U.S. NUCLEAR REGULATORY COMMISSION
REGION I

Combined Results of Non-Radiological Standards Comparison Inspection Activities for Region I Licensees

Inspectors: Harvey Zibulsky

Harvey Zibulsky, Chemist, Effluents Radiation Protection Section, EP&RPB, DRSS

J. J. Kottan

James J. Kottan, Radiation Laboratory Specialist, Effluents Radiation Protection Section, EP&RPB, DRSS

Approved By: Walter J. Pasciak

Walter J. Pasciak, Chief, Effluents Radiation Protection Section, EP&RPB, DRSS

Details

1. Introduction

Region I has implemented an inspection program in the area of non-radiological water chemistry. As part of this inspection program, licensees are required to analyze test standards prepared by Brookhaven National Laboratory (BNL) for NRC Region I. The data from the first round of this part of the inspection program are now available from all power reactors in Region I and are presented here.

The data as presented permits each Region I nuclear power plant chemistry laboratory to compare its performance with all other Region I nuclear power plant laboratories. The data for the BNL known values are also presented so that comparison of the average from all Region I sites to the known value may be made. The data were taken from inspection reports, but are coded here. The letter transmitting this report identified the individual code(s) for each addressee. Section 3.0 lists the inspection reports data were taken from. The data are presented in Appendix B.

2. Data Analysis

The data were analyzed as follows.

1. The analytical data from all Region I sites were entered into a data base at BNL. The analytical data consisted of each licensee's result for each analyte at each analyzed concentration.

2. At each concentration a grand average and standard deviation were calculated using the data from all sites.

3. A range consisting of the grand average plus or minus two standard deviations was established. Any values outside of this range were considered outliers.

4. A new grand average and standard deviation were calculated excluding the outliers determined in step 3.

5. A range consisting of the grand average plus or minus two standard deviations was again established. Any values outside this range were considered outliers.

6. The above process was repeated until a range was obtained with no outliers. This range was used for the data comparison.

A sample calculation is presented in Appendix A.

It must be recognized that the data used to generate the averages are not of equal weight. For example, some laboratories were permitted to reanalyze the standards if problems could be identified and corrected during the inspection. Also some of the BNL standards were diluted to different final concentrations by the licensees prior to analysis to allow them to analyze within their calibration range. The results were then normalized back to the original dilution in order to enable comparison. In addition, all methods of analysis for a particular analyte were grouped together.

3. References:

Site	Docket No.	Inspection No.
Beaver Valley #1	50-334	85-07
Beaver Valley #2	50-412	86-14
Calvert Cliffs #1	50-317	86-08
Calvert Cliffs #2	50-318	86-08
FitzPatrick	50-333	85-23
Ginna	50-244	85-14
Ct. Yankee	50-213	85-24
Hope Creek	50-354	85-59
Indian Pt. #2	50-247	86-07
Indian Pt. #3	50-286	86-04
Limerick	50-352	86-10
Maine Yankee	50-309	85-33
Millstone #1	50-245	86-04
Millstone #2	50-336	86-04
Millstone #3	50-423	86-13
Nine Mile Pt. #1	50-220	85-10
Oyster Creek	50-219	86-16
Peach Bottom #2	50-277	85-28
Peach Bottom #3	50-278	85-26
Pilgrim	50-293	85-23
Salem #1	50-272	86-03
Salem #2	50-311	86-03
Seabrook	50-443	86-22
Shoreham	50-322	86-11
Susquehanna #1	50-387	85-27
Susquehanna #2	50-388	85-22
Three Mile Island #1	50-289	85-17
Vermont Yankee	50-271	85-38
Yankee Atomic	50-29	85-21

Appendix A

Sample Calculation

The chloride measurements at approximately 30 ppb were chosen for this example.

Step 1

The following data were in the BNL data base for chloride at approximately 30 ppb.

Site No.	Value (ppb)	Site No.	Value (ppb)	Site No.	Value (ppb)
1	30.7	16	27.1	31*	26.7
2	30	17	39.3	32*	71
3	30.2	18	28.8	33	not analyzed
4	24.3	19	28		
5	30.9	20	29.3		
6	30.9	21	23.3		
7	32.7	22	28.9		
8	38.3	23	not analyzed		
9	32	24	30.7		
10	34.2	25	not analyzed		
11	37	26*	41.3		
12	28.7	27	33		
13	not analyzed	28	-		
14	30.7	29	52		
15*	43.35	30	29.7		

*normalized data

Step 2

A grand average and standard deviation were calculated for all 28 values:

Grand average = 33.6804

$$= \frac{\Sigma\, xi}{n}$$

Standard deviation = 9.5116

$$= \left[\frac{\Sigma\, (xi-\bar{x})^2}{n-1}\right]^{1/2}$$

Step 3

From step two above, a range of 52.7036 - 14.6572 was established. The value from site 32 was determined to be an outlier.

Step 4

A new grand average and standard deviation were calculated excluding the outlier determined in Step 3.

grand average = 32.2981 (n=27)
standard deviation - 6.1966

Appendix A

Sample Calculation (continued)

Step 5

From step 4 above a range of 44.6914 - 19.9048 was established. The value from site 29 was determined to be an outlier.

Step 6

The above process was completed through seven more iterations as follows:

n	x	s	range	outlier sites
26	31.5404	4.8796	41.2996 - 21.7812	26, 15
24	30.6417	3.8514	38.3444 - 22.9390	17
23	30.2652	3.4571	37.1794 - 23.3510	8, 21
21	30.2143	2.7368	35.6880 - 24.7406	4, 11
19	30.1684	1.9542	34.0768 - 26.2600	10
18	29.9444	1.7419	33.4283 - 26.4605	None

Thus out of a total of 28 values 10 were outliers. The range of 33.4283 - 26.4605, which contained no outliers, was used for final comparison.

RECORD: 3 Code 25

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE			
CL	69.8646	3.6778	24	62.509	-	77.2202	71.3		
									ELEC
FL	144.627	5.18286	15	134.261	-	154.992	140		
FL	303.444	37.8747	18	227.695	-	379.194	300		
									ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.004E+06		
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	2.946E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.875E+06		
									TITR
FE	1.27239	.0679298	15	1.13653	-	1.40825	1.23		
FE	2.4702	.102406	19	2.26538	-	2.67501	2.4		
FE	3.62507	.116941	18	3.39119	-	3.85895	3.47		
									AAGF
CU	1.34168	.068628	17	1.20443	-	1.47894	1.39		
CU	2.63135	.0660583	18	2.49924	-	2.76347	2.73		
CU	3.9834	.100391	15	3.78262	-	4.18418	3.95		
									AAGF
AUH	1193.62	88.4432	9	1016.74	-	1370.51	1500	**	
AUH	112.915	9.42891	10	94.0572	-	131.773	157	**	
AUH	355.4	28.397	9	298.606	-	412.194	443	**	
									ELEC
HY	100.592	4.68925	13	91.2138	-	109.971	96.8		
HY	20.5538	.916166	13	18.7215	-	22.3862	19.5		
HY	50.55	1.88076	12	46.7885	-	54.3115	49.9		
									SPEC

** OUTLIER

RECORD: 4 Code 16

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE			
CL	9.64667	.352271	15	8.94212	-	10.3512	9		
CL	69.8646	3.6778	24	62.509	-	77.2202	70		
CL	29.9444	1.74195	18	26.4606	-	33.4283	27.1		TC
FL	10058.7	649.237	15	8760.19	-	11357.1	10800		
FL	72313.3	2591.43	15	67130.5	-	77496.2	71300		
FL	30344.4	3787.47	18	22769.5	-	37919.4	29500		ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	961000	**	
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	2.832E+06	**	
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.69E+06	**	TITR
PE	9.88078	.409625	19	9.06154	-	10.7	11	**	AAGF
CU	10.5254	.264233	18	9.99694	-	11.0539	9.89	**	
CU	15.9336	.401565	15	15.1305	-	16.7367	16.52		AAGF
HI	10.3064	.194564	11	9.91732	-	10.6956	10.4		
HI	15.2204	.749159	12	13.7221	-	16.7187	14.1		AAGF
CR	9.55203	.807373	12	7.93729	-	11.1668	9.67		
CR	14.7923	.932843	11	12.9266	-	16.658	15.1		AAGF

OUTLIER

RECORD: 5 Code 26

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE			
CL	96.4667	3.52271	15	89.4212	-	103.512	92		
CL	698.646	36.778	24	625.09	-	772.202	647		
CL	299.444	17.4195	18	264.606	-	334.283	413	**	
									MERT
FL	100.587	6.49237	15	87.6019	-	113.571	107		
FL	144.627	5.18286	15	134.261	-	154.992	150		
FL	303.444	37.8747	18	227.695	-	379.194	283		
									ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.005E+06		
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	3.011E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.932E+06		
									TITR
AHH	112915	9428.91	10	94057.2	-	131773	110000		
AHM	355400	28397	9	298606	-	412194	337000		
									SPEC
HY	100.592	4.68925	13	91.2138	-	109.971	95		
HY	20.5538	.916166	13	18.7215	-	22.3862	21.5		
HY	50.55	1.88076	12	46.7885	-	54.3115	56.8	**	
									SPEC

* OUTLIER

RECORD: 6 Code 21

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE		
CL	19.2933	.704543	15	17.8842	-	20.7024	20	
CL	139.729	7.35559	24	125.018	-	154.44	128.3	
CL	29.9444	1.74195	18	26.4606	-	33.4283	23.3	**
								ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.006E+06	
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	2.923E+06	
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.945E+06	
								TITR
FE	1272.39	67.9298	15	1136.53	-	1408.25	1070	**
FE	2470.2	102.406	19	2265.38	-	2675.01	2300	
FE	3625.07	116.941	18	3391.19	-	3858.95	3530	
								PLAS
CU	1341.68	68.628	17	1204.43	-	1478.94	1280	
CU	2631.35	66.0583	18	2499.23	-	2763.47	2630	
CU	3983.4	100.391	15	3782.62	-	4184.18	3980	
								PLAS
NI	1278.97	33.6022	10	1211.76	-	1346.17	1260	
NI	2576.61	48.6409	11	2479.33	-	2673.89	2580	
NI	3805.1	187.29	12	3430.53	-	4179.68	3890	
								PLAS
CR	1238.83	77.0573	10	1084.71	-	1392.94	1230	
CR	2388.01	201.843	12	1984.32	-	2791.7	2530	
CR	3698.07	233.211	11	3231.65	-	4164.49	3850	
								PLAS

** OUTLIER

RECORD: 7 Code 30

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE			
CL	19.2933	.704543	15	17.8842	-	20.7024	22.7	**	
CL	69.8646	3.6778	24	62.509	-	77.2202	68.6		
CL	29.9444	1.74195	18	26.4606	-	33.4283	29.7		
									ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	995000		
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	2.953E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.955E+06		
									TITR
FE	848.257	45.2865	15	757.684	-	938.83	800		
FE	1646.8	68.2708	19	1510.26	-	1783.34	1680		
FE	2416.71	77.9603	18	2260.79	-	2572.63	2500		
									AA
CU	894.455	45.752	17	802.951	-	985.959	860		
CU	1754.23	44.0389	18	1666.16	-	1842.31	1770		
CU	2655.6	66.9275	15	2521.75	-	2789.46	2580		
									AA
NI	852.645	22.4014	10	807.842	-	897.448	850		
NI	1717.74	32.4273	11	1652.89	-	1782.6	1690		
NI	2536.74	124.86	12	2287.02	-	2786.46	2440		
									AA
CR	825.884	51.3716	10	723.141	-	928.627	750		
CR	1592.01	134.562	12	1322.88	-	1861.13	1540		
CR	2465.38	155.474	11	2154.43	-	2776.33	2430		
									AA

** OUTLIER

RECORD: 8 Code 23

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE			
FL	20.1173	1.29847	15	17.5204	-	22.7143	20.7		
FL	72.3133	2.59143	15	67.1305	-	77.4962	68		
FL	30.3444	3.78747	18	22.7695	-	37.9194	30.3		
									ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.01E+06		
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	2.989E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.929E+06		
									TITR
FE	5.08954	.271719	15	4.5461	-	5.63298	5.05		
FE	9.88078	.409625	19	9.06154	-	10.7	9.65		
FE	14.5003	.467762	18	13.5648	-	15.4358	13.63		
									AAGF
CU	5.36673	.274512	17	4.81771	-	5.91576	4.35	**	
CU	10.5254	.264233	18	9.99694	-	11.0539	9.02	**	
CU	15.9336	.401565	15	15.1305	-	16.7367	13.09	**	
									AAGF
HY	100.592	4.68925	13	91.2138	-	109.971	103.7		
HY	20.5538	.916166	13	18.7215	-	22.3862	20.6		
HY	50.55	1.88076	12	46.7885	-	54.3115	52		
									SPEC

OUTLIER

RECORD: 9 Code 24

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE			
CL	9.64667	.352271	15	8.94212	-	10.3512	9.7		
CL	69.8646	3.6778	24	62.509	-	77.2202	70		
CL	29.9444	1.74195	18	26.4606	-	33.4283	30.7		
									IC
FL	10.0587	.649237	15	8.76019	-	11.3571	9.9		
FL	72.3133	2.59143	15	67.1305	-	77.4962	70.7		
FL	30.3444	3.78747	18	22.7695	-	37.9194	30.7		
									IC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.06E+06	**	
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	3.03E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.915E+06		
									TITR
FE	508.954	27.1719	15	454.61	-	563.298	511		
FE	988.078	40.9625	19	906.154	-	1070	982		
FE	1450.03	46.7762	18	1356.48	-	1543.58	1413		
									PLAS
CU	536.673	27.4512	17	481.771	-	591.576	498		
CU	1052.54	26.4233	18	999.694	-	1105.39	1012		
CU	1593.36	40.1565	15	1513.05	-	1673.67	1548		
									PLAS
NI	511.587	13.4409	10	484.705	-	538.469	494		
NI	1030.64	19.4564	11	991.732	-	1069.56	1009		
NI	1522.04	74.9159	12	1372.21	-	1671.87	1519		
									PLAS
CR	495.53	30.8229	10	433.884	-	557.176	489		
CR	955.203	80.7373	12	793.729	-	1116.68	968		
CR	1479.23	93.2843	11	1292.66	-	1665.8	1442		
									PLAS

* OUTLIER

RECORD: 10 Code 7.

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE			
CL	19.2933	.704543	15	17.8842	-	20.7024	24.7	**	
CL	69.8646	3.6778	24	62.509	-	77.2202	83.5	**	
CL	29.9444	1.74195	18	26.4606	-	33.4283	32.7		
									IC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.081E+06	**	
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	3.243E+06	**	
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	5.345E+06	**	
									TITR
FE	1272.39	67.9298	15	1136.53	-	1408.25	1310		
FE	2470.2	102.406	19	2265.38	-	2675.01	2490		
FE	3625.07	116.941	18	3391.19	-	3858.95	3640		
									AA
CU	1341.68	68.628	17	1204.43	-	1478.94	1350		
CU	2631.35	66.0583	18	2499.23	-	2763.47	2650		
CU	3983.4	100.391	15	3782.62	-	4184.18	3990		
									AA
NI	1278.97	33.6022	10	1211.76	-	1346.17	1400	**	
NI	2576.61	48.6409	11	2479.33	-	2673.89	2750	**	
NI	3805.1	187.29	12	3430.53	-	4179.68	4060		
									AA
CR	1238.83	77.0573	10	1084.71	-	1392.94	1270		
CR	2388.01	201.843	12	1984.32	-	2791.7	2010		
CR	3698.07	233.211	11	3231.65	-	4164.49	3970		
									AA

* OUTLIER

RECORD: 11 Code 9

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE		
CL	9.64667	.352271	15	8.94212	-	10.3512	10	
CL	69.8646	3.6778	24	62.509	-	77.2202	65.3	
CL	29.9444	1.74195	18	26.4606	-	33.4283	32	
								IC
FL	100.587	6.49237	15	87.6019	-	113.571	100	
FL	144.627	5.18286	15	134.261	-	154.992	130	**
FL	303.444	37.8747	18	227.695	-	379.194	340	
								ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.002E+06	
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	2.986E+06	
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.806E+06	**
								TITR
FE	5.08954	.271719	15	4.5461	-	5.63298	9.2	**
FE	9.88078	.409625	19	9.06154	-	10.7	16.9	**
FE	14.5003	.467762	18	13.5648	-	15.4358	20.3	**
								AAGF
CU	5.36673	.274512	17	4.81771	-	5.91576	5	
CU	10.5254	.264233	18	9.99694	-	11.0539	10.2	
CU	15.9336	.401565	15	15.1305	-	16.7367	16	
								AAGF
AUH	1193.62	88.4432	9	1016.74	-	1370.51	1200	
AUH	112.915	9.42891	10	94.0572	-	131.773	100	
AUH	355.4	28.397	9	298.606	-	412.194	360	
								SPEC
HY	100.592	4.68925	13	91.2138	-	109.971	101.3	
HY	20.5538	.916166	13	18.7215	-	22.3862	20	
HY	50.55	1.88076	12	46.7885	-	54.3115	51.3	
								SPEC

* OUTLIER

RECORD: 12 Code 19

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	69.8646	3.6778	24	62.509	-	77.2202	65.7		
CL	29.9444	1.74195	18	26.4606	-	33.4283	28		
									ELEC
FE	50.8954	2.71719	15	45.461	-	56.3298	59.4	**	
FE	9.88078	.409625	19	9.06154	-	10.7	9.5		
FE	14.5003	.467762	18	13.5648	-	15.4358	13.9		
									PLAS
CU	53.6673	2.74512	17	48.1771	-	59.1576	57.5		
CU	10.5254	.264233	18	9.99694	-	11.0539	26.6	**	
CU	15.9336	.401565	15	15.1305	-	16.7367	41.2	**	
									PLAS
NI	51.1587	1.34409	10	48.4705	-	53.8469	60.7	**	
NI	10.3064	.194564	11	9.91732	-	10.6956	16.2	**	
NI	15.2204	.749159	12	13.7221	-	16.7187	23.1	**	
									PLAS
CR	49.553	3.08229	10	43.3884	-	55.7176	59.5	**	
CR	9.55203	.807373	12	7.93729	-	11.1668	12.8	**	
CR	14.7923	.932843	11	12.9266	-	16.658	18	**	
									PLAS

** OUTLIER

RECORD: 13 Code 10

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	9.64667	.352271	15	8.94212	-	10.3512	9.6		
CL	69.8646	3.6778	24	62.509	-	77.2202	83.2	**	
CL	29.9444	1.74195	18	26.4606	-	33.4283	34.2	**	
									IC
FL	100.587	6.49237	15	87.6019	-	113.571	109		
FL	72.3133	2.59143	15	67.1305	-	77.4962	74.7		
FL	30.3444	3.78747	18	22.7695	-	37.9194	37.7		
									ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	995000		
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	3.013E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.962E+06		
									TITR
FE	101.791	5.43438	15	90.9221	-	112.66	98		
FE	98.8078	4.09625	19	90.6154	-	107	102.3		
FE	145.003	4.67762	18	135.648	-	154.358	146.5		
									ICPL
CU	107.335	5.49024	17	96.3541	-	118.315	111.7		
CU	105.254	2.64233	18	99.9694	-	110.539	103		
CU	159.336	4.01565	15	151.305	-	167.367	163.2		
									ICPL
HY	100.592	4.68925	13	91.2138	-	109.971	106		
HY	20.5538	.916166	13	18.7215	-	22.3862	21.7		
HY	50.55	1.88076	12	46.7885	-	54.3115	53.7		
									SPEC

** OUTLIER

RECORD: 14 Code 2

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	9.64667	.352271	15	8.94212	-	10.3512	10		
CL	69.8646	3.6778	24	62.509	-	77.2202	67.5		
CL	29.9444	1.74195	18	26.4606	-	33.4283	30		
									SPEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.081E+06	**	
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	2.919E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.919E+06		
									TITR
FE	1272.39	67.9298	15	1136.53	-	1408.25	1350		
FE	2470.2	102.406	19	2265.38	-	2675.01	2640		
FE	3625.07	116.941	18	3391.19	-	3858.95	3760		
									AA
CU	1341.68	68.628	17	1204.43	-	1478.94	1330		
CU	2631.35	66.0583	18	2499.23	-	2763.47	2720		
CU	3983.4	100.391	15	3782.62	-	4184.18	4060		
									AA
NI	1278.97	33.6022	10	1211.76	-	1346.17	1300		
NI	2576.61	48.6409	11	2479.33	-	2673.89	2550		
NI	3805.1	187.29	12	3430.53	-	4179.68	3640		
									AA
CR	1238.83	77.0573	10	1084.71	-	1392.94	1350		
CR	2388.01	201.843	12	1984.32	-	2791.7	2540		
CR	3698.07	233.211	11	3231.65	-	4164.49	3310		
									AA

** OUTLIER

RECORD: 15 Code 31

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE			
CL	96.4667	3.52271	15	89.4212	-	103.512	72	**	
CL	698.646	36.778	24	625.09	-	772.202	663		
CL	299.444	17.4195	18	264.606	-	334.283	267		
									SPEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	994000		
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	2.927E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.885E+06		
									TITR
FE	1272.39	67.9298	15	1136.53	-	1408.25	1040	**	
FE	2470.2	102.406	19	2265.38	-	2675.01	2460		
FE	3625.07	116.941	18	3391.19	-	3858.95	3720		
									ICPL
CU	1341.68	68.628	17	1204.43	-	1478.94	1350		
CU	2631.35	66.0583	18	2499.23	-	2763.47	2710		
CU	3983.4	100.391	15	3782.62	-	4184.18	4120		
									ICPL
NI	1278.97	33.6022	10	1211.76	-	1346.17	1270		
NI	2576.61	48.6409	11	2479.33	-	2673.89	2640		
NI	3805.1	187.29	12	3430.53	-	4179.68	3980		
									ICPL
CR	1238.83	77.0573	10	1084.71	-	1392.94	1280		
CR	2388.01	201.843	12	1984.32	-	2791.7	2580		
CR	3698.07	233.211	11	3231.65	-	4164.49	3880		
									ICPL

** OUTLIER

RECORD: 16 Code 27

ANALYTE	MEAN	STD DEV	N		RANGE		REPORTED VALUE		
CL	9.64667	.352271	15	8.94212	-	10.3512	12.7	**	
CL	69.8646	3.6778	24	62.509	-	77.2202	72		
CL	29.9444	1.74195	18	26.4606	-	33.4283	33		
									ELEC
FL	100.587	6.49237	15	87.6019	-	113.571	106		
FL	144.627	5.18286	15	134.261	-	154.992	145		
FL	303.444	37.8747	18	227.695	-	379.194	304		
									ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.002E+06		
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	2.081E+06	**	
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.89E+06		
									TITR
FE	5.08954	.271719	15	4.5461	-	5.63298	4	**	
FE	9.88078	.409625	19	9.06154	-	10.7	9.2		
FE	14.5003	.467762	18	13.5648	-	15.4358	14.2		
									AAGF
CU	5.36673	.274512	17	4.81771	-	5.91576	5.9		
CU	10.5254	.264233	18	9.99694	-	11.0539	10.4		
CU	15.9336	.401565	15	15.1305	-	16.7367	14.5	**	
									AAGF
HY	100.592	4.68925	13	91.2138	-	109.971	105.3		
HY	20.5538	.916166	13	18.7215	-	22.3862	20		
HY	50.55	1.88076	12	46.7885	-	54.3115	51		
									SPEC

** OUTLIER

RECORD: 17 Code 28

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	9.64667	.352271	15	8.94212	-	10.3512	16.6	**	
CL	69.8646	3.6778	24	62.509	-	77.2202	79	**	
									IC
FL	40.2347	2.59695	15	35.0408	-	45.4286	17.1	**	
FL	72.3133	2.59143	15	67.1305	-	77.4962	98.6	**	
FL	30.3444	3.78747	18	22.7695	-	37.9194	46.3	**	
									IC
									AAGF
CU	5.36673	.274512	17	4.81771	-	5.91576	4.3	**	
CU	10.5254	.264233	18	9.99694	-	11.0539	10.3		
CU	15.9336	.401565	15	15.1305	-	16.7367	11.7	**	
									AAGF
AUM	1193.62	88.4432	9	1016.74	-	1370.51	1207		
AUI	112.915	9.42891	10	94.0572	-	131.773	95		
AUM	355.4	28.397	9	298.606	-	412.194	348		
									SPEC
HY	100.592	4.68925	13	91.2138	-	109.971	87.3	**	
HY	205.538	9.16166	13	187.215	-	223.862	217		
HY	101.1	3.76153	12	93.5769	-	108.623	97		
									SPEC

* OUTLIER

RECORD: 18 Code 20

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
Cl.	9.64667	.352271	15	8.94212	-	10.3512	9.3		
Cl.	69.8646	3.6778	24	62.509	-	77.2202	71.3		
Cl.	29.9444	1.74195	18	26.4606	-	33.4283	29.3		
									IC
Fl.	50.2933	3.24619	15	43.801	-	56.7857	45		
Fl.	144.627	5.18286	15	134.261	-	154.992	140		
Fl.	30.3444	3.78747	18	22.7695	-	37.9194	25		
									ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.095E+06	**	
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	3.074E+06	**	
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	5.004E+06		
									TITR
AlH	1193.62	88.4432	9	1016.74	-	1370.51	1050		
AlH	112.915	9.42891	10	94.0572	-	131.773	116		
									ELEC
HY	100.592	4.68925	13	91.2138	-	109.971	97.5		
HY	20.5538	.916166	13	18.7215	-	22.3862	19.8		
HY	50.55	1.88076	12	46.7885	-	54.3115	49.5		
									SPEC

OUTLIER

RECORD: 19 Code 15

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	48.2333	1.76136	15	44.7106	-	51.7561	58	**	
CL	69.8646	3.6778	24	62.509	-	77.2202	105	**	
CL	59.8889	3.4839	18	52.9211	-	66.8567	86.7	**	
									MERT
FL	20.1173	1.29847	15	17.5204	-	22.7143	24.3	**	
FL	144.627	5.18286	15	134.261	-	154.992	151		
FL	30.3444	3.78747	18	22.7695	-	37.9194	34		
									ELEC
B	501308	3654.55	13	493999	-	508617	502500		
B	596917	7496.68	18	581923	-	611910	600300		
B	1.64494E+06	11650.1	17	1.62164E+06	-	1.66824E+06	1.636E+06		
									ITIR
FE	1017.91	54.3438	15	909.221	-	1126.6	1000		
FE	1976.16	81.9249	19	1812.31	-	2140.01	2040		
FE	2900.06	93.5524	18	2712.95	-	3087.16	2940		
									AA
CU	1073.35	54.9024	17	963.541	-	1183.15	1140		
CU	2105.08	52.8467	18	1999.39	-	2210.77	2140		
CU	3186.72	80.313	15	3026.09	-	3347.35	3160		
									AA
NI	1023.17	26.8817	10	969.411	-	1076.94	1060		
NI	2061.29	38.9127	11	1983.46	-	2139.11	2090		
NI	3044.08	149.832	12	2744.42	-	3343.75	3150		
									AA
CR	991.06	61.6459	10	867.769	-	1114.35	810	**	
CR	1910.41	161.475	12	1587.46	-	2233.36	1610		
CR	2958.45	186.569	11	2585.32	-	3331.59	2310	**	
									AA
AHM	596.811	44.2216	9	508.368	-	685.254	533.3		
AHM	112.915	9.42891	10	94.0572	-	131.773	127		
AHM	177.7	14.1985	9	149.303	-	206.097	173.3		
									ELEC
HY	100.592	4.68925	13	91.2138	-	109.971	101		
HY	20.5538	.916166	13	18.7215	-	22.3862	20		
HY	50.55	1.88076	12	46.7885	-	54.3115	50.3		
									SPEC

** OUTLIER

RECORD: 20 Code 3

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	9.64667	.352271	15	8.94212	-	10.3512	10.1		
CL	69.8646	3.6778	24	62.509	-	77.2202	73.7		
CL	29.9444	1.74195	18	26.4606	-	33.4283	30.2		
									IC
FL	10.0587	.649237	15	8.76019	-	11.3571	9.2		
FL	72.3133	2.59143	15	67.1305	-	77.4962	72.2		
FL	30.3444	3.78747	18	22.7695	-	37.9194	26.1		
									IC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.042E+06	**	
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	3.006E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.752E+06	**	
									TITR
FE	1017.91	54.3438	15	909.221	-	1126.6	1040		
FE	1976.16	81.9249	19	1812.31	-	2140.01	2010		
FE	2900.06	93.5524	18	2712.95	-	3087.16	3020		
									AA
CU	1073.35	54.9024	17	963.541	-	1183.15	1030		
CU	2105.08	52.8467	18	1999.39	-	2210.77	1910	**	
CU	3186.72	80.313	15	3026.09	-	3347.35	2870	**	
									AA
ANM	1193.62	88.4432	9	1016.74	-	1370.51	1247		
ANM	112.915	9.42891	10	94.0572	-	131.773	113.3		
ANM	355.4	28.397	9	298.606	-	412.194	370		
									SPEC
HY	100.592	4.68925	13	91.2138	-	109.971	103.7		
HY	20.5538	.916166	13	18.7215	-	22.3862	21.7		
HY	50.55	1.88076	12	46.7885	-	54.3115	49.3		
									SPEC

** OUTLIER

RECORD: 21 Code 17

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	19.2933	.704543	15	17.8842	-	20.7024	27.7	**	
CL	69.8646	3.6778	24	62.509	-	77.2202	72		
CL	29.9444	1.74195	18	26.4606	-	33.4283	39.3	**	
									ELEC
B	100262	730.91	13	98799.7	-	101723	99100		
B	59691.7	749.668	18	58192.3	-	61191	59700		
B	246741	1747.52	17	243246	-	250236	241700	**	
									TITR
FE	1017.91	54.3438	15	909.221	-	1126.6	1010		
FE	1976.16	81.9249	19	1812.31	-	2140.01	1950		
FE	2900.06	93.5524	18	2712.95	-	3087.16	2930		
									AA
CU	1073.35	54.9024	17	963.541	-	1183.15	1020		
CU	2105.08	52.8467	18	1999.39	-	2210.77	2090		
CU	3186.72	80.313	15	3026.09	-	3347.35	2990	**	
									AA
NI	1023.17	26.8817	10	969.411	-	1076.94	1000		
NI	2061.29	38.9127	11	1983.46	-	2139.11	2060		
NI	3044.08	149.832	12	2744.42	-	3343.75	3100		
									AA
CR	991.06	61.6459	10	867.769	-	1114.35	900		
CR	1910.41	161.475	12	1587.46	-	2233.36	1850		
CR	2958.45	186.569	11	2585.32	-	3331.59	2770		
									AA

** OUTLIER

RECORD: 22 Code 12

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	9.64667	.352271	15	8.94212	-	10.3512	9.8		
CL	69.8646	3.6778	24	62.509	-	77.2202	72.4		
CL	29.9444	1.74195	18	26.4606	-	33.4283	28.7		
								IC	
FL	40.2347	2.59695	15	35.0408	-	45.4286	37.7		
FL	72.3133	2.59143	15	67.1305	-	77.4962	73.7		
FL	30.3444	3.78747	18	22.7695	-	37.9194	27.7		
								ELEC	
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.029E+06	**	
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	3.002E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.962E+06		
								TITR	
FE	814.327	43.475	15	727.377	-	901.277	790		
FE	1580.93	65.5399	19	1449.85	-	1712.01	1640		
FE	1160.02	37.421	18	1085.18	-	1234.86	1210		
								AA	
CU	858.677	43.9219	17	770.833	-	946.521	890		
CU	1684.06	42.2773	18	1599.51	-	1768.62	1730		
CU	1274.69	32.1252	15	1210.44	-	1338.94	1320		
								AA	
NI	818.539	21.5054	10	775.528	-	861.55	830		
NI	1649.03	31.1302	11	1586.77	-	1711.29	1680		
NI	1217.63	59.9327	12	1097.77	-	1337.5	1290		
								AA	
CR	792.848	49.3167	10	694.215	-	891.482	860		
CR	1528.33	129.18	12	1269.97	-	1786.68	1670		
CR	1183.38	74.6275	11	1034.13	-	1332.64	1270		
								AA	
AMM	596.811	44.2216	9	508.368	-	685.254	597		
AMM	225.83	18.8578	10	188.114	-	263.546	238		
AMM	355.4	28.397	9	298.606	-	412.194	340		
								ELEC	
HY	100.592	4.68925	13	91.2138	-	109.971	108		
HY	20.5538	.916166	13	18.7215	-	22.3862	21		
HY	50.55	1.88076	12	46.7885	-	54.3115	53.7		
								SPEC	

AA OUTLIER

RECORD: 23 Code 18

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE		
CL	19.2933	.704543	15	17.8842	-	20.7024	18.4	
CL	69.8646	3.6778	24	62.509	-	77.2202	64.6	
CL	29.9444	1.74195	18	26.4606	-	33.4283	28.8	
								ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.017E+06	
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	3E+06	
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.93E+06	
								TITR
FE	254.477	13.586	15	227.305	-	281.649	228	
FE	494.039	20.4812	19	453.077	-	535.002	469	
FE	725.014	23.3881	18	678.238	-	771.79	725	
								DCPL
CU	268.337	13.7256	17	240.885	-	295.788	257	
CU	526.27	13.2117	18	499.847	-	552.694	508	
CU	796.68	20.0782	15	756.524	-	836.836	782	
								DCPL
NI	255.794	6.72043	10	242.353	-	269.234	249	
NI	515.322	9.72818	11	495.866	-	534.779	497	
NI	761.021	37.4579	12	686.105	-	835.937	748	
								DCPL
CR	247.765	15.4115	10	216.942	-	278.588	241	
CR	477.602	40.3686	12	396.864	-	558.339	476	
CR	739.614	46.6422	11	646.329	-	832.898	766	
								DCPL

* OUTLIER

RECORD: 24 Code 1

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	19.2933	.704543	15	17.8842	-	20.7024	27	**	
CL	69.8646	3.6778	24	62.509	-	77.2202	54.7	**	
CL	29.9444	1.74195	18	26.4606	-	33.4283	30.7		
									ELEC
FL	100.587	6.49237	15	87.6019	-	113.571	105.7		
FL	144.627	5.18286	15	134.261	-	154.992	146		
FL	60.6889	7.57495	18	45.539	-	75.8388	53		
									ELEC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.008E+06		
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	3E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.946E+06		
									TITR
FE	5.08954	.271719	15	4.5461	-	5.63298	5.6		
FE	9.88078	.409625	19	9.06154	-	10.7	9.64		
FE	14.5003	.467762	18	13.5648	-	15.4358	14.87		
									AAGF
CU	5.36673	.274512	17	4.81771	-	5.91576	4.61	**	
CU	10.5254	.264233	18	9.99694	-	11.0539	10.86		
CU	15.9336	.401565	15	15.1305	-	16.7367	15.5		
									AAGF
AUM	596.811	44.2216	9	508.368	-	685.254	670		
AUM	112.915	9.42891	10	94.0572	-	131.773	120		
AUM	355.4	28.397	9	298.606	-	412.194	410		
									SPEC
HY	100.592	4.68925	13	91.2138	-	109.971	101		
HY	20.5538	.916166	13	18.7215	-	22.3862	20.7		
HY	50.55	1.88076	12	46.7885	-	54.3115	49.7		
									SPEC

A OUTLIER

RECORD: 25 Code 14

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE			
CL	19.2933	.704543	15	17.8842	-	20.7024	18.8		
CL	69.8646	3.6778	24	62.509	-	77.2202	69.2		
CL	29.9444	1.74195	18	26.4606	-	33.4283	30.7		
									IC
FL	20.1173	1.29847	15	17.5204	-	22.7143	19.6		
FL	72.3133	2.59143	15	67.1305	-	77.4962	68.1		
FL	30.3444	3.78747	18	22.7695	-	37.9194	36.5		
									IC
B	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.009E+06		
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	2.977E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.945E+06		
									TITR
FE	304.763	16.2706	15	272.222	-	337.304	330		
FE	591.664	24.5284	19	542.607	-	640.721	630		
FE	868.28	28.0097	18	812.261	-	924.299	950	**	
									AA
CU	321.361	16.4379	17	288.485	-	354.237	320		
CU	630.264	15.8224	18	598.619	-	661.908	620		
CU	954.108	24.0458	15	906.016	-	1002.2	920		
									AA
ANM	1193.62	88.4432	9	1016.74	-	1370.51	1223		
ANM	112.915	9.42891	10	94.0572	-	131.773	113		
ANM	355.4	28.397	9	298.606	-	412.194	377		
									SPEC
HY	100.592	4.68925	13	91.2138	-	109.971	94.7		
HY	20.5538	.916166	13	18.7215	-	22.3862	16.7	**	
HY	50.55	1.88076	12	46.7885	-	54.3115	42	**	
									SPEC

* OUTLIER

RECORD: 26 Code 5

ANALYTE	MEAN	STD DEV	N	RANGE		REPORTED VALUE			
CL	9.64667	.352271	15	8.94212	-	10.3512	9.7		
CL	69.8646	3.6778	24	62.509	-	77.2202	70.9		
CL	29.9444	1.74195	18	26.4606	-	33.4283	30.9		
									IC
FL	50.2933	3.24619	15	43.801	-	56.7857	47.3		
FL	144.627	5.18286	15	134.261	-	154.992	126	**	
FL	60.6889	7.57495	18	45.539	-	75.8388	57		
									ELEC
B	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	3.054E+06		
B	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	4.99E+06		
									TITR
FE	610.99	32.6193	15	545.751	-	676.228	608		
FE	591.664	24.5284	19	542.607	-	640.721	617		
FE	483.343	15.5921	18	452.158	-	514.527	469		
									PLAS
CU	644.265	32.9546	17	578.356	-	710.175	627		
CU	630.264	15.8224	18	598.619	-	661.908	624		
CU	531.12	13.3855	15	504.349	-	557.891	461	**	
									PLAS
NI	614.15	16.1355	10	581.879	-	646.421	640		
NI	617.152	11.6505	11	593.851	-	640.453	627		
NI	507.347	24.972	12	457.403	-	557.291	470		
									PLAS
CR	594.874	37.0023	10	520.87	-	668.879	594		
CR	571.978	48.3457	12	475.287	-	668.669	607		
CR	493.076	31.0948	11	430.886	-	555.265	451		
									PLAS
ANM	1193.62	88.4432	9	1016.74	-	1370.51	1215		
ANM	225.83	18.8578	10	188.114	-	263.546	231.7		
ANM	355.4	28.397	9	298.606	-	412.194	310		
									SPEC
HY	100.592	4.68925	13	91.2138	-	109.971	93.7		
HY	20.5538	.916166	13	18.7215	-	22.3862	19		
HY	50.55	1.88076	12	46.7885	-	54.3115	47.7		
									SPEC

** OUTLIER

RECORD: 27 Code 29

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	9.64667	.352271	15	8.94212	-	10.3512	22.7	**	
CL	69.8646	3.6778	24	62.509	-	77.2202	76		
CL	29.9444	1.74195	18	26.4606	-	33.4283	52	**	ELEC
FL	40.2347	2.59695	15	35.0408	-	45.4286	43		
FL	72.3133	2.59143	15	67.1305	-	77.4962	78.7	**	
FL	30.3444	3.78747	18	22.7695	-	37.9194	36		ELEC

* OUTLIER

RECORD: 28 Code 32

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE	
CL	4.82333	.176136	15	4.47106	-	5.17561	5.59	**
CL	6.98646	.36778	24	6.2509	-	7.72202	3.29	**
CL	2.99444	.174195	18	2.64606	-	3.34283	7.1	**

IC

** OUTLIER

RECORD: 29 Code 11

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	69.8646	3.6778	24	62.509	-	77.2202	74		
CL	29.9444	1.74195	18	26.4606	-	33.4283	37	**	ELEC

** OUTLIER

RECORD: 30 Code 8

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE	
CL	19.2933	.704543	15	17.8842	-	20.7024	26	**
CL	69.8646	3.6778	24	62.509	-	77.2202	76.3	
CL	29.9444	1.74195	18	26.4606	-	33.4283	38.3	**

SPEC

** OUTLIER

RECORD: 31 . Code 22

ANALYTE	MEAN	STD.DEV	N	RANGE			REPORTED VALUE	
Cl.	19.2933	.704543	15	17.8842	-	20.7024	21.7	**
Cl.	69.8646	3.6778	24	62.509	-	77.2202	65.9	
Cl	29.9444	1.74195	18	26.4606	-	33.4283	28.9	

IC

** OUTLIER

RECORD: 32 Code 6

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE
CL	9.64667	.352271	15	8.94212	-	10.3512	9.7
CL	69.8646	3.6778	24	62.509	-	77.2202	70.9
CL	29.9444	1.74195	18	26.4606	-	33.4283	30.9

IC

* OUTLIER

RECORD: 33 Code 13

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE
FL	40.2347	2.59695	15	35.0408	-	45.4286	37.7
FL	72.3133	2.59143	15	67.1305	-	77.4962	73.7
EL	30.3444	3.78747	18	22.7695	-	37.9194	27.7

* OUTLIER

RECORD: 34 Code 4

NALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
CL	9.64667	.352271	15	8.94212	-	10.3512	10		
CL	69.8646	3.6778	24	62.509	-	77.2202	74		
CL	29.9444	1.74195	18	26.4606	-	33.4283	24.3	**	ELEC
FL	72.3133	2.59143	15	67.1305	-	77.4962	76.3		
FL	30.3444	3.78747	18	22.7695	-	37.9194	27.3		

OUTLIER

RECORD: 35 (BNL)

ANALYTE	MEAN	STD DEV	N	RANGE			REPORTED VALUE		
ACL	9.64667	.352271	15	8.94212	-	10.3512	10.3		
BCL	69.8646	3.6778	24	62.509	-	77.2202	69.7		
CCL	29.9444	1.74195	18	26.4606	-	33.4283	27.7		
									ELEC
AFL	100.587	6.49237	15	87.6019	-	113.571	96.1		
BFL	144.627	5.18286	15	134.261	-	154.992	149		
CFL	303.444	37.8747	18	227.695	-	379.194	329		
									ELEC
DB	1.00262E+06	7309.1	13	987997	-	1.01723E+06	1.014E+06		
EB	2.98458E+06	37483.4	18	2.90962E+06	-	3.05955E+06	3.047E+06		
FB	4.93482E+06	34950.4	17	4.86492E+06	-	5.00472E+06	5.04E+06	**	
									TITR
GFE	1272.39	67.9298	15	1136.53	-	1408.25	1280		
HFE	2470.2	102.406	19	2265.38	-	2675.01	2390		
IFE	3625.07	116.941	18	3391.19	-	3858.95	3430		
									AA
GCU	1341.68	68.628	17	1204.43	-	1478.94	1330		
HCU	2631.35	66.0583	18	2499.23	-	2763.47	2600		
ICU	3983.4	100.391	15	3782.62	-	4184.18	3840		
									AA
GNI	1278.97	33.6022	10	1211.76	-	1346.17	1320		
HNI	2576.61	48.6409	11	2479.33	-	2673.89	2580		
INI	3805.1	187.29	12	3430.53	-	4179.68	3790		
									AA
GCR	1238.83	77.0573	10	1084.71	-	1392.94	1200		
HCR	2388.01	201.843	12	1984.32	-	2791.7	2690		
ICR	3698.07	233.211	11	3231.65	-	4164.49	3740		
									AA
NAMM	1193.62	88.4432	9	1016.74	-	1370.51	1166.9		
NAMM	112.915	9.42891	10	94.0572	-	131.773	119.7		
OAMM	355.4	28.397	9	298.606	-	412.194	355		
									ELEC
PHY	100.592	4.68925	13	91.2138	-	109.971	100		
QHY	20.5538	.916166	13	18.7215	-	22.3862	19.3		
RHY	50.55	1.88076	12	46.7885	-	54.3115	52.4		
									SPEC

** OUTLIER