African Mineral Standards
MATRIX REFERENCE MATERIALS

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AMIS0353

Certified Reference Material

High grade epithermal gold ore, Masbate Gold Project, Philippines

Certificate of Analysis

Recommended Concentrations and Limits[1. 2.]
(at two Standard Deviations)

Certified Concentrations

Au Pb Collection	2.02	±	0.10	g/t
Cu M/ICP	55	±	6	ppm
Specific Gravity	2.68	±	0.10	

1. *Manufacturers recommended limits for use of the material as control samples, based on two standard deviations, calculated using "Between Laboratory" statistics for treatment of the data for trivial, non-trivial and technically invalid results. See sections 1, 9 and 12.*
2. *There is additional certified major element data presented on p2 and uncertified trace element data presented as an appendix.*

Major Element
Recommended Concentrations and Limits
(at two Standard Deviations)

Certified Concentrations

Al_2O_3	4.16	±	0.08	%
CaO	0.59	±	0.02	%
Cr_2O_3	0.030	±	0.004	%
Fe_2O_3	2.65	±	0.08	%
K_2O	1.77	±	0.02	%
MgO	0.55	±	0.03	%
MnO	0.22	±	0.02	%
Na_2O	0.18	±	0.02	%
SiO_2	87.88	±	0.28	%
TiO_2	0.16	±	0.01	%
LOI	1.43	±	0.08	%

Provisional Concentrations

S Comb/LECO	0.16	±	0.03	%

1. Intended Use: AMIS0353 is a certified reference material which may be used to demonstrate the validity of measurement results of a single analysis of high grade gold ore hosted by rocks with a similar grade and matrix

It is a matrix matched Certified Reference Material, fit for use as control samples in routine assay laboratory quality control when inserted within runs of samples and measured in parallel to the unknown. Its purpose is to monitor inter-laboratory or instrument bias and within lab precision. It can be used, indirectly, to establish the traceability of results to an SI system of units.

The recommended concentrations and limits for this material are property values based on a measurement campaign (round robin) and reflect consensus results from the laboratories that participated in the round robin.

Slight variations in analytical procedures between laboratories will reflect as slight biases to the recommended concentrations (see 19). Good laboratories will report results within the two standard deviation levels with a failure rate of <10 %.

The material can also be used for method development and for the calibration of equipment.

2. Origin of Material: The material for AMIS0353 was provided by SGS Minerals Services from the Filminera Resources Corp Masbate Gold Project. The Masbate gold deposits are located near the northern tip of the island of Masbate, 360 km south-east of the Philippines capital of Manila.

3. Approximate Mineral and Chemical Composition: The main deposit type in the region is a 'low-sulphidation' epithermal vein gold style of mineralisation. The principal host rocks to the gold mineralisation comprise fractured andesitic-dacitic, tufaceous agglomerate. Mineralisation occurs within quartz veins within the agglomerate, and also within associated altered wall rocks, breccias and stockwork zones. Individual mineralised quartz veins can be traced up to 3 km. The primary

mineral associated with gold (+minor silver) mineralisation is quartz, both in the form of fracture-filling quartz veins and in the silicification of the host rocks. Calcite is a common vein mineral but is generally present in smaller amounts or absent in the oxidized ore. Sulphides associated with quartz veining average between 1 and 10 % with pyrite making up 85 % to 95 % of all sulphides and as high as 40 per cent in places. Other sulphides present in significant percentages are galena, sphalerite, chalcopyrite and manganite.

4. Appearance: The material is a very fine powder. It is colored a Pale Yellowish Brown (Corstor 10 YR 6/4).

5. Handling instructions: The material is packaged in Laboratory Packs and Explorer Packs that must be shaken or otherwise agitated before use. Normal safety precautions for handling fine particulate matter are suggested, such as the use of safety glasses, breathing protection, gloves and a laboratory coat.

6. Method of Preparation: The material was crushed, dry-milled and air-classified to <54um. Wet sieve parti**c**le size analysis of random samples confirmed the material was 98.5% <54um. It was then blended in a double cone blender, systematically divided and then sealed into 1kg Laboratory Packs. Explorer Packs are subdivided from the Laboratory packs as required. Samples were randomly selected for homogeneity testing and third party analysis. Statistical analysis of both homogeneity and the consensus test results were carried out by independent statisticians.

7. Methods of Analysis requested:

1. Au – Pb collection ICP-OES or ICP-MS.
2. Multi-acid digest, including HF, ICP- OES or ICP-MS. Multi element scan.
3. Majors (Al_2O_3, CaO, Cr_2O_3, Fe_2O_3, K_2O, MgO, MnO, Na_2O, SiO_2, TiO_2. LOI.) XRF fusion.
4. SG – Gas Pycnometer.

8. Information requested:

1. State aliquots used for all determinations.
2. Report all results for gold in ppm
3. All results for major elements to be reported as oxides in percentages.
4. All results for multi-element scans to be reported in ppm.
5. Report all QC data, to include replicates, blanks and certified reference materials used.
6. State and provide brief description of analytical techniques used.

9. Method of Certification: Twenty five laboratories were each given eight randomly selected packages of sample. Twenty three of the laboratories submitted results in time for certification.

Final limits were calculated after first determining if all data was compatible within a spread normally expected for similar analytical methods done by reputable laboratories. Data from any one laboratory was then removed from further calculations when the mean of all analyses from that laboratory failed a “t test” of the global means of the other laboratories. The means and standard deviations were then re-calculated using all remaining data. Any analysis that fell outside of the new two standard deviations was removed from the ensuing data base. The mean and standard deviations were again calculated using the remaining data.

The “between-laboratory” standard deviation is used in the calculation to eliminate technically and statistically invalid data. Upper and lower limits are based on the standard deviation of the remaining data, which reflect individual analyses and can be used to monitor accuracy in routine laboratory quality control. This is different to limits based on standard deviations derived from grouped set of

analyses (see 12), which provide important measures for precision and trueness, but which are less useful for routine QC.

Standards with an RSD of near or less than 5 % are termed “Certified”, RSD’s of between near 5 % and 15 % are termed “Provisional”, and RSD’s over 15 % are termed “Informational”.

10. Participating Laboratories: The 23 out of 25 laboratories that provided results timeously were (not in same order as in the table of assays):

1. Activation Laboratories Pty Ltd (ActLabs) CA
2. ALS Chemex Laboratory Group Johannesburg SA
3. ALS Chemex Laboratory Group Perth WA
4. Anglo Gold Ashanti - Navachab Gold Mine Laboratory Namibia
5. Bureau Veritas (Namibia)
6. Genalysis Laboratory Services (South Africa) Pty
7. Genalysis Laboratory Services (W Australia P)
8. Intertek Utama Services (Indonesia)
9. Performance Laboratories Barberton
10. Performance Laboratories FS (Allanridge)
11. Performance Laboratories SA (Randfontein)
12. Set Point Laboratories (Isando) SA
13. SGS Australia Pty Ltd (Newburn) WA
14. SGS Geosol Laboratories Ltda (Brazil)
15. SGS Mineral Services Callao (Peru)
16. SGS Mineral Services Lakefield (Canada)
17. SGS Mwanza (Tanzania)
18. SGS NSW (Australia)
19. SGS Tarkwa (Ghana)
20. SGS Toronto (Canada)
21. SGS Townsville (Australia)
22. SGS Vancouver (Canada)
23. Ultra Trace (Pty) Ltd WA

11. Assay Data: Data as received from the laboratories for the important certified elements listed on p1 are set out below.

Lab Code	Au Pb Coll g/t	Al2O3 XRF %	CaO XRF %	Cr2O3 XRF %	Fe2O3 XRF %	K2O XRF %	MgO XRF %	MnO XRF %	Na2O XRF %	SiO2 XRF %	TiO2 XRF %	LOI %	S Comb LECO %	SG pyc
A	2.03	4.13	0.59	0.04	2.62	1.76	0.56	0.22	0.17	88.00	0.16	1.48	0.16	
A	2.02	4.14	0.59	0.03	2.60	1.77	0.54	0.22	0.19	87.83	0.15	1.50	0.16	
A	2.04	4.12	0.59	0.03	2.60	1.76	0.56	0.21	0.17	87.77	0.15	1.49	0.16	
A	2.04	4.13	0.59	0.03	2.61	1.76	0.56	0.22	0.17	87.84	0.16	1.45	0.16	
A	2.01	4.09	0.59	0.03	2.60	1.75	0.54	0.21	0.16	87.73	0.16	1.44	0.16	
A	2.02	4.16	0.59	0.03	2.63	1.79	0.57	0.22	0.22	88.06	0.16	1.42	0.15	
A	2.05	4.15	0.59	0.03	2.63	1.76	0.56	0.22	0.18	87.98	0.15	1.46	0.16	
A	2.01	4.10	0.59	0.03	2.62	1.76	0.56	0.22	0.18	88.20	0.15	1.55	0.16	
B	2.08													
B	2.05													
B	2.02													
B	1.92													
B	1.96													
B	1.90													
B	2.00													
B	2.06													
C	1.99	4.14	0.59	0.03	2.69	1.77	0.55	0.22	0.18	87.79	0.16	1.39		2.70
C	2.00	4.18	0.59	0.03	2.67	1.78	0.56	0.22	0.19	87.80	0.15	1.41		2.66
C	2.02	4.20	0.59	0.03	2.67	1.77	0.55	0.22	0.18	87.83	0.15	1.39		2.66
C	1.83	4.18	0.59	0.03	2.68	1.77	0.55	0.22	0.19	87.90	0.15	1.40		2.66
C	2.05	4.21	0.59	0.03	2.68	1.77	0.55	0.22	0.18	88.09	0.15	1.38		2.63
C	2.00	4.20	0.59	0.03	2.69	1.77	0.55	0.22	0.18	87.96	0.15	1.38		2.70
C	1.93	4.18	0.59	0.03	2.69	1.78	0.55	0.22	0.19	87.66	0.16	1.37		2.69
C	1.98	4.21	0.59	0.03	2.69	1.77	0.56	0.22	0.19	88.19	0.16	1.39		2.64

Assay data (cont)

Lab Code	Au Pb Coll g/t	Al2O3 XRF %	CaO XRF %	Cr2O3 XRF %	Fe2O3 XRF %	K2O XRF %	MgO XRF %	MnO XRF %	Na2O XRF %	SiO2 XRF %	TiO2 XRF %	LOI %	S Comb LECO %	SG pyc
D	1.96													
D	1.97													
D	2.03													
D	1.90													
D	1.90													
D	2.01													
D	2.00													
D	2.03													
E	2.01	4.16	0.60	0.04	2.64	1.76	0.55	0.22	0.19	88.12	0.16	1.20		
E	1.96	4.14	0.60	0.03	2.62	1.77	0.55	0.22	0.19	87.89	0.17	1.40		
E	2.05	4.14	0.59	0.04	2.61	1.77	0.55	0.22	0.19	87.65	0.17	1.40		
E	2.07	4.15	0.60	0.03	2.62	1.77	0.56	0.22	0.18	87.95	0.17	1.40		
E	2.02	4.16	0.60	0.03	2.63	1.78	0.55	0.22	0.17	88.27	0.16	1.40		
E	2.06	4.15	0.60	0.03	2.61	1.77	0.54	0.22	0.17	87.74	0.16	1.40		
E	2.05	4.17	0.59	0.03	2.63	1.77	0.55	0.22	0.19	87.99	0.16	1.40		
E	2.08	4.15	0.59	0.02	2.64	1.76	0.55	0.22	0.18	87.95	0.16	1.40		
F	2.07													
F	2.09													
F	2.04													
F	2.02													
F	2.01													
F	2.00													
F	2.03													
F	2.02													
G	1.99													2.61
G	2.02													2.68
G	1.87													2.70
G	1.99													2.69
G	1.92													2.70
G	1.98													2.72
G	1.98													2.71
G	1.94													2.73
H	1.50													
H	1.49													
H	1.48													
H	1.51													
H	1.53													
H	1.52													
H	1.48													
H	1.51													
I	1.95	4.16	0.59	0.03	2.67	1.77	0.55	0.22	0.18	87.87	0.16	1.45		2.74
I	1.95	4.17	0.59	0.03	2.65	1.77	0.54	0.22	0.18	87.91	0.16	1.43		2.77
I	1.94	4.17	0.59	0.03	2.65	1.76	0.55	0.22	0.18	87.94	0.16	1.44		2.76
I	2.05	4.16	0.59	0.03	2.67	1.77	0.55	0.22	0.18	88.00	0.16	1.44		2.74
I	2.13	4.16	0.59	0.03	2.67	1.77	0.55	0.22	0.18	87.92	0.16	1.45		2.73
I	2.03	4.17	0.58	0.03	2.67	1.77	0.54	0.22	0.18	87.98	0.16	1.43		2.75
I	2.01	4.16	0.58	0.03	2.65	1.76	0.54	0.22	0.18	87.87	0.16	1.43		2.78
I	2.09	4.19	0.59	0.03	2.65	1.77	0.55	0.22	0.18	87.99	0.16	1.41		2.73
J	2.12	4.14	0.59	0.03	2.68	1.78	0.56	0.23	0.20	87.70	0.15	1.38	0.17	
J	2.03	4.14	0.59	0.03	2.65	1.77	0.54	0.23	0.19	87.80	0.15	1.42	0.18	
J	2.11	4.15	0.59	0.03	2.70	1.79	0.54	0.23	0.19	87.80	0.15	1.34	0.18	
J	2.05	4.13	0.59	0.03	2.67	1.78	0.54	0.23	0.18	87.80	0.15	1.37	0.18	
J	2.04	4.15	0.60	0.03	2.67	1.77	0.54	0.23	0.18	87.80	0.16	1.38	0.18	
J	2.06	4.14	0.59	0.03	2.64	1.78	0.54	0.23	0.18	87.80	0.15	1.37	0.18	
J	2.09	4.14	0.60	0.03	2.70	1.79	0.54	0.23	0.18	87.80	0.15	1.36	0.18	
J	2.15	4.13	0.59	0.03	2.70	1.79	0.54	0.23	0.19	87.70	0.16	1.35	0.18	
K	2.33	4.10	0.55	0.03	2.63	1.77	0.50	0.22		87.90	0.15	1.95		2.65
K	2.42	4.13	0.55	0.03	2.62	1.76	0.50	0.22		87.94	0.16	1.94		2.66
K	2.14	4.09	0.56	0.03	2.63	1.76	0.51	0.22		87.88	0.15	1.96		2.67
K	1.99	4.03	0.54	0.03	2.65	1.76	0.50	0.22		87.93	0.15	1.93		2.64
K	2.02	4.10	0.54	0.03	2.63	1.78	0.50	0.22		88.90	0.15	1.95		2.65
K	2.03	4.13	0.55	0.03	2.65	1.76	0.50	0.22		88.01	0.15	1.94		2.65
K	1.79	4.15	0.55	0.03	2.60	1.75	0.50	0.22		87.89	0.16	2.03		2.65
K	1.93	4.13	0.55	0.03	2.65	1.74	0.49	0.22		87.95	0.16	1.96		2.66
L	2.10												0.17	2.75
L	2.06												0.16	2.77
L	2.08												0.16	2.75
L	2.00												0.16	2.75
L	2.04												0.16	2.75
L	2.03												0.18	2.66
L	2.06												0.17	2.75
L	2.11												0.16	2.75

Assay data (cont)

Lab Code	Au Pb Coll g/t	Al2O3 XRF %	CaO XRF %	Cr2O3 XRF %	Fe2O3 XRF %	K2O XRF %	MgO XRF %	MnO XRF %	Na2O XRF %	SiO2 XRF %	TiO2 XRF %	LOI %	S Comb LECO %	SG pyc
M	2.22													
M	2.19													
M	2.23													
M	2.24													
M	2.24													
M	2.05													
M	2.26													
M	2.22													
N	2.13	4.24	0.60	0.03	2.73	1.79	0.57	0.22	0.18	88.60	0.16	1.49	0.15	
N	2.10	4.24	0.59	0.03	2.72	1.78	0.57	0.22	0.19	88.50	0.16	1.57	0.14	
N	2.16	4.24	0.58	0.03	2.74	1.72	0.57	0.22	0.18	88.80	0.15	1.48	0.14	
N	2.10	4.19	0.60	0.04	2.71	1.77	0.56	0.22	0.18	88.00	0.16	1.47	0.14	
N	2.10	4.23	0.60	0.04	2.73	1.78	0.57	0.23	0.18	88.80	0.16	1.47	0.14	
N	2.07	4.24	0.60	0.04	2.71	1.78	0.57	0.23	0.18	88.30	0.15	1.52	0.14	
N	2.14	4.20	0.61	0.03	2.71	1.77	0.57	0.23	0.18	88.30	0.16	1.49	0.15	
N	2.10	4.23	0.60	0.03	2.73	1.78	0.57	0.23	0.18	88.70	0.16	1.51	0.15	
O	2.05	4.15	0.57	0.03	2.76	1.74	0.53	0.22	0.16	87.60	0.20	1.45		2.63
O	2.00	4.14	0.58	0.03	2.67	1.75	0.53	0.21	0.16	87.80	0.16	1.46		2.64
O	1.96	4.16	0.57	0.03	2.67	1.76	0.52	0.21	0.15	87.70	0.16	1.47		2.63
O	2.04	4.18	0.58	0.03	2.68	1.76	0.53	0.22	0.15	87.70	0.16	1.45		2.62
O	1.95	4.14	0.58	0.03	2.66	1.74	0.52	0.21	0.15	87.90	0.15	1.46		2.63
O	2.01	4.13	0.57	0.03	2.79	1.76	0.54	0.22	0.16	87.60	0.19	1.47		2.60
O	2.00	4.13	0.57	0.03	2.63	1.74	0.52	0.21	0.16	87.90	0.15	1.46		2.61
O	1.94	4.14	0.57	0.03	2.69	1.76	0.53	0.21	0.16	87.80	0.16	1.44		2.65
P	2.03												0.14	2.73
P	2.00												0.14	2.72
P	2.03												0.14	2.72
P	2.03												0.13	2.71
P	2.01												0.13	2.73
P	1.98												0.12	2.72
P	2.08												0.13	2.72
P	2.06												0.12	2.72
Q	2.02	4.22	0.60	0.03	2.62	1.76	0.47	0.24	0.10	87.73	0.16	1.91		2.65
Q	2.03	4.22	0.60	0.03	2.60	1.76	0.46	0.24	0.10	87.45	0.16	1.88		2.66
Q	2.02	4.24	0.60	0.02	2.62	1.76	0.48	0.24	0.10	87.20	0.16	1.93		2.66
Q	2.01	4.21	0.59	0.02	2.60	1.76	0.46	0.24	0.10	87.66	0.16	1.91		2.65
Q	2.02	4.22	0.60	0.03	2.60	1.76	0.47	0.24	0.10	87.69	0.16	1.93		2.66
Q	2.02	4.21	0.60	0.03	2.59	1.76	0.47	0.24	0.10	87.26	0.16	1.93		2.65
Q	2.04	4.22	0.60	0.03	2.62	1.76	0.47	0.24	0.10	87.51	0.16	1.90		2.65
Q	2.03	4.26	0.59	0.03	2.60	1.76	0.50	0.24	0.10	87.08	0.16	1.94		2.65
R													0.17	2.62
R													0.16	2.61
R													0.17	2.62
R													0.16	2.62
R													0.17	2.61
R													0.16	2.61
R													0.17	2.62
R													0.16	2.60
S	2.01													2.67
S	2.06													2.67
S	2.08													2.67
S	2.03													2.69
S	2.04													2.68
S	2.05													2.67
S	2.06													2.67
S	2.03													2.67
U	2.01													
U	1.96													
U	1.98													
U	1.97													
U	1.98													
U	2.03													
U	2.08													
U	2.07													
V	1.95												0.16	
V	1.88												0.16	
V	2.00												0.16	
V	1.90												0.17	
V	1.94												0.16	
V	2.01												0.16	
V	1.99												0.16	
V	1.92												0.17	

Assay data (cont)

Lab Code	Au Pb Coll g/t	Al2O3 XRF %	CaO XRF %	Cr2O3 XRF %	Fe2O3 XRF %	K2O XRF %	MgO XRF %	MnO XRF %	Na2O XRF %	SiO2 XRF %	TiO2 XRF %	LOI %	S Comb LECO %	SG pyc
W	2.03	4.14	0.60	0.03	2.62	1.77	0.56	0.23	0.19		0.16			2.74
W	2.02	4.14	0.60	0.03	2.63	1.76	0.55	0.23	0.19		0.16			2.73
W	2.04	4.16	0.60	0.03	2.67	1.74	0.55	0.23	0.19		0.15			2.72
W	2.05	4.18	0.59	0.03	2.67	1.77	0.55	0.23	0.19		0.16			2.71
W	2.06	4.14	0.59	0.02	2.65	1.75	0.55	0.23	0.18		0.15			2.71
W	2.03	4.14	0.62	0.02	2.66	1.78	0.56	0.24	0.19		0.16			2.71
W	2.07	4.16	0.60	0.03	2.69	1.77	0.55	0.24	0.19		0.16			2.71
W	2.04	4.14	0.57	0.03	2.65	1.76	0.53	0.24	0.19		0.15			2.71
Y	2.06													
Y	2.00													
Y	2.00													
Y	1.92													
Y	2.00													
Y	2.04													
Y	1.96													
Y	1.96													

12. Measurement of Uncertainty: (*ref Dr Hugh Bartlett, Hugh Bartlett Consulting CC.)*

The samples used in this certification process have been selected in such a way as to represent the entire batch of material and were taken from the final packaged units; therefore all possible sources of uncertainty (sample uncertainty and measurement uncertainty) are included in the final combined standard uncertainty determination.

The uncertainty measurement takes into consideration the between lab and the within lab variances and is calculated from the square roots of the variances of these components using the formula:

Combined standard uncertainty=sqrt((between lab.var/no of labs) + (mean square within lab.var /no of assays))

These uncertainty measurements may be used, by laboratories, as a component for calculating the total uncertainty for method validation according to the relevant ISO guidelines.

Analyte	Method	unit	S [1]	σ_L [2]	Sw [3]	CSU [4]
Au	Pb Coll	g/t	0.055	0.022	0.042	0.006
Al_2O_3	XRF	%	0.038	0.032	0.017	0.010
CaO	XRF	%	0.009	0.007	0.006	0.002
Cr_2O_3	XRF	%	0.002		0.002	0.0002
Fe_2O_3	XRF	%	0.038	0.031	0.016	0.010
K_2O	XRF	%	0.010	0.006	0.007	0.002
MgO	XRF	%	0.020	0.018	0.007	0.006
MnO	XRF	%	0.008	0.007	0.003	0.002
SiO_2	XRF	%	0.144	0.072	0.129	0.032
TiO_2	XRF	%	0.005	0.003	0.004	0.000
LOI		%	0.044	0.045	0.018	0.017
S	Comb/LECO	%	0.014	0.015	0.005	0.006
SG	pyc		0.046	0.037	0.019	0.011

1. *S - Std Dev for use on control charts.*
2. *σ_L - Betw Lab Std Dev, for use to calculate a measure of accuracy.*
3. *Sw - Within Lab Stc Dev, for use to calculate a measure of precision.*
4. *CSU - Combined Standard Uncertainty, a component for use to calculate the total uncertainty in method validation.*

13. Certified values: The Certified, Provisional and Indicated values listed on p1 of this certificate fulfill the AMIS statistical criteria regarding agreement for certification and have been independently validated by Dr Barry Smee.

14. Metrological Traceability: The values quoted herein are based on the consensus values derived from statistical analysis of the data from an inter laboratory measurement program. Traceability to SI units is via the standards used by the individual laboratories the majority of which are accredited and who have maintained measurement traceability during the analytical process.

15. Certification: AMIS0353 is a new material.

16. Period of validity: The certified values are valid for this product, while still sealed in its original packaging, until notification to the contrary. The stability of the material will be subject to continuous testing for the duration of the inventory. Should product stability become an issue, all customers will be notified and notification to that effect will be placed on the www.amis.co.za website.

17. Minimum sample size: The majority of laboratories reporting used a 0.5g sample size for the ICP and a 30g sample size for the fire assay. These are the recommended minimum sample sizes for the use of this material.

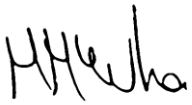
18. Availability: This product is available in Laboratory Packs containing 1kg of material and Explorer Packs containing custom weights (from 50 to 250g) of material. Laboratory Packs are sealed bottles delivered in sealed foil pouches. Explorer Packs contain material in standard geochem envelopes, nitrogen flushed and vacuum sealed in foil pouches.

19. Recommended use: The data used to characterize this CRM has been scrutinized using outlier treatment techniques. This, together with the number of participating laboratories, should overcome any “inter-laboratory issues” and should lead to a very accurate measure for the given methods; notwithstanding the underlying assumption that what the good inter-laboratory labs reported was accurate. However an amount of bad data might have had an effect, resulting in limits which in some situations might be too broad for the effective monitoring of a single analytical method, laboratory or production process. Users should therefore set their own limits based on their own data quality objectives and control measurements, after determining the performance characteristics of their own particular method, using a minimum of 20 analyses using this CRM. User set limits should normally be within the limits recommended on p1 and 2 of this certificate.

20. Legal Notice: This certificate and the reference material described in it have been prepared with due care and attention. However AMIS, Set Point Technology (Pty) Ltd, Mike McWha, Dr Barry Smee and Smee and Associates Ltd; accept no liability for any decisions or actions taken following the use of the reference material.

13 October 2012

Certifying Officers:



African Mineral Standards: _____

Mike McWha
BSc (Hons), FGSSA, MAusIMM, Pr.Sci.Nat

Geochemist:_____

Barry W. Smee
BSc, PhD, P.Geo, (B.C.)

Appendix – uncertified trace element statistics

Analyte	Method	Unit	Mean	2SD	RSD%	n
Ag	M/ICP	ppm	2.98	0.33	5.56	82
Al	M/ICP	%	2.15	0.19	4.44	104
As	M/ICP	ppm	50.3	8.97	8.92	83
Ba	M/ICP	ppm	140	68.6	24.5	96
Be	M/ICP	ppm	0.60	0.41	34.1	74
Bi	M/ICP	ppm	0.10	0.02	12.1	66
Ca	M/ICP	%	0.43	0.04	4.49	100
Cd	M/ICP	ppm	0.78	0.21	13.2	72
Ce	M/ICP	ppm	6.92	1.09	7.87	72
Co	M/ICP	ppm	6.85	2.56	18.7	100
Cr	M/ICP	ppm	158	91.7	29.1	111
Cs	M/ICP	ppm	1.66	0.17	5.19	56
Cu	M/ICP	ppm	54.9	5.60	5.10	110
Dy	M/ICP	ppm	0.76	0.09	5.89	40
Er	M/ICP	ppm	0.44	0.12	13.4	40
Eu	M/ICP	ppm	0.29	0.06	10.4	39
Fe	M/ICP	%	1.89	0.19	5.03	97
Ga	M/ICP	ppm	5.12	1.05	10.2	80
Gd	M/ICP	ppm	0.79	0.19	12.1	40
Ge	M/ICP	ppm	0.74	1.04	70.5	16
Hf	M/ICP	ppm	0.42	0.11	13.2	77
Ho	M/ICP	ppm	0.16	0.03	10.2	36
In	M/ICP	ppm	0.06	0.01	11.6	63
K	M/ICP	%	1.43	0.18	6.48	104
La	M/ICP	ppm	3.75	0.57	7.65	81
Li	M/ICP	ppm	83.7	14.9	8.88	80
Lu	M/ICP	ppm	0.06	0.04	29.8	64
Mg	M/ICP	%	0.31	0.05	8.08	96
Mn	M/ICP	ppm	1715	251	7.33	111
Mo	M/ICP	ppm	8.42	1.25	7.40	95
Na	M/ICP	%	0.13	0.03	10.1	103
Nb	M/ICP	ppm	1.24	0.37	14.8	80
Nd	M/ICP	ppm	3.50	0.62	8.86	38
Ni	M/ICP	ppm	24.0	2.84	5.91	85
P	M/ICP	ppm	239	65.4	13.7	87
Pb	M/ICP	ppm	18.7	3.30	8.83	97
Pr	M/ICP	ppm	0.89	0.09	5.28	36
Rb	M/ICP	ppm	48.7	6.37	6.53	72
S	M/ICP	%	0.16	0.02	6.70	98
Sb	M/ICP	ppm	12.1	2.89	12.0	92
Sc	M/ICP	ppm	5.05	1.19	11.8	87
Se	M/ICP	ppm	1.56	0.47	14.9	8
Si	M/ICP	%	41.1	0.53	0.64	8
Sm	M/ICP	ppm	0.81	0.13	7.96	39
Sn	M/ICP	ppm	0.87	0.62	35.9	44
Sr	M/ICP	ppm	67.8	8.04	5.93	96
Ta	M/ICP	ppm	0.07	0.04	25.0	35
Tb	M/ICP	ppm	0.11	0.02	9.60	68
Te	M/ICP	ppm	1.10	0.33	14.9	77
Th	M/ICP	ppm	0.51	0.14	13.9	71
Ti	M/ICP	%	0.09	0.02	8.44	88
Tl	M/ICP	ppm	1.17	0.14	5.89	79
Tm	M/ICP	ppm	0.09	0.14	76.5	37
V	M/ICP	ppm	49.9	5.98	5.98	97
W	M/ICP	ppm	1.07	0.90	41.9	80
Y	M/ICP	ppm	3.87	0.77	9.95	81
Yb	M/ICP	ppm	0.39	0.15	19.2	72
Zn	M/ICP	ppm	125	15.2	6.10	99
Zr	M/ICP	ppm	13.9	5.70	20.4	80