Department of Mines and Petroleum Resources ASSESSMENT REPORT NO. 5334 MAP GEOPHYSICAL, GEOCHEMICAL REPORT JASON EXPLORERS LTD. Stan Claim Group, Greenwood Mining Division, B.C. Latitude 49°08'N Longitude 118°33'W AUTHORS: G. L. Anselmo, President G. E. White, Chief Geophysicist P. ENGINEER: W. G. Stevenson DATE OF WORK: April 22 - May 5, 1971 82E/DE

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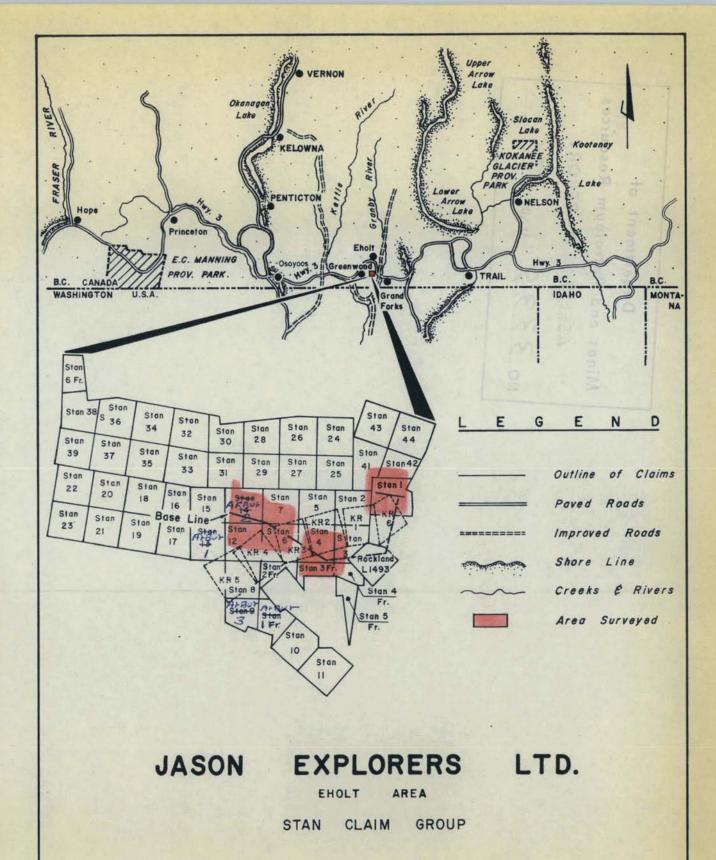
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# LOCATION AND CLAIMS MAP

SCALE: LOCATION MAP: I" = 39 MILES APPROX. - CLAIMS MAP: I" = 4000 FEET APPROX.

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Fig I.

#### INTRODUCTION

During the period April 22 to May 5, 1971, Tri-Con Exploration Surveys Ltd. on behalf of Jason Explorers Ltd. conducted a program of geochemical soil sampling, induced polarization surveying and a small amount of hammer seismic profiling over a portion of the Stan Claim group, Eholt Area, Greenwood Mining Division, Province of British Columbia.

The surveys were undertaken to examine three areas of interesting chargeability data located by a previous reconnaissance induced polarization survey and thus try to delineate an optimum exploration target.

#### LOCATION AND ACCESS

The group of mineral claims covered by this report are located approximately 5 miles east of the town of Greenwood on the south side of Highway #3, latitude  $49^{\circ}$  08' north, longitude 118° 33' west. N.T.S. 82E/2

#### THE PROPERTY

The mineral claims covered completely or partially by the above surveys are listed as follows:

Stan 3 FR , Stan 4 FR

Stan 1, 3, 4, 6, 7, 12, 14, 41 and 42

These claims are shown with respect to the complete claim group in Figure 1.

#### SURVEY SPECIFICATIONS

#### The Survey Grid

The surveys were conducted along fill-in lines turned off every 200 feet from a previously established baseline and directed in a N  $16^{\circ}$  E direction parallel to the original traverse lines which were spaced at approximately 1000 foot intervals.

Some 13,400 line feet of grid was cut and surveyed on Grid #1, some 15,800 line feet on Grid #2 and some 7,800 line feet on Grid #3.

# Geochemical Survey

Some 181 soil samples and 28 profile samples were taken along the traverse lines at 200 foot intervals by experienced field assistants and their locations were flagged and coded with "lime yellow" plastic flagging.

The sample holes were dug with a mattock and the samples were taken by hand and placed in a water resistant bag where they remained until analysis.

The samples were packaged and delivered to Chemex Labs Ltd. of North Vancouver, B.C., where drying, sieving and analysis by atomic absorption was carried out under the supervision of professional chemists.

All samples were run for copper. The background value was found to be 25 ppm. The intensity ranged from 4 ppm. to 224 ppm. copper in the soil samples.

# The Induced Polarization Survey

The induced polarization survey was conducted with a Hewitt 1KW I.P. transient pulse type unit deployed in the Wenner electrode configuration with an "a" spacing and traverse interval of 200 feet. Detailed surveying was conducted with "a" spacings of 50, 100 and 300 feet. In the pulse (also known as time domain) method a steady direct current is impressed into the ground for a few seconds, abruptly terminated for a short time (usually equal to the length of pulse time) and then a steady current is impressed in the reverse direction for a few seconds and then aburptly terminated for a few seconds. This is one cycle which can be repeated. A fraction of a second after each cessation of the current pulse the decay voltage is integrated and measured. The current and total integrated primary voltage and total integrated decay voltage are then recorded for the given number of cycles. From these measurements the chargeability in millivolts/volt and apparent resistivity in ohm-feet are calculated. The values calculated are then plotted at the center position of the array for a given set of readings.

#### The Hammer Seismic Survey

The hammer seismic profiling was conducted with a Huntec FS-3 single channel hammer seismic unit, employed in the refraction mode. This instrument

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is a time-distance plotting instrument which permanently records on electrosensitive paper an entire seismic event produced by a hammer blow to the surface of the ground or by an electrically detonated explosive charge. The record is in the form of short dashes which signify the positive zero crossings of each cycle of the shock waves (wavelength) initiated by the hammer or explosive charge. In the refraction mode, travel time data are obtained for the elastic waves which have been refracted at the boundaries separating medias of different elastic constants and/or density by hammering or detonating an explosive charge at given intervals to a distance several times the depth of the beds being investigated. Generally only the minimum time or first arrival events are used.

#### Data Presentation

The survey data from the various surveys has been presented at a horizontal scale of 1"=400 feet as follows:

- Figure 2 Induced Polarization-chargeability data contoured at an interval of 4 mv/v.
- Figure 3 Induced Polarization-resistivity data contoured at an interval of 1000 ohm feet.

Figure 4 Geochemical data-copper-contoured at 25, 40 and 55 ppm. levels. Figure 5 Interpretation Map.

#### DISCUSSION OF RESULTS

Geological and ground magnetometer data provided by Jason Explorers Ltd. has been employed to aid interpretation of the induced polarization, geochemical and hammer seismic data covered by this report. Principle features from the various surveys are highlighted on the interpretation map, Figure 5.

# Geochemical Data

There were six soil profiles taken at locations over the property such that two profiles were obtained from each of the three grids (Figure 4). The profile pits were dug to a general depth of 20 inches and the different horizons were sampled.

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In all profiles, the " $A_0$ " horizon was a 1" thick layer of organic material and contained a normal amount of copper in relation to the immediate soils. The " $A_1$ " horizon was 2" thick and was a black to black brown layer of decayed organic material. It is a concentrating layer and showed erratic amounts of copper ranging from  $\frac{1}{2}$  to 2 times the amounts in the "B" horizon. The " $A_2$ " horizon was in all cases 1" to 2" thick and was a gray fine friable clay. It was relatively void of copper and carried as little as 1/10 that of the "B" horizon. There was no " $A_2$ " horizon encountered on grid #3. The "B" horizon was 8"-12" thick and was an orange-brown, oxidized friable sand-clay mixture with angular rock indicating proximity of bedrock. It was found to be the most stable soil horizon for soil sampling. The "C" horizon was greater than 12" thick and was in all cases a gray to gray brown sandy clay. It contained angular rock and there was a considerable amount of water running at the interface of the "B" and "C" horizons.

There was a considerable pH drop of up to 1.5 with the transition from "A and A<sub>1</sub>" soils to "A<sub>2</sub> - B and C" soils.

There was no glacial debris located in any of the sample holes. Round gravel rock was located near the road on line D grid #1 in a draw which would indicate a probable old river bed. All other sample locations contained angular rock indicating proximity of bedrock. This was confirmed by hammer seismic.

A detailed sketch of the profiles on plate 3 better explains the ion migration patterns of the property.

The "C" horizon has in all cases approximately 1.5 time the amount of copper contained in the "B" horizon. As the "C" horizon samples were taken near the top of the "C" horizon and as the composition of the "C" horizon restricts ion migration, it is reasonable to assume that the copper values would increase appreciable as the soil approaches bedrock.

## Geophysical Data

The induced polarization resistivity data Figure 3, shows considerable variations which can be attributed to the physical characteristics of the

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overburden and bedrock and variations in depth to the bedrock.

Since the induced polarization survey was conducted in areas of anomalous response located by a previous reconnaissance type I.P. survey, the present chargeability data does not indicate a true background response. In general with respect to both induced polarization surveys, the chargeability values which can be considered anomalous are as follows:

> Weakly Anomalous 8-12 mv/v Anomalous 12-20 mv/v Definitely Anomalous 20 and above

Correlation of the geological, geochemical, ground magnetometer, induced polarization and hammer seismic data with respect to Grids #1, 2 and 3 is discussed as follows:

#### Grid #1

Grid #1 is located on an assumed south extending flange of Nelson Intrusive of medium grained, greenish colored granodiorite into sedimentary and greenstone rocks of the Anarchist group<sup>1</sup>. This area was delineated by a chargeability high of 31.8 milliseconds with a 400 foot "a" spacing by the previous induced polarization survey.<sup>2</sup> The present detailed induced polarization survey specifically defined this anomaly and located a high of 37 mv/v. Figure 2. Correlation of the two I.P. surveys indicates that the principle anomaly occurs at the intersection of NW-SE and SW-NE chargeability trends. The ground magnetometer survey<sup>3</sup> indicates that this chargeability feature is in an area of low magnetic intensity. A detailed magnetometer survey over this area, discussed

1. M.C. Robinson P. Eng. P. Geol. Geological Report on the Stan Mineral claims Eholt area, Greenwood Mining Division, January 1966.

 G. A. Mouritsen B.Sc. Geofac Surveys Ltd., Geophysical Report on the induced polarization survey on the Stand (Sic) Group of Mineral Claims Eholt Area, Greenwood Mining Division, November 14, 1966.

3. J. D. Mason P. Eng. Geophysical Report on the Stan Claims, Eholt area, Greenwood Mining Division, December 1969.

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in the same report, and the resistivity data from the present I.P. survey both show weak NW-SE and SW-NE magnetic and resistivity low trends respectively.

The hammer seismic data as shown in Plate 2 indicates that the principle chargeability anomaly is on a moderate to steep northerly slope and shows a velocity interface at approximately 11 feet. Correlation of the refraction hammer seismic data with known trenches in the survey area indicates that the bedrock is highly fractured and appears to have a lower velocity than normally. The geochemical data shows well developed copper trends which occur downslope from the principle chargeability anomaly. The copper geochemical data also suggests that some of the areas of weakly anomalous to anomalous chargeability values may contain more copper bearing mineralization than some of the areas of very high chargeability values. Both soil profiles obtained from this grid, though not situated within the anomalous surface geochemical pattern, indicate an increase in ppm. copper with depth.

Plate 1 illustates the various data over line D. Here at 6S the 50 foot, 100 foot and 200 foot induced polarization "a" spacings show a definite chargeable body. The 200 foot "a" spacing also shows an increase in response towards 0+00 where the 400 foot "a" spacing from the original reconnaissance induced polarization survey shows a chargeability high. Examination of the induced polarization data on Figure 2 indicates that this "a" spacing is possibly detecting a causitive body at depth between 4 + 00W - 3S and 8 + 00W - 1N or is being influenced by a large volume of near surface chargeable material between these two points. Plate 1 also shows the low magnetic response and the anomalous geochemical copper values along this line.

#### Grid 2

Grid 2 is also reported to be located on a prong of granitic material and is an area of high magnetic response. (Plate 2). The principle chargeability anomaly is centered around 4 + 00W - 1S just south of some old diggings and is associated with a large copper geochemical anomaly. Profile No. 1 located within the geochemical anomaly increases to a value of 562 ppm. near the top of the "C" horizon. The resistivity data shows a strong NE-SW trending resistivity low which may possibly be caused by structure or possibly a dike-

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like body. The induced polarization data shown on Plate 1 shows that the chargeable body occurs along the flanks of the magnetic high and that the 200 foot "a" spacing yields the optimum response with the 100 foot "a" spacing giving the lowest readings, thus the causitive body would appear to be principly situated between 100 to 170 feet beneath the surface. The hammer seismic shows what appear to be shallow overburden conditions assuming the fractured bedrock prevails in this area as well.

#### Grid 3

Grid #3 is located at the eastern tip of the large prong of Nelson granite in an area of high magnetic values. The detailed induced polarization survey located a well defined chargeability high. Correlation with the geochemical data indicated little response in this area. A smaller chargeability high just to the northwest however, showed some copper geochemical response. Examination of the induced polarization data on Plate 1 indicated that the maximum response was detected with the 100 foot "a" spacing thus the causitive body does not appear to increase in size with depth and the largest concentration of chargeable material may likely occur at a depth of possibly 50 to 100 feet beneath the surface. Hammer Seismic data in this area indicated an overburden depth of approximately 11 feet with what would appear to be fractured and possibly altered bedrock extending to a depth of some 38 feet beneath the surface where compentent high velocity bedrock was encountered.

#### CONCLUSIONS

A program of geochemical soil sampling, induced polarization surveying and a limited amount of hammer seismic profiling, was completed over three small grids on a portion of the Stan claim group, Eholt area, Greenwood Mining Division, Province of British Columbia.

The Induced polarization survey located high chargeability values in each of the three survey areas. The chargeability anomalies in Grids #1 and 2, appear to be associated with favourable copper geochemical values.

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The causitive body delineated in Grid 2 is associated with an area of high magnetic intensity and appears to be limited in depth while the chargeable body located in Grid 1 is in a magnetic low area and appears to have some depth extension.

#### RECOMMENDATIONS

To evaluate the induced polarization anomalies in Grids 1 and 2 a minimum of 2 reconnaissance diamond drill holes are recommended as follows: Grid 1

Assuming the slope in this area is some  $45^{\circ}$  to the north a diamond drill hole should be collared on line "D" 6 + 00S and drilled vertically for a minimum length of 200 feet.

Grid 2

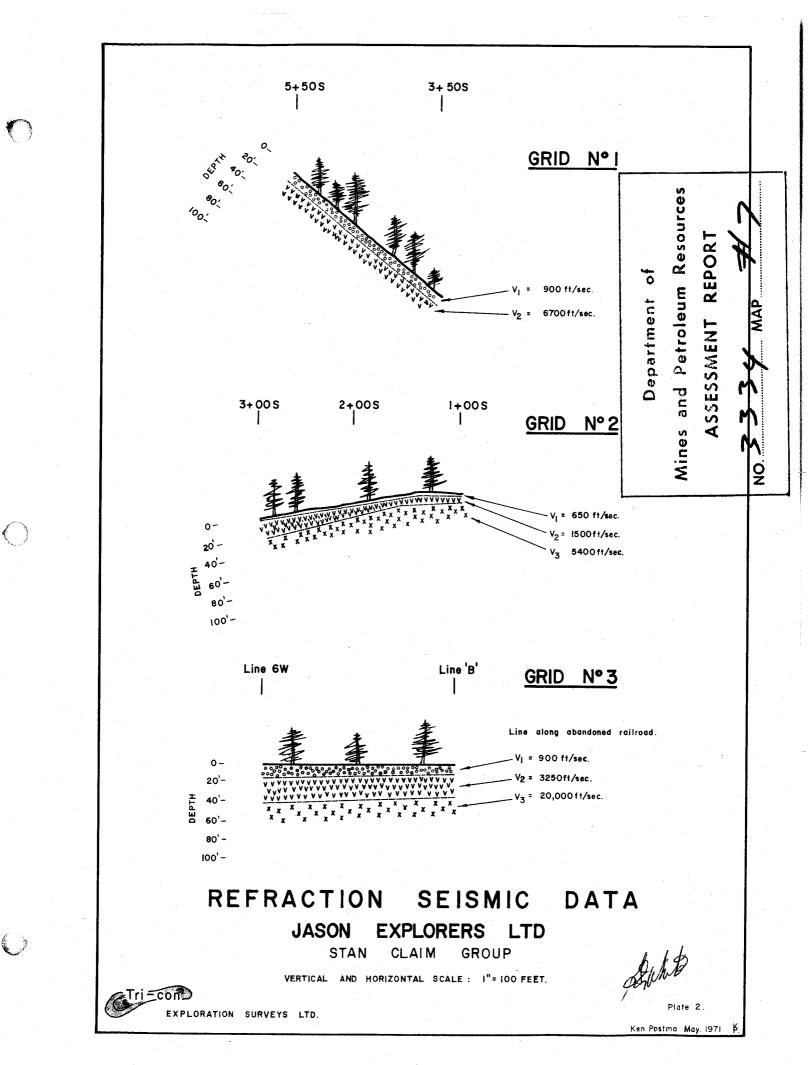
A diamond drill hole should be collared at 4W - 0 + 50S drilled S  $16^{\circ} W$  at an angle of  $-55^{\circ}$  for a minimum length of 200 feet.

Respectfully submitted, TRI-CON EXPLORATION SURVEYS LTD.

G. L. Anselmo, President

Henswhite

Glen E. White, Chief Geophysicist



#### APPENDIX

#### Instrument Specification

#### INDUCED POLARIZATION

A Instrument

- (a) Type Transient Pulse Prospecting Equipment
- (b) Make Hewitt Enterprises 200
- (c) Size 13¼" W x 15½" L x 9½" Deep

#### **B** Specifications

- (a) Transmitter
  - (i) 1,000 Wat nickle cadnium battery supply
  - (ii) operation mode 2 seconds on, 2 seconds off, 2 seconds reverse.
  - 4 seconds on, 4 seconds off, 4 seconds reverse
  - (iii) Cycles .5, 1, 2, 3, 4. selected on switch.
  - (iv) Timing-solid state logic circuitry
  - (v) Current Ranges 10, 50, 100, 500, 1,000, 5,000, milliampere
- (b) Receiver
  - (i) Solid State
  - (ii) dV and I.P. solid state memory storage.

(iii) dV ranges 10, 50, 100, 1,000, 1,500 millivolts
(iv) I.P. ranges .1, .5, 1.0, 5, 10, 15, millivolts
(v) Self-potential-direct dial readings from polartometer
(vi) A.C. filtering-low pass active filter
(vii) Transient delay period .4 seconds
(viii) Integrating period 1.2 seconds
(ix) Power supply-four 9 volt transistor radio batteries.

- C Survey Procedure
  - (i) Wenner, pole-dipole or schlumberger array

D Data Presentation

 (i) chargeability percent chargeability in milliseconds or millivolts

volt

- (ii) Resistivity- ohm-feet
- (iii) Self-potential-millivolts often not used

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# APPENDIX

#### Instrument Specifications

# HAMMER SEISMIC

A	Inst	rument					
	(a)	Make -	F.S3	Huntec	Portable	Facsimile	Seismograph
	(b)	Type -	Hammer	- refra	action and	d reflection	on

- B <u>Specifications</u>
  - (a) Geophones:

Hall Sears HS-J Model L1 Velocity Sensitive Coil Resistance - 280 ohms Natural Frequency - 14 Hz

Input Impedance - 700 ohms

Frequency Response

- (b) Amplifiers Dual Channel:
- (c) Gain Control:
- (d) Printing Sensitivity:
- (e) Time Base:
- (f) Temperature:
- (g) Power Supplies:
- (h) Size:
- (i) Weight:
- (j) Accessories:

- Adjustable attenuator; 6 db steps from 0 to - 66 db 2 microvolts peak to peak with attenuator control at 0 db 3 to 180 milliseconds (Normal) 163 to 240 milliseconds (Delayed) Accuracy - ±1%
- $0^{\circ}F$  to  $115^{\circ}F$  (-18°C to  $46^{\circ}C$ )

Internal battery pack employing 20 D cells or external 24 volt battery Option: Nickel cadmium battery pack employing external Battery Charger. 18" x 14" x 6"

27.5 lbs (32.5 lbs with Nickel Cadmium Batteries)

- Shot box for remote detonation of seismic caps and explosives
- 2. Inter-connection cables
- 3. Nylon tape measure

#### CERTIFICATE

- I, Garry L. Anselmo, DO HEREBY CERTIFY:
- That I am President of Tri-Con Exploration Surveys Ltd. with offices at Suite 200 - 1405 Hunter Street, North Vancouver, British Columbia, and a Consultant in Geochemical Exploration.
- That I studied Geology and Geochemistry at the University of British Columbia for three years and am a graduate of Simon Fraser University with the Degree of Bachelor of Arts.
- That I have been engaged in Mining Exploration for six years.
- That I have no direct, indirect or contingent interest in the Stan Claims or in the securities of Jason Explorers Ltd., nor do I intend to receive any such interest.
- That this report dated May 27, 1971 is based on information derived from geochemical soil sampling, induced polarization surveying and Hammer Seismic profiling carried out by Tri-Con Exploration Surveys Ltd.

Dated at Vancouver, British Columbia, this 27 day of May 1971.

TRI-CON EXPLORATION SURVEYS LTD.

Jany J. Cluselm

G. L. Anselmo, B.A. President

# CERTIFICATION

#### TO WHOM IT MAY CONCERN:

I, GLEN ELMO WHITE, of the City of Richmond in the Province of British Columbia, hereby certify:

- 1. That I am a Geophysicist and reside at 117-641 Gilbert Rd.
- 2. That I studied Geophysics and Geology and graduated from the Univer-
- sity of British Columbia with the degree of Bachelor of Science.
- 3. That I have been engaged in Mining Exploration for eight years.
- 4. That I do not have, nor do I expect to receive, either directly or indirectly, any interest in the Stan Claims or in the securities of Jason Explorers Ltd.
- 5. That this report is based on information derived from an induced polarization survey, geochemical soil sampling, and hammer seismic profiling carried out by Tri-Con Exploration Surveys Ltd., under my supervision.

Dated this 27 day of May 1971.

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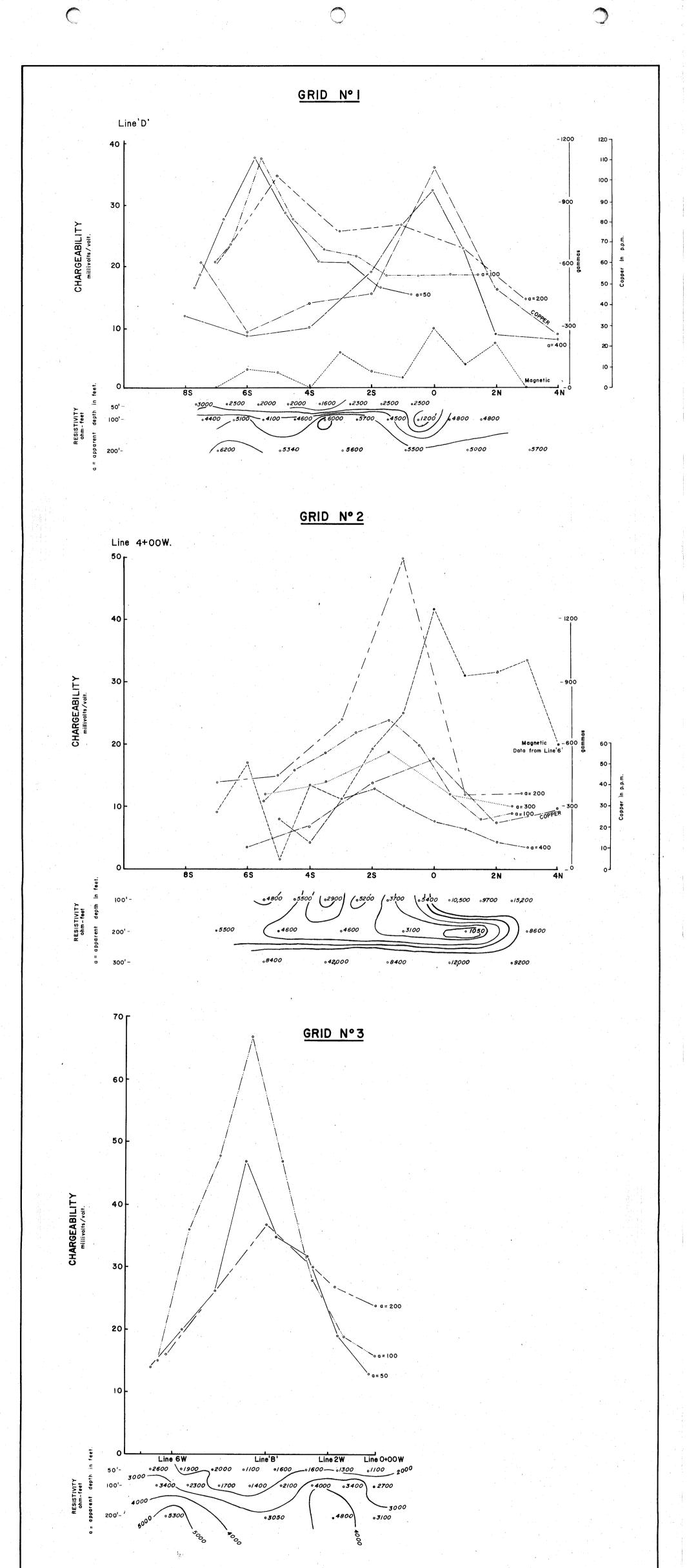
G. E. White, B.Sc., Chief Geophysicist

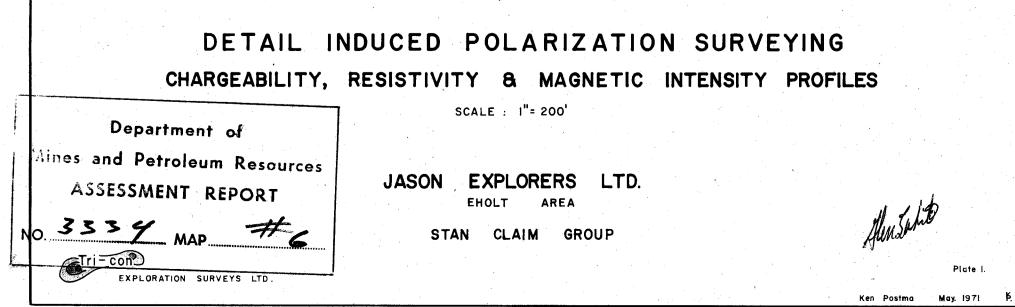
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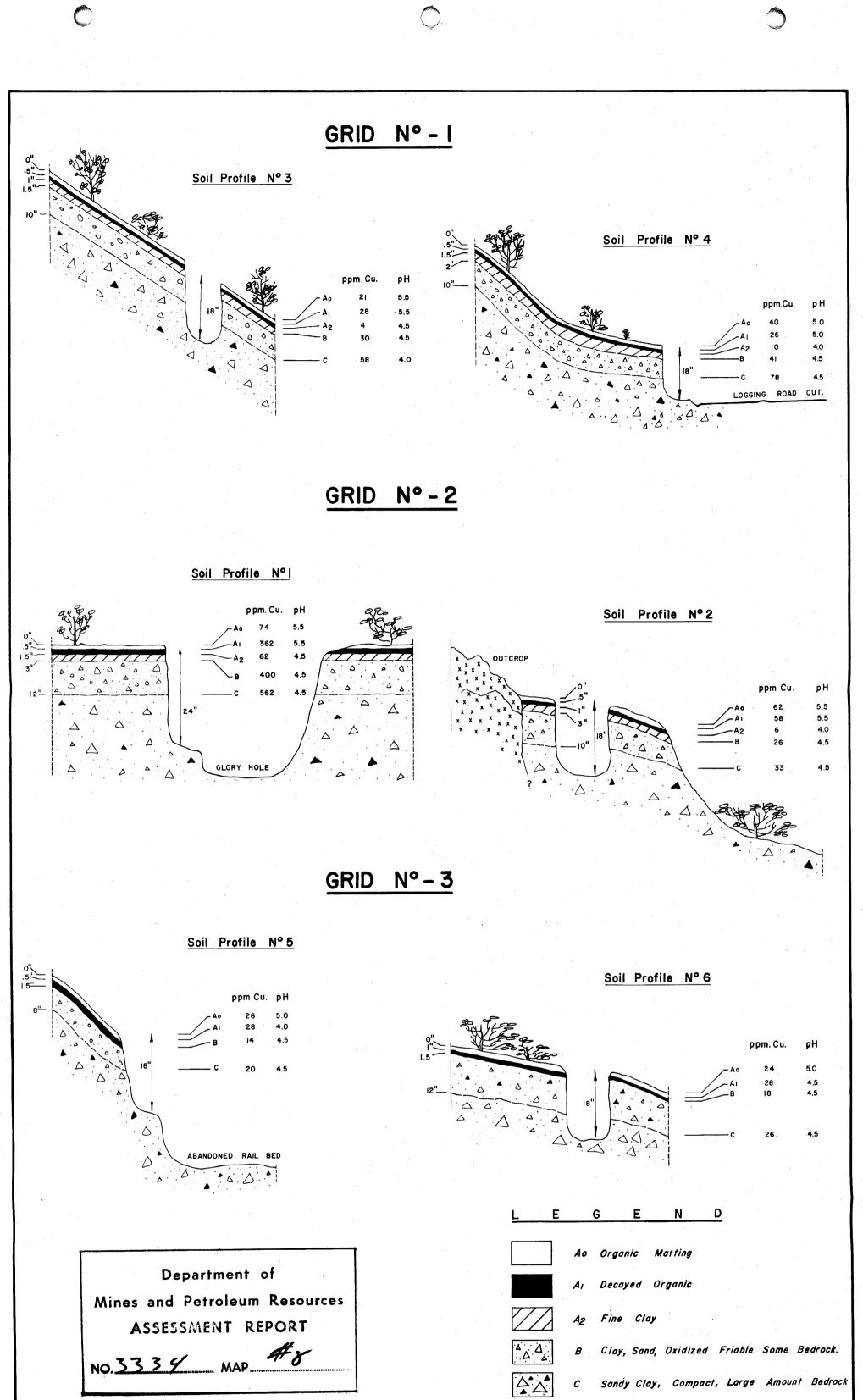
- I, William G. Stevenson, DO HEREBY CERTIFY:
- That I am a Consulting Geological Engineer with offices at Suite 209 Stock Exchange Building, 475 Howe Street, Vancouver 1, B.C.
- That I am a graduate of the University of Utah, 1946, with a B.Sc. Degree.
- That I am a registered Professional Engineer in the Association in British Columbia.
- That I have pracitised my profession for 22 years.
- That I have no direct, indirect or contingent interest in the Stan Mineral Claims or in the securities of Jason Explorers Ltd., nor do I intend to receive any such interest.
- That I have reviewed a report dated May 27, 1971 based on work conducted by Tri-Con Exploration Surveys Ltd. under the supervision of G. L. Anselmo, President and G. E. White, Chief Geophysicist.

DATED at Vancouver, British Columbia, this 28 day of May 1971

W. G. STEVENSON & ASSOCIATES LIMITED Consulting Geologists







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EXPLORATION SURVEYS LTD.

# SOIL PROFILES ON GRIDS 1,2 & 3 SHOWING SLOPE.

**EXPLORERS** LTD. JASON AREA EHOLT STAN CLAIMS

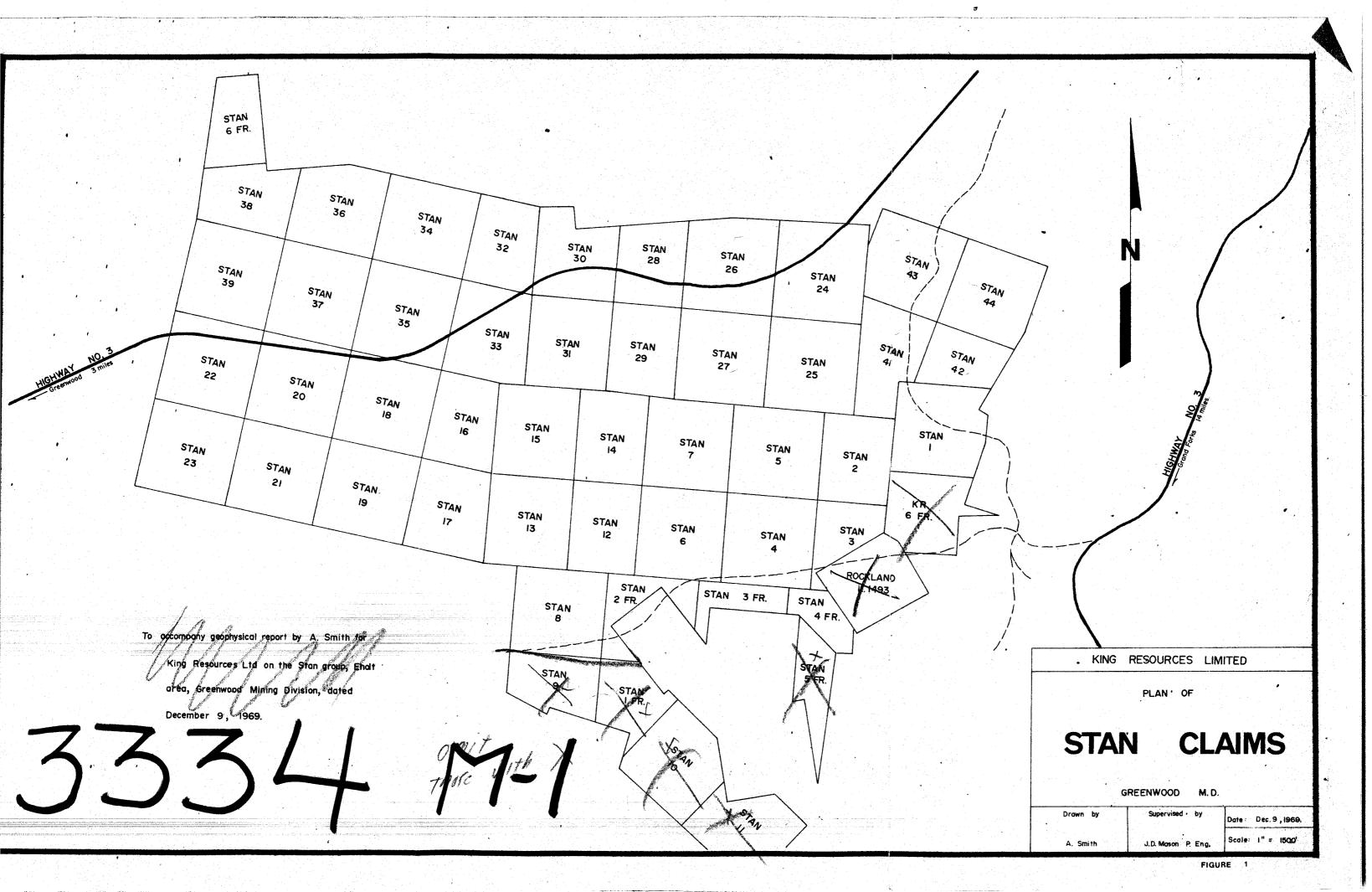
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May 1971 Ken Postma











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