1	mg/L	21	Standard
Fe	57	6187.9	1.7	289.3595	2.140	0.7	mg/L	240	Standard
Sc-1	45	46977.7	2.2				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	4.0	50.0				ug/L	5	Standard
Br	81	11787.9	5.2				ug/L	1587	Standard
P	31	88.3	6.5				ug/L	50	Standard
S	34	46.7	30.9				ug/L	8	Standard
Sr	88	330.0	12.1				ug/L	198	Standard
C	12	106.7	51.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	193.3	35.2				mg/L	3	Standard
Dy	164	735.1	13.1				mg/L	6	Standard
Ho-1	165	508.3	7.4				mg/L	12	Standard
Er	166	520.0	14.5				mg/L	10	Standard
I	127	83522.1	12.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		100.237	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		97.852	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132701

Report Date/Time: Tuesday, February 28, 2017 15:16:18

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	82.290
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	80.213
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Mn 55 Upper, S, EEE	Mn	55	
Ba 135 Upper, S, EEE	Ba	135	

Sample ID: L1702132701

Report Date/Time: Tuesday, February 28, 2017 15:16:18

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702132702

Sample Date/Time: Tuesday, February 28, 2017 15:17:13

Number of Replicates: 3

Autosampler Position: 248

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	233724.0	0.8				ug/L	250104	Standard
|	Be	9	16.7	34.6	0.0007	0.004	544.1	ug/L	7	Standard
|	Al	27	10666791.7	1.0	93.7813	0.792	0.8	ug/L	597	Standard
|	Sc	45	48046.1	1.0				ug/L	41681	Standard
|	Ti	47	84.0	12.5	-0.0344	0.055	159.3	ug/L	86	Standard
|	V	51	-419.5	176.3	-0.3380	0.108	32.1	ug/L	1740	Standard
|	Cr	52	13982.1	1.4	0.9889	0.034	3.4	ug/L	7178	Standard
|	Cr	53	22535.1	7.8	26.9329	2.178	8.1	ug/L	573	Standard
|	Mn	55	204481.4	1.2	19.3211	0.198	1.0	ug/L	3072	Standard
|	Co	59	2197.8	1.6	0.2087	0.005	2.4	ug/L	573	Standard
|	Ni	60	44175.0	0.9	25.3883	0.161	0.6	ug/L	264	Standard
|	Cu	65	1231.4	3.5	0.3670	0.028	7.5	ug/L	530	Standard
|	Zn	66	1737.8	1.5	1.4798	0.031	2.1	ug/L	252	Standard
>	Ge	72	707559.9	0.3				ug/L	641188	Standard
|	As	75	443.8	28.7	0.5074	0.134	26.4	ug/L	-83	Standard
|	Se	82	48.5	15.2	0.3600	0.089	24.6	ug/L	16	Standard
|	Se-1	77	2180.8	3.4	34.7430	1.159	3.3	ug/L	126	Standard
>	Ga	71	193.3	10.5				mg/L	70	Standard
|	Rb	85	108378.0	1.7				ug/L	33	Standard
|	Y	89	473151.5	1.1				ug/L	493982	Standard
>	Rh	103	95.0	60.7				ug/L	17	Standard
|	Mo	98	622.8	2.7	0.2090	0.007	3.2	ug/L	54	Standard
|	Ag	107	119.3	7.8	0.0018	0.002	107.9	ug/L	137	Standard
|	Cd	111	9.2	50.0	-0.0070	0.003	47.3	mg/L	6	Standard
|	Cd	114	48.0	39.1	0.0025	0.005	196.1	ug/L	20	Standard
>	In	115	657936.9	0.2				ug/L	755264	Standard
|	Sn	118	200.3	4.9	0.1062	0.011	10.8	ug/L	138	Standard
|	Sb	123	247.9	5.3	0.0369	0.004	9.6	ug/L	391	Standard
|	Ba	135	153612.4	0.1	98.6213	0.293	0.3	ug/L	32	Standard
|	Ce	140	116.7	12.4				ug/L	42	Standard
>	Tb	159	921730.2	1.7				ug/L	966827	Standard
|	Ho	165	11.7	107.9				ug/L	12	Standard
|	Tl	203	62.3	30.5	0.0037	0.003	88.1	ug/L	19	Standard
|	Tl	205	143.3	29.7	0.0079	0.003	39.8	ug/L	58	Standard
|	Pb	206	445.3	5.0	0.0021	0.005	240.7	ug/L	464	Standard
|	Pb	207	397.7	5.8	0.0050	0.005	105.3	ug/L	405	Standard
|	Pb	208	846.0	2.4	0.0059	0.002	35.9	ug/L	876	Standard
|	U	238	3407.7	2.5	0.3316	0.007	2.1	ug/L	14	Standard
>	Bi	209	530763.8	0.4				ug/L	599146	Standard

Sample ID: L1702132702

Report Date/Time: Tuesday, February 28, 2017 15:19:24

Page 1

Approved: March 01, 2017

Na	23	125.0	48.7	30.9188	15.440	49.9	mg/L	3	Standard
Mg	24	900.0	4.2	15.2533	0.612	4.0	mg/L	30	Standard
K	39	628.3	5.8	7.0273	0.425	6.0	mg/L	10	Standard
Ca	43	205.0	14.8	63.4149	14.663	23.1	mg/L	83	Standard
Fe	54	24.6	41.5	0.0793	0.134	169.4	mg/L	21	Standard
Fe	57	703.4	20.6	18.0315	6.892	38.2	mg/L	240	Standard
Sc-1	45	48046.1	1.0				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.3	66.6				ug/L	5	Standard
Br	81	7175.0	1.4				ug/L	1587	Standard
P	31	53.3	39.0				ug/L	50	Standard
S	34	33.3	8.7				ug/L	8	Standard
Sr	88	215.0	4.7				ug/L	198	Standard
C	12	20.0	50.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	16.0	72.9				mg/L	6	Standard
Ho-1	165	11.7	107.9				mg/L	12	Standard
Er	166	13.3	43.3				mg/L	10	Standard
I	127	23570.1	8.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		93.451	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		110.351	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702132702

Report Date/Time: Tuesday, February 28, 2017 15:19:24

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	87.113
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	88.587
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702132702

Report Date/Time: Tuesday, February 28, 2017 15:19:24

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702138801

Sample Date/Time: Tuesday, February 28, 2017 15:20:18

Number of Replicates: 3

Autosampler Position: 249

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	411788.8	3.6				ug/L	250104	Standard
|	Be	9	40.0	33.1	0.0046	0.005	99.4	ug/L	7	Standard
|	Al	27	132455862.4	4.0	660.9620	7.168	1.1	ug/L	597	Standard
|	Sc	45	42170.3	2.0				ug/L	41681	Standard
|	Ti	47	195.0	5.2	0.7359	0.039	5.3	ug/L	86	Standard
|	V	51	-8490.0	31.0	-1.7728	0.432	24.4	ug/L	1740	Standard
|	Cr	52	15505.3	2.2	1.7345	0.013	0.8	ug/L	7178	Standard
|	Cr	53	50357.3	8.9	73.9876	4.749	6.4	ug/L	573	Standard
|	Mn	55	66933244.5	2.7	7752.0818	276.311	3.6	ug/L	3072	Standard
|	Co	59	34446.1	3.5	5.0459	0.233	4.6	ug/L	573	Standard
|	Ni	60	72877.3	3.8	50.7336	2.816	5.6	ug/L	264	Standard
|	Cu	65	8556.4	2.7	5.8688	0.244	4.2	ug/L	530	Standard
|	Zn	66	6728.2	2.8	8.2032	0.321	3.9	ug/L	252	Standard
>	Ge	72	586643.4	2.7				ug/L	641188	Standard
|	As	75	-860.2	87.0	-1.0300	0.922	89.5	ug/L	-83	Standard
|	Se	82	480.7	21.1	6.8322	1.693	24.8	ug/L	16	Standard
|	Se-1	77	21093.1	10.3	428.9916	33.316	7.8	ug/L	126	Standard
>	Ga	71	1105.0	15.3				mg/L	70	Standard
|	Rb	85	144528.0	2.5				ug/L	33	Standard
|	Y	89	457749.2	4.1				ug/L	493982	Standard
>	Rh	103	7483.5	3.2				ug/L	17	Standard
|	Mo	98	467.0	7.2	0.1645	0.007	4.2	ug/L	54	Standard
|	Ag	107	203.7	7.8	0.0234	0.006	24.7	ug/L	137	Standard
|	Cd	111	36.7	25.2	0.0147	0.006	41.2	mg/L	6	Standard
|	Cd	114	94.3	43.3	0.0164	0.011	67.0	ug/L	20	Standard
>	In	115	611343.4	4.4				ug/L	755264	Standard
|	Sn	118	210.7	2.2	0.1380	0.007	5.2	ug/L	138	Standard
|	Sb	123	1868.4	2.2	0.4897	0.031	6.3	ug/L	391	Standard
|	Ba	135	23215324.0	2.2	16068.1331	854.219	5.3	ug/L	32	Standard
|	Ce	140	17371.6	1.0				ug/L	42	Standard
>	Tb	159	1052565.7	3.7				ug/L	966827	Standard
|	Ho	165	135.0	6.4				ug/L	12	Standard
|	Tl	203	515.7	4.0	0.1074	0.005	4.8	ug/L	19	Standard
|	Tl	205	1231.7	7.6	0.1145	0.013	11.7	ug/L	58	Standard
|	Pb	206	1709.8	3.0	0.3861	0.009	2.2	ug/L	464	Standard
|	Pb	207	1350.7	3.3	0.3329	0.007	2.2	ug/L	405	Standard
|	Pb	208	3585.5	1.9	0.4283	0.010	2.4	ug/L	876	Standard
|	U	238	3447.4	3.7	0.4344	0.016	3.8	ug/L	14	Standard
>	Bi	209	410591.4	3.8				ug/L	599146	Standard

Sample ID: L1702138801

Report Date/Time: Tuesday, February 28, 2017 15:22:28

Page 1

Approved: March 01, 2017

Na	23	4102.2	3.2	1170.2041	30.705	2.6	mg/L	3	Standard
Mg	24	13144.0	1.2	262.3180	5.630	2.1	mg/L	30	Standard
K	39	1726.8	14.4	22.5585	3.647	16.2	mg/L	10	Standard
Ca	43	3590.4	3.1	2034.4713	102.624	5.0	mg/L	83	Standard
Fe	54	161.8	10.9	2.2163	0.308	13.9	mg/L	21	Standard
Fe	57	8602.4	3.2	457.1192	23.924	5.2	mg/L	240	Standard
Sc-1	45	42170.3	2.0				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	3.7	15.7				ug/L	5	Standard
Br	81	199043.0	3.1				ug/L	1587	Standard
P	31	81.7	3.5				ug/L	50	Standard
S	34	30.0	16.7				ug/L	8	Standard
Sr	88	613.3	6.6				ug/L	198	Standard
C	12	50.0	40.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	210.1	26.3				mg/L	6	Standard
Ho-1	165	135.0	6.4				mg/L	12	Standard
Er	166	136.7	42.9				mg/L	10	Standard
I	127	330873.7	12.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		164.647	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		91.493	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702138801

Report Date/Time: Tuesday, February 28, 2017 15:22:28

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	80.944
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	68.529
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702138801

Report Date/Time: Tuesday, February 28, 2017 15:22:28

Page 3

Approved: March 01, 2017



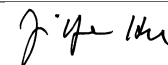
Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702138801

Report Date/Time: Tuesday, February 28, 2017 15:22:28

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702138802

Sample Date/Time: Tuesday, February 28, 2017 15:23:22

Number of Replicates: 3

Autosampler Position: 250

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	455919.6	0.5				ug/L	250104	Standard
|	Be	9	48.3	36.3	0.0060	0.006	97.2	ug/L	7	Standard
|	Al	27	115897187.7	1.7	522.4107	10.684	2.0	ug/L	597	Standard
|	Sc	45	41642.2	4.0				ug/L	41681	Standard
|	Ti	47	261.0	8.3	1.1701	0.109	9.3	ug/L	86	Standard
|	V	51	-6411.6	3.0	-1.4329	0.015	1.1	ug/L	1740	Standard
|	Cr	52	14732.2	0.4	1.6385	0.043	2.6	ug/L	7178	Standard
|	Cr	53	48883.9	4.9	73.1734	2.318	3.2	ug/L	573	Standard
|	Mn	55	34882453.0	0.6	4112.1716	61.146	1.5	ug/L	3072	Standard
|	Co	59	31058.8	0.5	4.6261	0.107	2.3	ug/L	573	Standard
|	Ni	60	61832.3	1.1	43.7828	1.268	2.9	ug/L	264	Standard
|	Cu	65	9794.8	0.5	6.9003	0.095	1.4	ug/L	530	Standard
|	Zn	66	6262.6	0.6	7.7535	0.107	1.4	ug/L	252	Standard
>	Ge	72	576173.6	1.8				ug/L	641188	Standard
|	As	75	-500.9	68.0	-0.5998	0.429	71.5	ug/L	-83	Standard
|	Se	82	14.9	756.4	0.0138	1.699	12292.8	ug/L	16	Standard
|	Se-1	77	18728.6	4.7	388.0068	11.535	3.0	ug/L	126	Standard
>	Ga	71	785.0	13.4				mg/L	70	Standard
|	Rb	85	182562.1	2.7				ug/L	33	Standard
|	Y	89	446931.1	2.1				ug/L	493982	Standard
>	Rh	103	8620.8	1.6				ug/L	17	Standard
|	Mo	98	2702.9	3.0	1.0674	0.025	2.3	ug/L	54	Standard
|	Ag	107	206.0	10.0	0.0244	0.005	21.3	ug/L	137	Standard
|	Cd	111	22.5	45.5	0.0041	0.008	200.4	mg/L	6	Standard
|	Cd	114	71.0	29.9	0.0103	0.006	58.8	ug/L	20	Standard
>	In	115	602914.9	0.8				ug/L	755264	Standard
|	Sn	118	213.0	8.8	0.1448	0.026	18.1	ug/L	138	Standard
|	Sb	123	1378.5	3.7	0.3590	0.014	3.9	ug/L	391	Standard
|	Ba	135	38587318.3	0.3	27042.6477	174.715	0.6	ug/L	32	Standard
|	Ce	140	2058.5	8.3				ug/L	42	Standard
>	Tb	159	1016986.1	1.0				ug/L	966827	Standard
|	Ho	165	61.7	24.8				ug/L	12	Standard
|	Tl	203	143.0	7.4	0.0270	0.003	9.6	ug/L	19	Standard
|	Tl	205	338.3	6.2	0.0317	0.002	6.4	ug/L	58	Standard
|	Pb	206	440.3	5.1	0.0378	0.007	18.8	ug/L	464	Standard
|	Pb	207	396.3	2.5	0.0417	0.003	8.3	ug/L	405	Standard
|	Pb	208	979.7	5.9	0.0627	0.009	14.2	ug/L	876	Standard
|	U	238	961.4	2.3	0.1284	0.003	2.0	ug/L	14	Standard
>	Bi	209	383577.3	0.3				ug/L	599146	Standard

Sample ID: L1702138802

Report Date/Time: Tuesday, February 28, 2017 15:25:33

Page 1

Approved: March 01, 2017

Na	23	3662.1	4.5	1058.2677	42.911	4.1	mg/L	3	Standard
Mg	24	16856.0	1.3	341.1761	16.517	4.8	mg/L	30	Standard
K	39	1925.1	4.8	25.4796	1.560	6.1	mg/L	10	Standard
Ca	43	3153.7	1.1	1805.8104	70.059	3.9	mg/L	83	Standard
Fe	54	473.1	9.2	7.0489	0.736	10.4	mg/L	21	Standard
Fe	57	7618.6	3.0	408.4659	20.324	5.0	mg/L	240	Standard
Sc-1	45	41642.2	4.0				mg/L	41681	Standard
Cl	35	2.7	43.3				ug/L	2	Standard
Kr	83	7.7	15.1				ug/L	5	Standard
Br	81	194059.4	3.8				ug/L	1587	Standard
P	31	78.3	16.1				ug/L	50	Standard
S	34	38.3	7.5				ug/L	8	Standard
Sr	88	725.0	3.2				ug/L	198	Standard
C	12	26.7	114.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	56.6	28.4				mg/L	6	Standard
Ho-1	165	61.7	24.8				mg/L	12	Standard
Er	166	70.0	37.8				mg/L	10	Standard
I	127	317296.5	5.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		182.292	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		89.860	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702138802

Report Date/Time: Tuesday, February 28, 2017 15:25:33

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	79.828
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.021
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702138802

Report Date/Time: Tuesday, February 28, 2017 15:25:33

Page 3

Approved: March 01, 2017

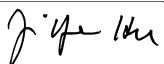


Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702138802

Report Date/Time: Tuesday, February 28, 2017 15:25:33

Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702138803

Sample Date/Time: Tuesday, February 28, 2017 15:26:27

Number of Replicates: 3

Autosampler Position: 251

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	503502.9	0.7				ug/L	250104	Standard
|	Be	9	68.3	41.6	0.0106	0.009	83.1	ug/L	7	Standard
|	Al	27	106611523.1	2.7	435.1595	13.583	3.1	ug/L	597	Standard
|	Sc	45	40896.8	2.8				ug/L	41681	Standard
|	Ti	47	283.0	7.6	1.3348	0.164	12.3	ug/L	86	Standard
|	V	51	-8181.0	23.8	-1.7771	0.381	21.4	ug/L	1740	Standard
|	Cr	52	14110.2	0.5	1.5550	0.040	2.6	ug/L	7178	Standard
|	Cr	53	53215.0	2.5	80.9043	3.612	4.5	ug/L	573	Standard
|	Mn	55	76530710.7	2.1	9147.9081	364.057	4.0	ug/L	3072	Standard
|	Co	59	27680.3	1.2	4.1732	0.116	2.8	ug/L	573	Standard
|	Ni	60	69689.6	1.4	50.0324	0.898	1.8	ug/L	264	Standard
|	Cu	65	9556.0	1.6	6.8209	0.235	3.4	ug/L	530	Standard
|	Zn	66	5281.9	0.4	6.5780	0.154	2.3	ug/L	252	Standard
>	Ge	72	568463.2	2.0				ug/L	641188	Standard
|	As	75	-943.7	94.5	-1.2024	1.175	97.7	ug/L	-83	Standard
|	Se	82	362.9	37.4	5.2285	1.941	37.1	ug/L	16	Standard
|	Se-1	77	22029.4	5.0	463.5872	31.803	6.9	ug/L	126	Standard
>	Ga	71	838.4	7.4				mg/L	70	Standard
|	Rb	85	352601.3	4.6				ug/L	33	Standard
|	Y	89	449272.2	0.8				ug/L	493982	Standard
>	Rh	103	6934.9	2.1				ug/L	17	Standard
|	Mo	98	156.5	12.2	0.0432	0.008	18.9	ug/L	54	Standard
|	Ag	107	201.0	9.7	0.0240	0.005	21.2	ug/L	137	Standard
|	Cd	111	23.8	29.5	0.0053	0.005	100.5	mg/L	6	Standard
|	Cd	114	74.5	37.4	0.0116	0.008	71.0	ug/L	20	Standard
>	In	115	593729.4	1.2				ug/L	755264	Standard
|	Sn	118	205.3	15.5	0.1392	0.045	32.3	ug/L	138	Standard
|	Sb	123	1038.3	1.3	0.2684	0.007	2.7	ug/L	391	Standard
|	Ba	135	32899067.0	2.1	23418.2452	757.456	3.2	ug/L	32	Standard
|	Ce	140	1495.1	4.7				ug/L	42	Standard
>	Tb	159	1016038.3	0.8				ug/L	966827	Standard
|	Ho	165	156.7	12.1				ug/L	12	Standard
|	Tl	203	99.3	15.1	0.0158	0.003	20.3	ug/L	19	Standard
|	Tl	205	220.0	26.2	0.0189	0.005	27.6	ug/L	58	Standard
|	Pb	206	402.7	8.4	0.0223	0.010	46.3	ug/L	464	Standard
|	Pb	207	346.0	2.6	0.0207	0.002	7.7	ug/L	405	Standard
|	Pb	208	919.0	2.7	0.0484	0.001	2.3	ug/L	876	Standard
|	U	238	43.3	4.8	0.0040	0.000	9.3	ug/L	14	Standard
>	Bi	209	397371.9	1.9				ug/L	599146	Standard

Sample ID: L1702138803

Report Date/Time: Tuesday, February 28, 2017 15:28:38

Page 1

Approved: March 01, 2017

Na	23	4288.9	1.3	1261.9313	18.917	1.5	mg/L	3	Standard
Mg	24	13587.8	1.4	279.7996	11.536	4.1	mg/L	30	Standard
K	39	4877.5	4.2	66.0302	0.942	1.4	mg/L	10	Standard
Ca	43	3735.5	1.8	2185.0559	65.696	3.0	mg/L	83	Standard
Fe	54	483.4	21.3	7.3350	1.624	22.1	mg/L	21	Standard
Fe	57	8922.6	1.9	489.8258	12.040	2.5	mg/L	240	Standard
Sc-1	45	40896.8	2.8				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	6.3	9.1				ug/L	5	Standard
Br	81	243931.6	5.4				ug/L	1587	Standard
P	31	100.0	13.2				ug/L	50	Standard
S	34	36.7	34.3				ug/L	8	Standard
Sr	88	681.7	4.0				ug/L	198	Standard
C	12	46.7	32.7				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	157.3	36.6				mg/L	6	Standard
Ho-1	165	156.7	12.1				mg/L	12	Standard
Er	166	126.7	12.1				mg/L	10	Standard
I	127	381801.3	7.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		201.318	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		88.658	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702138803

Report Date/Time: Tuesday, February 28, 2017 15:28:38

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	78.612
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	66.323
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702138803

Report Date/Time: Tuesday, February 28, 2017 15:28:38

Page 3

Approved: March 01, 2017



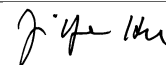
Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702138803

Report Date/Time: Tuesday, February 28, 2017 15:28:38

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702138804

Sample Date/Time: Tuesday, February 28, 2017 15:29:33

Number of Replicates: 3

Autosampler Position: 252

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	515934.5	1.1				ug/L	250104	Standard
|	Be	9	61.7	33.8	0.0082	0.006	78.8	ug/L	7	Standard
|	Al	27	111742443.8	4.0	445.0254	15.640	3.5	ug/L	597	Standard
|	Sc	45	39028.5	2.1				ug/L	41681	Standard
|	Ti	47	304.7	10.6	1.4762	0.197	13.4	ug/L	86	Standard
|	V	51	-8972.3	14.9	-1.9250	0.271	14.1	ug/L	1740	Standard
|	Cr	52	14228.7	1.7	1.5869	0.040	2.5	ug/L	7178	Standard
|	Cr	53	55673.9	4.2	84.9034	3.149	3.7	ug/L	573	Standard
|	Mn	55	80252608.1	1.0	9619.5935	102.070	1.1	ug/L	3072	Standard
|	Co	59	29334.0	1.9	4.4390	0.010	0.2	ug/L	573	Standard
|	Ni	60	73912.9	1.5	53.2428	0.825	1.5	ug/L	264	Standard
|	Cu	65	10310.8	3.0	7.4103	0.089	1.2	ug/L	530	Standard
|	Zn	66	5301.9	0.8	6.6261	0.144	2.2	ug/L	252	Standard
>	Ge	72	566660.2	2.0				ug/L	641188	Standard
|	As	75	-1145.3	35.8	-1.4560	0.538	37.0	ug/L	-83	Standard
|	Se	82	315.3	34.6	4.5612	1.715	37.6	ug/L	16	Standard
|	Se-1	77	23372.0	3.8	493.0559	12.855	2.6	ug/L	126	Standard
>	Ga	71	940.0	11.7				mg/L	70	Standard
|	Rb	85	371535.4	1.0				ug/L	33	Standard
|	Y	89	451065.9	2.9				ug/L	493982	Standard
>	Rh	103	7255.1	0.7				ug/L	17	Standard
|	Mo	98	176.7	12.9	0.0524	0.008	16.0	ug/L	54	Standard
|	Ag	107	214.7	9.6	0.0279	0.004	14.9	ug/L	137	Standard
|	Cd	111	17.1	23.7	0.0002	0.003	1400.4	mg/L	6	Standard
|	Cd	114	92.0	22.7	0.0172	0.006	37.4	ug/L	20	Standard
>	In	115	584815.9	1.7				ug/L	755264	Standard
|	Sn	118	236.7	8.1	0.1850	0.020	11.0	ug/L	138	Standard
|	Sb	123	1064.6	1.6	0.2805	0.009	3.3	ug/L	391	Standard
|	Ba	135	33874456.5	0.4	24477.5753	332.687	1.4	ug/L	32	Standard
|	Ce	140	1598.4	2.2				ug/L	42	Standard
>	Tb	159	990954.1	1.2				ug/L	966827	Standard
|	Ho	165	138.3	24.1				ug/L	12	Standard
|	Tl	203	102.0	2.9	0.0171	0.000	2.7	ug/L	19	Standard
|	Tl	205	206.7	7.4	0.0182	0.002	8.4	ug/L	58	Standard
|	Pb	206	500.0	4.9	0.0548	0.007	13.0	ug/L	464	Standard
|	Pb	207	426.7	4.6	0.0511	0.008	15.3	ug/L	405	Standard
|	Pb	208	1102.3	0.3	0.0806	0.002	3.0	ug/L	876	Standard
|	U	238	55.7	20.0	0.0058	0.002	27.2	ug/L	14	Standard
>	Bi	209	385942.4	1.2				ug/L	599146	Standard

Sample ID: L1702138804

Report Date/Time: Tuesday, February 28, 2017 15:31:44

Page 1

Approved: March 01, 2017

Na	23	4397.3	3.7	1355.2161	31.670	2.3	mg/L	3	Standard
Mg	24	14118.3	4.8	304.5264	15.665	5.1	mg/L	30	Standard
K	39	4922.5	5.6	69.9355	5.307	7.6	mg/L	10	Standard
Ca	43	3983.9	4.6	2444.9356	73.612	3.0	mg/L	83	Standard
Fe	54	496.5	5.6	7.9171	0.499	6.3	mg/L	21	Standard
Fe	57	9176.1	1.8	528.9847	9.242	1.7	mg/L	240	Standard
Sc-1	45	39028.5	2.1				mg/L	41681	Standard
Cl	35	2.0	0.0				ug/L	2	Standard
Kr	83	5.7	10.2				ug/L	5	Standard
Br	81	261784.4	3.9				ug/L	1587	Standard
P	31	71.7	4.0				ug/L	50	Standard
S	34	33.3	74.0				ug/L	8	Standard
Sr	88	696.7	11.6				ug/L	198	Standard
C	12	43.3	13.3				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	190.6	25.0				mg/L	6	Standard
Ho-1	165	138.3	24.1				mg/L	12	Standard
Er	166	126.7	44.9				mg/L	10	Standard
I	127	385117.0	6.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		206.288	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		88.377	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702138804

Report Date/Time: Tuesday, February 28, 2017 15:31:44

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.432
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	64.415
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Li 6 Int Std for sample	Li	6	Rerun sample
Al 27 Upper, S, EEE	Al	27	
V 51 Lower	V	51	

Sample ID: L1702138804

Report Date/Time: Tuesday, February 28, 2017 15:31:44

Page 3

Approved: March 01, 2017



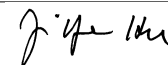
Mn 55 Upper, S, EEE	Mn	55
As 75 Lower	As	75
Se-1 77 Upper, S, EEE	Se-1	77
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702138804

Report Date/Time: Tuesday, February 28, 2017 15:31:44

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 15:32:40

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	203217.8	6.8				ug/L	250104	Standard
|	Be	9	63028.1	8.4	47.6558	1.502	3.2	ug/L	7	Standard
|	Al	27	4536500.0	8.0	45.8519	1.392	3.0	ug/L	597	Standard
|	Sc	45	43666.2	1.6				ug/L	41681	Standard
|	Ti	47	18708.2	2.4	101.6455	2.206	2.2	ug/L	86	Standard
|	V	51	294712.6	3.8	46.0583	1.306	2.8	ug/L	1740	Standard
|	Cr	52	280499.4	3.8	46.2097	1.467	3.2	ug/L	7178	Standard
|	Cr	53	55783.3	10.7	72.7705	7.077	9.7	ug/L	573	Standard
|	Mn	55	456788.5	3.9	46.6294	1.516	3.3	ug/L	3072	Standard
|	Co	59	356690.7	3.2	46.8542	1.236	2.6	ug/L	573	Standard
|	Ni	60	76035.4	3.3	46.9289	1.124	2.4	ug/L	264	Standard
|	Cu	65	73764.5	2.1	47.4049	1.145	2.4	ug/L	530	Standard
|	Zn	66	41045.6	3.7	45.9457	1.388	3.0	ug/L	252	Standard
>	Ge	72	660909.6	1.3				ug/L	641188	Standard
|	As	75	40640.4	3.9	45.6412	1.471	3.2	ug/L	-83	Standard
|	Se	82	3486.8	3.0	45.0365	1.249	2.8	ug/L	16	Standard
|	Se-1	77	5289.3	12.1	93.7787	10.602	11.3	ug/L	126	Standard
>	Ga	71	263.3	30.4				mg/L	70	Standard
|	Rb	85	636.7	11.1				ug/L	33	Standard
|	Y	89	450618.0	0.8				ug/L	493982	Standard
>	Rh	103	45.0	22.2				ug/L	17	Standard
|	Mo	98	242667.8	2.7	95.3342	0.569	0.6	ug/L	54	Standard
|	Ag	107	206363.5	3.8	47.0154	0.747	1.6	ug/L	137	Standard
|	Cd	111	56318.1	5.4	43.2745	1.372	3.2	mg/L	6	Standard
|	Cd	114	161740.9	5.0	45.3054	1.291	2.8	ug/L	20	Standard
>	In	115	617790.9	2.3				ug/L	755264	Standard
|	Sn	118	37900.1	4.7	48.1956	1.377	2.9	ug/L	138	Standard
|	Sb	123	173366.4	3.8	47.2925	0.975	2.1	ug/L	391	Standard
|	Ba	135	73531.9	4.3	50.2476	1.080	2.1	ug/L	32	Standard
|	Ce	140	51.7	47.7				ug/L	42	Standard
>	Tb	159	852042.2	1.1				ug/L	966827	Standard
|	Ho	165	18.3	41.7				ug/L	12	Standard
|	Tl	203	259683.1	3.3	47.4721	0.638	1.3	ug/L	19	Standard
|	Tl	205	607378.9	4.5	47.4789	1.103	2.3	ug/L	58	Standard
|	Pb	206	203156.6	3.4	47.0184	0.615	1.3	ug/L	464	Standard
|	Pb	207	181957.0	4.2	47.0633	0.915	1.9	ug/L	405	Standard
|	Pb	208	383951.5	4.1	45.5096	0.858	1.9	ug/L	876	Standard
|	U	238	339174.0	2.9	35.3720	0.378	1.1	ug/L	14	Standard
>	Bi	209	497785.3	2.4				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:34:51

Page 1

Approved: March 01, 2017

Na	23	15.0	66.7	3.6610	2.793	76.3	mg/L	3	Standard
Mg	24	300.0	18.9	5.2478	1.061	20.2	mg/L	30	Standard
K	39	561.7	14.7	6.9074	1.054	15.3	mg/L	10	Standard
Ca	43	56.7	35.7	-8.8113	11.383	129.2	mg/L	83	Standard
Fe	54	288.2	16.6	3.9947	0.768	19.2	mg/L	21	Standard
Fe	57	551.7	3.7	13.4009	1.184	8.8	mg/L	240	Standard
Sc-1	45	43666.2	1.6				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.3	69.3				ug/L	5	Standard
Br	81	6574.8	22.6				ug/L	1587	Standard
P	31	60.0	25.0				ug/L	50	Standard
S	34	30.0	16.7				ug/L	8	Standard
Sr	88	226.7	13.3				ug/L	198	Standard
C	12	13.3	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	9.5	107.6				mg/L	6	Standard
Ho-1	165	18.3	41.7				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	34627.2	40.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	95.312		
Al	27	91.704		
Sc	45			
Ti	47	101.646		
V	51	92.117		
Cr	52	92.419		
Cr	53			
Mn	55	93.259		
Co	59	93.708		
Ni	60	93.858		
Cu	65	94.810		
Zn	66	91.891		
Ge	72		103.076	
As	75	91.282		
Se	82	90.073		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:34:51

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	95.334	
[	Ag	107	94.031	
[	Cd	111	86.549	
[	Cd	114		
>	In	115		81.798
[	Sn	118	96.391	
[	Sb	123	94.585	
[	Ba	135	100.495	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	94.944	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	91.019	
[	U	238	70.744	
>	Bi	209		83.082
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:34:51

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 15:35:46

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	178653.9	1.4				ug/L	250104	Standard
|	Be	9	46.7	83.2	0.0297	0.033	111.3	ug/L	7	Standard
|	Al	27	26077.9	150.5	0.2918	0.448	153.5	ug/L	597	Standard
|	Sc	45	40402.2	3.2				ug/L	41681	Standard
|	Ti	47	36.7	13.7	-0.2531	0.029	11.4	ug/L	86	Standard
|	V	51	195.8	261.9	-0.2442	0.085	34.8	ug/L	1740	Standard
|	Cr	52	7000.3	2.5	0.0203	0.040	195.7	ug/L	7178	Standard
|	Cr	53	14917.3	3.0	19.7672	0.708	3.6	ug/L	573	Standard
|	Mn	55	16687.6	132.9	1.4960	2.400	160.4	ug/L	3072	Standard
|	Co	59	329.0	13.3	-0.0160	0.006	39.8	ug/L	573	Standard
|	Ni	60	192.0	18.9	-0.0529	0.024	45.1	ug/L	264	Standard
|	Cu	65	519.0	4.8	-0.0261	0.013	48.2	ug/L	530	Standard
|	Zn	66	312.7	4.3	0.0180	0.014	75.3	ug/L	252	Standard
>	Ge	72	631047.3	1.3				ug/L	641188	Standard
|	As	75	43.4	152.0	0.0938	0.078	82.7	ug/L	-83	Standard
|	Se	82	18.1	31.0	0.0182	0.079	434.1	ug/L	16	Standard
|	Se-1	77	1824.8	11.6	32.4653	4.144	12.8	ug/L	126	Standard
>	Ga	71	176.7	4.3				mg/L	70	Standard
|	Rb	85	393.3	142.4				ug/L	33	Standard
|	Y	89	439436.4	0.4				ug/L	493982	Standard
>	Rh	103	21.7	74.2				ug/L	17	Standard
|	Mo	98	274.3	85.2	0.0964	0.101	104.4	ug/L	54	Standard
|	Ag	107	187.3	60.9	0.0227	0.029	125.9	ug/L	137	Standard
|	Cd	111	26.3	108.6	0.0084	0.024	286.4	mg/L	6	Standard
|	Cd	114	91.4	101.8	0.0177	0.029	161.2	ug/L	20	Standard
>	In	115	569550.9	2.0				ug/L	755264	Standard
|	Sn	118	136.0	19.2	0.0546	0.037	68.1	ug/L	138	Standard
|	Sb	123	750.0	10.8	0.1957	0.027	13.8	ug/L	391	Standard
|	Ba	135	25367.7	172.8	18.9153	32.729	173.0	ug/L	32	Standard
|	Ce	140	31.7	39.7				ug/L	42	Standard
>	Tb	159	786704.5	0.8				ug/L	966827	Standard
|	Ho	165	8.3	69.3				ug/L	12	Standard
|	Tl	203	197.0	87.1	0.0309	0.033	106.5	ug/L	19	Standard
|	Tl	205	443.3	99.1	0.0338	0.036	106.6	ug/L	58	Standard
|	Pb	206	475.7	27.5	0.0211	0.032	149.4	ug/L	464	Standard
|	Pb	207	376.3	32.7	0.0109	0.033	307.2	ug/L	405	Standard
|	Pb	208	835.7	21.6	0.0159	0.022	139.9	ug/L	876	Standard
|	U	238	91.7	125.0	0.0083	0.013	150.3	ug/L	14	Standard
>	Bi	209	473682.2	0.6				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:37:56

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	0.0132	0.851	6453.2	mg/L	3	Standard
Mg	24	30.0	76.4	0.0805	0.470	583.4	mg/L	30	Standard
K	39	20.0	25.0	0.0327	0.066	202.7	mg/L	10	Standard
Ca	43	35.0	37.8	-19.4472	7.388	38.0	mg/L	83	Standard
Fe	54	28.1	21.0	0.1953	0.084	42.8	mg/L	21	Standard
Fe	57	418.3	14.6	8.1318	3.550	43.7	mg/L	240	Standard
Sc-1	45	40402.2	3.2				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	3.0	33.3				ug/L	5	Standard
Br	81	3510.4	10.9				ug/L	1587	Standard
P	31	173.3	100.9				ug/L	50	Standard
S	34	20.0	66.1				ug/L	8	Standard
Sr	88	181.7	7.9				ug/L	198	Standard
C	12	16.7	69.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	6.0	100.7				mg/L	6	Standard
Ho-1	165	8.3	69.3				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	16265.5	12.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		98.418	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:37:56

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	75.411
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	79.060
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 7	Mn	55	
In 115 Int Std for QC Std	In	115	Rerun sample
QC Std 7	Ba	135	

Sample ID: QC Std 7

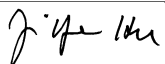
Report Date/Time: Tuesday, February 28, 2017 15:37:56

Page 3

Approved: March 01, 2017



Sample ID: QC Std 7
Report Date/Time: Tuesday, February 28, 2017 15:37:56
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702131902

Sample Date/Time: Tuesday, February 28, 2017 15:46:33

Number of Replicates: 3

Autosampler Position: 253

Sample Description: 100

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	150034.3	1.3				ug/L	250104	Standard
|	Be	9	16.7	17.3	0.0068	0.003	46.1	ug/L	7	Standard
|	Al	27	1260.1	5.2	0.0111	0.001	9.6	ug/L	597	Standard
|	Sc	45	36186.5	0.3				ug/L	41681	Standard
|	Ti	47	29.0	6.9	-0.2845	0.013	4.6	ug/L	86	Standard
|	V	51	147.0	80.3	-0.2506	0.021	8.3	ug/L	1740	Standard
|	Cr	52	5862.5	0.9	-0.1038	0.022	21.6	ug/L	7178	Standard
|	Cr	53	8742.5	5.8	12.1345	1.004	8.3	ug/L	573	Standard
|	Mn	55	1985.5	3.5	-0.0768	0.005	6.1	ug/L	3072	Standard
|	Co	59	293.7	6.5	-0.0179	0.002	12.8	ug/L	573	Standard
|	Ni	60	356.7	4.2	0.0711	0.006	9.0	ug/L	264	Standard
|	Cu	65	5519.0	0.5	3.6456	0.066	1.8	ug/L	530	Standard
|	Zn	66	836.0	5.0	0.7103	0.059	8.3	ug/L	252	Standard
>	Ge	72	587293.9	1.9				ug/L	641188	Standard
|	As	75	-24.9	218.7	0.0117	0.069	591.0	ug/L	-83	Standard
|	Se	82	12.5	23.0	-0.0451	0.045	99.8	ug/L	16	Standard
|	Se-1	77	898.7	0.6	16.1089	0.352	2.2	ug/L	126	Standard
>	Ga	71	100.0	13.2				mg/L	70	Standard
|	Rb	85	91.7	20.7				ug/L	33	Standard
|	Y	89	396659.8	2.0				ug/L	493982	Standard
>	Rh	103	11.7	65.5				ug/L	17	Standard
|	Mo	98	295.7	5.0	0.1210	0.007	5.9	ug/L	54	Standard
|	Ag	107	92.7	8.7	0.0021	0.002	115.1	ug/L	137	Standard
|	Cd	111	6.6	14.8	-0.0074	0.001	11.9	mg/L	6	Standard
|	Cd	114	193.9	6.9	0.0562	0.004	7.7	ug/L	20	Standard
>	In	115	506102.2	1.0				ug/L	755264	Standard
|	Sn	118	1596.1	8.0	2.3526	0.217	9.2	ug/L	138	Standard
|	Sb	123	76.0	23.7	-0.0013	0.006	451.1	ug/L	391	Standard
|	Ba	135	372.0	3.3	0.2830	0.008	2.8	ug/L	32	Standard
|	Ce	140	18.3	56.8				ug/L	42	Standard
>	Tb	159	719973.9	1.8				ug/L	966827	Standard
|	Ho	165	16.7	17.3				ug/L	12	Standard
|	Tl	203	44.7	12.7	0.0023	0.001	49.1	ug/L	19	Standard
|	Tl	205	70.0	14.3	0.0036	0.001	21.2	ug/L	58	Standard
|	Pb	206	733.7	3.3	0.0986	0.005	4.8	ug/L	464	Standard
|	Pb	207	608.0	5.6	0.0874	0.007	7.7	ug/L	405	Standard
|	Pb	208	1339.4	2.8	0.0926	0.008	8.6	ug/L	876	Standard
|	U	238	2.3	24.7	-0.0014	0.000	4.4	ug/L	14	Standard
>	Bi	209	437995.9	2.1				ug/L	599146	Standard

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 15:48:43

Page 1

Approved: March 01, 2017

Na	23	16.7	34.6	5.0677	1.930	38.1	mg/L	3	Standard
Mg	24	21.7	26.6	-0.0353	0.133	377.2	mg/L	30	Standard
K	39	41.7	13.9	0.3978	0.090	22.6	mg/L	10	Standard
Ca	43	61.7	40.8	1.0760	16.891	1569.7	mg/L	83	Standard
Fe	54	23.0	43.6	0.1579	0.177	112.3	mg/L	21	Standard
Fe	57	398.3	26.5	9.6238	6.722	69.8	mg/L	240	Standard
Sc-1	45	36186.5	0.3				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	3.7	68.6				ug/L	5	Standard
Br	81	2130.1	4.9				ug/L	1587	Standard
P	31	30.0	16.7				ug/L	50	Standard
S	34	20.0	0.0				ug/L	8	Standard
Sr	88	225.0	9.7				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	2.7	219.6				mg/L	6	Standard
Ho-1	165	16.7	17.3				mg/L	12	Standard
Er	166	13.3	43.3				mg/L	10	Standard
I	127	9783.2	3.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		59.989	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		91.595	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 15:48:43

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	67.010
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	73.103
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702131902

Report Date/Time: Tuesday, February 28, 2017 15:48:43

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 15:49:40

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	173856.9	1.4				ug/L	250104	Standard
|	Be	9	55248.9	0.3	48.8614	0.678	1.4	ug/L	7	Standard
|	Al	27	3845834.4	0.8	45.4539	0.269	0.6	ug/L	597	Standard
|	Sc	45	40544.2	0.5				ug/L	41681	Standard
|	Ti	47	18071.8	1.4	99.0014	0.954	1.0	ug/L	86	Standard
|	V	51	287396.4	1.4	45.2983	0.701	1.5	ug/L	1740	Standard
|	Cr	52	266721.7	1.0	44.2668	0.470	1.1	ug/L	7178	Standard
|	Cr	53	39944.3	0.6	52.3401	0.194	0.4	ug/L	573	Standard
|	Mn	55	441075.8	1.1	45.4032	0.427	0.9	ug/L	3072	Standard
|	Co	59	355187.5	1.4	47.0519	0.273	0.6	ug/L	573	Standard
|	Ni	60	76027.0	1.4	47.3258	0.432	0.9	ug/L	264	Standard
|	Cu	65	75730.8	1.7	49.0864	0.549	1.1	ug/L	530	Standard
|	Zn	66	41574.3	1.0	46.9431	0.110	0.2	ug/L	252	Standard
>	Ge	72	655373.9	0.8				ug/L	641188	Standard
|	As	75	42050.7	1.2	47.6267	0.280	0.6	ug/L	-83	Standard
|	Se	82	3672.5	1.3	47.8495	0.455	1.0	ug/L	16	Standard
|	Se-1	77	3349.0	3.0	59.1089	2.117	3.6	ug/L	126	Standard
>	Ga	71	88.3	21.4				mg/L	70	Standard
|	Rb	85	638.3	6.8				ug/L	33	Standard
|	Y	89	448553.5	1.3				ug/L	493982	Standard
>	Rh	103	35.0	24.7				ug/L	17	Standard
|	Mo	98	250993.6	0.4	106.2727	1.617	1.5	ug/L	54	Standard
|	Ag	107	208115.2	0.4	51.1115	0.797	1.6	ug/L	137	Standard
|	Cd	111	53543.8	0.9	44.3606	0.819	1.8	mg/L	6	Standard
|	Cd	114	152946.9	1.6	46.1867	0.924	2.0	ug/L	20	Standard
>	In	115	573333.3	1.3				ug/L	755264	Standard
|	Sn	118	35885.8	2.0	49.1946	1.085	2.2	ug/L	138	Standard
|	Sb	123	162685.5	1.1	47.8324	0.695	1.5	ug/L	391	Standard
|	Ba	135	71258.5	1.0	52.4938	0.980	1.9	ug/L	32	Standard
|	Ce	140	46.7	44.6				ug/L	42	Standard
>	Tb	159	777484.1	1.2				ug/L	966827	Standard
|	Ho	165	16.7	69.3				ug/L	12	Standard
|	Tl	203	253755.8	1.1	49.1210	0.667	1.4	ug/L	19	Standard
|	Tl	205	590848.1	1.4	48.9171	0.785	1.6	ug/L	58	Standard
|	Pb	206	198394.5	1.0	48.6248	0.593	1.2	ug/L	464	Standard
|	Pb	207	178149.3	0.9	48.8030	0.561	1.1	ug/L	405	Standard
|	Pb	208	374893.1	1.8	47.0628	0.963	2.0	ug/L	876	Standard
|	U	238	315125.0	1.8	34.7977	0.712	2.0	ug/L	14	Standard
>	Bi	209	470163.4	0.3				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:51:50

Page 1

Approved: March 01, 2017

Na	23	5.0	100.0	1.0105	1.493	147.7	mg/L	3	Standard
Mg	24	256.7	15.1	4.8005	0.837	17.4	mg/L	30	Standard
K	39	575.0	2.6	7.6414	0.242	3.2	mg/L	10	Standard
Ca	43	46.7	52.9	-12.4186	14.721	118.5	mg/L	83	Standard
Fe	54	379.2	9.5	5.7503	0.542	9.4	mg/L	21	Standard
Fe	57	588.3	10.8	17.7518	3.716	20.9	mg/L	240	Standard
Sc-1	45	40544.2	0.5				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	2.7	21.7				ug/L	5	Standard
Br	81	2303.5	5.6				ug/L	1587	Standard
P	31	61.7	9.4				ug/L	50	Standard
S	34	33.3	22.9				ug/L	8	Standard
Sr	88	183.3	9.6				ug/L	198	Standard
C	12	20.0	50.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	23.0	24.5				mg/L	6	Standard
Ho-1	165	16.7	69.3				mg/L	12	Standard
Er	166	6.7	86.6				mg/L	10	Standard
I	127	6883.2	4.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	97.723		
Al	27	90.908		
Sc	45			
Ti	47	99.001		
V	51	90.597		
Cr	52	88.534		
Cr	53			
Mn	55	90.806		
Co	59	94.104		
Ni	60	94.652		
Cu	65	98.173		
Zn	66	93.886		
Ge	72		102.212	
As	75	95.253		
Se	82	95.699		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:51:50

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	106.273	
[	Ag	107	102.223	
[	Cd	111	88.721	
[	Cd	114		
>	In	115		75.912
[	Sn	118	98.389	
[	Sb	123	95.665	
[	Ba	135	104.988	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	98.242	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	94.126	
[	U	238	69.595	
>	Bi	209		78.472
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cr	52	
QC Std 6	Cd	111	
In 115 Int Std for QC Std	In	115	Rerun sample

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 15:51:50

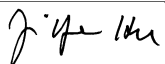
Page 3

Approved: March 01, 2017



QC Std 6 U 238
Bi 209 Int Std for QC Std Bi 209 Rerun sample

Sample ID: QC Std 6
Report Date/Time: Tuesday, February 28, 2017 15:51:50
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 15:52:45

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	170295.2	1.6				ug/L	250104	Standard
|	Be	9	21.7	48.0	0.0094	0.010	102.6	ug/L	7	Standard
|	Al	27	1080.0	10.4	0.0069	0.001	20.6	ug/L	597	Standard
|	Sc	45	39691.9	1.4				ug/L	41681	Standard
|	Ti	47	33.3	6.2	-0.2739	0.012	4.3	ug/L	86	Standard
|	V	51	1351.3	16.2	-0.0561	0.035	62.0	ug/L	1740	Standard
|	Cr	52	6476.1	2.4	-0.0832	0.017	20.2	ug/L	7178	Standard
|	Cr	53	6031.2	6.0	7.3918	0.433	5.9	ug/L	573	Standard
|	Mn	55	2528.5	1.0	-0.0367	0.005	13.9	ug/L	3072	Standard
|	Co	59	311.0	1.4	-0.0188	0.001	4.3	ug/L	573	Standard
|	Ni	60	145.7	12.3	-0.0839	0.011	12.9	ug/L	264	Standard
|	Cu	65	558.3	1.8	-0.0027	0.006	216.9	ug/L	530	Standard
|	Zn	66	321.0	1.1	0.0245	0.006	25.1	ug/L	252	Standard
>	Ge	72	636821.6	1.0				ug/L	641188	Standard
|	As	75	22.7	392.0	0.0693	0.104	150.5	ug/L	-83	Standard
|	Se	82	14.6	23.8	-0.0316	0.045	142.2	ug/L	16	Standard
|	Se-1	77	630.7	3.8	9.6242	0.574	6.0	ug/L	126	Standard
>	Ga	71	80.0	12.5				mg/L	70	Standard
|	Rb	85	53.3	14.3				ug/L	33	Standard
|	Y	89	445431.2	0.7				ug/L	493982	Standard
>	Rh	103	15.0	120.2				ug/L	17	Standard
|	Mo	98	176.7	22.4	0.0566	0.019	32.8	ug/L	54	Standard
|	Ag	107	117.0	16.0	0.0059	0.005	77.8	ug/L	137	Standard
|	Cd	111	7.4	62.4	-0.0073	0.004	52.7	mg/L	6	Standard
|	Cd	114	30.3	34.3	-0.0006	0.003	529.0	ug/L	20	Standard
>	In	115	555685.5	1.6				ug/L	755264	Standard
|	Sn	118	114.0	11.6	0.0281	0.020	72.4	ug/L	138	Standard
|	Sb	123	723.8	21.3	0.1929	0.046	23.6	ug/L	391	Standard
|	Ba	135	44.0	15.9	0.0060	0.005	89.4	ug/L	32	Standard
|	Ce	140	23.3	24.7				ug/L	42	Standard
>	Tb	159	761727.8	2.0				ug/L	966827	Standard
|	Ho	165	5.0	0.0				ug/L	12	Standard
|	Tl	203	40.7	8.6	0.0010	0.001	62.1	ug/L	19	Standard
|	Tl	205	80.0	22.5	0.0040	0.001	35.3	ug/L	58	Standard
|	Pb	206	398.0	2.0	0.0038	0.001	33.6	ug/L	464	Standard
|	Pb	207	319.7	5.3	-0.0031	0.006	183.0	ug/L	405	Standard
|	Pb	208	700.0	1.9	0.0005	0.001	218.5	ug/L	876	Standard
|	U	238	31.0	42.2	0.0017	0.001	80.6	ug/L	14	Standard
>	Bi	209	466140.9	2.3				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:54:56

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	13.3	43.3	-0.2563	0.124	48.3	mg/L	30	Standard
K	39	25.0	34.6	0.1089	0.125	114.8	mg/L	10	Standard
Ca	43	35.0	37.8	-18.8698	8.362	44.3	mg/L	83	Standard
Fe	54	34.7	61.9	0.3139	0.355	113.0	mg/L	21	Standard
Fe	57	448.3	23.6	10.2414	5.788	56.5	mg/L	240	Standard
Sc-1	45	39691.9	1.4				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	1.3	114.6				ug/L	5	Standard
Br	81	2263.5	6.8				ug/L	1587	Standard
P	31	58.3	39.6				ug/L	50	Standard
S	34	21.7	35.3				ug/L	8	Standard
Sr	88	198.3	11.6				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	26.0	21.8				mg/L	6	Standard
Ho-1	165	5.0	0.0				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	7712.0	4.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		99.319	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:54:56

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	73.575
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	77.801
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
In 115 Int Std for QC Std	In	115	Rerun sample
Bi 209 Int Std for QC Std	Bi	209	Rerun sample

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 15:54:56

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 4

Sample Date/Time: Tuesday, February 28, 2017 15:55:54

Number of Replicates: 3

Autosampler Position: 203

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	174458.7	0.6				ug/L	250104	Standard
|	Be	9	13.3	21.7	0.0015	0.003	173.3	ug/L	7	Standard
|	Al	27	3615840.3	1.4	42.5844	0.354	0.8	ug/L	597	Standard
|	Sc	45	40230.0	1.3				ug/L	41681	Standard
|	Ti	47	16660.5	2.5	93.1400	1.558	1.7	ug/L	86	Standard
|	V	51	1308.2	14.8	-0.0646	0.033	50.8	ug/L	1740	Standard
|	Cr	52	7620.6	0.7	0.1072	0.027	25.4	ug/L	7178	Standard
|	Cr	53	4632.4	5.4	5.4294	0.441	8.1	ug/L	573	Standard
|	Mn	55	6805.0	65.9	0.4095	0.461	112.7	ug/L	3072	Standard
|	Co	59	725.0	3.6	0.0368	0.002	5.6	ug/L	573	Standard
|	Ni	60	693.3	8.2	0.2645	0.031	11.9	ug/L	264	Standard
|	Cu	65	834.0	3.8	0.1784	0.030	17.0	ug/L	530	Standard
|	Zn	66	867.0	2.8	0.6555	0.020	3.1	ug/L	252	Standard
>	Ge	72	642025.3	1.7				ug/L	641188	Standard
|	As	75	8.1	1122.3	0.0504	0.105	208.8	ug/L	-83	Standard
|	Se	82	18.2	18.1	0.0157	0.041	260.9	ug/L	16	Standard
|	Se-1	77	523.7	5.0	7.5286	0.629	8.4	ug/L	126	Standard
>	Ga	71	105.0	17.2				mg/L	70	Standard
|	Rb	85	668.3	12.3				ug/L	33	Standard
|	Y	89	444202.4	0.2				ug/L	493982	Standard
>	Rh	103	16.7	45.8				ug/L	17	Standard
|	Mo	98	227751.0	2.5	97.9195	0.883	0.9	ug/L	54	Standard
|	Ag	107	108.0	24.5	0.0033	0.007	213.3	ug/L	137	Standard
|	Cd	111	-22.5	19.6	-0.0325	0.004	10.8	mg/L	6	Standard
|	Cd	114	646.8	8.1	0.1885	0.019	9.9	ug/L	20	Standard
>	In	115	564490.6	1.6				ug/L	755264	Standard
|	Sn	118	120.3	6.3	0.0343	0.010	28.2	ug/L	138	Standard
|	Sb	123	315.6	18.6	0.0676	0.017	24.8	ug/L	391	Standard
|	Ba	135	173.7	130.9	0.1008	0.167	165.4	ug/L	32	Standard
|	Ce	140	781.7	10.1				ug/L	42	Standard
>	Tb	159	780914.7	0.9				ug/L	966827	Standard
|	Ho	165	5.0	100.0				ug/L	12	Standard
|	Tl	203	35.3	30.3	0.0000	0.002	15284.9	ug/L	19	Standard
|	Tl	205	85.0	31.1	0.0046	0.002	51.4	ug/L	58	Standard
|	Pb	206	445.0	3.0	0.0164	0.004	23.7	ug/L	464	Standard
|	Pb	207	386.3	4.2	0.0162	0.006	37.0	ug/L	405	Standard
|	Pb	208	767.3	4.8	0.0098	0.004	40.8	ug/L	876	Standard
|	U	238	7.7	19.9	-0.0008	0.000	21.6	ug/L	14	Standard
>	Bi	209	462385.2	1.4				ug/L	599146	Standard

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 15:58:05

Page 1

Approved: March 01, 2017

Na	23	30.0	44.1	8.4709	3.860	45.6	mg/L	3	Standard
Mg	24	571.7	5.8	11.4485	0.856	7.5	mg/L	30	Standard
K	39	545.0	9.7	7.2938	0.815	11.2	mg/L	10	Standard
Ca	43	80.0	22.5	7.9276	10.422	131.5	mg/L	83	Standard
Fe	54	881.2	6.8	13.8151	1.101	8.0	mg/L	21	Standard
Fe	57	733.4	6.1	26.3868	3.141	11.9	mg/L	240	Standard
Sc-1	45	40230.0	1.3				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	5.0	20.0				ug/L	5	Standard
Br	81	2183.5	7.7				ug/L	1587	Standard
P	31	45.0	29.4				ug/L	50	Standard
S	34	40.0	25.0				ug/L	8	Standard
Sr	88	211.7	9.5				ug/L	198	Standard
C	12	16.7	91.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	-0.5	173.2				mg/L	6	Standard
Ho-1	165	5.0	100.0				mg/L	12	Standard
Er	166	10.0	173.2				mg/L	10	Standard
I	127	7370.1	2.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27	0.852		
Sc	45			
Ti	47	93.140		
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		100.131	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 15:58:05

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	97.920	
[	Ag	107		
[	Cd	111		
[	Cd	114		
>	In	115		74.741
[	Sn	118		
[	Sb	123		
[	Ba	135		
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203		
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208		
[	U	238		
>	Bi	209		77.174
[	Na	23	67.767	
[	Mg	24	228.970	
[	K	39	145.876	
[	Ca	43	52.851	
[	Fe	54	110.521	
[	Fe	57	211.094	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 4	Al	27	
QC Std 4	Mn	55	
In 115 Int Std for QC Std	In	115	Rerun sample

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 15:58:05

Page 3

Approved: March 01, 2017



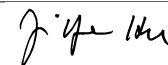
Bi 209 Int Std for QC Std	Bi	209	Rerun sample
QC Std 4	Na	23	
QC Std 4	Mg	24	
QC Std 4	K	39	
QC Std 4	Ca	43	
QC Std 4	Fe	57	

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 15:58:05

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 5

Sample Date/Time: Tuesday, February 28, 2017 15:58:59

Number of Replicates: 3

Autosampler Position: 204

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	194790.0	3.2				ug/L	250104	Standard
|	Be	9	125668.0	4.3	99.1713	1.059	1.1	ug/L	7	Standard
|	Al	27	4079745.2	6.7	43.0057	1.733	4.0	ug/L	597	Standard
|	Sc	45	43256.7	1.1				ug/L	41681	Standard
|	Ti	47	19753.9	3.7	106.0267	3.009	2.8	ug/L	86	Standard
|	V	51	585322.4	4.5	90.6186	2.905	3.2	ug/L	1740	Standard
|	Cr	52	551617.6	4.6	90.9030	2.983	3.3	ug/L	7178	Standard
|	Cr	53	76010.3	3.5	98.2964	1.886	1.9	ug/L	573	Standard
|	Mn	55	901895.1	2.6	91.2405	1.383	1.5	ug/L	3072	Standard
|	Co	59	721375.8	2.8	93.6608	1.287	1.4	ug/L	573	Standard
|	Ni	60	155154.2	3.1	94.7768	1.994	2.1	ug/L	264	Standard
|	Cu	65	151273.9	3.0	96.4026	1.836	1.9	ug/L	530	Standard
|	Zn	66	84535.6	2.7	93.8429	1.529	1.6	ug/L	252	Standard
>	Ge	72	669064.5	1.8				ug/L	641188	Standard
|	As	75	84509.8	2.4	93.7193	1.730	1.8	ug/L	-83	Standard
|	Se	82	7304.0	2.2	93.4309	0.913	1.0	ug/L	16	Standard
|	Se-1	77	6099.2	3.4	107.2278	3.704	3.5	ug/L	126	Standard
>	Ga	71	198.3	6.3				mg/L	70	Standard
|	Rb	85	675.0	12.6				ug/L	33	Standard
|	Y	89	461352.3	2.2				ug/L	493982	Standard
>	Rh	103	55.0	15.7				ug/L	17	Standard
|	Mo	98	239356.4	2.0	95.0027	2.049	2.2	ug/L	54	Standard
|	Ag	107	408316.1	2.2	94.0132	1.333	1.4	ug/L	137	Standard
|	Cd	111	113201.6	4.1	87.8923	1.944	2.2	mg/L	6	Standard
|	Cd	114	316489.5	4.8	89.5448	1.647	1.8	ug/L	20	Standard
>	In	115	611791.8	3.6				ug/L	755264	Standard
|	Sn	118	127.0	12.4	0.0297	0.018	59.2	ug/L	138	Standard
|	Sb	123	350861.9	3.1	96.7055	0.974	1.0	ug/L	391	Standard
|	Ba	135	147845.3	4.1	102.0739	1.795	1.8	ug/L	32	Standard
|	Ce	140	90.0	9.6				ug/L	42	Standard
>	Tb	159	833458.7	3.5				ug/L	966827	Standard
|	Ho	165	46.7	27.0				ug/L	12	Standard
|	Tl	203	519083.0	3.4	94.8856	1.044	1.1	ug/L	19	Standard
|	Tl	205	1209032.2	3.7	94.5145	1.414	1.5	ug/L	58	Standard
|	Pb	206	408958.5	3.6	94.7296	0.919	1.0	ug/L	464	Standard
|	Pb	207	369191.1	3.2	95.5895	0.527	0.6	ug/L	405	Standard
|	Pb	208	781998.3	3.4	92.7804	1.119	1.2	ug/L	876	Standard
|	U	238	669690.5	4.5	69.8143	1.391	2.0	ug/L	14	Standard
>	Bi	209	497857.7	2.7				ug/L	599146	Standard

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 16:01:10

Page 1

Approved: March 01, 2017

Na	23	30.0	50.0	7.8938	4.233	53.6	mg/L	3	Standard
Mg	24	588.3	8.8	10.9358	1.128	10.3	mg/L	30	Standard
K	39	506.7	16.1	6.2611	0.969	15.5	mg/L	10	Standard
Ca	43	61.7	4.7	-5.6949	1.820	32.0	mg/L	83	Standard
Fe	54	828.0	7.2	12.0393	0.975	8.1	mg/L	21	Standard
Fe	57	731.7	12.2	23.3024	4.607	19.8	mg/L	240	Standard
Sc-1	45	43256.7	1.1				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	2.0	86.6				ug/L	5	Standard
Br	81	2493.5	2.4				ug/L	1587	Standard
P	31	45.0	11.1				ug/L	50	Standard
S	34	26.7	28.6				ug/L	8	Standard
Sr	88	225.0	13.5				ug/L	198	Standard
C	12	13.3	114.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	13.3	43.3				mg/L	3	Standard
Dy	164	16.2	91.5				mg/L	6	Standard
Ho-1	165	46.7	27.0				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	9176.1	2.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	99.171		
Al	27	0.860		
Sc	45			
Ti	47	106.027		
V	51	90.619		
Cr	52	90.903		
Cr	53			
Mn	55	91.241		
Co	59	93.661		
Ni	60	94.777		
Cu	65	96.403		
Zn	66	93.843		
Ge	72		104.348	
As	75	93.719		
Se	82	93.431		
Se-1	77			
Ga	71			

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 16:01:10

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	95.003	
[	Ag	107	94.013	
[	Cd	111	87.892	
[	Cd	114		
>	In	115		81.004
[	Sn	118		
[	Sb	123	96.705	
[	Ba	135	102.074	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	94.886	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	92.780	
[	U	238	69.814	
>	Bi	209		83.095
[	Na	23	63.151	
[	Mg	24	218.716	
[	K	39	125.222	
[	Ca	43	-37.966	
[	Fe	54	96.314	
[	Fe	57	186.419	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

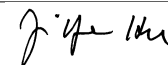
Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 5	Al	27	
QC Std 5	U	238	
QC Std 5	Na	23	

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 16:01:10

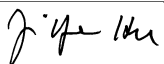
Page 3

Approved: March 01, 2017



QC Std 5	Mg	24
QC Std 5	K	39
QC Std 5	Ca	43
QC Std 5	Fe	57

Sample ID: QC Std 5
Report Date/Time: Tuesday, February 28, 2017 16:01:10
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 16:02:07

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	195364.9	1.3				ug/L	250104	Standard
|	Be	9	63151.4	1.8	49.7074	1.468	3.0	ug/L	7	Standard
|	Al	27	4517497.8	0.4	47.5155	0.440	0.9	ug/L	597	Standard
|	Sc	45	43106.2	0.8				ug/L	41681	Standard
|	Ti	47	19693.1	0.9	104.8073	1.158	1.1	ug/L	86	Standard
|	V	51	310969.4	1.5	47.6157	0.787	1.7	ug/L	1740	Standard
|	Cr	52	291236.6	1.2	47.0188	0.805	1.7	ug/L	7178	Standard
|	Cr	53	40171.5	2.2	51.1068	1.492	2.9	ug/L	573	Standard
|	Mn	55	480916.7	3.2	48.0962	1.534	3.2	ug/L	3072	Standard
|	Co	59	382891.2	1.8	49.2675	0.984	2.0	ug/L	573	Standard
|	Ni	60	81603.9	1.8	49.3464	1.115	2.3	ug/L	264	Standard
|	Cu	65	79216.2	1.4	49.8769	0.887	1.8	ug/L	530	Standard
|	Zn	66	43786.5	1.3	48.0286	0.874	1.8	ug/L	252	Standard
>	Ge	72	674810.9	0.6				ug/L	641188	Standard
|	As	75	43618.8	1.6	47.9813	0.821	1.7	ug/L	-83	Standard
|	Se	82	3874.0	2.0	49.0298	1.167	2.4	ug/L	16	Standard
|	Se-1	77	3264.0	0.6	55.8222	0.382	0.7	ug/L	126	Standard
>	Ga	71	105.0	9.5				mg/L	70	Standard
|	Rb	85	685.0	7.6				ug/L	33	Standard
|	Y	89	461392.1	1.2				ug/L	493982	Standard
>	Rh	103	36.7	43.8				ug/L	17	Standard
|	Mo	98	261756.4	0.4	103.2869	1.262	1.2	ug/L	54	Standard
|	Ag	107	220302.8	1.1	50.4251	1.042	2.1	ug/L	137	Standard
|	Cd	111	57963.0	0.7	44.7550	0.761	1.7	mg/L	6	Standard
|	Cd	114	169221.5	1.1	47.6258	0.844	1.8	ug/L	20	Standard
>	In	115	615171.0	1.0				ug/L	755264	Standard
|	Sn	118	39453.3	1.5	50.4144	1.290	2.6	ug/L	138	Standard
|	Sb	123	179251.8	0.7	49.1213	0.852	1.7	ug/L	391	Standard
|	Ba	135	85971.2	19.3	59.0622	11.731	19.9	ug/L	32	Standard
|	Ce	140	53.3	19.5				ug/L	42	Standard
>	Tb	159	832514.5	0.9				ug/L	966827	Standard
|	Ho	165	16.7	45.8				ug/L	12	Standard
|	Tl	203	272640.1	1.3	49.7761	1.194	2.4	ug/L	19	Standard
|	Tl	205	639786.4	1.2	49.9566	1.126	2.3	ug/L	58	Standard
|	Pb	206	214223.7	1.7	49.5224	1.362	2.8	ug/L	464	Standard
|	Pb	207	191548.8	2.0	49.4941	1.506	3.0	ug/L	405	Standard
|	Pb	208	406236.6	1.0	48.0980	0.966	2.0	ug/L	876	Standard
|	U	238	344787.3	2.1	35.9100	1.130	3.1	ug/L	14	Standard
>	Bi	209	498578.3	1.1				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:04:18

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0142	0.803	5676.2	mg/L	3	Standard
Mg	24	275.0	12.7	4.8357	0.644	13.3	mg/L	30	Standard
K	39	508.3	2.3	6.3130	0.174	2.8	mg/L	10	Standard
Ca	43	60.0	25.0	-6.4863	8.716	134.4	mg/L	83	Standard
Fe	54	374.8	15.6	5.3311	0.879	16.5	mg/L	21	Standard
Fe	57	555.0	4.5	13.9509	1.172	8.4	mg/L	240	Standard
Sc-1	45	43106.2	0.8				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	5.3	28.6				ug/L	5	Standard
Br	81	2216.8	2.6				ug/L	1587	Standard
P	31	58.3	4.9				ug/L	50	Standard
S	34	38.3	19.9				ug/L	8	Standard
Sr	88	218.3	34.7				ug/L	198	Standard
C	12	10.0	173.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	39.5	66.7				mg/L	6	Standard
Ho-1	165	16.7	45.8				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	6241.3	1.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	99.415		
Al	27	95.031		
Sc	45			
Ti	47	104.807		
V	51	95.231		
Cr	52	94.038		
Cr	53			
Mn	55	96.192		
Co	59	98.535		
Ni	60	98.693		
Cu	65	99.754		
Zn	66	96.057		
Ge	72		105.244	
As	75	95.963		
Se	82	98.060		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:04:18

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	103.287	
[	Ag	107	100.850	
[	Cd	111	89.510	
[	Cd	114		
>	In	115		81.451
[	Sn	118	100.829	
[	Sb	123	98.243	
[	Ba	135	118.124	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	99.552	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	96.196	
[	U	238	71.820	
>	Bi	209		83.215
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	Ba	135	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:04:18

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 16:05:13

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	190218.5	1.6				ug/L	250104	Standard
|	Be	9	18.3	41.7	0.0046	0.006	134.9	ug/L	7	Standard
|	Al	27	1041.7	20.6	0.0051	0.003	49.4	ug/L	597	Standard
|	Sc	45	42648.3	0.7				ug/L	41681	Standard
|	Ti	47	33.0	13.9	-0.2842	0.024	8.3	ug/L	86	Standard
|	V	51	1329.5	18.0	-0.0693	0.037	53.1	ug/L	1740	Standard
|	Cr	52	6844.2	3.0	-0.0720	0.030	41.7	ug/L	7178	Standard
|	Cr	53	4442.3	1.3	4.9454	0.113	2.3	ug/L	573	Standard
|	Mn	55	2556.2	1.2	-0.0459	0.003	7.2	ug/L	3072	Standard
|	Co	59	339.0	3.2	-0.0171	0.001	8.3	ug/L	573	Standard
|	Ni	60	165.0	1.6	-0.0762	0.002	3.0	ug/L	264	Standard
|	Cu	65	575.7	5.7	-0.0083	0.021	255.0	ug/L	530	Standard
|	Zn	66	315.0	6.3	0.0011	0.023	2059.0	ug/L	252	Standard
>	Ge	72	666448.5	0.7				ug/L	641188	Standard
|	As	75	-77.2	78.8	-0.0433	0.067	155.5	ug/L	-83	Standard
|	Se	82	16.7	19.8	-0.0125	0.041	330.4	ug/L	16	Standard
|	Se-1	77	451.3	2.6	5.8597	0.218	3.7	ug/L	126	Standard
>	Ga	71	81.7	28.9				mg/L	70	Standard
|	Rb	85	46.7	43.3				ug/L	33	Standard
|	Y	89	460237.8	1.2				ug/L	493982	Standard
>	Rh	103	10.0	50.0				ug/L	17	Standard
|	Mo	98	233.9	28.1	0.0739	0.027	36.4	ug/L	54	Standard
|	Ag	107	109.0	9.7	0.0019	0.002	127.6	ug/L	137	Standard
|	Cd	111	7.0	7.0	-0.0081	0.000	5.0	mg/L	6	Standard
|	Cd	114	38.2	40.6	0.0009	0.004	482.1	ug/L	20	Standard
>	In	115	599786.2	0.4				ug/L	755264	Standard
|	Sn	118	128.3	8.5	0.0349	0.014	41.0	ug/L	138	Standard
|	Sb	123	979.2	19.2	0.2486	0.052	20.8	ug/L	391	Standard
|	Ba	135	45.3	8.4	0.0044	0.003	59.1	ug/L	32	Standard
|	Ce	140	23.3	12.4				ug/L	42	Standard
>	Tb	159	808775.7	0.8				ug/L	966827	Standard
|	Ho	165	13.3	78.1				ug/L	12	Standard
|	Tl	203	44.7	25.2	0.0013	0.002	158.0	ug/L	19	Standard
|	Tl	205	120.0	56.1	0.0069	0.005	77.4	ug/L	58	Standard
|	Pb	206	432.0	4.4	0.0066	0.004	63.9	ug/L	464	Standard
|	Pb	207	355.7	8.0	0.0016	0.007	426.9	ug/L	405	Standard
|	Pb	208	756.3	4.6	0.0025	0.004	161.0	ug/L	876	Standard
|	U	238	46.7	101.3	0.0032	0.005	154.6	ug/L	14	Standard
>	Bi	209	491975.6	0.6				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:07:24

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	26.7	43.3	-0.0116	0.233	2006.2	mg/L	30	Standard
K	39	20.0	25.0	0.0181	0.064	353.4	mg/L	10	Standard
Ca	43	50.0	45.8	-11.8745	13.026	109.7	mg/L	83	Standard
Fe	54	26.1	28.6	0.1440	0.115	79.8	mg/L	21	Standard
Fe	57	426.7	5.9	7.3024	1.345	18.4	mg/L	240	Standard
Sc-1	45	42648.3	0.7				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	3.0	66.7				ug/L	5	Standard
Br	81	2116.8	2.1				ug/L	1587	Standard
P	31	51.7	24.4				ug/L	50	Standard
S	34	28.3	44.4				ug/L	8	Standard
Sr	88	215.0	10.1				ug/L	198	Standard
C	12	13.3	43.3				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	15.7	76.2				mg/L	6	Standard
Ho-1	165	13.3	78.1				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	7210.0	2.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.940	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:07:24

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	79.414
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	82.113
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
In 115 Int Std for QC Std	In	115	Rerun sample
QC Std 7	Sb	123	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:07:24

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: PBW 71 WG604422-02

Sample Date/Time: Tuesday, February 28, 2017 16:09:20

Number of Replicates: 3

Autosampler Position: 301

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	210768.8	3.7				ug/L	250104	Standard
|	Be	9	36.7	68.6	0.0168	0.019	111.0	ug/L	7	Standard
|	Al	27	7778.2	146.5	0.0699	0.111	159.5	ug/L	597	Standard
|	Sc	45	44298.0	3.2				ug/L	41681	Standard
|	Ti	47	34.3	31.1	-0.2775	0.055	20.0	ug/L	86	Standard
|	V	51	-955.9	73.5	-0.4243	0.107	25.2	ug/L	1740	Standard
|	Cr	52	7976.1	3.7	0.1169	0.032	27.4	ug/L	7178	Standard
|	Cr	53	15291.1	9.9	19.1278	1.644	8.6	ug/L	573	Standard
|	Mn	55	8612.6	105.0	0.5710	0.921	161.3	ug/L	3072	Standard
|	Co	59	414.3	44.2	-0.0073	0.024	324.6	ug/L	573	Standard
|	Ni	60	189.0	37.7	-0.0614	0.044	71.4	ug/L	264	Standard
|	Cu	65	629.7	5.0	0.0262	0.021	78.5	ug/L	530	Standard
|	Zn	66	2690.2	4.7	2.6556	0.091	3.4	ug/L	252	Standard
>	Ge	72	666821.2	1.7				ug/L	641188	Standard
|	As	75	-94.1	123.1	-0.0613	0.126	206.1	ug/L	-83	Standard
|	Se	82	12.5	38.1	-0.0667	0.061	91.7	ug/L	16	Standard
|	Se-1	77	993.0	10.4	15.5961	1.580	10.1	ug/L	126	Standard
>	Ga	71	108.3	34.9				mg/L	70	Standard
|	Rb	85	73.3	17.2				ug/L	33	Standard
|	Y	89	463175.3	3.0				ug/L	493982	Standard
>	Rh	103	20.0	90.1				ug/L	17	Standard
|	Mo	98	98.5	18.5	0.0172	0.007	41.0	ug/L	54	Standard
|	Ag	107	123.0	16.9	0.0038	0.005	121.8	ug/L	137	Standard
|	Cd	111	6.5	46.4	-0.0087	0.002	26.4	mg/L	6	Standard
|	Cd	114	43.6	59.4	0.0019	0.007	381.4	ug/L	20	Standard
>	In	115	629580.4	2.3				ug/L	755264	Standard
|	Sn	118	114.0	9.2	0.0090	0.013	148.4	ug/L	138	Standard
|	Sb	123	340.5	22.6	0.0643	0.018	28.7	ug/L	391	Standard
|	Ba	135	350.7	148.3	0.2076	0.348	167.8	ug/L	32	Standard
|	Ce	140	30.0	16.7				ug/L	42	Standard
>	Tb	159	853405.2	3.1				ug/L	966827	Standard
|	Ho	165	13.3	57.3				ug/L	12	Standard
|	Tl	203	276.7	20.1	0.0428	0.011	26.0	ug/L	19	Standard
|	Tl	205	668.3	22.2	0.0488	0.013	25.7	ug/L	58	Standard
|	Pb	206	520.0	4.3	0.0234	0.005	21.3	ug/L	464	Standard
|	Pb	207	465.7	4.0	0.0266	0.004	13.3	ug/L	405	Standard
|	Pb	208	984.0	2.8	0.0262	0.006	23.8	ug/L	876	Standard
|	U	238	16.0	81.7	-0.0001	0.001	2163.9	ug/L	14	Standard
>	Bi	209	508300.5	2.7				ug/L	599146	Standard

Sample ID: PBW 71 WG604422-02

Report Date/Time: Tuesday, February 28, 2017 16:11:30

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	23.3	61.9	-0.0987	0.264	268.0	mg/L	30	Standard
K	39	15.0	57.7	-0.0529	0.111	209.9	mg/L	10	Standard
Ca	43	38.3	49.4	-19.1061	11.297	59.1	mg/L	83	Standard
Fe	54	27.6	55.1	0.1559	0.237	151.7	mg/L	21	Standard
Fe	57	465.0	1.1	8.4671	1.047	12.4	mg/L	240	Standard
Sc-1	45	44298.0	3.2				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	6.0	16.7				ug/L	5	Standard
Br	81	2200.2	7.0				ug/L	1587	Standard
P	31	48.3	26.0				ug/L	50	Standard
S	34	33.3	22.9				ug/L	8	Standard
Sr	88	198.3	5.2				ug/L	198	Standard
C	12	13.3	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	6.3	186.3				mg/L	6	Standard
Ho-1	165	13.3	57.3				mg/L	12	Standard
Er	166	6.7	86.6				mg/L	10	Standard
I	127	9139.4	2.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		84.273	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.998	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: PBW 71 WG604422-02

Report Date/Time: Tuesday, February 28, 2017 16:11:30

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.359
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	84.838
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	

Sample ID: PBW 71 WG604422-02

Report Date/Time: Tuesday, February 28, 2017 16:11:30

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: LCSW 71 WG604422-03

Sample Date/Time: Tuesday, February 28, 2017 16:12:25

Number of Replicates: 3

Autosampler Position: 302

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	224389.5	1.1				ug/L	250104	Standard
|	Be	9	685.0	9.8	0.4589	0.041	9.0	ug/L	7	Standard
|	Al	27	93511.1	2.6	0.8504	0.030	3.6	ug/L	597	Standard
|	Sc	45	46350.8	1.6				ug/L	41681	Standard
|	Ti	47	1995.1	1.9	10.3795	0.251	2.4	ug/L	86	Standard
|	V	51	55964.5	0.5	8.4853	0.077	0.9	ug/L	1740	Standard
|	Cr	52	36753.2	1.0	4.9686	0.091	1.8	ug/L	7178	Standard
|	Cr	53	33587.3	5.3	43.3036	2.394	5.5	ug/L	573	Standard
|	Mn	55	48866.0	0.9	4.6934	0.051	1.1	ug/L	3072	Standard
|	Co	59	15172.9	0.5	1.9258	0.015	0.8	ug/L	573	Standard
|	Ni	60	7880.7	0.3	4.6841	0.033	0.7	ug/L	264	Standard
|	Cu	65	7998.1	0.7	4.7798	0.037	0.8	ug/L	530	Standard
|	Zn	66	9290.2	1.6	10.0836	0.218	2.2	ug/L	252	Standard
>	Ge	72	663810.5	0.6				ug/L	641188	Standard
|	As	75	3012.9	6.0	3.4077	0.183	5.4	ug/L	-83	Standard
|	Se	82	270.1	4.6	3.2641	0.179	5.5	ug/L	16	Standard
|	Se-1	77	1948.8	5.0	32.9906	1.859	5.6	ug/L	126	Standard
>	Ga	71	96.7	7.9				mg/L	70	Standard
|	Rb	85	121.7	13.2				ug/L	33	Standard
|	Y	89	453951.0	2.5				ug/L	493982	Standard
>	Rh	103	36.7	31.5				ug/L	17	Standard
|	Mo	98	24890.6	0.8	9.4035	0.073	0.8	ug/L	54	Standard
|	Ag	107	16356.2	0.7	3.5694	0.029	0.8	ug/L	137	Standard
|	Cd	111	558.6	3.8	0.4001	0.012	3.0	mg/L	6	Standard
|	Cd	114	2557.3	2.4	0.6805	0.018	2.6	ug/L	20	Standard
>	In	115	641230.9	1.5				ug/L	755264	Standard
|	Sn	118	8123.5	1.5	9.8501	0.139	1.4	ug/L	138	Standard
|	Sb	123	41983.5	1.0	11.0171	0.197	1.8	ug/L	391	Standard
|	Ba	135	14873.3	0.7	9.7741	0.141	1.4	ug/L	32	Standard
|	Ce	140	28.3	53.9				ug/L	42	Standard
>	Tb	159	882626.1	2.4				ug/L	966827	Standard
|	Ho	165	8.3	34.6				ug/L	12	Standard
|	Tl	203	26799.7	1.5	4.6817	0.044	0.9	ug/L	19	Standard
|	Tl	205	63517.9	1.2	4.7500	0.061	1.3	ug/L	58	Standard
|	Pb	206	21388.4	1.6	4.6514	0.021	0.4	ug/L	464	Standard
|	Pb	207	19105.7	1.3	4.6471	0.049	1.0	ug/L	405	Standard
|	Pb	208	40497.6	0.4	4.5148	0.059	1.3	ug/L	876	Standard
|	U	238	5.7	36.7	-0.0011	0.000	17.8	ug/L	14	Standard
>	Bi	209	520284.2	1.4				ug/L	599146	Standard

Sample ID: LCSW 71 WG604422-03

Report Date/Time: Tuesday, February 28, 2017 16:14:36

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0522	0.738	1413.5	mg/L	3	Standard
Mg	24	70.0	21.4	0.7309	0.253	34.6	mg/L	30	Standard
K	39	75.0	23.1	0.6554	0.198	30.2	mg/L	10	Standard
Ca	43	41.7	30.2	-18.5480	6.554	35.3	mg/L	83	Standard
Fe	54	26.0	59.2	0.1088	0.208	191.3	mg/L	21	Standard
Fe	57	446.7	10.2	6.4310	1.916	29.8	mg/L	240	Standard
Sc-1	45	46350.8	1.6				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	4.3	13.3				ug/L	5	Standard
Br	81	2363.5	10.9				ug/L	1587	Standard
P	31	61.7	40.0				ug/L	50	Standard
S	34	25.0	20.0				ug/L	8	Standard
Sr	88	241.7	2.4				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	19.7	50.8				mg/L	6	Standard
Ho-1	165	8.3	34.6				mg/L	12	Standard
Er	166	6.7	86.6				mg/L	10	Standard
I	127	9191.1	1.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		89.719	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.528	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: LCSW 71 WG604422-03

Report Date/Time: Tuesday, February 28, 2017 16:14:36

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	84.902
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	86.838
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: LCSW 71 WG604422-03

Report Date/Time: Tuesday, February 28, 2017 16:14:36

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: F BLANK WG604265-01

Sample Date/Time: Tuesday, February 28, 2017 16:15:31

Number of Replicates: 3

Autosampler Position: 303

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	217584.7	1.5				ug/L	250104	Standard
|	Be	9	28.3	44.4	0.0097	0.009	89.1	ug/L	7	Standard
|	Al	27	1440.1	37.0	0.0074	0.005	64.9	ug/L	597	Standard
|	Sc	45	45867.7	2.2				ug/L	41681	Standard
|	Ti	47	32.0	26.7	-0.2945	0.047	15.9	ug/L	86	Standard
|	V	51	-2076.1	16.8	-0.5902	0.053	9.0	ug/L	1740	Standard
|	Cr	52	8866.3	1.2	0.2208	0.018	8.3	ug/L	7178	Standard
|	Cr	53	19404.1	0.9	23.7557	0.454	1.9	ug/L	573	Standard
|	Mn	55	3475.7	3.0	0.0367	0.006	15.9	ug/L	3072	Standard
|	Co	59	334.3	4.8	-0.0190	0.003	13.2	ug/L	573	Standard
|	Ni	60	195.0	6.9	-0.0614	0.010	15.5	ug/L	264	Standard
|	Cu	65	645.7	2.5	0.0238	0.012	48.6	ug/L	530	Standard
|	Zn	66	1504.7	3.7	1.2802	0.082	6.4	ug/L	252	Standard
>	Ge	72	687930.0	1.4				ug/L	641188	Standard
|	As	75	-51.2	48.5	-0.0127	0.026	203.5	ug/L	-83	Standard
|	Se	82	14.2	31.7	-0.0504	0.056	111.8	ug/L	16	Standard
|	Se-1	77	1203.7	5.0	18.7493	1.241	6.6	ug/L	126	Standard
>	Ga	71	93.3	3.1				mg/L	70	Standard
|	Rb	85	53.3	28.6				ug/L	33	Standard
|	Y	89	459064.2	2.1				ug/L	493982	Standard
>	Rh	103	21.7	35.3				ug/L	17	Standard
|	Mo	98	60.0	25.0	0.0016	0.006	348.8	ug/L	54	Standard
|	Ag	107	126.0	7.6	0.0036	0.002	55.5	ug/L	137	Standard
|	Cd	111	9.6	52.6	-0.0066	0.004	55.9	mg/L	6	Standard
|	Cd	114	26.3	19.5	-0.0031	0.001	44.7	ug/L	20	Standard
>	In	115	649271.3	0.3				ug/L	755264	Standard
|	Sn	118	139.0	4.4	0.0350	0.007	21.2	ug/L	138	Standard
|	Sb	123	157.0	23.0	0.0142	0.009	66.4	ug/L	391	Standard
|	Ba	135	66.0	27.4	0.0154	0.012	76.0	ug/L	32	Standard
|	Ce	140	36.7	28.4				ug/L	42	Standard
>	Tb	159	878728.5	0.3				ug/L	966827	Standard
|	Ho	165	8.3	91.7				ug/L	12	Standard
|	Tl	203	224.3	14.4	0.0318	0.006	17.6	ug/L	19	Standard
|	Tl	205	568.3	10.1	0.0394	0.004	11.0	ug/L	58	Standard
|	Pb	206	701.3	3.0	0.0589	0.004	7.6	ug/L	464	Standard
|	Pb	207	595.3	5.7	0.0541	0.009	15.8	ug/L	405	Standard
|	Pb	208	1352.0	5.5	0.0633	0.008	13.3	ug/L	876	Standard
|	U	238	28.7	164.2	0.0011	0.005	411.5	ug/L	14	Standard
>	Bi	209	527039.5	0.4				ug/L	599146	Standard

Sample ID: F BLANK WG604265-01

Report Date/Time: Tuesday, February 28, 2017 16:17:41

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	195.0	34.7	3.0612	1.323	43.2	mg/L	30	Standard
K	39	31.7	32.9	0.1427	0.132	92.3	mg/L	10	Standard
Ca	43	26.7	96.2	-26.2748	13.458	51.2	mg/L	83	Standard
Fe	54	25.7	30.4	0.1108	0.108	97.6	mg/L	21	Standard
Fe	57	476.7	7.9	8.1956	1.706	20.8	mg/L	240	Standard
Sc-1	45	45867.7	2.2				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.0	66.7				ug/L	5	Standard
Br	81	2223.5	9.6				ug/L	1587	Standard
P	31	53.3	14.3				ug/L	50	Standard
S	34	36.7	39.4				ug/L	8	Standard
Sr	88	225.0	21.9				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	-0.6	86.6				mg/L	6	Standard
Ho-1	165	8.3	91.7				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	7895.4	1.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		86.998	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		107.290	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: F BLANK WG604265-01

Report Date/Time: Tuesday, February 28, 2017 16:17:41

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	85.966
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	87.965
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	

Sample ID: F BLANK WG604265-01

Report Date/Time: Tuesday, February 28, 2017 16:17:41

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: F BLANK WG604265-02

Sample Date/Time: Tuesday, February 28, 2017 16:18:36

Number of Replicates: 3

Autosampler Position: 304

Sample Description: 50

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	214901.7	0.6				ug/L	250104	Standard
|	Be	9	25.0	20.0	0.0076	0.003	45.5	ug/L	7	Standard
|	Al	27	1603.4	56.5	0.0091	0.009	93.5	ug/L	597	Standard
|	Sc	45	45260.8	0.9				ug/L	41681	Standard
|	Ti	47	31.0	14.8	-0.2955	0.024	8.0	ug/L	86	Standard
|	V	51	-3015.4	8.9	-0.7454	0.040	5.4	ug/L	1740	Standard
|	Cr	52	9067.4	1.1	0.2968	0.014	4.9	ug/L	7178	Standard
|	Cr	53	22919.0	5.4	29.0800	1.882	6.5	ug/L	573	Standard
|	Mn	55	3067.0	4.4	0.0053	0.012	219.7	ug/L	3072	Standard
|	Co	59	336.3	12.8	-0.0175	0.006	33.1	ug/L	573	Standard
|	Ni	60	188.0	9.6	-0.0624	0.011	18.0	ug/L	264	Standard
|	Cu	65	601.3	6.3	0.0072	0.025	343.6	ug/L	530	Standard
|	Zn	66	1172.0	3.1	0.9565	0.051	5.3	ug/L	252	Standard
>	Ge	72	668277.4	0.9				ug/L	641188	Standard
|	As	75	-59.8	122.4	-0.0245	0.082	333.3	ug/L	-83	Standard
|	Se	82	15.5	40.7	-0.0278	0.083	297.4	ug/L	16	Standard
|	Se-1	77	1175.4	9.5	18.8634	2.190	11.6	ug/L	126	Standard
>	Ga	71	93.3	13.5				mg/L	70	Standard
|	Rb	85	65.0	7.7				ug/L	33	Standard
|	Y	89	456261.1	1.9				ug/L	493982	Standard
>	Rh	103	21.7	35.3				ug/L	17	Standard
|	Mo	98	49.9	8.0	-0.0016	0.002	94.6	ug/L	54	Standard
|	Ag	107	119.3	6.8	0.0029	0.002	65.4	ug/L	137	Standard
|	Cd	111	7.6	40.2	-0.0079	0.002	29.6	mg/L	6	Standard
|	Cd	114	37.5	48.6	0.0002	0.005	2505.3	ug/L	20	Standard
>	In	115	631286.5	0.7				ug/L	755264	Standard
|	Sn	118	155.7	17.1	0.0605	0.032	53.0	ug/L	138	Standard
|	Sb	123	115.7	8.7	0.0043	0.003	63.7	ug/L	391	Standard
|	Ba	135	66.7	8.7	0.0171	0.004	20.9	ug/L	32	Standard
|	Ce	140	31.7	24.1				ug/L	42	Standard
>	Tb	159	867803.9	0.7				ug/L	966827	Standard
|	Ho	165	16.7	86.6				ug/L	12	Standard
|	Tl	203	209.0	31.8	0.0300	0.012	39.9	ug/L	19	Standard
|	Tl	205	503.3	18.1	0.0355	0.007	19.9	ug/L	58	Standard
|	Pb	206	691.7	7.7	0.0604	0.013	21.0	ug/L	464	Standard
|	Pb	207	613.7	4.8	0.0622	0.008	12.8	ug/L	405	Standard
|	Pb	208	1317.4	7.4	0.0630	0.012	18.9	ug/L	876	Standard
|	U	238	64.7	167.8	0.0049	0.011	226.4	ug/L	14	Standard
>	Bi	209	514689.8	0.7				ug/L	599146	Standard

Sample ID: F BLANK WG604265-02

Report Date/Time: Tuesday, February 28, 2017 16:20:46

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0374	0.763	2043.2	mg/L	3	Standard
Mg	24	36.7	28.4	0.1441	0.198	137.7	mg/L	30	Standard
K	39	23.3	44.6	0.0450	0.131	291.0	mg/L	10	Standard
Ca	43	45.0	33.3	-16.2510	7.894	48.6	mg/L	83	Standard
Fe	54	22.8	78.1	0.0749	0.255	340.6	mg/L	21	Standard
Fe	57	498.3	3.2	9.6301	0.593	6.2	mg/L	240	Standard
Sc-1	45	45260.8	0.9				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.0	33.3				ug/L	5	Standard
Br	81	2403.5	9.4				ug/L	1587	Standard
P	31	78.3	22.4				ug/L	50	Standard
S	34	31.7	24.1				ug/L	8	Standard
Sr	88	251.7	8.0				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	16.0	32.7				mg/L	6	Standard
Ho-1	165	16.7	86.6				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	7451.8	1.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		85.925	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		104.225	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: F BLANK WG604265-02

Report Date/Time: Tuesday, February 28, 2017 16:20:46

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.585
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.904
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	

Sample ID: F BLANK WG604265-02

Report Date/Time: Tuesday, February 28, 2017 16:20:46

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702134702 WG604422-01

Sample Date/Time: Tuesday, February 28, 2017 16:21:41

Number of Replicates: 3

Autosampler Position: 305

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	218743.2	2.2				ug/L	250104	Standard
|	Be	9	20.0	50.0	0.0039	0.007	188.5	ug/L	7	Standard
|	Al	27	36766.2	0.7	0.3393	0.006	1.8	ug/L	597	Standard
|	Sc	45	45369.5	2.1				ug/L	41681	Standard
|	Ti	47	34.3	16.0	-0.2812	0.029	10.4	ug/L	86	Standard
|	V	51	-2857.8	24.1	-0.7120	0.106	14.9	ug/L	1740	Standard
|	Cr	52	147059.0	1.7	22.8647	0.331	1.4	ug/L	7178	Standard
|	Cr	53	35695.4	4.7	44.7962	2.207	4.9	ug/L	573	Standard
|	Mn	55	5028.5	0.9	0.1941	0.003	1.7	ug/L	3072	Standard
|	Co	59	466.0	5.5	-0.0019	0.003	172.0	ug/L	573	Standard
|	Ni	60	448.0	5.7	0.0913	0.015	16.9	ug/L	264	Standard
|	Cu	65	759.4	0.7	0.0983	0.003	2.5	ug/L	530	Standard
|	Zn	66	1878.8	1.3	1.7014	0.033	2.0	ug/L	252	Standard
>	Ge	72	682410.6	0.3				ug/L	641188	Standard
|	As	75	-143.0	32.9	-0.1133	0.052	45.5	ug/L	-83	Standard
|	Se	82	22.1	34.2	0.0503	0.094	187.1	ug/L	16	Standard
|	Se-1	77	1120.7	1.7	17.4509	0.348	2.0	ug/L	126	Standard
>	Ga	71	86.7	13.3				mg/L	70	Standard
|	Rb	85	26067.4	1.4				ug/L	33	Standard
|	Y	89	462626.2	1.7				ug/L	493982	Standard
>	Rh	103	10.0	50.0				ug/L	17	Standard
|	Mo	98	17267.6	1.2	6.4298	0.114	1.8	ug/L	54	Standard
|	Ag	107	149.3	7.0	0.0087	0.003	30.5	ug/L	137	Standard
|	Cd	111	13.7	13.9	-0.0036	0.001	40.4	mg/L	6	Standard
|	Cd	114	101.1	8.8	0.0168	0.002	12.9	ug/L	20	Standard
>	In	115	649939.8	1.2				ug/L	755264	Standard
|	Sn	118	144.3	10.0	0.0413	0.017	41.0	ug/L	138	Standard
|	Sb	123	120.5	16.5	0.0046	0.005	106.1	ug/L	391	Standard
|	Ba	135	873.7	4.9	0.5403	0.022	4.1	ug/L	32	Standard
|	Ce	140	73.3	17.2				ug/L	42	Standard
>	Tb	159	879474.9	1.1				ug/L	966827	Standard
|	Ho	165	23.3	53.9				ug/L	12	Standard
|	Tl	203	169.7	5.3	0.0225	0.002	7.8	ug/L	19	Standard
|	Tl	205	383.3	17.7	0.0258	0.005	20.1	ug/L	58	Standard
|	Pb	206	779.7	3.0	0.0767	0.004	5.5	ug/L	464	Standard
|	Pb	207	669.3	4.4	0.0729	0.006	8.8	ug/L	405	Standard
|	Pb	208	1402.4	2.9	0.0697	0.005	7.6	ug/L	876	Standard
|	U	238	54.0	17.7	0.0036	0.001	25.1	ug/L	14	Standard
>	Bi	209	524868.5	0.6				ug/L	599146	Standard

Sample ID: L1702134702 WG604422-01

Report Date/Time: Tuesday, February 28, 2017 16:23:52

Page 1

Approved: March 01, 2017

Na	23	6.7	86.6	1.2694	1.513	119.2	mg/L	3	Standard
Mg	24	166.7	35.8	2.5509	1.077	42.2	mg/L	30	Standard
K	39	133.3	18.9	1.3905	0.297	21.4	mg/L	10	Standard
Ca	43	33.3	60.6	-22.5686	10.613	47.0	mg/L	83	Standard
Fe	54	32.2	36.6	0.2073	0.172	82.8	mg/L	21	Standard
Fe	57	476.7	8.9	8.5024	2.681	31.5	mg/L	240	Standard
Sc-1	45	45369.5	2.1				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	4.7	32.7				ug/L	5	Standard
Br	81	2083.5	3.9				ug/L	1587	Standard
P	31	73.3	27.6				ug/L	50	Standard
S	34	45.0	19.2				ug/L	8	Standard
Sr	88	221.7	10.7				ug/L	198	Standard
C	12	20.0	0.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	48.7	53.2				mg/L	6	Standard
Ho-1	165	23.3	53.9				mg/L	12	Standard
Er	166	26.7	43.3				mg/L	10	Standard
I	127	7076.7	3.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		87.461	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.429	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702134702 WG604422-01

Report Date/Time: Tuesday, February 28, 2017 16:23:52

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	86.055
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	87.603
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
V 51 Lower	V	51	

Sample ID: L1702134702 WG604422-01

Report Date/Time: Tuesday, February 28, 2017 16:23:52

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702134702S WG604422-04

Sample Date/Time: Tuesday, February 28, 2017 16:24:46

Number of Replicates: 3

Autosampler Position: 306

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	237206.7	2.8				ug/L	250104	Standard
|	Be	9	746.7	6.4	0.4736	0.023	4.9	ug/L	7	Standard
|	Al	27	135360.6	2.9	1.1665	0.009	0.7	ug/L	597	Standard
|	Sc	45	47367.3	2.1				ug/L	41681	Standard
|	Ti	47	2070.5	4.8	10.4616	0.675	6.5	ug/L	86	Standard
|	V	51	58428.5	2.6	8.6024	0.313	3.6	ug/L	1740	Standard
|	Cr	52	174489.9	1.8	27.2944	0.724	2.7	ug/L	7178	Standard
|	Cr	53	47280.3	2.4	59.4845	1.904	3.2	ug/L	573	Standard
|	Mn	55	52308.8	2.3	4.8884	0.169	3.5	ug/L	3072	Standard
|	Co	59	15342.8	2.0	1.8890	0.059	3.1	ug/L	573	Standard
|	Ni	60	8380.3	1.1	4.8402	0.118	2.4	ug/L	264	Standard
|	Cu	65	8339.3	1.1	4.8424	0.161	3.3	ug/L	530	Standard
|	Zn	66	9963.6	1.3	10.5116	0.341	3.2	ug/L	252	Standard
>	Ge	72	684098.4	1.9				ug/L	641188	Standard
|	As	75	3142.3	3.0	3.4491	0.093	2.7	ug/L	-83	Standard
|	Se	82	301.7	2.7	3.5562	0.105	3.0	ug/L	16	Standard
|	Se-1	77	1908.1	5.1	31.2129	1.068	3.4	ug/L	126	Standard
>	Ga	71	91.7	34.6				mg/L	70	Standard
|	Rb	85	24805.3	0.7				ug/L	33	Standard
|	Y	89	467833.9	4.1				ug/L	493982	Standard
>	Rh	103	43.3	46.6				ug/L	17	Standard
|	Mo	98	41582.5	0.5	15.0493	0.501	3.3	ug/L	54	Standard
|	Ag	107	16974.8	1.1	3.5462	0.148	4.2	ug/L	137	Standard
|	Cd	111	618.4	1.1	0.4249	0.015	3.5	mg/L	6	Standard
|	Cd	114	2612.7	8.2	0.6641	0.037	5.5	ug/L	20	Standard
>	In	115	670319.2	3.0				ug/L	755264	Standard
|	Sn	118	8359.0	1.9	9.7023	0.462	4.8	ug/L	138	Standard
|	Sb	123	43806.0	0.8	11.0006	0.291	2.6	ug/L	391	Standard
|	Ba	135	16294.8	1.1	10.2498	0.327	3.2	ug/L	32	Standard
|	Ce	140	88.3	8.6				ug/L	42	Standard
>	Tb	159	911325.5	2.3				ug/L	966827	Standard
|	Ho	165	21.7	81.0				ug/L	12	Standard
|	Tl	203	27700.6	1.2	4.7027	0.128	2.7	ug/L	19	Standard
|	Tl	205	64873.6	1.1	4.7148	0.151	3.2	ug/L	58	Standard
|	Pb	206	21922.2	1.3	4.6329	0.133	2.9	ug/L	464	Standard
|	Pb	207	19860.0	0.2	4.6950	0.112	2.4	ug/L	405	Standard
|	Pb	208	42674.3	1.6	4.6248	0.131	2.8	ug/L	876	Standard
|	U	238	47.7	26.6	0.0029	0.001	43.4	ug/L	14	Standard
>	Bi	209	535559.2	2.1				ug/L	599146	Standard

Sample ID: L1702134702S WG604422-04

Report Date/Time: Tuesday, February 28, 2017 16:26:57

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0644	0.716	1111.9	mg/L	3	Standard
Mg	24	215.0	14.1	3.2853	0.520	15.8	mg/L	30	Standard
K	39	220.0	18.6	2.3412	0.498	21.3	mg/L	10	Standard
Ca	43	53.3	47.2	-12.9679	13.182	101.7	mg/L	83	Standard
Fe	54	27.0	37.2	0.1151	0.128	110.9	mg/L	21	Standard
Fe	57	403.3	15.5	3.8832	3.333	85.8	mg/L	240	Standard
Sc-1	45	47367.3	2.1				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	5.0	20.0				ug/L	5	Standard
Br	81	2170.2	7.6				ug/L	1587	Standard
P	31	81.7	14.1				ug/L	50	Standard
S	34	31.7	18.2				ug/L	8	Standard
Sr	88	195.0	20.4				ug/L	198	Standard
C	12	13.3	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	28.7	57.9				mg/L	6	Standard
Ho-1	165	21.7	81.0				mg/L	12	Standard
Er	166	26.7	78.1				mg/L	10	Standard
I	127	7136.7	3.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		94.843	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.692	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702134702S WG604422-04

Report Date/Time: Tuesday, February 28, 2017 16:26:57

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	88.753
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.387
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702134702S WG604422-04

Report Date/Time: Tuesday, February 28, 2017 16:26:57

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702134702SD WG604422-05

Sample Date/Time: Tuesday, February 28, 2017 16:27:52

Number of Replicates: 3

Autosampler Position: 307

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	233040.7	2.1				ug/L	250104	Standard
|	Be	9	680.0	15.7	0.4391	0.076	17.4	ug/L	7	Standard
|	Al	27	141751.7	1.2	1.2440	0.013	1.0	ug/L	597	Standard
|	Sc	45	46277.2	0.3				ug/L	41681	Standard
|	Ti	47	2118.8	2.7	10.6982	0.351	3.3	ug/L	86	Standard
|	V	51	59457.8	0.2	8.7461	0.057	0.7	ug/L	1740	Standard
|	Cr	52	180581.4	0.4	28.2504	0.106	0.4	ug/L	7178	Standard
|	Cr	53	50295.0	1.8	63.2461	1.257	2.0	ug/L	573	Standard
|	Mn	55	53351.8	0.3	4.9846	0.029	0.6	ug/L	3072	Standard
|	Co	59	16122.9	0.6	1.9853	0.016	0.8	ug/L	573	Standard
|	Ni	60	8789.9	2.6	5.0782	0.134	2.6	ug/L	264	Standard
|	Cu	65	8673.1	1.5	5.0434	0.091	1.8	ug/L	530	Standard
|	Zn	66	10278.2	1.2	10.8380	0.155	1.4	ug/L	252	Standard
>	Ge	72	684852.9	0.5				ug/L	641188	Standard
|	As	75	3483.6	2.4	3.8146	0.085	2.2	ug/L	-83	Standard
|	Se	82	303.9	5.7	3.5788	0.201	5.6	ug/L	16	Standard
|	Se-1	77	2035.5	4.1	33.4267	1.570	4.7	ug/L	126	Standard
>	Ga	71	80.0	16.5				mg/L	70	Standard
|	Rb	85	26110.8	2.3				ug/L	33	Standard
|	Y	89	452883.4	1.8				ug/L	493982	Standard
>	Rh	103	38.3	27.2				ug/L	17	Standard
|	Mo	98	43525.3	0.1	16.0128	0.245	1.5	ug/L	54	Standard
|	Ag	107	17340.9	2.1	3.6831	0.124	3.4	ug/L	137	Standard
|	Cd	111	614.5	4.5	0.4294	0.021	5.0	mg/L	6	Standard
|	Cd	114	2878.5	5.6	0.7466	0.053	7.1	ug/L	20	Standard
>	In	115	659132.1	1.5				ug/L	755264	Standard
|	Sn	118	8329.6	0.7	9.8269	0.214	2.2	ug/L	138	Standard
|	Sb	123	45275.1	1.6	11.5587	0.193	1.7	ug/L	391	Standard
|	Ba	135	17147.0	4.5	10.9609	0.335	3.1	ug/L	32	Standard
|	Ce	140	98.3	25.1				ug/L	42	Standard
>	Tb	159	913412.5	1.5				ug/L	966827	Standard
|	Ho	165	35.0	14.3				ug/L	12	Standard
|	Tl	203	28499.8	1.4	4.8370	0.082	1.7	ug/L	19	Standard
|	Tl	205	67205.4	1.4	4.8826	0.107	2.2	ug/L	58	Standard
|	Pb	206	23065.5	1.8	4.8771	0.003	0.1	ug/L	464	Standard
|	Pb	207	20577.6	1.0	4.8664	0.046	0.9	ug/L	405	Standard
|	Pb	208	43714.2	1.3	4.7379	0.028	0.6	ug/L	876	Standard
|	U	238	48.0	12.5	0.0030	0.001	22.5	ug/L	14	Standard
>	Bi	209	535620.0	1.9				ug/L	599146	Standard

Sample ID: L1702134702SD WG604422-05

Report Date/Time: Tuesday, February 28, 2017 16:30:03

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	0.3898	0.752	192.8	mg/L	3	Standard
Mg	24	211.7	13.6	3.3177	0.539	16.3	mg/L	30	Standard
K	39	215.0	15.2	2.3403	0.395	16.9	mg/L	10	Standard
Ca	43	23.3	12.4	-28.1407	1.542	5.5	mg/L	83	Standard
Fe	54	45.3	16.5	0.3796	0.103	27.1	mg/L	21	Standard
Fe	57	438.3	3.7	6.0674	0.735	12.1	mg/L	240	Standard
Sc-1	45	46277.2	0.3				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	3.7	56.8				ug/L	5	Standard
Br	81	2130.1	4.1				ug/L	1587	Standard
P	31	71.7	35.1				ug/L	50	Standard
S	34	41.7	54.1				ug/L	8	Standard
Sr	88	266.7	15.3				ug/L	198	Standard
C	12	20.0	50.0				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	28.9	70.9				mg/L	6	Standard
Ho-1	165	35.0	14.3				mg/L	12	Standard
Er	166	23.3	65.5				mg/L	10	Standard
I	127	7391.8	1.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		93.178	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.810	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702134702SD WG604422-05

Report Date/Time: Tuesday, February 28, 2017 16:30:03

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	87.272
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.397
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702134702SD WG604422-05

Report Date/Time: Tuesday, February 28, 2017 16:30:03

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702136701

Sample Date/Time: Tuesday, February 28, 2017 16:30:58

Number of Replicates: 3

Autosampler Position: 308

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	221412.8	0.7				ug/L	250104	Standard
|	Be	9	15.0	88.2	0.0001	0.009	7202.9	ug/L	7	Standard
|	Al	27	1241.7	7.5	0.0054	0.001	15.1	ug/L	597	Standard
|	Sc	45	46613.3	3.1				ug/L	41681	Standard
|	Ti	47	31.7	6.6	-0.2957	0.011	3.7	ug/L	86	Standard
|	V	51	729.4	27.3	-0.1657	0.031	18.5	ug/L	1740	Standard
|	Cr	52	7613.6	3.2	0.0243	0.047	191.7	ug/L	7178	Standard
|	Cr	53	9222.8	11.6	10.8928	1.323	12.1	ug/L	573	Standard
|	Mn	55	3172.0	0.8	0.0085	0.004	42.6	ug/L	3072	Standard
|	Co	59	377.7	0.6	-0.0133	0.000	0.5	ug/L	573	Standard
|	Ni	60	373.0	9.8	0.0458	0.022	49.0	ug/L	264	Standard
|	Cu	65	680.3	5.6	0.0477	0.026	54.3	ug/L	530	Standard
|	Zn	66	13686.5	3.7	14.5659	0.621	4.3	ug/L	252	Standard
>	Ge	72	684125.5	0.5				ug/L	641188	Standard
|	As	75	4.4	3237.8	0.0467	0.155	332.1	ug/L	-83	Standard
|	Se	82	36.9	23.5	0.2350	0.107	45.6	ug/L	16	Standard
|	Se-1	77	955.7	5.4	14.5065	0.969	6.7	ug/L	126	Standard
>	Ga	71	83.3	45.0				mg/L	70	Standard
|	Rb	85	11627.8	3.9				ug/L	33	Standard
|	Y	89	469541.3	0.6				ug/L	493982	Standard
>	Rh	103	26.7	60.3				ug/L	17	Standard
|	Mo	98	273.9	2.2	0.0804	0.003	4.1	ug/L	54	Standard
|	Ag	107	104.0	6.7	-0.0014	0.001	94.9	ug/L	137	Standard
|	Cd	111	6.6	39.8	-0.0089	0.002	21.4	mg/L	6	Standard
|	Cd	114	37.6	53.2	-0.0002	0.005	2213.2	ug/L	20	Standard
>	In	115	657219.4	1.1				ug/L	755264	Standard
|	Sn	118	151.7	9.0	0.0481	0.016	33.0	ug/L	138	Standard
|	Sb	123	80.3	20.0	-0.0060	0.004	65.3	ug/L	391	Standard
|	Ba	135	6996.6	2.8	4.4705	0.115	2.6	ug/L	32	Standard
|	Ce	140	28.3	27.0				ug/L	42	Standard
>	Tb	159	891927.7	1.2				ug/L	966827	Standard
|	Ho	165	10.0	132.3				ug/L	12	Standard
|	Tl	203	160.0	7.6	0.0199	0.002	9.1	ug/L	19	Standard
|	Tl	205	341.7	16.6	0.0219	0.004	17.2	ug/L	58	Standard
|	Pb	206	4865.1	3.6	0.9427	0.050	5.3	ug/L	464	Standard
|	Pb	207	4101.2	2.9	0.8858	0.041	4.6	ug/L	405	Standard
|	Pb	208	8951.0	3.2	0.8892	0.043	4.8	ug/L	876	Standard
|	U	238	4.0	25.0	-0.0013	0.000	7.2	ug/L	14	Standard
>	Bi	209	541660.4	1.8				ug/L	599146	Standard

Sample ID: L1702136701

Report Date/Time: Tuesday, February 28, 2017 16:33:08

Page 1

Approved: March 01, 2017

Na	23	15.0	0.0	3.3970	0.117	3.4	mg/L	3	Standard
Mg	24	248.3	18.0	3.9595	0.860	21.7	mg/L	30	Standard
K	39	655.0	11.9	7.5866	1.123	14.8	mg/L	10	Standard
Ca	43	51.7	36.6	-13.5722	9.347	68.9	mg/L	83	Standard
Fe	54	27.5	42.9	0.1286	0.161	125.0	mg/L	21	Standard
Fe	57	416.7	12.9	4.8129	2.391	49.7	mg/L	240	Standard
Sc-1	45	46613.3	3.1				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	3.7	31.5				ug/L	5	Standard
Br	81	2550.2	2.7				ug/L	1587	Standard
P	31	45.0	40.1				ug/L	50	Standard
S	34	23.3	12.4				ug/L	8	Standard
Sr	88	206.7	1.4				ug/L	198	Standard
C	12	16.7	34.6				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	15.9	92.7				mg/L	6	Standard
Ho-1	165	10.0	132.3				mg/L	12	Standard
Er	166	16.7	91.7				mg/L	10	Standard
I	127	9329.5	5.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		88.528	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.697	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702136701

Report Date/Time: Tuesday, February 28, 2017 16:33:08

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	87.018
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	90.405
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702136701

Report Date/Time: Tuesday, February 28, 2017 16:33:08

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702136701PS WG604447-01

Sample Date/Time: Tuesday, February 28, 2017 16:34:02

Number of Replicates: 3

Autosampler Position: 309

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	222843.8	1.7				ug/L	250104	Standard
|	Be	9	69226.1	0.7	47.7695	1.054	2.2	ug/L	7	Standard
|	Al	27	1445.1	13.3	0.0071	0.002	21.7	ug/L	597	Standard
|	Sc	45	45947.9	2.3				ug/L	41681	Standard
|	Ti	47	39.7	26.7	-0.2528	0.054	21.4	ug/L	86	Standard
|	V	51	315254.0	1.1	47.8601	0.652	1.4	ug/L	1740	Standard
|	Cr	52	297295.8	0.8	47.6037	0.953	2.0	ug/L	7178	Standard
|	Cr	53	46315.7	1.0	58.5457	1.334	2.3	ug/L	573	Standard
|	Mn	55	489126.1	0.9	48.5066	0.992	2.0	ug/L	3072	Standard
|	Co	59	387569.0	1.0	49.4464	1.014	2.1	ug/L	573	Standard
|	Ni	60	81757.7	0.9	49.0183	1.084	2.2	ug/L	264	Standard
|	Cu	65	80160.2	0.5	50.0432	0.890	1.8	ug/L	530	Standard
|	Zn	66	57340.3	0.6	62.4647	1.161	1.9	ug/L	252	Standard
>	Ge	72	680667.9	1.3				ug/L	641188	Standard
|	As	75	42391.3	0.7	46.2331	0.415	0.9	ug/L	-83	Standard
|	Se	82	3700.3	0.7	46.4149	0.281	0.6	ug/L	16	Standard
|	Se-1	77	3634.8	2.6	61.8570	0.884	1.4	ug/L	126	Standard
>	Ga	71	136.7	20.1				mg/L	70	Standard
|	Rb	85	11904.7	3.1				ug/L	33	Standard
|	Y	89	469881.7	2.0				ug/L	493982	Standard
>	Rh	103	48.3	33.3				ug/L	17	Standard
|	Mo	98	254.3	9.4	0.0735	0.006	8.5	ug/L	54	Standard
|	Ag	107	212672.5	1.8	45.8369	0.493	1.1	ug/L	137	Standard
|	Cd	111	60024.0	1.4	43.6470	0.668	1.5	mg/L	6	Standard
|	Cd	114	169245.3	2.3	44.8505	0.191	0.4	ug/L	20	Standard
>	In	115	653307.4	2.7				ug/L	755264	Standard
|	Sn	118	125.7	12.3	0.0176	0.015	83.9	ug/L	138	Standard
|	Sb	123	186403.3	0.4	48.1130	1.100	2.3	ug/L	391	Standard
|	Ba	135	85816.0	0.4	55.5009	1.539	2.8	ug/L	32	Standard
|	Ce	140	38.3	7.5				ug/L	42	Standard
>	Tb	159	890873.4	3.5				ug/L	966827	Standard
|	Ho	165	15.0	33.3				ug/L	12	Standard
|	Tl	203	277094.2	0.7	47.2720	0.822	1.7	ug/L	19	Standard
|	Tl	205	646861.5	1.5	47.1970	0.974	2.1	ug/L	58	Standard
|	Pb	206	222049.8	1.4	47.9584	0.734	1.5	ug/L	464	Standard
|	Pb	207	199526.0	1.4	48.1702	1.016	2.1	ug/L	405	Standard
|	Pb	208	426248.8	1.0	47.1570	0.803	1.7	ug/L	876	Standard
|	U	238	372939.3	1.9	36.2878	0.432	1.2	ug/L	14	Standard
>	Bi	209	533618.9	2.4				ug/L	599146	Standard

Sample ID: L1702136701PS WG604447-01

Report Date/Time: Tuesday, February 28, 2017 16:36:13

Page 1

Approved: March 01, 2017

Na	23	15.0	88.2	3.3992	3.334	98.1	mg/L	3	Standard
Mg	24	328.3	14.1	5.4824	0.820	15.0	mg/L	30	Standard
K	39	706.7	0.8	8.3089	0.172	2.1	mg/L	10	Standard
Ca	43	58.3	32.5	-9.6448	9.201	95.4	mg/L	83	Standard
Fe	54	30.0	52.0	0.1669	0.206	123.3	mg/L	21	Standard
Fe	57	516.7	10.7	10.1494	2.273	22.4	mg/L	240	Standard
Sc-1	45	45947.9	2.3				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	4.7	81.1				ug/L	5	Standard
Br	81	2516.9	9.7				ug/L	1587	Standard
P	31	61.7	32.8				ug/L	50	Standard
S	34	26.7	10.8				ug/L	8	Standard
Sr	88	216.7	30.1				ug/L	198	Standard
C	12	13.3	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	12.7	46.9				mg/L	6	Standard
Ho-1	165	15.0	33.3				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	9314.5	3.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		89.101	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.157	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702136701PS WG604447-01

Report Date/Time: Tuesday, February 28, 2017 16:36:13

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	86.500
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	89.063
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702136701PS WG604447-01

Report Date/Time: Tuesday, February 28, 2017 16:36:13

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702136701SDL WG604447-02

Sample Date/Time: Tuesday, February 28, 2017 16:37:08

Number of Replicates: 3

Autosampler Position: 310

Sample Description: 250

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	194810.0	2.8				ug/L	250104	Standard
|	Be	9	30.0	16.7	0.0134	0.004	28.9	ug/L	7	Standard
|	Al	27	1440.1	88.7	0.0092	0.014	151.3	ug/L	597	Standard
|	Sc	45	41608.7	2.1				ug/L	41681	Standard
|	Ti	47	23.7	14.8	-0.3279	0.021	6.4	ug/L	86	Standard
|	V	51	538.5	49.4	-0.1886	0.043	22.7	ug/L	1740	Standard
|	Cr	52	7037.6	0.3	0.0218	0.013	58.1	ug/L	7178	Standard
|	Cr	53	6839.9	4.7	8.5475	0.328	3.8	ug/L	573	Standard
|	Mn	55	2348.9	27.5	-0.0540	0.073	134.8	ug/L	3072	Standard
|	Co	59	275.3	4.7	-0.0235	0.002	8.8	ug/L	573	Standard
|	Ni	60	192.3	6.2	-0.0532	0.009	17.5	ug/L	264	Standard
|	Cu	65	673.7	4.8	0.0770	0.018	23.9	ug/L	530	Standard
|	Zn	66	3657.8	1.7	3.9530	0.082	2.1	ug/L	252	Standard
>	Ge	72	633615.5	1.3				ug/L	641188	Standard
|	As	75	-114.2	32.5	-0.0916	0.044	48.3	ug/L	-83	Standard
|	Se	82	18.1	20.3	0.0165	0.047	283.6	ug/L	16	Standard
|	Se-1	77	561.0	3.7	8.3577	0.257	3.1	ug/L	126	Standard
>	Ga	71	70.0	18.9				mg/L	70	Standard
|	Rb	85	2210.2	5.9				ug/L	33	Standard
|	Y	89	436312.8	1.9				ug/L	493982	Standard
>	Rh	103	38.3	32.8				ug/L	17	Standard
|	Mo	98	117.6	74.5	0.0274	0.037	134.7	ug/L	54	Standard
|	Ag	107	158.3	49.0	0.0138	0.019	138.2	ug/L	137	Standard
|	Cd	111	20.2	80.9	0.0025	0.013	526.9	mg/L	6	Standard
|	Cd	114	263.3	22.8	0.0664	0.019	28.1	ug/L	20	Standard
>	In	115	597306.3	2.3				ug/L	755264	Standard
|	Sn	118	1615.8	4.5	1.9976	0.066	3.3	ug/L	138	Standard
|	Sb	123	440.1	15.0	0.0980	0.021	21.9	ug/L	391	Standard
|	Ba	135	2484.0	79.6	1.7479	1.448	82.8	ug/L	32	Standard
|	Ce	140	25.0	72.1				ug/L	42	Standard
>	Tb	159	824232.9	1.4				ug/L	966827	Standard
|	Ho	165	11.7	49.5				ug/L	12	Standard
|	Tl	203	153.0	32.7	0.0207	0.009	43.4	ug/L	19	Standard
|	Tl	205	381.7	20.3	0.0268	0.006	22.0	ug/L	58	Standard
|	Pb	206	1344.1	4.1	0.2130	0.012	5.7	ug/L	464	Standard
|	Pb	207	1150.7	2.4	0.2029	0.006	3.2	ug/L	405	Standard
|	Pb	208	2528.1	2.1	0.2082	0.006	2.7	ug/L	876	Standard
|	U	238	35.3	49.9	0.0019	0.002	93.0	ug/L	14	Standard
>	Bi	209	504131.7	0.2				ug/L	599146	Standard

Sample ID: L1702136701SDL WG604447-02

Report Date/Time: Tuesday, February 28, 2017 16:39:19

Page 1

Approved: March 01, 2017

Na	23	3.3	173.2	0.5059	1.704	336.8	mg/L	3	Standard
Mg	24	65.0	7.7	0.7762	0.073	9.4	mg/L	30	Standard
K	39	140.0	9.4	1.6305	0.208	12.8	mg/L	10	Standard
Ca	43	35.0	14.3	-19.9539	2.673	13.4	mg/L	83	Standard
Fe	54	19.4	50.4	0.0485	0.145	298.0	mg/L	21	Standard
Fe	57	403.3	7.3	6.5913	1.753	26.6	mg/L	240	Standard
Sc-1	45	41608.7	2.1				mg/L	41681	Standard
Cl	35	2.0	0.0				ug/L	2	Standard
Kr	83	3.7	15.7				ug/L	5	Standard
Br	81	1853.4	15.8				ug/L	1587	Standard
P	31	38.3	41.9				ug/L	50	Standard
S	34	35.0	42.9				ug/L	8	Standard
Sr	88	203.3	20.5				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.7	108.3				mg/L	6	Standard
Ho-1	165	11.7	49.5				mg/L	12	Standard
Er	166	6.7	173.2				mg/L	10	Standard
I	127	6238.0	2.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		77.892	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		98.819	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702136701SDL WG604447-02

Report Date/Time: Tuesday, February 28, 2017 16:39:19

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	79.086
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	84.142
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702136701SDL WG604447-02

Report Date/Time: Tuesday, February 28, 2017 16:39:19

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 16:40:15

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	196009.1	3.5				ug/L	250104	Standard
|	Be	9	62674.7	6.7	49.1452	2.429	4.9	ug/L	7	Standard
|	Al	27	4434390.3	2.5	46.5011	1.033	2.2	ug/L	597	Standard
|	Sc	45	43708.0	4.6				ug/L	41681	Standard
|	Ti	47	19618.0	1.7	105.3768	0.499	0.5	ug/L	86	Standard
|	V	51	308243.1	2.0	47.6340	0.461	1.0	ug/L	1740	Standard
|	Cr	52	287574.1	2.0	46.8512	0.548	1.2	ug/L	7178	Standard
|	Cr	53	38702.7	3.1	49.6568	0.743	1.5	ug/L	573	Standard
|	Mn	55	473351.2	2.5	47.7731	0.572	1.2	ug/L	3072	Standard
|	Co	59	377810.7	2.0	49.0623	0.576	1.2	ug/L	573	Standard
|	Ni	60	80620.9	0.8	49.2075	0.780	1.6	ug/L	264	Standard
|	Cu	65	78432.9	1.9	49.8382	0.295	0.6	ug/L	530	Standard
|	Zn	66	42881.3	1.2	47.4704	0.725	1.5	ug/L	252	Standard
>	Ge	72	668616.0	1.8				ug/L	641188	Standard
|	As	75	43095.9	2.7	47.8436	0.967	2.0	ug/L	-83	Standard
|	Se	82	3820.5	4.2	48.7892	1.613	3.3	ug/L	16	Standard
|	Se-1	77	3093.3	3.1	53.2910	1.272	2.4	ug/L	126	Standard
>	Ga	71	115.0	8.7				mg/L	70	Standard
|	Rb	85	645.0	8.6				ug/L	33	Standard
|	Y	89	453097.6	1.4				ug/L	493982	Standard
>	Rh	103	43.3	6.7				ug/L	17	Standard
|	Mo	98	258458.5	1.6	103.2272	0.069	0.1	ug/L	54	Standard
|	Ag	107	210812.5	2.0	48.8358	0.472	1.0	ug/L	137	Standard
|	Cd	111	57219.8	3.1	44.7103	0.678	1.5	mg/L	6	Standard
|	Cd	114	163305.7	2.1	46.5171	0.185	0.4	ug/L	20	Standard
>	In	115	607726.0	1.7				ug/L	755264	Standard
|	Sn	118	38429.7	1.9	49.6964	0.132	0.3	ug/L	138	Standard
|	Sb	123	176032.1	2.2	48.8210	0.322	0.7	ug/L	391	Standard
|	Ba	135	74597.2	2.2	51.8331	0.354	0.7	ug/L	32	Standard
|	Ce	140	68.3	11.2				ug/L	42	Standard
>	Tb	159	822058.9	1.3				ug/L	966827	Standard
|	Ho	165	25.0	20.0				ug/L	12	Standard
|	Tl	203	267489.7	1.9	49.2119	0.750	1.5	ug/L	19	Standard
|	Tl	205	625713.3	1.2	49.2363	0.573	1.2	ug/L	58	Standard
|	Pb	206	208736.9	1.7	48.6225	0.568	1.2	ug/L	464	Standard
|	Pb	207	187885.3	1.7	48.9179	0.638	1.3	ug/L	405	Standard
|	Pb	208	399793.1	2.2	47.6988	0.746	1.6	ug/L	876	Standard
|	U	238	342172.3	1.7	35.9113	0.562	1.6	ug/L	14	Standard
>	Bi	209	494699.8	1.5				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:42:26

Page 1

Approved: March 01, 2017

Na	23	15.0	33.3	3.6319	1.245	34.3	mg/L	3	Standard
Mg	24	305.0	16.4	5.3630	1.121	20.9	mg/L	30	Standard
K	39	546.7	17.8	6.7525	1.496	22.1	mg/L	10	Standard
Ca	43	50.0	45.8	-12.2288	13.444	109.9	mg/L	83	Standard
Fe	54	390.9	15.3	5.4906	0.853	15.5	mg/L	21	Standard
Fe	57	548.3	3.7	13.1993	0.271	2.1	mg/L	240	Standard
Sc-1	45	43708.0	4.6				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	5.0	34.6				ug/L	5	Standard
Br	81	2000.1	1.5				ug/L	1587	Standard
P	31	56.7	36.7				ug/L	50	Standard
S	34	31.7	24.1				ug/L	8	Standard
Sr	88	215.0	8.1				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	16.2	38.3				mg/L	6	Standard
Ho-1	165	25.0	20.0				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	5352.6	5.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	98.290		
Al	27	93.002		
Sc	45			
Ti	47	105.377		
V	51	95.268		
Cr	52	93.702		
Cr	53			
Mn	55	95.546		
Co	59	98.125		
Ni	60	98.415		
Cu	65	99.676		
Zn	66	94.941		
Ge	72		104.278	
As	75	95.687		
Se	82	97.578		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:42:26

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	103.227	
[	Ag	107	97.672	
[	Cd	111	89.421	
[	Cd	114		
>	In	115		80.465
[	Sn	118	99.393	
[	Sb	123	97.642	
[	Ba	135	103.666	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	98.424	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	95.398	
[	U	238	71.823	
>	Bi	209		82.568
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

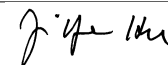
Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:42:26

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 16:43:21

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	186368.1	2.9				ug/L	250104	Standard
|	Be	9	41.7	59.2	0.0243	0.021	85.3	ug/L	7	Standard
|	Al	27	1230.1	66.4	0.0075	0.009	122.4	ug/L	597	Standard
|	Sc	45	42043.3	1.2				ug/L	41681	Standard
|	Ti	47	39.7	27.0	-0.2412	0.063	26.3	ug/L	86	Standard
|	V	51	1536.7	25.4	-0.0300	0.063	209.3	ug/L	1740	Standard
|	Cr	52	6827.2	3.2	-0.0412	0.051	124.0	ug/L	7178	Standard
|	Cr	53	2753.6	1.7	2.8375	0.082	2.9	ug/L	573	Standard
|	Mn	55	2169.2	3.9	-0.0788	0.012	14.6	ug/L	3072	Standard
|	Co	59	346.7	20.2	-0.0147	0.010	69.6	ug/L	573	Standard
|	Ni	60	208.0	11.3	-0.0459	0.017	36.7	ug/L	264	Standard
|	Cu	65	596.7	1.7	0.0163	0.006	36.4	ug/L	530	Standard
|	Zn	66	244.7	4.9	-0.0698	0.010	13.8	ug/L	252	Standard
>	Ge	72	647716.4	1.8				ug/L	641188	Standard
|	As	75	-39.7	38.6	-0.0032	0.018	547.9	ug/L	-83	Standard
|	Se	82	6.6	37.3	-0.1412	0.031	22.0	ug/L	16	Standard
|	Se-1	77	293.7	1.9	3.1712	0.069	2.2	ug/L	126	Standard
>	Ga	71	73.3	15.7				mg/L	70	Standard
|	Rb	85	28.3	53.9				ug/L	33	Standard
|	Y	89	451391.8	2.7				ug/L	493982	Standard
>	Rh	103	21.7	35.3				ug/L	17	Standard
|	Mo	98	185.5	21.5	0.0560	0.015	26.8	ug/L	54	Standard
|	Ag	107	121.3	3.3	0.0055	0.001	26.4	ug/L	137	Standard
|	Cd	111	12.1	80.5	-0.0038	0.008	215.2	mg/L	6	Standard
|	Cd	114	38.6	38.3	0.0013	0.004	327.2	ug/L	20	Standard
>	In	115	584667.8	1.9				ug/L	755264	Standard
|	Sn	118	113.0	12.4	0.0187	0.020	106.0	ug/L	138	Standard
|	Sb	123	733.3	10.9	0.1853	0.027	14.5	ug/L	391	Standard
|	Ba	135	33.7	9.5	-0.0032	0.002	61.0	ug/L	32	Standard
|	Ce	140	18.3	15.7				ug/L	42	Standard
>	Tb	159	797777.0	2.2				ug/L	966827	Standard
|	Ho	165	6.7	43.3				ug/L	12	Standard
|	Tl	203	39.3	53.5	0.0005	0.004	835.5	ug/L	19	Standard
|	Tl	205	76.7	46.3	0.0036	0.003	82.7	ug/L	58	Standard
|	Pb	206	385.3	2.1	-0.0028	0.003	119.4	ug/L	464	Standard
|	Pb	207	330.7	4.0	-0.0034	0.004	109.0	ug/L	405	Standard
|	Pb	208	748.7	3.9	0.0032	0.005	144.9	ug/L	876	Standard
|	U	238	71.7	100.8	0.0061	0.008	130.2	ug/L	14	Standard
>	Bi	209	483748.5	1.5				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:45:32

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0072	0.815	11380.9	mg/L	3	Standard
Mg	24	40.0	43.3	0.2597	0.336	129.3	mg/L	30	Standard
K	39	28.3	62.0	0.1340	0.235	175.7	mg/L	10	Standard
Ca	43	20.0	25.0	-28.8382	2.905	10.1	mg/L	83	Standard
Fe	54	37.5	33.3	0.3234	0.191	59.0	mg/L	21	Standard
Fe	57	468.3	4.0	9.9373	1.166	11.7	mg/L	240	Standard
Sc-1	45	42043.3	1.2				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	4.0	50.0				ug/L	5	Standard
Br	81	1923.5	10.5				ug/L	1587	Standard
P	31	58.3	35.7				ug/L	50	Standard
S	34	33.3	75.5				ug/L	8	Standard
Sr	88	231.7	11.1				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	13.2	44.9				mg/L	6	Standard
Ho-1	165	6.7	43.3				mg/L	12	Standard
Er	166	3.3	173.2				mg/L	10	Standard
I	127	6483.1	7.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		101.018	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:45:32

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.412
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	80.740
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
In 115 Int Std for QC Std	In	115	Rerun sample

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:45:32

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702136801

Sample Date/Time: Tuesday, February 28, 2017 16:46:28

Number of Replicates: 3

Autosampler Position: 311

Sample Description: 50

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	214182.2	4.9				ug/L	250104	Standard
|	Be	9	8.3	69.3	-0.0043	0.004	94.4	ug/L	7	Standard
|	Al	27	1031.7	10.0	0.0037	0.001	19.5	ug/L	597	Standard
|	Sc	45	45424.7	3.5				ug/L	41681	Standard
|	Ti	47	31.3	24.4	-0.2923	0.042	14.2	ug/L	86	Standard
|	V	51	1845.0	34.9	0.0123	0.100	811.0	ug/L	1740	Standard
|	Cr	52	8059.5	7.1	0.1386	0.095	68.9	ug/L	7178	Standard
|	Cr	53	5441.0	8.6	6.2889	0.617	9.8	ug/L	573	Standard
|	Mn	55	2627.9	2.7	-0.0372	0.008	22.5	ug/L	3072	Standard
|	Co	59	452.3	5.7	-0.0020	0.003	154.6	ug/L	573	Standard
|	Ni	60	602.0	2.0	0.1942	0.008	3.9	ug/L	264	Standard
|	Cu	65	893.0	1.6	0.1984	0.006	3.2	ug/L	530	Standard
|	Zn	66	1449.1	1.5	1.2778	0.017	1.4	ug/L	252	Standard
>	Ge	72	663134.1	0.5				ug/L	641188	Standard
|	As	75	-5.3	1053.9	0.0364	0.063	173.0	ug/L	-83	Standard
|	Se	82	40.9	18.6	0.3016	0.100	33.0	ug/L	16	Standard
|	Se-1	77	732.0	6.1	10.9840	0.811	7.4	ug/L	126	Standard
>	Ga	71	116.7	31.0				mg/L	70	Standard
|	Rb	85	10068.3	3.3				ug/L	33	Standard
|	Y	89	459229.6	1.3				ug/L	493982	Standard
>	Rh	103	35.0	49.5				ug/L	17	Standard
|	Mo	98	605.8	4.1	0.2111	0.007	3.4	ug/L	54	Standard
|	Ag	107	109.3	6.1	0.0006	0.001	237.3	ug/L	137	Standard
|	Cd	111	6.6	17.3	-0.0087	0.001	8.9	mg/L	6	Standard
|	Cd	114	32.0	31.9	-0.0014	0.003	205.1	ug/L	20	Standard
>	In	115	633913.6	1.6				ug/L	755264	Standard
|	Sn	118	112.3	12.0	0.0058	0.015	254.6	ug/L	138	Standard
|	Sb	123	268.7	24.9	0.0447	0.017	37.5	ug/L	391	Standard
|	Ba	135	12302.3	1.2	8.1732	0.115	1.4	ug/L	32	Standard
|	Ce	140	25.0	20.0				ug/L	42	Standard
>	Tb	159	878026.3	3.3				ug/L	966827	Standard
|	Ho	165	5.0	0.0				ug/L	12	Standard
|	Tl	203	170.7	13.5	0.0231	0.004	19.1	ug/L	19	Standard
|	Tl	205	413.3	10.4	0.0285	0.004	13.1	ug/L	58	Standard
|	Pb	206	1385.1	1.6	0.2140	0.010	4.7	ug/L	464	Standard
|	Pb	207	1161.4	2.5	0.1976	0.006	2.9	ug/L	405	Standard
|	Pb	208	2569.8	1.3	0.2049	0.003	1.4	ug/L	876	Standard
|	U	238	10.0	34.6	-0.0007	0.000	47.8	ug/L	14	Standard
>	Bi	209	518108.5	1.7				ug/L	599146	Standard

Sample ID: L1702136801

Report Date/Time: Tuesday, February 28, 2017 16:48:39

Page 1

Approved: March 01, 2017

Na	23	18.3	95.8	4.3267	4.658	107.7	mg/L	3	Standard
Mg	24	301.7	5.8	5.0714	0.520	10.2	mg/L	30	Standard
K	39	610.0	2.2	7.2253	0.182	2.5	mg/L	10	Standard
Ca	43	53.3	30.1	-11.9864	7.848	65.5	mg/L	83	Standard
Fe	54	47.7	42.9	0.4261	0.298	69.9	mg/L	21	Standard
Fe	57	500.0	8.7	9.6016	1.433	14.9	mg/L	240	Standard
Sc-1	45	45424.7	3.5				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	5.0	40.0				ug/L	5	Standard
Br	81	2990.3	2.7				ug/L	1587	Standard
P	31	65.0	33.5				ug/L	50	Standard
S	34	38.3	27.2				ug/L	8	Standard
Sr	88	181.7	19.5				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	6.7	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	12.7	119.6				mg/L	6	Standard
Ho-1	165	5.0	0.0				mg/L	12	Standard
Er	166	13.3	86.6				mg/L	10	Standard
I	127	23974.0	7.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		85.637	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.423	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702136801

Report Date/Time: Tuesday, February 28, 2017 16:48:39

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.933
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	86.475
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702136801

Report Date/Time: Tuesday, February 28, 2017 16:48:39

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 16:49:35

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	206646.7	2.1				ug/L	250104	Standard
|	Be	9	63231.7	2.7	47.0418	0.808	1.7	ug/L	7	Standard
|	Al	27	4580256.9	1.3	45.5507	0.805	1.8	ug/L	597	Standard
|	Sc	45	45170.6	1.7				ug/L	41681	Standard
|	Ti	47	19752.2	1.2	102.6527	1.243	1.2	ug/L	86	Standard
|	V	51	313566.4	1.2	46.8859	0.591	1.3	ug/L	1740	Standard
|	Cr	52	292794.7	1.5	46.1414	0.789	1.7	ug/L	7178	Standard
|	Cr	53	38490.5	3.1	47.7632	1.585	3.3	ug/L	573	Standard
|	Mn	55	485336.4	0.3	47.3993	0.233	0.5	ug/L	3072	Standard
|	Co	59	382910.6	0.8	48.1153	0.440	0.9	ug/L	573	Standard
|	Ni	60	81415.5	0.8	48.0739	0.455	0.9	ug/L	264	Standard
|	Cu	65	78908.6	1.3	48.5098	0.703	1.4	ug/L	530	Standard
|	Zn	66	43569.2	0.9	46.6604	0.436	0.9	ug/L	252	Standard
>	Ge	72	690959.1	0.2				ug/L	641188	Standard
|	As	75	43378.4	1.0	46.6017	0.477	1.0	ug/L	-83	Standard
|	Se	82	3784.2	1.6	46.7602	0.822	1.8	ug/L	16	Standard
|	Se-1	77	3050.6	2.0	50.7543	1.068	2.1	ug/L	126	Standard
>	Ga	71	108.3	37.6				mg/L	70	Standard
|	Rb	85	651.7	5.9				ug/L	33	Standard
|	Y	89	475948.8	1.1				ug/L	493982	Standard
>	Rh	103	25.0	20.0				ug/L	17	Standard
|	Mo	98	257328.2	0.8	98.4548	1.029	1.0	ug/L	54	Standard
|	Ag	107	213543.8	1.2	47.3901	0.728	1.5	ug/L	137	Standard
|	Cd	111	57707.3	1.4	43.2031	0.729	1.7	mg/L	6	Standard
|	Cd	114	167539.5	2.6	45.7197	1.256	2.7	ug/L	20	Standard
>	In	115	634399.5	0.4				ug/L	755264	Standard
|	Sn	118	39467.7	2.9	48.8953	1.577	3.2	ug/L	138	Standard
|	Sb	123	179287.9	1.9	47.6375	1.028	2.2	ug/L	391	Standard
|	Ba	135	76334.8	0.5	50.8137	0.434	0.9	ug/L	32	Standard
|	Ce	140	56.7	20.4				ug/L	42	Standard
>	Tb	159	862431.5	0.7				ug/L	966827	Standard
|	Ho	165	33.3	56.8				ug/L	12	Standard
|	Tl	203	272968.1	1.1	47.8245	1.051	2.2	ug/L	19	Standard
|	Tl	205	635838.0	2.2	47.6489	1.551	3.3	ug/L	58	Standard
|	Pb	206	214138.7	1.2	47.5002	1.077	2.3	ug/L	464	Standard
|	Pb	207	192656.1	0.7	47.7645	0.854	1.8	ug/L	405	Standard
|	Pb	208	408628.3	0.9	46.4259	0.889	1.9	ug/L	876	Standard
|	U	238	348697.6	0.7	34.8489	0.638	1.8	ug/L	14	Standard
>	Bi	209	519540.0	1.1				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:51:46

Page 1

Approved: March 01, 2017

Na	23	1.7	173.2	-0.0279	0.780	2790.8	mg/L	3	Standard
Mg	24	296.7	12.0	5.0015	0.709	14.2	mg/L	30	Standard
K	39	625.0	2.1	7.4503	0.223	3.0	mg/L	10	Standard
Ca	43	33.3	43.3	-22.3865	8.046	35.9	mg/L	83	Standard
Fe	54	357.8	10.5	4.8359	0.555	11.5	mg/L	21	Standard
Fe	57	585.0	7.4	14.1287	2.130	15.1	mg/L	240	Standard
Sc-1	45	45170.6	1.7				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	5.3	28.6				ug/L	5	Standard
Br	81	1923.5	7.3				ug/L	1587	Standard
P	31	56.7	39.8				ug/L	50	Standard
S	34	35.0	37.8				ug/L	8	Standard
Sr	88	193.3	6.0				ug/L	198	Standard
C	12	20.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	18.7	108.2				mg/L	6	Standard
Ho-1	165	33.3	56.8				mg/L	12	Standard
Er	166	26.7	57.3				mg/L	10	Standard
I	127	5327.6	9.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	94.084		
Al	27	91.101		
Sc	45			
Ti	47	102.653		
V	51	93.772		
Cr	52	92.283		
Cr	53			
Mn	55	94.799		
Co	59	96.231		
Ni	60	96.148		
Cu	65	97.020		
Zn	66	93.321		
Ge	72		107.762	
As	75	93.203		
Se	82	93.520		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:51:46

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	98.455	
[	Ag	107	94.780	
[	Cd	111	86.406	
[	Cd	114		
>	In	115		83.997
[	Sn	118	97.791	
[	Sb	123	95.275	
[	Ba	135	101.627	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	95.649	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	92.852	
[	U	238	69.698	
>	Bi	209		86.713
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 16:51:46

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 16:52:40

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	196411.6	1.1				ug/L	250104	Standard
|	Be	9	26.7	39.0	0.0106	0.008	75.6	ug/L	7	Standard
|	Al	27	728.4	9.8	0.0015	0.001	45.5	ug/L	597	Standard
|	Sc	45	44114.1	0.9				ug/L	41681	Standard
|	Ti	47	29.7	9.7	-0.3055	0.015	5.0	ug/L	86	Standard
|	V	51	1655.2	8.0	-0.0239	0.020	82.0	ug/L	1740	Standard
|	Cr	52	6717.2	0.8	-0.1167	0.010	8.3	ug/L	7178	Standard
|	Cr	53	2341.8	4.3	2.1293	0.136	6.4	ug/L	573	Standard
|	Mn	55	2067.5	2.0	-0.1001	0.004	3.6	ug/L	3072	Standard
|	Co	59	318.7	3.8	-0.0206	0.002	8.1	ug/L	573	Standard
|	Ni	60	190.0	5.0	-0.0633	0.005	8.7	ug/L	264	Standard
|	Cu	65	602.3	4.6	0.0008	0.018	2258.7	ug/L	530	Standard
|	Zn	66	266.3	5.1	-0.0595	0.016	26.7	ug/L	252	Standard
>	Ge	72	680655.2	0.3				ug/L	641188	Standard
|	As	75	-102.0	26.6	-0.0689	0.030	43.0	ug/L	-83	Standard
|	Se	82	12.5	12.9	-0.0699	0.020	28.7	ug/L	16	Standard
|	Se-1	77	264.3	4.9	2.3896	0.223	9.3	ug/L	126	Standard
>	Ga	71	106.7	7.2				mg/L	70	Standard
|	Rb	85	41.7	38.6				ug/L	33	Standard
|	Y	89	478567.8	1.3				ug/L	493982	Standard
>	Rh	103	18.3	41.7				ug/L	17	Standard
|	Mo	98	196.9	13.1	0.0579	0.012	20.1	ug/L	54	Standard
|	Ag	107	126.0	6.8	0.0055	0.002	43.1	ug/L	137	Standard
|	Cd	111	9.7	57.2	-0.0060	0.004	72.1	mg/L	6	Standard
|	Cd	114	36.9	61.9	0.0004	0.006	1786.4	ug/L	20	Standard
>	In	115	608297.1	1.8				ug/L	755264	Standard
|	Sn	118	115.7	2.5	0.0162	0.005	30.5	ug/L	138	Standard
|	Sb	123	717.4	14.9	0.1720	0.026	15.0	ug/L	391	Standard
|	Ba	135	32.3	17.6	-0.0051	0.004	74.9	ug/L	32	Standard
|	Ce	140	20.0	66.1				ug/L	42	Standard
>	Tb	159	829132.4	2.0				ug/L	966827	Standard
|	Ho	165	8.3	34.6				ug/L	12	Standard
|	Tl	203	35.0	42.3	-0.0006	0.003	416.7	ug/L	19	Standard
|	Tl	205	71.7	20.1	0.0029	0.001	36.8	ug/L	58	Standard
|	Pb	206	388.7	2.8	-0.0055	0.002	32.8	ug/L	464	Standard
|	Pb	207	351.3	5.4	-0.0015	0.004	271.8	ug/L	405	Standard
|	Pb	208	739.7	6.6	-0.0014	0.005	363.6	ug/L	876	Standard
|	U	238	33.3	21.7	0.0017	0.001	41.3	ug/L	14	Standard
>	Bi	209	502844.7	0.9				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:54:51

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	15.0	33.3	-0.2530	0.097	38.3	mg/L	30	Standard
K	39	16.7	45.8	-0.0320	0.097	303.1	mg/L	10	Standard
Ca	43	40.0	12.5	-18.3537	2.571	14.0	mg/L	83	Standard
Fe	54	26.4	47.4	0.1350	0.184	136.3	mg/L	21	Standard
Fe	57	441.7	8.0	7.3262	1.969	26.9	mg/L	240	Standard
Sc-1	45	44114.1	0.9				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	2.0	50.0				ug/L	5	Standard
Br	81	1696.8	4.8				ug/L	1587	Standard
P	31	51.7	48.7				ug/L	50	Standard
S	34	28.3	20.4				ug/L	8	Standard
Sr	88	201.7	3.8				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	19.5	102.5				mg/L	6	Standard
Ho-1	165	8.3	34.6				mg/L	12	Standard
Er	166	10.0					mg/L	10	Standard
I	127	6318.0	4.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		106.155	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:54:51

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	80.541
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	83.927
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 16:54:51

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: PBS 28 WG604395-02

Sample Date/Time: Tuesday, February 28, 2017 16:55:47

Number of Replicates: 3

Autosampler Position: 312

Sample Description: 50

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	192438.3	2.8				ug/L	250104	Standard
|	Be	9	11.7	49.5	-0.0009	0.005	559.9	ug/L	7	Standard
|	Al	27	8470.7	1.6	0.0843	0.001	1.7	ug/L	597	Standard
|	Sc	45	44160.9	1.1				ug/L	41681	Standard
|	Ti	47	36.3	15.2	-0.2683	0.028	10.6	ug/L	86	Standard
|	V	51	1632.5	13.1	-0.0247	0.034	139.6	ug/L	1740	Standard
|	Cr	52	9834.2	0.7	0.4114	0.013	3.3	ug/L	7178	Standard
|	Cr	53	3073.6	3.9	3.1075	0.154	5.0	ug/L	573	Standard
|	Mn	55	4018.9	2.7	0.0987	0.011	11.3	ug/L	3072	Standard
|	Co	59	302.7	6.0	-0.0223	0.002	10.3	ug/L	573	Standard
|	Ni	60	310.3	5.4	0.0111	0.011	100.1	ug/L	264	Standard
|	Cu	65	660.0	2.2	0.0412	0.009	21.2	ug/L	530	Standard
|	Zn	66	1585.7	1.5	1.4031	0.019	1.3	ug/L	252	Standard
>	Ge	72	673869.8	0.7				ug/L	641188	Standard
|	As	75	-58.9	57.0	-0.0226	0.037	162.7	ug/L	-83	Standard
|	Se	82	17.0	28.7	-0.0121	0.061	502.3	ug/L	16	Standard
|	Se-1	77	259.7	1.6	2.3541	0.104	4.4	ug/L	126	Standard
>	Ga	71	100.0	18.0				mg/L	70	Standard
|	Rb	85	88.3	43.2				ug/L	33	Standard
|	Y	89	470554.4	1.4				ug/L	493982	Standard
>	Rh	103	25.0	34.6				ug/L	17	Standard
|	Mo	98	89.1	11.7	0.0152	0.004	26.9	ug/L	54	Standard
|	Ag	107	109.7	8.2	0.0020	0.002	102.6	ug/L	137	Standard
|	Cd	111	9.9	20.3	-0.0058	0.002	28.1	mg/L	6	Standard
|	Cd	114	33.0	30.9	-0.0006	0.003	490.0	ug/L	20	Standard
>	In	115	599527.2	0.5				ug/L	755264	Standard
|	Sn	118	138.3	9.8	0.0481	0.018	36.9	ug/L	138	Standard
|	Sb	123	235.0	26.3	0.0395	0.017	44.0	ug/L	391	Standard
|	Ba	135	105.3	17.9	0.0467	0.013	27.7	ug/L	32	Standard
|	Ce	140	68.3	25.7				ug/L	42	Standard
>	Tb	159	825487.6	0.3				ug/L	966827	Standard
|	Ho	165	5.0	100.0				ug/L	12	Standard
|	Tl	203	23.3	55.1	-0.0027	0.002	88.1	ug/L	19	Standard
|	Tl	205	53.3	44.3	0.0015	0.002	122.4	ug/L	58	Standard
|	Pb	206	479.3	2.7	0.0158	0.003	19.6	ug/L	464	Standard
|	Pb	207	400.0	2.6	0.0115	0.003	28.6	ug/L	405	Standard
|	Pb	208	903.7	4.3	0.0184	0.005	28.6	ug/L	876	Standard
|	U	238	10.7	61.0	-0.0006	0.001	112.4	ug/L	14	Standard
>	Bi	209	500434.9	1.0				ug/L	599146	Standard

Sample ID: PBS 28 WG604395-02

Report Date/Time: Tuesday, February 28, 2017 16:57:58

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	33.3	22.9	0.0964	0.144	149.1	mg/L	30	Standard
K	39	25.0	34.6	0.0724	0.109	150.9	mg/L	10	Standard
Ca	43	36.7	41.7	-20.1387	8.629	42.8	mg/L	83	Standard
Fe	54	34.4	25.5	0.2513	0.128	51.0	mg/L	21	Standard
Fe	57	451.7	17.2	7.7950	3.814	48.9	mg/L	240	Standard
Sc-1	45	44160.9	1.1				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	3.0	33.3				ug/L	5	Standard
Br	81	1990.1	5.8				ug/L	1587	Standard
P	31	48.3	39.2				ug/L	50	Standard
S	34	31.7	91.2				ug/L	8	Standard
Sr	88	186.7	1.5				ug/L	198	Standard
C	12	6.7	173.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	12.4	43.3				mg/L	6	Standard
Ho-1	165	5.0	100.0				mg/L	12	Standard
Er	166	20.0	50.0				mg/L	10	Standard
I	127	7173.4	2.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		76.943	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		105.097	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: PBS 28 WG604395-02

Report Date/Time: Tuesday, February 28, 2017 16:57:58

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	79.380
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	83.525
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: PBS 28 WG604395-02

Report Date/Time: Tuesday, February 28, 2017 16:57:58

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: LCSS 28 WG604395-03

Sample Date/Time: Tuesday, February 28, 2017 16:58:52

Number of Replicates: 3

Autosampler Position: 313

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	187128.5	0.6				ug/L	250104	Standard
|	Be	9	29974.6	1.1	24.6226	0.420	1.7	ug/L	7	Standard
|	Al	27	7546.9	5.9	0.0767	0.004	5.8	ug/L	597	Standard
|	Sc	45	43373.7	0.3				ug/L	41681	Standard
|	Ti	47	34.3	39.8	-0.2754	0.075	27.2	ug/L	86	Standard
|	V	51	151266.1	0.9	23.4827	0.436	1.9	ug/L	1740	Standard
|	Cr	52	147916.2	1.0	23.7666	0.508	2.1	ug/L	7178	Standard
|	Cr	53	20785.9	1.6	26.5542	0.630	2.4	ug/L	573	Standard
|	Mn	55	232188.3	0.9	23.5278	0.475	2.0	ug/L	3072	Standard
|	Co	59	185832.0	0.7	24.3551	0.419	1.7	ug/L	573	Standard
|	Ni	60	40264.4	0.9	24.7421	0.421	1.7	ug/L	264	Standard
|	Cu	65	39399.5	0.8	25.1122	0.368	1.5	ug/L	530	Standard
|	Zn	66	21766.6	0.8	24.1750	0.382	1.6	ug/L	252	Standard
>	Ge	72	661725.9	1.1				ug/L	641188	Standard
|	As	75	21161.6	1.5	23.7632	0.595	2.5	ug/L	-83	Standard
|	Se	82	1835.0	2.6	23.5673	0.765	3.2	ug/L	16	Standard
|	Se-1	77	1605.1	2.4	26.8577	0.533	2.0	ug/L	126	Standard
>	Ga	71	85.0	25.6				mg/L	70	Standard
|	Rb	85	81.7	9.4				ug/L	33	Standard
|	Y	89	462843.1	0.3				ug/L	493982	Standard
>	Rh	103	33.3	60.6				ug/L	17	Standard
|	Mo	98	113.8	83.5	0.0256	0.038	150.2	ug/L	54	Standard
|	Ag	107	102211.6	0.9	24.2720	0.244	1.0	ug/L	137	Standard
|	Cd	111	27815.4	1.2	22.2906	0.574	2.6	mg/L	6	Standard
|	Cd	114	77147.4	0.3	22.5359	0.448	2.0	ug/L	20	Standard
>	In	115	592630.0	1.7				ug/L	755264	Standard
|	Sn	118	132.7	14.6	0.0425	0.024	56.1	ug/L	138	Standard
|	Sb	123	83918.3	0.6	23.8593	0.417	1.7	ug/L	391	Standard
|	Ba	135	36384.0	0.6	25.9187	0.537	2.1	ug/L	32	Standard
|	Ce	140	73.3	25.8				ug/L	42	Standard
>	Tb	159	812806.4	2.9				ug/L	966827	Standard
|	Ho	165	13.3	21.7				ug/L	12	Standard
|	Tl	203	136186.3	0.3	25.0686	0.836	3.3	ug/L	19	Standard
|	Tl	205	321185.4	0.9	25.2828	0.582	2.3	ug/L	58	Standard
|	Pb	206	105668.5	0.4	24.5820	0.727	3.0	ug/L	464	Standard
|	Pb	207	92131.6	0.6	23.9557	0.748	3.1	ug/L	405	Standard
|	Pb	208	198344.5	1.2	23.6322	0.628	2.7	ug/L	876	Standard
|	U	238	162932.7	0.5	17.1083	0.487	2.8	ug/L	14	Standard
>	Bi	209	494703.4	3.2				ug/L	599146	Standard

Sample ID: LCSS 28 WG604395-03

Report Date/Time: Tuesday, February 28, 2017 17:01:03

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	21.7	58.1	-0.1186	0.244	205.8	mg/L	30	Standard
K	39	26.7	39.0	0.0996	0.134	134.6	mg/L	10	Standard
Ca	43	33.3	17.3	-21.7102	3.198	14.7	mg/L	83	Standard
Fe	54	36.4	23.0	0.2885	0.122	42.4	mg/L	21	Standard
Fe	57	436.7	3.5	7.4511	0.886	11.9	mg/L	240	Standard
Sc-1	45	43373.7	0.3				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.3	34.6				ug/L	5	Standard
Br	81	2566.9	5.3				ug/L	1587	Standard
P	31	45.0	22.2				ug/L	50	Standard
S	34	30.0	86.6				ug/L	8	Standard
Sr	88	191.7	21.1				ug/L	198	Standard
C	12	6.7	173.2				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	3.3	173.2				mg/L	3	Standard
Dy	164	9.5	107.6				mg/L	6	Standard
Ho-1	165	13.3	21.7				mg/L	12	Standard
Er	166	10.0	100.0				mg/L	10	Standard
I	127	5571.0	3.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		74.820	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.203	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: LCSS 28 WG604395-03

Report Date/Time: Tuesday, February 28, 2017 17:01:03

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	78.467
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	82.568
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: LCSS 28 WG604395-03

Report Date/Time: Tuesday, February 28, 2017 17:01:03

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702124801 WG604395-01

Sample Date/Time: Tuesday, February 28, 2017 17:01:58

Number of Replicates: 3

Autosampler Position: 314

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	204940.9	3.1				ug/L	250104	Standard
|	Be	9	3410.4	8.3	2.5461	0.138	5.4	ug/L	7	Standard
|	Al	27	10310739.0	4.7	103.3500	1.923	1.9	ug/L	597	Standard
|	Sc	45	53925.9	3.8				ug/L	41681	Standard
|	Ti	47	57465.5	2.7	305.9492	5.610	1.8	ug/L	86	Standard
|	V	51	282707.4	2.7	43.1524	0.728	1.7	ug/L	1740	Standard
|	Cr	52	325090.2	3.0	52.4864	1.025	2.0	ug/L	7178	Standard
|	Cr	53	42633.3	4.0	54.1420	1.624	3.0	ug/L	573	Standard
|	Mn	55	11539924.2	2.9	1158.2366	23.001	2.0	ug/L	3072	Standard
|	Co	59	423628.8	2.8	54.3774	1.050	1.9	ug/L	573	Standard
|	Ni	60	69696.0	1.7	42.0138	0.378	0.9	ug/L	264	Standard
|	Cu	65	95968.1	2.2	60.3512	0.815	1.4	ug/L	530	Standard
|	Zn	66	453735.8	2.0	499.7259	6.343	1.3	ug/L	252	Standard
>	Ge	72	676432.7	1.1				ug/L	641188	Standard
|	As	75	10617.9	1.7	11.6830	0.078	0.7	ug/L	-83	Standard
|	Se	82	199.3	4.0	2.3012	0.128	5.6	ug/L	16	Standard
|	Se-1	77	415.3	2.9	5.1006	0.220	4.3	ug/L	126	Standard
>	Ga	71	27072.5	2.2				mg/L	70	Standard
|	Rb	85	268681.3	0.4				ug/L	33	Standard
|	Y	89	824816.0	0.5				ug/L	493982	Standard
>	Rh	103	80.0	43.8				ug/L	17	Standard
|	Mo	98	3089.5	3.4	1.2317	0.011	0.9	ug/L	54	Standard
|	Ag	107	18781.6	1.4	4.3958	0.089	2.0	ug/L	137	Standard
|	Cd	111	6625.1	3.6	5.2419	0.027	0.5	mg/L	6	Standard
|	Cd	114	19194.4	3.2	5.5410	0.125	2.3	ug/L	20	Standard
>	In	115	598837.8	3.3				ug/L	755264	Standard
|	Sn	118	164.0	9.8	0.0827	0.029	34.7	ug/L	138	Standard
|	Sb	123	398.8	14.9	0.0854	0.013	15.7	ug/L	391	Standard
|	Ba	135	467483.3	2.6	329.8693	3.110	0.9	ug/L	32	Standard
|	Ce	140	1466940.2	3.1				ug/L	42	Standard
>	Tb	159	884339.2	2.7				ug/L	966827	Standard
|	Ho	165	25474.8	3.8				ug/L	12	Standard
|	Tl	203	1736.1	4.4	0.3123	0.008	2.5	ug/L	19	Standard
|	Tl	205	4005.5	5.3	0.3124	0.011	3.5	ug/L	58	Standard
|	Pb	206	350386.6	2.7	81.6638	0.500	0.6	ug/L	464	Standard
|	Pb	207	287078.6	2.5	74.7766	0.367	0.5	ug/L	405	Standard
|	Pb	208	637626.9	3.1	76.1089	1.012	1.3	ug/L	876	Standard
|	U	238	23530.6	4.2	2.4668	0.055	2.2	ug/L	14	Standard
>	Bi	209	494756.3	2.1				ug/L	599146	Standard

Sample ID: L1702124801 WG604395-01

Report Date/Time: Tuesday, February 28, 2017 17:04:09

Page 1

Approved: March 01, 2017

Na	23	98.3	39.5	21.5646	8.834	41.0	mg/L	3	Standard
Mg	24	43.3	37.1	0.1402	0.257	183.2	mg/L	30	Standard
K	39	385.0	6.0	3.7343	0.365	9.8	mg/L	10	Standard
Ca	43	210.0	4.8	54.6116	7.941	14.5	mg/L	83	Standard
Fe	54	3365.8	4.0	39.8112	1.088	2.7	mg/L	21	Standard
Fe	57	1523.4	3.0	49.6242	2.438	4.9	mg/L	240	Standard
Sc-1	45	53925.9	3.8				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	2.3	24.7				ug/L	5	Standard
Br	81	2323.5	4.2				ug/L	1587	Standard
P	31	50.0	20.0				ug/L	50	Standard
S	34	40.0	45.1				ug/L	8	Standard
Sr	88	196.7	6.4				ug/L	198	Standard
C	12	30.0	57.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	1880.1	7.4				mg/L	3	Standard
Dy	164	39289.2	0.5				mg/L	6	Standard
Ho-1	165	25474.8	3.8				mg/L	12	Standard
Er	166	24663.4	4.9				mg/L	10	Standard
I	127	13752.9	2.4				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		81.942	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		105.497	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124801 WG604395-01

Report Date/Time: Tuesday, February 28, 2017 17:04:09

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	79.289
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	82.577
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Ti 47 Upper, S, EEE	Ti	47	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702124801 WG604395-01

Report Date/Time: Tuesday, February 28, 2017 17:04:09

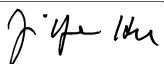
Page 3

Approved: March 01, 2017



Zn 66 Upper, S, EEE	Zn	66
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702124801 WG604395-01
Report Date/Time: Tuesday, February 28, 2017 17:04:09
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702124801S WG604395-04

Sample Date/Time: Tuesday, February 28, 2017 17:05:04

Number of Replicates: 3

Autosampler Position: 315

Sample Description: 1

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	216467.5	2.1				ug/L	250104	Standard
|	Be	9	34626.2	1.3	24.5973	0.772	3.1	ug/L	7	Standard
|	Al	27	12417761.6	1.8	117.8876	1.161	1.0	ug/L	597	Standard
|	Sc	45	54929.4	2.4				ug/L	41681	Standard
|	Ti	47	40661.2	0.6	212.0026	1.751	0.8	ug/L	86	Standard
|	V	51	395704.7	1.3	59.2914	0.437	0.7	ug/L	1740	Standard
|	Cr	52	395586.6	1.5	62.8229	0.586	0.9	ug/L	7178	Standard
|	Cr	53	50853.6	2.4	63.4424	1.535	2.4	ug/L	573	Standard
|	Mn	55	11825911.4	1.6	1163.0809	8.030	0.7	ug/L	3072	Standard
|	Co	59	457108.7	1.1	57.5003	0.205	0.4	ug/L	573	Standard
|	Ni	60	97307.1	0.8	57.5430	0.050	0.1	ug/L	264	Standard
|	Cu	65	109571.5	0.9	67.5663	0.198	0.3	ug/L	530	Standard
|	Zn	66	268099.8	0.2	289.1988	2.196	0.8	ug/L	252	Standard
>	Ge	72	690350.5	0.9				ug/L	641188	Standard
|	As	75	29419.3	1.1	31.6471	0.279	0.9	ug/L	-83	Standard
|	Se	82	1876.9	0.8	23.1008	0.396	1.7	ug/L	16	Standard
|	Se-1	77	1670.4	2.6	26.7867	0.622	2.3	ug/L	126	Standard
>	Ga	71	22902.3	2.1				mg/L	70	Standard
|	Rb	85	216313.5	1.8				ug/L	33	Standard
|	Y	89	813162.8	0.7				ug/L	493982	Standard
>	Rh	103	70.0	43.4				ug/L	17	Standard
|	Mo	98	2824.3	0.4	1.0725	0.042	3.9	ug/L	54	Standard
|	Ag	107	108970.8	0.9	24.4480	0.768	3.1	ug/L	137	Standard
|	Cd	111	30657.0	1.4	23.2049	0.636	2.7	mg/L	6	Standard
|	Cd	114	84886.7	3.9	23.4181	0.948	4.0	ug/L	20	Standard
>	In	115	627662.4	3.5				ug/L	755264	Standard
|	Sn	118	149.7	5.8	0.0546	0.017	32.0	ug/L	138	Standard
|	Sb	123	1892.0	2.7	0.4821	0.016	3.4	ug/L	391	Standard
|	Ba	135	424934.2	1.5	286.2460	10.278	3.6	ug/L	32	Standard
|	Ce	140	1477406.7	2.0				ug/L	42	Standard
>	Tb	159	917315.1	3.1				ug/L	966827	Standard
|	Ho	165	24731.8	1.8				ug/L	12	Standard
|	Tl	203	139194.5	1.3	24.6574	0.420	1.7	ug/L	19	Standard
|	Tl	205	325200.0	1.4	24.6413	0.509	2.1	ug/L	58	Standard
|	Pb	206	321068.8	1.3	72.0747	1.747	2.4	ug/L	464	Standard
|	Pb	207	270292.4	1.0	67.8123	1.581	2.3	ug/L	405	Standard
|	Pb	208	590036.3	0.9	67.8367	1.440	2.1	ug/L	876	Standard
|	U	238	188522.5	1.8	19.0501	0.222	1.2	ug/L	14	Standard
>	Bi	209	513823.1	2.5				ug/L	599146	Standard

Sample ID: L1702124801S WG604395-04

Report Date/Time: Tuesday, February 28, 2017 17:07:14

Page 1

Approved: March 01, 2017

Na	23	95.0	29.3	20.3552	6.109	30.0	mg/L	3	Standard
Mg	24	33.3	31.2	-0.0254	0.174	683.0	mg/L	30	Standard
K	39	268.3	14.1	2.4790	0.435	17.6	mg/L	10	Standard
Ca	43	186.7	5.6	42.4375	6.409	15.1	mg/L	83	Standard
Fe	54	3229.5	2.0	37.4907	1.068	2.8	mg/L	21	Standard
Fe	57	1536.7	2.0	48.9564	1.009	2.1	mg/L	240	Standard
Sc-1	45	54929.4	2.4				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	2.3	65.5				ug/L	5	Standard
Br	81	2090.1	7.4				ug/L	1587	Standard
P	31	63.3	19.9				ug/L	50	Standard
S	34	30.0	44.1				ug/L	8	Standard
Sr	88	198.3	6.3				ug/L	198	Standard
C	12	23.3	24.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	640.0	9.5				mg/L	3	Standard
Dy	164	38757.8	1.8				mg/L	6	Standard
Ho-1	165	24731.8	1.8				mg/L	12	Standard
Er	166	23895.5	3.2				mg/L	10	Standard
I	127	9599.7	4.0				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		86.551	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		107.667	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124801S WG604395-04

Report Date/Time: Tuesday, February 28, 2017 17:07:14

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.105
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.759
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Ti 47 Upper, S, EEE	Ti	47	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702124801S WG604395-04

Report Date/Time: Tuesday, February 28, 2017 17:07:14

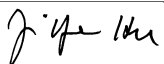
Page 3

Approved: March 01, 2017



Zn 66 Upper, S, EEE	Zn	66
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702124801S WG604395-04
Report Date/Time: Tuesday, February 28, 2017 17:07:14
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702124801SD WG604395-05

Sample Date/Time: Tuesday, February 28, 2017 17:08:09

Number of Replicates: 3

Autosampler Position: 316

Sample Description: 1

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	219652.4	0.7				ug/L	250104	Standard
|	Be	9	34908.5	3.2	24.4263	0.676	2.8	ug/L	7	Standard
|	Al	27	8573549.0	2.5	80.2054	1.975	2.5	ug/L	597	Standard
|	Sc	45	55722.3	0.6				ug/L	41681	Standard
|	Ti	47	51472.6	0.8	265.6688	1.153	0.4	ug/L	86	Standard
|	V	51	433481.3	1.5	64.2941	0.716	1.1	ug/L	1740	Standard
|	Cr	52	446992.6	1.2	70.3884	0.697	1.0	ug/L	7178	Standard
|	Cr	53	57465.5	1.9	71.0402	1.109	1.6	ug/L	573	Standard
|	Mn	55	10079046.2	1.1	980.8799	5.129	0.5	ug/L	3072	Standard
|	Co	59	461463.8	0.6	57.4413	0.211	0.4	ug/L	573	Standard
|	Ni	60	106776.6	1.4	62.4953	0.545	0.9	ug/L	264	Standard
|	Cu	65	119989.6	1.0	73.2469	0.384	0.5	ug/L	530	Standard
|	Zn	66	309320.1	1.2	330.1991	2.317	0.7	ug/L	252	Standard
>	Ge	72	697650.5	0.5				ug/L	641188	Standard
|	As	75	30024.0	1.2	31.9581	0.199	0.6	ug/L	-83	Standard
|	Se	82	1867.0	4.3	22.7336	1.043	4.6	ug/L	16	Standard
|	Se-1	77	1574.1	2.0	24.8256	0.553	2.2	ug/L	126	Standard
>	Ga	71	25194.3	0.7				mg/L	70	Standard
|	Rb	85	229458.5	2.6				ug/L	33	Standard
|	Y	89	790645.5	2.2				ug/L	493982	Standard
>	Rh	103	68.3	11.2				ug/L	17	Standard
|	Mo	98	3653.1	1.7	1.3629	0.023	1.7	ug/L	54	Standard
|	Ag	107	110429.6	0.4	24.2452	0.044	0.2	ug/L	137	Standard
|	Cd	111	30774.5	0.9	22.7979	0.173	0.8	mg/L	6	Standard
|	Cd	114	86436.7	1.3	23.3429	0.372	1.6	ug/L	20	Standard
>	In	115	640918.2	0.3				ug/L	755264	Standard
|	Sn	118	156.7	15.8	0.0590	0.031	52.4	ug/L	138	Standard
|	Sb	123	1527.9	0.8	0.3754	0.002	0.5	ug/L	391	Standard
|	Ba	135	375691.0	1.0	247.6503	3.117	1.3	ug/L	32	Standard
|	Ce	140	1323836.0	0.6				ug/L	42	Standard
>	Tb	159	945768.8	1.2				ug/L	966827	Standard
|	Ho	165	23486.5	2.0				ug/L	12	Standard
|	Tl	203	142233.8	0.5	24.5361	0.240	1.0	ug/L	19	Standard
|	Tl	205	330892.9	1.3	24.4155	0.407	1.7	ug/L	58	Standard
|	Pb	206	399161.6	1.8	87.2661	1.387	1.6	ug/L	464	Standard
|	Pb	207	334625.9	1.7	81.7673	1.771	2.2	ug/L	405	Standard
|	Pb	208	738367.0	1.0	82.6817	1.271	1.5	ug/L	876	Standard
|	U	238	194693.5	1.8	19.1602	0.352	1.8	ug/L	14	Standard
>	Bi	209	527536.3	1.1				ug/L	599146	Standard

Sample ID: L1702124801SD WG604395-05

Report Date/Time: Tuesday, February 28, 2017 17:10:20

Page 1

Approved: March 01, 2017

Na	23	56.7	31.0	11.7522	3.740	31.8	mg/L	3	Standard
Mg	24	41.7	50.0	0.0903	0.314	348.3	mg/L	30	Standard
K	39	331.7	7.1	3.0664	0.242	7.9	mg/L	10	Standard
Ca	43	150.0	11.5	25.1410	7.598	30.2	mg/L	83	Standard
Fe	54	3454.3	1.9	39.5317	0.828	2.1	mg/L	21	Standard
Fe	57	1560.1	6.7	49.0131	4.725	9.6	mg/L	240	Standard
Sc-1	45	55722.3	0.6				mg/L	41681	Standard
Cl	35	2.0	100.0				ug/L	2	Standard
Kr	83	3.7	31.5				ug/L	5	Standard
Br	81	2250.2	10.8				ug/L	1587	Standard
P	31	63.3	9.1				ug/L	50	Standard
S	34	38.3	37.7				ug/L	8	Standard
Sr	88	215.0	20.3				ug/L	198	Standard
C	12	26.7	78.1				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	606.7	13.3				mg/L	3	Standard
Dy	164	36151.7	1.7				mg/L	6	Standard
Ho-1	165	23486.5	2.0				mg/L	12	Standard
Er	166	22630.2	1.9				mg/L	10	Standard
I	127	10490.3	1.9				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		87.825	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		108.806	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124801SD WG604395-05

Report Date/Time: Tuesday, February 28, 2017 17:10:20

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	84.860
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	88.048
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Ti 47 Upper, S, EEE	Ti	47	
Mn 55 Upper, S, EEE	Mn	55	
Zn 66 Upper, S, EEE	Zn	66	

Sample ID: L1702124801SD WG604395-05

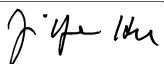
Report Date/Time: Tuesday, February 28, 2017 17:10:20

Page 3

Approved: March 01, 2017



Sample ID: L1702124801SD WG604395-05
Report Date/Time: Tuesday, February 28, 2017 17:10:20
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702124901

Sample Date/Time: Tuesday, February 28, 2017 17:11:14

Number of Replicates: 3

Autosampler Position: 317

Sample Description: 1

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	217887.7	2.2				ug/L	250104	Standard
|	Be	9	6921.6	9.0	4.8699	0.340	7.0	ug/L	7	Standard
|	Al	27	36923914.7	3.5	348.1706	4.716	1.4	ug/L	597	Standard
|	Sc	45	53688.4	5.0				ug/L	41681	Standard
|	Ti	47	51379.4	4.3	295.2993	6.180	2.1	ug/L	86	Standard
|	V	51	268989.1	4.2	44.3408	1.220	2.8	ug/L	1740	Standard
|	Cr	52	245712.3	3.9	42.6132	1.037	2.4	ug/L	7178	Standard
|	Cr	53	31122.0	4.4	42.4836	0.506	1.2	ug/L	573	Standard
|	Mn	55	17715175.9	3.8	1920.1284	43.961	2.3	ug/L	3072	Standard
|	Co	59	121789.8	2.9	16.8421	0.431	2.6	ug/L	573	Standard
|	Ni	60	90651.9	3.1	59.0859	1.514	2.6	ug/L	264	Standard
|	Cu	65	74520.6	3.3	50.5436	1.014	2.0	ug/L	530	Standard
|	Zn	66	263464.4	3.2	313.2131	6.950	2.2	ug/L	252	Standard
>	Ge	72	626621.4	3.8				ug/L	641188	Standard
|	As	75	18563.8	4.0	22.0152	0.471	2.1	ug/L	-83	Standard
|	Se	82	332.6	0.5	4.3305	0.160	3.7	ug/L	16	Standard
|	Se-1	77	464.0	5.0	6.6175	0.191	2.9	ug/L	126	Standard
>	Ga	71	18027.4	5.2				mg/L	70	Standard
|	Rb	85	184058.6	3.1				ug/L	33	Standard
|	Y	89	888735.6	2.5				ug/L	493982	Standard
>	Rh	103	266.7	4.3				ug/L	17	Standard
|	Mo	98	8181.2	4.2	3.4300	0.053	1.5	ug/L	54	Standard
|	Ag	107	22517.4	2.4	5.4888	0.063	1.1	ug/L	137	Standard
|	Cd	111	1142.2	7.4	0.9285	0.043	4.6	mg/L	6	Standard
|	Cd	114	3099.0	1.5	0.9230	0.034	3.7	ug/L	20	Standard
>	In	115	575443.6	3.0				ug/L	755264	Standard
|	Sn	118	297.7	2.7	0.2740	0.002	0.8	ug/L	138	Standard
|	Sb	123	182.1	12.6	0.0269	0.008	29.6	ug/L	391	Standard
|	Ba	135	466778.6	4.4	342.6181	5.767	1.7	ug/L	32	Standard
|	Ce	140	1653844.6	4.5				ug/L	42	Standard
>	Tb	159	904827.6	2.8				ug/L	966827	Standard
|	Ho	165	32296.1	3.5				ug/L	12	Standard
|	Tl	203	1734.8	2.3	0.3312	0.010	3.1	ug/L	19	Standard
|	Tl	205	4167.2	6.6	0.3444	0.011	3.3	ug/L	58	Standard
|	Pb	206	284882.9	4.4	70.2974	0.586	0.8	ug/L	464	Standard
|	Pb	207	233336.4	4.8	64.3388	0.697	1.1	ug/L	405	Standard
|	Pb	208	518015.3	3.8	65.4774	0.547	0.8	ug/L	876	Standard
|	U	238	38213.8	1.9	4.2474	0.110	2.6	ug/L	14	Standard
>	Bi	209	467252.6	4.2				ug/L	599146	Standard

Sample ID: L1702124901

Report Date/Time: Tuesday, February 28, 2017 17:13:24

Page 1

Approved: March 01, 2017

Na	23	658.3	9.1	147.0115	9.252	6.3	mg/L	3	Standard
Mg	24	81.7	25.5	0.7414	0.304	41.1	mg/L	30	Standard
K	39	386.7	3.3	3.7673	0.232	6.2	mg/L	10	Standard
Ca	43	760.0	5.4	304.7784	21.908	7.2	mg/L	83	Standard
Fe	54	3246.3	8.7	38.5171	1.915	5.0	mg/L	21	Standard
Fe	57	2553.5	3.8	94.4347	4.580	4.8	mg/L	240	Standard
Sc-1	45	53688.4	5.0				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	5.0	20.0				ug/L	5	Standard
Br	81	2666.9	8.8				ug/L	1587	Standard
P	31	58.3	19.8				ug/L	50	Standard
S	34	35.0	49.5				ug/L	8	Standard
Sr	88	208.3	25.0				ug/L	198	Standard
C	12	70.0	37.8				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	600.0	8.3				mg/L	3	Standard
Dy	164	46576.5	2.2				mg/L	6	Standard
Ho-1	165	32296.1	3.5				mg/L	12	Standard
Er	166	32494.8	1.7				mg/L	10	Standard
I	127	26140.9	3.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		87.119	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		97.728	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124901

Report Date/Time: Tuesday, February 28, 2017 17:13:24

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.191
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	77.986
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Ti 47 Upper, S, EEE	Ti	47	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702124901

Report Date/Time: Tuesday, February 28, 2017 17:13:24

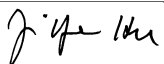
Page 3

Approved: March 01, 2017



Zn 66 Upper, S, EEE	Zn	66
Ba 135 Upper, S, EEE	Ba	135

Sample ID: L1702124901
Report Date/Time: Tuesday, February 28, 2017 17:13:24
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: L1702124901PS WG604524-01

Sample Date/Time: Tuesday, February 28, 2017 17:14:19

Number of Replicates: 3

Autosampler Position: 318

Sample Description: 1

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	221944.7	2.9				ug/L	250104	Standard
|	Be	9	71339.3	1.9	49.4337	1.194	2.4	ug/L	7	Standard
|	Al	27	36219428.5	1.7	335.4462	5.687	1.7	ug/L	597	Standard
|	Sc	45	53415.7	1.3				ug/L	41681	Standard
|	Ti	47	49595.1	2.5	282.8264	2.949	1.0	ug/L	86	Standard
|	V	51	558188.1	2.4	91.5851	0.802	0.9	ug/L	1740	Standard
|	Cr	52	512249.9	3.0	89.4302	0.488	0.5	ug/L	7178	Standard
|	Cr	53	64915.5	2.8	88.8696	0.367	0.4	ug/L	573	Standard
|	Mn	55	17682906.5	3.2	1901.2661	24.862	1.3	ug/L	3072	Standard
|	Co	59	475790.0	3.0	65.4319	0.734	1.1	ug/L	573	Standard
|	Ni	60	162247.0	3.2	105.0202	0.978	0.9	ug/L	264	Standard
|	Cu	65	142642.7	2.9	96.3104	0.833	0.9	ug/L	530	Standard
|	Zn	66	295523.1	2.9	348.5235	3.636	1.0	ug/L	252	Standard
>	Ge	72	631560.4	2.9				ug/L	641188	Standard
|	As	75	58316.6	4.3	68.5061	1.251	1.8	ug/L	-83	Standard
|	Se	82	3712.0	6.3	50.1669	1.756	3.5	ug/L	16	Standard
|	Se-1	77	3054.0	4.9	55.7902	1.632	2.9	ug/L	126	Standard
>	Ga	71	17405.0	2.4				mg/L	70	Standard
|	Rb	85	177807.0	4.6				ug/L	33	Standard
|	Y	89	872415.9	3.8				ug/L	493982	Standard
>	Rh	103	285.0	7.6				ug/L	17	Standard
|	Mo	98	7938.2	2.9	3.2820	0.115	3.5	ug/L	54	Standard
|	Ag	107	212718.0	3.5	51.3057	1.062	2.1	ug/L	137	Standard
|	Cd	111	56181.5	2.5	45.7160	0.452	1.0	mg/L	6	Standard
|	Cd	114	154603.6	3.1	45.8528	0.681	1.5	ug/L	20	Standard
>	In	115	583784.8	3.4				ug/L	755264	Standard
|	Sn	118	311.7	7.8	0.2868	0.023	8.1	ug/L	138	Standard
|	Sb	123	171469.4	2.7	49.5196	0.750	1.5	ug/L	391	Standard
|	Ba	135	529235.1	2.2	383.1444	7.427	1.9	ug/L	32	Standard
|	Ce	140	1632965.2	1.4				ug/L	42	Standard
>	Tb	159	936523.0	1.5				ug/L	966827	Standard
|	Ho	165	31815.0	2.1				ug/L	12	Standard
|	Tl	203	263712.3	1.7	50.4939	0.780	1.5	ug/L	19	Standard
|	Tl	205	615774.1	0.8	50.4278	0.373	0.7	ug/L	58	Standard
|	Pb	206	482148.6	1.7	117.0186	1.590	1.4	ug/L	464	Standard
|	Pb	207	409368.7	1.5	111.0438	1.563	1.4	ug/L	405	Standard
|	Pb	208	894063.4	0.8	111.1424	1.403	1.3	ug/L	876	Standard
|	U	238	416133.3	0.7	45.4558	0.668	1.5	ug/L	14	Standard
>	Bi	209	475321.0	1.0				ug/L	599146	Standard

Sample ID: L1702124901PS WG604524-01

Report Date/Time: Tuesday, February 28, 2017 17:16:30

Page 1

Approved: March 01, 2017

Na	23	663.3	8.8	149.0181	13.916	9.3	mg/L	3	Standard
Mg	24	61.7	9.4	0.4332	0.085	19.7	mg/L	30	Standard
K	39	346.7	9.8	3.3676	0.389	11.5	mg/L	10	Standard
Ca	43	755.0	8.7	304.1089	33.940	11.2	mg/L	83	Standard
Fe	54	3112.5	6.5	37.1307	2.124	5.7	mg/L	21	Standard
Fe	57	2525.2	1.6	93.6789	2.480	2.6	mg/L	240	Standard
Sc-1	45	53415.7	1.3				mg/L	41681	Standard
Cl	35	2.7	43.3				ug/L	2	Standard
Kr	83	6.0	44.1				ug/L	5	Standard
Br	81	2886.9	7.0				ug/L	1587	Standard
P	31	60.0	16.7				ug/L	50	Standard
S	34	25.0	60.0				ug/L	8	Standard
Sr	88	226.7	32.1				ug/L	198	Standard
C	12	36.7	87.7				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	530.0	5.7				mg/L	3	Standard
Dy	164	46086.4	3.3				mg/L	6	Standard
Ho-1	165	31815.0	2.1				mg/L	12	Standard
Er	166	31836.8	2.5				mg/L	10	Standard
I	127	25766.9	3.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		88.741	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		98.498	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124901PS WG604524-01

Report Date/Time: Tuesday, February 28, 2017 17:16:30

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.295
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	79.333
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Al 27 Upper, S, EEE	Al	27	
Ti 47 Upper, S, EEE	Ti	47	
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702124901PS WG604524-01

Report Date/Time: Tuesday, February 28, 2017 17:16:30

Page 3

Approved: March 01, 2017



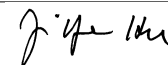
Ni 60 Upper, S, EEE	Ni	60
Zn 66 Upper, S, EEE	Zn	66
Ba 135 Upper, S, EEE	Ba	135
Pb 206 Upper, S, EEE	Pb	206
Pb 207 Upper, S, EEE	Pb	207
Pb 208 Upper, S, EEE	Pb	208

Sample ID: L1702124901PS WG604524-01

Report Date/Time: Tuesday, February 28, 2017 17:16:30

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702124901SDL WG604524-02

Sample Date/Time: Tuesday, February 28, 2017 17:17:25

Number of Replicates: 3

Autosampler Position: 319

Sample Description: 5

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	201678.6	1.7				ug/L	250104	Standard
|	Be	9	1436.7	3.5	1.0852	0.035	3.2	ug/L	7	Standard
|	Al	27	7352415.1	1.0	74.9176	0.784	1.0	ug/L	597	Standard
|	Sc	45	44625.6	1.3				ug/L	41681	Standard
|	Ti	47	10119.4	1.0	57.9796	0.554	1.0	ug/L	86	Standard
|	V	51	54648.8	1.9	8.8172	0.222	2.5	ug/L	1740	Standard
|	Cr	52	54294.8	1.7	8.4966	0.213	2.5	ug/L	7178	Standard
|	Cr	53	7170.0	4.7	9.1472	0.444	4.9	ug/L	573	Standard
|	Mn	55	3553624.0	0.7	386.1271	4.368	1.1	ug/L	3072	Standard
|	Co	59	25003.3	0.9	3.4190	0.054	1.6	ug/L	573	Standard
|	Ni	60	18636.1	2.3	12.0420	0.333	2.8	ug/L	264	Standard
|	Cu	65	15948.7	1.2	10.5536	0.187	1.8	ug/L	530	Standard
|	Zn	66	56751.8	1.6	67.3971	1.461	2.2	ug/L	252	Standard
>	Ge	72	624585.9	0.7				ug/L	641188	Standard
|	As	75	3707.8	1.6	4.4452	0.091	2.0	ug/L	-83	Standard
|	Se	82	85.2	16.9	0.9427	0.204	21.7	ug/L	16	Standard
|	Se-1	77	242.7	6.9	2.3932	0.351	14.7	ug/L	126	Standard
>	Ga	71	3735.5	3.0				mg/L	70	Standard
|	Rb	85	35185.8	0.5				ug/L	33	Standard
|	Y	89	511704.8	2.1				ug/L	493982	Standard
>	Rh	103	81.7	24.7				ug/L	17	Standard
|	Mo	98	1620.2	1.7	0.6589	0.011	1.7	ug/L	54	Standard
|	Ag	107	4771.8	2.7	1.1377	0.030	2.7	ug/L	137	Standard
|	Cd	111	231.9	3.0	0.1768	0.008	4.7	mg/L	6	Standard
|	Cd	114	817.0	4.9	0.2345	0.016	7.0	ug/L	20	Standard
>	In	115	578769.7	1.8				ug/L	755264	Standard
|	Sn	118	1541.4	4.9	1.9645	0.078	4.0	ug/L	138	Standard
|	Sb	123	420.0	18.7	0.0957	0.022	23.3	ug/L	391	Standard
|	Ba	135	94077.2	1.4	68.6574	0.766	1.1	ug/L	32	Standard
|	Ce	140	343460.5	2.3				ug/L	42	Standard
>	Tb	159	858022.8	0.5				ug/L	966827	Standard
|	Ho	165	6349.7	0.7				ug/L	12	Standard
|	Tl	203	390.3	8.6	0.0661	0.006	9.5	ug/L	19	Standard
|	Tl	205	866.7	8.1	0.0668	0.006	9.1	ug/L	58	Standard
|	Pb	206	58393.7	1.2	13.7660	0.298	2.2	ug/L	464	Standard
|	Pb	207	47710.7	2.2	12.5664	0.391	3.1	ug/L	405	Standard
|	Pb	208	106252.1	1.3	12.8289	0.291	2.3	ug/L	876	Standard
|	U	238	7297.1	1.7	0.7772	0.022	2.8	ug/L	14	Standard
>	Bi	209	486464.9	1.0				ug/L	599146	Standard

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:19:35

Page 1

Approved: March 01, 2017

Na	23	116.7	17.8	30.9689	5.484	17.7	mg/L	3	Standard
Mg	24	26.7	92.5	-0.0389	0.458	1176.2	mg/L	30	Standard
K	39	105.0	19.0	1.0665	0.254	23.8	mg/L	10	Standard
Ca	43	181.7	1.6	58.7324	1.900	3.2	mg/L	83	Standard
Fe	54	702.5	1.8	9.8528	0.046	0.5	mg/L	21	Standard
Fe	57	830.0	4.2	27.2382	2.326	8.5	mg/L	240	Standard
Sc-1	45	44625.6	1.3				mg/L	41681	Standard
Cl	35	1.3	173.2				ug/L	2	Standard
Kr	83	3.7	41.7				ug/L	5	Standard
Br	81	1810.1	3.3				ug/L	1587	Standard
P	31	48.3	21.5				ug/L	50	Standard
S	34	40.0	12.5				ug/L	8	Standard
Sr	88	256.7	36.8				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	113.3	20.4				mg/L	3	Standard
Dy	164	8895.0	3.0				mg/L	6	Standard
Ho-1	165	6349.7	0.7				mg/L	12	Standard
Er	166	6147.9	4.3				mg/L	10	Standard
I	127	9781.5	3.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		80.638	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		97.411	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:19:35

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	76.631
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	81.193
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
Mn 55 Upper, S, EEE	Mn	55	

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:19:35

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 17:20:31

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	215630.3	1.1				ug/L	250104	Standard
|	Be	9	66924.2	2.1	47.7110	0.486	1.0	ug/L	7	Standard
|	Al	27	4903843.8	2.2	46.7253	0.607	1.3	ug/L	597	Standard
|	Sc	45	46518.0	2.3				ug/L	41681	Standard
|	Ti	47	20641.7	1.6	105.9486	2.921	2.8	ug/L	86	Standard
|	V	51	324498.5	2.1	47.9223	1.611	3.4	ug/L	1740	Standard
|	Cr	52	305352.3	1.4	47.5545	1.307	2.7	ug/L	7178	Standard
|	Cr	53	38871.5	1.3	47.6290	1.260	2.6	ug/L	573	Standard
|	Mn	55	496145.4	1.3	47.8514	1.246	2.6	ug/L	3072	Standard
|	Co	59	395632.0	1.3	49.0925	1.246	2.5	ug/L	573	Standard
|	Ni	60	84215.8	1.2	49.1085	1.231	2.5	ug/L	264	Standard
|	Cu	65	81517.0	1.0	49.4927	1.169	2.4	ug/L	530	Standard
|	Zn	66	44156.9	0.5	46.6938	0.718	1.5	ug/L	252	Standard
>	Ge	72	699869.9	1.3				ug/L	641188	Standard
|	As	75	44171.8	0.9	46.8586	1.045	2.2	ug/L	-83	Standard
|	Se	82	3813.7	2.2	46.5364	1.545	3.3	ug/L	16	Standard
|	Se-1	77	2954.3	2.6	48.4201	0.629	1.3	ug/L	126	Standard
>	Ga	71	106.7	17.7				mg/L	70	Standard
|	Rb	85	690.0	10.0				ug/L	33	Standard
|	Y	89	480081.1	1.1				ug/L	493982	Standard
>	Rh	103	48.3	31.6				ug/L	17	Standard
|	Mo	98	261044.0	0.3	98.1722	1.736	1.8	ug/L	54	Standard
|	Ag	107	216729.3	1.4	47.2805	1.345	2.8	ug/L	137	Standard
|	Cd	111	59361.6	0.4	43.6831	0.818	1.9	mg/L	6	Standard
|	Cd	114	171657.4	1.3	46.0461	1.157	2.5	ug/L	20	Standard
>	In	115	645518.9	1.6				ug/L	755264	Standard
|	Sn	118	40391.5	2.7	49.1962	2.071	4.2	ug/L	138	Standard
|	Sb	123	182736.0	1.1	47.7255	1.066	2.2	ug/L	391	Standard
|	Ba	135	78152.4	1.1	51.1401	1.325	2.6	ug/L	32	Standard
|	Ce	140	95.0	38.0				ug/L	42	Standard
>	Tb	159	903079.7	1.5				ug/L	966827	Standard
|	Ho	165	15.0	33.3				ug/L	12	Standard
|	Tl	203	278419.4	1.3	48.7709	1.139	2.3	ug/L	19	Standard
|	Tl	205	643961.1	1.2	48.2384	0.484	1.0	ug/L	58	Standard
|	Pb	206	218566.4	1.5	48.4758	1.226	2.5	ug/L	464	Standard
|	Pb	207	195955.7	0.7	48.5741	0.790	1.6	ug/L	405	Standard
|	Pb	208	416797.5	0.5	47.3444	0.596	1.3	ug/L	876	Standard
|	U	238	362710.1	0.4	36.2400	0.331	0.9	ug/L	14	Standard
>	Bi	209	519634.7	1.0				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:22:42

Page 1

Approved: March 01, 2017

Na	23	11.7	65.5	2.5574	2.041	79.8	mg/L	3	Standard
Mg	24	285.0	9.3	4.6348	0.592	12.8	mg/L	30	Standard
K	39	660.0	5.3	7.6491	0.518	6.8	mg/L	10	Standard
Ca	43	36.7	7.9	-21.2155	1.633	7.7	mg/L	83	Standard
Fe	54	378.4	10.4	4.9708	0.535	10.8	mg/L	21	Standard
Fe	57	530.0	6.6	10.5569	2.320	22.0	mg/L	240	Standard
Sc-1	45	46518.0	2.3				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.7	41.7				ug/L	5	Standard
Br	81	1916.8	9.1				ug/L	1587	Standard
P	31	73.3	7.9				ug/L	50	Standard
S	34	40.0	33.1				ug/L	8	Standard
Sr	88	216.7	15.0				ug/L	198	Standard
C	12	6.7	86.6				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	10.0	100.0				mg/L	3	Standard
Dy	164	16.0	67.7				mg/L	6	Standard
Ho-1	165	15.0	33.3				mg/L	12	Standard
Er	166	13.3	114.6				mg/L	10	Standard
I	127	4954.1	3.6				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	95.422		
Al	27	93.451		
Sc	45			
Ti	47	105.949		
V	51	95.845		
Cr	52	95.109		
Cr	53			
Mn	55	95.703		
Co	59	98.185		
Ni	60	98.217		
Cu	65	98.985		
Zn	66	93.388		
Ge	72		109.152	
As	75	93.717		
Se	82	93.073		
Se-1	77			
Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:22:42

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	98.172	
[	Ag	107	94.561	
[	Cd	111	87.366	
[	Cd	114		
>	In	115		85.469
[	Sn	118	98.392	
[	Sb	123	95.451	
[	Ba	135	102.280	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	97.542	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	94.689	
[	U	238	72.480	
>	Bi	209		86.729
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:22:42

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 17:23:36

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	200302.6	2.7				ug/L	250104	Standard
|	Be	9	40.0	25.0	0.0206	0.008	40.9	ug/L	7	Standard
|	Al	27	4709.3	75.9	0.0426	0.037	87.6	ug/L	597	Standard
|	Sc	45	43276.7	2.5				ug/L	41681	Standard
|	Ti	47	33.0	16.9	-0.2761	0.031	11.2	ug/L	86	Standard
|	V	51	1647.6	7.1	-0.0079	0.021	264.8	ug/L	1740	Standard
|	Cr	52	6857.2	1.4	-0.0178	0.007	38.9	ug/L	7178	Standard
|	Cr	53	1231.7	1.9	0.8121	0.052	6.4	ug/L	573	Standard
|	Mn	55	4269.0	53.4	0.1489	0.244	163.5	ug/L	3072	Standard
|	Co	59	385.0	11.5	-0.0088	0.006	73.7	ug/L	573	Standard
|	Ni	60	188.3	8.1	-0.0565	0.011	19.9	ug/L	264	Standard
|	Cu	65	643.3	7.9	0.0536	0.029	53.8	ug/L	530	Standard
|	Zn	66	282.0	6.8	-0.0217	0.018	84.6	ug/L	252	Standard
>	Ge	72	637646.5	1.3				ug/L	641188	Standard
|	As	75	-31.2	83.7	0.0062	0.030	483.9	ug/L	-83	Standard
|	Se	82	11.6	12.8	-0.0722	0.019	25.8	ug/L	16	Standard
|	Se-1	77	173.7	11.0	1.0001	0.401	40.1	ug/L	126	Standard
>	Ga	71	70.0	28.6				mg/L	70	Standard
|	Rb	85	85.0	59.7				ug/L	33	Standard
|	Y	89	450013.6	0.5				ug/L	493982	Standard
>	Rh	103	30.0	66.7				ug/L	17	Standard
|	Mo	98	203.1	17.8	0.0621	0.013	21.6	ug/L	54	Standard
|	Ag	107	162.0	38.7	0.0147	0.015	99.5	ug/L	137	Standard
|	Cd	111	18.7	80.7	0.0013	0.012	897.5	mg/L	6	Standard
|	Cd	114	70.2	45.5	0.0103	0.009	88.1	ug/L	20	Standard
>	In	115	593109.8	1.8				ug/L	755264	Standard
|	Sn	118	117.7	8.1	0.0225	0.010	46.2	ug/L	138	Standard
|	Sb	123	783.2	16.9	0.1964	0.040	20.3	ug/L	391	Standard
|	Ba	135	677.0	153.0	0.4514	0.731	161.9	ug/L	32	Standard
|	Ce	140	188.3	111.8				ug/L	42	Standard
>	Tb	159	827936.6	0.7				ug/L	966827	Standard
|	Ho	165	15.0	88.2				ug/L	12	Standard
|	Tl	203	80.7	83.4	0.0081	0.013	156.1	ug/L	19	Standard
|	Tl	205	173.3	83.4	0.0112	0.012	103.7	ug/L	58	Standard
|	Pb	206	425.0	18.1	0.0054	0.019	345.4	ug/L	464	Standard
|	Pb	207	389.3	9.6	0.0109	0.011	96.2	ug/L	405	Standard
|	Pb	208	805.0	12.5	0.0088	0.013	144.7	ug/L	876	Standard
|	U	238	81.7	58.4	0.0070	0.005	73.2	ug/L	14	Standard
>	Bi	209	490033.9	0.7				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:25:47

Page 1

Approved: March 01, 2017

Na	23	0.0		-0.4780	0.000	0.0	mg/L	3	Standard
Mg	24	21.7	58.1	-0.1156	0.248	214.4	mg/L	30	Standard
K	39	38.3	60.2	0.2506	0.298	118.9	mg/L	10	Standard
Ca	43	41.7	13.9	-16.9145	3.754	22.2	mg/L	83	Standard
Fe	54	20.9	70.0	0.0644	0.222	344.2	mg/L	21	Standard
Fe	57	433.3	6.6	7.3136	1.126	15.4	mg/L	240	Standard
Sc-1	45	43276.7	2.5				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	4.0	25.0				ug/L	5	Standard
Br	81	1760.1	2.5				ug/L	1587	Standard
P	31	60.0	36.3				ug/L	50	Standard
S	34	28.3	27.0				ug/L	8	Standard
Sr	88	206.7	14.6				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	15.4	79.5				mg/L	6	Standard
Ho-1	165	15.0	88.2				mg/L	12	Standard
Er	166	26.7	57.3				mg/L	10	Standard
I	127	6704.8	8.8				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		99.448	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:25:47

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	78.530
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	81.789
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
In 115 Int Std for QC Std	In	115	Rerun sample
QC Std 7	Ba	135	

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:25:47

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: L1702124901SDL WG604524-02

Sample Date/Time: Tuesday, February 28, 2017 17:26:43

Number of Replicates: 3

Autosampler Position: 320

Sample Description: 25

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	197964.9	0.1				ug/L	250104	Standard
|	Be	9	281.7	11.5	0.2085	0.025	12.1	ug/L	7	Standard
|	Al	27	1323189.3	0.9	13.7293	0.123	0.9	ug/L	597	Standard
|	Sc	45	45071.9	1.0				ug/L	41681	Standard
|	Ti	47	1995.8	2.0	10.7536	0.259	2.4	ug/L	86	Standard
|	V	51	11969.0	0.9	1.6614	0.034	2.0	ug/L	1740	Standard
|	Cr	52	15763.2	1.7	1.5248	0.025	1.7	ug/L	7178	Standard
|	Cr	53	2213.5	1.4	2.1359	0.027	1.3	ug/L	573	Standard
|	Mn	55	649759.7	1.8	68.4517	1.714	2.5	ug/L	3072	Standard
|	Co	59	5146.9	2.4	0.6359	0.022	3.4	ug/L	573	Standard
|	Ni	60	3869.8	0.6	2.2913	0.021	0.9	ug/L	264	Standard
|	Cu	65	3713.8	3.3	2.0986	0.073	3.5	ug/L	530	Standard
|	Zn	66	12324.3	0.6	13.9645	0.202	1.4	ug/L	252	Standard
>	Ge	72	641885.8	0.8				ug/L	641188	Standard
|	As	75	699.2	6.0	0.8500	0.046	5.5	ug/L	-83	Standard
|	Se	82	27.1	21.3	0.1352	0.080	58.9	ug/L	16	Standard
|	Se-1	77	174.3	7.2	0.9889	0.261	26.4	ug/L	126	Standard
>	Ga	71	700.0	6.5				mg/L	70	Standard
|	Rb	85	7286.8	3.9				ug/L	33	Standard
|	Y	89	451641.7	1.4				ug/L	493982	Standard
>	Rh	103	26.7	47.2				ug/L	17	Standard
|	Mo	98	347.6	1.5	0.1238	0.004	3.3	ug/L	54	Standard
|	Ag	107	1045.7	1.6	0.2288	0.005	2.2	ug/L	137	Standard
|	Cd	111	53.6	27.6	0.0298	0.011	37.2	mg/L	6	Standard
|	Cd	114	318.4	20.2	0.0842	0.018	21.0	ug/L	20	Standard
>	In	115	583513.2	2.6				ug/L	755264	Standard
|	Sn	118	1800.4	4.9	2.3009	0.185	8.0	ug/L	138	Standard
|	Sb	123	94.2	16.9	0.0006	0.004	699.2	ug/L	391	Standard
|	Ba	135	18189.9	0.4	13.1494	0.331	2.5	ug/L	32	Standard
|	Ce	140	67439.8	3.0				ug/L	42	Standard
>	Tb	159	843317.6	2.9				ug/L	966827	Standard
|	Ho	165	1233.4	5.7				ug/L	12	Standard
|	Tl	203	78.7	13.7	0.0074	0.002	31.1	ug/L	19	Standard
|	Tl	205	206.7	22.0	0.0135	0.003	23.8	ug/L	58	Standard
|	Pb	206	11866.6	0.8	2.6544	0.080	3.0	ug/L	464	Standard
|	Pb	207	9559.0	1.0	2.3837	0.084	3.5	ug/L	405	Standard
|	Pb	208	21383.3	1.0	2.4489	0.077	3.2	ug/L	876	Standard
|	U	238	1408.1	2.2	0.1450	0.004	2.7	ug/L	14	Standard
>	Bi	209	498567.6	2.4				ug/L	599146	Standard

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:28:54

Page 1

Approved: March 01, 2017

Na	23	30.0	28.9	7.5200	2.236	29.7	mg/L	3	Standard
Mg	24	23.3	53.9	-0.1018	0.240	235.5	mg/L	30	Standard
K	39	40.0	78.1	0.2520	0.388	153.9	mg/L	10	Standard
Ca	43	56.7	27.0	-9.8118	8.164	83.2	mg/L	83	Standard
Fe	54	139.2	7.0	1.7328	0.128	7.4	mg/L	21	Standard
Fe	57	541.7	10.8	11.9768	3.117	26.0	mg/L	240	Standard
Sc-1	45	45071.9	1.0				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.0	66.7				ug/L	5	Standard
Br	81	1563.4	12.3				ug/L	1587	Standard
P	31	55.0	32.8				ug/L	50	Standard
S	34	33.3	22.9				ug/L	8	Standard
Sr	88	230.0	13.0				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	20.0	50.0				mg/L	3	Standard
Dy	164	1655.6	5.2				mg/L	6	Standard
Ho-1	165	1233.4	5.7				mg/L	12	Standard
Er	166	1136.7	6.0				mg/L	10	Standard
I	127	5981.2	2.5				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6		79.153	
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		100.109	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:28:54

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	77.259
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	83.213
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: L1702124901SDL WG604524-02

Report Date/Time: Tuesday, February 28, 2017 17:28:54

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 4

Sample Date/Time: Tuesday, February 28, 2017 17:29:49

Number of Replicates: 3

Autosampler Position: 203

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	215453.4	4.9				ug/L	250104	Standard
|	Be	9	20.0	43.3	0.0042	0.007	158.4	ug/L	7	Standard
|	Al	27	4590262.8	4.8	43.7809	0.717	1.6	ug/L	597	Standard
|	Sc	45	46140.3	5.1				ug/L	41681	Standard
|	Ti	47	20102.7	2.4	108.4709	2.895	2.7	ug/L	86	Standard
|	V	51	1400.3	9.4	-0.0574	0.027	47.5	ug/L	1740	Standard
|	Cr	52	8708.8	2.0	0.2428	0.049	20.3	ug/L	7178	Standard
|	Cr	53	2218.5	11.8	2.0289	0.253	12.5	ug/L	573	Standard
|	Mn	55	4269.6	1.8	0.1293	0.011	8.3	ug/L	3072	Standard
|	Co	59	602.7	1.8	0.0174	0.001	7.9	ug/L	573	Standard
|	Ni	60	677.3	3.3	0.2395	0.025	10.4	ug/L	264	Standard
|	Cu	65	855.0	7.6	0.1711	0.024	14.0	ug/L	530	Standard
|	Zn	66	797.0	2.0	0.5413	0.012	2.3	ug/L	252	Standard
>	Ge	72	665919.2	3.3				ug/L	641188	Standard
|	As	75	-10.5	158.8	0.0305	0.019	62.1	ug/L	-83	Standard
|	Se	82	16.6	7.4	-0.0137	0.022	162.1	ug/L	16	Standard
|	Se-1	77	299.7	15.5	3.1176	0.671	21.5	ug/L	126	Standard
>	Ga	71	126.7	23.1				mg/L	70	Standard
|	Rb	85	663.3	9.4				ug/L	33	Standard
|	Y	89	448588.8	3.4				ug/L	493982	Standard
>	Rh	103	16.7	17.3				ug/L	17	Standard
|	Mo	98	240387.7	0.9	92.2510	2.476	2.7	ug/L	54	Standard
|	Ag	107	134.3	18.5	0.0063	0.007	103.7	ug/L	137	Standard
|	Cd	111	48.2	35.5	0.0225	0.012	54.6	mg/L	6	Standard
|	Cd	114	836.7	3.8	0.2191	0.013	5.7	ug/L	20	Standard
>	In	115	632851.4	3.4				ug/L	755264	Standard
|	Sn	118	122.7	17.4	0.0192	0.028	144.5	ug/L	138	Standard
|	Sb	123	263.9	18.3	0.0435	0.010	24.0	ug/L	391	Standard
|	Ba	135	129.7	18.7	0.0588	0.014	24.1	ug/L	32	Standard
|	Ce	140	325.0	4.1				ug/L	42	Standard
>	Tb	159	900708.2	4.1				ug/L	966827	Standard
|	Ho	165	21.7	133.2				ug/L	12	Standard
|	Tl	203	197.0	4.2	0.0280	0.002	6.2	ug/L	19	Standard
|	Tl	205	485.0	10.9	0.0343	0.005	14.0	ug/L	58	Standard
|	Pb	206	1568.4	4.5	0.2584	0.005	1.8	ug/L	464	Standard
|	Pb	207	1357.4	3.5	0.2500	0.004	1.4	ug/L	405	Standard
|	Pb	208	2956.4	3.4	0.2527	0.005	2.1	ug/L	876	Standard
|	U	238	16.0	62.5	-0.0001	0.001	1673.7	ug/L	14	Standard
>	Bi	209	512702.2	3.9				ug/L	599146	Standard

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 17:32:00

Page 1

Approved: March 01, 2017

Na	23	48.3	15.8	12.2168	2.595	21.2	mg/L	3	Standard
Mg	24	656.7	7.8	11.4527	0.514	4.5	mg/L	30	Standard
K	39	585.0	8.9	6.8099	0.617	9.1	mg/L	10	Standard
Ca	43	80.0	22.5	2.1971	11.474	522.2	mg/L	83	Standard
Fe	54	792.5	4.8	10.7741	0.176	1.6	mg/L	21	Standard
Fe	57	726.7	3.4	20.7041	2.812	13.6	mg/L	240	Standard
Sc-1	45	46140.3	5.1				mg/L	41681	Standard
Cl	35	0.0					ug/L	2	Standard
Kr	83	4.0	50.0				ug/L	5	Standard
Br	81	1890.1	8.7				ug/L	1587	Standard
P	31	68.3	15.2				ug/L	50	Standard
S	34	25.0	69.3				ug/L	8	Standard
Sr	88	218.3	10.3				ug/L	198	Standard
C	12	3.3	173.2				mg/L	33	Standard
N	14	6.7	173.2				mg/L	0	Standard
Hg	202	23.3	24.7				mg/L	3	Standard
Dy	164	13.0	40.1				mg/L	6	Standard
Ho-1	165	21.7	133.2				mg/L	12	Standard
Er	166	6.7	173.2				mg/L	10	Standard
I	127	4907.5	0.7				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27	0.876		
Sc	45			
Ti	47	108.471		
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		103.857	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 17:32:00

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	92.251	
[	Ag	107		
[	Cd	111		
[	Cd	114		
>	In	115		83.792
[	Sn	118		
[	Sb	123		
[	Ba	135		
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203		
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208		
[	U	238		
>	Bi	209		85.572
[	Na	23	97.735	
[	Mg	24	229.054	
[	K	39	136.197	
[	Ca	43	14.648	
[	Fe	54	86.193	
[	Fe	57	165.633	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 4	Al	27	
QC Std 4	Mg	24	
QC Std 4	K	39	

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 17:32:00

Page 3

Approved: March 01, 2017



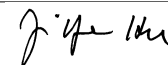
QC Std 4	Ca	43
QC Std 4	Fe	57

Sample ID: QC Std 4

Report Date/Time: Tuesday, February 28, 2017 17:32:00

Page 4

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 5

Sample Date/Time: Tuesday, February 28, 2017 17:32:54

Number of Replicates: 3

Autosampler Position: 204

Sample Description:

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	238713.1	2.4				ug/L	250104	Standard
|	Be	9	152891.2	2.5	98.4764	0.685	0.7	ug/L	7	Standard
|	Al	27	5341474.1	3.0	45.9739	0.635	1.4	ug/L	597	Standard
|	Sc	45	47974.2	0.9				ug/L	41681	Standard
|	Ti	47	21756.3	1.7	116.0148	1.312	1.1	ug/L	86	Standard
|	V	51	654510.4	2.1	100.6724	0.859	0.9	ug/L	1740	Standard
|	Cr	52	605555.3	2.0	99.2266	0.889	0.9	ug/L	7178	Standard
|	Cr	53	82832.6	2.7	106.4503	1.440	1.4	ug/L	573	Standard
|	Mn	55	991812.3	2.2	99.6638	0.778	0.8	ug/L	3072	Standard
|	Co	59	773364.0	2.0	99.7197	0.880	0.9	ug/L	573	Standard
|	Ni	60	164167.0	2.7	99.5833	0.646	0.6	ug/L	264	Standard
|	Cu	65	157379.0	1.8	99.6128	1.030	1.0	ug/L	530	Standard
|	Zn	66	90613.2	2.2	99.9104	0.960	1.0	ug/L	252	Standard
>	Ge	72	673897.4	2.8				ug/L	641188	Standard
|	As	75	86682.4	1.7	95.4623	1.631	1.7	ug/L	-83	Standard
|	Se	82	7386.1	1.0	93.8408	1.821	1.9	ug/L	16	Standard
|	Se-1	77	6173.9	1.5	107.8062	2.643	2.5	ug/L	126	Standard
>	Ga	71	180.0	21.7				mg/L	70	Standard
|	Rb	85	708.4	17.4				ug/L	33	Standard
|	Y	89	462457.4	2.4				ug/L	493982	Standard
>	Rh	103	60.0	46.4				ug/L	17	Standard
|	Mo	98	254777.6	2.2	94.0880	0.688	0.7	ug/L	54	Standard
|	Ag	107	260759.9	3.3	55.8499	0.587	1.1	ug/L	137	Standard
|	Cd	111	127121.9	1.8	91.8787	0.375	0.4	mg/L	6	Standard
|	Cd	114	352616.3	0.5	92.9182	2.160	2.3	ug/L	20	Standard
>	In	115	657257.9	2.2				ug/L	755264	Standard
|	Sn	118	243.7	6.4	0.1585	0.018	11.4	ug/L	138	Standard
|	Sb	123	388260.1	2.1	99.6018	0.161	0.2	ug/L	391	Standard
|	Ba	135	162280.0	1.9	104.3016	0.777	0.7	ug/L	32	Standard
|	Ce	140	180.0	14.4				ug/L	42	Standard
>	Tb	159	951928.3	2.4				ug/L	966827	Standard
|	Ho	165	43.3	17.6				ug/L	12	Standard
|	Tl	203	570438.1	1.6	97.2924	1.041	1.1	ug/L	19	Standard
|	Tl	205	1331875.8	1.0	97.1651	1.964	2.0	ug/L	58	Standard
|	Pb	206	451366.2	1.3	97.5655	1.417	1.5	ug/L	464	Standard
|	Pb	207	407060.9	1.0	98.3471	1.527	1.6	ug/L	405	Standard
|	Pb	208	877519.0	1.6	97.1479	1.202	1.2	ug/L	876	Standard
|	U	238	824714.4	2.5	80.2230	0.486	0.6	ug/L	14	Standard
>	Bi	209	533729.6	2.5				ug/L	599146	Standard

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 17:35:05

Page 1

Approved: March 01, 2017

Na	23	28.3	56.7	6.6096	4.000	60.5	mg/L	3	Standard
Mg	24	738.4	6.9	12.4422	1.004	8.1	mg/L	30	Standard
K	39	650.0	12.4	7.2855	0.894	12.3	mg/L	10	Standard
Ca	43	91.7	22.0	6.1427	10.487	170.7	mg/L	83	Standard
Fe	54	820.3	9.5	10.7259	1.100	10.3	mg/L	21	Standard
Fe	57	703.3	2.5	18.0997	1.157	6.4	mg/L	240	Standard
Sc-1	45	47974.2	0.9				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	3.7	63.0				ug/L	5	Standard
Br	81	1910.1	3.2				ug/L	1587	Standard
P	31	61.7	30.7				ug/L	50	Standard
S	34	30.0	28.9				ug/L	8	Standard
Sr	88	261.7	12.7				ug/L	198	Standard
C	12	23.3	49.5				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	6.7	86.6				mg/L	3	Standard
Dy	164	15.9	34.6				mg/L	6	Standard
Ho-1	165	43.3	17.6				mg/L	12	Standard
Er	166	16.7	34.6				mg/L	10	Standard
I	127	4444.0	1.1				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9	98.476		
Al	27	0.919		
Sc	45			
Ti	47	116.015		
V	51	100.672		
Cr	52	99.227		
Cr	53			
Mn	55	99.664		
Co	59	99.720		
Ni	60	99.583		
Cu	65	99.613		
Zn	66	99.910		
Ge	72		105.101	
As	75	95.462		
Se	82	93.841		
Se-1	77			
Ga	71			

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 17:35:05

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	94.088	
[	Ag	107	55.850	
[	Cd	111	91.879	
[	Cd	114		
>	In	115		87.024
[	Sn	118		
[	Sb	123	99.602	
[	Ba	135	104.302	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	97.292	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	97.148	
[	U	238	80.223	
>	Bi	209		89.082
[	Na	23	52.877	
[	Mg	24	248.843	
[	K	39	145.710	
[	Ca	43	40.951	
[	Fe	54	85.807	
[	Fe	57	144.797	
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 5	Al	27	
QC Std 5	Ag	107	
QC Std 5	Na	23	

Sample ID: QC Std 5

Report Date/Time: Tuesday, February 28, 2017 17:35:05

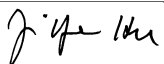
Page 3

Approved: March 01, 2017



QC Std 5	Mg	24
QC Std 5	K	39
QC Std 5	Ca	43
QC Std 5	Fe	57

Sample ID: QC Std 5
Report Date/Time: Tuesday, February 28, 2017 17:35:05
Page 4

Approved: March 01, 2017


Method 6020 - Summary Report

Sample ID: QC Std 6

Sample Date/Time: Tuesday, February 28, 2017 17:36:57

Number of Replicates: 3

Autosampler Position: 101

Sample Description:

Method File: C:\NexIONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	230298.8	1.0				ug/L	250104	Standard
|	Be	9	70776.7	3.0	47.2502	1.494	3.2	ug/L	7	Standard
|	Al	27	5144496.6	2.4	45.9029	1.259	2.7	ug/L	597	Standard
|	Sc	45	49226.5	1.9				ug/L	41681	Standard
|	Ti	47	20972.2	0.6	105.3601	1.401	1.3	ug/L	86	Standard
|	V	51	329180.8	2.0	47.5812	1.288	2.7	ug/L	1740	Standard
|	Cr	52	309698.0	1.1	47.2006	0.874	1.9	ug/L	7178	Standard
|	Cr	53	40803.2	3.3	48.9666	2.031	4.1	ug/L	573	Standard
|	Mn	55	509204.8	0.1	48.0698	0.325	0.7	ug/L	3072	Standard
|	Co	59	399830.0	0.8	48.5604	0.599	1.2	ug/L	573	Standard
|	Ni	60	84922.4	1.5	48.4706	1.052	2.2	ug/L	264	Standard
|	Cu	65	82178.9	0.4	48.8323	0.558	1.1	ug/L	530	Standard
|	Zn	66	44946.9	1.6	46.5253	0.973	2.1	ug/L	252	Standard
>	Ge	72	714913.2	0.8				ug/L	641188	Standard
|	As	75	44247.1	0.3	45.9448	0.445	1.0	ug/L	-83	Standard
|	Se	82	3871.8	2.0	46.2399	1.089	2.4	ug/L	16	Standard
|	Se-1	77	3045.3	1.9	48.8945	1.325	2.7	ug/L	126	Standard
>	Ga	71	118.3	23.3				mg/L	70	Standard
|	Rb	85	576.7	8.7				ug/L	33	Standard
|	Y	89	494293.3	1.8				ug/L	493982	Standard
>	Rh	103	43.3	6.7				ug/L	17	Standard
|	Mo	98	265487.8	1.0	97.2104	0.990	1.0	ug/L	54	Standard
|	Ag	107	219450.3	2.2	46.6062	1.025	2.2	ug/L	137	Standard
|	Cd	111	60897.7	2.1	43.6302	0.833	1.9	mg/L	6	Standard
|	Cd	114	174520.0	3.0	45.5762	1.350	3.0	ug/L	20	Standard
>	In	115	662885.6	0.4				ug/L	755264	Standard
|	Sn	118	40976.7	2.0	48.5778	0.862	1.8	ug/L	138	Standard
|	Sb	123	187156.0	1.2	47.5890	0.493	1.0	ug/L	391	Standard
|	Ba	135	80050.6	1.2	50.9961	0.544	1.1	ug/L	32	Standard
|	Ce	140	66.7	4.3				ug/L	42	Standard
>	Tb	159	925890.6	1.6				ug/L	966827	Standard
|	Ho	165	25.0	40.0				ug/L	12	Standard
|	Tl	203	281502.5	1.2	48.1034	0.753	1.6	ug/L	19	Standard
|	Tl	205	660242.7	1.6	48.2541	0.961	2.0	ug/L	58	Standard
|	Pb	206	221230.6	1.2	47.8613	0.505	1.1	ug/L	464	Standard
|	Pb	207	197914.7	1.3	47.8576	0.564	1.2	ug/L	405	Standard
|	Pb	208	424189.1	1.3	47.0082	0.858	1.8	ug/L	876	Standard
|	U	238	376274.5	0.8	36.6788	0.526	1.4	ug/L	14	Standard
>	Bi	209	532620.9	0.7				ug/L	599146	Standard

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:39:08

Page 1

Approved: March 01, 2017

Na	23	13.3	43.3	2.8000	1.488	53.2	mg/L	3	Standard
Mg	24	341.7	4.2	5.3105	0.144	2.7	mg/L	30	Standard
K	39	620.0	9.3	6.7573	0.611	9.0	mg/L	10	Standard
Ca	43	48.3	21.5	-16.4458	5.617	34.2	mg/L	83	Standard
Fe	54	389.4	4.8	4.8290	0.298	6.2	mg/L	21	Standard
Fe	57	583.3	5.5	11.5847	1.546	13.3	mg/L	240	Standard
Sc-1	45	49226.5	1.9				mg/L	41681	Standard
Cl	35	0.7	173.2				ug/L	2	Standard
Kr	83	7.3	34.3				ug/L	5	Standard
Br	81	2086.8	5.7				ug/L	1587	Standard
P	31	81.7	35.3				ug/L	50	Standard
S	34	43.3	13.3				ug/L	8	Standard
Sr	88	186.7	22.8				ug/L	198	Standard
C	12	10.0	100.0				mg/L	33	Standard
N	14	0.0					mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	5.5	196.1				mg/L	6	Standard
Ho-1	165	25.0	40.0				mg/L	12	Standard
Er	166	23.3	89.2				mg/L	10	Standard
I	127	4535.7	2.2				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
> Li	6			
Be	9	94.500		
Al	27	91.806		
Sc	45			
Ti	47	105.360		
V	51	95.162		
Cr	52	94.401		
Cr	53			
Mn	55	96.140		
Co	59	97.121		
Ni	60	96.941		
Cu	65	97.665		
Zn	66	93.051		
> Ge	72		111.498	
As	75	91.890		
Se	82	92.480		
Se-1	77			
> Ga	71			

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:39:08

Page 2

Approved: March 01, 2017

[	Rb	85		
[	Y	89		
>	Rh	103		
[	Mo	98	97.210	
[	Ag	107	93.212	
[	Cd	111	87.260	
[	Cd	114		
>	In	115		87.769
[	Sn	118	97.156	
[	Sb	123	95.178	
[	Ba	135	101.992	
[	Ce	140		
>	Tb	159		
[	Ho	165		
[	Tl	203	96.207	
[	Tl	205		
[	Pb	206		
[	Pb	207		
[	Pb	208	94.016	
[	U	238	73.358	
>	Bi	209		88.897
[	Na	23		
[	Mg	24		
[	K	39		
[	Ca	43		
[	Fe	54		
[	Fe	57		
>	Sc-1	45		
[	Cl	35		
[	Kr	83		
[	Br	81		
[	P	31		
[	S	34		
[	Sr	88		
[	C	12		
[	N	14		
[	Hg	202		
[	Dy	164		
[	Ho-1	165		
[	Er	166		
[	I	127		

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
QC Std 6	Cd	111	
QC Std 6	U	238	

Sample ID: QC Std 6

Report Date/Time: Tuesday, February 28, 2017 17:39:08

Page 3

Approved: March 01, 2017



Method 6020 - Summary Report

Sample ID: QC Std 7

Sample Date/Time: Tuesday, February 28, 2017 17:40:03

Number of Replicates: 3

Autosampler Position: 102

Sample Description:

Method File: C:\NexlONData\Method\6020a.mth

Aliquot Volume (mL):

Diluted to Volume (mL):

User Name: JYH Nexion300X

Cumulative Autodilution Factor: 1

Nexion-ICP 200.8\6020

Concentration Results

IS	Analyte	Mass	Intensity	RSD	Conc.	SD	RSD	Units	Blank Intens.	Mode
>	Li	6	211820.6	1.7				ug/L	250104	Standard
|	Be	9	35.0	14.3	0.0152	0.004	26.7	ug/L	7	Standard
|	Al	27	1005.0	25.6	0.0036	0.003	73.2	ug/L	597	Standard
|	Sc	45	46115.1	2.0				ug/L	41681	Standard
|	Ti	47	34.7	18.5	-0.2807	0.032	11.5	ug/L	86	Standard
|	V	51	1687.4	12.6	-0.0211	0.032	153.7	ug/L	1740	Standard
|	Cr	52	7141.0	1.6	-0.0572	0.026	44.6	ug/L	7178	Standard
|	Cr	53	1391.7	1.3	0.8951	0.039	4.3	ug/L	573	Standard
|	Mn	55	2211.2	4.1	-0.0876	0.011	12.1	ug/L	3072	Standard
|	Co	59	340.7	3.0	-0.0182	0.002	8.8	ug/L	573	Standard
|	Ni	60	195.3	8.2	-0.0611	0.010	15.9	ug/L	264	Standard
|	Cu	65	614.0	5.6	0.0046	0.017	378.2	ug/L	530	Standard
|	Zn	66	283.7	5.1	-0.0432	0.019	43.6	ug/L	252	Standard
>	Ge	72	686644.2	1.1				ug/L	641188	Standard
|	As	75	-33.3	146.2	0.0063	0.052	835.4	ug/L	-83	Standard
|	Se	82	16.9	8.5	-0.0172	0.016	95.9	ug/L	16	Standard
|	Se-1	77	205.0	7.2	1.3117	0.266	20.3	ug/L	126	Standard
>	Ga	71	66.7	8.7				mg/L	70	Standard
|	Rb	85	31.7	24.1				ug/L	33	Standard
|	Y	89	476664.0	1.1				ug/L	493982	Standard
>	Rh	103	25.0	52.9				ug/L	17	Standard
|	Mo	98	213.8	12.9	0.0614	0.011	17.7	ug/L	54	Standard
|	Ag	107	142.7	11.4	0.0081	0.004	43.6	ug/L	137	Standard
|	Cd	111	10.7	46.8	-0.0056	0.004	67.6	mg/L	6	Standard
|	Cd	114	35.1	65.7	-0.0005	0.006	1353.5	ug/L	20	Standard
>	In	115	631289.1	0.4				ug/L	755264	Standard
|	Sn	118	120.3	5.5	0.0165	0.008	47.4	ug/L	138	Standard
|	Sb	123	812.4	14.4	0.1904	0.030	16.0	ug/L	391	Standard
|	Ba	135	35.3	28.6	-0.0039	0.007	176.4	ug/L	32	Standard
|	Ce	140	26.7	28.6				ug/L	42	Standard
>	Tb	159	873158.4	1.5				ug/L	966827	Standard
|	Ho	165	15.0	88.2				ug/L	12	Standard
|	Tl	203	76.3	26.2	0.0066	0.004	53.7	ug/L	19	Standard
|	Tl	205	145.0	24.9	0.0084	0.003	33.1	ug/L	58	Standard
|	Pb	206	427.7	6.1	0.0016	0.005	317.9	ug/L	464	Standard
|	Pb	207	364.0	2.5	0.0001	0.002	4281.8	ug/L	405	Standard
|	Pb	208	802.7	5.0	0.0043	0.004	96.6	ug/L	876	Standard
|	U	238	48.0	59.8	0.0032	0.003	91.6	ug/L	14	Standard
>	Bi	209	512282.8	0.9				ug/L	599146	Standard

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:42:14

Page 1

Approved: March 01, 2017

Na	23	3.3	86.6	0.3963	0.758	191.2	mg/L	3	Standard
Mg	24	28.3	66.8	-0.0241	0.340	1409.0	mg/L	30	Standard
K	39	21.7	35.3	0.0188	0.091	482.9	mg/L	10	Standard
Ca	43	38.3	27.2	-20.2180	5.256	26.0	mg/L	83	Standard
Fe	54	34.3	38.2	0.2313	0.194	84.0	mg/L	21	Standard
Fe	57	421.7	14.8	5.3440	3.443	64.4	mg/L	240	Standard
Sc-1	45	46115.1	2.0				mg/L	41681	Standard
Cl	35	1.3	86.6				ug/L	2	Standard
Kr	83	5.7	10.2				ug/L	5	Standard
Br	81	1990.1	10.9				ug/L	1587	Standard
P	31	60.0	30.0				ug/L	50	Standard
S	34	35.0	51.5				ug/L	8	Standard
Sr	88	245.0	6.1				ug/L	198	Standard
C	12	10.0	173.2				mg/L	33	Standard
N	14	3.3	173.2				mg/L	0	Standard
Hg	202	0.0					mg/L	3	Standard
Dy	164	13.2	41.7				mg/L	6	Standard
Ho-1	165	15.0	88.2				mg/L	12	Standard
Er	166	3.3	173.2				mg/L	10	Standard
I	127	5862.8	1.3				mg/L	5503	Standard

QC Calculated Values

Analyte	Mass	QC Std % Recovery	Int Std % Recovery	Spike % Recovery
Li	6			
Be	9			
Al	27			
Sc	45			
Ti	47			
V	51			
Cr	52			
Cr	53			
Mn	55			
Co	59			
Ni	60			
Cu	65			
Zn	66			
Ge	72		107.089	
As	75			
Se	82			
Se-1	77			
Ga	71			

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:42:14

Page 2

Approved: March 01, 2017

[	Rb	85	
[	Y	89	
>	Rh	103	
[	Mo	98	
[	Ag	107	
[	Cd	111	
[	Cd	114	
>	In	115	83.585
[	Sn	118	
[	Sb	123	
[	Ba	135	
[	Ce	140	
>	Tb	159	
[	Ho	165	
[	Tl	203	
[	Tl	205	
[	Pb	206	
[	Pb	207	
[	Pb	208	
[	U	238	
>	Bi	209	85.502
[	Na	23	
[	Mg	24	
[	K	39	
[	Ca	43	
[	Fe	54	
[	Fe	57	
>	Sc-1	45	
[	Cl	35	
[	Kr	83	
[	Br	81	
[	P	31	
[	S	34	
[	Sr	88	
[	C	12	
[	N	14	
[	Hg	202	
[	Dy	164	
[	Ho-1	165	
[	Er	166	
[	I	127	

QC Out of Limits

Measurement Type	Analyte	Mass	Out of Limits Message
------------------	---------	------	-----------------------

Sample ID: QC Std 7

Report Date/Time: Tuesday, February 28, 2017 17:42:14

Page 3

Approved: March 01, 2017



2.2 General Chemistry Data

2.2.1 Hexavalent Chromium Data

2.2.1.1 Summary Data

Lab Report #: L17021203

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17021203-01	PrePrep Method: N/A	Instrument: UV-2600
Client ID: LH18/24-SP140-7418-GRAB	Prep Method: 7196A	Prep Date: N/A
Matrix: Water	Analytical Method: 7196A	Cal Date: 12/08/2016 08:20
Workgroup #: WG603982	Analyst: ADG	Run Date: 02/23/2017 11:15
Collect Date: 02/22/2017 10:00	Dilution: 1	File ID: 00.1702231115-07
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Chromium, Hexavalent	18540-29-9	0.0100	U,H1	0.0200	0.0100	0.00500
U,H1	Not detected; Sample analysis performed past holding time.					

2.2.1.2 QC Summary Data

Example Calculations for Visible Spectrophotometric Methods

Linear Calibration Model

Step 1 - Retrieve Curve Data from ICAL

m = slope of the linear equation
 b = intercept from the linear equation
 y = instrument response as absorbance or OD
 x = concentration of analyte (mg/L)
 $y = mx + b$

Step 2: Calculate the instrument concentration, x

Where:

$$x = (y - b)/m$$

Step 3: Solve for analyte concentration in sample, Cx

$$C_x = (x) (D)$$

Example Calculation (LCS):

Value of m from plot:	7.809
Value of b from plot:	0.0004135
Absorbance of unknown from quantitation report (y):	0.31
Calculated concentration (x):	0.03964483
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	0.0396 mg/L

SmartChem Autoanalyzer - Quadratic Calibration for Chloride and Sulfate

Step 1 - Retrieve Curve Data from Smartchem ICAL

A, B, C = constants from the ICAL quadratic regression

x = instrument response as absorbance or OD

y = concentration of analyte (mg/L)

Step 2: Calculate the instrument concentration, y

Where:

$$y = Ax^2 + Bx + C$$

Step 3: Solve for analyte concentration in sample, C_y

$$C_y = (y) (D)$$

Example Calculation (LCS):

Value of A from plot:	101.2796
Value of B from plot:	318.9056
Value of C from plot:	-2.2712
Absorbance of unknown from quantitation report (x):	0.1583
Calculated concentration (y):	50.7495108
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	50.75 mg/L

Microbac Laboratories Inc.

Data Checklist

Date: 23-FEB-2017
 Analyst: ADG
 Analyst: NA
 Method: CR-6
 Instrument: UV-2600
 Curve Workgroup: NA
 Runlog ID: _____
 Analytical Workgroups: WG603982

Calibration/Linearity	02/23/17
Second Source Check	
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	ADG
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
27-FEB-2017

April Greene

Secondary Reviewer:
28-FEB-2017

Dennis Johnson



Analytical Method: 7196A
Login Number: L17021203

AAB#: WG603982

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP140-7418-GRAB	01	02/22/17					02/23/2017	1.1	1	*	02/23/17	1.1	1	*

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17021203 Work Group: WG603982
 Blank File ID: 00.1702231115-03 Blank Sample ID: WG603982-01
 Prep Date: 02/23/17 11:15 Instrument ID: UV-2600
 Analyzed Date: 02/23/17 11:15 Method: 7196A
 Analyst: ADG

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG603982-02	00.1702231115-04	02/23/17 11:15	
LCS2	WG603982-03	00.1702231115-05	02/23/17 11:15	
LH18/24-SP140-7418-GRAB	L17021203-01	00.1702231115-07	02/23/17 11:15	
DUP	WG603982-05	00.1702231115-08	02/23/17 11:15	

Report Name: BLANK_SUMMARY
 PDF File ID: 5176381
 Report generated 02/28/2017 09:34



Login Number: L17021203 Prep Date: 02/23/17 11:15 Sample ID: WG603982-01
Instrument ID: UV-2600 Run Date: 02/23/17 11:15 Prep Method: 7196A
File ID: 00.1702231115-03 Analyst: ADG Method: 7196A
Workgroup (AAB#): WG603982 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: UV-260-07-FEB-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Chromium, Hexavalent	0.00500	0.0200	0.00500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 5176382
28-FEB-2017 09:35



Login Number: L17021203 Analyst: ADG Prep Method: 7196A
 Instrument ID: UV-2600 Matrix: Water Method: 7196A
 Workgroup (AAB#): WG603982 Units: mg/L
 QC Key: DOD4 Lot #: STD79927
 Sample ID: WG603982-02 LCS File ID: 00.1702231115-04 Run Date: 02/23/2017 11:15
 Sample ID: WG603982-03 LCS2 File ID: 00.1702231115-05 Run Date: 02/23/2017 11:15

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Chromium, Hexavalent	0.100	0.102	102	0.100	0.102	102	0.491	90 - 110	20	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5176383
 Report generated: 02/28/2017 09:35



2.2.1.3 Raw Data

wg594062

Curves

Parameter: CR-6 ^{low} ~~low~~ _{12/21/16}

Spectrophotometer: UV-2600

Calibration (Curve) standard stock: Std 77969 Std 77970

Concentration: 50mg/L 5mg/L

Recipe for preparation of curve standards found in:
SOP: 52186 Revision: 22 Page: 12

Second Source Stock: 78032 (concentration: 2)

Daily Preparation: 5(2)/100
= 0.1
concentration =

Calibration Standards (mg/L)	Volume (mL)	Cell Size (cm)	Wavelength (nm)	Absorbance
0.2	100	5cm	540	0.792
0.1	100	5cm	540	0.423
0.05	100	5cm	540	0.197
0.02	100	5cm	540	0.078
0.01	100	5cm	540	0.041
0	100	5cm	SP	0.001
2nd Source (0.1)			540	0.412

Analyst: Jimmy Morris

Date/Time: 12/21/16 8:20

DCN#122579



Microbac Laboratories Inc.
INITIAL CALIBRATION

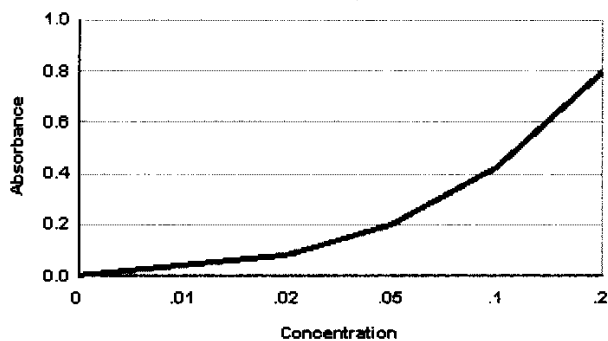
Workgroup: WG594062
Analytical Method: 3500CR
Instrument ID: UV-2600

Analyst: TMM
Initial Calibration Date: 12/08/2016

Analyte: **CHROMIUM, HEXAVALENT**
Number of Points: 6
Slope: 3.99171
Y-Intercept: 0.00252535
Coef. Of Correlation (R^2): 0.998739
Coef. Of Correlation (R): 0.999369

Concentration X	Absorbance Y	X^2	$X * Y$	Y-Fitted (mX^2+B)
0.00	0.00100	0.00	0.00	0.00252535
0.0100	0.0410	0.000100	0.000410	0.0424424
0.0200	0.0780	0.000400	0.00156	0.0823594
0.0500	0.197	0.00250	0.00985	0.202111
0.100	0.423	0.0100	0.0423	0.401696
0.200	0.792	0.0400	0.158	0.800866

Curve Fit



WG_ICAL_CAL_WET - Modified 03/06/2008
Report generated 12/08/2016 09:20



Microbac Laboratories Inc.
ALTERNATE SOURCE REPORT

Workgroup #: WG594062Instrument ID: UV-2600File ID: 00.1612080820-07Run Date: 12/08/2016CCV ID: WG594062-07Run Time: 08:20Units: mg/LAnalyst: TMMAnalyte: CHROMIUM, HEXAVALENT Cal ID: UV-260 - 08-DEC-16 08:20:06

Analyte	Expected	Found	RF	%D	Q
Chromium, Hexavalent	.1	0.103	4.12	3.0	

* Exceeds %D Limit

CCC Calibration Check Compounds

SPCC System Performance Check Compounds

WET_WG_SSCV - Modified 03/06/2008
Report generated 12/08/2016 09:20



WORKGROUP: WG603982

CHROMIUM (6)

(cr6)

Standard Methods 3500 Cr-D (18th, 19th), 3500Cr-B(20th)

SPEC: UV-2600

SOP K2186 Rev. # 22

SW846 7196A

Curve ID: 12-846

CCV: 79338

LCS: 79917

Spike: 7800 RGT 39314

Matrix: liquid (mg/L)

Daily dilution: 165/100

Daily dilution: 10(2)/100

Daily dilution: 0.2(50)/100 RGT 77969

Soil (mg/Kg)

Daily dilution: 20.05

Daily dilution: 20.1

Daily dilution: 20.1 COV 18997

Sample	Volume (mL)	pH adj. to 2 ± 0.5	Dilution	Cell size (cm)	Absorbance @ 540 nm
CCV: mg/L(1 cm)	100				
CCV: <u>0.05</u> mg/L(5 cm)	100	/		<u>5cm</u>	<u>0.212</u>
Blank/CCB:	100	/		<u>5cm</u>	<u>0.002</u>
LCS: <u>0.1</u> ppm	100	/		<u>5cm</u>	<u>0.409</u>
LCS DUP: <u>0.1</u> ppm	100	/		<u>5cm</u>	<u>0.411</u>
<u>1201-01</u>	100	/		<u>5cm</u>	<u>0.006</u>
<u>1203-01</u>	100	/		<u>5cm</u>	<u>0.007</u>
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
CCV: (1 cm)	100				
CCV: (5 cm)	100				
CCB:	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
	100				
DUP: <u>1201-01</u>	100	/		<u>5cm</u>	<u>0.005</u>
MS: (<u>0.1</u>) <u>1201-01</u>	100	/		<u>5cm</u>	<u>0.414</u>
MSD: ()	100				
CCV: (1 cm)	100				
CCV: <u>0.1</u> (5 cm)	100	/		<u>5cm</u>	<u>0.212</u>
CCB: <u>0</u>	100	/		<u>5cm</u>	<u>0.003</u>

Analyst: April Greene

Date/Time: 2/23/17 1 11:5

SW846 7196 (Dup and/or MS every 10 samples)

SM3500 Cr (Dup and MS/MSD every 20 samples)

Received in lab out of Holal

DCN#124169



Microbac Laboratories Inc.
SAMPLE REPORT

Workgroup: WG603982Analyst: ADGAnalyte: CHROMIUM, HEXAVALENTDate: 02/23/2017

Sample ID	I Vol	F Vol	Response	Slope	Y Intercept	Anal. Conc.	Rep. Conc.	Dil	Units
WG603982-01	100	100	0.00200	3.992	0.002525	-0.00013161	-0.00013161	1	mg/L
WG603982-02	100	100	0.409	3.992	0.002525	0.10183	0.10183	1	mg/L
WG603982-03	100	100	0.411	3.992	0.002525	0.10233	0.10233	1	mg/L
L17021201-01	100	100	0.00600	3.992	0.002525	0.00087047	ND	1	mg/L
WG603982-04	100	100	0.00600	3.992	0.002525	0.00087047	0.00087047	1	mg/L
L17021203-01	100	100	0.00700	3.992	0.002525	0.0011210	ND	1	mg/L
WG603982-05	100	100	0.00500	3.992	0.002525	0.00061995	0.00061995	1	mg/L
WG603982-06	100	100	0.414	3.992	0.002525	0.10308	0.10308	1	mg/L

UV_SAMPLE_REPORT - Modified 03/06/2008

Report generated 02/27/2017 10:42

Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

00844366

Workgroup #: WG604295 Instrument ID: UV-2600
File ID: 00.1702231115-01 Run Date: 02/23/2017
CCV ID: WG604295-01 Run Time: 11:15
Units: mg/L Analyst: ADG
Analyte: CHROMIUM, HEXAVALENT Cal ID: UV-260 - 07-FEB-17

Analyte	Expected	Found	RF	%D	Q
Chromium, Hexavalent	.05	0.0525	4.24	5.0	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 02/27/2017 10:40



Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

00844367

Workgroup #: WG604295 Instrument ID: UV-2600
File ID: 00.1702231115-10 Run Date: 02/23/2017
CCV ID: WG604295-03 Run Time: 11:15
Units: mg/L Analyst: ADG
Analyte: CHROMIUM, HEXAVALENT Cal ID: UV-260 - 07-FEB-17

Analyte	Expected	Found	RF	%D	Q
Chromium, Hexavalent	.05	0.0525	4.24	5.0	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 02/27/2017 10:40



3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
March 6, 2017

001 - BIO-CHEM TESTING WVDEP 220	002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental	004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES	006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES	008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND	AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER	ADG - APRIL D. GREENE
ALS - ADRIANE L. STEED	AWE - ANDREW W. ESSIG
AZH - AFTER HOURS	BJO - BRIAN J. OGDEN
BLG - BRENDA L. GREENWALT	BNB - Brandi N. Bentley
BRG - BRENDA R. GREGORY	CAS - Craig A. Smith
CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER	CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL	CV - Carl Volkman
DAK - DEAN A. KETELSEN	DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG	DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER	DLP - DOROTHY L. PAYNE
DSM - DAVID S. MOSSOR	DTG - DOMINIC T. GEHRET
ECL - ERIC C. LAWSON	EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER	FJB - FRANCES J. BOLDEN
JDH - JUSTIN D. HESSON	JDS - JARED D. SMITH
JKP - JACQUELINE K. PARSONS	JLD - JESSICA L. DELONG
JST - JOSHUA S. TAYLOR	JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES
JYH - JI Y. HU	KAK - KATHY A. KIRBY
KDD - Katelyn D. Daley	KEB - KATIE E. BARNES
KHR - KIM H. RHODES	KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON	KRP - KATHY R. PARSONS
LJH - Lacey J. Hendershot	LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA	LSJ - LAURA S. JONES
MAP - MARLA A. PORTER	MBK - MORGAN B. KNOWLTON
MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE	REK - BOB E. KYER
RLB - BOB BUCHANAN	RNP - RICK N. PETTY
SAV - SARAH A. VANDENBERG	SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY	TB - TODD BOYLE
TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT	

List of Valid Qualifiers

March 06, 2017

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
>,H1	Result is greater than the associated numerical value. Sample analysis performed past holding time.
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample receipt exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
FP1	Did not ignite.
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample receipt exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentatively identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL)
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound



List of Valid Qualifiers

March 06, 2017

Qualkey: DOD

TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.
TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample receipt exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below



CHAIN OF CUSTODY

Name Of Lab Shipping To: MICROBAC (740) 373-4071 ATTN: STEPHANIE MOSSBURG

Project: AECOM
 LONGHORN ARMY AMMN. PLANT (LHAAP)
 GROUNDWATER TREATMENT PLANT (GWTP)
 KARNACK, TEXAS
 Project No.
 60256135.GWTPPT
 HRJUMAR16

Job:
**GROUNDWATER TREATMENT PLANT
 MONTHLY INFLUENT SAMPLES**
 Prepared By:
Scott Beesinger
 P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD	No. Of Containers	Analyses				Remarks (Preservatives, etc.)	Lab I.D.#
					SILVER & SELENIUM	PERCHLORATE METHOD 6850	HEXAVALENT CHROMIUM			
LH18/24-SP140-7418-Grab	Water	02/22/17 / 10:00		1	X				HNO3	
LH18/24-SP140-7418-Grab	Water	02/22/17 / 10:00		2	X	X			NONE	

Additional Remarks: **STANDARD TURN AROUND TIME**

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
<i>Scott Beesinger</i>	02/22/17	15:00									

Received At Lab By: _____ Date: _____ Time: _____

For Lab Use Only
 Opened By: _____ Date: _____ Time: _____

Seal No. _____ Condition _____

Temp of Container _____

Microbac OVD
 Received: 02/23/2017 09:39
 By: BRENDA GREGORY

221000097407

Brenda Gregory

(Word) S:_ecsl\Forms\Chain of Custody - BIRweekly



Cooler ID 7407

COOLER TEMP >6° C LOG

SAMPLE ID	Bottle 1 °C	Bottle 2 °C	Bottle 3 °C	Bottle 4 °C	Bottle 5 °C	Bottle 6 °C

UFD 2/23/17

pH Lot # H093124

pH Exceptions

SAMPLE ID	Bottle 1	Bottle 2	Bottle 3	Bottle 4	Bottle 5	Bottle 6

UFD 2/23/17

**PRESERVATIVE
EXCEPTIONS
✓ NONE
AS NOTED**

UFD 2/23/17

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17021203

Account: 2551

Project: 2551.096

Samples: 1

Due Date: 06-MAR-2017

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L17021203-01	871136	AG-MS SE

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	23-FEB-2017 11:20	BRG		
2	PREP	W1	DIG	23-FEB-2017 11:31	AC	BRG	
3	ANALYZ*	DIG	METALS	24-FEB-2017 12:34	KKB	AC	

**Sample extract/digestate/leachate*

<u>Samplenum</u>	<u>Container ID</u>	<u>Products</u>
L17021203-01	871137	CR-6

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	23-FEB-2017 11:20	BRG		
2	ANALYZ	W1	WET	23-FEB-2017 11:57	DCM	CLS	
3	STORE	WET	A1	24-FEB-2017 08:00	CLS	ADG	

A1 - Sample Archive (COLD)
 A2 - Sample Archive (AMBIENT)
 F1 - Volatiles Freezer in Login
 V1 - Volatiles Refrigerator in Login
 W1 - Walkin Cooler in Login



NELAP Addendum - January 4, 2016

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVD NELAP Scope of Accreditation:

Heat of Combustion (BTU)
 Total Halide by Bomb Combustion (TX)
 Particle Sizing - 200 Mesh (PS200)
 Specific Gravity/Density (SPGRAV)
 Total Residual Chlorine (CL-TRL)
 Total Volatile Solids (all forms) (TVS)
 Total Coliform Bacteria (all methods)
 Fecal Coliform Bacteria (all methods)
 Sulfite (SO₃)
 Propionaldehyde (HPLC-UV)

SOLID AND HAZARDOUS CHEMICALS

Nitrogen, Ammonia by Method 350.1
 Chromium, Hexavalent, Leachable by SM3500 Cr-B 2009
 Phenolics, Total by Method 420.1
 ASTM D3987-06

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVD HPLC02/HPLC-UV

Nitroglycerin
 Acetic acid
 Butyric acid
 Lactic acid
 Propionic acid
 Pyruvic acid

OVD MSS01/GC-MS

1,4-Phenylenediamine
 1-Methylnaphthalene
 1,4-Dioxane
 Atrazine
 Benzaldehyde
 Biphenyl
 Caprolactam
 Hexamethylphosphoramide (HMPA)
 Pentachlorobenzene
 Pentachloroethane

NELAP Accreditation by Laboratory SOP**NONPOTABLE WATER**OVD MSV01/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVD HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

OVD HPLC12/HPLC/UV

Acetate
Formate

OVD RSK01/GC-FID

Acetylene
Propane

OVD K9305/ISE

Fluoroborate

SOLID AND HAZARDOUS CHEMICALSOVD MSS01/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP**SOLID AND HAZARDOUS CHEMICALS**OVD MSV01/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)

Laboratory Report Number: L17030058

Linda Raabe
AECOM Technical Services, Inc.
1950 N Stemmons FWY
Dallas, TX 75207

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Adriane Steed – Client Services Specialist
(740) 373-4071
Adriane.Steed@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on March 08 2017



Leslie Bucina – Managing Director

State of Origin: TX
Accrediting Authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: DOD Ver 4.1



Microbac Laboratories * Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 * T: (740) 373-4071 F: (740) 373-4835 * www.microbac.com

Lab Report #: L17030058

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00112799	I	1.0		1Z4016632210154867	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	NA

**Lab Report #:** L17030058**Lab Project #:** 2551.096**Project Name:** Longhorn Army Ammunition**Lab Contact:** Adriane Steed**Samples Received**

Client ID	Laboratory ID	Date Collected	Date Received
LH18/24-SP650-6420-GRAB	L17030058-01	03/01/2017 15:00	03/02/2017 09:34

Microbac REPORT L17030058
PREPARED FOR AECOM Technical Services, Inc.
WORK ID:

1.0 Summary Data	5
1.1 Narratives	6
1.2 Certificate of Analysis	25
2.0 Full Sample Data Package	27
2.1 General Chemistry Data	28
2.1.1 Ammonia Data	29
2.1.1.1 Summary Data	30
2.1.1.2 QC Summary Data	32
2.1.1.3 Raw Data	39
2.1.2 Orthophosphate Data	48
2.1.2.1 Summary Data	49
2.1.2.2 QC Summary Data	51
2.1.2.3 Raw Data	58
2.1.3 Total Organic Carbon Data	66
2.1.3.1 Summary Data	67
2.1.3.2 QC Summary Data	69
2.1.3.3 Raw Data	76
3.0 Attachments	114

1.0 Summary Data

1.1 Narratives



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	NH3
Prep Batch Number(s):	WG605397	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a. if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Deanna Hesson		Conventional Lab Supervisor	2017-03-08 14:54:46



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	NH3
Prep Batch Number(s):	WG605397	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):	X				
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	NH3
Prep Batch Number(s):	WG605397	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	X				
Were MS/MSD analyzed at the appropriate frequency?	X				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
Were MS/MSD RPDs within laboratory QC limits?	X				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	X				
Were analytical duplicates analyzed at the appropriate frequency?	X				
Were RPDs or relative standard deviations within the laboratory QC limits?	X				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?			X		
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	NH3
Prep Batch Number(s):	WG605397	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)			X		
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)			X		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions			X		
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	NH3
Prep Batch Number(s):	WG605397	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)	X				
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	NH3
Prep Batch Number(s):	WG605397	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604692	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Deanna Hesson		Conventional Lab Supervisor	2017-03-08 14:53:23



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604692	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):	X				
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604692	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	X				
Were MS/MSD analyzed at the appropriate frequency?	X				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
Were MS/MSD RPDs within laboratory QC limits?	X				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	X				
Were analytical duplicates analyzed at the appropriate frequency?	X				
Were RPDs or relative standard deviations within the laboratory QC limits?	X				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?			X		
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604692	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)			X		
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)			X		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions			X		
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604692	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)	X				
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	PO4
Prep Batch Number(s):	WG604692	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	TOC
Prep Batch Number(s):	WG604821	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Deanna Hesson		Conventional Lab Supervisor	2017-03-08 14:54:14



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	TOC
Prep Batch Number(s):	WG604821	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):	X				
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	TOC
Prep Batch Number(s):	WG604821	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	X				
Were MS/MSD analyzed at the appropriate frequency?	X				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
Were MS/MSD RPDs within laboratory QC limits?	X				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	X				
Were analytical duplicates analyzed at the appropriate frequency?	X				
Were RPDs or relative standard deviations within the laboratory QC limits?	X				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?			X		
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	TOC
Prep Batch Number(s):	WG604821	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)			X		
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)			X		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions			X		
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	TOC
Prep Batch Number(s):	WG604821	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)	X				
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030058
Project Name:		Method:	TOC
Prep Batch Number(s):	WG604821	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-08 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

1.2 Certificate of Analysis

Lab Report #: L17030058
 Lab Project #: 2551.096
 Project Name: Longhorn Army Ammunition
 Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030058-01	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: LH18/24-SP650-6420-GRAB	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 03/08/2017 10:33
Workgroup #: WG605397	Analyst: TMM	Run Date: 03/08/2017 10:52
Collect Date: 03/01/2017 15:00	Dilution: 25	File ID: SC170308001.029
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Nitrogen, Ammonia	7664-41-7	48.8		5.00	2.50	1.25

Certificate of Analysis

Sample #: L17030058-01	PrePrep Method: N/A	Instrument: UV-2600
Client ID: LH18/24-SP650-6420-GRAB	Prep Method: 365.2	Prep Date: N/A
Matrix: Water	Analytical Method: 365.2	Cal Date: 12/08/2016 13:50
Workgroup #: WG604692	Analyst: ADG	Run Date: 03/02/2017 09:10
Collect Date: 03/01/2017 15:00	Dilution: 5	File ID: 00.1703020910-13
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Orthophosphate	14265-44-2	3.43		0.500	0.250	0.125

Certificate of Analysis

Sample #: L17030058-01	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: LH18/24-SP650-6420-GRAB	Prep Method: 415.1	Prep Date: N/A
Matrix: Water	Analytical Method: 415.1	Cal Date: 02/10/2017 10:25
Workgroup #: WG604821	Analyst: DCM	Run Date: 03/03/2017 09:06
Collect Date: 03/01/2017 15:00	Dilution: 20	File ID: TC03032017.007
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Total Organic Carbon	TOC	373		40.0	20.0	10.0

2.0 Full Sample Data Package

2.1 General Chemistry Data

2.1.1 Ammonia Data

2.1.1.1 Summary Data

Lab Report #: L17030058

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030058-01	PrePrep Method: N/A	Instrument: SMARTCHEM
Client ID: LH18/24-SP650-6420-GRAB	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 03/08/2017 10:33
Workgroup #: WG605397	Analyst: TMM	Run Date: 03/08/2017 10:52
Collect Date: 03/01/2017 15:00	Dilution: 25	File ID: SC170308001.029
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Nitrogen, Ammonia	7664-41-7	48.8		5.00	2.50	1.25

2.1.1.2 QC Summary Data

Example Calculations for Visible Spectrophotometric Methods

Linear Calibration Model

Step 1 - Retrieve Curve Data from ICAL

m = slope of the linear equation
 b = intercept from the linear equation
 y = instrument response as absorbance or OD
 x = concentration of analyte (mg/L)
 $y = mx + b$

Step 2: Calculate the instrument concentration, x

Where:

$$x = (y - b)/m$$

Step 3: Solve for analyte concentration in sample, Cx

$$C_x = (x) (D)$$

Example Calculation (LCS):

Value of m from plot:	7.809
Value of b from plot:	0.0004135
Absorbance of unknown from quantitation report (y):	0.31
Calculated concentration (x):	0.03964483
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	0.0396 mg/L

SmartChem Autoanalyzer - Quadratic Calibration for Chloride and Sulfate

Step 1 - Retrieve Curve Data from Smartchem ICAL

A, B, C = constants from the ICAL quadratic regression

x = instrument response as absorbance or OD

y = concentration of analyte (mg/L)

Step 2: Calculate the instrument concentration, y

Where:

$$y = Ax^2 + Bx + C$$

Step 3: Solve for analyte concentration in sample, C_y

$$C_y = (y) (D)$$

Example Calculation (LCS):

Value of A from plot:	101.2796
Value of B from plot:	318.9056
Value of C from plot:	-2.2712
Absorbance of unknown from quantitation report (x):	0.1583
Calculated concentration (y):	50.7495108
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	50.75 mg/L

Microbac Laboratories Inc.

Data Checklist

Date: 08-MAR-2017
 Analyst: TMM
 Analyst: NA
 Method: NH3
 Instrument: SC1
 Curve Workgroup: NA
 Runlog ID: _____
 Analytical Workgroups: WG605399 WG605403 WG605397

Calibration/Linearity	3/8/17
Second Source Check	
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	TMM
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
08-MAR-2017

Jammy Morris

Secondary Reviewer:
08-MAR-2017

Dennis Johnson



Analytical Method: 350.1
Login Number: L17030058

AAB#: WG605397

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6420-GRAB	01	03/01/17					03/08/2017	6.8	28		03/08/17	6.8	28	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5188360
Report generated 03/08/2017 14:07



METHOD BLANK SUMMARY

Login Number: L17030058 Work Group: WG605397
 Blank File ID: SC170308001.011 Blank Sample ID: WG605397-01
 Prep Date: 03/08/17 10:36 Instrument ID: SMARTCHEM
 Analyzed Date: 03/08/17 10:36 Method: 350.1
 Analyst: TMM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG605397-02	SC170308001.012	03/08/17 10:38	01
LH18/24-SP650-6420-GRAB	L17030058-01	SC170308001.029	03/08/17 10:52	DL01
DUP	WG605397-05	SC170308001.037	03/08/17 11:00	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5188361
 Report generated 03/08/2017 14:07



Login Number: L17030058 Prep Date: 03/08/17 10:36 Sample ID: WG605397-01
 Instrument ID: SMARTCHEM Run Date: 03/08/17 10:36 Prep Method: 350.1
 File ID: SC170308001.011 Analyst: TMM Method: 350.1
 Workgroup (AAB#): WG605397 Matrix: Water Units: mg/L
 Contract #: _____ Cal ID: SMARTC-08-MAR-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrogen, Ammonia	0.0500	0.200	0.0882	1	J

DL Method Detection Limit
 LOQ Reporting/Practical Quantitation Limit
 ND Analyte Not detected at or above reporting limit
 * |Analyte concentration| > 1/2 RL

Report Name: BLANK
 PDF ID: 5188362
 08-MAR-2017 14:07



Login Number: L17030058 Run Date: 03/08/2017 Sample ID: WG605397-02
Instrument ID: SMARTCHEM Run Time: 10:38 Prep Method: 350.1
File ID: SC170308001.012 Analyst: TMM Method: 350.1
Workgroup (AAB#): WG605397 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD80299 Cal ID: SMARTC-08-MAR-17

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrogen, Ammonia	2.00	2.07	104	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 5188363
Report generated: 03/08/2017 14:07



2.1.1.3 Raw Data

SMARTCHEM RUN LOG
(smartchem2, smartchem3)

605399
605403

Daily Check

- Lamp On
- Probe Rinse Full
- DI Water > 1/2 Full
- Wash Solution > 1/2 Full
- NO3 Reagent bottle connected / purged
- NO3 pH adj to pH 5-9
- Syringe filter lot # _____
- pH paper Lot #: _____
- WBL Run
- Reagents Full
- Dilution H2O Full
- Waste Container Check

- 1) Workgroup _____
Plan # 20170308001
- 2) Workgroup _____
Plan # _____
- 3) Workgroup _____
Plan # _____
- Instrument: SC1 SC2

Analyte	1	2	3
SC Prepared Curve			
Position			
1-1	ICV 15		
1-2	BIK		
1-3	LCS 2		
1-4	03-032-01	4/40 * 1/20	
1-5	02	4/40 * 1/20	
1-6	03	4/40 * 1/20	
1-7	05	4/40 * 1/2	
1-8	03-074-02		
1-9	03-089-04		
1-10	03-097-01	1/100	
1-11	02	1/100	
1-12	03-115-01		
1-13	03-069-01	4/40 * 1/40	
1-14	03-195-01	1/100	
1-15	03-209-02	1/2	
1-16	03-247-01		
1-17	02	1/4 Auto 1/15	
1-18	03-058-01	1/25	
1-19	03-084-01		
1-20	03-086-01		
1-21	02		
1-22	03		
2-1	04		
2-2	DUP 074-02		
2-3	MS ↓		

Position	Analyte	1	2	3
2-4	MS-086-02			
2-5	BIK			
2-6	LCS(2)			
2-7	03-152-02			
2-8	03-208-01			
2-9	03-289-03			
2-10	03-290-01			
2-11	DUP 208-01			
2-12	MS ↓			
2-13	BLK-AA			
2-14	LCS 2			
2-15	LCS DUP			
2-16	03-214-01			
2-17	04			
2-18	DUP 04			
2-19	MS 05			
2-20	MSD 06			
2-21	13			
2-22	16			
2-23	19			
2-24	23			
2-25	25			
2-26	03-293-01	22	ML	
3-1	02	13	ML	
3-2	03	17	ML	

NOTES:
 * Run NO2 std on NO3 runs
 * LCSD must be run if no MS or Duplicate
 *MS(10% sample): NO3, TKN, NH3, PHOS



DCN#124395

SMARTCHEM RUN LOG

(smartchem2, smartchem3)

Analyte	1	2	3
Position			
3-3	03-293-04	20 mL	
3-4	05	15 mL	
3-5	06	24 mL	
3-6	Blk		
3-7	03-247-02	1/2 LCS	
3-8	03-247-02	1/20	
3-9	Blk		
3-10	Blk		
3-11			
3-12			
3-13			
3-14			
3-15			

Analyte	1	2	3
Position			
3-16			
3-17			
3-18			
3-19			
3-20			
3-21			
3-22			
3-23			
3-24			
3-25			
3-26			
3-27			
3-28			

Chloride	EPA 325.2/SM 4500-Cl E-2000
Nitrate-Nitrite	EPA 353.2/SM 4500-NO3 F-2000
Alkalinity	EPA 310.2
Sulfate	EPA 375.4/SM 426C (15 th)/SM4500-504 E-1997

Ammonia	EPA 350.1/SM 4500-NH3 B-1997
TKN	EPA 351.2
Phos	EPA 365.4

Analyte	NH3	NBAA	Reagents
SOP & Revision	K3501 R-24		39214
Curve Stock (SC made)	Std 80467	Std 80467	39421
NO2 STD			38594
ICV	Std 80370	Std 80370	
CCV	Std 80469	Std 80468	
LCS		80369	
MS	Standard Dilution	Std 80299 0.1000/10 = 1.0	

Comments: _____

Analyst: Jammy Morris

Date: 3/8/17

DCN#124395



AMMONIA DISTILLATION LOG

SOP K3501 Revision # 24

LCS: 80299

SPIKE: 80299

WATER (mg/L)

DAILY DIL. 5(100)/250=2

DAILY DIL. 0.4(100)/40=1
~~1mm~~ 3/7/17

SOIL (mg/Kg)

* All Distillate are at a Final Volume of 40 mL.

RGT 39370
 RGT 39399

SAMPLE	VOLUME DISTILLED (mL or g)	CHLORINE PRESENT?	NO ✓	YES ✓	COMMENTS
			pH ADJUSTED 9.5 ± 0.2		
BLANK	40	✓	✓		
LCS(2)	40	✓	✓		
03-032-01	40	✓	✗		
02	40	✓	✗		
03	40	✓	✗		
05	40	✓	✗		
03-074-02	40	✓	✗		
03-089-04	40	✓	✗		
03-097-01	40	✓	✗		
02	40	✓	✗		
03-115-01	40	✓	✗		
03-069-01	4	✓	✗		
03-195-01	40	✓	✗		
03-209-02	40	✓	✗		
03-247-01	40	✓	✗		
02	40	✓	✗		
03-058-01	40	✓	✗		
03-084-01	40	✓	✗		
03-086-01	40	✓	✗		
02	40	✓	✗		
03	40	✓	✗		
04	40	✓	✗		
DUP 03-074-02	40	✓	✗		
MS 03-074-02	40	✓	✗		
MS 086-02	40	✓	✗		

Analyst: Jammy Morris

Date/Time: 3/7/17 @ 9:00

*MS required on 10% of samples (EPA 350.1)
 *MS/MS required on each set of 20 samples (SM4500)

AMMONIA DISTILLATION LOG

SOP K3501 Revision # 24

LCS: 80299

SPIKE: SN 80299

WATER (mg/L)

DAILY DIL 5(100)/250 = 2

DAILY DIL 0.4(100)/50 = 1

SOIL (mg/Kg)

* All Distillate are at a Final Volume of 40 mL.

RGT 39370
RGT 39399

SAMPLE	VOLUME DISTILLED (mL or g)	CHLORINE PRESENT?	pH ADJUSTED 9.5 ± 0.2	COMMENTS
BLANK	40	✓	✓	
LCS(2)	40	✓	✓	
03-152-02	40	✓	✓	
03-208-01	40	✓	✓	
03-289-03	40	✓	✓	
03-290-01	40	✓	✓	
DUP	<u>208-01</u> 40	✓	✓	
MS	<u>208-01</u> 40	✓	✓	
03-290-1	<u>290-01</u> 40	✓	✓	

Analyst: Jimmy Morris

Date/Time: 3/7/17

*MS required on 10% of samples (EPA 350.1)
*MS/MS required on each set of 20 samples (SM4500)

MICROBAC (OVD)
 SMARTCHEM200 INST1 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WNH3 -Unit [mg/L] - EPA 350.1/SM4500-NH3 AMMONIA

Smp#[Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
DIL-1	RBL	0.000	0.1128	0.00	R	10:25:30 AM
DIL-1	RBL	0.000	0.1097	0.00	R	10:25:48 AM
DIL-1	RBL	0.000	0.1101	0.00	R	10:27:18 AM
DIL-1	Std-1	0.000	0.0011	0.00	EPL	10:27:36 AM
SR5-1	Std-2	0.030	0.0079	0.00		10:29:06 AM
SR5-2	Std-3	0.094	0.0304	0.00	EPL	10:29:24 AM
SR5-3	Std-4	0.600	0.1685	0.00		10:30:54 AM
SR5-4	Std-5	1.050	0.3042	0.00		10:31:13 AM
SR5-5	Std-6	2.100	0.5492	0.00		10:32:44 AM
ST-1	Std-7	3.000	0.9014	0.00		10:33:01 AM
ST-3	1CCV (1.5 mg/L)	1.441	0.4142	96.09		10:34:30 AM
ST-2	2CCB (0 mg/L)	0.025	0.0017	0.00		10:34:48 AM
1	ICV	1.503	0.4322	0.00		10:36:18 AM
2	WG605397-01 BLK	0.088	0.0200	0.00		10:36:36 AM
3	WG605397-02 LCS	2.072	0.5979	0.00		10:38:06 AM
4	L17030032-01 (200)	1.009	0.2881	0.00		10:38:24 AM
5	L17030032-02 (200)	0.986	0.2815	0.00	EPL	10:39:54 AM
6	L17030032-03 (200)	0.631	0.1782	0.00		10:40:12 AM
7	L17030032-05 (20)	0.380	0.1049	0.00		10:41:42 AM
8	L17030074-02	0.144	0.0363	0.00		10:42:00 AM
9	L17030089-04	0.265	0.0716	0.00		10:43:30 AM
10	L17030097-01 (100)	0.987	0.2817	0.00		10:43:48 AM
ST-3	1CCV (1.5 mg/L)	1.581	0.4549	105.40	EPL	10:45:18 AM
ST-2	2CCB (0 mg/L)	0.043	0.0069	0.00	EPL	10:45:36 AM
11	L17030097-02 (100)	1.174	0.3363	0.00		10:47:06 AM
12	L17030115-01	0.576	0.1621	0.00		10:47:24 AM
13	L17030069-01 (400)	0.707	0.2004	0.00	EPL	10:48:55 AM
14	L17030195-01 (100)	0.769	0.2183	0.00	EPL	10:49:13 AM
15	L17030209-02 (2)	3.244	0.9394	0.00	><,LH	10:50:43 AM
16	L17030247-01	0.307	0.0836	0.00		10:51:01 AM
17	L17030247-02 (4)	13.931	4.0530	0.00	EPL,><,LH	10:52:31 AM
18	L17030058-01 (25)	1.952	0.5631	0.00		10:52:49 AM

Report Date :03/08/2017 Run Date :3/8/2017 Operator : SMARTCHEM1 Plan # :20170308001

Plan Description : NH3-A-TMM/03/08/2017

MICROBAC (OVD)
 SMARTCHEM200 INST1 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WNH3 -Unit [mg/L] - EPA 350.1/SM4500-NH3 AMMONIA

Smp#[Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
19	L17030084-01	0.370	0.1020	0.00		10:54:19 AM
20	L17030086-01	0.274	0.0741	0.00	EPL	10:54:37 AM
ST-3	1CCV (1.5 mg/L)	1.566	0.4506	104.42	EPL	10:56:07 AM
ST-2	2CCB (0 mg/L)	0.031	0.0033	0.00		10:56:25 AM
21	L17030086-02	0.223	0.0592	0.00	EPL	10:57:55 AM
22	L17030086-03	0.272	0.0735	0.00		10:58:13 AM
23	L17030086-04	0.273	0.0739	0.00		10:59:43 AM
24	WG605397-05 DUP	0.274	0.0742	0.00	EPL	11:00:01 AM
25	WG605397-06 MS	1.177	0.3371	0.00	EPL	11:01:31 AM
26	WG605397-07 MS	1.102	0.3154	0.00		11:01:49 AM
27	WG605399-01 BLK	X 0.102	0.0240	0.00		11:03:19 AM
28	WG605399-02 LCS	1.974	0.5694	0.00	EPL	11:03:37 AM
29	L17030152-02	0.608	0.1713	0.00		11:05:07 AM
30	L17030208-01	0.491	0.1374	0.00	EPL	11:05:25 AM
ST-3	1CCV (1.5 mg/L)	1.573	0.4526	104.87		11:06:55 AM
ST-2	2CCB (0 mg/L)	0.032	0.0036	0.00		11:07:13 AM
31	L17030289-03	0.334	0.0917	0.00		11:08:43 AM
32	L17030290-01	0.234	0.0624	0.00	EPL	11:09:01 AM
33	W605399-04 DUP	0.497	0.1392	0.00		11:10:31 AM
34	WG605399-05 MS	1.306	0.3748	0.00		11:10:49 AM
35	WG605403-01 BLK	X 0.050	0.0089	0.00		11:12:19 AM
36	WG605403-02 LCS	2.034	0.5869	0.00		11:12:37 AM
37	WG605403-03 LCS2	2.047	0.5906	0.00		11:14:07 AM
38	L17030214-01	0.124	0.0305	0.00		11:14:25 AM
39	L17030214-04	0.130	0.0323	0.00	EPL	11:15:55 AM
40	WG605403-05 DUP	0.137	0.0343	0.00		11:16:13 AM
ST-3	1CCV (1.5 mg/L)	1.587	0.4565	105.77		11:17:43 AM
ST-2	2CCB (0 mg/L)	0.033	0.0038	0.00		11:18:01 AM
41	WG605403-06 MS	0.891	0.2539	0.00		11:19:31 AM
42	WG605403-07 MSD	1.038	0.2968	0.00	EPL	11:22:31 AM
43	L17030214-13	0.086	0.0194	0.00		11:22:49 AM
44	L17030214-16	0.102	0.0239	0.00		11:24:19 AM

Report Date :03/08/2017 Run Date :3/8/2017 Operator : SMARTCHEM1 Plan # :20170308001

Plan Description : NH3-A-TMM/03/08/2017

MICROBAC (OVD)
 SMARTCHEM200 INST1 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

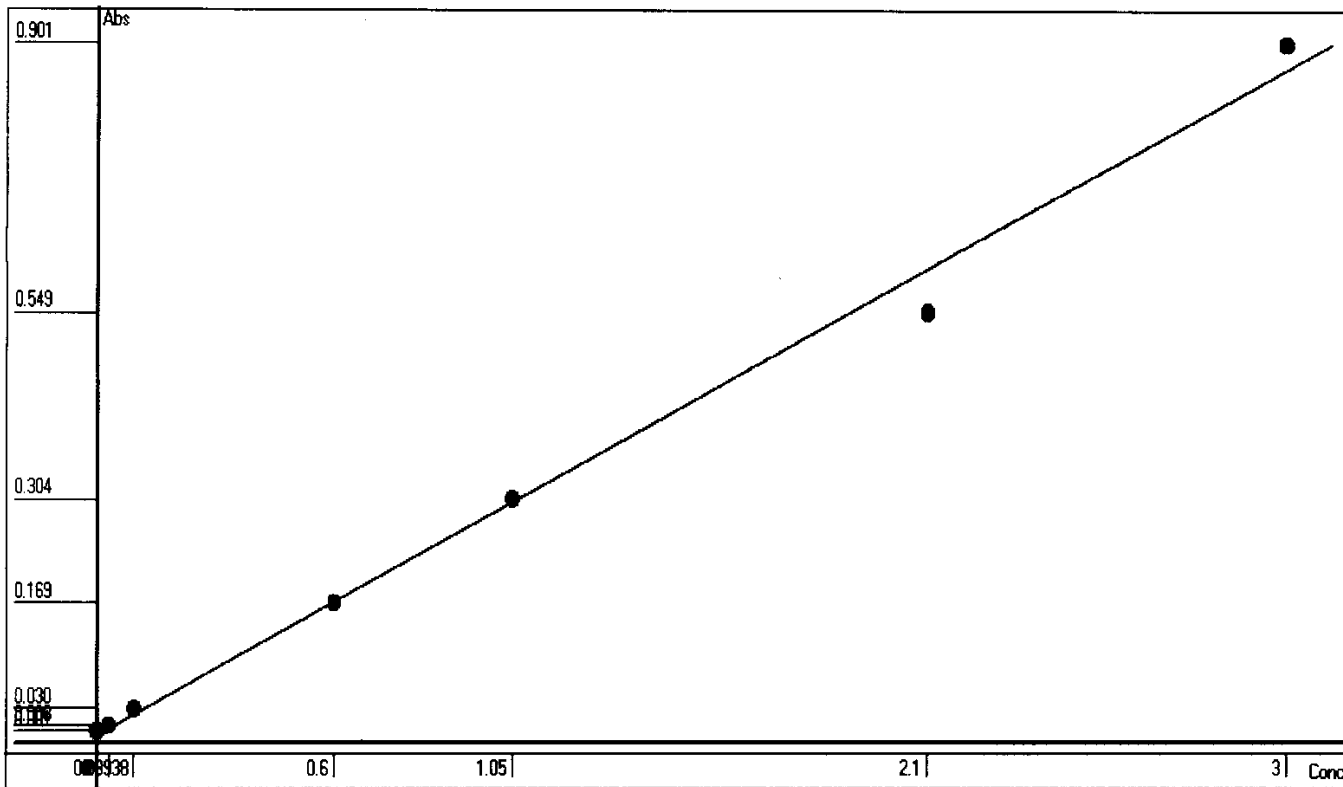
Method : WNH3 -Unit [mg/L] - EPA 350.1/SM4500-NH3 AMMONIA

Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
45	L17030214-19	0.093	0.0213	0.00		11:24:37 AM
46	L17030214-22	0.107	0.0255	0.00		11:26:07 AM
47	L17030214-25	0.094	0.0216	0.00		11:26:25 AM
48	L17030293-01	0.197	0.0516	0.00		11:27:55 AM
49	L17030293-02	0.841	0.2392	0.00		11:28:13 AM
50	L17030293-03	0.325	0.0891	0.00		11:30:37 AM
ST-3	1CCV (1.5 mg/L)	1.523	0.4380	101.53		11:30:55 AM
ST-2	2CCB (0 mg/L)	0.000	-0.0056	0.00	INV,><	11:32:26 AM
51	L17030293-04	0.291	0.0791	0.00		11:32:43 AM
52	L17030293-05	0.381	0.1054	0.00	EPL	11:34:13 AM
53	L17030293-06	0.458	0.1278	0.00	EPL	11:34:31 AM
54	ID 54 WGL605399-01 BK	-0.032	-0.0149	0.00	INV,EPL,><	11:36:01 AM
55	ID 55 Lcs	1.979	0.5709	0.00		11:36:20 AM
ST-3	1CCV (1.5 mg/L)	1.508	0.4335	100.50	EPL	11:37:49 AM
ST-2	2CCB (0 mg/L)	0.007	-0.0036	0.00	INV,><	11:38:08 AM
56	ID 56 L17030247-02 (20)	2.521	0.7288	0.00		11:39:38 AM
ST-3	1CCV (1.5 mg/L)	1.560	0.4488	104.00		11:39:55 AM
ST-2	2CCB (0 mg/L)	0.016	-0.0011	0.00	INV,><	11:41:26 AM
57	ID 57 WGL605403-01 BK	-0.007	-0.0077	0.00	INV,><,LL	11:41:43 AM
58	ID 58 BK	-0.002	-0.0064	0.00	INV,><,LL	11:43:13 AM
ST-3	1CCV (1.5 mg/L)	1.548	0.4454	103.23		11:43:31 AM
ST-2	2CCB (0 mg/L)	0.006	-0.0039	0.00	INV,><	11:45:01 AM
15-[1/2]	L17030209-02 (2)	3.096	0.4453	0.00	LH	11:57:12 AM
17-[1/2]	L17030247-02	X 2.113	0.3021	0.00		11:59:00 AM
15-[1/2]	L17030209-02	X 2.984	0.4290	0.00		12:00:48 PM
17-[1/2]	L17030247-02	X 2.096	0.2996	0.00		12:02:36 PM
ST-3	1CCV (1.5 mg/L)	1.548	0.4452	103.18		12:02:36 PM
ST-2	2CCB (0 mg/L)	0.014	-0.0017	0.00	INV,><	12:04:06 PM

Report Date :03/08/2017 Run Date :3/8/2017 Operator : SMARTCHEM1 Plan # :20170308001
 Plan Description : NH3-A-TMM/03/08/2017

Calibrant Report - WNH3 -

Calib Lot #:010104 Exp Date:6/17/2020 User:Westco Scientific
 Plan # : 20170308001 Description : [NH3-A-TMM/03/08/2017] Unit



Point	OD	Conc	Recalc Conc	% Error
1	0.0011	0	0.0234	2.34
2	0.0079	0.03	0.0467	55.67
3	0.0304	0.0938	0.1239	32.09
4	0.1685	0.6	0.5980	-0.33
5	0.3042	1.05	1.0638	1.31
6	0.5492	2.1	1.9047	-9.30
7	0.9014	3	3.1137	3.79

Conc= +3.4325*Abso +0.0196 R²=0.9935

RBL
0.1099
0

Report Date 3/8/2017 Run Date 3/8/2017

2.1.2 Orthophosphate Data

2.1.2.1 Summary Data

Lab Report #: L17030058

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030058-01	PrePrep Method: N/A	Instrument: UV-2600
Client ID: LH18/24-SP650-6420-GRAB	Prep Method: 365.2	Prep Date: N/A
Matrix: Water	Analytical Method: 365.2	Cal Date: 12/08/2016 13:50
Workgroup #: WG604692	Analyst: ADG	Run Date: 03/02/2017 09:10
Collect Date: 03/01/2017 15:00	Dilution: 5	File ID: 00.1703020910-13
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Orthophosphate	14265-44-2	3.43		0.500	0.250	0.125

2.1.2.2 QC Summary Data

Example Calculations for Visible Spectrophotometric Methods

Linear Calibration Model

Step 1 - Retrieve Curve Data from ICAL

m = slope of the linear equation
 b = intercept from the linear equation
 y = instrument response as absorbance or OD
 x = concentration of analyte (mg/L)
 $y = mx + b$

Step 2: Calculate the instrument concentration, x

Where:

$$x = (y - b)/m$$

Step 3: Solve for analyte concentration in sample, Cx

$$C_x = (x) (D)$$

Example Calculation (LCS):

Value of m from plot:	7.809
Value of b from plot:	0.0004135
Absorbance of unknown from quantitation report (y):	0.31
Calculated concentration (x):	0.03964483
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	0.0396 mg/L

SmartChem Autoanalyzer - Quadratic Calibration for Chloride and Sulfate

Step 1 - Retrieve Curve Data from Smartchem ICAL

A, B, C = constants from the ICAL quadratic regression

x = instrument response as absorbance or OD

y = concentration of analyte (mg/L)

Step 2: Calculate the instrument concentration, y

Where:

$$y = Ax^2 + Bx + C$$

Step 3: Solve for analyte concentration in sample, C_y

$$C_y = (y) (D)$$

Example Calculation (LCS):

Value of A from plot:	101.2796
Value of B from plot:	318.9056
Value of C from plot:	-2.2712
Absorbance of unknown from quantitation report (x):	0.1583
Calculated concentration (y):	50.7495108
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	50.75 mg/L

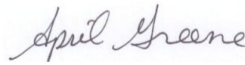
Microbac Laboratories Inc.

Data Checklist

Date: 02-MAR-2017
 Analyst: ADG
 Analyst: NA
 Method: PO4
 Instrument: UV-2600
 Curve Workgroup: NA
 Runlog ID: _____
 Analytical Workgroups: WG604692

Calibration/Linearity	03/02/17
Second Source Check	
ICV/CCV (std)	
ICB/CCB	
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	ADG
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
02-MAR-2017



Secondary Reviewer:
03-MAR-2017




Analytical Method: 365.2
Login Number: L17030058

AAB#: WG604692

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6420-GRAB	01	03/01/17					03/02/2017	.8	2		03/02/17	.8	2	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5180791
Report generated 03/02/2017 15:01



METHOD BLANK SUMMARY

Login Number: L17030058 Work Group: WG604692
 Blank File ID: 00.1703020910-03 Blank Sample ID: WG604692-01
 Prep Date: 03/02/17 09:10 Instrument ID: UV-2600
 Analyzed Date: 03/02/17 09:10 Method: 365.2
 Analyst: ADG

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG604692-02	00.1703020910-04	03/02/17 09:10	
LCS2	WG604692-03	00.1703020910-05	03/02/17 09:10	
DUP	WG604692-05	00.1703020910-09	03/02/17 09:10	
LH18/24-SP650-6420-GRAB	L17030058-01	00.1703020910-08	03/02/17 09:55	

Report Name: BLANK_SUMMARY
 PDF File ID: 5180792
 Report generated 03/02/2017 15:01



Login Number: L17030058 Prep Date: 03/02/17 09:10 Sample ID: WG604692-01
 Instrument ID: UV-2600 Run Date: 03/02/17 09:10 Prep Method: 365.2
 File ID: 00.1703020910-03 Analyst: ADG Method: 365.2
 Workgroup (AAB#): WG604692 Matrix: Water Units: mg/L
 Contract #: _____ Cal ID: UV-260-27-FEB-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Orthophosphate	0.0250	0.100	0.0250	1	U

DL Method Detection Limit
 LOQ Reporting/Practical Quantitation Limit
 ND Analyte Not detected at or above reporting limit
 * |Analyte concentration| > 1/2 RL

Report Name: BLANK
 PDF ID: 5180793
 02-MAR-2017 15:01



Login Number: L17030058 Analyst: ADG Prep Method: 365.2
 Instrument ID: UV-2600 Matrix: Water Method: 365.2
 Workgroup (AAB#): WG604692 Units: mg/L
 QC Key: DOD4 Lot #: STD80706
 Sample ID: WG604692-02 LCS File ID: 00.1703020910-04 Run Date: 03/02/2017 09:10
 Sample ID: WG604692-03 LCS2 File ID: 00.1703020910-05 Run Date: 03/02/2017 09:10

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Orthophosphate	1.00	0.984	98.4	1.00	0.986	98.6	0.162	90 - 110	20	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5180794
 Report generated: 03/02/2017 15:01



2.1.2.3 Raw Data

Curves

Parameter: P04

Spectrophotometer: UV-2600

Calibration (Curve) standard stock: 75790

Concentration: 1000 mg/L

Recipe for preparation of curve standards found in:
SOP: K3653 Revision: _____ Page: 9

Second Source Stock: Std 79302 (concentration: 10)

Daily Preparation: 1000/100
concentration = 10.0

Calibration Standards (mg/L)	Volume (mL)	Cell Size (cm)	Wavelength (nm)	Absorbance
Std 1 1.0	50	1cm	880	0.634
0.7				0.440
0.5				0.323
0.2				0.130
0.1				0.067
0.05				0.038
0.00				0.010
2nd Source 1.0				0.629
				Ag 12/8/14

Analyst: Paul Greene

Date/Time: 12/8/14 @ 1350

DCN#122607



Microbac Laboratories Inc.
INITIAL CALIBRATION

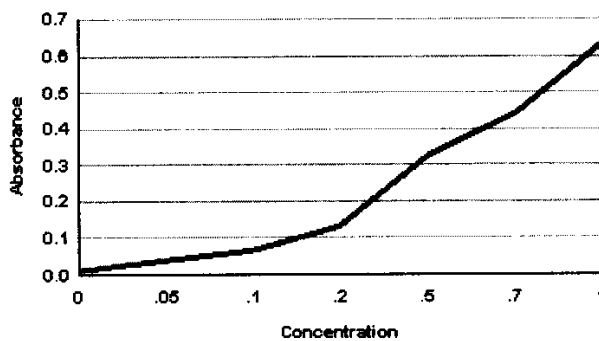
Workgroup: WG594148
Analytical Method: 300
Instrument ID: DV-2600

Analyst: ADG
Initial Calibration Date: 12/08/2016

Analyte: ORTHOPHOSPHATE
Number of Points: 7
Slope: 0.625244
Y-Intercept: 0.00680397
Coef. Of Correlation (R^2): 0.999835
Coef. Of Correlation (R): 0.999918

Concentration X	Absorbance Y	X^2	$X * Y$	Y-Fitted (mX^2+B)
0.00	0.0100	0.00	0.00	0.00680397
0.0500	0.0380	0.00250	0.00190	0.0380662
0.100	0.0670	0.0100	0.00670	0.0693284
0.200	0.130	0.0400	0.0260	0.131853
0.500	0.323	0.250	0.162	0.319426
0.700	0.440	0.490	0.308	0.444475
1.00	0.634	1.00	0.634	0.632048

Curve Fit



WG_ICAL_CAL_WET - Modified 03/06/2008
Report generated 12/08/2016 14:41



Microbac Laboratories Inc.
ALTERNATE SOURCE REPORT

Workgroup #: WG594148
 File ID: 00.1612081350-08
 CCV ID: WG594148-08
 Units: mg/L
 Analyte: ORTHOPHOSPHATE

Instrument ID: UV-2600
 Run Date: 12/08/2016
 Run Time: 13:50
 Analyst: ADG
 Cal ID: UV-260 - 08-DEC-16 13:50:07

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	1	0.995	0.629	0.5	

* Exceeds %D Limit

CCC Calibration Check Compounds
 SPCC System Performance Check Compounds

WET_WG_SSCV - Modified 03/06/2008
 Report generated 12/08/2016 14:40



WORKGROUP: WG604692

Orthophosphate
(orthophosphate1)

EPA 365.2 / SM4500-P E

SOP K3653 Rev 17

Color Reagent Chemicals

39094

38724

38086

COA 17313

CCV: 80707

LCS: 80706

Spike: 80706

Daily Dilution: 51.5/100

Daily Dilution: 10(10)/100

Daily Dilution: 2(10)/58

Daily Dilution: 20.5

Daily Dilution: 21.0

Daily Dilution: 2.9

Spectrophotometer: UV-2600 Curve ID: 12/8/16

SAMPLE	VOLUME	PH < 8.2	DILUTION	ABSORBANCE @ 880 nm
CCV: mg/L	50	✓		0.320
BLK/CCB:	50	✓		0.001
LCS: ppm	50	✓		0.622
LCSD: ppm	50	✓		0.623
03 0031-01	50	✓	1/50	0.445
03 0031-02	50	✓	1/200	0.393
03 0058-01	50	✓	3/200 4/10 1/5	0.436
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
DUP: 0031-01	50	✓	1/50	0.448
MS: () 0031-01	50	✓	3/200 4/50	0.539 1/9 3-2-17
MSD: () MS-058-01	50	✓	4/9 4/10 1/5	0.502
CCV: ()	50	✓		0.005
CCB:	50	✓		0.338

0455

Analyst: Paul Greene

Date / Time: 3-2-17 1 0910

DCN#124284



Microbac Laboratories Inc.
SAMPLE REPORT

Workgroup: WG604692

Analyst: ADG

Analyte: ORTHOPHOSPHATE

Date: 03/02/2017

Sample ID	I Vol	F Vol	Response	Slope	Y Intercept	Anal. Conc.	Rep. Conc.	Dil	Units
WG604692-01	50	50	0.00100	0.6252	0.006804	-0.0092827	-0.0092827	1	mg/L
WG604692-02	50	50	0.622	0.6252	0.006804	0.98393	0.98393	1	mg/L
WG604692-03	50	50	0.623	0.6252	0.006804	0.98553	0.98553	1	mg/L
L17030031-01	50	50	0.445	0.6252	0.006804	0.70084	35.042	50	mg/L
WG604692-04	50	50	0.445	0.6252	0.006804	0.70084	35.042	50	mg/L
L17030031-02	50	50	0.393	0.6252	0.006804	0.61767	123.53	200	mg/L
WG604692-06	50	50	0.436	0.6252	0.006804	0.68645	3.4322	5	mg/L
WG604692-05	50	50	0.448	0.6252	0.006804	0.70564	35.282	50	mg/L
WG604692-07	50	50	0.502	0.6252	0.006804	0.79200	3.9600	5	mg/L
L17030058-01	50	50	0.436	0.6252	0.006804	0.68645	3.4322	5	mg/L

UV_SAMPLE_REPORT - Modified 03/06/2008

Report generated 03/03/2017 10:54

Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

00844442

Workgroup #: WG604775
File ID: 00.1703020910-01
CCV ID: WG604775-01
Units: mg/L
Analyte: ORTHOPHOSPHATE

Instrument ID: UV-2600
Run Date: 03/02/2017
Run Time: 09:10
Analyst: ADG
Cal ID: UV-260 - 27-FEB-17

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	.5	0.517	0.660	3.4	

* Exceeds %D Limit

CCC Calibration Check Compounds

SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 03/02/2017 13:28



Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

00844443

Workgroup #: WG604775 Instrument ID: UV-2600
File ID: 00.1703020910-11 Run Date: 03/02/2017
CCV ID: WG604775-03 Run Time: 09:10
Units: mg/L Analyst: ADG
Analyte: ORTHOPHOSPHATE Cal ID: UV-260 - 27-FEB-17

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	.5	0.530	0.676	6.0	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 03/02/2017 13:28



2.1.3 Total Organic Carbon Data

2.1.3.1 Summary Data

Lab Report #: L17030058

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030058-01	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: LH18/24-SP650-6420-GRAB	Prep Method: 415.1	Prep Date: N/A
Matrix: Water	Analytical Method: 415.1	Cal Date: 02/10/2017 10:25
Workgroup #: WG604821	Analyst: DCM	Run Date: 03/03/2017 09:06
Collect Date: 03/01/2017 15:00	Dilution: 20	File ID: TC03032017.007
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Total Organic Carbon	TOC	373		40.0	20.0	10.0

2.1.3.2 QC Summary Data

**Total Organic Carbon Example Calculations
(Direct Readout Parameter)**

$$(\text{Readout})/(\text{dilution}) = \text{mg/L}$$

where:

Readout = direct readout from the instrument

dilution = dilution in decimal form (ex. 1/5 dilution = 0.2)

Microbac Laboratories Inc.

Data Checklist

Date: 03-MAR-2017
 Analyst: DCM
 Analyst: ADG
 Method: TOC-VPM
 Instrument: TOC
 Curve Workgroup: NA
 Runlog ID: _____
 Analytical Workgroups: WG604821

Calibration/Linearity	02/10/17
Second Source Check	
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	ADG
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
06-MAR-2017

April Greene

Secondary Reviewer:
07-MAR-2017

Dennis Johnson



Analytical Method: 415.1
Login Number: L17030058

AAB#: WG604821

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6420-GRAB	01	03/01/17					03/03/2017	1.8	28		03/03/17	1.8	28	

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17030058 Work Group: WG604821
 Blank File ID: TC03032017.004 Blank Sample ID: WG604821-01
 Prep Date: 03/03/17 07:57 Instrument ID: TOC-VWP
 Analyzed Date: 03/03/17 07:57 Method: 415.1
 Analyst: DCM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG604821-02	TC03032017.005	03/03/17 08:09	01
LCS2	WG604821-03	TC03032017.006	03/03/17 08:21	01
LH18/24-SP650-6420-GRAB	L17030058-01	TC03032017.007	03/03/17 09:06	DL01
DUP	WG604821-08	TC03032017.029	03/03/17 14:40	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5186229
 Report generated 03/07/2017 11:03



Login Number: L17030058 Prep Date: 03/03/17 07:57 Sample ID: WG604821-01
Instrument ID: TOC-VWP Run Date: 03/03/17 07:57 Prep Method: 415.1
File ID: TC03032017.004 Analyst: DCM Method: 415.1
Workgroup (AAB#): WG604821 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: TOC-VW-10-FEB-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	2.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 5186230
07-MAR-2017 11:03



Login Number: L17030058 Analyst: DCM Prep Method: 415.1
 Instrument ID: TOC-VWP Matrix: Water Method: 415.1
 Workgroup (AAB#): WG604821 Units: mg/L
 QC Key: DOD4 Lot #: STD77870
 Sample ID: WG604821-02 LCS File ID: TC03032017.005 Run Date: 03/03/2017 08:09
 Sample ID: WG604821-03 LCS2 File ID: TC03032017.006 Run Date: 03/03/2017 08:21

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	25.4	102	25.0	24.8	99.2	2.39	85 - 115	15	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5186231
 Report generated: 03/07/2017 11:03



2.1.3.3 Raw Data

	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TC	TCCURVE		Complete	2/10/2017 10:29:51 A	0, 1, 2, 3, 4, 5
2	TC	TOC ICV	TC:23.90mg/L	Complete	2/10/2017 10:47:48 A	6
3	IC	TICCURVE		Complete	2/10/2017 3:55:41 PM	0, 1, 2, 3, 4, 5
4	IC	TIC CURVE	IC:24.27mg/L	Complete	2/10/2017 4:12:07 PM	6
5	TC		TC:0.000mg/L	Complete	2/10/2017 4:31:41 PM	7
6	IC	TOC/TIC	IC:8.571mg/L	Complete	2/10/2017 4:42:05 PM	7
7	TC	TOC/TIC	TC:32.10mg/L	Complete	2/10/2017 5:01:02 PM	7

Instr. Information

System TOCVW ASI
 Detector Wet Chemical

Cal. Curve

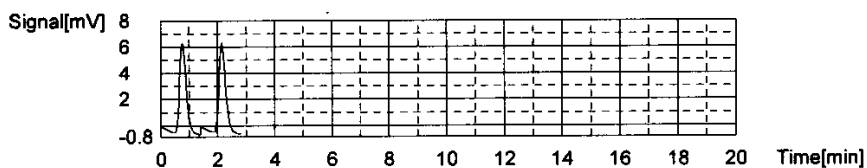
Sample Name: TCCURVE
 Sample ID: Untitled
 Cal. Curve: TCCURVE-02-10-2017.2017_02_10_09_32_59.cal
 Status: Completed

Type	Anal.
Standard	TC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	10.83	500uL	1	*****		2/10/2017 9:36:31 AM
2	10.82	500uL	1	*****		2/10/2017 9:40:05 AM

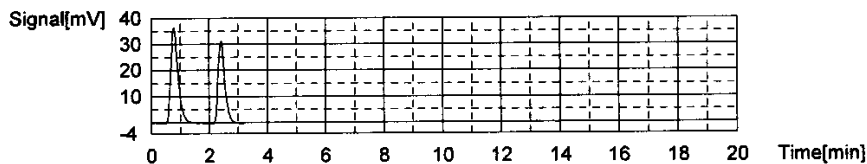
Acid Add. 0.000%
 Mean Area 10.82



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	64.31	500uL	1	*****		2/10/2017 9:45:28 AM
2	51.52	500uL	1	*****		2/10/2017 9:49:19 AM

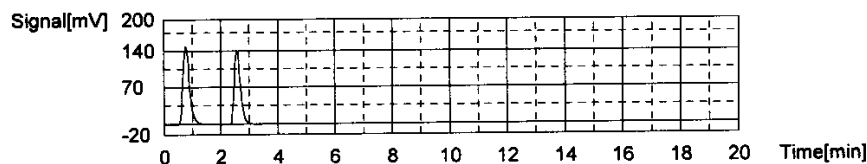
Acid Add. 0.000%
 Mean Area 57.92



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	238.4	500uL	1	*****		2/10/2017 9:55:04 AM
2	216.3	500uL	1	*****		2/10/2017 9:58:58 AM

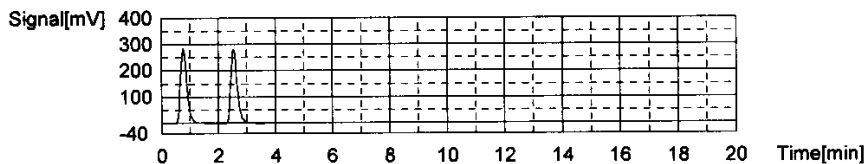
Acid Add. 0.000%
 Mean Area 227.4



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	442.5	500uL	1	*****		2/10/2017 10:04:41 AM
2	437.9	500uL	1	*****		2/10/2017 10:08:48 AM

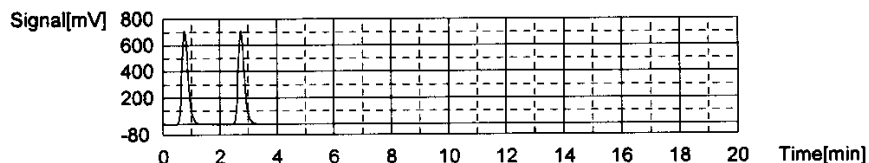
Acid Add. 0.000%
 Mean Area 440.2



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1091	500uL	1	*****		2/10/2017 10:14:47 AM
2	1092	500uL	1	*****		2/10/2017 10:19:05 AM

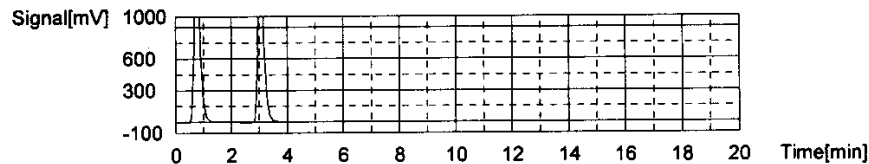
Acid Add. 0.000%
 Mean Area 1092



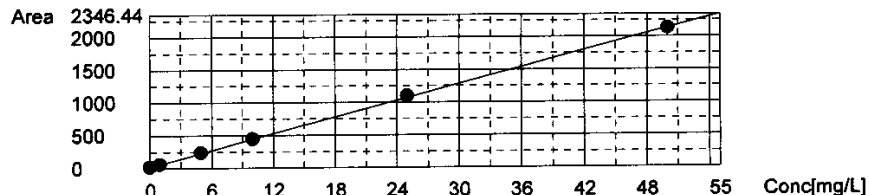
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	2132	500uL	1	*H*****		2/10/2017 10:25:19 AM
2	2118	500uL	1	*H*****		2/10/2017 10:29:51 AM

Acid Add. 0.000%
 Mean Area 2125



Slope: 42.33
 Intercept 16.87
 r² 0.999887
 Zero Shift No



Sample

Sample Name: TOC ICV
 Sample ID: Untitled
 Origin: TCCURVE-02-10-2017.2017_02_10_09_32_59.cal
 Status: Completed
 Chk. Result

Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:23.90mg/L

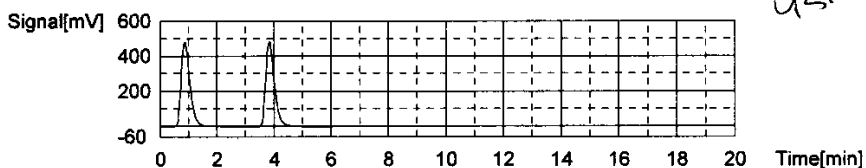
1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1029	23.91mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/10/2017 10:42:11 AM
2	1028	23.89mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/10/2017 10:47:48 AM

Q5.6%

Mean Area 1029
Mean Conc. 23.90mg/L



Cal. Curve

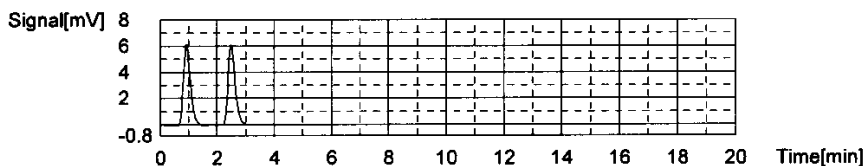
Sample Name: TICCURVE
Sample ID: Untitled
Cal. Curve: TICCURVE-02-10-2017.2017_02_10_14_45_10.cal
Status: Completed

Type	Anal.
Standard	IC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	10.59	500uL	1	*****		2/10/2017 2:49:09 PM
2	10.43	500uL	1	*****		2/10/2017 2:53:06 PM

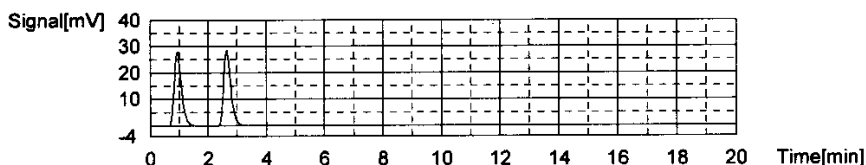
Acid Add. 3.000%
Mean Area 10.51



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	48.13	500uL	1	*****		2/10/2017 3:00:24 PM
2	49.13	500uL	1	*****		2/10/2017 3:04:41 PM

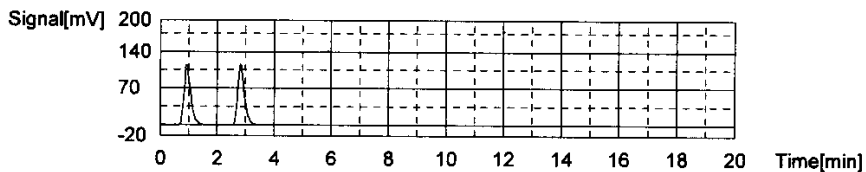
Acid Add. 3.000%
Mean Area 48.63



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	189.0	500uL	1	*****		2/10/2017 3:12:24 PM
2	190.1	500uL	1	*****		2/10/2017 3:16:55 PM

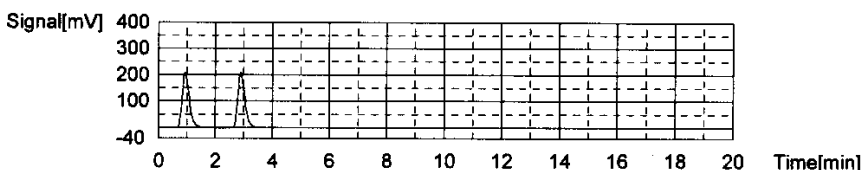
Acid Add. 3.000%
Mean Area 189.6



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	360.6	500ul	1	*****		2/10/2017 3:24:47 PM
2	362.2	500ul	1	*****		2/10/2017 3:29:24 PM

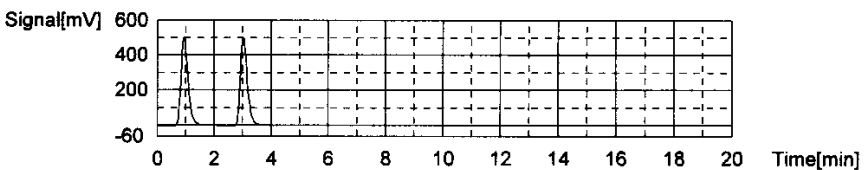
Acid Add. 3.000%
Mean Area 361.4



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	859.3	500ul	1	*****		2/10/2017 3:37:23 PM
2	856.9	500ul	1	*****		2/10/2017 3:42:16 PM

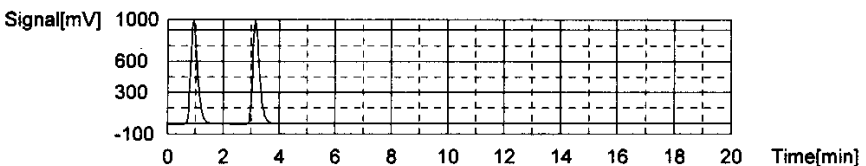
Acid Add. 3.000%
Mean Area 858.1



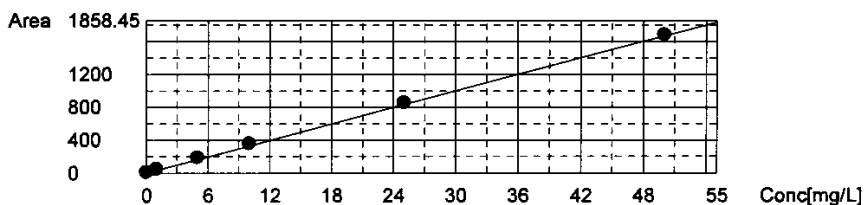
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1690	500ul	1	*****		2/10/2017 3:50:31 PM
2	1689	500ul	1	*****		2/10/2017 3:55:41 PM

Acid Add. 3.000%
Mean Area 1690



Slope: 33.49
Intercept: 0.000
r^2: 0.999919
Zero Shift: Yes



Sample

Sample Name: TIC CURVE
 Sample ID: Untitled
 Origin: TICCURVE-02-10-2017.2017_02_10_14_45_10.cal
 Status: Completed
 Chk. Result:

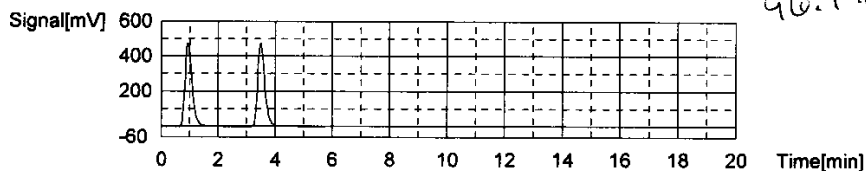
Type	Anal.	Dil.	Result
Unknown	IC	1.000	IC:24.27mg/L

1. Det

Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	810.5	24.20mg/L	500uL	1	1	TICCURVE-02-10-2017.2017_02_10_14_45	2/10/2017 4:06:15 PM
2	814.6	24.33mg/L	500uL	1	1	TICCURVE-02-10-2017.2017_02_10_14_45	2/10/2017 4:12:07 PM

Mean Area 812.5
 Mean Conc. 24.27mg/L



Sample

Sample Name: Untitled
 Sample ID: Untitled
 Origin: TCCURVE-02-10-2017.2017_02_10_14_14_25.cal
 Status: Completed
 Chk. Result:

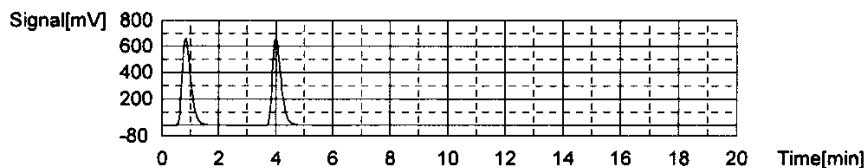
Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:0.000mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1406	0.000mg/L	500uL	1	1	TCCURVE-02-10-2017.2017_02_10_14_14	2/10/2017 4:25:42 PM
2	1411	0.000mg/L	500uL	1	1	TCCURVE-02-10-2017.2017_02_10_14_14	2/10/2017 4:31:41 PM

Mean Area 1409
 Mean Conc. 0.000mg/L



Sample

Sample Name: TOC/TIC
 Sample ID: Untitled
 Origin: TICCURVE-02-10-2017.2017_02_10_14_45_10.cal
 Status: Completed
 Chk. Result:

2/12/2017 11:18:36 AM

CURVES-02-10-2017.132

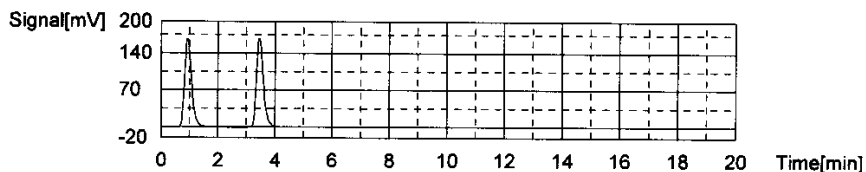
Type	Anal.	Dil.	Result
Unknown	IC	1.000	IC:8.571mg/L

1. Det

Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	286.8	8.565mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/10/2017 4:37:09 PM
2	287.2	8.577mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	12/10/2017 4:42:05 PM

Mean Area 287.0
Mean Conc. 8.571mg/L



Sample

Sample Name: TOC/TIC
Sample ID: Untitled
Origin: TCCURVE-02-10-2017.2017_02_10_09_32_59.cal
Status: Completed
Chk. Result:

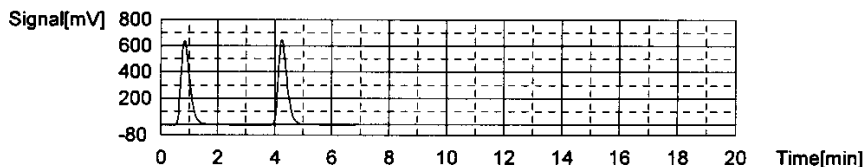
Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:32.10mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1378	32.16mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_59	12/10/2017 4:55:07 PM
2	1373	32.04mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_59	12/10/2017 5:01:02 PM

Mean Area 1376
Mean Conc. 32.10mg/L



Total Organic Carbon

MAKE DAILY

CCV (TOC): std 7981
 $(5/200)(1000) = 25\text{mg/L}$

LCS (TOC): std 77870
 $(5/200)(1000) = 25\text{mg/L}$

CCV (TIC): std 80416
 $(5/200)(1000) = 25\text{mg/L}$

MS (TOC): 0.4 (1000) / 10 = 10
std 77870

Calibration Curve Date: 2/10/17

Reagent: 38944
39246

SM5310-C : Matrix 2 WG _____

EPA 415.1/9060A(mod): Matrix 1 WG 604821 SOP: K 4151 Rev. 19
 Instrument: Shimadza TOC-VWP/ASI

- drain reservoir filled
- ASI water bottle full
- dilution water bottle full

- DAILY CHECK
- 3rd bottle full
 - sufficient gas
 - sufficient persulfate

- sufficient acid waste container

Position	Sample ID	Dilution
1	TIC/TOC	
2	TIC	
3	CCV	
4	BLK	
5	LCS	
6	LCS	
7	0058-01	1/20
8	0061-01	1/2
9	02	1/2
10	03	1/2
11	04	1/2
12	ms 0062-01	
13	msd 02	
14	CCV	
15	CCB	
16	0062-03	
17	04	
18	05	
19	0064-01	
20	03	
21	05	
22	07	
23	0062-01	
24	03	
25	05	

Position	Sample ID	Dilution
26	CCV	
27	CCB	
28	0084-01	
29	0084-01 Dup	
30	0041-03	1/4
31	03	1/4
32	0062-05	1/2
33	0061-03	1/2
34	07	1/2
35	007-01	1/2
36	03	1/2
37	0061-03	1/4
38	CCV	
39	CCB	
40		
41		
42		
43		
44		
45		
46		
47		
48		
49		
50		

Position	Sample ID	Dilution
51		
52		
53		
54		
55		
56		
57		
58		
59		
60		
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		

Analyst: April Cheene

Date/Time: 2/13/17 @ 0725

David Merckle

DCN#124312



	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TOC	TIC/TOC	TOC:26.93mg/L TC:35.75mg/L IC:8.821mg/L	Complet	3/3/2017 7:28:02 AM	1
2	TOC	TIC	TOC:2.004mg/L TC:26.49mg/L IC:24.48mg/L	Complet	3/3/2017 7:40:43 AM	2
3	TOC	CCV	!!Error!! TOC:25.43mg/L TC:25.07mg/L IC:-0.3546mg/L	Complet	3/3/2017 7:52:52 AM	3
4	TOC	WG604821-01 BLK	!!Error!! TOC:0.1204mg/L TC:-0.1715mg/L IC:-0.2919mg/L	Complet	3/3/2017 8:01:48 AM	0
5	TOC	WG604821-02 LCS	!!Error!! TOC:25.39mg/L TC:25.05mg/L IC:-0.3378mg/L	Complet	3/3/2017 8:13:53 AM	5
6	TOC	WG604821-03 LCSDUP	!!Error!! TOC:24.79mg/L TC:24.46mg/L IC:-0.3331mg/L	Complet	3/3/2017 8:26:03 AM	6
7	TOC	L17030058-01 (20)	TOC:18.66mg/L TC:18.71mg/L IC:0.05392mg/L	Complet	3/3/2017 9:11:15 AM	7
8	TOC	L17030061-01 (2)	TOC:2.170mg/L TC:16.93mg/L IC:14.76mg/L	Complet	3/3/2017 10:17:16 AM	8
9	TOC		!!Error!! TOC:-5.308mg/L TC:59.99mg/L IC:65.30mg/L	Complet	3/3/2017 10:30:40 AM	9
10	TOC		TOC:4.355mg/L TC:57.89mg/L IC:53.53mg/L	Complet	3/3/2017 10:44:51 AM	10
11	TOC	L17030061-04 (2)	TOC:2.178mg/L TC:17.20mg/L IC:15.02mg/L	Complet	3/3/2017 10:57:40 AM	11
12	TOC	L17030062-01	TOC:12.78mg/L TC:19.92mg/L IC:17.96mg/L	Complet	3/3/2017 11:10:16 AM	12
13	TOC	L17030062-02	TOC:11.45mg/L TC:29.02mg/L IC:17.56mg/L	Complet	3/3/2017 11:22:59 AM	13
14	TOC	CCV	!!Error!! TOC:25.11mg/L TC:24.86mg/L IC:-0.2537mg/L	Complet	3/3/2017 11:35:09 AM	14
15	TOC	CCB	!!Error!! TOC:0.1168mg/L TC:-0.1719mg/L IC:-0.2887mg/L	Complet	3/3/2017 11:44:05 AM	0
16	TOC	L17030062-03	TOC:1.815mg/L TC:19.92mg/L IC:18.11mg/L	Complet	3/3/2017 11:56:46 AM	16
17	TOC	L17030062-04	TOC:3.558mg/L TC:43.71mg/L IC:40.15mg/L	Complet	3/3/2017 12:10:22 PM	17
18	TOC		!!Error!! TOC:-8.175mg/L TC:59.99mg/L IC:68.17mg/L	Complet	3/3/2017 12:24:57 PM	18
19	TOC	L17030066-01	TOC:4.723mg/L TC:47.45mg/L IC:42.72mg/L	Complet	3/3/2017 12:38:53 PM	19
20	TOC		!!Error!! TOC:-19.57mg/L TC:80.10mg/L IC:99.67mg/L	Complet	3/3/2017 12:54:29 PM	20
21	TOC	L17030066-05	TOC:1.821mg/L TC:31.40mg/L IC:29.58mg/L	Complet	3/3/2017 1:07:28 PM	21
22	TOC		!!Error!! TOC:-13.27mg/L TC:64.36mg/L IC:77.63mg/L	Complet	3/3/2017 1:21:07 PM	22
23	TOC		!!Error!! TOC:-1.087mg/L TC:56.90mg/L IC:57.98mg/L	Complet	3/3/2017 1:35:22 PM	23
24	TOC		!!Error!! TOC:-1.960mg/L TC:57.60mg/L IC:59.57mg/L	Complet	3/3/2017 1:48:23 PM	24
25	TOC	L17030067-05	TOC:1.183mg/L TC:13.90mg/L IC:12.71mg/L	Complet	3/3/2017 2:00:36 PM	25
26	TOC	CCV	!!Error!! TOC:24.96mg/L TC:24.74mg/L IC:-0.2152mg/L	Complet	3/3/2017 2:12:46 PM	26
27	TOC	CCB	!!Error!! TOC:0.1102mg/L TC:-0.1660mg/L IC:-0.2761mg/L	Complet	3/3/2017 2:21:43 PM	0
28	TOC	L17030084-01	!!Error!! TOC:0.9791mg/L TC:0.6787mg/L IC:-0.3004mg/L	Complet	3/3/2017 2:33:06 PM	28
29	TOC	WG604821-08 DUP	!!Error!! TOC:0.9502mg/L TC:0.6425mg/L IC:-0.3077mg/L	Complet	3/3/2017 2:44:31 PM	29
30	TOC	L17030061-02 (4)	TOC:4.810mg/L TC:35.92mg/L IC:31.11mg/L	Complet	3/3/2017 3:01:21 PM	30
31	TOC	L17030061-03 (4)	TOC:3.854mg/L TC:26.39mg/L IC:22.54mg/L	Complet	3/3/2017 3:14:34 PM	31
32	TOC	L17030062-05 (2)	TOC:3.424mg/L TC:38.11mg/L IC:34.69mg/L	Complet	3/3/2017 3:27:39 PM	32
33	TOC		!!Error!! TOC:-9.501mg/L TC:62.64mg/L IC:72.14mg/L	Complet	3/3/2017 3:41:56 PM	33
34	TOC	L17030066-07 (2)	TOC:3.016mg/L TC:39.32mg/L IC:36.30mg/L	Complet	3/3/2017 3:54:33 PM	34
35	TOC	L17030067-01 (2)	TOC:4.295mg/L TC:28.59mg/L IC:24.30mg/L	Complet	3/3/2017 4:07:44 PM	35
36	TOC	L17030067-03 (2)	TOC:4.698mg/L TC:27.53mg/L IC:22.83mg/L	Complet	3/3/2017 4:20:43 PM	36
37	TOC	L17030066-03 (4)	TOC:3.551mg/L TC:39.55mg/L IC:36.00mg/L	Complet	3/3/2017 4:40:46 PM	37
38	TOC	CCV	!!Error!! TOC:25.09mg/L TC:24.93mg/L IC:-0.1572mg/L	Complet	3/3/2017 4:53:03 PM	38
39	TOC	CCB	!!Error!! TOC:0.1080mg/L TC:-0.1633mg/L IC:-0.2714mg/L	Complet	3/3/2017 5:01:59 PM	0

3/6/2017 7:42:34 AM

1/1

3/6/2017 7:28:10 AM

03-03-2017-ADG-TOC.132

Instr. Information

System TOCVW ASI
 Detector Wet Chemical

Sample

Sample Name:
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017.met
 Status Completed
 Chk. Result

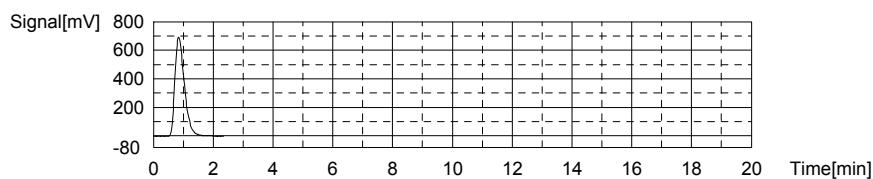
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:26.93mg/L TC:35.75mg/L IC:8.821mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1530	35.75mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 7:23:16 AM

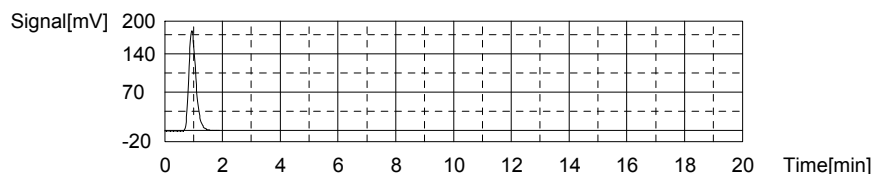
Mean Area 1530
 Mean Conc. 35.75mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	313.8	8.821mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 7:28:02 AM

Mean Area 313.8
 Mean Conc. 8.821mg/L



Sample

Sample Name:
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017.met
 Status Completed
 Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.004mg/L TC:26.49mg/L IC:24.48mg/L

1. Det

Anal.: TC

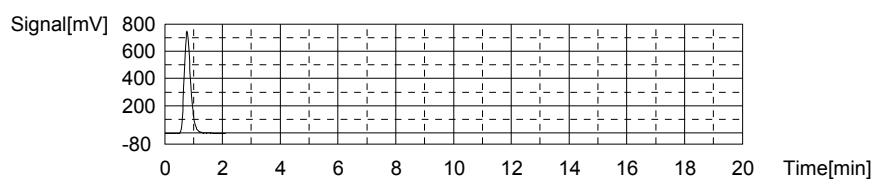
1/27

3/6/2017 7:28:10 AM

03-03-2017-ADG-TOC.t32

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1138	26.49mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 7:35:34 AM

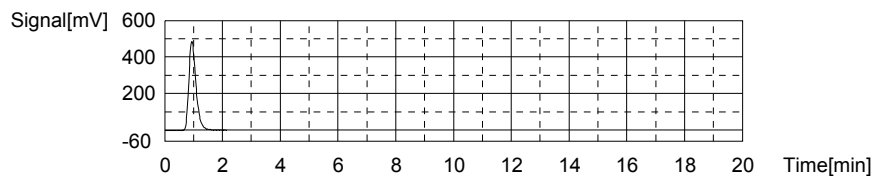
Mean Area 1138
Mean Conc. 26.49mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	838.3	24.48mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 7:40:43 AM

Mean Area 838.3
Mean Conc. 24.48mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

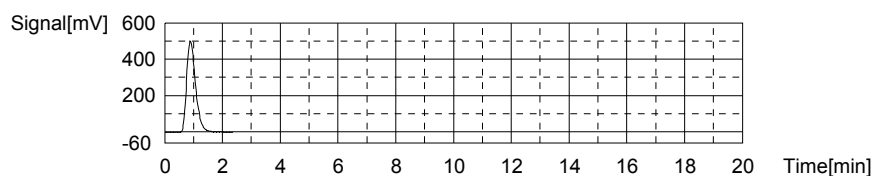
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:25.43mg/L TC:25.07mg/L IC:-0.3546mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1078	25.07mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 7:48:30 AM

Mean Area 1078
Mean Conc. 25.07mg/L

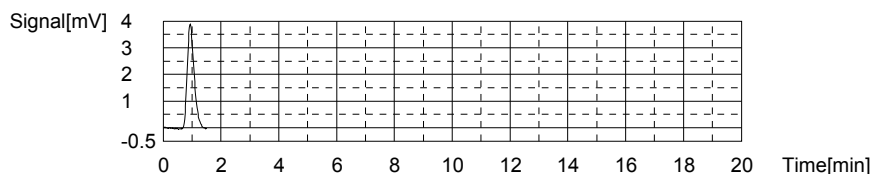


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.542	-0.3546mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 7:52:52 AM

2/27

Mean Area 6.542
 Mean Conc. -0.3546mg/L



Sample

Sample Name:
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017.met
 Status: Completed
 Chk. Result

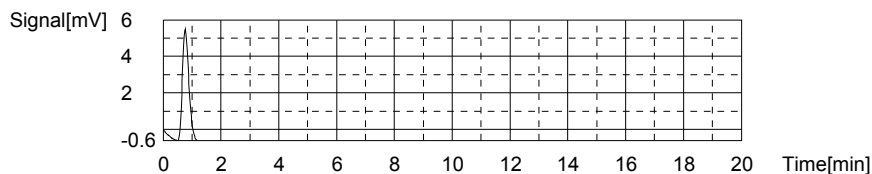
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1204mg/L TC:-0.1715mg/L IC:-0.2919mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.607	-0.1715mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 7:57:52 AM

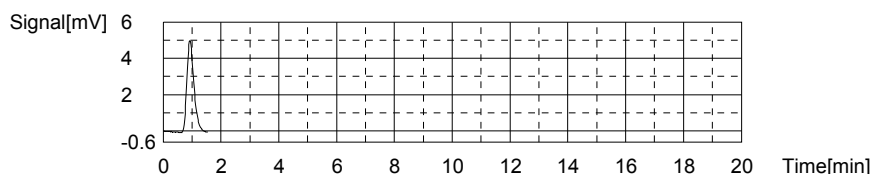
Mean Area 9.607
 Mean Conc. -0.1715mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.640	-0.2919mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 8:01:48 AM

Mean Area 8.640
 Mean Conc. -0.2919mg/L



Sample

Sample Name:
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017.met
 Status: Completed
 Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:25.39mg/L TC:25.05mg/L IC:-0.3378mg/L

3/6/2017 7:28:10 AM

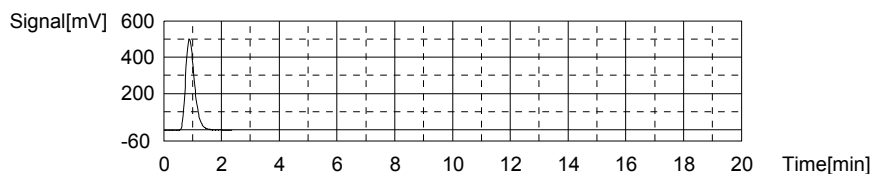
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1077	25.05mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 8:09:36 AM

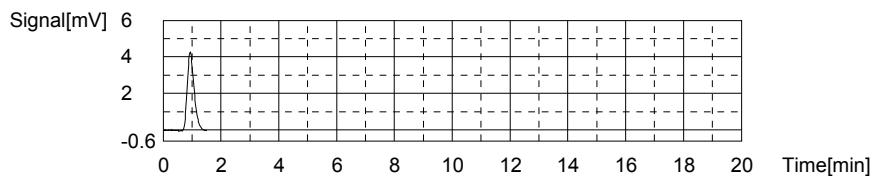
Mean Area 1077
Mean Conc. 25.05mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.103	-0.3378mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 8:13:53 AM

Mean Area 7.103
Mean Conc. -0.3378mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

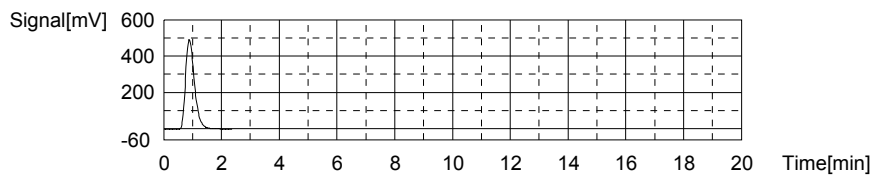
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.79mg/L TC:24.46mg/L IC:-0.3331mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1052	24.46mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 8:21:41 AM

Mean Area 1052
Mean Conc. 24.46mg/L

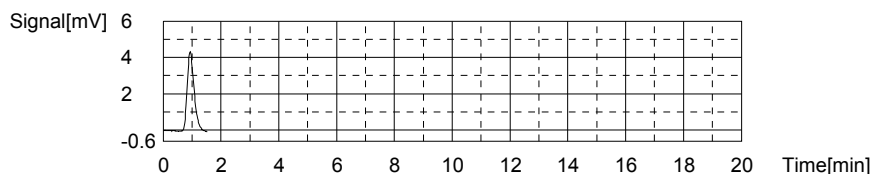


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.260	-0.3331mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 8:26:03 AM

4/27

Mean Area 7.260
Mean Conc. -0.3331mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

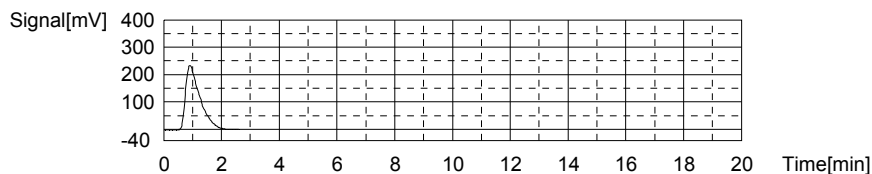
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:18.66mg/L TC:18.71mg/L IC:0.05392mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	808.8	18.71mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 9:06:45 AM

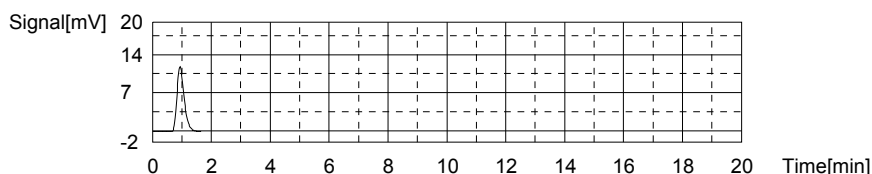
Mean Area 808.8
Mean Conc. 18.71mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	20.22	0.05392mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45	3/3/2017 9:11:15 AM

Mean Area 20.22
Mean Conc. 0.05392mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.170mg/L TC:16.93mg/L IC:14.76mg/L

3/6/2017 7:28:10 AM

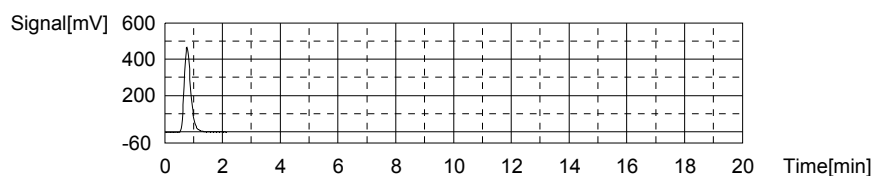
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	733.6	16.93mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 10:12:21 AM

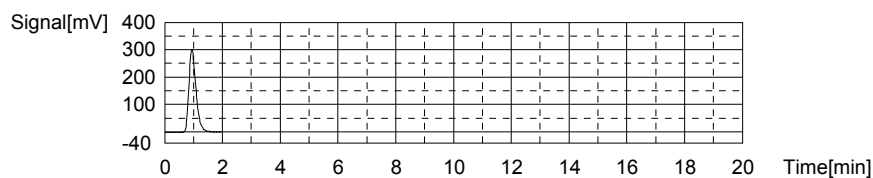
Mean Area 733.6
Mean Conc. 16.93mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	512.8	14.76mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 10:17:16 AM

Mean Area 512.8
Mean Conc. 14.76mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

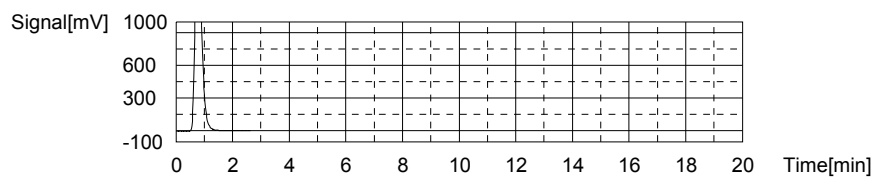
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-5.308mg/L TC:59.99mg/L IC:65.30mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2556	59.99mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 10:25:21 AM

Mean Area 2556
Mean Conc. 59.99mg/L



Anal.: IC

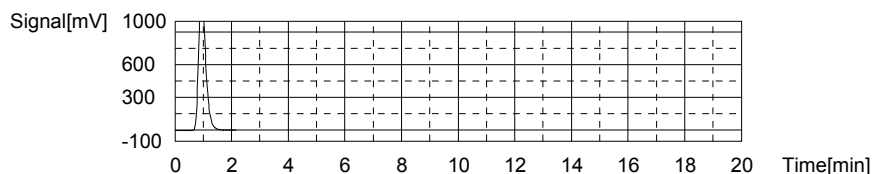
No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2205	65.30mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 10:30:40 AM

6/27

3/6/2017 7:28:10 AM

03-03-2017-ADG-TOC.t32

Mean Area 2205
Mean Conc. 65.30mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

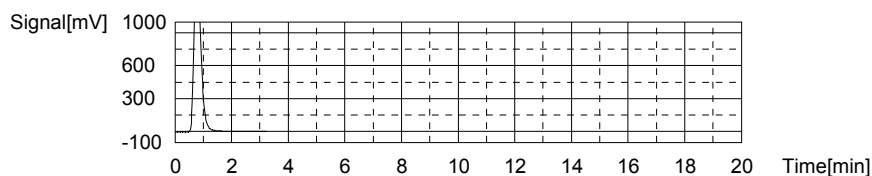
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.355mg/L TC:57.89mg/L IC:53.53mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2467	57.89mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 10:39:20 AM

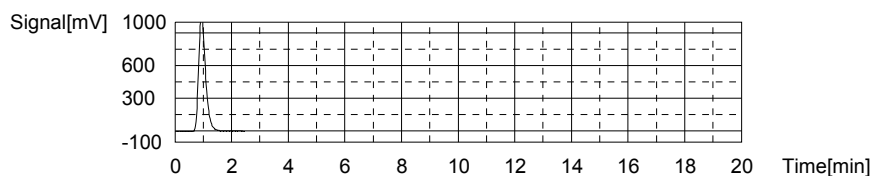
Mean Area 2467
Mean Conc. 57.89mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1811	53.53mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 10:44:51 AM

Mean Area 1811
Mean Conc. 53.53mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:2.178mg/L TC:17.20mg/L IC:15.02mg/L

7/27

3/6/2017 7:28:10 AM

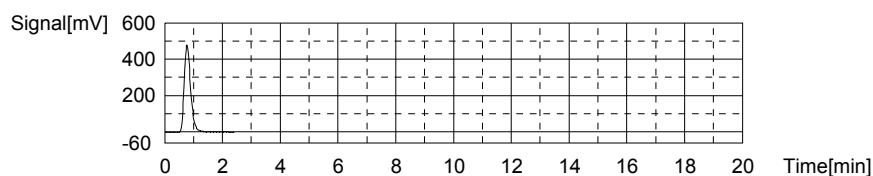
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	744.7	17.20mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 10:52:42 AM

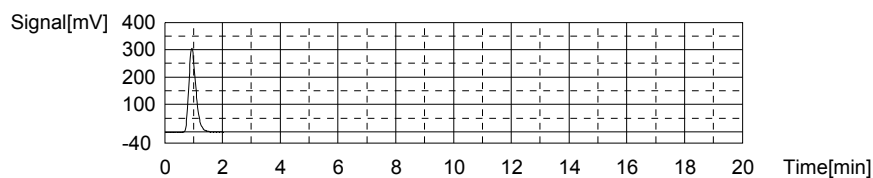
Mean Area 744.7
Mean Conc. 17.20mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	521.3	15.02mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 10:57:40 AM

Mean Area 521.3
Mean Conc. 15.02mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

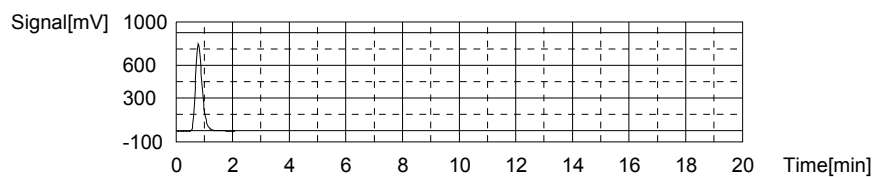
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:12.78mg/L TC:30.74mg/L IC:17.96mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1318	30.74mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 11:05:12 AM

Mean Area 1318
Mean Conc. 30.74mg/L

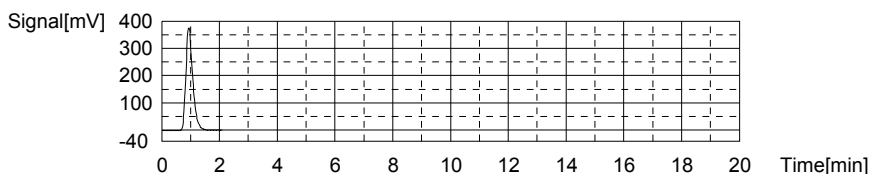


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	619.7	17.96mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 11:10:16 AM

8/27

Mean Area 619.7
 Mean Conc. 17.96mg/L



Sample

Sample Name:
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017.met
 Status: Completed
 Chk. Result

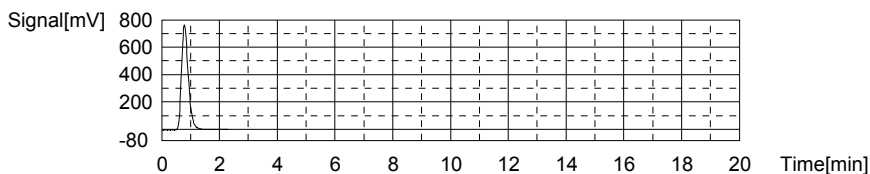
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:11.45mg/L TC:29.02mg/L IC:17.56mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1245	29.02mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 11:18:01 AM

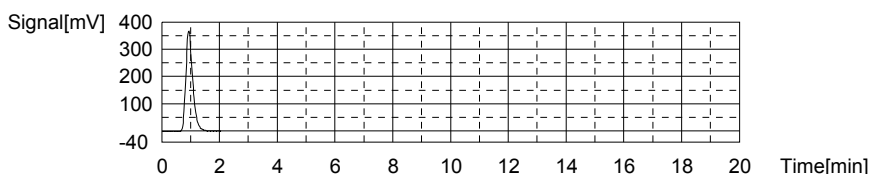
Mean Area 1245
 Mean Conc. 29.02mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	606.5	17.56mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45	3/3/2017 11:22:59 AM

Mean Area 606.5
 Mean Conc. 17.56mg/L



Sample

Sample Name:
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017.met
 Status: Completed
 Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:25.11mg/L TC:24.86mg/L IC:-0.2537mg/L

3/6/2017 7:28:10 AM

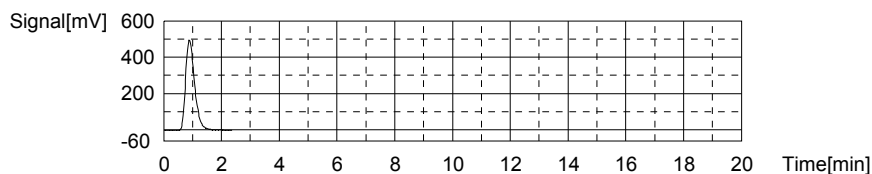
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1069	24.86mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 11:30:47 AM

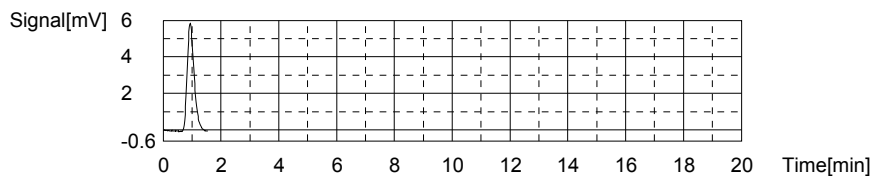
Mean Area 1069
Mean Conc. 24.86mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.918	-0.2537mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 11:35:09 AM

Mean Area 9.918
Mean Conc. -0.2537mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

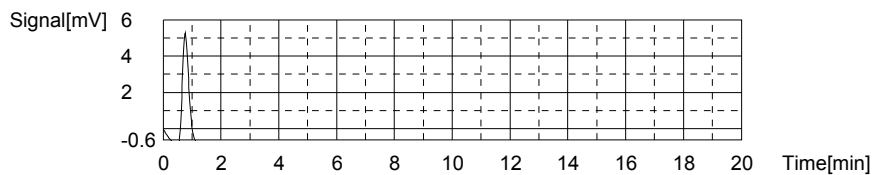
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1168mg/L TC:-0.1719mg/L IC:-0.2887mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.588	-0.1719mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 11:40:11 AM

Mean Area 9.588
Mean Conc. -0.1719mg/L



Anal.: IC

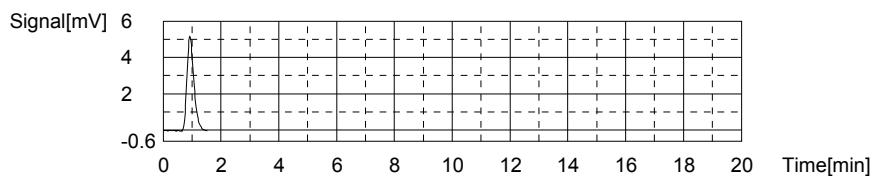
No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.746	-0.2887mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 11:44:05 AM

10/27

3/6/2017 7:28:10 AM

03-03-2017-ADG-TOC.t32

Mean Area 8.746
Mean Conc. -0.2887mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

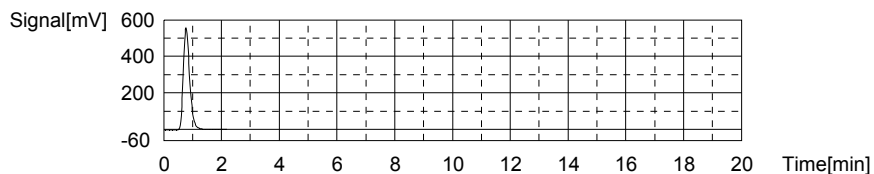
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.815mg/L TC:19.92mg/L IC:18.11mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	860.0	19.92mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 11:51:43 AM

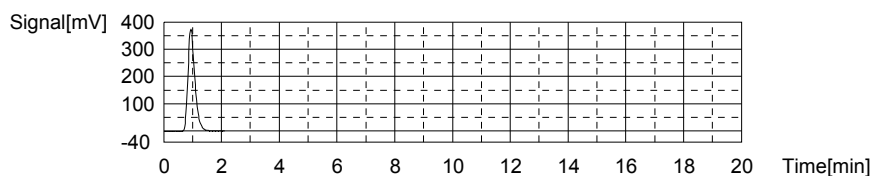
Mean Area 860.0
Mean Conc. 19.92mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	624.7	18.11mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	3/3/2017 11:56:46 AM

Mean Area 624.7
Mean Conc. 18.11mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.558mg/L TC:43.71mg/L IC:40.15mg/L

11/27

3/6/2017 7:28:10 AM

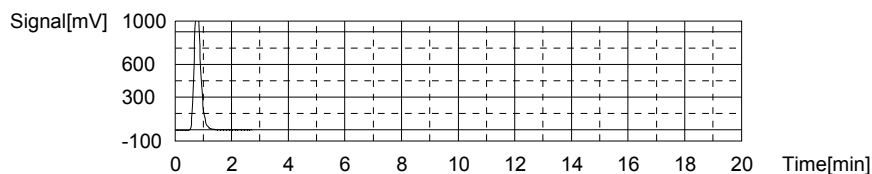
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1867	43.71mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 12:04:56 PM

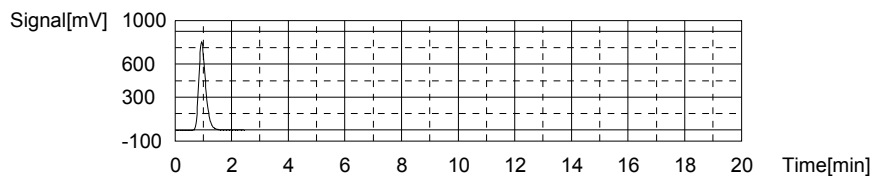
Mean Area 1867
Mean Conc. 43.71mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1363	40.15mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 12:10:22 PM

Mean Area 1363
Mean Conc. 40.15mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

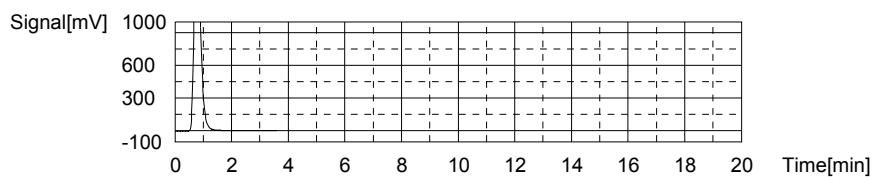
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-8.175mg/L TC:59.99mg/L IC:68.17mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2556	59.99mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 12:19:24 PM

Mean Area 2556
Mean Conc. 59.99mg/L

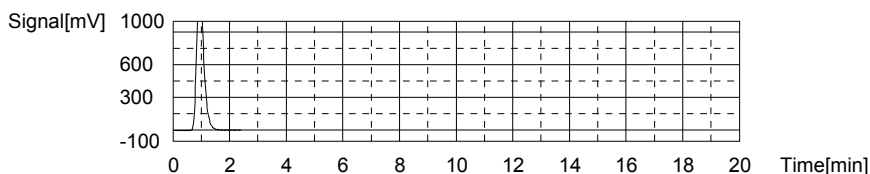


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2301	68.17mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 12:24:57 PM

12/27

Mean Area 2301
Mean Conc. 68.17mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

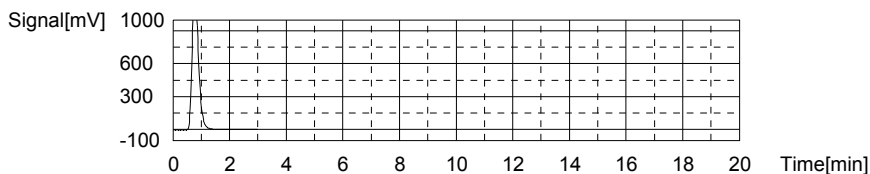
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.723mg/L TC:47.45mg/L IC:42.72mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2025	47.45mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 12:33:23 PM

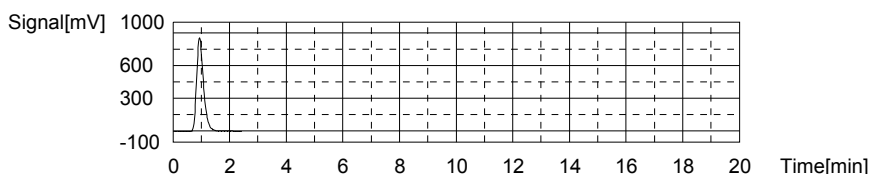
Mean Area 2025
Mean Conc. 47.45mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1449	42.72mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 12:38:53 PM

Mean Area 1449
Mean Conc. 42.72mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-19.57mg/L TC:80.10mg/L IC:99.67mg/L

3/6/2017 7:28:10 AM

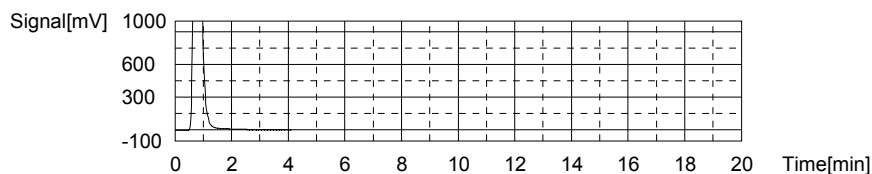
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3407	80.10mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 12:48:27 PM

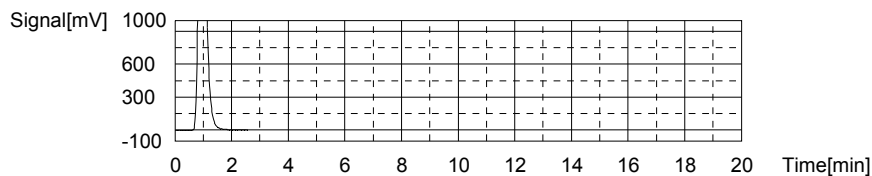
Mean Area 3407
Mean Conc. 80.10mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	3356	99.67mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 12:54:29 PM

Mean Area 3356
Mean Conc. 99.67mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

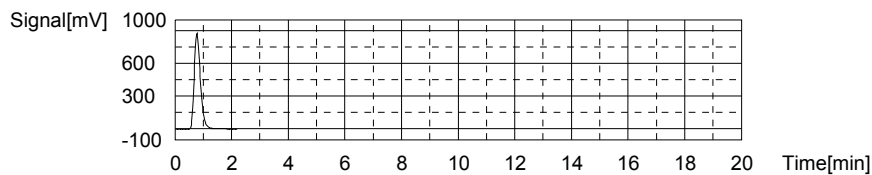
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.821mg/L TC:31.40mg/L IC:29.58mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1346	31.40mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 1:02:06 PM

Mean Area 1346
Mean Conc. 31.40mg/L

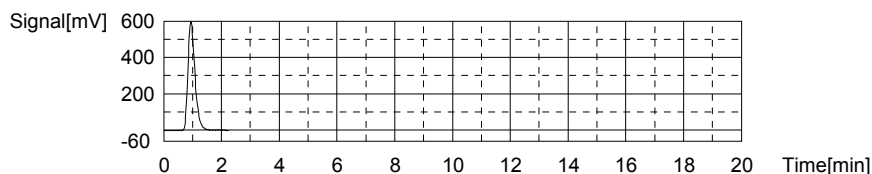


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1009	29.58mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 1:07:28 PM

14/27

Mean Area 1009
Mean Conc. 29.58mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

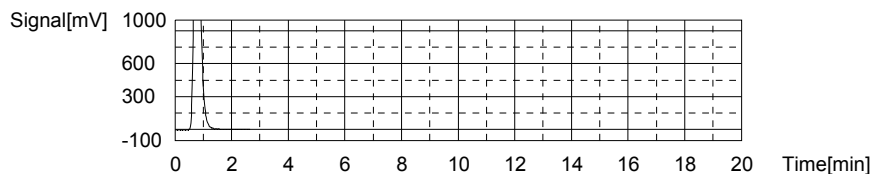
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-13.27mg/L TC:64.36mg/L IC:77.63mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2741	64.36mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 1:15:34 PM

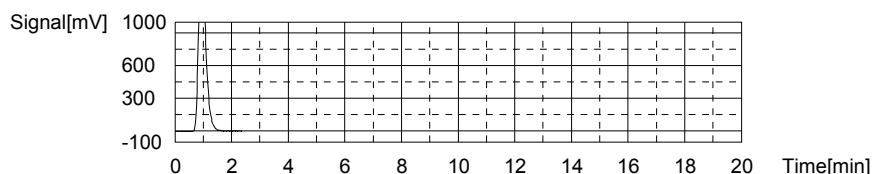
Mean Area 2741
Mean Conc. 64.36mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2618	77.63mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45	3/3/2017 1:21:07 PM

Mean Area 2618
Mean Conc. 77.63mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-1.087mg/L TC:56.90mg/L IC:57.98mg/L

3/6/2017 7:28:10 AM

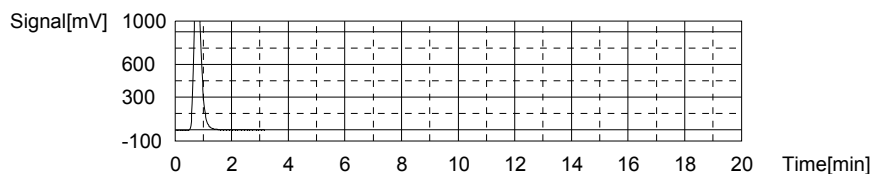
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2425	56.90mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 1:29:44 PM

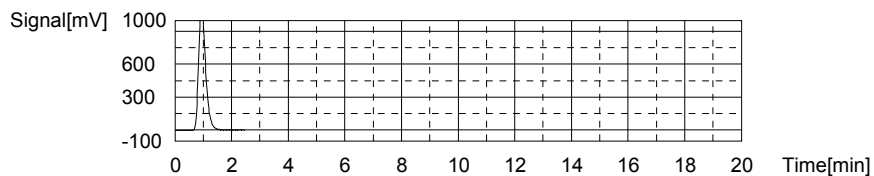
Mean Area 2425
Mean Conc. 56.90mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1960	57.98mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 1:35:22 PM

Mean Area 1960
Mean Conc. 57.98mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

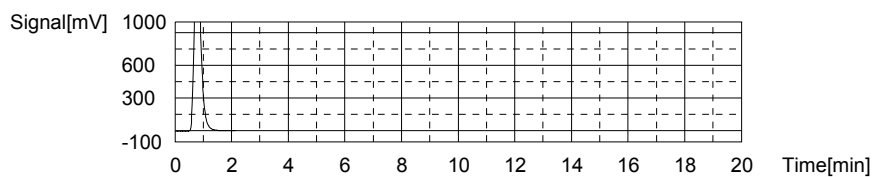
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-1.960mg/L TC:57.60mg/L IC:59.57mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2455	57.60mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 1:42:56 PM

Mean Area 2455
Mean Conc. 57.60mg/L

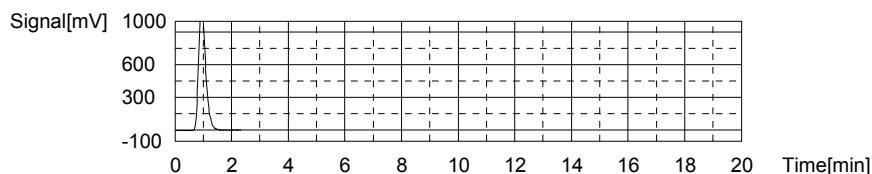


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2013	59.57mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 1:48:23 PM

16/27

Mean Area 2013
Mean Conc. 59.57mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

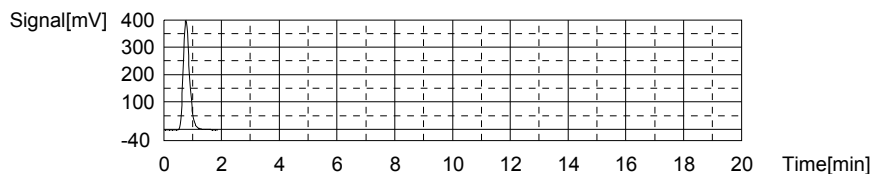
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.183mg/L TC:13.90mg/L IC:12.71mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	605.0	13.90mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 1:55:42 PM

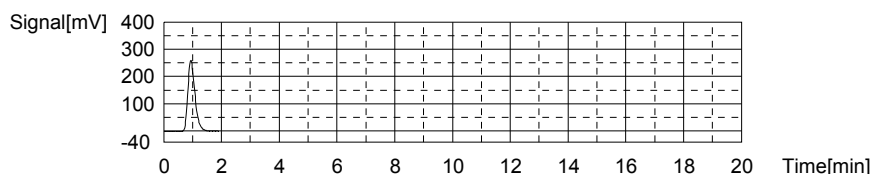
Mean Area 605.0
Mean Conc. 13.90mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	444.1	12.71mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45	3/3/2017 2:00:36 PM

Mean Area 444.1
Mean Conc. 12.71mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.96mg/L TC:24.74mg/L IC:-0.2152mg/L

3/6/2017 7:28:10 AM

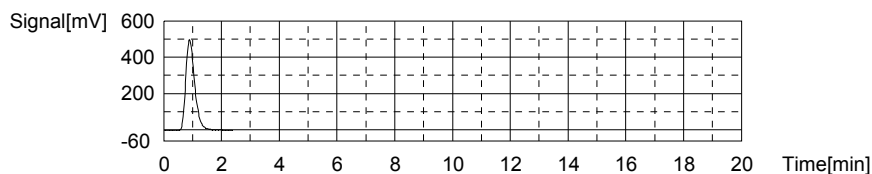
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1064	24.74mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 2:08:26 PM

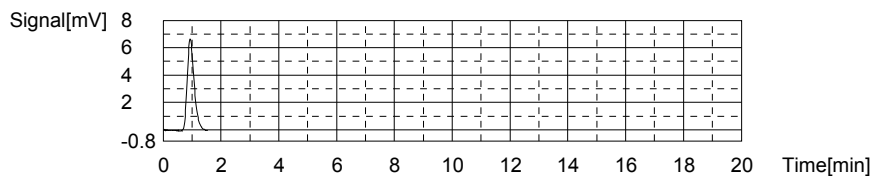
Mean Area 1064
Mean Conc. 24.74mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	11.21	-0.2152mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 2:12:46 PM

Mean Area 11.21
Mean Conc. -0.2152mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

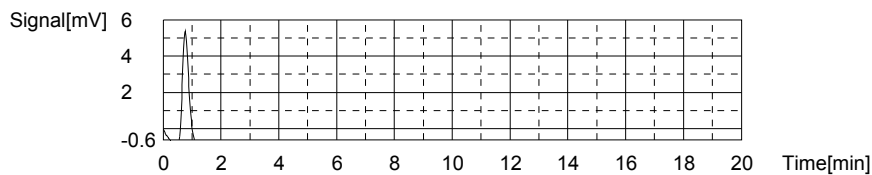
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1102mg/L TC:-0.1660mg/L IC:-0.2761mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.841	-0.1660mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 2:17:47 PM

Mean Area 9.841
Mean Conc. -0.1660mg/L

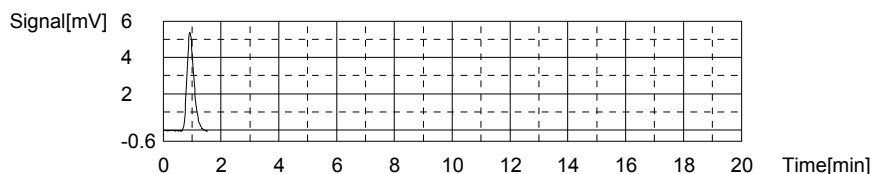


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.168	-0.2761mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 2:21:43 PM

18/27

Mean Area 9.168
Mean Conc. -0.2761mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

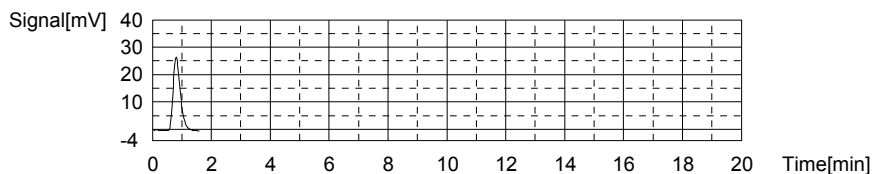
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.9791mg/L TC:0.6787mg/L IC:-0.3004mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	45.59	0.6787mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 2:28:45 PM

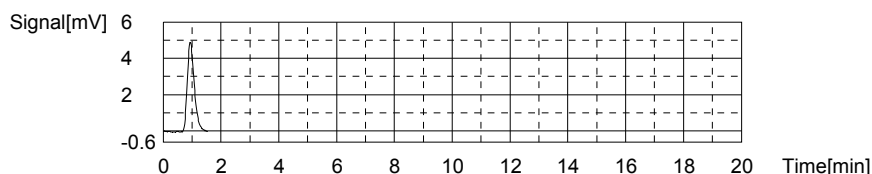
Mean Area 45.59
Mean Conc. 0.6787mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.354	-0.3004mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	3/3/2017 2:33:06 PM

Mean Area 8.354
Mean Conc. -0.3004mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.9502mg/L TC:0.6425mg/L IC:-0.3077mg/L

3/6/2017 7:28:10 AM

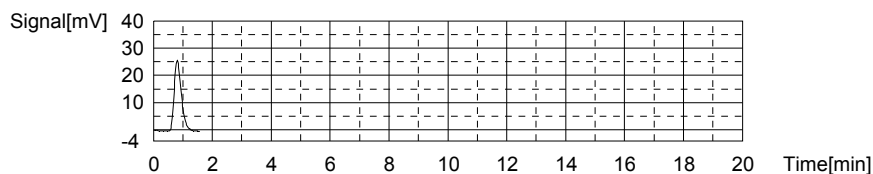
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	44.06	0.6425mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 2:40:08 PM

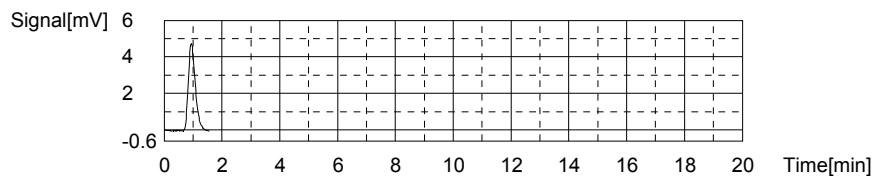
Mean Area 44.06
Mean Conc. 0.6425mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.111	-0.3077mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 2:44:31 PM

Mean Area 8.111
Mean Conc. -0.3077mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

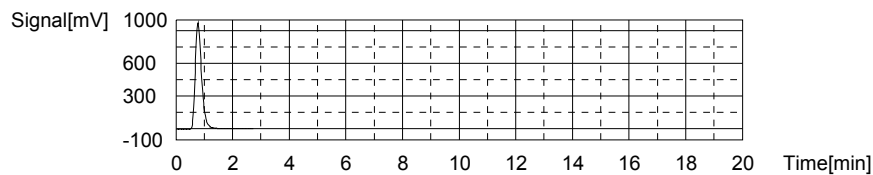
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.810mg/L TC:35.92mg/L IC:31.11mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1537	35.92mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 2:56:16 PM

Mean Area 1537
Mean Conc. 35.92mg/L

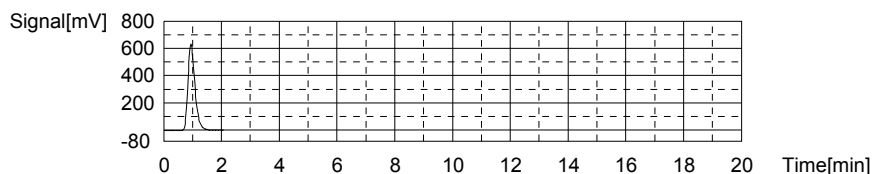


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1060	31.11mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 3:01:21 PM

20/27

Mean Area 1060
Mean Conc. 31.11mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

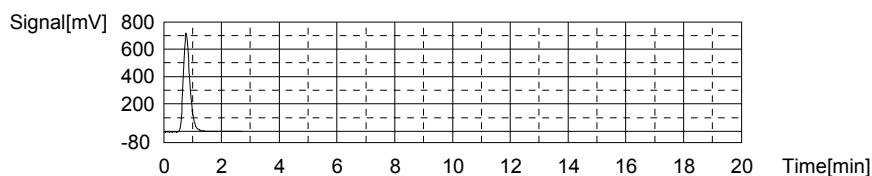
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.854mg/L TC:26.39mg/L IC:22.54mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1134	26.39mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 3:09:31 PM

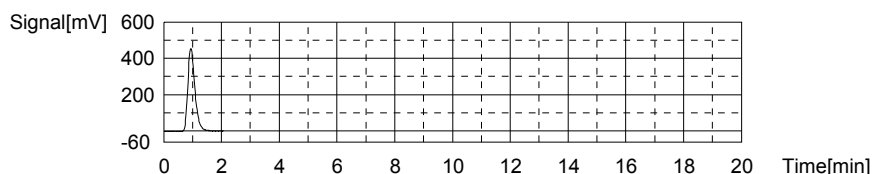
Mean Area 1134
Mean Conc. 26.39mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	773.2	22.54mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45	3/3/2017 3:14:34 PM

Mean Area 773.2
Mean Conc. 22.54mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.424mg/L TC:38.11mg/L IC:34.69mg/L

3/6/2017 7:28:10 AM

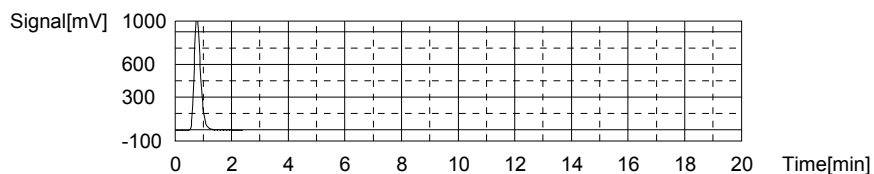
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1630	38.11mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 3:22:25 PM

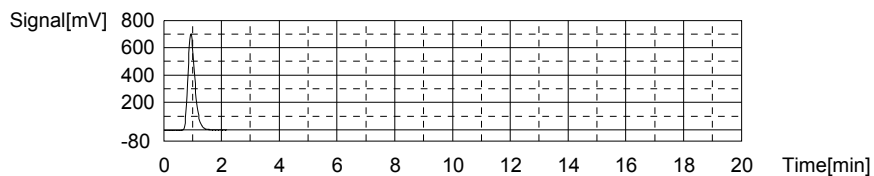
Mean Area 1630
Mean Conc. 38.11mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1180	34.69mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 3:27:39 PM

Mean Area 1180
Mean Conc. 34.69mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

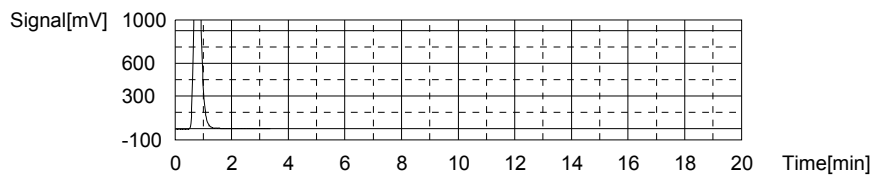
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:-9.501mg/L TC:62.64mg/L IC:72.14mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2668	62.64mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 3:36:27 PM

Mean Area 2668
Mean Conc. 62.64mg/L



Anal.: IC

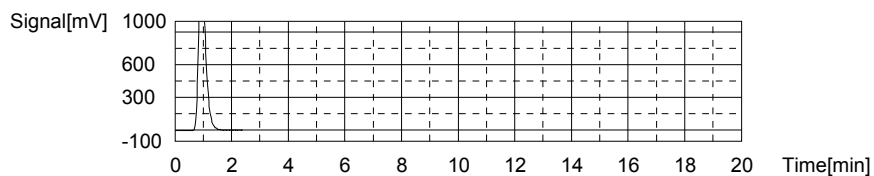
No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	2434	72.14mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 3:41:56 PM

22/27

3/6/2017 7:28:10 AM

03-03-2017-ADG-TOC.t32

Mean Area 2434
Mean Conc. 72.14mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

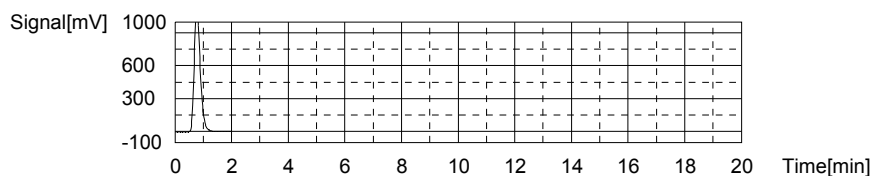
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.016mg/L TC:39.32mg/L IC:36.30mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1681	39.32mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 3:49:24 PM

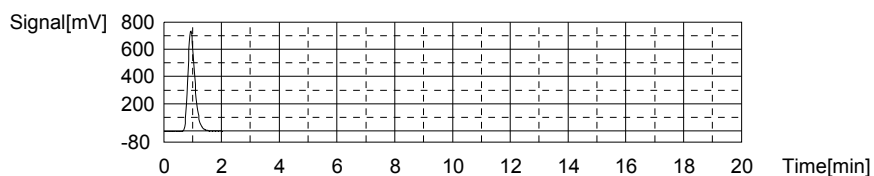
Mean Area 1681
Mean Conc. 39.32mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1234	36.30mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	3/3/2017 3:54:33 PM

Mean Area 1234
Mean Conc. 36.30mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.295mg/L TC:28.59mg/L IC:24.30mg/L

23/27

3/6/2017 7:28:10 AM

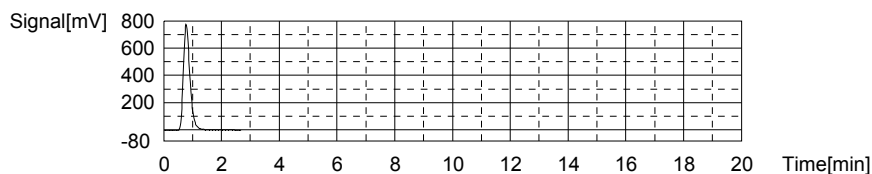
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1227	28.59mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 4:02:41 PM

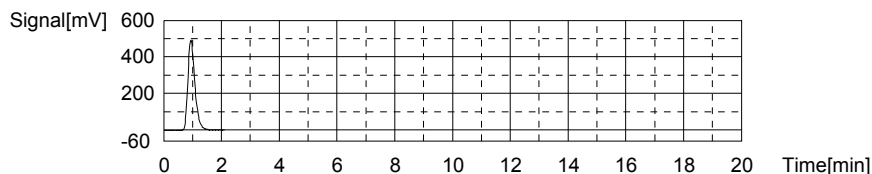
Mean Area 1227
Mean Conc. 28.59mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	832.0	24.30mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 4:07:44 PM

Mean Area 832.0
Mean Conc. 24.30mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

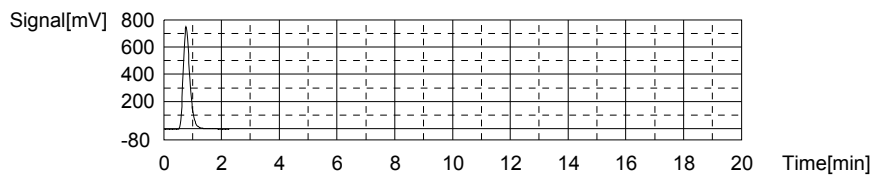
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:4.698mg/L TC:27.53mg/L IC:22.83mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1182	27.53mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 4:15:27 PM

Mean Area 1182
Mean Conc. 27.53mg/L

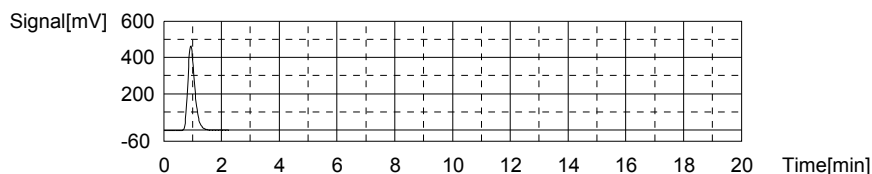


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	782.9	22.83mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 4:20:43 PM

24/27

Mean Area 782.9
Mean Conc. 22.83mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

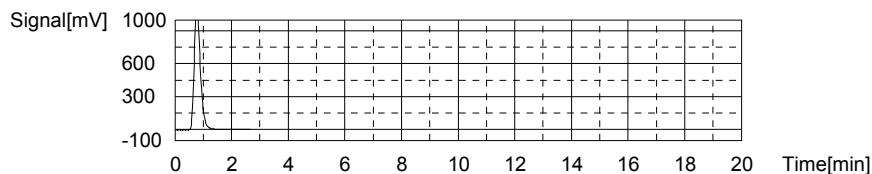
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:3.551mg/L TC:39.55mg/L IC:36.00mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1691	39.55mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 4:35:36 PM

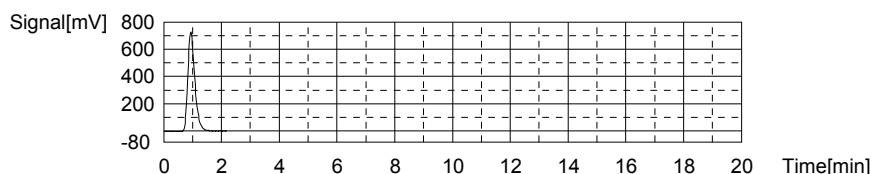
Mean Area 1691
Mean Conc. 39.55mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1224	36.00mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 4:40:46 PM

Mean Area 1224
Mean Conc. 36.00mg/L



Sample

Sample Name:
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:25.09mg/L TC:24.93mg/L IC:-0.1572mg/L

3/6/2017 7:28:10 AM

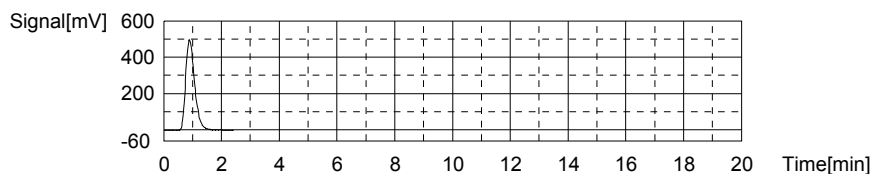
03-03-2017-ADG-TOC.t32

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1072	24.93mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 4:48:39 PM

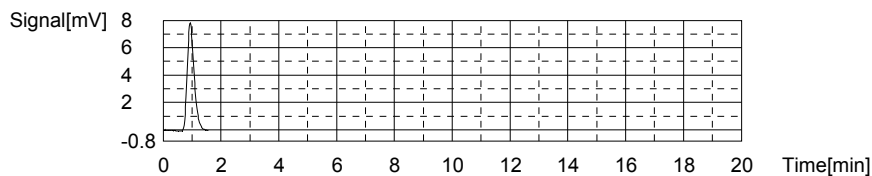
Mean Area 1072
Mean Conc. 24.93mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	13.15	-0.1572mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 4:53:03 PM

Mean Area 13.15
Mean Conc. -0.1572mg/L



Sample

Sample Name:

Sample ID:

Origin:

Status

Chk. Result

<Untitled>
TOC-02-10-2017.met
Completed

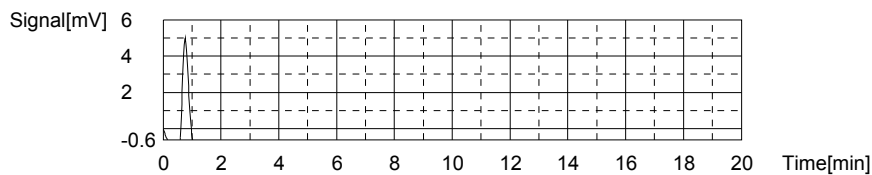
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1080mg/L TC:-0.1633mg/L IC:-0.2714mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.953	-0.1633mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/3/2017 4:58:03 PM

Mean Area 9.953
Mean Conc. -0.1633mg/L

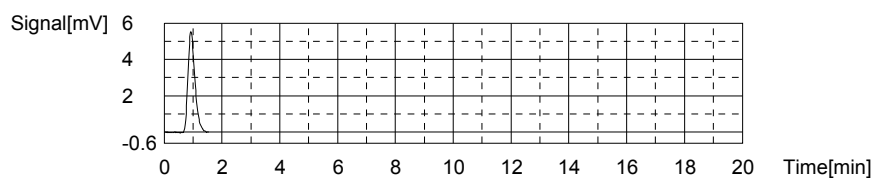


Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	9.328	-0.2714mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/3/2017 5:01:59 PM

26/27

Mean Area 9.328
Mean Conc. -0.2714mg/L



3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
March 8, 2017

001 - BIO-CHEM TESTING WVDEP 220	002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental	004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES	006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES	008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND	AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER	ADG - APRIL D. GREENE
ALS - ADRIANE L. STEED	AWE - ANDREW W. ESSIG
AZH - AFTER HOURS	BJO - BRIAN J. OGDEN
BLG - BRENDA L. GREENWALT	BNB - Brandi N. Bentley
BRG - BRENDA R. GREGORY	CAS - Craig A. Smith
CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER	CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL	CV - Carl Volkman
DAK - DEAN A. KETELSEN	DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG	DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER	DLP - DOROTHY L. PAYNE
DSM - DAVID S. MOSSOR	DTG - DOMINIC T. GEHRET
ECL - ERIC C. LAWSON	EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER	FJB - FRANCES J. BOLDEN
JDH - JUSTIN D. HESSON	JDS - JARED D. SMITH
JKP - JACQUELINE K. PARSONS	JLD - JESSICA L. DELONG
JST - JOSHUA S. TAYLOR	JTP - JOSHUA T. PEMBERTON
JWR - JOHN W. RICHARDS	JWS - JACK W. SHEAVES
JYH - JI Y. HU	KAK - KATHY A. KIRBY
KDD - Katelyn D. Daley	KEB - KATIE E. BARNES
KHR - KIM H. RHODES	KKB - KERRI K. BUCK
KRA - KATHY R. ALBERTSON	KRP - KATHY R. PARSONS
LJH - Lacey J. Hendershot	LLS - LARRY L. STEPHENS
LSB - LESLIE S. BUCINA	LSJ - LAURA S. JONES
MAP - MARLA A. PORTER	MBK - MORGAN B. KNOWLTON
MES - MARY E. SCHILLING	MMB - MAREN M. BEERY
MRT - MICHELLE R. TAYLOR	PDM - PIERCE D. MORRIS
PIT - MICROBAC WARRENDALE	REK - BOB E. KYER
RLB - BOB BUCHANAN	RNP - RICK N. PETTY
SAV - SARAH A. VANDENBERG	SCB - SARAH C. BOGOLIN
SDC - SHALYN D. CONLEY	TB - TODD BOYLE
TMB - TIFFANY M. BAILEY	TMM - TAMMY M. MORRIS
VC - VICKI COLLIER	WTD - WADE T. DELONG
XXX - UNAVAILABLE OR SUBCONTRACT	

List of Valid Qualifiers

March 08, 2017

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
>,H1	Result is greater than the associated numerical value. Sample analysis performed past holding time.
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample receipt exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
FP1	Did not ignite.
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample receipt exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentatively identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL)
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound



List of Valid Qualifiers

March 08, 2017

Qualkey: DOD

TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.
TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample receipt exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below



CHAIN OF CUSTODY

Name Of Lab Shipping To: MICROBAC (740) 373-4071 ATTN: STEPHANIE MOSSBURG

Project: AECOM
LONGHORN ARMY AMMIN. PLANT (LHAAP)
GROUNDWATER TREATMENT PLANT (GWTP)
KARNACK, TEXAS

Job: GROUNDWATER TREATMENT PLANT
WEEKLY SAMPLES

Prepared By: Scott Beesinger
P.O. Number

Field Sample I.D.	Sample Matrix	Date / Time	MS / MSD			No. Of Containers	Analyses				Remarks (Preservatives, etc.)	Lab I.D.#
			AMMONIA-N	ORTHO-PHOSPHATE	TOTAL ORGANIC CARBON							
LH18/24-SP650-6420-Grab	Water	03/01/17 / 15:00	X	X		2					H2SO4	
LH18/24-SP650-6420-Grab	Water	03/01/17 / 15:00		X		1					NONE	

Additional Remarks: Standard TAT on all parameters Send results to Linda Raabe at linda.raabe@aecom.com or call at 210-253-7518

Relinquished By:	Date	Time	Received By:	Date	Time	Relinquished By:	Date	Time	Received By:	Date	Time
<i>Scott Beesinger</i>	03/01/17	15:30									

For Lab Use Only

Received At Lab By:	Date	Time	Airbill No.	Date	Time	Temp of Container	Seal No.	Condition

Remarks:

Microbac OVD
 Received: 03/02/2017 09:34
 By: CARA STRICKLER
 221000097651

Cara Strickler

Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17030058

Account: 2551

Project: 2551.096

Samples: 1

Due Date: 13-MAR-2017

Samplenum Container ID Products
L17030058-01 874456 PO4

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	02-MAR-2017 09:51	CLS		
2	ANALYZ	W1	DIG	02-MAR-2017 09:53	ADG	CLS	
3	STORE	WET	A2	06-MAR-2017 09:26	CLS	ADG	

Samplenum Container ID Products
L17030058-01 874457 TOC

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	02-MAR-2017 09:51	CLS		<2
2	ANALYZ	W1	WET	03-MAR-2017 07:48	ADG	CLS	
3	STORE	WET	A1	07-MAR-2017 09:07	CLS	ADG	

Samplenum Container ID Products
L17030058-01 874458 NH3

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	W1	02-MAR-2017 09:51	CLS		<2
2	ANALYZ	W1	WET	07-MAR-2017 09:01	TMM	BRG	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login



NELAP Addendum - January 4, 2016

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVD NELAP Scope of Accreditation:

Heat of Combustion (BTU)
 Total Halide by Bomb Combustion (TX)
 Particle Sizing - 200 Mesh (PS200)
 Specific Gravity/Density (SPGRAV)
 Total Residual Chlorine (CL-TRL)
 Total Volatile Solids (all forms) (TVS)
 Total Coliform Bacteria (all methods)
 Fecal Coliform Bacteria (all methods)
 Sulfite (SO₃)
 Propionaldehyde (HPLC-UV)

SOLID AND HAZARDOUS CHEMICALS

Nitrogen, Ammonia by Method 350.1
 Chromium, Hexavalent, Leachable by SM3500 Cr-B 2009
 Phenolics, Total by Method 420.1
 ASTM D3987-06

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVD HPLC02/HPLC-UV

Nitroglycerin
 Acetic acid
 Butyric acid
 Lactic acid
 Propionic acid
 Pyruvic acid

OVD MSS01/GC-MS

1,4-Phenylenediamine
 1-Methylnaphthalene
 1,4-Dioxane
 Atrazine
 Benzaldehyde
 Biphenyl
 Caprolactam
 Hexamethylphosphoramide (HMPA)
 Pentachlorobenzene
 Pentachloroethane

NELAP Accreditation by Laboratory SOP**NONPOTABLE WATER**OVD MSV01/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVD HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

OVD HPLC12/HPLC/UV

Acetate
Formate

OVD RSK01/GC-FID

Acetylene
Propane

OVD K9305/ISE

Fluoroborate

SOLID AND HAZARDOUS CHEMICALSOVD MSS01/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP**SOLID AND HAZARDOUS CHEMICALS**OVD MSV01/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)



Laboratory Report Number: L17030342

Linda Raabe
AECOM Technical Services, Inc.
1950 N Stemmons FWY
Dallas, TX 75207

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Adriane Steed – Client Services Specialist
(740) 373-4071
Adriane.Steed@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on March 15 2017



Leslie Bucina – Managing Director

State of Origin: TX
Accrediting Authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: DOD Ver 4.1



Microbac Laboratories * Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 * T: (740) 373-4071 F: (740) 373-4835 * www.microbac.com

Lab Report #: L17030342

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00114718	I	5.0		1Z4016632210154858	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	Yes

**Lab Report #:** L17030342**Lab Project #:** 2551.096**Project Name:** Longhorn Army Ammunition**Lab Contact:** Adriane Steed**Samples Received**

Client ID	Laboratory ID	Date Collected	Date Received
LH18/24-SP650-6421	L17030342-01	03/06/2017 15:00	03/07/2017 09:38
TRIP BLANK	L17030342-02	03/06/2017 00:01	03/07/2017 09:38

Microbac REPORT L17030342
PREPARED FOR AECOM Technical Services, Inc.
WORK ID:

1.0 Summary Data	5
1.1 Narratives	6
1.2 Certificate of Analysis	21
2.0 Full Sample Data Package	27
2.1 Volatiles Data	28
2.1.1 Volatiles GCMS Data (8260)	29
2.1.1.1 Summary Data	30
2.1.1.2 QC Summary Data	34
2.1.1.3 Sample Data	60
2.1.1.4 Standards Data	71
2.1.1.5 Raw QC Data	155
2.2 General Chemistry Data	166
2.2.1 Method 9056	167
2.2.1.1 Summary Data	168
2.2.1.2 QC Summary Data	174
2.2.1.3 Sample Data	190
2.2.1.4 Standards Data	193
2.2.1.5 Raw QC Data	210
3.0 Attachments	213

1.0 Summary Data

1.1 Narratives



Login Number: L17030342
Department: General Chromatography
Analyst: Craig Smith

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO₂ and NO₃ are 48 hours and the hold times for F, Cl, Br, and SO₄ are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The client did not specify an MS/MSD for this sample delivery group.

SAMPLES

Samples: Sample 01 was analyzed at dilutions only due to its pre-run screen result for CL which was greater than 200 ppm. Any sample that has a single anion load greater than 200 ppm will be diluted in order to prevent damage to the ion chromatograph, which is caused by repeated overloading of the analytical column and oversaturation of the conductivity suppressor and/or detector.

MANUAL INTEGRATION: No manual integrations were required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 123426

Approved By: Eric Lawson

A handwritten signature in black ink, appearing to read "Eric Lawson", is written over a light gray rectangular background.



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	8260
Prep Batch Number(s):	605446	Reviewer Name:	Sarah Vandenberg
LRC Date:	2017-03-09 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a. if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Sarah Vandenberg	<i>Sarah Vandenberg</i>		2017-03-09 19:11:38



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	8260
Prep Batch Number(s):	605446	Reviewer Name:	Sarah Vandenberg
LRC Date:	2017-03-09 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification	X				
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?	X				
Were surrogate percent recoveries in all samples within the laboratory QC limits?	X				
Test reports/summary forms for blank samples	X				
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	8260
Prep Batch Number(s):	605446	Reviewer Name:	Sarah Vandenberg
LRC Date:	2017-03-09 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			X		
Were MS/MSD analyzed at the appropriate frequency?			X		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
Were MS/MSD RPDs within laboratory QC limits?			X		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			X		
Were analytical duplicates analyzed at the appropriate frequency?			X		
Were RPDs or relative standard deviations within the laboratory QC limits?			X		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	8260
Prep Batch Number(s):	605446	Reviewer Name:	Sarah Vandenberg
LRC Date:	2017-03-09 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?	X				
Were ion abundance data within the method-required QC limits?	X				
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?	X				
Raw data (NELAC Section 5.5.10)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?	X				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	8260
Prep Batch Number(s):	605446	Reviewer Name:	Sarah Vandenberg
LRC Date:	2017-03-09 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	8260
Prep Batch Number(s):	605446	Reviewer Name:	Sarah Vandenberg
LRC Date:	2017-03-09 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

There are no exceptions.



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	9056
Prep Batch Number(s):	WG606173	Reviewer Name:	Eric Lawson
LRC Date:	2017-03-15 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Eric Lawson		Chemist III	2017-03-15 18:33:34



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	9056
Prep Batch Number(s):	WG606173	Reviewer Name:	Eric Lawson
LRC Date:	2017-03-15 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification	X				
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?			X		
Were % moisture (or solids) reported for all soil and sediment samples?			X		
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples	X				
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):					
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	9056
Prep Batch Number(s):	WG606173	Reviewer Name:	Eric Lawson
LRC Date:	2017-03-15 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?			X		
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?			X		
Were MS/MSD analyzed at the appropriate frequency?			X		
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?			X		
Were MS/MSD RPDs within laboratory QC limits?			X		
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?			X		
Were analytical duplicates analyzed at the appropriate frequency?			X		
Were RPDs or relative standard deviations within the laboratory QC limits?			X		
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?	X				
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	9056
Prep Batch Number(s):	WG606173	Reviewer Name:	Eric Lawson
LRC Date:	2017-03-15 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?			X		
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)					
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?	X				
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)					
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions					
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	9056
Prep Batch Number(s):	WG606173	Reviewer Name:	Eric Lawson
LRC Date:	2017-03-15 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)					
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030342
Project Name:		Method:	9056
Prep Batch Number(s):	WG606173	Reviewer Name:	Eric Lawson
LRC Date:	2017-03-15 00:00:00		

below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

There are no exceptions.

1.2 Certificate of Analysis

Certificate of Analysis

Sample #: L17030342-01	PrePrep Method: N/A	Instrument: HPMS8
Client ID: LH18/24-SP650-6421	Prep Method: 5030B/5030C/5035A	Prep Date: N/A
Matrix: Water	Analytical Method: 8260B	Cal Date: 03/03/2017 14:14
Workgroup #: WG605446	Analyst: TMB	Run Date: 03/08/2017 17:09
Collect Date: 03/06/2017 15:00	Dilution: 1	File ID: 8M418236
Sample Tag: 01	Units: ug/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
1,1,1-Trichloroethane	71-55-6	0.500	U	1.00	0.500	0.250
1,1,2-Trichloroethane	79-00-5	0.500	U	1.00	0.500	0.250
1,1-Dichloroethane	75-34-3	0.250	U	0.500	0.250	0.125
1,1-Dichloroethene	75-35-4	1.00	U	2.00	1.00	0.500
1,2-Dichloroethane	107-06-2	0.500	U	1.00	0.500	0.250
Acetone	67-64-1	6.73	J	10.0	5.00	2.50
Benzene	71-43-2	0.250	U	0.500	0.250	0.125
Carbon tetrachloride	56-23-5	0.500	U	1.00	0.500	0.250
Chloroform	67-66-3	0.250	U	0.500	0.250	0.125
Ethylbenzene	100-41-4	0.500	U	1.00	0.500	0.250
Methylene chloride	75-09-2	0.500	U	1.00	0.500	0.250
m,p-Xylene	179601-23-1	1.00	U	2.00	1.00	0.500
o-Xylene	95-47-6	0.500	U	1.00	0.500	0.250
Styrene	100-42-5	0.250	U	0.500	0.250	0.125
Tetrachloroethene	127-18-4	0.500	U	1.00	0.500	0.250
Trichloroethene	79-01-6	3.49		1.00	0.500	0.250
Toluene	108-88-3	0.500	U	1.00	0.500	0.250
Vinyl chloride	75-01-4	0.500	U	1.00	0.500	0.250
Surrogate	Recovery	Lower Limit	Upper Limit	Q		
1,2-Dichloroethane-d4	92.4	70	120			
4-Bromofluorobenzene	99.2	75	120			
Dibromofluoromethane	92.4	85	115			
Toluene-d8	95.6	85	120			
J	Estimated value ; the analyte concentration was less than the LOQ.					
U	Analyte was not detected. The concentration is below the reported LOD.					

Lab Report #: L17030342
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030342-01	PrePrep Method: N/A	Instrument: IC2
Client ID: LH18/24-SP650-6421	Prep Method: 9056	Prep Date: 03/14/2017 16:00
Matrix: Water	Analytical Method: 9056	Cal Date: 10/12/2016 15:28
Workgroup #: WG606173	Analyst: CAS	Run Date: 03/14/2017 17:17
Collect Date: 03/06/2017 15:00	Dilution: 25	File ID: I2_031417-07
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Sulfate	14808-79-8	115		50.0	25.0	12.5
J	Estimated value ; the analyte concentration was greater than the highest standard					

Lab Report #: L17030342
Lab Project #: 2551.096
Project Name: Longhorn Army Ammunition
Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030342-01	PrePrep Method: N/A	Instrument: IC2
Client ID: LH18/24-SP650-6421	Prep Method: 9056	Prep Date: 03/14/2017 16:00
Matrix: Water	Analytical Method: 9056	Cal Date: 10/12/2016 15:28
Workgroup #: WG606173	Analyst: CAS	Run Date: 03/14/2017 17:36
Collect Date: 03/06/2017 15:00	Dilution: 250	File ID: I2_031417-08
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Chloride	16887-00-6	4190		100	50.0	25.0
J	Estimated value ; the analyte concentration was less than the LOQ.					

Certificate of Analysis

Sample #: L17030342-02	PrePrep Method: N/A	Instrument: HPMS8
Client ID: TRIP BLANK	Prep Method: 5030B/5030C/5035A	Prep Date: N/A
Matrix: Water	Analytical Method: 8260B	Cal Date: 03/03/2017 14:14
Workgroup #: WG605446	Analyst: TMB	Run Date: 03/08/2017 16:09
Collect Date: 03/06/2017 00:01	Dilution: 1	File ID: 8M418234
Sample Tag: 01	Units: ug/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
1,1,1-Trichloroethane	71-55-6	0.500	U	1.00	0.500	0.250
1,1,2-Trichloroethane	79-00-5	0.500	U	1.00	0.500	0.250
1,1-Dichloroethane	75-34-3	0.250	U	0.500	0.250	0.125
1,1-Dichloroethene	75-35-4	1.00	U	2.00	1.00	0.500
1,2-Dichloroethane	107-06-2	0.500	U	1.00	0.500	0.250
Acetone	67-64-1	2.53	J	10.0	5.00	2.50
Benzene	71-43-2	0.250	U	0.500	0.250	0.125
Carbon tetrachloride	56-23-5	0.500	U	1.00	0.500	0.250
Chloroform	67-66-3	0.250	U	0.500	0.250	0.125
Ethylbenzene	100-41-4	0.500	U	1.00	0.500	0.250
Methylene chloride	75-09-2	0.500	U	1.00	0.500	0.250
m,p-Xylene	179601-23-1	1.00	U	2.00	1.00	0.500
o-Xylene	95-47-6	0.500	U	1.00	0.500	0.250
Styrene	100-42-5	0.250	U	0.500	0.250	0.125
Tetrachloroethene	127-18-4	0.500	U	1.00	0.500	0.250
Trichloroethene	79-01-6	0.500	U	1.00	0.500	0.250
Toluene	108-88-3	0.500	U	1.00	0.500	0.250
Vinyl chloride	75-01-4	0.500	U	1.00	0.500	0.250

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	93.1	70	120	
4-Bromofluorobenzene	98.4	75	120	
Dibromofluoromethane	92.0	85	115	
Toluene-d8	94.5	85	120	
J	Estimated value ; the analyte concentration was less than the LOQ.			
U	Analyte was not detected. The concentration is below the reported LOD.			

Lab Report #: L17030342

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

2.0 Full Sample Data Package

2.1 Volatiles Data

2.1.1 Volatiles GCMS Data (8260)

2.1.1.1 Summary Data

Certificate of Analysis

Sample #: L17030342-01	PrePrep Method: N/A	Instrument: HPMS8
Client ID: LH18/24-SP650-6421	Prep Method: 5030B/5030C/5035A	Prep Date: N/A
Matrix: Water	Analytical Method: 8260B	Cal Date: 03/03/2017 14:14
Workgroup #: WG605446	Analyst: TMB	Run Date: 03/08/2017 17:09
Collect Date: 03/06/2017 15:00	Dilution: 1	File ID: 8M418236
Sample Tag: 01	Units: ug/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
1,1,1-Trichloroethane	71-55-6	0.500	U	1.00	0.500	0.250
1,1,2-Trichloroethane	79-00-5	0.500	U	1.00	0.500	0.250
1,1-Dichloroethane	75-34-3	0.250	U	0.500	0.250	0.125
1,1-Dichloroethene	75-35-4	1.00	U	2.00	1.00	0.500
1,2-Dichloroethane	107-06-2	0.500	U	1.00	0.500	0.250
Acetone	67-64-1	6.73	J	10.0	5.00	2.50
Benzene	71-43-2	0.250	U	0.500	0.250	0.125
Carbon tetrachloride	56-23-5	0.500	U	1.00	0.500	0.250
Chloroform	67-66-3	0.250	U	0.500	0.250	0.125
Ethylbenzene	100-41-4	0.500	U	1.00	0.500	0.250
Methylene chloride	75-09-2	0.500	U	1.00	0.500	0.250
m,p-Xylene	179601-23-1	1.00	U	2.00	1.00	0.500
o-Xylene	95-47-6	0.500	U	1.00	0.500	0.250
Styrene	100-42-5	0.250	U	0.500	0.250	0.125
Tetrachloroethene	127-18-4	0.500	U	1.00	0.500	0.250
Trichloroethene	79-01-6	3.49		1.00	0.500	0.250
Toluene	108-88-3	0.500	U	1.00	0.500	0.250
Vinyl chloride	75-01-4	0.500	U	1.00	0.500	0.250

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	92.4	70	120	
4-Bromofluorobenzene	99.2	75	120	
Dibromofluoromethane	92.4	85	115	
Toluene-d8	95.6	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

Certificate of Analysis

Sample #: L17030342-02

PrePrep Method: N/A

Instrument: HPMS8

Client ID: TRIP BLANK

Prep Method: 5030B/5030C/5035A

Prep Date: N/A

Matrix: Water

Analytical Method: 8260B

Cal Date: 03/03/2017 14:14

Workgroup #: WG605446

Analyst: TMB

Run Date: 03/08/2017 16:09

Collect Date: 03/06/2017 00:01

Dilution: 1

File ID: 8M418234

Sample Tag: 01

Units: ug/L

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
1,1,1-Trichloroethane	71-55-6	0.500	U	1.00	0.500	0.250
1,1,2-Trichloroethane	79-00-5	0.500	U	1.00	0.500	0.250
1,1-Dichloroethane	75-34-3	0.250	U	0.500	0.250	0.125
1,1-Dichloroethene	75-35-4	1.00	U	2.00	1.00	0.500
1,2-Dichloroethane	107-06-2	0.500	U	1.00	0.500	0.250
Acetone	67-64-1	2.53	J	10.0	5.00	2.50
Benzene	71-43-2	0.250	U	0.500	0.250	0.125
Carbon tetrachloride	56-23-5	0.500	U	1.00	0.500	0.250
Chloroform	67-66-3	0.250	U	0.500	0.250	0.125
Ethylbenzene	100-41-4	0.500	U	1.00	0.500	0.250
Methylene chloride	75-09-2	0.500	U	1.00	0.500	0.250
m,p-Xylene	179601-23-1	1.00	U	2.00	1.00	0.500
o-Xylene	95-47-6	0.500	U	1.00	0.500	0.250
Styrene	100-42-5	0.250	U	0.500	0.250	0.125
Tetrachloroethene	127-18-4	0.500	U	1.00	0.500	0.250
Trichloroethene	79-01-6	0.500	U	1.00	0.500	0.250
Toluene	108-88-3	0.500	U	1.00	0.500	0.250
Vinyl chloride	75-01-4	0.500	U	1.00	0.500	0.250

Surrogate	Recovery	Lower Limit	Upper Limit	Q
1,2-Dichloroethane-d4	93.1	70	120	
4-Bromofluorobenzene	98.4	75	120	
Dibromofluoromethane	92.0	85	115	
Toluene-d8	94.5	85	120	

J	Estimated value ; the analyte concentration was less than the LOQ.
U	Analyte was not detected. The concentration is below the reported LOD.

2.1.1.2 QC Summary Data

Example 8260 Calculations

1.0 Calculating the Response Factor (RF) from the initial calibration (ICAL) data:

$$RF = [(Ax) (Cis)] / [(Ais) (Cx)]$$

where:

Ax = Area of the characteristic ion for the compound being measured:	3399156
Cis = Concentration of the specific internal standard (ug/mL)	25
Ais = Area of the characteristic ion of the specific internal standard	846471
Cx = Concentration of the compound in the standard being measured (ug/mL)	100
RF = Calculated Response Factor	1.0039

Example

2.0 Calculating the concentration (C) of a compound in water using the average RF: *

$$Cx = [(Ax) (Cis) (Vn)(D)] / [(Ais) (RF) (Vs)]$$

where:

Ax = Area of the characteristic ion for the compound being measured	3122498
Cis = Concentration of the specific internal standard (ug/L)	25
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	611048
RF = Average RF from the ICAL	1.004
Vs = Purge volume of sample (mL)	10
Vn = Nominal purge volume of sample (mL) (10.0 mL)	10
Cx = Concentration of the compound in the sample being measured (ug/L)	127.2428

Example

3.0 Calculating the concentration (C) of a compound in soil using the average RF: *

$$Cx = [(Ax) (Cis) (Wn)(D)] / [(Ais) (RF) (Ws)]$$

where:

Ax = Area of the characteristic ion for the compound being measured	3122498
Cis = Concentration of the specific internal standard (ug/L)	25
D = Dilution factor for sample as a multiplier (10x = 10)	1
Ais = Area of the characteristic ion of the specific internal standard	611048
RF = Average RF from the ICAL	1.004
Ws = Weight of sample purged (g)	5
Wn = Nominal purge weight (g) (5.0 g)	5
Cx = Concentration of the compound in the sample being measured (ug/L)	127.2428

Example

Dry weight correction:

Percent solids (PCT_S)	50
Cd = (Cx) (100)/PCT_S	254.4856

* Concentrations appearing on the instrument quantitation reports are on-column results and do not take into account initial volume, final volume, and the dilution factor.

4.0 Concentration from Linear Regression

Step 1: Retrieve Curve Data From Plot, $y = mx + b$

y = response ratio = response of analyte / response of IS = Ax/Ais

x = amount ratio = concentration analyte/concentration internal standard = Cx / Cis

m = slope from curve = 0.213

b = intercept from curve = - 0.00642

Step 2: Calculate y from Quantitation Report

$$y = 86550/593147 = 0.1459$$

Step 3: Solve for x

$$x = (y - b)/m = [(0.1459 - (-0.00642))/0.213] = 0.7152$$

Step 4: Solve for analyte concentration Cx

$$Cx = Cis (x) = (25.0)(0.7152) = 17.88$$

Example Spreadsheet Calculation:

Slope from curve, m:	0.213
Intercept from curve, b:	-0.00642
Area of analyte, Ax:	86550
Area of Internal Standard, Ais:	593147
Concentration of IS, Cis	25.00
Response Ratio:	0.145917
Amount Ratio:	0.715195
Concentration:	17.87988
Units of Internal Standard:	ug/L

5.0 Concentration from Quadratic Regression**Step 1 - Retrieve Curve Data from Plot, $y = Ax^2 + Bx + C$**

Where:

$$Ax^2 + Bx + (C - y) = 0$$

A, B, C = constants from the ICAL quadratic regression

y = Response ratio = Area of analyte/Area of internal standard (IS)

x = Amount ratio = Concentration of analyte/concentration of IS

Step 2: Calculate y from Quantitation Report

$$y = Ax/Ais$$

Step 3: Solve for x using the quadratic formula

$$Ax^2 + Bx + C - y = 0$$

$$x = \frac{b \pm \sqrt{(b^2 - 4a(c - y))}}{2a} \quad (\text{Two possible solutions})$$

Step 4: Solve for analyte concentration Cx

$$Cx = (Cis)(\text{Amount ratio})$$

Example Spreadsheet Calculation:

Value of A from plot:	-0.00629
Value of B from plot:	0.511
Value of C from plot:	-0.0276
Area of unknown from quantitation report:	293821
Area of IS from quantitation report:	784848
Response ratio, y:	0.374367
C - y:	-0.40197
Root 1 - Computed amount ratio, X1:	80.44567
Root 2 - Computed amount ratio, X2:	0.794396 use this solution
Concentration of IS, Cis:	25.00
Concentration of analyte, Cx:	19.86 ug/L

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 120816
 Analyst1: TMB Analyst2: NA
 Method: 8260B SOP: MSV01 Rev: 24
 Method: 624 SOP: MSV10 Rev: 15
 Method: 5030B/5030C/5035A SOP: PAT01 Rev: 18
 Maintenance Log ID: 53988

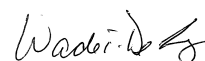
Internal Standard: STD78987 Surrogate Standard: STD78987
 CCV: STD79185; STD79330 LCS: STD79186; STD78319 MS/MSD: NA
 Column 1 ID: RTX502.2 Column 2 ID: NA
 Workgroups: WG594051; WG594142

Comments:

File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
8M416518	WG594051-01 50ng BFB STD A9/FOO	NA	1	1	STD78995	12/08/16 08:55
8M416519	WG594051-02 5ug/L STD A9/FOO	NA	1	1	STD79185	12/08/16 09:19
8M416520	WG594051-03 20ug/L STD A9/FOO	NA	1	1	STD79185	12/08/16 09:48
8M416521	WG594051-04 50ug/L STD A9/FOO	NA	1	1	STD79185	12/08/16 10:17
8M416522	WG594051-05 100ug/L STD A9/FOO	NA	1	1	STD79185	12/08/16 10:47
8M416523	WG594051-06 200ug/L STD A9/FOO	NA	1	1	STD79185	12/08/16 11:16
8M416524	WG594051-07 300ug/L STD A9/FOO	NA	1	1	STD79185	12/08/16 11:46
8M416525	WG594051-08 400ug/L STD A9/FOO	NA	1	1	STD79185	12/08/16 12:16
8M416526	WG594051-09 500ug/L STD A9/FOO	NA	1	1	STD79185	12/08/16 12:45
8M416527	RINSE	NA	1	1		12/08/16 13:14
8M416528	RINSE	NA	1	1		12/08/16 13:43
8M416529	WG594051-10 100ug/L STD A9/FOO	NA	1	1	STD79186	12/08/16 14:12
8M416530	WG594141-01 50ng BFB STD 8260	NA	1	1	STD78995	12/08/16 14:40
8M416531	WG594141-01 50ng BFB STD 8260	NA	1	1	STD78995	12/08/16 14:54
8M416532	WG594141-01 50ng BFB STD 8260	NA	1	1	STD78995	12/08/16 15:17
8M416533	WG594141-02 50ug/L CCV STD 8260	NA	1	1	STD79330	12/08/16 15:44
8M416534	WG594141-02 50ug/L CCV STD 8260	NA	1	1	STD79330	12/08/16 16:15
8M416535	WG000000-01 100ug/L A9 CCV STD 8260	NA	1	1	STD78971	12/08/16 16:45
8M416536	WG594142-01 VBLK1208 BLANK STD 826	NA	1	1		12/08/16 17:16
8M416537	WG594142-02 20ug/L LCS STD 8260	NA	1	1	STD79319	12/08/16 17:45
8M416538	L16120424-04 A MS 826-SPE	<2	1	1	STD79319	12/08/16 18:14
8M416539	L16120424-05 A MSD 826-SPE	<2	1	1	STD79319	12/08/16 18:43
8M416540	L16120315-05 B TB 826-SPE	<2	1	1		12/08/16 19:12
8M416541	L16120315-03 B EB 826-SPE	<2	1	1		12/08/16 19:41
8M416542	L16120424-01 A TB 826-SPE	<2	1	1		12/08/16 20:10
8M416543	L16120424-03 A RS 826-SPE	<2	1	1		12/08/16 20:39
8M416544	L16120424-06 A 826-SPE	<2	1	1		12/08/16 21:09
8M416545	L16120424-02 A 826-SPE	<2	1	1		12/08/16 21:40
8M416546	L16120315-01 B 826-SPE	<2	1	1		12/08/16 22:08
8M416547	L16120315-02 B 826-SPE	<2	1	1		12/08/16 22:37
8M416548	L16120315-04 B 826-SPE	<2	1	1		12/08/16 23:06
8M416549	L16120424-07 A 826-SPE	<2	1	1		12/08/16 23:35
8M416550	WG594142-06 20ug/L LCS2 STD 8260	NA	1	1	STD79319	12/09/16 00:04
8M416551	CCV	NA	1	1		12/09/16 00:33

Approved: December 09, 2016

Page: 1




Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 120816
 Analyst1: TMB Analyst2: NA
 Method: 8260B SOP: MSV01 Rev: 24
 Method: 624 SOP: MSV10 Rev: 15
 Method: 5030B/5030C/5035A SOP: PAT01 Rev: 18
 Maintenance Log ID: 53988

Internal Standard: STD78987 Surrogate Standard: STD78987
 CCV: STD79185; STD79330 LCS: STD79186; STD78319 MS/MSD: NA
 Column 1 ID: RTX502.2 Column 2 ID: NA
 Workgroups: WG594051; WG594142

Comments:

File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
8M416552	RINSE	NA	1	1		12/09/16 01:01

Comments

Seq.	Rerun	Dil.	Reason	Analytes
13	X			
File ID: 8M416530				
Tune failed, DNR.				
15	X			
File ID: 8M416531				
Tune failed, DNR.				
16				
File ID: 8M416532				
Purged BFB.				
17	X			
File ID: 8M416533				
DNR. Bromomethane was low.				
19				
File ID: 8M416535				
Not needed, DNR.				
27	X	10	Over Calibration Range	PCE
File ID: 8M416543				

Approved: December 09, 2016

Page: 2

Wade D. [Signature]



Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 030317
 Analyst1: TMB Analyst2: NA
 Method: 8260B SOP: MSV01 Rev: 24
 Method: 624 SOP: MSV10 Rev: 15
 Method: 5030B/5030C/5035A SOP: PAT01 Rev: 18
 Maintenance Log ID: _____

Internal Standard: STD80702 Surrogate Standard: STD80702
 CCV: STD80732 LCS: STD80765 MS/MSD: NA
 Column 1 ID: RTX502.2 Column 2 ID: NA
 Workgroups: WG604846

Comments:

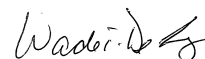
File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
8M418132	WG604846-01 50ng BFB STD 8260	NA	1	1	STD80536	03/03/17 08:58
8M418133	WG604846-02 0.3ug/L STD 8260	NA	1	1	STD80732	03/03/17 09:22
8M418134	WG604846-03 0.4ug/L STD 8260	NA	1	1	STD80732	03/03/17 09:51
8M418135	WG604846-04 1ug/L STD 8260	NA	1	1	STD80732	03/03/17 10:20
8M418136	WG604846-05 2ug/L STD 8260	NA	1	1	STD80732	03/03/17 10:49
8M418137	WG604846-06 5ug/L STD 8260	NA	1	1	STD80732	03/03/17 11:18
8M418138	WG604846-02 0.3ug/L STD 8260	NA	1	1	STD80732	03/03/17 11:48
8M418139	WG604846-07 20ug/L STD 8260	NA	1	1	STD80732	03/03/17 12:17
8M418140	WG604846-08 50ug/L STD 8260	NA	1	1	STD80732	03/03/17 12:46
8M418141	WG604846-09 100ug/L STD 8260	NA	1	1	STD80732	03/03/17 13:15
8M418142	WG604846-10 200ug/L STD 8260	NA	1	1	STD80732	03/03/17 13:45
8M418143	WG604846-11 300ug/L STD 8260	NA	1	1	STD80732	03/03/17 14:14
8M418144	RINSE	NA	1	1		03/03/17 14:43
8M418145	RINSE	NA	1	1		03/03/17 15:12
8M418146	WG604846-12 50ug/L ALT SRC STD 8260	NA	1	1	STD80757	03/03/17 16:06
8M418147	RINSE	NA	1	1		03/03/17 16:34
8M418148	WG604846-12 50ug/L ALT SRC STD	NA	1	1	STD80765	03/03/17 17:04
8M418149	RINSE	NA	1	1		03/03/17 17:33

Comments

Seq.	Rerun	Dil.	Reason	Analytes
2	X			
File ID: 8M418133				
DNR.				
15	X			
File ID: 8M418146				
DNR.				

Approved: March 07, 2017

Page: 1




Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 030817
 Analyst1: TMB Analyst2: NA
 Method: 8260B SOP: MSV01 Rev: 24
 Method: 5030B/5030C/5035A SOP: PAT01 Rev: 18

Maintenance Log ID: 80872

Internal Standard: STD80702 Surrogate Standard: STD80702
 CCV: STD80765 LCS: STD80757 MS/MSD: STD80757

Column 1 ID: RTX502.2 Column 2 ID: NA
 Workgroups: WG605446

Comments:

File ID	Sample Information	pH	Mat	Dil	Reference	Date/Time
8M418221	WG605444-01 50ng BFB STD 8260	NA	1	1	STD80536	03/08/17 09:49
8M418222	WG605444-02 50ug/L CCV STD 8260	NA	1	1	STD80765	03/08/17 10:12
8M418223	WG605444-02 50ug/L CCV STD 8260	NA	1	1	STD80765	03/08/17 10:42
8M418224	WG000000-01 100ug/L A9CCV STD 8260	NA	1	1	STD80642	03/08/17 11:12
8M418225	WG605446-01 VBLK0308 BLANK STD 826	NA	1	1		03/08/17 11:42
8M418226	WG605446-02 20ug/L LCS STD 8260	NA	1	1	STD80757	03/08/17 12:11
8M418227	L17021388-02 B 826-SPE	<2	1	1		03/08/17 12:41
8M418228	L17021324-03 C RS 826-SPE	NA	1	1		03/08/17 13:11
8M418229	L17030097-02 A 1000X 826-SPE	4	1	1000		03/08/17 13:40
8M418230	L17030097-01 A 250X 826-SPE	3	1	250		03/08/17 14:10
8M418231	L17021388-01 B 826-SPE	<2	1	1		03/08/17 14:39
8M418232	L17021388-03 B 826-SPE	<2	1	1		03/08/17 15:09
8M418233	L17021388-04 B 826-SPE	<2	1	1		03/08/17 15:38
8M418234	L17030342-02 TB A 826-SPE	<2	1	1		03/08/17 16:09
8M418235	L17030348-01 A 8260	<2	1	1		03/08/17 16:39
8M418236	L17030342-01 A 826-SPE	4	1	1		03/08/17 17:09
8M418237	L17030226-04 TB A 826-LOW	<2	1	1		03/08/17 17:38
8M418238	L17030226-05 A 826-LOW	<2	1	1		03/08/17 18:08
8M418239	L17030226-03 A 826-LOW	<2	1	1		03/08/17 18:38
8M418240	L17030226-02 A 826-LOW	<2	1	1		03/08/17 19:08
8M418241	L17030226-01 A 826-LOW	<2	1	1		03/08/17 19:38
8M418242	L17030097-01 B 100X 826-SPE 00	3	1	100		03/08/17 20:08
8M418243	L17030097-02 B 5X 826-SPE 00	5	1	5		03/08/17 20:37
8M418244	L17021324-04 C MS 826-SPE	NA	1	1	STD80757	03/08/17 21:07
8M418245	L17021324-05 C MSD 826-SPE	NA	1	1	STD80757	03/08/17 21:37
8M418246	LCS2	NA	1	1		03/08/17 22:06
8M418247	CCV	NA	1	1		03/08/17 22:35
8M418248	RINSE	NA	1	1		03/08/17 23:05
8M418249	RINSE	NA	1	1		03/08/17 23:34

Comments

Seq.	Rerun	Dil.	Reason	Analytes
2	X			

Approved: March 09, 2017

Sarah Vandenberg

Page: 1

Microbac Laboratories Inc.

Instrument Run Log

Instrument: HPMS8 Dataset: 030817
 Analyst1: TMB Analyst2: NA
 Method: 8260B SOP: MSV01 Rev: 24
 Method: 5030B/5030C/5035A SOP: PAT01 Rev: 18

Maintenance Log ID: 80872

Internal Standard: STD80702 Surrogate Standard: STD80702
 CCV: STD80765 LCS: STD80757 MS/MSD: STD80757
 Column 1 ID: RTX502.2 Column 2 ID: NA
 Workgroups: WG605446

Comments: **Comments**

Seq.	Rerun	Dil.	Reason	Analytes
File ID: 8M418222				
VC was high, DNR.				
4				
File ID: 8M418224				
Not needed, DNR.				
9	X	5	Analyzed too dilute	
File ID: 8M418229				
DNR.				
10	X	100	Analyzed too dilute	
File ID: 8M418230				
DNR.				

Approved: March 09, 2017

Page: 2

Sarah Vandenberg

Microbac Laboratories Inc.

Data Checklist

Date: 08-DEC-2016
 Analyst: TMB
 Analyst: NA
 Method: 8260B/624
 Instrument: HPMS8
 Curve Workgroup: NA
 Runlog ID: 79117
 Analytical Workgroups: WG594051; WG594142

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	TMB
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	NA
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	WTD
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
08-DEC-2016

Tiffany Bailey

Secondary Reviewer:
09-DEC-2016

Wade D. ...



Microbac Laboratories Inc.

Data Checklist

Date: 03-MAR-2017
 Analyst: TMB
 Analyst: NA
 Method: 8260B/624/OVAP
 Instrument: HPMS8
 Curve Workgroup: NA
 Runlog ID: 80788
 Analytical Workgroups: WG604846

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	X
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	NA
Samples	X
TCL Hits	X
Spectra of TCL Hits	TMB
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	NA
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	WTD
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
06-MAR-2017

Tiffany Bailey

Secondary Reviewer:
07-MAR-2017

Wade D. ...



Microbac Laboratories Inc.

Data Checklist

Date: 08-MAR-2017
 Analyst: TMB
 Analyst: NA
 Method: 8260B
 Instrument: HPMS8
 Curve Workgroup: NA
 Runlog ID: 80872
 Analytical Workgroups: WG605446

System Performance Check	NA
BFB	X
Initial Calibration	X
Average RF	X
Linear Reg or Higher Order Curve	X
Second Source standard % Difference	X
Continuing Calibration /Check Standards	X
Project/Client Specific Requirements	X
Special Standards	NA
Blanks	X
TCL's	X
Surrogates	X
LCS (Laboratory Control Sample)	X
Recoveries	X
Surrogates	X
MS/MSD/Duplicates	X
Samples	X
TCL Hits	X
Spectra of TCL Hits	TMB
Surrogates	X
Internal Standards Criteria	X
Library Searches	NA
Calculations & Correct Factors	X
Dilutions Run	X
Reruns	X
Manual Integrations	NA
Case Narrative	X
Results Reporting/Data Qualifiers	X
KOBRA Workgroup Data	X
Check for Completeness	X
Primary Reviewer	TMB
Secondary Reviewer	SAV
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Check the reasonableness of the results	X

Primary Reviewer:
09-MAR-2017

Tiffany Bailey

Secondary Reviewer:
09-MAR-2017

Sarah Vandenberg



Analytical Method:8260B
Login Number:L17030342

AAB#:WG605446

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6421	01	03/06/17					03/08/2017	2.1	14		03/08/17	2.1	14	
TRIP BLANK	02	03/06/17					03/08/2017	2.7	14		03/08/17	2.7	14	

* = SEE PROJECT QAPP REQUIREMENTS

HOLD_TIMES - Modified 03/06/2008
PDF File ID: 5190471
Report generated 03/09/2017 13:35



Login Number: L17030342
 Instrument Id: HPMS8
 Workgroup (AAB#): WG605446

Method: 8260
 CAL ID: HPMS8-03-MAR-17
 Matrix: Water

Sample Number	Dilution	Tag	1	2	3	4
L17030342-01	1.00	01	92.4	92.4	99.2	95.6
L17030342-02	1.00	01	93.1	92.0	98.4	94.5
WG605446-01	1.00	01	93.1	93.4	97.5	94.5
WG605446-02	1.00	01	93.0	94.5	94.4	93.4

Surrogates	Surrogate Limits		
1 - 1,2-Dichloroethane-d4	70	-	120
2 - Dibromofluoromethane	85	-	115
3 - 4-Bromofluorobenzene	75	-	120
4 - Toluene-d8	85	-	120

Underline = Result out of surrogate limits

DL = surrogate diluted out

ND = surrogate not detected



Login Number: L17030342 Prep Date: 03/08/17 11:42 Sample ID: WG605446-01
 Instrument ID: HPMS8 Run Date: 03/08/17 11:42 Prep Method: 5030B/5030C/503
 File ID: 8M418225 Analyst: TMB Method: 8260B
 Workgroup (AAB#): WG605446 Matrix: Water Units: ug/L
 Contract #: _____ Cal ID: HPMS8-03-MAR-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
1,1,1-Trichloroethane	0.250	1.00	0.250	1	U
1,1,2-Trichloroethane	0.250	1.00	0.250	1	U
1,1-Dichloroethane	0.125	0.500	0.125	1	U
1,1-Dichloroethene	0.500	2.00	0.500	1	U
1,2-Dichloroethane	0.250	1.00	0.250	1	U
Acetone	2.50	10.0	2.50	1	U
Benzene	0.125	0.500	0.125	1	U
Carbon tetrachloride	0.250	1.00	0.250	1	U
Chloroform	0.125	0.500	0.125	1	U
Ethylbenzene	0.250	1.00	0.250	1	U
Methylene chloride	0.250	1.00	0.250	1	U
m,p-Xylene	0.500	2.00	0.500	1	U
o-Xylene	0.250	1.00	0.250	1	U
Styrene	0.125	0.500	0.125	1	U
Tetrachloroethene	0.250	1.00	0.250	1	U
Trichloroethene	0.250	1.00	0.250	1	U
Toluene	0.250	1.00	0.250	1	U
Vinyl chloride	0.250	1.00	0.250	1	U

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	93.1	70 - 120	PASS
4-Bromofluorobenzene	97.5	75 - 120	PASS
Dibromofluoromethane	93.4	85 - 115	PASS
Toluene-d8	94.5	85 - 120	PASS

DL Method Detection Limit
 LOQ Reporting/Practical Quantitation Limit
 ND Analyte Not detected at or above reporting limit
 * |Analyte concentration| > 1/2 RL

Report Name: BLANK
 PDF ID: 5190472
 09-MAR-2017 13:35



Login Number: L17030342 Run Date: 03/08/2017 Sample ID: WG605446-02
 Instrument ID: HPMS8 Run Time: 12:11 Prep Method: 5030B/5030C/503
 File ID: 8M418226 Analyst: TMB Method: 8260B
 Workgroup (AAB#): WG605446 Matrix: Water Units: ug/L
 QC Key: DOD4 Lot#: STD80757 Cal ID: HPMS8-03-MAR-17

Analytes	Expected	Found	% Rec	LCS Limits	Q
1,1,1-Trichloroethane	20.0	20.6	103	65 - 130	
1,1,2-Trichloroethane	20.0	19.7	98.3	75 - 125	
1,1-Dichloroethane	20.0	19.8	98.9	70 - 135	
1,1-Dichloroethene	20.0	19.0	95.2	70 - 130	
1,2-Dichloroethane	20.0	20.1	100	70 - 130	
Acetone	20.0	20.0	100	40 - 140	
Benzene	20.0	20.5	103	80 - 120	
Carbon tetrachloride	20.0	20.4	102	65 - 140	
Chloroform	20.0	19.6	98.1	65 - 135	
Ethylbenzene	20.0	18.5	92.3	75 - 125	
Methylene chloride	20.0	19.5	97.7	55 - 140	
m,p-Xylene	40.0	38.7	96.8	75 - 130	
o-Xylene	20.0	18.7	93.6	80 - 120	
Styrene	20.0	20.0	100	65 - 135	
Tetrachloroethene	20.0	18.6	93.2	45 - 150	
Trichloroethene	20.0	19.6	98.0	70 - 125	
Toluene	20.0	19.9	99.3	75 - 120	
Vinyl chloride	20.0	25.2	126	50 - 145	

Surrogates	% Recovery	Surrogate Limits	Qualifier
1,2-Dichloroethane-d4	93.0	70 - 120	PASS
4-Bromofluorobenzene	94.4	75 - 120	PASS
Dibromofluoromethane	94.5	85 - 115	PASS
Toluene-d8	93.4	85 - 120	PASS

* EXCEEDS %REC LIMIT

LCS - Modified 03/06/2008
 PDF File ID: 5190473
 Report generated: 03/09/2017 13:35



BFB

Login Number: L17030342

Tune ID: WG594051-01

Instrument: HPMS8

Run Date: 12/08/2016

Analyst: TMB

Run Time: 08:55

Workgroup: WG594051

File ID: 8M416518

Cal ID: HPMS8-08-DEC-16

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	15.9	3959	PASS
75.0	95.0	30.0	60.0	50.2	12523	PASS
95.0	95.0	100	100	100	24967	PASS
96.0	95.0	5.00	9.00	6.61	1651	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	74.9	18700	PASS
175	174	5.00	9.00	7.25	1355	PASS
176	174	95.0	101	96.0	17959	PASS
177	176	5.00	9.00	6.08	1092	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG594051-02	STD	01	12/08/2016 09:19	
WG594051-03	STD	01	12/08/2016 09:48	
WG594051-04	STD	01	12/08/2016 10:17	
WG594051-05	STD-CCV	01	12/08/2016 10:47	
WG594051-06	STD	01	12/08/2016 11:16	
WG594051-07	STD	01	12/08/2016 11:46	
WG594051-08	STD	01	12/08/2016 12:16	
WG594051-09	STD	01	12/08/2016 12:45	
WG594051-10	SSCV	01	12/08/2016 14:12	

* Sample past 12 hour tune limit



BFB

Login Number: L17030342

Tune ID: WG604846-01

Instrument: HPMS8

Run Date: 03/03/2017

Analyst: TMB

Run Time: 08:58

Workgroup: WG604846

File ID: 8M418132

Cal ID: HPMS8-03-MAR-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	17.7	6821	PASS
75.0	95.0	30.0	60.0	46.5	17889	PASS
95.0	95.0	100	100	100	38477	PASS
96.0	95.0	5.00	9.00	7.09	2727	PASS
173	174	0	2.00	0.383	114	PASS
174	95.0	50.0	100	77.4	29800	PASS
175	174	5.00	9.00	7.40	2204	PASS
176	174	95.0	101	99.5	29642	PASS
177	176	5.00	9.00	6.68	1979	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG604846-03	STD	01	03/03/2017 09:51	
WG604846-04	STD	01	03/03/2017 10:20	
WG604846-05	STD	01	03/03/2017 10:49	
WG604846-06	STD	01	03/03/2017 11:18	
WG604846-02	STD	01	03/03/2017 11:48	
WG604846-07	STD	01	03/03/2017 12:17	
WG604846-08	STD-CCV	01	03/03/2017 12:46	
WG604846-09	STD	01	03/03/2017 13:15	
WG604846-10	STD	01	03/03/2017 13:45	
WG604846-11	STD	01	03/03/2017 14:14	
WG604846-12	SSCV	01	03/03/2017 17:04	

* Sample past 12 hour tune limit



BFB

Login Number: L17030342 Tune ID: WG605444-01
 Instrument: HPMS8 Run Date: 03/08/2017
 Analyst: TMB Run Time: 09:49
 Workgroup: WG605444 File ID: 8M418221
 Cal ID: HPMS8-03-MAR-17

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50.0	95.0	15.0	40.0	18.3	6014	PASS
75.0	95.0	30.0	60.0	47.6	15657	PASS
95.0	95.0	100	100	100	32864	PASS
96.0	95.0	5.00	9.00	6.67	2193	PASS
173	174	0	2.00	0	0	PASS
174	95.0	50.0	100	75.5	24821	PASS
175	174	5.00	9.00	7.32	1818	PASS
176	174	95.0	101	96.1	23856	PASS
177	176	5.00	9.00	6.64	1585	PASS

This check relates to the following samples:

Lab ID	Client ID	Tag	Date Analyzed	Q
WG605444-02	CCV	01	03/08/2017 10:42	
WG605446-01	BLANK	01	03/08/2017 11:42	
WG605446-02	LCS	01	03/08/2017 12:11	
L17030342-02	TRIP BLANK	01	03/08/2017 16:09	
L17030342-01	LH18/24-SP650-6421	01	03/08/2017 17:09	

* Sample past 12 hour tune limit



Calibration Table Report
 Method: A9FOOWTR.M
 Title: A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Calibration: Thu Dec 08 13:41:47 2016
 Curve: WG594051
 Calibration Files

Compound											Avg	%RSD	
	5	20	50	100	200	300	400	500					
	8M116519.D	8M116520.D	8M116521.D	8M116522.D	8M116523.D	8M116524.D	8M116525.D	8M116526.D					
I Fluorobenzene	ISTD												
T Acetonitrile		0.007	0.007	0.008	0.007	0.007	0.007	0.007	0.007	0.007	0.007	2.734	
T 3-Chloro-1-propene	0.285	0.281	0.282	0.286	0.290	0.298	0.298	0.306	0.291	0.318	3.019		
T 2-Chloro-1,3-butadiene	0.282	0.298	0.305	0.315	0.325	0.335	0.338	0.343	0.318	0.318	6.789		
T Ethyl Acetate		0.065	0.063	0.064	0.066	0.064	0.067	0.066	0.065	0.065	2.080		
T Methacrylonitrile	0.032	0.041	0.043	0.043	0.044	0.044	0.046	0.045	0.042	0.042	10.556		
T Isobutyl Alcohol			0.002	0.002	0.002	0.002	0.002	0.002	0.002	0.002	6.131		
T 1-Butanol										0.000	0.000		
T Methyl methacrylate	0.055	0.067	0.068	0.069	0.071	0.070	0.074	0.074	0.068	0.068	8.866		
T 2-Nitropropane		0.020	0.020	0.021	0.023	0.023	0.024	0.024	0.022	0.022	7.043		
I Chlorobenzene-d5	ISTD												
I 1,4-Dichlorobenzene-d4	ISTD												
T Cyclohexanone			0.007	0.008	0.008	0.008	0.008	0.008	0.008	0.008	7.809		

Thu Dec 08 15:05:15 2016

Calibration Table Report

Method: 8260WT.M

Title: Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8

Last Calibration: Fri Mar 03 15:26:23 2017

Curve: WG604846

Calibration Files

Compound	0.3 0.4 1 2 5 20 50 100 200 300										Avg	%RSD	Linear	Quad
	8M418138.D	8M418134.D	8M418135.D	8M418136.D	8M418137.D	8M418139.D	8M418140.D	8M418141.D	8M418142.D	8M418143.D				
I Fluorobenzene	ISTD													
T Dichlorodifluoromethane			0.305	0.299	0.315	0.358	0.367	0.363	0.356	0.314	0.335	8.548		
P Chloromethane			0.560	0.510	0.494	0.486	0.476	0.458	0.437	0.371	0.474	11.698		
C Vinyl Chloride	0.416	0.439	0.495	0.454	0.442	0.442	0.419	0.384	0.355	0.286	0.413	14.211		
T 1,3-Butadiene			0.278	0.290	0.296	0.197	0.128	0.111	0.091	0.199	0.199	45.231	1.008	
T Bromomethane			0.138	0.139	0.158	0.164	0.189	0.208	0.229	0.216	0.180	19.576	0.998	
T Chloroethane		0.129	0.182	0.167	0.177	0.179	0.187	0.190	0.197	0.181	0.177	11.081		
T Trichlorofluoromethane		0.394	0.440	0.411	0.437	0.429	0.441	0.444	0.440	0.410	0.427	4.168		
T Diethyl ether			0.158	0.161	0.162	0.161	0.173	0.173		0.174	0.166	4.099		
T Isoprene					0.356	0.361	0.383	0.404	0.408	0.383	0.382	5.548		
T Acrolein				0.020	0.021	0.021	0.023	0.024		0.025	0.022	8.318		
T 1,1,2-Trichloro-1,2,2-Trifluoroethane			0.228	0.228	0.258	0.253	0.259	0.264	0.261	0.240	0.249	5.862		
T Acetone					0.029	0.030	0.036	0.032	0.032	0.030	0.032	7.670		
C 1,1-Dichloroethene		0.392	0.380	0.349	0.378	0.373	0.395	0.400	0.402	0.363	0.382	4.692		
T Tert-Butyl Alcohol				0.010	0.010	0.010	0.011	0.010		0.010	0.010	5.163		
T Dimethyl Sulfide					0.257	0.266	0.287	0.295	0.304	0.290	0.283	6.322		
T Iodomethane			0.059	0.071	0.110	0.180	0.231	0.260	0.279	0.240	0.179	49.134	0.992	
T Methyl acetate					0.088	0.089	0.099	0.098	0.098	0.099	0.095	5.465		
T Methylene Chloride			0.261	0.262	0.262	0.257	0.267	0.269	0.278	0.261	0.265	2.527		
T Carbon Disulfide			0.805	0.765	0.798	0.802	0.841	0.861	0.870	0.770	0.814	4.826		
T Acrylonitrile			0.037	0.045	0.045	0.048	0.054	0.054			0.047	14.060		
T Methyl Tert Butyl Ether			0.449	0.466	0.477	0.491	0.543	0.514	0.505	0.488	0.491	6.004		
T trans-1,2-Dichloroethene		0.370	0.368	0.332	0.363	0.362	0.379	0.386	0.394	0.357	0.368	4.915		
T n-Hexane					0.355	0.341	0.353	0.362	0.368	0.337	0.353	3.361		
T Diisopropyl ether			0.731	0.729	0.746	0.747	0.783	0.785		0.731	0.750	3.249		
T Vinyl Acetate					0.291	0.268	0.295	0.291	0.267	0.277	0.282	4.447		
P 1,1-Dichloroethane		0.437	0.443	0.437	0.467	0.461	0.490	0.496	0.497	0.454	0.465	5.255		
T Ethyl-Tert-Butyl ether			0.663	0.678	0.676	0.685	0.729	0.721		0.680	0.690	3.555		
T 2-Butanone					0.050	0.051	0.056	0.053	0.051	0.054	0.053	4.459		
T Propionitrile			0.014	0.016	0.016	0.017	0.018	0.018		0.018	0.017	9.638		
T 2,2-Dichloropropane		0.404	0.400	0.373	0.406	0.381	0.403	0.403	0.406	0.367	0.394	3.946		
T cis-1,2-Dichloroethene		0.250	0.266	0.274	0.293	0.287	0.306	0.309	0.311	0.290	0.287	7.229		
C Chloroform	0.555	0.553	0.503	0.461	0.468	0.455	0.483	0.481	0.479	0.436	0.487	8.131		
T 1-Bromopropane			0.045	0.052	0.055	0.055	0.060	0.060	0.062	0.058	0.056	9.733		
T Bromochloromethane		0.137	0.151	0.142	0.161	0.160	0.171	0.168	0.164	0.154	0.156	7.256		
T Tetrahydrofuran			0.033	0.033	0.031	0.031	0.036	0.034		0.035	0.033	5.590		
S Dibromofluoromethane				0.241	0.258	0.251	0.266	0.265	0.265	0.250	0.257	3.722		
T 1,1,1-Trichloroethane		0.374	0.411	0.386	0.404	0.405	0.436	0.443	0.449	0.406	0.413	6.153		
T Cyclohexane			0.440	0.393	0.424	0.420	0.443	0.462	0.475	0.441	0.437	5.794		
T 1,1-Dichloropropene			0.332	0.313	0.358	0.349	0.366	0.374	0.377	0.343	0.351	6.217		
T Tert-Amyl-Methyl ether			0.531	0.565	0.564	0.561	0.610	0.599		0.579	0.573	4.591		
T Carbon Tetrachloride		0.346	0.37	0.339	0.377	0.381	0.406	0.412	0.407	0.375	0.3793	6.86898		
S 1,2-Dichloroethane-d4				0.219	0.22	0.219	0.241	0.232	0.228	0.217	0.225	3.90034		
T Heptane											0	0		
T 1,2-Dichloroethane		0.274	0.282	0.287	0.294	0.292	0.319	0.307	0.303	0.285	0.2936	4.72851		
T Benzene		1.014	1.023	0.987	1.05	1.019	1.07	1.058	1.021	0.88	1.0136	5.53904		
T Trichloroethene		0.284	0.293	0.27	0.288	0.288	0.305	0.307	0.317	0.293	0.2939	4.76806		
T Methylcyclohexane					0.432	0.42	0.442	0.453	0.46	0.427	0.4389	3.50107		
C 1,2-Dichloropropane		0.204	0.254	0.241	0.256	0.248	0.272	0.27	0.277	0.263	0.2539	8.67417		
T Bromodichloromethane		0.311	0.313	0.307	0.322	0.333	0.368	0.358	0.363	0.34	0.335	7.04048		
T 1,4-Dioxane					0.001	0.001	0.001	0.001		0.001	0.0012	14.5531		
T Dibromomethane		0.113	0.111	0.122	0.124	0.129	0.142	0.136	0.137	0.132	0.1273	8.5591		
T 2-Chloroethyl Vinyl Ether				0.097	0.101	0.111	0.125	0.118	0.12	0.121	0.1133	9.61538		
T 4-Methyl-2-Pentanone					0.04	0.049	0.056	0.052	0.052	0.053	0.0503	10.7829		
T cis-1,3-Dichloropropene		0.357	0.348	0.35	0.376	0.383	0.422	0.417	0.42	0.392	0.385	7.74459		

T	Dimethyl Disulfide				0.16	0.186	0.216	0.228	0.239	0.232	0.21	14.7103		
I	Chlorobenzene-d5	ISTD												
S	Toluene-d8			1.094	1.204	1.143	1.226	1.241	1.213	1.109	1.1757	5.07157		
C	Toluene	1.326	1.464	1.384	1.493	1.435	1.518	1.506	1.386	1.155	1.4075	8.12879		
T	Ethyl Methacrylate		0.183	0.22	0.239	0.274	0.311	0.309	0.307	0.306	0.2685	18.2722	1.000	
T	Paraldehyde										0	0		
T	trans-1,3-Dichloropropene		0.352	0.379	0.422	0.417	0.466	0.455	0.447	0.427	0.4207	9.16996		
T	1,1,2-Trichloroethane	0.202	0.216	0.229	0.223	0.229	0.257	0.243	0.24	0.235	0.2304	6.92857		
T	2-Hexanone				0.045	0.054	0.068	0.063	0.062	0.064	0.0593	13.9825		
T	1,3-Dichloropropane	0.323	0.379	0.379	0.39	0.391	0.438	0.415	0.408	0.391	0.3905	8.09478		
T	Tetrachloroethene	0.292	0.302	0.276	0.31	0.29	0.311	0.317	0.326	0.304	0.3033	5.02726		
T	Dibromochloromethane	0.25	0.255	0.273	0.283	0.303	0.346	0.336	0.336	0.324	0.3006	12.214		
T	1,2-Dibromoethane	0.186	0.188	0.227	0.222	0.232	0.257	0.245	0.241	0.234	0.2257	10.7466		
T	1-Chlorohexane	0.435	0.472	0.439	0.49	0.482	0.511	0.533	0.541	0.496	0.4889	7.56008		
P	Chlorobenzene	0.995	1.018	0.979	1.027	0.985	1.081	1.099	1.083	0.926	1.0213	5.59295		
T	1,1,1,2-Tetrachloroethane	0.291	0.315	0.33	0.346	0.353	0.406	0.415	0.44	0.402	0.3664	13.9833		
C	Ethylbenzene	0.533	0.523	0.507	0.546	0.54	0.605	0.639	0.68	0.615	0.5765	10.3995		
T	m-p-Xylene	0.611	0.633	0.621	0.672	0.656	0.725	0.748	0.71	0.57	0.6605	8.84592		
T	o-Xylene		0.6	0.588	0.64	0.632	0.703	0.715	0.739	0.674	0.6613	8.37023		
T	Styrene	0.888	0.891	0.899	1.032	1.078	1.21	1.202	1.164	0.998	1.0403	12.6642		
P	Bromoform		0.12	0.141	0.155	0.176	0.214	0.2	0.203	0.198	0.1759	19.2679	0.999	
T	Isopropylbenzene	1.545	1.645	1.54	1.698	1.667	1.819	1.764	1.608	1.291	1.6198	9.49754		
I	1,4-Dichlorobenzene-d4	ISTD												
P	1,1,2,2-Tetrachloroethane	0.356	0.417	0.467	0.473	0.473	0.549	0.494	0.474	0.469	0.4636	11.4246		
S	p-Bromofluorobenzene			0.768	0.872	0.841	0.898	0.906	0.908	0.864	0.8653	5.69728		
T	1,2,3-Trichloropropane		0.113	0.12	0.139	0.136	0.155	0.14	0.137	0.137	0.1346	9.66586		
T	trans-1,4-Dichloro-2-Butene		0.052	0.096	0.126	0.134	0.149	0.144	0.143	0.141	0.1231	27.0793	1.000	
T	n-Propylbenzene	3.653	3.787	3.585	3.928	3.791	3.996	3.776	3.177	2.507	3.5779	13.0291		
T	Bromobenzene	0.727	0.695	0.761	0.725	0.793	0.788	0.856	0.826	0.828	0.775	6.60272		
T	1,3,5-Trimethylbenzene		2.43	2.518	2.487	2.627	2.662	2.873	2.78	2.564	2.107	2.561	8.62404	
T	2-Chlorotoluene	2.415	2.461	2.372	2.548	2.564	2.634	2.535	2.313	1.881	2.4136	9.28132		
T	4-Chlorotoluene	1.912	2.129	2.05	2.225	2.055	2.346	2.293	2.138	1.804	2.1058	8.27163		
T	a-Methylstyrene				1.343	1.429	1.528	1.599	1.605	1.431	1.489	7.05606		
T	tert-Butylbenzene		0.524	0.549	0.561	0.575	0.624	0.628	0.657	0.608	0.5909	7.70005		
T	1,2,4-Trimethylbenzene	2.47	2.674	2.55	2.809	2.793	3.013	2.903	2.637	2.135	2.6649	9.81301		
T	sec-Butylbenzene		3.396	3.239	3.578	3.463	3.689	3.524	3.091	2.447	3.3034	11.9396		
T	p-Isopropyltoluene		2.692	2.603	2.925	2.912	3.13	3.022	2.718	2.178	2.7726	10.7756		
T	1,3-Dichlorobenzene	1.509	1.536	1.498	1.595	1.57	1.723	1.656	1.623	1.423	1.5703	5.78145		
T	1,4-Dichlorobenzene	1.453	1.59	1.588	1.535	1.578	1.553	1.707	1.618	1.589	1.389	5.62757		
T	n-Butylbenzene		2.714	2.556	2.834	2.797	2.983	2.852	2.554	2.05	2.6675	10.8627		
T	1,2-Dichlorobenzene	1.331	1.361	1.41	1.36	1.394	1.386	1.53	1.444	1.418	1.272	4.95935		
T	1,2-Dibromo-3-Chloropropane			0.048	0.066	0.075	0.092	0.08	0.079	0.078	0.0741	18.6579	0.997	
T	1,2,4-Trichlorobenzene	0.972	0.97	0.987	1.007	0.998	1.128	1.063	1.045	0.954	1.0138	5.492		
T	Hexachlorobutadiene	0.429	0.433	0.466	0.48	0.467	0.517	0.507	0.515	0.472	0.4762	6.86211		
T	Naphthalene		1.503	1.524	1.598	1.586	1.649	1.897	1.65	1.529	1.376	8.98264		
T	1,2,3-Trichlorobenzene	0.826	0.703	0.855	0.847	0.831	0.843	0.957	0.873	0.853	0.8	7.52358		

Mon Mar 06 12:18:35 2017

Login Number: L17030342 Run Date: 03/03/2017 Sample ID: WG604846-12
 Instrument ID: HPMS8 Run Time: 17:04 Method: 8260B
 File ID: 8M418148 Analyst: TMB QC Key: DOD4
 ICal Workgroup: WG604846 Cal ID: HPMS8 - 03-MAR-17

Analyte		Expected	Found	Units	RF	%D	UCL	Q
1,1-Dichloroethene	CCC	50.0	48.8	ug/L	0.372	2.50	20	
Chloroform	CCC	50.0	47.7	ug/L	0.465	4.60	20	
Ethylbenzene	CCC	50.0	48.0	ug/L	0.554	3.90	20	
Toluene	CCC	50.0	49.9	ug/L	1.41	0.100	20	
Vinyl Chloride	CCC	50.0	44.1	ug/L	0.364	11.8	20	
1,1,2,2-Tetrachloroethane	SPCC	50.0	52.6	ug/L	0.488	5.20	20	
Chloromethane	SPCC	50.0	50.1	ug/L	0.475	0.300	20	
Bromoform	SPCC	50.0	46.1	ug/L	0.183	7.80	20	
Chlorobenzene	SPCC	50.0	48.1	ug/L	0.982	3.80	20	
1,1-Dichloroethane	SPCC	50.0	49.5	ug/L	0.460	0.900	20	
1,1,1-Trichloroethane		50.0	51.1	ug/L	0.422	2.30	20	
1,1,2-Trichloroethane		50.0	48.9	ug/L	0.225	2.10	20	
1,2-Dichloroethane		50.0	49.1	ug/L	0.289	1.70	20	
Acetone		50.0	47.6	ug/L	0.0302	4.80	20	
Benzene		50.0	49.3	ug/L	0.998	1.50	20	
Carbon Tetrachloride		50.0	50.5	ug/L	0.383	1.10	20	
Methylene Chloride		50.0	48.6	ug/L	0.257	2.90	20	
m-,p-Xylene		100	101	ug/L	0.669	1.30	20	
o-Xylene		50.0	48.7	ug/L	0.644	2.60	20	
Styrene		50.0	53.0	ug/L	1.10	6.10	20	
Tetrachloroethene		50.0	48.2	ug/L	0.293	3.50	20	
Trichloroethene		50.0	47.1	ug/L	0.277	5.80	20	

* Exceeds %D Limit

CCC Calibration Check Compounds
 SPCC System Performance Check Compounds



Login Number: L17030342 Run Date: 03/08/2017 Sample ID: WG605444-02
Instrument ID: HPMS8 Run Time: 10:42 Method: 8260B
File ID: 8M418223 Analyst: TMB QC Key: DOD4
Workgroup (AAB#): WG605446 Cal ID: HPMS8 - 03-MAR-17
Matrix: WATER

Analyte		Expected	Found	UNITS	RF	%D	UCL	Q
1,2-Dichloropropane	CCC	50.0	51.4	ug/L	0.261	2.80	20	
1,1-Dichloroethene	CCC	50.0	50.1	ug/L	0.382	0.155	20	
Chloroform	CCC	50.0	47.8	ug/L	0.466	4.35	20	
Ethylbenzene	CCC	50.0	48.6	ug/L	0.560	2.79	20	
Toluene	CCC	50.0	51.2	ug/L	1.44	2.33	20	
Vinyl Chloride	CCC	50.0	57.7	ug/L	0.477	15.4	20	
1,1,2,2-Tetrachloroethane	SPCC	50.0	53.3	ug/L	0.494	6.62	20	
Bromoform	SPCC	50.0	45.9	ug/L	0.183	8.16	20	
Chlorobenzene	SPCC	50.0	49.0	ug/L	1.00	1.95	20	
Chloromethane	SPCC	50.0	54.9	ug/L	0.520	9.83	20	
1,1-Dichloroethane	SPCC	50.0	50.9	ug/L	0.473	1.86	20	
Xylenes		150	151	ug/L	0.662	0.939	20	
1,1,1-Trichloroethane		50.0	50.9	ug/L	0.420	1.71	20	
1,1,2-Trichloroethane		50.0	49.2	ug/L	0.227	1.56	20	
1,2-Dichloroethane		50.0	49.7	ug/L	0.292	0.541	20	
Acetone		50.0	48.7	ug/L	0.0309	2.68	20	
Benzene		50.0	51.4	ug/L	1.04	2.77	20	
Carbon Tetrachloride		50.0	51.1	ug/L	0.388	2.22	20	
Methylene Chloride		50.0	48.6	ug/L	0.257	2.89	20	
m-,p-Xylene		100	103	ug/L	0.677	2.54	20	
o-Xylene		50.0	48.9	ug/L	0.646	2.26	20	
Styrene		50.0	52.7	ug/L	1.10	5.44	20	
Tetrachloroethene		50.0	47.5	ug/L	0.288	5.05	20	
Trichloroethene		50.0	49.3	ug/L	0.290	1.43	20	

* Exceeds %D Criteria

CCC Calibration Check Compounds

SPCC System Performance Check Compounds

CCV - Modified 03/05/2008

PDF File ID: 5190476

Report generated 03/09/2017 13:35



Login Number: L17030342
Instrument ID: HPMS8
Workgroup (AAB#): WG605446

ICAL CCV Number: WG604846-08
CAL ID: HPMS8-03-MAR-17
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG604846-08	NA	NA	278577	509436	654600
Upper Limit	NA	NA	557154	1018872	1309200
Lower Limit	NA	NA	139289	254718	327300
<u>L17030342-01</u>	1.00	01	207156	410193	533746
<u>L17030342-02</u>	1.00	01	215484	426845	548011
WG605446-01	1.00	01	224850	440788	569983
WG605446-02	1.00	01	246122	455727	573590

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits



Microbac Laboratories Inc.
INTERNAL STANDARD RETENTION TIME SUMMARY
(COMPARED TO MIDPOINT OF ICAL)

00844560

Login Number: L17030342
Instrument ID: HPMS8
Workgroup (AAB#): WG605446

ICAL CCV Number: WG604846-08
CAL ID: HPMS8-03-MAR-17
Matrix: WATER

Sample Number	Dilution	Tag	IS-1	IS-2	IS-3
WG604846-08	NA	NA	17.88	14.84	10.95
Upper Limit	NA	NA	18.38	15.34	11.45
Lower Limit	NA	NA	17.38	14.34	10.45
<u>L17030342-01</u>	1.00	01	17.88	14.84	10.95
<u>L17030342-02</u>	1.00	01	17.88	14.84	10.95
<u>WG605446-01</u>	1.00	01	17.88	14.84	10.95
<u>WG605446-02</u>	1.00	01	17.87	14.84	10.95

IS-1 - 1,4-Dichlorobenzene-d4
IS-2 - Chlorobenzene-d5
IS-3 - Fluorobenzene

Underline = Response outside limits



2.1.1.3 Sample Data

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418236.D Vial: 16
 Acq On : 8 Mar 2017 17:09 Operator: TMB
 Sample : L17030342-01 A 826-LOW Inst : HPMS8
 Misc : 1,1 Multiplr: 1.00

MS Integration Params: RTEINT.P

Quant Time: Mar 09 08:30:27 2017

Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

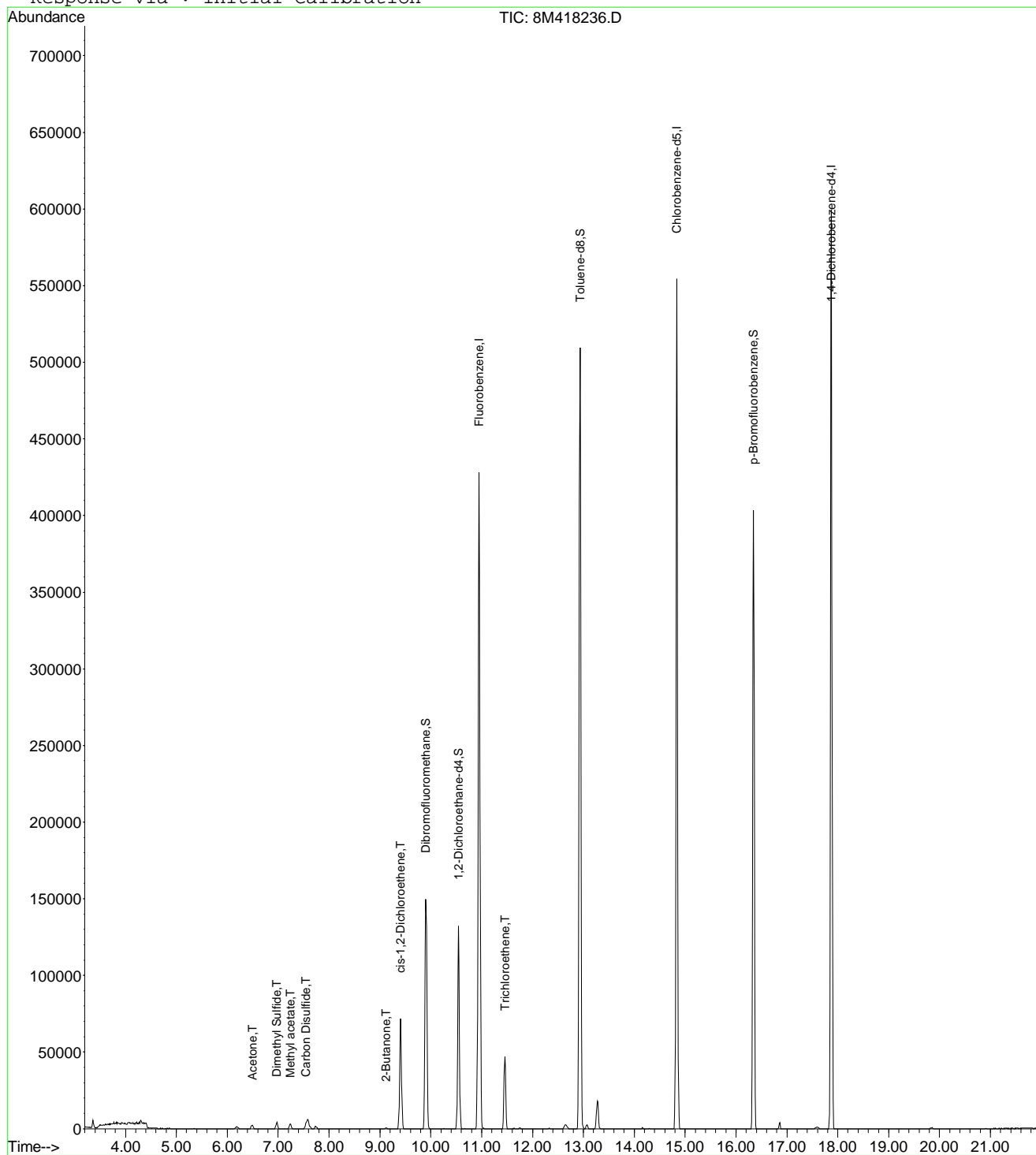
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	533746	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	410193	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	207156	25.00	ug/L	0.00
System Monitoring Compounds						
37) Dibromofluoromethane	9.90	111	126580	23.0912	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	92.36%	
43) 1,2-Dichloroethane-d4	10.54	65	111005	23.1047	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	92.40%	
58) Toluene-d8	12.93	98	461261	23.9104	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	95.64%	
80) p-Bromofluorobenzene	16.34	95	177755	24.7915	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	99.16%	
Target Compounds						
						Qvalue
13) Acetone	6.49	43	4562	6.7336	ug/L	100
16) Dimethyl Sulfide	6.97	62	3721	0.6155	ug/L	86
18) Methyl acetate	7.24	43	6804	3.3466	ug/L #	88
20) Carbon Disulfide	7.55	76	4084	0.2350	ug/L #	74
29) 2-Butanone	9.12	43	1241	1.1069	ug/L #	50
32) cis-1,2-Dichloroethene	9.41	96	42444	6.9204	ug/L	78
47) Trichloroethene	11.45	130	21882	3.4874	ug/L	93

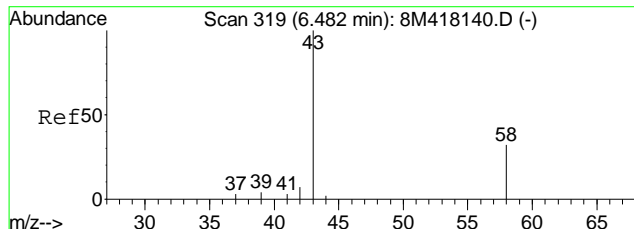
(#) = qualifier out of range (m) = manual integration
 8M418236.D 8260WT.M Thu Mar 09 08:30:30 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418236.D Vial: 16
 Acq On : 8 Mar 2017 17:09 Operator: TMB
 Sample : L17030342-01 A 826-LOW Inst : HPMS8
 Misc : 1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 9 8:30 2017 Quant Results File: 8260WT.RES

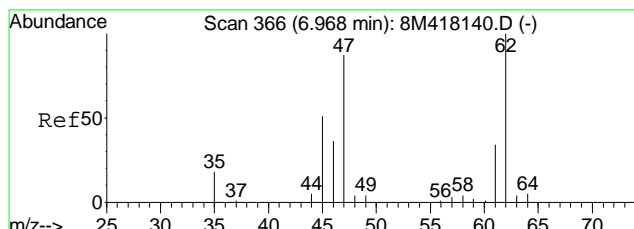
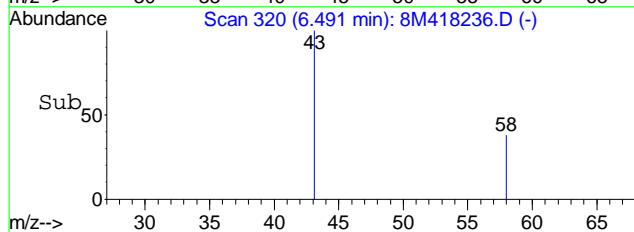
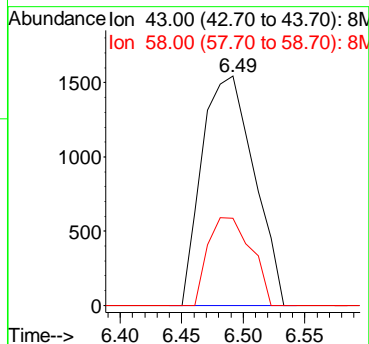
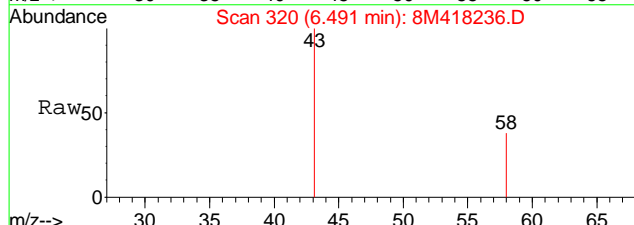
Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Initial Calibration





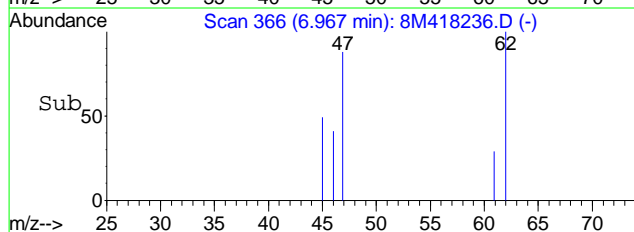
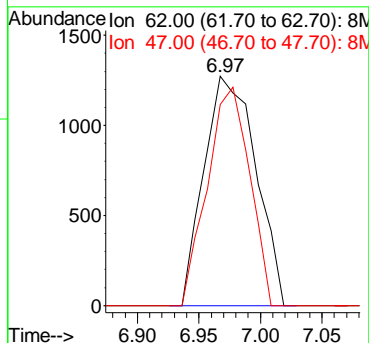
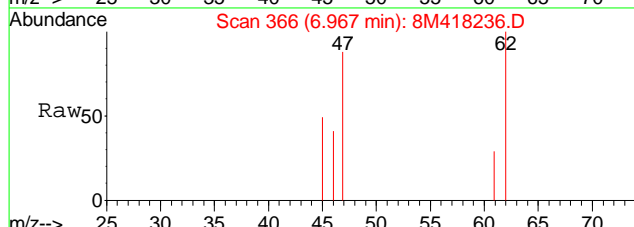
#13
 Acetone
 Concen: 6.73 ug/L
 RT: 6.49 min Scan# 320
 Delta R.T. 0.01 min
 Lab File: 8M418236.D
 Acq: 8 Mar 2017 17:09

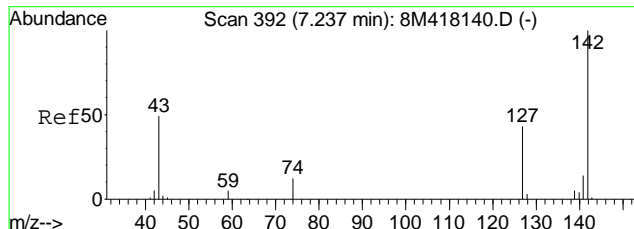
Tgt Ion	Ratio	Lower	Upper
43	100		
58	31.8	19.0	44.4



#16
 Dimethyl Sulfide
 Concen: 0.62 ug/L
 RT: 6.97 min Scan# 366
 Delta R.T. -0.00 min
 Lab File: 8M418236.D
 Acq: 8 Mar 2017 17:09

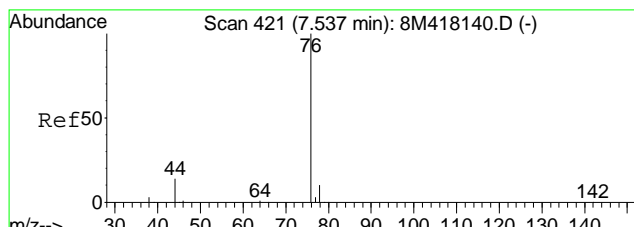
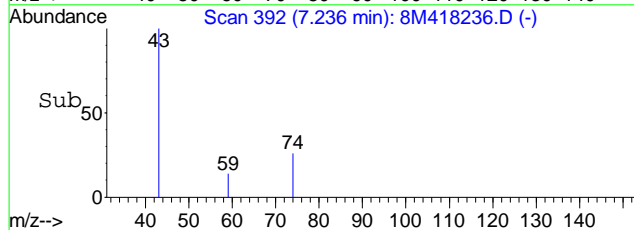
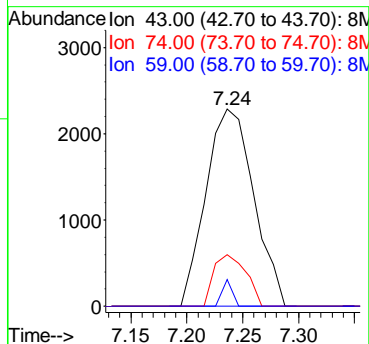
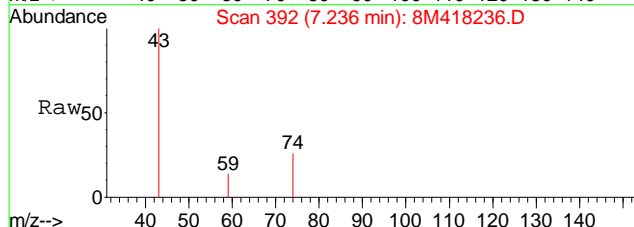
Tgt Ion	Ratio	Lower	Upper
62	100		
47	77.8	54.5	127.3





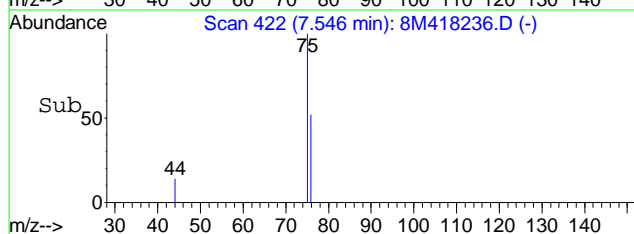
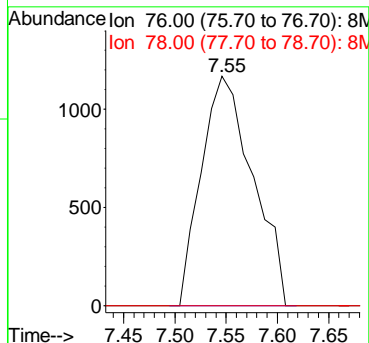
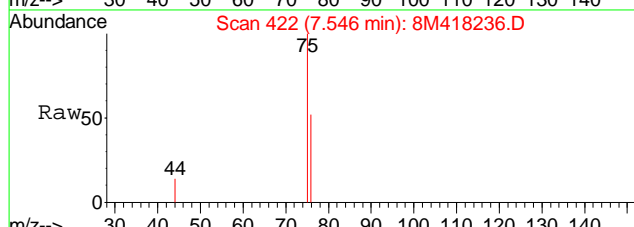
#18
Methyl acetate
Concen: 3.35 ug/L
RT: 7.24 min Scan# 392
Delta R.T. -0.00 min
Lab File: 8M418236.D
Acq: 8 Mar 2017 17:09

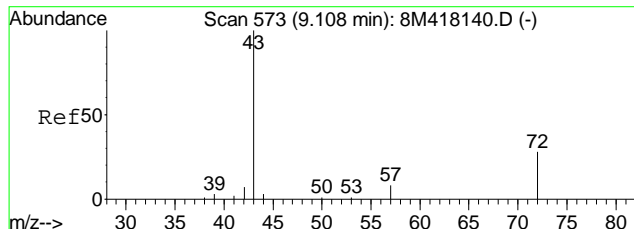
Tgt Ion	Ratio	Lower	Upper
43	100		
74	17.6	13.1	30.5
59	0.0	4.7	11.1#



#20
Carbon Disulfide
Concen: 0.23 ug/L
RT: 7.55 min Scan# 422
Delta R.T. 0.01 min
Lab File: 8M418236.D
Acq: 8 Mar 2017 17:09

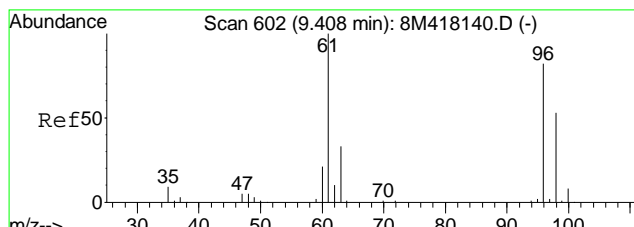
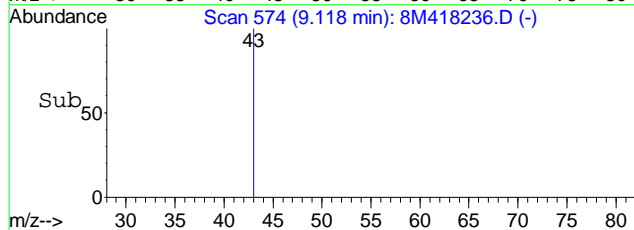
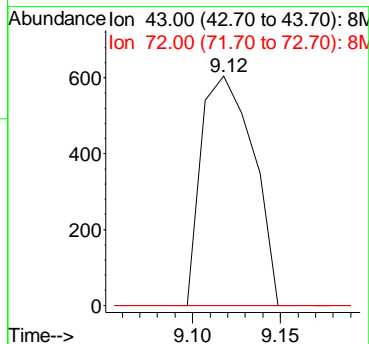
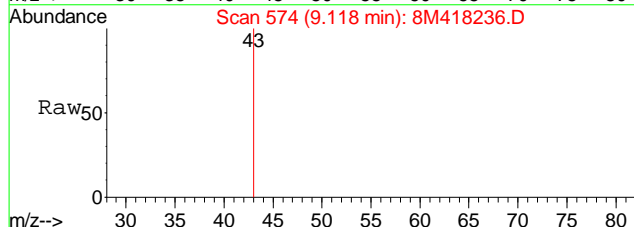
Tgt Ion	Ratio	Lower	Upper
76	100		
78	0.0	5.8	13.4#





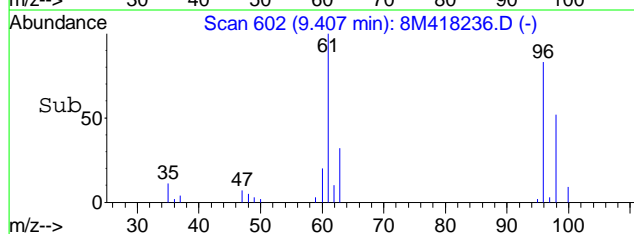
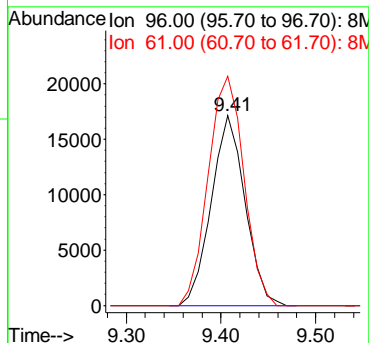
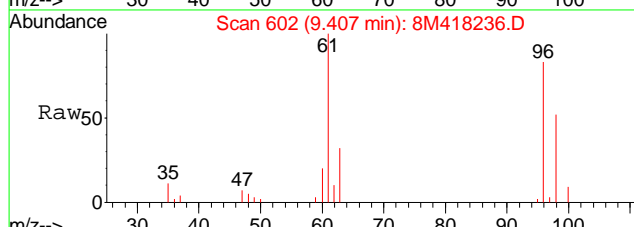
#29
 2-Butanone
 Concen: 1.11 ug/L
 RT: 9.12 min Scan# 574
 Delta R.T. -0.00 min
 Lab File: 8M418236.D
 Acq: 8 Mar 2017 17:09

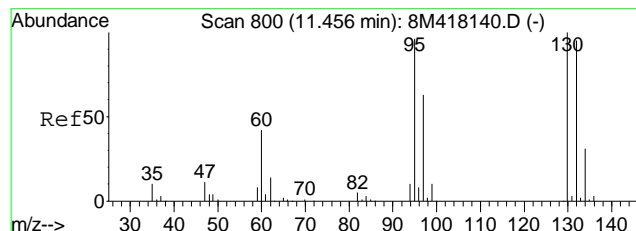
Tgt Ion	Ratio	Lower	Upper
43	100		
72	0.0	14.9	34.7#



#32
 cis-1,2-Dichloroethene
 Concen: 6.92 ug/L
 RT: 9.41 min Scan# 602
 Delta R.T. -0.00 min
 Lab File: 8M418236.D
 Acq: 8 Mar 2017 17:09

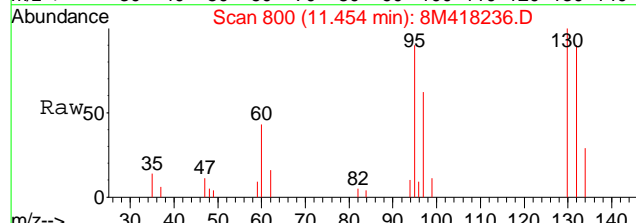
Tgt Ion	Ratio	Lower	Upper
96	100		
61	127.4	93.9	219.1



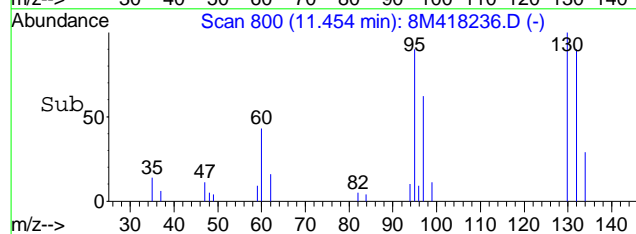
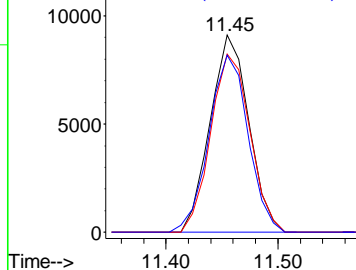


#47
 Trichloroethene
 Concen: 3.49 ug/L
 RT: 11.45 min Scan# 800
 Delta R.T. -0.00 min
 Lab File: 8M418236.D
 Acq: 8 Mar 2017 17:09

Tgt Ion	Ratio	Resp	Lower	Upper
130	100	21882		
132	91.6		57.5	134.3
95	91.0		59.7	139.3



Abundance Ion 130.00 (129.70 to 130.70):
 Ion 132.00 (131.70 to 132.70):
 Ion 95.00 (94.70 to 95.70): 8N



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418234.D Vial: 14
 Acq On : 8 Mar 2017 16:09 Operator: TMB
 Sample : L17030342-02 TB A 826-LOW Inst : HPMS8
 Misc : 1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 09 08:30:18 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

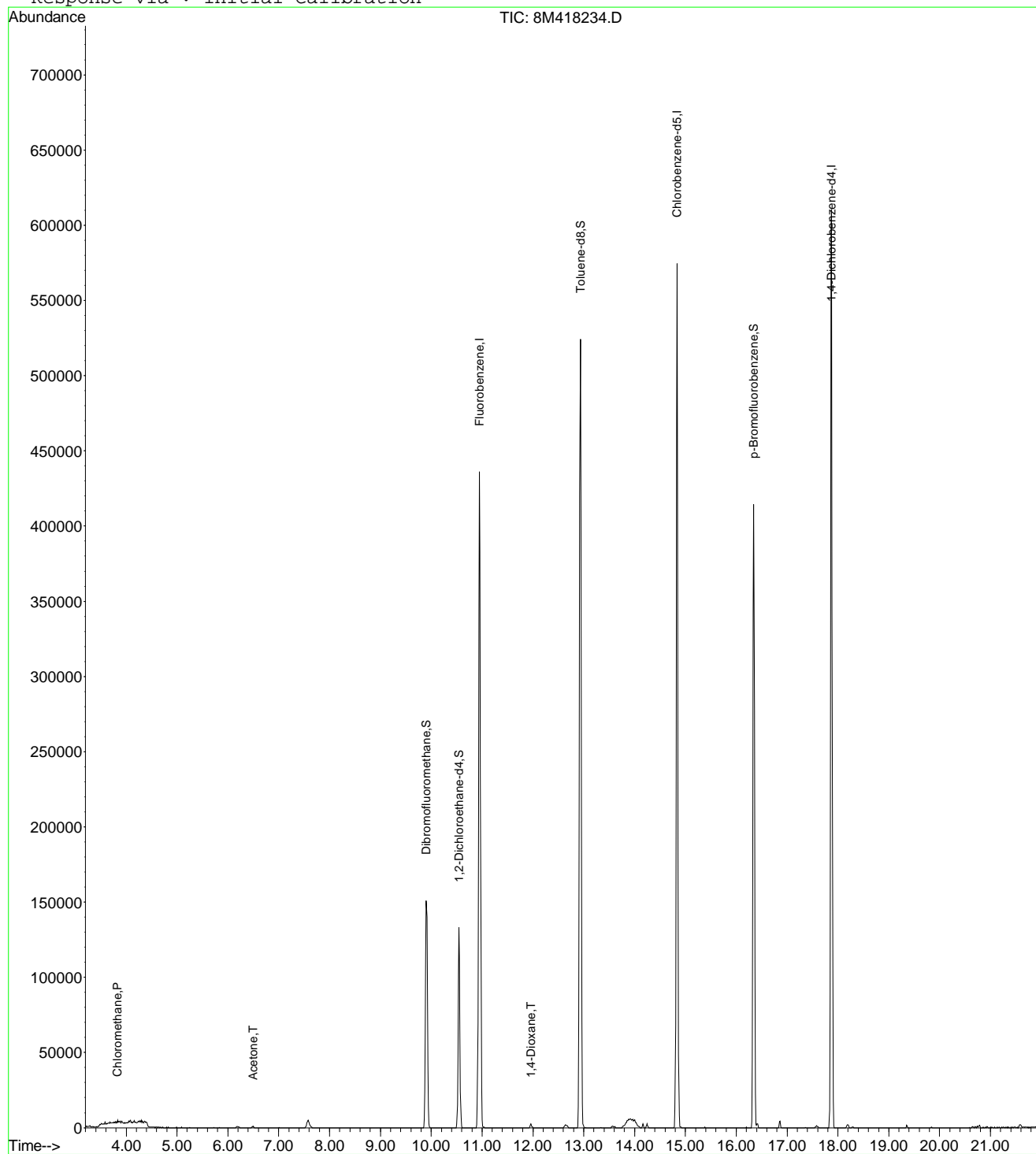
Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	548011	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	426845	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	215484	25.00	ug/L	0.00
System Monitoring Compounds						
37) Dibromofluoromethane	9.90	111	129414	22.9936	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	91.96%	
43) 1,2-Dichloroethane-d4	10.54	65	114848	23.2824	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	93.12%	
58) Toluene-d8	12.93	98	474274	23.6258	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	94.52%	
80) p-Bromofluorobenzene	16.35	95	183504	24.6042	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	98.40%	
Target Compounds						
						Qvalue
3) Chloromethane	3.82	50	1460	0.1406	ug/L #	66
13) Acetone	6.49	43	1763	2.5345	ug/L #	43
51) 1,4-Dioxane	11.96	88	3323	123.4460	ug/L	94

(#) = qualifier out of range (m) = manual integration
 8M418234.D 8260WT.M Thu Mar 09 08:30:21 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418234.D Vial: 14
Acq On : 8 Mar 2017 16:09 Operator: TMB
Sample : L17030342-02 TB A 826-LOW Inst : HPMS8
Misc : 1,1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 9 8:30 2017 Quant Results File: 8260WT.RES

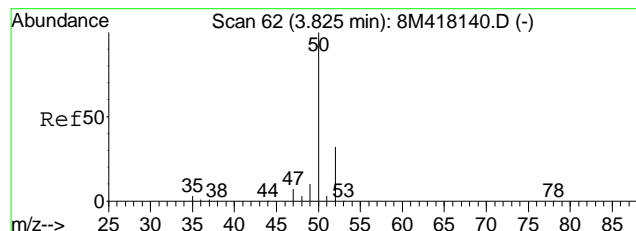
Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
Last Update : Mon Mar 06 12:17:52 2017
Response via : Initial Calibration



8M418234.D 8260WT.M

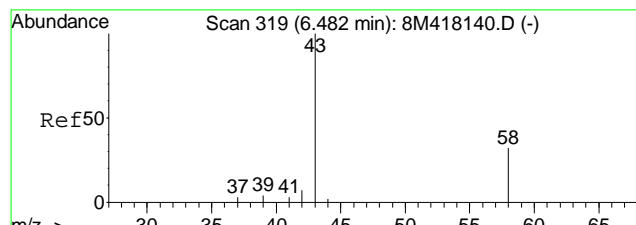
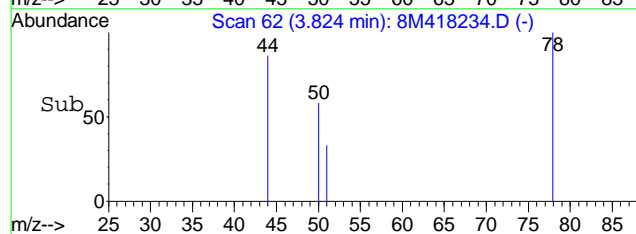
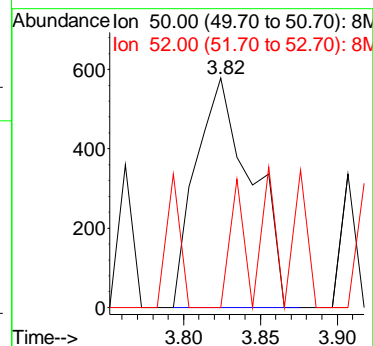
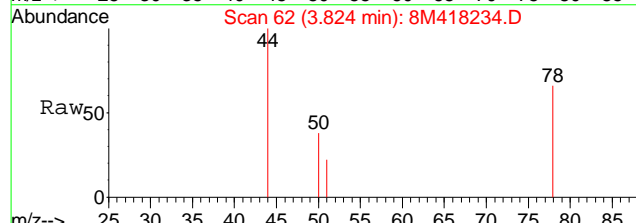
Thu Mar 09 08:30:21 2017

Page 2



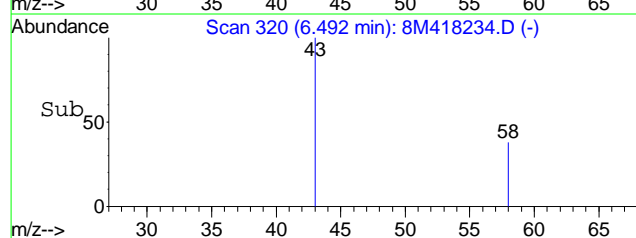
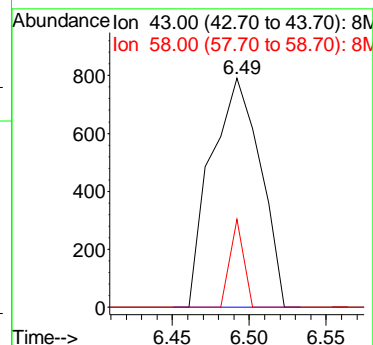
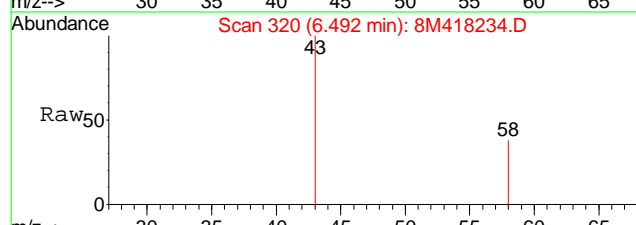
#3
 Chloromethane
 Concen: 0.14 ug/L
 RT: 3.82 min Scan# 62
 Delta R.T. 0.01 min
 Lab File: 8M418234.D
 Acq: 8 Mar 2017 16:09

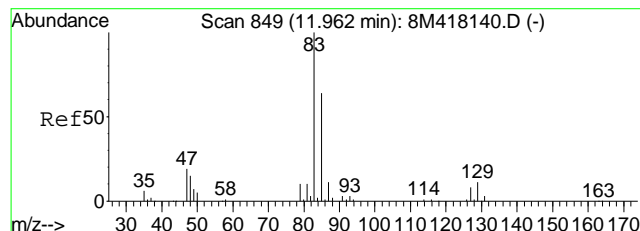
Tgt Ion: 50 Resp: 1460
 Ion Ratio Lower Upper
 50 100
 52 13.7 19.6 45.8#



#13
 Acetone
 Concen: 2.53 ug/L
 RT: 6.49 min Scan# 320
 Delta R.T. 0.01 min
 Lab File: 8M418234.D
 Acq: 8 Mar 2017 16:09

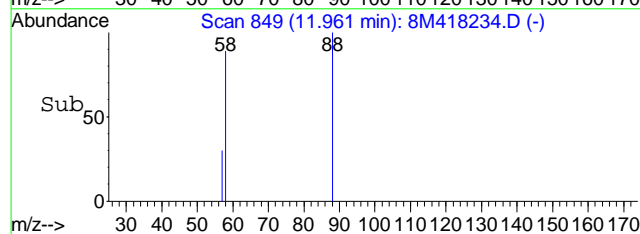
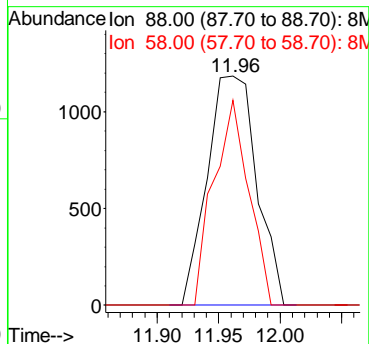
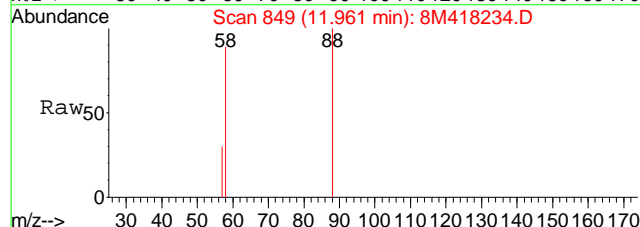
Tgt Ion: 43 Resp: 1763
 Ion Ratio Lower Upper
 43 100
 58 0.0 19.0 44.4#





#51
 1,4-Dioxane
 Concen: 123.45 ug/L
 RT: 11.96 min Scan# 849
 Delta R.T. 0.00 min
 Lab File: 8M418234.D
 Acq: 8 Mar 2017 16:09

Tgt Ion	Ratio	Lower	Upper
88	100		
58	63.3	35.5	82.7



2.1.1.4 Standards Data

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416519.D Vial: 2
 Acq On : 8 Dec 2016 9:19 Operator: TMB
 Sample : WG594051-02 5ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 08 14:33:51 2016 Quant Results File: A9FOOWTR.RES

Quant Method : K:\ORGANICS\V...\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIion	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.97	96	524008	25.00	ug/L	0.00
11) Chlorobenzene-d5	14.84	117	364349	25.00	ug/L	0.00
12) 1,4-Dichlorobenzene-d4	17.86	152	144698	25.00	ug/L	0.00

Target Compounds	R.T.	QIion	Response	Conc	Units	Qvalue
3) 3-Chloro-1-propene	7.35	41	29881	4.9041	ug/L	96
4) 2-Chloro-1,3-butadiene	8.72	53	29557	4.4384	ug/L	94
5) Ethyl Acetate	9.34	43	5291	3.8864	ug/L #	59
6) Methacrylonitrile	9.53	67	3339	3.7723	ug/L	88
7) Isobutyl Alcohol	9.34	43	5291	117.7955	ug/L #	10
9) Methyl methacrylate	11.68	41	5754	4.0085	ug/L	90
10) 2-Nitropropane	12.01	43	1384	2.9662	ug/L	98

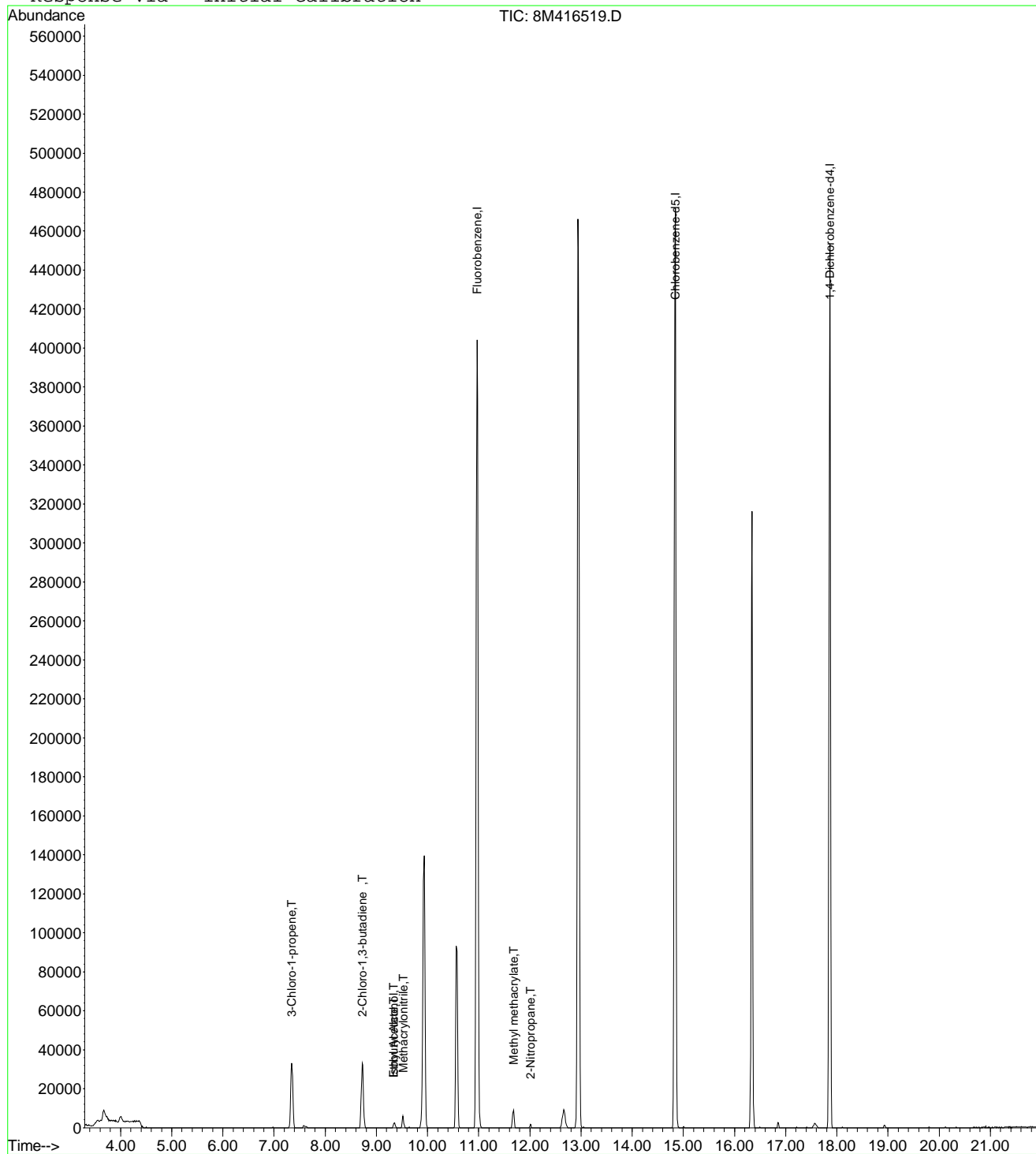
 (#) = qualifier out of range (m) = manual integration
 8M416519.D A9FOOWTR.M Thu Dec 08 14:33:52 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416519.D Vial: 2
 Acq On : 8 Dec 2016 9:19 Operator: TMB
 Sample : WG594051-02 5ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 8 14:33 2016

Quant Results File: A9FOOWTR.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416519.D Vial: 2
 Acq On : 8 Dec 2016 9:19 Operator: TMB
 Sample : WG594051-02 5ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 1% Max. R.T. Dev 0.50min
 Max. RRF Dev : 75% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	100	0.00
2 T	Acetonitrile	-1.0000	0.0000	0.0	0	-6.97#
3 T	3-Chloro-1-propene	5.0000	4.9041	1.9	100	0.00
4 T	2-Chloro-1,3-butadiene	5.0000	4.4384	11.2	100	0.00
5 T	Ethyl Acetate	-1.0000	3.8864	0.0	0	0.00
6 T	Methacrylonitrile	5.0000	3.7723	24.6	100	0.00
7 T	Isobutyl Alcohol	-1.0000	117.7955	0.0	0	-0.18
8 T	1-Butanol	-1.0000	0.0000	0.0	0	-10.45#
9 T	Methyl methacrylate	5.0000	4.0085	19.8	100	0.00
10 T	2-Nitropropane	-1.0000	2.9662	0.0	0	0.00
11 I	Chlorobenzene-d5	25.0000	25.0000	0.0	100	0.00
12 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	100	0.00
13 T	Cyclohexanone	-1.0000	0.0000	0.0	0	-16.11#

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M416519.D A9FOOWTR.M Thu Dec 08 14:40:29 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416520.D Vial: 3
 Acq On : 8 Dec 2016 9:48 Operator: TMB
 Sample : WG594051-03 20ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 08 14:33:53 2016 Quant Results File: A9FOOWTR.RES

Quant Method : K:\ORGANICS\V...\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIion	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.97	96	562112	25.00	ug/L	0.00
11) Chlorobenzene-d5	14.84	117	401339	25.00	ug/L	0.00
12) 1,4-Dichlorobenzene-d4	17.86	152	163574	25.00	ug/L	0.00

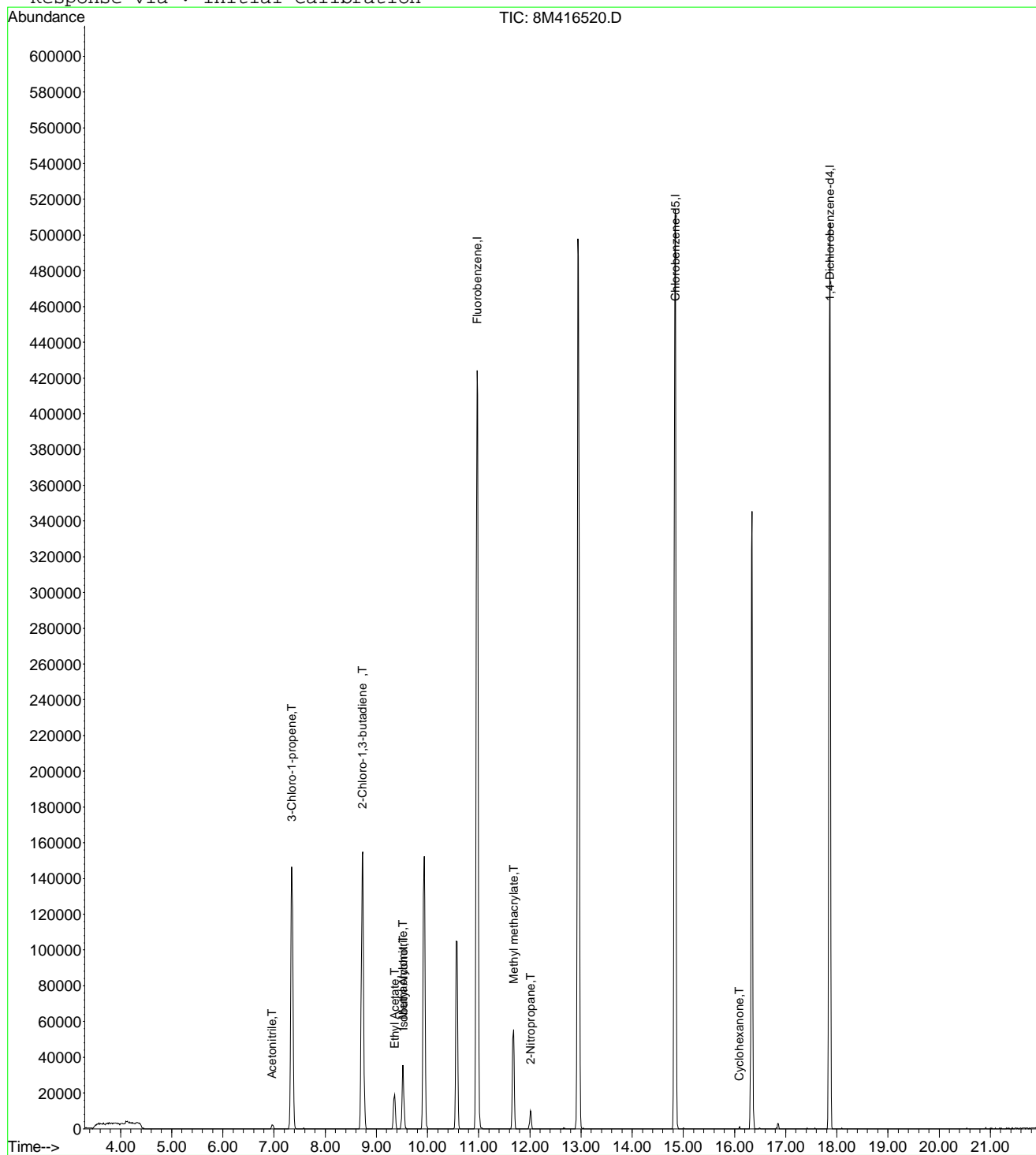
Target Compounds	R.T.	QIion	Response	Conc	Units	Qvalue
2) Acetonitrile	6.96	41	3251	20.0530	ug/L	86
3) 3-Chloro-1-propene	7.35	41	126513	19.3558	ug/L	94
4) 2-Chloro-1,3-butadiene	8.72	53	133862	18.7385	ug/L	93
5) Ethyl Acetate	9.35	43	29216	20.0054	ug/L	96
6) Methacrylonitrile	9.52	67	18458	19.4399	ug/L	89
7) Isobutyl Alcohol	9.53	43	1383	28.7031	ug/L #	86
9) Methyl methacrylate	11.68	41	30029	19.5014	ug/L	97
10) 2-Nitropropane	12.01	43	9171	18.3231	ug/L	92
13) Cyclohexanone	16.09	55	573	11.3348	ug/L #	22

 (#) = qualifier out of range (m) = manual integration
 8M416520.D A9FOOWTR.M Thu Dec 08 14:33:55 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416520.D Vial: 3
 Acq On : 8 Dec 2016 9:48 Operator: TMB
 Sample : WG594051-03 20ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 8 14:33 2016 Quant Results File: A9FOOWTR.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416520.D Vial: 3
 Acq On : 8 Dec 2016 9:48 Operator: TMB
 Sample : WG594051-03 20ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 1% Max. R.T. Dev 0.50min
 Max. RRF Dev : 75% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	100	0.00
2 T	Acetonitrile	20.0000	20.0530	-0.3	100	0.00
3 T	3-Chloro-1-propene	20.0000	19.3558	3.2	100	0.00
4 T	2-Chloro-1,3-butadiene	20.0000	18.7385	6.3	100	0.00
5 T	Ethyl Acetate	20.0000	20.0054	-0.0	100	0.00
6 T	Methacrylonitrile	20.0000	19.4399	2.8	100	0.00
7 T	Isobutyl Alcohol	-1.0000	28.7031	0.0	0	0.00
8 T	1-Butanol	-1.0000	0.0000	0.0	0	-10.45#
9 T	Methyl methacrylate	20.0000	19.5014	2.5	100	0.00
10 T	2-Nitropropane	20.0000	18.3231	8.4	100	0.00
11 I	Chlorobenzene-d5	25.0000	25.0000	0.0	100	0.00
12 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	100	0.00
13 T	Cyclohexanone	-1.0000	11.3348	0.0	0	-0.01

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M416520.D A9FOOWTR.M Thu Dec 08 14:40:47 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416521.D Vial: 4
 Acq On : 8 Dec 2016 10:17 Operator: TMB
 Sample : WG594051-04 50ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 08 14:33:56 2016 Quant Results File: A9FOOWTR.RES

Quant Method : K:\ORGANICS\V...\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.97	96	564001	25.00	ug/L	0.00
11) Chlorobenzene-d5	14.84	117	394560	25.00	ug/L	0.00
12) 1,4-Dichlorobenzene-d4	17.86	152	164538	25.00	ug/L	0.00

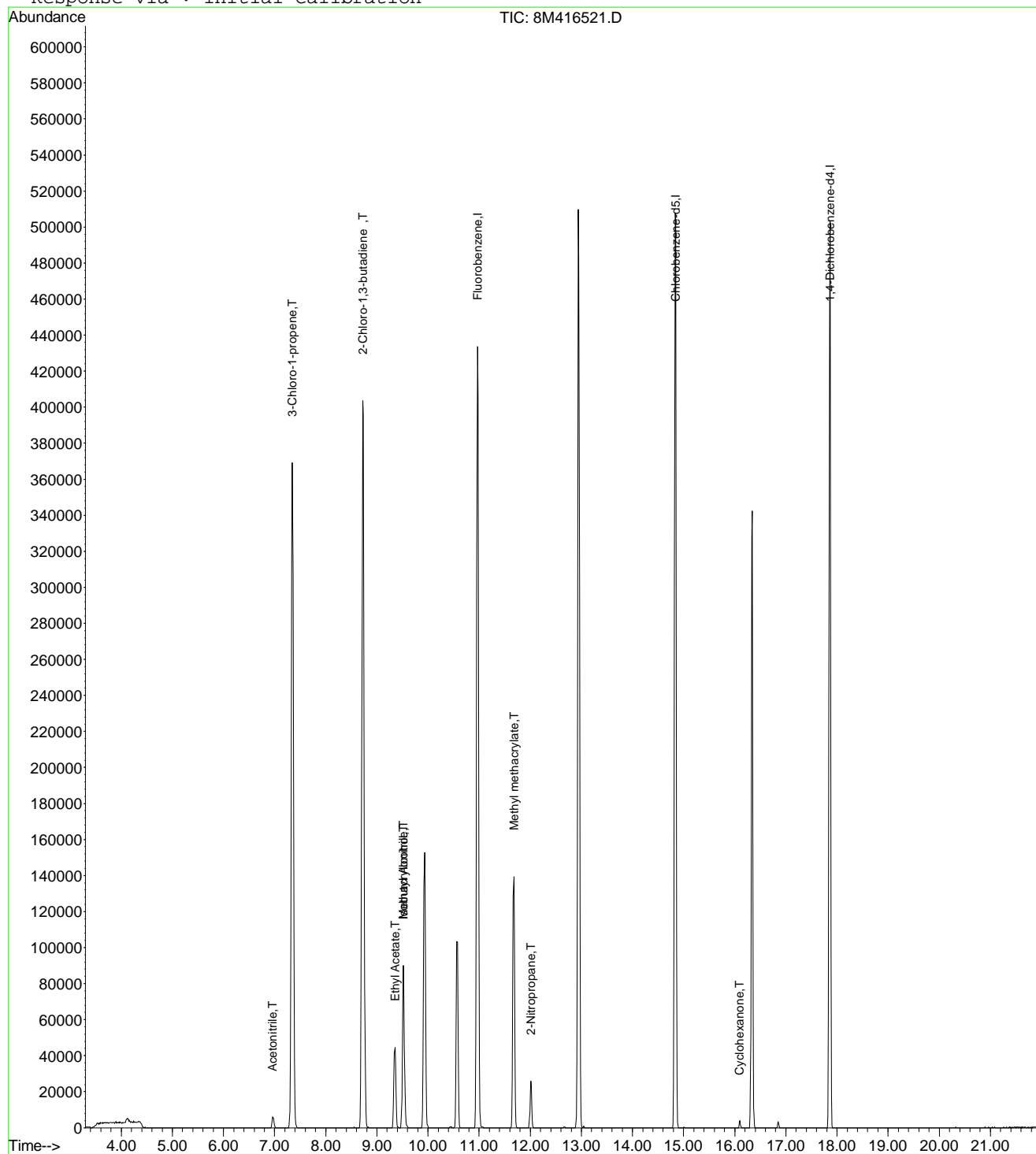
Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Acetonitrile	6.96	41	7864	48.3447	ug/L	100
3) 3-Chloro-1-propene	7.35	41	318087	48.5026	ug/L	96
4) 2-Chloro-1,3-butadiene	8.72	53	344272	48.0312	ug/L	93
5) Ethyl Acetate	9.35	43	70890	48.3788	ug/L	100
6) Methacrylonitrile	9.52	67	48404	50.8082	ug/L	93
7) Isobutyl Alcohol	9.52	43	4449	92.0262	ug/L #	94
9) Methyl methacrylate	11.68	41	76637	49.6027	ug/L	97
10) 2-Nitropropane	12.01	43	23103	46.0039	ug/L	95
13) Cyclohexanone	16.09	55	2163	42.5368	ug/L	98

 (#) = qualifier out of range (m) = manual integration
 8M416521.D A9FOOWTR.M Thu Dec 08 14:33:58 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416521.D Vial: 4
Acq On : 8 Dec 2016 10:17 Operator: TMB
Sample : WG594051-04 50ug/L STD A9/FOO Inst : HPMS8
Misc : 1,1 STD79185 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Dec 8 14:33 2016 Quant Results File: A9FOOWTR.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
Last Update : Thu Dec 08 13:41:47 2016
Response via : Initial Calibration



8M416521.D A9FOOWTR.M

Thu Dec 08 14:33:58 2016

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416521.D Vial: 4
 Acq On : 8 Dec 2016 10:17 Operator: TMB
 Sample : WG594051-04 50ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 1% Max. R.T. Dev 0.50min
 Max. RRF Dev : 75% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	100	0.00
2 T	Acetonitrile	50.0000	48.3447	3.3	100	0.00
3 T	3-Chloro-1-propene	50.0000	48.5026	3.0	100	0.00
4 T	2-Chloro-1,3-butadiene	50.0000	48.0312	3.9	100	0.00
5 T	Ethyl Acetate	50.0000	48.3788	3.2	100	0.00
6 T	Methacrylonitrile	50.0000	50.8082	-1.6	100	0.00
7 T	Isobutyl Alcohol	100.0000	92.0262	8.0	100	0.00
8 T	1-Butanol	-1.0000	0.0000	0.0	0	-0.01
9 T	Methyl methacrylate	50.0000	49.6027	0.8	100	0.00
10 T	2-Nitropropane	50.0000	46.0039	8.0	100	0.00
11 I	Chlorobenzene-d5	25.0000	25.0000	0.0	100	0.00
12 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	100	0.00
13 T	Cyclohexanone	50.0000	42.5368	14.9	100	-0.01

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M416521.D A9FOOWTR.M Thu Dec 08 14:41:01 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416522.D Vial: 5
 Acq On : 8 Dec 2016 10:47 Operator: TMB
 Sample : WG594051-05 100ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 08 14:33:59 2016 Quant Results File: A9FOOWTR.RES

Quant Method : K:\ORGANICS\V...\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.97	96	591526	25.00	ug/L	0.00
11) Chlorobenzene-d5	14.84	117	415270	25.00	ug/L	0.00
12) 1,4-Dichlorobenzene-d4	17.86	152	167978	25.00	ug/L	0.00

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Acetonitrile	6.97	41	17844	104.5933	ug/L	96
3) 3-Chloro-1-propene	7.35	41	676105	98.2967	ug/L	97
4) 2-Chloro-1,3-butadiene	8.72	53	745903	99.2224	ug/L	94
5) Ethyl Acetate	9.35	43	151658	98.6828	ug/L	100
6) Methacrylonitrile	9.52	67	101361	101.4448	ug/L	99
7) Isobutyl Alcohol	9.53	43	10092	199.0363	ug/L	96
9) Methyl methacrylate	11.68	41	163688	101.0159	ug/L	97
10) 2-Nitropropane	12.01	43	50322	95.5410	ug/L	95
13) Cyclohexanone	16.11	55	5170	99.5894	ug/L	97

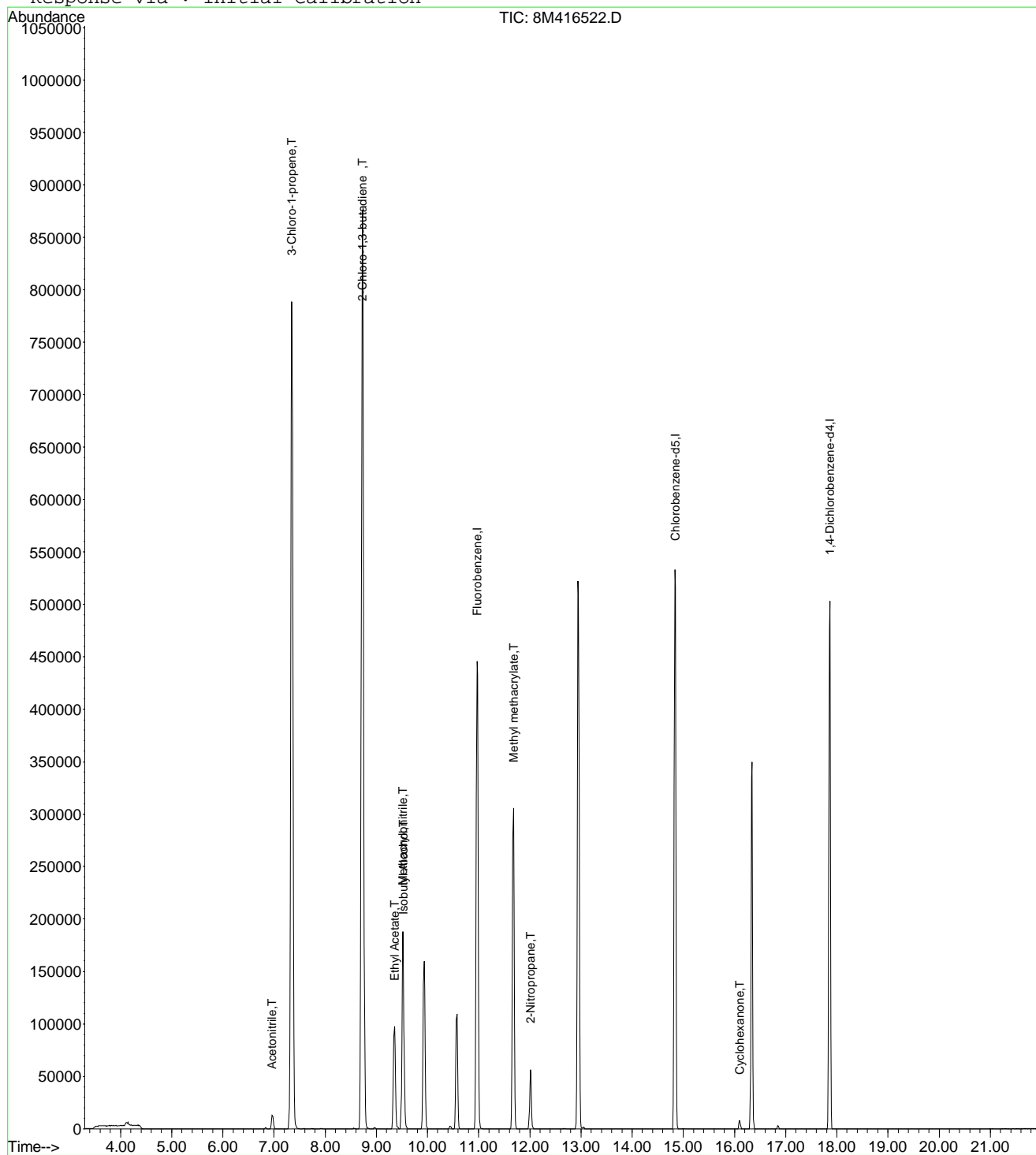
 (#) = qualifier out of range (m) = manual integration
 8M416522.D A9FOOWTR.M Thu Dec 08 14:34:01 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416522.D Vial: 5
 Acq On : 8 Dec 2016 10:47 Operator: TMB
 Sample : WG594051-05 100ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 8 14:33 2016

Quant Results File: A9FOOWTR.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416522.D Vial: 5
 Acq On : 8 Dec 2016 10:47 Operator: TMB
 Sample : WG594051-05 100ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 1% Max. R.T. Dev 0.50min
 Max. RRF Dev : 75% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	100	0.00
2 T	Acetonitrile	100.0000	104.5933	-4.6	100	0.00
3 T	3-Chloro-1-propene	100.0000	98.2967	1.7	100	0.00
4 T	2-Chloro-1,3-butadiene	100.0000	99.2224	0.8	100	0.00
5 T	Ethyl Acetate	100.0000	98.6828	1.3	100	0.00
6 T	Methacrylonitrile	100.0000	101.4448	-1.4	100	0.00
7 T	Isobutyl Alcohol	200.0000	199.0363	0.5	100	0.00
8 T	1-Butanol	-1.0000	0.0000	0.0	0	0.00
9 T	Methyl methacrylate	100.0000	101.0159	-1.0	100	0.00
10 T	2-Nitropropane	100.0000	95.5410	4.5	100	0.00
11 I	Chlorobenzene-d5	25.0000	25.0000	0.0	100	0.00
12 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	100	0.00
13 T	Cyclohexanone	100.0000	99.5894	0.4	100	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M416522.D A9FOOWTR.M Thu Dec 08 14:41:12 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416523.D Vial: 6
 Acq On : 8 Dec 2016 11:16 Operator: TMB
 Sample : WG594051-06 200ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 08 14:34:02 2016 Quant Results File: A9FOOWTR.RES

Quant Method : K:\ORGANICS\V...\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.97	96	594977	25.00	ug/L	0.00
11) Chlorobenzene-d5	14.84	117	420464	25.00	ug/L	0.00
12) 1,4-Dichlorobenzene-d4	17.85	152	172604	25.00	ug/L	0.00

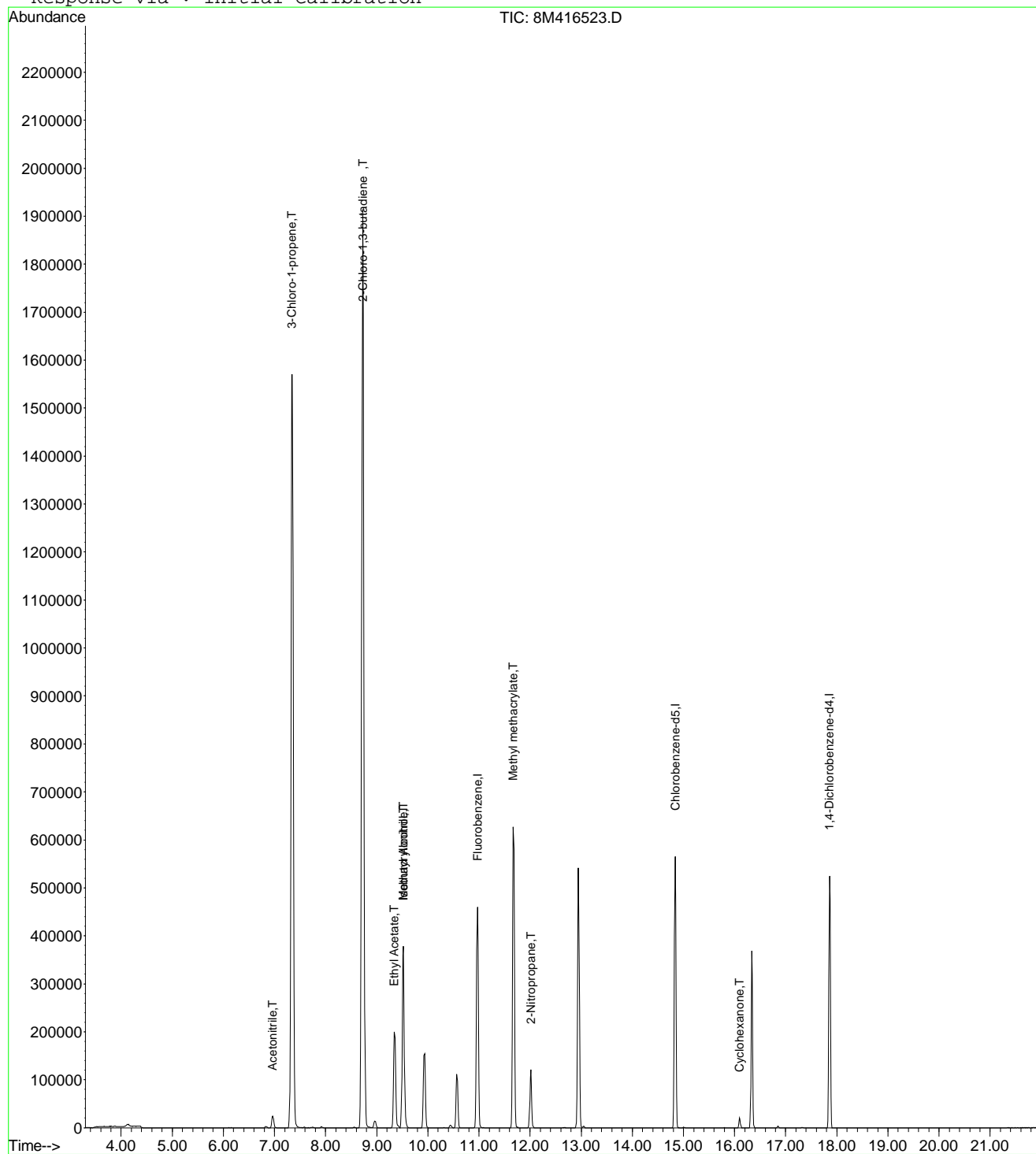
Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Acetonitrile	6.97	41	34536	201.2600	ug/L	98
3) 3-Chloro-1-propene	7.34	41	1382110	199.7750	ug/L	97
4) 2-Chloro-1,3-butadiene	8.73	53	1548323	204.7683	ug/L	96
5) Ethyl Acetate	9.35	43	311769	201.6892	ug/L	100
6) Methacrylonitrile	9.52	67	209671	208.6271	ug/L	99
7) Isobutyl Alcohol	9.52	43	19754	387.3323	ug/L	94
9) Methyl methacrylate	11.67	41	335849	206.0586	ug/L	99
10) 2-Nitropropane	12.01	43	108018	203.8928	ug/L	98
13) Cyclohexanone	16.10	55	10760	201.7141	ug/L	97

 (#) = qualifier out of range (m) = manual integration
 8M416523.D A9FOOWTR.M Thu Dec 08 14:34:03 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416523.D Vial: 6
Acq On : 8 Dec 2016 11:16 Operator: TMB
Sample : WG594051-06 200ug/L STD A9/FOO Inst : HPMS8
Misc : 1,1 STD79185 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Dec 8 14:34 2016 Quant Results File: A9FOOWTR.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
Last Update : Thu Dec 08 13:41:47 2016
Response via : Initial Calibration



8M416523.D A9FOOWTR.M

Thu Dec 08 14:34:04 2016

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416524.D Vial: 7
 Acq On : 8 Dec 2016 11:46 Operator: TMB
 Sample : WG594051-07 300ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 08 14:34:05 2016 Quant Results File: A9FOOWTR.RES

Quant Method : K:\ORGANICS\V...\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.97	96	603930	25.00	ug/L	0.00
11) Chlorobenzene-d5	14.84	117	427693	25.00	ug/L	0.00
12) 1,4-Dichlorobenzene-d4	17.86	152	174680	25.00	ug/L	0.00

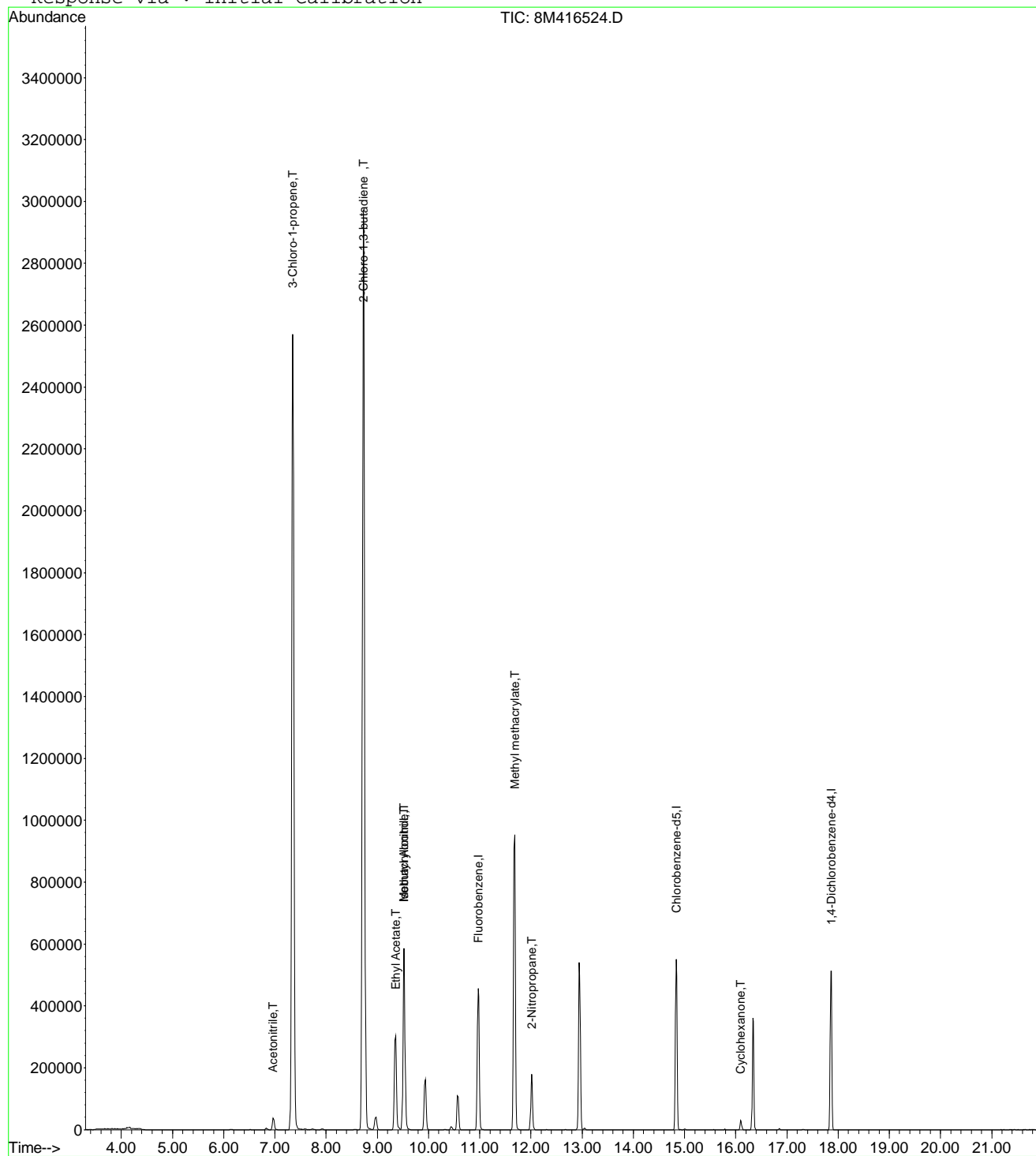
Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Acetonitrile	6.97	41	50936	292.4312	ug/L	98
3) 3-Chloro-1-propene	7.35	41	2157997	307.3002	ug/L	98
4) 2-Chloro-1,3-butadiene	8.72	53	2431028	316.7413	ug/L	97
5) Ethyl Acetate	9.36	43	465757	296.8402	ug/L	100
6) Methacrylonitrile	9.52	67	317606	311.3398	ug/L	99
7) Isobutyl Alcohol	9.52	43	31446	607.4460	ug/L	97
9) Methyl methacrylate	11.68	41	510372	308.4942	ug/L	99
10) 2-Nitropropane	12.01	43	166198	309.0616	ug/L	100
13) Cyclohexanone	16.10	55	16564	306.8294	ug/L	99

 (#) = qualifier out of range (m) = manual integration
 8M416524.D A9FOOWTR.M Thu Dec 08 14:34:06 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416524.D Vial: 7
Acq On : 8 Dec 2016 11:46 Operator: TMB
Sample : WG594051-07 300ug/L STD A9/FOO Inst : HPMS8
Misc : 1,1 STD79185 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Dec 8 14:34 2016 Quant Results File: A9FOOWTR.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
Last Update : Thu Dec 08 13:41:47 2016
Response via : Initial Calibration



8M416524.D A9FOOWTR.M

Thu Dec 08 14:34:06 2016

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416525.D Vial: 8
 Acq On : 8 Dec 2016 12:16 Operator: TMB
 Sample : WG594051-08 400ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 08 14:34:08 2016 Quant Results File: A9FOOWTR.RES

Quant Method : K:\ORGANICS\V...\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.97	96	605694	25.00	ug/L	0.00
11) Chlorobenzene-d5	14.83	117	430760	25.00	ug/L	0.00
12) 1,4-Dichlorobenzene-d4	17.86	152	180284	25.00	ug/L	0.00

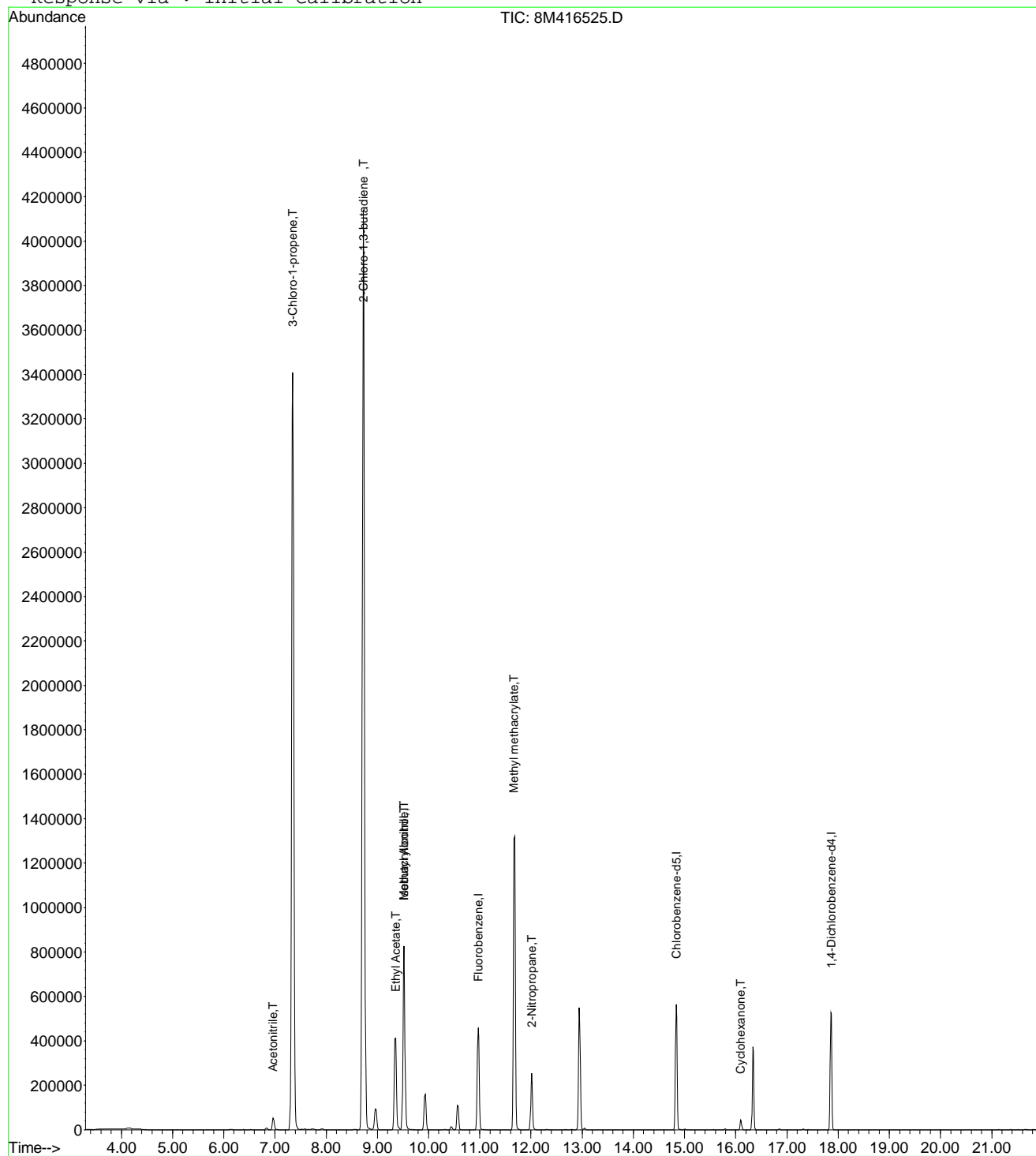
Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Acetonitrile	6.97	41	71198	407.5680	ug/L	99
3) 3-Chloro-1-propene	7.35	41	2884846	409.6076	ug/L	99
4) 2-Chloro-1,3-butadiene	8.72	53	3270965	424.9364	ug/L	98
5) Ethyl Acetate	9.35	43	647926	411.7391	ug/L	100
6) Methacrylonitrile	9.52	67	444486	434.4476	ug/L	100
7) Isobutyl Alcohol	9.52	43	45941	884.8630	ug/L	99
9) Methyl methacrylate	11.67	41	717453	432.4013	ug/L	100
10) 2-Nitropropane	12.01	43	236171	437.9042	ug/L	98
13) Cyclohexanone	16.10	55	23842	427.9179	ug/L	97

 (#) = qualifier out of range (m) = manual integration
 8M416525.D A9FOOWTR.M Thu Dec 08 14:34:09 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416525.D Vial: 8
Acq On : 8 Dec 2016 12:16 Operator: TMB
Sample : WG594051-08 400ug/L STD A9/FOO Inst : HPMS8
Misc : 1,1 STD79185 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Dec 8 14:34 2016 Quant Results File: A9FOOWTR.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
Last Update : Thu Dec 08 13:41:47 2016
Response via : Initial Calibration



8M416525.D A9FOOWTR.M

Thu Dec 08 14:34:09 2016

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416526.D Vial: 9
 Acq On : 8 Dec 2016 12:45 Operator: TMB
 Sample : WG594051-09 500ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79185 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 08 14:34:10 2016 Quant Results File: A9FOOWTR.RES

Quant Method : K:\ORGANICS\V...\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.97	96	602709	25.00	ug/L	0.00
11) Chlorobenzene-d5	14.84	117	431889	25.00	ug/L	0.00
12) 1,4-Dichlorobenzene-d4	17.86	152	183338	25.00	ug/L	0.00

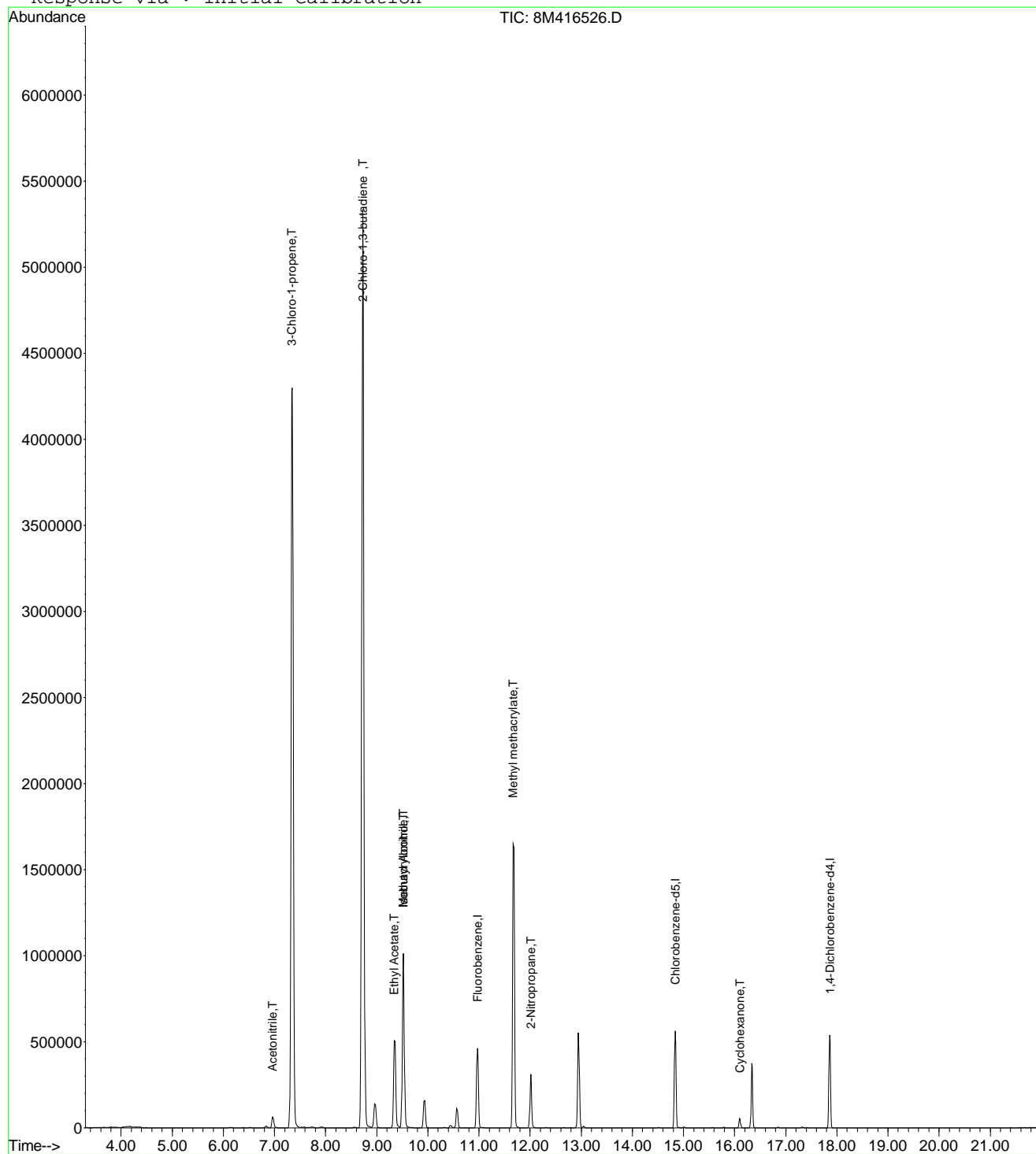
Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Acetonitrile	6.97	41	85570	492.2655	ug/L	100
3) 3-Chloro-1-propene	7.34	41	3683366	525.5763	ug/L	100
4) 2-Chloro-1,3-butadiene	8.72	53	4138456	540.2962	ug/L	100
5) Ethyl Acetate	9.35	43	797081	509.0316	ug/L	100
6) Methacrylonitrile	9.52	67	547652	537.9348	ug/L	100
7) Isobutyl Alcohol	9.52	43	51546	997.7372	ug/L	100
9) Methyl methacrylate	11.67	41	892736	540.7072	ug/L	100
10) 2-Nitropropane	12.01	43	285485	531.9631	ug/L	100
13) Cyclohexanone	16.11	55	29810	526.1195	ug/L	100

 (#) = qualifier out of range (m) = manual integration
 8M416526.D A9FOOWTR.M Thu Dec 08 14:34:12 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416526.D Vial: 9
Acq On : 8 Dec 2016 12:45 Operator: TMB
Sample : WG594051-09 500ug/L STD A9/FOO Inst : HPMS8
Misc : 1,1 STD79185 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Dec 8 14:34 2016 Quant Results File: A9FOOWTR.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
Last Update : Thu Dec 08 13:41:47 2016
Response via : Initial Calibration



8M416526.D A9FOOWTR.M

Thu Dec 08 14:34:12 2016

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416529.D Vial: 12
 Acq On : 8 Dec 2016 14:12 Operator: TMB
 Sample : WG594051-09 100ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79186 Multiplr: 1.00
 MS Integration Params: rteint.p
 Quant Time: Dec 08 15:03:45 2016 Quant Results File: A9FOOWTR.RES

Quant Method : K:\ORGANICS\V...\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.97	96	587664	25.00	ug/L	0.00
11) Chlorobenzene-d5	14.84	117	419667	25.00	ug/L	0.00
12) 1,4-Dichlorobenzene-d4	17.87	152	172171	25.00	ug/L	0.00

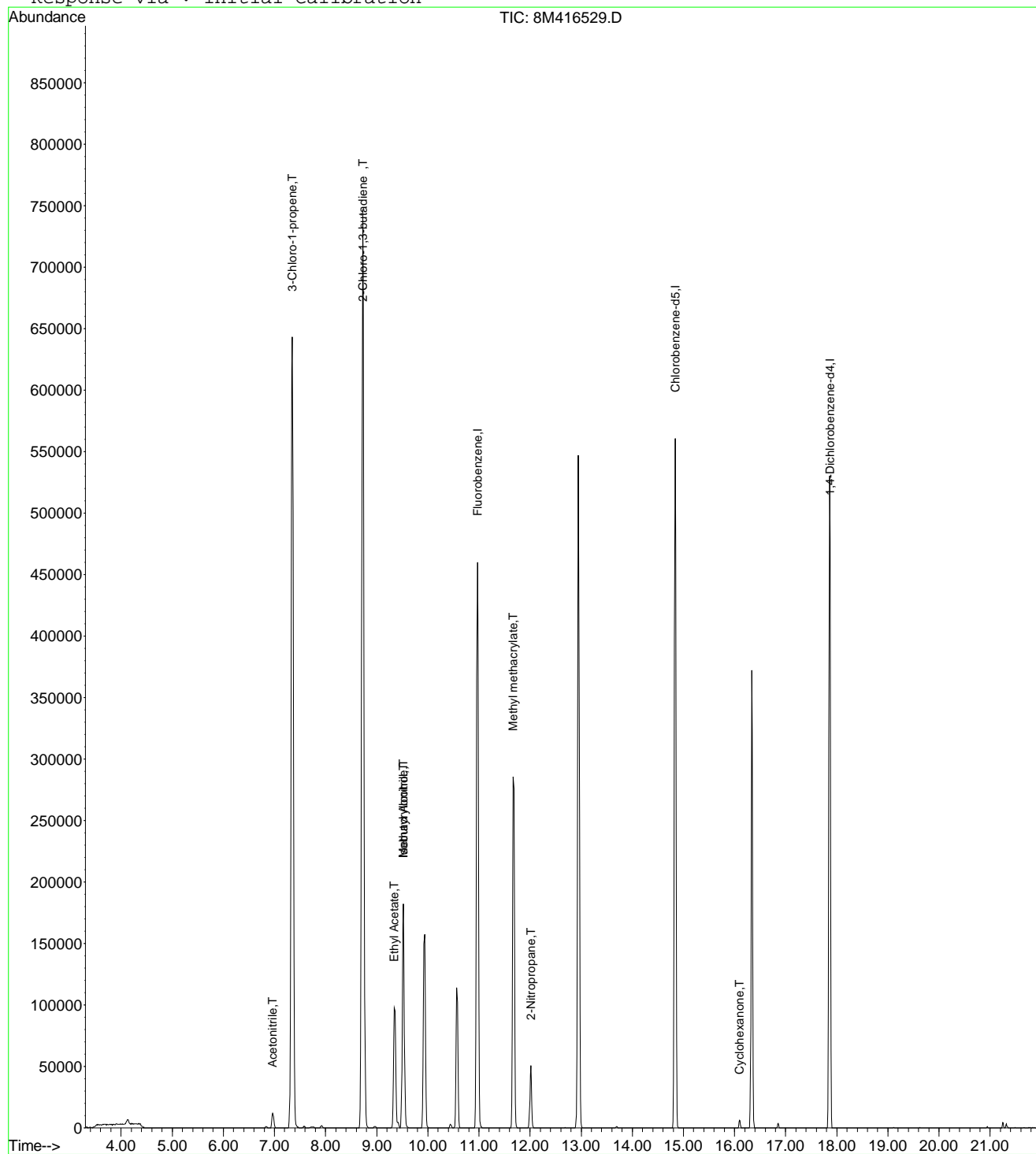
Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Acetonitrile	6.97	41	16063	94.7727	ug/L	97
3) 3-Chloro-1-propene	7.35	41	567885	83.1055	ug/L	96
4) 2-Chloro-1,3-butadiene	8.73	53	618003	82.7490	ug/L	94
5) Ethyl Acetate	9.35	43	154055	100.9013	ug/L	99
6) Methacrylonitrile	9.52	67	99886	100.6255	ug/L	98
7) Isobutyl Alcohol	9.52	43	9727	193.0984	ug/L	95
9) Methyl methacrylate	11.67	41	157038	97.5489	ug/L	98
10) 2-Nitropropane	12.01	43	46163	88.2208	ug/L	98
13) Cyclohexanone	16.10	55	3773	70.9091	ug/L	99

 (#) = qualifier out of range (m) = manual integration
 8M416529.D A9FOOWTR.M Thu Dec 08 15:03:47 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416529.D Vial: 12
Acq On : 8 Dec 2016 14:12 Operator: TMB
Sample : WG594051-09 100ug/L STD A9/FOO Inst : HPMS8
Misc : 1,1 STD79186 Multiplr: 1.00
MS Integration Params: rteint.p
Quant Time: Dec 8 15:03 2016 Quant Results File: A9FOOWTR.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
Last Update : Thu Dec 08 13:41:47 2016
Response via : Initial Calibration



8M416529.D A9FOOWTR.M

Thu Dec 08 15:03:47 2016

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416529.D Vial: 12
 Acq On : 8 Dec 2016 14:12 Operator: TMB
 Sample : WG594051-09 100ug/L STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD79186 Multiplr: 1.00
 MS Integration Params: rteint.p

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8
 Last Update : Thu Dec 08 13:41:47 2016
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 1% Max. R.T. Dev 0.50min
 Max. RRF Dev : 75% Max. Rel. Area : 200%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	99	0.00
2 T	Acetonitrile	100.0000	94.7727	5.2	90	0.00
3 T	3-Chloro-1-propene	100.0000	83.1055	16.9	84	0.01
4 T	2-Chloro-1,3-butadiene	100.0000	82.7490	17.3	83	0.00
5 T	Ethyl Acetate	100.0000	100.9013	-0.9	102	0.00
6 T	Methacrylonitrile	100.0000	100.6255	-0.6	99	0.00
7 T	Isobutyl Alcohol	200.0000	193.0984	3.5	96	0.00
8 T	1-Butanol	-1.0000	0.0000	0.0	0	0.00
9 T	Methyl methacrylate	100.0000	97.5489	2.5	96	0.00
10 T	2-Nitropropane	100.0000	88.2208	11.8	92	0.00
11 I	Chlorobenzene-d5	25.0000	25.0000	0.0	101	0.00
12 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	102	0.00
13 T	Cyclohexanone	100.0000	70.9091	29.1	73	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M416529.D A9FOOWTR.M Thu Dec 08 15:03:52 2016

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418134.D Vial: 3
 Acq On : 3 Mar 2017 9:51 Operator: TMB
 Sample : WG604846-03 0.4ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:17 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	630116	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.83	117	473450	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.87	152	247226	25.00	ug/L	0.00

System Monitoring Compounds

37) Dibromofluoromethane	0.00	111	0	0.0000	ug/L	
Spiked Amount	25.000	Range 86 - 118	Recovery	=	0.00%#	
43) 1,2-Dichloroethane-d4	0.00	65	0	0.0000	ug/L	
Spiked Amount	25.000	Range 80 - 120	Recovery	=	0.00%#	
58) Toluene-d8	12.94	98	387	0.0174	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	0.08%#	
80) p-Bromofluorobenzene	0.00	95	0	0.0000	ug/L	
Spiked Amount	25.000	Range 86 - 115	Recovery	=	0.00%#	

Target Compounds

					Qvalue	
2) Dichlorodifluoromethane	3.35	85	3153	0.3738	ug/L	88
3) Chloromethane	3.83	50	6179	0.5174	ug/L	85
4) Vinyl Chloride	4.07	62	4425	0.4247	ug/L	92
5) 1,3-Butadiene	4.13	54	3123	Below Cal		80
6) Bromomethane	4.98	94	1072	0.7917	ug/L	74
7) Chloroethane	5.13	64	1304	0.2931	ug/L	# 45
8) Trichlorofluoromethane	5.62	101	3973	0.3689	ug/L	# 87
10) Isoprene	6.18	67	3357	0.3482	ug/L	77
12) 1,1,2-Trichloro-1,2,2-Trif	6.40	101	1426	0.2272	ug/L	66
14) 1,1-Dichloroethene	6.71	61	3956	0.4113	ug/L	83
16) Dimethyl Sulfide	6.97	62	2439	0.3417	ug/L	88
19) Methylene Chloride	7.49	84	2885	0.4326	ug/L	89
20) Carbon Disulfide	7.54	76	8728	0.4254	ug/L	# 88
22) Methyl Tert Butyl Ether	7.72	73	4482	0.3618	ug/L	# 53
23) trans-1,2-Dichloroethene	7.94	61	3731	0.4023	ug/L	99
24) n-Hexane	8.03	57	3905	0.4393	ug/L	84
26) Vinyl Acetate	8.53	43	2278	0.3209	ug/L	# 73
27) 1,1-Dichloroethane	8.56	63	4410	0.3765	ug/L	# 88
31) 2,2-Dichloropropane	9.34	77	4074	0.4104	ug/L	80
32) cis-1,2-Dichloroethene	9.41	96	2521	0.3482	ug/L	89
33) Chloroform	9.62	83	5579	0.4541	ug/L	93
35) Bromochloromethane	9.86	130	1380	0.3500	ug/L	87
38) 1,1,1-Trichloroethane	10.15	97	3772	0.3626	ug/L	92
39) Cyclohexane	10.19	56	3957	0.3591	ug/L	# 89
40) 1,1-Dichloropropene	10.34	75	3115	0.3517	ug/L	83
42) Carbon Tetrachloride	10.50	117	3492	0.3653	ug/L	# 90
45) 1,2-Dichloroethane	10.66	62	2765	0.3737	ug/L	# 75
46) Benzene	10.70	78	10224	0.4002	ug/L	88
47) Trichloroethene	11.46	130	2867	0.3870	ug/L	94
48) Methylcyclohexane	11.53	83	4143	0.3745	ug/L	93
49) 1,2-Dichloropropane	11.67	63	2061	0.3221	ug/L	89
50) Bromodichloromethane	11.98	83	3133	0.3711	ug/L	# 90
52) Dibromomethane	12.06	93	1135	0.3537	ug/L	91
53) 2-Chloroethyl Vinyl Ether	12.25	63	516	0.1808	ug/L	# 47
55) cis-1,3-Dichloropropene	12.61	75	3599	0.3709	ug/L	94
56) Dimethyl Disulfide	12.88	79	1247	0.2355	ug/L	98
59) Toluene	13.03	91	10048	0.3770	ug/L	98
60) Ethyl Methacrylate	13.12	69	1337	0.7903	ug/L	# 55
62) trans-1,3-Dichloropropene	13.21	75	2531	0.3177	ug/L	82
63) 1,1,2-Trichloroethane	13.43	97	1530	0.3507	ug/L	100

(#) = qualifier out of range (m) = manual integration
 8M418134.D 8260WT.M Mon Mar 06 12:10:20 2017

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418134.D Vial: 3
 Acq On : 3 Mar 2017 9:51 Operator: TMB
 Sample : WG604846-03 0.4ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:17 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

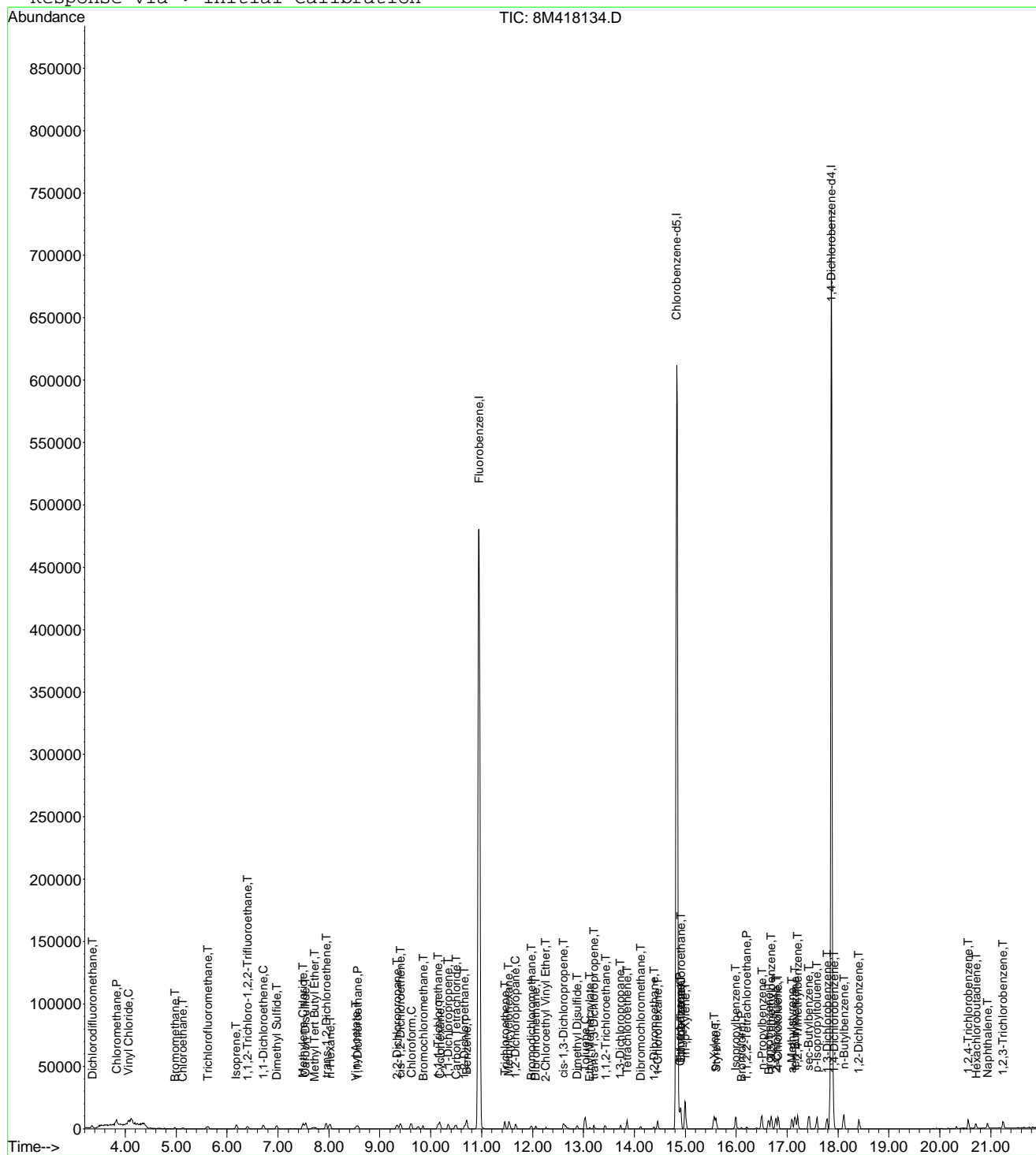
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
65) 1,3-Dichloropropane	13.72	76	2445	0.3306	ug/L	94
66) Tetrachloroethene	13.86	164	2213	0.3853	ug/L	88
67) Dibromochloromethane	14.13	129	1897	0.3332	ug/L	95
68) 1,2-Dibromoethane	14.38	107	1408	0.3294	ug/L	99
69) 1-Chlorohexane	14.46	91	3296	0.3560	ug/L	96
70) Chlorobenzene	14.89	112	7536	0.3896	ug/L	84
71) 1,1,1,2-Tetrachloroethane	14.91	131	2203	0.3174	ug/L	93
72) Ethylbenzene	14.91	106	4035	0.3696	ug/L	94
73) m-,p-Xylene	15.01	106	9254	0.7398	ug/L	86
74) o-Xylene	15.56	106	4134	0.3301	ug/L	93
75) Styrene	15.60	104	6728	0.3415	ug/L	93
76) Bromoform	16.10	173	819	0.7771	ug/L #	45
77) Isopropylbenzene	15.99	105	11701	0.3815	ug/L	93
79) 1,1,2,2-Tetrachloroethane	16.20	83	1407	0.3069	ug/L #	88
83) n-Propylbenzene	16.50	91	14450	0.4084	ug/L	95
84) Bromobenzene	16.64	156	2748	0.3575	ug/L	92
85) 1,3,5-Trimethylbenzene	16.69	105	9612	0.3795	ug/L	96
86) 2-Chlorotoluene	16.78	91	9551	0.4002	ug/L	99
87) 4-Chlorotoluene	16.82	91	7564	0.3632	ug/L	92
88) a-Methylstyrene	17.09	118	3924	0.2665	ug/L	96
89) tert-Butylbenzene	17.16	134	2222	0.3803	ug/L	89
90) 1,2,4-Trimethylbenzene	17.21	105	9769	0.3707	ug/L	84
91) sec-Butylbenzene	17.42	105	12801	0.3919	ug/L	99
92) p-Isopropyltoluene	17.58	119	10812	0.3943	ug/L	95
93) 1,3-Dichlorobenzene	17.79	146	5969	0.3844	ug/L	92
94) 1,4-Dichlorobenzene	17.92	146	6288	0.4076	ug/L #	34
95) n-Butylbenzene	18.12	91	10810	0.4098	ug/L	96
96) 1,2-Dichlorobenzene	18.41	146	5384	0.3915	ug/L	89
98) 1,2,4-Trichlorobenzene	20.56	180	3845	0.3835	ug/L	94
99) Hexachlorobutadiene	20.71	225	1695	0.3599	ug/L	96
100) Naphthalene	20.94	128	5947	0.3782	ug/L	89
101) 1,2,3-Trichlorobenzene	21.24	180	2781	0.3353	ug/L	87

(#) = qualifier out of range (m) = manual integration
 8M418134.D 8260WT.M Mon Mar 06 12:10:21 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418134.D Vial: 3
Acq On : 3 Mar 2017 9:51 Operator: TMB
Sample : WG604846-03 0.4ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD80732 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 6 12:10 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
Last Update : Fri Mar 03 15:26:23 2017
Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418134.D Vial: 3
 Acq On : 3 Mar 2017 9:51 Operator: TMB
 Sample : WG604846-03 0.4ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	100	0.00
2 T	Dichlorodifluoromethane	-1.0000	0.3738	0.0	100	0.01
3 P	Chloromethane	-1.0000	0.5174	0.0	100	0.01
4 C	Vinyl Chloride	0.4000	0.4247	-6.2	100	0.01
5 T	1,3-Butadiene	-1.0000	-1.0000	0.0	0	0.04
6 T	Bromomethane	-1.0000	0.7917	0.0	0	0.01
7 T	Chloroethane	0.4000	0.2931	26.7#	100	0.00
8 T	Trichlorofluoromethane	0.4000	0.3689	7.8	100	0.00
9 T	Diethyl ether	-1.0000	0.0000	0.0	0	-6.14#
10 T	Isoprene	-1.0000	0.3482	0.0	100	0.00
11 T	Acrolein	-1.0000	0.0000	0.0	0	-6.38#
12 T	1,1,2-Trichloro-1,2,2-Trifl	-1.0000	0.2272	0.0	100	0.01
13 T	Acetone	-1.0000	0.0000	0.0	0	-6.48#
14 C	1,1-Dichloroethene	0.4000	0.4113	-2.8	100	0.00
15 T	Tert-Butyl Alcohol	-1.0000	0.0000	0.0	0	-6.82#
16 T	Dimethyl Sulfide	-1.0000	0.3417	0.0	100	0.00
17 T	Iodomethane	-1.0000	0.0000	0.0	0	-7.22#
18 T	Methyl acetate	-1.0000	0.0000	0.0	0	-7.24#
19 T	Methylene Chloride	-1.0000	0.4326	0.0	100	0.00
20 T	Carbon Disulfide	-1.0000	0.4254	0.0	100	0.00
21 T	Acrylonitrile	-1.0000	0.0000	0.0	0	-7.67#
22 T	Methyl Tert Butyl Ether	-1.0000	0.3618	0.0	100	0.01
23 T	trans-1,2-Dichloroethene	0.4000	0.4023	-0.6	100	0.00
24 T	n-Hexane	-1.0000	0.4393	0.0	100	0.01
25 T	Diisopropyl ether	-1.0000	0.0000	0.0	0	-8.35#
26 T	Vinyl Acetate	-1.0000	0.3209	0.0	100	0.00
27 P	1,1-Dichloroethane	0.4000	0.3765	5.9	100	0.00
28 T	Ethyl-Tert-Butyl ether	-1.0000	0.0000	0.0	0	-8.93#
29 T	2-Butanone	-1.0000	0.0000	0.0	0	-9.12#
30 T	Propionitrile	-1.0000	0.0000	0.0	0	-9.23#
31 T	2,2-Dichloropropane	0.4000	0.4104	-2.6	100	0.00
32 T	cis-1,2-Dichloroethene	0.4000	0.3482	13.0	100	0.00
33 C	Chloroform	0.4000	0.4541	-13.5	100	0.00
34	1-Bromopropane	-1.0000	0.0000	0.0	0	-9.75#
35 T	Bromochloromethane	0.4000	0.3500	12.5	100	0.00
36 T	Tetrahydrofuran	-1.0000	0.0000	0.0	0	-9.87#
37 S	Dibromofluoromethane	-1.0000	0.0000	0.0	0	-9.90#
38 T	1,1,1-Trichloroethane	0.4000	0.3626	9.4	100	0.00
39 T	Cyclohexane	-1.0000	0.3591	0.0	100	0.01
40 T	1,1-Dichloropropene	-1.0000	0.3517	0.0	100	0.00
41 T	Tert-Amyl-Methyl ether	-1.0000	0.0000	0.0	0	-10.44#
42 T	Carbon Tetrachloride	0.4000	0.3653	8.7	100	0.00
43 S	1,2-Dichloroethane-d4	-1.0000	0.0000	0.0	0	-10.54#
44	Heptane	-1.0000	0.0000	0.0	0	-2.61#
45 T	1,2-Dichloroethane	0.4000	0.3736	6.6	100	0.00
46 T	Benzene	0.4000	0.4002	-0.0	100	0.00
47 T	Trichloroethene	0.4000	0.3870	3.2	100	0.00
48 T	Methylcyclohexane	-1.0000	0.3745	0.0	100	0.00
49 C	1,2-Dichloropropane	0.4000	0.3221	19.5	100	0.00
50 T	Bromodichloromethane	0.4000	0.3711	7.2	100	0.00
51 T	1,4-Dioxane	-1.0000	0.0000	0.0	0	-11.96#
52 T	Dibromomethane	0.4000	0.3537	11.6	100	0.00
53 T	2-Chloroethyl Vinyl Ether	-1.0000	0.1808	0.0	0	0.00
54 T	4-Methyl-2-Pentanone	-1.0000	0.0000	0.0	0	-12.29#

(#) = Out of Range

8M418134.D 8260WT.M

Mon Mar 06 12:12:40 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418134.D Vial: 3
 Acq On : 3 Mar 2017 9:51 Operator: TMB
 Sample : WG604846-03 0.4ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
55 T	cis-1,3-Dichloropropene	0.4000	0.3709	7.3	100	0.00
56 T	Dimethyl Disulfide	-1.0000	0.2355	0.0	100	0.00
57 I	Chlorobenzene-d5	25.0000	25.0000	0.0	100	0.00
58 S	Toluene-d8	-1.0000	0.0174	0.0	100	0.00
59 C	Toluene	0.4000	0.3770	5.8	100	0.00
60 T	Ethyl Methacrylate	-1.0000	0.7903	0.0	0	0.00
61	Paraldehyde	-1.0000	0.0000	0.0	0	-13.40#
62 T	trans-1,3-Dichloropropene	-1.0000	0.3177	0.0	100	0.00
63 T	1,1,2-Trichloroethane	0.4000	0.3507	12.3	100	0.00
64 T	2-Hexanone	-1.0000	0.0000	0.0	0	-13.36#
65 T	1,3-Dichloropropane	0.4000	0.3306	17.4	100	0.00
66 T	Tetrachloroethene	0.4000	0.3853	3.7	100	0.00
67 T	Dibromochloromethane	0.4000	0.3332	16.7	100	0.00
68 T	1,2-Dibromoethane	0.4000	0.3294	17.7	100	0.00
69 T	1-Chlorohexane	0.4000	0.3560	11.0	100	0.00
70 P	Chlorobenzene	0.4000	0.3896	2.6	100	0.00
71 T	1,1,1,2-Tetrachloroethane	0.4000	0.3175	20.6	100	0.00
72 C	Ethylbenzene	0.4000	0.3696	7.6	100	0.00
73 T	m-,p-Xylene	0.8000	0.7398	7.5	100	0.00
74 T	o-Xylene	-1.0000	0.3301	0.0	100	0.00
75 T	Styrene	0.4000	0.3415	14.6	100	0.00
76 P	Bromoform	-1.0000	0.7771	0.0	0	0.00
77 T	Isopropylbenzene	0.4000	0.3815	4.6	100	0.00
78 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	100	0.00
79 P	1,1,2,2-Tetrachloroethane	0.4000	0.3069	23.3	100	0.00
80 S	p-Bromofluorobenzene	-1.0000	0.0000	0.0	0	-16.35#
81 T	1,2,3-Trichloropropane	-1.0000	0.0000	0.0	0	-16.41#
82 T	trans-1,4-Dichloro-2-Butene	-1.0000	0.0000	0.0	0	-16.45#
83 T	n-Propylbenzene	0.4000	0.4084	-2.1	100	0.00
84 T	Bromobenzene	0.4000	0.3575	10.6	100	0.00
85 T	1,3,5-Trimethylbenzene	0.4000	0.3795	5.1	100	0.00
86 T	2-Chlorotoluene	0.4000	0.4002	-0.0	100	0.00
87 T	4-Chlorotoluene	0.4000	0.3632	9.2	100	0.00
88 T	a-Methylstyrene	-1.0000	0.2665	0.0	100	0.00
89 T	tert-Butylbenzene	-1.0000	0.3803	0.0	100	0.00
90 T	1,2,4-Trimethylbenzene	0.4000	0.3707	7.3	100	0.00
91 T	sec-Butylbenzene	-1.0000	0.3919	0.0	100	0.00
92 T	p-Isopropyltoluene	-1.0000	0.3943	0.0	100	0.00
93 T	1,3-Dichlorobenzene	0.4000	0.3844	3.9	100	0.00
94 T	1,4-Dichlorobenzene	0.4000	0.4076	-1.9	100	0.00
95 T	n-Butylbenzene	-1.0000	0.4098	0.0	100	0.00
96 T	1,2-Dichlorobenzene	0.4000	0.3915	2.1	100	0.00
97 T	1,2-Dibromo-3-Chloropropane	-1.0000	0.0000	0.0	0	-19.41#
98 T	1,2,4-Trichlorobenzene	0.4000	0.3835	4.1	100	0.00
99 T	Hexachlorobutadiene	0.4000	0.3599	10.0	100	0.00
100 T	Naphthalene	0.4000	0.3782	5.5	100	0.00
101 T	1,2,3-Trichlorobenzene	0.4000	0.3353	16.2	100	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M418134.D 8260WT.M Mon Mar 06 12:12:40 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418135.D Vial: 4
 Acq On : 3 Mar 2017 10:20 Operator: TMB
 Sample : WG604846-04 lug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:22 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	622067	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	469373	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	245858	25.00	ug/L	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
37) Dibromofluoromethane	9.90	111	2820	0.4414	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	1.76%#	
43) 1,2-Dichloroethane-d4	10.55	65	2477	0.4424	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	1.76%#	
58) Toluene-d8	12.93	98	11093	0.5025	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	2.00%#	
80) p-Bromofluorobenzene	16.35	95	4482	0.5267	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	2.12%#	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Dichlorodifluoromethane	3.35	85	7586	0.9109	ug/L	94
3) Chloromethane	3.82	50	13940	1.1823	ug/L	90
4) Vinyl Chloride	4.06	62	12325	1.1983	ug/L	98
5) 1,3-Butadiene	4.12	54	7849	Below Cal		85
6) Bromomethane	4.96	94	3442	1.2712	ug/L	96
7) Chloroethane	5.13	64	4530	1.0314	ug/L	83
8) Trichlorofluoromethane	5.61	101	10956	1.0304	ug/L	# 96
9) Diethyl ether	6.14	59	19691	4.7666	ug/L	96
10) Isoprene	6.17	67	8078	0.8488	ug/L	96
11) Acrolein	6.38	56	1082	1.9462	ug/L	74
12) 1,1,2-Trichloro-1,2,2-Trif	6.39	101	5684	0.9174	ug/L	91
14) 1,1-Dichloroethene	6.71	61	9461	0.9964	ug/L	95
15) Tert-Butyl Alcohol	6.82	59	1834	7.2085	ug/L	# 61
16) Dimethyl Sulfide	6.97	62	6143	0.8718	ug/L	95
17) Iodomethane	7.23	142	1465	1.5811	ug/L	# 55
18) Methyl acetate	7.24	43	2121	0.8951	ug/L	# 60
19) Methylene Chloride	7.49	84	6505	0.9879	ug/L	97
20) Carbon Disulfide	7.54	76	20039	0.9893	ug/L	98
21) Acrylonitrile	7.67	53	2272	1.9485	ug/L	87
22) Methyl Tert Butyl Ether	7.69	73	11164	0.9129	ug/L	87
23) trans-1,2-Dichloroethene	7.94	61	9164	1.0010	ug/L	93
24) n-Hexane	8.01	57	8481	0.9664	ug/L	98
25) Diisopropyl ether	8.35	45	90889	4.8691	ug/L	97
26) Vinyl Acetate	8.53	43	5962	0.8507	ug/L	# 73
27) 1,1-Dichloroethane	8.56	63	11030	0.9540	ug/L	98
28) Ethyl-Tert-Butyl ether	8.93	59	82512	4.8043	ug/L	99
29) 2-Butanone	9.13	43	950	0.7270	ug/L	# 50
30) Propionitrile	9.23	54	1713	4.1109	ug/L	# 56
31) 2,2-Dichloropropane	9.35	77	9950	1.0153	ug/L	99
32) cis-1,2-Dichloroethene	9.41	96	6609	0.9246	ug/L	95
33) Chloroform	9.61	83	12524	1.0325	ug/L	99
34) 1-Bromopropane	9.75	122	1130	0.8140	ug/L	82
35) Bromochloromethane	9.85	130	3762	0.9665	ug/L	95
36) Tetrahydrofuran	9.87	42	4147	5.0010	ug/L	97
38) 1,1,1-Trichloroethane	10.15	97	10238	0.9969	ug/L	92
39) Cyclohexane	10.18	56	10936	1.0052	ug/L	93
40) 1,1-Dichloropropene	10.34	75	8253	0.9437	ug/L	98
41) Tert-Amyl-Methyl ether	10.44	73	66043	4.6356	ug/L	100
42) Carbon Tetrachloride	10.49	117	9199	0.9747	ug/L	92
45) 1,2-Dichloroethane	10.66	62	7022	0.9612	ug/L	88

(#) = qualifier out of range (m) = manual integration
 8M418135.D 8260WT.M Mon Mar 06 12:10:24 2017

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418135.D Vial: 4
 Acq On : 3 Mar 2017 10:20 Operator: TMB
 Sample : WG604846-04 lug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:22 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

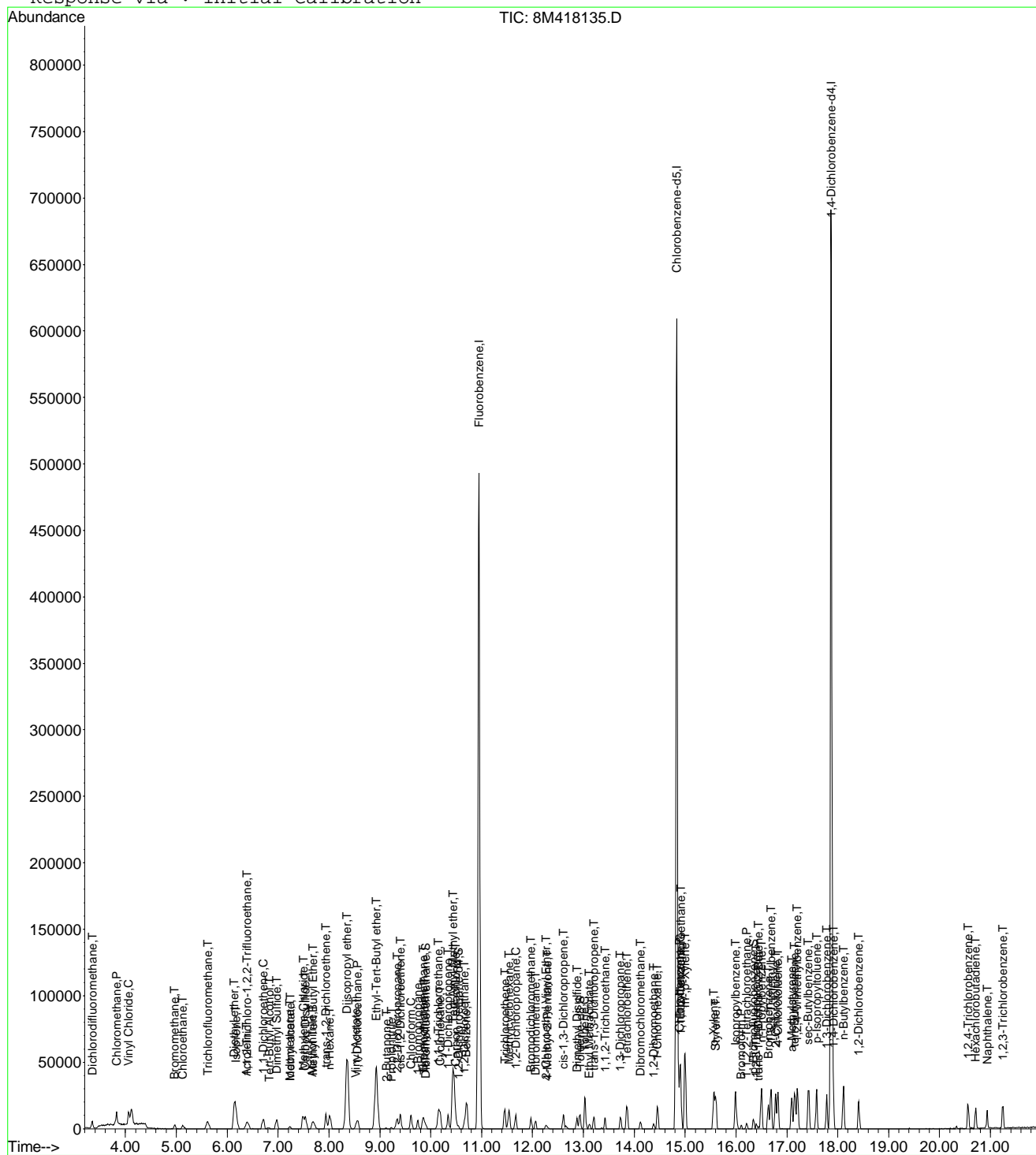
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
46) Benzene	10.70	78	25453	1.0092	ug/L	96
47) Trichloroethene	11.45	130	7295	0.9975	ug/L	97
48) Methylcyclohexane	11.54	83	10640	0.9744	ug/L	93
49) 1,2-Dichloropropane	11.67	63	6326	1.0014	ug/L	87
50) Bromodichloromethane	11.97	83	7792	0.9348	ug/L	95
52) Dibromomethane	12.05	93	2753	0.8690	ug/L	93
53) 2-Chloroethyl Vinyl Ether	12.26	63	2011	0.7136	ug/L #	47
54) 4-Methyl-2-Pentanone	12.29	58	249	0.1988	ug/L #	33
55) cis-1,3-Dichloropropene	12.60	75	8671	0.9051	ug/L	95
56) Dimethyl Disulfide	12.87	79	2898	0.5545	ug/L	83
59) Toluene	13.03	91	27488	1.0402	ug/L	97
60) Ethyl Methacrylate	13.12	69	3438	1.1569	ug/L	91
62) trans-1,3-Dichloropropene	13.20	75	6615	0.8374	ug/L	95
63) 1,1,2-Trichloroethane	13.43	97	4053	0.9372	ug/L	99
65) 1,3-Dichloropropane	13.73	76	7119	0.9709	ug/L	93
66) Tetrachloroethene	13.85	164	5676	0.9967	ug/L	95
67) Dibromochloromethane	14.12	129	4785	0.8477	ug/L	97
68) 1,2-Dibromoethane	14.38	107	3529	0.8327	ug/L	90
69) 1-Chlorohexane	14.45	91	8857	0.9650	ug/L	99
70) Chlorobenzene	14.89	112	19111	0.9967	ug/L	89
71) 1,1,1,2-Tetrachloroethane	14.92	131	5913	0.8595	ug/L	99
72) Ethylbenzene	14.91	106	9827	0.9079	ug/L	96
73) m-,p-Xylene	15.00	106	23779	1.9176	ug/L	92
74) o-Xylene	15.56	106	11257	0.9067	ug/L	94
75) Styrene	15.60	104	16732	0.8567	ug/L	95
76) Bromoform	16.10	173	2256	1.1594	ug/L	98
77) Isopropylbenzene	15.99	105	30889	1.0157	ug/L	93
79) 1,1,2,2-Tetrachloroethane	16.21	83	4097	0.8987	ug/L #	95
81) 1,2,3-Trichloropropane	16.40	110	1107	0.8363	ug/L #	73
82) trans-1,4-Dichloro-2-Butene	16.44	53	512	0.9931	ug/L #	1
83) n-Propylbenzene	16.50	91	37240	1.0584	ug/L	97
84) Bromobenzene	16.64	156	7487	0.9793	ug/L	96
85) 1,3,5-Trimethylbenzene	16.69	105	24762	0.9832	ug/L	99
86) 2-Chlorotoluene	16.78	91	24204	1.0197	ug/L	97
87) 4-Chlorotoluene	16.82	91	20936	1.0110	ug/L	99
88) a-Methylstyrene	17.09	118	10974	0.7494	ug/L	99
89) tert-Butylbenzene	17.15	134	5155	0.8871	ug/L	91
90) 1,2,4-Trimethylbenzene	17.20	105	26296	1.0034	ug/L	98
91) sec-Butylbenzene	17.42	105	33402	1.0282	ug/L	98
92) p-Isopropyltoluene	17.59	119	26478	0.9711	ug/L	98
93) 1,3-Dichlorobenzene	17.78	146	15104	0.9781	ug/L	94
94) 1,4-Dichlorobenzene	17.92	146	15615	1.0178	ug/L	74
95) n-Butylbenzene	18.11	91	26687	1.0173	ug/L	97
96) 1,2-Dichlorobenzene	18.41	146	13866	1.0138	ug/L	92
98) 1,2,4-Trichlorobenzene	20.56	180	9543	0.9572	ug/L	95
99) Hexachlorobutadiene	20.71	225	4257	0.9090	ug/L	95
100) Naphthalene	20.94	128	14984	0.9581	ug/L	98
101) 1,2,3-Trichlorobenzene	21.25	180	8410	1.0195	ug/L	94

(#) = qualifier out of range (m) = manual integration
 8M418135.D 8260WT.M Mon Mar 06 12:10:25 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418135.D Vial: 4
 Acq On : 3 Mar 2017 10:20 Operator: TMB
 Sample : WG604846-04 ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 6 12:10 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418135.D Vial: 4
 Acq On : 3 Mar 2017 10:20 Operator: TMB
 Sample : WG604846-04 lug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	100	0.00
2 T	Dichlorodifluoromethane	1.0000	0.9109	8.9	100	0.01
3 P	Chloromethane	1.0000	1.1823	-18.2	100	0.01
4 C	Vinyl Chloride	1.0000	1.1984	-19.8	100	0.01
5 T	1,3-Butadiene	-1.0000	-1.0000	0.0	0	0.03
6 T	Bromomethane	1.0000	1.2712	-27.1#	100	0.00
7 T	Chloroethane	1.0000	1.0314	-3.1	100	0.00
8 T	Trichlorofluoromethane	1.0000	1.0304	-3.0	100	0.00
9 T	Diethyl ether	5.0000	4.7666	4.7	100	0.00
10 T	Isoprene	-1.0000	0.8488	0.0	100	0.00
11 T	Acrolein	-1.0000	1.9462	0.0	100	0.00
12 T	1,1,2-Trichloro-1,2,2-Trifl	1.0000	0.9174	8.3	100	0.00
13 T	Acetone	-1.0000	0.0000	0.0	0	-6.48#
14 C	1,1-Dichloroethene	1.0000	0.9964	0.4	100	0.00
15 T	Tert-Butyl Alcohol	-1.0000	7.2085	0.0	0	0.00
16 T	Dimethyl Sulfide	-1.0000	0.8718	0.0	100	0.00
17 T	Iodomethane	1.0000	1.5811	-58.1#	100	0.00
18 T	Methyl acetate	-1.0000	0.8951	0.0	100	0.00
19 T	Methylene Chloride	1.0000	0.9879	1.2	100	0.00
20 T	Carbon Disulfide	1.0000	0.9893	1.1	100	0.00
21 T	Acrylonitrile	2.5000	1.9485	22.1	100	0.00
22 T	Methyl Tert Butyl Ether	1.0000	0.9129	8.7	100	0.00
23 T	trans-1,2-Dichloroethene	1.0000	1.0010	-0.1	100	0.00
24 T	n-Hexane	-1.0000	0.9664	0.0	100	0.00
25 T	Diisopropyl ether	5.0000	4.8691	2.6	100	0.00
26 T	Vinyl Acetate	-1.0000	0.8507	0.0	100	0.00
27 P	1,1-Dichloroethane	1.0000	0.9540	4.6	100	0.00
28 T	Ethyl-Tert-Butyl ether	5.0000	4.8043	3.9	100	0.00
29 T	2-Butanone	-1.0000	0.7270	0.0	100	0.01
30 T	Propionitrile	5.0000	4.1109	17.8	100	0.00
31 T	2,2-Dichloropropane	1.0000	1.0153	-1.5	100	0.01
32 T	cis-1,2-Dichloroethene	1.0000	0.9246	7.5	100	0.00
33 C	Chloroform	1.0000	1.0325	-3.2	100	0.00
34	1-Bromopropane	1.0000	0.8141	18.6	100	0.00
35 T	Bromochloromethane	1.0000	0.9665	3.4	100	0.00
36 T	Tetrahydrofuran	5.0000	5.0010	-0.0	100	0.00
37 S	Dibromofluoromethane	-1.0000	0.4414	0.0	100	0.00
38 T	1,1,1-Trichloroethane	1.0000	0.9969	0.3	100	0.01
39 T	Cyclohexane	1.0000	1.0052	-0.5	100	0.01
40 T	1,1-Dichloropropene	1.0000	0.9437	5.6	100	0.00
41 T	Tert-Amyl-Methyl ether	5.0000	4.6356	7.3	100	0.00
42 T	Carbon Tetrachloride	1.0000	0.9747	2.5	100	0.00
43 S	1,2-Dichloroethane-d4	-1.0000	0.4424	0.0	100	0.00
44	Heptane	-1.0000	0.0000	0.0	0	-2.61#
45 T	1,2-Dichloroethane	1.0000	0.9612	3.9	100	0.00
46 T	Benzene	1.0000	1.0092	-0.9	100	0.00
47 T	Trichloroethene	1.0000	0.9976	0.2	100	0.00
48 T	Methylcyclohexane	-1.0000	0.9744	0.0	100	0.00
49 C	1,2-Dichloropropane	1.0000	1.0014	-0.1	100	0.00
50 T	Bromodichloromethane	1.0000	0.9348	6.5	100	0.00
51 T	1,4-Dioxane	-1.0000	0.0000	0.0	0	-11.96#
52 T	Dibromomethane	1.0000	0.8690	13.1	100	0.00
53 T	2-Chloroethyl Vinyl Ether	-1.0000	0.7136	0.0	0	0.00
54 T	4-Methyl-2-Pentanone	-1.0000	0.1988	0.0	100	0.00

(#) = Out of Range

8M418135.D 8260WT.M

Mon Mar 06 12:34:04 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418135.D Vial: 4
 Acq On : 3 Mar 2017 10:20 Operator: TMB
 Sample : WG604846-04 lug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
55 T	cis-1,3-Dichloropropene	1.0000	0.9051	9.5	100	0.00
56 T	Dimethyl Disulfide	-1.0000	0.5545	0.0	100	0.00
57 I	Chlorobenzene-d5	25.0000	25.0000	0.0	100	0.00
58 S	Toluene-d8	-1.0000	0.5025	0.0	100	0.00
59 C	Toluene	1.0000	1.0402	-4.0	100	0.00
60 T	Ethyl Methacrylate	1.0000	1.1569	-15.7	100	0.00
61	Paraldehyde	-1.0000	0.0000	0.0	0	-13.40#
62 T	trans-1,3-Dichloropropene	1.0000	0.8374	16.3	100	0.00
63 T	1,1,2-Trichloroethane	1.0000	0.9372	6.3	100	0.00
64 T	2-Hexanone	-1.0000	0.0000	0.0	0	-13.36#
65 T	1,3-Dichloropropane	1.0000	0.9709	2.9	100	0.00
66 T	Tetrachloroethene	1.0000	0.9968	0.3	100	0.00
67 T	Dibromochloromethane	1.0000	0.8477	15.2	100	0.00
68 T	1,2-Dibromoethane	1.0000	0.8327	16.7	100	0.00
69 T	1-Chlorohexane	1.0000	0.9650	3.5	100	0.00
70 P	Chlorobenzene	1.0000	0.9967	0.3	100	0.00
71 T	1,1,1,2-Tetrachloroethane	1.0000	0.8595	14.1	100	0.00
72 C	Ethylbenzene	1.0000	0.9079	9.2	100	0.00
73 T	m-,p-Xylene	2.0000	1.9176	4.1	100	0.00
74 T	o-Xylene	1.0000	0.9067	9.3	100	0.00
75 T	Styrene	1.0000	0.8567	14.3	100	0.00
76 P	Bromoform	1.0000	1.1594	-15.9	100	0.00
77 T	Isopropylbenzene	1.0000	1.0157	-1.6	100	0.00
78 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	100	0.00
79 P	1,1,2,2-Tetrachloroethane	1.0000	0.8987	10.1	100	0.00
80 S	p-Bromofluorobenzene	-1.0000	0.5267	0.0	100	0.00
81 T	1,2,3-Trichloropropane	1.0000	0.8363	16.4	100	0.00
82 T	trans-1,4-Dichloro-2-Butene	1.0000	0.9931	0.7	100	0.00
83 T	n-Propylbenzene	1.0000	1.0584	-5.8	100	0.00
84 T	Bromobenzene	1.0000	0.9793	2.1	100	0.00
85 T	1,3,5-Trimethylbenzene	1.0000	0.9832	1.7	100	0.00
86 T	2-Chlorotoluene	1.0000	1.0197	-2.0	100	0.00
87 T	4-Chlorotoluene	1.0000	1.0110	-1.1	100	0.00
88 T	a-Methylstyrene	-1.0000	0.7494	0.0	100	0.00
89 T	tert-Butylbenzene	1.0000	0.8871	11.3	100	0.00
90 T	1,2,4-Trimethylbenzene	1.0000	1.0034	-0.3	100	0.00
91 T	sec-Butylbenzene	1.0000	1.0282	-2.8	100	0.00
92 T	p-Isopropyltoluene	1.0000	0.9711	2.9	100	0.00
93 T	1,3-Dichlorobenzene	1.0000	0.9781	2.2	100	0.00
94 T	1,4-Dichlorobenzene	1.0000	1.0178	-1.8	100	0.00
95 T	n-Butylbenzene	1.0000	1.0173	-1.7	100	0.00
96 T	1,2-Dichlorobenzene	1.0000	1.0138	-1.4	100	0.00
97 T	1,2-Dibromo-3-Chloropropane	-1.0000	0.0000	0.0	0	-19.41#
98 T	1,2,4-Trichlorobenzene	1.0000	0.9572	4.3	100	0.00
99 T	Hexachlorobutadiene	1.0000	0.9090	9.1	100	0.00
100 T	Naphthalene	1.0000	0.9581	4.2	100	0.00
101 T	1,2,3-Trichlorobenzene	1.0000	1.0196	-2.0	100	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M418135.D 8260WT.M Mon Mar 06 12:34:05 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418136.D Vial: 6
 Acq On : 3 Mar 2017 10:49 Operator: TMB
 Sample : WG604846-05 2ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:26 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	626919	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	470963	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	251541	25.00	ug/L	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
37) Dibromofluoromethane	9.90	111	6049	0.9395	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	3.76%#	
43) 1,2-Dichloroethane-d4	10.54	65	5502	0.9750	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	3.88%#	
58) Toluene-d8	12.93	98	20600	0.9301	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	3.72%#	
80) p-Bromofluorobenzene	16.34	95	7729	0.8878	ug/L	-0.01
Spiked Amount	25.000	Range 86 - 115	Recovery	=	3.56%#	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Dichlorodifluoromethane	3.35	85	15013	1.7888	ug/L	90
3) Chloromethane	3.82	50	25554	2.1506	ug/L	97
4) Vinyl Chloride	4.06	62	22774	2.1972	ug/L	95
5) 1,3-Butadiene	4.11	54	13940	0.8356	ug/L	85
6) Bromomethane	4.97	94	6983	1.9723	ug/L	99
7) Chloroethane	5.12	64	8382	1.8937	ug/L	93
8) Trichlorofluoromethane	5.61	101	20600	1.9224	ug/L	95
9) Diethyl ether	6.14	59	101125	24.2897	ug/L	98
10) Isoprene	6.18	67	16869	1.7588	ug/L	97
11) Acrolein	6.38	56	6349	11.3318	ug/L	97
12) 1,1,2-Trichloro-1,2,2-Trif	6.39	101	11448	1.8334	ug/L	93
13) Acetone	6.48	43	1320	1.6588	ug/L #	43
14) 1,1-Dichloroethene	6.71	61	17511	1.8300	ug/L	93
15) Tert-Butyl Alcohol	6.81	59	12663	49.3868	ug/L #	90
16) Dimethyl Sulfide	6.97	62	12431	1.7506	ug/L	97
17) Iodomethane	7.23	142	3542	1.8998	ug/L	77
18) Methyl acetate	7.24	43	4361	1.8262	ug/L #	79
19) Methylene Chloride	7.49	84	13116	1.9766	ug/L	90
20) Carbon Disulfide	7.54	76	38377	1.8800	ug/L	100
21) Acrylonitrile	7.67	53	13951	11.8718	ug/L	88
22) Methyl Tert Butyl Ether	7.70	73	23364	1.8956	ug/L	93
23) trans-1,2-Dichloroethene	7.94	61	16645	1.8041	ug/L	87
24) n-Hexane	8.02	57	16569	1.8734	ug/L	94
25) Diisopropyl ether	8.35	45	457148	24.3009	ug/L	98
26) Vinyl Acetate	8.53	43	14073	1.9926	ug/L	96
27) 1,1-Dichloroethane	8.57	63	21923	1.8814	ug/L	98
28) Ethyl-Tert-Butyl ether	8.93	59	425043	24.5566	ug/L	100
29) 2-Butanone	9.13	43	2440	1.8528	ug/L #	50
30) Propionitrile	9.22	54	10188	24.2601	ug/L	96
31) 2,2-Dichloropropane	9.34	77	18717	1.8951	ug/L	99
32) cis-1,2-Dichloroethene	9.41	96	13735	1.9066	ug/L	81
33) Chloroform	9.61	83	23129	1.8920	ug/L	97
34) 1-Bromopropane	9.76	122	2594	1.8542	ug/L	99
35) Bromochloromethane	9.85	130	7143	1.8209	ug/L	99
36) Tetrahydrofuran	9.87	42	20496	24.5255	ug/L	99
38) 1,1,1-Trichloroethane	10.14	97	19365	1.8709	ug/L	99
39) Cyclohexane	10.17	56	19722	1.7988	ug/L	99
40) 1,1-Dichloropropene	10.34	75	15712	1.7828	ug/L	96
41) Tert-Amyl-Methyl ether	10.44	73	354100	24.6621	ug/L	100
42) Carbon Tetrachloride	10.48	117	16988	1.7860	ug/L	97

(#) = qualifier out of range (m) = manual integration
 8M418136.D 8260WT.M Mon Mar 06 12:10:29 2017

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418136.D Vial: 5
 Acq On : 3 Mar 2017 10:49 Operator: TMB
 Sample : WG604846-05 2ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:26 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

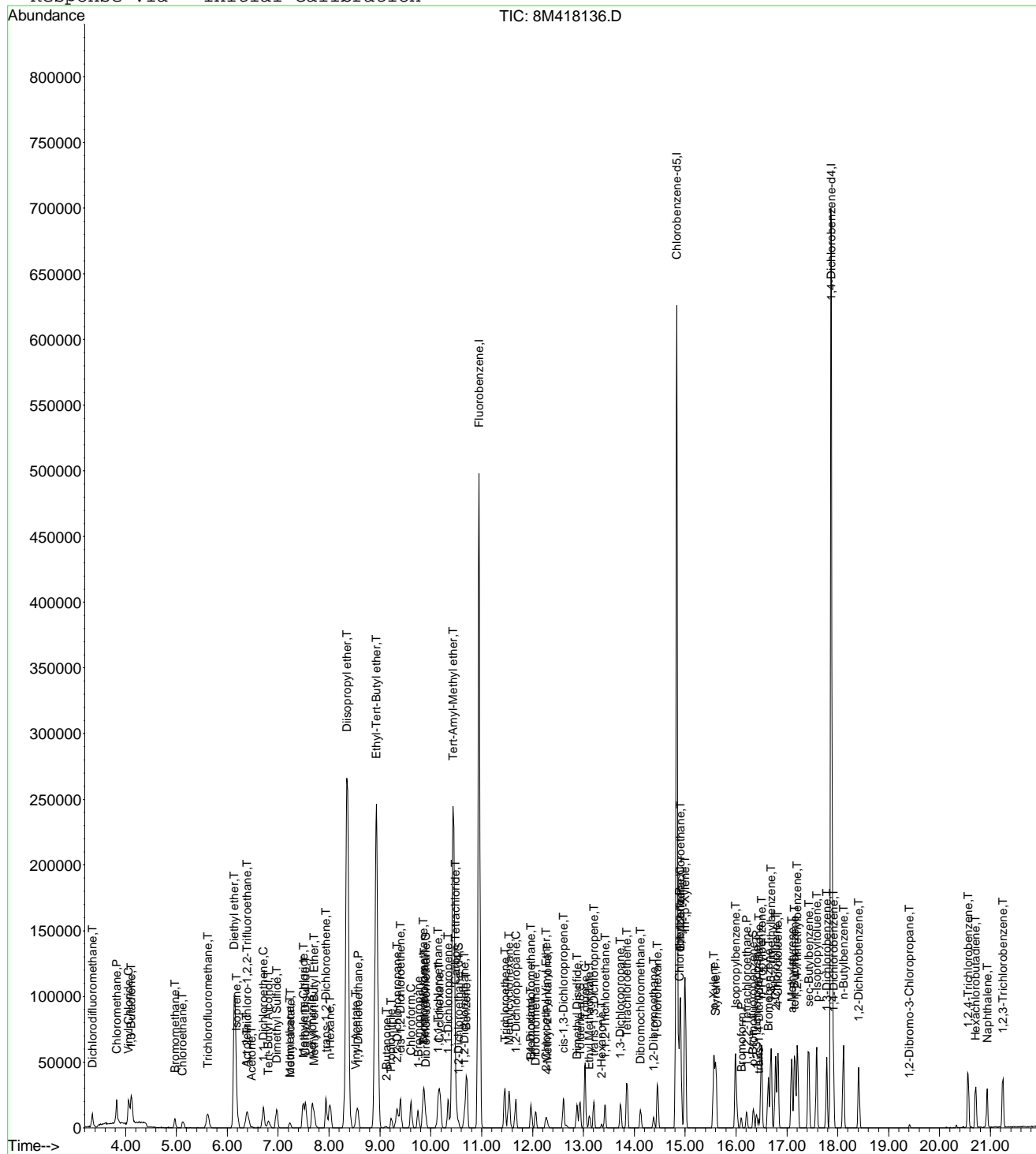
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) 1,2-Dichloroethane	10.66	62	14373	1.9522	ug/L	94
46) Benzene	10.70	78	49497	1.9474	ug/L	97
47) Trichloroethene	11.45	130	13537	1.8368	ug/L	99
48) Methylcyclohexane	11.54	83	20054	1.8222	ug/L	96
49) 1,2-Dichloropropane	11.67	63	12064	1.8950	ug/L	93
50) Bromodichloromethane	11.97	83	15411	1.8346	ug/L	97
51) 1,4-Dioxane	11.96	88	873	28.3491	ug/L	97
52) Dibromomethane	12.05	93	6106	1.9125	ug/L	97
53) 2-Chloroethyl Vinyl Ether	12.26	63	4845	1.7059	ug/L	94
54) 4-Methyl-2-Pentanone	12.29	58	2013	1.5951	ug/L #	41
55) cis-1,3-Dichloropropene	12.60	75	17533	1.8160	ug/L	97
56) Dimethyl Disulfide	12.87	79	6647	1.2619	ug/L	92
59) Toluene	13.04	91	52151	1.9668	ug/L	98
60) Ethyl Methacrylate	13.12	69	8290	1.9939	ug/L	100
62) trans-1,3-Dichloropropene	13.20	75	14279	1.8016	ug/L	97
63) 1,1,2-Trichloroethane	13.43	97	8611	1.9844	ug/L	92
64) 2-Hexanone	13.36	58	1323	1.1847	ug/L #	5
65) 1,3-Dichloropropane	13.73	76	14285	1.9417	ug/L	98
66) Tetrachloroethene	13.85	164	10408	1.8216	ug/L	98
67) Dibromochloromethane	14.12	129	10301	1.8188	ug/L	98
68) 1,2-Dibromoethane	14.38	107	8562	2.0134	ug/L	97
69) 1-Chlorohexane	14.45	91	16551	1.7971	ug/L	97
70) Chlorobenzene	14.89	112	36877	1.9167	ug/L	93
71) 1,1,1,2-Tetrachloroethane	14.91	131	12418	1.7989	ug/L	98
72) Ethylbenzene	14.91	106	19112	1.7598	ug/L	91
73) m-,p-Xylene	15.00	106	46763	3.7583	ug/L	93
74) o-Xylene	15.56	106	22139	1.7771	ug/L	94
75) Styrene	15.60	104	33869	1.7283	ug/L	100
76) Bromoform	16.11	173	5309	1.9628	ug/L	92
77) Isopropylbenzene	15.99	105	58032	1.9018	ug/L	98
79) 1,1,2,2-Tetrachloroethane	16.21	83	9396	2.0145	ug/L	97
81) 1,2,3-Trichloropropane	16.41	110	2413	1.7817	ug/L	73
82) trans-1,4-Dichloro-2-Butene	16.45	53	1922	1.9629	ug/L	47
83) n-Propylbenzene	16.50	91	72151	2.0042	ug/L	98
84) Bromobenzene	16.63	156	14597	1.8662	ug/L	95
85) 1,3,5-Trimethylbenzene	16.69	105	50055	1.9426	ug/L	95
86) 2-Chlorotoluene	16.78	91	47728	1.9653	ug/L	99
87) 4-Chlorotoluene	16.82	91	41245	1.9467	ug/L	97
88) a-Methylstyrene	17.09	118	23443	1.5647	ug/L	98
89) tert-Butylbenzene	17.15	134	11052	1.8589	ug/L	98
90) 1,2,4-Trimethylbenzene	17.20	105	51321	1.9140	ug/L	86
91) sec-Butylbenzene	17.43	105	65186	1.9612	ug/L	98
92) p-Isopropyltoluene	17.59	119	52374	1.8774	ug/L	99
93) 1,3-Dichlorobenzene	17.78	146	30139	1.9076	ug/L	96
94) 1,4-Dichlorobenzene	17.92	146	30884	1.9677	ug/L	89
95) n-Butylbenzene	18.11	91	51428	1.9161	ug/L	98
96) 1,2-Dichlorobenzene	18.41	146	27377	1.9564	ug/L	93
97) 1,2-Dibromo-3-Chloropropane	19.41	75	974	1.8663	ug/L	81
98) 1,2,4-Trichlorobenzene	20.56	180	19857	1.9467	ug/L	99
99) Hexachlorobutadiene	20.71	225	9371	1.9557	ug/L	97
100) Naphthalene	20.94	128	32152	2.0095	ug/L	100
101) 1,2,3-Trichlorobenzene	21.25	180	17043	2.0194	ug/L	97

(#) = qualifier out of range (m) = manual integration
 8M418136.D 8260WT.M Mon Mar 06 12:10:29 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418136.D Vial: 5
Acq On : 3 Mar 2017 10:49 Operator: TMB
Sample : WG604846-05 2ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD80732 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 6 12:10 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
Last Update : Fri Mar 03 15:26:23 2017
Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418136.D Vial: 5
 Acq On : 3 Mar 2017 10:49 Operator: TMB
 Sample : WG604846-05 2ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	100	0.00
2 T	Dichlorodifluoromethane	2.0000	1.7888	10.6	100	0.01
3 P	Chloromethane	2.0000	2.1506	-7.5	100	0.01
4 C	Vinyl Chloride	2.0000	2.1972	-9.9	100	0.01
5 T	1,3-Butadiene	2.0000	0.8356	58.2#	100	0.02
6 T	Bromomethane	2.0000	1.9723	1.4	100	0.01
7 T	Chloroethane	2.0000	1.8937	5.3	100	-0.01
8 T	Trichlorofluoromethane	2.0000	1.9224	3.9	100	0.00
9 T	Diethyl ether	25.0000	24.2897	2.8	100	0.00
10 T	Isoprene	-1.0000	1.7588	0.0	100	0.00
11 T	Acrolein	12.5000	11.3318	9.3	100	0.00
12 T	1,1,2-Trichloro-1,2,2-Trifl	2.0000	1.8334	8.3	100	0.00
13 T	Acetone	-1.0000	1.6588	0.0	100	0.00
14 C	1,1-Dichloroethene	2.0000	1.8300	8.5	100	0.00
15 T	Tert-Butyl Alcohol	50.0000	49.3867	1.2	100	-0.01
16 T	Dimethyl Sulfide	-1.0000	1.7506	0.0	100	0.00
17 T	Iodomethane	2.0000	1.8998	5.0	100	0.00
18 T	Methyl acetate	-1.0000	1.8262	0.0	100	0.00
19 T	Methylene Chloride	2.0000	1.9766	1.2	100	0.00
20 T	Carbon Disulfide	2.0000	1.8800	6.0	100	0.00
21 T	Acrylonitrile	12.5000	11.8718	5.0	100	0.00
22 T	Methyl Tert Butyl Ether	2.0000	1.8957	5.2	100	0.00
23 T	trans-1,2-Dichloroethene	2.0000	1.8041	9.8	100	0.00
24 T	n-Hexane	-1.0000	1.8734	0.0	100	0.01
25 T	Diisopropyl ether	25.0000	24.3009	2.8	100	0.00
26 T	Vinyl Acetate	-1.0000	1.9926	0.0	100	0.00
27 P	1,1-Dichloroethane	2.0000	1.8814	5.9	100	0.01
28 T	Ethyl-Tert-Butyl ether	25.0000	24.5566	1.8	100	0.00
29 T	2-Butanone	-1.0000	1.8528	0.0	100	0.01
30 T	Propionitrile	25.0000	24.2601	3.0	100	-0.01
31 T	2,2-Dichloropropane	2.0000	1.8951	5.2	100	0.00
32 T	cis-1,2-Dichloroethene	2.0000	1.9066	4.7	100	0.00
33 C	Chloroform	2.0000	1.8920	5.4	100	0.00
34	1-Bromopropane	2.0000	1.8542	7.3	100	0.01
35 T	Bromochloromethane	2.0000	1.8209	9.0	100	0.00
36 T	Tetrahydrofuran	25.0000	24.5255	1.9	100	0.00
37 S	Dibromofluoromethane	1.0000	0.9395	6.1	100	0.00
38 T	1,1,1-Trichloroethane	2.0000	1.8709	6.5	100	0.00
39 T	Cyclohexane	2.0000	1.7988	10.1	100	0.00
40 T	1,1-Dichloropropene	2.0000	1.7828	10.9	100	0.00
41 T	Tert-Amyl-Methyl ether	25.0000	24.6621	1.4	100	0.00
42 T	Carbon Tetrachloride	2.0000	1.7860	10.7	100	-0.01
43 S	1,2-Dichloroethane-d4	1.0000	0.9750	2.5	100	0.00
44	Heptane	-1.0000	0.0000	0.0	0	-2.61#
45 T	1,2-Dichloroethane	2.0000	1.9522	2.4	100	0.00
46 T	Benzene	2.0000	1.9474	2.6	100	0.00
47 T	Trichloroethene	2.0000	1.8368	8.2	100	0.00
48 T	Methylcyclohexane	-1.0000	1.8222	0.0	100	0.00
49 C	1,2-Dichloropropane	2.0000	1.8950	5.3	100	0.00
50 T	Bromodichloromethane	2.0000	1.8346	8.3	100	0.00
51 T	1,4-Dioxane	-1.0000	28.3491	0.0	0	0.00
52 T	Dibromomethane	2.0000	1.9125	4.4	100	-0.01
53 T	2-Chloroethyl Vinyl Ether	2.0000	1.7059	14.7	100	0.00
54 T	4-Methyl-2-Pentanone	-1.0000	1.5951	0.0	100	0.00

(#) = Out of Range

8M418136.D 8260WT.M

Mon Mar 06 12:13:16 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418136.D Vial: 5
 Acq On : 3 Mar 2017 10:49 Operator: TMB
 Sample : WG604846-05 2ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
55 T	cis-1,3-Dichloropropene	2.0000	1.8160	9.2	100	-0.01
56 T	Dimethyl Disulfide	-1.0000	1.2619	0.0	100	0.00
57 I	Chlorobenzene-d5	25.0000	25.0000	0.0	100	0.00
58 S	Toluene-d8	1.0000	0.9301	7.0	100	0.00
59 C	Toluene	2.0000	1.9668	1.7	100	0.00
60 T	Ethyl Methacrylate	2.0000	1.9939	0.3	100	0.00
61	Paraldehyde	-1.0000	0.0000	0.0	0	-13.40#
62 T	trans-1,3-Dichloropropene	2.0000	1.8016	9.9	100	0.00
63 T	1,1,2-Trichloroethane	2.0000	1.9844	0.8	100	0.00
64 T	2-Hexanone	-1.0000	1.1847	0.0	100	0.00
65 T	1,3-Dichloropropane	2.0000	1.9417	2.9	100	0.00
66 T	Tetrachloroethene	2.0000	1.8216	8.9	100	0.00
67 T	Dibromochloromethane	2.0000	1.8188	9.1	100	0.00
68 T	1,2-Dibromoethane	2.0000	2.0134	-0.7	100	0.00
69 T	1-Chlorohexane	2.0000	1.7971	10.1	100	-0.01
70 P	Chlorobenzene	2.0000	1.9168	4.2	100	0.00
71 T	1,1,1,2-Tetrachloroethane	2.0000	1.7989	10.1	100	-0.01
72 C	Ethylbenzene	2.0000	1.7598	12.0	100	0.00
73 T	m-,p-Xylene	4.0000	3.7583	6.0	100	0.00
74 T	o-Xylene	2.0000	1.7771	11.1	100	-0.01
75 T	Styrene	2.0000	1.7283	13.6	100	0.00
76 P	Bromoform	2.0000	1.9628	1.9	100	0.00
77 T	Isopropylbenzene	2.0000	1.9018	4.9	100	0.00
78 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	100	0.00
79 P	1,1,2,2-Tetrachloroethane	2.0000	2.0145	-0.7	100	0.00
80 S	p-Bromofluorobenzene	1.0000	0.8878	11.2	100	-0.01
81 T	1,2,3-Trichloropropane	2.0000	1.7817	10.9	100	0.00
82 T	trans-1,4-Dichloro-2-Butene	2.0000	1.9629	1.9	100	0.00
83 T	n-Propylbenzene	2.0000	2.0042	-0.2	100	0.00
84 T	Bromobenzene	2.0000	1.8662	6.7	100	0.00
85 T	1,3,5-Trimethylbenzene	2.0000	1.9426	2.9	100	-0.01
86 T	2-Chlorotoluene	2.0000	1.9653	1.7	100	0.00
87 T	4-Chlorotoluene	2.0000	1.9467	2.7	100	-0.01
88 T	a-Methylstyrene	-1.0000	1.5647	0.0	100	-0.01
89 T	tert-Butylbenzene	2.0000	1.8589	7.1	100	-0.01
90 T	1,2,4-Trimethylbenzene	2.0000	1.9140	4.3	100	-0.01
91 T	sec-Butylbenzene	2.0000	1.9612	1.9	100	0.00
92 T	p-Isopropyltoluene	2.0000	1.8774	6.1	100	0.00
93 T	1,3-Dichlorobenzene	2.0000	1.9076	4.6	100	0.00
94 T	1,4-Dichlorobenzene	2.0000	1.9677	1.6	100	0.00
95 T	n-Butylbenzene	2.0000	1.9161	4.2	100	0.00
96 T	1,2-Dichlorobenzene	2.0000	1.9564	2.2	100	0.00
97 T	1,2-Dibromo-3-Chloropropane	2.0000	1.8663	6.7	100	0.00
98 T	1,2,4-Trichlorobenzene	2.0000	1.9467	2.7	100	0.00
99 T	Hexachlorobutadiene	2.0000	1.9557	2.2	100	0.00
100 T	Naphthalene	2.0000	2.0095	-0.5	100	0.00
101 T	1,2,3-Trichlorobenzene	2.0000	2.0194	-1.0	100	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M418136.D 8260WT.M Mon Mar 06 12:13:16 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418137.D Vial: 6
 Acq On : 3 Mar 2017 11:18 Operator: TMB
 Sample : WG604846-06 5ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:30 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	635457	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	483357	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.87	152	257360	25.00	ug/L	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
37) Dibromofluoromethane	9.89	111	16418	2.5156	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	10.08%#	
43) 1,2-Dichloroethane-d4	10.54	65	13979	2.4439	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	9.76%#	
58) Toluene-d8	12.93	98	58220	2.5611	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	10.24%#	
80) p-Bromofluorobenzene	16.35	95	22442	2.5194	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	10.08%#	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Dichlorodifluoromethane	3.34	85	40088	4.7122	ug/L	98
3) Chloromethane	3.83	50	62721	5.2076	ug/L	100
4) Vinyl Chloride	4.06	62	56154	5.3447	ug/L	97
5) 1,3-Butadiene	4.11	54	36847	5.6691	ug/L	96
6) Bromomethane	4.96	94	20109	4.5341	ug/L	99
7) Chloroethane	5.13	64	22523	5.0201	ug/L	96
8) Trichlorofluoromethane	5.62	101	55502	5.1097	ug/L	99
9) Diethyl ether	6.14	59	205825	48.7739	ug/L	99
10) Isoprene	6.18	67	45217	4.6510	ug/L	96
11) Acrolein	6.38	56	13199	23.2413	ug/L	96
12) 1,1,2-Trichloro-1,2,2-Trif	6.39	101	32767	5.1771	ug/L	98
13) Acetone	6.47	43	3708	4.5970	ug/L	88
14) 1,1-Dichloroethene	6.71	61	48006	4.9495	ug/L	95
15) Tert-Butyl Alcohol	6.81	59	25114	96.6307	ug/L	95
16) Dimethyl Sulfide	6.97	62	32649	4.5359	ug/L	98
17) Iodomethane	7.23	142	13985	3.4824	ug/L	100
18) Methyl acetate	7.24	43	11144	4.6040	ug/L	# 94
19) Methylene Chloride	7.50	84	33344	4.9574	ug/L	93
20) Carbon Disulfide	7.54	76	101438	4.9026	ug/L	99
21) Acrylonitrile	7.67	53	28346	23.7973	ug/L	96
22) Methyl Tert Butyl Ether	7.70	73	60614	4.8519	ug/L	96
23) trans-1,2-Dichloroethene	7.94	61	46113	4.9308	ug/L	96
24) n-Hexane	8.01	57	45101	5.0308	ug/L	96
25) Diisopropyl ether	8.35	45	947837	49.7077	ug/L	98
26) Vinyl Acetate	8.53	43	37042	5.1742	ug/L	98
27) 1,1-Dichloroethane	8.56	63	59303	5.0209	ug/L	99
28) Ethyl-Tert-Butyl ether	8.93	59	859758	49.0047	ug/L	100
29) 2-Butanone	9.12	43	6304	4.7227	ug/L	91
30) Propionitrile	9.22	54	20546	48.2676	ug/L	92
31) 2,2-Dichloropropane	9.34	77	51659	5.1602	ug/L	99
32) cis-1,2-Dichloroethene	9.41	96	37296	5.1077	ug/L	92
33) Chloroform	9.62	83	59525	4.8039	ug/L	100
34) 1-Bromopropane	9.75	122	6929	4.8864	ug/L	99
35) Bromochloromethane	9.84	130	20473	5.1488	ug/L	96
36) Tetrahydrofuran	9.86	42	39934	47.1429	ug/L	98
38) 1,1,1-Trichloroethane	10.14	97	51349	4.8944	ug/L	99
39) Cyclohexane	10.17	56	53840	4.8447	ug/L	98
40) 1,1-Dichloropropene	10.34	75	45459	5.0888	ug/L	100
41) Tert-Amyl-Methyl ether	10.44	73	716455	49.2287	ug/L	99
42) Carbon Tetrachloride	10.48	117	47967	4.9752	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418137.D 8260WT.M Mon Mar 06 12:10:33 2017

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418137.D Vial: 6
 Acq On : 3 Mar 2017 11:18 Operator: TMB
 Sample : WG604846-06 5ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:30 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

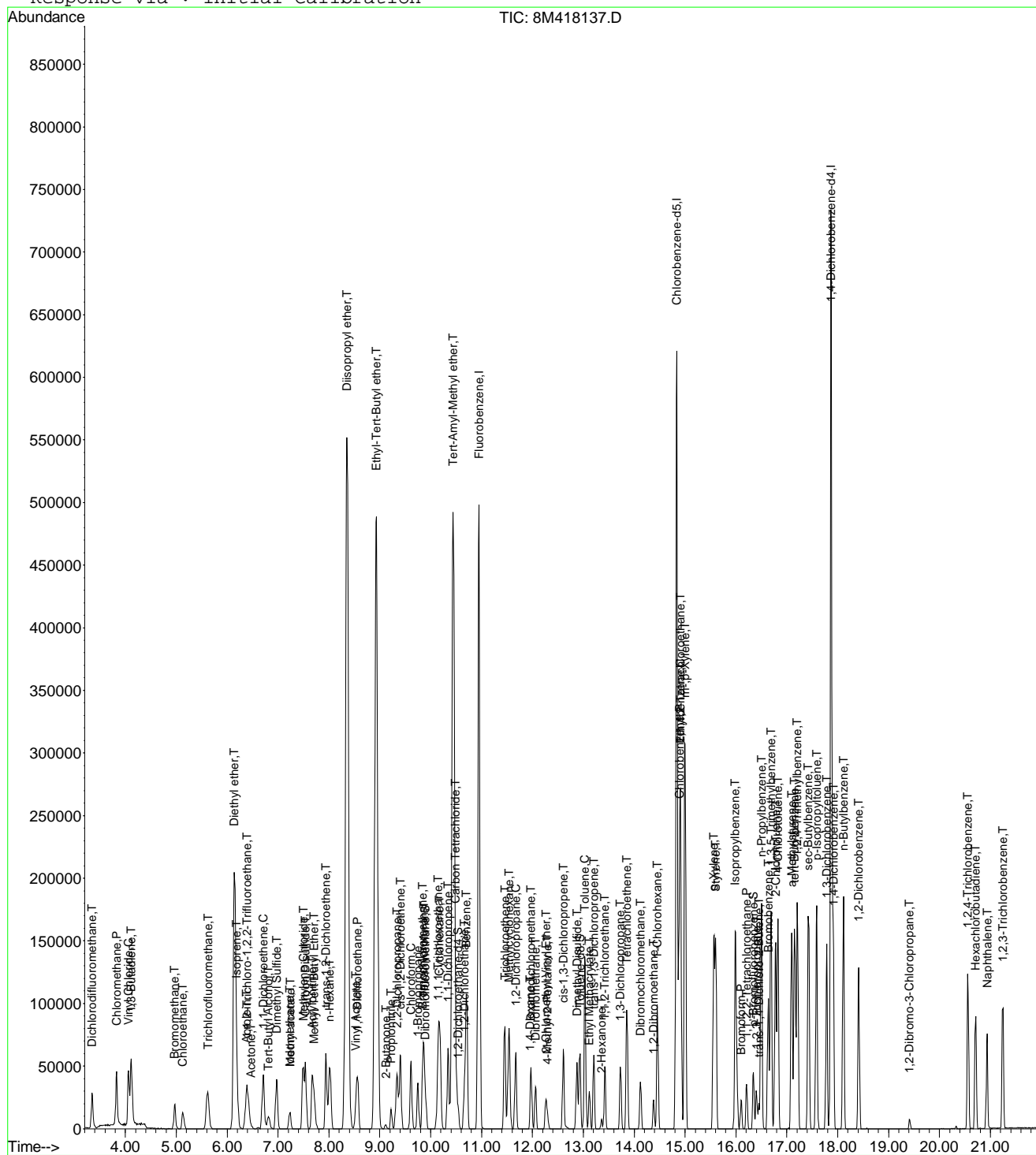
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) 1,2-Dichloroethane	10.66	62	37338	5.0033	ug/L	98
46) Benzene	10.70	78	133494	5.1815	ug/L	98
47) Trichloroethene	11.46	130	36639	4.9046	ug/L	97
48) Methylcyclohexane	11.54	83	54845	4.9166	ug/L	97
49) 1,2-Dichloropropane	11.67	63	32532	5.0414	ug/L	94
50) Bromodichloromethane	11.97	83	40864	4.7993	ug/L	98
51) 1,4-Dioxane	11.95	88	2837	90.8886	ug/L	93
52) Dibromomethane	12.06	93	15780	4.8762	ug/L	94
53) 2-Chloroethyl Vinyl Ether	12.26	63	12827	4.4556	ug/L	97
54) 4-Methyl-2-Pentanone	12.29	58	5132	4.0119	ug/L	89
55) cis-1,3-Dichloropropene	12.60	75	47793	4.8837	ug/L	99
56) Dimethyl Disulfide	12.87	79	20287	3.7998	ug/L	96
59) Toluene	13.03	91	144303	5.3026	ug/L	98
60) Ethyl Methacrylate	13.12	69	23068	4.4473	ug/L	96
62) trans-1,3-Dichloropropene	13.20	75	40783	5.0137	ug/L	97
63) 1,1,2-Trichloroethane	13.42	97	21573	4.8439	ug/L	97
64) 2-Hexanone	13.36	58	4349	3.7945	ug/L #	48
65) 1,3-Dichloropropane	13.73	76	37743	4.9986	ug/L	93
66) Tetrachloroethene	13.85	164	29983	5.1129	ug/L	91
67) Dibromochloromethane	14.12	129	27328	4.7013	ug/L	97
68) 1,2-Dibromoethane	14.38	107	21440	4.9125	ug/L	99
69) 1-Chlorohexane	14.45	91	47325	5.0068	ug/L	98
70) Chlorobenzene	14.89	112	99241	5.0260	ug/L	97
71) 1,1,1,2-Tetrachloroethane	14.91	131	33479	4.7254	ug/L	99
72) Ethylbenzene	14.91	106	52796	4.7367	ug/L	91
73) m-,p-Xylene	15.00	106	129845	10.1680	ug/L	95
74) o-Xylene	15.56	106	61865	4.8385	ug/L	98
75) Styrene	15.60	104	99796	4.9618	ug/L	94
76) Bromoform	16.10	173	14999	4.4178	ug/L	99
77) Isopropylbenzene	15.98	105	164105	5.2402	ug/L	96
79) 1,1,2,2-Tetrachloroethane	16.21	83	24365	5.1058	ug/L	99
81) 1,2,3-Trichloropropane	16.41	110	7178	5.1801	ug/L	89
82) trans-1,4-Dichloro-2-Butene	16.45	53	6464	5.0118	ug/L	85
83) n-Propylbenzene	16.50	91	202205	5.4899	ug/L	97
84) Bromobenzene	16.64	156	40803	5.0987	ug/L	93
85) 1,3,5-Trimethylbenzene	16.69	105	135225	5.1292	ug/L	100
86) 2-Chlorotoluene	16.78	91	131174	5.2794	ug/L	99
87) 4-Chlorotoluene	16.82	91	114500	5.2820	ug/L	100
88) a-Methylstyrene	17.09	118	69136	4.5102	ug/L	99
89) tert-Butylbenzene	17.15	134	28866	4.7455	ug/L	93
90) 1,2,4-Trimethylbenzene	17.20	105	144572	5.2699	ug/L	97
91) sec-Butylbenzene	17.42	105	184154	5.4153	ug/L	97
92) p-Isopropyltoluene	17.59	119	150555	5.2749	ug/L	99
93) 1,3-Dichlorobenzene	17.78	146	82111	5.0795	ug/L	96
94) 1,4-Dichlorobenzene	17.92	146	81209	5.0570	ug/L	98
95) n-Butylbenzene	18.11	91	145875	5.3122	ug/L	97
96) 1,2-Dichlorobenzene	18.41	146	71773	5.0130	ug/L	96
97) 1,2-Dibromo-3-Chloropropane	19.41	75	3379	4.7584	ug/L	97
98) 1,2,4-Trichlorobenzene	20.55	180	51816	4.9649	ug/L	98
99) Hexachlorobutadiene	20.71	225	24691	5.0364	ug/L	97
100) Naphthalene	20.94	128	81656	4.9880	ug/L	99
101) 1,2,3-Trichlorobenzene	21.25	180	42775	4.9539	ug/L	97

(#) = qualifier out of range (m) = manual integration
 8M418137.D 8260WT.M Mon Mar 06 12:10:33 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418137.D Vial: 6
 Acq On : 3 Mar 2017 11:18 Operator: TMB
 Sample : WG604846-06 5ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 6 12:10 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418137.D Vial: 6
 Acq On : 3 Mar 2017 11:18 Operator: TMB
 Sample : WG604846-06 5ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	100	0.00
2 T	Dichlorodifluoromethane	5.0000	4.7122	5.8	100	0.00
3 P	Chloromethane	5.0000	5.2076	-4.2	100	0.01
4 C	Vinyl Chloride	5.0000	5.3448	-6.9	100	0.01
5 T	1,3-Butadiene	5.0000	5.6691	-13.4	100	0.02
6 T	Bromomethane	5.0000	4.5341	9.3	100	0.00
7 T	Chloroethane	5.0000	5.0201	-0.4	100	0.00
8 T	Trichlorofluoromethane	5.0000	5.1098	-2.2	100	0.01
9 T	Diethyl ether	50.0000	48.7739	2.5	100	0.00
10 T	Isoprene	5.0000	4.6510	7.0	100	0.00
11 T	Acrolein	25.0000	23.2413	7.0	100	0.00
12 T	1,1,2-Trichloro-1,2,2-Trifl	5.0000	5.1771	-3.5	100	0.00
13 T	Acetone	5.0000	4.5970	8.1	100	0.00
14 C	1,1-Dichloroethene	5.0000	4.9495	1.0	100	0.00
15 T	Tert-Butyl Alcohol	100.0000	96.6307	3.4	100	0.00
16 T	Dimethyl Sulfide	5.0000	4.5359	9.3	100	0.00
17 T	Iodomethane	5.0000	3.4825	30.4#	100	0.00
18 T	Methyl acetate	5.0000	4.6040	7.9	100	0.00
19 T	Methylene Chloride	5.0000	4.9574	0.9	100	0.00
20 T	Carbon Disulfide	5.0000	4.9026	1.9	100	0.00
21 T	Acrylonitrile	25.0000	23.7973	4.8	100	0.00
22 T	Methyl Tert Butyl Ether	5.0000	4.8519	3.0	100	0.00
23 T	trans-1,2-Dichloroethene	5.0000	4.9308	1.4	100	0.00
24 T	n-Hexane	5.0000	5.0308	-0.6	100	0.00
25 T	Diisopropyl ether	50.0000	49.7077	0.6	100	0.00
26 T	Vinyl Acetate	5.0000	5.1742	-3.5	100	0.00
27 P	1,1-Dichloroethane	5.0000	5.0209	-0.4	100	0.00
28 T	Ethyl-Tert-Butyl ether	50.0000	49.0047	2.0	100	0.00
29 T	2-Butanone	5.0000	4.7227	5.5	100	0.00
30 T	Propionitrile	50.0000	48.2676	3.5	100	0.00
31 T	2,2-Dichloropropane	5.0000	5.1602	-3.2	100	0.00
32 T	cis-1,2-Dichloroethene	5.0000	5.1077	-2.2	100	0.00
33 C	Chloroform	5.0000	4.8039	3.9	100	0.00
34	1-Bromopropane	5.0000	4.8864	2.3	100	0.00
35 T	Bromochloromethane	5.0000	5.1488	-3.0	100	0.00
36 T	Tetrahydrofuran	50.0000	47.1429	5.7	100	0.00
37 S	Dibromofluoromethane	2.5000	2.5156	-0.6	100	0.00
38 T	1,1,1-Trichloroethane	5.0000	4.8944	2.1	100	0.00
39 T	Cyclohexane	5.0000	4.8447	3.1	100	0.00
40 T	1,1-Dichloropropene	5.0000	5.0888	-1.8	100	0.00
41 T	Tert-Amyl-Methyl ether	50.0000	49.2287	1.5	100	0.00
42 T	Carbon Tetrachloride	5.0000	4.9752	0.5	100	0.00
43 S	1,2-Dichloroethane-d4	2.5000	2.4439	2.2	100	0.00
44	Heptane	-1.0000	0.0000	0.0	0	-2.61#
45 T	1,2-Dichloroethane	5.0000	5.0033	-0.1	100	0.00
46 T	Benzene	5.0000	5.1815	-3.6	100	0.00
47 T	Trichloroethene	5.0000	4.9046	1.9	100	0.00
48 T	Methylcyclohexane	5.0000	4.9166	1.7	100	0.00
49 C	1,2-Dichloropropane	5.0000	5.0414	-0.8	100	0.00
50 T	Bromodichloromethane	5.0000	4.7993	4.0	100	0.00
51 T	1,4-Dioxane	100.0000	90.8886	9.1	100	0.00
52 T	Dibromomethane	5.0000	4.8762	2.5	100	0.00
53 T	2-Chloroethyl Vinyl Ether	5.0000	4.4556	10.9	100	0.00
54 T	4-Methyl-2-Pentanone	5.0000	4.0119	19.8	100	0.00

(#) = Out of Range

8M418137.D 8260WT.M

Mon Mar 06 12:13:27 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418137.D Vial: 6
 Acq On : 3 Mar 2017 11:18 Operator: TMB
 Sample : WG604846-06 5ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
55 T	cis-1,3-Dichloropropene	5.0000	4.8837	2.3	100	0.00
56 T	Dimethyl Disulfide	5.0000	3.7998	24.0	100	0.00
57 I	Chlorobenzene-d5	25.0000	25.0000	0.0	100	0.00
58 S	Toluene-d8	2.5000	2.5611	-2.4	100	0.00
59 C	Toluene	5.0000	5.3026	-6.1	100	0.00
60 T	Ethyl Methacrylate	5.0000	4.4473	11.1	100	0.00
61	Paraldehyde	-1.0000	0.0000	0.0	0	-13.40#
62 T	trans-1,3-Dichloropropene	5.0000	5.0137	-0.3	100	0.00
63 T	1,1,2-Trichloroethane	5.0000	4.8439	3.1	100	0.00
64 T	2-Hexanone	5.0000	3.7945	24.1	100	0.00
65 T	1,3-Dichloropropane	5.0000	4.9986	0.0	100	0.00
66 T	Tetrachloroethene	5.0000	5.1129	-2.3	100	0.00
67 T	Dibromochloromethane	5.0000	4.7013	6.0	100	0.00
68 T	1,2-Dibromoethane	5.0000	4.9125	1.8	100	0.00
69 T	1-Chlorohexane	5.0000	5.0068	-0.1	100	0.00
70 P	Chlorobenzene	5.0000	5.0260	-0.5	100	0.00
71 T	1,1,1,2-Tetrachloroethane	5.0000	4.7254	5.5	100	0.00
72 C	Ethylbenzene	5.0000	4.7367	5.3	100	0.00
73 T	m-,p-Xylene	10.0000	10.1680	-1.7	100	0.00
74 T	o-Xylene	5.0000	4.8385	3.2	100	0.00
75 T	Styrene	5.0000	4.9618	0.8	100	0.00
76 P	Bromoform	5.0000	4.4178	11.6	100	0.00
77 T	Isopropylbenzene	5.0000	5.2402	-4.8	100	0.00
78 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	100	0.00
79 P	1,1,2,2-Tetrachloroethane	5.0000	5.1058	-2.1	100	0.00
80 S	p-Bromofluorobenzene	2.5000	2.5194	-0.8	100	0.00
81 T	1,2,3-Trichloropropane	5.0000	5.1801	-3.6	100	0.00
82 T	trans-1,4-Dichloro-2-Butene	5.0000	5.0118	-0.2	100	0.00
83 T	n-Propylbenzene	5.0000	5.4900	-9.8	100	0.00
84 T	Bromobenzene	5.0000	5.0987	-2.0	100	0.00
85 T	1,3,5-Trimethylbenzene	5.0000	5.1292	-2.6	100	0.00
86 T	2-Chlorotoluene	5.0000	5.2794	-5.6	100	0.00
87 T	4-Chlorotoluene	5.0000	5.2820	-5.6	100	0.00
88 T	a-Methylstyrene	5.0000	4.5102	9.8	100	0.00
89 T	tert-Butylbenzene	5.0000	4.7455	5.1	100	0.00
90 T	1,2,4-Trimethylbenzene	5.0000	5.2699	-5.4	100	0.00
91 T	sec-Butylbenzene	5.0000	5.4153	-8.3	100	0.00
92 T	p-Isopropyltoluene	5.0000	5.2749	-5.5	100	0.00
93 T	1,3-Dichlorobenzene	5.0000	5.0795	-1.6	100	0.00
94 T	1,4-Dichlorobenzene	5.0000	5.0569	-1.1	100	0.00
95 T	n-Butylbenzene	5.0000	5.3122	-6.2	100	0.00
96 T	1,2-Dichlorobenzene	5.0000	5.0130	-0.3	100	0.00
97 T	1,2-Dibromo-3-Chloropropane	5.0000	4.7584	4.8	100	0.00
98 T	1,2,4-Trichlorobenzene	5.0000	4.9649	0.7	100	0.00
99 T	Hexachlorobutadiene	5.0000	5.0364	-0.7	100	0.00
100 T	Naphthalene	5.0000	4.9880	0.2	100	0.00
101 T	1,2,3-Trichlorobenzene	5.0000	4.9539	0.9	100	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M418137.D 8260WT.M Mon Mar 06 12:13:27 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418138.D Vial: 7
 Acq On : 3 Mar 2017 11:48 Operator: TMB
 Sample : WG604846-02 0.3ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:35 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	620662	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	472545	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	246385	25.00	ug/L	0.00

System Monitoring Compounds

37) Dibromofluoromethane	0.00	111	0	0.0000	ug/L	
Spiked Amount	25.000	Range 86 - 118	Recovery	=	0.00%#	
43) 1,2-Dichloroethane-d4	0.00	65	0	0.0000	ug/L	
Spiked Amount	25.000	Range 80 - 120	Recovery	=	0.00%#	
58) Toluene-d8	0.00	98	0	0.0000	ug/L	
Spiked Amount	25.000	Range 88 - 110	Recovery	=	0.00%#	
80) p-Bromofluorobenzene	0.00	95	0	0.0000	ug/L	
Spiked Amount	25.000	Range 86 - 115	Recovery	=	0.00%#	

Target Compounds

					Qvalue	
2) Dichlorodifluoromethane	3.35	85	1859	0.2237	ug/L	# 42
3) Chloromethane	3.82	50	4704	0.3999	ug/L	# 59
4) Vinyl Chloride	4.06	62	3099	0.3020	ug/L	92
5) 1,3-Butadiene	4.12	54	2298	Below Cal		# 71
6) Bromomethane	4.96	94	714	0.7227	ug/L	69
7) Chloroethane	5.12	64	1041	0.2376	ug/L	# 45
8) Trichlorofluoromethane	5.61	101	2798	0.2637	ug/L	# 55
10) Isoprene	6.18	67	2013	0.2120	ug/L	69
12) 1,1,2-Trichloro-1,2,2-Trif	6.40	101	805	0.1302	ug/L	94
14) 1,1-Dichloroethene	6.72	61	2587	0.2731	ug/L	87
16) Dimethyl Sulfide	6.98	62	1262	0.1795	ug/L	95
19) Methylene Chloride	7.50	84	1585	0.2413	ug/L	69
20) Carbon Disulfide	7.54	76	6487	0.3210	ug/L	# 82
22) Methyl Tert Butyl Ether	7.71	73	2978	0.2441	ug/L	# 53
23) trans-1,2-Dichloroethene	7.94	61	2289	0.2506	ug/L	79
24) n-Hexane	8.02	57	2204	0.2517	ug/L	89
26) Vinyl Acetate	8.53	43	1557	0.2227	ug/L	# 73
27) 1,1-Dichloroethane	8.56	63	2955	0.2561	ug/L	# 89
31) 2,2-Dichloropropane	9.34	77	2453	0.2509	ug/L	# 57
32) cis-1,2-Dichloroethene	9.41	96	1847	0.2590	ug/L	81
33) Chloroform	9.61	83	4136	0.3417	ug/L	96
35) Bromochloromethane	9.84	130	618	0.1591	ug/L	# 66
38) 1,1,1-Trichloroethane	10.15	97	2439	0.2380	ug/L	88
39) Cyclohexane	10.18	56	2312	0.2130	ug/L	# 85
40) 1,1-Dichloropropene	10.34	75	2133	0.2445	ug/L	# 39
42) Carbon Tetrachloride	10.49	117	2304	0.2447	ug/L	# 76
45) 1,2-Dichloroethane	10.66	62	1603	0.2199	ug/L	# 41
46) Benzene	10.71	78	7407	0.2944	ug/L	# 83
47) Trichloroethene	11.47	130	2073	0.2841	ug/L	95
48) Methylcyclohexane	11.55	83	2979	0.2734	ug/L	79
49) 1,2-Dichloropropane	11.67	63	1466	0.2326	ug/L	# 31
50) Bromodichloromethane	11.97	83	2161	0.2598	ug/L	# 83
52) Dibromomethane	12.06	93	465	0.1471	ug/L	92
55) cis-1,3-Dichloropropene	12.61	75	2207	0.2309	ug/L	92
56) Dimethyl Disulfide	12.87	79	787	0.1509	ug/L	97
59) Toluene	13.04	91	7102	0.2669	ug/L	98
60) Ethyl Methacrylate	13.13	69	432	0.6348	ug/L	# 17
62) trans-1,3-Dichloropropene	13.21	75	1769	0.2224	ug/L	# 43
63) 1,1,2-Trichloroethane	13.42	97	579	0.1330	ug/L	# 45
65) 1,3-Dichloropropane	13.73	76	1997	0.2705	ug/L	85

(#) = qualifier out of range (m) = manual integration
 8M418138.D 8260WT.M Mon Mar 06 12:10:38 2017

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418138.D Vial: 7
 Acq On : 3 Mar 2017 11:48 Operator: TMB
 Sample : WG604846-02 0.3ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:35 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

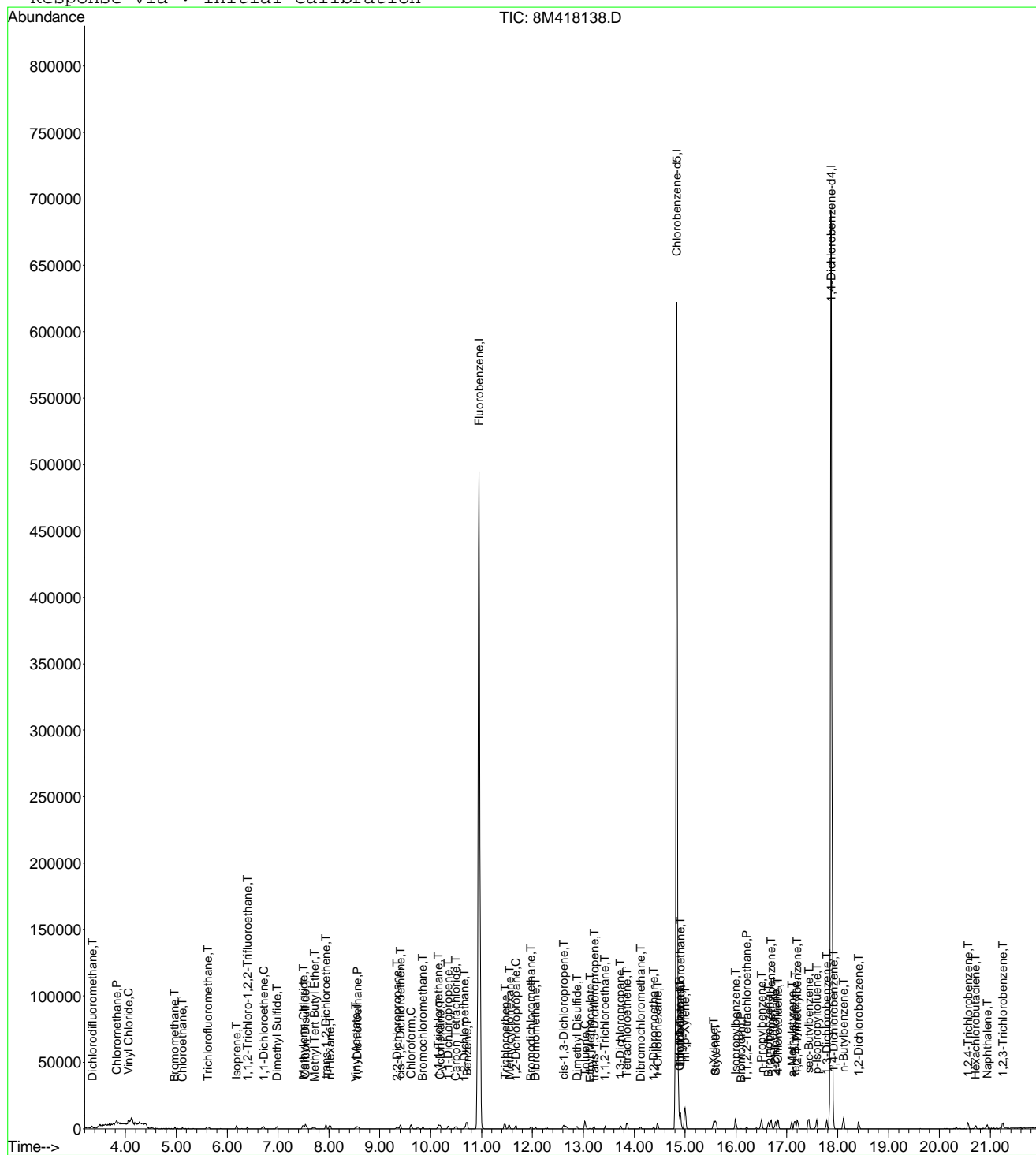
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
66) Tetrachloroethene	13.85	164	1454	0.2536	ug/L	79
67) Dibromochloromethane	14.13	129	1008	0.1774	ug/L	99
68) 1,2-Dibromoethane	14.38	107	835	0.1957	ug/L	89
69) 1-Chlorohexane	14.46	91	2191	0.2371	ug/L	99
70) Chlorobenzene	14.89	112	5567	0.2884	ug/L	79
71) 1,1,1,2-Tetrachloroethane	14.91	131	1372	0.1981	ug/L	94
72) Ethylbenzene	14.91	106	2687	0.2466	ug/L	79
73) m-,p-Xylene	15.00	106	7042	0.5641	ug/L	95
74) o-Xylene	15.56	106	3186	0.2549	ug/L	97
75) Styrene	15.60	104	4264	0.2169	ug/L	96
76) Bromoform	16.10	173	202	0.6153	ug/L #	27
77) Isopropylbenzene	15.99	105	7977	0.2605	ug/L	98
79) 1,1,2,2-Tetrachloroethane	16.21	83	928	0.2031	ug/L #	77
83) n-Propylbenzene	16.50	91	10135	0.2874	ug/L	89
84) Bromobenzene	16.64	156	2150	0.2806	ug/L	86
85) 1,3,5-Trimethylbenzene	16.69	105	7372	0.2921	ug/L	93
86) 2-Chlorotoluene	16.77	91	6834	0.2873	ug/L	99
87) 4-Chlorotoluene	16.82	91	6106	0.2942	ug/L	97
88) a-Methylstyrene	17.10	118	2933	0.1999	ug/L	82
89) tert-Butylbenzene	17.16	134	1481	0.2543	ug/L	93
90) 1,2,4-Trimethylbenzene	17.20	105	7144	0.2720	ug/L	90
91) sec-Butylbenzene	17.43	105	8781	0.2697	ug/L	93
92) p-Isopropyltoluene	17.59	119	7562	0.2767	ug/L	91
93) 1,3-Dichlorobenzene	17.78	146	4612	0.2980	ug/L	89
94) 1,4-Dichlorobenzene	17.92	146	4297	0.2795	ug/L #	43
95) n-Butylbenzene	18.11	91	7163	0.2725	ug/L #	91
96) 1,2-Dichlorobenzene	18.41	146	3936	0.2872	ug/L	94
98) 1,2,4-Trichlorobenzene	20.56	180	2860	0.2862	ug/L	90
99) Hexachlorobutadiene	20.71	225	1267	0.2700	ug/L #	75
100) Naphthalene	20.94	128	4772	0.3045	ug/L	92
101) 1,2,3-Trichlorobenzene	21.25	180	2441	0.2953	ug/L	95

(#) = qualifier out of range (m) = manual integration
 8M418138.D 8260WT.M Mon Mar 06 12:10:38 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418138.D Vial: 7
 Acq On : 3 Mar 2017 11:48 Operator: TMB
 Sample : WG604846-02 0.3ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 6 12:10 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418138.D Vial: 7
 Acq On : 3 Mar 2017 11:48 Operator: TMB
 Sample : WG604846-02 0.3ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	100	0.00
2 T	Dichlorodifluoromethane	-1.0000	0.2237	0.0	100	0.01
3 P	Chloromethane	-1.0000	0.3999	0.0	100	0.01
4 C	Vinyl Chloride	0.3000	0.3020	-0.7	100	0.01
5 T	1,3-Butadiene	-1.0000	-1.0000	0.0	0	0.03
6 T	Bromomethane	-1.0000	0.7227	0.0	0	0.00
7 T	Chloroethane	-1.0000	0.2376	0.0	100	0.00
8 T	Trichlorofluoromethane	-1.0000	0.2637	0.0	100	0.00
9 T	Diethyl ether	-1.0000	0.0000	0.0	0	-6.14#
10 T	Isoprene	-1.0000	0.2120	0.0	100	0.00
11 T	Acrolein	-1.0000	0.0000	0.0	0	-6.38#
12 T	1,1,2-Trichloro-1,2,2-Trifl	-1.0000	0.1302	0.0	100	0.01
13 T	Acetone	-1.0000	0.0000	0.0	0	-6.48#
14 C	1,1-Dichloroethene	-1.0000	0.2731	0.0	100	0.01
15 T	Tert-Butyl Alcohol	-1.0000	0.0000	0.0	0	-6.82#
16 T	Dimethyl Sulfide	-1.0000	0.1795	0.0	100	0.01
17 T	Iodomethane	-1.0000	0.0000	0.0	0	-7.22#
18 T	Methyl acetate	-1.0000	0.0000	0.0	0	-7.24#
19 T	Methylene Chloride	-1.0000	0.2413	0.0	100	0.00
20 T	Carbon Disulfide	-1.0000	0.3210	0.0	100	0.00
21 T	Acrylonitrile	-1.0000	0.0000	0.0	0	-7.67#
22 T	Methyl Tert Butyl Ether	-1.0000	0.2441	0.0	100	0.01
23 T	trans-1,2-Dichloroethene	-1.0000	0.2506	0.0	100	0.00
24 T	n-Hexane	-1.0000	0.2517	0.0	100	0.01
25 T	Diisopropyl ether	-1.0000	0.0000	0.0	0	-8.35#
26 T	Vinyl Acetate	-1.0000	0.2227	0.0	100	0.00
27 P	1,1-Dichloroethane	-1.0000	0.2561	0.0	100	0.00
28 T	Ethyl-Tert-Butyl ether	-1.0000	0.0000	0.0	0	-8.93#
29 T	2-Butanone	-1.0000	0.0000	0.0	0	-9.12#
30 T	Propionitrile	-1.0000	0.0000	0.0	0	-9.23#
31 T	2,2-Dichloropropane	-1.0000	0.2509	0.0	100	0.00
32 T	cis-1,2-Dichloroethene	-1.0000	0.2590	0.0	100	0.00
33 C	Chloroform	0.3000	0.3418	-13.9	100	0.00
34	1-Bromopropane	-1.0000	0.0000	0.0	0	-9.75#
35 T	Bromochloromethane	-1.0000	0.1591	0.0	100	0.00
36 T	Tetrahydrofuran	-1.0000	0.0000	0.0	0	-9.87#
37 S	Dibromodifluoromethane	-1.0000	0.0000	0.0	0	-9.90#
38 T	1,1,1-Trichloroethane	-1.0000	0.2380	0.0	100	0.01
39 T	Cyclohexane	-1.0000	0.2130	0.0	100	0.01
40 T	1,1-Dichloropropene	-1.0000	0.2445	0.0	100	0.00
41 T	Tert-Amyl-Methyl ether	-1.0000	0.0000	0.0	0	-10.44#
42 T	Carbon Tetrachloride	-1.0000	0.2447	0.0	100	0.00
43 S	1,2-Dichloroethane-d4	-1.0000	0.0000	0.0	0	-10.54#
44	Heptane	-1.0000	0.0000	0.0	0	-2.61#
45 T	1,2-Dichloroethane	-1.0000	0.2199	0.0	100	0.00
46 T	Benzene	-1.0000	0.2944	0.0	100	0.01
47 T	Trichloroethene	-1.0000	0.2841	0.0	100	0.01
48 T	Methylcyclohexane	-1.0000	0.2734	0.0	100	0.01
49 C	1,2-Dichloropropane	-1.0000	0.2326	0.0	100	0.00
50 T	Bromodichloromethane	-1.0000	0.2598	0.0	100	0.00
51 T	1,4-Dioxane	-1.0000	0.0000	0.0	0	-11.96#
52 T	Dibromomethane	-1.0000	0.1471	0.0	100	0.00
53 T	2-Chloroethyl Vinyl Ether	-1.0000	0.0000	0.0	0	-12.26#
54 T	4-Methyl-2-Pentanone	-1.0000	0.0000	0.0	0	-12.29#

(#) = Out of Range

8M418138.D 8260WT.M

Mon Mar 06 12:12:24 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418138.D Vial: 7
 Acq On : 3 Mar 2017 11:48 Operator: TMB
 Sample : WG604846-02 0.3ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
55 T	cis-1,3-Dichloropropene	-1.0000	0.2309	0.0	100	0.00
56 T	Dimethyl Disulfide	-1.0000	0.1509	0.0	100	0.00
57 I	Chlorobenzene-d5	25.0000	25.0000	0.0	100	0.00
58 S	Toluene-d8	-1.0000	0.0000	0.0	0	-12.93#
59 C	Toluene	-1.0000	0.2669	0.0	100	0.00
60 T	Ethyl Methacrylate	-1.0000	0.6348	0.0	0	0.01
61	Paraldehyde	-1.0000	0.0000	0.0	0	-13.40#
62 T	trans-1,3-Dichloropropene	-1.0000	0.2224	0.0	100	0.01
63 T	1,1,2-Trichloroethane	-1.0000	0.1330	0.0	100	0.00
64 T	2-Hexanone	-1.0000	0.0000	0.0	0	-13.36#
65 T	1,3-Dichloropropane	-1.0000	0.2705	0.0	100	0.00
66 T	Tetrachloroethene	-1.0000	0.2536	0.0	100	0.00
67 T	Dibromochloromethane	-1.0000	0.1774	0.0	100	0.01
68 T	1,2-Dibromoethane	-1.0000	0.1957	0.0	100	0.00
69 T	1-Chlorohexane	-1.0000	0.2371	0.0	100	0.00
70 P	Chlorobenzene	-1.0000	0.2884	0.0	100	0.00
71 T	1,1,1,2-Tetrachloroethane	-1.0000	0.1981	0.0	100	0.00
72 C	Ethylbenzene	-1.0000	0.2466	0.0	100	0.00
73 T	m-,p-Xylene	-1.0000	0.5641	0.0	100	0.00
74 T	o-Xylene	-1.0000	0.2549	0.0	100	0.00
75 T	Styrene	-1.0000	0.2169	0.0	100	0.00
76 P	Bromoform	-1.0000	0.6153	0.0	0	0.00
77 T	Isopropylbenzene	-1.0000	0.2605	0.0	100	0.00
78 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	100	0.00
79 P	1,1,2,2-Tetrachloroethane	-1.0000	0.2031	0.0	100	0.00
80 S	p-Bromofluorobenzene	-1.0000	0.0000	0.0	0	-16.35#
81 T	1,2,3-Trichloropropane	-1.0000	0.0000	0.0	0	-16.41#
82 T	trans-1,4-Dichloro-2-Butene	-1.0000	0.0000	0.0	0	-16.45#
83 T	n-Propylbenzene	-1.0000	0.2874	0.0	100	0.00
84 T	Bromobenzene	0.3000	0.2806	6.5	100	0.00
85 T	1,3,5-Trimethylbenzene	-1.0000	0.2921	0.0	100	0.00
86 T	2-Chlorotoluene	-1.0000	0.2873	0.0	100	0.00
87 T	4-Chlorotoluene	-1.0000	0.2942	0.0	100	0.00
88 T	a-Methylstyrene	-1.0000	0.1999	0.0	100	0.00
89 T	tert-Butylbenzene	-1.0000	0.2543	0.0	100	0.00
90 T	1,2,4-Trimethylbenzene	-1.0000	0.2720	0.0	100	0.00
91 T	sec-Butylbenzene	-1.0000	0.2697	0.0	100	0.00
92 T	p-Isopropyltoluene	-1.0000	0.2767	0.0	100	0.00
93 T	1,3-Dichlorobenzene	-1.0000	0.2980	0.0	100	0.00
94 T	1,4-Dichlorobenzene	0.3000	0.2795	6.8	100	0.00
95 T	n-Butylbenzene	-1.0000	0.2725	0.0	100	0.00
96 T	1,2-Dichlorobenzene	0.3000	0.2872	4.3	100	0.00
97 T	1,2-Dibromo-3-Chloropropane	-1.0000	0.0000	0.0	0	-19.41#
98 T	1,2,4-Trichlorobenzene	-1.0000	0.2862	0.0	100	0.00
99 T	Hexachlorobutadiene	-1.0000	0.2700	0.0	100	0.00
100 T	Naphthalene	-1.0000	0.3045	0.0	100	0.00
101 T	1,2,3-Trichlorobenzene	0.3000	0.2953	1.6	100	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M418138.D 8260WT.M Mon Mar 06 12:12:24 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418139.D Vial: 8
 Acq On : 3 Mar 2017 12:17 Operator: TMB
 Sample : WG604846-07 20ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:39 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	625349	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.83	117	481946	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.87	152	259567	25.00	ug/L	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
37) Dibromofluoromethane	9.90	111	62863	9.7879	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	39.16%#	
43) 1,2-Dichloroethane-d4	10.54	65	54777	9.7312	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	38.92%#	
58) Toluene-d8	12.93	98	220430	9.7252	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	38.92%#	
80) p-Bromofluorobenzene	16.34	95	87329	9.7205	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	38.88%#	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Dichlorodifluoromethane	3.34	85	179188	21.4035	ug/L	99
3) Chloromethane	3.83	50	242935	20.4964	ug/L	99
4) Vinyl Chloride	4.05	62	221352	21.4089	ug/L	99
5) 1,3-Butadiene	4.12	54	148210	31.3394	ug/L	99
6) Bromomethane	4.96	94	82002	16.8917	ug/L	99
7) Chloroethane	5.13	64	89435	20.2563	ug/L	97
8) Trichlorofluoromethane	5.62	101	214696	20.0853	ug/L	99
9) Diethyl ether	6.14	59	322324	77.6150	ug/L	98
10) Isoprene	6.18	67	180753	18.8928	ug/L	99
11) Acrolein	6.38	56	21166	37.8724	ug/L	99
12) 1,1,2-Trichloro-1,2,2-Trif	6.39	101	126527	20.3140	ug/L	99
13) Acetone	6.47	43	15209	19.1603	ug/L	99
14) 1,1-Dichloroethene	6.71	61	186851	19.5761	ug/L	96
15) Tert-Butyl Alcohol	6.82	59	39471	154.3267	ug/L	97
16) Dimethyl Sulfide	6.97	62	133259	18.8129	ug/L	96
17) Iodomethane	7.23	142	89951	15.2816	ug/L	95
18) Methyl acetate	7.23	43	44765	18.7930	ug/L	96
19) Methylene Chloride	7.49	84	128331	19.3879	ug/L	95
20) Carbon Disulfide	7.54	76	401326	19.7099	ug/L	99
21) Acrylonitrile	7.67	53	47799	40.7773	ug/L	98
22) Methyl Tert Butyl Ether	7.69	73	245394	19.9601	ug/L	99
23) trans-1,2-Dichloroethene	7.94	61	180975	19.6643	ug/L	95
24) n-Hexane	8.01	57	170579	19.3348	ug/L	97
25) Diisopropyl ether	8.36	45	1494003	79.6170	ug/L	98
26) Vinyl Acetate	8.52	43	134114	19.0365	ug/L	99
27) 1,1-Dichloroethane	8.56	63	230391	19.8213	ug/L	100
28) Ethyl-Tert-Butyl ether	8.92	59	1370167	79.3594	ug/L	100
29) 2-Butanone	9.11	43	25724	19.5828	ug/L	98
30) Propionitrile	9.22	54	33136	79.1029	ug/L	100
31) 2,2-Dichloropropane	9.34	77	190585	19.3452	ug/L	99
32) cis-1,2-Dichloroethene	9.40	96	143700	19.9979	ug/L	91
33) Chloroform	9.61	83	227459	18.6535	ug/L	99
34) 1-Bromopropane	9.75	122	27337	19.5901	ug/L	99
35) Bromochloromethane	9.84	130	80017	20.4488	ug/L	96
36) Tetrahydrofuran	9.87	42	61601	73.8967	ug/L	96
38) 1,1,1-Trichloroethane	10.14	97	202401	19.6040	ug/L	99
39) Cyclohexane	10.18	56	210315	19.2306	ug/L	99
40) 1,1-Dichloropropene	10.34	75	174389	19.8371	ug/L	99
41) Tert-Amyl-Methyl ether	10.44	73	1122293	78.3608	ug/L	99
42) Carbon Tetrachloride	10.49	117	190649	20.0941	ug/L	98

(#) = qualifier out of range (m) = manual integration
 8M418139.D 8260WT.M Mon Mar 06 12:10:42 2017

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418139.D Vial: 8
 Acq On : 3 Mar 2017 12:17 Operator: TMB
 Sample : WG604846-07 20ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:39 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

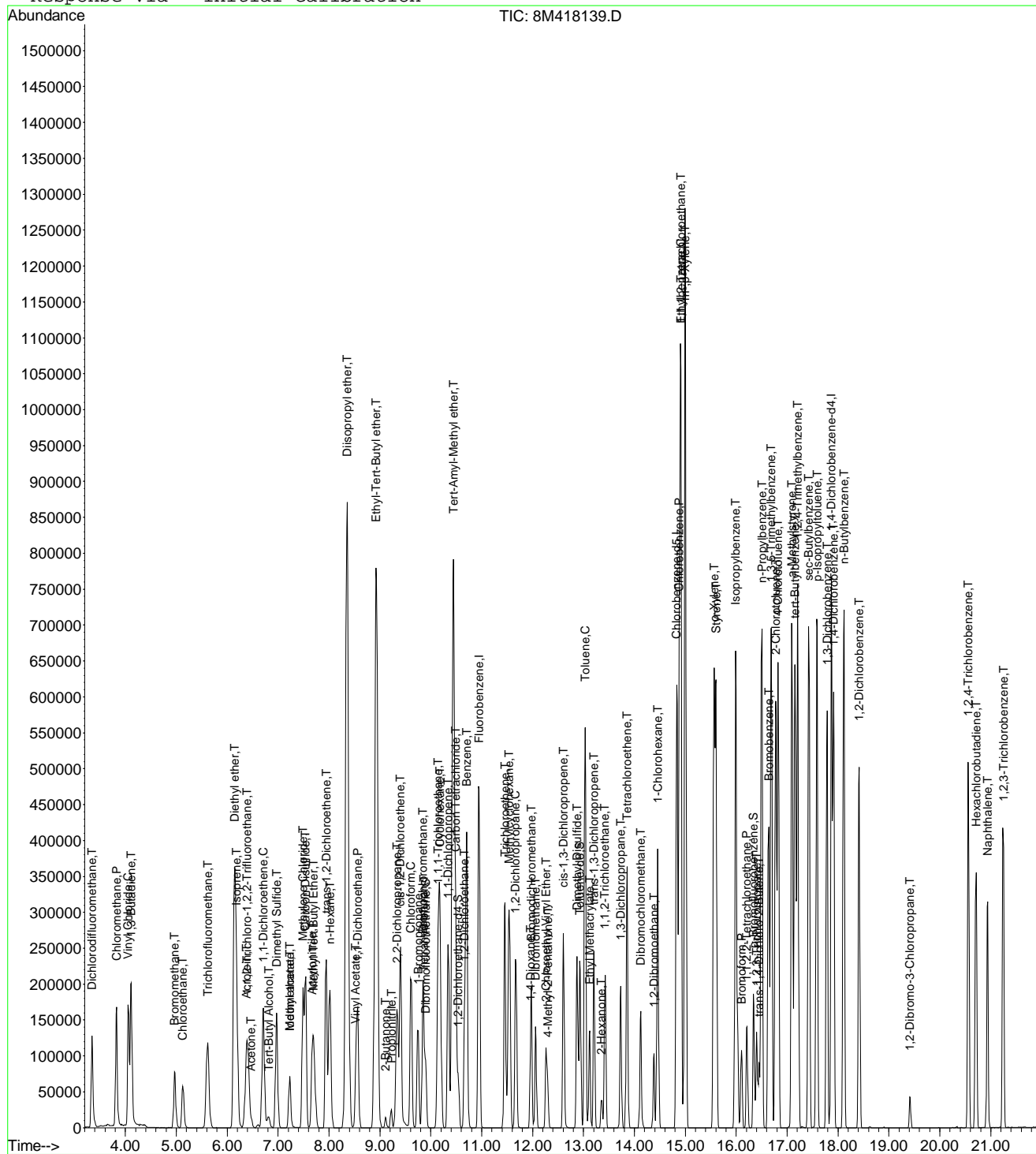
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) 1,2-Dichloroethane	10.66	62	145981	19.8778	ug/L	99
46) Benzene	10.70	78	509608	20.0999	ug/L	98
47) Trichloroethene	11.46	130	143922	19.5772	ug/L	98
48) Methylcyclohexane	11.54	83	210274	19.1548	ug/L	98
49) 1,2-Dichloropropane	11.66	63	123860	19.5045	ug/L	97
50) Bromodichloromethane	11.97	83	166640	19.8873	ug/L	100
51) 1,4-Dioxane	11.95	88	3943	128.3631	ug/L	90
52) Dibromomethane	12.06	93	64713	20.3202	ug/L	95
53) 2-Chloroethyl Vinyl Ether	12.26	63	55316	19.5252	ug/L	100
54) 4-Methyl-2-Pentanone	12.30	58	24387	19.3725	ug/L	95
55) cis-1,3-Dichloropropene	12.61	75	191531	19.8878	ug/L	99
56) Dimethyl Disulfide	12.87	79	93135	17.7262	ug/L	98
59) Toluene	13.03	91	553136	20.3852	ug/L	99
60) Ethyl Methacrylate	13.12	69	105627	18.4105	ug/L	94
62) trans-1,3-Dichloropropene	13.21	75	160880	19.8357	ug/L	99
63) 1,1,2-Trichloroethane	13.42	97	88215	19.8654	ug/L	99
64) 2-Hexanone	13.35	58	20904	18.2922	ug/L	96
65) 1,3-Dichloropropane	13.73	76	150819	20.0326	ug/L	93
66) Tetrachloroethene	13.86	164	111955	19.1472	ug/L	96
67) Dibromochloromethane	14.13	129	116657	20.1277	ug/L	100
68) 1,2-Dibromoethane	14.38	107	89287	20.5178	ug/L	99
69) 1-Chlorohexane	14.46	91	186028	19.7388	ug/L	97
70) Chlorobenzene	14.88	112	379891	19.2955	ug/L	95
71) 1,1,1,2-Tetrachloroethane	14.91	131	135967	19.2472	ug/L	98
72) Ethylbenzene	14.91	106	208051	18.7204	ug/L	94
73) m-,p-Xylene	14.99	106	505631	39.7114	ug/L	94
74) o-Xylene	15.56	106	243652	19.1121	ug/L	99
75) Styrene	15.60	104	415687	20.7282	ug/L	94
76) Bromoform	16.10	173	67672	18.0088	ug/L	99
77) Isopropylbenzene	15.99	105	642905	20.5893	ug/L	98
79) 1,1,2,2-Tetrachloroethane	16.20	83	98243	20.4122	ug/L	99
81) 1,2,3-Trichloropropane	16.40	110	28295	20.2458	ug/L #	44
82) trans-1,4-Dichloro-2-Butene	16.44	53	27881	19.3697	ug/L #	38
83) n-Propylbenzene	16.50	91	787128	21.1891	ug/L	98
84) Bromobenzene	16.64	156	163699	20.2819	ug/L	94
85) 1,3,5-Trimethylbenzene	16.69	105	552747	20.7879	ug/L	98
86) 2-Chlorotoluene	16.77	91	532493	21.2490	ug/L	100
87) 4-Chlorotoluene	16.82	91	426829	19.5226	ug/L	98
88) a-Methylstyrene	17.09	118	296748	19.1944	ug/L	100
89) tert-Butylbenzene	17.15	134	119436	19.4679	ug/L	97
90) 1,2,4-Trimethylbenzene	17.21	105	580072	20.9650	ug/L	98
91) sec-Butylbenzene	17.42	105	719061	20.9650	ug/L	99
92) p-Isopropyltoluene	17.59	119	604719	21.0070	ug/L	100
93) 1,3-Dichlorobenzene	17.79	146	325988	19.9946	ug/L	97
94) 1,4-Dichlorobenzene	17.91	146	322576	19.9163	ug/L	98
95) n-Butylbenzene	18.12	91	580833	20.9719	ug/L	99
96) 1,2-Dichlorobenzene	18.42	146	287792	19.9299	ug/L	95
97) 1,2-Dibromo-3-Chloropropane	19.41	75	15556	19.3796	ug/L	91
98) 1,2,4-Trichlorobenzene	20.56	180	207189	19.6836	ug/L	99
99) Hexachlorobutadiene	20.71	225	97044	19.6264	ug/L	98
100) Naphthalene	20.94	128	342472	20.7422	ug/L	99
101) 1,2,3-Trichlorobenzene	21.25	180	174953	20.0894	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418139.D 8260WT.M Mon Mar 06 12:10:42 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418139.D Vial: 8
Acq On : 3 Mar 2017 12:17 Operator: TMB
Sample : WG604846-07 20ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD80732 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 6 12:10 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
Last Update : Fri Mar 03 15:26:23 2017
Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418140.D Vial: 9
 Acq On : 3 Mar 2017 12:46 Operator: TMB
 Sample : WG604846-08 50ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:43 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	654600	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	509436	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	278577	25.00	ug/L	0.00

System Monitoring Compounds	R.T.	QIon	Response	Conc	Units	Dev(Min)
37) Dibromofluoromethane	9.90	111	174359	25.9349	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	103.72%	
43) 1,2-Dichloroethane-d4	10.55	65	157445	26.7206	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	106.88%	
58) Toluene-d8	12.93	98	624421	26.0625	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	104.24%	
80) p-Bromofluorobenzene	16.35	95	250283	25.9576	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	103.84%	

Target Compounds	R.T.	QIon	Response	Conc	Units	Qvalue
2) Dichlorodifluoromethane	3.34	85	480133	54.7877	ug/L	99
3) Chloromethane	3.83	50	623131	50.2243	ug/L	100
4) Vinyl Chloride	4.05	62	548074	50.6403	ug/L	100
5) 1,3-Butadiene	4.10	54	257929	56.3764	ug/L	99
6) Bromomethane	4.97	94	247927	47.1579	ug/L	100
7) Chloroethane	5.13	64	244486	52.8997	ug/L	98
8) Trichlorofluoromethane	5.61	101	576981	51.5659	ug/L	100
9) Diethyl ether	6.14	59	453533	104.3298	ug/L	99
10) Isoprene	6.18	67	501570	50.0828	ug/L	98
11) Acrolein	6.38	56	30544	52.2103	ug/L	99
12) 1,1,2-Trichloro-1,2,2-Trif	6.40	101	339297	52.0401	ug/L	97
13) Acetone	6.48	43	47292	56.9162	ug/L	97
14) 1,1-Dichloroethene	6.71	61	517664	51.8115	ug/L	97
15) Tert-Butyl Alcohol	6.81	59	58992	220.3446	ug/L	99
16) Dimethyl Sulfide	6.97	62	375346	50.6219	ug/L	95
17) Iodomethane	7.23	142	302381	46.1847	ug/L	95
18) Methyl acetate	7.24	43	128982	51.7288	ug/L	96
19) Methylene Chloride	7.50	84	349699	50.4707	ug/L	96
20) Carbon Disulfide	7.54	76	1100541	51.6344	ug/L	100
21) Acrylonitrile	7.67	53	70942	57.8162	ug/L	99
22) Methyl Tert Butyl Ether	7.70	73	711461	55.2837	ug/L	99
23) trans-1,2-Dichloroethene	7.94	61	496567	51.5447	ug/L	95
24) n-Hexane	8.01	57	462079	50.0354	ug/L	98
25) Diisopropyl ether	8.35	45	2050534	104.3921	ug/L	98
26) Vinyl Acetate	8.53	43	386537	52.4145	ug/L	98
27) 1,1-Dichloroethane	8.56	63	640892	52.6743	ug/L	100
28) Ethyl-Tert-Butyl ether	8.93	59	1907573	105.5486	ug/L	100
29) 2-Butanone	9.11	43	73659	53.5685	ug/L	97
30) Propionitrile	9.22	54	47636	108.6361	ug/L	98
31) 2,2-Dichloropropane	9.34	77	528126	51.2116	ug/L	100
32) cis-1,2-Dichloroethene	9.41	96	400499	53.2445	ug/L	92
33) Chloroform	9.62	83	632846	49.5794	ug/L	100
34) 1-Bromopropane	9.75	122	78357	53.6426	ug/L	100
35) Bromochloromethane	9.84	130	223465	54.5559	ug/L	97
36) Tetrahydrofuran	9.86	42	94064	107.7971	ug/L	99
38) 1,1,1-Trichloroethane	10.14	97	571157	52.8485	ug/L	99
39) Cyclohexane	10.18	56	580131	50.6753	ug/L	99
40) 1,1-Dichloropropene	10.34	75	479419	52.0980	ug/L	97
41) Tert-Amyl-Methyl ether	10.44	73	1596344	106.4795	ug/L	99
42) Carbon Tetrachloride	10.49	117	531498	53.5159	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418140.D 8260WT.M Mon Mar 06 12:10:46 2017

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418140.D Vial: 9
 Acq On : 3 Mar 2017 12:46 Operator: TMB
 Sample : WG604846-08 50ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 06 12:10:43 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

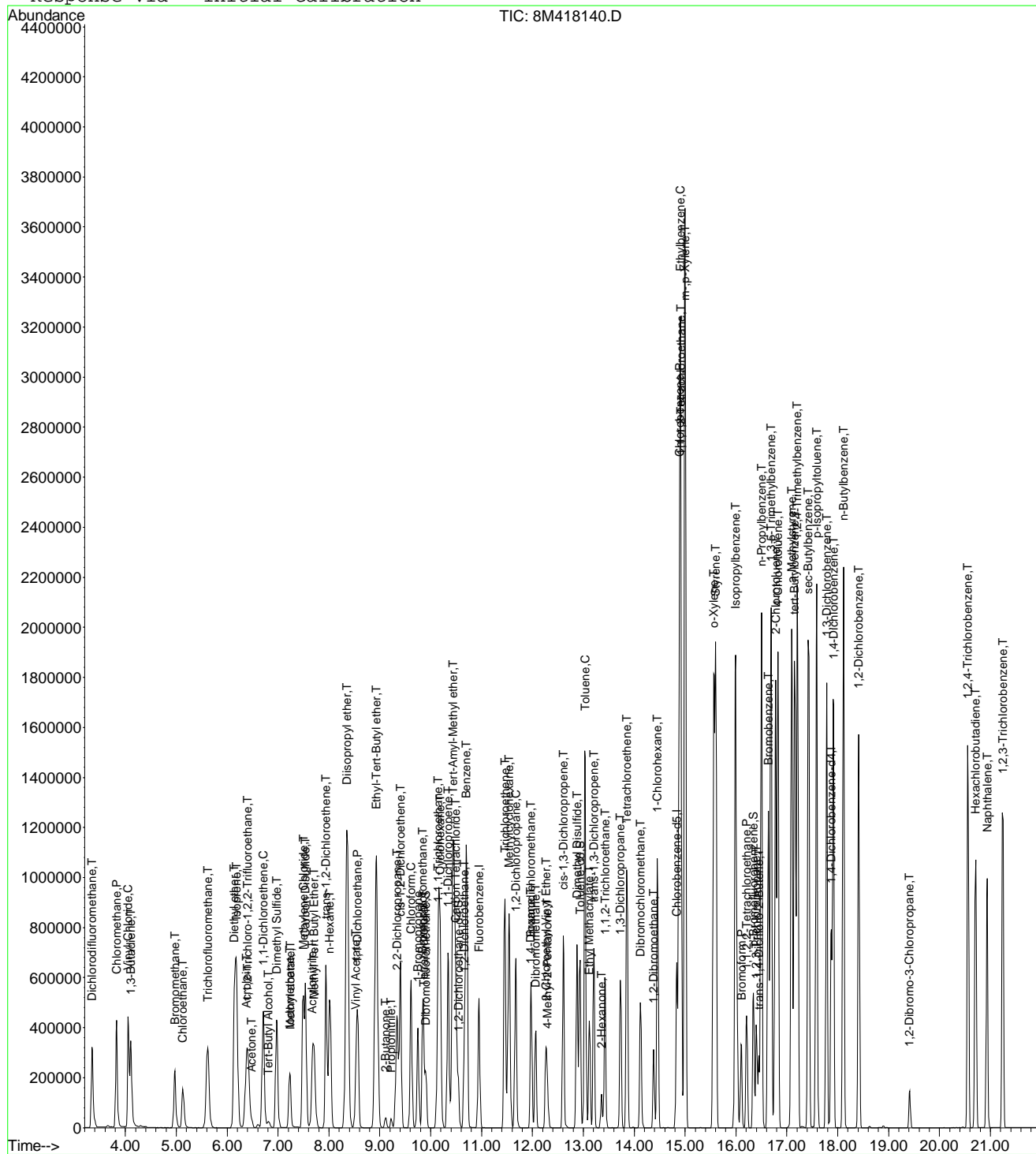
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) 1,2-Dichloroethane	10.66	62	416996	54.2439	ug/L	99
46) Benzene	10.70	78	1400829	52.7824	ug/L	99
47) Trichloroethene	11.46	130	399362	51.8964	ug/L	99
48) Methylcyclohexane	11.54	83	578020	50.3015	ug/L	98
49) 1,2-Dichloropropane	11.67	63	355890	53.5386	ug/L	95
50) Bromodichloromethane	11.97	83	481214	54.8633	ug/L	100
51) 1,4-Dioxane	11.96	88	6771	210.5779	ug/L	99
52) Dibromomethane	12.06	93	185682	55.6997	ug/L	97
53) 2-Chloroethyl Vinyl Ether	12.26	63	163447	55.1148	ug/L	100
54) 4-Methyl-2-Pentanone	12.29	58	73364	55.6745	ug/L	95
55) cis-1,3-Dichloropropene	12.60	75	552509	54.8065	ug/L	100
56) Dimethyl Disulfide	12.87	79	282388	51.3448	ug/L	99
59) Toluene	13.04	91	1546928	53.9339	ug/L	99
60) Ethyl Methacrylate	13.12	69	317353	51.2965	ug/L	94
62) trans-1,3-Dichloropropene	13.20	75	474813	55.3831	ug/L	99
63) 1,1,2-Trichloroethane	13.43	97	261417	55.6925	ug/L	99
64) 2-Hexanone	13.36	58	69014	57.1324	ug/L	95
65) 1,3-Dichloropropane	13.73	76	446017	56.0455	ug/L	91
66) Tetrachloroethene	13.85	164	317016	51.2924	ug/L	96
67) Dibromochloromethane	14.12	129	352801	57.5867	ug/L	100
68) 1,2-Dibromoethane	14.38	107	261599	56.8707	ug/L	100
69) 1-Chlorohexane	14.45	91	520866	52.2849	ug/L	97
70) Chlorobenzene	14.89	112	1100895	52.8996	ug/L	95
71) 1,1,1,2-Tetrachloroethane	14.92	131	413367	55.3579	ug/L	99
72) Ethylbenzene	14.91	106	616755	52.5010	ug/L	99
73) m-,p-Xylene	15.00	106	1477319	109.7653	ug/L	98
74) o-Xylene	15.56	106	716424	53.1641	ug/L	99
75) Styrene	15.60	104	1232990	58.1652	ug/L	95
76) Bromoform	16.11	173	217775	53.6775	ug/L	99
77) Isopropylbenzene	15.99	105	1853309	56.1502	ug/L	99
79) 1,1,2,2-Tetrachloroethane	16.21	83	305902	59.2207	ug/L	99
81) 1,2,3-Trichloropropane	16.40	110	86372	57.5841	ug/L	46
82) trans-1,4-Dichloro-2-Butene	16.45	53	82816	52.4951	ug/L #	41
83) n-Propylbenzene	16.50	91	2226286	55.8410	ug/L	99
84) Bromobenzene	16.64	156	476720	55.0339	ug/L	95
85) 1,3,5-Trimethylbenzene	16.69	105	1600812	56.0956	ug/L	100
86) 2-Chlorotoluene	16.78	91	1467323	54.5576	ug/L	99
87) 4-Chlorotoluene	16.82	91	1307214	55.7103	ug/L	99
88) a-Methylstyrene	17.09	118	851235	51.3028	ug/L	100
89) tert-Butylbenzene	17.15	134	347940	52.8436	ug/L	98
90) 1,2,4-Trimethylbenzene	17.20	105	1678468	56.5236	ug/L	98
91) sec-Butylbenzene	17.42	105	2055207	55.8329	ug/L	100
92) p-Isopropyltoluene	17.59	119	1743785	56.4427	ug/L	99
93) 1,3-Dichlorobenzene	17.78	146	959892	54.8577	ug/L	97
94) 1,4-Dichlorobenzene	17.92	146	951263	54.7244	ug/L	97
95) n-Butylbenzene	18.11	91	1662268	55.9233	ug/L	100
96) 1,2-Dichlorobenzene	18.41	146	852399	55.0013	ug/L	97
97) 1,2-Dibromo-3-Chloropropane	19.41	75	51518	58.4317	ug/L	92
98) 1,2,4-Trichlorobenzene	20.55	180	628718	55.6542	ug/L	100
99) Hexachlorobutadiene	20.71	225	288135	54.2967	ug/L	98
100) Naphthalene	20.94	128	1057116	59.6563	ug/L	100
101) 1,2,3-Trichlorobenzene	21.25	180	533260	57.0543	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418140.D 8260WT.M Mon Mar 06 12:10:46 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418140.D Vial: 9
Acq On : 3 Mar 2017 12:46 Operator: TMB
Sample : WG604846-08 50ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD80732 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 6 12:10 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
Last Update : Fri Mar 03 15:26:23 2017
Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418141.D Vial: 10
 Acq On : 3 Mar 2017 13:15 Operator: TMB
 Sample : WG604846-09 100ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00

MS Integration Params: RTEINT.P

Quant Time: Mar 06 12:10:47 2017

Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	680155	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	525620	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	288376	25.00	ug/L	0.00

System Monitoring Compounds

37) Dibromofluoromethane	9.90	111	360624	51.6253	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	206.52%#	
43) 1,2-Dichloroethane-d4	10.54	65	315876	51.5943	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	206.36%#	
58) Toluene-d8	12.93	98	1304802	52.7838	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	211.12%#	
80) p-Bromofluorobenzene	16.35	95	522284	52.3270	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	209.32%#	

Target Compounds

						Qvalue
2) Dichlorodifluoromethane	3.34	85	986346	108.3227	ug/L	100
3) Chloromethane	3.82	50	1245720	96.6326	ug/L	99
4) Vinyl Chloride	4.05	62	1045412	92.9635	ug/L	99
5) 1,3-Butadiene	4.09	54	347391	77.0793	ug/L	98
6) Bromomethane	4.97	94	566277	100.9348	ug/L	100
7) Chloroethane	5.13	64	517135	107.6889	ug/L	98
8) Trichlorofluoromethane	5.61	101	1207796	103.8874	ug/L	99
9) Diethyl ether	6.14	59	939593	208.0210	ug/L	100
10) Isoprene	6.18	67	1098152	105.5328	ug/L	99
11) Acrolein	6.38	56	64546	106.1860	ug/L	97
12) 1,1,2-Trichloro-1,2,2-Trif	6.40	101	717051	105.8465	ug/L	98
13) Acetone	6.48	43	87951	101.8726	ug/L	98
14) 1,1-Dichloroethene	6.71	61	1089237	104.9225	ug/L	97
15) Tert-Butyl Alcohol	6.81	59	108947	391.6451	ug/L	99
16) Dimethyl Sulfide	6.97	62	802910	104.2177	ug/L	95
17) Iodomethane	7.23	142	707463	102.7248	ug/L	94
18) Methyl acetate	7.23	43	266122	102.7193	ug/L	96
19) Methylene Chloride	7.48	84	731105	101.5529	ug/L	96
20) Carbon Disulfide	7.54	76	2341682	105.7374	ug/L	100
21) Acrylonitrile	7.67	53	145753	114.3224	ug/L	100
22) Methyl Tert Butyl Ether	7.69	73	1397381	104.5030	ug/L	100
23) trans-1,2-Dichloroethene	7.94	61	1051340	105.0309	ug/L	97
24) n-Hexane	8.01	57	985563	102.7102	ug/L	98
25) Diisopropyl ether	8.35	45	4273368	209.3818	ug/L	98
26) Vinyl Acetate	8.53	43	791371	103.2781	ug/L	98
27) 1,1-Dichloroethane	8.56	63	1350217	106.8036	ug/L	99
28) Ethyl-Tert-Butyl ether	8.93	59	3922361	208.8753	ug/L	99
29) 2-Butanone	9.11	43	143250	100.2643	ug/L	96
30) Propionitrile	9.22	54	97258	213.4678	ug/L	98
31) 2,2-Dichloropropane	9.34	77	1097298	102.4056	ug/L	100
32) cis-1,2-Dichloroethene	9.41	96	840915	107.5954	ug/L	91
33) Chloroform	9.61	83	1307650	98.5968	ug/L	99
34) 1-Bromopropane	9.75	122	164152	108.1550	ug/L	99
35) Bromochloromethane	9.84	130	455925	107.1258	ug/L	97
36) Tetrahydrofuran	9.86	42	185295	204.3691	ug/L	99
38) 1,1,1-Trichloroethane	10.14	97	1205474	107.3503	ug/L	99
39) Cyclohexane	10.17	56	1257411	105.7099	ug/L	100
40) 1,1-Dichloropropene	10.34	75	1017064	106.3708	ug/L	98
41) Tert-Amyl-Methyl ether	10.44	73	3254784	208.9439	ug/L	100
42) Carbon Tetrachloride	10.49	117	1122009	108.7290	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418141.D 8260WT.M Mon Mar 06 12:10:50 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418141.D Vial: 10

Acq On : 3 Mar 2017 13:15

Operator: TMB

Sample : WG604846-09 100ug/L STD 8260

Inst : HPMS8

Misc : 1,1 STD80732

Multiplr: 1.00

MS Integration Params: RTEINT.P

Quant Time: Mar 06 12:10:47 2017

Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)

Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8

Last Update : Fri Mar 03 15:26:23 2017

Response via : Initial Calibration

DataAcq Meth : 8260WT

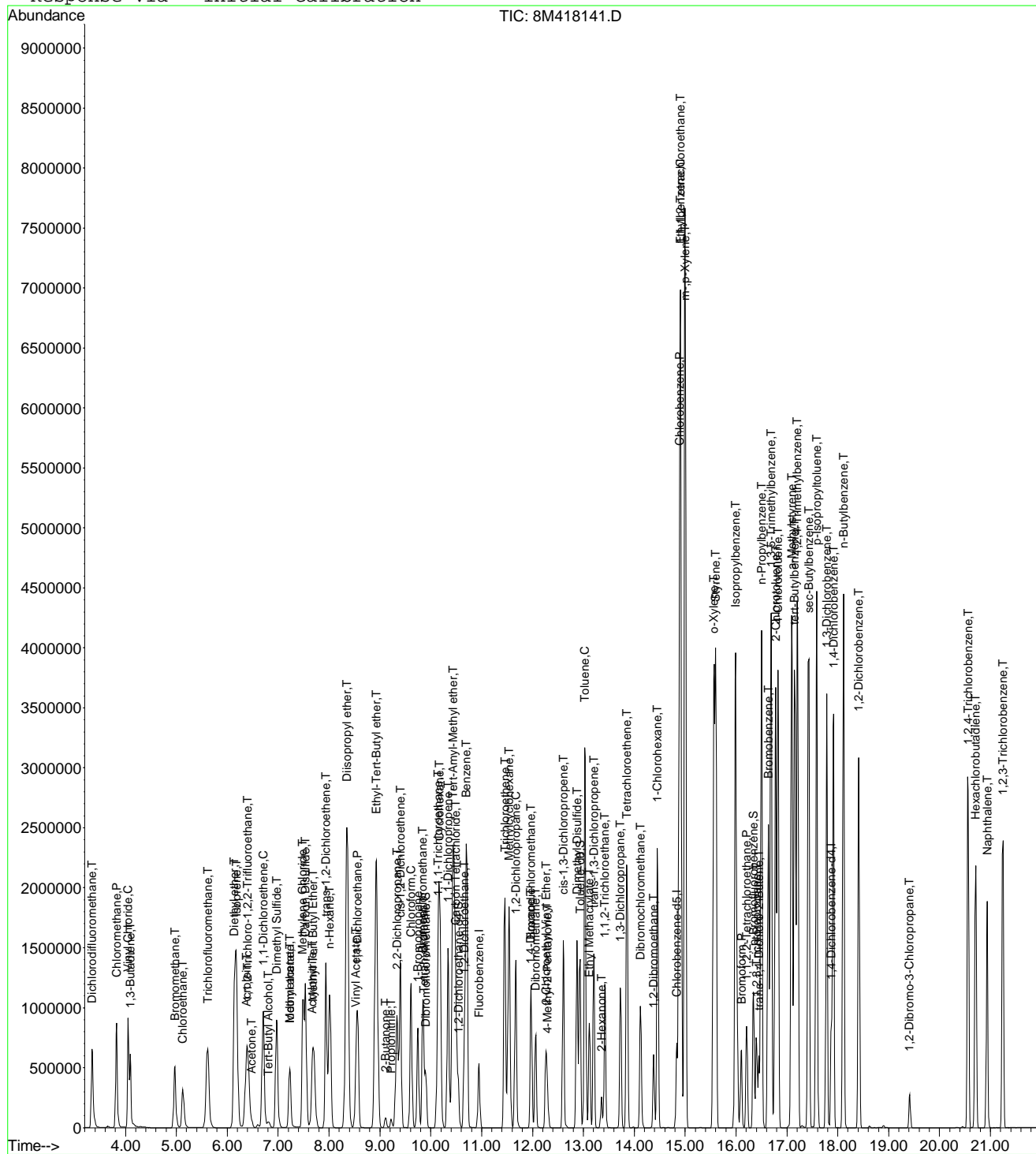
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) 1,2-Dichloroethane	10.66	62	835801	104.6382	ug/L	98
46) Benzene	10.70	78	2879451	104.4196	ug/L	100
47) Trichloroethene	11.45	130	834969	104.4260	ug/L	98
48) Methylcyclohexane	11.54	83	1231638	103.1548	ug/L	99
49) 1,2-Dichloropropane	11.67	63	734772	106.3829	ug/L	95
50) Bromodichloromethane	11.97	83	975329	107.0194	ug/L	100
51) 1,4-Dioxane	11.96	88	14168	424.0692	ug/L	97
52) Dibromomethane	12.05	93	370879	107.0738	ug/L	96
53) 2-Chloroethyl Vinyl Ether	12.26	63	321051	104.1917	ug/L	99
54) 4-Methyl-2-Pentanone	12.29	58	140345	102.5035	ug/L	95
55) cis-1,3-Dichloropropene	12.60	75	1133255	108.1904	ug/L	100
56) Dimethyl Disulfide	12.87	79	619899	108.4774	ug/L	98
59) Toluene	13.03	91	3167244	107.0265	ug/L	99
60) Ethyl Methacrylate	13.12	69	648897	101.1072	ug/L	94
62) trans-1,3-Dichloropropene	13.20	75	956963	108.1851	ug/L	100
63) 1,1,2-Trichloroethane	13.42	97	511602	105.6362	ug/L	100
64) 2-Hexanone	13.36	58	132667	106.4451	ug/L	94
65) 1,3-Dichloropropane	13.73	76	873003	106.3220	ug/L	92
66) Tetrachloroethene	13.85	164	666772	104.5603	ug/L	96
67) Dibromochloromethane	14.12	129	706377	111.7497	ug/L	100
68) 1,2-Dibromoethane	14.38	107	514556	108.4183	ug/L	100
69) 1-Chlorohexane	14.45	91	1120054	108.9700	ug/L	98
70) Chlorobenzene	14.89	112	2310067	107.5843	ug/L	96
71) 1,1,1,2-Tetrachloroethane	14.91	131	872561	113.2550	ug/L	98
72) Ethylbenzene	14.91	106	1343562	110.8485	ug/L	94
73) m-,p-Xylene	15.00	106	3143236	226.3526	ug/L	91
74) o-Xylene	15.56	106	1502880	108.0912	ug/L	96
75) Styrene	15.60	104	2526192	115.5016	ug/L	97
76) Bromoform	16.11	173	421383	100.1730	ug/L	100
77) Isopropylbenzene	15.99	105	3708367	108.8940	ug/L	98
79) 1,1,2,2-Tetrachloroethane	16.21	83	570358	106.6658	ug/L	99
81) 1,2,3-Trichloropropane	16.41	110	161700	104.1420	ug/L #	44
82) trans-1,4-Dichloro-2-Butene	16.45	53	166563	101.3988	ug/L #	34
83) n-Propylbenzene	16.50	91	4355883	105.5442	ug/L	98
84) Bromobenzene	16.63	156	952802	106.2565	ug/L	94
85) 1,3,5-Trimethylbenzene	16.69	105	3206711	108.5512	ug/L	98
86) 2-Chlorotoluene	16.78	91	2923663	105.0129	ug/L	97
87) 4-Chlorotoluene	16.82	91	2644508	108.8729	ug/L	97
88) a-Methylstyrene	17.09	118	1844130	107.3666	ug/L	99
89) tert-Butylbenzene	17.15	134	724614	106.3117	ug/L	98
90) 1,2,4-Trimethylbenzene	17.20	105	3348133	108.9196	ug/L	98
91) sec-Butylbenzene	17.43	105	4065049	106.6808	ug/L	98
92) p-Isopropyltoluene	17.59	119	3486388	109.0126	ug/L	97
93) 1,3-Dichlorobenzene	17.78	146	1910507	105.4752	ug/L	99
94) 1,4-Dichlorobenzene	17.92	146	1866891	103.7494	ug/L	98
95) n-Butylbenzene	18.11	91	3290008	106.9239	ug/L	98
96) 1,2-Dichlorobenzene	18.41	146	1666206	103.8592	ug/L	98
97) 1,2-Dibromo-3-Chloropropane	19.41	75	92542	100.9118	ug/L	90
98) 1,2,4-Trichlorobenzene	20.56	180	1226320	104.8653	ug/L	99
99) Hexachlorobutadiene	20.71	225	585172	106.5239	ug/L	99
100) Naphthalene	20.94	128	1903082	103.7474	ug/L	99
101) 1,2,3-Trichlorobenzene	21.25	180	1006584	104.0365	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418141.D 8260WT.M Mon Mar 06 12:10:50 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418141.D Vial: 10
Acq On : 3 Mar 2017 13:15 Operator: TMB
Sample : WG604846-09 100ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD80732 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 6 12:10 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
Last Update : Fri Mar 03 15:26:23 2017
Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418142.D Vial: 11
 Acq On : 3 Mar 2017 13:45 Operator: TMB
 Sample : WG604846-10 200ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00

MS Integration Params: RTEINT.P

Quant Time: Mar 06 12:10:52 2017

Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	690149	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	546984	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	305633	25.00	ug/L	0.00

System Monitoring Compounds

37) Dibromofluoromethane	9.91	111	731370	103.1835	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	412.72%#	
43) 1,2-Dichloroethane-d4	10.55	65	628089	101.1046	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	404.40%#	
58) Toluene-d8	12.93	98	2654554	103.1916	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	412.76%#	
80) p-Bromofluorobenzene	16.35	95	1109664	104.8986	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	419.60%#	

Target Compounds

						Qvalue
2) Dichlorodifluoromethane	3.35	85	1965569	212.7371	ug/L	99
3) Chloromethane	3.83	50	2414921	184.6167	ug/L	97
4) Vinyl Chloride	4.05	62	1962493	171.9880	ug/L	98
5) 1,3-Butadiene	4.10	54	614196	170.5365	ug/L	97
6) Bromomethane	4.97	94	1265367	212.8032	ug/L	100
7) Chloroethane	5.13	64	1085771	222.8283	ug/L	99
8) Trichlorofluoromethane	5.61	101	2428634	205.8715	ug/L	99
10) Isoprene	6.18	67	2251574	213.2437	ug/L	99
12) 1,1,2-Trichloro-1,2,2-Trif	6.40	101	1443656	210.0174	ug/L	98
13) Acetone	6.48	43	176258	201.2011	ug/L	97
14) 1,1-Dichloroethene	6.71	61	2221294	210.8713	ug/L	96
15) Tert-Butyl Alcohol	6.83	59	2184	7.7374	ug/L #	61
16) Dimethyl Sulfide	6.98	62	1677259	214.5556	ug/L	95
17) Iodomethane	7.24	142	1541539	220.9645	ug/L	94
18) Methyl acetate	7.24	43	543551	206.7649	ug/L	96
19) Methylene Chloride	7.50	84	1536403	210.3211	ug/L	95
20) Carbon Disulfide	7.55	76	4802875	213.7307	ug/L	99
21) Acrylonitrile	7.70	53	26004	20.1011	ug/L #	31
22) Methyl Tert Butyl Ether	7.70	73	2789508	205.5922	ug/L	100
23) trans-1,2-Dichloroethene	7.94	61	2173286	213.9715	ug/L	96
24) n-Hexane	8.02	57	2031144	208.6099	ug/L	98
26) Vinyl Acetate	8.53	43	1474269	189.6138	ug/L	98
27) 1,1-Dichloroethane	8.56	63	2745318	214.0129	ug/L	99
29) 2-Butanone	9.12	43	282811	195.0802	ug/L	96
31) 2,2-Dichloropropane	9.34	77	2242174	206.2213	ug/L	99
32) cis-1,2-Dichloroethene	9.41	96	1715462	216.3155	ug/L	92
33) Chloroform	9.62	83	2643567	196.4385	ug/L	99
34) 1-Bromopropane	9.75	122	341918	222.0176	ug/L	99
35) Bromochloromethane	9.85	130	905586	209.6984	ug/L	97
36) Tetrahydrofuran	9.88	42	259	0.2815	ug/L #	31
38) 1,1,1-Trichloroethane	10.15	97	2477924	217.4696	ug/L	99
39) Cyclohexane	10.18	56	2621534	217.1995	ug/L	100
40) 1,1-Dichloropropene	10.35	75	2082247	214.6206	ug/L	97
42) Carbon Tetrachloride	10.49	117	2247727	214.6632	ug/L	99
45) 1,2-Dichloroethane	10.67	62	1675417	206.7166	ug/L	99
46) Benzene	10.71	78	5635799	201.4155	ug/L	98
47) Trichloroethene	11.46	130	1750862	215.8019	ug/L	99
48) Methylcyclohexane	11.54	83	2539649	209.6259	ug/L	99
49) 1,2-Dichloropropane	11.67	63	1530582	218.3942	ug/L	95
50) Bromodichloromethane	11.97	83	2005369	216.8557	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418142.D 8260WT.M Mon Mar 06 12:10:54 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418142.D Vial: 11

Acq On : 3 Mar 2017 13:45

Operator: TMB

Sample : WG604846-10 200ug/L STD 8260

Inst : HPMS8

Misc : 1,1 STD80732

Multiplr: 1.00

MS Integration Params: RTEINT.P

Quant Time: Mar 06 12:10:52 2017

Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)

Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8

Last Update : Fri Mar 03 15:26:23 2017

Response via : Initial Calibration

DataAcq Meth : 8260WT

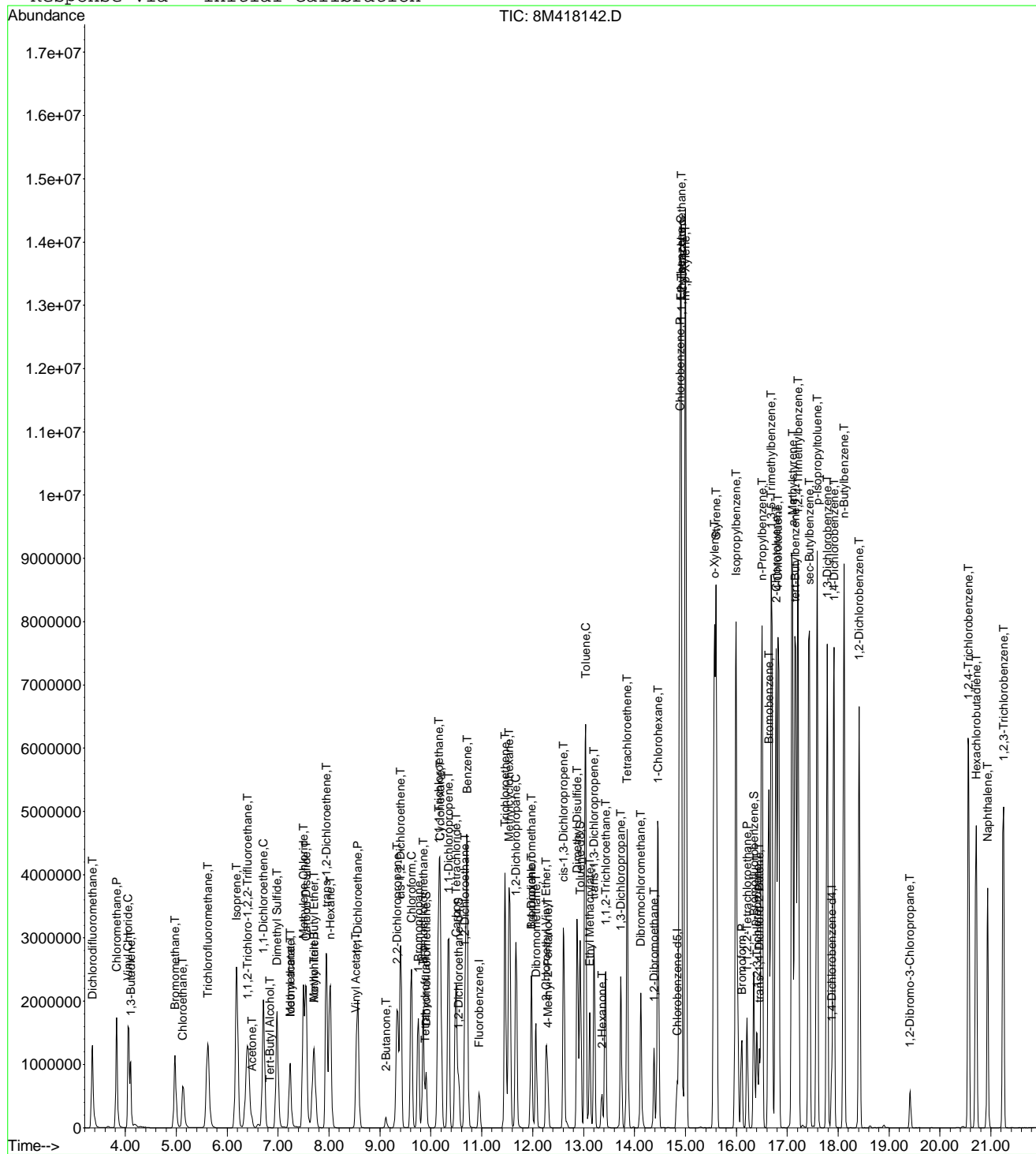
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
51) 1,4-Dioxane	11.97	88	3219	94.9542	ug/L #	21
52) Dibromomethane	12.07	93	756463	215.2305	ug/L	96
53) 2-Chloroethyl Vinyl Ether	12.26	63	665192	212.7508	ug/L	100
54) 4-Methyl-2-Pentanone	12.29	58	286042	205.8906	ug/L	96
55) cis-1,3-Dichloropropene	12.60	75	2319566	218.2393	ug/L	98
56) Dimethyl Disulfide	12.87	79	1317326	227.1835	ug/L	97
59) Toluene	13.04	91	6066486	196.9900	ug/L	93
60) Ethyl Methacrylate	13.12	69	1341646	200.3294	ug/L	94
62) trans-1,3-Dichloropropene	13.20	75	1957841	212.6900	ug/L	98
63) 1,1,2-Trichloroethane	13.43	97	1048157	207.9716	ug/L	100
64) 2-Hexanone	13.36	58	270012	208.1819	ug/L	92
65) 1,3-Dichloropropane	13.73	76	1785105	208.9145	ug/L	92
66) Tetrachloroethene	13.85	164	1428416	215.2491	ug/L	96
67) Dibromochloromethane	14.12	129	1468914	223.3077	ug/L	99
68) 1,2-Dibromoethane	14.38	107	1055800	213.7711	ug/L	100
69) 1-Chlorohexane	14.47	91	2369362	221.5117	ug/L	99
70) Chlorobenzene	14.89	112	4736891	211.9897	ug/L	100
71) 1,1,1,2-Tetrachloroethane	14.92	131	1927482	240.4082	ug/L	99
72) Ethylbenzene	14.91	106	2975579	235.9071	ug/L	71
73) m-,p-Xylene	15.00	106	6212798	429.9253	ug/L	72
74) o-Xylene	15.57	106	3235931	223.6467	ug/L	85
75) Styrene	15.60	104	5094186	223.8174	ug/L	98
76) Bromoform	16.11	173	890167	202.7702	ug/L	99
77) Isopropylbenzene	16.00	105	7038008	198.5950	ug/L	90
79) 1,1,2,2-Tetrachloroethane	16.21	83	1159138	204.5369	ug/L	99
81) 1,2,3-Trichloropropane	16.41	110	334533	203.2888	ug/L #	41
82) trans-1,4-Dichloro-2-Butene	16.45	53	350831	200.8949	ug/L #	31
83) n-Propylbenzene	16.50	91	7768617	177.6073	ug/L	86
84) Bromobenzene	16.64	156	2024043	212.9763	ug/L	93
85) 1,3,5-Trimethylbenzene	16.69	105	6269102	200.2346	ug/L	90
86) 2-Chlorotoluene	16.78	91	5654405	191.6290	ug/L	91
87) 4-Chlorotoluene	16.82	91	5228350	203.0946	ug/L	89
88) a-Methylstyrene	17.10	118	3923634	215.5385	ug/L	98
89) tert-Butylbenzene	17.16	134	1605577	222.2615	ug/L	87
90) 1,2,4-Trimethylbenzene	17.22	105	6448383	197.9306	ug/L	89
91) sec-Butylbenzene	17.43	105	7557092	187.1260	ug/L	90
92) p-Isopropyltoluene	17.59	119	6646223	196.0806	ug/L	90
93) 1,3-Dichlorobenzene	17.78	146	3967757	206.6834	ug/L	98
94) 1,4-Dichlorobenzene	17.92	146	3884134	203.6665	ug/L	98
95) n-Butylbenzene	18.11	91	6244935	191.4981	ug/L	91
96) 1,2-Dichlorobenzene	18.41	146	3467912	203.9591	ug/L	99
97) 1,2-Dibromo-3-Chloropropane	19.41	75	192835	197.7685	ug/L	90
98) 1,2,4-Trichlorobenzene	20.57	180	2555191	206.1628	ug/L	100
99) Hexachlorobutadiene	20.71	225	1259967	216.4120	ug/L	99
100) Naphthalene	20.94	128	3738169	192.2816	ug/L	97
101) 1,2,3-Trichlorobenzene	21.25	180	2086433	203.4693	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418142.D 8260WT.M Mon Mar 06 12:10:54 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418142.D Vial: 11
Acq On : 3 Mar 2017 13:45 Operator: TMB
Sample : WG604846-10 200ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD80732 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 6 12:10 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
Last Update : Fri Mar 03 15:26:23 2017
Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418143.D Vial: 12
 Acq On : 3 Mar 2017 14:14 Operator: TMB
 Sample : WG604846-11 300ug/L STD 8260 Inst : HPMS8
 Misc : 1,1 STD80732 Multiplr: 1.00

MS Integration Params: RTEINT.P

Quant Time: Mar 06 12:10:56 2017

Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	739703	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	584829	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	324307	25.00	ug/L	0.00

System Monitoring Compounds

37) Dibromofluoromethane	9.90	111	1109619	146.0604	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	584.24%#	
43) 1,2-Dichloroethane-d4	10.54	65	961363	144.3852	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	577.56%#	
58) Toluene-d8	12.93	98	3889999	141.4322	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	565.72%#	
80) p-Bromofluorobenzene	16.35	95	1681368	149.7907	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	599.16%#	

Target Compounds

						Qvalue
2) Dichlorodifluoromethane	3.34	85	2790887	281.8271	ug/L	98
3) Chloromethane	3.81	50	3289673	234.6423	ug/L	97
4) Vinyl Chloride	4.05	62	2541860	207.8390	ug/L	97
5) 1,3-Butadiene	4.09	54	805311	Below Cal		97
6) Bromomethane	4.96	94	1915851	292.1599	ug/L	99
7) Chloroethane	5.13	64	1602938	306.9264	ug/L	98
8) Trichlorofluoromethane	5.61	101	3643385	288.1541	ug/L	99
9) Diethyl ether	6.14	59	1541514	313.8090	ug/L	99
10) Isoprene	6.18	67	3401679	300.5861	ug/L	98
11) Acrolein	6.38	56	110161	166.6389	ug/L	99
12) 1,1,2-Trichloro-1,2,2-Trif	6.39	101	2133911	289.6365	ug/L	97
13) Acetone	6.48	43	270277	287.8565	ug/L	91
14) 1,1-Dichloroethene	6.71	61	3223475	285.5099	ug/L	94
15) Tert-Butyl Alcohol	6.82	59	176691	584.0396	ug/L	99
16) Dimethyl Sulfide	6.97	62	2575873	307.4324	ug/L	94
17) Iodomethane	7.23	142	2130544	285.9243	ug/L	96
18) Methyl acetate	7.24	43	882724	313.2902	ug/L	95
19) Methylene Chloride	7.49	84	2316830	295.9085	ug/L	93
20) Carbon Disulfide	7.54	76	6834736	283.7742	ug/L	97
21) Acrylonitrile	7.67	53	264225	190.5629	ug/L	96
22) Methyl Tert Butyl Ether	7.70	73	4329002	297.6817	ug/L	99
23) trans-1,2-Dichloroethene	7.94	61	3170166	291.2102	ug/L	95
24) n-Hexane	8.01	57	2993698	286.8717	ug/L	98
25) Diisopropyl ether	8.35	45	6485385	292.1830	ug/L	98
26) Vinyl Acetate	8.53	43	2460491	295.2572	ug/L	97
27) 1,1-Dichloroethane	8.56	63	4030510	293.1519	ug/L	98
28) Ethyl-Tert-Butyl ether	8.93	59	6034449	295.4797	ug/L	97
29) 2-Butanone	9.12	43	478684	308.0713	ug/L	96
30) Propionitrile	9.23	54	163447	329.8637	ug/L	99
31) 2,2-Dichloropropane	9.34	77	3259874	279.7373	ug/L	98
32) cis-1,2-Dichloroethene	9.41	96	2569811	302.3384	ug/L	90
33) Chloroform	9.61	83	3868423	268.1982	ug/L	98
34) 1-Bromopropane	9.75	122	513781	311.2640	ug/L	98
35) Bromochloromethane	9.85	130	1367795	295.5099	ug/L	96
36) Tetrahydrofuran	9.87	42	311306	315.7109	ug/L	96
38) 1,1,1-Trichloroethane	10.14	97	3606317	295.2977	ug/L	99
39) Cyclohexane	10.17	56	3913070	302.4868	ug/L	99
40) 1,1-Dichloropropene	10.34	75	3046159	292.9390	ug/L	96
41) Tert-Amyl-Methyl ether	10.44	73	5138965	303.3427	ug/L	100
42) Carbon Tetrachloride	10.49	117	3328012	296.5407	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418143.D 8260WT.M Mon Mar 06 12:10:58 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418143.D Vial: 12

Acq On : 3 Mar 2017 14:14

Operator: TMB

Sample : WG604846-11 300ug/L STD 8260

Inst : HPMS8

Misc : 1,1 STD80732

Multiplr: 1.00

MS Integration Params: RTEINT.P

Quant Time: Mar 06 12:10:56 2017

Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)

Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8

Last Update : Fri Mar 03 15:26:23 2017

Response via : Initial Calibration

DataAcq Meth : 8260WT

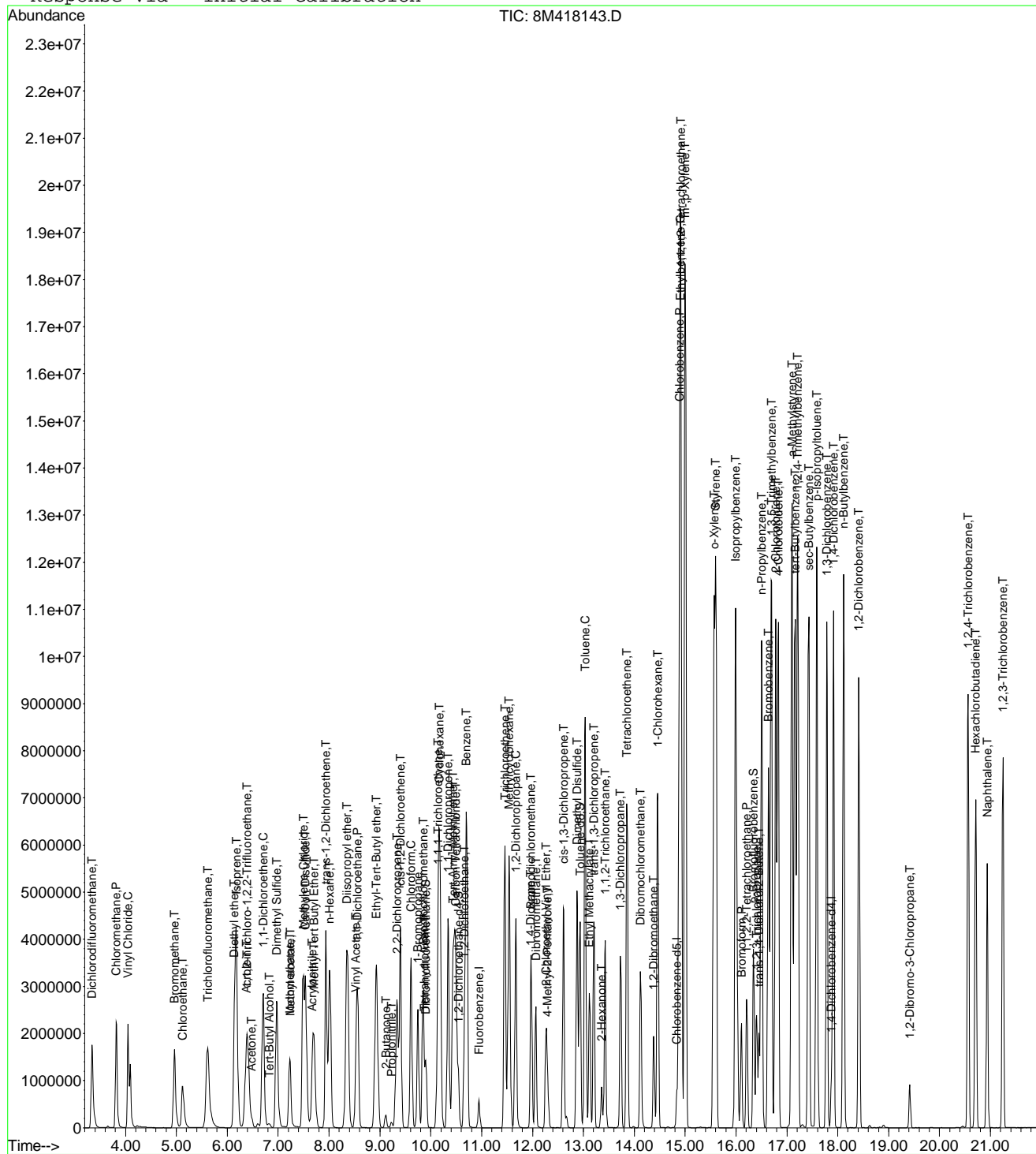
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) 1,2-Dichloroethane	10.66	62	2525616	290.7403	ug/L	98
46) Benzene	10.70	78	7812813	260.5136	ug/L	94
47) Trichloroethene	11.45	130	2596975	298.6460	ug/L	99
48) Methylcyclohexane	11.54	83	3791241	291.9699	ug/L	98
49) 1,2-Dichloropropane	11.67	63	2334046	310.7272	ug/L	95
50) Bromodichloromethane	11.97	83	3015789	304.2726	ug/L	98
51) 1,4-Dioxane	11.96	88	25633	705.4693	ug/L	96
52) Dibromomethane	12.06	93	1173446	311.5047	ug/L	96
53) 2-Chloroethyl Vinyl Ether	12.26	63	1077432	321.5137	ug/L	100
54) 4-Methyl-2-Pentanone	12.29	58	473971	318.3053	ug/L	96
55) cis-1,3-Dichloropropene	12.61	75	3483623	305.8038	ug/L	97
56) Dimethyl Disulfide	12.87	79	2062358	331.8433	ug/L	95
59) Toluene	13.04	91	8103671	246.1129	ug/L	87
60) Ethyl Methacrylate	13.12	69	2144847	299.2583	ug/L	93
62) trans-1,3-Dichloropropene	13.20	75	2994769	304.2837	ug/L	97
63) 1,1,2-Trichloroethane	13.43	97	1651717	306.5202	ug/L	99
64) 2-Hexanone	13.36	58	448671	323.5442	ug/L	91
65) 1,3-Dichloropropane	13.73	76	2745535	300.5228	ug/L	92
66) Tetrachloroethene	13.85	164	2132094	300.4960	ug/L	95
67) Dibromochloromethane	14.12	129	2273555	323.2648	ug/L	99
68) 1,2-Dibromoethane	14.38	107	1645009	311.5167	ug/L	100
69) 1-Chlorohexane	14.46	91	3483125	304.5650	ug/L	99
70) Chlorobenzene	14.89	112	6501311	272.1248	ug/L	96
71) 1,1,1,2-Tetrachloroethane	14.92	131	2824474	329.4900	ug/L	98
72) Ethylbenzene	14.91	106	4316139	320.0447	ug/L	56
73) m-,p-Xylene	15.00	106	8000424	517.8029	ug/L	65
74) o-Xylene	15.57	106	4729447	305.7168	ug/L	75
75) Styrene	15.60	104	7002885	287.7675	ug/L	92
76) Bromoform	16.11	173	1389774	295.8305	ug/L	99
77) Isopropylbenzene	15.99	105	9063037	239.1873	ug/L	81
79) 1,1,2,2-Tetrachloroethane	16.21	83	1824210	303.3579	ug/L	98
81) 1,2,3-Trichloropropane	16.41	110	531737	304.5197	ug/L #	38
82) trans-1,4-Dichloro-2-Butene	16.45	53	548820	295.8738	ug/L #	28
83) n-Propylbenzene	16.50	91	9757008	210.2217	ug/L #	76
84) Bromobenzene	16.63	156	3014604	298.9412	ug/L	91
85) 1,3,5-Trimethylbenzene	16.70	105	8201065	246.8585	ug/L	83
86) 2-Chlorotoluene	16.78	91	7321608	233.8432	ug/L	84
87) 4-Chlorotoluene	16.83	91	7020069	256.9917	ug/L	81
88) a-Methylstyrene	17.10	118	5567769	288.2449	ug/L	93
89) tert-Butylbenzene	17.16	134	2367704	308.8904	ug/L	78
90) 1,2,4-Trimethylbenzene	17.21	105	8310192	240.3903	ug/L	79
91) sec-Butylbenzene	17.43	105	9523758	222.2448	ug/L #	81
92) p-Isopropyltoluene	17.59	119	8475190	235.6422	ug/L	81
93) 1,3-Dichlorobenzene	17.78	146	5538013	271.8682	ug/L	93
94) 1,4-Dichlorobenzene	17.92	146	5403841	267.0372	ug/L	93
95) n-Butylbenzene	18.11	91	7976631	230.5154	ug/L	84
96) 1,2-Dichlorobenzene	18.41	146	4950886	274.4112	ug/L	96
97) 1,2-Dibromo-3-Chloropropane	19.42	75	304392	293.8837	ug/L	89
98) 1,2,4-Trichlorobenzene	20.56	180	3712561	282.2958	ug/L	99
99) Hexachlorobutadiene	20.71	225	1837742	297.4752	ug/L	99
100) Naphthalene	20.94	128	5353312	259.5047	ug/L	94
101) 1,2,3-Trichlorobenzene	21.25	180	3114763	286.2618	ug/L	99

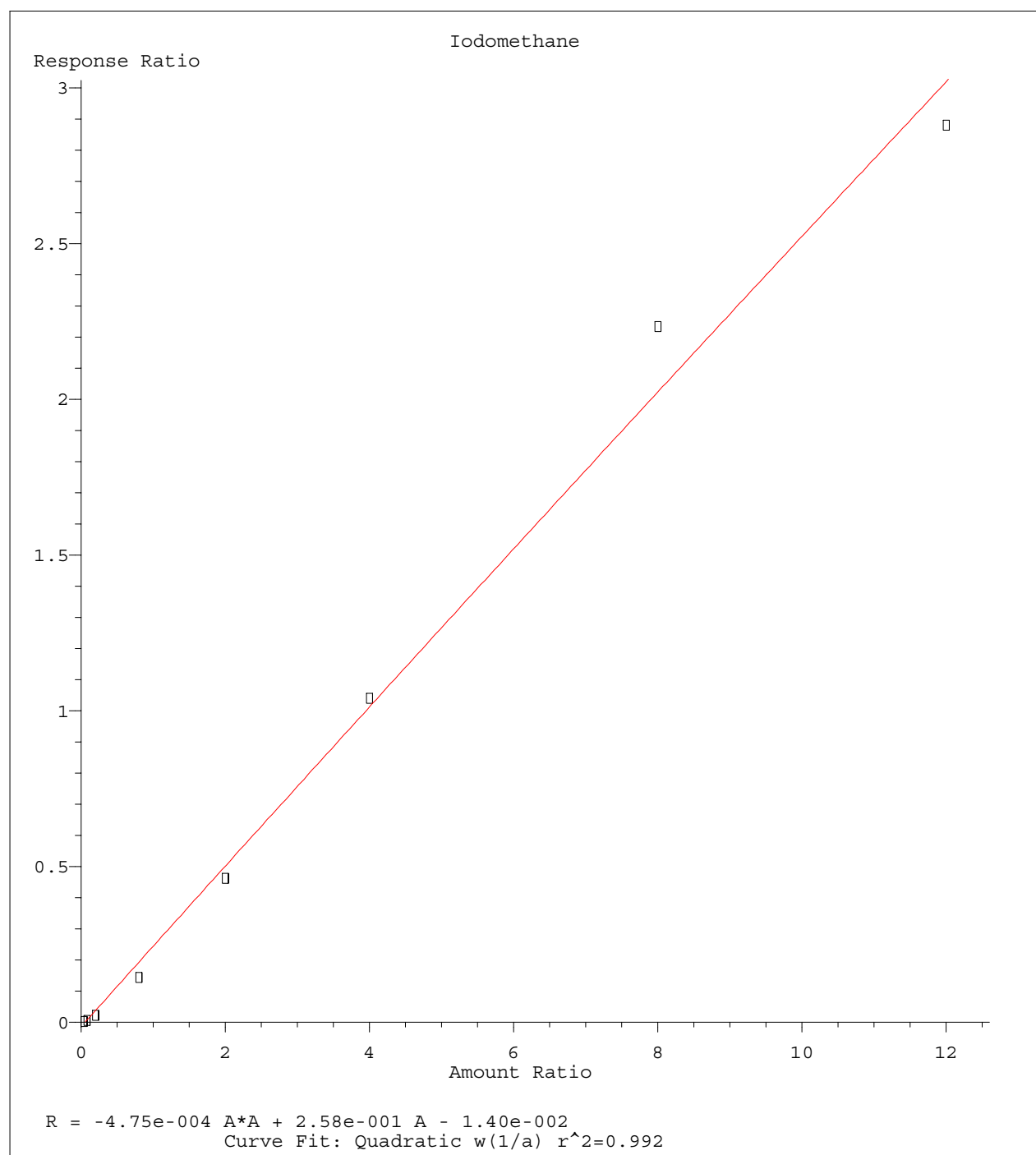
(#) = qualifier out of range (m) = manual integration
 8M418143.D 8260WT.M Mon Mar 06 12:10:58 2017

Page 2

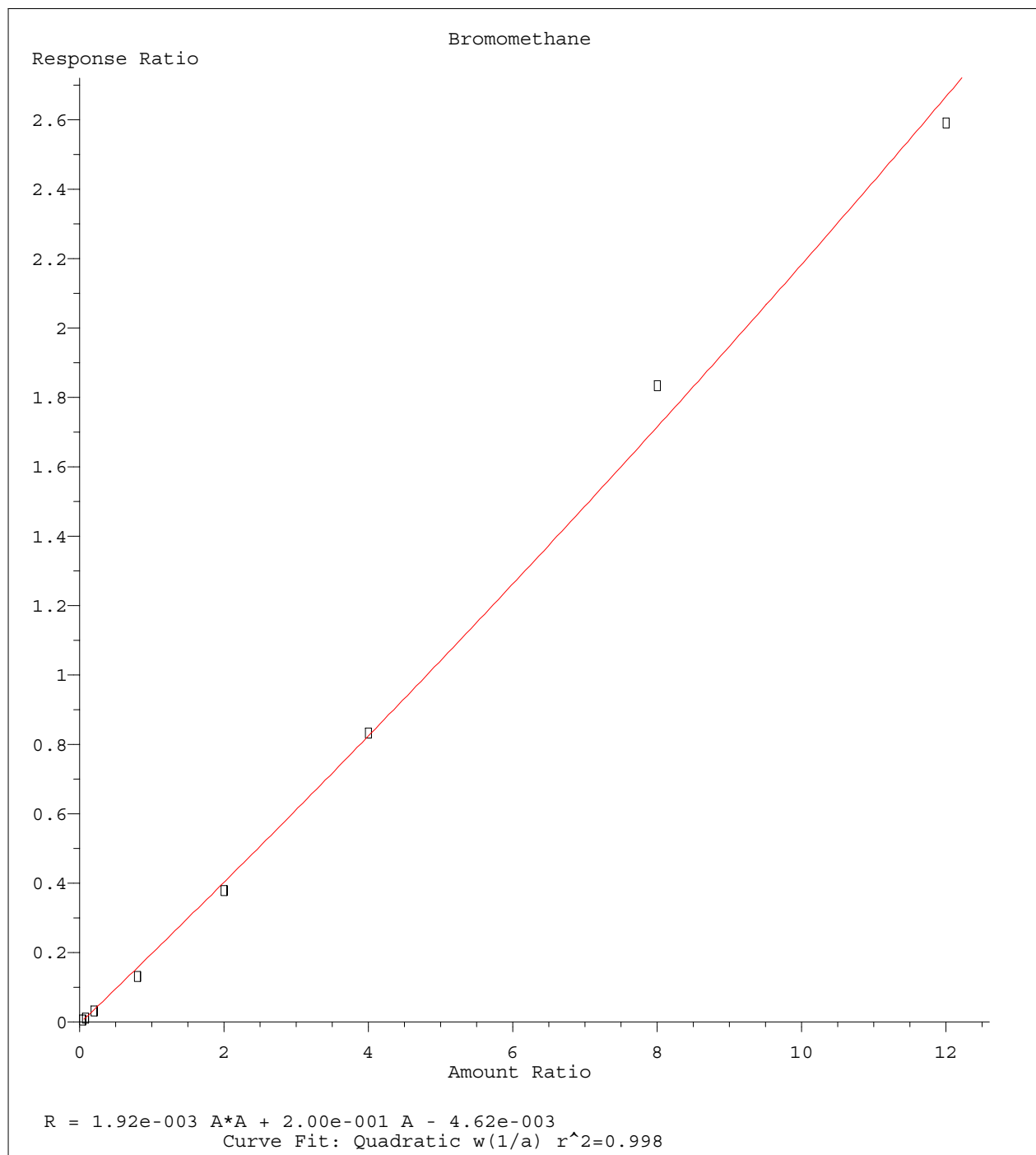
Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418143.D Vial: 12
Acq On : 3 Mar 2017 14:14 Operator: TMB
Sample : WG604846-11 300ug/L STD 8260 Inst : HPMS8
Misc : 1,1 STD80732 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 6 12:10 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
Last Update : Fri Mar 03 15:26:23 2017
Response via : Initial Calibration

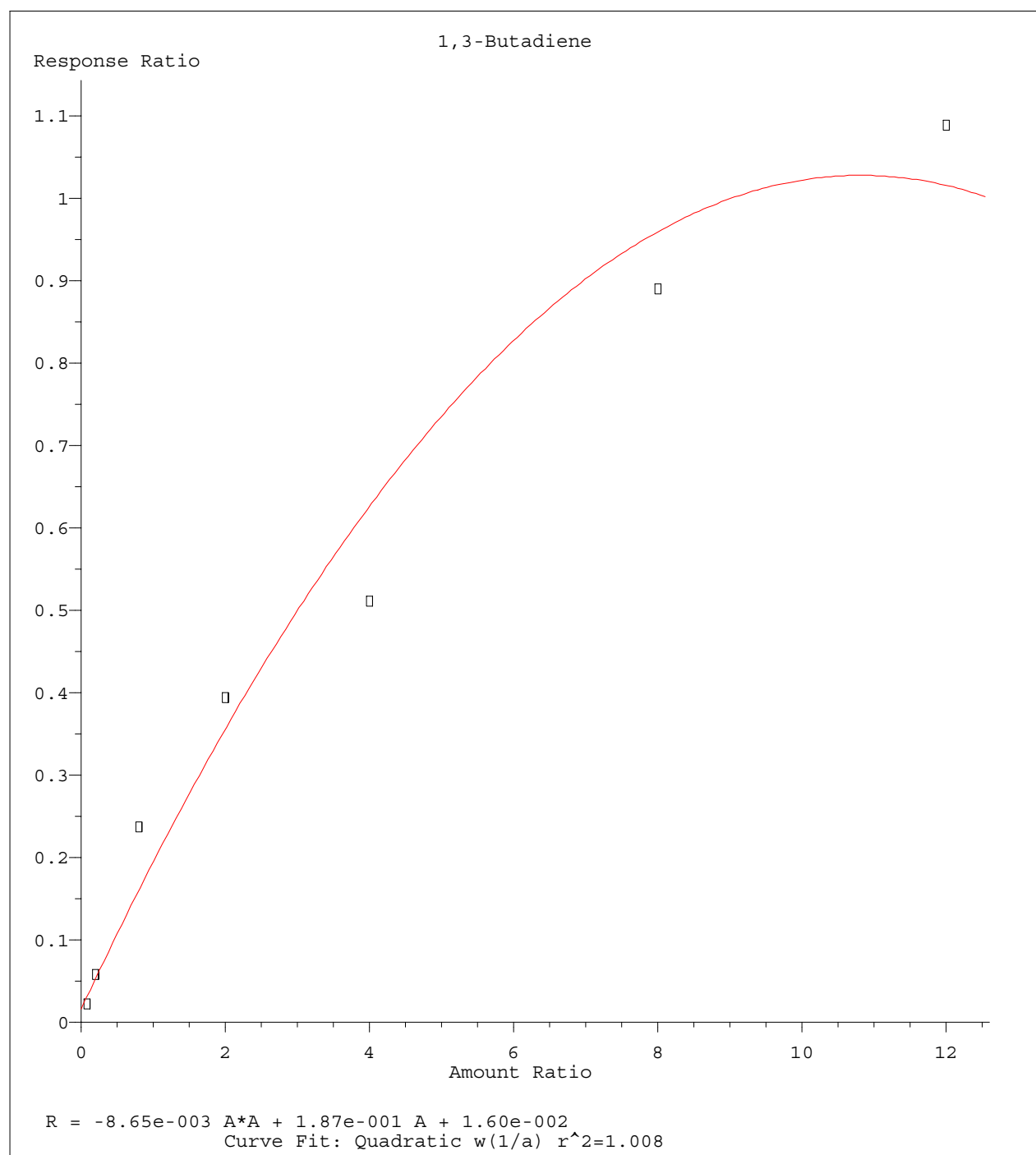




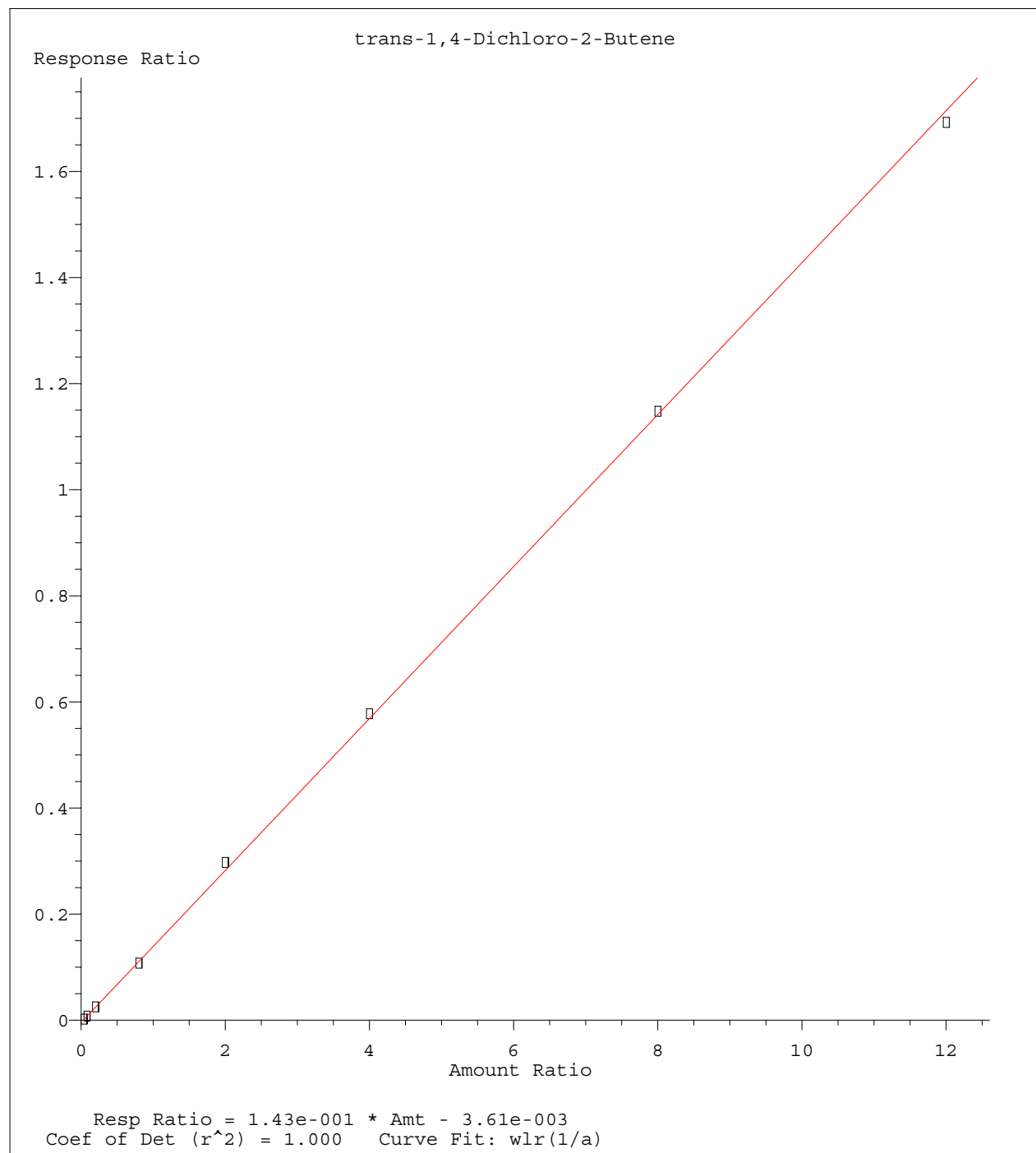
Method Name: K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M
Calibration Table Last Updated: Mon Mar 06 12:13:51 2017



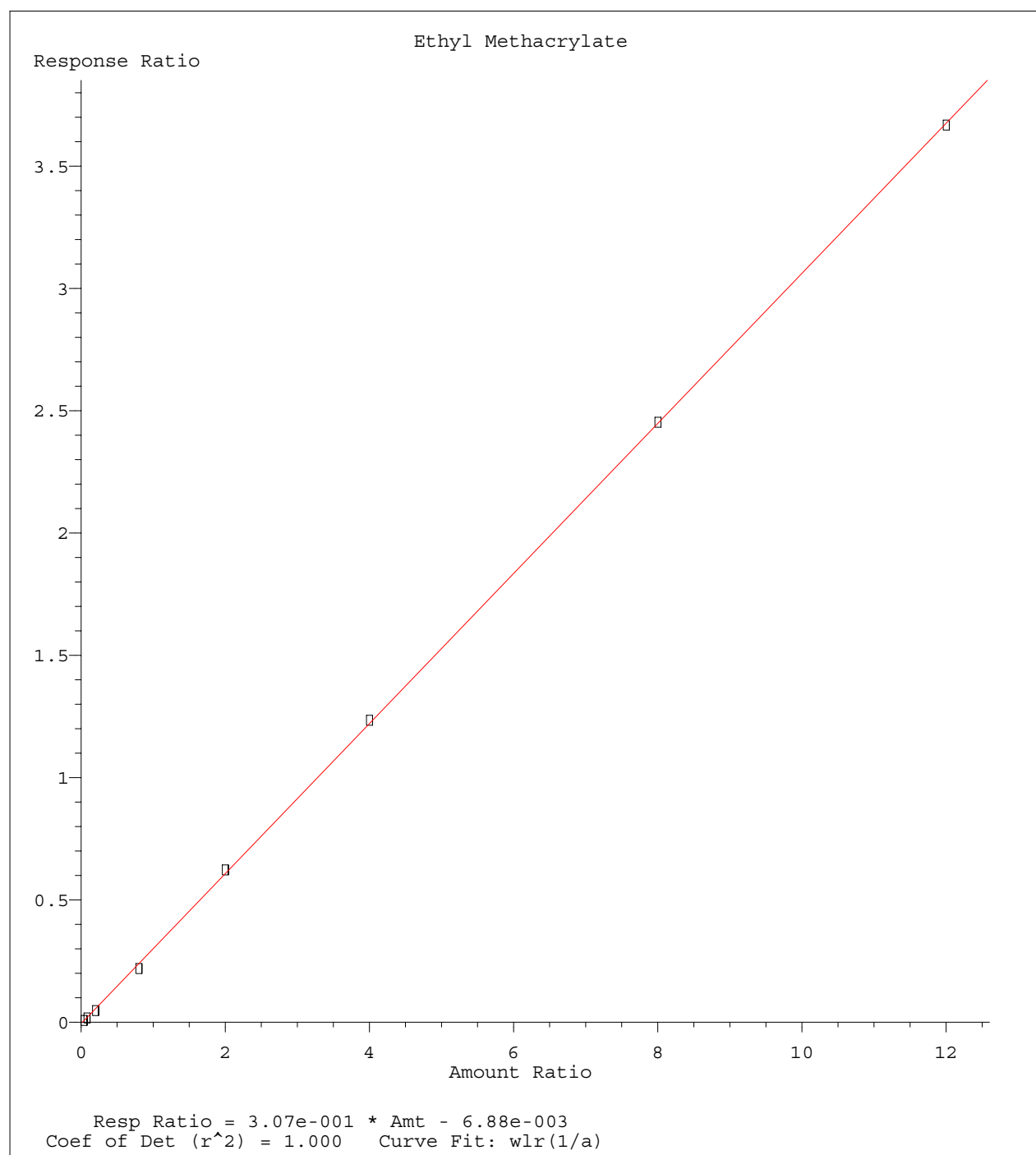
Method Name: K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M
Calibration Table Last Updated: Mon Mar 06 12:13:51 2017



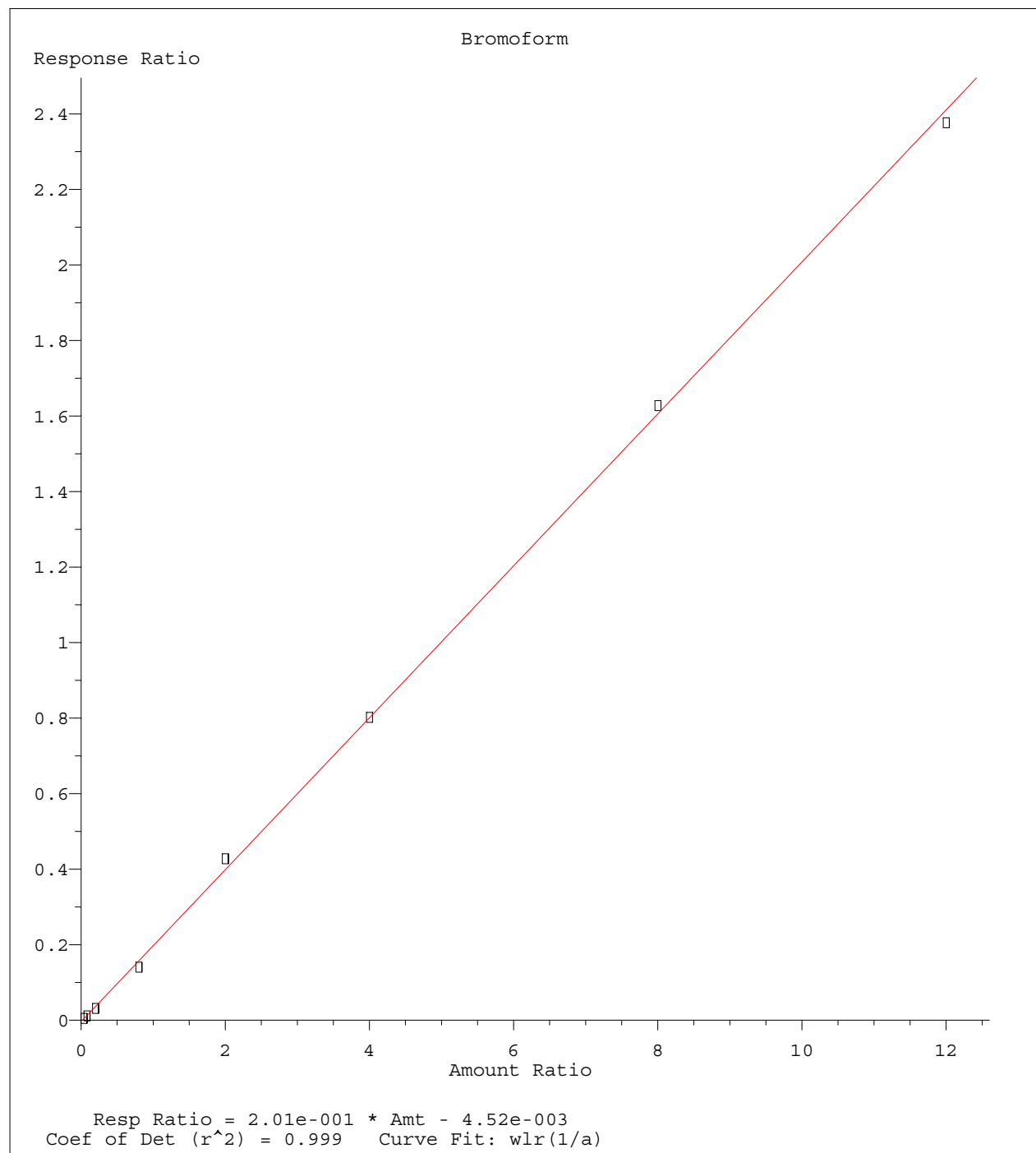
Method Name: K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M
Calibration Table Last Updated: Mon Mar 06 12:13:51 2017



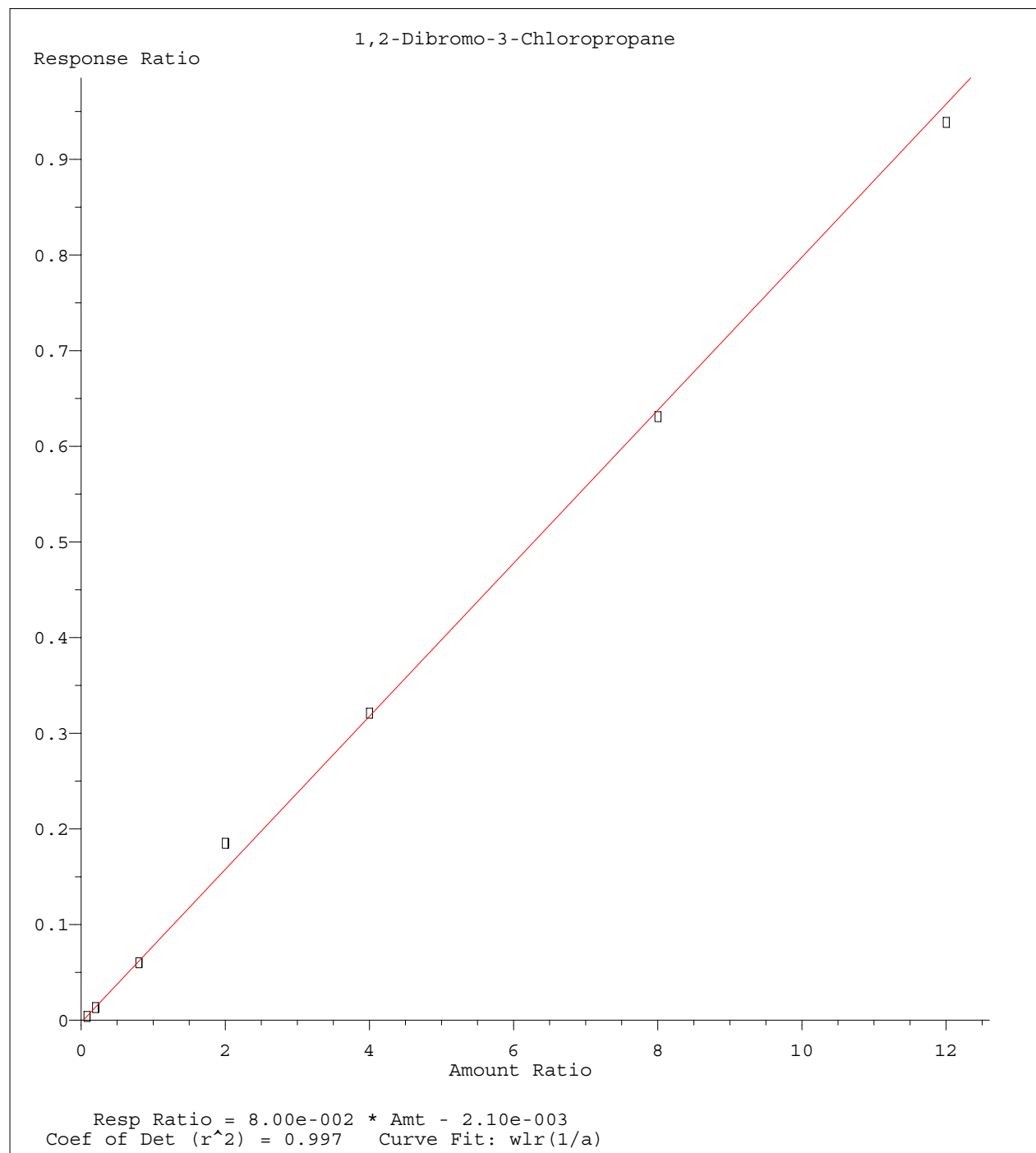
Method Name: K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M
Calibration Table Last Updated: Mon Mar 06 12:13:51 2017



Method Name: K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M
Calibration Table Last Updated: Mon Mar 06 12:13:51 2017



Method Name: K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M
Calibration Table Last Updated: Mon Mar 06 12:13:51 2017



Method Name: K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M
Calibration Table Last Updated: Mon Mar 06 12:13:51 2017

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418148.D Vial: 17
 Acq On : 3 Mar 2017 17:04 Operator: TMB
 Sample : WG604846-12 50ug/L ALT SRC STD Inst : HPMS8
 Misc : 1,1 STD80765 Multiplr: 1.00

MS Integration Params: RTEINT.P

Quant Time: Mar 06 12:11:16 2017

Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	709380	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	551317	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	301496	25.00	ug/L	0.00

System Monitoring Compounds

37) Dibromofluoromethane	9.90	111	166773	22.8909	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	91.56%	
43) 1,2-Dichloroethane-d4	10.55	65	149993	23.4901	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	93.96%	
58) Toluene-d8	12.93	98	612051	23.6055	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	94.44%	
80) p-Bromofluorobenzene	16.35	95	250817	24.0355	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	96.16%	

Target Compounds

						Qvalue
2) Dichlorodifluoromethane	3.34	85	566176	59.6170	ug/L	100
3) Chloromethane	3.82	50	674101	50.1368	ug/L	100
4) Vinyl Chloride	4.05	62	516980	44.0786	ug/L	100
5) 1,3-Butadiene	4.09	54	213622	41.2350	ug/L	98
6) Bromomethane	4.96	94	272023	47.7283	ug/L	99
7) Chloroethane	5.13	64	279081	55.7219	ug/L	98
8) Trichlorofluoromethane	5.61	101	622607	51.3467	ug/L	99
9) Diethyl ether	6.14	59	467712	99.2830	ug/L	100
10) Isoprene	6.18	67	564451	52.0092	ug/L	98
11) Acrolein	6.38	56	70199	110.7281	ug/L	96
12) 1,1,2-Trichloro-1,2,2-Trif	6.39	101	381344	53.9725	ug/L	97
13) Acetone	6.48	43	42860	47.5990	ug/L	99
14) 1,1-Dichloroethene	6.71	61	527984	48.7636	ug/L	96
15) Tert-Butyl Alcohol	6.82	59	57253	197.3352	ug/L	98
16) Dimethyl Sulfide	6.97	62	379050	47.1737	ug/L	95
17) Iodomethane	7.23	142	284783	40.2981	ug/L	97
18) Methyl acetate	7.24	43	123272	45.6210	ug/L	96
19) Methylene Chloride	7.50	84	364556	48.5519	ug/L	94
20) Carbon Disulfide	7.54	76	854677	37.0025	ug/L	100
21) Acrylonitrile	7.67	53	67465	50.7366	ug/L	100
22) Methyl Tert Butyl Ether	7.70	73	669260	47.9886	ug/L	100
23) trans-1,2-Dichloroethene	7.94	61	517465	49.5660	ug/L	96
24) n-Hexane	8.01	57	451202	45.0847	ug/L	97
25) Diisopropyl ether	8.35	45	2194342	103.0865	ug/L	98
26) Vinyl Acetate	8.53	43	466165	58.3307	ug/L	98
27) 1,1-Dichloroethane	8.56	63	653135	49.5352	ug/L	99
28) Ethyl-Tert-Butyl ether	8.93	59	1937269	98.9141	ug/L	100
29) 2-Butanone	9.12	43	67717	45.4442	ug/L	96
30) Propionitrile	9.22	54	51632	108.6563	ug/L	99
31) 2,2-Dichloropropane	9.34	77	574368	51.3947	ug/L	100
32) cis-1,2-Dichloroethene	9.41	96	411690	50.5058	ug/L	92
33) Chloroform	9.61	83	660153	47.7249	ug/L	99
34) 1-Bromopropane	9.75	122	102559	64.7893	ug/L	100
35) Bromochloromethane	9.84	130	228379	51.4500	ug/L	96
36) Tetrahydrofuran	9.87	42	99955	105.7025	ug/L	99
38) 1,1,1-Trichloroethane	10.14	97	598802	51.1279	ug/L	100
39) Cyclohexane	10.17	56	605115	48.7759	ug/L	100
40) 1,1-Dichloropropene	10.34	75	493232	49.4600	ug/L	97
41) Tert-Amyl-Methyl ether	10.44	73	1691332	104.1035	ug/L	99
42) Carbon Tetrachloride	10.49	117	543811	50.5273	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418148.D 8260WT.M Mon Mar 06 12:11:18 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418148.D Vial: 17

Acq On : 3 Mar 2017 17:04

Operator: TMB

Sample : WG604846-12 50ug/L ALT SRC STD

Inst : HPMS8

Misc : 1,1 STD80765

Multiplr: 1.00

MS Integration Params: RTEINT.P

Quant Time: Mar 06 12:11:16 2017

Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)

Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8

Last Update : Fri Mar 03 15:26:23 2017

Response via : Initial Calibration

DataAcq Meth : 8260WT

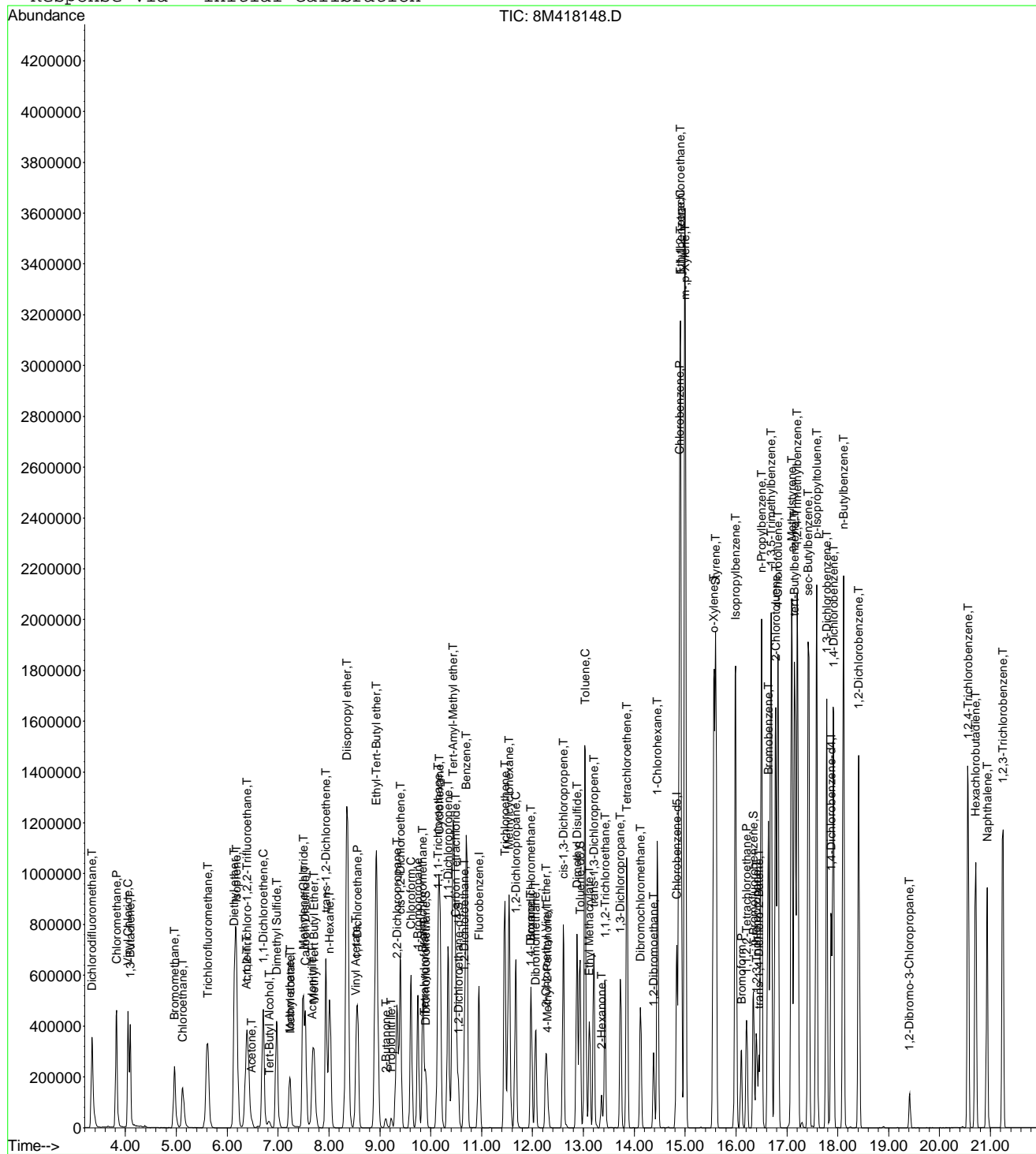
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) 1,2-Dichloroethane	10.66	62	409356	49.1380	ug/L	98
46) Benzene	10.70	78	1416539	49.2527	ug/L	99
47) Trichloroethene	11.46	130	392942	47.1190	ug/L	99
48) Methylcyclohexane	11.54	83	620632	49.8390	ug/L	98
49) 1,2-Dichloropropane	11.67	63	349122	48.4647	ug/L	96
50) Bromodichloromethane	11.97	83	465622	48.9862	ug/L	100
51) 1,4-Dioxane	11.96	88	6672	191.4755	ug/L	91
52) Dibromomethane	12.05	93	185394	51.3187	ug/L	96
53) 2-Chloroethyl Vinyl Ether	12.26	63	150940	46.9670	ug/L	99
54) 4-Methyl-2-Pentanone	12.29	58	66398	46.4971	ug/L	96
55) cis-1,3-Dichloropropene	12.60	75	580877	53.1709	ug/L	100
56) Dimethyl Disulfide	12.87	79	301907	50.6548	ug/L	99
59) Toluene	13.04	91	1550285	49.9450	ug/L	100
60) Ethyl Methacrylate	13.12	69	323527	48.3544	ug/L	92
62) trans-1,3-Dichloropropene	13.20	75	463749	49.9834	ug/L	100
63) 1,1,2-Trichloroethane	13.43	97	248585	48.9357	ug/L	100
64) 2-Hexanone	13.36	58	63762	48.7748	ug/L	93
65) 1,3-Dichloropropane	13.73	76	441883	51.3080	ug/L	93
66) Tetrachloroethene	13.85	164	322694	48.2448	ug/L	96
67) Dibromochloromethane	14.12	129	333307	50.2719	ug/L	100
68) 1,2-Dibromoethane	14.38	107	252991	50.8213	ug/L	100
69) 1-Chlorohexane	14.45	91	548321	50.8596	ug/L	98
70) Chlorobenzene	14.89	112	1083145	48.0929	ug/L	96
71) 1,1,1,2-Tetrachloroethane	14.91	131	391601	48.4592	ug/L	99
72) Ethylbenzene	14.91	106	610582	48.0271	ug/L	97
73) m-,p-Xylene	15.00	106	1475288	101.2875	ug/L	98
74) o-Xylene	15.56	106	709905	48.6784	ug/L	100
75) Styrene	15.60	104	1216894	53.0451	ug/L	96
76) Bromoform	16.11	173	202057	46.1002	ug/L	99
77) Isopropylbenzene	15.99	105	1797521	50.3229	ug/L	100
79) 1,1,2,2-Tetrachloroethane	16.21	83	294065	52.6015	ug/L	100
81) 1,2,3-Trichloropropane	16.41	110	82880	51.0556	ug/L #	41
82) trans-1,4-Dichloro-2-Butene	16.45	53	81365	47.7127	ug/L #	37
83) n-Propylbenzene	16.50	91	2175054	50.4087	ug/L	99
84) Bromobenzene	16.64	156	459740	49.0391	ug/L	95
85) 1,3,5-Trimethylbenzene	16.69	105	1578672	51.1145	ug/L	100
86) 2-Chlorotoluene	16.78	91	1418017	48.7163	ug/L	99
87) 4-Chlorotoluene	16.82	91	1298841	51.1456	ug/L	99
88) a-Methylstyrene	17.09	118	897075	49.9556	ug/L	99
89) tert-Butylbenzene	17.15	134	347386	48.7488	ug/L	98
90) 1,2,4-Trimethylbenzene	17.20	105	1648710	51.3009	ug/L	98
91) sec-Butylbenzene	17.42	105	2006917	50.3764	ug/L	100
92) p-Isopropyltoluene	17.59	119	1738063	51.9809	ug/L	100
93) 1,3-Dichlorobenzene	17.78	146	917247	48.4357	ug/L	98
94) 1,4-Dichlorobenzene	17.92	146	920570	48.9329	ug/L	97
95) n-Butylbenzene	18.11	91	1663158	51.6998	ug/L	100
96) 1,2-Dichlorobenzene	18.41	146	814429	48.5565	ug/L	96
97) 1,2-Dibromo-3-Chloropropane	19.41	75	45707	48.0184	ug/L	92
98) 1,2,4-Trichlorobenzene	20.56	180	605281	49.5066	ug/L	99
99) Hexachlorobutadiene	20.71	225	282621	49.2091	ug/L	98
100) Naphthalene	20.94	128	975348	50.8577	ug/L	99
101) 1,2,3-Trichlorobenzene	21.25	180	504147	49.8391	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418148.D 8260WT.M Mon Mar 06 12:11:19 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418148.D Vial: 17
Acq On : 3 Mar 2017 17:04 Operator: TMB
Sample : WG604846-12 50ug/L ALT SRC STD Inst : HPMS8
Misc : 1,1 STD80765 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 6 12:11 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
Last Update : Fri Mar 03 15:26:23 2017
Response via : Initial Calibration



Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418148.D Vial: 17
 Acq On : 3 Mar 2017 17:04 Operator: TMB
 Sample : WG604846-12 50ug/L ALT SRC STD Inst : HPMS8
 Misc : 1,1 STD80765 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	108	0.00
2 T	Dichlorodifluoromethane	50.0000	59.6170	-19.2	118	0.00
3 P	Chloromethane	50.0000	50.1368	-0.3	108	0.01
4 C	Vinyl Chloride	50.0000	44.0786	11.8	94	0.00
5 T	1,3-Butadiene	50.0000	41.2349	17.5	83	0.00
6 T	Bromomethane	50.0000	47.7283	4.5	110	0.00
7 T	Chloroethane	50.0000	55.7219	-11.4	114	0.00
8 T	Trichlorofluoromethane	50.0000	51.3466	-2.7	108	0.00
9 T	Diethyl ether	100.0000	99.2830	0.7	103	0.00
10 T	Isoprene	50.0000	52.0092	-4.0	113	0.00
11 T	Acrolein	50.0000	110.7281	-121.5#	230	0.00
12 T	1,1,2-Trichloro-1,2,2-Trifl	50.0000	53.9725	-7.9	112	0.00
13 T	Acetone	50.0000	47.5990	4.8	91	0.00
14 C	1,1-Dichloroethene	50.0000	48.7636	2.5	102	0.00
15 T	Tert-Butyl Alcohol	200.0000	197.3352	1.3	97	0.00
16 T	Dimethyl Sulfide	50.0000	47.1737	5.7	101	0.00
17 T	Iodomethane	50.0000	40.2981	19.4	94	0.00
18 T	Methyl acetate	50.0000	45.6210	8.8	96	0.00
19 T	Methylene Chloride	50.0000	48.5519	2.9	104	0.00
20 T	Carbon Disulfide	50.0000	37.0025	26.0#	78	0.00
21 T	Acrylonitrile	50.0000	50.7366	-1.5	95	0.00
22 T	Methyl Tert Butyl Ether	50.0000	47.9886	4.0	94	0.00
23 T	trans-1,2-Dichloroethene	50.0000	49.5660	0.9	104	0.00
24 T	n-Hexane	50.0000	45.0847	9.8	98	0.00
25 T	Diisopropyl ether	100.0000	103.0865	-3.1	107	0.00
26 T	Vinyl Acetate	50.0000	58.3307	-16.7	121	0.00
27 P	1,1-Dichloroethane	50.0000	49.5352	0.9	102	0.00
28 T	Ethyl-Tert-Butyl ether	100.0000	98.9141	1.1	102	0.00
29 T	2-Butanone	50.0000	45.4442	9.1	92	0.00
30 T	Propionitrile	100.0000	108.6563	-8.7	108	0.00
31 T	2,2-Dichloropropane	50.0000	51.3947	-2.8	109	0.00
32 T	cis-1,2-Dichloroethene	50.0000	50.5057	-1.0	103	0.00
33 C	Chloroform	50.0000	47.7249	4.6	104	0.00
34	1-Bromopropane	50.0000	64.7893	-29.6#	131	0.00
35 T	Bromochloromethane	50.0000	51.4500	-2.9	102	0.00
36 T	Tetrahydrofuran	100.0000	105.7025	-5.7	106	0.00
37 S	Dibromofluoromethane	25.0000	22.8909	8.4	96	0.00
38 T	1,1,1-Trichloroethane	50.0000	51.1279	-2.3	105	0.00
39 T	Cyclohexane	50.0000	48.7759	2.4	104	0.00
40 T	1,1-Dichloropropene	50.0000	49.4600	1.1	103	0.00
41 T	Tert-Amyl-Methyl ether	100.0000	104.1035	-4.1	106	0.00
42 T	Carbon Tetrachloride	50.0000	50.5273	-1.1	102	0.00
43 S	1,2-Dichloroethane-d4	25.0000	23.4901	6.0	95	0.00
44	Heptane	-1.0000	0.0000	0.0	0	-2.61#
45 T	1,2-Dichloroethane	50.0000	49.1380	1.7	98	0.00
46 T	Benzene	50.0000	49.2527	1.5	101	0.00
47 T	Trichloroethene	50.0000	47.1190	5.8	98	0.00
48 T	Methylcyclohexane	50.0000	49.8390	0.3	107	0.00
49 C	1,2-Dichloropropane	50.0000	48.4647	3.1	98	0.00
50 T	Bromodichloromethane	50.0000	48.9862	2.0	97	0.00
51 T	1,4-Dioxane	200.0000	191.4755	4.3	99	0.00
52 T	Dibromomethane	50.0000	51.3187	-2.6	100	0.00
53 T	2-Chloroethyl Vinyl Ether	50.0000	46.9670	6.1	92	0.00
54 T	4-Methyl-2-Pentanone	50.0000	46.4971	7.0	91	0.00

(#) = Out of Range

8M418148.D 8260WT.M

Mon Mar 06 12:14:20 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418148.D Vial: 17
 Acq On : 3 Mar 2017 17:04 Operator: TMB
 Sample : WG604846-12 50ug/L ALT SRC STD Inst : HPMS8
 Misc : 1,1 STD80765 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Fri Mar 03 15:26:23 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
55 T	cis-1,3-Dichloropropene	50.0000	53.1709	-6.3	105	0.00
56 T	Dimethyl Disulfide	50.0000	50.6548	-1.3	107	0.00
57 I	Chlorobenzene-d5	25.0000	25.0000	0.0	108	0.00
58 S	Toluene-d8	25.0000	23.6055	5.6	98	0.00
59 C	Toluene	50.0000	49.9450	0.1	100	0.00
60 T	Ethyl Methacrylate	50.0000	48.3544	3.3	102	0.00
61	Paraldehyde	-1.0000	0.0000	0.0	0	-13.40#
62 T	trans-1,3-Dichloropropene	50.0000	49.9834	0.0	98	0.00
63 T	1,1,2-Trichloroethane	50.0000	48.9357	2.1	95	0.00
64 T	2-Hexanone	50.0000	48.7748	2.5	92	0.00
65 T	1,3-Dichloropropane	50.0000	51.3080	-2.6	99	0.00
66 T	Tetrachloroethene	50.0000	48.2448	3.5	102	0.00
67 T	Dibromochloromethane	50.0000	50.2719	-0.5	94	0.00
68 T	1,2-Dibromoethane	50.0000	50.8213	-1.6	97	0.00
69 T	1-Chlorohexane	50.0000	50.8597	-1.7	105	0.00
70 P	Chlorobenzene	50.0000	48.0929	3.8	98	0.00
71 T	1,1,1,2-Tetrachloroethane	50.0000	48.4592	3.1	95	0.00
72 C	Ethylbenzene	50.0000	48.0271	3.9	99	0.00
73 T	m-,p-Xylene	100.0000	101.2875	-1.3	100	0.00
74 T	o-Xylene	50.0000	48.6784	2.6	99	0.00
75 T	Styrene	50.0000	53.0451	-6.1	99	0.00
76 P	Bromoform	50.0000	46.1002	7.8	93	0.00
77 T	Isopropylbenzene	50.0000	50.3229	-0.6	97	0.00
78 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	108	0.00
79 P	1,1,2,2-Tetrachloroethane	50.0000	52.6016	-5.2	96	0.00
80 S	p-Bromofluorobenzene	25.0000	24.0355	3.9	100	0.00
81 T	1,2,3-Trichloropropane	50.0000	51.0556	-2.1	96	0.00
82 T	trans-1,4-Dichloro-2-Butene	50.0000	47.7127	4.6	98	0.00
83 T	n-Propylbenzene	50.0000	50.4087	-0.8	98	0.00
84 T	Bromobenzene	50.0000	49.0391	1.9	96	0.00
85 T	1,3,5-Trimethylbenzene	50.0000	51.1145	-2.2	99	0.00
86 T	2-Chlorotoluene	50.0000	48.7163	2.6	97	0.00
87 T	4-Chlorotoluene	50.0000	51.1456	-2.3	99	0.00
88 T	a-Methylstyrene	50.0000	49.9556	0.1	105	0.00
89 T	tert-Butylbenzene	50.0000	48.7488	2.5	100	0.00
90 T	1,2,4-Trimethylbenzene	50.0000	51.3009	-2.6	98	0.00
91 T	sec-Butylbenzene	50.0000	50.3764	-0.8	98	0.00
92 T	p-Isopropyltoluene	50.0000	51.9809	-4.0	100	0.00
93 T	1,3-Dichlorobenzene	50.0000	48.4357	3.1	96	0.00
94 T	1,4-Dichlorobenzene	50.0000	48.9329	2.1	97	0.00
95 T	n-Butylbenzene	50.0000	51.6998	-3.4	100	0.00
96 T	1,2-Dichlorobenzene	50.0000	48.5564	2.9	96	0.00
97 T	1,2-Dibromo-3-Chloropropane	50.0000	48.0184	4.0	89	0.00
98 T	1,2,4-Trichlorobenzene	50.0000	49.5065	1.0	96	0.00
99 T	Hexachlorobutadiene	50.0000	49.2091	1.6	98	0.00
100 T	Naphthalene	50.0000	50.8577	-1.7	92	0.00
101 T	1,2,3-Trichlorobenzene	50.0000	49.8391	0.3	95	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M418148.D 8260WT.M Mon Mar 06 12:14:20 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418223.D Vial: 3
 Acq On : 8 Mar 2017 10:42 Operator: TMB
 Sample : WG605444-02 50ug/L CCV STD 8260 Inst : HPMS8
 Misc : 1,1 STD80765 Multiplr: 1.00

MS Integration Params: RTEINT.P

Quant Time: Mar 08 14:20:45 2017

Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	593320	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	466475	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	247269	25.00	ug/L	0.00

System Monitoring Compounds

37) Dibromofluoromethane	9.90	111	141838	23.2766	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	93.12%	
43) 1,2-Dichloroethane-d4	10.55	65	121587	22.7662	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	91.08%	
58) Toluene-d8	12.93	98	517998	23.6117	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	94.44%	
80) p-Bromofluorobenzene	16.35	95	205951	24.0643	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	96.24%	

Target Compounds

						Qvalue
2) Dichlorodifluoromethane	3.34	85	429070	54.0178	ug/L	100
3) Chloromethane	3.82	50	617534	54.9140	ug/L	100
4) Vinyl Chloride	4.06	62	566164	57.7147	ug/L	100
5) 1,3-Butadiene	4.10	54	329359	85.5542	ug/L	99
6) Bromomethane	4.97	94	219790	46.1538	ug/L	100
7) Chloroethane	5.13	64	218448	52.1476	ug/L	99
8) Trichlorofluoromethane	5.61	101	510639	50.3503	ug/L	99
9) Diethyl ether	6.14	59	391903	99.4638	ug/L	100
10) Isoprene	6.18	67	448876	49.4505	ug/L	99
11) Acrolein	6.38	56	25474	48.0412	ug/L	99
12) 1,1,2-Trichloro-1,2,2-Trif	6.40	101	298365	50.4886	ug/L	98
13) Acetone	6.48	43	36647	48.6602	ug/L	99
14) 1,1-Dichloroethene	6.71	61	453502	50.0777	ug/L	96
15) Tert-Butyl Alcohol	6.81	59	47719	196.6471	ug/L	99
16) Dimethyl Sulfide	6.97	62	332745	49.5114	ug/L	97
17) Iodomethane	7.23	142	245407	41.4816	ug/L	95
18) Methyl acetate	7.24	43	114998	50.8839	ug/L	97
19) Methylene Chloride	7.50	84	304947	48.5575	ug/L	97
20) Carbon Disulfide	7.54	76	995802	51.5457	ug/L	99
21) Acrylonitrile	7.67	53	60227	54.1532	ug/L	98
22) Methyl Tert Butyl Ether	7.69	73	584034	50.0692	ug/L	99
23) trans-1,2-Dichloroethene	7.94	61	438185	50.1823	ug/L	95
24) n-Hexane	8.02	57	414744	49.5482	ug/L	98
25) Diisopropyl ether	8.35	45	1862574	104.6167	ug/L	98
26) Vinyl Acetate	8.53	43	359159	53.7321	ug/L	99
27) 1,1-Dichloroethane	8.56	63	561633	50.9277	ug/L	100
28) Ethyl-Tert-Butyl ether	8.93	59	1665420	101.6675	ug/L	99
29) 2-Butanone	9.12	43	60276	48.3632	ug/L	98
30) Propionitrile	9.22	54	40020	100.6939	ug/L	99
31) 2,2-Dichloropropane	9.34	77	488469	52.2583	ug/L	100
32) cis-1,2-Dichloroethene	9.41	96	352533	51.7083	ug/L	92
33) Chloroform	9.61	83	553293	47.8239	ug/L	100
34) 1-Bromopropane	9.75	122	70218	53.0356	ug/L	100
35) Bromochloromethane	9.85	130	188737	50.8366	ug/L	99
36) Tetrahydrofuran	9.87	42	78672	99.4697	ug/L	98
38) 1,1,1-Trichloroethane	10.15	97	498141	50.8530	ug/L	100
39) Cyclohexane	10.18	56	506717	48.8340	ug/L	99
40) 1,1-Dichloropropene	10.34	75	421542	50.5398	ug/L	97
41) Tert-Amyl-Methyl ether	10.44	73	1382751	101.7584	ug/L	99
42) Carbon Tetrachloride	10.49	117	460097	51.1113	ug/L	100

(#) = qualifier out of range (m) = manual integration
 8M418223.D 8260WT.M Wed Mar 08 14:20:47 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418223.D Vial: 3
 Acq On : 8 Mar 2017 10:42 Operator: TMB
 Sample : WG605444-02 50ug/L CCV STD 8260 Inst : HPMS8
 Misc : 1,1 STD80765 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 08 14:20:45 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

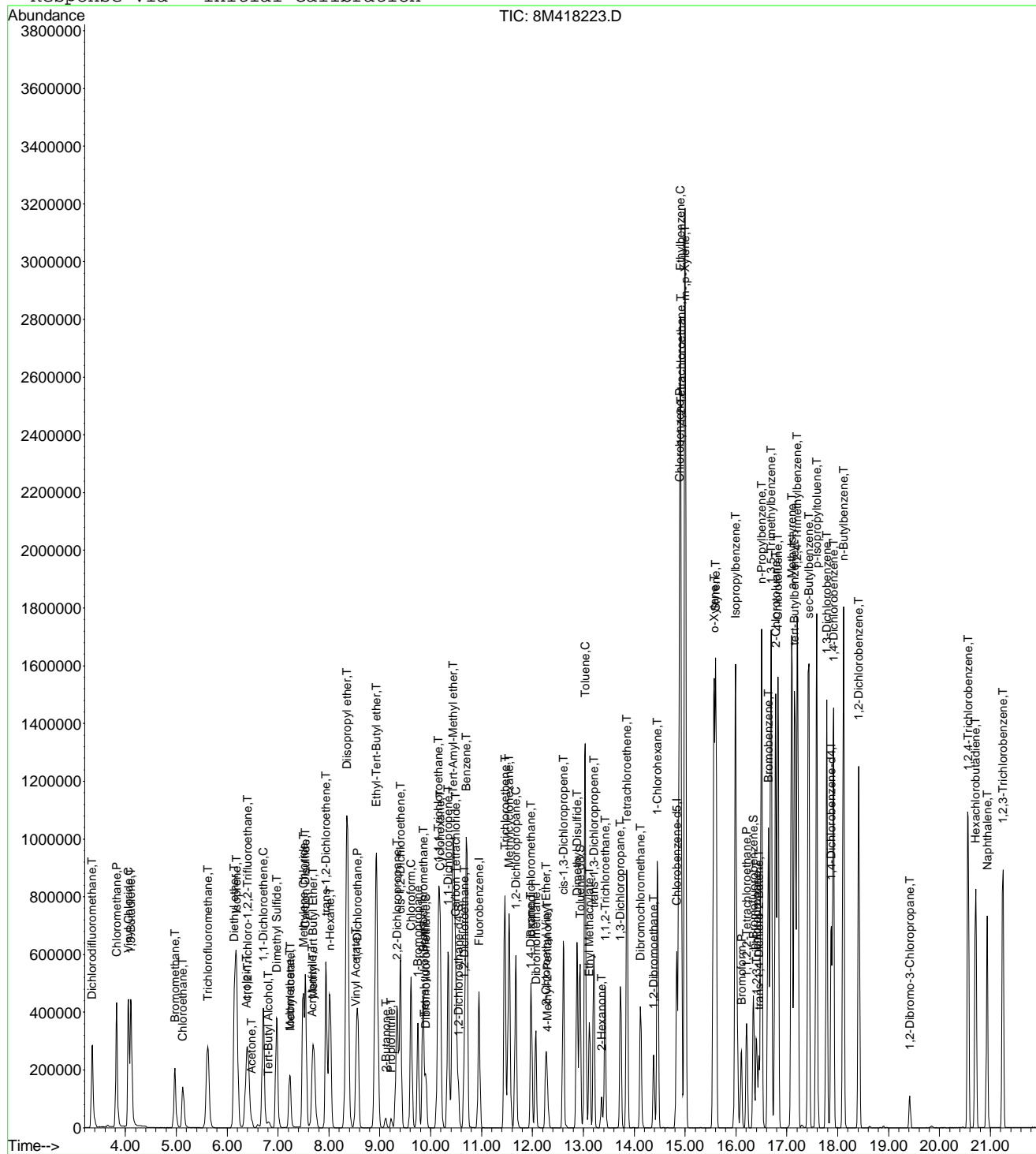
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) 1,2-Dichloroethane	10.66	62	346504	49.7295	ug/L	99
46) Benzene	10.70	78	1236062	51.3844	ug/L	99
47) Trichloroethene	11.46	130	343765	49.2855	ug/L	99
48) Methylcyclohexane	11.54	83	495489	47.5728	ug/L	99
49) 1,2-Dichloropropane	11.67	63	309701	51.4021	ug/L	94
50) Bromodichloromethane	11.97	83	412381	51.8715	ug/L	99
51) 1,4-Dioxane	11.96	88	5936	203.6765	ug/L	100
52) Dibromomethane	12.07	93	156151	51.6791	ug/L	96
53) 2-Chloroethyl Vinyl Ether	12.26	63	135096	50.2598	ug/L	100
54) 4-Methyl-2-Pentanone	12.29	58	57589	48.2170	ug/L	95
55) cis-1,3-Dichloropropene	12.60	75	471232	51.5721	ug/L	100
56) Dimethyl Disulfide	12.87	79	248253	49.8003	ug/L	100
59) Toluene	13.04	91	1343741	51.1645	ug/L	99
60) Ethyl Methacrylate	13.12	69	265235	46.8695	ug/L	96
62) trans-1,3-Dichloropropene	13.20	75	399578	50.9000	ug/L	99
63) 1,1,2-Trichloroethane	13.43	97	211550	49.2195	ug/L	99
64) 2-Hexanone	13.36	58	53727	48.5734	ug/L	97
65) 1,3-Dichloropropane	13.73	76	360784	49.5106	ug/L	94
66) Tetrachloroethene	13.85	164	268669	47.4734	ug/L	96
67) Dibromochloromethane	14.12	129	286893	51.1415	ug/L	99
68) 1,2-Dibromoethane	14.38	107	214268	50.8711	ug/L	99
69) 1-Chlorohexane	14.45	91	449671	49.2954	ug/L	98
70) Chlorobenzene	14.89	112	934207	49.0242	ug/L	94
71) 1,1,1,2-Tetrachloroethane	14.92	131	343770	50.2774	ug/L	99
72) Ethylbenzene	14.91	106	522856	48.6069	ug/L	97
73) m-,p-Xylene	15.00	106	1263648	102.5364	ug/L	98
74) o-Xylene	15.57	106	603044	48.8718	ug/L	99
75) Styrene	15.60	104	1023307	52.7195	ug/L	95
76) Bromoform	16.11	173	170294	45.9221	ug/L	99
77) Isopropylbenzene	15.99	105	1537102	50.8590	ug/L	98
79) 1,1,2,2-Tetrachloroethane	16.21	83	244416	53.3085	ug/L	99
81) 1,2,3-Trichloropropane	16.41	110	66804	50.1773	ug/L #	40
82) trans-1,4-Dichloro-2-Butene	16.45	53	65762	47.0293	ug/L #	35
83) n-Propylbenzene	16.50	91	1863141	52.6494	ug/L	98
84) Bromobenzene	16.64	156	391870	50.9664	ug/L	93
85) 1,3,5-Trimethylbenzene	16.69	105	1326534	52.3700	ug/L	99
86) 2-Chlorotoluene	16.78	91	1202351	50.3658	ug/L	99
87) 4-Chlorotoluene	16.82	91	1100851	52.8558	ug/L	99
88) a-Methylstyrene	17.09	118	739081	50.1833	ug/L	99
89) tert-Butylbenzene	17.15	134	282417	48.3231	ug/L	97
90) 1,2,4-Trimethylbenzene	17.20	105	1383177	52.4772	ug/L	98
91) sec-Butylbenzene	17.43	105	1684098	51.5439	ug/L	99
92) p-Isopropyltoluene	17.59	119	1410591	51.4389	ug/L	100
93) 1,3-Dichlorobenzene	17.78	146	785256	50.5595	ug/L	97
94) 1,4-Dichlorobenzene	17.92	146	768374	49.7999	ug/L	97
95) n-Butylbenzene	18.11	91	1363072	51.6637	ug/L	99
96) 1,2-Dichlorobenzene	18.41	146	683514	49.6882	ug/L	96
97) 1,2-Dibromo-3-Chloropropane	19.42	75	36535	46.8167	ug/L	88
98) 1,2,4-Trichlorobenzene	20.56	180	463872	46.2611	ug/L	99
99) Hexachlorobutadiene	20.71	225	217044	46.0787	ug/L	99
100) Naphthalene	20.94	128	745700	47.4104	ug/L	99
101) 1,2,3-Trichlorobenzene	21.25	180	369151	44.4968	ug/L	98

(#) = qualifier out of range (m) = manual integration
 8M418223.D 8260WT.M Wed Mar 08 14:20:48 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418223.D Vial: 3
Acq On : 8 Mar 2017 10:42 Operator: TMB
Sample : WG605444-02 50ug/L CCV STD 8260 Inst : HPMS8
Misc : 1,1 STD80765 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 8 14:20 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
Last Update : Mon Mar 06 12:17:52 2017
Response via : Initial Calibration



Continuing Calibration Area and RT check

Instrument: HPMS8
Initial cal date: 3 Mar 2017 12:46
CCV date: 8 Mar 2017 10:42
CCV Filename: 8M418223.D

	Fluorobenzene		Chlorobenzene-d5		1,4-Dichlorobenzene-d4	
	<u>Amount</u>	<u>RT</u>	<u>Amount</u>	<u>RT</u>	<u>Amount</u>	<u>RT</u>
InitCal	654600	10.95	509436	14.84	278577	17.88
CCV	593320	10.95	466475	14.84	247269	17.88

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418223.D Vial: 3
 Acq On : 8 Mar 2017 10:42 Operator: TMB
 Sample : WG605444-02 50ug/L CCV STD 8260 Inst : HPMS8
 Misc : 1,1 STD80765 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	1.0000	1.0000	0.0	91	0.00
2 T	Dichlorodifluoromethane	0.3347	0.3616	-8.0	89	0.00
3 P	Chloromethane	0.4738	0.5204	-9.8	99	0.01
4 C	Vinyl Chloride	0.4133	0.4771	-15.4	103	0.01
5 T	1,3-Butadiene	0.1987	0.2776	-39.7#	128	0.01
6 T	Bromomethane	0.1803	0.1852	-2.7	89	0.01
7 T	Chloroethane	0.1765	0.1841	-4.3	89	0.00
8 T	Trichlorofluoromethane	0.4273	0.4303	-0.7	89	0.00
9 T	Diethyl ether	0.1660	0.1651	0.5	86	0.00
10 T	Isoprene	0.3825	0.3783	1.1	89	0.00
11 T	Acrolein	0.0223	0.0215	3.9	83	0.00
12 T	1,1,2-Trichloro-1,2,2-Trifl	0.2490	0.2514	-1.0	88	0.01
13 T	Acetone	0.0317	0.0309	2.7	77	0.00
14 C	1,1-Dichloroethene	0.3816	0.3822	-0.2	88	0.00
15 T	Tert-Butyl Alcohol	0.0102	0.0101	1.7	81	0.00
16 T	Dimethyl Sulfide	0.2832	0.2804	1.0	89	0.00
17 T	Iodomethane	0.1787	0.2068	-15.7	81	0.00
18 T	Methyl acetate	0.0952	0.0969	-1.8	89	0.00
19 T	Methylene Chloride	0.2646	0.2570	2.9	87	0.00
20 T	Carbon Disulfide	0.8140	0.8392	-3.1	90	0.00
21 T	Acrylonitrile	0.0469	0.0508	-8.3	85	0.00
22 T	Methyl Tert Butyl Ether	0.4915	0.4922	-0.1	82	0.00
23 T	trans-1,2-Dichloroethene	0.3679	0.3693	-0.4	88	0.00
24 T	n-Hexane	0.3527	0.3495	0.9	90	0.01
25 T	Diisopropyl ether	0.7502	0.7848	-4.6	91	0.00
26 T	Vinyl Acetate	0.2817	0.3027	-7.5	93	0.00
27 P	1,1-Dichloroethane	0.4647	0.4733	-1.9	88	0.00
28 T	Ethyl-Tert-Butyl ether	0.6902	0.7017	-1.7	87	0.00
29 T	2-Butanone	0.0525	0.0508	3.3	82	0.00
30 T	Propionitrile	0.0168	0.0169	-0.7	84	0.00
31 T	2,2-Dichloropropane	0.3938	0.4116	-4.5	92	0.00
32 T	cis-1,2-Dichloroethene	0.2873	0.2971	-3.4	88	0.00
33 C	Chloroform	0.4875	0.4663	4.4	87	0.00
34	1-Bromopropane	0.0558	0.0592	-6.1	90	0.00
35 T	Bromochloromethane	0.1564	0.1591	-1.7	84	0.00
36 T	Tetrahydrofuran	0.0333	0.0331	0.5	84	0.00
37 S	Dibromofluoromethane	0.2568	0.2391	6.9	81	0.00
38 T	1,1,1-Trichloroethane	0.4128	0.4198	-1.7	87	0.01
39 T	Cyclohexane	0.4372	0.4270	2.3	87	0.01
40 T	1,1-Dichloropropene	0.3514	0.3552	-1.1	88	0.00
41 T	Tert-Amyl-Methyl ether	0.5726	0.5826	-1.8	87	0.00
42 T	Carbon Tetrachloride	0.3793	0.3877	-2.2	87	0.00
43 S	1,2-Dichloroethane-d4	0.2250	0.2049	8.9	77	0.00
44	Heptane	0.0000	0.0000	0.0	0#	-2.61#
45 T	1,2-Dichloroethane	0.2936	0.2920	0.5	83	0.00
46 T	Benzene	1.0136	1.0417	-2.8	88	0.00
47 T	Trichloroethene	0.2939	0.2897	1.4	86	0.00
48 T	Methylcyclohexane	0.4389	0.4176	4.9	86	0.00
49 C	1,2-Dichloropropane	0.2539	0.2610	-2.8	87	0.00
50 T	Bromodichloromethane	0.3350	0.3475	-3.7	86	0.00
51 T	1,4-Dioxane	0.0012	0.0013	-1.6	88	0.00
52 T	Dibromomethane	0.1273	0.1316	-3.4	84	0.00
53 T	2-Chloroethyl Vinyl Ether	0.1133	0.1139	-0.5	83	0.00
54 T	4-Methyl-2-Pentanone	0.0503	0.0485	3.6	78	0.00

(#) = Out of Range

8M418223.D 8260WT.M

Wed Mar 08 14:23:38 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418223.D Vial: 3
 Acq On : 8 Mar 2017 10:42 Operator: TMB
 Sample : WG605444-02 50ug/L CCV STD 8260 Inst : HPMS8
 Misc : 1,1 STD80765 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	AvgRF	CCRF	%Dev	Area%	Dev(min)
55 T	cis-1,3-Dichloropropene	0.3850	0.3971	-3.1	85	0.00
56 T	Dimethyl Disulfide	0.2100	0.2092	0.4	88	0.00
57 I	Chlorobenzene-d5	1.0000	1.0000	0.0	92	0.00
58 S	Toluene-d8	1.1757	1.1104	5.6	83	0.00
59 C	Toluene	1.4075	1.4403	-2.3	87	0.00
60 T	Ethyl Methacrylate	0.2685	0.2843	-5.9	84	0.00
61	Paraldehyde	0.0000	0.0000	0.0	0#	-13.40#
62 T	trans-1,3-Dichloropropene	0.4207	0.4283	-1.8	84	0.00
63 T	1,1,2-Trichloroethane	0.2304	0.2268	1.6	81	0.00
64 T	2-Hexanone	0.0593	0.0576	2.9	78	0.00
65 T	1,3-Dichloropropane	0.3905	0.3867	1.0	81	0.00
66 T	Tetrachloroethene	0.3033	0.2880	5.1	85	0.00
67 T	Dibromochloromethane	0.3006	0.3075	-2.3	81	0.00
68 T	1,2-Dibromoethane	0.2257	0.2297	-1.7	82	0.00
69 T	1-Chlorohexane	0.4889	0.4820	1.4	86	0.00
70 P	Chlorobenzene	1.0213	1.0014	2.0	85	0.00
71 T	1,1,1,2-Tetrachloroethane	0.3664	0.3685	-0.6	83	0.00
72 C	Ethylbenzene	0.5765	0.5604	2.8	85	0.00
73 T	m-,p-Xylene	0.6605	0.6772	-2.5	86	0.00
74 T	o-Xylene	0.6613	0.6464	2.3	84	0.00
75 T	Styrene	1.0403	1.0969	-5.4	83	0.00
76 P	Bromoform	0.1759	0.1825	-3.8	78	0.00
77 T	Isopropylbenzene	1.6198	1.6476	-1.7	83	0.00
78 I	1,4-Dichlorobenzene-d4	1.0000	1.0000	0.0	89	0.00
79 P	1,1,2,2-Tetrachloroethane	0.4636	0.4942	-6.6	80	0.00
80 S	p-Bromofluorobenzene	0.8653	0.8329	3.7	82	0.00
81 T	1,2,3-Trichloropropane	0.1346	0.1351	-0.3	77	0.00
82 T	trans-1,4-Dichloro-2-Butene	0.1231	0.1330	-8.0	79	0.00
83 T	n-Propylbenzene	3.5779	3.7674	-5.3	84	0.00
84 T	Bromobenzene	0.7774	0.7924	-1.9	82	0.00
85 T	1,3,5-Trimethylbenzene	2.5610	2.6824	-4.7	83	0.00
86 T	2-Chlorotoluene	2.4136	2.4313	-0.7	82	0.00
87 T	4-Chlorotoluene	2.1058	2.2260	-5.7	84	0.00
88 T	a-Methylstyrene	1.4890	1.4945	-0.4	87	0.00
89 T	tert-Butylbenzene	0.5909	0.5711	3.4	81	0.00
90 T	1,2,4-Trimethylbenzene	2.6649	2.7969	-5.0	82	0.00
91 T	sec-Butylbenzene	3.3034	3.4054	-3.1	82	0.00
92 T	p-Isopropyltoluene	2.7725	2.8523	-2.9	81	0.00
93 T	1,3-Dichlorobenzene	1.5703	1.5879	-1.1	82	0.00
94 T	1,4-Dichlorobenzene	1.5600	1.5537	0.4	81	0.00
95 T	n-Butylbenzene	2.6675	2.7563	-3.3	82	0.00
96 T	1,2-Dichlorobenzene	1.3908	1.3821	0.6	80	0.00
97 T	1,2-Dibromo-3-Chloropropane	0.0741	0.0739	0.3	71	0.00
98 T	1,2,4-Trichlorobenzene	1.0138	0.9380	7.5	74	0.00
99 T	Hexachlorobutadiene	0.4762	0.4389	7.8	75	0.00
100 T	Naphthalene	1.5902	1.5079	5.2	71	0.00
101 T	1,2,3-Trichlorobenzene	0.8388	0.7465	11.0	69	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M418223.D 8260WT.M Wed Mar 08 14:23:39 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418223.D Vial: 3
 Acq On : 8 Mar 2017 10:42 Operator: TMB
 Sample : WG605444-02 50ug/L CCV STD 8260 Inst : HPMS8
 Misc : 1,1 STD80765 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
1 I	Fluorobenzene	25.0000	25.0000	0.0	91	0.00
2 T	Dichlorodifluoromethane	50.0000	54.0178	-8.0	89	0.00
3 P	Chloromethane	50.0000	54.9140	-9.8	99	0.01
4 C	Vinyl Chloride	50.0000	57.7146	-15.4	103	0.01
5 T	1,3-Butadiene	50.0000	85.5542	-71.1#	128	0.01
6 T	Bromomethane	50.0000	46.1538	7.7	89	0.01
7 T	Chloroethane	50.0000	52.1476	-4.3	89	0.00
8 T	Trichlorofluoromethane	50.0000	50.3503	-0.7	89	0.00
9 T	Diethyl ether	100.0000	99.4638	0.5	86	0.00
10 T	Isoprene	50.0000	49.4505	1.1	89	0.00
11 T	Acrolein	50.0000	48.0412	3.9	83	0.00
12 T	1,1,2-Trichloro-1,2,2-Trifl	50.0000	50.4886	-1.0	88	0.01
13 T	Acetone	50.0000	48.6602	2.7	77	0.00
14 C	1,1-Dichloroethene	50.0000	50.0777	-0.2	88	0.00
15 T	Tert-Butyl Alcohol	200.0000	196.6471	1.7	81	0.00
16 T	Dimethyl Sulfide	50.0000	49.5114	1.0	89	0.00
17 T	Iodomethane	50.0000	41.4816	17.0	81	0.00
18 T	Methyl acetate	50.0000	50.8839	-1.8	89	0.00
19 T	Methylene Chloride	50.0000	48.5575	2.9	87	0.00
20 T	Carbon Disulfide	50.0000	51.5457	-3.1	90	0.00
21 T	Acrylonitrile	50.0000	54.1532	-8.3	85	0.00
22 T	Methyl Tert Butyl Ether	50.0000	50.0692	-0.1	82	0.00
23 T	trans-1,2-Dichloroethene	50.0000	50.1823	-0.4	88	0.00
24 T	n-Hexane	50.0000	49.5482	0.9	90	0.01
25 T	Diisopropyl ether	100.0000	104.6167	-4.6	91	0.00
26 T	Vinyl Acetate	50.0000	53.7321	-7.5	93	0.00
27 P	1,1-Dichloroethane	50.0000	50.9277	-1.9	88	0.00
28 T	Ethyl-Tert-Butyl ether	100.0000	101.6675	-1.7	87	0.00
29 T	2-Butanone	50.0000	48.3632	3.3	82	0.00
30 T	Propionitrile	100.0000	100.6939	-0.7	84	0.00
31 T	2,2-Dichloropropane	50.0000	52.2583	-4.5	92	0.00
32 T	cis-1,2-Dichloroethene	50.0000	51.7083	-3.4	88	0.00
33 C	Chloroform	50.0000	47.8239	4.4	87	0.00
34	1-Bromopropane	50.0000	53.0356	-6.1	90	0.00
35 T	Bromochloromethane	50.0000	50.8366	-1.7	84	0.00
36 T	Tetrahydrofuran	100.0000	99.4697	0.5	84	0.00
37 S	Dibromofluoromethane	25.0000	23.2766	6.9	81	0.00
38 T	1,1,1-Trichloroethane	50.0000	50.8530	-1.7	87	0.01
39 T	Cyclohexane	50.0000	48.8340	2.3	87	0.01
40 T	1,1-Dichloropropene	50.0000	50.5398	-1.1	88	0.00
41 T	Tert-Amyl-Methyl ether	100.0000	101.7584	-1.8	87	0.00
42 T	Carbon Tetrachloride	50.0000	51.1113	-2.2	87	0.00
43 S	1,2-Dichloroethane-d4	25.0000	22.7662	8.9	77	0.00
44	Heptane	-1.0000	0.0000	0.0	0	-2.61#
45 T	1,2-Dichloroethane	50.0000	49.7296	0.5	83	0.00
46 T	Benzene	50.0000	51.3844	-2.8	88	0.00
47 T	Trichloroethene	50.0000	49.2855	1.4	86	0.00
48 T	Methylcyclohexane	50.0000	47.5729	4.9	86	0.00
49 C	1,2-Dichloropropane	50.0000	51.4021	-2.8	87	0.00
50 T	Bromodichloromethane	50.0000	51.8715	-3.7	86	0.00
51 T	1,4-Dioxane	200.0000	203.6765	-1.8	88	0.00
52 T	Dibromomethane	50.0000	51.6791	-3.4	84	0.00
53 T	2-Chloroethyl Vinyl Ether	50.0000	50.2598	-0.5	83	0.00
54 T	4-Methyl-2-Pentanone	50.0000	48.2170	3.6	78	0.00

(#) = Out of Range

8M418223.D 8260WT.M

Wed Mar 08 14:23:41 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418223.D Vial: 3
 Acq On : 8 Mar 2017 10:42 Operator: TMB
 Sample : WG605444-02 50ug/L CCV STD 8260 Inst : HPMS8
 Misc : 1,1 STD80765 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Multiple Level Calibration

Min. RRF : 0.000 Min. Rel. Area : 50% Max. R.T. Dev 0.50min
 Max. RRF Dev : 25% Max. Rel. Area : 150%

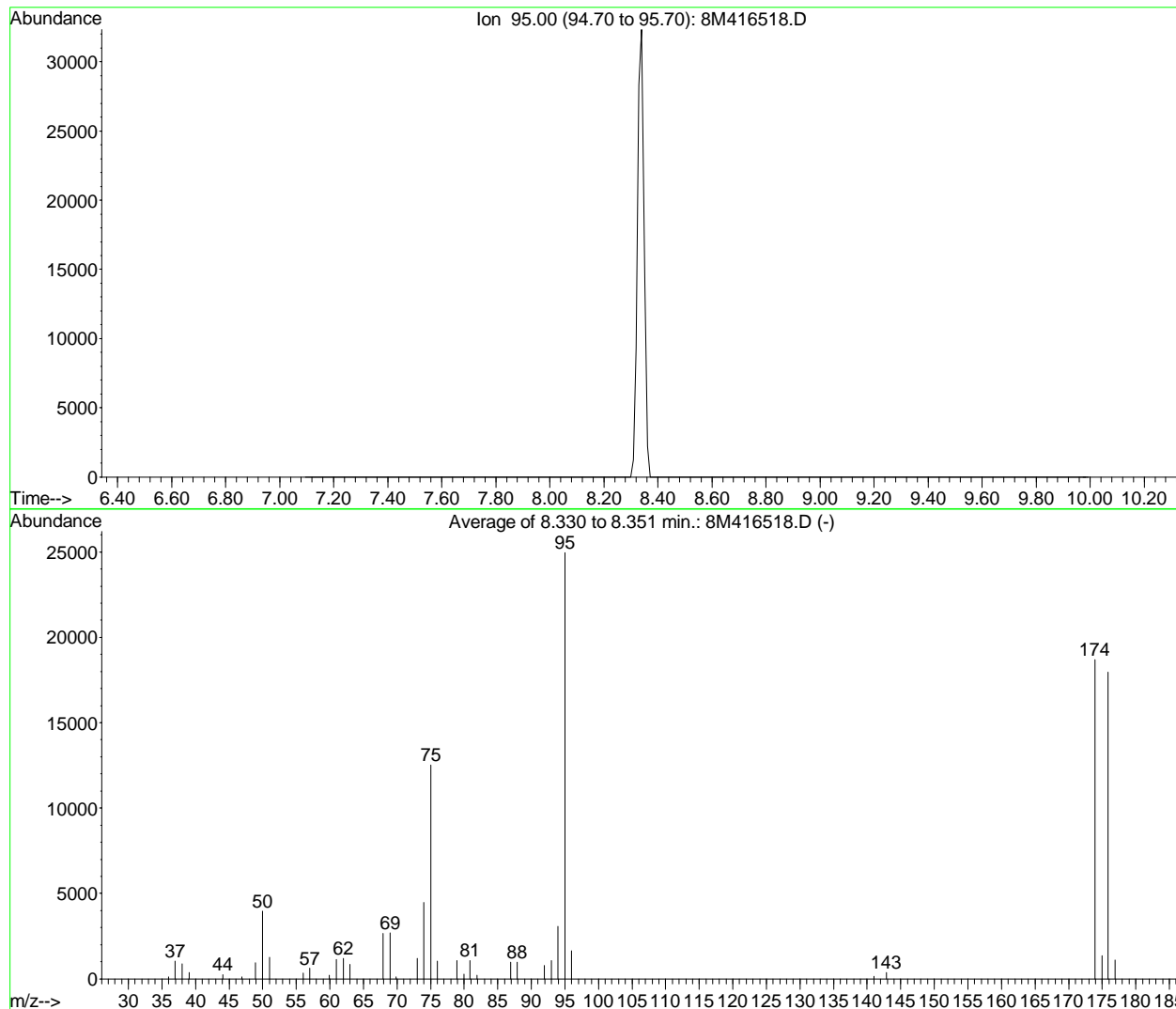
	Compound	Amount	Calc.	%Dev	Area%	Dev(min)
55 T	cis-1,3-Dichloropropene	50.0000	51.5721	-3.1	85	0.00
56 T	Dimethyl Disulfide	50.0000	49.8003	0.4	88	0.00
57 I	Chlorobenzene-d5	25.0000	25.0000	0.0	92	0.00
58 S	Toluene-d8	25.0000	23.6117	5.6	83	0.00
59 C	Toluene	50.0000	51.1645	-2.3	87	0.00
60 T	Ethyl Methacrylate	50.0000	46.8695	6.3	84	0.00
61	Paraldehyde	-1.0000	0.0000	0.0	0	-13.40#
62 T	trans-1,3-Dichloropropene	50.0000	50.9000	-1.8	84	0.00
63 T	1,1,2-Trichloroethane	50.0000	49.2195	1.6	81	0.00
64 T	2-Hexanone	50.0000	48.5734	2.9	78	0.00
65 T	1,3-Dichloropropane	50.0000	49.5106	1.0	81	0.00
66 T	Tetrachloroethene	50.0000	47.4734	5.1	85	0.00
67 T	Dibromochloromethane	50.0000	51.1415	-2.3	81	0.00
68 T	1,2-Dibromoethane	50.0000	50.8711	-1.7	82	0.00
69 T	1-Chlorohexane	50.0000	49.2954	1.4	86	0.00
70 P	Chlorobenzene	50.0000	49.0242	2.0	85	0.00
71 T	1,1,1,2-Tetrachloroethane	50.0000	50.2774	-0.6	83	0.00
72 C	Ethylbenzene	50.0000	48.6069	2.8	85	0.00
73 T	m-,p-Xylene	100.0000	102.5364	-2.5	86	0.00
74 T	o-Xylene	50.0000	48.8718	2.3	84	0.00
75 T	Styrene	50.0000	52.7195	-5.4	83	0.00
76 P	Bromoform	50.0000	45.9221	8.2	78	0.00
77 T	Isopropylbenzene	50.0000	50.8590	-1.7	83	0.00
78 I	1,4-Dichlorobenzene-d4	25.0000	25.0000	0.0	89	0.00
79 P	1,1,2,2-Tetrachloroethane	50.0000	53.3085	-6.6	80	0.00
80 S	p-Bromofluorobenzene	25.0000	24.0643	3.7	82	0.00
81 T	1,2,3-Trichloropropane	50.0000	50.1773	-0.4	77	0.00
82 T	trans-1,4-Dichloro-2-Butene	50.0000	47.0292	5.9	79	0.00
83 T	n-Propylbenzene	50.0000	52.6494	-5.3	84	0.00
84 T	Bromobenzene	50.0000	50.9664	-1.9	82	0.00
85 T	1,3,5-Trimethylbenzene	50.0000	52.3700	-4.7	83	0.00
86 T	2-Chlorotoluene	50.0000	50.3659	-0.7	82	0.00
87 T	4-Chlorotoluene	50.0000	52.8558	-5.7	84	0.00
88 T	a-Methylstyrene	50.0000	50.1833	-0.4	87	0.00
89 T	tert-Butylbenzene	50.0000	48.3231	3.4	81	0.00
90 T	1,2,4-Trimethylbenzene	50.0000	52.4772	-5.0	82	0.00
91 T	sec-Butylbenzene	50.0000	51.5439	-3.1	82	0.00
92 T	p-Isopropyltoluene	50.0000	51.4389	-2.9	81	0.00
93 T	1,3-Dichlorobenzene	50.0000	50.5594	-1.1	82	0.00
94 T	1,4-Dichlorobenzene	50.0000	49.7999	0.4	81	0.00
95 T	n-Butylbenzene	50.0000	51.6638	-3.3	82	0.00
96 T	1,2-Dichlorobenzene	50.0000	49.6882	0.6	80	0.00
97 T	1,2-Dibromo-3-Chloropropane	50.0000	46.8167	6.4	71	0.00
98 T	1,2,4-Trichlorobenzene	50.0000	46.2611	7.5	74	0.00
99 T	Hexachlorobutadiene	50.0000	46.0787	7.8	75	0.00
100 T	Naphthalene	50.0000	47.4104	5.2	71	0.00
101 T	1,2,3-Trichlorobenzene	50.0000	44.4968	11.0	69	0.00

(#) = Out of Range SPCC's out = 0 CCC's out = 0
 8M418223.D 8260WT.M Wed Mar 08 14:23:41 2017

Page 2

2.1.1.5 Raw QC Data

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\120816\8M416518.D Vial: 1
 Acq On : 8 Dec 2016 8:55 Operator: TMB
 Sample : WG594051-01 50ng BFB STD A9/FOO Inst : HPMS8
 Misc : 1,1 STD78995 Multiplr: 1.00
 MS Integration Params: rteint.p
 Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\A9FOOWTR.M (RTE Integrator)
 Title : A9-FOO Water SOP:MSV01 12-08-16 HPMS8



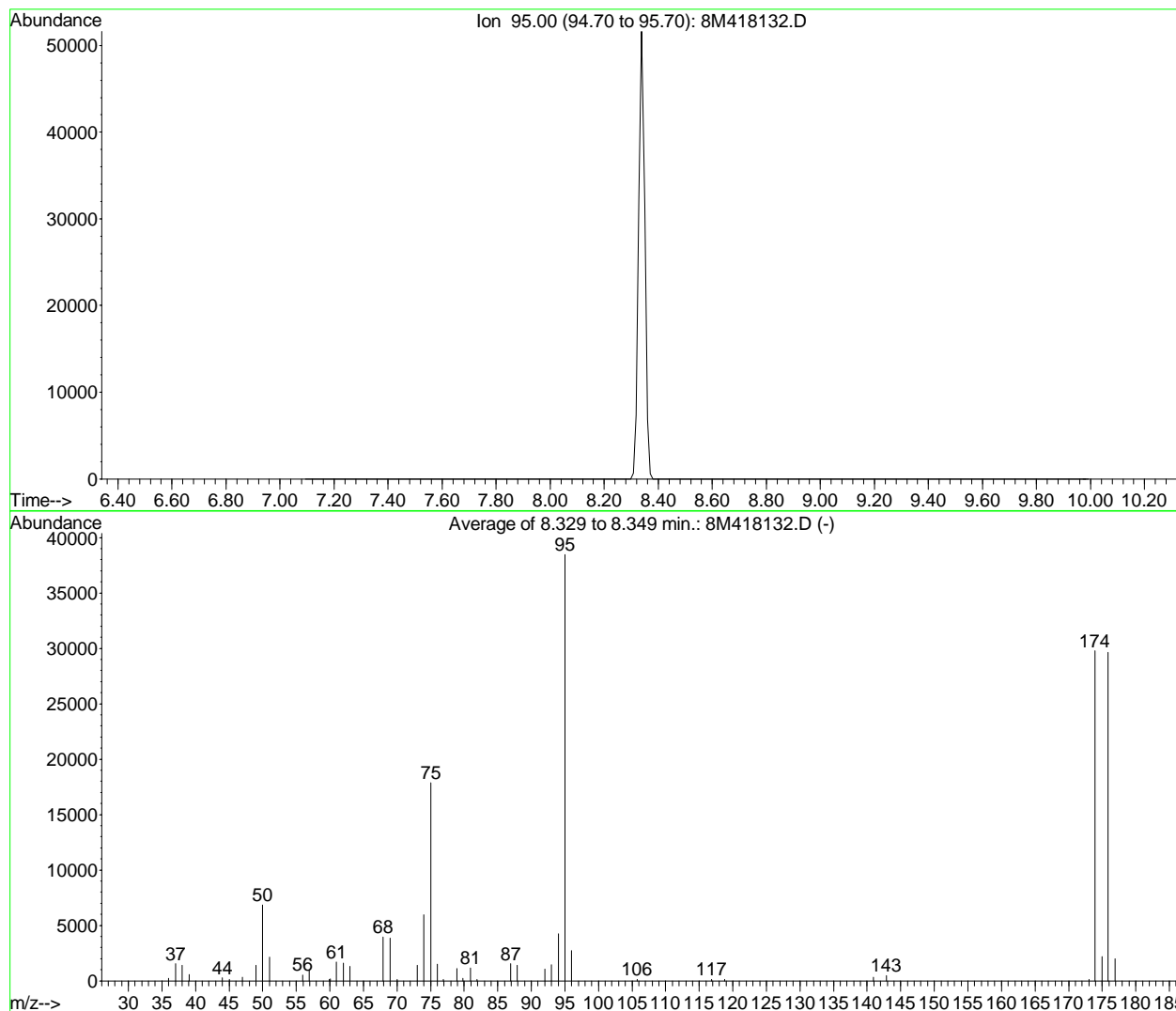
AutoFind: Scans 122, 123, 124; Background Corrected with Scan 117

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	15.9	3959	PASS
75	95	30	60	50.2	12523	PASS
95	95	100	100	100.0	24967	PASS
96	95	5	9	6.6	1651	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	74.9	18700	PASS
175	174	5	9	7.2	1355	PASS
176	174	95	101	96.0	17959	PASS
177	176	5	9	6.1	1092	PASS

8M416518.D A9FOOWTR.M Thu Dec 08 14:42:12 2016

BFB

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030317\8M418132.D Vial: 1
 Acq On : 3 Mar 2017 8:58 Operator: TMB
 Sample : WG604846-01 50ng BFB STD 8260 Inst : HPMS8
 Misc : 1,1 STD80536 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8



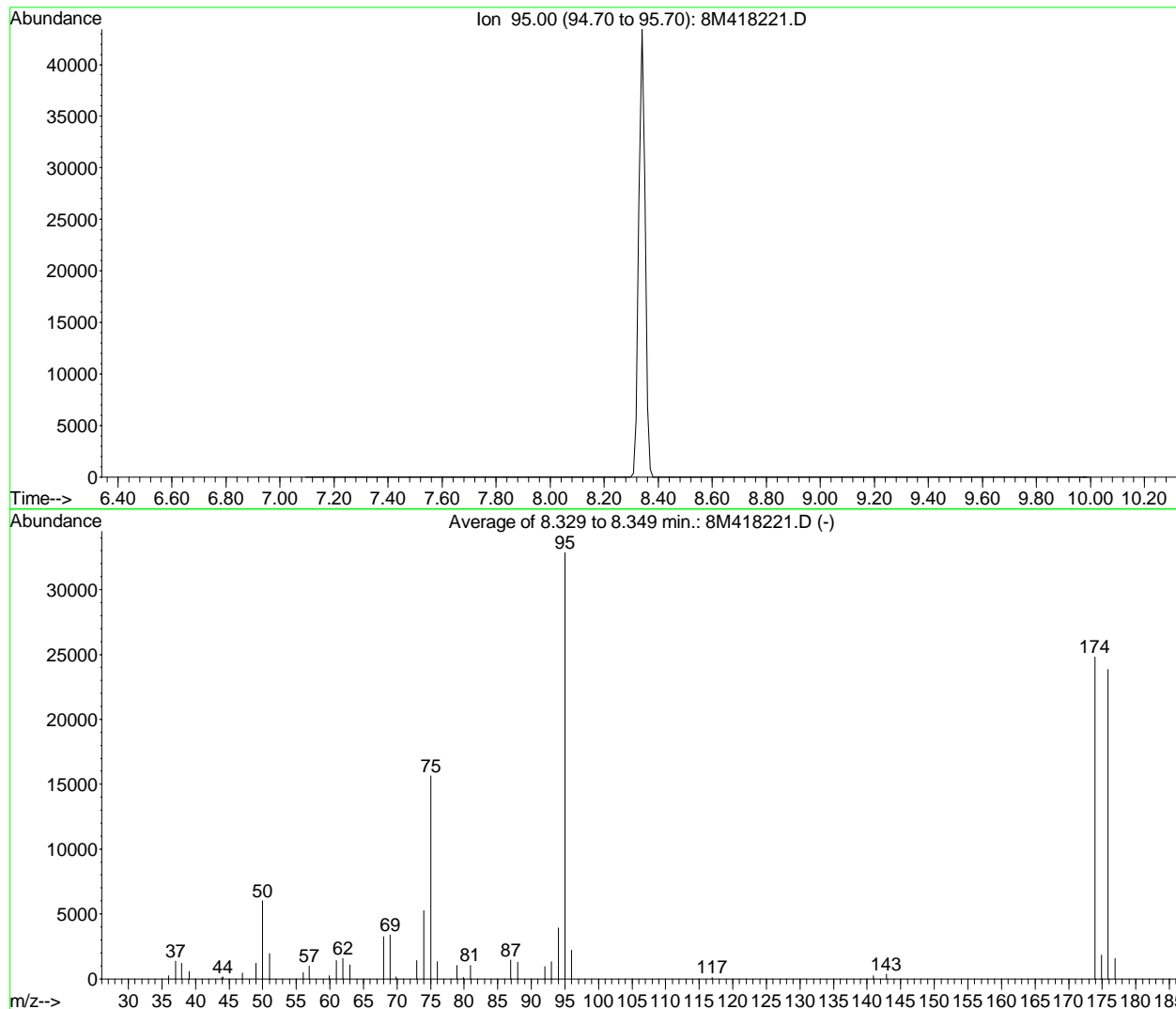
AutoFind: Scans 122, 123, 124; Background Corrected with Scan 117

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	17.7	6821	PASS
75	95	30	60	46.5	17889	PASS
95	95	100	100	100.0	38477	PASS
96	95	5	9	7.1	2727	PASS
173	174	0.00	2	0.4	114	PASS
174	95	50	100	77.4	29800	PASS
175	174	5	9	7.4	2204	PASS
176	174	95	101	99.5	29642	PASS
177	176	5	9	6.7	1979	PASS

8M418132.D 8260WT.M Mon Mar 06 12:31:59 2017

BFB

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418221.D Vial: 1
 Acq On : 8 Mar 2017 9:49 Operator: TMB
 Sample : WG605444-01 50ng BFB STD 8260 Inst : HPMS8
 Misc : 1,1 STD80536 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8



AutoFind: Scans 122, 123, 124; Background Corrected with Scan 117

Target Mass	Rel. to Mass	Lower Limit%	Upper Limit%	Rel. Abn%	Raw Abn	Result Pass/Fail
50	95	15	40	18.3	6014	PASS
75	95	30	60	47.6	15657	PASS
95	95	100	100	100.0	32864	PASS
96	95	5	9	6.7	2193	PASS
173	174	0.00	2	0.0	0	PASS
174	95	50	100	75.5	24821	PASS
175	174	5	9	7.3	1818	PASS
176	174	95	101	96.1	23856	PASS
177	176	5	9	6.6	1585	PASS

8M418221.D 8260WT.M Wed Mar 08 10:18:30 2017

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418225.D Vial: 5
 Acq On : 8 Mar 2017 11:42 Operator: TMB
 Sample : WG605446-01 VBLK0308 BLANK STD 8260 Inst : HPMS8
 Misc : 1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 09 08:29:30 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	569983	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	440788	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.88	152	224850	25.00	ug/L	0.00

System Monitoring Compounds						
37) Dibromofluoromethane	9.90	111	136630	23.3400	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery =	93.36%		
43) 1,2-Dichloroethane-d4	10.54	65	119367	23.2656	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery =	93.08%		
58) Toluene-d8	12.93	98	489557	23.6157	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery =	94.48%		
80) p-Bromofluorobenzene	16.34	95	189722	24.3783	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery =	97.52%		

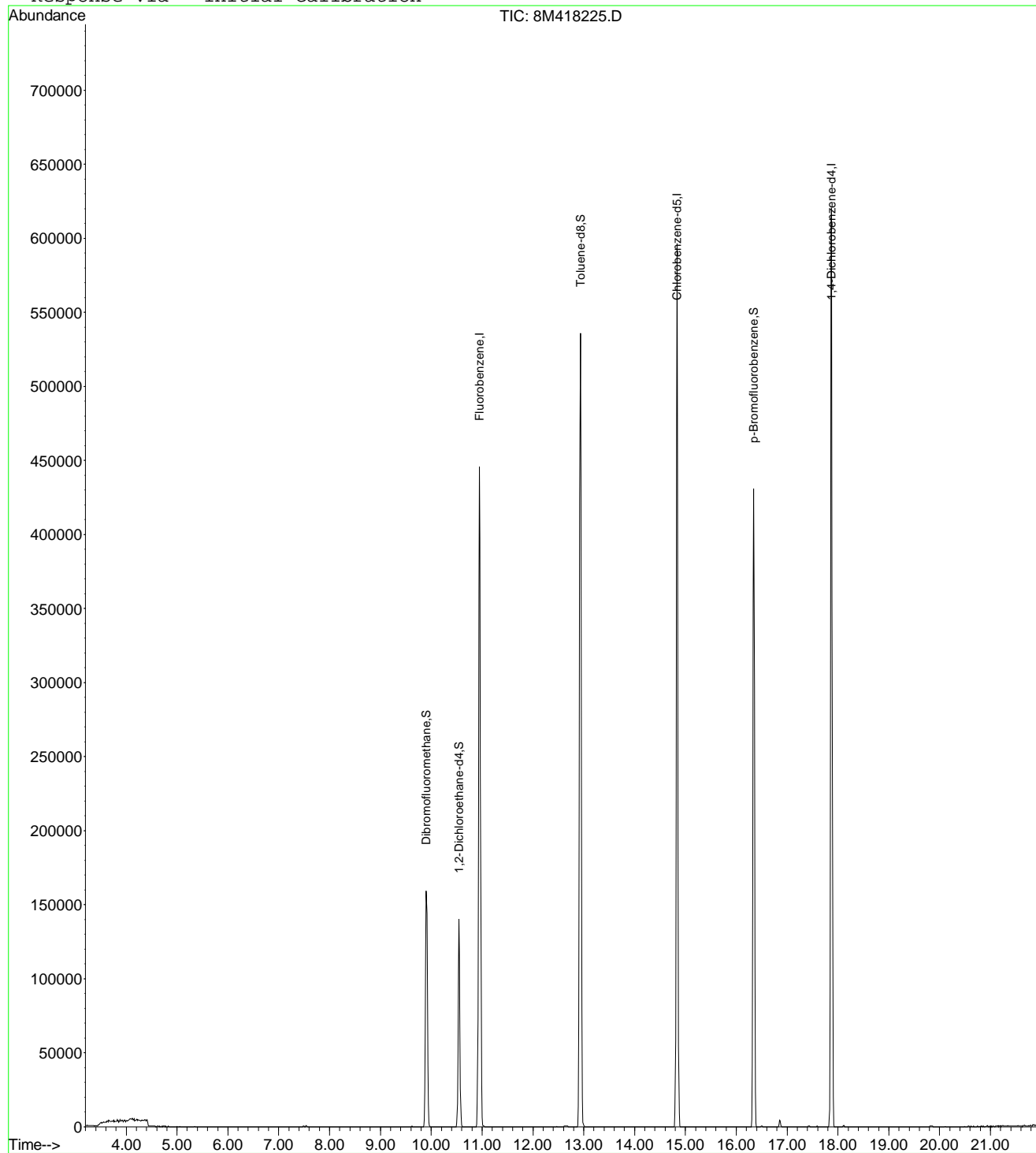
Target Compounds	Qvalue

 (#) = qualifier out of range (m) = manual integration
 8M418225.D 8260WT.M Thu Mar 09 08:29:32 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418225.D Vial: 5
Acq On : 8 Mar 2017 11:42 Operator: TMB
Sample : WG605446-01 VBLK0308 BLANK STD 8260 Inst : HPMS8
Misc : 1,1 Multiplr: 1.00
MS Integration Params: RTEINT.P
Quant Time: Mar 9 8:29 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
Last Update : Mon Mar 06 12:17:52 2017
Response via : Initial Calibration



8M418225.D 8260WT.M

Thu Mar 09 08:29:33 2017

Page 2

Data File : C:\MSDCHEM\2\DATA\030817\8M418225.D Vial: 5
 Acq On : 8 Mar 2017 11:42 Operator: TMB
 Sample : WG605446-01 VBLK0308 BLANK STD 8260 Inst : HPMS8
 Misc : 1,1 Multiplr: 1.00
 MS Integration Params: RTEINT.P

Method : C:\MSDCHEM\2\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Smoothing : ON Filtering: 5
 Sampling : 1 Min Area: 200 Area counts
 Start Thrs: 0.2 Max Peaks: 100
 Stop Thrs : 0 Peak Location: TOP

If leading or trailing edge < 100 prefer < Baseline drop else tangent >
 Peak separation: 5

Signal : TIC

peak #	R.T. min	first scan	max scan	last scan	PK TY	peak height	corr. area	corr. % max.	% of total
1	3.555	25	36	39	rBV	2840	17569	1.31%	0.260%
2	3.617	41	42	45	rVV2	1081	2356	0.18%	0.035%
3	3.875	65	67	69	rBV	1869	3266	0.24%	0.048%
4	4.082	84	87	89	rBV2	969	2086	0.16%	0.031%
5	4.630	137	140	145	rBB	440	1092	0.08%	0.016%
6	4.703	146	147	149	rBB	367	445	0.03%	0.007%
7	4.744	149	151	156	rBB	355	832	0.06%	0.012%
8	4.827	157	159	162	rBB	322	386	0.03%	0.006%
9	7.494	414	417	419	rBB	634	785	0.06%	0.012%
10	7.536	420	421	425	rBB	647	1089	0.08%	0.016%
11	9.624	620	623	625	rBB	335	397	0.03%	0.006%
12	9.903	643	650	658	rBB	159275	418000	31.07%	6.192%
13	10.544	706	712	720	rBB	140241	330093	24.54%	4.890%
14	10.948	744	751	762	rBB	445890	1158908	86.15%	17.169%
15	12.654	910	916	921	rBB	589	2270	0.17%	0.034%
16	12.933	936	943	952	rBB	535886	1260431	93.70%	18.673%
17	14.835	1120	1127	1134	rBB	596462	1283859	95.44%	19.020%
18	16.345	1267	1273	1279	rBB	431022	888345	66.04%	13.160%
19	16.500	1285	1288	1291	rBB	501	760	0.06%	0.011%
20	16.852	1318	1322	1327	rBB	4390	8799	0.65%	0.130%
21	17.431	1375	1378	1381	rBB	499	829	0.06%	0.012%
22	17.586	1391	1393	1396	rBB	420	465	0.03%	0.007%
23	17.875	1414	1421	1427	rBB	620602	1345176	100.00%	19.928%
24	18.123	1441	1445	1447	rBB	898	1397	0.10%	0.021%
25	19.829	1606	1610	1615	rBB	546	1565	0.12%	0.023%
26	20.563	1679	1681	1684	rBB	347	429	0.03%	0.006%
27	20.615	1685	1686	1690	rBB	382	432	0.03%	0.006%
28	20.667	1690	1691	1693	rBB	343	213	0.02%	0.003%
29	20.749	1696	1699	1701	rBB	373	439	0.03%	0.007%
30	20.832	1704	1707	1708	rBB	396	643	0.05%	0.010%
31	20.853	1708	1709	1712	rBB	418	498	0.04%	0.007%
32	20.936	1713	1717	1721	rBB	756	1823	0.14%	0.027%
33	20.987	1721	1722	1723	rBB	341	211	0.02%	0.003%
34	21.008	1723	1724	1725	rBB	335	208	0.02%	0.003%
35	21.060	1725	1729	1731	rBB	383	839	0.06%	0.012%
36	21.122	1732	1735	1737	rBV	447	1221	0.09%	0.018%
37	21.194	1739	1742	1743	rBB	675	908	0.07%	0.013%
38	21.246	1743	1747	1751	rBV	788	2331	0.17%	0.035%
39	21.339	1753	1756	1759	rBV	346	414	0.03%	0.006%
40	21.380	1759	1760	1762	rBV	295	241	0.02%	0.004%
41	21.546	1768	1776	1778	rBV	521	1194	0.09%	0.018%
42	21.670	1784	1788	1793	rBV2	1118	3719	0.28%	0.055%

43	21.783	1793	1799	1802	rVV	665	1570	0.12%	0.023%
44	21.856	1802	1806	1807	rBV	876	1652	0.12%	0.024%

00844663

Sum of corrected areas: 6750185

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418226.D Vial: 6
 Acq On : 8 Mar 2017 12:11 Operator: TMB
 Sample : WG605446-02 20ug/L LCS STD 8260 Inst : HPMS8
 Misc : 1,1 STD80757 Multiplr: 1.00

MS Integration Params: RTEINT.P

Quant Time: Mar 08 14:20:58 2017

Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

Internal Standards	R.T.	QIon	Response	Conc	Units	Dev(Min)
1) Fluorobenzene	10.95	96	573590	25.00	ug/L	0.00
57) Chlorobenzene-d5	14.84	117	455727	25.00	ug/L	0.00
78) 1,4-Dichlorobenzene-d4	17.87	152	246122	25.00	ug/L	0.00

System Monitoring Compounds

37) Dibromofluoromethane	9.91	111	139103	23.6130	ug/L	0.00
Spiked Amount	25.000	Range 86 - 118	Recovery	=	94.44%	
43) 1,2-Dichloroethane-d4	10.55	65	120005	23.2429	ug/L	0.00
Spiked Amount	25.000	Range 80 - 120	Recovery	=	92.96%	
58) Toluene-d8	12.93	98	500443	23.3495	ug/L	0.00
Spiked Amount	25.000	Range 88 - 110	Recovery	=	93.40%	
80) p-Bromofluorobenzene	16.34	95	201033	23.5991	ug/L	0.00
Spiked Amount	25.000	Range 86 - 115	Recovery	=	94.40%	

Target Compounds

						Qvalue
2) Dichlorodifluoromethane	3.34	85	191729	24.9680	ug/L	99
3) Chloromethane	3.83	50	277766	25.5499	ug/L	100
4) Vinyl Chloride	4.06	62	238937	25.1950	ug/L	100
5) 1,3-Butadiene	4.10	54	106783	23.7777	ug/L	97
6) Bromomethane	4.97	94	77699	17.4270	ug/L	100
7) Chloroethane	5.13	64	93639	23.1222	ug/L	99
8) Trichlorofluoromethane	5.62	101	208049	21.2198	ug/L	98
9) Diethyl ether	6.14	59	372112	97.6894	ug/L	100
10) Isoprene	6.19	67	182948	20.8477	ug/L	99
11) Acrolein	6.38	56	48154	93.9370	ug/L	97
12) 1,1,2-Trichloro-1,2,2-Trif	6.40	101	122270	21.4019	ug/L	97
13) Acetone	6.49	43	14596	20.0473	ug/L	97
14) 1,1-Dichloroethene	6.71	61	166660	19.0364	ug/L	95
15) Tert-Butyl Alcohol	6.82	59	52541	223.9660	ug/L	99
16) Dimethyl Sulfide	6.97	62	126487	19.4682	ug/L	92
17) Iodomethane	7.23	142	74223	13.8820	ug/L	95
18) Methyl acetate	7.23	43	42306	19.3633	ug/L	96
19) Methylene Chloride	7.50	84	118660	19.5444	ug/L	98
20) Carbon Disulfide	7.54	76	281423	15.0684	ug/L	99
21) Acrylonitrile	7.67	53	21834	20.3074	ug/L	99
22) Methyl Tert Butyl Ether	7.71	73	221366	19.6305	ug/L	100
23) trans-1,2-Dichloroethene	7.94	61	165151	19.5642	ug/L	95
24) n-Hexane	8.02	57	134231	16.5878	ug/L	99
25) Diisopropyl ether	8.36	45	1776231	103.1988	ug/L	98
26) Vinyl Acetate	8.53	43	132857	20.5598	ug/L	99
27) 1,1-Dichloroethane	8.56	63	210790	19.7715	ug/L	100
28) Ethyl-Tert-Butyl ether	8.94	59	1516134	95.7378	ug/L	100
29) 2-Butanone	9.11	43	23498	19.5024	ug/L	98
30) Propionitrile	9.22	54	39941	103.9519	ug/L	98
31) 2,2-Dichloropropane	9.34	77	175061	19.3729	ug/L	99
32) cis-1,2-Dichloroethene	9.40	96	135619	20.5764	ug/L	90
33) Chloroform	9.62	83	219381	19.6145	ug/L	99
34) 1-Bromopropane	9.75	122	34438	26.9057	ug/L	98
35) Bromochloromethane	9.85	130	74682	20.8076	ug/L	100
36) Tetrahydrofuran	9.87	42	78616	102.8179	ug/L	100
38) 1,1,1-Trichloroethane	10.15	97	195005	20.5920	ug/L	99
39) Cyclohexane	10.18	56	195124	19.4516	ug/L	99
40) 1,1-Dichloropropene	10.34	75	160556	19.9116	ug/L	98
41) Tert-Amyl-Methyl ether	10.45	73	1337004	101.7763	ug/L	99
42) Carbon Tetrachloride	10.49	117	177534	20.4003	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418226.D 8260WT.M Wed Mar 08 14:21:00 2017

Page 1

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418226.D Vial: 6
 Acq On : 8 Mar 2017 12:11 Operator: TMB
 Sample : WG605446-02 20ug/L LCS STD 8260 Inst : HPMS8
 Misc : 1,1 STD80757 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 08 14:20:58 2017 Quant Results File: 8260WT.RES

Quant Method : K:\ORGANICS\V...\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Initial Calibration
 DataAcq Meth : 8260WT

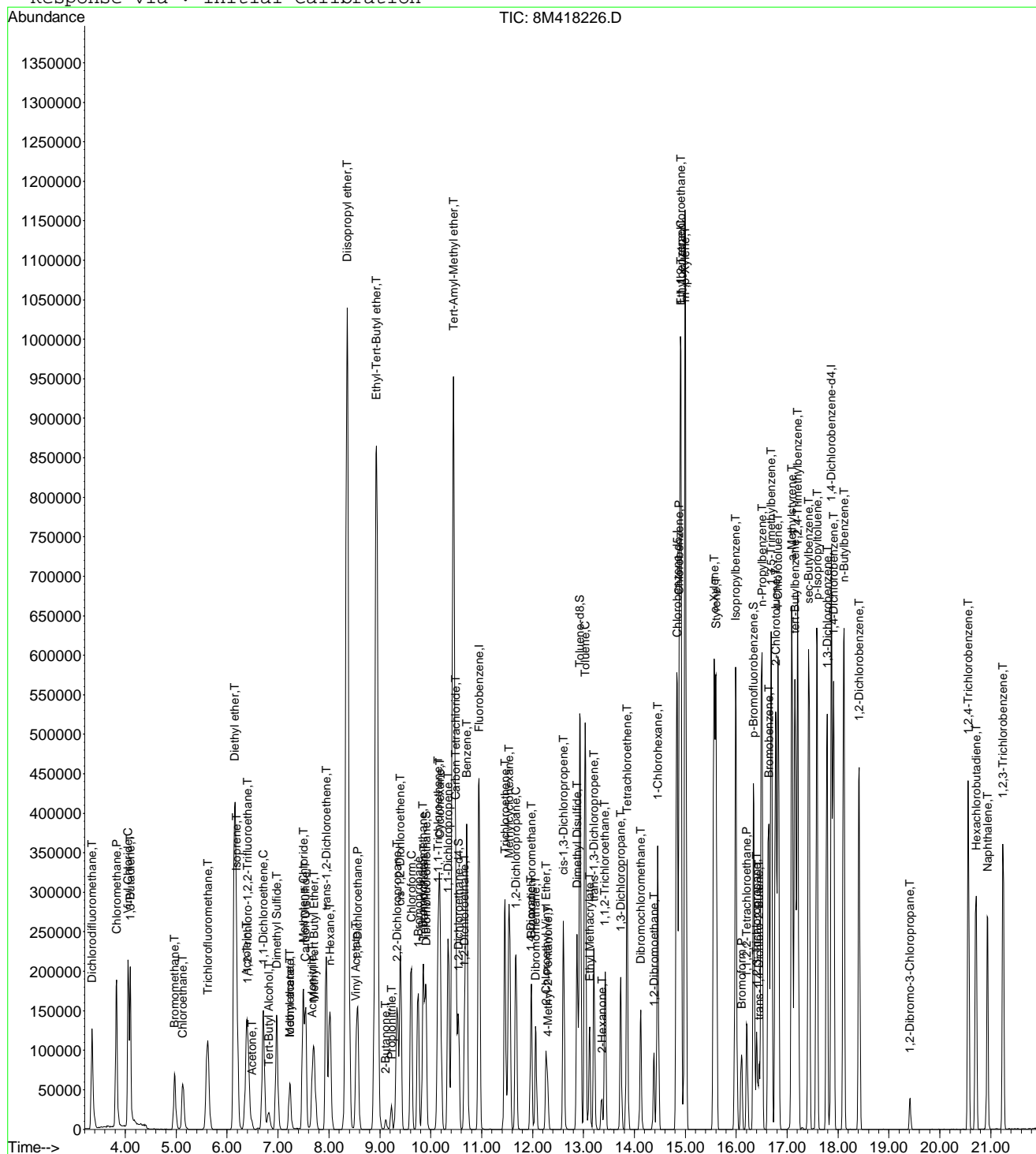
Compound	R.T.	QIon	Response	Conc	Unit	Qvalue
45) 1,2-Dichloroethane	10.66	62	135071	20.0519	ug/L	99
46) Benzene	10.70	78	477873	20.5490	ug/L	98
47) Trichloroethene	11.46	130	132181	19.6026	ug/L	98
48) Methylcyclohexane	11.54	83	190385	18.9080	ug/L	99
49) 1,2-Dichloropropane	11.68	63	116842	20.0597	ug/L	94
50) Bromodichloromethane	11.98	83	152254	19.8101	ug/L	100
51) 1,4-Dioxane	11.96	88	5235	185.8023	ug/L	97
52) Dibromomethane	12.06	93	60997	20.8817	ug/L	96
53) 2-Chloroethyl Vinyl Ether	12.26	63	49012	18.8611	ug/L	100
54) 4-Methyl-2-Pentanone	12.30	58	21503	18.6229	ug/L	96
55) cis-1,3-Dichloropropene	12.61	75	186311	21.0914	ug/L	99
56) Dimethyl Disulfide	12.87	79	93194	19.3381	ug/L	94
59) Toluene	13.03	91	509646	19.8630	ug/L	99
60) Ethyl Methacrylate	13.12	69	102185	18.8223	ug/L	94
62) trans-1,3-Dichloropropene	13.21	75	148018	19.2999	ug/L	100
63) 1,1,2-Trichloroethane	13.42	97	82543	19.6575	ug/L	99
64) 2-Hexanone	13.36	58	19553	18.0944	ug/L	98
65) 1,3-Dichloropropane	13.73	76	146636	20.5975	ug/L	92
66) Tetrachloroethene	13.86	164	103055	18.6391	ug/L	96
67) Dibromochloromethane	14.13	129	106424	19.4185	ug/L	99
68) 1,2-Dibromoethane	14.38	107	84362	20.5014	ug/L	97
69) 1-Chlorohexane	14.46	91	170606	19.1439	ug/L	97
70) Chlorobenzene	14.88	112	348604	18.7251	ug/L	95
71) 1,1,1,2-Tetrachloroethane	14.91	131	124864	18.6924	ug/L	99
72) Ethylbenzene	14.91	106	194082	18.4682	ug/L	97
73) m-,p-Xylene	14.99	106	466156	38.7175	ug/L	95
74) o-Xylene	15.56	106	225664	18.7195	ug/L	100
75) Styrene	15.60	104	379861	20.0315	ug/L	95
76) Bromoform	16.10	173	62277	17.5416	ug/L	99
77) Isopropylbenzene	15.99	105	566178	19.1753	ug/L	98
79) 1,1,2,2-Tetrachloroethane	16.20	83	94811	20.7752	ug/L	100
81) 1,2,3-Trichloropropane	16.40	110	26406	19.9263	ug/L #	33
82) trans-1,4-Dichloro-2-Butene	16.44	53	25273	18.5447	ug/L #	30
83) n-Propylbenzene	16.50	91	690292	19.5975	ug/L	97
84) Bromobenzene	16.64	156	148954	19.4632	ug/L	95
85) 1,3,5-Trimethylbenzene	16.69	105	496073	19.6757	ug/L	98
86) 2-Chlorotoluene	16.77	91	473000	19.9061	ug/L	100
87) 4-Chlorotoluene	16.82	91	390666	18.8447	ug/L	98
88) a-Methylstyrene	17.09	118	279028	19.0342	ug/L	99
89) tert-Butylbenzene	17.16	134	105758	18.1801	ug/L	97
90) 1,2,4-Trimethylbenzene	17.21	105	520751	19.8492	ug/L	98
91) sec-Butylbenzene	17.42	105	628820	19.3355	ug/L	98
92) p-Isopropyltoluene	17.59	119	531645	19.4774	ug/L	99
93) 1,3-Dichlorobenzene	17.79	146	294053	19.0211	ug/L	96
94) 1,4-Dichlorobenzene	17.91	146	295854	19.2643	ug/L	96
95) n-Butylbenzene	18.12	91	512114	19.5008	ug/L	99
96) 1,2-Dichlorobenzene	18.42	146	261776	19.1185	ug/L	94
97) 1,2-Dibromo-3-Chloropropane	19.41	75	14178	18.6532	ug/L	92
98) 1,2,4-Trichlorobenzene	20.56	180	176414	17.6754	ug/L	98
99) Hexachlorobutadiene	20.71	225	79627	16.9837	ug/L	99
100) Naphthalene	20.94	128	298143	19.0438	ug/L	99
101) 1,2,3-Trichlorobenzene	21.24	180	145235	17.5880	ug/L	99

(#) = qualifier out of range (m) = manual integration
 8M418226.D 8260WT.M Wed Mar 08 14:21:01 2017

Page 2

Data File : K:\ORGANICS\VOLATILE\HPMS8\DATA\030817\8M418226.D Vial: 6
 Acq On : 8 Mar 2017 12:11 Operator: TMB
 Sample : WG605446-02 20ug/L LCS STD 8260 Inst : HPMS8
 Misc : 1,1 STD80757 Multiplr: 1.00
 MS Integration Params: RTEINT.P
 Quant Time: Mar 8 14:20 2017 Quant Results File: 8260WT.RES

Method : K:\ORGANICS\VOLATILE\HPMS8\METHODS\8260WT.M (RTE Integrator)
 Title : Method 8260B/624 WTR-SOP:OVLMSV01 03-03-17 HPMS8
 Last Update : Mon Mar 06 12:17:52 2017
 Response via : Initial Calibration



2.2 General Chemistry Data

2.2.1 Method 9056

2.2.1.1 Summary Data



Login Number: L17030342
Department: General Chromatography
Analyst: Craig Smith

METHOD

Analysis EPA300.0/SW846 9056

HOLDING TIMES

Sample Analysis: Hold times for NO₂ and NO₃ are 48 hours and the hold times for F, Cl, Br, and SO₄ are 28 days. The hold time forms calculate the hold time based on 48 hours. All samples were analyzed in hold.

CALIBRATION

Initial Calibration: All acceptance criteria were met.

Alternate Source Standards: All acceptance criteria were met.

Continuing Calibration Verification: All acceptance criteria were met.

Continuing Calibration Blank: All acceptance criteria were met.

BATCH QA/QC

Method Blank: All acceptance criteria were met.

Laboratory Control Sample: All acceptance criteria were met.

Matrix Spikes: The client did not specify an MS/MSD for this sample delivery group.

SAMPLES

Samples: Sample 01 was analyzed at dilutions only due to its pre-run screen result for CL which was greater than 200 ppm. Any sample that has a single anion load greater than 200 ppm will be diluted in order to prevent damage to the ion chromatograph, which is caused by repeated overloading of the analytical column and oversaturation of the conductivity suppressor and/or detector.

MANUAL INTEGRATION: No manual integrations were required.

I certify that this data package is in compliance with the terms and conditions agreed to by the client and Microbac Laboratories Inc., both technically and for completeness, except for the conditions noted above. Release of the data contained in this hard copy data package has been authorized by the Laboratory Manager or designated person, as verified by the following signature.

Narrative ID: 123426

Approved By: Eric Lawson

A handwritten signature in black ink, appearing to read "Eric Lawson", is written over a light gray rectangular background.

Lab Report #: L17030342

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030342-01	PrePrep Method: N/A	Instrument: IC2
Client ID: LH18/24-SP650-6421	Prep Method: 9056	Prep Date: 03/14/2017 16:00
Matrix: Water	Analytical Method: 9056	Cal Date: 10/12/2016 15:28
Workgroup #: WG606173	Analyst: CAS	Run Date: 03/14/2017 17:17
Collect Date: 03/06/2017 15:00	Dilution: 25	File ID: I2_031417-07
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Sulfate	14808-79-8	115		50.0	25.0	12.5
J	Estimated value ; the analyte concentration was greater than the highest standard					

Lab Report #: L17030342

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030342-01	PrePrep Method: N/A	Instrument: IC2
Client ID: LH18/24-SP650-6421	Prep Method: 9056	Prep Date: 03/14/2017 16:00
Matrix: Water	Analytical Method: 9056	Cal Date: 10/12/2016 15:28
Workgroup #: WG606173	Analyst: CAS	Run Date: 03/14/2017 17:36
Collect Date: 03/06/2017 15:00	Dilution: 250	File ID: I2_031417-08
Sample Tag: DL02	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Chloride	16887-00-6	4190		100	50.0	25.0
J	Estimated value ; the analyte concentration was less than the LOQ.					

2.2.1.2 QC Summary Data

Example Calculations - Ion Chromatography

A. Methods 9056/300.0 (Quadratic with Offset)

1. Retrieve Curve Data from the ICAL Curve

c2 = the value of curve constant

c1 = the curve slope

c0 = the curve offset

2. Obtain the area, y , from the instrument raw data

3. Calculate the concentration of the analyte, f(y), where:

$$f(y) = \frac{1}{2 * c_2} * \left(-c_1 \pm \sqrt{c_1^2 - 4 * c_2 * (c_0 - y)} \right)$$

Example Calculation:

Value of constant, c2, (curve):	0.0003
Value of curve constant, c1, (slope):	0.0869
Value of curve constant, c0, (offset):	-0.0103
Area of target analyte, y, (uS*min):	2.993
Calculated concentration, f(y), (mg/L):	31.1998864
	or: -40.1161215 *
Dilution factor (D):	1.00
Concentration of analyte in sample (mg/L):	31.200

* There are two possible solutions, but only one is valid.

B. Method 314.0 - Perchlorate (Linear)

Retrieve Curve Data from Linear Plot

c1 = the curve slope

Obtain the area, y , from the quantitation report

Calculate the concentration of the analyte, f(y), where:

$$f(y) = y / c1$$

Example Calculation:

Value of c1, slope:	0.0034
Area of target analyte, y:	0.083
Calculated concentration:	24.4117647
Dilution Factor:	1
Concentration in sample:	24.4117647

Microbac Laboratories Inc.
Instrument Run Log

Instrument: IC2 Dataset: 101216 IC2 ICAL.SEQ
 Analyst1: CAS Analyst2: JWR
 Method: IC01 SOP: 300/9056 Rev: 19

Maintenance Log ID: _____ Syringe Filter Lot#: 160109254
 Eluent ID#: RGT38178

Workgroups: Column 1 ID: AG14A-4MM Column 2 ID: AS14A-4MM
 Analytical WGs 587194 (LOD/LOQ Waters), 587087 (LOD/LOQ Soils)
 Internal STD: NA Surrogate STD: NA Calibration STD STD77046 (10/12/2016)
 CCV STD: STD77046 LCS STD: STD77045 MS/MSD STD: NA

Comments: ICAL WG587294 : Alternate Source STD77045
 Guard Column : Ionpac AG14A (4x50mm)
 Dionex S/N 012640
 Analytical Column : Ionpac AS14A (4x250mm)
 Dionex S/N 010066
 Cond Suppressor : AERS 500 (4mm)
 Dionex S/N 140122040
 System backpressure = 1666psi

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I2_101216-01	ELUENT	1	1		10/12/16 13:14
2	I2_101216-02	DI WATER	1	1		10/12/16 13:33
3	I2_101216-03	WG587294-01 STD	1	1	STD77046	10/12/16 13:52
4	I2_101216-04	WG587294-02 STD	1	1	STD77046	10/12/16 14:12
5	I2_101216-05	WG587294-03 STD	1	1	STD77046	10/12/16 14:31
6	I2_101216-06	WG587294-04 STD	1	1	STD77046	10/12/16 14:50
7	I2_101216-07	WG587294-05 STD	1	1	STD77046	10/12/16 15:09
8	I2_101216-08	WG587294-06 STD	1	1	STD77046	10/12/16 15:28
9	I2_101216-09	WG587294-07 SSCV	1	1	STD77045	10/12/16 15:48
10	I2_101216-10	LCRV @Level-6	1	1	STD77045	10/12/16 16:14
11	I2_101216-11	LCRV @Level-4	1	1	STD77045	10/12/16 16:34
12	I2_101216-12	LCRV @Level-2	1	1	STD77045	10/12/16 16:53
13	I2_101216-13	LCRV @Level-0	1	1		10/12/16 17:12
14	I2_101216-14	WG587303-01 ANION CCV	1	1	STD77046	10/12/16 17:31
15	I2_101216-15	WG587303-02 ANION CCB	1	1		10/12/16 17:51
16	I2_101216-16	WG587194-01 ANION BLANK	1	1		10/12/16 18:10
17	I2_101216-17	WG587194-02 ANION LCS	1	1	STD77045	10/12/16 18:29
18	I2_101216-18	WG587194-03 ANION LCS2	1	1	STD77045	10/12/16 18:48
19	I2_101216-19	L16100002-01 LOD (F,CL,BR,SO4)	1	1	STD77045	10/12/16 19:07
20	I2_101216-20	L16100002-01 LOD (NO2,NO3)	1	1	STD77045	10/12/16 19:27
21	I2_101216-21	L16100004-01 LOQ (F,CL,BR,SO4)	1	1	STD77045	10/12/16 19:46
22	I2_101216-22	L16100004-01 LOQ (NO2,NO3)	1	1	STD77045	10/12/16 20:05
23	I2_101216-23	L16100004-09 LOQ (F,CL,BR,SO4)	1	1	STD77045	10/12/16 20:24
24	I2_101216-24	L16100004-09 LOQ (NO2,NO3)	1	1	STD77045	10/12/16 20:43
25	I2_101216-25	WG587303-03 ANION CCV	1	1	STD77046	10/12/16 21:03
26	I2_101216-26	WG587303-04 ANION CCB	1	1		10/12/16 21:22
27	I2_101216-27	WG587087-01 ANION BLANK-SOIL	7	1		10/12/16 21:41
28	I2_101216-28	WG587087-02 ANION LCS-SOIL	7	1	STD77045	10/12/16 22:00
29	I2_101216-29	WG587087-03 ANION LCS2-SOIL	7	1	STD77045	10/12/16 22:20
30	I2_101216-30	L16100003-01 LOD (F,CL,BR,SO4)	7	1	STD77045	10/12/16 22:39

Page: 1

Approved: 14-OCT-16




Microbac Laboratories Inc.
Instrument Run Log

Instrument: IC2 Dataset: 101216 IC2 ICAL.SEQ
 Analyst1: CAS Analyst2: JWR
 Method: IC01 SOP: 300/9056 Rev: 19

Maintenance Log ID: _____ Syringe Filter Lot#: 160109254
 Eluent ID#: RGT38178

Workgroups: Column 1 ID: AG14A-4MM Column 2 ID: AS14A-4MM
 Analytical WGs 587194 (LOD/LOQ Waters), 587087 (LOD/LOQ Soils)
 Internal STD: NA Surrogate STD: NA STD77046 (10/12/2016)
 CCV STD: STD77046 LCS STD: STD77045 NA

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
31	I2_101216-31	L16100003-01 LOD (NO2,NO3)	7	1	STD77045	10/12/16 22:58
32	I2_101216-32	L16100005-01 LOQ (F,CL,BR,SO4)	7	1	STD77045	10/12/16 23:17
33	I2_101216-33	L16100005-01 LOQ (NO2,NO3)	7	1	STD77045	10/12/16 23:36
34	I2_101216-34	L16100005-10 LOQ (F,CL,BR,SO4)	7	1	STD77045	10/12/16 23:56
35	I2_101216-35	L16100005-10 LOQ (NO2,NO3)	7	1	STD77045	10/13/16 00:15
36	I2_101216-36	WG587303-05 ANION CCV	1	1	STD77046	10/13/16 00:34
37	I2_101216-37	WG587303-06 ANION CCB	1	1		10/13/16 00:53
38	I2_101216-38	END	1	1		10/13/16 01:12

Comments

Seq.	Rerun	Dil.	Reason	Analytes
------	-------	------	--------	----------

Eri C. Zimm



Microbac Laboratories Inc.
Instrument Run Log

Instrument: IC2 Dataset: 031417 IC2.SEQ
 Analyst1: CAS Analyst2: NA
 Method: 300/9056 SOP: IC01 Rev: 19

Maintenance Log ID: _____ Syringe Filter Lot#: 160804254
 Eluent ID#: RGT39539

Workgroups: Column 1 ID: AG14A-4MM Column 2 ID: AS14A-4MM
 Analytical WGs: WG606173 (Waters), WG606174 (TX-IC)
 Internal STD: NA Surrogate STD: NA Calibration STD: STD77046 (10/12/2016)
 CCV STD: STD77046 LCS STD: STD79166 MS/MSD STD: STD79166

Comments: System Backpressure: 1679 psi

Samples L17030342-01, L17030378-01, and L17030379-01 were analyzed at dilutions only due to their pre-run screen results for chloride, which were greater than 200 ppm.

Sample L17030359-01 was analyzed at a dilution only due to its pre-run screen result for sulfate, which was greater than the calibration maximum for that analyte.

Sample L17030448-01 was analyzed at a dilution only due to its pre-run screen result for chloride, which was greater than the calibration maximum for that analyte.

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
1	I2_031417-01	ELUENT	1	1		03/14/17 15:21
2	I2_031417-02	DI WATER	1	1		03/14/17 15:41
3	I2_031417-03	WG606178-01 ANION CCV	1	1	STD77046	03/14/17 16:00
4	I2_031417-04	WG606178-02 ANION CCB	1	1		03/14/17 16:19
5	I2_031417-05	WG606173-01 ANION BLANK	1	1		03/14/17 16:38
6	I2_031417-06	WG606173-02 ANION LCS	1	1	STD79166	03/14/17 16:57
7	I2_031417-07	L17030342-01 (CL,SO4) 25x	1	25		03/14/17 17:17
8	I2_031417-08	L17030342-01 RR CL 250x	1	250		03/14/17 17:36
9	I2_031417-09	L17030378-01 (CL,SO4) 10x	1	10		03/14/17 17:55
10	I2_031417-10	L17030378-01 RR CL 100x	1	100		03/14/17 18:15
11	I2_031417-11	L17030379-01 (CL,SO4) 100x	1	100		03/14/17 18:34
12	I2_031417-12	L17030379-01 RR CL 1000x	1	1000		03/14/17 18:53
13	I2_031417-13	L17030359-01 (SO4) 5x	2	5		03/14/17 19:12
14	I2_031417-14	L17030448-01 (CL) 250x	2	250		03/14/17 19:31
15	I2_031417-15	WG606178-03 ANION CCV	1	1	STD77046	03/14/17 19:51
16	I2_031417-16	WG606178-04 ANION CCB	1	1		03/14/17 20:10
17	I2_031417-17	L17030453-03 (SO4) REF	1	1		03/14/17 20:29
18	I2_031417-18	WG606173-04 DUP 0453-03	2	1		03/14/17 20:48
19	I2_031417-19	WG606173-05 MS 0453-03	2	1	STD79166	03/14/17 21:07
20	I2_031417-20	WG606173-06 MSD 0453-03	2	1	STD79166	03/14/17 21:27
21	I2_031417-21	L17030453-04 (SO4)	2	1		03/14/17 21:46
22	I2_031417-22	WG606178-05 ANION CCV	1	1	STD77046	03/14/17 22:05
23	I2_031417-23	WG606178-06 ANION CCB	1	1		03/14/17 22:24
24	I2_031417-24	WG606174-01 TX-IC BLANK	11	1		03/14/17 22:44
25	I2_031417-25	WG606174-02 TX-IC LCS	11	1	STD77067	03/14/17 23:03
26	I2_031417-26	WG606174-03 TX-IC LCS2	11	1	STD77067	03/14/17 23:22
27	I2_031417-27	L17030511-01 TX-IC REF	11	1		03/14/17 23:41
28	I2_031417-28	WG606174-05 DUP 0511-01	11	1		03/15/17 00:00

Page: 1

Approved: 15-MAR-17




Microbac Laboratories Inc.
Instrument Run Log

Instrument: IC2 Dataset: 031417 IC2.SEQ
 Analyst1: CAS Analyst2: NA
 Method: 300/9056 SOP: IC01 Rev: 19

Maintenance Log ID: _____ Syringe Filter Lot#: 160804254
 Eluent ID#: RGT39539

Workgroups: Column 1 ID: AG14A-4MM Column 2 ID: AS14A-4MM
 Analytical WGs: WG606173 (Waters), WG606174 (TX-IC)
 Internal STD: NA Surrogate STD: NA STD77046 (10/12/2016)
 CCV STD: STD77046 LCS STD: STD79166 STD79166

Seq.	File ID	Sample Information	Mat	Dil	Reference	Date/Time
29	I2_031417-29	WG606178-07 ANION CCV	1	1	STD77046	03/15/17 00:20
30	I2_031417-30	WG606178-08 ANION CCB	1	1		03/15/17 00:39
31	I2_031417-31	END	1	1		03/15/17 00:58

Comments

Seq.	Rerun	Dil.	Reason	Analytes
20				
			Sample WG606173-06 MSD 0453-03 had an MSD %Rec below the advisory limit for sulfate. This was due to the parent sample's initial matrix, which contained an amount of sulfate approximately equal to 10% of that of the MSD spiking solution.	
25				
			Sample WG606174-02 TX-IC LCS had a %Rec that was below the advisory limit for chloride. This failure, however, was found to be the result of an error in the generation of the quality control form, wherein the incorrect %Rec limits were chosen. According to the correct %Rec limits for htis TX-IC LCS, the %Rec for chloride was within acceptance limits.	

Page: 2

Approved: 15-MAR-17




Microbac Laboratories Inc.

Data Checklist

Date: 12-OCT-2016
 Analyst: CAS
 Analyst: JWR
 Method: 300/9056
 Instrument: IC2
 Curve Workgroup: WG587294
 Runlog ID: 78045
 Analytical Workgroups: L16100002, L16100004, L16100003, L16100005

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	1666PSI
Window standard (FID)	NA
Initial Calibration	X
Average RF	NA
Linear regression or higher order curve	X
Alternate source standard (ICV) % Difference	X
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	NA
Recoveries	NA
%RPD	NA
Samples	INTERNAL QC ONLY
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	NA
Reruns	0005-01 (SO4) NEEDED
Manual integrations	X
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	NA
Check for completeness	X
Primary Reviewer	CAS
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	ECL

Primary Reviewer:
13-OCT-2016



Secondary Reviewer:
14-OCT-2016




Microbac Laboratories Inc.

Data Checklist

Date: 14-MAR-2017
 Analyst: CAS
 Analyst: NA
 Method: 300/9056
 Instrument: IC2
 Curve Workgroup: NA
 Runlog ID: 80978
 Analytical Workgroups: L17030342, 030359, 030378, 030379, 030448, 030453, 030511

ANALYTICAL	
System Performance Check	X
DFTPP (MS)	NA
Endrin/DDT breakdown (8081/MS)	NA
Pentachlorophenol/benzidine tailing (MS)	NA
Eluent check (IC)/system pressure (HPLC)	1679PSI
Window standard (FID)	NA
Initial Calibration	NA
Average RF	NA
Linear regression or higher order curve	NA
Alternate source standard (ICV) % Difference	NA
Continuing Calibration (CCV)	X
% D/% Drift	X
Minimum response factors (MS)	NA
Continuing calibration blank (CCB) (IC)	X
Special standards	NA
Blanks	X
TCL hits	ND
Surrogate recoveries	NA
LCS/LCSD (Laboratory Control Sample)	X
Recoveries	X
Surrogate recoveries	NA
MS/MSD/Sample duplicates	X
Recoveries	X
%RPD	X
Samples	X
TCL hits	X
Mass spectra (MS/HPLC)/2nd column confirmations (ECD/FID/HPLC)	NA
Surrogate recoveries	NA
Internal standard areas (MS)	NA
Library searches (MS)	NA
Calculations & correct factors	X
Compounds above calibration range	X
Reruns	X
Manual integrations	NA
Project/client specific requirements	X
REPORTING	
Upload batch form	X
KOBRA workgroup data/forms/bench sheets	X
Case narratives	X
Check for completeness	X
Primary Reviewer	CAS
SUPERVISORY/SECONDARY REVIEW	
Check for compliance with method and project specific requirements	X
Check the completeness/accuracy of reported information	X
Data qualifiers	X
Secondary Reviewer	ECL

Primary Reviewer:
15-MAR-2017



Secondary Reviewer:
15-MAR-2017




Analytical Method:9056
Login Number:L17030342

AAB#:WG606173

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6421	01	03/06/17					03/14/2017	8	2	*	03/14/17	8.1	2	*
LH18/24-SP650-6421	01	03/06/17					03/14/2017	8	2	*	03/14/17	8.1	2	*

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17030342 Work Group: WG606173
 Blank File ID: I2_031417-05 Blank Sample ID: WG606173-01
 Prep Date: 03/14/17 16:00 Instrument ID: IC2
 Analyzed Date: 03/14/17 16:38 Method: 9056
 Analyst: CAS

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG606173-02	I2_031417-06	03/14/17 16:57	01
LH18/24-SP650-6421	L17030342-01	I2_031417-07	03/14/17 17:17	DL01
LH18/24-SP650-6421	L17030342-01	I2_031417-08	03/14/17 17:36	DL02
DUP	WG606173-04	I2_031417-18	03/14/17 20:48	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5198875
 Report generated 03/15/2017 11:02



Login Number: L17030342 Prep Date: 03/14/17 16:00 Sample ID: WG606173-01
 Instrument ID: IC2 Run Date: 03/14/17 16:38 Prep Method: 9056
 File ID: I2_031417-05 Analyst: CAS Method: 9056
 Workgroup (AAB#): WG606173 Matrix: Water Units: mg/L
 Contract #: Cal ID: IC2-12-OCT-16

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Chloride	0.100	0.400	0.100	1	U
Sulfate	0.500	2.00	0.500	1	U

DL Method Detection Limit
 LOQ Reporting/Practical Quantitation Limit
 ND Analyte Not detected at or above reporting limit
 * |Analyte concentration| > 1/2 RL

Report Name: BLANK
 PDF ID: 5198876
 15-MAR-2017 11:02



Login Number: L17030342 Run Date: 03/14/2017 Sample ID: WG606173-02
Instrument ID: IC2 Run Time: 16:57 Prep Method: 9056
File ID: I2 031417-06 Analyst: CAS Method: 9056
Workgroup (AAB#): WG606173 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD79166 Cal ID: IC2-12-OCT-16

Analytes	Expected	Found	% Rec	LCS Limits	Q
Chloride	8.00	8.02	100	90 - 110	
Sulfate	40.0	40.7	102	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 5198877
Report generated: 03/15/2017 11:02



Login Number: L17030342 Run Date: 03/14/2017 Sample ID: WG606178-02
 Instrument ID: IC2 Run Time: 16:19 Method: 9056
 File ID: I2 031417-04 Analyst: CAS Units: mg/L
 Workgroup (AAB#): WG606173 Cal ID: IC2 - 12-OCT-16
 Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Chloride	0.100	0.400	0.100	U
Sulfate	0.500	2.00	0.500	U

U = Result is less than MDL.
 F = Result is between MDL and RL.
 * = Result is above RL.



Login Number: L17030342 Run Date: 03/14/2017 Sample ID: WG606178-04
Instrument ID: IC2 Run Time: 20:10 Method: 9056
File ID: I2 031417-16 Analyst: CAS Units: mg/L
Workgroup (AAB#): WG606173 Cal ID: IC2 - 12-OCT-16
Matrix: WATER QAPP: DOD4

Analytes	MDL	RDL	Concentration	Qualifier
Chloride	0.100	0.400	0.100	U
Sulfate	0.500	2.00	0.500	U

U = Result is less than MDL.
F = Result is between MDL and RL.
* = Result is above RL.



Login Number: L17030342 Run Date: 03/14/2017 Sample ID: WG606178-01
 Instrument ID: IC2 Run Time: 16:00 Method: 9056
 File ID: I2 031417-03 Analyst: CAS QC Key: DOD4
 Workgroup (AAB#): WG606173 Cal ID: IC2 - 12-OCT-16
 Matrix: WATER

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Chloride	8.00	8.06	mg/L	4.55	0.788	10	
Sulfate	40.0	40.3	mg/L	5.89	0.633	10	

* Exceeds %D Criteria



Login Number: L17030342 Run Date: 03/14/2017 Sample ID: WG606178-03
 Instrument ID: IC2 Run Time: 19:51 Method: 9056
 File ID: I2 031417-15 Analyst: CAS QC Key: DOD4
 Workgroup (AAB#): WG606173 Cal ID: IC2 - 12-OCT-16
 Matrix: WATER

Analyte	Expected	Found	UNITS	RF	%D	UCL	Q
Chloride	8.00	7.78	mg/L	4.73	2.70	10	
Sulfate	40.0	39.2	mg/L	6.07	2.08	10	

* Exceeds %D Criteria

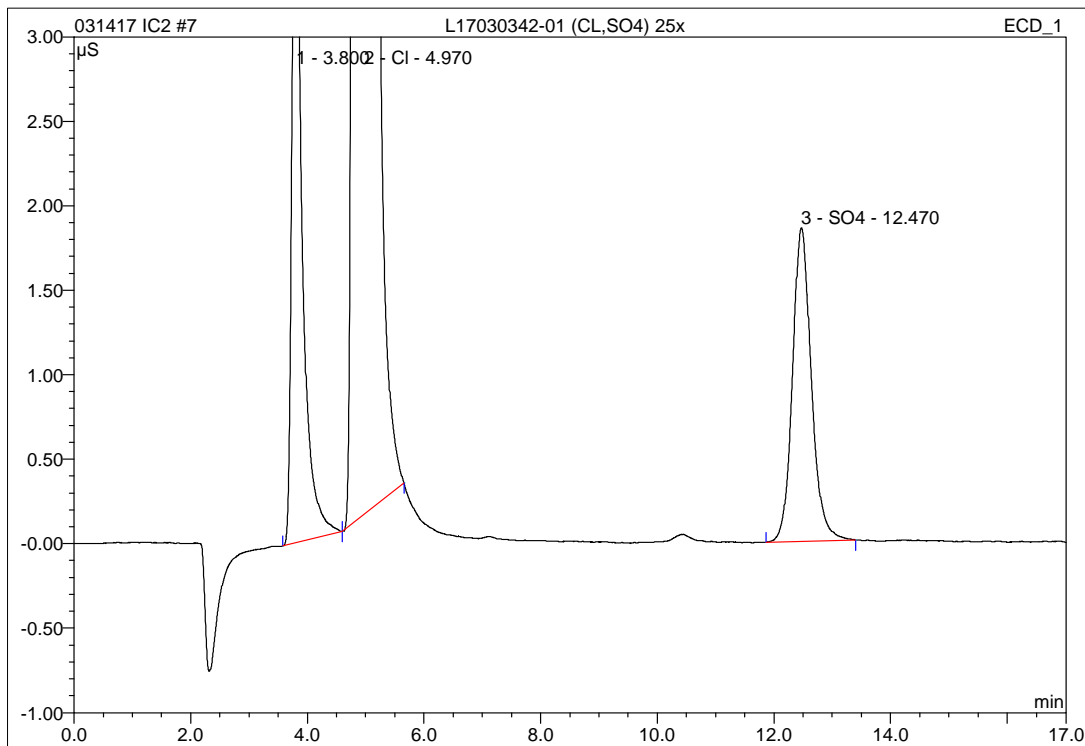
CCV - Modified 03/05/2008
 PDF File ID: 5198878
 Report generated 03/15/2017 11:02



2.2.1.3 Sample Data

7 L17030342-01 (CL,SO4) 25x**1,25 CAS (CL screen>200ppm)**

Sample Name:	L17030342-01 (CL,SO4) 25x	Injection Volume:	25.0
Vial Number:	7	Channel:	ECD_1
Sample Type:	unknown	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	03/14/2017 17:17	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



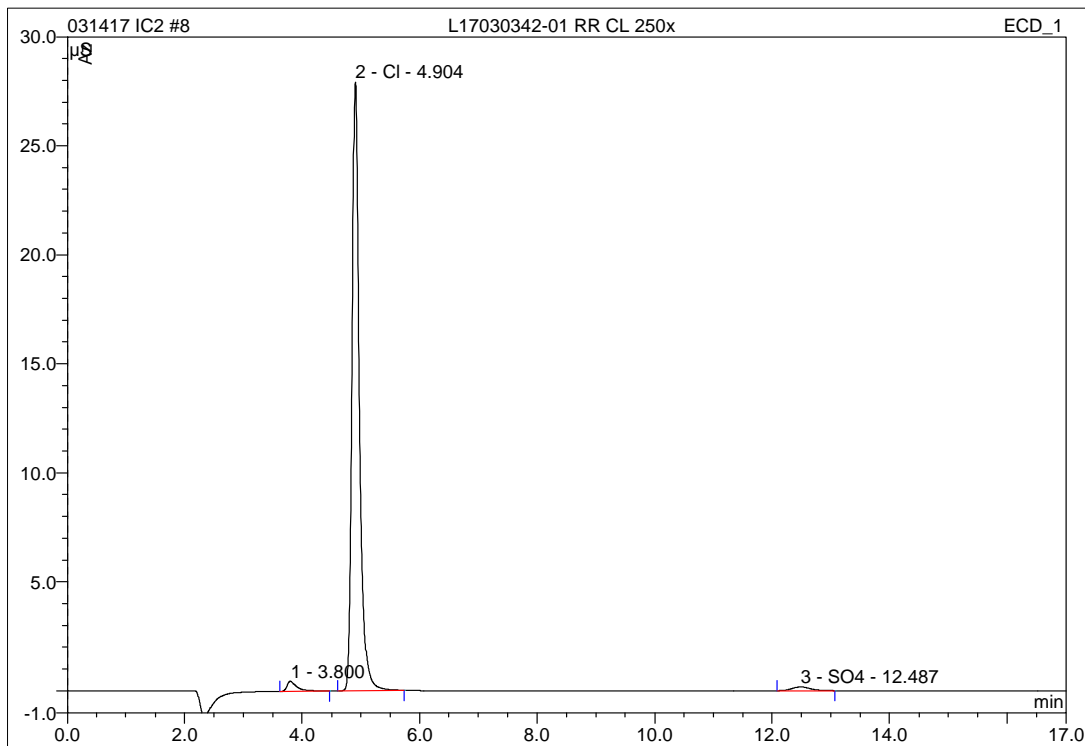
No.	Ret.Time min	Peak Name	Height μS	Area μS*min	Rel.Area %	Amount mg/L	Type
1	3.80	n.a.	4.269	0.869	1.54	n.a.	BMB
2	4.97	Cl	349.750	54.878	97.23	114.073	bMB
3	12.47	SO4	1.857	0.696	1.23	4.601	BMB
Total:			355.876	56.443	100.00	118.674	

IC/Integration

Chromeleon (c) Dionex 1996-2001
Version 6.80 SP1 Build 2238

8 L17030342-01 RR CL 250x**1,250 CAS**

Sample Name:	L17030342-01 RR CL 250x	Injection Volume:	25.0
Vial Number:	8	Channel:	ECD_1
Sample Type:	unknown	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	03/14/2017 17:36	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



No.	Ret.Time min	Peak Name	Height μS	Area $\mu\text{S}\cdot\text{min}$	Rel.Area %	Amount mg/L	Type
1	3.80	n.a.	0.459	0.089	2.13	n.a.	BMB
2	4.90	Cl	27.924	4.018	96.30	16.772	BMB
3	12.49	SO4	0.178	0.065	1.57	0.512	BMB
Total:			28.561	4.173	100.00	17.285	

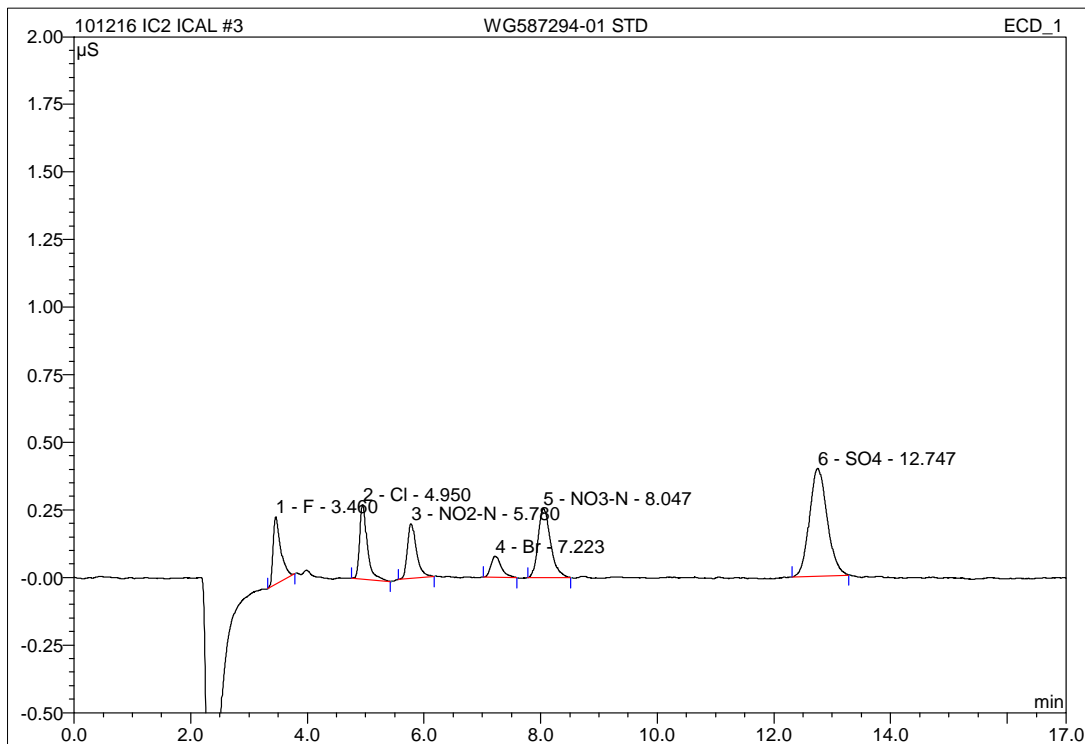
IC/Integration

Chromeleon (c) Dionex 1996-2001
Version 6.80 SP1 Build 2238

2.2.1.4 Standards Data

3 WG587294-01 STD**1,1 CAS STD77046 (Level-1)**

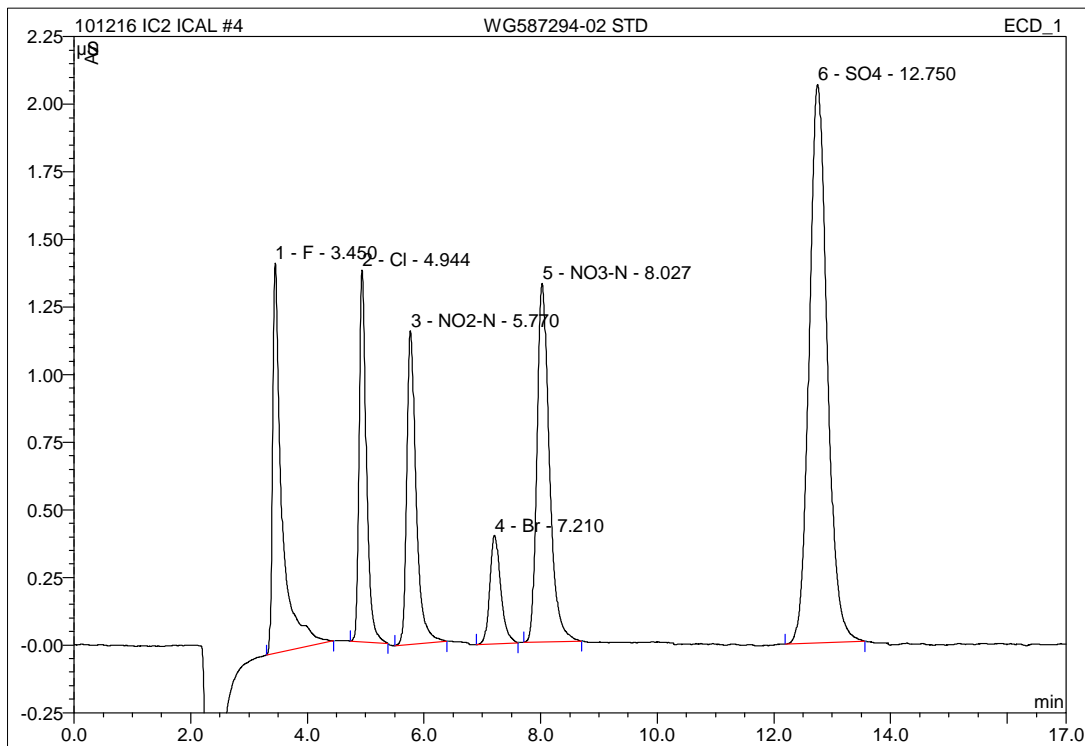
Sample Name:	WG587294-01 STD	Injection Volume:	25.0
Vial Number:	3	Channel:	ECD_1
Sample Type:	standard	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	10/12/2016 13:52	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/L	Type
1	3.46	F	0.251	0.039	11.54	0.200	BMB
2	4.95	Cl	0.275	0.042	12.47	0.201	BMB
3	5.78	NO2-N	0.203	0.037	10.87	0.123	BMB
4	7.22	Br	0.078	0.016	4.80	0.199	BMB
5	8.05	NO3-N	0.256	0.063	18.74	0.136	BMB
6	12.75	SO4	0.398	0.141	41.58	1.004	BMB
Total:			1.461	0.338	100.00	1.862	

4 WG587294-02 STD**1,1 CAS STD77046 (Level-2)**

Sample Name:	WG587294-02 STD	Injection Volume:	25.0
Vial Number:	4	Channel:	ECD_1
Sample Type:	standard	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	10/12/2016 14:12	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



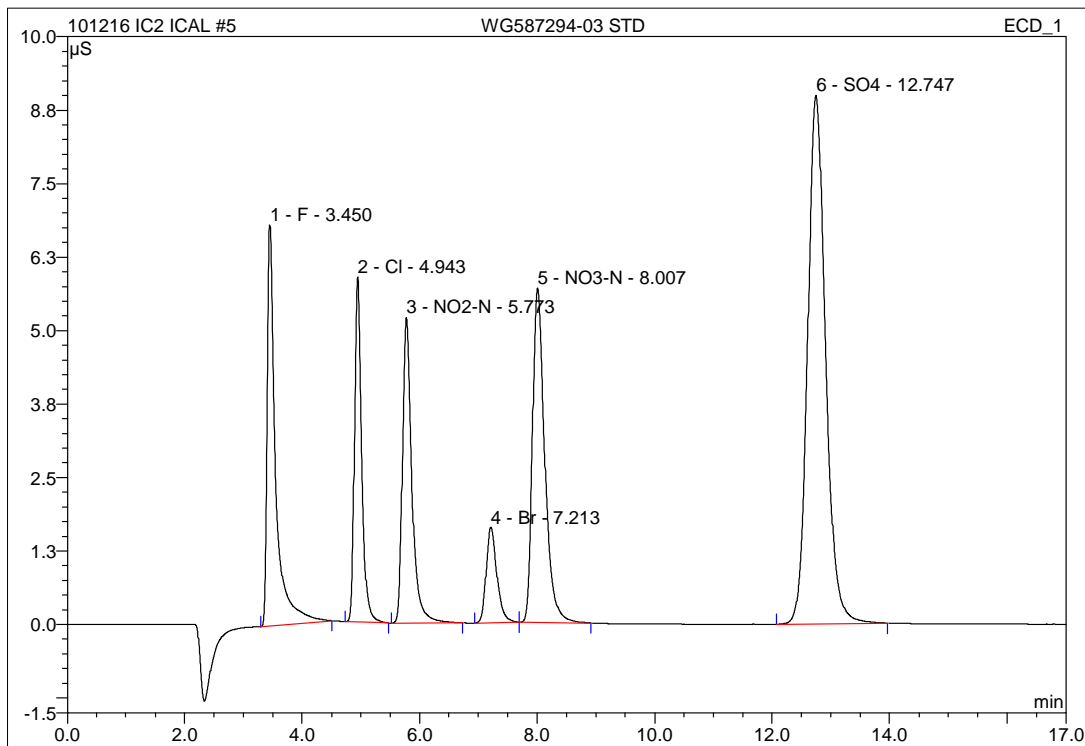
No.	Ret.Time min	Peak Name	Height μS	Area μS*min	Rel.Area %	Amount mg/L	Type
1	3.45	F	1.443	0.271	14.70	1.013	BMB
2	4.94	Cl	1.376	0.200	10.83	0.985	BMB
3	5.77	NO2-N	1.159	0.215	11.69	0.581	BMB
4	7.21	Br	0.402	0.087	4.72	1.019	BMB
5	8.03	NO3-N	1.326	0.327	17.76	0.670	BMB
6	12.75	SO4	2.065	0.742	40.29	4.894	BMB
Total:			7.771	1.842	100.00	9.161	

IC/Integration

Chromeleon (c) Dionex 1996-2001
Version 6.80 SP1 Build 2238

5 WG587294-03 STD**1,1 CAS STD77046 (Level-3)**

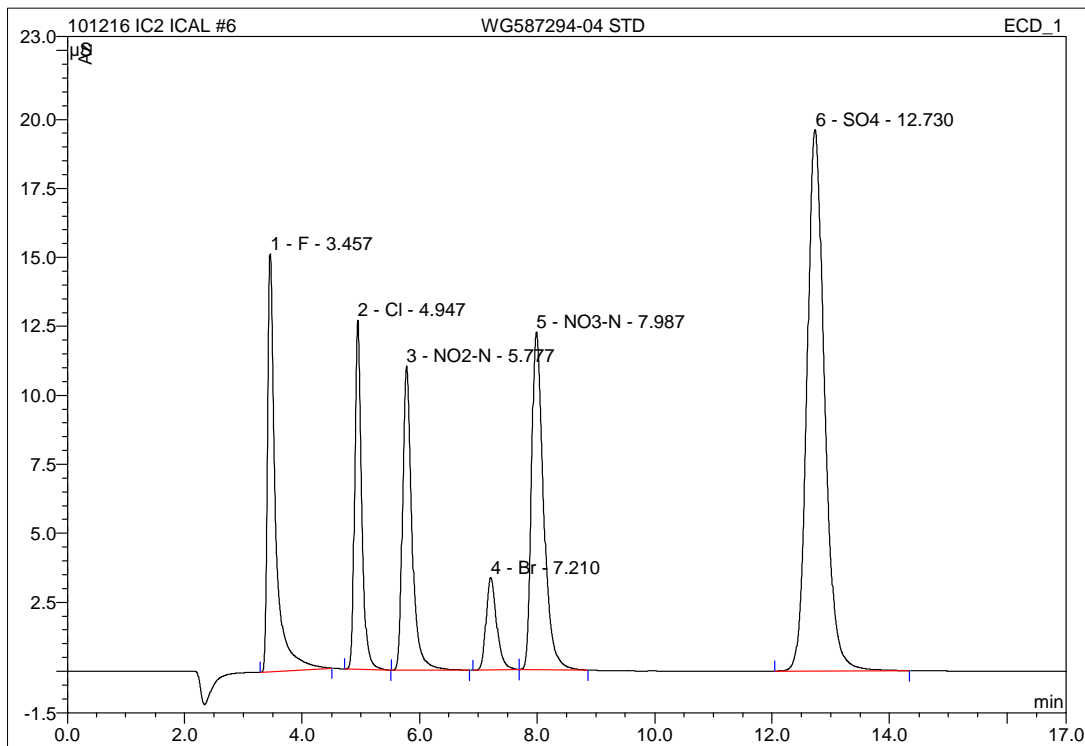
Sample Name:	WG587294-03 STD	Injection Volume:	25.0
Vial Number:	5	Channel:	ECD_1
Sample Type:	standard	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	10/12/2016 14:31	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



No.	Ret.Time min	Peak Name	Height μS	Area μS*min	Rel.Area %	Amount mg/L	Type
1	3.45	F	6.820	1.119	14.30	3.927	BMB
2	4.94	Cl	5.876	0.832	10.63	3.996	BMB
3	5.77	NO2-N	5.197	0.966	12.35	2.446	BMB
4	7.21	Br	1.628	0.344	4.39	3.960	BMB
5	8.01	NO3-N	5.689	1.380	17.63	2.707	bMB
6	12.75	SO4	8.992	3.186	40.70	19.932	BMB
Total:			34.202	7.828	100.00	36.967	

6 WG587294-04 STD**1,1 CAS STD77046 (Level-4)**

Sample Name:	WG587294-04 STD	Injection Volume:	25.0
Vial Number:	6	Channel:	ECD_1
Sample Type:	standard	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	10/12/2016 14:50	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



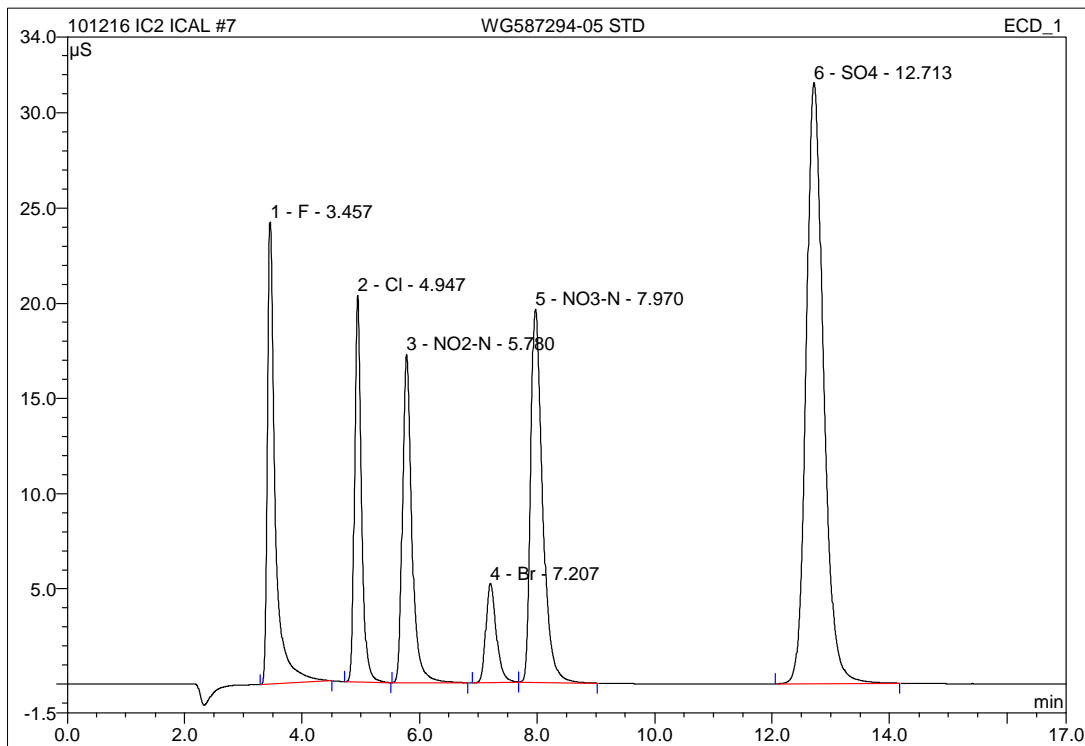
No.	Ret.Time min	Peak Name	Height μ S	Area μ S*min	Rel.Area %	Amount mg/L	Type
1	3.46	F	15.142	2.345	14.15	7.981	BMB
2	4.95	Cl	12.656	1.755	10.59	8.047	BMB
3	5.78	NO2-N	11.035	2.046	12.35	4.969	BMB
4	7.21	Br	3.356	0.699	4.22	7.924	BMB
5	7.99	NO3-N	12.242	2.909	17.56	5.436	BMB
6	12.73	SO4	19.625	6.813	41.12	40.379	BMB
Total:			74.055	16.567	100.00	74.737	

IC/Integration

Chromleon (c) Dionex 1996-2001
Version 6.80 SP1 Build 2238

7 WG587294-05 STD**1,1 CAS STD77046 (Level-5)**

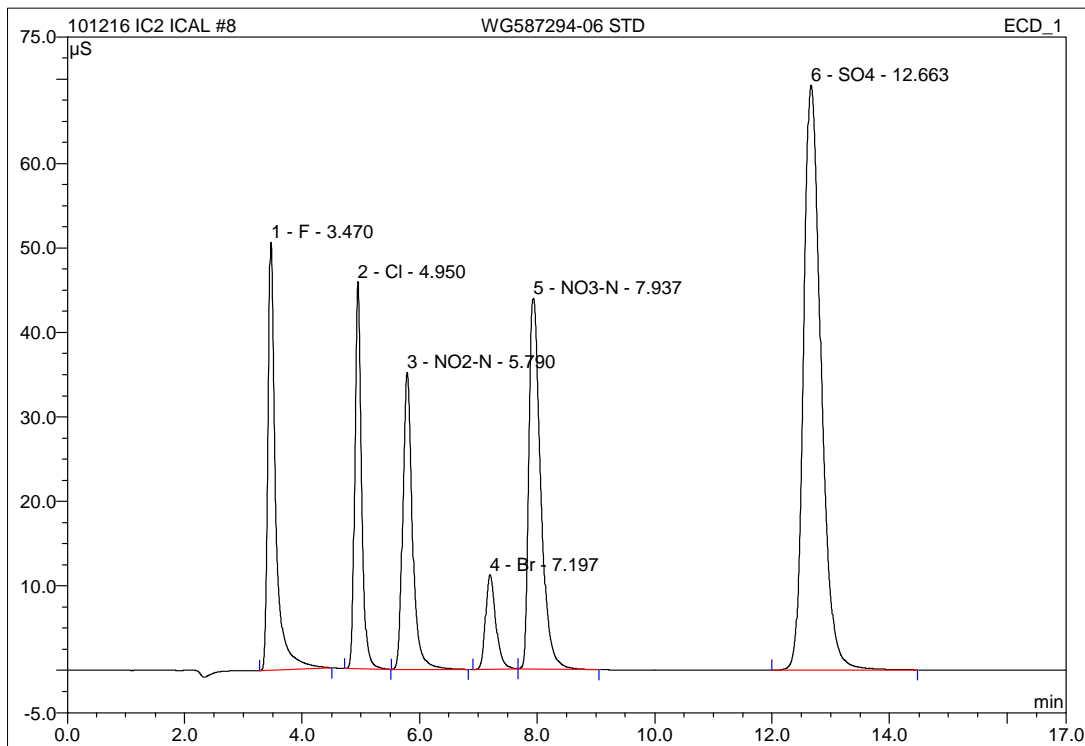
Sample Name:	WG587294-05 STD	Injection Volume:	25.0
Vial Number:	7	Channel:	ECD_1
Sample Type:	standard	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	10/12/2016 15:09	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



No.	Ret.Time min	Peak Name	Height μ S	Area μ S*min	Rel.Area %	Amount mg/L	Type
1	3.46	F	24.266	3.660	13.98	12.152	BMB
2	4.95	Cl	20.307	2.774	10.59	12.156	BMB
3	5.78	NO2-N	17.236	3.210	12.26	7.515	BMB
4	7.21	Br	5.212	1.075	4.11	11.997	BMB
5	7.97	NO3-N	19.590	4.616	17.63	8.234	BMB
6	12.71	SO4	31.553	10.847	41.43	61.113	BMB
Total:			118.163	26.182	100.00	113.167	

8 WG587294-06 STD**1,1 CAS STD77046 (Level-6)**

Sample Name:	WG587294-06 STD	Injection Volume:	25.0
Vial Number:	8	Channel:	ECD_1
Sample Type:	standard	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	10/12/2016 15:28	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



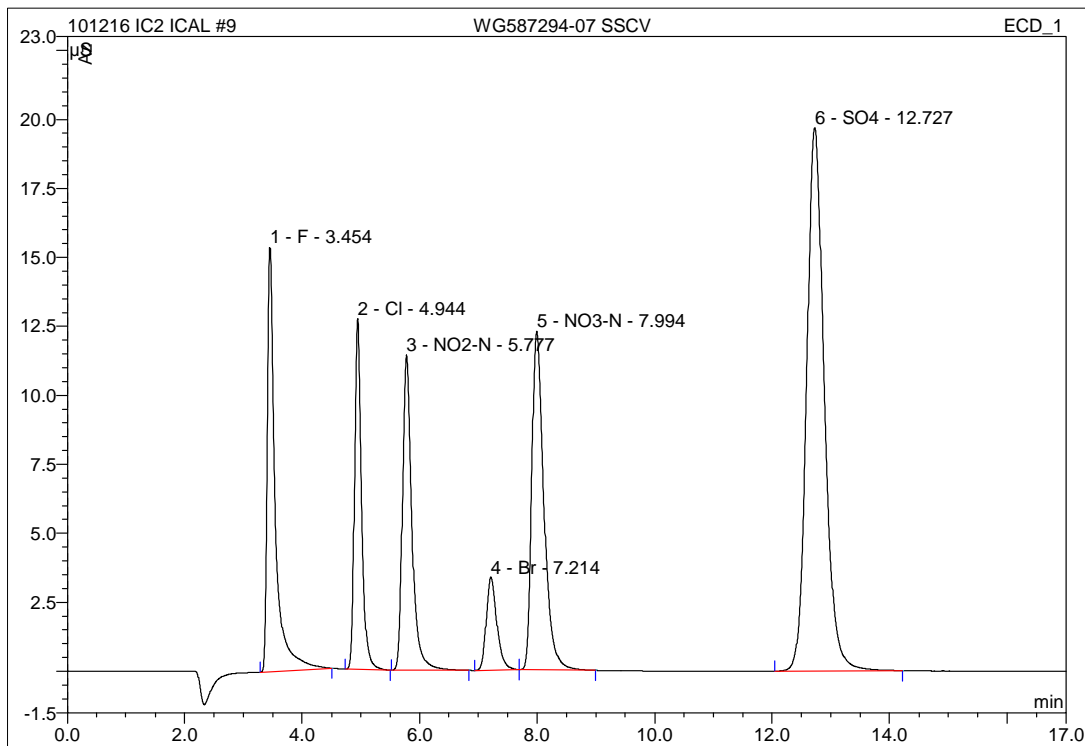
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/L	Type
1	3.47	F	50.632	7.677	13.47	23.931	BMB
2	4.95	Cl	45.834	6.132	10.76	23.850	BMB
3	5.79	NO2-N	35.116	6.712	11.77	14.370	BMB
4	7.20	Br	11.209	2.256	3.96	24.089	BMB
5	7.94	NO3-N	43.829	10.232	17.95	16.178	bMB
6	12.66	SO4	69.262	23.995	42.09	118.934	BMB
Total:			255.882	57.004	100.00	221.352	

IC/Integration

Chromeleon (c) Dionex 1996-2001
Version 6.80 SP1 Build 2238

9 WG587294-07 SSCV**1,1 CAS STD77045 (@Level-4)**

Sample Name:	WG587294-07 SSCV	Injection Volume:	25.0
Vial Number:	9	Channel:	ECD_1
Sample Type:	unknown	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	10/12/2016 15:48	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000

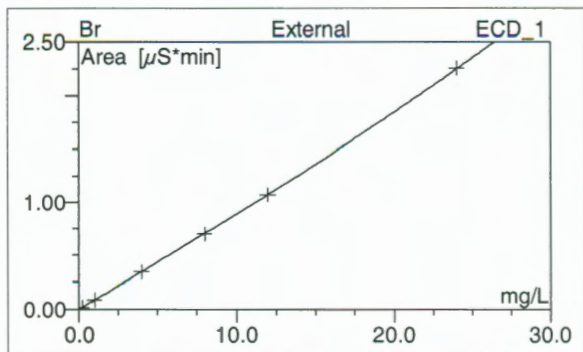
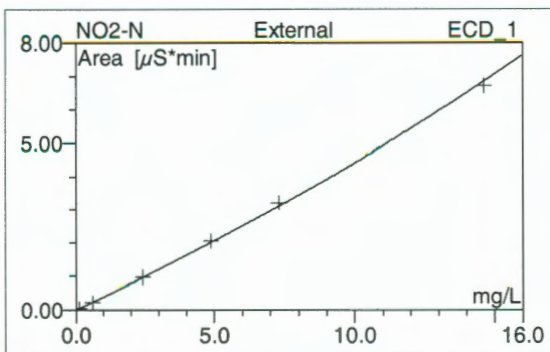
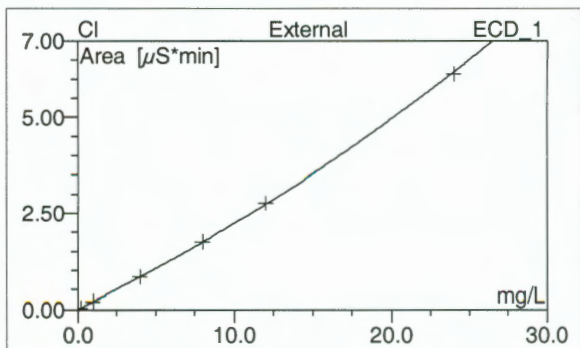
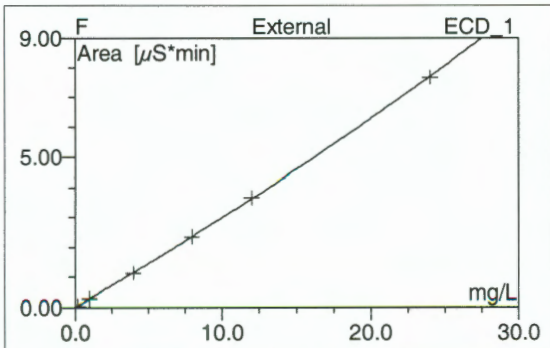


No.	Ret.Time min	Peak Name	Height μ S	Area μ S*min	Rel.Area %	Amount mg/L	Type
1	3.45	F	15.383	2.372	14.16	8.071	BMB
2	4.94	Cl	12.707	1.765	10.54	8.092	BMB
3	5.78	NO2-N	11.424	2.127	12.70	5.151	BMB
4	7.21	Br	3.367	0.704	4.20	7.973	BMB
5	7.99	NO3-N	12.269	2.932	17.51	5.475	bMB
6	12.73	SO4	19.700	6.850	40.89	40.577	BMB
Total:			74.849	16.750	100.00	75.339	

IC/Integration

Chromeleon (c) Dionex 1996-2001
Version 6.80 SP1 Build 2238

9 WG587294-07 SSCV	
1,1 CAS STD77045 (@Level-4)	
Sample Name:	WG587294-07 SSCV
Vial Number:	9
Sample Type:	unknown
Control Program:	9056
Quantif. Method:	101216_9056
Recording Time:	#####
Run Time (min):	17.00
Injection Volume:	25.0
Channel:	ECD_1
Wavelength:	n.a.
Bandwidth:	n.a.
Dilution Factor:	1.0000
Sample Weight:	1.0000
Sample Amount:	1.0000

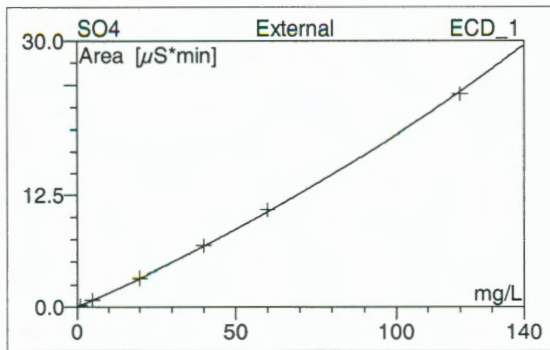
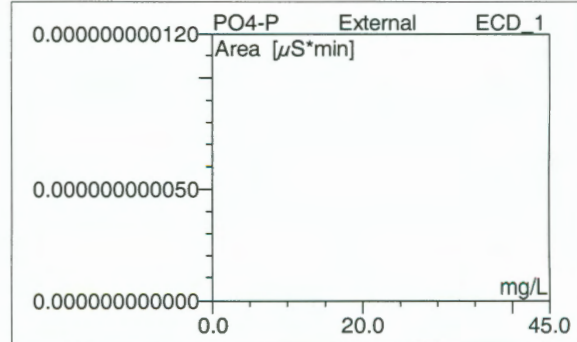
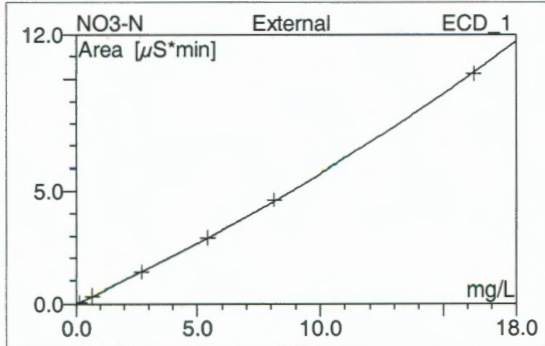


No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	Offset	Slope	Curve
1	3.45	F	XXQOff	6	99.9017	-0.0176	0.2832	0.0016
2	4.94	Cl	XXQOff	6	99.6062	0.0024	0.1978	0.0025
3	5.78	NO2-N	XXQOff	6	99.7411	-0.0107	0.3855	0.0057
4	7.21	Br	XXQOff	6	99.9503	-0.0009	0.0857	0.0003
5	7.99	NO3-N	XXQOff	6	99.6072	-0.0029	0.4866	0.0090
6	12.73	SO4	XXQOff	6	99.5345	-0.0127	0.1522	0.0004
Average:					99.7235	-0.0071	0.2652	0.0033

IC/Calibration(Batch)

Chromeleon (c) Dionex 1996-2001
Version 6.80 SP1 Build 2238

9 WG587294-07 SSCV		
1,1 CAS STD77045 (@Level-4)		
Sample Name:	WG587294-07 SSCV	Injection Volume: 25.0
Vial Number:	9	Channel: ECD_1
Sample Type:	unknown	Wavelength: n.a.
Control Program:	9056	Bandwidth: n.a.
Quantif. Method:	101216_9056	Dilution Factor: 1.0000
Recording Time:	#####	Sample Weight: 1.0000
Run Time (min):	17.00	Sample Amount: 1.0000



No.	Ret.Time min	Peak Name	Cal.Type	Points	Corr.Coeff. %	Offset	Slope	Curve
1	3.45	F	XXQOff	6	99.9017	-0.0176	0.2832	0.0016
2	4.94	Cl	XXQOff	6	99.6062	0.0024	0.1978	0.0025
3	5.78	NO2-N	XXQOff	6	99.7411	-0.0107	0.3855	0.0057
4	7.21	Br	XXQOff	6	99.9503	-0.0009	0.0857	0.0003
5	7.99	NO3-N	XXQOff	6	99.6072	-0.0029	0.4866	0.0090
6	12.73	SO4	XXQOff	6	99.5345	-0.0127	0.1522	0.0004
Average:					99.7235	-0.0071	0.2652	0.0033

IC/Calibration(Batch)(2)

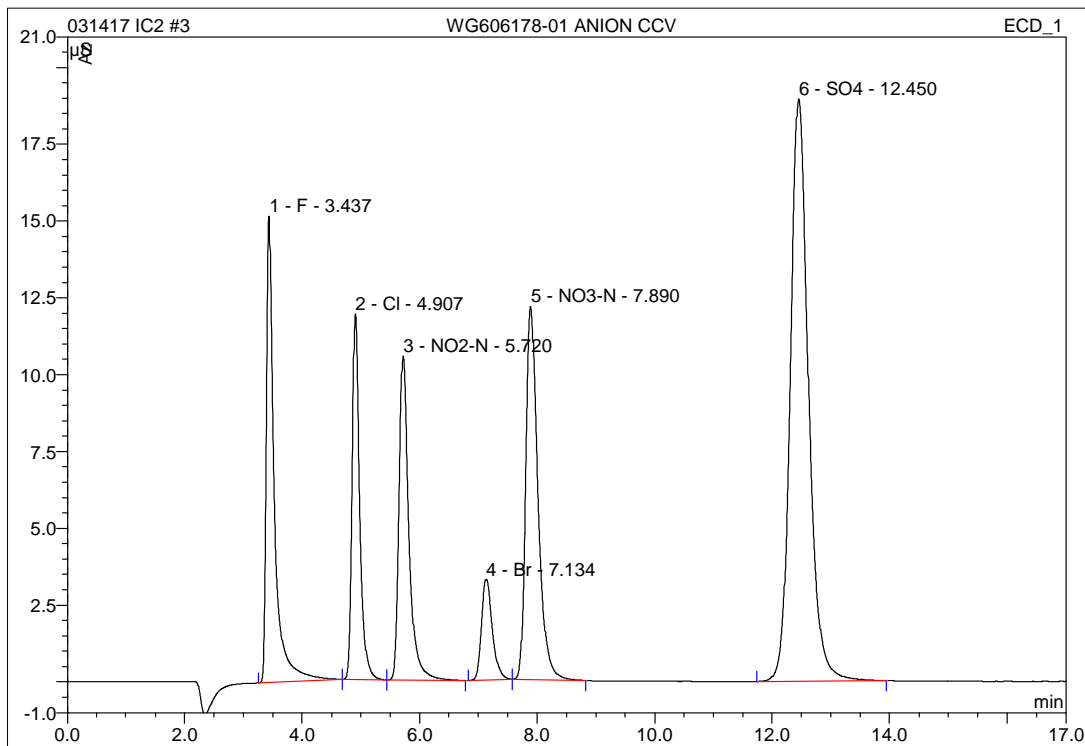
Chromleon (c) Dionex 1996-2001
Version 6.80 SP1 Build 2238

3 WG606178-01 ANION CCV		
1,1 CAS STD77046 (1679psi)		
<i>Sample Name:</i>	WG606178-01 ANION CCV	<i>Injection Volume:</i> 25.0
<i>Vial Number:</i>	3	<i>Channel:</i> ECD_1
<i>Sample Type:</i>	unknown	<i>Wavelength:</i> n.a.
<i>Control Program:</i>	9056	<i>Bandwidth:</i> n.a.
<i>Quantif. Method:</i>	101216_9056	<i>Dilution Factor:</i> 1.0000
<i>Recording Time:</i>	3/14/2017 16:00	<i>Sample Weight:</i> 1.0000
<i>Run Time (min):</i>	17.00	<i>Sample Amount:</i> 1.0000

WG606178-01 ANI Actual mg/L	Recovered mg/L	%Difference	
F 8.00	8.0609	0.76	PASS
Cl 8	8.0630	0.79	PASS
NO2-N 4.8714	4.9895	2.42	PASS
NO3-N 5.4216	5.4552	0.62	PASS
Br 8	7.8851	-1.44	PASS
SO4 40	40.2531	0.63	PASS
PO4-P 13.0456	n.a.	#VALUE!	#VALUE!

3 WG606178-01 ANION CCV**1,1 CAS STD77046 (1679psi)**

Sample Name:	WG606178-01 ANION CCV	Injection Volume:	25.0
Vial Number:	3	Channel:	ECD_1
Sample Type:	unknown	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	03/14/2017 16:00	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



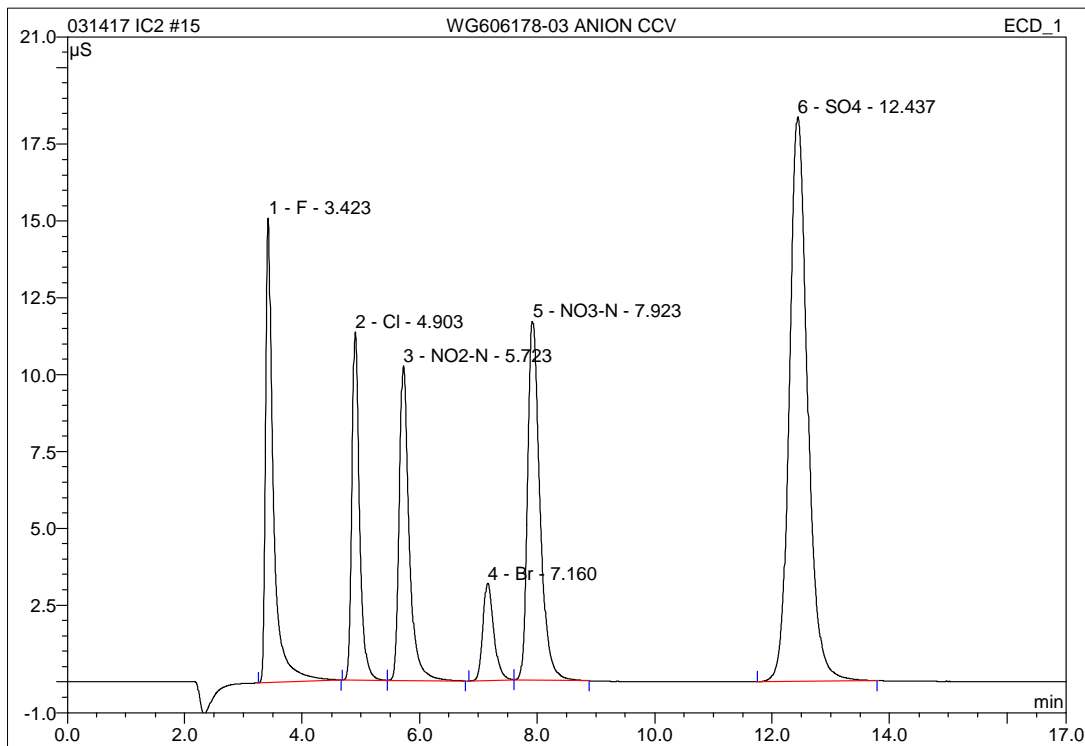
No.	Ret.Time min	Peak Name	Height μS	Area $\mu\text{S}\cdot\text{min}$	Rel.Area %	Amount mg/L	Type
1	3.44	F	15.172	2.369	14.28	8.061	BMB
2	4.91	Cl	11.910	1.759	10.60	8.063	BMB
3	5.72	NO2-N	10.543	2.055	12.39	4.989	BMB
4	7.13	Br	3.281	0.696	4.19	7.885	BMB
5	7.89	NO3-N	12.157	2.920	17.60	5.455	bMB
6	12.45	SO4	18.961	6.789	40.93	40.253	BMB
Total:			72.025	16.589	100.00	74.707	

15 WG606178-03 ANION CCV		
1,1 CAS STD77046		
<i>Sample Name:</i>	WG606178-03 ANION CCV	<i>Injection Volume:</i> 25.0
<i>Vial Number:</i>	15	<i>Channel:</i> ECD_1
<i>Sample Type:</i>	unknown	<i>Wavelength:</i> n.a.
<i>Control Program:</i>	9056	<i>Bandwidth:</i> n.a.
<i>Quantif. Method:</i>	101216_9056	<i>Dilution Factor:</i> 1.0000
<i>Recording Time:</i>	3/14/2017 19:51	<i>Sample Weight:</i> 1.0000
<i>Run Time (min):</i>	17.00	<i>Sample Amount:</i> 1.0000

WG606178-03 ANI Actual mg/L	Recovered mg/L	%Difference	
F 8.00	7.9516	-0.61	PASS
Cl 8	7.7840	-2.70	PASS
NO2-N 4.8714	4.8863	0.31	PASS
NO3-N 5.4216	5.3118	-2.03	PASS
Br 8	7.6919	-3.85	PASS
SO4 40	39.1683	-2.08	PASS
PO4-P 13.0456	n.a.	#VALUE!	#VALUE!

15 WG606178-03 ANION CCV**1,1 CAS STD77046**

Sample Name:	WG606178-03 ANION CCV	Injection Volume:	25.0
Vial Number:	15	Channel:	ECD_1
Sample Type:	unknown	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	03/14/2017 19:51	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



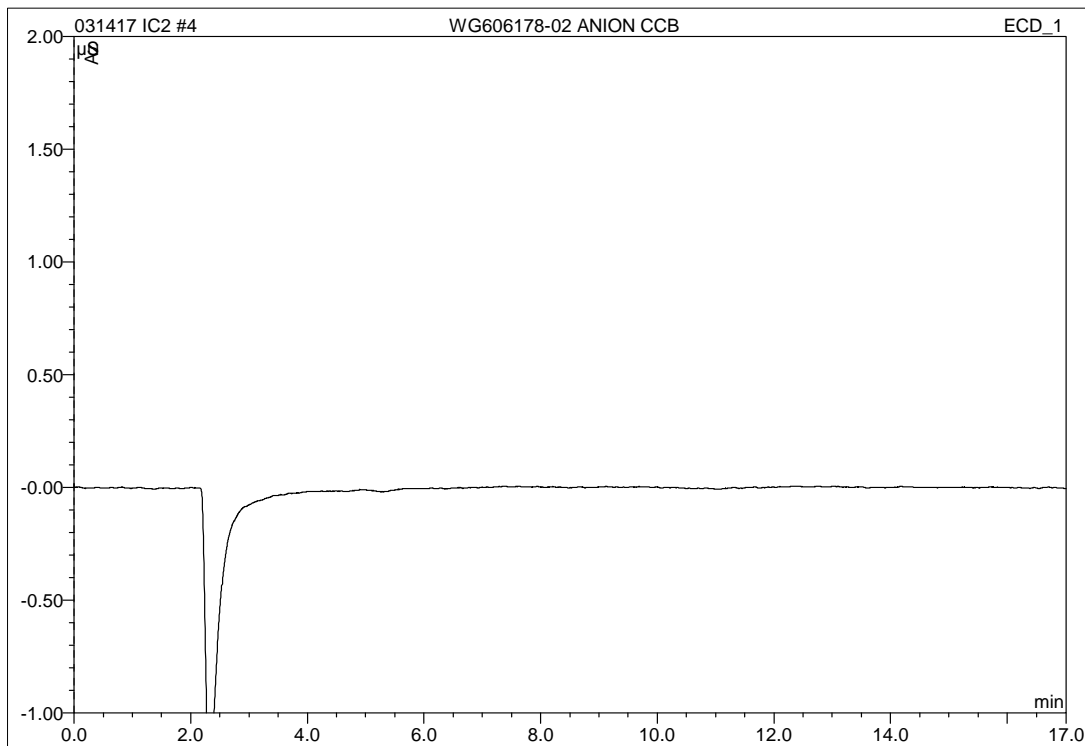
No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/L	Type
1	3.42	F	15.127	2.336	14.47	7.952	BMB
2	4.90	Cl	11.337	1.692	10.49	7.784	BMB
3	5.72	NO2-N	10.229	2.010	12.45	4.886	BMB
4	7.16	Br	3.167	0.678	4.20	7.692	BMB
5	7.92	NO3-N	11.673	2.837	17.57	5.312	bMB
6	12.44	SO4	18.375	6.588	40.82	39.168	BMB
Total:			69.909	16.141	100.00	72.794	

IC/Integration

Chromleon (c) Dionex 1996-2001
Version 6.80 SP1 Build 2238

4 WG606178-02 ANION CCB**1,1 CAS**

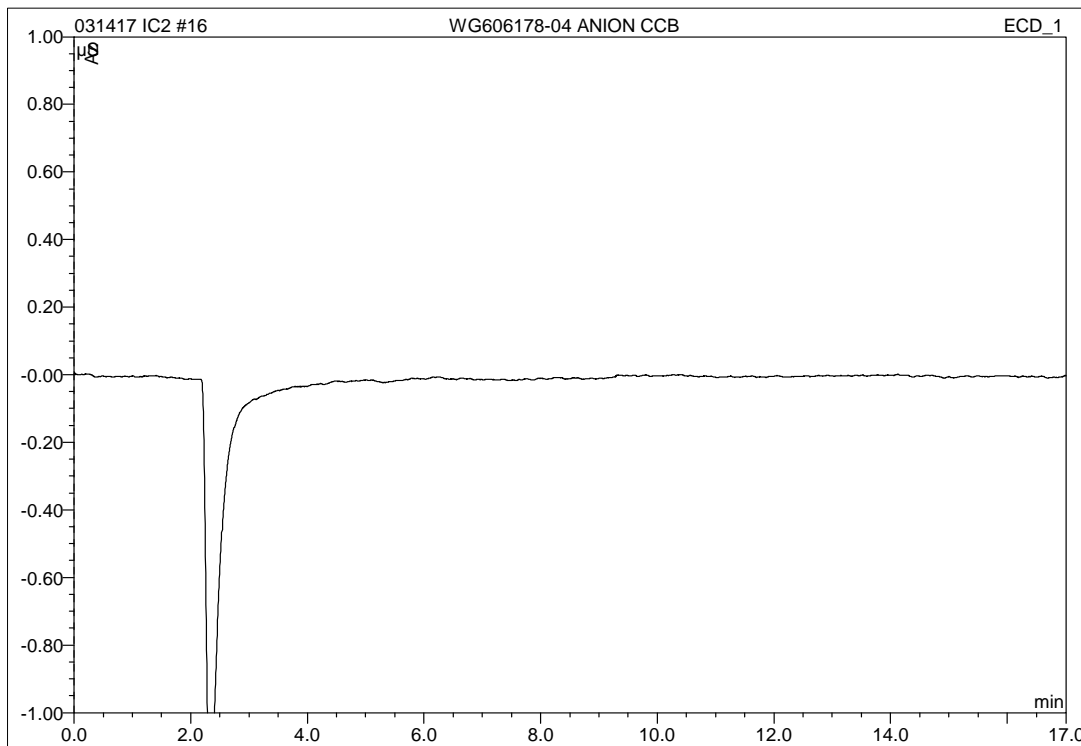
Sample Name:	WG606178-02 ANION CCB	Injection Volume:	25.0
Vial Number:	4	Channel:	ECD_1
Sample Type:	unknown	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	03/14/2017 16:19	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



No.	Ret.Time min	Peak Name	Height μS	Area $\mu\text{S}\cdot\text{min}$	Rel.Area %	Amount mg/L	Type
Total:			0.000	0.000	0.00	0.000	

16 WG606178-04 ANION CCB**1,1 CAS**

Sample Name:	WG606178-04 ANION CCB	Injection Volume:	25.0
Vial Number:	16	Channel:	ECD_1
Sample Type:	unknown	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	03/14/2017 20:10	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



No.	Ret.Time min	Peak Name	Height μS	Area $\mu\text{S}\cdot\text{min}$	Rel.Area %	Amount mg/L	Type
Total:			0.000	0.000	0.00	0.000	

RETENTION TIME WINDOWS

Lab Name: MICROBAC Laboratories, Inc.

Instrument ID: IC1

IC Column: AG14A-SC/AS14A-SC

	STANDARD #1	STANDARD #2	STANDARD #3
Date Run	6/5/2013	6/5/2013	6/6/2013
File #	WG432976-05	WG432976-07	WG433275-01
Time	16:16	18:25	16:50

COMPOUND	STD #1 RT	STD #2 RT	STD #3 RT	RT WIN
F	3.41	3.40	3.41	0.017
Cl	4.87	4.87	4.88	0.017
NO2-N	5.67	5.66	5.67	0.017
Br	7.01	6.99	7.02	0.046
NO3-N	7.76	7.74	7.77	0.046
SO4	13.35	13.35	13.35	0.000

Instrument ID: IC2

IC Column: AS14A-4mm

	STANDARD #1	STANDARD #2	STANDARD #3
Date Run	3/2/2015	3/4/2015	3/5/2015
File #	WG514023-02	WG514341-02	WG514431-02
Time	23:15	18:47	17:41

COMPOUND	STD #1 RT	STD #2 RT	STD #3 RT	RT WIN
F	3.33	3.33	3.32	0.017
Cl	4.75	4.78	4.76	0.043
NO2-N	5.54	5.59	5.56	0.082
Br	6.86	6.98	6.93	0.180
NO3-N	7.59	7.73	7.67	0.222
SO4	12.42	12.38	12.34	0.116

Instrument ID: IC3

IC Column: AG14A-SC/AS14A-SC

	STANDARD #1	STANDARD #2	STANDARD #3
Date Run	5/20/2014	5/21/2014	5/21/2014
File #	WG476910-05	WG476934-01	WG476934-03
Time	12:41	9:54	13:59

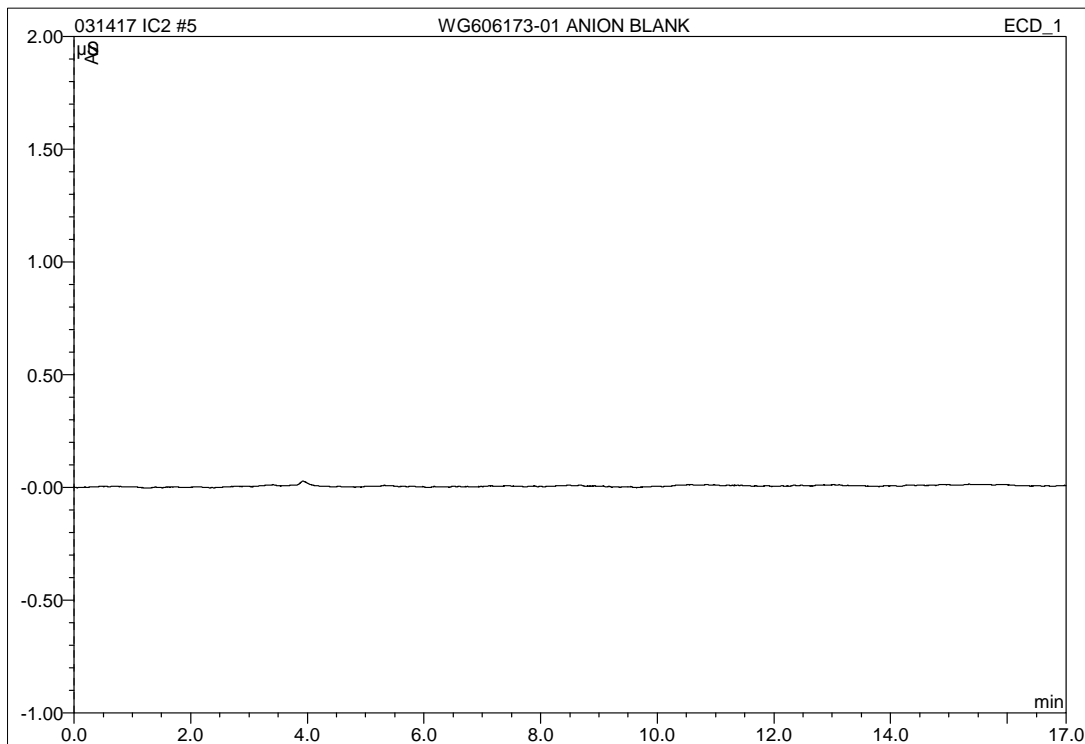
COMPOUND	STD #1 RT	STD #2 RT	STD #3 RT	RT WIN
F	3.41	3.41	3.41	0.000
Cl	5.11	5.09	5.07	0.050
NO2-N	6.14	6.11	6.07	0.101
Br	7.90	7.84	7.75	0.220
NO3-N	8.94	8.86	8.76	0.271
SO4	13.35	13.39	13.42	0.101

Page 1

2.2.1.5 Raw QC Data

5 WG606173-01 ANION BLANK**1,1 CAS**

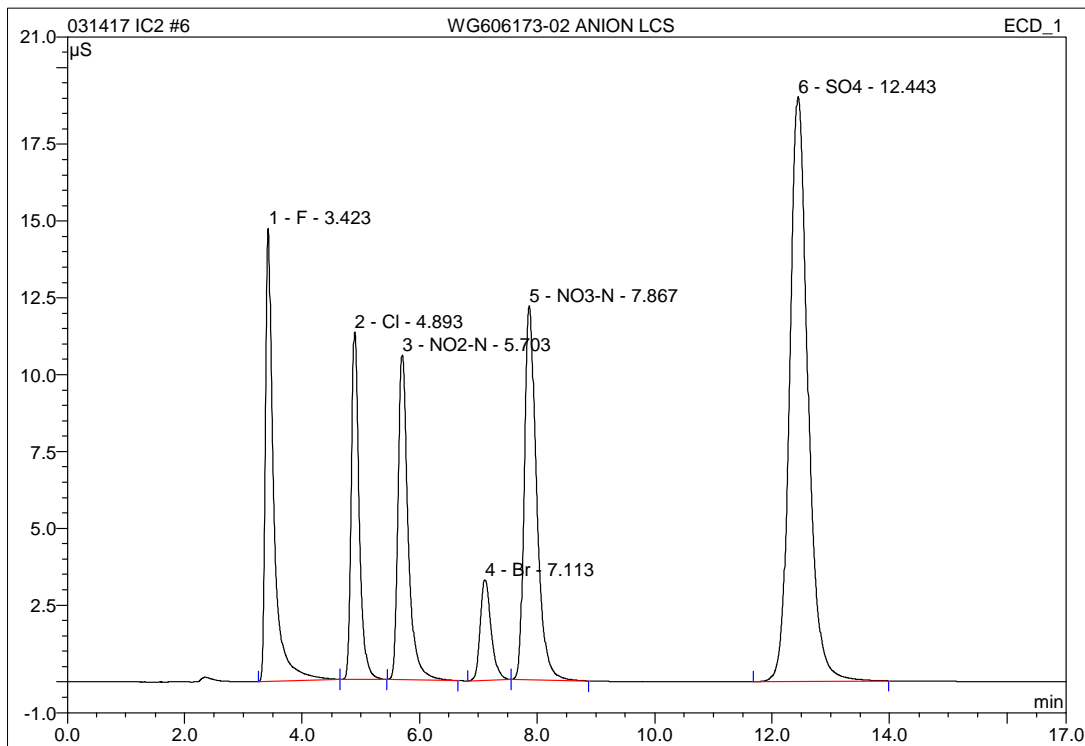
Sample Name:	WG606173-01 ANION BLANK	Injection Volume:	25.0
Vial Number:	5	Channel:	ECD_1
Sample Type:	unknown	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	03/14/2017 16:38	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



No.	Ret.Time min	Peak Name	Height μS	Area $\mu\text{S}\cdot\text{min}$	Rel.Area %	Amount mg/L	Type
Total:			0.000	0.000	0.00	0.000	

6 WG606173-02 ANION LCS**1,1 CAS STD79166**

Sample Name:	WG606173-02 ANION LCS	Injection Volume:	25.0
Vial Number:	6	Channel:	ECD_1
Sample Type:	unknown	Wavelength:	n.a.
Control Program:	9056	Bandwidth:	n.a.
Quantif. Method:	101216_9056	Dilution Factor:	1.0000
Recording Time:	03/14/2017 16:57	Sample Weight:	1.0000
Run Time (min):	17.00	Sample Amount:	1.0000



No.	Ret.Time min	Peak Name	Height µS	Area µS*min	Rel.Area %	Amount mg/L	Type
1	3.42	F	14.735	2.408	14.37	8.187	BMB
2	4.89	Cl	11.323	1.748	10.43	8.017	bMB
3	5.70	NO2-N	10.568	2.087	12.45	5.060	BMB
4	7.11	Br	3.276	0.700	4.18	7.937	BMB
5	7.87	NO3-N	12.176	2.955	17.63	5.514	bMB
6	12.44	SO4	19.037	6.865	40.95	40.658	BMB
Total:			71.114	16.762	100.00	75.372	

IC/Integration

Chromleon (c) Dionex 1996-2001
Version 6.80 SP1 Build 2238

3.0 Attachments

Microbac Laboratories Inc.
Ohio Valley Division Analyst List
March 15, 2017

001 - BIO-CHEM TESTING WVDEP 220	002 - REIC Consultants, Inc. WVDEP 060
003 - Sturm Environmental	004 - MICROBAC PITTSBURGH
005 - ES LABORATORIES	006 - ALCOSAN LABORATORIES
007 - ALS LABORATORIES	008 - BENCHMARK LABORATORIES
010 - MICROBAC CHICAGOLAND	AC - AMBER R. CARMICHAEL
ADC - ANTHONY D. CANTER	ADG - APRIL D. GREENE
ALS - ADRIANE L. STEED	AWE - ANDREW W. ESSIG
AZH - AFTER HOURS	BJO - BRIAN J. OGDEN
BLG - BRENDA L. GREENWALT	BNB - Brandi N. Bentley
BRG - BRENDA R. GREGORY	CAS - Craig A. Smith
CEB - CHAD E. BARNES	CLC - CHRYS L. CRAWFORD
CLS - CARA L. STRICKLER	CPD - CHAD P. DAVIS
CSH - CHRIS S. HILL	CV - Carl Volkman
DAK - DEAN A. KETELSEN	DCM - DAVID C. MERCKLE
DEV - DAVID E. VANDENBERG	DIH - DEANNA I. HESSON
DLB - DAVID L. BUMGARNER	DLP - DOROTHY L. PAYNE
DSM - DAVID S. MOSSOR	DTG - DOMINIC T. GEHRET
ECL - ERIC C. LAWSON	EPT - ETHAN P. TIDD
ERP - ERIN R. PORTER	FJB - FRANCES J. BOLDEN
HRF - HEATHER R. FAIRCHILD	JDH - JUSTIN D. HESSON
JDS - JARED D. SMITH	JKP - JACQUELINE K. PARSONS
JLD - JESSICA L. DELONG	JST - JOSHUA S. TAYLOR
JTP - JOSHUA T. PEMBERTON	JWR - JOHN W. RICHARDS
JWS - JACK W. SHEAVES	JYH - JI Y. HU
KAK - KATHY A. KIRBY	KDD - Katelyn D. Daley
KEB - KATIE E. BARNES	KHR - KIM H. RHODES
KKB - KERRI K. BUCK	KRA - KATHY R. ALBERTSON
KRP - KATHY R. PARSONS	LJH - Lacey J. Hendershot
LLS - LARRY L. STEPHENS	LSB - LESLIE S. BUCINA
LSJ - LAURA S. JONES	MAP - MARLA A. PORTER
MBK - MORGAN B. KNOWLTON	MES - MARY E. SCHILLING
MMB - MAREN M. BEERY	MRT - MICHELLE R. TAYLOR
PDM - PIERCE D. MORRIS	PIT - MICROBAC WARRENDALE
REK - BOB E. KYER	RLB - BOB BUCHANAN
RNP - RICK N. PETTY	SAV - SARAH A. VANDENBERG
SCB - SARAH C. BOGOLIN	SDC - SHALYN D. CONLEY
TB - TODD BOYLE	TMB - TIFFANY M. BAILEY
TMM - TAMMY M. MORRIS	VC - VICKI COLLIER
WTD - WADE T. DELONG	XXX - UNAVAILABLE OR SUBCONTRACT

List of Valid Qualifiers

March 15, 2017

Qualkey: DOD

Qualifier	Description
*	Surrogate or spike compound out of range
+	Correlation coefficient for the MSA is less than 0.995
<	Result is less than the associated numerical value.
>	Greater than
>,H1	Result is greater than the associated numerical value. Sample analysis performed past holding time.
A	See the report narrative
B	The reported result is associated with a contaminated method blank.
B,H1	Analyte present in method blank. Sample analysis performed past holding time.
B1	Target analyte detected in method blank at or above the method reporting limit
B3	Target analyte detected in calibration blank at or above the method reporting limit
B4	The BOD unseeded dilution water blank exceeded 0.2 mg/L
C	Confirmed by GC/MS
CG	Confluent growth
CT1	Cooler temperature at sample receipt exceeded regulatory limit.
DL	Surrogate or spike compound was diluted out
E	Estimated concentration due to sample matrix interference
E,CT1	Estimated results. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
EDL	Elevated sample reporting limits, presence of non-target analytes
EMPC	Estimated Maximum Possible Concentration
F, S	Estimated result below quantitation limit; method of standard additions(MSA)
F,CT1	Estimated value; the analyte concentration was less than the RL/LOQ. The cooler temperature at receipt exceeded regula
FL	Free Liquid
FP1	Did not ignite.
H1	Sample analysis performed past holding time.
H1,CT1	Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guidelines for reque
I	Semiquantitative result (out of instrument calibration range)
J	Estimated concentration; sample matrix interference.
J	Estimated value ; the analyte concentration was greater than the highest standard
J	Estimated value ; the analyte concentration was less than the LOQ.
J	The reported result is an estimated value.
J,B	Analyte detected in both the method blank and sample above the MDL.
J,CT1	Estimated value ; the analyte concentration was less than the LOQ. Cooler temperature at sample receipt exceeded regu
J,H1	Estimated value ; the analyte concentration was less than the LOQ. Sample analysis performed past holding time.
J,H1	The reported result is an estimated value. Sample was analyzed past holding time.
J,P	Estimate; columns don't agree to within 40%
J,S	Estimated concentration; analyzed by method of standard addition (MSA)
JB	The reported result is an estimated value. The reported result is also associated with a contaminated method blank.
JQ	The reported result is an estimated value and one or more quality control criteria failed. See narrative.
L	Sample reporting limits elevated due to matrix interference
L1	The associated blank spike (LCS) recovery was above the laboratory acceptance limits.
L2	The associated blank spike (LCS) recovery was below the laboratory acceptance limits.
M	Matrix effect; the concentration is an estimate due to matrix effect.
N	Nontarget analyte; the analyte is a tentatively identified compound (TIC) by GC/MS
NA	Not applicable
ND	Not detected at or above the reporting limit (RL)
ND, B	Not detected at or above the reporting limit (RL). Analyte present in method blank.
ND, CT1	Analyte was not detected. The concentration is below the reported LOD. The cooler temperature at receipt exceeded reg
ND, L	Not detected; sample reporting limit (RL) elevated due to interference
ND, S	Not detected; analyzed by method of standard addition (MSA)
ND,H1	Not detected; Sample analysis performed past holding time.
ND,H1,CT1	Not detected; Sample analysis performed past holding time. The cooler temperature at receipt exceeded regulatory guide
NF	Not found by library search
NFL	No free liquid
NI	Non-ignitable
NR	Analyte is not required to be analyzed
NS	Not spiked
P	Concentrations >40% difference between the two GC columns
Q	One or more quality control criteria failed. See narrative.
Q,H1	One or more quality control criteria failed. Sample analyzed past holding time. See narrative.
QNS	Quantity of sample not sufficient to perform analysis
RA	Reanalysis confirms reported results
RE	Reanalysis confirms sample matrix interference
S	Analyzed by method of standard addition (MSA)
SMI	Sample matrix interference on surrogate
SP	Reported results are for spike compounds only
T5	Laboratory not licensed for this parameter
TIC	Library Search Compound



List of Valid Qualifiers

March 15, 2017

Qualkey: DOD

TNTC	Too numerous to count
TNTC, B	Too numerous to count. Analyte present in method blank.
TNTC,CT1	Too numerous to count. The cooler temperature at receipt exceeded regulatory guidelines for requested testing.
TNTC,H1	Too numerous to count. Sample analysis performed past holding time.
U	Analyte was not detected. The concentration is below the reported LOD.
U,CT1	Analyte was not detected. The concentration is below the reported LOD. Cooler temperature at sample receipt exceeded
U,H1	Not detected; Sample analysis performed past holding time.
UJ	Undetected; the MDL and RL are estimated due to quality control discrepancies.
UQ	Undetected; the analyte was analyzed for, but not detected.
W	Post-digestion spike for furnace AA out of control limits
X	Exceeds regulatory limit
X, S	Exceeds regulatory limit; method of standard additions (MSA)
Z	Cannot be resolved from isomer - see below



Microbac Laboratories Inc.

Internal Chain of Custody Report

Login: L17030342

Account: 2551

Project: 2551.096

Samples: 2

Due Date: 17-MAR-2017

Samplenum Container ID Products**L17030342-01 876956**

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	07-MAR-2017 10:31	CLS		
2	ANALYZ	V1	ORG4	07-MAR-2017 14:42	TMB	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	07-MAR-2017 10:31	CLS		
2	ANALYZ	V1	ORG4	07-MAR-2017 14:42	TMB	CLS	

Bottle: 3

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	07-MAR-2017 10:31	CLS		
2	ANALYZ	V1	ORG4	07-MAR-2017 14:42	TMB	CLS	

Samplenum Container ID Products**L17030342-01 876957 826-SPE 9056**

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER		07-MAR-2017 10:31	CLS		

Samplenum Container ID Products**L17030342-02 876958 826-SPE**

Bottle: 1

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	07-MAR-2017 10:31	CLS		
2	ANALYZ	V1	ORG4	07-MAR-2017 14:42	TMB	CLS	

Bottle: 2

Seq.	Purpose	From	To	Date/Time	Accept	Relinquish	pH
1	LOGIN	COOLER	V1	07-MAR-2017 10:31	CLS		
2	ANALYZ	V1	ORG4	07-MAR-2017 14:42	TMB	CLS	

A1 - Sample Archive (COLD)
A2 - Sample Archive (AMBIENT)
F1 - Volatiles Freezer in Login
V1 - Volatiles Refrigerator in Login
W1 - Walkin Cooler in Login



NELAP Addendum - January 4, 2016

Non-NELAP LIMS Product and Description

The following is a list of those tests that are not included in the Microbac – OVD NELAP Scope of Accreditation:

Heat of Combustion (BTU)
Total Halide by Bomb Combustion (TX)
Particle Sizing - 200 Mesh (PS200)
Specific Gravity/Density (SPGRAV)
Total Residual Chlorine (CL-TRL)
Total Volatile Solids (all forms) (TVS)
Total Coliform Bacteria (all methods)
Fecal Coliform Bacteria (all methods)
Sulfite (SO₃)
Propionaldehyde (HPLC-UV)

SOLID AND HAZARDOUS CHEMICALS

Nitrogen, Ammonia by Method 350.1
Chromium, Hexavalent, Leachable by SM3500 Cr-B 2009
Phenolics, Total by Method 420.1
ASTM D3987-06

NELAP Accreditation by Laboratory SOP

NONPOTABLE WATER

OVD HPLC02/HPLC-UV

Nitroglycerin
Acetic acid
Butyric acid
Lactic acid
Propionic acid
Pyruvic acid

OVD MSS01/GC-MS

1,4-Phenylenediamine
1-Methylnaphthalene
1,4-Dioxane
Atrazine
Benzaldehyde
Biphenyl
Caprolactam
Hexamethylphosphoramide (HMPA)
Pentachlorobenzene
Pentachloroethane

NELAP Accreditation by Laboratory SOP**NONPOTABLE WATER**OVD MSV01/GC-MS

1, 1, 2-Trichloro-1,2,2-trifluoroethane
1,3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
T-amylmethylether (TAME)
Tetrahydrofuran (THF)

OVD HPLC07/HPLC-MS-MS

Hexamethylphosphoramide (XMPA-LCMS)

OVD HPLC12/HPLC/UV

Acetate
Formate

OVD RSK01/GC-FID

Acetylene
Propane

OVD K9305/ISE

Fluoroborate

SOLID AND HAZARDOUS CHEMICALSOVD MSS01/GC-MS

1-Methylnaphthalene
Benzaldehyde
Biphenyl
Caprolactam
Pentachloroethane

NELAP Accreditation by Laboratory SOP**SOLID AND HAZARDOUS CHEMICALS**OVD MSV01/GC-MS

1.3-Butadiene
Cyclohexane
Cyclohexanone
Dimethyl disulfide
Dimethylsulfide
Ethyl-t-butylether (ETBE)
Isoprene
Methylacetate
Methylcyclohexane
n-Hexane
T-amylmethylether (TAME)



Laboratory Report Number: L17030455

Linda Raabe
AECOM Technical Services, Inc.
1950 N Stemmons FWY
Dallas, TX 75207

Please find enclosed the analytical results for the samples you submitted to Microbac Laboratories. Review and compilation of your report was completed by Microbac's Ohio Valley Division (OVD). If you have any questions, comments, or require further assistance regarding this report, please contact your service representative listed below.

Laboratory Contact:
Adriane Steed – Client Services Specialist
(740) 373-4071
Adriane.Steed@microbac.com

I certify that all test results meet all of the requirements of the DoD QSM and other applicable contract terms and conditions. Any exceptions are attached to this cover page or addressed in the method narratives presented in the report. All results for soil samples are reported on a 'dry-weight' basis unless specified otherwise. Analytical results for water and wastes are reported on a 'as received' basis unless specified otherwise. A statement of uncertainty for each analysis is available upon request. This laboratory report shall not be reproduced, except in full, without the written approval of Microbac Laboratories, DoD ELAP certification number 2936.01. The reported results are related only to the samples analyzed as received.

This report was certified on March 17 2017



Leslie Bucina – Managing Director

State of Origin: TX
Accrediting Authority: Texas Commission on Environmental Quality ID:T104704252-07-TX
QAPP: DOD Ver 4.1



Microbac Laboratories * Ohio Valley Division
158 Starlite Drive, Marietta, OH 45750 * T: (740) 373-4071 F: (740) 373-4835 * www.microbac.com

Lab Report #: L17030455

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Record of Sample Receipt and Inspection

Comments/Discrepancies

This is the record of the shipment conditions and the inspection records for the samples received and reported as a sample delivery group (SDG). All of the samples were inspected and observed to conform to our receipt policies, except as noted below.

There were no discrepancies.

Discrepancy	Resolution

Coolers

Cooler #	Temperature Gun	Temperature	COC #	Airbill #	Temp Required?
00113830	I	1.0		1Z4016632210154849	X

Inspection Checklist

#	Question	Result
1	Were shipping coolers sealed?	Yes
2	Were custody seals intact?	Yes
3	Were cooler temperatures in range of 0-6?	Yes
4	Was ice present?	Yes
5	Were COC's received/information complete/signed and dated?	Yes
6	Were sample containers intact and match COC?	Yes
7	Were sample labels intact and match COC?	Yes
8	Were the correct containers and volumes received?	Yes
9	Were samples received within EPA hold times?	Yes
10	Were correct preservatives used? (water only)	Yes
11	Were pH ranges acceptable? (voa's excluded)	Yes
12	Were VOA samples free of headspace (less than 6mm)?	NA

**Lab Report #:** L17030455**Lab Project #:** 2551.096**Project Name:** Longhorn Army Ammunition**Lab Contact:** Adriane Steed**Samples Received**

Client ID	Laboratory ID	Date Collected	Date Received
LH18/24-SP650-6422-GRAB	L17030455-01	03/08/2017 15:00	03/09/2017 09:35

Microbac REPORT L17030455
PREPARED FOR AECOM Technical Services, Inc.
WORK ID:

1.0 Summary Data	5
1.1 Narratives	6
1.2 Certificate of Analysis	25
2.0 Full Sample Data Package	27
2.1 General Chemistry Data	28
2.1.1 Ammonia Data	29
2.1.1.1 Summary Data	30
2.1.1.2 QC Summary Data	32
2.1.1.3 Raw Data	39
2.1.2 Orthophosphate Data	48
2.1.2.1 Summary Data	49
2.1.2.2 QC Summary Data	51
2.1.2.3 Raw Data	58
2.1.3 Total Organic Carbon Data	66
2.1.3.1 Summary Data	67
2.1.3.2 QC Summary Data	69
2.1.3.3 Raw Data	76
3.0 Attachments	128

1.0 Summary Data

1.1 Narratives



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	NH3
Prep Batch Number(s):	WG606011	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Deanna Hesson		Conventional Lab Supervisor	2017-03-16 20:46:43



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	NH3
Prep Batch Number(s):	WG606011	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):	X				
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	NH3
Prep Batch Number(s):	WG606011	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	X				
Were MS/MSD analyzed at the appropriate frequency?	X				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
Were MS/MSD RPDs within laboratory QC limits?	X				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	X				
Were analytical duplicates analyzed at the appropriate frequency?	X				
Were RPDs or relative standard deviations within the laboratory QC limits?	X				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?			X		
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	NH3
Prep Batch Number(s):	WG606011	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)			X		
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)			X		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions			X		
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	NH3
Prep Batch Number(s):	WG606011	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)	X				
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	NH3
Prep Batch Number(s):	WG606011	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	PO4
Prep Batch Number(s):	WG605652	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a.if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Deanna Hesson		Conventional Lab Supervisor	2017-03-16 20:46:05



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	PO4
Prep Batch Number(s):	WG605652	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):	X				
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	PO4
Prep Batch Number(s):	WG605652	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	X				
Were MS/MSD analyzed at the appropriate frequency?	X				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
Were MS/MSD RPDs within laboratory QC limits?	X				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	X				
Were analytical duplicates analyzed at the appropriate frequency?	X				
Were RPDs or relative standard deviations within the laboratory QC limits?	X				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?			X		
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	PO4
Prep Batch Number(s):	WG605652	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)			X		
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)			X		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions			X		
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	PO4
Prep Batch Number(s):	WG605652	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)	X				
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	PO4
Prep Batch Number(s):	WG605652	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	TOC
Prep Batch Number(s):	WG605775	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Laboratory Data Package Cover Page

R1	Field chain-of-custody documentation;
R2	Sample identification cross-reference;
R3	Test reports (analytical data sheets) for each environmental sample that includes: (a) Items consistent with NELAC Chapter 5, (b) dilution factors, (c) preparation methods, (d) cleanup methods, and (e) a. if required for the project, tentatively identified compounds (TICs).
R4	Surrogate recovery data including: (a) Calculated recovery (%R), and (b) the laboratory's surrogate QC limits.
R5	Test reports/summary forms for blank samples;
R6	Test reports/summary forms for laboratory control samples (LCSs) including: (a) LCS spiking amounts, (b) calculated %R for each analyte, and (c) the laboratory's LCS QC limits.
R7	Test reports for project matrix spike/matrix spike duplicates (MS/MSDs) including: (a) samples associated with the MS/MSD clearly identified, (b) MS/MSD spiking compounds, (c) concentration of each MS/MSD analyte measured in the parent and spiked samples, (d) calculated %Rs and relative percent differences (RPDs), and (e) the laboratory's MS/MSD QC limits.
R8	Laboratory analytical duplicate (if applicable) recovery and precision: (a) the amount of analyte measured in the duplicate, (b) the calculated RPD, and (c) the laboratory's QC limits for analytical duplicates.
R9	List of method quantitation limits (MQLs) and detectability check sample results for each analyte for each method and matrix.
R10	Other problems or anomalies.

Name (Printed)	Signature	Official Title (Printed)	Date
Deanna Hesson		Conventional Lab Supervisor	2017-03-16 20:47:12



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	TOC
Prep Batch Number(s):	WG605775	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Description	Yes	No	NA	NR	ER#
Chain-of-custody (C-O-C)					
Did samples meet the laboratory's standard conditions of sample acceptability upon receipt?	X				
Were all departures from standard conditions described in an exception report?	X				
Sample and quality control (QC) identification					
Are all field sample ID numbers cross-referenced to the laboratory ID numbers?	X				
Are all laboratory ID numbers cross-referenced to the corresponding QC data?	X				
Test reports					
Were all samples prepared and analyzed within holding times?	X				
Other than those results < MQL, were all other raw values bracketed by calibration standards?	X				
Were calculations checked by a peer or supervisor?	X				
Were all analyte identifications checked by a peer or supervisor?	X				
Were sample detection limits reported for all analytes not detected?	X				
Were all results for soil and sediment samples reported on a dry weight basis?	X				
Were % moisture (or solids) reported for all soil and sediment samples?	X				
Were bulk soils/solids samples for volatile analysis extracted with methanol per SW846 Method 5035?			X		
If required for the project, are TICs reported?			X		
Surrogate recovery data					
Were surrogates added prior to extraction?			X		
Were surrogate percent recoveries in all samples within the laboratory QC limits?			X		
Test reports/summary forms for blank samples					
Were appropriate type(s) of blanks analyzed?	X				
Were blanks analyzed at the appropriate frequency?	X				
Were method blanks taken through the entire analytical process, including preparation and, if applicable, cleanup procedures?	X				
Were blank concentrations < MQL?	X				
Laboratory control samples (LCS):	X				
Were all COCs included in the LCS?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	TOC
Prep Batch Number(s):	WG605775	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Was each LCS taken through the entire analytical procedure, including prep and cleanup steps?	X				
Were LCSs analyzed at the required frequency?	X				
Were LCS (and LCSD, if applicable) %Rs within the laboratory QC limits?	X				
Does the detectability check sample data document the laboratory's capability to detect the COCs at the MDL used to calculate the SDLs?	X				
Was the LCSD RPD within QC limits?	X				
Matrix spike (MS) and matrix spike duplicate (MSD) data					
Were the project/method specified analytes included in the MS and MSD?	X				
Were MS/MSD analyzed at the appropriate frequency?	X				
Were MS (and MSD, if applicable) %Rs within the laboratory QC limits?	X				
Were MS/MSD RPDs within laboratory QC limits?	X				
Analytical duplicate data					
Were appropriate analytical duplicates analyzed for each matrix?	X				
Were analytical duplicates analyzed at the appropriate frequency?	X				
Were RPDs or relative standard deviations within the laboratory QC limits?	X				
Method quantitation limits (MQLs):					
Are the MQLs for each method analyte included in the laboratory data package?	X				
Do the MQLs correspond to the concentration of the lowest non-zero calibration standard?	X				
Are unadjusted MQLs and DCSs included in the laboratory data package?	X				
Other problems/anomalies					
Are all known problems/anomalies/special conditions noted in this LRC and ER?	X				
Was applicable and available technology used to lower the SDL to minimize the matrix interference effects on the sample results?			X		
Is the laboratory NELAC-accredited under the Texas Laboratory Accreditation Program for the analytes, matrices and methods associated with this laboratory data package?	X				
Initial calibration (ICAL)					
Were response factors and/or relative response factors for each analyte within QC limits?	X				
Were percent RSDs or correlation coefficient criteria met?	X				



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	TOC
Prep Batch Number(s):	WG605775	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Was the number of standards recommended in the method used for all analytes?	X				
Were all points generated between the lowest and highest standard used to calculate the curve?	X				
Are ICAL data available for all instruments used?	X				
Has the initial calibration curve been verified using an appropriate second source standard?	X				
Initial and continuing calibration verification (ICCV and CCV) and continuing calibration blank (CCB):					
Was the CCV analyzed at the method-required frequency?	X				
Were percent differences for each analyte within the method-required QC limits?	X				
Was the ICAL curve verified for each analyte?	X				
Was the absolute value of the analyte concentration in the inorganic CCB < MDL?	X				
Mass spectral tuning					
Was the appropriate compound for the method used for tuning?			X		
Were ion abundance data within the method-required QC limits?			X		
Internal standards (IS)					
Were IS area counts and retention times within the method-required QC limits?			X		
Raw data (NELAC Section 5.5.10)			X		
Were the raw data (for example, chromatograms, spectral data) reviewed by an analyst?	X				
Were data associated with manual integrations flagged on the raw data?			X		
Dual column confirmation					
Did dual column confirmation results meet the method-required QC?			X		
Tentatively identified compounds (TICs)			X		
If TICs were requested, were the mass spectra and TIC data subject to appropriate checks?			X		
Interference Check Sample (ICS) results					
Were percent recoveries within method QC limits?			X		
Serial dilutions, post digestion spikes, and method of standard additions			X		
Were percent differences, recoveries, and the linearity within the QC limits specified in the method?			X		
Method detection limit (MDL) studies					



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	TOC
Prep Batch Number(s):	WG605775	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

Was a MDL study performed for each reported analyte?	X				
Is the MDL either adjusted or supported by the analysis of DCSs?	X				
Proficiency test reports					
Was the laboratory's performance acceptable on the applicable proficiency tests or evaluation studies?	X				
Standards documentation					
Are all standards used in the analyses NIST-traceable or obtained from other appropriate sources?	X				
Compound/analyte identification procedures					
Are the procedures for compound/analyte identification documented?	X				
Demonstration of analyst competency (DOC)					
Was DOC conducted consistent with NELAC Chapter 5?	X				
Is documentation of the analyst's competency up-to-date and on file?	X				
Verification/validation documentation for methods (NELAC Chapter 5)	X				
Are all the methods used to generate the data documented, verified, and validated, where applicable?	X				
Laboratory standard operating procedures (SOPs)					
Are laboratory SOPs current and on file for each method performed	X				

1. Items identified by the letter "R" must be included in the laboratory data package submitted in the TRRP-required report(s). Items identified by the letter "S" should be retained and made available upon request for the appropriate retention period;
2. O = organic analyses; I = inorganic analyses (and general chemistry, when applicable);
3. NA = Not applicable;
4. NR = Not reviewed;
5. ER# = Exception Report identification number (an Exception Report should be completed for an item if "NR" or "No" is checked).

The Exception Report for each "No" or "Not Reviewed (NR)" item in Laboratory Review Checklist and for each analyte, matrix, and method for which the laboratory does not hold NELAC accreditation under the Texas Laboratory Accreditation Program.

Release Statement: I am responsible for the release of this laboratory data package. This laboratory is NELAC accredited under the Texas Laboratory Accreditation Program for all the methods, analytes, and matrices reported in this data package except as noted in the Exception Reports. The data have been reviewed and are technically compliant with



Texas Risk Reduction Program (TRRP) Checklist

Laboratory Name:	Microbac OVD	Laboratory Log Number:	L17030455
Project Name:		Method:	TOC
Prep Batch Number(s):	WG605775	Reviewer Name:	Deanna Hesson
LRC Date:	2017-03-16 00:00:00		

the requirements of the methods used, except where noted by the laboratory in the Exception Reports. By my signature below, I affirm to the best of my knowledge all problems/anomalies observed by the laboratory have been identified in the Laboratory Review Checklist, and no information affecting the quality of the data has been knowingly withheld.

Check, if applicable: This laboratory meets an exception under 30 TAC §25.6 and was last inspection by TCEQ or _____ on **(enter date of last inspection)**. Any findings affecting the data in this laboratory data package are noted in the Exception Reports herein. The official signing the cover page of the report in which these data are used is responsible for releasing this data package and is by signature affirming the above release statement is true.

Exceptions Report

1.2 Certificate of Analysis

Lab Report #: L17030455
 Lab Project #: 2551.096
 Project Name: Longhorn Army Ammunition
 Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030455-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: LH18/24-SP650-6422-GRAB	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 03/14/2017 08:05
Workgroup #: WG606011	Analyst: DCM	Run Date: 03/14/2017 09:21
Collect Date: 03/08/2017 15:00	Dilution: 50	File ID: S2170314001.060
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Nitrogen, Ammonia	7664-41-7	49.1		10.0	5.00	2.50

Certificate of Analysis

Sample #: L17030455-01	PrePrep Method: N/A	Instrument: UV-2600
Client ID: LH18/24-SP650-6422-GRAB	Prep Method: 365.2	Prep Date: N/A
Matrix: Water	Analytical Method: 365.2	Cal Date: 03/09/2017 11:25
Workgroup #: WG605652	Analyst: SDC	Run Date: 03/09/2017 12:05
Collect Date: 03/08/2017 15:00	Dilution: 5	File ID: 00.1703091205-06
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Orthophosphate	14265-44-2	4.28		0.500	0.250	0.125

Certificate of Analysis

Sample #: L17030455-01	PrePrep Method: N/A	Instrument: TOC-VWP
Client ID: LH18/24-SP650-6422-GRAB	Prep Method: 415.1	Prep Date: N/A
Matrix: Water	Analytical Method: 415.1	Cal Date: 02/10/2017 10:25
Workgroup #: WG605775	Analyst: DCM	Run Date: 03/10/2017 20:39
Collect Date: 03/08/2017 15:00	Dilution: 25	File ID: TC03102017.042
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Total Organic Carbon	TOC	538		50.0	25.0	12.5

2.0 Full Sample Data Package

2.1 General Chemistry Data

2.1.1 Ammonia Data

2.1.1.1 Summary Data

Lab Report #: L17030455

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030455-01	PrePrep Method: N/A	Instrument: SMARTCHEM2
Client ID: LH18/24-SP650-6422-GRAB	Prep Method: 350.1	Prep Date: N/A
Matrix: Water	Analytical Method: 350.1	Cal Date: 03/14/2017 08:05
Workgroup #: WG606011	Analyst: DCM	Run Date: 03/14/2017 09:21
Collect Date: 03/08/2017 15:00	Dilution: 50	File ID: S2170314001.060
Sample Tag: DL01	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Nitrogen, Ammonia	7664-41-7	49.1		10.0	5.00	2.50

2.1.1.2 QC Summary Data

Example Calculations for Visible Spectrophotometric Methods

Linear Calibration Model

Step 1 - Retrieve Curve Data from ICAL

m = slope of the linear equation
 b = intercept from the linear equation
 y = instrument response as absorbance or OD
 x = concentration of analyte (mg/L)
 $y = mx + b$

Step 2: Calculate the instrument concentration, x

Where:

$$x = (y - b)/m$$

Step 3: Solve for analyte concentration in sample, Cx

$$C_x = (x) (D)$$

Example Calculation (LCS):

Value of m from plot:	7.809
Value of b from plot:	0.0004135
Absorbance of unknown from quantitation report (y):	0.31
Calculated concentration (x):	0.03964483
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	0.0396 mg/L

SmartChem Autoanalyzer - Quadratic Calibration for Chloride and Sulfate

Step 1 - Retrieve Curve Data from Smartchem ICAL

A, B, C = constants from the ICAL quadratic regression

x = instrument response as absorbance or OD

y = concentration of analyte (mg/L)

Step 2: Calculate the instrument concentration, y

Where:

$$y = Ax^2 + Bx + C$$

Step 3: Solve for analyte concentration in sample, C_y

$$C_y = (y) (D)$$

Example Calculation (LCS):

Value of A from plot:	101.2796
Value of B from plot:	318.9056
Value of C from plot:	-2.2712
Absorbance of unknown from quantitation report (x):	0.1583
Calculated concentration (y):	50.7495108
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	50.75 mg/L

Microbac Laboratories Inc.

Data Checklist

Date: 14-MAR-2017
 Analyst: DCM
 Analyst: NA
 Method: NH3
 Instrument: SC2
 Curve Workgroup: NA
 Runlog ID: _____
 Analytical Workgroups: WG606011 WG606010

Calibration/Linearity	03-14-2017
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DCM
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
14-MAR-2017



Secondary Reviewer:
16-MAR-2017




Analytical Method: 350.1
Login Number: L17030455

AAB#: WG606011

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6422-GRAB	01	03/08/17					03/14/2017	5.8	28		03/14/17	5.8	28	

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17030455 Work Group: WG606011
 Blank File ID: S2170314001.048 Blank Sample ID: WG606011-01
 Prep Date: 03/14/17 08:44 Instrument ID: SMARTCHEM2
 Analyzed Date: 03/14/17 08:44 Method: 350.1
 Analyst: DCM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG606011-02	S2170314001.041	03/14/17 08:37	01
DUP	WG606011-04	S2170314001.056	03/14/17 09:05	DL01
LH18/24-SP650-6422-GRAB	L17030455-01	S2170314001.060	03/14/17 09:21	DL01

Report Name: BLANK_SUMMARY
 PDF File ID: 5196750
 Report generated 03/14/2017 10:28



Login Number: L17030455 Prep Date: 03/14/17 08:44 Sample ID: WG606011-01
 Instrument ID: SMARTCHEM2 Run Date: 03/14/17 08:44 Prep Method: 350.1
 File ID: S2170314001.048 Analyst: DCM Method: 350.1
 Workgroup (AAB#): WG606011 Matrix: Water Units: mg/L
 Contract #: _____ Cal ID: SMARTC-14-MAR-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Nitrogen, Ammonia	0.0500	0.200	0.0515	1	J

DL Method Detection Limit
 LOQ Reporting/Practical Quantitation Limit
 ND Analyte Not detected at or above reporting limit
 * |Analyte concentration| > 1/2 RL

Report Name: BLANK
 PDF ID: 5196751
 14-MAR-2017 10:28



Login Number: L17030455 Run Date: 03/14/2017 Sample ID: WG606011-02
Instrument ID: SMARTCHEM2 Run Time: 08:37 Prep Method: 350.1
File ID: S2170314001.041 Analyst: DCM Method: 350.1
Workgroup (AAB#): WG606011 Matrix: Water Units: mg/L
QC Key: DOD4 Lot#: STD80299 Cal ID: SMARTC-14-MAR-17

Analytes	Expected	Found	% Rec	LCS Limits	Q
Nitrogen, Ammonia	2.00	1.97	98.4	90 - 110	

LCS - Modified 03/06/2008
PDF File ID: 5196752
Report generated: 03/14/2017 10:28



2.1.1.3 Raw Data

SMARTCHEM RUN LOG
(smartchem2, smartchem3)

WORKGROUP: WG606010

606010

Daily Check

- Lamp On
- Probe Rinse Full
- DI Water > 1/2 Full
- Wash Solution > 1/2 Full
- NO3 Reagent bottle connected / purged
- NO3 pH adj to pH 5-9
- Syringe filter lot # _____
- pH paper Lot #: _____
- WBL Run
- Reagents Full
- Dilution H2O Full
- Waste Container Check

- 1) Workgroup _____
Plan # 20170314001
- 2) Workgroup _____
Plan # _____
- 3) Workgroup _____
Plan # _____
- Instrument: SC1 SC2

Analyte	1	2	3
	NH3		
	Dilution		
SC Prepared Curve			
Position			
1-1	ICV		
1-2	Blk		
1-3	LCS		
1-4	03-351-07	1/400	
1-5	03-367-01		
1-6	03-377-01		
1-7	03-494-01		
1-8	02		
1-9	03-301-02		
1-10	03-359-01		
1-11	03-404-01	4ml/40 # 1/20	
1-12	02	4ml/40 # 1/20	
1-13	03	4ml/40 # 1/20	
1-14	06	4ml/40 # 1/2	
1-15	03-491-09		
1-16	03-559-15		
1-17	03-571-01	1/100	
1-18	03-574-02	1/2	
1-19	03-603-01		
1-20	03-459-01		
1-21	02		
1-22	03		
2-1	04		
2-2	DUP 03-459-02		
2-3	MS 03-459-03		

Position	Analyte	1	2	3
2-4	MS 03-459-04			
2-5	Blk			
2-6	LCS			
2-7	03-455-01	Auto 1/5 # Auto 1/5		
2-8	03-603-01	Auto 1/5		
2-9	DUP 03-603-01	Auto 1/5		
2-10	MS 03-603-01	Auto 1/5		
2-11	Blk		deu 3/14/17	
2-12	03-571-01	1/25	1/25	1/25
2-13	03-571-01	1/25		
2-14				
2-15				
2-16				
2-17				
2-18				
2-19				
2-20				
2-21				
2-22				
2-23				
2-24				
2-25				
2-26				
3-1				
3-2				

NOTES:
 * Run NO2 std on NO3 runs
 * LCSD must be run if no MS or Duplicate
 *MS(10% sample): NO3, TKN, NH3, PHOS

DCN#124499



SMARTCHEM RUN LOG
(smartchem2, smartchem3)

WORKGROUP: WG606010

Analyte		1	2	3
Position				
3-3				
3-4				
3-5				
3-6				
3-7				
3-8				
3-9				
3-10				
3-11				
3-12				
3-13				
3-14				
3-15				

Analyte		1	2	3
Position				
3-16				
3-17				
3-18				
3-19				
3-20				
3-21				
3-22				
3-23				
3-24				
3-25				
3-26				
3-27				
3-28				

Chloride	EPA 325.2/SM 4500-Cl E-2000
Nitrate-Nitrite	EPA 353.2/SM 4500-NO3 F-2000
Alkalinity	EPA 310.2
Sulfate	EPA 375.4/SM 426C (15 th)/ SM4500-504 E-1997

<input checked="" type="checkbox"/> Ammonia	EPA 350.1/SM 4500-NH3 B-1997
TKN	EPA 351.2
Phos	EPA 365.4

Analyte	NH3	Reagents
SOP & Revision	K3501 R24	RGIT 38596
Curve Stock (SC made)	Std 80467	RGIT 39421
NO2 STD		RGIT 39214
ICV	Std 80868	
CCV	Std 80468	
LCS		
MS	see distill Dilution log	

Comments: _____

Analyst: David Morales

Date: 3/14/17

DCN#124499



AMMONIA DISTILLATION LOG

SOP K3501 Revision # 24LCS: 80299
Tmm 3/13/17SPIKE: 80299

WATER (mg/L)

DAILY DIL. $\frac{5(100)650}{40} = 2$
3/13/17 Tmm ~~256~~ $40(2)/40 = 2$ DAILY DIL. $\frac{0.4(100)40}{40} = 1$

SOIL (mg/Kg)

* All Distillate are at a Final Volume of 40 mL.

RGT 39399RGT 39370

SAMPLE	VOLUME DISTILLED (mL or g)	CHLORINE PRESENT?	pH ADJUSTED 9.5 ± 0.2	COMMENTS
BLANK	40	-	✓	
LCS(2.0)	40	-	✓	
LCS DUP(2.0)	40	-	✓	
03-351-07	40	-	✓	
03-367-01	40	-	✓	
03-377-01	40	-	✓	
03-494-01	40	-	✓	
02	40	-	✓	
03-501-02	40	-	✓	
03-359-01	40	-	✓	
03-404-01	4	-	✓	
02	4	-	✓	
03	4	-	✓	
06	4	-	✓	
03-491-09	40	-	✓	
03-559-15	40	-	✓	
03-571-01	40	-	✓	
03-574-02	40	-	✓	
03-613-01	40	-	✓	
03-459-01	40	-	✓	
02	40	-	✓	
03	40	-	✓	
04	40	-	✓	
DUP 03-459-03	40	-	✓	
MS(10.10) 03-459-03	40	-	✓	
MS(10.10) 03-459-04	40	-	✓	

Analyst: Jammy MoresDate/Time: 3/13/17 @ 800

*MS required on 10% of samples (EPA 350.1)

*MS/MS required on each set of 20 samples (SM4500)

MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WNH3 -Unit [mg/L] - EPA 350.1/SM4500-NH3 AMMONIA

Smp#[[Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
DIL-1	RBL	0.000	0.0466	0.00		7:58:19 AM
DIL-1	RBL	0.000	0.0464	0.00		7:58:37 AM
DIL-1	RBL	0.000	0.0459	0.00		8:00:07 AM
DIL-1	Std-1	0.000	-0.0002	0.00	INV	8:00:25 AM
SR5-1	Std-2	0.030	0.0142	0.00		8:01:55 AM
SR5-2	Std-3	0.094	0.0218	0.00		8:02:13 AM
SR5-3	Std-4	0.600	0.1485	0.00		8:03:43 AM
SR5-4	Std-5	1.050	0.2623	0.00		8:04:01 AM
SR5-5	Std-6	2.100	0.5303	0.00		8:05:31 AM
ST-1	Std-7	3.000	0.7953	0.00		8:05:49 AM
ST-3	1CCV (1.5 mg/L)	1.505	0.3901	100.34		8:07:19 AM
ST-2	2CCB (0 mg/L)	0.001	-0.0036	0.00	INV,><	8:07:37 AM
1	ICV	1.496	0.3878	0.00		8:09:07 AM
2	WG606010-01 BLK	0.042	0.0072	0.00		8:09:25 AM
3	WG606010-02 LCS	1.952	0.5070	0.00		8:10:55 AM
4	L17030351-07 (400)	1.154	0.2983	0.00		8:11:13 AM
5	L17030367-01	0.790	0.2029	0.00		8:12:43 AM
6	L17030377-01	0.668	0.1709	0.00		8:13:01 AM
7	L17030494-01	0.231	0.0566	0.00		8:14:31 AM
8	L17030494-02	0.344	0.0861	0.00		8:14:50 AM
9	L17030501-02	0.145	0.0342	0.00		8:16:20 AM
10	L17030359-01	0.202	0.0489	0.00		8:16:38 AM
ST-3	1CCV (1.5 mg/L)	1.499	0.3886	99.96		8:18:08 AM
ST-2	2CCB (0 mg/L)	0.004	-0.0029	0.00	INV,><	8:18:26 AM
11	L17030404-01 (200)	1.575	0.4084	0.00		8:19:56 AM
12	L17030404-02 (200)	× 3.009	0.7837	0.00	LH	8:20:14 AM
13	L17030404-03 (200)	1.995	0.5183	0.00		8:21:44 AM
14	L17030404-06 (20)	1.546	0.4008	0.00		8:22:02 AM
15	L17030491-09	0.127	0.0294	0.00		8:23:32 AM
16	L17030559-15	0.127	0.0293	0.00		8:23:50 AM
17	L17030571-01 (100)	× 0.551	0.1403	0.00		8:25:56 AM
18	L17030574-02 (2)	2.858	0.7442	0.00		8:26:14 AM

Report Date :03/14/2017 Run Date :3/14/2017 Operator : SMARTCHEM2 Plan # :20170314001
 Plan Description : NH3-A2-DCM/03/14/2017

MICROBAC (OVD)
 SMARTCHEM200 INST2 (VER3.1.14)
 NH3, TKN, NO3NO2 (MG/L N)
 ALK (MG/L CaCO3) CL, SO4 (MG/L)

Method : WNH3 -Unit [mg/L] - EPA 350.1/SM4500-NH3 AMMONIA

Smp#[/Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
19	L17030613-01	0.270	0.0669	0.00		8:27:44 AM
20	L17030459-01	0.119	0.0272	0.00		8:28:02 AM
ST-3	1CCV (1.5 mg/L)	1.532	0.3972	102.15		8:29:32 AM
ST-2	2CCB (0 mg/L)	0.007	-0.0020	0.00	INV,><	8:29:50 AM
21	L17030459-02	0.156	0.0369	0.00		8:31:20 AM
22	L17030459-03	0.109	0.0247	0.00		8:31:38 AM
23	L17030459-04	0.624	0.1594	0.00		8:33:26 AM
24	WG606010-04 DUP	0.089	0.0194	0.00		8:33:44 AM
25	WG606010-05 MS	1.048	0.2704	0.00		8:35:14 AM
26	WG606010-07 MS	1.019	0.2629	0.00		8:35:32 AM
27	WG606011-01 BLK	X 0.113	0.0257	0.00		8:37:02 AM
28	WG606011-02 LCS	1.968	0.5112	0.00		8:37:20 AM
29	L17030455-01	X 17.971	4.7004	0.00	><,LH	8:38:50 AM
30	L17030633-01	X 17.970	4.6999	0.00	><,LH	8:39:08 AM
ST-3	1CCV (1.5 mg/L)	1.544	0.4004	102.96		8:40:38 AM
ST-2	2CCB (0 mg/L)	0.011	-0.0011	0.00	INV,><	8:40:56 AM
31	WG606011-04 DUP	X 17.972	4.7006	0.00	><,LH	8:42:26 AM
32	WG606011-05 MS	X 17.975	4.7012	0.00	><,LH	8:42:44 AM
33	ID 33 Blk	0.052	0.0096	0.00		8:44:14 AM
34	ID 34 03-571-01 (25)	2.110	0.5485	0.00		8:44:32 AM
35	ID 35	2.115	0.5498	0.00		8:46:02 AM
ST-3	1CCV (1.5 mg/L)	1.540	0.3991	102.63		8:46:20 AM
ST-2	2CCB (0 mg/L)	0.009	-0.0014	0.00	INV,><	8:47:50 AM
12-[1/2]	L17030404-02 (200)	2.829	0.3664	0.00		9:00:00 AM
29-[1/2]	L17030455-01 (2)	X 10.028	1.3086	0.00	><,LH	9:01:48 AM
30-[1/2]	L17030633-01 (2)	4.044	0.5254	0.00	LH	9:03:54 AM
31-[1/2]	WG606011-04 DUP (2)	4.486	0.5833	0.00	LH	9:05:42 AM
32-[1/2]	WG606011-05 MS (2)	3.937	0.5114	0.00	LH	9:07:30 AM
ST-3	1CCV (1.5 mg/L)	1.558	0.4040	103.88		9:07:30 AM
ST-2	2CCB (0 mg/L)	0.014	-0.0002	0.00	INV	9:09:00 AM
29-[1/5]	L17030455-01 (10)	4.909	0.2531	0.00	LH	9:21:10 AM
ST-3	1CCV (1.5 mg/L)	1.559	0.4042	103.93		9:21:10 AM

Report Date :03/14/2017 Run Date :3/14/2017 Operator : SMARTCHEM2 Plan # :20170314001
 Plan Description : NH3-A2-DCM/03/14/2017

MICROBAC (OVD)
SMARTCHEM200 INST2 (VER3.1.14)
NH3, TKN, NO3NO2 (MG/L N)
ALK (MG/L CaCO3) CL, SO4 (MG/L)

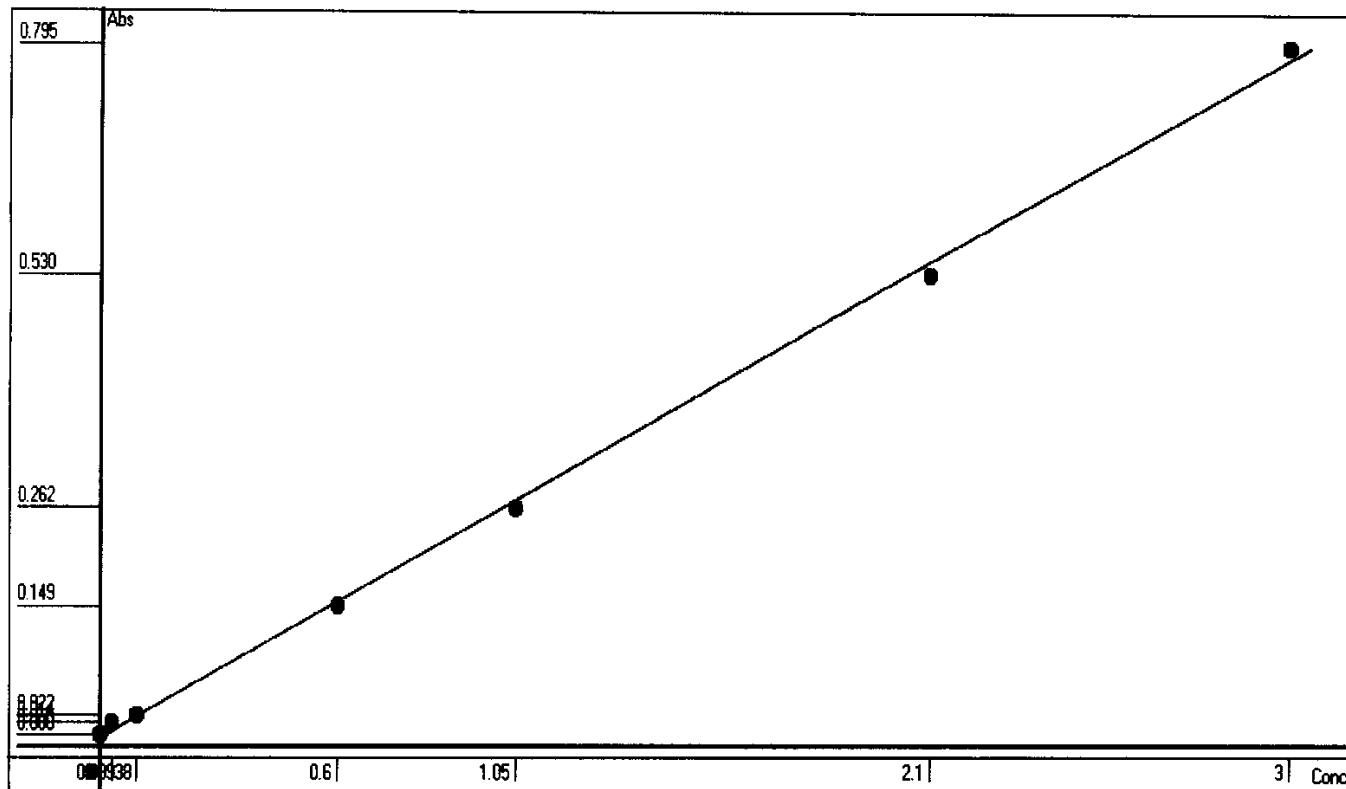
Method : WNH3 -Unit [mg/L] - EPA 350.1/SM4500-NH3 AMMONIA

Smp#[Dil Fact]	Sample ID	Conc	OD	%Recovery/RPD	Flag	Analysis Time
ST-2	2CCB (0 mg/L)	0.019	0.0011	0.00		9:22:40 AM

Report Date :03/14/2017 Run Date :3/14/2017 Operator : SMARTCHEM2 Plan # :20170314001
Plan Description : NH3-A2-DCM/03/14/2017

Calibrant Report - WNH3 -

Calib Lot #:010104 Exp Date:6/17/2020 User:Westco Scientific
 Plan # : 20170314001 Description : [NH3-A2-DCM/03/14/2017] Unit



Point	OD	Conc	Recalc Conc	% Error
1	-0.0002	0	0.0140	1.40
2	0.0142	0.03	0.0690	130.00
3	0.0218	0.0938	0.0981	4.58
4	0.1485	0.6	0.5821	-2.98
5	0.2623	1.05	1.0168	-3.16
6	0.5303	2.1	2.0407	-2.82
7	0.7953	3	3.0530	1.77

Conc= +3.8202*Abso +0.0148 R²=0.9988

RBL
0.0465
0

Report Date 3/14/2017 Run Date 3/14/2017

2.1.2 Orthophosphate Data

2.1.2.1 Summary Data

Lab Report #: L17030455

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030455-01	PrePrep Method: N/A	Instrument: UV-2600
Client ID: LH18/24-SP650-6422-GRAB	Prep Method: 365.2	Prep Date: N/A
Matrix: Water	Analytical Method: 365.2	Cal Date: 03/09/2017 11:25
Workgroup #: WG605652	Analyst: SDC	Run Date: 03/09/2017 12:05
Collect Date: 03/08/2017 15:00	Dilution: 5	File ID: 00.1703091205-06
Sample Tag:	Units: mg/L	

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Orthophosphate	14265-44-2	4.28		0.500	0.250	0.125

2.1.2.2 QC Summary Data

Example Calculations for Visible Spectrophotometric Methods

Linear Calibration Model

Step 1 - Retrieve Curve Data from ICAL

m = slope of the linear equation
 b = intercept from the linear equation
 y = instrument response as absorbance or OD
 x = concentration of analyte (mg/L)
 $y = mx + b$

Step 2: Calculate the instrument concentration, x

Where:

$$x = (y - b)/m$$

Step 3: Solve for analyte concentration in sample, Cx

$$C_x = (x) (D)$$

Example Calculation (LCS):

Value of m from plot:	7.809
Value of b from plot:	0.0004135
Absorbance of unknown from quantitation report (y):	0.31
Calculated concentration (x):	0.03964483
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	0.0396 mg/L

SmartChem Autoanalyzer - Quadratic Calibration for Chloride and Sulfate

Step 1 - Retrieve Curve Data from Smartchem ICAL

A, B, C = constants from the ICAL quadratic regression

x = instrument response as absorbance or OD

y = concentration of analyte (mg/L)

Step 2: Calculate the instrument concentration, y

Where:

$$y = Ax^2 + Bx + C$$

Step 3: Solve for analyte concentration in sample, C_y

$$C_y = (y) (D)$$

Example Calculation (LCS):

Value of A from plot:	101.2796
Value of B from plot:	318.9056
Value of C from plot:	-2.2712
Absorbance of unknown from quantitation report (x):	0.1583
Calculated concentration (y):	50.7495108
Dilution factor (D):	1.00
Concentration of analyte in sample, C _y :	50.75 mg/L

Microbac Laboratories Inc.

Data Checklist

Date: 09-MAR-2017
 Analyst: SDC
 Analyst: NA
 Method: PO4
 Instrument: UV-2600
 Curve Workgroup: NA
 Runlog ID: _____
 Analytical Workgroups: WG605652

Calibration/Linearity	03/09/17
Second Source Check	
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	
QC Violation Sheet	X
Case Narratives	
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	
Primary Reviewer	SDC
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
09-MAR-2017

Shalyn Culy

Secondary Reviewer:
16-MAR-2017

Denna Johnson



Analytical Method: 365.2
Login Number: L17030455

AAB#: WG605652

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6422-GRAB	01	03/08/17					03/09/2017	.9	2		03/09/17	.9	2	

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17030455 Work Group: WG605652
 Blank File ID: 00.1703091205-03 Blank Sample ID: WG605652-01
 Prep Date: 03/09/17 12:05 Instrument ID: UV-2600
 Analyzed Date: 03/09/17 12:05 Method: 365.2
 Analyst: SDC

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG605652-02	00.1703091205-04	03/09/17 12:05	
LCS2	WG605652-03	00.1703091205-05	03/09/17 12:05	
LH18/24-SP650-6422-GRAB	L17030455-01	00.1703091205-06	03/09/17 12:05	
DUP	WG605652-05	00.1703091205-07	03/09/17 12:05	

Report Name: BLANK_SUMMARY
 PDF File ID: 5196962
 Report generated 03/14/2017 11:02



Login Number: L17030455 Prep Date: 03/09/17 12:05 Sample ID: WG605652-01
Instrument ID: UV-2600 Run Date: 03/09/17 12:05 Prep Method: 365.2
File ID: 00.1703091205-03 Analyst: SDC Method: 365.2
Workgroup (AAB#): WG605652 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: UV-260-09-MAR-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Orthophosphate	0.0250	0.100	0.0250	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 5196963
14-MAR-2017 11:02



Login Number: L17030455 Analyst: SDC Prep Method: 365.2
 Instrument ID: UV-2600 Matrix: Water Method: 365.2
 Workgroup (AAB#): WG605652 Units: mg/L
 QC Key: DOD4 Lot #: STD80857
 Sample ID: WG605652-02 LCS File ID: 00.1703091205-04 Run Date: 03/09/2017 12:05
 Sample ID: WG605652-03 LCS2 File ID: 00.1703091205-05 Run Date: 03/09/2017 12:05

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Orthophosphate	1.00	0.997	99.7	1.00	1.01	101	0.798	90 - 110	20	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5196964
 Report generated: 03/14/2017 11:02



2.1.2.3 Raw Data

UG 005657

Curves

Parameter: PO4

Spectrophotometer: UV-2600

Calibration (Curve) standard stock: std 79040

Concentration: 1000 mg/L

Recipe for preparation of curve standards found in:

SOP: std 40857 Revision: 17 Page: 89

Second Source Stock: std 40857 (concentration: 1000)

Daily Preparation: std 40857
10 mL / 100
concentration = 1.0

Calibration Standards (mg/L)	Volume (mL)	Cell Size (cm)	Wavelength (nm)	Absorbance
1.0	50	1 cm	880	0.632
0.7				0.438
0.5				0.317
0.2				0.129
0.1				0.067
0.05				0.039
0.00			319/100 mg	0.003 0.001
2nd Source 1.0	↓	↓	↓	0.633

Analyst: April Greene

Date/Time: 3/9/17 1125

DCN#124440



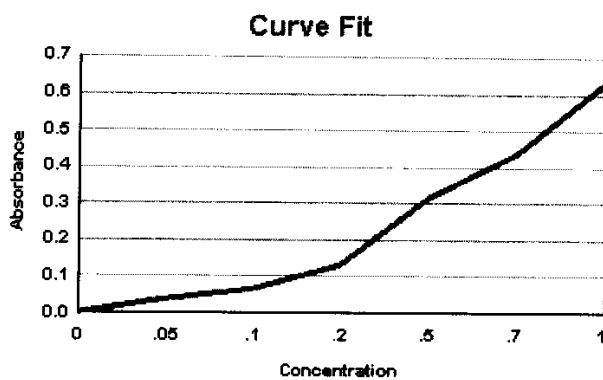
Microbac Laboratories Inc.
INITIAL CALIBRATION

Workgroup: WG605651
Analytical Method: 300
Instrument ID: UV-2600

Analyst: ADG
Initial Calibration Date: 03/09/2017

Analyte: ORTHOPHOSPHATE
Number of Points: 7
Slope: 0.625674
Y-Intercept: 0.00393300
Coef. Of Correlation (R^2): 0.999869
Coef. Of Correlation (R): 0.999935

Concentration X	Absorbance Y	X ²	X * Y	Y-Fitted (mX^2+B)
0.00	0.00100	0.00	0.00	0.00393300
0.0500	0.0390	0.00250	0.00195	0.0352167
0.100	0.0670	0.0100	0.00670	0.0665004
0.200	0.129	0.0400	0.0258	0.129068
0.500	0.317	0.250	0.159	0.316770
0.700	0.438	0.490	0.307	0.441905
1.00	0.632	1.00	0.632	0.629607



WG_ICAL_CAL_WET - Modified 03/06/2008
Report generated 03/09/2017 11:49



Microbac Laboratories Inc.
ALTERNATE SOURCE REPORT

00844784

Workgroup #: WG605651
File ID: 00.1703091125-08
CCV ID: WG605651-08
Units: mg/L
Analyte: ORTHOPHOSPHATE

Instrument ID: UV-2600
Run Date: 03/09/2017
Run Time: 11:25
Analyst: ADG
Cal ID: UV-260 - 09-MAR-17 11:25:07

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	1	1.01	0.633	1.0	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

WET_WG_SSCV - Modified 03/06/2008
Report generated 03/09/2017 11:50



WORKGROUP: WG605652

Orthophosphate
(orthophosphate1)

EPA 365.2 / SM4500-P E
SOP K3653 Rev _____
Color Reagent Chemicals
39024
38726
39086
COA 17313

CCV: 80856 LCS: 80857
Daily Dilution: 5(5)/50 Daily Dilution: 6(10)/100
Daily Dilution: =0.5 Daily Dilution: =1.0
Spectrophotometer: W-2100 Curve ID: 3-9-17

Spike: 80857
Daily Dilution: 2(10)/20
Daily Dilution: =0.4

SAMPLE	VOLUME	PH < 8.2	DILUTION	ABSORBANCE @ 880 nm
CCV: mg/L	50	✓		0.322
BLK/CCB:	50	✓		0.001
LCS: ppm	50	✓		0.628
LCSD: ppm	50	✓		0.633
03-455-01	50	✓	1/5	0.539
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
	50			
DUP: 03-455-01	50	✓	1/5	0.532
MS: (0.4) 03-455-01	50	✓	1/5	0.583
MSD: ()	50			
CCV: ()	50	✓		0.326
CCB:	50	✓		0.005

Analyst: Chalyn Cevalier

Date / Time: 3-9-17 , 1205

DCN#124445



Microbac Laboratories Inc.
SAMPLE REPORT

Workgroup: WG605652
Analyte: ORTHOPHOSPHATE

Analyst: SDC
Date: 03/09/2017

Sample ID	I Vol	F Vol	Response	Slope	Y Intercept	Anal. Conc.	Rep. Conc.	Dil	Units
WG605652-01	50	50	0.00100	0.6257	0.003933	-0.0046877	-0.0046877	1	mg/L
WG605652-02	50	50	0.628	0.6257	0.003933	0.99743	0.99743	1	mg/L
WG605652-03	50	50	0.633	0.6257	0.003933	1.0054	1.0054	1	mg/L
L17030455-01	50	50	0.539	0.6257	0.003933	0.85518	4.2759	5	mg/L
WG605652-04	50	50	0.539	0.6257	0.003933	0.85518	4.2759	5	mg/L
WG605652-05	50	50	0.532	0.6257	0.003933	0.84400	4.2200	5	mg/L
WG605652-06	50	50	0.583	0.6257	0.003933	0.92551	4.6275	5	mg/L

UV_SAMPLE_REPORT - Modified 03/06/2008

Report generated 03/14/2017 09:58



Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

00844787

Workgroup #: WG606063
File ID: 00.1703091205-01
CCV ID: WG606063-01
Units: mg/L
Analyte: ORTHOPHOSPHATE

Instrument ID: UV-2600
Run Date: 03/09/2017
Run Time: 12:05
Analyst: SDC
Cal ID: UV-260 - 09-MAR-17

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	.5	0.508	0.644	1.6	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 03/14/2017 09:48



Microbac Laboratories Inc.
CONTINUING CALIBRATION REPORT

00844788

Workgroup #: WG606063 Instrument ID: UV-2600
File ID: 00.1703091205-09 Run Date: 03/09/2017
CCV ID: WG606063-03 Run Time: 12:05
Units: mg/L Analyst: SDC
Analyte: ORTHOPHOSPHATE Cal ID: UV-260 - 09-MAR-17

Analyte	Expected	Found	RF	%D	Q
Orthophosphate	.5	0.515	0.652	3.0	

* Exceeds %D Limit

CCC Calibration Check Compounds
SPCC System Performance Check Compounds

WET_WG_CCV - Modified 03/06/2008

Report generated 03/14/2017 09:48



2.1.3 Total Organic Carbon Data

2.1.3.1 Summary Data

Lab Report #: L17030455

Lab Project #: 2551.096

Project Name: Longhorn Army Ammunition

Lab Contact: Adriane Steed

Certificate of Analysis

Sample #: L17030455-01

PrePrep Method: N/A

Instrument: TOC-VWP

Client ID: LH18/24-SP650-6422-GRAB

Prep Method: 415.1

Prep Date: N/A

Matrix: Water

Analytical Method: 415.1

Cal Date: 02/10/2017 10:25

Workgroup #: WG605775

Analyst: DCM

Run Date: 03/10/2017 20:39

Collect Date: 03/08/2017 15:00

Dilution: 25

File ID: TC03102017.042

Sample Tag: DL01

Units: mg/L

Analyte	CAS #	Result	Qual	LOQ	LOD	DL
Total Organic Carbon	TOC	538		50.0	25.0	12.5

2.1.3.2 QC Summary Data

**Total Organic Carbon Example Calculations
(Direct Readout Parameter)**

$$(\text{Readout})/(\text{dilution}) = \text{mg/L}$$

where:

Readout = direct readout from the instrument

dilution = dilution in decimal form (ex. 1/5 dilution = 0.2)

Microbac Laboratories Inc.

Data Checklist

Date: 10-MAR-2017
 Analyst: DCM
 Analyst: NA
 Method: TOC
 Instrument: TOC-VWP
 Curve Workgroup: NA
 Runlog ID: _____
 Analytical Workgroups: WG605775 WG605771

Calibration/Linearity	02-10-2017
Second Source Check	X
ICV/CCV (std)	X
ICB/CCB	X
Blank	X
LCS/LCS Dup	X
MS/MSD	X
Duplicate	X
Upload Results	X
Client Forms	X
QC Violation Sheet	X
Case Narratives	X
Signed Raw Data	X
STD/LCS on benchsheet	X
Check for compliance with method and project specific requirements	X
Check the completeness of reported information	X
Check the information for the report narrative	X
Primary Reviewer	DCM
Secondary Reviewer	DIH
Comments	

Primary Reviewer:
14-MAR-2017



Secondary Reviewer:
16-MAR-2017




Analytical Method: 415.1
Login Number: L17030455

AAB#: WG605775

Client ID	ID	Date Collected	TCLP Date	Time Held	Max Hold	Q	Extract Date	Time Held	Max Hold	Q	Run Date	Time Held	Max Hold	Q
LH18/24-SP650-6422-GRAB	01	03/08/17					03/10/2017	2.2	28		03/10/17	2.2	28	

* = SEE PROJECT QAPP REQUIREMENTS



METHOD BLANK SUMMARY

Login Number: L17030455 Work Group: WG605775
 Blank File ID: TC03102017.019 Blank Sample ID: WG605775-01
 Prep Date: 03/10/17 15:52 Instrument ID: TOC-VWP
 Analyzed Date: 03/10/17 15:52 Method: 415.1
 Analyst: DCM

This Method Blank Applies To The Following Samples:

Client ID	Lab Sample ID	Lab File ID	Time Analyzed	TAG
LCS	WG605775-02	TC03102017.020	03/10/17 16:11	01
LCS2	WG605775-03	TC03102017.021	03/10/17 16:23	01
LH18/24-SP650-6422-GRAB	L17030455-01	TC03102017.042	03/10/17 20:39	DL01
DUP	WG605775-05	TC03102017.043	03/10/17 20:53	01

Report Name: BLANK_SUMMARY
 PDF File ID: 5199731
 Report generated 03/15/2017 14:21



Login Number: L17030455 Prep Date: 03/10/17 15:52 Sample ID: WG605775-01
Instrument ID: TOC-VWP Run Date: 03/10/17 15:52 Prep Method: 415.1
File ID: TC03102017.019 Analyst: DCM Method: 415.1
Workgroup (AAB#): WG605775 Matrix: Water Units: mg/L
Contract #: _____ Cal ID: TOC-VW-10-FEB-17

Analytes	DL	LOQ	Concentration	Dilution	Qualifier
Total Organic Carbon	0.500	2.00	0.500	1	U

DL Method Detection Limit
LOQ Reporting/Practical Quantitation Limit
ND Analyte Not detected at or above reporting limit
* |Analyte concentration| > 1/2 RL

Report Name: BLANK
PDF ID: 5199732
15-MAR-2017 14:21



Login Number: L17030455 Analyst: DCM Prep Method: 415.1
 Instrument ID: TOC-VWP Matrix: Water Method: 415.1
 Workgroup (AAB#): WG605775 Units: mg/L
 QC Key: DOD4 Lot #: STD80787

Sample ID: WG605775-02 LCS File ID: TC03102017.020 Run Date: 03/10/2017 16:11
 Sample ID: WG605775-03 LCS2 File ID: TC03102017.021 Run Date: 03/10/2017 16:23

Analytes	LCS			LCS2			%RPD	%Rec Limits	RPD Lmt	Q
	Known	Found	% REC	Known	Found	% REC				
Total Organic Carbon	25.0	24.5	97.8	25.0	25.3	101	3.54	85 - 115	15	

LCS_LCS2 - Modified 03/06/2008
 PDF File ID: 5199733
 Report generated: 03/15/2017 14:22



2.1.3.3 Raw Data

Curve

WG 602411
WG 602476
WG 602481
2/11/17

Total Organic Carbon

MAKE DAILY

CCV (TOC): $(5/200)(1000) = 25\text{mg/L}$ LCS (TOC): $(5/200)(1000) = 25\text{mg/L}$

CCV (TIC): $(5/200)(1000) = 25\text{mg/L}$ MS (TOC): _____

Calibration Curve Date: _____ Reagent: RCR 38944
RCR 37673

SM5310-C : Matrix 2 WG _____ SOP: K 4151 Rev. 18 *2/11/17*
 EPA 415.1/9060A(mod): Matrix 1 WG _____ Instrument: Shimadzu TOC-VWP/ASI

- drain reservoir filled
- ASI water bottle full
- dilution water bottle full
- DAILY CHECK
- 3rd bottle full
- sufficient gas
- sufficient persulfate
- sufficient acid waste container

Position	Sample ID	Dilution	Position	Sample ID	Dilution	Position	Sample ID	Dilution
1	TC Curve		26	TC Curve		51		
2	TC ICV		27	Std 79318		52	See SOP	
3	TIC Curve		28			53	for point	
4	TIC ICV		29	TIC Curve		54	preparation	
5			30	Std 80415		55		
6			31			56		
7			32			57		
8			33	TOC (TC)		58		
9			34	ICV		59		
10			35	Std 77870		60	5/200 (1000) = 25	
11			36			61		
12			37	TIC ICV		62		
13			38	Std 80416		63		
14			39			64		
15			40			65		
16			41			66		
17			42			67		
18			43			68		
19	all points		44	analyzed in duplicate		69		
20			45			70		
21			46			71		
22			47			72		
23			48			73		
24			49			74		
25			50			75		

Analyst: David Merckli Date/Time: 2/10/17

DCN#123915



	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TC	TCCURVE		Complete	2/10/2017 10:29:51 A	0, 1, 2, 3, 4, 5
2	TC	TOC ICV	TC:23.90mg/L	Complete	2/10/2017 10:47:48 A	6
3	IC	TICCURVE		Complete	2/10/2017 3:55:41 PM	0, 1, 2, 3, 4, 5
4	IC	TIC CURVE	IC:24.27mg/L	Complete	2/10/2017 4:12:07 PM	6
5	TC		TC:0.000mg/L	Complete	2/10/2017 4:31:41 PM	7
6	IC	TOC/TIC	IC:8.571mg/L	Complete	2/10/2017 4:42:05 PM	7
7	TC	TOC/TIC	TC:32.10mg/L	Complete	2/10/2017 5:01:02 PM	7

2/12/2017 11:18:36 AM

CURVES-02-10-2017.132

Instr. Information

System
DetectorTOCVW ASI
Wet Chemical

Cal. Curve

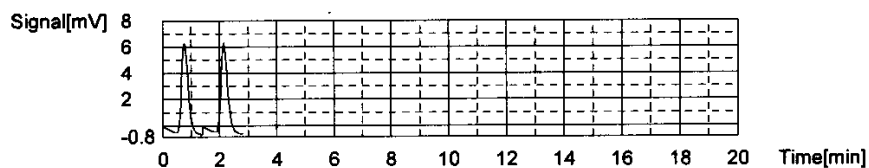
Sample Name: TCCURVE
 Sample ID: Untitled
 Cal. Curve: TCCURVE-02-10-2017.2017_02_10_09_32_59.cal
 Status: Completed

Type	Anal.
Standard	TC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	10.83	500uL	1	*****		2/10/2017 9:36:31 AM
2	10.82	500uL	1	*****		2/10/2017 9:40:05 AM

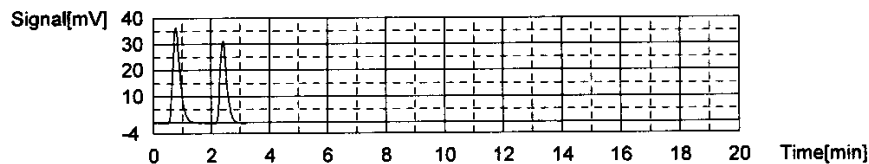
Acid Add. 0.000%
 Mean Area 10.82



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	64.31	500uL	1	*****		2/10/2017 9:45:28 AM
2	51.52	500uL	1	*****		2/10/2017 9:49:19 AM

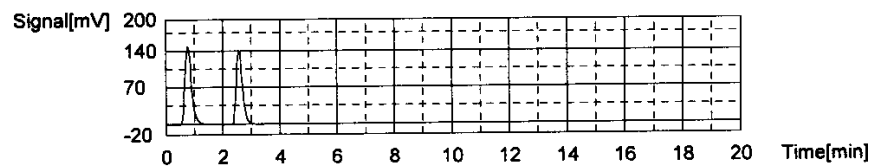
Acid Add. 0.000%
 Mean Area 57.92



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	238.4	500uL	1	*****		2/10/2017 9:55:04 AM
2	216.3	500uL	1	*****		2/10/2017 9:58:58 AM

Acid Add. 0.000%
 Mean Area 227.4

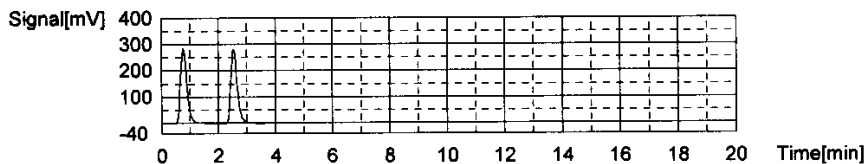


Conc: 10.00mg/L

1/6

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	442.5	500uL	1	*****		2/10/2017 10:04:41 AM
2	437.9	500uL	1	*****		2/10/2017 10:08:48 AM

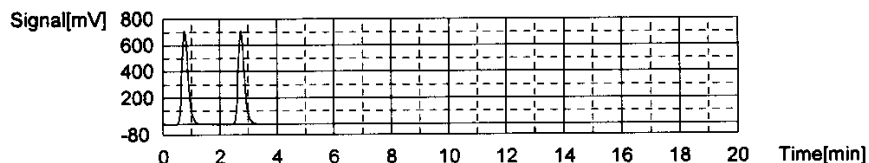
Acid Add. 0.000%
 Mean Area 440.2



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1091	500uL	1	*****		2/10/2017 10:14:47 AM
2	1092	500uL	1	*****		2/10/2017 10:19:05 AM

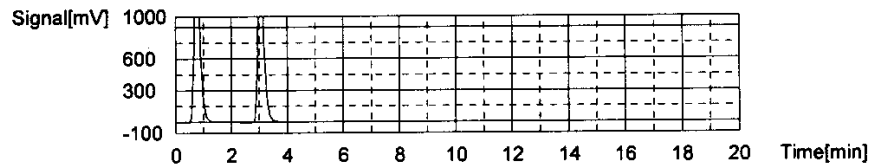
Acid Add. 0.000%
 Mean Area 1092



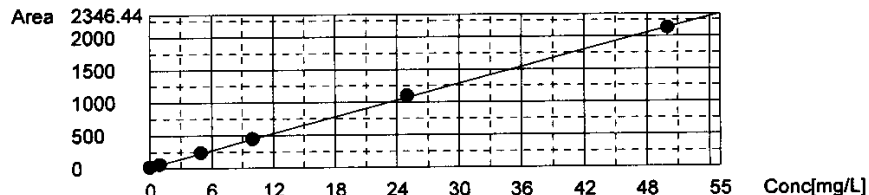
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	2132	500uL	1	*H*****		2/10/2017 10:25:19 AM
2	2118	500uL	1	*H*****		2/10/2017 10:29:51 AM

Acid Add. 0.000%
 Mean Area 2125



Slope: 42.33
 Intercept 16.87
 r² 0.999887
 Zero Shift No



Sample

Sample Name: TOC ICV
 Sample ID: Untitled
 Origin: TCCURVE-02-10-2017.2017_02_10_09_32_59.cal
 Status: Completed
 Chk. Result

Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:23.90mg/L

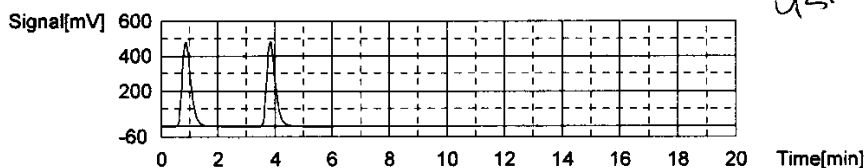
1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1029	23.91mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/10/2017 10:42:11 AM
2	1028	23.89mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_52	2/10/2017 10:47:48 AM

Q5.6%

Mean Area 1029
Mean Conc. 23.90mg/L



Cal. Curve

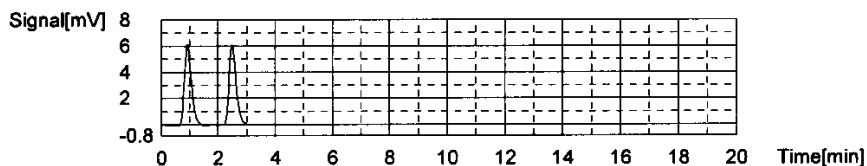
Sample Name: TICCURVE
Sample ID: Untitled
Cal. Curve: TICCURVE-02-10-2017.2017_02_10_14_45_10.cal
Status: Completed

Type	Anal.
Standard	TC

Conc: 0.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	10.59	500uL	1	*****		2/10/2017 2:49:09 PM
2	10.43	500uL	1	*****		2/10/2017 2:53:06 PM

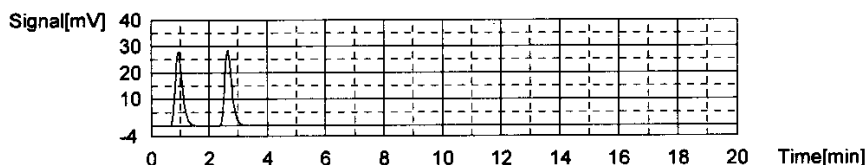
Acid Add. 3.000%
Mean Area 10.51



Conc: 1.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	48.13	500uL	1	*****		2/10/2017 3:00:24 PM
2	49.13	500uL	1	*****		2/10/2017 3:04:41 PM

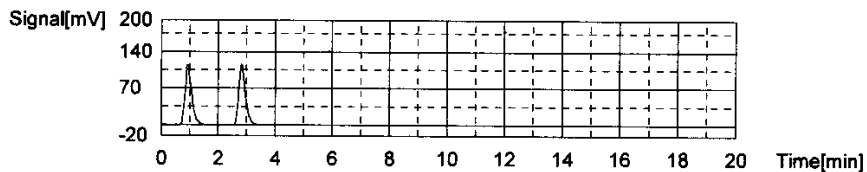
Acid Add. 3.000%
Mean Area 48.63



Conc: 5.000mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	189.0	500uL	1	*****		2/10/2017 3:12:24 PM
2	190.1	500uL	1	*****		2/10/2017 3:16:55 PM

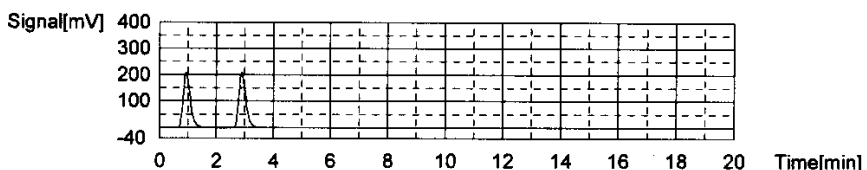
Acid Add. 3.000%
Mean Area 189.6



Conc: 10.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	360.6	500ul	1	*****		2/10/2017 3:24:47 PM
2	362.2	500ul	1	*****		2/10/2017 3:29:24 PM

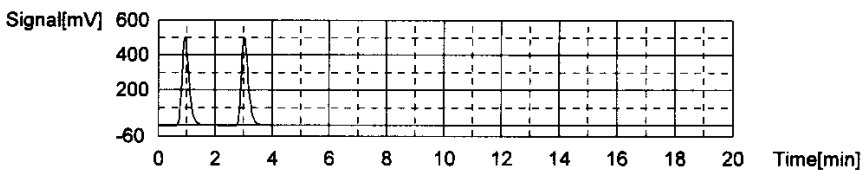
Acid Add. 3.000%
Mean Area 361.4



Conc: 25.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	859.3	500ul	1	*****		2/10/2017 3:37:23 PM
2	856.9	500ul	1	*****		2/10/2017 3:42:16 PM

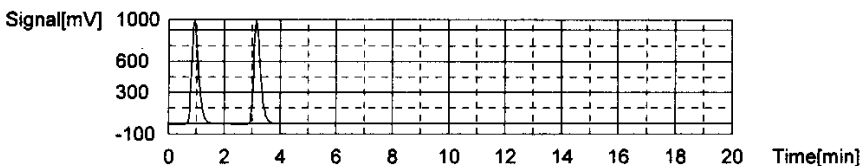
Acid Add. 3.000%
Mean Area 858.1



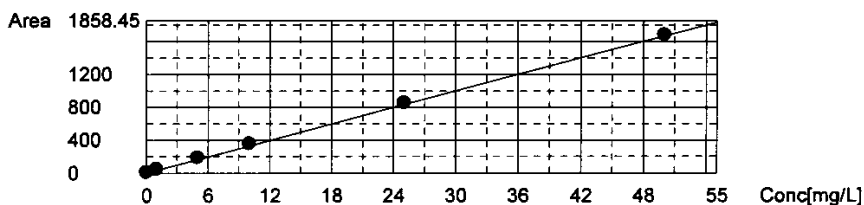
Conc: 50.00mg/L

No.	Area	Inj. Vol.	Aut. Dil.	Rem.	Ex.	Date / Time
1	1690	500ul	1	*****		2/10/2017 3:50:31 PM
2	1689	500ul	1	*****		2/10/2017 3:55:41 PM

Acid Add. 3.000%
Mean Area 1690



Slope: 33.49
Intercept: 0.000
r^2: 0.999919
Zero Shift: Yes



Sample

Sample Name: TIC CURVE
 Sample ID: Untitled
 Origin: TICCURVE-02-10-2017.2017_02_10_14_45_10.cal
 Status: Completed
 Chk. Result:

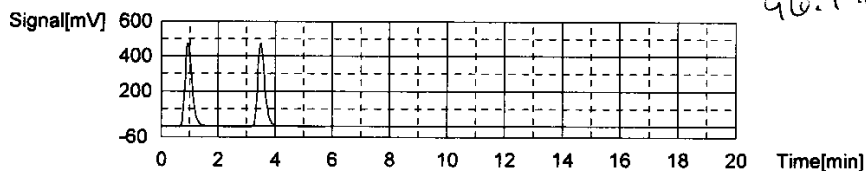
Type	Anal.	Dil.	Result
Unknown	IC	1.000	IC:24.27mg/L

1. Det

Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	810.5	24.20mg/L	500uL	1	1	TICCURVE-02-10-2017.2017_02_10_14_45	2/10/2017 4:06:15 PM
2	814.6	24.33mg/L	500uL	1	1	TICCURVE-02-10-2017.2017_02_10_14_45	2/10/2017 4:12:07 PM

Mean Area 812.5
 Mean Conc. 24.27mg/L



Sample

Sample Name: Untitled
 Sample ID: Untitled
 Origin: TCCURVE-02-10-2017.2017_02_10_14_14_25.cal
 Status: Completed
 Chk. Result:

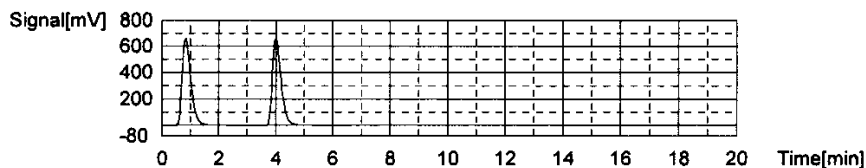
Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:0.000mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1406	0.000mg/L	500uL	1	1	TCCURVE-02-10-2017.2017_02_10_14_14	2/10/2017 4:25:42 PM
2	1411	0.000mg/L	500uL	1	1	TCCURVE-02-10-2017.2017_02_10_14_14	2/10/2017 4:31:41 PM

Mean Area 1409
 Mean Conc. 0.000mg/L



Sample

Sample Name: TOC/TIC
 Sample ID: Untitled
 Origin: TICCURVE-02-10-2017.2017_02_10_14_45_10.cal
 Status: Completed
 Chk. Result:

2/12/2017 11:18:36 AM

CURVES-02-10-2017.132

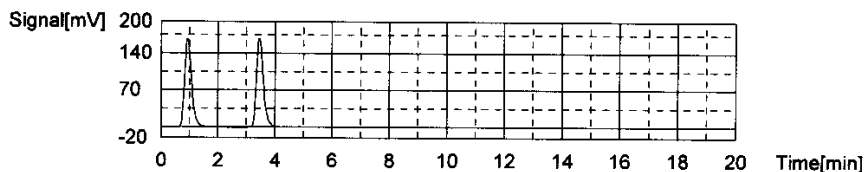
Type	Anal.	Dil.	Result
Unknown	IC	1.000	IC:8.571mg/L

1. Det

Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	286.8	8.565mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	2/10/2017 4:37:09 PM
2	287.2	8.577mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	2/10/2017 4:42:05 PM

Mean Area 287.0
Mean Conc. 8.571mg/L



Sample

Sample Name: TOC/TIC
Sample ID: Untitled
Origin: TCCURVE-02-10-2017.2017_02_10_09_32_59.cal
Status: Completed
Chk. Result:

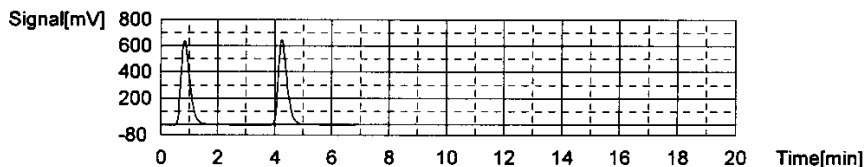
Type	Anal.	Dil.	Result
Unknown	TC	1.000	TC:32.10mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1378	32.16mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_59	2/10/2017 4:55:07 PM
2	1373	32.04mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_59	2/10/2017 5:01:02 PM

Mean Area 1376
Mean Conc. 32.10mg/L



WORKGROUP: WG605771
605775

Total Organic Carbon

MAKE DAILY

CCV (TOC): Std 79381
 $(5/200)(1000) = 25\text{mg/L}$

LCS (TOC): Std 80787
 $(5/200)(1000) = 25\text{mg/L}$

CCV (TIC): Std 80416
 $(5/200)(1000) = 25\text{mg/L}$

MS (TOC): Std 80787
 $0.4(1000)/10 = 10$

Calibration Curve Date: 2/10/17

Reagent: RGT 38944
RGT 39266

SM5310-C : Matrix 2 WG 605771

EPA 415.1/9060A(mod): Matrix 1 WG 605775 SOP: K 4151 Rev. 19

WG Instrument: Shimadza TOC-VWP/ASI

- drain reservoir filled
- ASI water bottle full
- dilution water bottle full

- DAILY CHECK**
- 3rd bottle full
 - sufficient gas
 - sufficient persulfate

- sufficient acid
- waste container

Position	Sample ID	Dilution
1	TIC	
2	TOC/TIC	
3	CCV	
4	Blk	
5	LCS	
6	LCS/DUP	
7	03-513-03	
8	DUP 03-513-03	
9	03-510-01	
10	C3	
11	C5	
12	C7	
13	C9	
14	CCV	
15	CCB	
16	03-510-11	
17	03-483-09	
18	MS 03-510-11	
19	Blk	
20	LCS	
21	LCS/DUP	
22	03-458-01	1/5
23	C3	1/5
24	C4	1/10
25	03-464-01	1/5

Position	Sample ID	Dilution
26	CCV	
27	CCB	
28	03-465-01	1/5
29	- C2	1/5
30	03-466-02	1/5
31	03-469-02	1/5
32	C3	
33	C4	
34	C5	
35	C7	
36	C9	
37	C10	
38	CCV	
39	CCB	
40	03-469-11	
41	03-543-01	1/20
42	03-455-01	1/25
43	DUP 03-469-11	
44	MS 03-469-11	
45	03-577-01	
46	C2	
47	C4	
48	03-558-01	
49	MS C2	
50	CCV	

Position	Sample ID	Dilution
51	CCB	
52	03-558-03	
53	03-558-04	
54	C5	
55	C6	1/2
56	03-558-10	1/3
57	11	1/3
58	12	
59	CCV	
60	CCB	
61		
62		
63		
64		
65		
66		
67		
68		
69		
70		
71		
72		
73		
74		
75		

dim
3/10/17

Analyst: David Morcillo

Date/Time: 3/10/17 1001

DCN#124463



	Analysis	Sample Name	Result	Status	Date / Time	Vial
1	TOC	TIC	TOC:1.950mg/L TC:25.45mg/L IC:23.50mg/L	Comple	3/10/2017 10:01:09 AM	1
2	TOC	TOC/TIC	TOC:24.99mg/L TC:33.10mg/L IC:8.110mg/L	Comple	3/10/2017 10:13:50 AM	2
3	TOC	CCV	!!Error!! TOC:24.64mg/L TC:24.29mg/L IC:-0.3496mg/L	Comple	3/10/2017 10:25:56 AM	3
4	TOC	WG605771-01 BLK	!!Error!! TOC:0.1318mg/L TC:-0.1876mg/L IC:-0.3194mg/L	Comple	3/10/2017 10:42:09 AM	0
5	TOC	WG605771-02 LCS	!!Error!! TOC:25.31mg/L TC:24.92mg/L IC:-0.3939mg/L	Comple	3/10/2017 11:02:55 AM	5
6	TOC	WG605771-03 LCSDUP	!!Error!! TOC:25.04mg/L TC:24.66mg/L IC:-0.3779mg/L	Comple	3/10/2017 11:23:42 AM	6
7	TOC	L17030513-03	!!Error!! TOC:7.621mg/L TC:7.222mg/L IC:-0.3990mg/L	Comple	3/10/2017 12:13:12 PM	7
8	TOC	WG605771-05 DUP	!!Error!! TOC:7.646mg/L TC:7.245mg/L IC:-0.4016mg/L	Comple	3/10/2017 12:35:44 PM	8
9	TOC	L17030510-01	TOC:5.048mg/L TC:38.98mg/L IC:33.93mg/L	Comple	3/10/2017 2:24:57 PM	9
10	TOC	L17030510-03	TOC:3.056mg/L TC:30.69mg/L IC:27.64mg/L	Comple	3/10/2017 1:19:54 PM	10
11	TOC	L17030510-05	TOC:3.190mg/L TC:32.89mg/L IC:29.70mg/L	Comple	3/10/2017 1:42:38 PM	11
12	TOC	L17030510-07	TOC:3.921mg/L TC:37.47mg/L IC:33.55mg/L	Comple	3/10/2017 2:04:57 PM	12
13	TOC	L17030510-09	TOC:1.093mg/L TC:1.305mg/L IC:0.2122mg/L	Comple	3/10/2017 2:24:57 PM	13
14	TOC	CCV	!!Error!! TOC:24.81mg/L TC:24.50mg/L IC:-0.3080mg/L	Comple	3/10/2017 2:37:07 PM	14
15	TOC	CCB	!!Error!! TOC:0.1302mg/L TC:-0.1886mg/L IC:-0.3187mg/L	Comple	3/10/2017 2:46:02 PM	0
16	TOC	L17030510-11	TOC:0.9018mg/L TC:1.006mg/L IC:0.1039mg/L	Comple	3/10/2017 3:05:54 PM	16
17	TOC	L17030483-09	TOC:3.026mg/L TC:12.09mg/L IC:9.063mg/L	Comple	3/10/2017 3:27:09 PM	17
18	TOC	WG605771-07 MS	!!Error!! TOC:11.07mg/L TC:11.01mg/L IC:-0.06434mg/L	Comple	3/10/2017 3:47:29 PM	18
19	TOC	WG605775-01 BLK	!!Error!! TOC:0.1298mg/L TC:-0.1889mg/L IC:-0.3187mg/L	Comple	3/10/2017 3:56:23 PM	0
20	TOC	WG605775-02 LCS	!!Error!! TOC:24.45mg/L TC:24.13mg/L IC:-0.3259mg/L	Comple	3/10/2017 4:15:29 PM	20
21	TOC	WG605775-03 LCSDUP	!!Error!! TOC:25.33mg/L TC:25.00mg/L IC:-0.3323mg/L	Comple	3/10/2017 4:27:37 PM	21
22	TOC	L17030458-01 (5)	TOC:3.288mg/L TC:23.25mg/L IC:19.96mg/L	Comple	3/10/2017 4:40:20 PM	22
23	TOC		TOC:0.6803mg/L TC:3.209mg/L IC:2.529mg/L	Comple	3/10/2017 4:52:19 PM	23
24	TOC	L17030458-04 (10)	TOC:2.374mg/L TC:12.47mg/L IC:6.593mg/L	Comple	3/10/2017 5:05:07 PM	24
25	TOC	L17030464-01 (5)	TOC:1.907mg/L TC:16.12mg/L IC:14.21mg/L	Comple	3/10/2017 5:17:44 PM	25
26	TOC	CCV	!!Error!! TOC:24.72mg/L TC:24.46mg/L IC:-0.2584mg/L	Comple	3/10/2017 5:29:54 PM	26
27	TOC	CCB	!!Error!! TOC:0.1299mg/L TC:-0.1835mg/L IC:-0.3135mg/L	Comple	3/10/2017 5:38:48 PM	0
28	TOC	L17030465-01 (5)	TOC:1.867mg/L TC:12.05mg/L IC:10.19mg/L	Comple	3/10/2017 5:51:18 PM	28
29	TOC		TOC:1.167mg/L TC:8.662mg/L IC:7.495mg/L	Comple	3/10/2017 6:03:26 PM	29
30	TOC		TOC:1.233mg/L TC:5.348mg/L IC:4.115mg/L	Comple	3/10/2017 6:15:30 PM	30
31	TOC		TOC:2.941mg/L TC:8.932mg/L IC:5.990mg/L	Comple	3/10/2017 6:27:30 PM	31
32	TOC	L17030469-03	TOC:2.374mg/L TC:18.75mg/L IC:16.38mg/L	Comple	3/10/2017 6:39:51 PM	32
33	TOC	L17030469-04	TOC:2.066mg/L TC:10.72mg/L IC:8.654mg/L	Comple	3/10/2017 6:52:43 PM	33
34	TOC	L17030469-05	TOC:1.996mg/L TC:5.645mg/L IC:3.649mg/L	Comple	3/10/2017 7:04:46 PM	34
35	TOC	L17030469-07	TOC:4.953mg/L TC:20.45mg/L IC:15.50mg/L	Comple	3/10/2017 7:18:04 PM	35
36	TOC	L17030469-09	TOC:3.652mg/L TC:16.28mg/L IC:12.63mg/L	Comple	3/10/2017 7:31:07 PM	36
37	TOC	L17030469-10	TOC:1.855mg/L TC:2.177mg/L IC:0.3221mg/L	Comple	3/10/2017 7:43:06 PM	37
38	TOC	CCV	!!Error!! TOC:25.00mg/L TC:24.72mg/L IC:-0.2875mg/L	Comple	3/10/2017 7:55:22 PM	38
39	TOC	CCB	!!Error!! TOC:0.1162mg/L TC:-0.1867mg/L IC:-0.3029mg/L	Comple	3/10/2017 8:04:18 PM	0
40	TOC	L17030469-11	TOC:5.938mg/L TC:15.26mg/L IC:9.326mg/L	Comple	3/10/2017 8:17:52 PM	40
41	TOC		TOC:64.83mg/L TC:64.98mg/L IC:0.1414mg/L	Comple	3/10/2017 8:31:40 PM	41
42	TOC	L17030455-01 (25)	TOC:21.53mg/L TC:21.81mg/L IC:0.2836mg/L	Comple	3/10/2017 8:44:16 PM	42
43	TOC	WG605775-05 DUP	TOC:5.847mg/L TC:12.62mg/L IC:6.776mg/L	Comple	3/10/2017 8:57:51 PM	43
44	TOC	WG605775-06 MS	TOC:15.75mg/L TC:26.82mg/L IC:11.07mg/L	Comple	3/10/2017 9:11:24 PM	44
45	TOC	L17030577-01	TOC:4.427mg/L TC:20.01mg/L IC:15.58mg/L	Comple	3/10/2017 9:33:44 PM	45
46	TOC	L17030577-02	TOC:3.439mg/L TC:8.333mg/L IC:4.894mg/L	Comple	3/10/2017 9:54:49 PM	46
47	TOC	L17030577-04	TOC:3.461mg/L TC:6.796mg/L IC:3.335mg/L	Comple	3/10/2017 10:15:43 PM	47
48	TOC	L17030558-01	TOC:3.001mg/L TC:27.06mg/L IC:24.05mg/L	Comple	3/10/2017 10:28:32 PM	48
49	TOC	L17030558-02 MS	TOC:12.94mg/L TC:28.95mg/L IC:16.00mg/L	Comple	3/10/2017 10:41:02 PM	49
50	TOC	CCV	!!Error!! TOC:25.44mg/L TC:25.19mg/L IC:-0.2510mg/L	Comple	3/10/2017 10:53:18 PM	50
51	TOC	CCB	!!Error!! TOC:0.1179mg/L TC:-0.1752mg/L IC:-0.2931mg/L	Comple	3/10/2017 11:02:12 PM	0
52	TOC	L17030558-03 MSD	TOC:12.42mg/L TC:24.81mg/L IC:12.39mg/L	Comple	3/10/2017 11:14:32 PM	52
53	TOC	L17030558-04	TOC:2.596mg/L TC:22.73mg/L IC:20.13mg/L	Comple	3/10/2017 11:26:50 PM	53
54	TOC	L17030558-05	TOC:2.226mg/L TC:21.23mg/L IC:19.01mg/L	Comple	3/10/2017 11:39:27 PM	54
55	TOC	L17030558-06 (2)	TOC:2.760mg/L TC:19.04mg/L IC:16.28mg/L	Comple	3/10/2017 11:51:50 PM	55
56	TOC	L17030558-10 (3)	TOC:3.986mg/L TC:18.17mg/L IC:14.18mg/L	Comple	3/11/2017 12:13:39 AM	56
57	TOC	L17030558-11	TOC:3.223mg/L TC:14.29mg/L IC:11.07mg/L	Comple	3/11/2017 12:35:14 AM	57
58	TOC	L17030558-12	TOC:2.659mg/L TC:21.46mg/L IC:18.80mg/L	Comple	3/11/2017 12:56:49 AM	58
59	TOC	CCV	!!Error!! TOC:24.62mg/L TC:24.39mg/L IC:-0.2316mg/L	Comple	3/11/2017 1:09:08 AM	59
60	TOC	CCB	!!Error!! TOC:0.1102mg/L TC:-0.1736mg/L IC:-0.2838mg/L	Comple	3/11/2017 1:18:05 AM	0

3/13/2017 7:52:11 AM

03-10-2017-DCM-TOC.t32

Instr. Information

System TOCVW ASI
 Detector Wet Chemical

Sample

Sample Name: TIC
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017.met
 Status: Completed
 Chk. Result

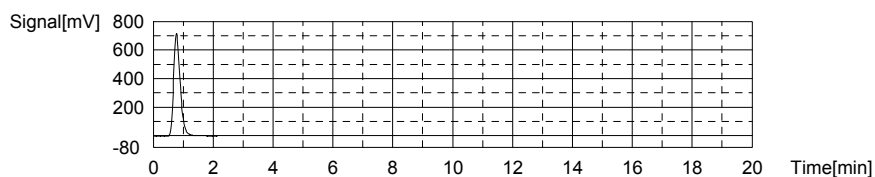
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:1.950mg/L TC:25.45mg/L IC:23.50mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1094	25.45mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_56	3/10/2017 9:56:13 AM

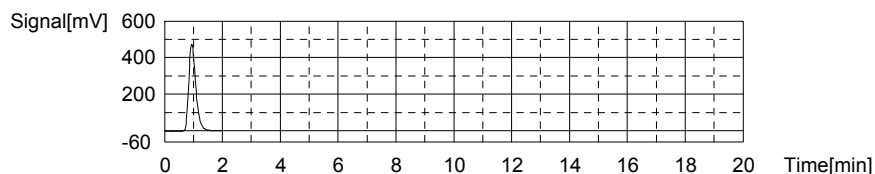
Mean Area 1094
 Mean Conc. 25.45mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	805.3	23.50mg/L	500uL	1		TICURVE-02-10-2017.2017_02_10_14_45_13	3/10/2017 10:01:09 AM

Mean Area 805.3
 Mean Conc. 23.50mg/L



Sample

Sample Name: TOC/TIC
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017.met
 Status: Completed
 Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:24.99mg/L TC:33.10mg/L IC:8.110mg/L

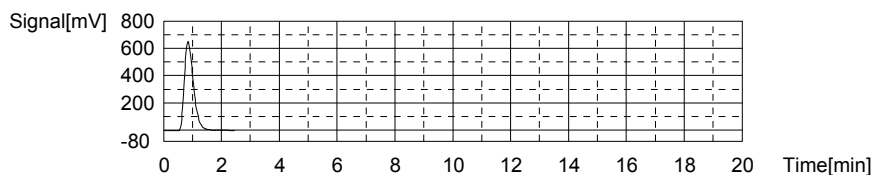
1. Det

Anal.: TC

1/41

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1418	33.10mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	13/10/2017 10:09:02 AM

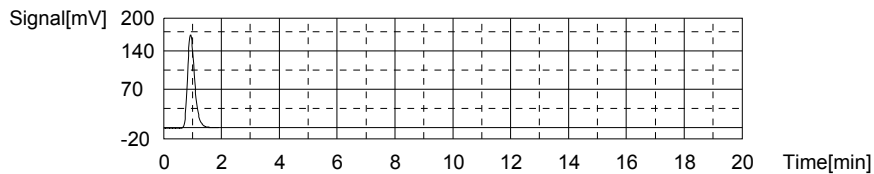
Mean Area 1418
Mean Conc. 33.10mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	290.0	8.110mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	13/10/2017 10:13:50 AM

Mean Area 290.0
Mean Conc. 8.110mg/L



Sample

Sample Name: CCV
Sample ID: <Untitled>
Origin: TOC-02-10-2017.met
Status: Completed
Chk. Result

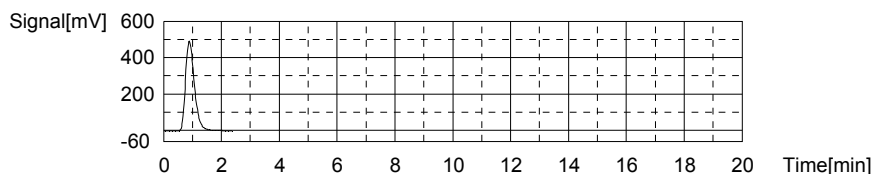
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:24.64mg/L TC:24.29mg/L IC:-0.3496mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1045	24.29mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	13/10/2017 10:21:39 AM

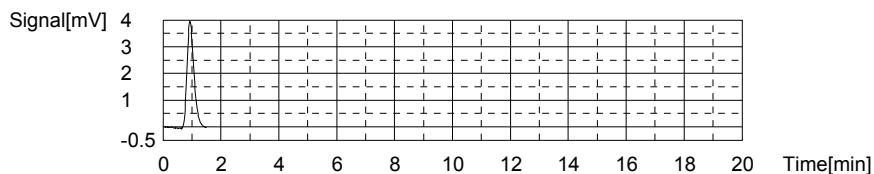
Mean Area 1045
Mean Conc. 24.29mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	6.707	-0.3496mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	13/10/2017 10:25:56 AM

Mean Area 6.707
 Mean Conc. -0.3496mg/L



Sample

Sample Name: WG605771-01 BLK
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017A.met
 Status: Completed
 Chk. Result

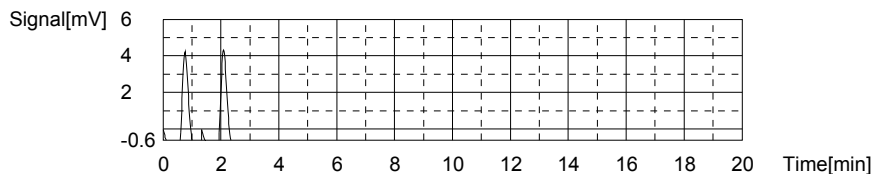
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:0.1318mg/L TC:-0.1876mg/L IC:-0.3194mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	8.875	-0.1888mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	10/2017 10:30:54 AM
2	8.972	-0.1865mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	10/2017 10:34:24 AM

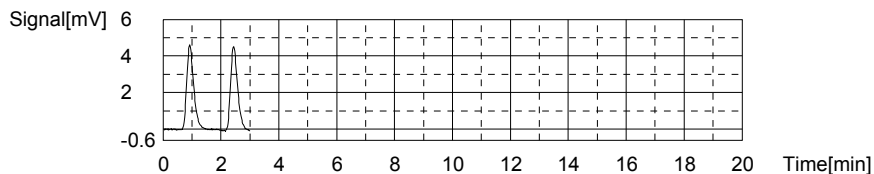
Mean Area 8.924
 Mean Conc. -0.1876mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	7.692	-0.3202mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	10/2017 10:38:18 AM
2	7.747	-0.3186mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	10/2017 10:42:09 AM

Mean Area 7.720
 Mean Conc. -0.3194mg/L



Sample

Sample Name: WG605771-02 LCS
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017A.met
 Status: Completed
 Chk. Result

3/13/2017 7:52:11 AM

03-10-2017-DCM-TOC.t32

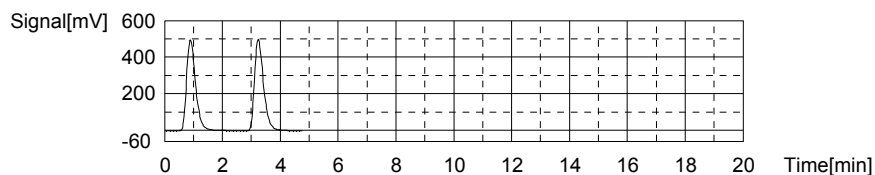
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:25.31mg/L TC:24.92mg/L IC:-0.3939mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1065	24.76mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	10/2017 10:49:56 AM
2	1078	25.07mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	10/2017 10:54:36 AM

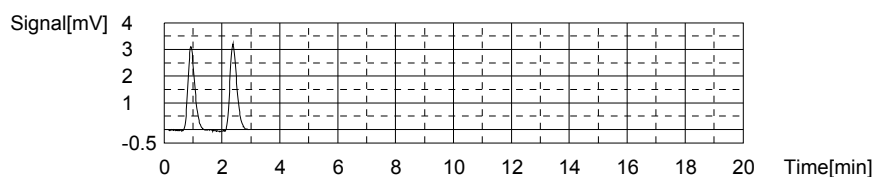
Mean Area 1072
Mean Conc. 24.92mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.130	-0.3967mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	10/2017 10:58:51 AM
2	5.319	-0.3911mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	10/2017 11:02:55 AM

Mean Area 5.224
Mean Conc. -0.3939mg/L



Sample

Sample Name: WG605771-03 LCS DUP
Sample ID: <Untitled>
Origin: TOC-02-10-2017A.met
Status: Completed
Chk. Result

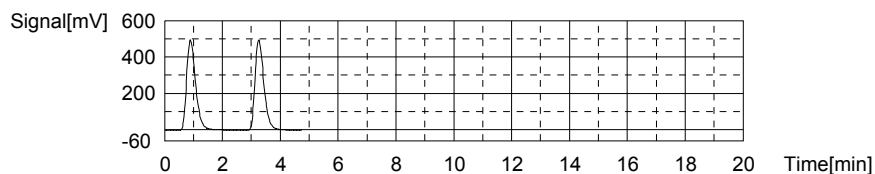
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:25.04mg/L TC:24.66mg/L IC:-0.3779mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1064	24.74mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	10/2017 11:10:43 AM
2	1057	24.57mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	10/2017 11:15:21 AM

Mean Area 1061
Mean Conc. 24.66mg/L



Anal.: IC

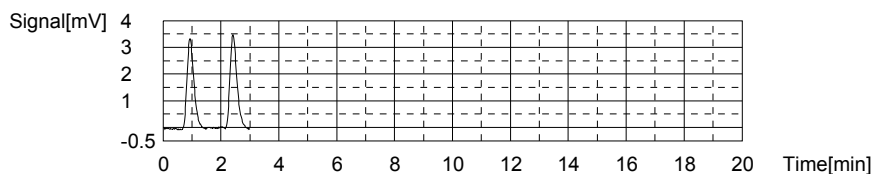
4/41

3/13/2017 7:52:11 AM

03-10-2017-DCM-TOC.t32

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.685	-0.3801mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	13/10/2017 11:19:38 AM
2	5.836	-0.3756mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	13/10/2017 11:23:42 AM

Mean Area 5.761
Mean Conc. -0.3779mg/L



Sample

Sample Name: L17030513-03
Sample ID: <Untitled>
Origin: TOC-02-10-2017A.met
Status: Completed
Chk. Result

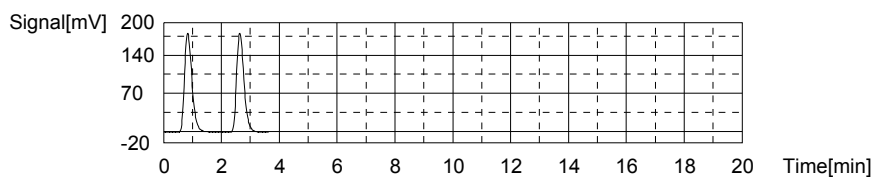
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:7.621mg/L TC:7.222mg/L IC:-0.3990mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	321.7	7.202mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	13/10/2017 12:00:48 PM
2	323.4	7.242mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	13/10/2017 12:04:52 PM

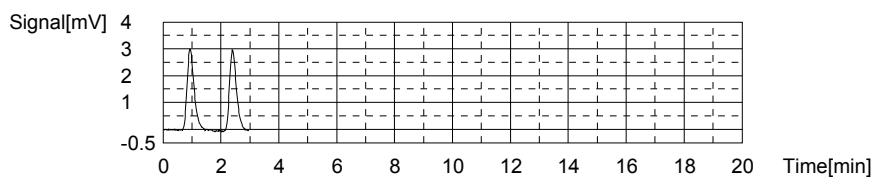
Mean Area 322.6
Mean Conc. 7.222mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	5.115	-0.3972mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	13/10/2017 12:09:09 PM
2	4.994	-0.4008mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45	13/10/2017 12:13:12 PM

Mean Area 5.055
Mean Conc. -0.3990mg/L



Sample

5/41

3/13/2017 7:52:11 AM

03-10-2017-DCM-TOC.t32

Sample Name: WG605771-05 DUP
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017A.met
 Status: Completed
 Chk. Result

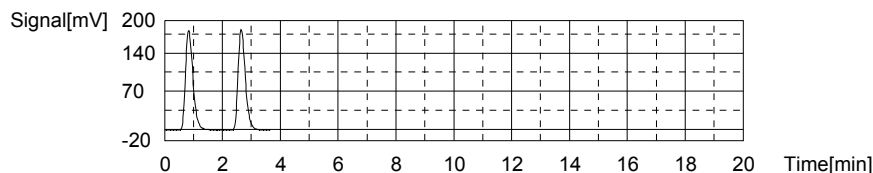
Type	Anal.	Dil.	Result
Unknown	TOC	1.000	!!Error!! TOC:7.646mg/L TC:7.245mg/L IC:-0.4016mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	323.1	7.235mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/10/2017 12:23:16 PM
2	323.9	7.254mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/10/2017 12:27:22 PM

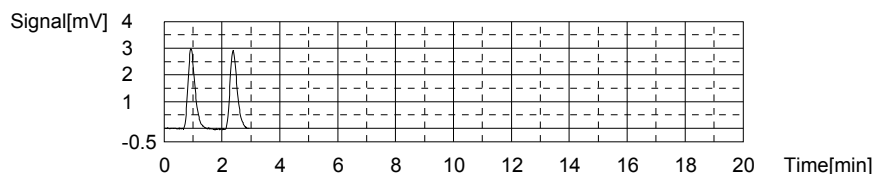
Mean Area 323.5
 Mean Conc. 7.245mg/L



Anal.: IC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	4.957	-0.4019mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	3/10/2017 12:31:39 PM
2	4.973	-0.4014mg/L	500uL	1		TICCURVE-02-10-2017.2017_02_10_14_45_13	3/10/2017 12:35:44 PM

Mean Area 4.965
 Mean Conc. -0.4016mg/L



Sample

Sample Name: L17030510-01
 Sample ID: <Untitled>
 Origin: TOC-02-10-2017A.met
 Status: Completed
 Chk. Result

Type	Anal.	Dil.	Result
Unknown	TOC	1.000	TOC:5.048mg/L TC:38.98mg/L IC:33.93mg/L

1. Det

Anal.: TC

No.	Area	Conc.	Inj. Vol.	Aut. Dil.	Ex.	Cal. Curve	Date / Time
1	1681	39.32mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/10/2017 12:43:35 PM
2	1652	38.63mg/L	500uL	1		TCCURVE-02-10-2017.2017_02_10_09_32_53	3/10/2017 12:48:10 PM

6/41