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Assessment Report on 1991 Linecutting and I.P. Geophysics on the Sam Group near Greenwood, B.C.

Greenwood Mining Division

NTS 82E/2E

Latitude 49°05'51"N Longitude 118°46'37"W

| SUB-RECORDER | Owner and Operator: |
|------------------------|--------------------------|
| RECEIVED | Minnova, Inc. |
| JAN 8 1992 | Floor - 311 Water Street |
| M.R. #\$3zd | Vancouver, B.C. |
| M.R. # WANCOINER, B.C. | V6B-1B8 |

C.J. Clayton January, 1992

GEOLOGICAL BRANCH ASSESSMENT REPORT

22.031

SUMMARY

The Sam Group consists of 10 contiguous 2 post claims located in the Greenwood Mining Division (NTS 82E/2E) of south central B.C. approximately 6 km west of Greenwood.

The claims are underlain by a sequence of Permo-Triassic chert, ash tuff and crystal tuff, as well as Tertiary volcaniclastics, conglomerate, and argillite. The property lies at the eastern margin of the Toroda graben and is dissected by a number of extensional faults related to Tertiary graben formation. Units generally strike in a north-south direction with dips varying from west to east at moderate angles.

The property is located approximately 5 km southwest of the Motherlode and Greyhound skarn deposits. The Greenwood camp is well known as a past producer of Cu and Au from skarn mineralization.

Induced Polarization geophysics delineated three distinct linear zones of resistivity less than 100 ohm-m and two broad zones of chargeabilities greater than 20 mV/V.

<u>i</u>

TABLE OF CONTENTS

| | Page: |
|--|----------------------------|
| SUMMARY | i |
| <pre>1.0 INTRODUCTION 1.1 General 1.2 Property Location and Access 1.3 Topography, Vegetation and Climate 1.4 Property and Ownership 1.5 Property History 1.6 Summary of Assessment Work, August - September, 1991</pre> | 1 1 1 2 2 3 |
| <pre>2.0 GEOLOGY 2.1 Regional Geology 2.2 Property Geology</pre> | 3 3 . 4 |
| 3.0 INDUCED POLARIZATION GEOPHYSICS | 5 |
| 4.0 CONCLUSIONS AND RECOMMENDATIONS | 13 |
| 5.0 REFERENCES | 14 |

LIST OF FIGURES

After Page:

| Figure Figure | 1 2 | • | Sam Group Location Map Claim Configuration, Grid Orientation, and Geophysical Coverage | | 1 3 |
|------------------|--------|---|--|-----|---------|
| | | | | Мар | Pocket: |
| Figure | 3 | : | Line 400S; I.P. Resistivity and Chargeability Pseudosections | | 1 |
| Figure | 4 | : | Line 200S; I.P. Resistivity and Chargeability Pseudosections | | 1 |
| Figure | 5 | : | Line 000N; I.P. Resistivity and Chargeability Pseudosections | | . 2 |
| Figure | 6 | : | Line 200N; I.P. Resistivity and Chargeability Pseudosections | | 2 |
| Figure | 7 | : | Line 400N; I.P. Resistivity and Chargeability Pseudosections | | 3 |
| Figure | 8 | : | Line 600N; I.P. Resistivity and Chargeability Pseudosections | | 3 |
| Figure | 9 | : | Line 800N; I.P. Resistivity and Chargeability Pseudosections | | 4 |
| Figure | 10 | : | Line 1000N; I.P. Resistivity and Chargeability Pseudosections | | 4 |

<u>iii</u>

TABLE OF CONTENTS

LIST OF TABLES

.

.

| Table | I: | Summary of | Claim Status | 2 |
|-------|-----|------------|---------------------------|---|
| Table | II: | Summary of | Geophysical Line Coverage | 3 |

LIST OF APPENDICES

.

| Appendix | I | : | Statement | of | Costs |
|----------|----|---|-----------|----|----------------|
| Appendix | II | : | Statement | of | Qualifications |

1.0 INTRODUCTION

1.1 General

This report describes the results of a 6.15 km linecutting and 6.15 km I.P. geophysical program carried out on the Sam Group between August 1 and September 30, 1991. Grid coverage was extended over the Sam Group as part of an exploration program on the adjacent Rainbow-Tam O'Shanter property. Only portions of those grid lines crossing the Sam Group property will be reported. The program was aimed at assessing the potential of the property for vein and disseminated type mineralization, and for skarn mineralization.

1.2 Property Location and Access

The Sam Group is situated within the Greenwood Mining Division at Latitude 49° 05' 51" North, and Longitude 118° 46' 37" West on NTS Map Sheet 82E/2E (Figure 1). This is approximately 6 km westsouthwest of the city of Greenwood, B.C. Access to the claims is via the old Motherlode mine road to the east of town winding up past the Greenwood smelter. This road leads to the garbage dump and is kept in excellent repair. Approximately 2 km from town an old well maintained logging road branches off to the westsouthwest. This is followed for approximately 4 km until a fork is reached. The road is on the property at this point and further access is gained by a network of old logging roads and skid trails.

1.3 Topography, Vegetation, and Climate

Topographic relief is extreme in areas, generally ranging from 900 metres above sea level (A.S.L.) to approximately 1500 metres A.S.L. The northern portions of the property have gentler relief. Vegetation consists predominantly of Lodgepole pine and Douglas fir. Areas near active drainages have dense alder.

Climate is moderate with ambient temperatures from -15° C in winter to 30° C in summer.



1.4 Property and Ownership

The Sam Group of claims consists of 10 contiguous 2 post claims comprising a total of 10 claim units. Claim information is summarised in the following table:

Table I: Summary of Claim Status

| CLA: | IM N | AME | REC. No. | No. OF UNITS | EXP. DATE | NEW EXP. DATE |
|------|------|--------|----------|--------------|-----------|---------------|
| SAM | 1 (| 1848) | 214357 | 1 | 10/12/91 | 10/12/1997* |
| SAM | 2 (| 1849) | 214358 | 1 | 10/12/92 | 10/12/1998* |
| SAM | 3 (| 1850) | 214359 | 1 | 10/12/91 | 10/12/1997* |
| SAM | 4 (| 1851) | 214360 | 1 | 10/12/91 | 10/12/1997* |
| SAM | 5 (| 3900) | 214709 | 1 | 10/18/91 | 10/18/1997* |
| SAM | 6 (| 3901) | 214710 | 1 | 10/18/92 | 10/18/1998* |
| SAM | 8 (| 3902) | 214711 | 1 | 10/18/91 | 10/18/1997* |
| SAM | 9 (| 2439) | 214504 | 1 | 10/21/91 | 10/91/1997* |
| SAM | 10 | (2440) | 214505 | 1 | 10/21/91 | 10/21/1997* |
| SAM | 11 | (6405) | 216269 | 1 | 05/24/92 | 05/24/1998* |

*Upon acceptance of this report.

1.5 Property History

The Greenwood area is known for its Cu/Au skarn deposits within calcareous units of Triassic Brooklyn Formation, and for smaller tonnage precious metal vein deposits.

Intermittent work has been carried out on the claim group and immediate surrounding area since 1895. Previous work on the group consists generally of a number of old hand dug trenches and the occasional small adit driven along mineralized structures. In 1897 a 15 metre shaft was driven along a mineralized vein and fault zone on an adjacent property. This zone could be traced in open cuts for 91 metres. Mineralization reportedly consists of massive and disseminated pyrrhotite with minor pyrite and arsenopyrite, and local blebs and masses of milky quartz. 1.6 Summary of Assessment Work, August - September, 1991 As stated in the introduction, only portions of the grid lines crossing the Sam Group will be reported herein. A total of 6.15 km of I.P. quality grid line was cut on the property using hand tools. Induced polarization geophysics was completed over the 6.15 km of cut line. The following is a listing of the lines completed and beginning and end stations covered by this report:

| LINE | FROM | <u>T0</u> | DISTANCE |
|--------|-------|-----------|------------------|
| 4+00S | 1500E | 1600E | 100m |
| 2+00S | 1500E | 2000E | 500m |
| 0+00N | 1500E | 2000E | 500m |
| 2+00N | 1200E | 2375E | 1175m |
| 4+00N | 1200E | 2375E | 1175m |
| 6+00N | 1225E | 2200E | 975m |
| 8+00N | 1350E | 2200E | 850m |
| 10+00N | 1325E | 2200E | <u>875m</u> |
| | | TOTA | <u>AL:</u> 6150m |

Table II: Summary of Geophsyical Line Coverage

Claim configuration, grid orientation, and geophysical coverage are shown in Figure 2.

2.0 GEOLOGY

2.1 Regional Geology

Regional geology of the area consists of Late Palaeozoic and Mesozoic volcanic and sedimentary rocks metamorphosed to greenschist facies. These are intruded by Mesozoic plutons and unconformably overlain by Tertiary volcaniclastic and flow rocks.

Late Palaeozoic rocks consist of chert greenstone, diorite and serpentinite of the Knob Hill Group, and dark grey argillite, limestone and minor volcanic rocks (andesite) belonging to the Attwood Group. These rocks are unconformably overlain by Triassic Brooklyn Formation, a sequence of clastic sedimentary rocks, limestones and submarine pyroclastic breccias and dioritic



intrusions.

Early Tertiary tectonism included resurgent magmatic activity, horst and graben development, and thrusting. Tertiary rock distributions in the area are controlled by extensional faulting.

The Sam Group is located along the eastern margins of the Toroda Creek graben flanking the Tenas Mary horst to the west. To the east of the horst is the Republic graben which extends south into the United States.

2.2 Property Geology

Property geology consists primarily of a bedded sequence of Carboniferous to Permian cherty sediments, volcaniclastic rocks (ash to crystal tuff), and argillite, generally striking north north-west and dipping 40-50° north-east, although strikes and dips vary locally. These are intruded locally by small sills and dykes of microdioritic, trachytic, and hornblende dioritic composition. Past interpretation has grouped the microdiorite and trachyte with the Carboniferous Knob Hill Group, however regional observations suggest the microdiorite may belong to the Jurassic/Cretaceous Nelson Plutonic Series. A major north-south trending structure, the Greyhound Creek Fault, cuts across the Sam #3 and Sam #5 claims separating the Permo-Carboniferous units to the west from possible Triassic age quartzite, calcareous phyllite, and impure limestone in the southeast corner of the Sam #5 claim. These units strike in a roughly east-northeast direction, dipping to the northwest.

In addition to the above sequence, a series of chert pebble conglomerate and sheared volcanic agglomerate occur on the property. The chert pebble conglomerate is described as consisting of fine chert pebbles 2-15 mm in diameter within a sandy silicious matrix. Agglomerate is described as a coarse collection of light to medium grey sandy material in a black silicious matrix. Fyles

<u>4</u>

(1990) suggests the conglomerate and agglomerate belong to the Carboniferous or Permian Knob Hill Group while Little (1979) indicates these to be of Triassic age belonging to the Brooklyn Formation.

Argillite reportedly hosts much of the quartz, pyrite, pyrrhotite mineralization seen on the property. Known mineralization consists of bands of massive pyrite, pyrrhotite, minor chalcopyrite, and arsenopyrite in a quartz breccia.

3.0 INDUCED POLARIZATION GEOPHYSICS

The survey was conducted by Dennis Morrison of CME Consulting Ltd of Vancouver, B.C. between August 1 and September 30 of 1991, using a pole-dipole array. Instrumentation used was a BRGM ELREC-6 Receiver with a 2.5 kW Huntec Transmitter and a 2 second pulse rate. A 25 metre "A" spacing was used with readings for N=1..6.

Results for both resistivity and chargeability are plotted on Figures 3 through 10.

LINE 400S; FIGURE 3

Resistivity Results

A broad zone of low resistivities (<300 ohm-m) is seen in this area. Within this broad zone is a smaller, localised, near surface low resistivity (<200 ohm-m) feature. This occurs from 15+25E to the end of line at 15+75E and is open to the east.

Chargeability Results

A zone of active chargeabilities at depth corresponds to the area of low resistivities described above. Chargeabilities for N=4 and greater exceed 20 mV/V to a maximum of 30 mV/V. Surface chargeabilities are low (<15 mV/V) at the end of the line in the area of lowest resistivity and these results may indicate overburden material.

5

LINE 200S; FIGURE 4

Resistivity Results

A broad zone of low resistivities is seen the length of I.P. These are generally less than 300 ohm-m in intensity. coverage. Within this broad area are steeply dipping localised zones of lower resistivity (<200 ohm-m) down to a low of 65 ohm-m at surface at The first low resistivity feature occurs from 15+75E to 16+50E. This fairly broad surficial zone becomes 16+75E for N=1..2. restricted at depth between 16+25E and 16+50E for N=1..6. Α resistivity feature occurs from seated low deep second, approximately 17+50E to 17+75E. At surface a resistivity high occurs (>1500 ohm-m) at 17+50E. This corresponds to an area of silicification. A third prominent resistivity low feature is seen from 17+75E to 18+00E for N=2..6. These three strong resistivity features are most probably associated with fault zones.

Chargeability Results

From 15+00E to 17+75E a broad zone of moderate chargeability response (in general >15 mV/V and <25 mV/V) is seen for N=3..6 underneath a broad low chargeability surface feature which is most likely overburden material. The most prominent chargeability feature occurs from approximately 17+25E for N=5..6 to 19+50E for N=1..6. This zone is characterised by chargeabilities greater than 20 mV/V with a wide area of greater than 30 mV/V from approximately 17+75E to 19+50E. This particular feature corresponds with the third low resistivity feature noted in the preceding paragraph.

LINE 000N; FIGURE 5

Resistivity Results

A small zone of lower resistivities is seen from 15+50E (N=3..6) to 16+50E (N=3..6). The values are generally less than 400 ohm-m with localised areas of less than 300 ohm-m. The restricted nature of this zone suggests it may represent a fault. A small, highly resistive (>1000 ohm-m) feature is seen at 16+75E and may indicate

<u>6</u>

silicification. The most interesting resistivity feature on this line occurs from 18+00E to 20+00E. This is a broad, continuous zone of resistivities less than 300 ohm-m.

Chargeability Results

A small zone of weak chargeability is seen from 16+00E to 16+75Eand is associated with a zone of high resistivity in this area. Highest chargeabilities (>30 mV/V) occur from 16+50E at N=6 to 20+00E, N=1..6. Values through this zone are consistently between 35 mV/V and 45 mV/V. From approximately 19+50E to 19+85E a small zone of chargeabilities between 24 mV/V and 30 mV/V occurs. The broad zone of high chargeability occurs coincident with the zone of low resistivities described above.

LINE 200N; FIGURE 6

Resistivity Results

From 12+00E to 13+75E a series of what appear to be small, restricted, parallel zones of weak resistivity lows (<500 ohm-m) These may be small parallel structures steeply dipping in occur. a westerly direction. From 14+25E to 15+50E resistivities drop to under 300 ohm-m. This broader resistivity feature is likely related to the smaller zones previously described as it appears to have the same orientation. Another area of low resistivities (<300 ohm-m) occurs from approximately 17+50E to 19+75E. Within this broad zone is a restricted steeply dipping to vertical feature with resistivities less than 100 ohm-m from 18+50E to 18+75E. A strong break in resistivities is apparent beginning at 20+25E with values rising continuously to the east. From 21+25E onward to the east, resistivities are greater than 1000 ohm-m. The sharp break may indicate the location of the northerly trending Greyhound Creek Fault zone.

<u>7</u>

<u>8</u>

Chargeability Results

Chargeabilities 12+00E to approximately 16+50E are from consistently between 15 mV/V and 20 mV/V with three restricted zones of higher chargeabilities (between 20 mV/V and 25 mV/V). These zones generally correspond to resistivity features described for this interval above. From 16+50E to 19+00E values are generally between 25 mV/V and 40 mV/V with local highs up to 52 Three restricted zones of +30 mV/V are seen within the mV/V. broader zone, the first at 16+75E, the second from approximately 17+60E to 18+00E, and the third from approximately 18+25E to This last zone corresponds to a steeply dipping zone of 18+75E. low resistivity from 18+50E to 18+75E. An abrupt drop in chargeabilities occurs at 19+00E, with values dropping to less than 5 mV/V from 19+00E to 19+50E. Values increase only slightly to the end of the line with occasional spot highs of 21 mV/V.

LINE 400N; FIGURE 7

Resistivity Results

Background resistivity values from 12+00E to 20+00E generally fluctuate between 300 ohm-m and 500 ohm-m. Three main zones of less than 300 ohm-m values occur, which contain within them more restricted zones of less than 200 ohm-m values. From approximately 12+50E to 13+25E values drop below 300 ohm-m for N=1..5 in a circular shaped anomaly having a <200 ohm-m core. From 13+50E to 13+75E a steeply dipping, restricted, linear zone of <300 ohm-m with a central core of values less than 200 ohm-m.

A third zone of resistivities less than 300 ohm-m occurs from 14+75E to 15+25E. Again, this zone appears fairly restricted and vertical or steeply dipping to the west in orientation. A final zone occurs from 16+25E to 17+25E, steeply dipping and linear. Resistivities begin increasing above 500 ohm-m from roughly 20+00E onward to the east. A sharp increase in resistivities occurs at 21+75E after which values are generally of the order of 2000 to 4000 ohm-m to local highs of greater than 8000 ohm-m. This sharp break in resistivities again is most likely due to the presence of a major northerly trending structure, likely the Greyhound Creek Fault.

Chargeability Results

A general broad background of chargeabilities between 10 and 20 mV/V occurs from 12+00E to the end of the line at 23+75E. Within this broad zone are smaller, near vertically oriented zones of chargeability between 20 mV/V and 25 mV/V. These zones generally correspond to zones of low resistivity. The first zone occurs from approximately 12+00E to 12+25E, followed by a broader zone from This zone is greater than 20 mV/V for N=1..6. 13+75E to 14+75E. From 15+75E to 16+25E is a third zone of greater than 20 mV/V for A fourth zone is located from approximately 17+50E to N=2..6. 17+75E at depth for N=4..6. Adjacent to this at depth is a smaller less significant zone. A strong break in chargeabilities occurs at 21+00E with values dropping off rapidly to less than 4 mV/V at surface and less than 10 mV/V at depth. Values to the east of 22+25E remain fairly consistent between 10 and 15 mV/V.

LINE 600N; FIGURE 8

Resistivity Results

Resistivity values for this line tend to be low, the majority of values being less than 300 ohm-m and broad zones of values less than 200 ohm-m. From 12+25E to 14+25E is a broad surficial zone of less than 200 ohm-m for N=1..3. A sharp linear, near vertical to steeply dipping resistivity break occurs from 15+50E to 15+75E across which values drop from a high of 574 ohm-m to less than 200 ohm-m. This feature likely corresponds to the Greyhound Creek Fault. From 15+75E to 18+25E is a broad zone of resistivities of less than 200 ohm-m. Beyond 18+25E values range between 200 and 400 ohm-m.

Chargeability Results

Chargeabilities are generally not very active through this interval although the western end of this line shows values greater than 20 mV/V which abruptly drop to between 10 and 15 mV/V at 12+50E. This corresponds to an area of low resistivity and may indicate a fault or change in stratigraphy. Values abruptly increase again from 14+00E to 14+25E from less than 15 mV/V to greater than 20 mV/V. From 15+50E to 17+75E chargeabilities again drop to less than 10 mV/V corresponding to a broad resistivity low in the same area and possibly indicating the Greyhound Creek Fault zone. For the remainder of the line values remain fairly consistent between 10 and 15 mV/V for values of N>3. From 18+75E to the end of the line at 21+75E surficial values drop below 10 mV/V possibly indicating overburden cover.

LINE 800N; FIGURE 9

Resistivity Results

A broad zone of resistivity greater than 200 ohm-m occurs from 13+50E to the end of the line at 21+75E. Within this zone are smaller, more localised zones - restricted and generally vertically oriented - of resistivity less than 200 ohm-m. Between 14+50E and 14+75E is a surficial resistivity feature less than 200 ohm-m which attenuates at N=2 but the trace of which continues to N=6, possibly indicating a minor structure. A deep seated resistivity feature (<200 ohm-m) occurs between 15+75E and 16+00E for N=4..6. From 17+00E to 17+25E is a strong resistivity feature (<200 ohm-m) which is present from N=1..6. This is a steeply dipping, narrow feature possibly associated with the Greyhound Creek Fault in this area. The final resistivity feature (<200 ohm-m) of note on this line occurs from 20+00E to 21+50E, having a cup shaped orientation from N=1..5.

Chargeability Results

From 13+50E to 16+75E chargeabilities show minor activity with the best chargeability feature seen between 13+50E and 14+75E with values just above 20 mV/V. This corresponds to a surficial resistivity low feature from 14+50E to 14+75E. At 16+75E a noticeable chargeability break occurs with values dropping below 10 mV/V from 16+75E to 17+00E for N=1..6. This is slightly offset to the west of the strong resistivity feature seen from 17+00E to 17+25E and probably represents the approximate location of the Greyhound Creek Fault. From 17+00E to 21+75E values are generally less than 10 mV/V for N=1..4 and just above 10 mV/V for remaining values of N.

LINE 1000N; FIGURE 10

Resistivity Results

A number of vertically oriented to steeply dipping resistivity features occur from 13+25E to the end of the line at 21+75E, alternating between subtle resistivity low and high features. For the most part these probably represent structural breaks as chargeabilities through the same interval remain fairly constant. From 17+50E onward, three distinct resistivity low features are seen. A surficial low (<200 ohm-m) is seen from 17+50E to the end of the line at 21+75E. From 18+25E to 18+75E this feature extends downward for N=1..6 and is possibly structurally related. Zones parallel to this orientation occur at 19+50E and from 20+00E to 20+75E, all of which are likely related.

Chargeability Results

A surficial zone of chargeability less than 10 mV/V occurs from 13+25E to the end of the line at 21+75E. Generally, this zone does not extend deeper than N=4, however from 19+50E to 19+75E the zone extends to N=6, coincident with a resistivity feature (<200 ohm-m) for the same interval and possibly indicating a structure. The surficial nature of chargeability suggest it may, for the most

part, result from overburden effects in this area. Chargeabilities under this surficial feature remain fairly consistent between 10 mV/V and 15 mV/V with only one deep seated area of chargeability slightly higher than 15 mV/V. This occurs from approximately 17+00E to 17+25E for N=5..6.

4.0 CONCLUSIONS AND RECOMMENDATIONS

Three distinct north, north-west, north-east trending resistivity anomalies are seen at N=1, generally defined by resistivities of less than 100 ohm-m. Knowledge of structural trends in the area suggest the cause of these anomalies is the Greyhound Creek Fault and its splays.

Two broad zones of chargeabilities greater than 20 mV/V at N=1 are seen on the Sam Group. These zones trend in a northerly direction. In general they are offset slightly to the west of linear resistivity zones but may be associated with the Greyhound Creek Fault structure as well. These northerly trending zones could also be explained by the presence of argillite and graphitic units in this area.

Detailed soil geochemistry, mapping, and sampling in this area would provide necessary and invaluable information for evaluating and developing these geophysically anomalous areas to the drill target stage. Careful attention should be paid to the possibility of graphitic and argillaceous units being the cause of some of these anomalies.

13

5.0 REFERENCES

Church, B.N., 1986. Geological Setting and Mineralization in the Mount Attwood-Phoenix area of the Greenwood Mining Camp. BCDM Paper 1986-2.

Fyles, J.T., 1990. Geology of the Greenwood-Grand Forks Area, British Columbia, NTS 82E/1,2. B.C. Geological Survey Branch Open File 1990-25.

Little, H.W., 1983. Geology of the Greenwood Map-Area, British Columbia. GSC Paper 79-29.

APPENDIX I: STATEMENT OF COSTS

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| STATEMENT OF COSTS - SAM GROUP ASSESSMENT | |
|--|--------------|
| SAM 1 TO 6, 8 TO 11 CLAIMS | |
| GEOPHYSICS | |
| 6.15 KM @ \$1500 PER | \$9,225 |
| LINE CUTTING | |
| 6.15 KM @ \$180 PER | \$1,107 |
| GEOLOGIST | |
| FIELD (5 DAYS @ \$300; SUPERVISORY) REPORT WRITING: | \$1,500 |
| 5 DAYS @ \$300 | \$1,500 |
| DRAFTING | |
| 3 DAYS @ \$300 | \$900 |
| TRUCK RENTAL (5 DAYS @ \$65) | \$325 |
| ROOM AND BOARD (5 DAYS @ \$60) | <u>\$300</u> |
| MISC | |
| TOTAL | \$14.857 |

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APPENDIX II: STATEMENT OF QUALIFICATIONS

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STATEMENT OF QUALIFICATIONS

I, Cameron J. Clayton of 2882 Masefield Road, North Vancouver, B.C. hereby certify that:

- I am a graduate of Queen's University, Kingston, Ontario with a Bachelor of Applied Science degree in Geological Engineering.
- 2. I have practised my profession for five years.
- 3. I am a contract geologist currently employed by Minnova, Inc.
- I have personally supervised the geophysical program 4. conducted on the Sam Group of claims and reviewed all geophysical data presented in this report in consultation with the geophysical operator, Dennis F. Morrison of CME Consulting Ltd. Mr. Morrison has over 20 years of experience in the direct application of induced polarization geophysics to mineral exploration, and has been employed by CME Consulting Ltd (formerly MPH Consulting Ltd) as a Supervisor of Geophysical Projects and as Senior Geophysical Technician and Project Manager (Geophysics) since 1980. Before this Mr. Morrison was Owner and Operator of Dennis F. Morrison I.P. Surveys from 1971 to 1980, and from 1967 to 1971 was employed by McPhar Geophysics as Field Crew Chief and Geophysical Technician.

Date: January 8, 1992

Signature

Cameron J. Clayton





| | 15QDE 1525E 1550E 1575E 16QDE 1625E 1650E 1675E 17QDE 1725E 1750E 1775E 18QDE 1825E 1850E 1875E 19QDE 1925E 1950E 1975E 2000E | |
|-------------|---|------------|
| RESISTIVITY | RE | ESISTIVITY |
| 1.00 | N11 273. 226. 214. 155. 131. 75. 65. 229. 310. 424. 1.84843, 249. 355. 368. 302. 233. 197. 292. 275. 101. | N 1 1 |
| (Ω – m) | N:2 201. 282. 251. 193. 191. 177. 09. 143. 469. 260, 604. 1.980. 10. 253.0848. 405. 289. 490, 357. 203. 175. | N:2 |
| | N:3 211. 297. 232. 253. 245. 214 142. 238. 400. 328. 585. 842. 107 (1434 878.) 432. 376. 216. 223. 323.0 807 | N:3 |
| | N:4 \$71. 226. 289. 292. 316. 283. 310. 199. 208. 479. 329. 304. 567. 184 162. 338. 414. 382. 254. 229. 459. 450. | N = 4 |
| | N:5 280. 231. 3\$3. 356. 355. 377. 401. 9,70. 238. 485. 199. 285. 463. 14 188. 336. 438. 451. 278. 310. 6\$4. | N:5 |
| | N:6 357. 294. 276. 420. 392. 450. 461. 343. 198. 248. 354. 145. 171. 482. 182. 197. 367. 515 509. 364. 409. 841. | N : 6 |
| | | |







\$ 684. \$61.1 385. 353.1 118. \$28. 555. 513. 1382. 453. 381. \$45. 584. epé. 881. 488. 510. 535. 505 535. 316, 458. 3136 543. 512. · \$43. \$25. 204.)351. 0305 182. 501. 565. 330. 333. 511. 540. 553. 182. \$33. 275. 247. 272. 274. 134 133 853. 426. 415: 522. . 604

91N

SIN

* : N

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RESISTIVITY

91 N 30 ° 18. 12. 13. 55. 56. 58. 35. 35. 30. · Z1 38. • E E SIN .35. · LE PIN · 52 · - 12 152.1 14. 11. 18. 18. 19. 20. 20. 32. 27. 34. EIN 30 \$1. 54. 58' 30' 31' 33' 33' 45' 31' 40' 45' 38' 35 55 59. 51. 58. 038. 13. 15. ZIN .96 36. 27-31. .36 · S7 I:N .98 . 14 .05 15. 10. 12. 12. 51. 35. 40. 25. 42. 42. WI CHG. 1,1,00e 1,1,52e 1,1,22e 1,1,22e 1,800e 1,852e 1,800e 1,852e 1,800e 1,852e 1,800e

· LZ

50 54' 52' 53'

| 11. 500 18. 18. 12. 13, 51 58. 30. 31. 33. 45. 31. 40. 45. 38. 30. 51. 54. | EIN | (A (ALL)) |
|--|-------|---|
| 15. 50. 19. 14. 13. 10. 3. 18. 35. 56. 51. 58. 038. 43. 45. 38. 38. 38. 38. 55. 51 | SIN | (// /////////////////////////////////// |
| 50' 18' 11' 8' 2' 8' 15' 18' 12' 8' 2' 8' 15' 19' 12' 12' 12' 33' 48' 25' 42' 20' 41' 38' | T = N | |
| ו 2000 ו 2525 ו 2505 ו 2525 ו 2505 ו 2525 ו 2505 ו 2525 ו 2525 ו 2505 ו 2525 ו 2505 ו 2505 ו 2505 ו 2525 ו 2505 | | .0H0 TM |
| | | |
| | | |
| 341. 426/ 848. 651/ 384. 524. 510. 344. \$15 684. \$81/ 382. 353/ 115. 528. 513. 1382. 453. 381. \$12. 534 | 9 = N | |
| 431. 631. 334. 583. 561. 921. 511. 686. 881. 433. 258. 510. 535. 505. 535. 316. 453. 3136. 553. 512. | SIN | |
| 401. 683. 830. #T1. 383. 538. 434. 542. 843. 625. 284. 351. 305. 182. 501. 585. 330. 333. 511. 540. 552 | 9 = N | |
| 881. 138. 310; 3500 310. 234. 403. 245. 134 433. 853. 426. 415. 522. 182. 533. 512. 512. 515. 514. 100. | E = N | |
| 236. 035. 854. 558, 535, 832, 832, 832, 832, 420 831 430, 883. 412. 510, 511. 583. 531. 508. 311. 185, 113 | Z=N | (111 - 11) |
| 1-34893 888 161 382 223 11K 1.8400 414 312 684 281 421 344 528 528 584 522 385 102 | T = N | $(\omega = 0)$ |
| | A.J | RESISTIVIT |
| 19002, 32761, 36261, 36261, 36761, 37561, 3671, 3671, 3671, 37571, 3671, 3671, 36701, 38761, 39761, 37561, 39701 | | |
| | | |

12. 11. 20.

9 : N

S:N

T:N

1200E 1225E 1250E 1275E 1300E 1325E 1350E 1375E 1400E 1425E 1450E 1475E 1500E 1525E 150E 1575E 1600E 1625E 1650E 1575E 1600E 1625E 1650E 1575E 1600E 1625E 1650E 1575E 1800E 1825E 1850E 1975E 200E 2025E 2050E 2075E 2100E 2125E 2150E 21

RESISTIVITY

 $(\Omega - m)$

722 . N:1 572. 495. 558. 363. \$13. 273. , 97. 167. 158. 194. 174. 300, 427. 725. 341. 488, 2.5K 1.9K 1.5K 2.3K 3.0K 3.0K 3.0K 4.8K 3.2K 3.0K 553. 535. 982. 580. 394. 258. 212. 179. 373. 378. 222. 516. 434. 618. 600. 503 379. 221. 422. 377. 601. 505. 543. 1. 24 3-2K 1.8K 2-1K 2.9K 2.6K 4.2K 3.6K 4.1K 3.1K 3.2K N12 BI 53 192. 220. 222. 298. 310. 411. 1.01659 885. 16 844. 264. 328. 285. 363. N:3 1690. 542, 349. 410. 496. 459. 766. 644. 405. 460. 418. 574. 485. 471. 507. 600. 419. 247. 223. 756 401. 248. .5049 600. 225. 205. 232 50 1. 1. 5K 9.8K 2.2K 2.3K 3.0K 03.1K 4.6K 3.3K 4.0K 3.4K 493 495 357. 593. 413. 617. N14 399. 447. 466. 822. 835. 359. 485. 401. 508 482. 398. 504. 422. 250. 250. 219. 328. 221. 36 283. 353. 296 322. 445. \$40. (1.8408 698.) 3.1K 1.5K 3.8K 2.2K 3.5K 3.3K 4.4K 3.4K 4.1K 3.2K 395. 505. 381. 871. 327. 984. . 372. 455. 482 7% 558. 345.0.247. 263. 278° 460. 355. 469. 405. 398. 398. 311. 260. 259. 187. 294. 254. 18. 346. 326. 323. 378. 560. N:5 755 .7K 3.1K 4.4K 3.6K 3.9K N:6 2802 410. 523- 418. 545. 317. 525 373. 284, 406, 340, 391, 399, 317, 227, 308, 266, 237, 264. 3.7K 3.1K 4.6K 3.5K 4.0K 352. 105. 328. V82 458. BAR.



2275E 2300E 2325E 2350E 2375E

49. 7. . 10. 14. 16 -. 13. . 19. . 22. . 17. 28. 40. 52 39. 19 20. 21. 17. 15. 14. 41. 29. 37. 34. 41. 21 9. 012. 12. 11. 90. 12. 19. 20. 50 41. 41. 28. 37. 13. 11. 210 18. 20. 120 42. 83. 49. 11. 10. 12. 10. , 11. 10. 19. 15. 38. 49. 43. 10. 10. 16. 18.

14

LEGEND



Instrument: BRGM ELREC-6 Receiver 2.5 KV Huntec Transmitter

Pole-Dipole Array

> C

S

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SO

SM

BO

ZA

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JA D

OZ

HI

RESISTIVITY

N 11

N:2

N:3

N:4

N:5

N:6

MT CHG

N±1

N12

N:3

Nt4

N:5

NIG



INNOVA Inc.





FIGURE 6

| Date | Septe | mber, 1991 | Re | Ref. P12A | | | |
|------|-------|------------|--------|-----------|-------------|--|--|
| 00 | Scale | 1-2500 | Ву | C.N. | D.M /C.J.C. | | |
| ĊΜ | E | Cons | ulting | Ĺ | td. | | |

1200E 1225E 1250E 1275E 1300E 1325E 1350E 1375E 1400E 1425E 1450E 1475E 1500E 1525E 1550E 1575E 1600E 1625E 1650E 1675E 1900E 1825E 1850E 1875E 2000E 2025E 2050E 2075E 2100E 2125E 2150E 2175E 220E 2225E 2250E 2275E 2300E 2325E 2350E 2375E

RESISTIVITY

$(\Omega - m)$

N.=1 393. 326. 323. 245. 267. 127. 226. 345. 228. 201. 231. 320. 263. 341. 263. 501. 326. 292. 248. 354. 234. 345. 263. 423. N:2 N:3 529. 474. 334. 204, 189, 551, 253. 334. 112. 257. 408. 329. 440. 339. 243. 270. 447. 437. 370. 218. 299. 167. 335. 430. 345. 376. 368. 466. 532. 114. 279. 290. 561. 595. 525. 671. 736. 610. 664 8.5K 5.0K 3.4K 2.7K 9.0K 4.2K0 108K0 4.0K N±4 473, 487. 352. 232. 45. 301, 283. 326. + 170. 253. 271. 333. 443. 364. 316. 3190, 136. 345. 388. 746. 693. 518. 190 1.2000, 581. 528. 1.0K 5.3K 2.9K 2.6K° 3.4K 4.18 2.5K 755. 483. 487. 404. 507. 228. 318 263. 319 12. 260. 411. 300. 379. 332. 253. 303. 394. 436. 401. 324. 351. 212. 387. 443. 358. 420. 407. 432. 463. 481. 365. 374. 474. 944. 901. 1.11815. N:6



6. 7. /9. 12. 12. 10. 13. 15. 9. 15. 14. 21. 23. 24. 17. 18. 15. 20. 24. 21. 19. 18. 16. 20. 20. 16. 20. 17. 16. 17. 18. 20. 17. 18. 17. 15. 12. 11. 15. 11. 8. 9. 11. 12. 13. 14. 14. 15. 19. 17. 21. 22. 18. 21. 18. 17. 19. 18. 20. 18. 18. 18. 18. 12. 12. 15. 11. 9. 9. 10. 14. 14. 13. 33 20. 20. 19. 23. 24. 18. 22. 19. 18. 20. 19. 21. 18. 18. 18. 18. 18. 13. 12. 16. 12. 10. 9. 12. 15. 14. 14. 14. 15. 9.



| | LE | EGEND |
|---------------|---------------------------------|--------------------------------------|
| | Induced Polariza | tion Survey |
| | Instrument: BRGM EL 2.5 KV H | REC-6 Receiver suntec Transmitter |
| 5 | Pole-Dipole Arra | У |
| | | <u>MAA_</u> |
| 0 | _ | |
| 5 | | DEPTH POLNT |
| 2 | | N = 1,2,3,4,5,6 |
| - | n sp 2 se | econd pulse rate |
| CAL | MINNO | VA Inc. |
| | LINE | 400N |
| 120 | SAM | GROUP |
| | Green | FIGURE 7 |
| ZDate | September, 1991 | Ref: P12A |
| Scale: 1:2500 | | BUI CN DH /CIC |

1225E 1250E 1275E 1300E 1325E 1350E 1375E 1400E 1425E 1450E 1475E 1500E 1525E 1550E 1575E 1600E 1625E

RESISTIVITY

(0 - m)

N:1 . 239. 174. 157. 167. 159. 130. 180. 126. 151. 212. 168. 192. 284. 153. 179. 200. 145. 395. 355. 856. 284. 270. 3450 39. 103 115. 81. 19. 139. 147. 186. N.9. 176. 265. 214. 150. 317 260. 214. 288. 257. 186. 306. 283. N:2 152. 218. 236. 224. 498. 195. /233. 492 439. 396. 98. 403. 347. 396. 14. 119. 124. 45.0141. /202. 187. 171. 137. 200 306. 200. 226. 277. 197. 179. 324. 882. 274. 294. 206. 174. 393. N:3 N:4 235. 166. 271. 265. 252. 278. 207. 218. 291. 205. 459. 289 253. 473. 381. 507. 142. 109. 146. 242. 183. 194. 158. 212. 353. 262. 246. 267. 227. 192. 358. 358. 286. 262. 235. 200. 257. 205. 328. 283. 310- 205. 223. 259. 299. 207. 344. 344. 344. 345. 459. 564. 140. 150- 136. 212. 238. 209. 217. 161. 247. 434. 272. 249. 300. 243. 215. 434. 373. 268. 301. 268. N:6 282. 309. 242. 360. 353. 329. 317. 255. 258. 300. 292. 570. 495. 574 156 151 / 188. 266 227. 227.

1225E 1250E 1275E 1300E 1325E 1350E 1375E 1400E 1425E 1450E 1475E 1500E 1525E 1550E 1575E 1600E 1625E 1650E 1675E 1700E 1725E 1750E 1775E 1800E 1825E 1650E 1875E MT CHG. N:1 22. 13. 12. 12. 12. 11. 13. 13. 21. 16. 15. 15. 5. 8. 7. 9. 10. 10. 012. 12. 12. 12. 12. 12. 9. 8. N12 (18. 23. 11. 14. 15. 13. 15. 15. 13. 28. 20. 19. 13. 15. 12. 5. (mV/V)49. 23. 12. 15. 15. 15. 16. 15. 12. 14. 21. 18. 14. 16. 15. 12. 13. 12. 13. 12. 13. 12. 13. 13. 18. 9. 10. 11. 19. 10. N:3 24. 202 24. 12. 15. 16. 15. 15. 14. 12. 83. 18. 17. 15 18. 16. 9. 8. 8. 10. (11. 12. 12. 12. 13. 13. 14. 14. 11. 9. /11. 12. 11. N:4 24. 21. 25. 12. 16. 14. 14. 14. 11. 28 19. 10 9. 9. 10. 12. 13. 12. 13. 13. 14. 14. 14. 14. 11. 11. 12. 13. 11. N:5 18. 19. 21. 25. 22. 25. 16. 16. 13. 14. 13. 1. 20. 19. 18. 16. N16



1350E 1375E 1400E 1425E 1450E 1475E 1500E 1525E 1550E 1575E 1500E 1575E 1600E 1625E 1650E 1675E 1700E 1725E 1750E 1825E 1850E 1875E 1900E 1925E 1950E 1975E 2000E 2025E 2050E 2075E 2100E 2125E 2150E 2125E

RESISTIVITY

 $(\Omega - m)$

 N:1
 269. 310. 213. 315. 155. 190. 365. 628. 503. 738. 444. 258. 253. 378. 175. 243. 369. 313. 303. 359. 298. 574. 378. 385. 295. 378. 200. 174. 185. 195. 228. 176. 211. 130.

 N:2
 251. 273. 214. 267. 309. 164. 285. 675. 529. 357. 388. 246. 311
 251. 223. 143. 305. 347. 264. 303. 350. 312. 332. 279. 3874. 235. 335. 221. 181. 174. 211. 192. 218. 245.

 N:3
 262. 249. 257. 298. 341.0223. 420. 556. 868. 211. 272. 280. 340. 229. 184. 170. 280. 284. 258. 314. 337. 224. 276. 227. 254. 219. 340. 243. 181. 184. 190. 238. 247.

 N:4
 182. 254. 313. 301. 347. 439. 299. 353. 398. 249. 448. 305. -906. 310. 208. 201. 168. 258. 295. 236. 235. 212. 242. 222. 268. 232. 360. 257. 194. 182. 229. 272.

 N:5
 172. 309
 377. 359. 433. 550. 256. 272. 204. 171. 162. 328. 286. 282. 227. 193. 166. 271. 287. 220. 244. 257. 198. 244. 241. 298. 250. 376. 278. 198. 247. 219. 340. 256. 210. 210. 210. 217. 182. 328. 286. 282. 227. 193. 166. 271. 287. 220. 244. 257. 198. 244. 241. 298. 250. 376. 278. 198. 247. 219. 309. 217. 263.

 N:6
 208. 209. 364. 448. 441. 527. 502. 210. 210. 217. 188. 168. 309. 268. 305. 229. 188. 182. 277. 284. 197. 253. 247. 202. 267. 267. 325. 265. 399. 289. 235. 250.

MT CHG.

(mV/V)

 N:1
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1. A. M. M.



