



Analyte PT For All Labs

Magruder Fertilizer Proficiency Testing Program

Analytes: 32

Sample # 230911

Regular PT Scheme

Labs Reporting: 70

0-0-25-17S Liquid

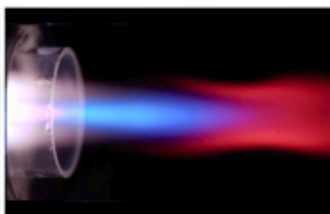
Statistical Summary

Issue Date : 10/31/2023

Analyte Code	Analyte Sample # 230911	# Tests Submitted	# Tests in Robust Calculations	Raw Mean	Raw SD	Assigned Value Robust Mean	IA at Analyte Value	Robust sd	Robust Uncertainty (U)	Robust % RSD	Analyte IA Ratio	Average Range (R-bar)	Horwitz %RSD
001	Ammoniacal N (%)	1		0.0108									
005	Urea N (%)	1		0.2240									
010	Total N (%)	6	5	4.311	10.43	0.0516	0.4900	0.0346	0.0193	66.95%	0.16	0.0062	6.25%
020	Total P2O5 (%)	3	2	0.1420	0.2236	0.0130		0.0120	0.0106	92.28%		0.0009	7.69%
041	Direct Available P2O5 (%)	3	1	0.0415	0.0521	0.0130	0.6700	0.0120	0.0149	92.28%	0.04	0.0008	7.69%
050	Soluble K2O (25%)	71	70	25.48	2.059	25.19	1.2458	0.6800	0.1016	2.70%	1.27	0.2666	1.99%
101	Acid Soluble Ca (%)	3	1	0.0140	0.0144	25.19	1.0000	0.6800	0.8500	2.70%	1.58	0.0000	1.99%
121	Acid Soluble Mg (%)	6	1	1.674	4.079	25.19	1.0000	0.6800	0.8500	2.70%	1.58	0.0000	1.99%
131	Water Soluble Mg (%)	1		0.0002									
143	Elemental S (%)	4	4	17.00	0.4266	17.00		0.4266	0.2666	2.51%		0.0847	2.43%
145	Sulfate S, HCl soluble (%)	2	2	18.84	0.8697								
146	Total S in Liquid (17%)	4	4	17.42	0.6092	17.42	1.0000	0.6092	0.3807	3.50%	1.42	0.1859	2.40%
148	Total S (17%)	43	42	17.03	1.205	17.02	1.0000	0.7302	0.1408	4.29%	1.70	0.3040	2.42%
149	S - HNO3 soluble (%)	5	5	17.51	1.736	17.51		1.736	0.9703	9.91%		0.4040	2.39%
151	Acid Soluble As (ppm)	14	2	1.759	2.214	1.167		0.3079	0.2722	26.38%		0.8555	15.63%
165	Acid Soluble B (%)	4	1	0.1565	0.3007	1.167	0.1781	0.3079	0.3849	26.38%	4.03	0.6690	3.91%
171	Water Soluble B (%)	1		0.0070									
181	Acid Soluble Cd (ppm)	16	3	0.7095	0.8103	0.9035		1.432	1.033	158.46%		1.457	16.24%
191	Acid Soluble Cr (ppm)	16	5	4.372	6.722	1.893		1.981	1.107	104.63%		0.4388	14.53%
202	Acid Soluble Co (ppm)	14	2	3.045	6.415	12.35	4.7045	17.25	15.25	139.68%	8.54	4.096	10.96%
221	Acid Soluble Cu (%)	15	4	0.2307	0.8889	0.8613	0.0911	1.722	1.076	199.90%	44.02	0.1640	4.09%
241	Acid Soluble Fe (%)	7	0	0.0022	0.0035	0.8613	0.0911	1.722		199.90%	44.02	0.0000	4.09%
251	Acid Soluble Pb (ppm)	18	4	2.109	2.227	0.5089		0.5717	0.3573	112.33%		0.0989	17.71%
261	Acid Soluble Mn (%)	5	1	0.0024	0.0043	0.5089	0.0559	0.5717	0.7146	112.33%	23.83	0.0020	4.43%
281	Acid Soluble Hg (ppm)	10	3	0.3890	0.6920	0.0028		0.0010	0.0008	37.25%		0.0020	22.00%
289	Acid Soluble Mo (ppm)	13	3	1.385	1.571	0.4298	1.1289	0.4966	0.3584	115.57%	1.03	0.0309	18.16%
291	Acid Soluble Ni (ppm)	12	4	4.055	8.347	9.000		14.27	8.917	158.53%		2.871	11.49%
301	Acid Soluble Se (ppm)	12	2	4.011	6.972	0.0768		0.0017	0.0015	2.16%		0.0295	22.00%
311	Sodium (%)	4	4	0.0655	0.0399	0.0655	0.0116	0.0399	0.0249	60.85%	8.04	0.0120	6.03%

Analyte Code	Analyte Sample # 230911	# Tests Submitted	# Tests in Robust Calculations	Raw Mean	Raw SD	Assigned Value Robust Mean	IA at Analyte Value	Robust sd	Robust Uncertainty (U)	Robust % RSD	Analyte IA Ratio	Average Range (R-bar)	Horwitz %RSD
321	Acid Soluble Zn (%)	14	3	0.2864	1.029	1.331	0.1381	2.191	1.581	164.56%	36.96	0.0692	3.83%
325	Water Soluble Zn (%)	1		0.0002									
431	Soluble Si in nonliquids (%)	1		0.0040									

The Analyte IA Ratio = $2.33 * \text{Robust SD} / \text{IA at the Analyte Assigned Value}$. IA ratios of 1 and less indicate participant data dispersion is as good or less than the IA. Red indicates the IA ratio is significantly greater than 1, Orange indicates marginally greater than 1, Green indicates IA ratio is not significantly greater than 1 and Grey indicates < 6 labs reporting. The Horwitz %RSD is calculated using the Thompson Modification, Analyst,2000,125,385-386.



Analyte PT For All Labs

Magruder Fertilizer Proficiency Testing Program

Analytes: 32

Sample # 230911

Regular PT Scheme

Labs Reporting: 70

0-0-25-17S Liquid

Lab Values

Issue Date : 10/31/2023

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
001	Ammoniacal N (%)	0524	0.0108	0.0185				1		001.99	0
005	Urea N (%)	0524	0.2240	0.0025				1		005.99	0
010	Total N (%)	0472	0.0120	0.0020	0.0516	0.0346	0.0062	5	-1.00	010.60	0
010	Total N (%)	0422	0.0200	0.0000	0.0516	0.0346	0.0062	5	-0.80	010.60	0
010	Total N (%)	0354	0.0595	0.0190	0.0516	0.0346	0.0062	5	0.20	010.60	0
010	Total N (%)	0524	0.0749	0.0022	0.0516	0.0346	0.0062	5	0.59	010.99	0
010	Total N (%)	0588	0.0917	0.0015	0.0516	0.0346	0.0062	5	1.01	010.60	0
010	Total N (%)	0234	25.61	0.0200	0.0516	0.0346	0.0062	5	645.63	010.60	2
020	Total P2O5 (%)	0588	0.0045	0.0010				2		020.50	0
020	Total P2O5 (%)	0422	0.0214	0.0008				2		020.50	0
020	Total P2O5 (%)	0035	< 0.4					2		020.40	5
041	Direct Available P2O5 (%)	0354	0.0245	0.0030				1		041.21	0
041	Direct Available P2O5 (%)	0034	0.0000	0.0000				1		041.40	4
041	Direct Available P2O5 (%)	0009	< 0.1					1		041.10	5
050	Soluble K2O (25%)	0543	23.17†	0.5770	25.19	0.6800	0.2666	70	-2.98	050.52	0
050	Soluble K2O (25%)	0553	23.74†	0.0900	25.19	0.6800	0.2666	70	-2.14	050.99	0
050	Soluble K2O (25%)	0472	23.95	0.3400	25.19	0.6800	0.2666	70	-1.83	050.32	0
050	Soluble K2O (25%)	0117	23.97	0.4680	25.19	0.6800	0.2666	70	-1.80	050.50	0
050	Soluble K2O (25%)	0177	24.05	0.2295	25.19	0.6800	0.2666	70	-1.68	050.99	0
050	Soluble K2O (25%)	0040	24.25	0.5000	25.19	0.6800	0.2666	70	-1.39	050.52	0
050	Soluble K2O (25%)	0200	24.32	0.2500	25.19	0.6800	0.2666	70	-1.29	050.60	0
050	Soluble K2O (25%)	0389	24.40	0.0800	25.19	0.6800	0.2666	70	-1.16	050.99	0
050	Soluble K2O (25%)	0260	24.43	0.8700	25.19	0.6800	0.2666	70	-1.13	050.99	0
050	Soluble K2O (25%)	0106	24.45	0.8700	25.19	0.6800	0.2666	70	-1.10	050.50	0
050	Soluble K2O (25%)	0157	24.50	0.4000	25.19	0.6800	0.2666	70	-1.02	050.99	0
050	Soluble K2O (25%)	0394	24.63	0.4430	25.19	0.6800	0.2666	70	-0.82	050.99	0
050	Soluble K2O (25%)	0518	24.65	0.3000	25.19	0.6800	0.2666	70	-0.80	050.99	0
050	Soluble K2O (25%)	0136	24.73	0.2200	25.19	0.6800	0.2666	70	-0.68	050.52	0
050	Soluble K2O (25%)	0043	24.74	0.0400	25.19	0.6800	0.2666	70	-0.66	050.52	0
050	Soluble K2O (25%)	0421	24.82	0.5700	25.19	0.6800	0.2666	70	-0.55	050.99	0
050	Soluble K2O (25%)	0580	24.83	0.0500	25.19	0.6800	0.2666	70	-0.54	050.30	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
050	Soluble K2O (25%)	0255	24.83	0.0970	25.19	0.6800	0.2666	70	-0.54	050.99	0
050	Soluble K2O (25%)	0423	24.87	0.1940	25.19	0.6800	0.2666	70	-0.47	050.52	0
050	Soluble K2O (25%)	0433	24.88	0.2900	25.19	0.6800	0.2666	70	-0.47	050.99	0
050	Soluble K2O (25%)	0510	24.88	0.4203	25.19	0.6800	0.2666	70	-0.46	050.60	0
050	Soluble K2O (25%)	0035	24.90	0.2000	25.19	0.6800	0.2666	70	-0.43	050.61	0
050	Soluble K2O (25%)	0023	24.92	0.2150	25.19	0.6800	0.2666	70	-0.40	050.52	0
050	Soluble K2O (25%)	0513	25.01	0.1300	25.19	0.6800	0.2666	70	-0.27	050.99	0
050	Soluble K2O (25%)	0405	25.02	0.0200	25.19	0.6800	0.2666	70	-0.25	050.00	0
050	Soluble K2O (25%)	0600	25.03	0.1400	25.19	0.6800	0.2666	70	-0.24	050.99	0
050	Soluble K2O (25%)	0485	25.05	0.7000	25.19	0.6800	0.2666	70	-0.21	050.52	0
050	Soluble K2O (25%)	0494	25.06	0.4100	25.19	0.6800	0.2666	70	-0.20	050.00	0
050	Soluble K2O (25%)	0452	25.06	0.0400	25.19	0.6800	0.2666	70	-0.19	050.51	0
050	Soluble K2O (25%)	0029	25.06	0.3200	25.19	0.6800	0.2666	70	-0.19	050.62	0
050	Soluble K2O (25%)	0587	25.06	0.1600	25.19	0.6800	0.2666	70	-0.19	050.99	0
050	Soluble K2O (25%)	0415	25.08	0.1392	25.19	0.6800	0.2666	70	-0.17	050.30	0
050	Soluble K2O (25%)	0562	25.10	0.0000	25.19	0.6800	0.2666	70	-0.14	050.99	0
050	Soluble K2O (25%)	0630	25.10	0.0801	25.19	0.6800	0.2666	70	-0.13	050.99	0
050	Soluble K2O (25%)	0584	25.11	0.4900	25.19	0.6800	0.2666	70	-0.13	050.99	0
050	Soluble K2O (25%)	0558	25.11	0.0189	25.19	0.6800	0.2666	70	-0.11	050.30	0
050	Soluble K2O (25%)	0368	25.12	0.4759	25.19	0.6800	0.2666	70	-0.11	050.51	0
050	Soluble K2O (25%)	0034	25.13	0.1581	25.19	0.6800	0.2666	70	-0.09	050.62	0
050	Soluble K2O (25%)	0619	25.20	0.4000	25.19	0.6800	0.2666	70	0.01	050.00	0
050	Soluble K2O (25%)	0619	25.20	0.4000	25.19	0.6800	0.2666	70	0.01	050.99	0
050	Soluble K2O (25%)	0451	25.25	0.2800	25.19	0.6800	0.2666	70	0.09	050.99	0
050	Soluble K2O (25%)	0559	25.26	0.0100	25.19	0.6800	0.2666	70	0.09	050.99	0
050	Soluble K2O (25%)	0055	25.27	0.2800	25.19	0.6800	0.2666	70	0.11	050.00	0
050	Soluble K2O (25%)	0494	25.27	0.1000	25.19	0.6800	0.2666	70	0.11	050.52	0
050	Soluble K2O (25%)	0513	25.27	0.0800	25.19	0.6800	0.2666	70	0.11	050.62	0
050	Soluble K2O (25%)	0481	25.28	0.3200	25.19	0.6800	0.2666	70	0.13	050.99	0
050	Soluble K2O (25%)	0588	25.30	0.0500	25.19	0.6800	0.2666	70	0.15	050.99	0
050	Soluble K2O (25%)	0360	25.32	0.1000	25.19	0.6800	0.2666	70	0.19	050.52	0
050	Soluble K2O (25%)	0095	25.34	1.160	25.19	0.6800	0.2666	70	0.22	050.62	0
050	Soluble K2O (25%)	0605	25.37	0.2500	25.19	0.6800	0.2666	70	0.25	050.99	0
050	Soluble K2O (25%)	0626	25.38	0.1700	25.19	0.6800	0.2666	70	0.27	050.99	0
050	Soluble K2O (25%)	0563	25.45	0.1000	25.19	0.6800	0.2666	70	0.38	050.99	0
050	Soluble K2O (25%)	0231	25.50	0.0000	25.19	0.6800	0.2666	70	0.45	050.00	0
050	Soluble K2O (25%)	0619	25.65	0.5000	25.19	0.6800	0.2666	70	0.67	050.50	0
050	Soluble K2O (25%)	0354	25.70	0.2000	25.19	0.6800	0.2666	70	0.75	050.52	0
050	Soluble K2O (25%)	0049	25.71	0.4700	25.19	0.6800	0.2666	70	0.75	050.00	0
050	Soluble K2O (25%)	0055	25.80	0.1700	25.19	0.6800	0.2666	70	0.89	050.50	0
050	Soluble K2O (25%)	0292	25.87	0.0200	25.19	0.6800	0.2666	70	1.00	050.50	0
050	Soluble K2O (25%)	0527	26.01	0.0513	25.19	0.6800	0.2666	70	1.21	050.99	0
050	Soluble K2O (25%)	0444	26.02	0.2200	25.19	0.6800	0.2666	70	1.22	050.50	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
050	Soluble K2O (25%)	0291	26.19	0.0100	25.19	0.6800	0.2666	70	1.46	050.51	0
050	Soluble K2O (25%)	0042	26.33	1.920	25.19	0.6800	0.2666	70	1.67	050.99	0
050	Soluble K2O (25%)	0027	26.34	0.2000	25.19	0.6800	0.2666	70	1.69	050.99	0
050	Soluble K2O (25%)	0073	26.60†	0.8200	25.19	0.6800	0.2666	70	2.07	050.30	0
050	Soluble K2O (25%)	0324	26.60†	1.400	25.19	0.6800	0.2666	70	2.07	050.50	0
050	Soluble K2O (25%)	0444	26.75†	0.1000	25.19	0.6800	0.2666	70	2.29	050.00	0
050	Soluble K2O (25%)	0524	27.18†	0.1431	25.19	0.6800	0.2666	70	2.92	050.99	0
050	Soluble K2O (25%)	0422	27.24†	0.0964	25.19	0.6800	0.2666	70	3.01	050.50	0
050	Soluble K2O (25%)	0086	27.59†	0.0855	25.19	0.6800	0.2666	70	3.53	050.50	0
050	Soluble K2O (25%)	0572	27.79†	1.270	25.19	0.6800	0.2666	70	3.81	050.99	0
050	Soluble K2O (25%)	0515	41.08†	5.530	25.19	0.6800	0.2666	70	23.36	050.99	1
101	Acid Soluble Ca (%)	0354	0.0100	0.0000				1		101.30	0
101	Acid Soluble Ca (%)	0572	< 0.002					1		101.99	5
101	Acid Soluble Ca (%)	0009	< 0.03					1		101.33	5
121	Acid Soluble Mg (%)	0524	0.0003	0.0001				1		121.99	0
121	Acid Soluble Mg (%)	0572	< 0.0002					1		121.99	5
121	Acid Soluble Mg (%)	0515	< 0.0011					1		121.99	5
121	Acid Soluble Mg (%)	0354	< 0.01					1		121.30	5
121	Acid Soluble Mg (%)	0009	< 0.03					1		121.33	5
121	Acid Soluble Mg (%)	0405	< 10					1		121.32	5
131	Water Soluble Mg (%)	0572	< 0.0002					0		131.99	5
143	Elemental S (%)	0255	16.66	0.0200	17.00	0.4266	0.0847	4	-0.81	143.99	0
143	Elemental S (%)	0368	16.66	0.2789	17.00	0.4266	0.0847	4	-0.79	143.99	0
143	Elemental S (%)	0444	17.15	0.0300	17.00	0.4266	0.0847	4	0.33	143.99	0
143	Elemental S (%)	0291	17.55	0.0100	17.00	0.4266	0.0847	4	1.27	143.99	0
145	Sulfate S, HCl soluble (%)	0444	18.22	0.2600				2		145.99	0
145	Sulfate S, HCl soluble (%)	0619	19.45	0.1000				2		145.99	0
146	Total S in Liquid (17%)	0494	16.91	0.3020	17.42	0.6092	0.1859	4	-0.84	146.00	0
146	Total S in Liquid (17%)	0626	17.15	0.2000	17.42	0.6092	0.1859	4	-0.45	146.00	0
146	Total S in Liquid (17%)	0117	17.33	0.0414	17.42	0.6092	0.1859	4	-0.15	146.00	0
146	Total S in Liquid (17%)	0324	18.30	0.2000	17.42	0.6092	0.1859	4	1.44	146.00	0
148	Total S (17%)	0049	12.88†	0.8100	17.02	0.7302	0.3040	42	-5.67	148.00	0
148	Total S (17%)	0543	13.62†	0.2310	17.02	0.7302	0.3040	42	-4.65	148.07	0
148	Total S (17%)	0073	15.96†	0.3800	17.02	0.7302	0.3040	42	-1.45	148.00	0
148	Total S (17%)	0422	16.16	0.2500	17.02	0.7302	0.3040	42	-1.18	148.99	0
148	Total S (17%)	0472	16.16	0.0600	17.02	0.7302	0.3040	42	-1.17	148.07	0
148	Total S (17%)	0131	16.19	0.3800	17.02	0.7302	0.3040	42	-1.13	148.00	0
148	Total S (17%)	0029	16.21	0.1600	17.02	0.7302	0.3040	42	-1.11	148.00	0
148	Total S (17%)	0095	16.25	0.5200	17.02	0.7302	0.3040	42	-1.05	148.01	0
148	Total S (17%)	0481	16.27	0.1000	17.02	0.7302	0.3040	42	-1.02	148.99	0
148	Total S (17%)	0035	16.40	0.0000	17.02	0.7302	0.3040	42	-0.85	148.99	0
148	Total S (17%)	0136	16.53	0.8500	17.02	0.7302	0.3040	42	-0.67	148.07	0
148	Total S (17%)	0451	16.60	0.8000	17.02	0.7302	0.3040	42	-0.57	148.00	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
148	Total S (17%)	0040	16.70	0.6000	17.02	0.7302	0.3040	42	-0.43	148.07	0
148	Total S (17%)	0028	16.72	0.1200	17.02	0.7302	0.3040	42	-0.41	148.01	0
148	Total S (17%)	0558	16.80	0.0257	17.02	0.7302	0.3040	42	-0.29	148.99	0
148	Total S (17%)	0260	16.81	0.7300	17.02	0.7302	0.3040	42	-0.29	148.07	0
148	Total S (17%)	0527	16.82	0.2250	17.02	0.7302	0.3040	42	-0.27	148.07	0
148	Total S (17%)	0177	17.03	0.0072	17.02	0.7302	0.3040	42	0.02	148.07	0
148	Total S (17%)	0534	17.05	0.3000	17.02	0.7302	0.3040	42	0.04	148.01	0
148	Total S (17%)	0562	17.07	0.0700	17.02	0.7302	0.3040	42	0.07	148.99	0
148	Total S (17%)	0023	17.07	0.5990	17.02	0.7302	0.3040	42	0.07	148.99	0
148	Total S (17%)	0600	17.10	0.1000	17.02	0.7302	0.3040	42	0.11	148.99	0
148	Total S (17%)	0043	17.11	0.0900	17.02	0.7302	0.3040	42	0.12	148.07	0
148	Total S (17%)	0559	17.11	0.0100	17.02	0.7302	0.3040	42	0.12	148.99	0
148	Total S (17%)	0626	17.17	0.0800	17.02	0.7302	0.3040	42	0.21	148.05	0
148	Total S (17%)	0513	17.19	0.1500	17.02	0.7302	0.3040	42	0.23	148.07	0
148	Total S (17%)	0231	17.20	0.0000	17.02	0.7302	0.3040	42	0.25	148.01	0
148	Total S (17%)	0354	17.25	0.1000	17.02	0.7302	0.3040	42	0.32	148.99	0
148	Total S (17%)	0563	17.30	0.4000	17.02	0.7302	0.3040	42	0.39	148.07	0
148	Total S (17%)	0106	17.32	0.1000	17.02	0.7302	0.3040	42	0.41	148.07	0
148	Total S (17%)	0433	17.35	0.4600	17.02	0.7302	0.3040	42	0.46	148.99	0
148	Total S (17%)	0055	17.50	0.0500	17.02	0.7302	0.3040	42	0.65	148.01	0
148	Total S (17%)	0421	17.50	0.4000	17.02	0.7302	0.3040	42	0.66	148.07	0
148	Total S (17%)	0605	17.51	0.6600	17.02	0.7302	0.3040	42	0.67	148.99	0
148	Total S (17%)	0485	17.55	0.5000	17.02	0.7302	0.3040	42	0.73	148.01	0
148	Total S (17%)	0292	17.57	0.0000	17.02	0.7302	0.3040	42	0.76	148.07	0
148	Total S (17%)	0494	17.83	0.4417	17.02	0.7302	0.3040	42	1.11	148.07	0
148	Total S (17%)	0444	18.17‡	0.0000	17.02	0.7302	0.3040	42	1.58	148.07	0
148	Total S (17%)	0452	18.28‡	0.1700	17.02	0.7302	0.3040	42	1.72	148.99	0
148	Total S (17%)	0200	18.93‡	0.1500	17.02	0.7302	0.3040	42	2.61	148.07	0
148	Total S (17%)	0572	19.17‡	0.7000	17.02	0.7302	0.3040	42	2.95	148.99	0
148	Total S (17%)	0394	20.12‡	0.1020	17.02	0.7302	0.3040	42	4.25	148.07	0
148	Total S (17%)	0515	18.73‡	1.970	17.02	0.7302	0.3040	42	2.34	148.07	1
149	S - HNO3 soluble (%)	0524	15.80	0.0812	17.51	1.736	0.4040	5	-0.99	149.04	0
149	S - HNO3 soluble (%)	0518	16.75	0.1000	17.51	1.736	0.4040	5	-0.44	149.99	0
149	S - HNO3 soluble (%)	0423	17.08	0.0900	17.51	1.736	0.4040	5	-0.25	149.04	0
149	S - HNO3 soluble (%)	0086	17.54	1.345	17.51	1.736	0.4040	5	0.02	149.04	0
149	S - HNO3 soluble (%)	0619	20.40	0.0000	17.51	1.736	0.4040	5	1.66	149.04	0
151	Acid Soluble As (ppm)	0515	0.9495	0.6690				2		151.34	0
151	Acid Soluble As (ppm)	0515	1.385	1.042				2		151.33	0
151	Acid Soluble As (ppm)	0255	0.0000	0.0000				2		151.30	4
151	Acid Soluble As (ppm)	0630	< 0.005					2		151.30	5
151	Acid Soluble As (ppm)	0572	< 0.05					2		151.99	5
151	Acid Soluble As (ppm)	0009	< 0.25					2		151.99	5
151	Acid Soluble As (ppm)	0368	< 0.3					2		151.34	5

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
151	Acid Soluble As (ppm)	0481	< 0.5					2		151.99	5
151	Acid Soluble As (ppm)	0626	< 0.5					2		151.99	5
151	Acid Soluble As (ppm)	0136	< 1					2		151.33	5
151	Acid Soluble As (ppm)	0405	< 3					2		151.32	5
151	Acid Soluble As (ppm)	0009	< 5					2		151.33	5
151	Acid Soluble As (ppm)	0035	< 5.49					2		151.30	5
151	Acid Soluble As (ppm)	0605	< 6.2					2		151.30	5
165	Acid Soluble B (%)	0515	0.6075	0.0236				1		165.99	0
165	Acid Soluble B (%)	0009	< 0.0025					1		165.99	5
165	Acid Soluble B (%)	0572	< 0.006					1		165.99	5
165	Acid Soluble B (%)	0354	< 0.01					1		165.30	5
171	Water Soluble B (%)	0572	< 0.007					0		171.99	5
181	Acid Soluble Cd (ppm)	0524	0.0051	0.0007	0.9035	1.432	1.457	3	-0.63	181.30	0
181	Acid Soluble Cd (ppm)	0086	0.1509	0.0020	0.9035	1.432	1.457	3	-0.53	181.33	0
181	Acid Soluble Cd (ppm)	0255	2.555	4.367	0.9035	1.432	1.457	3	1.15	181.30	0
181	Acid Soluble Cd (ppm)	0630	< 0.005		0.9035	1.432	1.457	3		181.30	5
181	Acid Soluble Cd (ppm)	0572	< 0.03		0.9035	1.432	1.457	3		181.99	5
181	Acid Soluble Cd (ppm)	0009	< 0.05		0.9035	1.432	1.457	3		181.99	5
181	Acid Soluble Cd (ppm)	0368	< 0.1		0.9035	1.432	1.457	3		181.34	5
181	Acid Soluble Cd (ppm)	0515	< 0.133		0.9035	1.432	1.457	3		181.34	5
181	Acid Soluble Cd (ppm)	0515	< 0.19		0.9035	1.432	1.457	3		181.33	5
181	Acid Soluble Cd (ppm)	0481	< 0.5		0.9035	1.432	1.457	3		181.99	5
181	Acid Soluble Cd (ppm)	0035	< 0.784		0.9035	1.432	1.457	3		181.30	5
181	Acid Soluble Cd (ppm)	0626	< 1		0.9035	1.432	1.457	3		181.30	5
181	Acid Soluble Cd (ppm)	0405	< 1		0.9035	1.432	1.457	3		181.32	5
181	Acid Soluble Cd (ppm)	0136	< 1		0.9035	1.432	1.457	3		181.33	5
181	Acid Soluble Cd (ppm)	0605	< 1.85		0.9035	1.432	1.457	3		181.30	5
181	Acid Soluble Cd (ppm)	0009	< 2		0.9035	1.432	1.457	3		181.33	5
191	Acid Soluble Cr (ppm)	0524	0.0431	0.0236	1.893	1.981	0.4388	5	-0.93	191.30	0
191	Acid Soluble Cr (ppm)	0086	0.4071	0.0475	1.893	1.981	0.4388	5	-0.75	191.33	0
191	Acid Soluble Cr (ppm)	0494	1.305	0.0300	1.893	1.981	0.4388	5	-0.30	191.33	0
191	Acid Soluble Cr (ppm)	0368	2.850	1.700	1.893	1.981	0.4388	5	0.48	191.34	0
191	Acid Soluble Cr (ppm)	0515	4.860	0.3930	1.893	1.981	0.4388	5	1.50	191.33	0
191	Acid Soluble Cr (ppm)	0515	< 0.141		1.893	1.981	0.4388	5		191.34	5
191	Acid Soluble Cr (ppm)	0572	< 0.16		1.893	1.981	0.4388	5		191.99	5
191	Acid Soluble Cr (ppm)	0035	< 0.98		1.893	1.981	0.4388	5		191.30	5
191	Acid Soluble Cr (ppm)	0405	< 1		1.893	1.981	0.4388	5		191.32	5
191	Acid Soluble Cr (ppm)	0605	< 1.2		1.893	1.981	0.4388	5		191.30	5
191	Acid Soluble Cr (ppm)	0136	< 2.5		1.893	1.981	0.4388	5		191.33	5
191	Acid Soluble Cr (ppm)	0009	< 2.5		1.893	1.981	0.4388	5		191.99	5
191	Acid Soluble Cr (ppm)	0626	< 5		1.893	1.981	0.4388	5		191.30	5
191	Acid Soluble Cr (ppm)	0626	< 5		1.893	1.981	0.4388	5		191.99	5
191	Acid Soluble Cr (ppm)	0481	< 20		1.893	1.981	0.4388	5		191.99	5

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
191	Acid Soluble Cr (ppm)	0009	< 22		1.893	1.981	0.4388	5		191.33	5
202	Acid Soluble Co (ppm)	0086	0.1520	0.0015				2		202.33	0
202	Acid Soluble Co (ppm)	0255	24.55	8.190				2		202.99	0
202	Acid Soluble Co (ppm)	0368	< 0.1					2		202.34	5
202	Acid Soluble Co (ppm)	0515	< 0.139					2		202.34	5
202	Acid Soluble Co (ppm)	0009	< 0.25					2		202.99	5
202	Acid Soluble Co (ppm)	0515	< 0.26					2		202.33	5
202	Acid Soluble Co (ppm)	0572	< 0.4					2		202.99	5
202	Acid Soluble Co (ppm)	0035	< 0.588					2		202.30	5
202	Acid Soluble Co (ppm)	0494	< 0.7					2		202.33	5
202	Acid Soluble Co (ppm)	0405	< 1					2		202.32	5
202	Acid Soluble Co (ppm)	0009	< 2					2		202.33	5
202	Acid Soluble Co (ppm)	0136	< 2.5					2		202.33	5
202	Acid Soluble Co (ppm)	0626	< 5					2		202.30	5
202	Acid Soluble Co (ppm)	0626	< 5					2		202.99	5
221	Acid Soluble Cu (%)	0035	0.0001	0.0000	0.8613	1.722	0.1640	4	-0.50	221.30	0
221	Acid Soluble Cu (%)	0572	0.0001	0.0000	0.8613	1.722	0.1640	4	-0.50	221.99	0
221	Acid Soluble Cu (%)	0559	0.0011	0.0002	0.8613	1.722	0.1640	4	-0.50	221.99	0
221	Acid Soluble Cu (%)	0086	3.444	0.3277	0.8613	1.722	0.1640	4	1.50	221.33	0
221	Acid Soluble Cu (%)	0255	0.0000	0.0000	0.8613	1.722	0.1640	4		221.30	4
221	Acid Soluble Cu (%)	0368	0.0001	0.0001	0.8613	1.722	0.1640	4		221.99	4
221	Acid Soluble Cu (%)	0494	< 0.0001		0.8613	1.722	0.1640	4		221.33	5
221	Acid Soluble Cu (%)	0405	< 0.0002		0.8613	1.722	0.1640	4		221.32	5
221	Acid Soluble Cu (%)	0136	< 0.0002		0.8613	1.722	0.1640	4		221.33	5
221	Acid Soluble Cu (%)	0626	< 0.0005		0.8613	1.722	0.1640	4		221.00	5
221	Acid Soluble Cu (%)	0626	< 0.0005		0.8613	1.722	0.1640	4		221.33	5
221	Acid Soluble Cu (%)	0009	< 0.0008		0.8613	1.722	0.1640	4		221.99	5
221	Acid Soluble Cu (%)	0481	< 0.001		0.8613	1.722	0.1640	4		221.99	5
221	Acid Soluble Cu (%)	0009	< 0.0025		0.8613	1.722	0.1640	4		221.33	5
221	Acid Soluble Cu (%)	0354	< 0.01		0.8613	1.722	0.1640	4		221.30	5
241	Acid Soluble Fe (%)	0572	< 0.0001					0		241.99	5
241	Acid Soluble Fe (%)	0626	< 0.001					0		241.00	5
241	Acid Soluble Fe (%)	0009	< 0.001					0		241.33	5
241	Acid Soluble Fe (%)	0494	< 0.001					0		241.33	5
241	Acid Soluble Fe (%)	0626	< 0.001					0		241.33	5
241	Acid Soluble Fe (%)	0630	< 0.001					0		241.33	5
241	Acid Soluble Fe (%)	0354	< 0.01					0		241.30	5
251	Acid Soluble Pb (ppm)	0630	0.0100	0.0020	0.5089	0.5717	0.0989	4	-0.87	251.30	0
251	Acid Soluble Pb (ppm)	0524	0.0701	0.0297	0.5089	0.5717	0.0989	4	-0.77	251.30	0
251	Acid Soluble Pb (ppm)	0481	0.7550	0.2100	0.5089	0.5717	0.0989	4	0.43	251.99	0
251	Acid Soluble Pb (ppm)	0086	1.201	0.1538	0.5089	0.5717	0.0989	4	1.21	251.33	0
251	Acid Soluble Pb (ppm)	0255	0.0000	0.0000	0.5089	0.5717	0.0989	4		251.30	4
251	Acid Soluble Pb (ppm)	0572	< 0.03		0.5089	0.5717	0.0989	4		251.99	5

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
251	Acid Soluble Pb (ppm)	0515	< 0.216		0.5089	0.5717	0.0989	4		251.34	5
251	Acid Soluble Pb (ppm)	0515	< 0.27		0.5089	0.5717	0.0989	4		251.33	5
251	Acid Soluble Pb (ppm)	0368	< 0.6		0.5089	0.5717	0.0989	4		251.34	5
251	Acid Soluble Pb (ppm)	0494	< 0.91		0.5089	0.5717	0.0989	4		251.33	5
251	Acid Soluble Pb (ppm)	0009	< 1		0.5089	0.5717	0.0989	4		251.99	5
251	Acid Soluble Pb (ppm)	0136	< 3		0.5089	0.5717	0.0989	4		251.33	5
251	Acid Soluble Pb (ppm)	0405	< 4		0.5089	0.5717	0.0989	4		251.32	5
251	Acid Soluble Pb (ppm)	0035	< 4.9		0.5089	0.5717	0.0989	4		251.30	5
251	Acid Soluble Pb (ppm)	0605	< 5		0.5089	0.5717	0.0989	4		251.30	5
251	Acid Soluble Pb (ppm)	0626	< 5		0.5089	0.5717	0.0989	4		251.30	5
251	Acid Soluble Pb (ppm)	0626	< 5		0.5089	0.5717	0.0989	4		251.99	5
251	Acid Soluble Pb (ppm)	0009	< 6		0.5089	0.5717	0.0989	4		251.33	5
261	Acid Soluble Mn (%)	0494	0.0001	0.0000				1		261.35	0
261	Acid Soluble Mn (%)	0572	< 0.0001					1		261.99	5
261	Acid Soluble Mn (%)	0009	< 0.0002					1		261.35	5
261	Acid Soluble Mn (%)	0515	< 0.0017					1		261.35	5
261	Acid Soluble Mn (%)	0354	< 0.01					1		261.30	5
281	Acid Soluble Hg (ppm)	0415	0.0020	0.0020	0.0028	0.0010	0.0020	3	-0.63	281.99	0
281	Acid Soluble Hg (ppm)	0524	0.0025	0.0001	0.0028	0.0010	0.0020	3	-0.28	281.99	0
281	Acid Soluble Hg (ppm)	0630	0.0040	0.0040	0.0028	0.0010	0.0020	3	0.91	281.30	0
281	Acid Soluble Hg (ppm)	0626	< 0.001		0.0028	0.0010	0.0020	3		281.99	5
281	Acid Soluble Hg (ppm)	0572	< 0.006		0.0028	0.0010	0.0020	3		281.99	5
281	Acid Soluble Hg (ppm)	0009	< 0.025		0.0028	0.0010	0.0020	3		281.30	5
281	Acid Soluble Hg (ppm)	0515	< 0.1		0.0028	0.0010	0.0020	3		281.30	5
281	Acid Soluble Hg (ppm)	0481	< 0.5		0.0028	0.0010	0.0020	3		281.00	5
281	Acid Soluble Hg (ppm)	0605	< 1.25		0.0028	0.0010	0.0020	3		281.30	5
281	Acid Soluble Hg (ppm)	0405	< 2		0.0028	0.0010	0.0020	3		281.30	5
289	Acid Soluble Mo (ppm)	0524	0.0921	0.0255	0.4298	0.4966	0.0309	3	-0.68	289.30	0
289	Acid Soluble Mo (ppm)	0086	0.1972	0.0362	0.4298	0.4966	0.0309	3	-0.47	289.33	0
289	Acid Soluble Mo (ppm)	0234	1.000	0.0000	0.4298	0.4966	0.0309	3	1.15	289.30	0
289	Acid Soluble Mo (ppm)	0255	0.0000	0.0000	0.4298	0.4966	0.0309	3		289.30	4
289	Acid Soluble Mo (ppm)	0368	< 0.1		0.4298	0.4966	0.0309	3		289.34	5
289	Acid Soluble Mo (ppm)	0515	< 0.23		0.4298	0.4966	0.0309	3		289.33	5
289	Acid Soluble Mo (ppm)	0405	< 1		0.4298	0.4966	0.0309	3		289.32	5
289	Acid Soluble Mo (ppm)	0009	< 1		0.4298	0.4966	0.0309	3		289.99	5
289	Acid Soluble Mo (ppm)	0035	< 1.37		0.4298	0.4966	0.0309	3		289.30	5
289	Acid Soluble Mo (ppm)	0572	< 1.52		0.4298	0.4966	0.0309	3		289.99	5
289	Acid Soluble Mo (ppm)	0136	< 2.5		0.4298	0.4966	0.0309	3		289.33	5
289	Acid Soluble Mo (ppm)	0009	< 4		0.4298	0.4966	0.0309	3		289.33	5
289	Acid Soluble Mo (ppm)	0626	< 5		0.4298	0.4966	0.0309	3		289.33	5
291	Acid Soluble Ni (ppm)	0086	0.4140	0.0337	9.000	14.27	2.871	4	-0.60	291.33	0
291	Acid Soluble Ni (ppm)	0405	2.000	2.000	9.000	14.27	2.871	4	-0.49	291.32	0
291	Acid Soluble Ni (ppm)	0494	3.255	0.0300	9.000	14.27	2.871	4	-0.40	291.33	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			# Tests	Magruder PT Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	Rob R-bar				
291	Acid Soluble Ni (ppm)	0255	30.33	9.420	9.000	14.27	2.871	4	1.50	291.99	0
291	Acid Soluble Ni (ppm)	0368	< 0.2		9.000	14.27	2.871	4		291.34	5
291	Acid Soluble Ni (ppm)	0515	< 0.26		9.000	14.27	2.871	4		291.33	5
291	Acid Soluble Ni (ppm)	0035	< 0.784		9.000	14.27	2.871	4		291.30	5
291	Acid Soluble Ni (ppm)	0572	< 1.02		9.000	14.27	2.871	4		291.99	5
291	Acid Soluble Ni (ppm)	0605	< 2.4		9.000	14.27	2.871	4		291.30	5
291	Acid Soluble Ni (ppm)	0136	< 2.5		9.000	14.27	2.871	4		291.33	5
291	Acid Soluble Ni (ppm)	0009	< 2.5		9.000	14.27	2.871	4		291.99	5
291	Acid Soluble Ni (ppm)	0009	< 3		9.000	14.27	2.871	4		291.33	5
301	Acid Soluble Se (ppm)	0524	0.0757	0.0029				2		301.30	0
301	Acid Soluble Se (ppm)	0630	0.0780	0.0560				2		301.30	0
301	Acid Soluble Se (ppm)	0255	0.0000	0.0000				2		301.99	4
301	Acid Soluble Se (ppm)	0009	< 0.25					2		301.99	5
301	Acid Soluble Se (ppm)	0515	< 0.27					2		301.33	5
301	Acid Soluble Se (ppm)	0572	< 0.41					2		301.99	5
301	Acid Soluble Se (ppm)	0481	< 0.5					2		301.99	5
301	Acid Soluble Se (ppm)	0368	< 1.1					2		301.34	5
301	Acid Soluble Se (ppm)	0605	< 1.65					2		301.30	5
301	Acid Soluble Se (ppm)	0405	< 10					2		301.32	5
301	Acid Soluble Se (ppm)	0035	< 11.8					2		301.30	5
301	Acid Soluble Se (ppm)	0009	< 22					2		301.33	5
311	Sodium (%)	0572	0.0420	0.0000	0.0655	0.0399	0.0120	4	-0.59	311.99	0
311	Sodium (%)	0009	0.0440	0.0020	0.0655	0.0399	0.0120	4	-0.54	311.33	0
311	Sodium (%)	0626	0.0510	0.0040	0.0655	0.0399	0.0120	4	-0.36	311.30	0
311	Sodium (%)	0354	0.1250	0.0300	0.0655	0.0399	0.0120	4	1.49	311.99	0
321	Acid Soluble Zn (%)	0255	0.0010	0.0000	1.331	2.191	0.0692	3	-0.61	321.30	0
321	Acid Soluble Zn (%)	0559	0.1330	0.0002	1.331	2.191	0.0692	3	-0.55	321.99	0
321	Acid Soluble Zn (%)	0086	3.860	0.1381	1.331	2.191	0.0692	3	1.15	321.33	0
321	Acid Soluble Zn (%)	0368	0.0003	0.0006	1.331	2.191	0.0692	3		321.99	4
321	Acid Soluble Zn (%)	0572	< 0.0002		1.331	2.191	0.0692	3		321.99	5
321	Acid Soluble Zn (%)	0035	< 0.0003		1.331	2.191	0.0692	3		321.30	5
321	Acid Soluble Zn (%)	0405	< 0.0003		1.331	2.191	0.0692	3		321.32	5
321	Acid Soluble Zn (%)	0136	< 0.0003		1.331	2.191	0.0692	3		321.33	5
321	Acid Soluble Zn (%)	0626	< 0.0005		1.331	2.191	0.0692	3		321.00	5
321	Acid Soluble Zn (%)	0494	< 0.0005		1.331	2.191	0.0692	3		321.33	5
321	Acid Soluble Zn (%)	0626	< 0.0005		1.331	2.191	0.0692	3		321.33	5
321	Acid Soluble Zn (%)	0481	< 0.001		1.331	2.191	0.0692	3		321.99	5
321	Acid Soluble Zn (%)	0009	< 0.0025		1.331	2.191	0.0692	3		321.33	5
321	Acid Soluble Zn (%)	0354	< 0.01		1.331	2.191	0.0692	3		321.30	5
325	Water Soluble Zn (%)	0572	< 0.0002					0		325.99	5
431	Soluble Si in nonliquids (%)	0572	< 0.004					0		431.99	5

Interpreting Z Scores and Flags:

Interpreting Z Scores: Red indicates a normally distributed Z value >3 or <-3 (requires action), Orange = Z between 2 and 3 or -2 and -3 (warning) and Green = Z < 2 and >-2 (OK)

Analyte Group	Analyte (Units)	Lab Code	Lab Data		*Robust Method Values			#	Magruder PT	Your	
			Value	Range	Rob Mean	Rob SD	Rob R-bar	Tests	Z Score	Method	Flag

at 95%). Flags indicate data usage: 0 = Used, 1 = rejected for duplicates too far apart, 2 = rejected as extreme outlier, 3 = removed from stats, 4 = rejected due to 0s submitted and 5 = LOD. A 9 flag indicates a data problem - scores not calculated.

Notes:

*Robust statistics not used if < 6 labs used in calculations, in this case Values and Z Scores are grayed out and should be interpreted with extreme caution. Identical duplicates not included in calculation of Rob R-bar. Your offset values are higher (‡) or lower (†) than the Robust Analyte value ± Investigational Allowance. Analyte codes in light green indicate a guaranteed analyte. Individual lab values may be below detection limits but are reported solely for the purpose of this Proficiency Testing program.