DESIGNATION # 91037

SEISMIC TESTING REPORT

PLACER LEASE PL 8674

CLAIM SHEET # 115 P ~ 11 Lat 63⁰ 30' to 63⁰ 45' Long 137⁰ 00' to 137⁰ 30'

AUTHOR: TED SANDOR FIELDSMAN: SCOTT CONE

PREPARED FOR: JACK P THOMPSON

DATE: JULY 27, 1991

.

November 7,1991

Jack P. Thompson Box 138-1612 Centennial Street, Whitehorse, Yukon YIA 3Z3

Mr. Rod Hill Economic Development Mines & Small Business Box 2703 Whitehorse, Yukon YIA 2C6

Dear Mr. Hill,

Re: Yukon Mining Incentives Program # 91037

Please find enclosed a copy of a seismic testing report on PL 8674 a 5 mile lease on the McQuesten River Map # 115-P-11. This report was done by Mr. Ted Sandor of RR#1 Site 20 Comp 121, Whitehorse Yukon, Y1A 4Z6. The field work was done by Mr. Scott Cone of Box 964, Dawson City, Yukon Y0B 1G0.

This report is self explanatory and is complete with all the graphs from each test hole. Their invoice to me is for \$ 5500.00 which has been paid. you may wish to phone Mr. T. Sandor to verify this as I mailed a cheque and never received a receipt. The cancelled cheques are at our accountants in Sidney, B.C.

Now the balance of the funds we still wish to use to finish testing this property. We had trucks ordered to move our Cat (D9-H) plus our 235 Hoe to move onto the site to do some trenching next to holes # 18, #19 and #20. We were also going to run a few yards of material through our Long Tom. If these first trenches prove up to where it would be profitable to mine we were going to move upstream and repeat this procedure. This did not happen as the Chief Mining Recorder in Whitehorse, Mr. Ronnigan, would not give us access up PL8604 to get to PL8673 & 8674. There had been some staking problems on PL8604. At this time I have now in my possession a letter from the staker Mr. Roger Lavoie and the Power of Attorney of Mr. Mark Ponton the other staker & owner of this lease that will alleviate these problems. As a result we are requesting an extension on 91037 so we may complete our program. page -2- November 7,1991

This program was discussed in depth with Mr. Dave Downing. After completion of our testing we were to bring evidence of our results to your office. We are still prepared to do this.

If this is not possible can we have new forms to re apply to get assistance to complete our program in connection with your office.

Under the circumstances we do not feel that we are responsible for not completing this in 1991.

Also please send one additional form so we may test PL8604 while we have our people & equipment on site.

I believe this covers the work done to date with our initial cash outlay of \$ 5500.00. Your portion to be \$ 2750.00. Can we expect your cheque by return.

Than Xyou;

Jack P. Thompson

SEISMIC TESTING REPORT

McQuesten River

5 Miles Placer Lease PL8674

NTS 115-P-11

Prepared for

Owner: Jack Thompson Box 138 1612 Centennial Cres. Whitehorse, Yukon Y1A 3ZE

and

Fieldsman: Scott Cone Box 964 Dawson City, Yukon YOB 1GO

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Prepared by Ted Sandor RR1 Site 20 Comp 121 Whitehorse, Yukon Y1A 4Z6 (Phone/Fax 667-6163 [403])

July 27, 1991

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# TABLE OF CONTENTS

| 1.         | Introduction<br>Location Map Figure A<br>Location Map Figure B<br>Claim Map Figure C     | 1          |
|------------|------------------------------------------------------------------------------------------|------------|
| 2.         | Survey<br>2.1 Location and Access<br>2.2 Claim Information                               | 2          |
| 3.         | Personnel                                                                                | 3          |
| <b>4</b> . | Geology                                                                                  | 4          |
| 5.         | Instrumentation                                                                          | 5          |
| 6.         | Theory                                                                                   | 6          |
|            | Figure 1 Schematic of Seismic Refraction<br>Survey                                       | 7          |
|            | Figure 2 Schematic of Seismic Reflection<br>Survey<br>Figure 2b Amplitudes of Reflected/ | 8          |
|            | Refracted Compressional Waves<br>Table 1A Speed of Propagation of Seismic                | 9          |
|            | Waves in Subsurface Materials                                                            |            |
|            | Waves for Representative Materials                                                       |            |
| 7.         | Method                                                                                   | 10         |
| 8.         | Data Processing and Presentation                                                         | 11         |
| 9.         | Interpretation                                                                           | 12, 13, 14 |
| 10.        | Conclusion                                                                               | 15         |
| 11.        | Recommendation<br>Seismic-Recording Printouts                                            | 16         |
| 12.        | Statement of Assessment Costs                                                            | 17         |
| 13.        | Certification                                                                            | 18         |
| 14.        | References                                                                               | 19         |

# **ASSESSMENT REPORT**

July 27, 1991

Seismic Survey

McQuesten River PL8674

# 1. INTRODUCTION

On July 27, 1991 a seismic survey was conducted on McQuesten River PL8674 for the owner Jack Thompson by fieldsman Scott Cone.

Scott Cone, using a compass and hip chain, located 20 sites on McQuesten River. Test locations were marked with flagging and labelled. (See Fig. C)

The seismic consultant, Ted Sandor, processed field recordings and interpreted the data received.



# 2. SURVEY

#### 2.1 Location and Access

The 5 Mile Placer lease PL8674 is located on the north side of McQuesten River, approximately 3 miles east of the mouth where it drains into the Stewart River.

Access to the test site was by pickup on the Klondike Highway (2) to the mouth of the McQuesten and then on foot the rest of the way. (See Fig.B)

### 2.2 Claim Information

| <u>Name</u>     | Placer Lease Number | Owner                                                                                                           |
|-----------------|---------------------|-----------------------------------------------------------------------------------------------------------------|
| McQuesten River | PL8674              | Mercid Industries Inc.<br>c/o Jack Thompson<br>Box 138 1612 Centennial<br>Cres.<br>Whitehorse, Yukon<br>Y1A 3ZE |

Claim Sheet 115-P-11

# 3. PERSONNEL

Scott Cone surveyed, marked, measured, expedited and carried out the field work.

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Ted Sandor supervised the quality, directed the data processing and prepared the report.

# 4. GEOLOGY

These bench gravels are made up of unconsolidated glacial and alluvial deposits. There are no visible outcroppings at any of the test locations. The roots of the vegetation do not reach deep; therefore, permafrost could be encountered. The valley is very wide making prospecting a little more challenging.

4

## 5. INSTRUMENTATION

Directional Electret Microphone 800 OHMS 30 - 18,000 Hz Response

Panasonic Magnetic Tape Recorder Model #RQ-L335 Frequency Range: 180 - 7,000 Hz Tape Speed: 4.8 cm/s (1-7/8 I.P.S.) Track System: 2-track monaural, recording and playback 16 ga. shotgun, 1-1/8 oz. shot, #7-1/2 shot

#### Software:

Sound Filler St. Visual Sample Editor Requires TOS in ROM This manual and the software described herein were copyrighted in 1987 by Drumware Inc., Los Angeles, California, with all rights reserved.

Akai Professional S700 Digital Sampler 12-Bit Sampling Sampling Frequency: 4KHZ - 40 KHZ Sampling Time: 8 Sec. - 08 Sec.

Frequency Response: 25 Hz - 16 KHz

Atari 520 St. Computer

Processor: MC6800, 32 Bit Internal, 16-Bit External Architecture 8 MHz clock frequency.

Memory: 524,288 Bytes of RAM; 196,608 Bytes of ROM

Keyboard: 94-key Intelligent keyboard, using 6301 Microprocessor

Storage Medium: 3-1/2 inch, Microfloppy disk;

Single-Side, Double Density;

135 Tracks per inch

Data Transfer

Speed: 250 Kilobits per second

Atari Sc. 1224 RGB Colour Monitor

Seikosha SP-1600 Dot Matrix Printer

Printing Method:Impact Dot Matrix Bidirectional Logic

Seeking Printing

Print Head: 9 Pins

Seismic Tests, McQuesten PL8674, July 27, 1991

## 6. THEORY

This report is intended as a guide to the application of seismic refraction and reflection techniques to shallow, subsurface exploration of engineering sites. Many civil engineers and geologists have some acquaintance with this basic geophysical tool, but few apply it frequently. The primary purpose of the report is to provide the reader with a working knowledge of the method, with a convenient reference, and further, with a basis to judge the applicability of the method and the results to his particular exploration problem.

Solid state electronics have improved the portability of engineering-type refraction and reflection instruments, but they operate fundamentally in the same way they did 50 years ago. The basic field practices and methods of interpreting the data have not changed with time, although specialized interpretational techniques have been proposed and developed for some difficult cases.

The conduct of refraction and reflection surveys and the interpretation of the data are well-established and reasonably straight forward, although they are not invariant. The user can change the field layout of his equipment and apply judgement and imagination in his handling of the raw data. In common with other indirect methods of subsurface exploration, there are no rigid inflexible approaches to making sense of the data, nor are there any handbooks that infallibly direct the engineer, geologist or geophysicist to the correct answer. The general case will require thought and care: ambiguities and uncertainties are not uncommon. Some foreknowledge of the site conditions and an understanding of what is geologically plausible will always assist in resolving the raw data into meaningful information.

Figure 1 shows a refraction survey. This method could be quite costly and require complicated data processing should multiple layers of soil and gravels be encountered.

#### 6. THEORY CONTINUED



Figure 1. Schematic of seismic refraction survey

Figure 2 represents a refraction survey.

There is a definite relation between reflected and refracted energy which could be observed in Figure 2B. Using this principle and Tables A1 and A2 calculation is simplified, for the sound in a reflected survey only has to go down, turn around at point of geophone or microphone without going along the higher velocity layers and then back up. Seismic waves will bounce off of most surface with a lot of amplitude but not necessarily with a wide range of frequencies. The reflected seismic waves returning to the geophone with the strongest amplitude and frequencies should come from the layer with the highest velocity change which, in most cases, should be bedrock (solid rock) or from a gravel layer directly beneath an organic surface cover.

#### 6. THEORY CONTINUED



Figure 2. Schematic of Seismic Reflection Survey

The thicker line representing the reflected seismic wave from the bedrock to the microphone should be the wave with the highest amplitudes and the widest range of frequencies in Figure 2. The six foot distance from microphone to charge is to prevent damage to the delicate recording equipment. The error of this footage can usually be made up by averaging the total of the velocities a little higher to simplify interpretation. In this case "1,200 ft/sec." will be close enough.

- 8

#### 6. THEORY CONTINUED



relative to incident waves as a function of angle of incidence.

It may seem anomalous in Figure 2b that the sum of the amplitudes of the reflected and refracted pulses is greater than that of the incident wave (i.e., greater than 1.0). However, the energy of a pulse is proportional to the square of its amplitude, and the sum of the energies of the reflected and refracted waves is equal to the energy of the incident wave.

Table A1. Speed of propagation of seismic waves in subsurface materials.

|                                                                |                    | · · · · · · · · · · · · · · · · · · ·                                        | T                   |
|----------------------------------------------------------------|--------------------|------------------------------------------------------------------------------|---------------------|
| MATERIALS                                                      | FEET PER<br>SECOND | MATERIALS                                                                    | FEET PER<br>Second  |
| TOP SOILS:                                                     |                    | GRANITE:                                                                     |                     |
| LIGHT AND DRY                                                  | 600 TO 900         | SIERRA NEVADA RANGE.                                                         |                     |
| MOIST, LOAMY OR SILTY                                          | 1,000 TO 1,300     | FRIARLE AND MIGHLY                                                           |                     |
| CLAYEY<br>BED CLAY IN COLORADO (4                              | 1.300 TO 2.000     | DECOMPOSED                                                                   | 1.540               |
| SENI-CONSOL IDATED                                             |                    | PARTLY DECOMPOSES                                                            | 2.200               |
| SANDY CLAY (8)<br>Wet Loam (8)                                 | 1.250 70 2.150     | SOFTENES AND PARTLY DE-<br>COMPOSES BUT SLIGHTLY                             |                     |
| CLAV, DENSE AND BET -<br>DEFENDING ON DEFTH                    | 3.000 TO 5.000     | SCANCO<br>SOLIO AND MONGLITHIC                                               | 10.570              |
| RUBBLE, OR GRAVEL(D)                                           | 1.970 TO 2.600     | NEW NAMPSHIRE (C) (Con-                                                      | 18 500              |
| CEMENTED SAND (8)                                              | 2.000 10 3,200     | PARISON OF VELOCITIES<br>VITH BRILLING LOGS)                                 |                     |
| SAND CLAT (8)                                                  | 3.200 10 3.800     | BAOLY BROKEN AND                                                             | [                   |
| CEMENTED SAND CLAY                                             | 3.800 70 4.200     | WEATHERED: FREQUENTLY<br>ONLY CHIPS AND FRAS/ENTS                            |                     |
| WATER SATURATED SAND                                           | 4,600              | RECOVERED. SEGMENTS OF                                                       |                     |
| CLAY, CLAYEY SANDSTONE (0)                                     | 4,600 10 6,400     | THERENO HAD PENETRATED                                                       |                     |
| GLACIAL TILL (C)<br>UPPER SUSQUEMANNA (C)                      | 5.600 TO 7.400     | ABOUT 174 THEN ON EACH<br>SIDE OF THE JOINT PLANES<br>ON THICH A FILM OF RE- |                     |
| GLACIAL MORAINE                                                |                    | SIQUAL CLAY HAD FORMED                                                       | 3.000 10 8.000      |
| GLACIAL MORAINE DEPOSIT.                                       | 2,500 10 5,000     | JOINT PLANES SHOT SUT<br>LITTLE SIGN OF BEATHER-                             | , I                 |
| CEMENTED LAVA                                                  | 3.000 10 7.000     | ARE OPEN                                                                     | 10.000 TO 13.000    |
| AGGLOMERATE, CALIFORNIA                                        | 5,000 10 6,000     | ENTIRELY UNDERTHERCO                                                         |                     |
| LOOSE PACE, TALUS                                              | 1.250 10 2.500     | AND UNSEAMED                                                                 | 16.000 TO 20.000    |
| SHALE:                                                         |                    |                                                                              | 1 5,000             |
| OLENTANGY RIVER, OHIO '                                        | 9.000 70 11.000    | AND FPACTURED                                                                | 9,000 10 14.000     |
| UPPER SUSQUEMANNA (C)                                          | 10.200 TO 12.800   | LINESTONE, DOLGHITE, META-                                                   |                     |
| PANAMA CANAL ZONE                                              | 7.000 10 8.090     | ROCKS(B)                                                                     | 6,400 To 20,200     |
| MANCOS, COLORADO                                               | 2,600 TG 2,900     | DIAGASE. IN SED OF BROAD<br>RIVER. SOUTH CAROLINA                            | 19,700              |
| RIVER - WEATHERED<br>ROMMEY SHALE-SHENNANDOAN                  | 4,000 TO 6.500     | GALLUSTONE, TIGHT SEAMED.<br>CALIFORNIA (A)                                  | 16,100              |
| RIVLE - GOOD                                                   | 12,000             | GREENSTONE. SLIGHTLY SEAMLD-                                                 |                     |
| JOHN MARSHALL DAM SITE                                         | 2,900 10 4,250     |                                                                              | 13,300              |
| PHYLITE-YORK, PA. 107                                          | 10.000 10 11.000   | ŅQTĒ:                                                                        | 1                   |
| DE VON I AN - UP PER (C)                                       | 7,200 10 7,900     | (A) Reported by G. M. Williams,                                              | U. S. Bureau        |
| CANAL ZONE, PACIFIC END                                        | 7,000 10 9.000     | · · · · · · · · · · · · · · · · · · ·                                        |                     |
| COLORADO. PENSL. MARO.<br>AND CONTINUOUS WITH<br>FEW SEAMS (A) | 7.250              | (8) From Report of Imperial Goo,<br>Exporimental Survey in Au                | physical<br>stralia |
| COLORADO, CONTAINING<br>DEATHERED SEAMS AND<br>SOFT AREAS, (A) | 4.725              | (C) Poperted by A. E. Wood, Cor                                              | n of                |
| SMORT HILL RIVER KANSAS                                        | 6.000 10 7.500     |                                                                              |                     |
| SANDSTONE CONGLOMERATE                                         | 8.000              | (D) Reported by L. T. Abele, Co.                                             | pe of               |
| CHALE:<br>FORT RANDALL DAMSITE -<br>ABOVE DATER TABLE          | 6.300 70 7.000     |                                                                              |                     |
| FORT RANDALL DAMSITE -<br>BELOW WATER TABLE                    | 8,000              |                                                                              |                     |

# Table A2. Approximate range of velocities of longitudinal waves for representative materials found in the earth's crust.<sup>a</sup>

|                                     | V elocity*               |              |
|-------------------------------------|--------------------------|--------------|
| Material -                          | Ft./Sec.                 | M./Sec.      |
| Weathered surface material          | 1,000 2,000              | 305- 610     |
| Gravel, rubble, or sand (dry)       | 1.500- 3.000             | 468- 915     |
| Sand (wet)                          | 2.000- 6.000             | 610- 1,830   |
| Clay                                | 3.000 9.000              | 915- 2750    |
| Water (depending on temperature and |                          |              |
| salt content)                       | 4,700 5,500              | 1,430- 1,680 |
| Sea water                           | 4,800 5,000              | 1,460- 1,530 |
| Sandstone                           | 6,00013,000              | 1,830- 3,970 |
| Shale                               | 9,00014,000 <sup>-</sup> | 2,750-4,270  |
| Chalk                               | 6.00013,000              | 1,830- 3,970 |
| Limestone                           | 7.000-20.000             | 2140- 6.100  |
| Salt                                | 14.000-17.000            | 4.270- 5.190 |
| Granite                             | 15.00019.000             | 4.580- 5.800 |
| Metamorphic rocks                   | 10.000-21.000            | 1.050 7.020  |
| lee                                 | 12.050                   |              |
|                                     |                          |              |

#### A Classification According to Material

|              | Type of Rock                         | · Velocity                               |                                          |
|--------------|--------------------------------------|------------------------------------------|------------------------------------------|
| A ye         |                                      | FL/Sec.                                  | M./Sec.                                  |
| Quaternary   | Sediments (various degrees           |                                          | 305 3 300                                |
| Testion      | Consolidated Sediments               | 5,000-14,000                             | 1 510- A 270                             |
| Massacia     | Consolidated Sediments               | 6,000 -19,500                            | 1,000                                    |
| MESOTOR      | Composidated Sediments               | 0,000-19,500                             | 1,830- 3,730                             |
| Paleozoic    | Consolidated Sediments               | 0,50019,500                              | 1,980- 5,950                             |
| Archeozoic   | Various                              | 12,500-23,000                            | 3,810 7,020                              |
|              | C. Classification Acce               | rding to Depth ?                         |                                          |
|              | 0-2000 (t.<br>(0-600 M.)<br>Ft./Sec. | 2000-3000 ft.<br>(600-900 M.)<br>FL/Sec. | 3000-4000 ft<br>(900-1200 M.)<br>FL/Sec. |
| Devonian     |                                      | 13,400                                   | 13,500                                   |
| Pennsylvania | ua                                   | 11,200                                   | 11,700                                   |
| Permian      | 8,500                                | 10.000                                   |                                          |
| Castageone   | 7.400                                | 9 300                                    | 10 200                                   |
| CITICETONS . | 7 100                                | 9,000                                    | 10,100                                   |
| COCCRC       |                                      | 9,000                                    | 10,100                                   |

6,500

\* The higher values in a given range are usually obtained at depth. \*\*\* † Dota from B. B. Weatherby and L. Y. Foust, Bull. Amer. Assoc. Potrol. Geologists, 19 (1934) 3.

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7,200

8,100

<sup>a</sup>Reprinted from pg. 660 of Jakosky<sup>2</sup>.

Cretaceous ..... Eocene ..... Pleistocene-to-Oligocene

# 7. METHOD

After the grid pattern is established on a given claim by the owner or party in charge, we mark each test with flagging. We clean loose debris to allow firm soil contact with the microphone. We then cover the microphone to lessen the surface noise. A small charge is fired (usually a 16 gauge shotgun) to generate a seismic wave six feet from the microphone. The wave going into the ground and the reflected signal coming out is recorded on a magnetic tape recorder. We also do a field test on a nearby area with similar conditions where bedrock depth is known by drilling or excavation to determine the velocity of the gravels.

#### 8. DATA PROCESSING AND PRESENTATION

The recording is sent back to base camp and is transferred into the Akai S700 Digital Sampler by means of a coaxal cable with 6.3 mm phone plug jack. The Akai is coupled with the Atari 520 St. computer with Midi Interface. Other peripherals are connected with various other interface connections.

The seismic recording is now analyzed in various formats and then the best choice is printed out on a Seikosha SP-1600 Dot Matrix Printer. A report on the testing and the interpretation of the data is made out to finalize the survey, along with copies of the original Fourier Transform for 3-D wave form analysis.

#### 9. INTERPRETATION

In tests conducted in the past on Hunker Creek and the Klondike River, we determined that those frozen gravels had a velocity of 1,500 ft/sec. (I.5 ft./ms). Based on this calculation the following formula is used:

Reflected milliseconds x I.5 divided by 2 = feet to bedrock or the layer to be of interest.

#### <u>TEST 1</u>

Sixty-two milliseconds indicates bedrock at 47 feet.

# TEST 2

Fifty milliseconds indicates bedrock at 38 feet.

### TEST 3

Forty-seven milliseconds indicates bedrock at 35 feet.

### TEST 4

Forty-eight milliseconds indicates bedrock at 36 feet.

#### TEST 5

Thirty-one milliseconds indicates bedrock at 23 feet.

#### <u>TEST 6</u>

Forty-six milliseconds indicates bedrock at 35 feet.

# TEST 7

Forty-seven milliseconds indicates bedrock at 35 feet.

# TEST 8

Forty-one milliseconds indicates bedrock at 31 feet.

### TEST 9

Forty-nine milliseconds indicates bedrock at 37 feet.

# **TEST 10**

The highest amplitude shows at 46 milliseconds but the broadest range of frequencies show up at 52 ms. We will now split the difference and round off at 50 ms. indicating bedrock at 38 feet.

# <u>TEST 11</u>

Sixty-four milliseconds indicates bedrock at 48 feet.

# **TEST 12**

Forty-six milliseconds indicates bedrock at 35 feet.

# **TEST 13**

Twenty-six milliseconds indicates bedrock at 20 feet.

#### **TEST 14**

Twenty-eight milliseconds indicates bedrock at 21 feet.

#### **TEST 15**

Forty-three milliseconds indicates bedrock at 32 feet.

# **TEST 16**

Twelve milliseconds indicates bedrock at 9 feet.

#### <u>TEST 17</u>

Thirty milliseconds indicates bedrock at 23 feet.

#### <u>TEST 18</u>

Thirty-three milliseconds indicates bedrock at 25 feet.

# <u>TEST 19</u>

Forty-two milliseconds indicates bedrock at 32 feet.

# **TEST 20**

Forty-milliseconds indicates bedrock at 30 feet.

\*Note:

The deepest spot is at test site eleven at 48 feet. The most shallow spot is at test site sixteen at 9 feet. Relating these test locations to the depths of the bedrock these tests indicate deep ground near the river and shallow ground away from the present water channel. Cross checking the valley in this way makes good sense for setting up mining strategy in the future.

# **10. CONCLUSION**

The many varying soil conditions in different geographical locations could alter the final results. For this reason, an actual excavation of one of the test sites is strongly recommended. The test site with the most shallow reading will provide the most economical results, however, the most accurate results would be achieved from one of the deeper test sites.

## **11. RECOMMENDATION**

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This type of reflected seismic testing is ideal in shallow placer ground. Without drilling or excavating near the test sites to establish velocity, the contour of the subsurface profile could still be charted in a cross test of a given valley. It is possible to locate old stream beds this way, giving a target area for a drill.

A re-analysis of the seismic data after a drill log can make these tests surprisingly accurate. A tighter grid pattern in the future may be of great value in a drilling or mining strategy program.

# **12. STATEMENT OF ASSESSMENT COSTS**

For seismic survey conducted on McQuesten River Placer Lease PL8674.

Seismic Test

\$250 per test x 20 shots

= \$5,000

Includes:

Seismic consultant Assistant for field and expediting Computer and printer time Computer and program time Computer down-loading (off-loading/data dumping) Seismic interpretation Equipment - ATV, axe, hip chain with thread, flagging tape, marker etc. Transportation Food and camping supplies Accommodations (hotel, tent or camper) Test shots where applicable (for calibration)

**Report Preparation** 

Report writing, drafting, map and figure preparation, photocopying and binding

= <u>\$ 500</u>

**Total Cost** 

= <u>\$5.500</u>

### **CERTIFICATION**

I, Ted Sandor, of Whitehorse, Yukon Territory certify that:

1. I hold a Gas and Arc Welding diploma from Northern Alberta Institute of Technology, Edmonton, Alberta, and have been practising continuously since mid seventies in Ardco Industries on oil field and seismic related equipment.

2. I am a journeyman welder, licensed to practise in Alberta. The geophysical technology came from extensive field work in the oil patch, and the very need to satisfy my own mining strategy since 1978.

3. The geophysical field work was conducted with assistance that may change from test to test. The report preparation and interpretation is done by me personally to keep up the highest quality of this report.

4. I have based conclusions and recommendations contained in this report on my knowledge of geophysics, my previous experience and the results of the field work conducted on the property.

5. Directly or indirectly I hold no interest in this property other than professional fees, nor do I expect any interest in the property or any other of the owner's holdings.

6. The accuracy of the final results depends more on the calibration of the recording device and the computers then on the qualification of the operator.

Whitehorse, Yukon Territory July, 27, 1991

Ted Sandor, Seismic Consultant

Seismic Tests, McQuesten PL8674, July 27, 1991

# **13. REFERENCES**

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- 2. J.J. Jakosky, <u>Exploration Geophysics</u>. (Trija Publishing Co., Newport Beach, California. 1957)
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- 4. 1984 Open File, R.L. Debicki, <u>Bedrock Geology and Mineralization</u> <u>of the Klondike Area</u> (West), 1150/14,15 and 116B/2,3.
- 5. J.K. Mortensen, <u>Geochemistry of the Klondike District</u>, West Central Revised, 1990.









































