SUMMARY GEOPHYSICAL REPORT

ON A

SEISMIC REFRACTION STUDY

OVER A

PLACER GOLD PROPERTY

SNAKE CREEK (UPPER)

ATLIN AREA

ATLIN MINING DIVISION, BRITISH COLUMBIA

FOR

LARRY PRINCE

ATLIN, BRITISH COLUMBIA

BY

DAVID G. MARK, P.GEO., GEOPHYSICIST

FEBRUARY 1997

GEOTRONICS

TABLE OF CONTENTS

LIST OF ILLUSTRATIONS

SUMMARY GEOPHYSICAL REPORT

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ATLIN AREA

ATLIN MINING DIVISION, BRITISH COLUMBIA

INTRODUCTION AND GENERAL REMARKS

This report discusses the results of two seismic refraction lines, both carried out along the upper part of Snake Creek, which is located within the Atlin Placer Mining Camp of British Columbia. The work was done for Larry Prince of Atlin, British Columbia, at his request.

The main purpose of the two seismic refraction lines was to determine the depths to bedrock as well as to locate any possible buried channels that may exist and that may carry placer gold.

The work was carried out on August 22, 1996 by David G. Mark, geophysicist, with the assistance of Mike Brindley, geophysical technician, and two additional helpers.

INSTRUMENTATION

Two 12-channel seismographs, model 1210F, manufactured by E.G. & G. Geometrics of Sunnyvale, California, were used on the project. They were interfaced together to form a 24-

channel system. This instrument features signal enhancement by stacking repeated signals in a digital memory. A CRT (cathode ray tube) continuously displays the signal stored in the memory on all channels simultaneously, or on selected combinations of fewer channels. The stored signal can then be printed on a permanent paper recorded by a built-in electric writing oscillograph. The instrument also contains active signal filters on each amplifier.

Two 12-channel geophone cables of 90 m length with 5/10 m geophone spacings were used as well as 8 cycle/sec marsh geophones. The cables and geophones were manufactured by Mark Products of Houston, Texas.

The blasting was done by radio signal with one encoder and one decoder, series 200, manufactured by Input/Output of Houston, Texas. These were interfaced with Motorola portable FM radios.

FIELD PROCEDURE

The 'two-way, in-line shot' seismic method was used for all seismic lines. The technique consists of laying out 24 geophones in a straight line and recording arrival times from shots fired at either end of the spread. Arrival times from three additional shot points each located every 1/4 of the spread length within the middle of the spread were also recorded. This provided the layer depths and velocity variations along the spread, and also gave additional information about the deeper layers. Finally, for each spread, two additional off-end shots were fired, each at a distance of up to one-half the spread length from the nearest geophone so that all first arrivals were from the basement bedrock (or basal layer). This was felt necessary so that the refractions received from the other shot points could be correlated and assigned the correct layer number.

Each of the seismic lines consisted of one spread that was 190 m long with 24 geophones and with geophone spacings of 5 and 10 meters. The geophones were numbered from G-1 to G-20 for only the 10-meter separated geophones. In other words, the in-between 5-meter separated geophones were not numbered. Blaze orange flagging was placed at each of the 20 geophone spots.

SL-1 was surveyed in at a direction of 70°E, which was at an oblique angle to the creek, and SL-2 was surveyed in at about 120°E, which was approximately perpendicular to the creek. The creek runs in a direction at about 40°E.

The lower line, SL-1, was labeled in the field as SL-2 and the upper line, SL-2 was labeled in the field as SL-3. This was labeled as such because of work done on an adjoining property for another client in order to minimize confusion. However, once in the office, it was decided to relabel the lines as SL-1 and SL-2, respectively, since the two properties are separate.

The shots were placed in holes dug by a D-handled shovel about 0.3 to 0.6 m deep with the shot size ranging from approximately 0.1 to 2.5 kg

Each geophone was surveyed in with a hand-held clinometer.

COMPUTING METHOD

The seismic data were analyzed using an intercept-delay time technique. Implementation of this method requires reverse refraction emanating from a common layer (usually bedrock) for at least two detectors (geophones). This bedrock overlap is necessary in order to obtain a true refractor velocity and travel time in the overlying overburden independent of bedrock dip and/or surface irregularities. The off-end shot times are used to extrapolate the bedrock refractions from either end back to their respective shot locations. With this information and related overburden velocities, it is possible to compute the depth to bedrock below each detector.

The seismic interpretation for lines SL-1 and SL-2 is shown in profile form on the accompanying map, G-1, at a scale of 1:500.

DISCUSSION OF RESULTS

A three-layer case was encountered below each of the two lines. The following is a table of the velocity layers classified as to what they probably reflect.

Laye r	Velocity (m/s)	Classification
1	370 - 400	Overburden: surficial, loose, dry sands, gravels, and/or tills
2	700 - 1,000	Overburden: partially water-saturated sands and gravels, possibly till
3	2,000 - 2,300	Overburden (channel in-fill): water-saturated, very hard and compact gravels and/or tills; or Bedrock: faulted or sheared
3	3,000	Bedrock: sediments and/or metasediments
3	4,000 - 4,200	Bedrock: possibly volcanics or metasediments

The second layer which has a velocity of 700 to 1,000 m/s, as stated above, indicates sands, gravels or possibly tills that would not be that hard and compact, and could be partially water-saturated. A typical seismic pitfall is, therefore, that an in-between velocity material could occur below this material and above the bedrock (looser gravels overlying hard tills, for example). This would result in the seismic-calculated depths being deeper than they actually are. If this pitfall occurs, then the error could be as much as 50%.

The seismic calculated depths along SL-1 vary from near surface (about two to three meters) below G-6 to G-8, to 30 meters below G-20. The depth to bedrock increases significantly east of G-17. The bedrock bench shown from G-13 to G-17 could be a placer channel. Also the bedrock slope shown at G-17 and east could be the western side of another channel.

On SL-2, the seismic-calculated depths vary from 11 m below G-9 to 17 m below G-12. On this line, two slow velocity zones occur within the bedrock. One occurs below G-12 (or possibly G-11) to G-16 and is very likely caused by a steep-sided buried creek channel. It could also be caused by a fault. Another slow zone occurs below G-1 to G-3. This one could also be caused by an in-filled channel, or possibly a fault. In most cases, if there exists a channel, there exists a fault, since a channel occurs in a place of bedrock weakness.

It is difficult to relate the two lines to each other. SL-2 is located almost at the top of Snake Creek and SL-1 is located several hundred meters downhill. (The distance was not measured.) Therefore, the possible channels that are shown on SL-2 could be to the east or to the west of SL-1. Or the bench shown on SL-1 could be the location of one of the channels and the second channel could be to the east of the line. In order to know for sure, seismic refraction surveying would have to be done in between the two lines. As well, ideally, the lines should be extended both to the east and to the west. However, before any additional seismic work is done, the channels should be verified which would probably best be done with excavator trenching. Geological mapping of surface features such as bedrock outcrops would also be useful.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

PROFESSIONAL GEOSCIENTIST
PROVINCE OF BRITISH COLUMBIA
D.G. MARK

David G. Mark, P.Geo.,
Geophysicist

February 1997

GEOPHYSICIST'S CERTIFICATE

I, DAVID G. MARK, of the City of Vancouver, in the Province of British Columbia, do hereby certify that:

I am registered as a Professional Geoscientist with the Association of Professional Engineers and Geoscientists of the Province of British Columbia.

I further certify that:

1. I am a Consulting Geophysicist of Geotronics Surveys Ltd., with offices at #405 - 535 Howe Street, Vancouver, British Columbia.
2. I am a graduate of the University of British Columbia (1968) and hold a B.Sc. degree in Geophysics.
3. I have been practicing my profession for the past 29 years, and have been active in mining exploration and geotechnical work for the past 32 years.
4. This report is compiled from data obtained from a seismic refraction survey carried out under my direct supervision on August 22, 1996.
5. I have no interest in the property discussed within this report, nor any other properties belonging to Larry Prince, nor will I receive any interest as a result of writing this report.

Respectfully submitted,
GEOTRONICS SURVEYS LTD.

PROFESSIONAL
PROVINCE OF
D.G. MARK
BRITISH COLUMBIA
GEOSCIENTIST

David G. Mark, P.Geo.,
Geophysicist

February 1997

INVOICE

GEOTRONICS SURVEYS LTD.
405-535 HOWE STREET
VANCOUVER, CANADA V6C 2Z4
(604) 687-6671 FAX: (604) 681-0870

TO: **LARRY PRINCE**
Box 126
Atlin, British Columbia
V0W 1A0

DATE February 24, 1997

INVOICE No. 96-31B

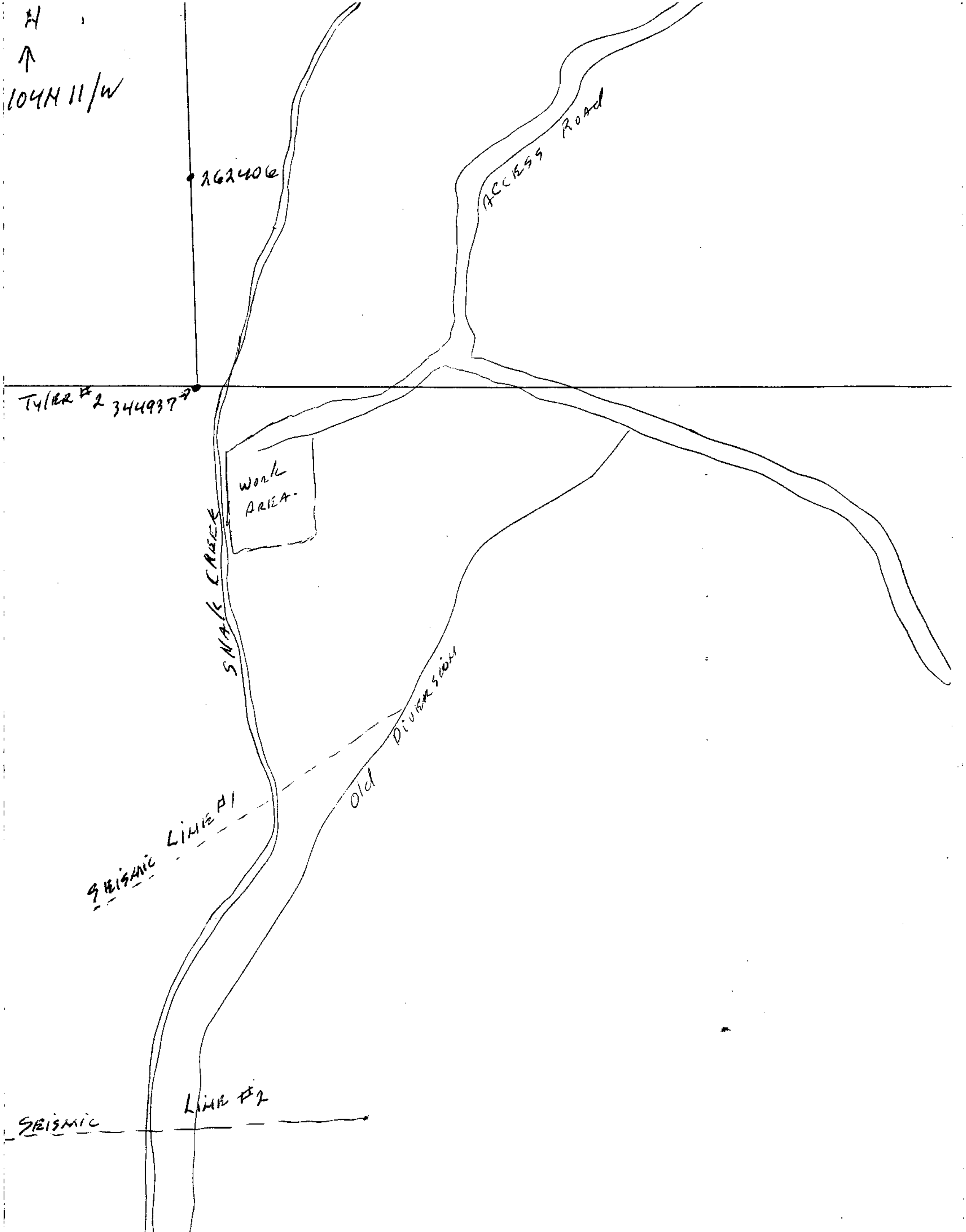
DESCRIPTION:

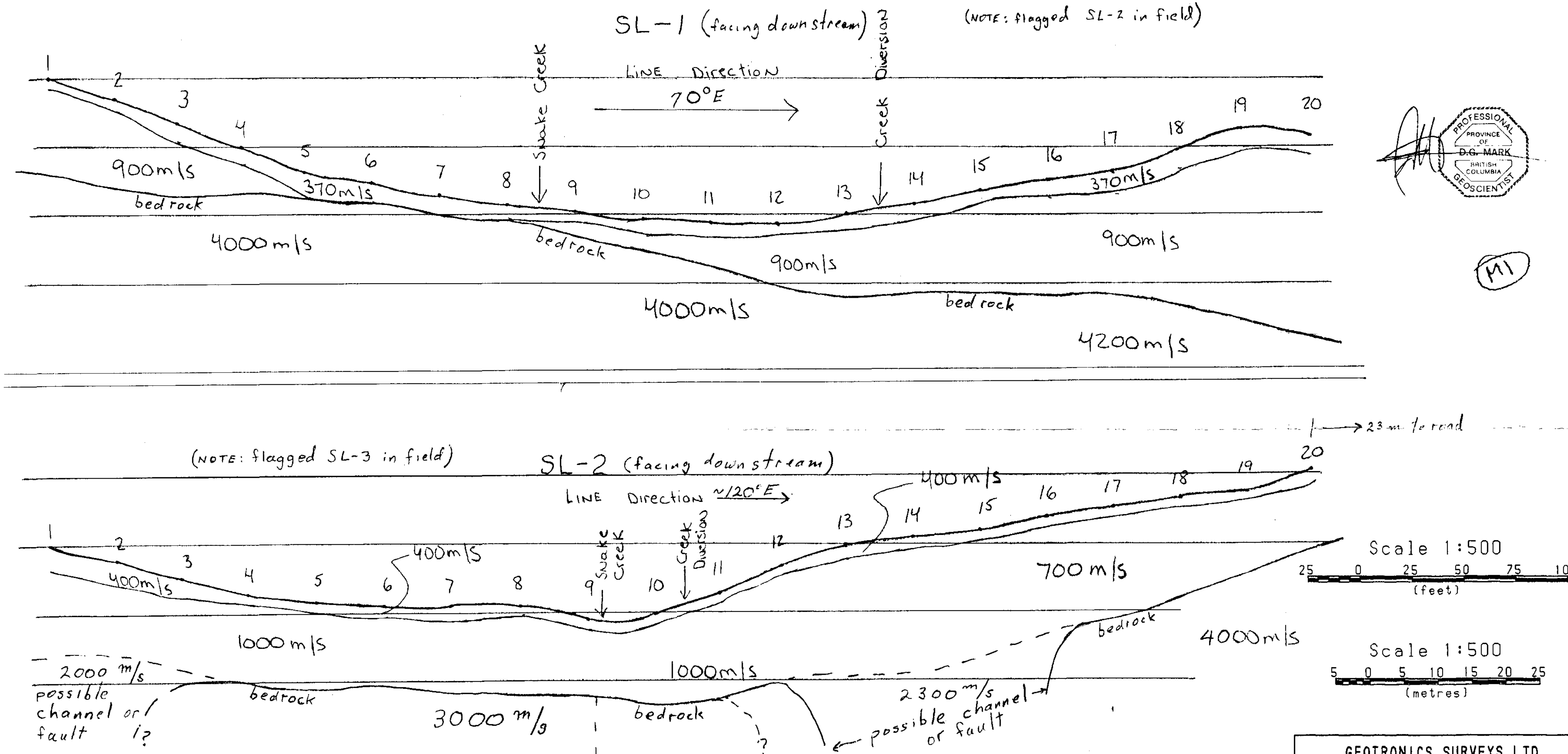
Seismic Refraction Survey
SUNSHINE PROPERTY
Snake Creek (Upper), Atlin Area
Atlin M.D., B.C.

FIELD:		
Mob/demob, your share	$200.00	
Two-man crew, including truck rental, instrumentation, and room and board, 5.5 hours @ $130/hour	715.00	
Helper, 5.5 hours @ $11/hour	60.50	
Seismic caps, 15 @ $4.50/cap	67.50	
Explosives	50.00	
TOTAL	$1,168.00	$1,093.00
DATA REDUCTION and REPORT:		
Senior geophysicist, 5 hours @ $50/hour	$250.00	
Geophysical technician, 12 hours @ $25/hour	300.00	
Printing and report compilation	25.00	
TOTAL	$575.00	$575.00
GRAND TOTAL		**$1,668.00**
GST		116.76
		1784.76
Less advance as per invoice # 96.31A, dated August 20, 1996		$800.00
G.S.T. No. R101999860 — **Please pay this amount.**		**$984.76**

BALANCE DUE UPON RECEIPT OF THIS INVOICE

Interest at 2% per month charged against Overdue Accounts


N
104H 11/W
262406
TYLER #2 344937
ACCESS Road
WORK AREA.
SNAK CREEK
Old DIVERSION
SEISMIC LINE #1
SEISMIC
LINE #2



GEOLOGICAL SURVEY BRANCH
ASSESSMENT REPORT

Geotronics

24,926

Surveyed by GEOTRONICS SURVEYS LTD
AUGUST 1996

GEOTRONICS SURVEYS LTD.

LARRY PRINCE
SNAKE CREEK PLACER PROPERTY

Atlin Area, Atlin M.D., B.C.
SEISMIC REFRACTION SURVEY
PROFILES SL-1 and SL-2

Drawn by:	Job No.	NTS	Scale	Date	Map No.
G.M.B.	96-28	104N/11	1:500	Aug 96	G-1