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Platreef, low grade, PGE Reference Material

AMIS0124

Certificate of Analysis

Recommended Concentrations and two “Between Laboratory” Standard Deviations

Certified Concentrations

Pt (Pb Coll)	0.84	±	0.07	g/t
Pd (NIS)	0.85	±	0.06	g/t
Pd (Pb Coll)	0.87	±	0.06	g/t
Co (XRF)	100	±	5.5	ppm
Cr (XRF)	1319	±	107	ppm
Cu (M/ICP)	1324	±	106	ppm
Cu (XRF)	1343	±	101	ppm
Ni (P)	1840	±	170	ppm
Ni (M/ICP)	1917	±	136	ppm
Ni (XRF)	2028	±	182	ppm
SG	3.13	±	0.14	g/cc

Provisional Concentrations

Pt (NIS)	0.82	±	0.10	g/t
Au (NIS)	0.154	±	0.02	g/t
Au (Pb Coll)	0.16	±	0.02	ppm
Ir (NiS)	0.010	±	0.002	g/t
Rh (M/ICP)	0.038	±	0.008	g/t
Ru (NiS)	0.033	±	0.008	g/t
Co (M/ICP)	94.3	±	15.4	ppm
Co (P)	76.4	±	8	ppm
Cr (M/ICP)	1330	±	304	ppm
Cu (P)	1337	±	139	ppm

4E = 1.882 g/t (Pt, Pd, Rh plus Au)

NB Additional uncertified major and trace element data is presented on p2 and as an appendix.

Intended Use: AMIS0124 is suitable for monitoring the accuracy of a single analysis of PGE, Cu and Ni ores hosted by Platreef Reef or similar other mafic rocks. The material can be used for routine quality control by inserting within a batch of samples.

The major and trace element composition of this material has also been determined but it has not been certified. The iterated statistics are set out below and as an appendix and this information may be useful for instrument calibration or method development.

Origin of Material: This standard was made using Platreef material from the northern limb of the Bushveld Complex supplied by Anglo Platinum Limited. Platreef is a Pt/Pd/Ni/Cu ore. This specific material was obtained from the open pit, PPRust Mine.

Mineral and Chemical Composition: Mineralization in this Platreef comprises 2-5% disseminated or net textured magmatic sulphides, mainly pyrrhotite, pentlandite and chalcopyrite. The PGE's occur as micron-sized satellite grains around but rarely within the sulphides.

This major element chemistry (below) was determined from (predominantly) XRF data supplied by 14 of the laboratories

AMIS0124	method	unit	mean	2SD	RSD %	n
Al ₂ O ₃	(XRF)	%	6.73	0.15	1.09	85
CaO	(XRF)	%	11.91	0.35	1.49	101
Cr ₂ O ₃	(XRF)	%	0.19	0.02	4.25	78
Fe ₂ O ₃	(XRF)	%	10.19	0.44	2.16	103
K ₂ O	(XRF)	%	0.139	0.004	1.30	71
LOI		%	4.85	0.53	5.50	100
MgO	(XRF)	%	18.23	0.51	1.41	100
MnO	(XRF)	%	0.19	0.01	3.21	89
Na ₂ O	(XRF)	%	0.58	0.07	5.77	109
P ₂ O ₅	(XRF)	%	0.03	0.01	14.25	61
S	(M/ICP)	%	0.94	0.17	9.21	77
SiO ₂	(XRF)	%	46.15	0.98	1.07	102
TiO ₂	(XRF)	%	0.26	0.02	4.08	117

Appearance: The material is a very fine bluish grey powder (Corstor colour chart 5B 7/1).

Method of preparation: The material was crushed, dry-milled and air-classified to 100% <54um. Wet sieve particle size analysis of random samples confirmed the material was 100% <54um. It was then blended in a bi-conical mixer, systematically divided and then sealed into 1kg Laboratory Packs. Samples were randomly selected for homogeneity testing and third party analysis. Statistical analysis for the consensus test results were carried out by an independent statistician. Explorer Packs are subdivided from the Laboratory packs as required.

Methods of analysis requested:

1. Pt, Pd and Au. Pb collection with Ag as a co-collector, ICP-OES or ICP-MS.
2. Pt, Pd, Au, Rh, Ru, Ir. NiS collection, ICP-OES or ICP-MS.
3. Multi element scan to include Co, Cu and Ni. Multi-acid total digestion, including HF, ICP-OES or ICP-MS.
4. Co, Cu and Ni. Aqua regia digestion with ICP-OES or ICP-MS.
5. Cr, Co, Cu and Ni. Pressed Pellet, XRF.
6. Majors (Al₂O₃, CaO, Cr₂O₃, Fe₂O₃, K₂O, MgO, MnO, Na₂O, SiO₂, TiO₂. LOI.) XRF fusion.
7. SG, gas pycnometer.

Information requested:

1. Aliquots used for all determinations.
2. Results for individual PGM's reported in ppb.
3. Results for base metals reported in ppm.
4. QC data, to include replicates, blanks and certified reference materials used.
5. Analytical techniques used.

Method of certification: Twenty nine laboratories were each given eight samples, comprising eight packages of sample scientifically selected from throughout the batch. Twenty seven laboratories issued results timeously and were used for certification.

The 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 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 calculated using all remaining data. Any analysis that fell outside of the mean ± 2 standard deviations was removed from the ensuing data base. The mean and standard deviations were again calculated using the remaining data.

This method is different from that used by Government agencies in that the actual "between-laboratory" standard deviation is used in the calculations. This produces upper and lower limits that reflect actual individual analyses rather than a grouped set of analyses. The limits can therefore be used to monitor accuracy from individual analyses, unlike the Confidence Limits published on other standards. Standards with an RSD of near or less than 5 % are certified, RSD's of between near 5 % and 15 % are Provisional, and RSD's over 15 % are Indicated.

Participating Laboratories: (Not in same order as in the table of assays)

1. ACME Analytical Laboratories Ltd., (Canada).
2. Activation Laboratories Ltd., (ActLabs, Ancaster, ON, Canada).
3. ALS Chemex South Africa (Pty) Ltd.
4. ALS Chemex, (Perth, Australia).
5. ALS Chemex, (Vancouver, Canada).
6. Ammtec Ltd., (Western Australia).
7. Anglo Platinum, Eastern Bushveld Regional Laboratory (South Africa).
8. Anglo Platinum, PPL Assay Laboratory (South Africa).
9. Anglo Research (Germiston Campus, South Africa)
10. Anglo Research (Crown Campus, South Africa).
11. Anglo Research (Germiston Campus, South Africa).
12. Assayers Canada, (Vancouver).
13. Becquerel Laboratories, (Canada).
14. Genalysis Laboratory Services (Pty) Ltd., (Australia).
15. Geoscience Laboratories, (Geo Labs, Sudbury, Canada).
16. Intertek Testing Services (China).
17. Labtium Inc. (Finland).
18. Nkomati JV Laboratory (South Africa).
19. OMAC Laboratories (Ireland).
20. Pt Intertek Utama Services (Intertek, Indonesia).
21. Set Point Laboratories (Pty) Ltd (South Africa).
22. Set Point Labs (Mokopane).
23. SGS Lakefield Research (Canada).
24. SGS Lakefield Research Africa (Pty) Ltd. (Joburg, South Africa)
25. SGS Welshpool (Australia).
26. Ultra Trace (Pty) Ltd. (Australia).
27. Zimplats Assay Laboratory (Zimbabwe).

Assay Data: Data as received from the laboratories for the important certified elements listed on p1 is set out below. A proficiency report has been sent to the managers of the participating laboratories. Additional data from this round robin is available on request.

Lab Code	Au g/t (NIS)	Au ppm (PbColl)	Co ppm (XRF)	Co ppm (M/ICP)	Co ppm (P)	Cr ppm (XRF)	Cr ppm (M/ICP)	Cu ppm (M/ICP)	Cu ppm (XRF)	Cu ppm (P)	Ir g/t (NIS)	Ni ppm (P)	Ni ppm (M/ICP)	Ni ppm (XRF)	Pd g/t (NIS)	Pd g/t (PbColl)	Pt g/t (PbColl)	Pt g/t (NIS)	Rh g/t (M/ICP)	Ru g/t (NIS)	SG g/cc
A	0.152		190.0			2319			1320		0.018			2300	0.914			0.868	0.040	0.023	
A	0.145		190.0			2298			1300		0.019			2280	0.873			0.831	0.038	0.019	
A	0.147		190.0			2305			1300		0.015			2280	0.895			0.857	0.040	0.023	
A	0.149		190.0			2312			1310		0.013			2310	0.888			0.842	0.038	0.021	
A	0.159		190.0			2319			1310		0.039			2310	0.881			0.854	0.038	0.021	
A	0.155		190.0			2305			1320		0.029			2290	0.886			0.849	0.039	0.022	
A	0.158		190.0			2291			1300		0.032			2270	0.914			0.871	0.041	0.023	
A	0.140		190.0			2298			1310		0.120			2290	0.811			0.808	0.035	0.022	
B									1426					2148		0.897	0.840				3.18
B									1415					2138		0.888	0.934				3.17
B									1420					2146		0.888	1.139				3.17
B									1414					2134		0.872	0.856				3.16
B									1418					2144		0.867	0.800				3.17
B									1419					2142		0.917	0.785				3.17
B									1418					2140		0.873	0.799				3.18
B									1413					2148		0.864	0.746				3.19
C		0.151		150				1500					1700			0.860	0.808				
C		0.161		140				1400					1700			0.910	0.814				
C		0.175		160				1400					1900			0.890	0.792				
C		0.151		140				1400					1700			0.840	0.809				
C		0.153		140				1400					1900			0.860	0.807				
C		0.154		140				1400					1700			0.870	0.807				
C		0.155		130				1400					1800			0.870	0.827				
C		0.153		140				1400					1900			0.860	0.797				
D		0.152														0.891	0.864				3.19
D		0.144														0.850	0.805				3.21
D		0.138														0.877	0.836				3.20
D		0.151														0.859	0.855				3.19
D		0.137														0.846	0.840				3.19
D		0.148														0.877	0.808				3.19
D		0.159														0.900	0.845				3.20
D		0.153														0.862	0.847				3.19
E	0.161			103			1513	1347			0.011		1952		0.900			0.891	0.045	0.039	
E	0.149			104			1532	1348			0.010		1951		0.856			0.853	0.041	0.036	
E	0.152			107			1562	1345			0.010		1951		0.871			0.863	0.041	0.036	
E	0.155			103			1439	1358			0.011		1988		0.874			0.873	0.043	0.037	
E	0.153			106			1511	1348			0.011		1968		0.868			0.871	0.043	0.039	
E	0.157			110			1636	1354			0.010		1954		0.868			0.871	0.042	0.037	
E	0.152			116			1742	1362			0.011		1960		0.870			0.870	0.042	0.038	
E	0.152			107			1524	1354			0.010		1958		0.853			0.851	0.042	0.037	
F	0.150	0.139	88.1	96	78.25	1128	1205	1340	1359	1309	0.035	1800	1945	1944	0.879	0.783	0.745	0.825	0.043	0.041	3.07
F	0.154	0.142	99.7	96	77.76	1100	1163	1348	1363	1307	0.013	1795	1936	1930	0.855	0.804	0.726	0.842	0.044	0.035	3.08
F	0.140	0.146	88.5	88	79.63	1112	1136	1340	1360	1305	0.014	1812	1912	1923	0.835	0.819	0.737	0.789	0.046	0.033	3.09
F	0.145	0.150	92.6	93	78.00	1156	1143	1333	1324	1296	0.012	1846	1909	1927	0.838	0.841	0.770	0.788	0.047	0.037	3.07
F	0.133	0.137	100.5	93	75.08	1087	1151	1333	1367	1298	0.012	1824	1899	1909	0.801	0.794	0.736	0.749	0.044	0.035	3.06
F	0.158	0.156	97.1	86	79.98	1071	1095	1338	1354	1331	0.010	1841	1897	1918	0.875	0.827	0.753	0.804	0.047	0.037	3.07
F	0.156	0.160	92.5	95	77.81	1080	1150	1364	1363	1298	0.010	1806	1948	1954	0.811	0.858	0.795	0.759	0.044	0.036	3.08
F	0.134	0.136	103.0	90	80.57	1087	1158	1309	1335	1346	0.010	1877	1981	1937	0.885	0.790	0.749	0.766	0.042	0.039	3.08
G		0.167														0.916	0.854		0.016		
G		0.159														0.887	0.828		0.037		
G		0.140														0.785	0.730		0.029		
G		0.151														0.855	0.786		0.037		
G		0.146														0.821	0.755		0.020		
G		0.140														0.780	0.726		0.036		
G		0.154														0.857	0.796		0.020		
G		0.158														0.870	0.799		0.021		
H		0.170		81		1300		1300	1400	1410		1870		2100		0.867	0.798				
H		0.171	100.0	82		1300		1300	1300	1400		1850		2100		0.850	0.821				
H		0.179	100.0	81		1300		1310	1300	1410		1860		2100		0.847	0.810				
H		0.170	100.0	81		1300		1300	1400	1410		1880		2100		0.869	0.800				
H		0.179	100.0	83		1300		1320	1400	1390		1890		2200		0.855	0.791				
H		0.178	100.0	82		1300		1290	1400	1420		1900		2100		0.838	0.810				
H		0.165	100.0	83		1300		1310	1400	1400		1900		2100		0.836	0.835				
H		0.170	100.0	81		1300		1290	1300	1430		2010		2100		0.849	0.820				
I		0.170		86	69.00	1300		1200	1400	1200		1700	1700	1900	0.860	0.910	0.840	0.880	0.040	0.050	3.08
I		0.180		86	70.00	1300		1200	1400	1300		1700	1700	2000	0.870	0.910	0.880	0.820	0.040	0.040	3.07
I		0.160		86	68.00	1300		1200	1300	1200		1600	1700	1800	0.850	0.900	0.820	0.950	0.040	0.050	3.05
I		0.150		87	70.00	1300		1200	1400	1200		1700	1600	2000	0.910	0.900	0.830	0.900	0.040	0.040	3.05
I		0.180		87	70.00	1300		1200	1200	1200		1700	1700	2000	0.940	0.890	0.850	0.890	0.040	0.040	3.03
I		0.150		90	70.00	1300		1200	1400	1300		1700	1600	2100	0.850	0.900	0.890	0.890	0.040	0.040	3.02
I		0.170		86	70.00	1300		1200	1200	1300		1700	1700	2000	0.800	0.890	0.830	0.980	0.040	0.050	3.05
I		0.190		85	70.00	1300		1200	1400	1200		1700	1600	1900	0.900	0.900	0.850	0.930	0.040	0.050	3.03
J		0.150	102.0	74		1259		1200	1180	110		1700	1943	0.860	0.850	0.790	0.820	0.050	0.030	3.13	
J		0.160	102.0	74		1292		1200	1192	110		1800	1932	0.830	0.850	0.800	0.860	0.080	0.030	3.13	
J		0.150	104.0	74		1282		1200	1198	110		1800	1938	0.830	0.830	0.780	0.810	0.060	0.030	3.14	
J		0.170	101.0	74		1285		1200	1181	110		1800	1936	0.820	0.840	0.790	0.830	0.070	0.030	3.13	
J		0.150	101.0	75		1283		1200	1189	110		1800	1946	0.820	0.840	0.780	0.800	0.050	0.030	3.12	
J		0.140	101.0	76		1263		1200	1193	110		1800	1950	0.850	0.830	0.770	0.830	0.050	0.050	3.13	
J		0.150	104.0	74		1268		1200	1182	110		1800	1934	0.840	0.870	0.820	0.830	0.050	0.020	3.13	
J		0.150	104.0	75		1256		1200	1180	110		1700	1935	0.860	0.850	0.800	0.840				

Assay Data (cont):

Lab Code	Au g/t (NIS)	Au ppm (PbColl)	Co ppm (XRF)	Co ppm (M/ICP)	Co ppm (P)	Cr ppm (XRF)	Cr ppm (M/ICP)	Cu ppm (M/ICP)	Cu ppm (XRF)	Cu ppm (P)	Ir g/t (NIS)	Ni ppm (P)	Ni ppm (M/ICP)	Ni ppm (XRF)	Pd g/t (NIS)	Pd g/t (PbColl)	Pt g/t (PbColl)	Pt g/t (NIS)	Rh g/t (M/ICP)	Ru g/t (NIS)	SG g/cc	
L		0.151		91	69.30	1290		1360	1400	1410		1845	1860	1880		0.882	0.850				2.90	
L		0.156		94	69.80	1305		1410	1400	1445		1890	1930	1880		0.899	0.853				3.04	
L		0.159		92	69.40	1305		1390	1380	1435		1875	1880	1880		0.903	0.859				3.02	
L		0.168		90	70.20	1290		1370	1390	1435		1870	1860	1880		0.864	0.848				3.00	
L		0.155		87	70.90	1290		1350	1410	1470		1900	1830	1900		0.871	0.822				3.05	
L		0.143		89	70.40	1305		1320	1400	1430		1860	1800	1910		0.834	0.801				2.97	
L		0.153		92	70.20	1300		1380	1390	1415		1845	1870	1900		0.874	0.831				2.99	
L		0.155		91	70.80	1300		1410	1400	1435		1880	1930	1900		0.852	0.820				2.93	
M		0.159		88	71.00			1340		1320		1820	1900			0.944	0.882				2.04	
M		0.189		87	71.00			1310		1360		1810	1870			0.951	0.890				2.94	
M		0.172		87	72.00			1300		1370		1850	1860			0.922	0.862				2.89	
M		0.151		86	70.00			1300		1340		1800	1820			0.908	0.864				2.90	
M		0.167		86	72.00			1280		1380		1800	1850			0.911	0.871				2.89	
M		0.154		91	72.00			1380		1365		1840	1920			0.911	0.826				2.87	
M		0.179		88	80.00			1310		1500		1940	1850			0.917	0.868				2.89	
M		0.170		88	79.00			1350		1520		1910	1880			0.915	0.890				2.89	
N		0.175		104	74.00			1400		1220		1620	1930			0.894	0.866					
N		0.164		103	73.00			1440		1220		1620	1940			0.867	0.832					
N		0.166		108	74.00			1460		1240		1640	1980			0.862	0.840					
N		0.168		103	74.00			1440		1200		1610	1950			0.860	0.833					
N		0.170		105	74.00			1410		1230		1630	1990			0.865	0.832					
N		0.161		103	75.00			1430		1240		1640	1970			0.862	0.849					
N		0.170		105	74.00			1420		1230		1610	1970			0.862	0.800					
N		0.162		107	74.00			1440		1240		1610	2010			0.873	0.849					
O	0.156										0.010				0.816			0.741	0.036	0.030		
O	0.156										0.010				0.850			0.748	0.038	0.035		
O	0.150										0.010				0.832			0.741	0.037	0.033		
O	0.146										0.010				0.819			0.769	0.037	0.031		
O	0.159										0.010				0.826			0.737	0.036	0.033		
O	0.152										0.009				0.827			0.751	0.037	0.032		
O	0.155										0.009				0.810			0.728	0.036	0.031		
O	0.160										0.010				0.812			0.709	0.039	0.034		
P	0.158	0.169		95	75.00	1398	1271	1295	1304	1252	0.010	1749	1885	2050	0.852	0.905	0.865	0.853	0.040	0.035	3.21	
P	0.167	0.158		100	75.00	1393	1270	1305	1296	1268	0.009	1742	1953	2047	0.818	0.862	0.804	0.846	0.038	0.032	3.20	
P	0.173	0.167		96	79.00	1400	1249	1302	1305	1321	0.010	1796	1889	2065	0.861	0.883	0.846	0.841	0.040	0.038	3.17	
P	0.170	0.166		93	76.00	1395	1228	1280	1313	1272	0.010	1779	1867	2056	0.845	0.869	0.834	0.829	0.039	0.032	3.20	
P	0.170	0.169		96	75.00	1381	1219	1314	1309	1258	0.009	1753	1916	2065	0.840	0.902	0.869	0.840	0.039	0.035	3.20	
P	0.167	0.169		96	79.00	1369	1243	1299	1307	1303	0.010	1807	1885	2057	0.852	0.894	0.870	0.866	0.039	0.035	3.18	
P	0.165	0.163		98	73.00	1380	1238	1306	1301	1223	0.012	1707	1925	2052	0.874	0.865	0.846	0.879	0.043	0.040	3.13	
P	0.167	0.178		98	72.00	1382	1090	1315	1302	1204	0.011	1682	1891	2060	0.869	0.884	0.847	0.876	0.041	0.037	3.21	
Q	0.132	0.138		100	82.00			1250	1320		1360	0.009	1970	1990		0.821	0.765	0.730	0.767	0.036	0.035	3.25
Q	0.138	0.155		95	79.00			1250	1310		1390	0.009	1990	1980		0.803	0.760	0.760	0.739	0.036	0.028	3.21
Q	0.156	0.140		95	81.00			1250	1320		1360	0.010	1970	1980		0.849	0.745	0.760	0.862	0.040	0.039	3.22
Q	0.136	0.128		90	83.00			1300	1320		1360	0.009	1980	1990		0.779	0.720	0.700	0.720	0.034	0.028	3.24
Q	0.139	0.166		100	79.00			1300	1320		1360	0.010	1940	1980		0.853	0.910	0.875	0.861	0.040	0.036	3.24
Q	0.114	0.138		95	79.00			1250	1350		1330	0.009	1920	1990		0.774	0.745	0.735	0.750	0.035	0.029	3.25
Q	0.157	0.153		95	78.00			1250	1340		1300	0.010	1900	1980		0.757	0.800	0.800	0.747	0.034	0.030	3.24
Q		0.131		95	80.00			1250	1310		1370		1940	1980			0.710	0.690				3.17
R		0.180						1490					2260			0.896	0.859					
R		0.190						1350					2090			0.962	0.882					
R		0.182						1290					2070			0.914	0.851					
R		0.175						1340					2010			0.934	0.858					
R		0.176						1110					1700			0.952	0.871					
R		0.165						1330					2020			0.930	0.863					
R		0.170						1350					2030			0.956	0.864					
R		0.156						1290					1920			0.875	0.783					
S		0.158		110	80.00		1150	1160		1310		1890	2010			0.875	0.850				2.67	
S		0.156		110	70.00		1180	1250		1290		1860	2140			0.880	0.858				2.82	
S		0.150		110	80.00		1160	1270		1310		1890	2120			0.850	0.814				2.79	
S		0.161		110	80.00		1160	1220		1310		1890	2010			0.877	0.854				2.67	
S		0.157		110	80.00		1320	1330		1320		1900	2180			0.892	0.864				2.81	
S		0.166		110	70.00		1190	1190		1300		1890	2130			0.895	0.864				2.86	
S		0.158		110	80.00		1230	1200		1320		1900	2100			0.874	0.855				2.84	
S		0.158		120	80.00		1430	1380		1310		1890	2210			0.862	0.856				2.81	
T	0.137	0.153	92.0	94	75.00	1440		1270	1330	1470	0.010	2000	1870	2130	0.812	0.828	0.776		0.035	0.034	3.11	
T	0.125	0.147	100.0	98	74.00	1440		1280	1330	1520	0.009	2010	1890	2120	0.771	0.912	0.795		0.032	0.031	3.07	
T	0.117	0.139	102.0	99	79.00	1440		1270	1340	1530	0.009	2090	1890	2120	0.770	0.774	0.696		0.033	0.030	3.12	
T	0.092	0.137	96.0	94	74.00	1460		1260	1340	1490	0.009	1990	1860	2140	0.649	0.779	0.700		0.028	0.029	3.08	
T	0.111	0.127	96.0	101	76.00	1390		1300	1280	1520	0.009	2030	1920	2040	0.758	0.722	0.694		0.032	0.028	3.07	
T	0.125	0.137	99.0	99	77.00	1450		1330	1320	1550	0.010	2080	1920	2120	0.794	0.789	0.772		0.034	0.030	3.14	
T	0.125	0.128	99.0	91	74.00	1440		1220	1310	1500	0.009	2000	1790	2100	0.760	0.741	0.707		0.032	0.027	3.12	
T	0.109	0.129	97.0	93	76.00	1440		1230	1330	1520	0.009	2060	1810	2130	0.728	0.756	0.705		0.031	0.028	3.06	
U	0.129	0.172		91	85.50	1315		1180		1460	0.010	1940	1860		0.766	0.852	0.901	0.802	0.036	0.030		
U	0.125	0.160		97	82.50	1251		1270		1380	0.009	1840	1970		0.708	0.835	0.881	0.774	0.034	0.028		
U	0.130	0.161		93	83.70	1240		1230		1390	0.009	1860	1900		0.756	0.834	0.892	0.800</				

Assay Data (cont):

Lab Code	Au g/t (NIS)	Au ppm (PbColl)	Co ppm (XRF)	Co ppm (M/ICP)	Co ppm (P)	Cr ppm (XRF)	Cr ppm (M/ICP)	Cu ppm (M/ICP)	Cu ppm (XRF)	Cu ppm (P)	Ir g/t (NIS)	Ni ppm (P)	Ni ppm (M/ICP)	Ni ppm (XRF)	Pd g/t (NIS)	Pd g/t (PbColl)	Pt g/t (PbColl)	Pt g/t (NIS)	Rh g/t (M/ICP)	Ru g/t (NIS)	SG g/cc
X		0.170		96	79.38		1497	1340		1321		1935	2046			0.890	0.845				
X		0.167		93	76.72		1463	1323		1311		1932	1999			0.902	0.852				
X		0.160		92	78.28		1461	1324		1343		1945	1995			0.887	0.864				
X		0.170		94	77.75		1454	1321		1322		1922	1982			0.856	0.855				
X		0.162		93	78.88		1314	1306		1332		1931	1951			0.899	0.830				
X		0.162		93	77.68		1486	1344		1312		1909	2023			0.883	0.865				
X		0.166		93	78.54		1471	1324		1332		1915	1999			0.851	0.851				
X		0.159		96	77.65		1506	1343		1312		1918	2022			0.895	0.868				
Y		0.161		93	78.00			1233		1240		1690	1750			0.846	0.790				
Y		0.149		99	82.00			1335		1250		1720	2020			0.854	0.799				
Y		0.166		96	80.00			1216		1270		1740	1840			0.852	0.802				
Y		0.157		109	80.00			1326		1230		1690	1990			0.872	0.837				
Y		0.158		93	77.00			1341		1250		1700	1820			0.883	0.774				
Y		0.162		105	78.00			1305		1230		1670	1910			0.833	0.797				
Y		0.163		106	78.00			1305		1240		1690	1810			0.842	0.798				
Y		0.148		88	82.00			1246		1280		1740	1680			0.833	0.788				
Z																					
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ZA	0.152	0.170	100.0				1300				0.009				2000	0.920				0.043	
ZA	0.181	0.170	100.0				1300				0.009				2000	0.940				0.044	
ZA	0.157	0.170	100.0				1300				0.009				2000	0.760				0.033	
ZA	0.180	0.170	100.0				1300				0.010				2000	0.800				0.038	
ZA	0.150	0.170	100.0				1300				0.008				2020	0.700				0.030	
ZA	0.175	0.180	100.0				1300				0.009				2030	0.880				0.038	
ZA	0.165	0.180	110.0				1300				0.009				2010	0.790				0.034	
ZA	0.148	0.190	110.0				1300				0.008				2000	0.820				0.035	
ZB		0.180		95				1505	1295						1968		1.010	0.910			
ZB		0.180		98				1477	1303						1964		0.960	0.860			
ZB		0.180		97				1340	1292						1961		0.970	0.890			
ZB		0.190		95				1433	1310						2033		0.970	0.890			
ZB		0.170		95				1585	1298						2011		0.880	0.790			
ZB		0.180		94				1527	1305						1991		1.000	0.920			
ZB		0.150		96				1545	1248						1913		0.880	0.810			
ZB		0.150		97				1430	1308						2001		0.840	0.750			
ZC	0.188	0.208	99.0	89	80.11	1341				1275		0.010	1802	1845	1832	0.889	0.842	0.958	0.851	0.040	0.033
ZC	0.148	0.175	99.0	91	78.95	1329				1268		0.010	1793	1885	1826	0.899	0.892	0.877	0.867	0.041	0.037
ZC	0.156	0.186	101.0	91	80.03	1328				1268		0.010	1819	1864	1823	0.893	0.869	0.833	0.855	0.041	0.036
ZC	0.155	0.203	100.0	95	76.32	1325				1260		0.010	1716	1961	1823	0.883	0.871	0.853	0.851	0.040	0.036
ZC	0.161	0.197	101.0	95	78.73	1340				1273		0.010	1748	1955	1848	0.884	0.831	0.880	0.868	0.041	0.036
ZC	0.157	0.180	96.0	94	79.02	1234				1192		0.010	1766	1924	1750	0.897	0.846	0.864	0.857	0.039	0.037
ZC	0.154	0.179	100.0	94	76.73	1327				1270		0.010	1730	1928	1830	0.896	0.747	0.843	0.870	0.041	0.037
ZC	0.153	0.203	101.0	95	77.76	1332				1272		0.010	1732	1952	1839	0.871	0.777	0.872	0.830	0.039	0.035

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

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.

10 July 2008

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

17 laboratories supplied additional trace element data. The iterated but uncertified statistics are presented below.

AMIS0124	method	unit	mean	2SD	RSD %	n
Ag	(M/ICP)	ppm	0.64	0.21	15.93	32
Al	(M/ICP)	ppm	3.52	0.35	4.99	83
Ba	(M/ICP)	ppm	41.9	4.81	5.74	78
Be	(M/ICP)	ppm	0.27	0.09	16.28	30
Bi	(M/ICP)	ppm	0.61	0.12	9.93	48
Ca	(M/ICP)	%	8.12	0.61	3.77	93
Cd	(M/ICP)	ppm	0.21	0.03	6.20	31
Ce	(M/ICP)	ppm	12.1	1.82	7.53	46
Cs	(M/ICP)	ppm	0.70	0.03	2.47	38
Fe	(M/ICP)	%	7.06	0.48	3.37	85
Ga	(M/ICP)	ppm	7.99	0.40	2.53	38
Hf	(M/ICP)	ppm	0.91	0.22	12.13	47
In	(M/ICP)	ppm	0.043	0.009	10.09	40
K	(M/ICP)	%	0.118	0.011	4.89	94
La	(M/ICP)	ppm	5.73	0.77	6.75	56
Li	(M/ICP)	ppm	9.56	1.51	7.89	39
Mg	(M/ICP)	%	10.8	0.95	4.37	84
Mn	(M/ICP)	ppm	1443	112	3.87	80
Mo	(M/ICP)	ppm	0.56	0.23	20.28	45
Na	(M/ICP)	%	0.44	0.05	5.91	86
Nb	(M/ICP)	ppm	1.57	0.21	6.70	45
P	(M/ICP)	ppm	129	32.0	12.42	76
Pb	(M/ICP)	ppm	8.62	2.67	15.49	66
Rb	(M/ICP)	ppm	4.72	0.56	5.93	46
Sb	(M/ICP)	ppm	4.48	0.65	7.25	56
Sc	(M/ICP)	ppm	23.0	2.55	5.56	62
Sn	(M/ICP)	ppm	1.02	0.26	12.69	39
Sr	(M/ICP)	ppm	65.0	6.55	5.03	92
Te	(M/ICP)	ppm	0.76	0.14	9.38	46
Th	(M/ICP)	ppm	1.51	0.24	7.88	47
Ti	(M/ICP)	%	0.15	0.015	4.85	71
Tl	(M/ICP)	ppm	0.16	0.06	18.60	32
U	(M/ICP)	ppm	1.33	0.24	9.15	46
V	(M/ICP)	ppm	93.1	12.0	6.46	78
W	(M/ICP)	ppm	0.22	0.13	29.24	39
Y	(M/ICP)	ppm	7.66	0.93	6.07	76
Zn	(M/ICP)	ppm	64.6	10.7	8.27	70
Zr	(M/ICP)	ppm	31.4	15.4	24.58	80