

# magruder fertilizer

## check sample program



STRIVING FOR EXCELLENCE IN ANALYSIS

Analyte Proficiency From All Labs

Sample # 160512

Micros

### Statistical Summary

# Analytes: 34

# Labs Reporting: 72

Issue Date : 06/30/2016

Analyte Code	Analyte	# 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	IA %RSD	Average Range (R-bar)	Horwitz %RSD
001	Ammoniacal Nitrogen (%)	1		0.7550									
010	Total Nitrogen (%)	6	6	2.448	0.1244	2.462		0.1071	0.0437	4.35%		0.0406	3.49%
020	Total Phosphorus as P2O5 (%)	2	2	0.4550	0.0636								
030	Citrate Insoluble Phosphorus as P2O5 (%)	1		0.2100									
040	Indirect Available Phosphorus as P2O5 (%)	1		0.2900									
041	Direct Available Phosphorus as P2O5 (%)	2	2	0.1155	0.0219								
048	Water Soluble Phosphorus as P2O5 (%)	1		0.0550									
050	Soluble Potassium as K2O (%)	7	7	0.7524	0.1711	0.7524		0.1940	0.0733	25.79%		0.0714	4.17%
060	Water (Free) (%)	2	2	1.616	0.0412								
101	Acid Soluble Calcium (%)	15	14	1.726	0.1651	1.704		0.1211	0.0324	7.11%		0.0412	3.69%
121	Acid Soluble Magnesium (%)	15	15	1.533	0.0929	1.534		0.1032	0.0266	6.73%		0.0531	3.75%
143	Elemental Sulfur (%)	3	3	11.85	2.372	11.85		2.372	1.370	20.02%		0.1600	2.76%
145	Sulfate Sulfur, HCl soluble (%)	10	9	11.49	0.7135	11.52		0.7350	0.2450	6.38%		0.1344	2.77%
146	Total Sulfur in Liquid (%)	1		11.45									
148	Total Sulfur (9%)	47	45	12.05	1.186	12.10	0.8048	1.055	0.1573	8.73%	3.33%	0.2261	2.75%
149	Sulfur - HNO3 soluble (%)	2	2	10.90	2.465								
151	Acid Soluble Arsenic (ppm)	9	9	6.122	1.822	6.150		1.459	0.4864	23.73%		0.3411	12.17%
165	Acid Soluble Boron (1%)	47	46	1.038	0.1735	1.048	0.1602	0.0905	0.0133	8.63%	7.64%	0.0306	3.97%
171	Water Soluble Boron (%)	2	2	1.036	0.0156								
181	Acid Soluble Cadmium (ppm)	16	16	9.585	3.078	9.505		2.373	0.5933	24.97%		0.5184	11.40%
191	Acid Soluble Chromium (ppm)	14	14	227.6	56.81	235.5		45.27	12.10	19.22%		7.252	7.03%
202	Acid Soluble Cobalt (ppm)	15	14	16.09	6.778	16.16		7.528	2.012	46.58%		0.4276	10.52%
221	Acid Soluble Copper (1%)	59	58	2.109	2.340	1.838	0.1888	0.1307	0.0172	7.11%	5.14%	0.0597	3.65%
241	Acid Soluble Iron (%)	18	17	5.703	1.848	6.302		0.6285	0.1524	9.97%		0.1809	3.03%
251	Acid Soluble Lead (ppm)	17	16	91.15	42.79	93.01		35.96	8.991	38.67%		4.413	8.09%
261	Acid Soluble Manganese (4%)	60	59	4.185	0.2791	4.167	0.4217	0.2225	0.0290	5.34%	5.06%	0.0852	3.23%
271	Water Soluble Manganese (%)	8	7	2.197	0.2179	2.161		0.1570	0.0593	7.26%		0.0600	3.56%
281	Acid Soluble Mercury (ppm)	2	2	0.3100	0.3465								
289	Acid Soluble Molybdenum (ppm)	12	11	13.12	16.46	8.825		3.931	1.185	44.55%		1.156	11.53%
291	Acid Soluble Nickel (ppm)	18	18	339.8	79.98	357.7		39.59	9.331	11.07%		13.98	6.60%
301	Acid Soluble Selenium (ppm)	4	4	8.660	9.263	8.660		9.263	4.632	106.97%		0.9600	11.56%

Analyte Code	Analyte	# 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	IA %RSD	Average Range (R-bar)	Horwitz %RSD
311	Sodium (%)	6	6	0.7339	0.0371	0.7339		0.0421	0.0172	5.74%		0.0137	4.19%
321	Acid Soluble Zinc (20%)	62	60	19.89	1.504	20.04	1.0000	1.119	0.1444	5.58%	2.49%	0.3845	2.55%
325	Water Soluble Zinc (%)	11	10	12.93	3.084	12.68		2.903	0.9180	22.89%		0.4168	2.73%

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# Analytes: 34

Sample # 160512

Lab Values

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Micros

Issue Date : 06/30/2016

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
001	Ammoniacal Nitrogen (%)	0096	0.7550	0.0500				1		001.99	0
010	Total Nitrogen (%)	0457	2.218	0.1033	2.462	0.1071	0.0406	6	-2.11	010.60	0
010	Total Nitrogen (%)	0354	2.412	0.0000	2.462	0.1071	0.0406	6	-0.43	010.60	0
010	Total Nitrogen (%)	0389	2.470	0.0200	2.462	0.1071	0.0406	6	0.07	010.60	0
010	Total Nitrogen (%)	0325	2.505	0.0700	2.462	0.1071	0.0406	6	0.37	010.60	0
010	Total Nitrogen (%)	0482	2.515	0.0100	2.462	0.1071	0.0406	6	0.46	010.60	0
010	Total Nitrogen (%)	0096	2.570	0.0400	2.462	0.1071	0.0406	6	0.93	010.60	0
020	Total Phosphorus as P2O5 (%)	0483	0.4100	0.5600				2		020.50	0
020	Total Phosphorus as P2O5 (%)	0096	0.5000	0.0400				2		020.40	0
030	Citrate Insoluble Phosphorus as P2O5 (%)	0096	0.2100	0.0200				1		030.40	0
040	Indirect Available Phosphorus as P2O5 (%)	0096	0.2900	0.0600				1		040.40	0
041	Direct Available Phosphorus as P2O5 (%)	0325	0.1000	0.0000				2		041.50	0
041	Direct Available Phosphorus as P2O5 (%)	0354	0.1310	0.0000				2		041.60	0
048	Water Soluble Phosphorus as P2O5 (%)	0096	0.0550	0.0100				1		048.40	0
050	Soluble Potassium as K2O (%)	0043	0.4700	0.0200	0.7524	0.1940	0.0714	7	-1.36	050.99	0
050	Soluble Potassium as K2O (%)	0096	0.6400	0.0200	0.7524	0.1940	0.0714	7	-0.54	050.99	0
050	Soluble Potassium as K2O (%)	0483	0.7350	0.2300	0.7524	0.1940	0.0714	7	-0.08	050.51	0
050	Soluble Potassium as K2O (%)	0325	0.7500	0.1000	0.7524	0.1940	0.0714	7	-0.01	050.99	0
050	Soluble Potassium as K2O (%)	0389	0.7600	0.0000	0.7524	0.1940	0.0714	7	0.04	050.99	0
050	Soluble Potassium as K2O (%)	0482	0.9550	0.1300	0.7524	0.1940	0.0714	7	0.98	050.99	0
050	Soluble Potassium as K2O (%)	0354	0.9570	0.0000	0.7524	0.1940	0.0714	7	0.99	050.52	0
060	Water (Free) (%)	0416	1.587	0.0154				2		060.00	0
060	Water (Free) (%)	0096	1.645	0.1500				2		060.00	0
101	Acid Soluble Calcium (%)	0389	1.560	0.0800	1.704	0.1211	0.0412	14	-1.19	101.99	0
101	Acid Soluble Calcium (%)	0457	1.578	0.0670	1.704	0.1211	0.0412	14	-1.04	101.00	0
101	Acid Soluble Calcium (%)	0035	1.590	0.0800	1.704	0.1211	0.0412	14	-0.94	101.30	0
101	Acid Soluble Calcium (%)	0055	1.625	0.0300	1.704	0.1211	0.0412	14	-0.65	101.30	0
101	Acid Soluble Calcium (%)	0354	1.653	0.0130	1.704	0.1211	0.0412	14	-0.42	101.30	0
101	Acid Soluble Calcium (%)	0482	1.655	0.0100	1.704	0.1211	0.0412	14	-0.40	101.30	0
101	Acid Soluble Calcium (%)	0117	1.665	0.0030	1.704	0.1211	0.0412	14	-0.32	101.33	0
101	Acid Soluble Calcium (%)	0096	1.685	0.0500	1.704	0.1211	0.0412	14	-0.15	101.30	0
101	Acid Soluble Calcium (%)	0025	1.728	0.1425	1.704	0.1211	0.0412	14	0.21	101.33	0
101	Acid Soluble Calcium (%)	0102	1.739	0.0120	1.704	0.1211	0.0412	14	0.29	101.30	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
101	Acid Soluble Calcium (%)	0105	1.789	0.0490	1.704	0.1211	0.0412	14	0.70	101.00	0
101	Acid Soluble Calcium (%)	0041	1.830	0.0200	1.704	0.1211	0.0412	14	1.04	101.30	0
101	Acid Soluble Calcium (%)	0452	1.870	0.0200	1.704	0.1211	0.0412	14	1.37	101.30	0
101	Acid Soluble Calcium (%)	0043	2.200	0.0000	1.704	0.1211	0.0412	14	4.10	101.00	0
101	Acid Soluble Calcium (%)	0483	2.180	0.2400	1.704	0.1211	0.0412	14	3.93	101.30	1
121	Acid Soluble Magnesium (%)	0325	1.365	0.2100	1.534	0.1032	0.0531	15	-1.64	121.33	0
121	Acid Soluble Magnesium (%)	0035	1.395	0.0900	1.534	0.1032	0.0531	15	-1.35	121.30	0
121	Acid Soluble Magnesium (%)	0354	1.416	0.0050	1.534	0.1032	0.0531	15	-1.15	121.30	0
121	Acid Soluble Magnesium (%)	0117	1.451	0.0220	1.534	0.1032	0.0531	15	-0.81	121.33	0
121	Acid Soluble Magnesium (%)	0096	1.505	0.0100	1.534	0.1032	0.0531	15	-0.29	121.30	0
121	Acid Soluble Magnesium (%)	0055	1.510	0.0200	1.534	0.1032	0.0531	15	-0.24	121.30	0
121	Acid Soluble Magnesium (%)	0482	1.515	0.0100	1.534	0.1032	0.0531	15	-0.19	121.30	0
121	Acid Soluble Magnesium (%)	0102	1.566	0.0100	1.534	0.1032	0.0531	15	0.31	121.30	0
121	Acid Soluble Magnesium (%)	0041	1.570	0.0400	1.534	0.1032	0.0531	15	0.34	121.30	0
121	Acid Soluble Magnesium (%)	0043	1.595	0.0500	1.534	0.1032	0.0531	15	0.59	121.00	0
121	Acid Soluble Magnesium (%)	0025	1.599	0.1522	1.534	0.1032	0.0531	15	0.62	121.33	0
121	Acid Soluble Magnesium (%)	0389	1.600	0.0400	1.534	0.1032	0.0531	15	0.63	121.99	0
121	Acid Soluble Magnesium (%)	0105	1.611	0.1280	1.534	0.1032	0.0531	15	0.74	121.00	0
121	Acid Soluble Magnesium (%)	0483	1.625	0.0100	1.534	0.1032	0.0531	15	0.88	121.30	0
121	Acid Soluble Magnesium (%)	0452	1.680	0.0000	1.534	0.1032	0.0531	15	1.41	121.30	0
143	Elemental Sulfur (%)	0472	9.565	0.2700	11.85	2.372	0.1600	3	-0.96	143.99	0
143	Elemental Sulfur (%)	0055	11.68	0.0100	11.85	2.372	0.1600	3	-0.07	143.00	0
143	Elemental Sulfur (%)	0389	14.30	0.2000	11.85	2.372	0.1600	3	1.03	143.99	0
145	Sulfate Sulfur, HCl soluble (%)	0211	10.13	0.0600	11.52	0.7350	0.1344	9	-1.80	145.00	0
145	Sulfate Sulfur, HCl soluble (%)	0444	10.78	0.0700	11.52	0.7350	0.1344	9	-0.96	145.00	0
145	Sulfate Sulfur, HCl soluble (%)	0444	11.12	0.0600	11.52	0.7350	0.1344	9	-0.52	145.99	0
145	Sulfate Sulfur, HCl soluble (%)	0233	11.57	0.0200	11.52	0.7350	0.1344	9	0.06	145.00	0
145	Sulfate Sulfur, HCl soluble (%)	0506	11.70	0.4000	11.52	0.7350	0.1344	9	0.23	145.99	0
145	Sulfate Sulfur, HCl soluble (%)	0043	11.77	0.1000	11.52	0.7350	0.1344	9	0.32	145.00	0
145	Sulfate Sulfur, HCl soluble (%)	0397	11.81	0.2100	11.52	0.7350	0.1344	9	0.37	145.00	0
145	Sulfate Sulfur, HCl soluble (%)	0027	12.01	0.1100	11.52	0.7350	0.1344	9	0.62	145.00	0
145	Sulfate Sulfur, HCl soluble (%)	0200	12.53	0.1800	11.52	0.7350	0.1344	9	1.30	145.99	0
145	Sulfate Sulfur, HCl soluble (%)	0498	12.90	0.8000	11.52	0.7350	0.1344	9	1.78	145.00	1
146	Total Sulfur in Liquid (%)	0324	11.45	0.5000				1		146.00	0
148	Total Sulfur (9%)	0519	9.130*	0.0600	12.10	1.055	0.2261	45	-2.81	148.07	0
148	Total Sulfur (9%)	0117	9.237*	0.0720	12.10	1.055	0.2261	45	-2.71	148.07	0
148	Total Sulfur (9%)	0354	9.721*	0.1640	12.10	1.055	0.2261	45	-2.25	148.99	0
148	Total Sulfur (9%)	0406	10.30*	0.5100	12.10	1.055	0.2261	45	-1.71	148.07	0
148	Total Sulfur (9%)	0486	10.31*	0.2900	12.10	1.055	0.2261	45	-1.70	148.07	0
148	Total Sulfur (9%)	0520	10.82*	0.3400	12.10	1.055	0.2261	45	-1.21	148.01	0
148	Total Sulfur (9%)	0444	10.97*	0.2300	12.10	1.055	0.2261	45	-1.07	148.01	0
148	Total Sulfur (9%)	0231	11.16*	0.0200	12.10	1.055	0.2261	45	-0.89	148.01	0
148	Total Sulfur (9%)	0482	11.20*	0.0000	12.10	1.055	0.2261	45	-0.85	148.99	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
148	Total Sulfur (9%)	0444	11.34	0.1800	12.10	1.055	0.2261	45	-0.72	148.07	0
148	Total Sulfur (9%)	0040	11.40	0.0000	12.10	1.055	0.2261	45	-0.66	148.01	0
148	Total Sulfur (9%)	0102	11.41	0.1230	12.10	1.055	0.2261	45	-0.65	148.01	0
148	Total Sulfur (9%)	0481	11.58	0.0300	12.10	1.055	0.2261	45	-0.49	148.01	0
148	Total Sulfur (9%)	0325	11.65	0.7000	12.10	1.055	0.2261	45	-0.42	148.07	0
148	Total Sulfur (9%)	0506	11.70	0.4000	12.10	1.055	0.2261	45	-0.37	148.99	0
148	Total Sulfur (9%)	0096	11.74	0.1800	12.10	1.055	0.2261	45	-0.34	148.99	0
148	Total Sulfur (9%)	0043	11.77	0.1000	12.10	1.055	0.2261	45	-0.31	148.01	0
148	Total Sulfur (9%)	0485	11.80	0.1700	12.10	1.055	0.2261	45	-0.28	148.01	0
148	Total Sulfur (9%)	0422	11.92	0.3700	12.10	1.055	0.2261	45	-0.17	148.07	0
148	Total Sulfur (9%)	0105	12.04	0.3000	12.10	1.055	0.2261	45	-0.05	148.01	0
148	Total Sulfur (9%)	0095	12.09	0.0400	12.10	1.055	0.2261	45	-0.01	148.01	0
148	Total Sulfur (9%)	0291	12.11	0.0800	12.10	1.055	0.2261	45	0.01	148.99	0
148	Total Sulfur (9%)	0157	12.25	0.1000	12.10	1.055	0.2261	45	0.15	148.01	0
148	Total Sulfur (9%)	0029	12.29	0.0300	12.10	1.055	0.2261	45	0.18	148.01	0
148	Total Sulfur (9%)	0292	12.30	0.0300	12.10	1.055	0.2261	45	0.19	148.07	0
148	Total Sulfur (9%)	0360	12.31	0.6400	12.10	1.055	0.2261	45	0.20	148.00	0
148	Total Sulfur (9%)	0073	12.33	0.5700	12.10	1.055	0.2261	45	0.22	148.01	0
148	Total Sulfur (9%)	0157	12.35	0.3000	12.10	1.055	0.2261	45	0.24	148.00	0
148	Total Sulfur (9%)	0023	12.38	0.6180	12.10	1.055	0.2261	45	0.27	148.07	0
148	Total Sulfur (9%)	0114	12.45	0.2000	12.10	1.055	0.2261	45	0.34	148.01	0
148	Total Sulfur (9%)	0102	12.48	0.0060	12.10	1.055	0.2261	45	0.37	148.07	0
148	Total Sulfur (9%)	0230	12.50	0.2000	12.10	1.055	0.2261	45	0.38	148.01	0
148	Total Sulfur (9%)	0025	12.57	0.1000	12.10	1.055	0.2261	45	0.45	148.00	0
148	Total Sulfur (9%)	0029	12.62	0.0500	12.10	1.055	0.2261	45	0.49	148.00	0
148	Total Sulfur (9%)	0177	12.80	0.0131	12.10	1.055	0.2261	45	0.66	148.07	0
148	Total Sulfur (9%)	0037	12.81	0.0900	12.10	1.055	0.2261	45	0.67	148.07	0
148	Total Sulfur (9%)	0136	12.85	0.0600	12.10	1.055	0.2261	45	0.71	148.00	0
148	Total Sulfur (9%)	0220	13.08	0.1600	12.10	1.055	0.2261	45	0.93	148.99	0
148	Total Sulfur (9%)	0483	13.10	0.6000	12.10	1.055	0.2261	45	0.95	148.07	0
148	Total Sulfur (9%)	0474	13.48	0.1800	12.10	1.055	0.2261	45	1.31	148.00	0
148	Total Sulfur (9%)	0377	13.50	1.000	12.10	1.055	0.2261	45	1.33	148.00	0
148	Total Sulfur (9%)	0451	13.60	0.2000	12.10	1.055	0.2261	45	1.43	148.00	0
148	Total Sulfur (9%)	0452	13.73	0.0300	12.10	1.055	0.2261	45	1.54	148.99	0
148	Total Sulfur (9%)	0211	13.89	0.0300	12.10	1.055	0.2261	45	1.70	148.00	0
148	Total Sulfur (9%)	0457	15.10	0.6100	12.10	1.055	0.2261	45	2.84	148.01	0
148	Total Sulfur (9%)	0307	11.63	2.252	12.10	1.055	0.2261	45	-0.44	148.99	1
148	Total Sulfur (9%)	0072	14.32	1.690	12.10	1.055	0.2261	45	2.10	148.99	1
149	Sulfur - HNO3 soluble (%)	0040	9.155	0.0900				2		149.04	0
149	Sulfur - HNO3 soluble (%)	0368	12.64	0.0372				2		149.04	0
151	Acid Soluble Arsenic (ppm)	0042	2.650	0.6400	6.150	1.459	0.3411	9	-2.28	151.99	0
151	Acid Soluble Arsenic (ppm)	0096	5.350	0.1000	6.150	1.459	0.3411	9	-0.52	151.30	0
151	Acid Soluble Arsenic (ppm)	0368	5.350	0.3000	6.150	1.459	0.3411	9	-0.52	151.30	0



Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
151	Acid Soluble Arsenic (ppm)	0037	5.720	0.7600	6.150	1.459	0.3411	9	-0.28	151.33	0
151	Acid Soluble Arsenic (ppm)	0519	6.040	0.0800	6.150	1.459	0.3411	9	-0.07	151.30	0
151	Acid Soluble Arsenic (ppm)	0136	6.400	0.0000	6.150	1.459	0.3411	9	0.16	151.00	0
151	Acid Soluble Arsenic (ppm)	0102	6.647	0.1800	6.150	1.459	0.3411	9	0.32	151.30	0
151	Acid Soluble Arsenic (ppm)	0481	7.540	0.2000	6.150	1.459	0.3411	9	0.90	151.99	0
151	Acid Soluble Arsenic (ppm)	0230	9.405	0.8100	6.150	1.459	0.3411	9	2.12	151.34	0
165	Acid Soluble Boron (1%)	0309	0.1700*	0.0200	1.048	0.0905	0.0306	46	-9.71	165.00	0
165	Acid Soluble Boron (1%)	0506	0.7750*	0.0500	1.048	0.0905	0.0306	46	-3.02	165.00	0
165	Acid Soluble Boron (1%)	0230	0.9115	0.0310	1.048	0.0905	0.0306	46	-1.51	165.99	0
165	Acid Soluble Boron (1%)	0498	0.9300	0.0600	1.048	0.0905	0.0306	46	-1.31	165.00	0
165	Acid Soluble Boron (1%)	0481	0.9350	0.0100	1.048	0.0905	0.0306	46	-1.25	165.00	0
165	Acid Soluble Boron (1%)	0325	0.9350	0.1300	1.048	0.0905	0.0306	46	-1.25	165.30	0
165	Acid Soluble Boron (1%)	0037	0.9420	0.0180	1.048	0.0905	0.0306	46	-1.17	165.00	0
165	Acid Soluble Boron (1%)	0513	0.9470	0.0140	1.048	0.0905	0.0306	46	-1.12	165.99	0
165	Acid Soluble Boron (1%)	0220	0.9550	0.0100	1.048	0.0905	0.0306	46	-1.03	165.00	0
165	Acid Soluble Boron (1%)	0397	0.9625	0.0110	1.048	0.0905	0.0306	46	-0.95	165.30	0
165	Acid Soluble Boron (1%)	0397	0.9875	0.0370	1.048	0.0905	0.0306	46	-0.67	165.00	0
165	Acid Soluble Boron (1%)	0136	0.9900	0.0600	1.048	0.0905	0.0306	46	-0.64	165.30	0
165	Acid Soluble Boron (1%)	0211	1.000	0.0400	1.048	0.0905	0.0306	46	-0.53	165.30	0
165	Acid Soluble Boron (1%)	0389	1.005	0.0100	1.048	0.0905	0.0306	46	-0.48	165.30	0
165	Acid Soluble Boron (1%)	0482	1.005	0.0300	1.048	0.0905	0.0306	46	-0.48	165.99	0
165	Acid Soluble Boron (1%)	0354	1.014	0.0910	1.048	0.0905	0.0306	46	-0.38	165.30	0
165	Acid Soluble Boron (1%)	0072	1.015	0.0100	1.048	0.0905	0.0306	46	-0.37	165.30	0
165	Acid Soluble Boron (1%)	0040	1.022	0.0120	1.048	0.0905	0.0306	46	-0.29	165.30	0
165	Acid Soluble Boron (1%)	0117	1.026	0.0060	1.048	0.0905	0.0306	46	-0.25	165.99	0
165	Acid Soluble Boron (1%)	0292	1.030	0.0000	1.048	0.0905	0.0306	46	-0.20	165.30	0
165	Acid Soluble Boron (1%)	0023	1.032	0.0040	1.048	0.0905	0.0306	46	-0.18	165.30	0
165	Acid Soluble Boron (1%)	0371	1.040	0.0000	1.048	0.0905	0.0306	46	-0.09	165.30	0
165	Acid Soluble Boron (1%)	0422	1.058	0.0220	1.048	0.0905	0.0306	46	0.11	165.30	0
165	Acid Soluble Boron (1%)	0029	1.063	0.0070	1.048	0.0905	0.0306	46	0.16	165.00	0
165	Acid Soluble Boron (1%)	0291	1.070	0.0400	1.048	0.0905	0.0306	46	0.24	165.99	0
165	Acid Soluble Boron (1%)	0025	1.076	0.0326	1.048	0.0905	0.0306	46	0.31	165.99	0
165	Acid Soluble Boron (1%)	0377	1.079	0.0500	1.048	0.0905	0.0306	46	0.34	165.30	0
165	Acid Soluble Boron (1%)	0416	1.080	0.0400	1.048	0.0905	0.0306	46	0.35	165.00	0
165	Acid Soluble Boron (1%)	0169	1.085	0.0300	1.048	0.0905	0.0306	46	0.41	165.99	0
165	Acid Soluble Boron (1%)	0028	1.088	0.0020	1.048	0.0905	0.0306	46	0.44	165.00	0
165	Acid Soluble Boron (1%)	0231	1.090	0.0200	1.048	0.0905	0.0306	46	0.46	165.99	0
165	Acid Soluble Boron (1%)	0508	1.095	0.0300	1.048	0.0905	0.0306	46	0.52	165.99	0
165	Acid Soluble Boron (1%)	0433	1.097	0.0123	1.048	0.0905	0.0306	46	0.54	165.30	0
165	Acid Soluble Boron (1%)	0055	1.098	0.0190	1.048	0.0905	0.0306	46	0.55	165.00	0
165	Acid Soluble Boron (1%)	0368	1.105	0.0077	1.048	0.0905	0.0306	46	0.63	165.30	0
165	Acid Soluble Boron (1%)	0043	1.110	0.1000	1.048	0.0905	0.0306	46	0.68	165.99	0
165	Acid Soluble Boron (1%)	0486	1.110	0.0200	1.048	0.0905	0.0306	46	0.68	165.99	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
165	Acid Soluble Boron (1%)	0090	1.115	0.0100	1.048	0.0905	0.0306	46	0.74	165.30	0
165	Acid Soluble Boron (1%)	0360	1.120	0.0200	1.048	0.0905	0.0306	46	0.79	165.99	0
165	Acid Soluble Boron (1%)	0472	1.135	0.0700	1.048	0.0905	0.0306	46	0.96	165.99	0
165	Acid Soluble Boron (1%)	0452	1.140	0.0000	1.048	0.0905	0.0306	46	1.01	165.99	0
165	Acid Soluble Boron (1%)	0519	1.170	0.0200	1.048	0.0905	0.0306	46	1.35	165.30	0
165	Acid Soluble Boron (1%)	0042	1.175	0.1100	1.048	0.0905	0.0306	46	1.40	165.99	0
165	Acid Soluble Boron (1%)	0483	1.180	0.0000	1.048	0.0905	0.0306	46	1.46	165.99	0
165	Acid Soluble Boron (1%)	0444	1.185	0.0500	1.048	0.0905	0.0306	46	1.51	165.30	0
165	Acid Soluble Boron (1%)	0324	1.580	0.0400	1.048	0.0905	0.0306	46	5.88	165.30	0
165	Acid Soluble Boron (1%)	0307	1.244	0.1500	1.048	0.0905	0.0306	46	2.16	165.30	1
171	Water Soluble Boron (%)	0444	1.025	0.0100				2		171.99	0
171	Water Soluble Boron (%)	0027	1.047	0.0060				2		171.99	0
181	Acid Soluble Cadmium (ppm)	0042	3.035	0.1500	9.505	2.373	0.5184	16	-2.73	181.99	0
181	Acid Soluble Cadmium (ppm)	0444	6.730	0.2800	9.505	2.373	0.5184	16	-1.17	181.30	0
181	Acid Soluble Cadmium (ppm)	0096	7.150	0.5000	9.505	2.373	0.5184	16	-0.99	181.30	0
181	Acid Soluble Cadmium (ppm)	0368	7.650	0.1000	9.505	2.373	0.5184	16	-0.78	181.30	0
181	Acid Soluble Cadmium (ppm)	0506	7.925	0.6500	9.505	2.373	0.5184	16	-0.67	181.99	0
181	Acid Soluble Cadmium (ppm)	0519	8.395	0.0100	9.505	2.373	0.5184	16	-0.47	181.30	0
181	Acid Soluble Cadmium (ppm)	0136	9.350	0.5000	9.505	2.373	0.5184	16	-0.07	181.00	0
181	Acid Soluble Cadmium (ppm)	0102	9.587	0.4980	9.505	2.373	0.5184	16	0.03	181.30	0
181	Acid Soluble Cadmium (ppm)	0117	9.735	0.3260	9.505	2.373	0.5184	16	0.10	181.33	0
181	Acid Soluble Cadmium (ppm)	0035	9.800	1.200	9.505	2.373	0.5184	16	0.12	181.30	0
181	Acid Soluble Cadmium (ppm)	0230	10.20	0.2000	9.505	2.373	0.5184	16	0.29	181.34	0
181	Acid Soluble Cadmium (ppm)	0482	10.85	1.500	9.505	2.373	0.5184	16	0.57	181.30	0
181	Acid Soluble Cadmium (ppm)	0037	11.50	1.020	9.505	2.373	0.5184	16	0.84	181.33	0
181	Acid Soluble Cadmium (ppm)	0481	12.01	0.0800	9.505	2.373	0.5184	16	1.06	181.99	0
181	Acid Soluble Cadmium (ppm)	0452	12.19	0.1800	9.505	2.373	0.5184	16	1.13	181.30	0
181	Acid Soluble Cadmium (ppm)	0498	17.25	1.100	9.505	2.373	0.5184	16	3.26	181.00	0
191	Acid Soluble Chromium (ppm)	0042	93.16	4.500	235.5	45.27	7.252	14	-3.15	191.99	0
191	Acid Soluble Chromium (ppm)	0519	130.2	0.2500	235.5	45.27	7.252	14	-2.33	191.30	0
191	Acid Soluble Chromium (ppm)	0444	212.0	26.00	235.5	45.27	7.252	14	-0.52	191.30	0
191	Acid Soluble Chromium (ppm)	0506	212.5	1.000	235.5	45.27	7.252	14	-0.51	191.99	0
191	Acid Soluble Chromium (ppm)	0368	214.0	8.000	235.5	45.27	7.252	14	-0.48	191.30	0
191	Acid Soluble Chromium (ppm)	0482	216.5	5.000	235.5	45.27	7.252	14	-0.42	191.30	0
191	Acid Soluble Chromium (ppm)	0096	224.4	4.800	235.5	45.27	7.252	14	-0.25	191.30	0
191	Acid Soluble Chromium (ppm)	0230	243.5	1.000	235.5	45.27	7.252	14	0.18	191.34	0
191	Acid Soluble Chromium (ppm)	0452	257.0	1.300	235.5	45.27	7.252	14	0.47	191.30	0
191	Acid Soluble Chromium (ppm)	0481	265.0	10.00	235.5	45.27	7.252	14	0.65	191.99	0
191	Acid Soluble Chromium (ppm)	0035	270.5	17.00	235.5	45.27	7.252	14	0.77	191.30	0
191	Acid Soluble Chromium (ppm)	0102	270.6	17.07	235.5	45.27	7.252	14	0.77	191.30	0
191	Acid Soluble Chromium (ppm)	0117	282.3	2.800	235.5	45.27	7.252	14	1.03	191.33	0
191	Acid Soluble Chromium (ppm)	0037	294.1	2.800	235.5	45.27	7.252	14	1.29	191.33	0
202	Acid Soluble Cobalt (ppm)	0042	3.835	0.1100	16.16	7.528	0.4276	14	-1.64	202.99	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
202	Acid Soluble Cobalt (ppm)	0519	7.545	0.0100	16.16	7.528	0.4276	14	-1.14	202.30	0
202	Acid Soluble Cobalt (ppm)	0506	8.100	0.3000	16.16	7.528	0.4276	14	-1.07	202.99	0
202	Acid Soluble Cobalt (ppm)	0368	11.45	0.1000	16.16	7.528	0.4276	14	-0.63	202.30	0
202	Acid Soluble Cobalt (ppm)	0102	12.82	0.3570	16.16	7.528	0.4276	14	-0.44	202.30	0
202	Acid Soluble Cobalt (ppm)	0095	13.00	0.0000	16.16	7.528	0.4276	14	-0.42	202.30	0
202	Acid Soluble Cobalt (ppm)	0482	16.50	1.200	16.16	7.528	0.4276	14	0.04	202.30	0
202	Acid Soluble Cobalt (ppm)	0498	18.50	1.000	16.16	7.528	0.4276	14	0.31	202.00	0
202	Acid Soluble Cobalt (ppm)	0452	18.54	0.0700	16.16	7.528	0.4276	14	0.32	202.30	0
202	Acid Soluble Cobalt (ppm)	0230	19.45	1.100	16.16	7.528	0.4276	14	0.44	202.34	0
202	Acid Soluble Cobalt (ppm)	0037	22.65	0.2100	16.16	7.528	0.4276	14	0.86	202.33	0
202	Acid Soluble Cobalt (ppm)	0117	23.63	0.0400	16.16	7.528	0.4276	14	0.99	202.33	0
202	Acid Soluble Cobalt (ppm)	0096	24.22	1.490	16.16	7.528	0.4276	14	1.07	202.30	0
202	Acid Soluble Cobalt (ppm)	0481	25.00	0.0000	16.16	7.528	0.4276	14	1.17	202.99	0
202	Acid Soluble Cobalt (ppm)	0035	21.55	2.700	16.16	7.528	0.4276	14	0.72	202.30	1
221	Acid Soluble Copper (1%)	0042	1.065*	0.0500	1.838	0.1307	0.0597	58	-5.92	221.99	0
221	Acid Soluble Copper (1%)	0420	1.075*	0.1510	1.838	0.1307	0.0597	58	-5.84	221.30	0
221	Acid Soluble Copper (1%)	0513	1.325*	0.0100	1.838	0.1307	0.0597	58	-3.93	221.00	0
221	Acid Soluble Copper (1%)	0519	1.340*	0.0800	1.838	0.1307	0.0597	58	-3.81	221.30	0
221	Acid Soluble Copper (1%)	0486	1.500*	0.0000	1.838	0.1307	0.0597	58	-2.59	221.33	0
221	Acid Soluble Copper (1%)	0457	1.516*	0.0480	1.838	0.1307	0.0597	58	-2.46	221.00	0
221	Acid Soluble Copper (1%)	0397	1.596*	0.0030	1.838	0.1307	0.0597	58	-1.86	221.33	0
221	Acid Soluble Copper (1%)	0506	1.695	0.0300	1.838	0.1307	0.0597	58	-1.09	221.99	0
221	Acid Soluble Copper (1%)	0360	1.705	0.0100	1.838	0.1307	0.0597	58	-1.02	221.30	0
221	Acid Soluble Copper (1%)	0493	1.705	0.0300	1.838	0.1307	0.0597	58	-1.02	221.99	0
221	Acid Soluble Copper (1%)	0291	1.725	0.0500	1.838	0.1307	0.0597	58	-0.86	221.00	0
221	Acid Soluble Copper (1%)	0233	1.740	0.0530	1.838	0.1307	0.0597	58	-0.75	221.30	0
221	Acid Soluble Copper (1%)	0211	1.745	0.1300	1.838	0.1307	0.0597	58	-0.71	221.31	0
221	Acid Soluble Copper (1%)	0472	1.750	0.1000	1.838	0.1307	0.0597	58	-0.67	221.30	0
221	Acid Soluble Copper (1%)	0220	1.760	0.0200	1.838	0.1307	0.0597	58	-0.60	221.33	0
221	Acid Soluble Copper (1%)	0230	1.765	0.0100	1.838	0.1307	0.0597	58	-0.56	221.30	0
221	Acid Soluble Copper (1%)	0481	1.770	0.0400	1.838	0.1307	0.0597	58	-0.52	221.00	0
221	Acid Soluble Copper (1%)	0023	1.787	0.1070	1.838	0.1307	0.0597	58	-0.39	221.03	0
221	Acid Soluble Copper (1%)	0029	1.787	0.0220	1.838	0.1307	0.0597	58	-0.39	221.00	0
221	Acid Soluble Copper (1%)	0325	1.805	0.2100	1.838	0.1307	0.0597	58	-0.25	221.33	0
221	Acid Soluble Copper (1%)	0090	1.805	0.0300	1.838	0.1307	0.0597	58	-0.25	221.30	0
221	Acid Soluble Copper (1%)	0028	1.810	0.0000	1.838	0.1307	0.0597	58	-0.21	221.00	0
221	Acid Soluble Copper (1%)	0402	1.810	0.0600	1.838	0.1307	0.0597	58	-0.21	221.30	0
221	Acid Soluble Copper (1%)	0157	1.815	0.0300	1.838	0.1307	0.0597	58	-0.18	221.30	0
221	Acid Soluble Copper (1%)	0433	1.824	0.0012	1.838	0.1307	0.0597	58	-0.10	221.30	0
221	Acid Soluble Copper (1%)	0035	1.830	0.1800	1.838	0.1307	0.0597	58	-0.06	221.30	0
221	Acid Soluble Copper (1%)	0136	1.830	0.0200	1.838	0.1307	0.0597	58	-0.06	221.33	0
221	Acid Soluble Copper (1%)	0096	1.832	0.0225	1.838	0.1307	0.0597	58	-0.05	221.30	0
221	Acid Soluble Copper (1%)	0177	1.832	0.0007	1.838	0.1307	0.0597	58	-0.05	221.33	0



Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
221	Acid Soluble Copper (1%)	0452	1.840	0.0400	1.838	0.1307	0.0597	58	0.02	221.30	0
221	Acid Soluble Copper (1%)	0043	1.850	0.0400	1.838	0.1307	0.0597	58	0.09	221.00	0
221	Acid Soluble Copper (1%)	0324	1.850	0.0800	1.838	0.1307	0.0597	58	0.09	221.30	0
221	Acid Soluble Copper (1%)	0508	1.850	0.0400	1.838	0.1307	0.0597	58	0.09	221.99	0
221	Acid Soluble Copper (1%)	0040	1.860	0.0186	1.838	0.1307	0.0597	58	0.17	221.00	0
221	Acid Soluble Copper (1%)	0073	1.870	0.1200	1.838	0.1307	0.0597	58	0.25	221.30	0
221	Acid Soluble Copper (1%)	0444	1.870	0.1200	1.838	0.1307	0.0597	58	0.25	221.30	0
221	Acid Soluble Copper (1%)	0055	1.878	0.1350	1.838	0.1307	0.0597	58	0.30	221.30	0
221	Acid Soluble Copper (1%)	0307	1.885	0.0500	1.838	0.1307	0.0597	58	0.36	221.30	0
221	Acid Soluble Copper (1%)	0231	1.890	0.0800	1.838	0.1307	0.0597	58	0.40	221.30	0
221	Acid Soluble Copper (1%)	0037	1.894	0.0370	1.838	0.1307	0.0597	58	0.43	221.33	0
221	Acid Soluble Copper (1%)	0368	1.894	0.0252	1.838	0.1307	0.0597	58	0.43	221.30	0
221	Acid Soluble Copper (1%)	0117	1.894	0.0640	1.838	0.1307	0.0597	58	0.43	221.33	0
221	Acid Soluble Copper (1%)	0102	1.915	0.0850	1.838	0.1307	0.0597	58	0.59	221.30	0
221	Acid Soluble Copper (1%)	0025	1.918	0.2296	1.838	0.1307	0.0597	58	0.62	221.33	0
221	Acid Soluble Copper (1%)	0095	1.925	0.0700	1.838	0.1307	0.0597	58	0.67	221.30	0
221	Acid Soluble Copper (1%)	0105	1.929	0.0450	1.838	0.1307	0.0597	58	0.69	221.00	0
221	Acid Soluble Copper (1%)	0482	1.940	0.0200	1.838	0.1307	0.0597	58	0.78	221.30	0
221	Acid Soluble Copper (1%)	0041	1.945	0.0300	1.838	0.1307	0.0597	58	0.82	221.30	0
221	Acid Soluble Copper (1%)	0027	1.967	0.0230	1.838	0.1307	0.0597	58	0.98	221.99	0
221	Acid Soluble Copper (1%)	0114	1.970	0.1400	1.838	0.1307	0.0597	58	1.01	221.30	0
221	Acid Soluble Copper (1%)	0516	1.990	0.1200	1.838	0.1307	0.0597	58	1.16	221.00	0
221	Acid Soluble Copper (1%)	0483	1.990	0.0200	1.838	0.1307	0.0597	58	1.16	221.30	0
221	Acid Soluble Copper (1%)	0498	2.000	0.0000	1.838	0.1307	0.0597	58	1.24	221.00	0
221	Acid Soluble Copper (1%)	0354	2.041	0.1370	1.838	0.1307	0.0597	58	1.55	221.30	0
221	Acid Soluble Copper (1%)	0377	2.078	0.0320	1.838	0.1307	0.0597	58	1.84	221.30	0
221	Acid Soluble Copper (1%)	0371	2.100	0.0200	1.838	0.1307	0.0597	58	2.01	221.30	0
221	Acid Soluble Copper (1%)	0422	2.180	0.0400	1.838	0.1307	0.0597	58	2.62	221.33	0
221	Acid Soluble Copper (1%)	0389	19.55	0.1000	1.838	0.1307	0.0597	58	135.56	221.99	0
221	Acid Soluble Copper (1%)	0292	98.47	193.1	1.838	0.1307	0.0597	58	739.57	221.32	2
241	Acid Soluble Iron (%)	0117	1.205	0.0640	6.302	0.6285	0.1809	17	-8.11	241.33	0
241	Acid Soluble Iron (%)	0482	1.555	0.4300	6.302	0.6285	0.1809	17	-7.55	241.30	0
241	Acid Soluble Iron (%)	0420	3.140	0.1400	6.302	0.6285	0.1809	17	-5.03	241.30	0
241	Acid Soluble Iron (%)	0354	5.654	0.3970	6.302	0.6285	0.1809	17	-1.03	241.30	0
241	Acid Soluble Iron (%)	0389	6.190	0.1200	6.302	0.6285	0.1809	17	-0.18	241.99	0
241	Acid Soluble Iron (%)	0034	6.244	0.0900	6.302	0.6285	0.1809	17	-0.09	241.33	0
241	Acid Soluble Iron (%)	0402	6.295	0.1500	6.302	0.6285	0.1809	17	-0.01	241.30	0
241	Acid Soluble Iron (%)	0035	6.300	0.3400	6.302	0.6285	0.1809	17	0.00	241.30	0
241	Acid Soluble Iron (%)	0102	6.418	0.1360	6.302	0.6285	0.1809	17	0.18	241.30	0
241	Acid Soluble Iron (%)	0043	6.510	0.1000	6.302	0.6285	0.1809	17	0.33	241.00	0
241	Acid Soluble Iron (%)	0055	6.673	0.1450	6.302	0.6285	0.1809	17	0.59	241.30	0
241	Acid Soluble Iron (%)	0452	6.680	0.0200	6.302	0.6285	0.1809	17	0.60	241.30	0
241	Acid Soluble Iron (%)	0105	6.700	0.3170	6.302	0.6285	0.1809	17	0.63	241.00	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
241	Acid Soluble Iron (%)	0096	6.705	0.0100	6.302	0.6285	0.1809	17	0.64	241.30	0
241	Acid Soluble Iron (%)	0090	6.765	0.0500	6.302	0.6285	0.1809	17	0.74	241.30	0
241	Acid Soluble Iron (%)	0025	6.771	0.5067	6.302	0.6285	0.1809	17	0.75	241.33	0
241	Acid Soluble Iron (%)	0483	7.150	0.0600	6.302	0.6285	0.1809	17	1.35	241.30	0
241	Acid Soluble Iron (%)	0041	7.690	1.440	6.302	0.6285	0.1809	17	2.21	241.30	1
251	Acid Soluble Lead (ppm)	0096	4.145	0.0715	93.01	35.96	4.413	16	-2.47	251.30	0
251	Acid Soluble Lead (ppm)	0042	23.00	1.210	93.01	35.96	4.413	16	-1.95	251.99	0
251	Acid Soluble Lead (ppm)	0498	29.35	4.300	93.01	35.96	4.413	16	-1.77	251.00	0
251	Acid Soluble Lead (ppm)	0368	81.70	3.800	93.01	35.96	4.413	16	-0.31	251.30	0
251	Acid Soluble Lead (ppm)	0506	87.50	3.000	93.01	35.96	4.413	16	-0.15	251.99	0
251	Acid Soluble Lead (ppm)	0444	87.62	4.340	93.01	35.96	4.413	16	-0.15	251.30	0
251	Acid Soluble Lead (ppm)	0519	88.65	0.7400	93.01	35.96	4.413	16	-0.12	251.30	0
251	Acid Soluble Lead (ppm)	0136	96.00	4.000	93.01	35.96	4.413	16	0.08	251.00	0
251	Acid Soluble Lead (ppm)	0117	97.83	0.9300	93.01	35.96	4.413	16	0.13	251.33	0
251	Acid Soluble Lead (ppm)	0230	103.0	0.0000	93.01	35.96	4.413	16	0.28	251.34	0
251	Acid Soluble Lead (ppm)	0037	106.6	1.810	93.01	35.96	4.413	16	0.38	251.33	0
251	Acid Soluble Lead (ppm)	0482	107.0	2.000	93.01	35.96	4.413	16	0.39	251.30	0
251	Acid Soluble Lead (ppm)	0481	115.9	2.700	93.01	35.96	4.413	16	0.64	251.99	0
251	Acid Soluble Lead (ppm)	0102	123.5	4.084	93.01	35.96	4.413	16	0.85	251.30	0
251	Acid Soluble Lead (ppm)	0027	128.7	1.627	93.01	35.96	4.413	16	0.99	251.99	0
251	Acid Soluble Lead (ppm)	0035	178.0	36.00	93.01	35.96	4.413	16	2.36	251.30	0
251	Acid Soluble Lead (ppm)	0095	66.00	42.00	93.01	35.96	4.413	16	-0.75	251.30	1
261	Acid Soluble Manganese (4%)	0072	3.320*	0.3800	4.167	0.2225	0.0852	59	-3.81	261.30	0
261	Acid Soluble Manganese (4%)	0356	3.870	0.0200	4.167	0.2225	0.0852	59	-1.33	261.11	0
261	Acid Soluble Manganese (4%)	0498	3.900	0.2000	4.167	0.2225	0.0852	59	-1.20	261.11	0
261	Acid Soluble Manganese (4%)	0230	3.905	0.1100	4.167	0.2225	0.0852	59	-1.18	261.30	0
261	Acid Soluble Manganese (4%)	0211	3.910	0.2200	4.167	0.2225	0.0852	59	-1.15	261.13	0
261	Acid Soluble Manganese (4%)	0513	3.915	0.0100	4.167	0.2225	0.0852	59	-1.13	261.12	0
261	Acid Soluble Manganese (4%)	0457	3.935	0.0520	4.167	0.2225	0.0852	59	-1.04	261.12	0
261	Acid Soluble Manganese (4%)	0493	3.950	0.0400	4.167	0.2225	0.0852	59	-0.97	261.99	0
261	Acid Soluble Manganese (4%)	0073	3.965	0.0500	4.167	0.2225	0.0852	59	-0.91	261.30	0
261	Acid Soluble Manganese (4%)	0117	3.968	0.0810	4.167	0.2225	0.0852	59	-0.90	261.35	0
261	Acid Soluble Manganese (4%)	0220	3.980	0.0800	4.167	0.2225	0.0852	59	-0.84	261.35	0
261	Acid Soluble Manganese (4%)	0307	3.983	0.2330	4.167	0.2225	0.0852	59	-0.83	261.30	0
261	Acid Soluble Manganese (4%)	0157	3.985	0.0700	4.167	0.2225	0.0852	59	-0.82	261.30	0
261	Acid Soluble Manganese (4%)	0034	3.987	0.0510	4.167	0.2225	0.0852	59	-0.81	261.35	0
261	Acid Soluble Manganese (4%)	0433	4.000	0.0080	4.167	0.2225	0.0852	59	-0.75	261.30	0
261	Acid Soluble Manganese (4%)	0292	4.010	0.0000	4.167	0.2225	0.0852	59	-0.70	261.14	0
261	Acid Soluble Manganese (4%)	0402	4.020	0.1200	4.167	0.2225	0.0852	59	-0.66	261.32	0
261	Acid Soluble Manganese (4%)	0029	4.034	0.0340	4.167	0.2225	0.0852	59	-0.60	261.12	0
261	Acid Soluble Manganese (4%)	0354	4.048	0.1260	4.167	0.2225	0.0852	59	-0.53	261.30	0
261	Acid Soluble Manganese (4%)	0023	4.050	0.0190	4.167	0.2225	0.0852	59	-0.53	261.35	0
261	Acid Soluble Manganese (4%)	0481	4.065	0.0100	4.167	0.2225	0.0852	59	-0.46	261.99	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
261	Acid Soluble Manganese (4%)	0420	4.070	0.0800	4.167	0.2225	0.0852	59	-0.43	261.30	0
261	Acid Soluble Manganese (4%)	0397	4.081	0.0170	4.167	0.2225	0.0852	59	-0.39	261.35	0
261	Acid Soluble Manganese (4%)	0444	4.095	0.0100	4.167	0.2225	0.0852	59	-0.32	261.32	0
261	Acid Soluble Manganese (4%)	0516	4.095	0.1300	4.167	0.2225	0.0852	59	-0.32	261.11	0
261	Acid Soluble Manganese (4%)	0040	4.100	0.1590	4.167	0.2225	0.0852	59	-0.30	261.12	0
261	Acid Soluble Manganese (4%)	0360	4.105	0.0500	4.167	0.2225	0.0852	59	-0.28	261.31	0
261	Acid Soluble Manganese (4%)	0042	4.120	0.0600	4.167	0.2225	0.0852	59	-0.21	261.99	0
261	Acid Soluble Manganese (4%)	0233	4.122	0.0110	4.167	0.2225	0.0852	59	-0.20	261.30	0
261	Acid Soluble Manganese (4%)	0506	4.130	0.0000	4.167	0.2225	0.0852	59	-0.17	261.99	0
261	Acid Soluble Manganese (4%)	0096	4.145	0.0715	4.167	0.2225	0.0852	59	-0.10	261.30	0
261	Acid Soluble Manganese (4%)	0037	4.145	0.0300	4.167	0.2225	0.0852	59	-0.10	261.35	0
261	Acid Soluble Manganese (4%)	0043	4.150	0.0200	4.167	0.2225	0.0852	59	-0.08	261.00	0
261	Acid Soluble Manganese (4%)	0169	4.150	0.0400	4.167	0.2225	0.0852	59	-0.08	261.12	0
261	Acid Soluble Manganese (4%)	0114	4.165	0.0100	4.167	0.2225	0.0852	59	-0.01	261.30	0
261	Acid Soluble Manganese (4%)	0177	4.191	0.0473	4.167	0.2225	0.0852	59	0.11	261.35	0
261	Acid Soluble Manganese (4%)	0055	4.216	0.1510	4.167	0.2225	0.0852	59	0.22	261.32	0
261	Acid Soluble Manganese (4%)	0368	4.219	0.0398	4.167	0.2225	0.0852	59	0.24	261.30	0
261	Acid Soluble Manganese (4%)	0291	4.250	0.0200	4.167	0.2225	0.0852	59	0.37	261.30	0
261	Acid Soluble Manganese (4%)	0025	4.252	0.3508	4.167	0.2225	0.0852	59	0.38	261.35	0
261	Acid Soluble Manganese (4%)	0028	4.270	0.0600	4.167	0.2225	0.0852	59	0.46	261.00	0
261	Acid Soluble Manganese (4%)	0519	4.275	0.0300	4.167	0.2225	0.0852	59	0.49	261.32	0
261	Acid Soluble Manganese (4%)	0472	4.285	0.0300	4.167	0.2225	0.0852	59	0.53	261.30	0
261	Acid Soluble Manganese (4%)	0231	4.290	0.0000	4.167	0.2225	0.0852	59	0.55	261.30	0
261	Acid Soluble Manganese (4%)	0389	4.290	0.1000	4.167	0.2225	0.0852	59	0.55	261.99	0
261	Acid Soluble Manganese (4%)	0136	4.320	0.0600	4.167	0.2225	0.0852	59	0.69	261.35	0
261	Acid Soluble Manganese (4%)	0508	4.340	0.0600	4.167	0.2225	0.0852	59	0.78	261.99	0
261	Acid Soluble Manganese (4%)	0105	4.356	0.2600	4.167	0.2225	0.0852	59	0.85	261.12	0
261	Acid Soluble Manganese (4%)	0102	4.412	0.2110	4.167	0.2225	0.0852	59	1.10	261.30	0
261	Acid Soluble Manganese (4%)	0090	4.460	0.1600	4.167	0.2225	0.0852	59	1.32	261.30	0
261	Acid Soluble Manganese (4%)	0027	4.461	0.2710	4.167	0.2225	0.0852	59	1.32	261.99	0
261	Acid Soluble Manganese (4%)	0483	4.480	0.0000	4.167	0.2225	0.0852	59	1.41	261.32	0
261	Acid Soluble Manganese (4%)	0377	4.486	0.0530	4.167	0.2225	0.0852	59	1.43	261.30	0
261	Acid Soluble Manganese (4%)	0452	4.535	0.0100	4.167	0.2225	0.0852	59	1.66	261.30	0
261	Acid Soluble Manganese (4%)	0482	4.610	0.1000	4.167	0.2225	0.0852	59	1.99	261.31	0
261	Acid Soluble Manganese (4%)	0324	4.645	0.0700	4.167	0.2225	0.0852	59	2.15	261.31	0
261	Acid Soluble Manganese (4%)	0041	4.875	0.0100	4.167	0.2225	0.0852	59	3.18	261.30	0
261	Acid Soluble Manganese (4%)	0422	4.905	0.2900	4.167	0.2225	0.0852	59	3.32	261.35	0
261	Acid Soluble Manganese (4%)	0486	5.040	0.0400	4.167	0.2225	0.0852	59	3.93	261.35	0
261	Acid Soluble Manganese (4%)	0035	3.700*	0.8800	4.167	0.2225	0.0852	59	-2.10	261.30	1
271	Water Soluble Manganese (%)	0356	2.025	0.0900	2.161	0.1570	0.0600	7	-0.81	271.00	0
271	Water Soluble Manganese (%)	0368	2.053	0.0257	2.161	0.1570	0.0600	7	-0.65	271.30	0
271	Water Soluble Manganese (%)	0444	2.075	0.0300	2.161	0.1570	0.0600	7	-0.51	271.30	0
271	Water Soluble Manganese (%)	0027	2.088	0.0240	2.161	0.1570	0.0600	7	-0.44	271.00	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
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271	Water Soluble Manganese (%)	0231	2.210	0.1000	2.161	0.1570	0.0600	7	0.29	271.30	0
271	Water Soluble Manganese (%)	0211	2.280	0.0400	2.161	0.1570	0.0600	7	0.71	271.30	0
271	Water Soluble Manganese (%)	0230	2.645	0.1100	2.161	0.1570	0.0600	7	2.88	271.30	0
271	Water Soluble Manganese (%)	0220	2.065	0.6300	2.161	0.1570	0.0600	7	-0.57	271.30	1
281	Acid Soluble Mercury (ppm)	0519	0.0650	0.0100				2		281.30	0
281	Acid Soluble Mercury (ppm)	0042	0.5550	0.0100				2		281.99	0
289	Acid Soluble Molybdenum (ppm)	0433	4.189	0.0521	8.825	3.931	1.156	11	-1.18	289.30	0
289	Acid Soluble Molybdenum (ppm)	0042	4.700	0.7800	8.825	3.931	1.156	11	-1.05	289.99	0
289	Acid Soluble Molybdenum (ppm)	0519	5.850	0.0600	8.825	3.931	1.156	11	-0.76	289.30	0
289	Acid Soluble Molybdenum (ppm)	0368	6.550	10.10	8.825	3.931	1.156	11	-0.58	289.30	0
289	Acid Soluble Molybdenum (ppm)	0452	7.800	0.0400	8.825	3.931	1.156	11	-0.26	289.30	0
289	Acid Soluble Molybdenum (ppm)	0096	8.300	0.2000	8.825	3.931	1.156	11	-0.13	289.30	0
289	Acid Soluble Molybdenum (ppm)	0102	9.165	0.5190	8.825	3.931	1.156	11	0.09	289.30	0
289	Acid Soluble Molybdenum (ppm)	0117	11.23	0.7400	8.825	3.931	1.156	11	0.61	289.33	0
289	Acid Soluble Molybdenum (ppm)	0230	11.35	0.1000	8.825	3.931	1.156	11	0.64	289.34	0
289	Acid Soluble Molybdenum (ppm)	0037	13.22	0.1300	8.825	3.931	1.156	11	1.12	289.33	0
289	Acid Soluble Molybdenum (ppm)	0481	62.00	0.0000	8.825	3.931	1.156	11	13.53	289.99	0
289	Acid Soluble Molybdenum (ppm)	0035	14.58	15.24	8.825	3.931	1.156	11	1.46	289.30	1
291	Acid Soluble Nickel (ppm)	0042	113.2	3.840	357.7	39.59	13.98	18	-6.18	291.99	0
291	Acid Soluble Nickel (ppm)	0498	156.1	2.000	357.7	39.59	13.98	18	-5.09	291.00	0
291	Acid Soluble Nickel (ppm)	0482	310.0	10.00	357.7	39.59	13.98	18	-1.21	291.30	0
291	Acid Soluble Nickel (ppm)	0035	314.5	37.00	357.7	39.59	13.98	18	-1.09	291.30	0
291	Acid Soluble Nickel (ppm)	0519	330.1	0.1100	357.7	39.59	13.98	18	-0.70	291.30	0
291	Acid Soluble Nickel (ppm)	0095	348.0	6.000	357.7	39.59	13.98	18	-0.25	291.30	0
291	Acid Soluble Nickel (ppm)	0368	354.0	4.000	357.7	39.59	13.98	18	-0.09	291.30	0
291	Acid Soluble Nickel (ppm)	0230	357.5	21.00	357.7	39.59	13.98	18	-0.01	291.34	0
291	Acid Soluble Nickel (ppm)	0027	363.8	5.619	357.7	39.59	13.98	18	0.15	291.99	0
291	Acid Soluble Nickel (ppm)	0117	370.7	9.600	357.7	39.59	13.98	18	0.33	291.33	0
291	Acid Soluble Nickel (ppm)	0452	373.0	1.600	357.7	39.59	13.98	18	0.39	291.30	0
291	Acid Soluble Nickel (ppm)	0136	375.0	10.00	357.7	39.59	13.98	18	0.44	291.00	0
291	Acid Soluble Nickel (ppm)	0096	378.6	23.20	357.7	39.59	13.98	18	0.53	291.30	0
291	Acid Soluble Nickel (ppm)	0037	378.9	33.13	357.7	39.59	13.98	18	0.54	291.33	0
291	Acid Soluble Nickel (ppm)	0444	379.0	16.00	357.7	39.59	13.98	18	0.54	291.30	0
291	Acid Soluble Nickel (ppm)	0506	390.0	40.00	357.7	39.59	13.98	18	0.81	291.99	0
291	Acid Soluble Nickel (ppm)	0481	402.5	25.00	357.7	39.59	13.98	18	1.13	291.99	0
291	Acid Soluble Nickel (ppm)	0102	420.8	3.455	357.7	39.59	13.98	18	1.59	291.30	0
301	Acid Soluble Selenium (ppm)	0519	1.225	0.0900	8.660	9.263	0.9600	4	-0.80	301.30	0
301	Acid Soluble Selenium (ppm)	0042	3.330	0.2400	8.660	9.263	0.9600	4	-0.58	301.99	0
301	Acid Soluble Selenium (ppm)	0368	8.250	2.300	8.660	9.263	0.9600	4	-0.04	301.30	0
301	Acid Soluble Selenium (ppm)	0037	21.84	1.210	8.660	9.263	0.9600	4	1.42	301.33	0
311	Sodium (%)	0354	0.6710	0.0200	0.7339	0.0421	0.0137	6	-1.38	311.99	0
311	Sodium (%)	0035	0.7210	0.0240	0.7339	0.0421	0.0137	6	-0.28	311.33	0
311	Sodium (%)	0025	0.7226	0.0060	0.7339	0.0421	0.0137	6	-0.25	311.32	0

Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
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311	Sodium (%)	0482	0.7550	0.0100	0.7339	0.0421	0.0137	6	0.46	311.99	0
311	Sodium (%)	0096	0.7650	0.0100	0.7339	0.0421	0.0137	6	0.68	311.99	0
311	Sodium (%)	0102	0.7690	0.0120	0.7339	0.0421	0.0137	6	0.77	311.33	0
321	Acid Soluble Zinc (20%)	0402	14.61*	0.5500	20.04	1.119	0.3845	60	-4.86	321.30	0
321	Acid Soluble Zinc (20%)	0292	14.91*	0.0100	20.04	1.119	0.3845	60	-4.59	321.30	0
321	Acid Soluble Zinc (20%)	0483	16.85*	0.9000	20.04	1.119	0.3845	60	-2.85	321.30	0
321	Acid Soluble Zinc (20%)	0211	16.99*	0.1800	20.04	1.119	0.3845	60	-2.73	321.01	0
321	Acid Soluble Zinc (20%)	0360	17.92*	0.6300	20.04	1.119	0.3845	60	-1.90	321.30	0
321	Acid Soluble Zinc (20%)	0428	17.96*	2.109	20.04	1.119	0.3845	60	-1.86	321.00	0
321	Acid Soluble Zinc (20%)	0433	18.16*	0.1160	20.04	1.119	0.3845	60	-1.68	321.30	0
321	Acid Soluble Zinc (20%)	0230	18.60*	0.0000	20.04	1.119	0.3845	60	-1.29	321.30	0
321	Acid Soluble Zinc (20%)	0482	18.75*	0.7000	20.04	1.119	0.3845	60	-1.15	321.30	0
321	Acid Soluble Zinc (20%)	0457	18.85*	0.7800	20.04	1.119	0.3845	60	-1.06	321.00	0
321	Acid Soluble Zinc (20%)	0029	18.88*	0.2300	20.04	1.119	0.3845	60	-1.04	321.00	0
321	Acid Soluble Zinc (20%)	0034	18.97*	0.1800	20.04	1.119	0.3845	60	-0.96	321.33	0
321	Acid Soluble Zinc (20%)	0117	19.18	0.1600	20.04	1.119	0.3845	60	-0.77	321.33	0
321	Acid Soluble Zinc (20%)	0072	19.27	0.6300	20.04	1.119	0.3845	60	-0.69	321.30	0
321	Acid Soluble Zinc (20%)	0513	19.27	0.0600	20.04	1.119	0.3845	60	-0.69	321.00	0
321	Acid Soluble Zinc (20%)	0220	19.39	0.1700	20.04	1.119	0.3845	60	-0.59	321.33	0
321	Acid Soluble Zinc (20%)	0200	19.50	0.6000	20.04	1.119	0.3845	60	-0.48	321.00	0
321	Acid Soluble Zinc (20%)	0043	19.53	0.0500	20.04	1.119	0.3845	60	-0.46	321.00	0
321	Acid Soluble Zinc (20%)	0371	19.60	0.0300	20.04	1.119	0.3845	60	-0.40	321.30	0
321	Acid Soluble Zinc (20%)	0042	19.60	0.0200	20.04	1.119	0.3845	60	-0.39	321.99	0
321	Acid Soluble Zinc (20%)	0444	19.68	0.2000	20.04	1.119	0.3845	60	-0.32	321.30	0
321	Acid Soluble Zinc (20%)	0354	19.75	0.0280	20.04	1.119	0.3845	60	-0.26	321.30	0
321	Acid Soluble Zinc (20%)	0356	19.86	0.0000	20.04	1.119	0.3845	60	-0.16	321.00	0
321	Acid Soluble Zinc (20%)	0040	19.94	0.3290	20.04	1.119	0.3845	60	-0.09	321.00	0
321	Acid Soluble Zinc (20%)	0095	19.94	0.3200	20.04	1.119	0.3845	60	-0.09	321.30	0
321	Acid Soluble Zinc (20%)	0037	19.95	0.1900	20.04	1.119	0.3845	60	-0.09	321.33	0
321	Acid Soluble Zinc (20%)	0324	20.05	0.7000	20.04	1.119	0.3845	60	0.01	321.30	0
321	Acid Soluble Zinc (20%)	0136	20.10	0.4000	20.04	1.119	0.3845	60	0.05	321.33	0
321	Acid Soluble Zinc (20%)	0389	20.10	0.2000	20.04	1.119	0.3845	60	0.05	321.99	0
321	Acid Soluble Zinc (20%)	0105	20.15	0.0100	20.04	1.119	0.3845	60	0.09	321.00	0
321	Acid Soluble Zinc (20%)	0481	20.15	0.4600	20.04	1.119	0.3845	60	0.10	321.00	0
321	Acid Soluble Zinc (20%)	0506	20.15	0.3000	20.04	1.119	0.3845	60	0.10	321.99	0
321	Acid Soluble Zinc (20%)	0519	20.18	0.0400	20.04	1.119	0.3845	60	0.12	321.30	0
321	Acid Soluble Zinc (20%)	0028	20.25	0.3000	20.04	1.119	0.3845	60	0.19	321.00	0
321	Acid Soluble Zinc (20%)	0486	20.25	0.2200	20.04	1.119	0.3845	60	0.19	321.33	0
321	Acid Soluble Zinc (20%)	0157	20.30	0.2000	20.04	1.119	0.3845	60	0.23	321.30	0
321	Acid Soluble Zinc (20%)	0498	20.30	0.6000	20.04	1.119	0.3845	60	0.23	321.00	0
321	Acid Soluble Zinc (20%)	0368	20.35	0.0440	20.04	1.119	0.3845	60	0.27	321.30	0
321	Acid Soluble Zinc (20%)	0307	20.40	1.895	20.04	1.119	0.3845	60	0.32	321.30	0
321	Acid Soluble Zinc (20%)	0233	20.52	0.7400	20.04	1.119	0.3845	60	0.43	321.30	0



Analyte Group	Analyte (Units)	Lab Code	Lab Data		Method Values			# Tests	Magruder CS Z Score	Your Method	Flag
			Value	Range	Rob Mean	Rob SD	R-bar				
321	Acid Soluble Zinc (20%)	0291	20.55	0.0400	20.04	1.119	0.3845	60	0.45	321.30	0
321	Acid Soluble Zinc (20%)	0508	20.55	0.5800	20.04	1.119	0.3845	60	0.45	321.99	0
321	Acid Soluble Zinc (20%)	0169	20.58	0.0920	20.04	1.119	0.3845	60	0.49	321.00	0
321	Acid Soluble Zinc (20%)	0023	20.78	0.9400	20.04	1.119	0.3845	60	0.66	321.33	0
321	Acid Soluble Zinc (20%)	0177	20.87	0.1829	20.04	1.119	0.3845	60	0.74	321.33	0
321	Acid Soluble Zinc (20%)	0377	20.88	0.1180	20.04	1.119	0.3845	60	0.75	321.30	0
321	Acid Soluble Zinc (20%)	0096	20.89	1.020	20.04	1.119	0.3845	60	0.76	321.30	0
321	Acid Soluble Zinc (20%)	0025	20.90	0.9661	20.04	1.119	0.3845	60	0.77	321.33	0
321	Acid Soluble Zinc (20%)	0055	21.03	0.2600	20.04	1.119	0.3845	60	0.88	321.30	0
321	Acid Soluble Zinc (20%)	0102	21.06	0.9430	20.04	1.119	0.3845	60	0.91	321.30	0
321	Acid Soluble Zinc (20%)	0027	21.07	0.0600	20.04	1.119	0.3845	60	0.92	321.99	0
321	Acid Soluble Zinc (20%)	0035	21.10	0.2000	20.04	1.119	0.3845	60	0.95	321.30	0
321	Acid Soluble Zinc (20%)	0073	21.11	0.6400	20.04	1.119	0.3845	60	0.96	321.30	0
321	Acid Soluble Zinc (20%)	0420	21.24	0.1800	20.04	1.119	0.3845	60	1.07	321.30	0
321	Acid Soluble Zinc (20%)	0231	21.33	0.0100	20.04	1.119	0.3845	60	1.15	321.30	0
321	Acid Soluble Zinc (20%)	0472	21.44	0.0700	20.04	1.119	0.3845	60	1.25	321.30	0
321	Acid Soluble Zinc (20%)	0397	21.68	0.1800	20.04	1.119	0.3845	60	1.46	321.33	0
321	Acid Soluble Zinc (20%)	0114	21.77	0.0300	20.04	1.119	0.3845	60	1.54	321.30	0
321	Acid Soluble Zinc (20%)	0090	22.47	1.270	20.04	1.119	0.3845	60	2.17	321.30	0
321	Acid Soluble Zinc (20%)	0452	23.03	0.0100	20.04	1.119	0.3845	60	2.67	321.30	0
321	Acid Soluble Zinc (20%)	0325	19.60	2.600	20.04	1.119	0.3845	60	-0.39	321.33	1
321	Acid Soluble Zinc (20%)	0516	21.57	2.730	20.04	1.119	0.3845	60	1.36	321.00	1
325	Water Soluble Zinc (%)	0474	9.115	0.0300	12.68	2.903	0.4168	10	-1.17	325.30	0
325	Water Soluble Zinc (%)	0200	10.00	0.2000	12.68	2.903	0.4168	10	-0.88	325.00	0
325	Water Soluble Zinc (%)	0220	10.06	0.0400	12.68	2.903	0.4168	10	-0.86	325.30	0
325	Water Soluble Zinc (%)	0356	12.30	0.9800	12.68	2.903	0.4168	10	-0.13	325.00	0
325	Water Soluble Zinc (%)	0368	12.32	0.1739	12.68	2.903	0.4168	10	-0.12	325.30	0
325	Water Soluble Zinc (%)	0231	12.75	0.0800	12.68	2.903	0.4168	10	0.02	325.30	0
325	Water Soluble Zinc (%)	0444	12.99	0.0700	12.68	2.903	0.4168	10	0.10	325.30	0
325	Water Soluble Zinc (%)	0027	14.45	0.7840	12.68	2.903	0.4168	10	0.58	325.00	0
325	Water Soluble Zinc (%)	0230	15.80	0.8000	12.68	2.903	0.4168	10	1.02	325.30	0
325	Water Soluble Zinc (%)	0406	19.48	1.010	12.68	2.903	0.4168	10	2.23	325.30	0
325	Water Soluble Zinc (%)	0211	17.15	9.160	12.68	2.903	0.4168	10	1.47	325.30	1

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 at 95%). Flags indicate data usage: 0 = Used, 1 = rejected for duplicates too far apart, 2 = rejected as extreme outlier and a 4 flag indicates rejected due to 0 value submitted. Robust statistics not used if < 6 labs used in calculations, in this case the Z Scores are included for information only (Grey). An offset lab value with an asterix indicates that the value is lower than the Analyte value less the IA. Method or 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.