GRANGES EXPLORATIONS LTD. GEOPHYSICAL REPORT ON A INDUCED POLARIZATION SURVEY S-Claim Omenica Mining Div. Lat.53⁰17'N Long.125⁰11'W NTS.93F/6 AUTHORS: E.Trent Pezzot, B.Sc., Geophysicist Glen E. White, B.Sc.,P.Eng. Consulting Geophysicist

DATE OF WORK: July, 1984 DATE OF REPORT: Aug.3/1984

GEOLOGICAL BRANCH ASSESSMENT REPORT

84-#723-12840

12,840 PART 2 OF 2

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INTRODUCTION

During the month of July, 1984 Glen E. White Geophysical Consulting and Services Ltd. conducted a reconnaissance induced polarization survey on behalf of Granges Exploration Ltd. Two grids, S-1 and S-2 were established on the S claim and surveyed with the poledipole electrode configuration using an "a" spacing of 50 metres and an n value of 1. Anomalous areas were subsequently detailed with n values of 2 and 3 as warranted.

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PROPERTY

The Capoose Lake Property is a claim block comprised of 23 mineral claims and 5 fractions which totals some 250 units. The S claim is part of this large block and contributes 20 units to the total package as illustrated on Figure 1.

LOCATION AND ACCESS

The S claim lies approximately 7 kilometres southeast of Capoose Lake in the Omenica Mining Division and NTS 93F/6. Approximate geographical co-ordinates are latitude 53⁰17'N and longitude 125⁰11'W.

The claim area is accessible from the town of Vanderhoof via the Plateau Mills Road. The Capoose Lake Mining road branches off this road near Top Lake and passes across the S claim on its' way to Capoose Lake. This road and a number of associated tractor roads provide 4 wheel drive vehicle access to much of the Capoose Lake Property.

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LEGEND:

PALEOCENE (?), EOCENE, AND OLIGOCENE



OOTSA LAKE GROUP (In Part) Rhyolite, dacite, and associated tuffs and breccias; minor andesite, basalt, and conglomerate; 10a, rhyolitic and dacitic dykes, necks, and stocks

CRETACEOUS AND (?) TERTIARY UPPER CRETACEOUS AND (?) PALEOCENE

9 Basalt, andesite, and related tu

Basalt, andesite, and related tuffs and breccias; minor rhyolite and dacite; 9a, conglomerate and greywacke

JURASSIC AND/OR CRETACEOUS UPPER JURASSIC AND/OR CRETACEOUS



Granite, quartz diorite, granodiorite, and diorite

JURASSIC UPPER JURASSIC



Argillite and argillaceous limestone

TRIASSIC AND JURASSIC UPPER TRIASSIC AND LOWER JURASSIC TAKLA GROUP (2.3)



Andesitic and basaltic flows, tuffs, and breccias; interbedded argillite and minor limestone

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GENERAL GEOLOGY

PLATE 1

LOCAL GEOLOGY

The regional geology of the area is illustrated on Geological Survey of Canadas' Nechako River map (1131A). The portion of this map which pertains to the S claim is included in this report as Plate 1.

This map shows the eastern portion of the S claim (grid S-2) to be underlain by the Takla group of volcanics, tuffs, breccias, interbedded argillite and minor limestone of Lower Jurassic age. The western half of the claim (grid S-1) is covered by recent till, gravel, sand, clay and silt.

PREVIOUS WORK

The Capoose Lake Property is known of by the authors to have been explored by Granges Exploration Ltd. since at least the mid 1970's. Geological prospecting, diamond drilling, soil geochemistry, induced polarization, magnetic and electromagnetic techniques are known to have been used in the exploration program. The amount of this previous work specifically conducted across the S claim is unknown of by the authors.

INDUCED POLARIZATION

The equipment used on this survey was the Huntec pulse-type unit and Mark IV receiver. Power was obtained from a Briggs and Stratton moter coupled to a 2.5 KW 400 cycle, three phase generator, providing a maximum of 2.5 KW D.C. to the ground. The cycling rate is 1.5 seconds "current on" and 0.5 seconds "current off", the pulse reversing continuously in polarity. Power was transmitted to the ground through two potential electrodes, P_1 and P_2 , which were deployed in the three electrode array with an "a" spacing of 50 m and separations of n = 1 with selected lines detailed with separations of n=2 and 3.

The data recorded in the field consists of careful 'measurements of the current (I) in amperes flowing through electrodes C_1 and C_2 , the primary voltage (V_p) appearing between electrodes P_1 and P_2 during the "current on" part of the cycle. A cycle time of 4 seconds was used with a duty ratio of 2.2 - 1, T_p .20 ms and T_d 60 ms.

The apparent chargeability (M') in milliseconds, is calculated internally by the Mk IV receiver by measuring the chargeability effects at various times on the voltage decay curve following switch off of the transmitter, measured as a percentage of the primary voltage, V_p recorded during the "current on" time. By the use of these factors, one can gain an estimate of the decay curve in terms of chargeability for the given integration time. This gives a quantitative value to the data measured.

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The apparent resistivity, in ohm-metres, is proportional to the ratio of the primary voltage to the measured current, the proportionality factor depending on the geometry of the electrode array used. The chargeability and resistivity obtained are called "apparent" as they are values which that portion of the earth sampled by the array would have if it were homogeneous. As the earth sample is usually inhomogeneous, the calculated apparent chargeability and apparent resistivity are functions of the actual chargeabilities and resistivities of the rocks sampled and of the geometry of the rocks.

DISCUSSION OF RESULTS

Grid S-1

Six north-south oriented lines labelled 1400E to 1900E inclusive, each 500 metres in length, were surveyed with a pole-dipole electrode array utilizing an "a" spacing of 50 metres and n=1. The apparent resistivity and chargeability data is posted and contoured on Figures 2 and 3 respectively. In addition, lines 1400E and 1500E were detailed with readings taken for n=2 and n=3. This data is profiled on Figures 4 and 5 respectively.

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The strongest resistivity and chargeability responses were observed on line 1900E. They occur within a swampy area and are considered to be of questionable reliability. These measurements were characterized by widely varying input current levels which suggests most of the current was carried along highly conductive surface layers.

The major portion of the survey grid exhibits reliable data with consistant and reasonable currents measured across the property. Very good correlation is observed between chargeability highs and resistivity lows along two major anomalous trends. The first anomaly trends in an east-west direction across the southern end of the survey grid. The strongest responses, on both the chargeability and resistivity parameters, occur on the south end of line 1500E. The second anomaly trends in a west-northwest by east-southeast direction across the central portion of the grid. Good chargeability and resistivity correlation is noted along this trend except on the westernmost line, 1400E, where the chargeability trend swings to the north. Lines 1400E and 1500E were surveyed with additional n values of 2 and 3 in order to detail these anomalous trends. The profiles (Figures 3 and 4) illustrate that these trends have significant depth extent and suggest the source bodies dip steeply to the south.

Grid S-2

Eight north-south oriented lines (26E to 33E) on grid S-2 were surveyed with the pole-dipole induced polarization system utilizing an "a" spacing of 50 metres and an "n" value of 1. Portions of some of these lines were detailed with n values of 2 and 3. Plan maps illustrating the apparent resistivity and chargeability data for n=1 and n=2 are included in this report as Figures 6-9. In addition, the expanding array data for lines 31E and 32E are profiled on Figures 10 and 11.

The resistivity plan maps for both n values of 1 and 2 delineate areas of increased conductivity which form east-west trending lineations across the survey grid. Anomalously high chargeability values are observed as isolated features, coincident with the resistivity lows. The two major conductivity trends observed are best illustrated on the resistivity plan map for n=1 (Figure 6). One trend strikes east-west across the grid near station 1400N. The lowest resistivity value observed along this trend occurs on line 27E at station 1450N and is associated with a chargeability high 100 metres to the south on the same line (station 1350N). Line 32E delineates a strong chargeability response and minor resistivity low immediately south of this trend at station 1300N. The second trend is mapped to the north of the first and appears to strike roughly west-southwest by east-northeast. The lowest

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resistivity value observed occurs on line 29E at station 1750N and is similarly associated with a chargeability anomaly approximately 100 metres to the south.

The detailing profiles for lines 31E and 32E are presented as Figures 10 and 11. They delineate an interesting chargeability and resistivity target at depth on line 32E at station 1775N. No clear definition of the apparent dip to the trends is observed. Line 32E suggests the northern conductor dips to the south while the southern conductor dips northward forming a synformal structure. This interpretation is however, not substantiated by the profile of the adjacent line.

SUMMARY AND CONCLUSIONS

During the month of July, two small grids, S-1 and S-2, were surveyed with an induced polarization system arranged in a pole-dipole configuration. An "a" spacing of 50 metres and n value of 1 were used as reconnaissance parameters and followed by n values of 2 and 3 for the detailing of anomalous areas. The survey grids covered portions of the S claim, owned by Granges Exploration, forming part of their Capoose Lake Property.

Grid S-1 totals approximately 3 kilometres in length and is laid out across an area of swampy overburden along the east side of the S claim. Although the nature of the overburden induced some noise into the data, two well defined low resistivity and coincident high chargeability trends were delineated. The two zones strike roughly east-west across the grid and appear to dip steeply to the south. The apparent resistivity and chargeability values observed could be attributed to sulphide concentrations on the order of 10% - 15%.

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Grid S-2 is laid out in the northeast corner of the S claim and totals approximately 7.4 kilometres in length. Two low resistivity trends are mapped across this grid; one striking east-west and another west-southwest - east northeast. These zones are not as distinct as those observed on grid S-1 but are still considered reliable anomalies. Where as both the chargeability and resistivity anomalies observed on grid S-1 define the linear trends, only the resistivity values align on grid S-2. The chargeability anomalies are coincident with the low resistivity trends but do not by themselves define the continuous feature. The dips associated with these trends are not well defined.

RECOMMENDATIONS

This survey has delineated four anomalous trends which warrant continued exploration. Follow up procedures should naturally compare the results of this test survey with whatever geological, geochemical and geophysical information is available. This exercise may identify these geophysical anomalies or assist in forming the priority system for further evaluation.

Based solely on the results of this induced polarization survey, each of the four anomalous low resistivity/ high chargeability trends should be identified by either geological prospecting, trenching or diamond drilling. The following grid locations identify what are considered the strongest, most reliable portions of the anomalous trends.

GRID	LINE	STATION
S-1	1500E	1150N
s-1	1600E	850N
S-2	32E	1775N
S-2	32E	1300N

Respectfully submitted,

E.Trent Pezzot, B.Sc. Geophysicist



Glen E. White, B.Sc., P.Eng. Consulting Geophysicist

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INSTRUMENT SPECIFICATIONS

INDUCED POLARIZATION SYSTEM

▲.	Instruments
	(a) Type - pulse
	(b) Make - Huntec
	(c) Serial No transmitter #107 - receiver #3016
в.	Specifications
	(a) Size and Power - 2.5 KW
	(b) Sensitivity - 300 x 10.5 volts
	(c) Power Sources - 2.5 KW 400 cycle - three-phase generator
	(d) Power - 8 H.P. Briggs and Stratton @ 3000 R.P.M.
	(e) Timing - electronic, remote and direct.
	(f) Readings - (i) ampls (ii) volts primary and secondary
	(g) Calculate (i) Resistivity - ohm-meters (ohm-feet)
	(ii) Chargeability - milliseconds
c.	Survey Procedures
	(a) Method - power supplied to mobile probe along TW 18 stranded wire from stationary set-up
	(b) Configuration - Pole-dipole (three electrode array) Plot point midway between \Im_1 and P_1
D.	Presentation
	Contour Maps (1) Chargeability - milliseconds
	(ii) Resistivity - ohm-meters (ohm-feet)

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STATEMENT OF QUALIFICATIONS

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NAME: PEZZOT, E. Trent

PROFESSION: Geophysicist - Geologist

EDUCATION: University of British Columbia-B.Sc. - Honors Geophysics and Geology

PROFESSIONAL ASSOCIATIONS:

S: Society of Exploration Geophysicist

EXPERIENCE: Three years undergraduate work in geology - Geological Survey of Canada, consultants.

Three years Petroleum Geophysicist, Senior Grade, Amoco Canada Petroleum Co. Ltd.

Two years consulting geophysicist, Consulting geologist - B.C., Alberta, Saskatchewan, N.W.T., Yukon, western U.S.A.

Four years geophysicist with Glen E. White Geophysical Consulting & Services Ltd.

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STATEMENT OF QUALIFICATIONS

NAME: WHITE, Glen E., P.Eng.

PROFESSION: Geophysicist

EDUCATION: B.Sc. Geophysicist - Geology University of British Columbia.

PROFESSIONAL

ASSOCIATIONS: Registered Professional Engineer, Province of British Columbia.

> Associate member of Society of Exploration Geophysicists.

Past President of B.C. Society of Mining Geophysicists.

EXPERIENCE: Pre-Graduate experience in Geology -Geochemistry - Geophysics with Anaconda American Brass.

> Two years Mining Geophysicist with Sulmac Exploration Ltd. and Airborne Geophysics with Spartan Air Services Ltd.

One year Mining Geophysicist and Technical Sales Manager in the Pacific north-west for W.P. McGill and Associates.

Two years Mining Geophysicist and supervisor Airborne and Ground Geophysical Divisions with Geo-X Surveys Ltd.

Two years Chief Geophysicist Tri-Con Exploration Surveys Ltd.

Twelve years Consulting Geophysicist.

Active experience in all Geologic provinces of Canada.

COST BREAKDOWN

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Personnel	Production day	<u>Rate</u>	Subtotal
G.McKenzie	13	275	\$3,575.00
N.McGarry	13	225	2,925.00
B.Branting	13	175	2,275.00
B.Crassweller	r 13	175	2,275.00
		Subtotal	\$11,050.00

Expenses

Meals & Accommodations,	13	days	@50/day/ man	2,600.00
Equipment Lease	13	days	@250/day	3,250.00
Vehicle	13	days	@100/day	1,300.00
Drafting				65.00
Interpretation & Report				1,500.00
Reproduction				50.00
		5	Subtotal	\$8,765.00
			Total	\$19,815.00

Total assessment value of this report is \$19,815.00



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ROAD SWAMP SURVEY STATION HUNTEC MK IX I.P. UNIT N=2, a = 50m	
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