GEOPHYSICAL REPORT ON THE

WL, JAN, GROG, GOOF, MISC, TUNA and FISH CLAIMS SITUATED 14 MILES SOUTH OF HOUSTON B.C. LAT. 54⁰12'N, LONG. 126⁰18'W. N.T.S. 93 L/2 OMINECA MINING DIVISION

ON BEHALF OF SOLOMON DEVELOPMENT LTD. (EDMOND BURKE) FIELD WORK BETWEEN APRIL 17 - JUNE 21, 1972.

BY

D.R. COCHRANE, RENG. A. SCOTT, B.SC. R. WOLFE, P.ENG.

JULY 12, 1972.



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Department of Mines and Petroleum Resources ASSESSMENT REPORT NO. 3766 MAP

Mining Recorder's Office RECORDED				
JUL 1 9 1972				
ATSMITHERS, B.C.				

<u>Page</u>

INTRODUCTION:

During the latter part of April, the month of May and early June, 1972, a field crew employed by Montgomery-Wolfe Associates Ltd., completed some 63 line miles of an induced polarization survey on the Parrott Lakes Project on behalf of Solomon Development Ltd.,

A Hewitt 200 automatic cycling time domain unit was utilized on the survey, in a Wenner field array with an "a" spacing of 1000 feet. Readings were taken every 1000 feet along cross lines which run north-south at 1000 foot intervals. Self potential gradient, apparent resistivity, and chargeability results were recorded and/or calculated from raw data, and contoured plans and profiles of these results accompany this report.

CONCLUSIONS:

1. The most prominent geophysical features outlined on the Parrott Lakes survey are the two zones of high apparent resistivity on the west side of the survey area. The anomalies have very steep gradients rising from a background of roughly 500 ohm feet and peak at 3110 ohm feet to the north and 2140 ohm feet to the south.



2. These two high resistivity zones correlate with "weakly to moderately anomalous" chargeability and are associated with patches of moderately steep self potential gradient.

;

3. Depth probe information from the northern zone (detail No. 1 and No. 2) indicates the chargeable body is quite thin, lies at a depth of some 400 feet and is dipping slightly to the south.

4. If geological and/or geochemical information is favourable in these areas (or in other high chargeability areas) further investigation is recommended.

Respectfully submitted,

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A. Scott, B.Sc.

D. R. Cochrane, P.Eng., July 12, 1972.



FIELD PROCEDURE:

A standard Wenner Array with an "a" spacing of 1,000 feet was used for the I.P. survey of the Parrott Lakes Project. For this array, the distance between the electrodes is equal, as illustrated below:

 $E_1 \leftarrow a \rightarrow P_1 \leftarrow a \rightarrow P_2 \leftarrow a \rightarrow E_2$

"E" positions are current electrodes and "P" positions receiving electrodes.

transit direction

The front positions are electrically positive and the rear positions negative.

The actual "in field procedure" was as follows:

A suitable station was chosen for the instrument to set up on, and the crew men moved to the appropriate positions on the line. A small hole was dug beneath the humus and cleared of rocks for the receiving pots (P) and the stakemen cleared a small strip of ground (roughly one square foot) of grass, leaves and rocks, spread aluminum foil over the cleared area and buried the foil (positions "E"). Salt water was poured over the foil to assure good ground contact.

Communication with the instrument operator was facilitated by portable transceivers and when all positions were



reported "ready" the instrument operator commenced measurement. Firstly, the self potential of the ground between the two receiving pots was balanced and this value was recorded (in millivolts) on standard pre-printed note forms. A 4 cycle 2 second current pulse was then initiated during which the transmitter current (I) was noted. During each cycle the impressed EMF (V_p) between receiving pots is automatically accumulated and on the cessation of each cycle the I.P. decay voltage (V_g) is integrated and automatically accumulated on a separate meter. This value was recorded along with notes on the position of the instrument, terrain, road locations, etc.

The I.P. was normalized and the procedure repeated for a minimum of three successive pulses.

The order was then given to move on 1000 feet to the next station.

DATA PROCESSING:

The I.P. data was normalized and the apparent resistivities were calculated by slide rule in the field and were spot checked in the office with an electronic calculator.

The chargeability is defined by dividing the residual decay voltage (V_p) by the impressed EMF (V_p) .



The apparent resistivity is calculated from the formula:

apparent resistivity (ohm-feet) = $\frac{2 \text{ a Tix V}}{1}$

The chargeabilities and apparent resistivities were plotted and contoured and accompany this report. Self potential gradient data was corrected for a standard pole and also accompanies this report.

The grouping of the data and calculation of the arithmetic mean, standard deviation and coefficient of correlation was done with the aid of an electronic calculator. A representative sample of 125 values was used for statistical purposes (i.e. every third data point).

SELF POTENTIAL GRADIENT RESULTS:

The plotted self potential gradient values represent the natural potential difference (in millivolts) of the ground, between a point 500 feet to the north and a point 500 feet to the south of the plotted value.

The data has been adjusted for a positive pole to the south.

The results vary from a high negative gradient of -50 millivolts (m.v.) over 1000 feet to a high positive of 45 m.v. over 1000 feet.



The frequency distribution histogram shows a near normal distribution of the S.P. gradient values. The mode lies in the -1 to -10 m.v. class, which encompasses 25 percent of the values, and the arithmetic mean and standard deviation are -1 m.v. and 17 m.v. respectively.

The following S.P. gradient categories have been defined:

-20 m.v. to 20 m.v.	background
-40 to -20 m.v. and/or 20 to 40 m.v.	weakly anomalous
less than -40 m.v. and/or greater than 40 m.v.	moderately anomalous

Patches of weakly to moderately anomalous S.P. gradient lie in and around the two resistivity anomalies discussed in the next section. In addition, there is a zone of weakly to moderately anomalous response around the baseline from 71E to line 95E. It peaks at 45 m.v. at 5S line 95E and is coincident at this point with an increase in the apparent resistivity to 628 ohm feet in an area of generally low background response.

The large "a" spacing used on this project, although increasing depth of investigation, minimizes the effectiveness of the S.P. results since the possibility of "straddling" an



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S.P. anomaly which is less than 1,000 feet wide, definitely exists.

APPARENT RESISTIVITY RESULTS:

The apparent resistivity plan is characterized by two very prominent "ridges" of anomalously high resistivity on the west side of the survey area. The anomalies are characterized by very steep resistivity gradients and peak at 3110 ohm feet to the north and at 2140 ohm feet to the south. The anomalies are open on the north and south perimeter of the survey area.

Depth probe information from the northern anomalously high resistivity area indicates that this high resistivity material overlies lower resistivity material, the latter having similar resistivity to that of the surrounding survey area.

In addition, the two high resistivity zones correlate very well to topographic highs, the area between being the Parrott Creek valley. A model to the resistivity plan is that it represents the response of an elongated lithologic unit of high resistivity that overlies a complex sequence of material that has nearly uniform, low resistivities. The overlying unit



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may have been eroded by Parrott Creek to give its present form or the two zones may represent the response of two distinct units having similar electrical properties.

The following statistical information was obtained:

arithmetic mean	- 460 ohm feet
standard deviation	- 500 ohm feet
primary mode	- 200 to 400 ohm foot class - 43 % of values
secondary mode	- greater than 2000 ohm foot class - 3% of values

CHARGEABILITY RESULTS:

The chargeability results vary from a high of 12.6 milliseconds to a low of 3.3 milliseconds (m.s.). The following statistical information was obtained:

> arithmetic mean - 7.4 m.s. standard deviation - 1.8 m.s. mode - 6 to 8 m.s. class - 42% of values

and the following chargeability categories have been defined:

greater than 11.0	weakly to moderately anomalous
9.2 to 11.0 m.s.	weakly anomalous
less than 9.2 m.s.	background

Chargeability values obtained on the Parrott survey were generally of low amplitude. Several zones of "weakly to



moderately anomalous" chargeability (greater than 11 m.s.) were outlined and they are indicated on the accompanying plan. The two zones that coincide with the high apparent resistivity anomalies discussed in the previous section may represent a change in concentration of polarizing material (between two rock types) or may be generated at the contact of two rock types.

The source of the other weakly to moderately anomalous zones is unknown.

DETAILING - DEPTH PROBES:

Three induced polarization depth probes were conducted on the Parrott Lakes Project using the Lee variation of the Wenner Array. For this array, a third receiving electrode is placed in the center of the normal Wenner spread and the "a" spacing is moved outward about this central point. For the Parrott survey, an "a" spacing of 2000, 1500, 1000, 500, 250, 125, 80, 40, 20, 10, and 5 feet were used. Readings were taken across the P_1P_2 , P_1P_0 and P_2P_0 positions.

 $E_1 \leftarrow a \rightarrow P_1 \leftarrow a/2 \Rightarrow P_0 \leftarrow a/2 \Rightarrow P_2 \leftarrow a \rightarrow$



Recent investigation of depth penetration as a function of "a" spacing has shown that the maximum contribution to the measured V signal is from a depth of about .33 times the "a" spacing for the Wenner Array. However, the measured value also represents the response to some extent from deeper (as well as shallower) material. Hence the "maximum signal depth" values plotted to the right of the profiles is meant only as a rough interpretive guide.

Depth Probe No. 1 - station 50S, line 5E:

This depth probe was centered at the above location and the lines were run true north-south along cross line 5E. It was conducted within the "weakly to moderately anomalous" chargeability zone that is coincident with the high apparent resistivities.

The profile shows a "weakly to moderately anomalous" chargeability zone at approximately 400 feet that is dipping slightly to the south. Because I.P. measurements at depth tend to yield somewhat diffused results the actual polarizing zone is thought to be quite thin.



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Depth Probe No. 2 - station 58S, line 5E:

This depth probe was centered at Station 58S, line 5E and the lines were run out due east-west about this point, i.e. at right angles to the apparent trend. It is some 200 feet lower in elevation and 800 feet to the south of the center of the No. 1 spread.

Chargeability values obtained are of relatively lower amplitude to those obtained on depth probe No. 1. The highest value was the "weakly anomalous" 10.0 on the west side of the spread at a 2000 foot "a" spacing.

Depth Probe No. 3 - 41E, 40S:

The spread was directed southeast to northwest along the road about the above grid coordinates. The highest chargeability value was 9.5 m.s. to the northwest at a 2000 foot "a" spacing. Evidently there is some directional bias to the polarizing material in this area as survey readings along the northsouth crosslines are somewhat higher than those obtained on the depth probe.

The resistivity profile indicates fairly flat lying material of nearly uniform resistivity.

Respectfully submitted,

COCHRANE D. R. Cochrane, P.Eng. July 12, 1972, Delta, B.C.

A. Scott, B.Sc.



Survey Details

PARROTT LAKE MINING DIVISION: Omineca **PROPERTY:** SPONSOR: Montgomery-Wolfe on behalf of Solomon Development Ltd. INTERPRETATION: Cochrane Consultants Ltd. 20 miles south of Houston, B.C. LOCATION: SURVEY MAN DAYS: $4 \times 50 = 200$ START: April 23 FINISH: June 21 STANDBY, MOBILIZATION AND DEMOBILIZATION MAN DAYS: 19 DATA PROCESSING: 3 man days 9¹/₂ days DRAFTING: LINE MILES: 63 NO. OF ALONG LINE READINGS: 333 DETAILING: 3 setups FIELD ARRAY: Wenner, a = 1000 feet FIELD CREW: W. Chase (instrument operator) N. Estacaille (chief helper) G. Forrester (helper) B. Magnusson (helper) DATA PROCESSING, REPORT PREPARATION: A. Scott, B.Sc. (Geophysics) D. R. Cochrane, P.Eng.

DRAFTING:

J. C. Rossier



Certificates

COCHRANE, Donald Robert NAME: B.A.Sc. - U. of T., M.Sc. (Eng.) - Queen's University Education: Professional Associations: Professional Engineer of B.C., Ontario, and Saskatchewan. Member of C.I.M.M., G.A.C., M.A.C., Geological Engineer Experience: Engaged in the profession since 1969 while employed with Noranda Exploration Co. Ltd., Quebec Cartier Mines Ltd., and Meridian Exploration Syndicate. SCOTT, Alan R. NAME: Education: B.Sc. - Geophysics, U.B.C. Experience: Two summers - crew member and operator with Geo-X Surveys Ltd. Presently employed with Cochrane Consultants Ltd. -Geophysicist Professional Associations: Member of S.E.G. NAME: CHASE, William - IF Operator 21 Age: Grade 12 Diploma Education: Experience: Employed since September, 1970 and engaged in EM and IP Surveying. Previous experience at the Anvil Mine, Y.T. Summer, 1970. ESTACAILLE, N. NAME: 25 Age: Grade 12 Diploma Education: Experience: ½ year exploration with Huntec. Since 1971 with Cochrane Consultants Ltd. NAME: FORRESTER, Greg Age: 20 Education: Grade 12 Diploma, 1 yr. Douglas College Experience: Since 1971 - Cochrane Consultants Ltd. ROSSIER, Jean-Claude NAME: 27 Age: Secondary and Vocational School - Architectural Drafting Education: Courses Experience: since 1965 - General Drafting Experience Geophysical Drafting, Seigel Associates - 1969-1972



NA	ME

POSITION

- D. HOCKING: LINECUTTER
- V. MUKANS: LINECUTTER
- A. PAGE: LINECUTTER
- E. HENDRY: LINECUTTER
- B. MAGNUSSON: I.P. HELPER
- C. STONE: COOK
- D. SYMONDS, B.Sc. (U.B.C.): GEOLOGIST, FIELD SUPERVISOR Has worked for the authors and associates since 1966.

R. WOLFE, P.Eng.

CONSULTING GEOLOGIST

Education: B.Sc. University of Alberta. Physics and Geology Experience: Engaged in the profession since 1963.

PERSONNEL AND DATES WORKED

		APRIL	MAY	JUNE			T01	TAL	-	
6.	FORRESTER	30 (1)	1-31 (31)	1-21 (21)		53	days	@	\$30 =	\$1, 590
8.	CHASE	24, 30 (2)	1-31 (31)	1-21 (21)		54	11	H	40 =	2,160
N.	ESTACAILLE	25-30 (6)	1-31 (31)	1-21 (21)		58	13	! †	40 =	2,320
D.	HOCKING	23-26 (4)	25-31 (7)			11	11	11	30 =	- 330
٧.	MUKANS	18-26 (9)	25-31 (7)			16	tì	8	40 =	- 640
D.	SYMONDS	17-30 (14)	1-31 (31)	1-26 (11½)	4-7(4)	60%	2 11	11	40 =	= 2,450
8.	MAGNUSSON	23-30 (8)	1-31 (31)	1-18 (18)		57	fl	Ħ	30 =	• 1,710
Α.	PAGE	19-30 (12)	1-31 (31)	1-21 (21)		64	41	11	30 =	1, 920
R.	WOLFE, P.ENG.	(41/2)	(4½)	(3)	(5)	17	1 9	11	100 =	= 1,700
ε.	HENDRY		9-31 (23)	1-11 (11)		34	15	11	30 =	= 1,020
	STONE		1-31 (31)	1-30 (30)		61	13	17	20 =	- 1,220

	\$17,060
Payroll benefits 10%	1,706
Payroll accounting 5%	850
TOTAL LABOUR	\$19,616

COST BREAKDOWN

WAGES

2

(See Personnel and dates	worked)	\$19,616.00
TRANSPORTATION		
Truck Rentals Helicopter SAS Etc.	\$1,576.00 160.00 342.24	
	2,078.24	2,078.24
CAMP CONSTRUCTION, SUPPLI	ES, AND EQUIPMENT	4,890.83
I.P. UNIT RENTAL		
2½ months @ \$1,000 per	month	2,500.00
RADIO RENTAL		
2½ months @ \$120 per mo	nth	300.00
ACCOMMODATION		
Motels, Meals, Food		3,519.00
RDAD_WORK		400.00
I.P. DETAIL, REPORT AND D	ATA PROCESSING	
Invoice from Cochrane Con	sultants	1,298.15
		\$34,602.22
Declared befo	remeat the City	
of · U	aucouver . in the	
Province of British	Columbia, this 17	10
day of Jul	y 1972 , A.D.	Χ.

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A Commissioner for taking Affidaxus Within British Columbia or A Notary Public in past for the a cavinge of British Columbia,

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