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African Mineral Standards

Certificate of Analysis

Copper Sulphide Ore
Reference Material from Lonshi
Democratic Republic of the Congo

AMIS0072

Recommended Concentration and two “Between Laboratory” Standard Deviations

*Certified Concentrations**

| | | | | |
|------------------|------|---|-------|------|
| Cu (F)** | 1.63 | ± | 0.075 | % |
| Cu (P)** | 1.65 | ± | 0.085 | % |
| Cu (T/ICP)** | 1.65 | ± | 0.095 | % |
| Specific Gravity | 2.79 | ± | 0.24 | g/cc |

Provisional Concentrations

| | | | | |
|--------------------|------|---|------|-----|
| Ag (T) | 3.5 | ± | 0.9 | ppm |
| Au (Pb Collection) | 0.06 | ± | 0.02 | ppm |
| Co (P) | 9.5 | ± | 1.6 | ppm |
| Co (T/ICP) | 11.0 | ± | 2.2 | ppm |
| Ni (T/ICP) | 38.5 | ± | 6.4 | ppm |
| Ni (XRF) | 39.6 | ± | 11.5 | ppm |
| U (T/ICP) | 3.8 | ± | 0.7 | ppm |
| Zn (T/ICP) | 148 | ± | 28 | ppm |

Indicated Means

| | | |
|------------|------|-----|
| As (T/ICP) | 5.9 | ppm |
| Pb (T/ICP) | 13.9 | ppm |

***Additional uncertified major and trace element data is on p2 and in the appendix of this certificate.**

**** N.B. Apologies. The two “Between Laboratory” standard deviations on the original certificate were incorrectly stated at 0.75%, 0.85% and 0.95%. That was incorrect.**

Intended Use: AMIS0072 is suitable to monitor the accuracy of a single analysis of copper ore. The material can be used for routine quality control by inserting within a batch of samples, method development and for the calibration of equipment.

The recommended mean and "Between Lab" standard deviations for this standard reflect the average 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 and this is acceptable. Good laboratories however will report results within the two standard deviation levels with a failure of <10 %.

Origin of Material: This standard was made using sulphide ore sourced from the Lonshi Copper Mine which is owned and operated by Compagnie Minière du Sakania sprl (Comisa), a wholly owned Congolese subsidiary of First Quantum Minerals Ltd (FQM). The mine is situated in the Congo Pedicle region of the Province of Katanga, Democratic Republic of the Congo.

Lonshi is a sediment hosted, structurally controlled deposit of Copperbelt type. In contrast to other Copperbelt deposits, Lonshi is interpreted to occur at or near the upper contact of the Upper Roan Group where a sheared and tectonised clastic unit, the Lonshi Conglomerate, is in thrust contact with overlying carbonaceous, silty, dolomitic marbles. This folded and thrust contact is the locus for mineralization which occurs in both the conglomerate and the intensely weathered dolomite.

(for more information, refer to Form 43-101F1 Technical Report, The Lonshi Copper Mine, Katanga Province, Democratic Republic of the Congo, March 26th 2003, Alan J. Stephens Vice President, Exploration, and G. Clive Newall, President, First Quantum Minerals Ltd.)

Mineral and Chemical Composition: Primary sulphide mineralization, mainly chalcopyrite, occurs as carbonate clast replacement in the conglomerate, and as disseminations and rare veinlets in both conglomerate and dolomite. Supergene enrichment and subsequent deep oxidation, has resulted in complete carbonate destruction in the dolomite, within the weathering zone, and formation of chalcocite now largely oxidized to malachite and black Cu oxide minerals.

Fifteen laboratories returned additional major and trace element data. This has not been certified but the iterated statistics are presented below and in the appendix. The major element chemistry was largely tested using X-Ray Fluorescence techniques. This data can be used to assist with instrument calibration.

| | Mean | 2SD | RSD% | n | unit |
|--------------------------------|------|------|------|----|------|
| Al ₂ O ₃ | 4.1 | 0.1 | 1.4 | 86 | % |
| BaO | 0.11 | 0.02 | 9.3 | 29 | % |
| CaO | 1.9 | 0.1 | 2.2 | 87 | % |
| Cr ₂ O ₃ | 0.07 | 0.03 | 21.4 | 71 | % |
| Fe ₂ O ₃ | 3.0 | 0.1 | 1.3 | 78 | % |
| K ₂ O | 1.4 | 0.1 | 2.0 | 78 | % |
| LOI | 4.7 | 0.5 | 5.5 | 79 | % |
| MgO | 2.4 | 0.1 | 1.5 | 64 | % |
| MnO | 0.15 | 0.01 | 3.7 | 78 | % |
| Na ₂ O | 0.04 | 0.02 | 30.3 | 40 | % |
| P ₂ O ₅ | 0.09 | 0.02 | 9.9 | 87 | % |
| S | 0.22 | 0.02 | 4.4 | 53 | % |
| SiO ₂ | 79.8 | 1.2 | 0.8 | 77 | % |
| TiO ₂ | 0.41 | 0.02 | 2.0 | 86 | % |

Appearance: The material is a very fine Greyish Orange Pink powder (Corstor Colour Gauge - 5YR 7/2).

Method of Preparation: The material was crushed, dry-milled and air-classified to 100% <54µm. Wet sieve particle size analysis of random samples confirmed the material was 100% <54µm. It was then blended in a bi-conical mixer, 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 an independent statistician.

Methods of Analysis:

1. Cu, Fusion AAS or ICP-OES.
2. Multi-acid digest multi-element scan - (to include Cu, Co, Ni, Pb, As, Zn, Ag, U.). ICP-OES or ICP-MS.
3. Aqua regia digest - Cu, Co. ICP-OES or ICP-MS.
4. Pressed pellet multi-element scan - (to include Cu, Co, Ni, Pb, As, Zn, Ag, U.). XRF.
5. Fusion (Majors). XRF.
6. Au. Pb collection ICP-OES or ICP-MS.
7. SG. Gas pycnometer.

Method of Certification: Twenty one laboratories were each given eight randomly selected packages of sample. Results from the nineteen laboratories that reported back were used for the determinations in the tables below

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 the same order as in the table of assays)

1. ACME Analytical Laboratories Ltd., (Canada).
2. Activation Laboratories Ltd., (ActLabs, Ancaster, ON, Canada).
3. Alex Stewart International Corporation (Zambia)
4. ALS Chemex South Africa (Pty) Ltd.
5. ALS Chemex, (Vancouver, Canada).
6. Amdel Limited, (Perth, Australia).
7. Anglo Research (Crown Campus, South Africa).
8. Assayers Canada, (Vancouver).
9. Genalysis Laboratory Services (Pty) Ltd., (Australia).
10. Geoscience Laboratories, (Geo Labs, Sudbury, Canada).
11. Geoservice Centre, Geolaboratory, (GTK. Finland).
12. Nkomati JV Laboratory
13. OMAC Laboratories (Ireland).
14. Pt Intertek Utama Services (Intertek, Indonesia)
15. Set Point Laboratories (Pty) Ltd (South Africa)
16. SGS Lakefield Research (Canada)
17. SGS Lakefield Research Africa (Pty) Ltd. (Joburg, South Africa)
18. SGS Welshpool (Australia).

19. Ultra Trace (Pty) Ltd. (Australia).

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 | Ag T/ICP ppm | As T/ICP ppm | Au Pb coll ppm | Co P ppm | Co T/ICP ppm | Cu F ppm | Cu P ppm | Cu T/ICP ppm | Ni T/ICP ppm | Ni XRF ppm | Pb T/ICP ppm | SG g/cc | U T/ICP ppm | Zn T/ICP ppm |
|----------|--------------|--------------|----------------|----------|--------------|----------|----------|--------------|--------------|------------|--------------|---------|-------------|--------------|
| A | 3.00 | | 0.05 | | | 17450 | 15850 | 16500 | 50.00 | | | | | 200 |
| A | 3.00 | | 0.07 | | | 16300 | 16400 | 16400 | 30.00 | | | | | 190 |
| A | 4.00 | | 0.08 | | | 16050 | 16400 | 16500 | 60.00 | | | | | 130 |
| A | 2.00 | | 0.04 | | | 16000 | 16400 | 16500 | 40.00 | | | | | 210 |
| A | 3.00 | | 0.07 | | | 16400 | 16450 | 16400 | 50.00 | | | | | 180 |
| A | 3.00 | | 0.06 | | | 16000 | 16200 | 16700 | 50.00 | | | | | 190 |
| A | 4.00 | | 0.07 | | | 16400 | 16500 | 16600 | 40.00 | | | | | 180 |
| A | 3.00 | | 0.05 | | | 16250 | 16400 | 16700 | 20.00 | | | | | 180 |
| B | 2.90 | | 0.05 | 9.00 | 9.00 | 16650 | 16800 | 16750 | 33.00 | 40.00 | 11.00 | 2.73 | | 128 |
| B | 3.50 | | 0.05 | 9.00 | 9.00 | 16300 | 16900 | 16600 | 38.00 | 30.00 | 13.00 | 2.75 | | 146 |
| B | 3.40 | | 0.07 | 9.00 | 9.00 | 15900 | 17300 | 16850 | 37.00 | 40.00 | 13.00 | 2.74 | | 146 |
| B | 3.50 | | 0.06 | 9.00 | 10.00 | 16650 | 16700 | 16600 | 37.00 | 40.00 | 15.00 | 2.74 | | 143 |
| B | 3.30 | | 0.06 | 9.00 | 9.00 | 16200 | 17400 | 16750 | 36.00 | 30.00 | 11.00 | 2.75 | | 142 |
| B | 3.40 | | 0.08 | 9.00 | 10.00 | 16100 | 17200 | 16800 | 40.00 | 30.00 | 12.00 | 2.80 | | 151 |
| B | 3.60 | | 0.05 | 11.00 | 10.00 | 16450 | 16600 | 16750 | 38.00 | 30.00 | 13.00 | 2.77 | | 146 |
| B | 3.40 | | 0.08 | 8.00 | 9.00 | 16450 | 17300 | 16300 | 36.00 | 40.00 | 12.00 | 2.76 | | 145 |
| C | | | | 4.00 | 12.00 | 15900 | | 16200 | 32.00 | | | | 3.88 | 156 |
| C | | | | 4.00 | 13.00 | 15900 | | 16100 | 31.00 | | | | 3.77 | 162 |
| C | | | | 4.00 | 13.00 | 16000 | | 15800 | 30.00 | | | | 3.77 | 161 |
| C | | | | 4.00 | 13.00 | 16000 | | 16200 | 33.00 | | | | 4.14 | 156 |
| C | | | | 4.00 | 12.00 | 16000 | | 15600 | 36.00 | | | | 4.42 | 151 |
| C | | | | 4.00 | 13.00 | 16000 | | 17000 | 35.00 | | | | 4.32 | 168 |
| C | | | | 4.00 | 12.00 | 16100 | | 15500 | 36.00 | | | | 4.42 | 151 |
| C | | | | 4.00 | 12.00 | 15800 | | 15500 | 32.00 | | | | 3.88 | 150 |
| D | | | 0.06 | | | | | | | | | 2.92 | | |
| D | | | 0.07 | | | | | | | | | 2.96 | | |
| D | | | 0.07 | | | | | | | | | 2.96 | | |
| D | | | 0.06 | | | | | | | | | 2.97 | | |
| D | | | 0.07 | | | | | | | | | 2.94 | | |
| D | | | 0.06 | | | | | | | | | 2.93 | | |
| D | | | 0.06 | | | | | | | | | 2.96 | | |
| D | | | 0.07 | | | | | | | | | 2.95 | | |
| E | 3.00 | | 0.06 | 9.00 | 13.00 | 16500 | 16100 | 16000 | 38.00 | | | 2.75 | | 140 |
| E | 3.00 | | 0.06 | 9.00 | 12.00 | 16100 | 16000 | 16000 | 40.00 | | | 2.77 | | 140 |
| E | 3.00 | | 0.06 | 9.00 | 12.00 | 15900 | 16400 | 16000 | 38.00 | | | 2.73 | | 150 |
| E | 3.00 | | 0.06 | 9.00 | 11.00 | 16200 | 16200 | 16000 | 31.00 | | | 2.79 | | 140 |
| E | 3.00 | | 0.07 | 9.00 | 11.00 | 16400 | 16100 | 16000 | 32.00 | | | 2.78 | | 130 |
| E | 3.00 | | 0.06 | 9.00 | 11.00 | 16000 | 16400 | 16000 | 32.00 | | | 2.73 | | 140 |
| E | 3.00 | | 0.05 | 9.00 | 11.00 | 16400 | 16700 | 16000 | 34.00 | | | 2.78 | | 140 |
| E | 3.00 | | 0.06 | 10.00 | 12.00 | 16300 | 16300 | 16000 | 36.00 | | | 2.81 | | 140 |
| F | 4.10 | | 0.05 | 8.00 | 11.00 | 16000 | 17100 | 17100 | 41.00 | | 20.00 | 3.01 | 3.67 | 165 |
| F | 4.00 | | 0.05 | 8.00 | 11.00 | 15900 | 17600 | 17200 | 40.00 | | 20.00 | 3.00 | 3.51 | 163 |
| F | 4.10 | | 0.05 | 8.00 | 11.00 | 15900 | 17900 | 17100 | 42.00 | | 20.00 | 3.04 | 3.58 | 166 |
| F | 4.10 | | 0.06 | 8.00 | 11.00 | 16000 | 17400 | 16900 | 42.00 | | 20.00 | 3.05 | 3.65 | 173 |
| F | 4.10 | | 0.06 | 9.00 | 11.00 | 17000 | 17900 | 17300 | 42.00 | | 20.00 | 2.94 | 3.59 | 168 |
| F | 4.00 | | 0.05 | 8.00 | 11.00 | 16000 | 17200 | 17000 | 42.00 | | 20.00 | 3.06 | 3.47 | 169 |
| F | 4.10 | | 0.06 | 8.00 | 12.00 | 16000 | 17300 | 17200 | 44.00 | | 30.00 | 3.04 | 3.52 | 173 |
| F | 4.10 | | 0.05 | 8.00 | 11.00 | 17000 | 16900 | 17100 | 43.00 | | 20.00 | 2.97 | 3.52 | 169 |
| G | 3.70 | | 0.06 | | | | | 17000 | 34.00 | 48.00 | | | | 140 |
| G | 3.70 | | 0.06 | | 10.00 | | | 17000 | 34.00 | 48.00 | | | | 130 |
| G | 3.60 | | 0.06 | | 12.00 | | | 17000 | 34.00 | 48.00 | | | | 140 |
| G | 3.80 | | 0.05 | | 12.00 | | | 17000 | 33.00 | 48.00 | | | | 130 |
| G | 3.80 | | 0.07 | | 12.00 | | | 16000 | 35.00 | 48.00 | | | | 130 |
| G | 3.60 | | 0.06 | | 12.00 | | | 16000 | 35.00 | 49.00 | | | | 130 |
| G | 3.90 | | 0.06 | | 11.00 | | | 16000 | 36.00 | 48.00 | | | | 130 |
| G | 3.80 | | 0.06 | | 13.00 | | | 16000 | 35.00 | 48.00 | | | | 140 |
| H | 3.50 | 7.00 | 0.06 | 12.00 | 15.00 | 16700 | 16600 | 16500 | 42.00 | | 13.00 | 2.68 | 3.90 | 154 |
| H | 3.50 | 6.00 | 0.06 | 10.00 | 10.00 | 16600 | 16400 | 16400 | 44.00 | | 15.00 | 2.63 | 3.90 | 150 |
| H | 4.00 | 4.00 | 0.06 | 10.00 | 10.00 | 16600 | 16100 | 16600 | 46.00 | | 14.00 | 2.64 | 3.80 | 156 |
| H | 3.50 | 6.00 | 0.06 | 10.00 | 10.00 | 17000 | 16200 | 16900 | 42.00 | | 14.00 | 2.63 | 3.70 | 156 |
| H | 3.50 | 6.00 | 0.06 | 12.00 | 10.00 | 16600 | 16200 | 16600 | 42.00 | | 13.00 | 2.63 | 3.70 | 154 |
| H | 3.50 | 4.00 | 0.06 | 10.00 | 10.00 | 16700 | 16600 | 17100 | 42.00 | | 13.00 | 2.67 | 4.00 | 152 |
| H | 3.50 | 4.00 | 0.06 | 12.00 | 10.00 | 16600 | 16900 | 16900 | 42.00 | | 14.00 | 2.65 | 3.80 | 156 |
| H | 3.50 | 6.00 | 0.06 | 10.00 | 10.00 | 17000 | 16400 | 16700 | 42.00 | | 15.00 | 2.69 | 3.90 | 158 |
| I | 3.60 | 9.31 | 0.05 | 11.00 | 5.60 | 15300 | | 15089 | 50.27 | 42.50 | 14.55 | 2.80 | 1.83 | 135 |
| I | 3.60 | 10.26 | 0.04 | 10.00 | 7.76 | 15606 | | 15958 | 54.96 | 39.80 | 12.56 | 2.78 | 1.50 | 132 |
| I | 2.40 | 9.41 | 0.05 | 9.00 | 8.16 | 15708 | | 16590 | 50.63 | 38.10 | 12.20 | 2.78 | 1.60 | 137 |
| I | 4.70 | 9.73 | 0.04 | 7.00 | 8.16 | 15708 | | 15800 | 53.37 | 43.50 | 17.06 | 2.78 | 1.63 | 133 |
| I | 3.80 | 10.27 | 0.05 | 7.00 | 7.52 | 15708 | | 15879 | 55.85 | 37.20 | 10.76 | 2.77 | 1.83 | 134 |
| I | 2.30 | 11.24 | 0.05 | 10.00 | 10.72 | 15504 | | 16511 | 51.60 | 39.10 | 8.01 | 2.78 | 1.92 | 133 |
| I | 6.30 | 10.24 | 0.05 | 10.00 | 10.08 | 15708 | | 16432 | 47.88 | 40.60 | 13.91 | 2.78 | 2.14 | 136 |
| I | 2.60 | 9.76 | 0.06 | 10.00 | 11.20 | 15606 | | 16353 | 58.77 | 40.70 | 9.63 | 2.77 | 2.33 | 131 |

| Lab Code | Ag T/ICP ppm | As T/ICP ppm | Au Pb coll ppm | Co P ppm | Co T/ICP ppm | Cu F ppm | Cu P ppm | Cu T/ICP ppm | Ni T/ICP ppm | Ni XRF ppm | Pb T/ICP ppm | SG g/cc | U T/ICP ppm | Zn T/ICP ppm |
|----------|--------------|--------------|----------------|----------|--------------|----------|----------|--------------|--------------|------------|--------------|---------|-------------|--------------|
| J | 2.70 | 3.00 | 0.05 | 9.00 | 9.60 | 15964 | 16120 | 15684 | 42.00 | 37.00 | 13.00 | 2.81 | 3.36 | 161 |
| J | 3.00 | 4.00 | 0.06 | 9.00 | 9.40 | 16189 | 16921 | 15684 | 42.00 | 36.00 | 13.00 | 2.81 | 3.31 | 165 |
| J | 2.80 | 4.00 | 0.07 | 10.00 | 9.70 | 16190 | 16496 | 15136 | 39.00 | 35.00 | 13.00 | 2.80 | 3.29 | 150 |
| J | 3.00 | 5.00 | 0.05 | 10.00 | 9.50 | 15993 | 15859 | 15395 | 40.00 | 34.00 | 14.00 | 2.80 | 3.32 | 151 |
| J | 2.60 | 3.00 | 0.06 | 9.00 | 9.60 | 16101 | 16044 | 15529 | 39.00 | 37.00 | 13.00 | 2.81 | 3.51 | 151 |
| J | 2.90 | 4.00 | 0.05 | 9.00 | 9.40 | 15922 | 16079 | 15924 | 40.00 | 35.00 | 13.00 | 2.83 | 3.29 | 152 |
| J | 3.00 | 6.00 | 0.05 | 9.00 | 9.40 | 15986 | 16512 | 15397 | 38.00 | 37.00 | 14.00 | 2.82 | 3.29 | 148 |
| J | 2.90 | 4.00 | 0.06 | 9.00 | 9.40 | 15904 | 16239 | 15977 | 40.00 | 36.00 | 13.00 | 2.82 | 3.21 | 153 |
| K | 3.60 | 7.00 | 0.07 | 10.00 | 12.00 | 16500 | 16210 | 18685 | 34.40 | | 12.90 | 2.51 | 3.90 | 182 |
| K | 3.60 | 9.00 | 0.05 | 10.00 | 11.00 | 16400 | 16230 | 18187 | 39.00 | | 14.20 | 2.56 | 4.00 | 178 |
| K | 3.80 | 9.00 | 0.07 | 10.00 | 13.00 | 16300 | 16510 | 18232 | 38.20 | | 13.40 | 2.49 | 4.00 | 170 |
| K | 3.80 | 7.00 | 0.06 | 10.00 | 12.00 | 16800 | 16380 | 17990 | 42.00 | | 14.00 | 2.50 | 4.00 | 168 |
| K | 3.50 | 10.00 | 0.06 | 10.00 | 12.00 | 16700 | 16060 | 17561 | 36.60 | | 12.40 | 2.54 | 3.90 | 169 |
| K | 3.40 | 11.00 | 0.06 | 10.00 | 12.00 | 16800 | 16150 | 17878 | 39.30 | | 15.90 | 2.54 | 3.90 | 173 |
| K | 3.90 | 7.00 | 0.09 | 10.00 | 12.00 | 16100 | 16120 | 17883 | 42.80 | | 14.20 | 2.48 | 3.80 | 171 |
| K | 3.60 | | 0.06 | 10.00 | 12.00 | 16300 | 16060 | 17856 | 38.50 | | 12.10 | 2.59 | 3.80 | 162 |
| L | | | 0.05 | 11.00 | 10.80 | 16300 | | 16600 | 41.40 | 43.00 | 12.00 | 2.75 | 4.20 | 135 |
| L | | | 0.06 | 12.00 | 11.00 | 15700 | | 16600 | 40.90 | 39.00 | 16.00 | 2.84 | 4.10 | 130 |
| L | | | 0.07 | 12.00 | 10.80 | 16100 | | 16500 | 38.90 | 43.00 | 15.00 | 2.72 | 4.00 | 127 |
| L | | | 0.07 | 12.00 | 10.10 | 16400 | | 16800 | 40.50 | 41.00 | 15.00 | 2.72 | 4.30 | 127 |
| L | | | 0.06 | 11.00 | 11.10 | 16300 | | 16900 | 43.60 | 43.00 | 17.00 | 2.77 | 4.10 | 136 |
| L | | | 0.05 | 10.00 | 11.40 | 16700 | | 16300 | 42.90 | 38.00 | 16.00 | 2.79 | 4.30 | 136 |
| L | | | 0.06 | 11.00 | 10.30 | 17700 | | 16400 | 41.20 | 43.00 | 14.00 | 2.75 | 7.70 | 126 |
| L | | | 0.05 | 10.00 | 11.40 | 16200 | | 16200 | 43.30 | 40.00 | 16.00 | 2.75 | 9.30 | 138 |
| M | | | | | 9.96 | | | 16200 | | | 19.91 | | | 139 |
| M | | | | | 10.00 | | | 16000 | | | 29.99 | | | 130 |
| M | | | | | 9.99 | | | 15300 | | | 29.97 | | | 140 |
| M | | | | | 9.98 | | | 15300 | | | 19.97 | | | 140 |
| M | | | | | 9.98 | | | 15900 | | | 29.93 | | | 130 |
| M | | | | | 10.00 | | | 15500 | | | 29.99 | | | 130 |
| M | | | | | 9.98 | | | 16300 | | | 29.94 | | | 140 |
| M | | | | | 9.91 | | | 16100 | | | 29.97 | | | 130 |
| N | | | | 9.95 | | | | 17502 | | | | | | |
| N | | | | 6.83 | | | | 17360 | | | | | | |
| N | | | | 12.86 | | | | 16659 | | | | | | |
| N | | | | 10.06 | | | | 16424 | | | | | | |
| N | | | | 7.98 | | | | 17154 | | | | | | |
| N | | | | 6.79 | | | | 17003 | | | | | | |
| N | | | | 6.59 | | | | 16976 | | | | | | |
| N | | | | 6.64 | | | | 17040 | | | | | | |
| O | 3.78 | 3.78 | 0.09 | 9.89 | 10.88 | | | 16589 | 16446 | 38.53 | | 12.06 | 3.28 | 156 |
| O | 3.85 | 4.03 | 0.07 | 9.71 | 10.74 | | | 16491 | 16679 | 39.23 | | 12.08 | 3.28 | 158 |
| O | 3.81 | 3.84 | 0.06 | 9.86 | 10.95 | | | 16653 | 16735 | 38.88 | | 12.16 | 3.25 | 158 |
| O | 3.74 | 4.24 | 0.06 | 10.12 | 11.25 | | | 16363 | 16743 | 38.95 | | 12.74 | 3.29 | 161 |
| O | 3.74 | 4.18 | 0.07 | 9.86 | 11.00 | | | 16117 | 16759 | 39.16 | | 12.20 | 3.28 | 159 |
| O | 3.76 | 4.20 | 0.11 | 10.52 | 11.13 | | | 16246 | 16486 | 39.15 | | 12.31 | 3.26 | 157 |
| O | 3.78 | 4.02 | 0.06 | 9.79 | 10.78 | | | 16530 | 16700 | 39.11 | | 12.47 | 3.27 | 157 |
| O | 3.71 | 3.81 | 0.07 | 9.64 | 10.91 | | | 16246 | 16654 | 38.76 | | 12.31 | 3.29 | 162 |
| P | | 4.30 | 0.06 | | 10.20 | 16600 | | 15000 | 34.90 | 48.00 | 12.70 | | | 158 |
| P | | 3.81 | 0.05 | | 10.10 | 16700 | | 15000 | 33.30 | 42.00 | 12.70 | | | 142 |
| P | | 3.47 | 0.06 | | 10.20 | 16800 | | 15100 | 34.00 | 41.00 | 12.80 | | | 141 |
| P | | 3.75 | 0.07 | | 10.30 | 16800 | | 14900 | 35.10 | 45.00 | 13.50 | | | 143 |
| P | | 3.60 | 0.05 | | 11.50 | 16700 | | 15100 | 34.00 | 46.00 | 12.70 | | | 140 |
| P | | 4.00 | 0.05 | | 11.10 | 16800 | | 15100 | 34.30 | 47.00 | 15.30 | | | 146 |
| P | | 5.89 | 0.06 | | 9.92 | 16600 | | 14900 | 32.00 | 87.00 | 12.00 | | | 141 |
| P | | 4.10 | 0.05 | | 10.80 | 16800 | | 15100 | 35.50 | 43.00 | 13.20 | | | 149 |
| Q | | | 0.05 | 8.45 | 11.40 | 15869 | | | 38.00 | 32.00 | 13.50 | | 3.72 | 137 |
| Q | | | 0.07 | 8.64 | 11.20 | 16577 | | | 39.00 | 34.00 | 13.60 | | 3.63 | 137 |
| Q | | | 0.05 | 8.92 | 11.20 | 16922 | | | 38.00 | 32.00 | 13.00 | | 3.63 | 132 |
| Q | | | 0.05 | 8.77 | 10.80 | 16237 | | | 39.00 | 31.00 | 13.40 | | 3.71 | 136 |
| Q | | | 0.06 | 8.55 | 11.10 | 16702 | | | 39.00 | 32.00 | 13.00 | | 3.69 | 138 |
| Q | | | 0.06 | 9.09 | 11.50 | 15959 | | | 40.00 | 34.00 | 13.30 | | 3.66 | 139 |
| Q | | | 0.05 | 8.89 | 11.40 | 16238 | | | 42.00 | 32.00 | 13.80 | | 3.92 | 134 |
| Q | | | 0.05 | 8.90 | 10.90 | 16117 | | | 40.00 | 33.00 | 13.20 | | 3.74 | 137 |
| R | 4.00 | 9.00 | 0.06 | | 13.00 | | | 17000 | 39.00 | | 14.00 | | | 182 |
| R | 3.90 | 9.00 | 0.09 | | 13.00 | | | 16900 | 38.00 | | 14.00 | | | 180 |
| R | 3.80 | 10.00 | 0.07 | | 12.00 | | | 17000 | 38.00 | | 13.00 | | | 174 |
| R | 3.80 | 8.00 | 0.06 | | 12.00 | | | 16900 | 38.00 | | 15.00 | | | 178 |
| R | 4.00 | 7.00 | 0.05 | | 12.00 | | | 16800 | 37.00 | | 15.00 | | | 176 |
| R | 3.80 | 7.00 | 0.06 | | 13.00 | | | 17000 | 41.00 | | 12.00 | | | 187 |
| R | 3.90 | 7.00 | 0.06 | | 12.00 | | | 17200 | 38.00 | | 15.00 | | | 178 |
| R | 4.10 | 8.00 | 0.07 | | 12.00 | | | 17200 | 39.00 | | 14.00 | | | 179 |
| S | | | | | | | | | | | | | | |
| S | | | | | | | | | | | | | | |
| S | | | | | | | | | | | | | | |
| S | | | | | | | | | | | | | | |
| S | | | | | | | | | | | | | | |
| S | | | | | | | | | | | | | | |
| S | | | | | | | | | | | | | | |
| T | 4.70 | 6.10 | 0.06 | 10.00 | 13.20 | 15300 | | | 39.90 | | 7.40 | | 4.30 | 160 |
| T | 4.90 | 6.80 | 0.06 | 10.00 | 14.10 | 15500 | | | 42.50 | | 10.80 | | 4.80 | 171 |
| T | 4.80 | 6.50 | 0.07 | 10.00 | 14.70 | 15700 | | | 41.80 | | 13.10 | | 4.10 | 168 |
| T | 4.80 | 6.80 | 0.05 | 10.00 | 14.30 | 15300 | | | 41.10 | | 11.10 | | 4.10 | 163 |
| T | 4.80 | 6.40 | 0.05 | 10.00 | 14.70 | 15200 | | | 42.10 | | 9.40 | | 4.20 | 170 |
| T | 4.70 | 6.40 | 0.06 | 10.00 | 14.70 | 15400 | | | 40.90 | | 10.40 | | 4.10 | 164 |
| T | 5.00 | 6.20 | 0.05 | 10.00 | 13.90 | 15800 | | | 41.90 | | 8.70 | | 4.10 | 170 |
| T | 5.20 | 6.90 | 0.06 | 10.00 | 14.90 | 15600 | | | 42.90 | | 8.50 | | 4.40 | 172 |

Availability: This product is available in Laboratory Packs containing 1kg of material or in Explorer Packs containing client specified weights of material (from 50g up to 250g). Laboratory Packs are sealed bottles delivered in sealed foil pouches. Explorer Packs contain material in standard geochem envelopes placed into foil pouches that are nitrogen flushed and vacuum sealed.

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.

19 January 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

Additional trace element statistics.

| | Mean | 2SD | RSD% | n | unit |
|-------------|------|------|------|----|------|
| Al M/ICP | 2.16 | 0.20 | 4.5 | 40 | ppm |
| Au Pb coll* | 57 | 15 | 13.1 | 60 | ppb* |
| Ba M/ICP | 948 | 116 | 6.1 | 55 | ppm |
| Be M/ICP | 0.76 | 0.21 | 13.6 | 32 | ppm |
| Bi M/ICP | 0.83 | 0.21 | 12.4 | 32 | ppm |
| Ca M/ICP | 1.37 | 0.13 | 4.6 | 37 | ppm |
| Ce M/ICP | 29 | 7 | 11.8 | 40 | ppm |
| Cr M/ICP | 412 | 145 | 17.6 | 48 | ppm |
| Cs M/ICP | 1.50 | 0.67 | 22.4 | 30 | ppm |
| Dy M/ICP | 1.65 | 0.31 | 9.3 | 24 | ppm |
| Eu M/ICP | 0.56 | 0.18 | 16.0 | 24 | ppm |
| Fe M/ICP | 2.18 | 0.12 | 2.8 | 40 | ppm |
| Ga M/ICP | 6.00 | 2.07 | 17.3 | 40 | ppm |
| Gd M/ICP | 2.03 | 0.44 | 10.9 | 24 | ppm |
| Hf M/ICP | 1.76 | 0.33 | 9.3 | 32 | ppm |
| Ho M/ICP | 0.31 | 0.09 | 14.0 | 24 | ppm |
| In M/ICP | 0.04 | | | 14 | ppm |
| K M/ICP | 1.19 | 0.12 | 5.2 | 45 | ppm |
| La M/ICP | 15 | 3 | 10.4 | 40 | ppm |
| Li M/ICP | 31 | 3 | 4.9 | 40 | ppm |
| Lu M/ICP | 0.13 | 0.04 | 14.6 | 16 | ppm |
| Mg M/ICP | 1.35 | 0.19 | 7.1 | 48 | ppm |
| Mn M/ICP | 1157 | 113 | 4.9 | 47 | ppm |
| Mo M/ICP | 3.26 | 0.95 | 14.5 | 39 | ppm |
| Na M/ICP | 341 | 102 | 14.9 | 38 | ppm |
| Nb M/ICP | 6.66 | 4.82 | 36.2 | 47 | ppm |
| Nd M/ICP | 13 | 3 | 10.8 | 24 | ppm |
| P M/ICP | 427 | 80 | 9.3 | 48 | ppm |
| Pr M/ICP | 3.43 | 0.57 | 8.4 | 24 | ppm |
| Rb M/ICP | 40 | 10 | 12.5 | 40 | ppm |
| Sb M/ICP | 7.17 | 1.12 | 7.8 | 38 | ppm |
| Sc M/ICP | 5.17 | 0.85 | 8.2 | 42 | ppm |
| Sm M/ICP | 2.49 | 0.57 | 11.5 | 24 | ppm |
| Sn M/ICP | 1.75 | 0.33 | 9.4 | 40 | ppm |
| Sr M/ICP | 44 | 9 | 9.8 | 54 | ppm |
| Ta M/ICP | 0.32 | 0.30 | 47.4 | 40 | ppm |
| Tb M/ICP | 0.29 | 0.07 | 11.6 | 24 | ppm |
| Th M/ICP | 3.89 | 0.49 | 6.3 | 30 | ppm |
| Ti M/ICP | 2177 | 649 | 14.9 | 48 | ppm |
| Tl M/ICP | 0.20 | 0.04 | 9.9 | 31 | ppm |
| Tm M/ICP | 0.13 | 0.03 | 13.3 | 24 | ppm |
| U M/ICP | 3.87 | 0.97 | 12.6 | 62 | ppm |
| V M/ICP | 53 | 13 | 12.5 | 56 | ppm |
| W M/ICP | 0.57 | 0.17 | 15.2 | 38 | ppm |
| Y M/ICP | 8.62 | 3.73 | 21.6 | 53 | ppm |
| Yb M/ICP | 0.89 | 0.21 | 12.1 | 23 | ppm |
| Zr M/ICP | 70 | 27 | 19.2 | 47 | ppm |

* NB - These ppb results are for information purposes. Based on the lab results Au is officially certified as "Provisional" 0.06± 0.02 g/t.