

**Bauxite & Aluminium**

Gove 2014 QAQC Report

13 October 2015

QAQC Report on the Gove 2014 drilling program to be reported to the NTDM

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## QAQC Summary

The Gove 2014 drill program resulted in 4,177 holes drilled for a total of 38,107 samples submitted for analysis. In addition to the drill samples, a further 399 field standards and 380 field duplicates were submitted. The drilling was completed between 17/07/2014 and 23/10/2014.

The certified GOV2011 field standard was used throughout the program. This standard was created by Rio Tinto for use at Gove during drilling campaigns. The sample is identical to the material collected from drilling. It is submitted in a calico bag of a similar weight to the drill samples. Samples are inserted into the drill sample sequence in a ratio of 1 every 100 samples.

The field standards follow the entire process of the drill sample through transport, preparation, and analysis.

Field duplicate samples are taken during the drilling by re-sampling the same interval as the original sample. Field duplicates are taken approximately 1 in every 100 samples.

The analysis was performed by Bureau Veritas (Ultra Trace) in Perth. Accompanying the 79 lab job numbers upon return were 1,797 lab repeats and 1,872 lab standards. The analysis was completed between 27/08/2014 and 08/12/2014.

## Standard Statistics

### Field Standard Statistics – GOV2011

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	% Outside Error Limit	Expected Mean	Calculated Mean	Bias	Status
Al2O3_pct	399	23	4	1	53.3	53.1078	-0.0036	Pass
Fe2O3_pct	399	50	16	4.01	9.23	9.2801	0.0054	Pass
LOI_pct	399	2	0	0	27.1	27.3	0.0074	Pass
SiO2_pct	399	68	28	7.02	6.40	6.4209	0.0033	Pass
TiO2_pct	399	31	4	1	3.42	3.4129	-0.0021	Pass

Field standard charts are shown below.

Lab standard statistics are shown in Appendix 1.

## Pair Statistics

### Field Duplicate Statistics

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	Mean Original	Mean Check	Bias	Mean AMRPD	% Samples AMRPD > 10%
Al2O3_pct	380	0	0	41.1621	41.1526	-0.0002	0.5616	0
Fe2O3_pct	380	12	0	17.9247	17.9344	0.0005	1.2782	0
LOI_pct	380	4	0	19.8658	19.8342	-0.0016	0.7085	0
SiO2_pct	380	25	3	18.7103	18.7438	0.0018	1.8519	0.7895
TiO2_pct	380	1	0	1.9108	1.9108	0	0.8429	0

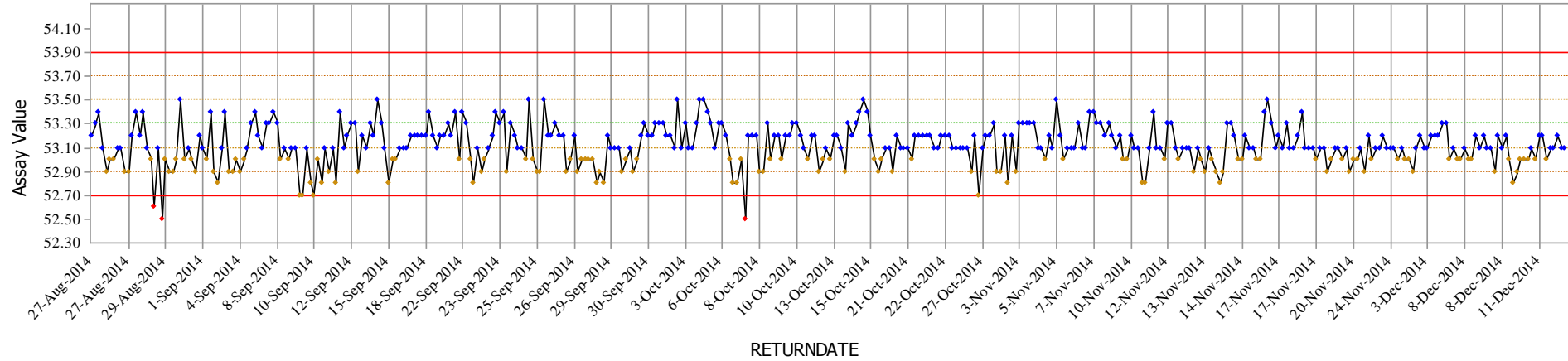
Field duplicate charts are shown below.

## Lab Repeat Statistics

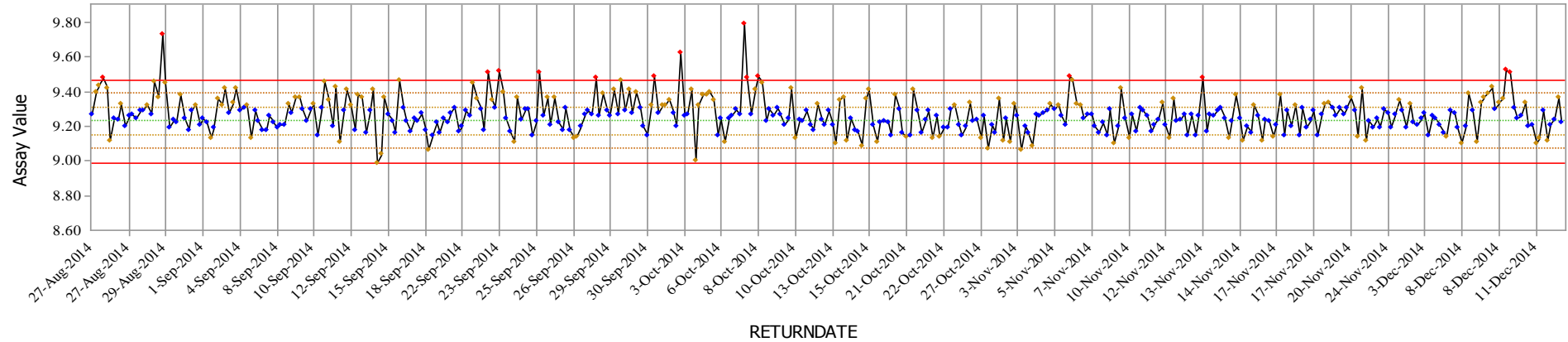
Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	Mean Original	Mean Check	Bias	Mean AMRPD	% Samples AMRPD > 10%
Al2O3_pct	1797	0	0	38.9506	38.9512	0	0.1335	0
Fe2O3_pct	1797	0	0	18.8235	18.8238	0	0.2492	0
LOI_pct	1797	0	0	18.428	18.4283	0	0.1033	0
SiO2_pct	1797	0	0	21.5684	21.5645	-0.0002	0.2363	0
TiO2_pct	1797	0	0	1.8046	1.8046	0	0.365	0

Field Standard Charts – GOV2011

Standards by Sequence : GOV2011 : Al2O3\_pct  
 GOV2011 : UT - 01-Aug-2014 to 31-Dec-2014

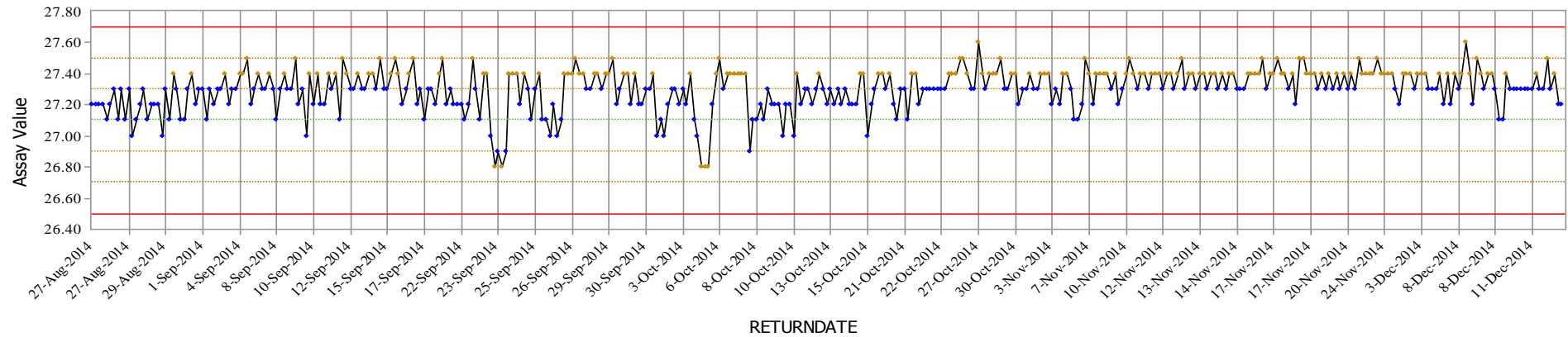


**Standards by Sequence : GOV2011 : Fe2O3\_pct**  
**GOV2011 : UT - 01-Aug-2014 to 31-Dec-2014**



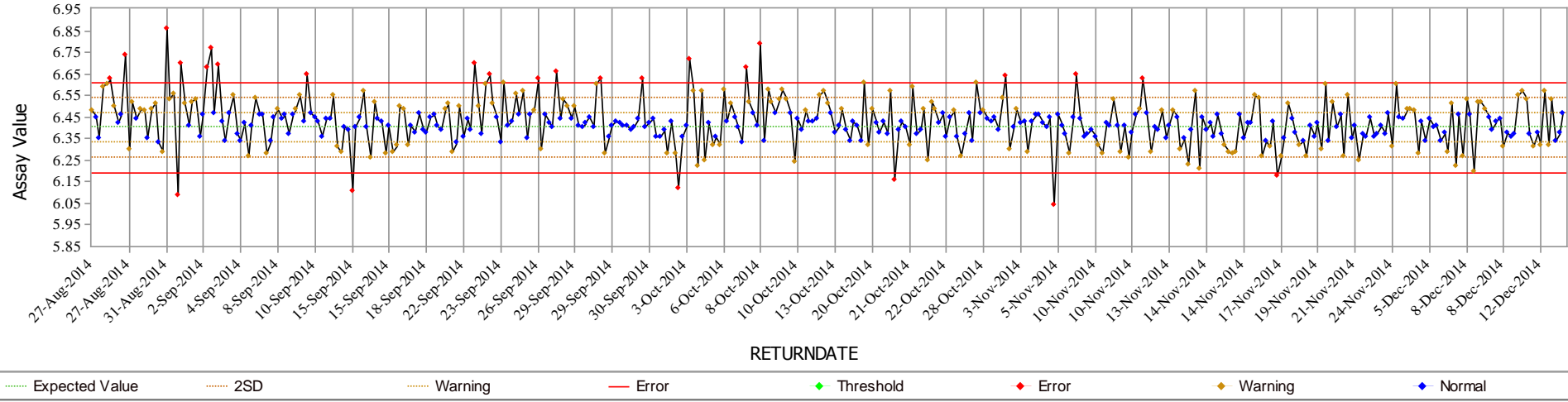
Expected Value      2SD      Warning      Error      Threshold      Error      Warning      Normal

**Standards by Sequence : GOV2011 : LOI\_pct**  
**GOV2011 : UT - 01-Aug-2014 to 31-Dec-2014**

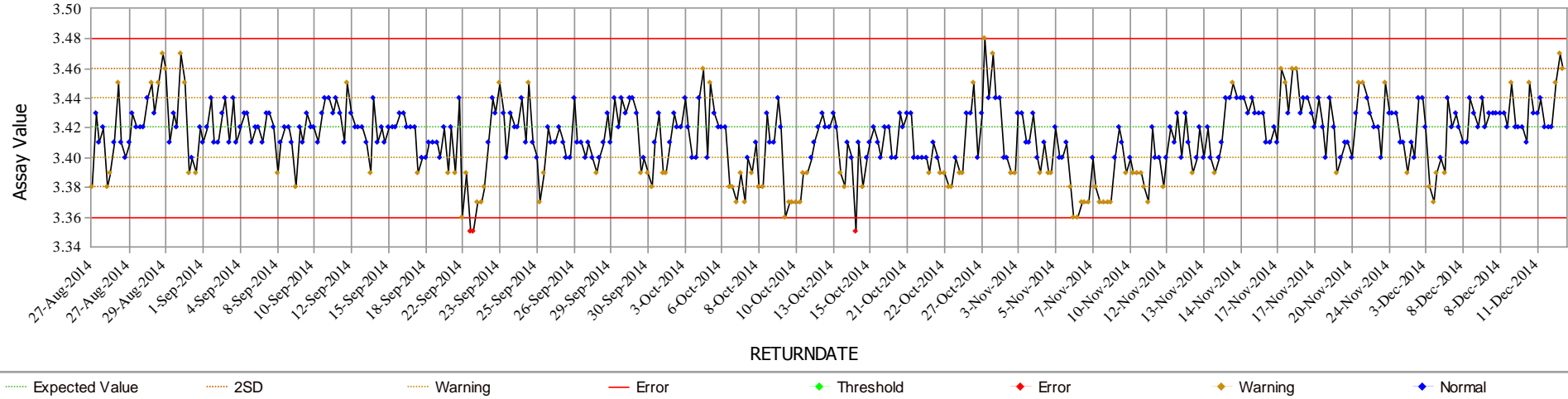


Expected Value      2SD      Warning      Error      Threshold      Error      Warning      Normal

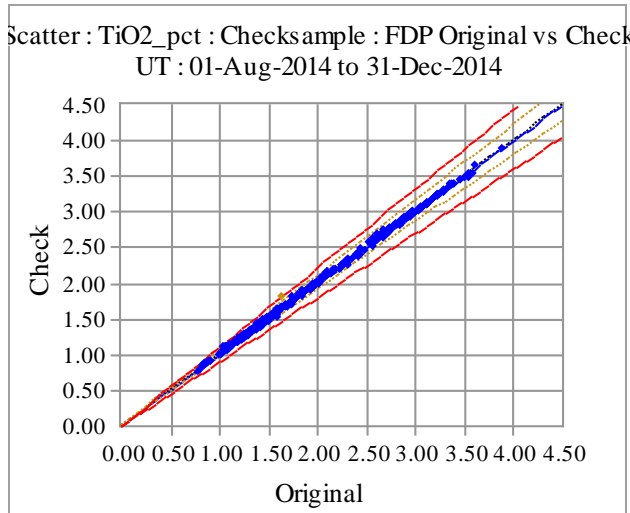
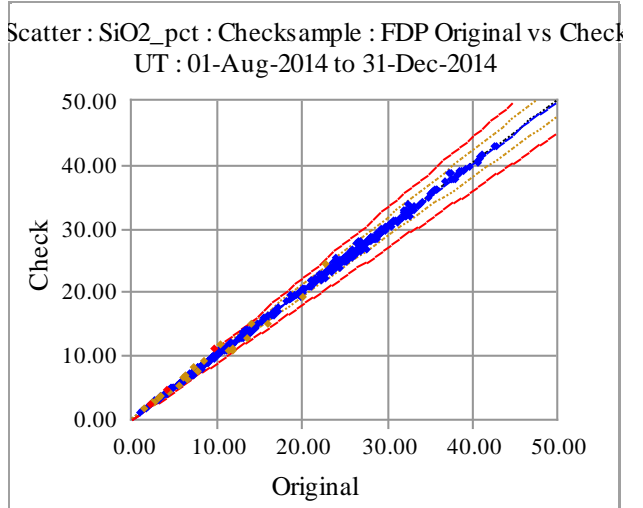
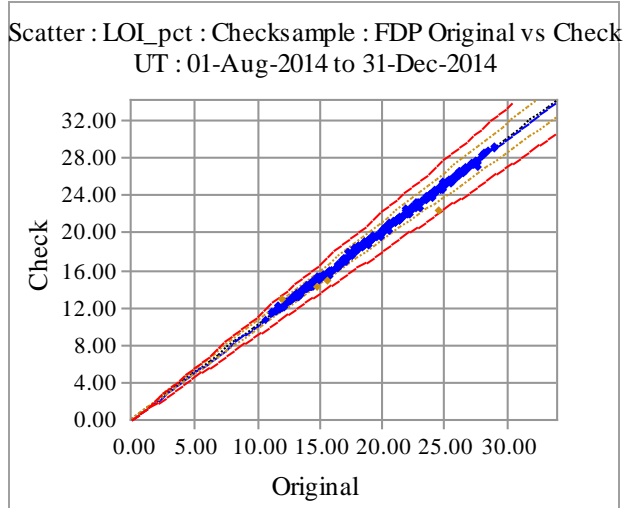
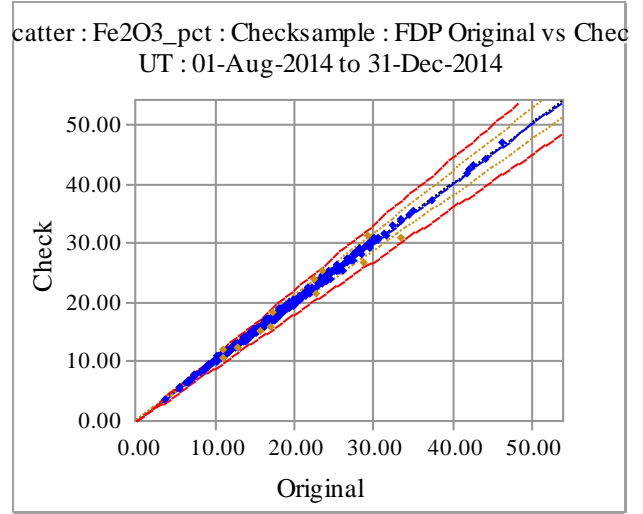
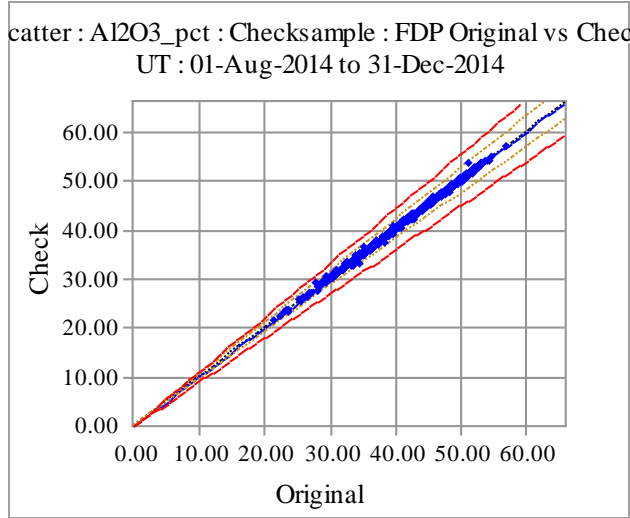
**Standards by Sequence : GOV2011 : SiO2\_pct**  
**GOV2011 : UT - 01-Aug-2014 to 31-Dec-2014**



**Standards by Sequence : GOV2011 : TiO2\_pct**  
**GOV2011 : UT - 01-Aug-2014 to 31-Dec-2014**

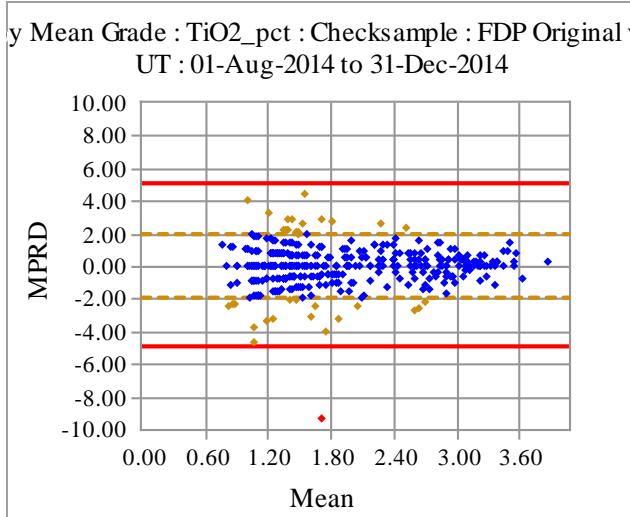
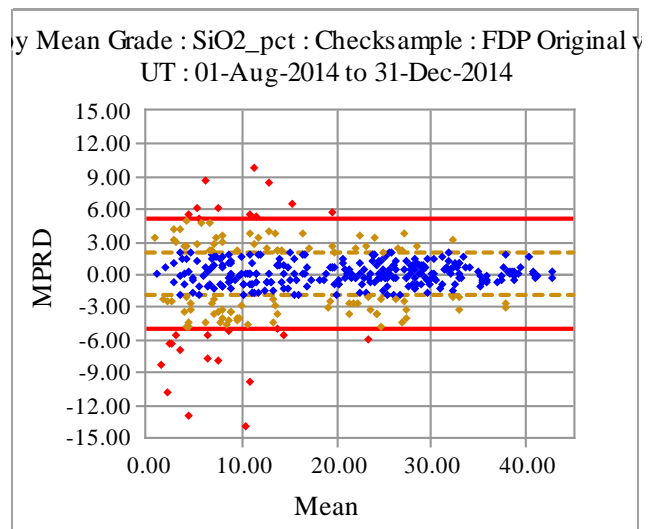
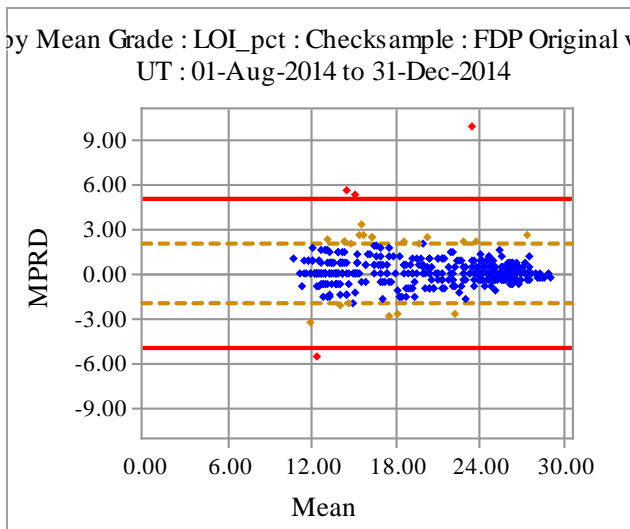
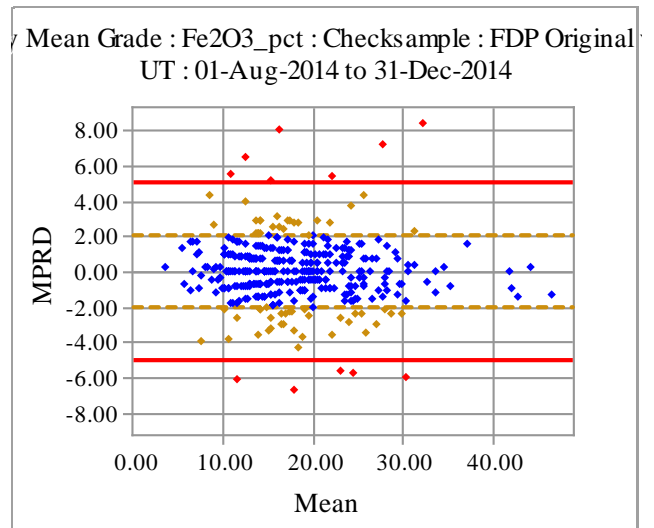
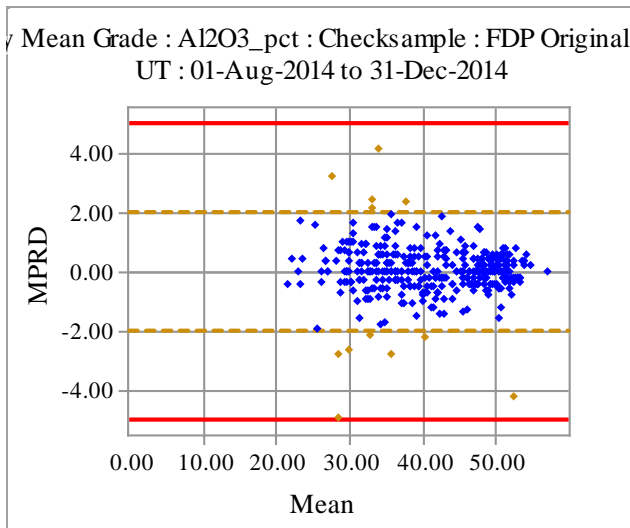


Field Duplicate Charts – Scatter





## Field Duplicate Charts – MPRD



## Appendix 1 – Lab Standard Statistics

### Lab Standard Statistics – ALCAN BAUXITE BXT-11

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	% Outside Error Limit	Expected Mean	Calculated Mean	Bias	Status
Al2O3_pct	71	0	0	0	n/a	54.269	n/a	Pass
Fe2O3_pct	71	0	0	0	n/a	12.669	n/a	Pass
LOI_pct	71	0	0	0	n/a	27.393	n/a	Pass
SiO2_pct	71	0	0	0	n/a	1.5537	n/a	Pass
TiO2_pct	71	0	0	0	n/a	3.3658	n/a	Pass

### Lab Standard Statistics – BCS CRM 348 BALL CLAY

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	% Outside Error Limit	Expected Mean	Calculated Mean	Bias	Status
Al2O3_pct	230	2	0	0	31.6	31.5543	-0.0014	Pass
Fe2O3_pct	230	4	0	0	1.04	1.0349	-0.0049	Pass
LOI_pct	237	226	1	0.4219	11.8	11.5949	-0.0174	Pass
SiO2_pct	230	3	0	0	51.1	51.0548	-0.0009	Pass
TiO2_pct	230	6	0	0	1.08	1.0867	0.0062	Pass

### Lab Standard Statistics – BCS-395 BAUXITE

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	% Outside Error Limit	Expected Mean	Calculated Mean	Bias	Status
Al2O3_pct	238	75	0	0	52.4	52.2929	-0.002	Pass
Fe2O3_pct	238	0	0	0	16.3	16.2765	-0.0014	Pass
LOI_pct	239	0	0	0	27.8	27.8285	0.001	Pass
SiO2_pct	238	25	0	0	1.24	1.2536	0.0109	Pass
TiO2_pct	238	1	0	0	1.93	1.9064	-0.0122	Pass

### Lab Standard Statistics – NIST BAUXITE 698

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	% Outside Error Limit	Expected Mean	Calculated Mean	Bias	Status
Al2O3_pct	216	0	0	0	48.2	48.2065	0.0001	Pass
Fe2O3_pct	216	93	0	0	19.6	19.3759	-0.0114	Pass
LOI_pct	216	0	0	0	27.3	27.2745	-0.0009	Pass
SiO2_pct	216	4	0	0	0.69	0.6921	0.003	Pass
TiO2_pct	216	0	0	0	2.38	2.3757	-0.0018	Pass

### Lab Standard Statistics – NIST SRM-600 BAUXITE (AUST)

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	% Outside Error Limit	Expected Mean	Calculated Mean	Bias	Status
Al2O3_pct	18	0	0	0	n/a	39.9944	n/a	Pass
Fe2O3_pct	18	0	0	0	n/a	17.0111	n/a	Pass
LOI_pct	18	0	0	0	n/a	20.6556	n/a	Pass
SiO2_pct	18	0	0	0	n/a	20.1667	n/a	Pass
TiO2_pct	18	0	0	0	n/a	1.2867	n/a	Pass

### Lab Standard Statistics – NIST-SRM 696

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	% Outside Error Limit	Expected Mean	Calculated Mean	Bias	Status
Al2O3_pct	163	10	0	0	54.5	54.5006	0	Pass
Fe2O3_pct	163	116	49	30.0613	8.7	8.6177	-0.0095	Pass
LOI_pct	163	0	0	0	n/a	29.9086	n/a	Pass
SiO2_pct	163	19	1	0.6135	3.79	3.8014	0.003	Pass
TiO2_pct	163	27	2	1.227	2.64	2.6448	0.0018	Pass

### Lab Standard Statistics – SARM 44 SILLIMANITE SCHIST

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	% Outside Error Limit	Expected Mean	Calculated Mean	Bias	Status
Al2O3_pct	232	45	0	0	58.8	58.8207	0.0004	Pass
Fe2O3_pct	232	207	80	34	2.06	2.0238	-0.0176	Pass
LOI_pct	232	0	0	0	n/a	1.3942	n/a	Pass
SiO2_pct	232	27	0	0	34.8	34.8319	0.0009	Pass
TiO2_pct	232	227	110	47	1.83	1.8741	0.0241	Pass

### Lab Standard Statistics – SARM 45 KINZINGITE

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	% Outside Error Limit	Expected Mean	Calculated Mean	Bias	Status
Al2O3_pct	233	85	0	0	26.2	26.312	0.0043	Pass
Fe2O3_pct	233	141	3	1	12.6	12.6433	0.0034	Pass
LOI_pct	233	0	0	0	n/a	0.8849	n/a	Pass
SiO2_pct	233	12	0	0	49.6	49.6288	0.0006	Pass
TiO2_pct	233	213	139	60	1.82	1.8624	0.0233	Pass

### Lab Standard Statistics – SARM 50 DOLERITE

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	% Outside Error Limit	Expected Mean	Calculated Mean	Bias	Status
Al2O3_pct	219	0	0	0	n/a	15.3612	n/a	Pass
Fe2O3_pct	219	0	0	0	n/a	11.0954	n/a	Pass
LOI_pct	14	0	0	0	n/a	0.0229	n/a	Pass
SiO2_pct	219	0	0	0	n/a	51.5393	n/a	Pass
TiO2_pct	219	0	0	0	n/a	0.8932	n/a	Pass

### Lab Standard Statistics – SARM-2

Assay Field	# Data points	# Outside Warning Limit	# Outside Error Limit	% Outside Error Limit	Expected Mean	Calculated Mean	Bias	Status
Al2O3_pct	230	143	0	0	17.3	17.2465	-0.0031	Pass
Fe2O3_pct	230	54	1	0	1.4	1.4037	0.0027	Pass
LOI_pct	230	0	0	0	n/a	0.2228	n/a	Pass
SiO2_pct	230	23	0	0	63.6	63.6	0	Pass
TiO2_pct	230	0	0	0	0.04	0.0453	0.1315	Pass