1721

GEOPHYSICAL REPORT

on the

G.E. and Vi Mineral Claims

Bald (Holmes) Mountain Property

of

Great Slave Mines Ltd.

Situated three road miles north east

of

Princeton, South Central B. C.

Similkameen M.D.

Latitude 49°30'N; Longitude 120°30'W.
NTS 92/ 9

Field Work Completed between 1 and 24 November, 1968

by

GEO-X SURVEYS LTD.

Mr. N. Wilson, Instrument Operator

Report by:

December 13, 1968.
Vancouver, B.C.

D.R. Cochrane,
P. Eng.

604-685-4296
TELEX 04-50404

GEO-X SURVEYS LTD. 627 HORNBY STREET, VANCOUVER 1, B. C.

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SUMMARY AND CONCLUSIONS

Geo-X Surveys Ltd. of Vancouver, B.C., completed 6.1 line miles of grid layout and induced polarization surveys on the Bald Mountain property of Great Slave Mines Ltd., during November 1968. The property is situated within three road miles of Princeton, in the Similkameen Mining Division. The area recently surveyed is approximately two thirds of a mile long by one-half a mile wide and is located on the west sloping flank of the hill.

The main purpose of the survey was to determine if the economically interesting zone of secondary copper in broken Nicola andesite, was in situ, or had been transported from within the area investigated.

A Hewitt Enterprises pulse type IP unit was used throughout, with a Wenner field array and an "a" spacing of 300 feet. Sampling interval was every 300 feet along east-west cross lines, spaced 400 feet apart.

Bald Mountain (alias Miner's or Holmes Mountain) has been the subject of a considerable amount of exploration interest since the early 1900's. The hill is covered with trenches, adits, drill holes, pits, etc., and to the authors knowledge, at least self potential, geochemical soil sampling and electromagnetic surveys have been completed within the area recently surveyed.

The original, and still enigmatic zone of interest is the Regal Zone, situated at the foot of the hill and containing significant amounts of copper, mainly in secondary form. The basic problem has been well demonstrated recently, by trenching across the lowermost (western) edge of the Regal Zone. Within the trench, unconsolidated gravel is overlain by fragments of Miocene coal, which in turn is overlain by broken triassic volcanics, all of which is covered by a thin mantle of glacial drift.

The self potential results were of moderate amplitude and the most significant area is rather irregularly shaped, negative in sign, and coincides with the boundary of a high IP response area. The apparent resistivity pattern is fairly regular, with isoresistivity trends primarily north directed. Values range from over 1000 ohm-feet at the top of the hill (east side) to 100 ohm feet on the Regal Zone (west side). The 200 ohm feet resistivity contour is believed to coincide with the geological contact between in place Nicola rock and Miocene sediments and/or broken Nicola rocks.

The area of most significant induced polarization response is centered some 1500 feet east and slightly north of the Regal Zone. The east edge extends into the Granby Zone. This Anomaly (designated Anomaly #1) is rimmed by negative self potential values and coincides with moderately low bedrock apparent resistivities.

Anomaly two, on the hill top, has already been partially investigated. Trenching has revealed leached bedrock.

Depth probing on the Regal Zone suggests three rock layers, the first layer approximately 65 feet thick.

Certain geological, and some geophysical evidence suggests that the Regal Zone has been transported. Investigation of Anomalies 1 and 2 is recommended. If they do not prove to be the original source areas, it must lie outside the area investigated.

Respectfully submitted,

PROFESSIONAL ENGINEER
PROVINCE OF BRITISH COLUMBIA
D. R. COCHRANE

D. R. Cochrane,
P. Eng.

INTRODUCTION

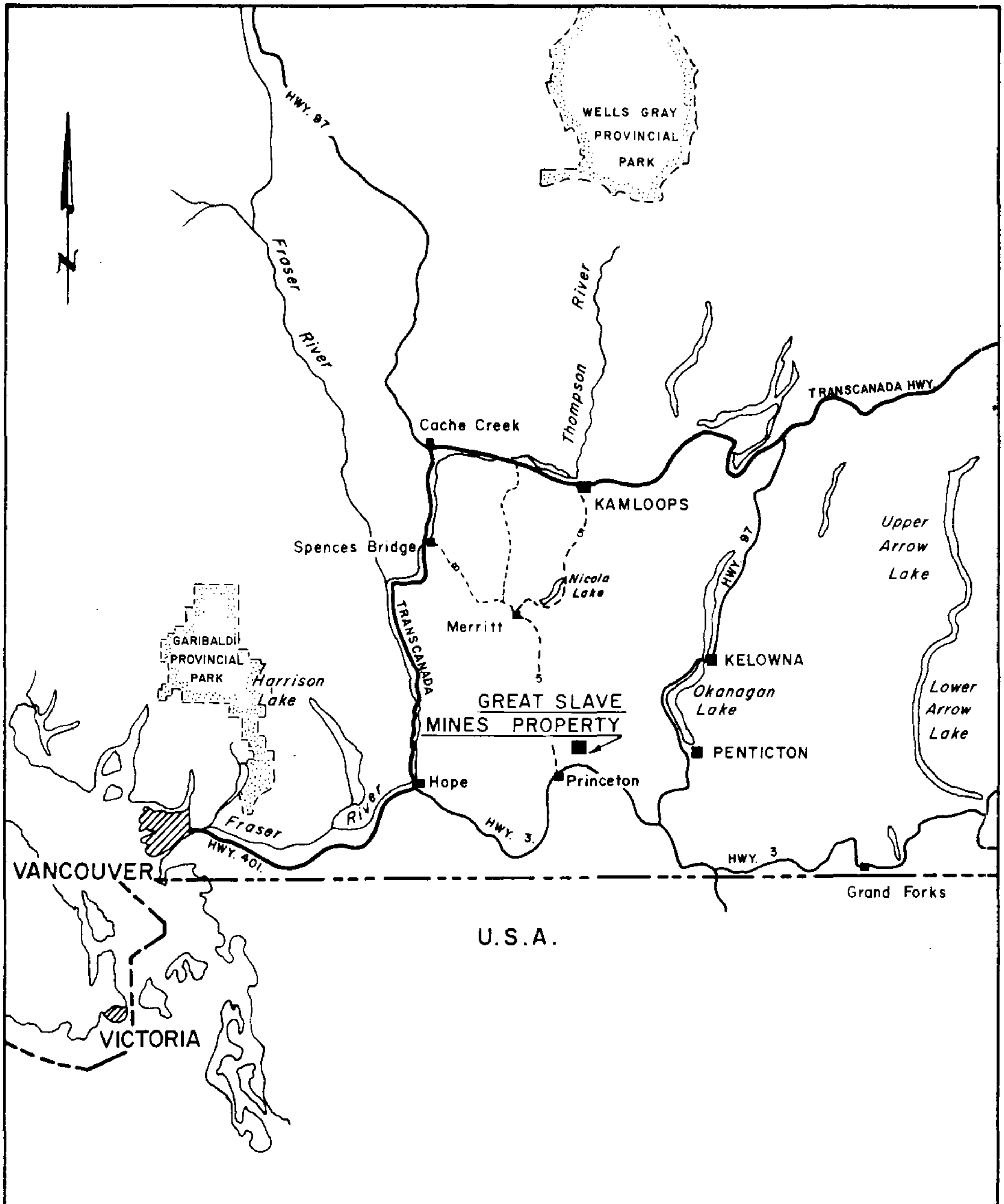
Between 1 and 24 November, 1968, a Geo-X Surveys field crew completed 6.1 line miles of grid layout and an induced polarization survey on the Bald (Holmes or Miner's) Mountain copper property of Great Slave Mines Limited. The claims are situated immediately northeast of the town of Princeton, south-central British Columbia.

There is some evidence to indicate that a zone, primarily made up of secondary copper minerals, in broken, weathered Nicola volcanics, has been transported some distance to its present position at the foot of Bald Mountain. The purpose of the survey was to determine if the provenance was up hill immediately to the west.

This report describes the field and data processing procedures and discusses the results of the survey.

LOCATION AND ACCESS

The Great Slave Mines mineral claims are located on the west flank of Bald (Holmes or Miner's) Mountain, just three road miles northeast of the town of Princeton, B.C. A good access road adjoins the Osprey Lake road immediately north of Allison Creek, crosses the railway tracks, and also several branch roads provide good access to the majority of



0 40 80 120

SCALE : MILES

GREAT SLAVE MINES LTD.
BALD MOUNTAIN AREA, SIMILKAMEEN M.D.
BRITISH COLUMBIA

LOCATION MAP

GEO - X SURVEYS LTD.	DRAWN R.K	DATED : Dec. 13/68	FIG. NO. 1
	CHECKED [signature]	JOB NO. 1061	

of claims. (see Figure 1).

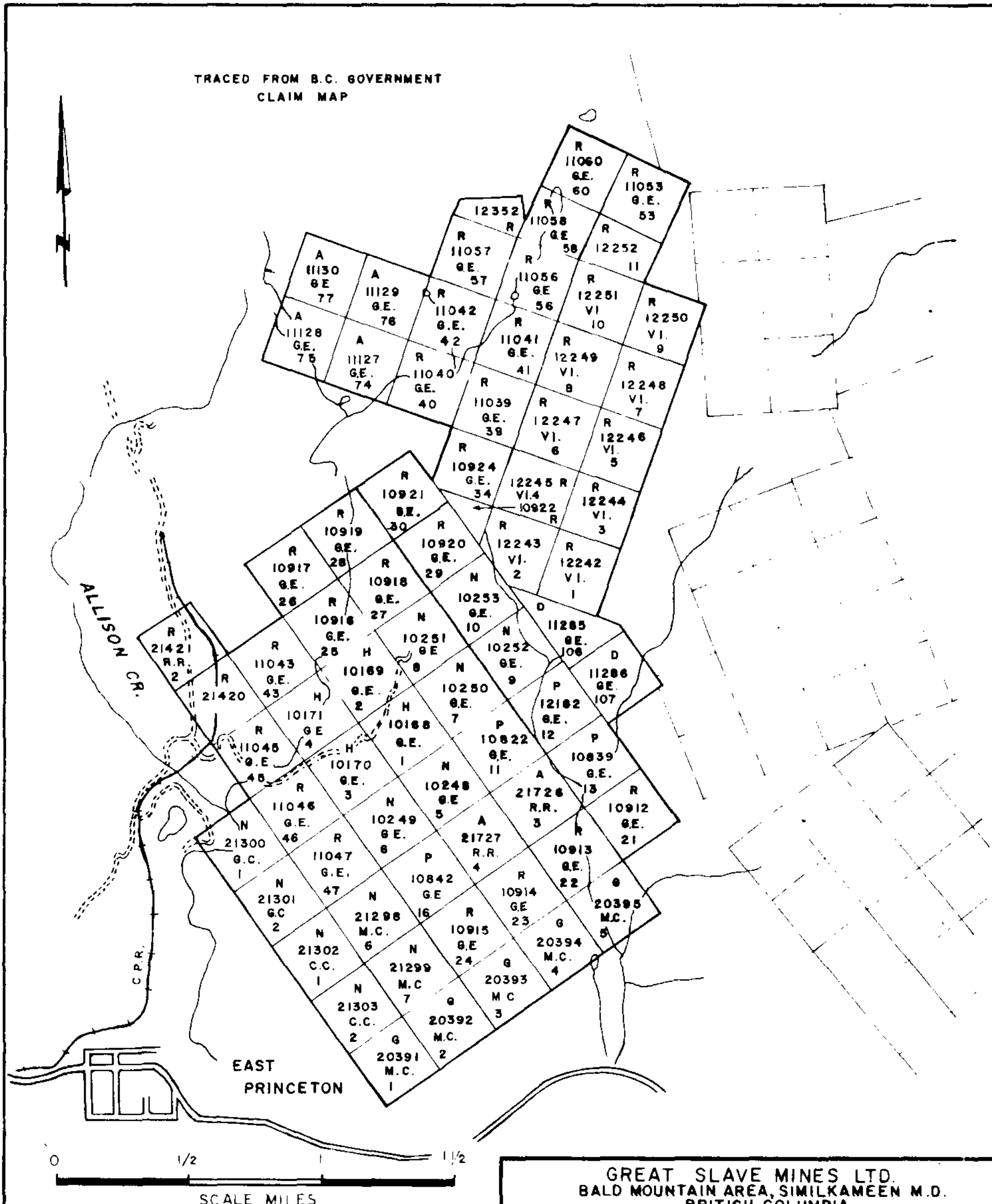
CLAIMS AND OWNERSHIP

The property consists of a contiguous block of 72 located mineral claims situated immediately east of Allison Creek and immediately north of the Similkameen River in the Similkameen Mining Division. They are held by Great Slave Mines Ltd., Suite 200, 890 West Pender Street, Vancouver 1, B.C.

The claim names and record numbers are shown in Figure 2, a portion of a copy of B.C. Department of Mines Mineral Claims Map numbers 92 H/9 (West 1/2) and 92 H/8 (West 1/2).

HISTORY

The Bald Mountain copper prospect has been known and intermittently explored since the turn of the century. The original area of interest was a zone of broken, oxidized nicola rock containing significant amounts of secondary copper minerals. This area, designated the Regal Zone, was initially explored by the United Empire Company, as somewhat of a by-product of coal development. Latter, Granby Consolidated Mines conducted geochemical and self potential surveys, which were followed by trenching and



GREAT SLAVE MINES LTD.
BALD MOUNTAIN AREA, SIMILKAMEEN M.D.
BRITISH COLUMBIA

CLAIM MAP

GEO – X SURVEYS LTD.	Drawn J.C.	Dated Dec 13/68	Fig. No.
	Checked [signature]	Job No. 1061	2

diamond drilling. This work resulted in the location of the Granby Zone. Early in 1960, Silver Standard Mines conducted drilling on the property, and in 1965, Meridian Syndicate completed geochemical soil sampling, and Crone J.E.M. electromagnetic surveys. Currently (November - December, 1968) Great Slave Mines is conducting extensive bulldozer trenching on various parts of the property.

GEOLOGICAL SETTING

The Bald Mountain property is dominently underlain by upper triassic Nicola Group intermediate volcanics. The Miocene or latter Princeton Group, unconformably overlie the Nicola rocks on the west side of the property, and consist primarily of sandstone, grit and coal.

The Regal Zone is an area of badly weathered and broken Nicola rocks with considerable amounts of secondary copper minerals. Some of the Nicola fragments, when broken, contain chalcopyrite and chalcocite in their interiors. There are fair amounts of gypsum, iron oxides and manganese throughout the weathered Nicola. One of the lowermost trenches on the Regal Zone exposes recent gravel in the trench bottom which is overlain by weathered Nicola and coal fragments, subsequently overlain by broken Nicola and a thin mantle of boulder clay till. There is little doubt then, that transportation of Nicola rocks is involved in this area, at least. The extent and thickness of this transported zone was under consideration during the course of the recent IP survey.

At higher elevations on the property, undisturbed, relatively, fresh Nicola rocks are exposed. The overburden, however, is quite extensively distributed, and quite variable in thickness.

Other exploration companies, I understand, have experienced the same problem in the general area, that of mineral occurrences in transported Nicola rocks. It is possible then, that there is a low angle gravity fault involved, probably pre-glacial till in age, which after erosion has left small patches of the original triassic rock overlying Miocene sediments.

GROUND CONTROL GRID

A few stations on the previously established base line (called the old base line) were located, and a line bearing approximately South 70° West extended down hill to the Regal Zone. At a point on the Regal, 5+00 East, old base line, a new base line was layed out running true north-south. (5E, base line corresponds to 0+00 new base line)

Cross lines were established at 400 foot intervals along the new base line, and extend from 0 to 20+00 east. These lines run from 16+00 south to 20+00 north. Stations were marked with numbered pickets and flagging every 100 feet on the new grid.

GENERAL CONSIDERATIONS OF THE PULSE TYPE INDUCED POLARIZATION METHOD

Two induced polarization methods are in common use today in mineral exploration. The first is the time domain or pulse type method in which a steady direct current is impressed on the ground for a few seconds and then abruptly terminated. A fraction of a second after cessation of current impulse, the decay voltage, caused by capacitive-like storage, is measured. The second method is the variable (dual) frequency technique or frequency domain. In this variety, the percentage difference between the impedance (a.c. resistance) offered at two separate frequencies, is measured.

The Hewitt (HEW 100) I.P. unit is a time domain unit and the exact method employed is outlined in the field procedure section.

The reader is referred to Wait, J.R. (1966), for a thorough treatment of frequency domain, and Seigel, H.O. (1966) and/or Brant (1966), for a discussion of time domain.

I.P. effect occurs when a current is passed through a volume of rock containing electronic conductors. Geophysical electronic conductors, or "metallic minerals" include most sulphides (pyrite, chalcopyrite, bornite, molybdenite, but not sphalerite), certain oxides, clays, graphite and certain micas. Apart from the sulphides, minerals with highly unsatisfied basal lattice surfaces act as leaky condensers and give rise to I.P. effects. All rocks are responsive to some degree, and this response is designated background. It is often equivalent to one volume percent of scattered pyrite, and probably due to unsatisfied charges at lattice imperfections, boundaries, fractures and so on. Background in various parts of B.C. with the HEW-100 I.P. unit follows:

Area	Lithology	Background (mv/v)
Mamit Lake	Guichon Batholith (granodiorite)	5.9
Tonasket, Wash.	Granodiorite plug	12.3
Aspen Grove	Nicola Volcanics	7.6
Princeton	Princeton sediments	17.2

Factors other than the amount of metallic conductors which affect I.P. response are grain size, conductivity of mineral, porosity, tortuosity (pore geometry), type of gangue minerals, composition and amount of pore fluid, degree of alteration, and mode of mineralization (disseminated, lode, vein type, etc.).

Rogers, (1966), has pointed out that the resistivity of rock is only slightly influenced by changes in the sulphide content at low levels. Much of the change is due to other effects such as moisture content, fracturing, pore space, ground water, extent, degree and type of alteration, type of sulphides and mode of sulphide distribution, etc. However, alteration in combination with increased sulphide content, not uncommonly affects the resistivity significantly. Unfortunately, there are many additional causes for resistivity variation and rarely can sulphides be recognized or predicted from resistivity data alone.

Background resistivity in various parts of B.C. with the HEW-100 I.P. unit follows:

Area	Lithology	Background (ohm-feet)
Mamit Lake	Guichon Batholith	1600
Tonasket, Wash.	Granodiorite plug	3500
Aspen Grove	Nicola Volcanics	1000
Princeton	Princeton sediments	500

Previous to current impression, the receiving pots are balanced, and this, the self potential value in millivolts is often a useful geophysical tool. When metallic lustered sulphide minerals are situated in a suitable geological-hydrological environment, the sulphides oxidize and a natural or spontanious "battery effect" occurs. Often the self potential effect over sulphide bodies is negative and in the order of a few hundred millivolts.

With a Wenner electrode configuration, the self potential and first derivative of the self potential are valuable information if the transit interval is equal to, or is onehalf the "a" spacing distance. In other cases, where the "a" spacing and transit interval are not evenly proportional, the self potential results are of very little useful value.

BIBLIOGRAPHY

Frequency Domain:

Wait, J.R. (1951) Editor, Overvoltage Research and Geophysical Applications. Longon, Pergamon Press.

Time Domain:

Brant, A.A. (1966) Examples of Induced Polarization Field Results in the Time Domain - Society of Exploration Geophysicists' Mining Geophysics, Volume I, Case Histories.

Seigel, H.O. (1966) Three Recent Irish Discovery Case Histories using Pulse Type Induced Polarization- S.E.G. Volume I, Case Histories - p.p. 341.

Rogers, G.R. Introduction to the Search for Disseminated Sulphides, S.E.G. Volume I.

INDUCED POLARIZATION FIELD PROCEDURE

A Hewitt Enterprises Pulse Type IP unit was utilized on the Great Slave Mines surveys. The instrument specifications are presented in Appendix IV.

The standard Wenner electrode array was employed with an "a" spacing (one-third the distance between the current electrodes) of 300 feet. A brief description of the field procedure follows:

Prior to voltage application, the self potential is observed and recorded (between two pots, 300 feet apart).

Normally, a voltage of 250, 500 or 1000 volts is impressed between the front and back aluminum or steel electrodes which are spaced 900 feet apart. During the four second voltage application, the dV (impressed EMF in millivolts) 0.3 seconds after the cessation of pulse, the residual voltage is integrated for 0.8 seconds (on integration function one), during which time the IP decay (in millivolts) is recorded. From these data, the self potential, apparent resistivity, and normalized IP may be calculated, as described in the data processing section of this report.

At each station, several pulses are initiated and the IP response must have agreed well before the instrument is moved ahead. Most of the survey was completed with single integration of the decay voltage (I.F. 1) with several re-checks on the double integration setting (I.F. 3).

Four and eight second pulses were initiated at several stations and are used for interpretive purposes. The operator's notes include remarks on the transience of the IP response, and the stability of the primary voltage, which are factors used in differentiation of polarization. A depth probe was conducted at 0+00, new base line, by expanding the Wenner array.

INDUCED POLARIZATION DATA PROCESSING

The following information was recorded by Mr. N. Wilson, the instrument operator, at each pulse station:

1. The property, operator's initials, job and page number, "a" spacing, transit interval and remarks on topography.
2. The line and station co-ordinates;
3. The self potential reading in millivolts (S.P. mv);
4. The current in milliamperes (I ma);
5. The impressed emf in millivolts (dV mV);
6. The induced polarization decay voltage in millivolts (IP mV);

7. The resistor-capacitor switch (R.C.);

8. The current electrode voltage switch value;

9. The integration function switch (I.F.);

10. The pulse time in seconds.

From this data, the apparent resistivity is calculated from the following relation:

$$\rho = \frac{2 \pi \times a \times dV}{I\,(ma)}$$

Where: ρ = apparent resistivity in ohm-feet

π = 3.1416

"a" = 1/3 distance between the current electrodes

The normalized IP value is obtained by utilization of the following relation:

$$IP\ norm = \frac{IP\ (mv) \times 100 \times k \times R.C.}{dV\ (mv)}$$

Where: IP norm = normalized IP in millivolt seconds per millivolt or milliseconds.

K = a constant depending on the IF setting

R.C. = resistor - capacitor function setting.

A specific example from the data collected at 4+00N; 0+00:

Pulse No.	I(ma)	dV	IP(mv)	R.C.	S.P.	I.F.	Remarks
1	120	30	1	1	-11	1	500 V
2	120	30	1	1		1	
3	120	30	1	1		1	

$$\text{Therefore} \quad \rho = \frac{1884.9 \times 30}{120} = 477 \text{ ohm feet}$$

$$\text{IP norm} \quad = \frac{1 \times 100 \times 1}{30} = 3.3 \text{ millivolt seconds per volt.}$$

These calculations were completed for each station, on an Olivetti Underwood 101 computer.

The final apparent resistivity and normalized IP values were plotted on a map (scale 1" : 400 feet) at a point midway between the receiving pots (ie: 150 feet in front of the instrument position).

DISCUSSION OF RESULTS

(a) Self Potential

The self potential results are presented in contoured plan in Figure 3 (map pocket).

Values ranged from a low of -35 to a high of +33 millivolts, in various parts of the property. The iso-potential plan shows a relatively complex situation of interdispersed, rather small positive-negative areas. One of the most striking features is a "Y" shaped self potential low extending along line 8+00 north and across the east end of lines 4 north, 0, and 4 south. The largest area of high chargeability fits inside this area of low potential.

One of the largest self potential gradient was recorded between stations 12+00 and 16±00 east, on line 20+00 north (change of 41 millivolts) across an inferred geological contact.

A second area of rapid self potential change (also 41 m.v.) was recorded near 20 east on line 4 South, within the area designated as the "Granby Zone".

(b) Apparent Resistivity

An isoapparent (d.c.) resistivity plan is presented as Figure 4 (map pocket).

Values ranged from a high of 1676, to a low of 100 ohm-feet. The arithmetic mean, within the area surveyed, is 540, and standard deviation 365 ohm-feet.

The general resistivity pattern is relatively simple, with the average resistivity decreasing from east to west, with strong north directed isoresistivity trends. Of special interest are the extremely low resistivities encountered near the base line, along the west border of the area surveyed. A relatively large section of less than 200 ohm-feet is featured here, with response as low as 100 ohm-feet. The cause of this extremely low response is believed to be twofold;

(a) an area underlain by broken, weathered Nicola and for Miocene sediments (with coal)

(b) relatively low topographic areas with considerable underground moisture (Deer Creek Valley etc.).

In direct contrast to these lows is a patch of +1000 ohm-feet response near the east ends of lines 0 and 4+00 south. This area is believed to be underlain by relatively unaltered, fairly massive, in situ, Nicola rocks.

The most striking exception to the overall fairly gentle east-west apparent resistivity gradient, is a single 125 ohm-feet value (Anomalously low) at station 18+50 east on line 8+00 north. This value is possibly a result of an oblique fault or fracture zone.

Of special exploration interest, is the easterly extension of less that 500 ohm-feet response at the east ends of lines 4 and 8+00 north. This bulge of relatively low resistivity coincides extremely well with the high IP response zone discussed in the following section.

(c) Induced Polarization

The isochargeability plan is designated Figure 5. (see Map Pocket)

Induced polarization, (in millivolt seconds per volt, or milliseconds, m.s.) ranged from zero, or no response (N.R.) to a high of 8.0. The arithmetic mean is 4.1 and standard deviation 2.9 m.s. Based on this data the following categories may be established:

VALUE	CATEGORY
less than 1.0	Anomalously low
1.0 to 3.9	background range
4.0 to 5.9	above average
greater than 6.0	Anomalously high

One of the most unusual features of the Bald Mountain survey, was the rather large number of stations exhibiting no induced polarization response (total of 11). Furthermore, these no response areas are systematically distributed along a line extending north 20 degrees east, just east of the new base line. They correspond well with the less than 200 ohm-feet resistivity low, and are believed to lie outside the area underlain by in situ Nicola rocks. Their cause is probably a result of several variables, three of the most important are believed to be:

(a) due to low resistivity, depth penetration of current would be relatively small.

(b) the potential difference between the receiving pots was very small (even with external switching and more than one k.w. power) therefore, IP response would be small)

(c) the ground is broken and shattered and, therefore, not chargeable.

Above average induced polarization response (greater than 4.0 m.s.) was encountered in six areas within the surveyed grid. These lie roughly within a fan shaped area with the apex at the extreme east end of line 4+00 south, and a base along the new base line. The largest area (Anomaly #1) is centered at 12+00 east on line 8+00 north. The highest IP effect was 8.0 m.s. at that station. The above average IP response zone is "L" shaped, and over 1400 feet long. The top (east) edge is within the "Granby Zone".

The second Anomaly is located near the upper "long" trench, on the hilltop, at 13+50 south on line 37+00 east. Two 6.2 m.s. results were recorded on this line. During the latter part of November, a bulldozer excavated a trench to determine the cause of the response. The trench indicated that bedrock was near surface, and bedrock consisted of weathered, fractured blocky Nicola rocks. There was considerable amounts of iron oxides, some iron sulphates and flakes of gypsum along fractures; possible the surface results of sulphide leaching.

The additional areas of above average response are one station values or much smaller than the two previously described Anomalies.

(d) Depth Probe - Regal Zone

The instrument and Po were fixed at 0+00, on the new base line (over the Regal Zone) and the Wenner array expanded in a direction North 40° East and South 40° West from this point. Readings were taken at a = 600, 500, 400, 200, 100, 50 and 25 feet. At the 25 foot "a" separation, the ground resistivity was extremely low, resulting in transmitter power transister failure.

Depth probing downward from this point revealed the following:

(a) there are three subsurface layers.

(b) the first layer is approximately 65 feet thick, second layer roughly half that thickness.

(c) the apparent ground resistivity is very low probably the result of damp, weathered "upper layer" rocks.

(d) induced polarization response increased to a maximum of 5.0 m.s. at a=100 then decreased at larger "a" spacings until a=400, then slightly increased again. (at a=500 and 600 feet).

APPENDIX I

PERSONNEL

Name:	COCHRANE, Donald Robert
Education:	B.Sc. - University of Toronto M.Sc.(Eng.) - Queen's University
Professional Associations:	Professional Engineer of British Columbia, Ontario and Saskatchewan. Jr. member of C.I.M.M., member of G.A.C., M.A.C. Geological Engineer.
Experience:	Engaged in the profession since 1962 while employed with Noranda Exploration Co. Ltd., Quebec Cartier Mines Ltd., Meridian Exploration Syndicate. Presently employed as Engineer with Geo-X Surveys Ltd. Experience in West Indies, Latin America, South America, United States and Canada.

APPENDIX I

PERSONNEL

NAME:	CERNE, James
EDUCATION:	B.S. Geology (June 1967) Case Institute of Technology - Cleveland, Ohio. M.S. Geophysics (August 1968) California Institute of Technology - Pasadena, California.
EXPERIENCE:	July 1965 - June 1967 - Metallurgy Dept., Case Institute of Technology - Student Asst. June - September 1967 - N.A.S.A. Manned Spacecraft CNT. Lunar and Earth Sciences Div., Geophysics Group, Houston, Texas. September 1967 - August 1968 - California Institute of Technology, Seismological Laboratory, Graduate Research Asst. September 1968 - present. Employed by Geo-X Surveys Ltd. as Geophysicist.

APPENDIX I

PERSONNEL

Name:	WILSON, Norman George Robert
Education:	Junior Matriculation equiv., Grade 13 Math. 2nd Year National Electrical Engineering.
Experience:	12 years Royal Air Force - Radar Technician. 6 months British Government Communications - Radio Technician. Presently employed by Geo-X Surveys Ltd., since October 22nd, 1967 doing Induced Polarization, Electromagnetic and Magnetometer Surveys under Professional supervision.

APPENDIX I

PERSONNEL

Name:	PASCHE, Juergen
Education:	Mittelschule - equivalent to Grade 12. Completed apprenticeship as precision mechanic with Carl Zeiss - Graduate Electrical Technology.
Experience:	3 years - Electro-Technician with SIEMENS of Braunschweig, Germany.
	$3\frac{1}{2}$ years - Seismic Party Chief with PRAKLA Association for practical deposit research in Germany - including field experience in Switzerland, Italy, and North Africa.

APPENDIX I

PERSONNEL

Name:	YIP, David Edward
Education:	Grade 12 - Majors: Science, Mathematics, Social Studies and Industrial Arts. Lake Cowichan Secondary School. 1 year - Vancouver Vocational Institute - Drafting Training.
Experience:	Presently employed by Geo-X Surveys Ltd. since November 27, 1967 as Draftsman.

APPENDIX I

PERSONNEL

Name: KEY, Robert A.

Education: Grade XII Diploma.

1 year Petroleum Geology at the Institute of Technology and Arts in Calgary.

Experience: 2 years in Steam Heating Design Drafting.

12 years with Mobil Oil Canada Limited, Senior Draftsman.

APPENDIX II

PERSONNEL AND DATES WORKED

A. FIELD WORK

D. R. Cochrane	P. Eng.	Oct. 31, Nov. 1-3 18 - 20
J. Cerne	Geophysicist	Nov. 1-6
J. Pasche	Instrument Operator	Nov. 4-6
N. Wilson	Instrument Operator	Nov. 1-5, 18-23
T. Lie	Helper	Nov. 19-23
W. Bellamy	Helper	Nov. 1-6
A. Bentzen	Helper	Nov. 1-6
J. Carvajal	Helper	Nov. 1-6, 19-23
R. Thompson	Helper	Nov. 21-23

B. DATA PROCESSING & REPORT PREPARATION

D. R. Cochrane	P. Eng.	Nov. 15, 25 Dec. 11, 12, 13
J. Cerne	Geophysicist	Nov. 12

C. DRAFTING & REPRODUCTION

D. Yip	Draftsman	Oct. 28 Nov. 18-21,25-36 29, Dec. 5, 13, 17
R. Key	Draftsman	Nov. 29, Dec. 3-5 10, 13, 16-17
J. Carvajal	Draftsman	Dec. 5, 17
M. Abrey	Secretary	Dec. 16-17

APPENDIX III

COST BREAKDOWN

The following is a cost breakdown covering an I.P. Survey done by Geo-X Surveys Ltd. under Agreement with Great Slave Mines Ltd. over 6.1 line miles in the Bald Mountain Area near Princeton, B.C.

6.1 line miles I.P. Survey @ $390./line mile	$2,379.00
Survey Orientation - 1 day @ $390./day	390.00
6.1 line miles of grid layout @ $50./line mile	305.00
	$3,074.00

APPENDIX IV

GENERAL SPECIFICATIONS OF THE HEWITT PULSE TYPE INDUCED POLARIZATION UNIT.

Transmitter Unit

Current pulse period (D.C. Pulse Manual initiated timer	1 - 10 seconds
Current measuring ranges	0 - 500 0 - 1000 Milliamperes 0 - 5000
Internal voltage converter 27 volt D.C. 350 watt output with belt back batteries	 250 500 volts D.C. 1000 Nominal

500 watts using 27 volts aircraft batteries.

Transmitter can switch up to 3 amps at 1000 volts from generator or battery supply with resistive load. The switching is done internally in the transmitter unit. Remote control output can switch up to 10 kilowatts of power by using a separate control unit. A remote control cord is supplied with auxiliary equipment.

Receiver Unit

Self Potential Range	0 - 1000 millivolts 1 millivolt resolution
Impressed EMF Ranges	0 - 30 0 - 100 millivolts 0 - 300 0 - 1000
Input Terminals with Three Combinations	$P_1 - P_2$ $P_1 - P_0$ $P_2 - P_0$
Induced Polarization Ranges	0 - 30 0 - 60 millivolt 0 - 90 seconds
Integration Time Periods	.8 seconds 1.6 seconds

Tandem Integration Time Periods	1.6 seconds 3.2 seconds
Input Filtering	3 ranges plus 4 integration combinations
Delay Time from Cessation of Current Pulse	.3 seconds

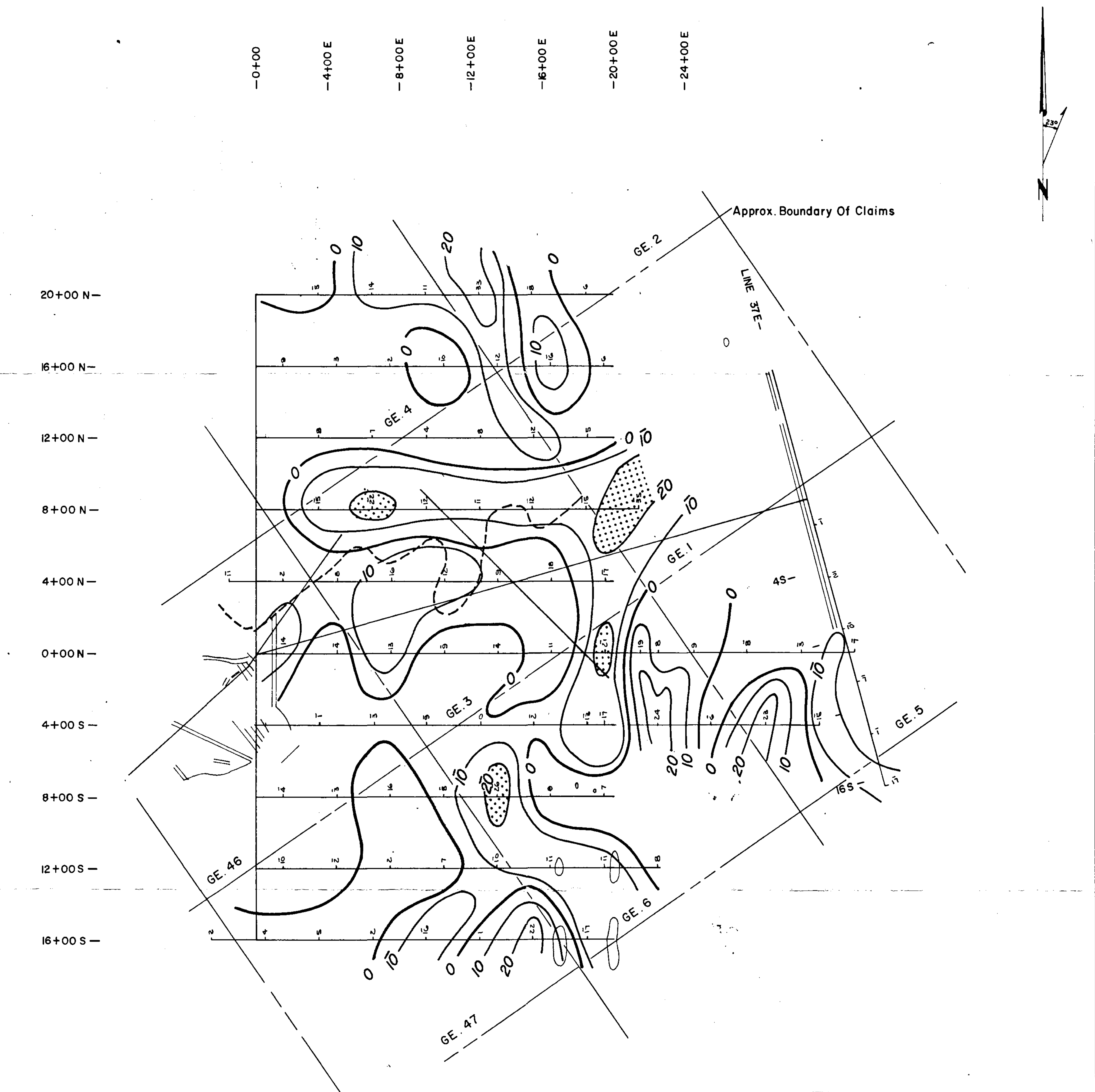
(Combined Photo Electric Coupled Receiver and Transmitter)

Operation Temperature	-25° F - 120° F

POWER SUPPLY

Receiver Unit	4 Eveready E136 Mercury Batteries 2 Eveready E134 Mercury Batteries 2 Eveready E401 Mercury Batteries
Transmitter Unit	Sealed Rechargeable 8 amp. hr. belt pack capable of driving the converter at 350 watts for a minimum of one day's operation before recharge.

Manufactured by Hewitt Enterprises, Box 978A, Sandy, Utah, 84070
Phone: 801 571-0157



SELF POTENTIAL LOW

a = 300'

0 400 800 1200
FEET

TO ACCOMPANY THE GEOPHYSICAL SURVEY REPORT ON THE GE, Vi, GC, CC & MC CLAIMS OWNED BY GREAT SLAVE MINES LTD. SITUATED IN THE BALD MOUNTAIN AREA, SIMILKAMEEN MINING DIVISION, BRITISH COLUMBIA BY DONALD R. COCHRANE, PROFESSIONAL ENGINEER, VANCOUVER, BRITISH COLUMBIA.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1721 MAP 1

1721

GREAT SLAVE MINES LTD.
BALD MOUNTAIN AREA, SIMILKAMEEN M.D.
BRITISH COLUMBIA

SELF POTENTIAL

CONTOUR INTERVAL: 10 MILLIVOLTS

GEO-X SURVEYS LTD.

Drawn D.E.Y.	Dated: Dec. 13/68	Fig. No.
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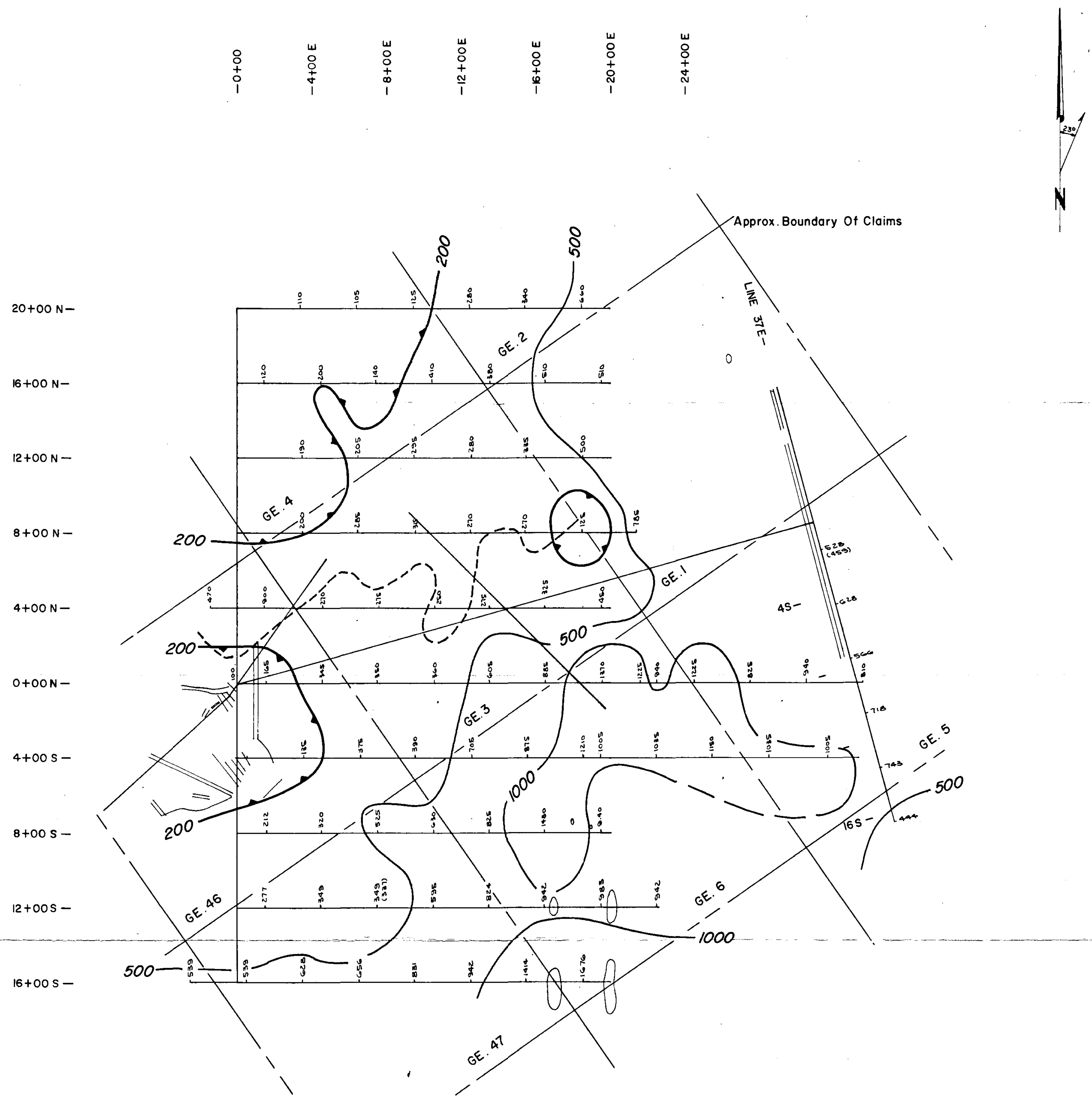
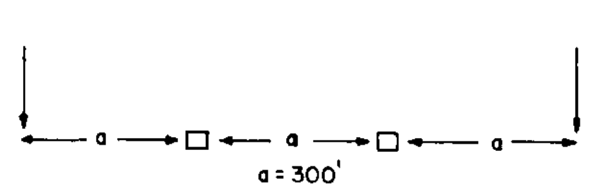


1721

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1721 MAP 2



0 400 800 1200
FEET

TO ACCOMPANY THE GEOPHYSICAL SURVEY REPORT ON THE
GE, VI, GC, CC & MC CLAIMS OWNED BY GREAT SLAVE MINES LTD.
SITUATED IN THE BALD MOUNTAIN AREA, SIMILKAMEEN MINING DIVISION, BRITISH COLUMBIA
BY DONALD R. COCHRANE, PROFESSIONAL ENGINEER, VANCOUVER, BRITISH COLUMBIA.

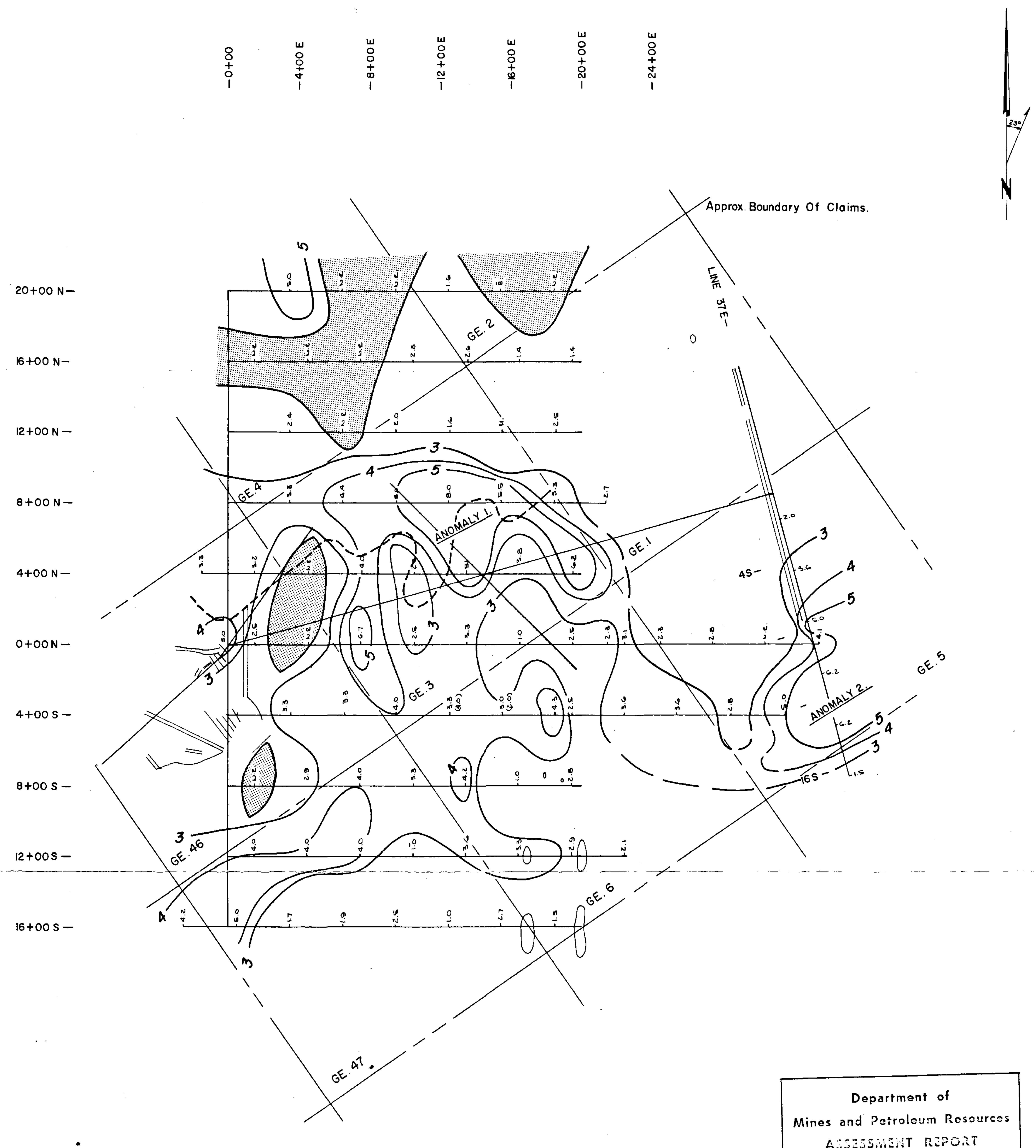
GREAT SLAVE MINES LTD.
BALD MOUNTAIN AREA, SIMILKAMEEN M. D.
BRITISH COLUMBIA

D. C. APPARENT RESISTIVITY

(OHM FEET)

GEO-X SURVEYS LTD.

Drawn D.E.Y.	Dated: Dec. 13/68	Fig. No. 4
Checked DRC	Job No. 1061	



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1721 MAP 3

1721

AREA OF NO RESPONSE (NR)

a = 300'

0 400 800 1200 FEET

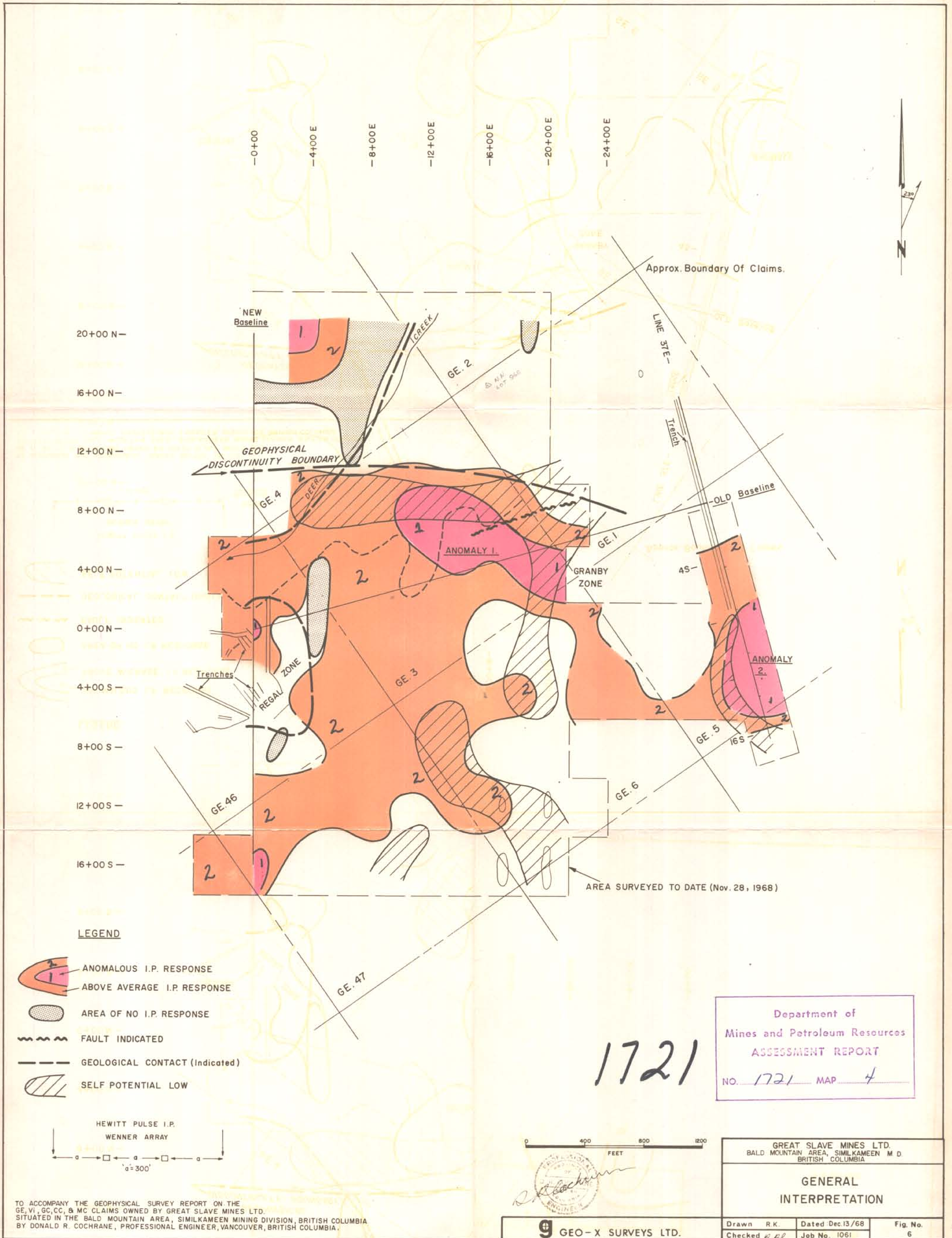
TO ACCOMPANY THE GEOPHYSICAL SURVEY REPORT ON THE GE, Vi, GC, CC, & M.C CLAIMS OWNED BY GREAT SLAVE MINES LTD. SITUATED IN THE BALD MOUNTAIN AREA, SIMILKAMEEN MINING DIVISION, BRITISH COLUMBIA BY DONALD R. COCHRANE, PROFESSIONAL ENGINEER, VANCOUVER, BRITISH COLUMBIA.

GREAT SLAVE MINES LTD.
BALD MOUNTAIN AREA, SIMILKAMEEN M D
BRITISH COLUMBIA

NORMALIZED
INDUCED POLARIZATION
CONTOUR INTERVAL: 1 MILLISECOND

GEO-X SURVEYS LTD.

Drawn D.E.Y.	Dated: Dec. 13/68	Fig. No.
Checked [signature]	Job No. 1061	5



TO ACCOMPANY THE GEOPHYSICAL SURVEY REPORT ON THE GE, VI, GC, CC, & MC CLAIMS OWNED BY GREAT SLAVE MINES LTD. SITUATED IN THE BALD MOUNTAIN AREA, SIMILKAMEEN MINING DIVISION, BRITISH COLUMBIA BY DONALD R. COCHRANE, PROFESSIONAL ENGINEER, VANCOUVER, BRITISH COLUMBIA.

KOPOROK MINES LTD.
BRENDA-PEACHLAND AREA, B.C.

Fig. 3 FLIGHT LINES ON AERIAL MOSIAC (APPROXIMATE CLAIM BOUNDARIES)

JOB NO. 1072
GEO-X SURVEYS LTD.

1000 0 1000 2000 3000
FEET

1721

To Accompany The Geophysical Report On The Aeromagnetic Survey Over the Cache & Glad Claims Owned By Koporok Mines Ltd., By Donald R. Cochrane, P. Eng., James Cerne & Glen White, Geophysicists, Vancouver, British Columbia.

1843