3048

A GEOPHYSICAL AND GEOCHEMICAL REPORT

ON THE

PAT, LESLIE, ALICE, AND LORENE CLAIMS

OMINECA MINING DIVISION

55° 30', 126° 40'

26 MILES SOUTHEAST OF SMITHERS, B. C.

FOR

SEARCHLIGHT EXPLORATION CORPORATION LTD.

BY

R. W. WOOLVERTON, P. ENG.

BETWEEN

MAY 1 AND JULY 31, 1970

AND

OCTOBER 1 AND DECEMBER 15, 1970

MAY, 1971

VANCOUVER, B. C.

92 J/4W

TABLE OF CONTENTS

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3048 MAP

APPENDICES

LIST OF ILLUSTRATIONS

INTRODUCTION

LOCATION

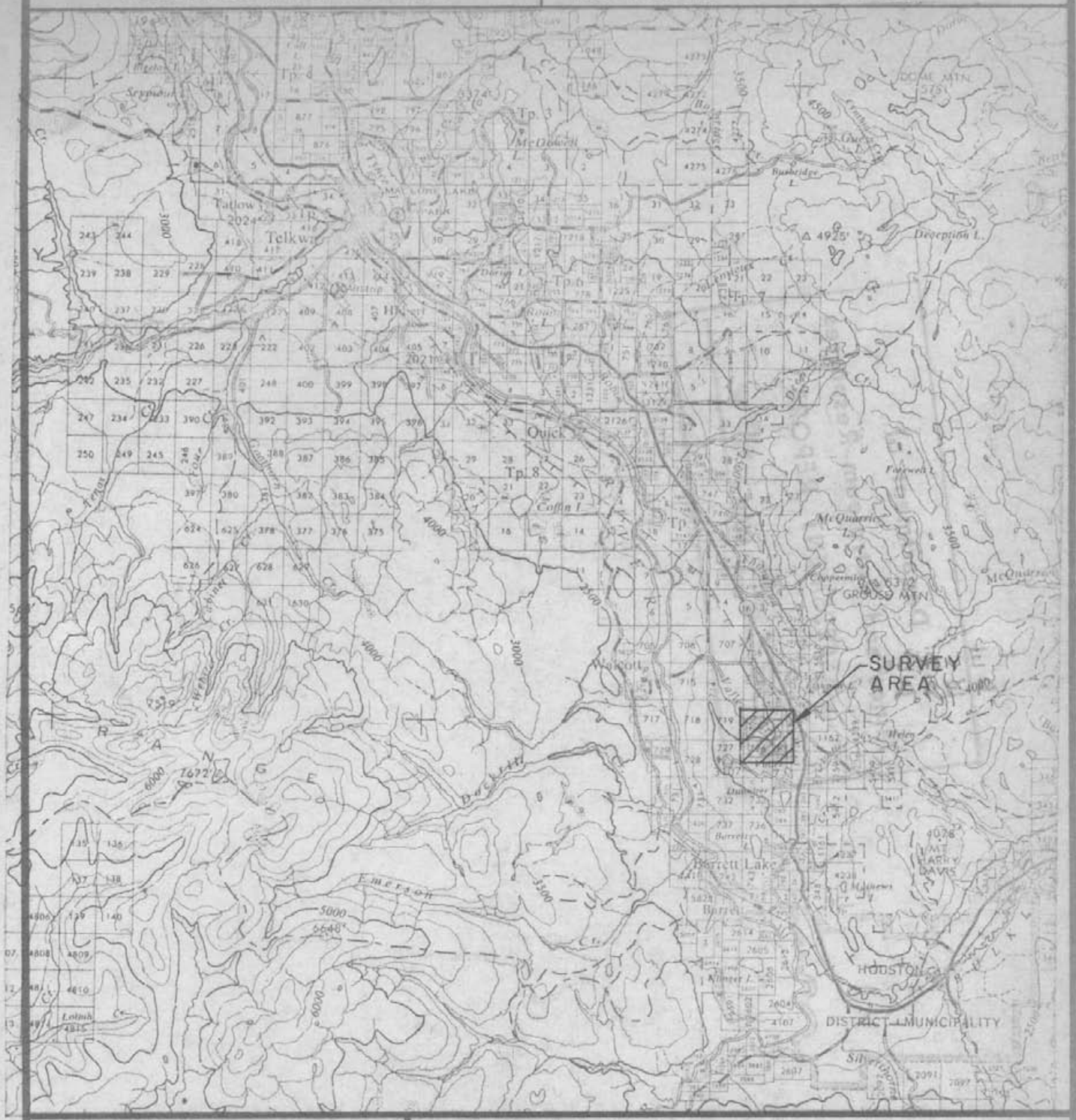
The Pat, Leslie, Alice and Lorene Claims are west of Highway 16, 3 miles north of Barrett Lake, and 26 miles southeast of Smithers, B. C. A hay meadow lies between the grid and Highway 16. Thus, field work has been concentrated in the non-growing season, although a longer route by foot through bush can be used when damage to the hay is possible. The farmer has been very co-operative and allowed McPhar to drive across the field in October. Naturally, relief within the grid is gentle and except for the hay fields on the western fringe, it is tree covered with a mixture of poplar and evergreen. Although there are adjacent exposures of Tertiary volcanics on the claim group, the grid area is completely covered by glacial deposits, possibly including some lake-bottom clays.

GEOLOGICAL SETTING

The regional geology is outlined on G.S.C. Map 971A, Smithers-Fort St. James. The local geology is more clearly defined on G.S.C. Map 671A, Houston, and on B. C. Dept. of Mines Map 69-1 by Carter and Kirkham.

The porphyry copper-molybdenum deposits of the district are found in Lower Tertiary sub-volcanic porphyritic stocks. An exposure of intermediate sub-volcanic rock on the Forestry lookout promintory,

VERSATILE DRAFTING LTD. | BASE FROM MAP | SERIES



SEARCHLIGHT EXPLORATION CORP. LTD.

LOCATION MAP

BULKLEY VALLEY PROJECT
DUNALTER GROUP

OMINECA M.D. BRITISH COLUMBIA

4 0 4 8

SCALE IN MILES

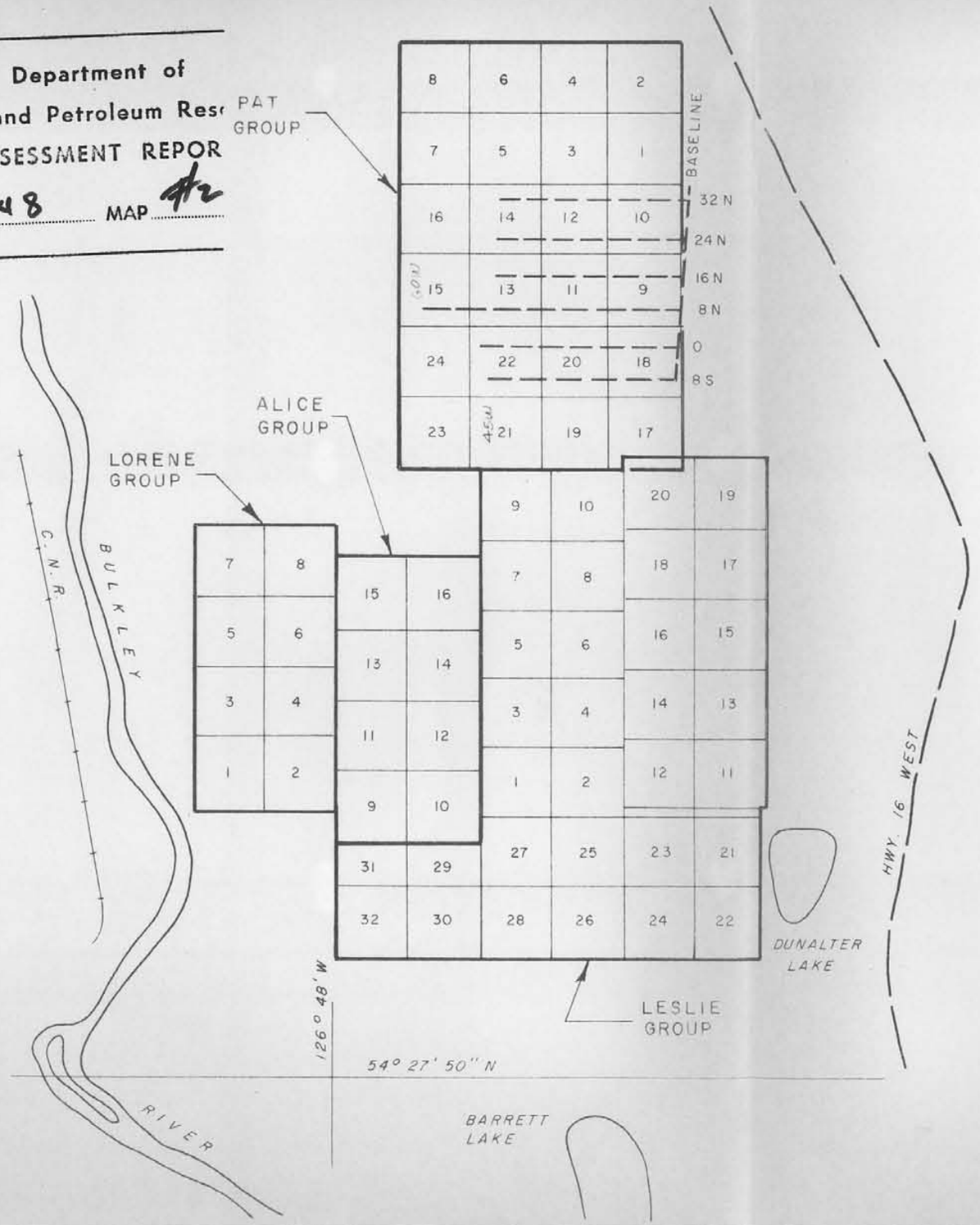
APRIL, 1971

about 1½ miles southwest of the grid, initially drew attention to the area. A subsequent helicopter mag-EM survey of the Bulkley Valley region disclosed a moderate mag high with adjacent conductivity.

1970 PROGRAM

A follow-up program of the airborne mag-EM survey was started by experienced crews of Evergreen Explorations under the writer's direction in May, 1970, using a portable pulse type I. P. unit (see Appendix V for specifications). Magnetometer readings, radem (VLF/EM) readings, and soil samples were also taken. A weak I. P. response with an associated magnetic complex was found on the Pat claims. In October, a grid was established by Eastern Associates Ltd. and McPhar surveyed the area with frequency domain I. P. equipment. A copy of their results and an interpretation is included as Appendix I of this report.

Department of
Mines and Petroleum Res
ASSESSMENT REPOR
NO. 3048 MAP #2



KEY MAP
BRITISH COLUMBIA

SEARCHLIGHT EXPLORATION CORP. LTD.

GRID LOCATION AND CLAIMS MAP

BULKLEY VALLEY PROJECT
DUNALTER GROUP

OMINECA M.D. BRITISH COLUMBIA

2 0 2
SCALE: 1 INCH = 2 MILES

PREPARED BY
VERSATILE DRAFTING LTD.

GEOCHEMISTRY

SOIL SURVEY

SAMPLING PROCEDURE AND ANALYSIS

Soil samples were collected at 200 ft. stations on the grid. They were taken by shovel from the "B" horizon, placed in wet strength paper bags, partially dried at room temperature, and shipped to Barringer Research Laboratory in Vancouver, where they were analyzed for total Cu. The data sheets are included as Appendix II of this report and the analytical procedure as Appendix III.

RESULTS

No anomalous values were obtained. Either the mag-I.P. complex is caused by a non-sulfide source or the glacial cover is thick enough or impervious enough to restrict the movement of metallic ions.

GEOPHYSICS

INDUCED POLARIZATION SURVEY

EQUIPMENT AND SURVEY

A 400 ft. Wenner Array was employed during the survey using a "Sabre" 500 watt pulse-type I. P. unit. This unit is manufactured by Sabre Electronic Instruments Ltd. of Burnaby, B. C., and is powered by a 12 volt aircraft storage battery. Steel rods 4 ft. long by ½ in. diameter were used as current electrodes. The potential electrodes were two porous pots filled with a supersaturated copper sulfate solution. Communication between the operator and electrode men was by walkie-talkie.

Experience has shown that this I. P. unit is capable of penetration equal to the spread when using a Wenner Array. At Newman (see Appendix V), a good response was obtained through 100 ft. (measured by several diamond drill holes along the profile) of cover on Line 25 E using a 400 ft. Wenner Array. The chargeabilities recorded in the same area with a 200 ft. spread were still anomalous but only about half as strong as those recorded by the 400 ft. array.

RESULTS

The chargeabilities and apparent resistivities recorded during the survey are plotted on Map #1 which is in the pocket in the back of this report.

An elliptical area of interest almost a mile long and ½ mile wide was outlined by several peripheral weakly chargeable zones and areas of low resistivity. Although the strongest chargeability was recorded on 16 N at 14 W, probably the most significant anomaly, because of its adjacent low resistivity, is the 1,600 ft. long zone crossed by Line 16 N at 30 W and Line 8 N at 32 W.

Normally, such weak anomalies would not be considered significant; however, if there is 200 to 300 ft. of cover within the grid area, then the chargeabilities registered would be equivalent to anomalies of 6 to 10 milliseconds under 10 to 20 ft. of cover.

MAGNETOMETER SURVEY

EQUIPMENT AND SURVEY

Readings were taken every 200 ft. along the grid lines using a "Sabre" fluxgate magnetometer which is manufactured by Sabre Electronics Ltd. of Burnaby, B. C. This is a hand held automatically self-levelling instrument with a sensitivity of 20 gammas per scale division. Readings were adjusted for daily fluctuations by tying into the base station twice daily. The magnetic profiles obtained are included as Map #2 in the pocket of this report.

RESULTS

A somewhat circular magnetic feature centered on Line 8 N at 22 W is approximately coincident with the core of the elliptical area

of I. P. interest. The magnetic feature suggests a small intrusive stock.

The extreme magnetic highs near the west end of Line 8 N are probably a reflection of Tertiary volcanics which are exposed about ½ mile west of the grid. A marked increase in resistivity recorded during the I. P. survey also suggests a marked geological change.

Of special interest is a local magnetic complex on Line 8 N at 30 W immediately adjacent to the mag high which may reflect an intrusive stock. Notably, the complex is coincident with the most interesting I. P. zone and may reflect intense shearing.

RADEM SURVEY

EQUIPMENT AND SURVEY

The Radem unit used in the survey is a 1-man EM radio receiver utilizing the 12 to 24 kilocycle United States Naval Communication Broadcast Stations. It was built by Crone Geophysics Limited, 3607 Wolfedale Road, Mississauga, Ontario. The instrument utilizes higher than normal EM frequencies and is capable of detecting disseminated sulfides; however, due to the high frequency, it is affected by clay and other conductive overburden. Also, experience indicates that the numerous weak conductors usually present in a "porphyry environment" are masked by 50 ft. or more of cover even if it doesn't contain conductive layers. Some type curves and specifications are included as Appendix IV of this report.

Readings were taken using the Cutler, Maine, Station (17.8 kc) and Seattle, Washington, (18.6 kc). Both in-phase (dip angle) and out-of-phase (field strength) readings were recorded. The out-of-phase is a better measure of the intensity of conductivity than is the dip angle; however, the field strength response is a function of the transmitter power (which fluctuates daily) as well as the intensity of nearby conductivity. The results of the radem survey are plotted on Maps 3 and 4 which accompany this report.

RESULTS

The radem profiles on Maps 3 and 4 suggest overburden in excess of 50 ft., with the possible exception of Line 8 S west of Station 30 W. The cover over the southwest portion of the grid appears slightly conductive.

Of possible interest is a weak crossover which occurs on both frequencies at 39 W on Line 8 S. Although it may be due to topographic changes, it coincides with the western edge of one of the weakly chargeable zones.

CONCLUSIONS

Several weakly chargeable zones were located peripherally to a semicircular magnetic high within a large moderately low resistivity zone. The I. P. anomalies were substantiated by a later frequency domain survey by McPhar. Unfortunately, detailed spreads were not taken during either I. P. survey to determine the depth of overburden; however, the soil samples collected contained only background amounts of Cu and the radem survey suggests fairly deep cover.

The mag-I. P. complex suggests a buried porphyry environment. If detailed I. P. indicates 200 or 300 ft. of cover, then a test hole should be considered, preferably near Line 16 N and 30 W.

Respectfully submitted,

R. W. Woolverton, P. Eng.

McPHAR GEOPHYSICS LIMITED

MEMORANDUM ON THE INDUCED POLARIZATION AND RESISTIVITY RESULTS ON THE NORTH DUNALTER PROPERTY BULKLEY VALLEY, B.C. FOR SEARCHLIGHT EXPLORATION CORPORATION

The induced polarization and resistivity survey was carried out to investigate airborne anomalies. No detailed geological information is available for this area.

The survey consisted of five east-west lines, with the lines 800 feet apart; 500 - foot electrode separations were used at frequencies of 0.3 and 5 cps.

The resistivities were very low throughout the survey area and only two lines showed any significant increase in frequency effects. Anomalous metal factor values other than those discussed below appear to reflect resistivity lows only.

The two lines of interest are Line 12N and Line 4N. The anomaly on Line 12N extends from 20W to 35W; the anomaly on Line 4N extends from 18W to 35W. The source of the two anomalies may be continuous, but the lines are too widely separated to make that assumption at this time. The source of both anomalies is deep relative to the electrode interval, as the anomalous values

occur on n = 3 only.

If the IP anomalies coincide with the airborne anomalies, parallel intermediate lines could be surveyed between Line 4N and Line 12N to determine the continuity of the source. If this is done, readings taken to n = 4 would be useful in further evaluation of the IP data.

McPHAR GEOPHYSICS LIMITED

Marion A. Goudie,
Geologist.

Robert A. Bell,
Geologist.

Dated: February 2, 1971

GEOCHEMICAL SAMPLE SHEET

Project Anomaly 44+49A Area BVP

Sampler Arne Axen Date May 22 1970

	Sample Number	Depth Ins.	Horizon	Color	Soil Type	Swamp	Organic	Moisture	Sed. Type	Seepage	Active	Dry			Analytical Results p.p.m. Cu	Pb	Zn	Mo		
~~8S-52W~~	943	8	B	Brn	Soil			✓							18					
8S-50W	944	10	B	Brn	Soil			✓							26					
8S-48W	945	6	B	Brn	Soil			✓							19					
8S-46W	946	10	B	Brn	Soil			✓							20					
8S-44W	Swamp - no sample.																			
8S-42W	947	10	B	Brn	Clay	✓		✓					Sm rake	Alder	25					
8S-40W	948	8	B	Brn	Soil			✓							22					
8S-38W	949	6	B	Brn	Clay			✓							14					
8S-36W	950	10	B	Grey	Soil			✓							18					
8S-34W	951	14	B	Grey	Clay	✓		✓							13					
8S-32W	952	8	B	Brn	Soil	✓		✓							15					
8S-30W	954	14	B	Grey	Clay	✓		✓							~~47~~					
~~8S-28W~~	~~953~~	10	B	Grey Brn	Clay	✓		✓							22					
	Anomaly 9S					May 26 1970						BVP			Arne Axen					
ON-0W	3354	16	B	Grey	Soil			✓				Slight W. Slope			16					
ON-2W	3355	6	B	Grey	Soil			✓				Flat			15					
ON-6W	3356	14	B	Grey	Soil			✓				Slight N. Slope			37					
ON-8W	3357	8	B	Brn	Soil			✓				N. Slope			31					
ON-10W	3358	8	B	Brn	Soil			✓		✓		Flat Bench			24					
ON-12W	3359	6	B	Brn	Soil			✓				Flat			23					
ON-13.5W	3360	10	B	Brn	Soil			✓				Shallow Depression			19					
ON-15.75	3361	10	B	Grey	Soil			✓		✓					35					
ON-18W	3362	8	B	Brn	Soil			✓				Shallow Gully			22					
ON-20W	3363	6	B	Brn	Soil			✓							19					
ON-22W	3364	6	B	Brn	Soil			✓				Flat			20					
ON-24W	3365	10	B	Grey	Soil			✓				"			16					
ON-25.5	3366	14	B	Brn	Soil			✓		✓					33					

APPENDIX VI

DECLARATION OF EXPENDITURES

APPENDIX II

GEOCHEMICAL DATA SHEETS

GEOCHEMICAL SAMPLE SHEET

Project Anomaly 95 Area BVP An 95

Sampler Arne Axen. Date May 26 1970

	Sample Number	Depth Ins.	Horizon	Color	Soil Type	Swamp	Organic	Moisture	Sed. Type	Seepage	Active	Dry			Analytical Results p.p.m. Cu	Pb	Zn	Mo	HQ Cu
ON-28.5W	3367	12	B	Grey Brn	Soil			✓					Large Gully		22				
ON-28W	3368	Silt									✓	6' wide creek bed							13
												Fairly swift.							
		BVP		An				1:3			A		RW						
	~~3375~~							Silt			✓								17
~~ON-30W~~	~~3370~~	~~8~~	~~B~~	~~Brn~~	~~Soil~~			~~✓~~											
~~ON-32.25W~~	~~3371~~	~~12~~	~~B~~	~~Grey Brn~~	~~Soil~~			~~✓~~											
	BVP	Anomaly 95			Arne Axen								May 27/70						
ON-30W	3370	8	B	Brn	Soil			✓							25				
ON-32.25W	3371	12	B	Grey Brn	Soil			✓					Dry Gully		29				
ON-33.5W	3372	8	B	Grey	Soil			✓					Flat		25				
ON-36W	3373	10	B	Brn	Soil	✓		✓		✓					18				
ON-38W	3374	6	B	Brn	Soil	✓		✓		✓			Swampy Gully		19				
ON-40W	3375	6	B	Red	Soil			✓					Slight NW slope		18				
8S-32W	3376	6	B	Brn	Soil			✓					Dry Gully		19				
8S-36W	3377	6	B	Brn	Soil			✓					S.W. Slope		21				
8S-34W	3378	6	B	Grey Brn	Soil			✓		✓			Swamp edge		16				
8S-32W	3379	6	B	Grey	Soil			✓					edge of beaver pond		20				
8S-30W	3380	8	B	Brn	Soil			✓					!		16				
8S-28.5W	3381		Silt	-	taken in creek						6' wide	below	beaver dam						18
8S-28.5W	3382	16	B	Grey	Soil			✓	edge of pond				creek		26				
8S-26W	3383	6	B	Brn	Soil			✓					Flat		16				
8S-23.5W	3384	10	B	Grey	Soil			✓					nr. Beaver pond		18				
8S-22W	3385	8	B	Grey	Clay			✓							20				
8S-20W	3386	6	B	Grey	Soil			✓					Flat		15				

GEOCHEMICAL SAMPLE SHEET

Project Anomaly 92-93A Area BVP

Sampler Arne Axen Date ~~Ma~~ June 1/1970

	Sample Number	Depth Ins.	Horizon	Color	Soil Type	Swamp	Organic	Moisture	Sed. Type	Seepage	Active	Dry			Analytical Results p.p.m. Cu	Pb	Zn	Mo	
16N-0W	3218	10	B	Brn	Soil							✓	W. Slope		29				
16N-2W	3220	6	B	Brn	Soil							✓			21				
16N-4W	3221	10	B	Brn	Soil							✓			22				
16N-6W	3132		Silt				✓				✓	✓	Small Creek		41				
16N-8W	3133	8	B	Grey	Soil			✓							15				
16N-10W	3134	7	B	Grey	Gr.							✓			16				
16N-12W	3135	12	B	Grey	Soil			✓							18				
16N-14W	3136	11	B	Brn	Clay							✓			19				
16N-16W	3137	8	B	Grey	Soil			✓							21				
16N-18W	3138	10	B	Grey	Soil			✓							17				
16N-20W	3139	10	B	Grey	Soil			✓					Flat.		18				
16N-22W	3140	4	B	Red	Clay							✓			22				
16N-24W	3141	6	B	Brn Grey	Soil							✓			24				
16N-26W	3142	5	B	Brn	Clay							✓			11				
16N-28W	3143	Silt - Small creek 2 ft. wide runs N.W.													39				
16N-30W	3144	5	B	Red	Clay							✓			21				
16N-32W	3145	6	B	Brn	Soil			✓							19				
16N-34W	3146	Silt					✓								39				
16N-36W	3147	8	B	Brn	Soil			✓					Flat		20				
16N-38W	3148	5	B	Brn	Clay					✓		✓			22				
16N-40W	3149	10	B	Grey	Clay							✓			25				
8N-36W	3150	10	B	Grey	Soil							✓	Slight W. Slope		23				
8N-38W	3151	6	B	Brn	Clay Soil			✓		✓					22				
8N-40W	3152	10	B	Brn	Clay	✓		✓							16				
8N-42W	3153	Silt - Fairly lg. creek													34				
8N-44W	3154	10	B	Brn	Soil			✓					Creek gully		21				
8N-46W	3155	5	B	Red	Clay							✓	Flat		10				

GEOCHEMICAL SAMPLE SHEET

Project Anomalies 92-93A Area BVP

Sampler Anne Axen Date June 1 1970

	Sample Number	Depth Ins.	Horizon	Color	Soil Type	Swamp	Organic	Moisture	Sed. Type	Seepage	Active	Dry			Analytical Results p.p.m. Cu	Pb	Zn	Mo		
8N-52W	3156	6	B	Grey	Soil			✓					Flat		18					
8N-48W	3157	Silt-mud									✓				57					
8N-56W	3158	6	B	Grey	Soil			✓							16					
8N-54W	3159	5	B	Red	Cr.			✓							14					
8N-34W	3161	7	B	Brn	Clay			✓		✓					22					
8N-32W	3162	12	B	Brn	Soil			✓					Dry gully		20					
8N-30W	3163	5	B	Brn	Soil			✓							19					
8N-28W	3164	8	B	Brn	Soil			✓		✓			Gully		18					
8N-26W	3165	5	B	Brn Soil	Soil							✓	Flat		17					
8N-24W	3166	6	B	Brn	Soil			✓							16					
8N-22W	3167	13	B	Brn	Soil			✓		✓					16					
8N-20W	3168	8	B	Grey	Soil			✓							18					
8N-18W	3169	5	B	Brn	Soil					✓		✓			22					
8N-16W	3170	10	B	Brn	Soil			✓							19					

GEOCHEMICAL SAMPLE SHEET

Project Au # 92 · Area BVP

Sampler N. Thomsen Date June 2, 1970

	Sample Number	Depth Ins.	Horizon	Color	Soil Type	Swamp	Organic	Moisture	Sed. Type	Seepage	Active	Dry			Analytical Results p.p.m. Cu	Pb	Zn	Mo		
24N-0w	3104	14	B	B	Cl.			D							16					
-2w	3105	8	B	B	Cl.			D							15					
-4w	3106	9	B	B	Cl.			D							20					
-6w	3107	7	B	B	Cl.			D							20					
-8w	3108	8	B	B	Cl.			D							19					
-10w	3109	14	B	B	Cl.			D							19					
-12w	3110	7	B	B	Cl.			D							17					
-14w	3111	8	B	B	Cl.			D							23					
-16w	3112	6	B	B	Cl.			D							26					
-18w	3113	6	B	B	Cl.			D							24					
-20w	3114	12	B	B	Cl.			D							24					
-22w	3115	8	B	B	Gr.			M		✓					21					
-24w	3116	1	A/B			✓	✓		mud					*	63					
-26w	3117	5	B	B	Gr.			M							19					
-28w	3118	5	B	B	Cl.			D							14					
-30w	3119	10	B	B	Cl.			M		✓					18					
-32w	3120	5	B	B	Cl.			M							14					
-34w	3121	4	B	B	Cl.			D							19					
-36w	3122	4	B	B	Cl.			D							26					
-38w	3123	11	B	B	Cl.			M		✓					18					
-40w	3124	10	B	B	Cl.			M		✓					23					
32N -36w	3125	5	B	B	Cl.			M							14					
-34w	3126	5	B	B	Gr.			D							16					
-32w	3127	7	B	B	Cl.			D							17					
-38w	3128	12	B	B	Cl.			M							22					
-40w	3129	10	B	B	Cl.			D		✓					21					
-30w	3130	10	B	B	Sand			W		✓					20					

GEOCHEMICAL SAMPLE SHEET

Project Av. # 92 Area BVP

Sampler N. Thomson Date June 2, 1970

	Sample Number	Depth Ins.	Horizon	Color	Soil Type	Swamp	Organic	Moisture	Sed. Type	Seepage	Active	Dry			Analytical Results p.p.m. Cu	Pb	Zn	Mo	
32N-28W	3171	9	B	B	Gr.			D							21				
-26W	3171	8	B	B	Cl.			D							18				
-24W	3172	8	B	B	Cl.			D							20				
-22W	3173	11	B	B	Cl.			M							16				
-20W	3174	24	A	Blk	Loam		✓	M						*	39				
-18W	3175	8	B	B	Cl.			M							11				
-16W	3176	5	B	B	Cl.			M							18				
-14W	3177	6	B	B	Cl.			M							19				
-12W	3178	8	B	B	Cl.			D							17				
-10W	3179	6	B	B	Cl.			D							18				
-8W	3180	13	B	B	Cl.			D							19				

SUMMARY OF EXPENDITURES

PER ACCOMPANYING INVOICES

Evergreen Explorations	Invoice #23	$ 559.48
" "	Invoice #22	248.02
" "	Invoice #21	328.00
" "	Invoice #20	2,429.83
" "	Invoice #19	577.38
Eastern Associates Required		604.98
McPhar Geophysics		2,309.22
	Sub Total	$7,056.91
Report preparation		500.00
	TOTAL	$7,556.91

DECLARATION OF PROJECT CHARGES

The undersigned considers the preceding invoices applicable as assessment work.

R. W. WOOLVERTON, P. ENG.

APPENDIX I

McPHAR I. P. SURVEY DATA

McPHAR GEOPHYSICS

NOTES ON THE THEORY, METHOD OF FIELD OPERATION, AND PRESENTATION OF DATA FOR THE INDUCED POLARIZATION METHOD

Induced Polarization as a geophysical measurement refers to the blocking action or polarization of metallic or electronic conductors in a medium of ionic solution conduction.

This electro-chemical phenomenon occurs wherever electrical current is passed through an area which contains metallic minerals such as base metal sulphides. Normally, when current is passed through the ground, as in resistivity measurements, all of the conduction takes place through ions present in the water content of the rock, or soil, i.e. by ionic conduction. This is because almost all minerals have a much higher specific resistivity than ground water. The group of minerals commonly described as "metallic", however, have specific resistivities much lower than ground waters. The induced polarization effect takes place at those interfaces where the mode of conduction changes from ionic in the solutions filling the interstices of the rock to electronic in the metallic minerals present

in the rock.

The blocking action or induced polarization mentioned above, which depends upon the chemical energies necessary to allow the ions to give up or receive electrons from the metallic surface, increases with the time that a d. c. current is allowed to flow through the rock; i. e. as ions pile up against the metallic interface the resistance to current flow increases. Eventually, there is enough polarization in the form of excess ions at the interfaces, to appreciably reduce the amount of current flow through the metallic particle. This polarization takes place at each of the infinite number of solution-metal interfaces in a mineralized rock.

When the d. c. voltage used to create this d. c. current flow is cut off, the Coulomb forces between the charged ions forming the polarization cause them to return to their normal position. This movement of charge creates a small current flow which can be measured on the surface of the ground as a decaying potential difference.

From an alternate viewpoint it can be seen that if the direction of the current through the system is reversed repeatedly before the polarization occurs, the effective resistivity of the system as a whole will change as the frequency of the switching is changed. This is a consequence of the fact that the amount of current flowing through each metallic interface depends upon the length of time that current has been passing through it in one direction.

The values of the per cent frequency effect or F. E. are a measurement of the polarization in the rock mass. However, since the measurement of the degree of polarization is related to the apparent resistivity of the rock mass it is found that the metal factor values or M. F. are the most useful values in determining the amount of polarization present in the rock mass. The MF values are obtained by normalizing the F. E. values for varying resistivities.

The induced polarization measurement is perhaps the most powerful geophysical method for the direct detection of metallic sulphide mineralization, even when this mineralization is of very low concentration. The lower limit of volume per cent sulphide necessary to produce a recognizable IP anomaly will vary with the geometry and geologic environment of the source, and the method of executing the survey. However, sulphide mineralization of less than one per cent by volume has been detected by the IP method under proper geological conditions.

The greatest application of the IP method has been in the search for disseminated metallic sulphides of less than 20% by volume. However, it has also been used successfully in the search for massive sulphides in situations where, due to source geometry, depth of source, or low resistivity of surface layer, the EM method can not be successfully applied. The ability to differentiate ionic conductors, such as water filled shear zones, makes the IP method a useful tool in checking EM

anomalies which are suspected of being due to these causes.

In normal field applications the IP method does not differentiate between the economically important metallic minerals such as chalcopyrite, chalcocite, molybdenite, galena, etc., and the other metallic minerals such as pyrite. The induced polarization effect is due to the total of all electronic conducting minerals in the rock mass. Other electronic conducting materials which can produce an IP response are magnetite, pyrolusite, graphite, and some forms of hematite.

In the field procedure, measurements on the surface are made in a way that allows the effects of lateral changes in the properties of the ground to be separated from the effects of vertical changes in the properties. Current is applied to the ground at two points in distance (X) apart. The potentials are measured at two other points (X) feet apart, in line with the current electrodes is an integer number (n) times the basic distance (X).

The measurements are made along a surveyed line, with a constant distance (nX) between the nearest current and potential electrodes. In most surveys, several traverses are made with various values of (n); i.e. (n) = 1, 2, 3, 4, etc. The kind of survey required (detailed or reconnaissance) decides the number of values of (n) used.

In plotting the results, the values of the apparent resistivity, apparent per cent frequency effect, and the apparent metal factor

measured for each set of electrode positions are plotted at the intersection of grid lines, one from the center point of the current electrodes and the other from the center point of the potential electrodes. (See Figure A.) The resistivity values are plotted above the line as a mirror image of the metal factor values below. On a second line, below the metal factor values, are plotted the values of the per cent frequency effect. In some cases the values of per cent frequency effect are plotted as superscripts of the metal factor value. In this second case the frequency effect values are not contoured. The lateral displacement of a given value is determined by the location along the survey line of the center point between the current and potential electrodes. The distance of the value from the line is determined by the distance (nX) between the current and potential electrodes when the measurement was made.

The separation between sender and receiver electrodes is only one factor which determines the depth to which the ground is being sampled in any particular measurement. The plots then, when contoured, are not section maps of the electrical properties of the ground under the survey line. The interpretation of the results from any given survey must be carried out using the combined experience gained from field results, model study results and theoretical investigations. The position of the electrodes when anomalous values are measured is important in the interpretation.

In the field procedure, the interval over which the potential differences are measured is the same as the interval over which the electrodes are moved after a series of potential readings has been made. One of the advantages of the induced polarization method is that the same equipment can be used for both detailed and reconnaissance surveys merely by changing the distance (X) over which the electrodes are moved each time. In the past, intervals have been used ranging from 25 feet to 2000 feet for (X). In each case, the decision as to the distance (X) and the values of (n) to be used is largely determined by the expected size of the mineral deposit being sought, the size of the expected anomaly and the speed with which it is desired to progress.

The diagram in Figure A demonstrates the method used in plotting the results. Each value of the apparent resistivity, apparent metal factor, and apparent per cent frequency effect is plotted and identified by the position of the four electrodes when the measurement was made. It can be seen that the values measured for the larger values of (n) are plotted farther from the line indicating that the thickness of the layer of the earth that is being tested is greater than for the smaller values of (n); i. e. the depth of the measurement is increased. When the F. E. values are plotted as superscripts to the MF values the third section of data values is not presented and the F. E. values are not contoured.

The actual data plots included with the report are prepared utilizing an IBM 360/75 Computer and a Calcomp 770/763 Incremental Plotting System. The data values are calculated, plotted, and contoured according to a programme developed by McPhar Geophysics. Certain symbols have been incorporated into the programme to explain various situations in recording the data in the field.

The IP measurement is basically obtained by measuring the difference in potential or voltage (ΔV) obtained at two operating frequencies. The voltage is the product of the current through the ground and the apparent resistivity of the ground. Therefore in field situations where the current is very low due to poor electrode contact, or the apparent resistivity is very low, or a combination of the two effects; the value of (ΔV) the change in potential will be too small to be measurable. The symbol "TL" on the data plots indicates this situation.

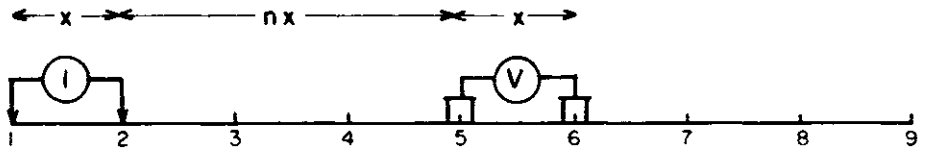
In some situations spurious noise, either man made or natural, will render it impossible to obtain a reading. The symbol "N" on the data plots indicates a station at which it is too noisey to record a reading. If a reading can be obtained, but for reasons of noise there is some doubt as to its accuracy, the reading is bracketed in the data plot ( ).

In certain situations negative values of Apparent Frequency Effect are recorded. This may be due to the geologic environment or spurious electrical effects. The actual negative frequency effect value recorded is indicated on the data plot, however the symbol "NEG" is

indicated for the corresponding value of Apparent Metal Factor. In contouring negative values the contour lines are indicated to the nearest positive value in the immediate vicinity of the negative value.

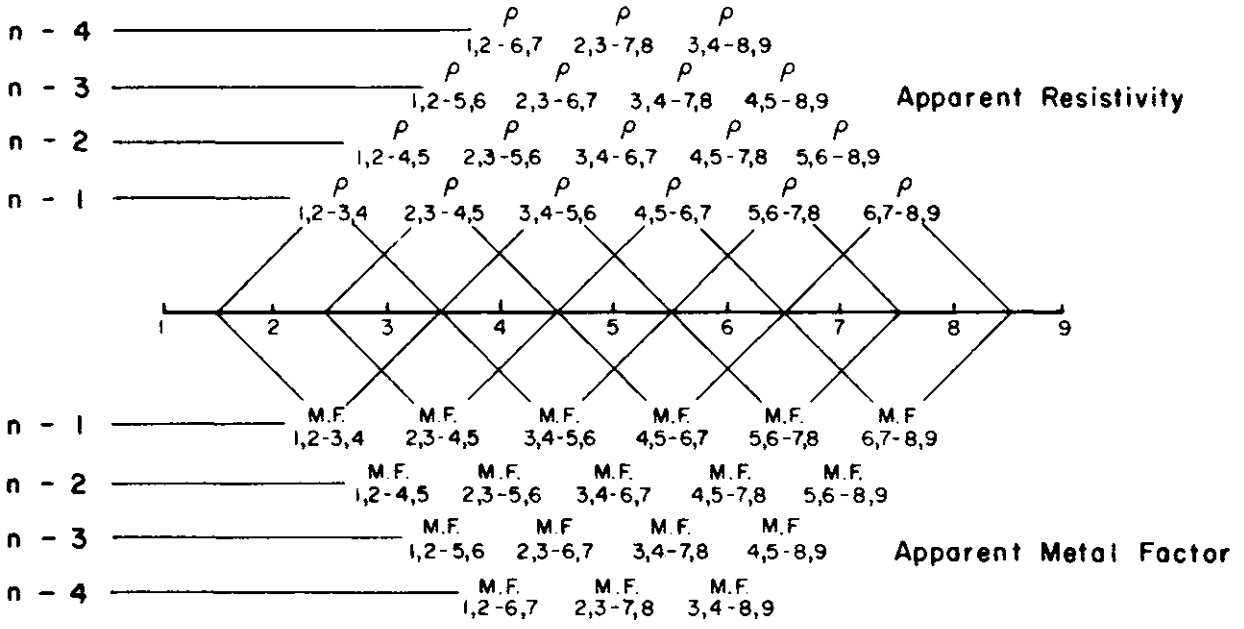
The symbol "NR" indicates that for some reason the operator did not attempt to record a reading although normal survey procedures would suggest that one was required. This may be due to inaccessible topography or other similar reasons. Any symbol other than those discussed above is unique to a particular situation and is described within the body of the report.

METHOD USED IN PLOTTING DIPOLE-DIPOLE INDUCED POLARIZATION AND RESISTIVITY RESULTS



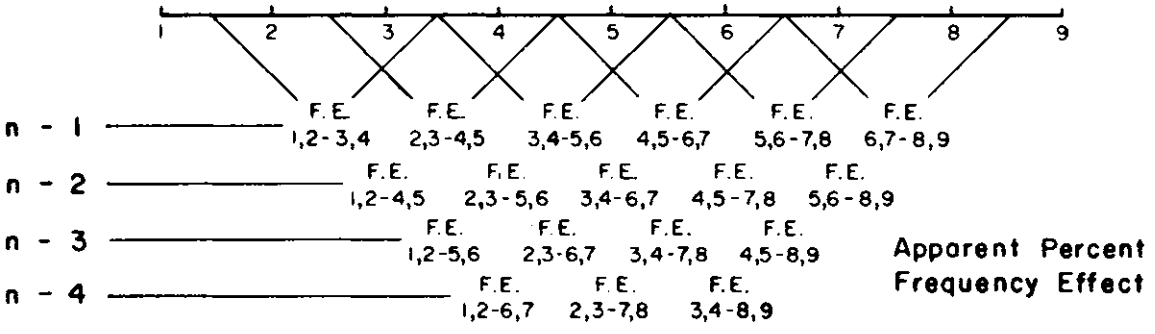
Stations on line

x = Electrode spread length
n = Electrode separation



Apparent Resistivity

Apparent Metal Factor



Apparent Percent Frequency Effect

Fig. A

APPENDIX III

GEOCHEMICAL ANALYTICAL PROCEDURE

BARRINGER RESEARCH INC.

304 CARLINGVIEW DRIVE
REXDALE, ONTARIO, CANADA
PHONE: 416-677-2491
CABLE: BARESEARCH

December 8th, 1969

Evergreen Explorations Limited
635-789 W. Pender Street
Vancouver 1, B.C.

Attention: Mr. Woolverton

Dear Sir:

Our laboratory procedures for your samples are as follows:-

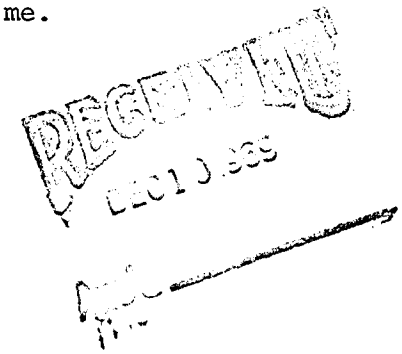
Total Copper (soils) - a portion of -80M material is digested in concentrated perchloric acid, diluted with water and analysed by atomic absorption.

HCl copper (stream sed.) - same as above but using a dilute solution of hydrochloric acid.

Total Molybdenum - a -80M portion of sample is fused with a carbonate flux and the molybdenum is colorimetrically determined using zinc dithiol.

Total copper was done on the "Donna" and "Red Top" projects and both total copper and moly on the "Allie". Our reports 168-B (for total copper) and 161-B (for HCl copper) had no project no. specified on the work order form received from you.

Should you require any further information, please do not hesitate to contact me.



Yours sincerely

BARRINGER RESEARCH LIMITED

Y. M. Hazeldene

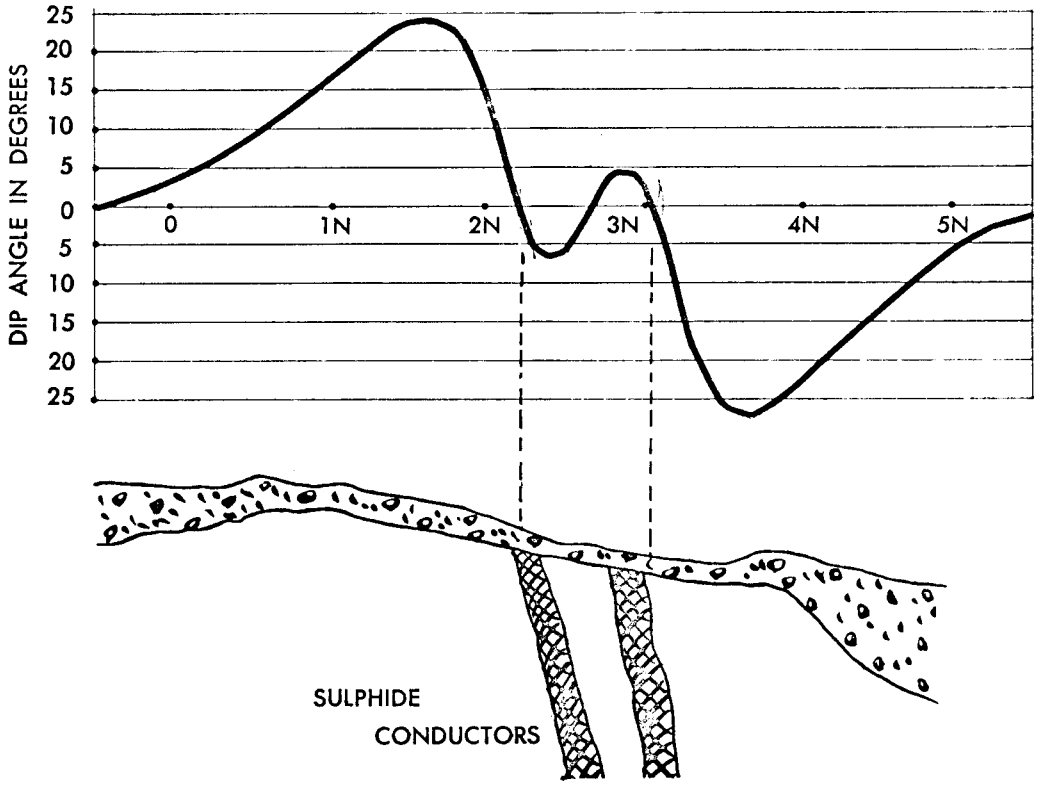
YH:lh

Yvonne Hazeldene
Chief Analyst
Department of Geochemistry

APPENDIX IV

RADEM SPECIFICATIONS

Example of a RADEM traverse over a Banded Conductor in the Timmins area of Ontario.



SPECIFICATIONS

READOUT — Dip angle of resultant VLF magnetic field component from an inclinometer of ± ½ degree sensitivity

NULL INDICATOR — Both audio (loudspeaker) and visual by means of an averaging field strength meter

TUNING — Preset switch tuning

BATTERIES — 2 of 9 volt Eveready # 216, independent test indicators

STATIONS — Standard 5 stations — Cutler, Maine 17.8; Seattle, Wash. 18.6; Ft. Collins, Colorado 20.0; Annapolis, Md. 21.4; Balboa, Panama 24.0 KCs.

— Optional — N.W. Cape, Australia 15.5; Lualualei, Hawaii 23.4; Rugby, England 16.0 KCs.
Other stations as they become operational

WEIGHT — Receiver — 4 lb. Leather Case — 2 lb. Shipping Weight — 15 lb.

PRICE — $2,250.00 Canadian

RENTAL — $150.00 per month

FIGURE 2.

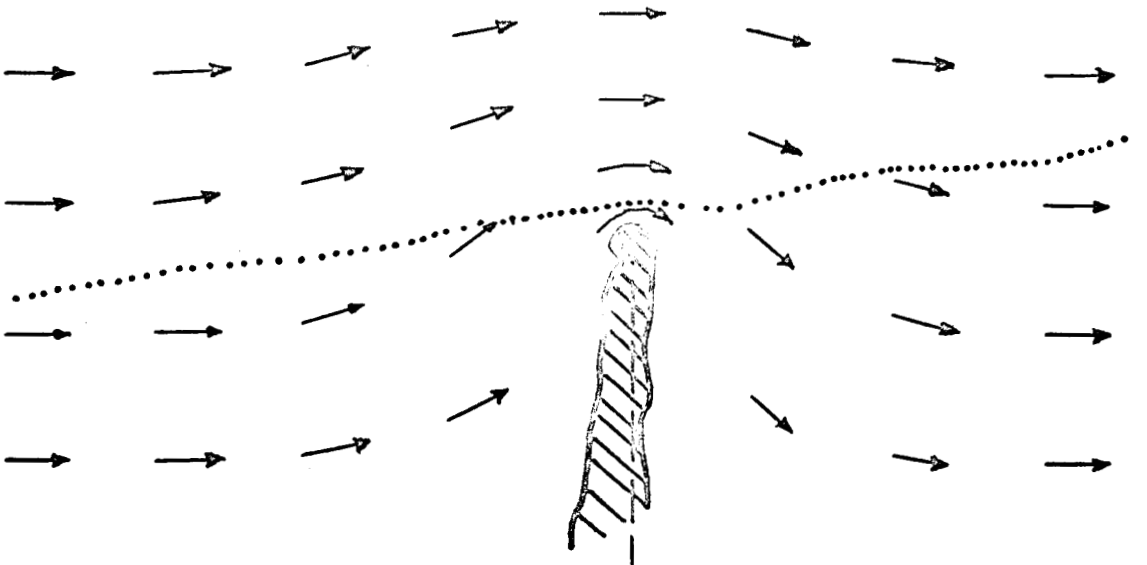
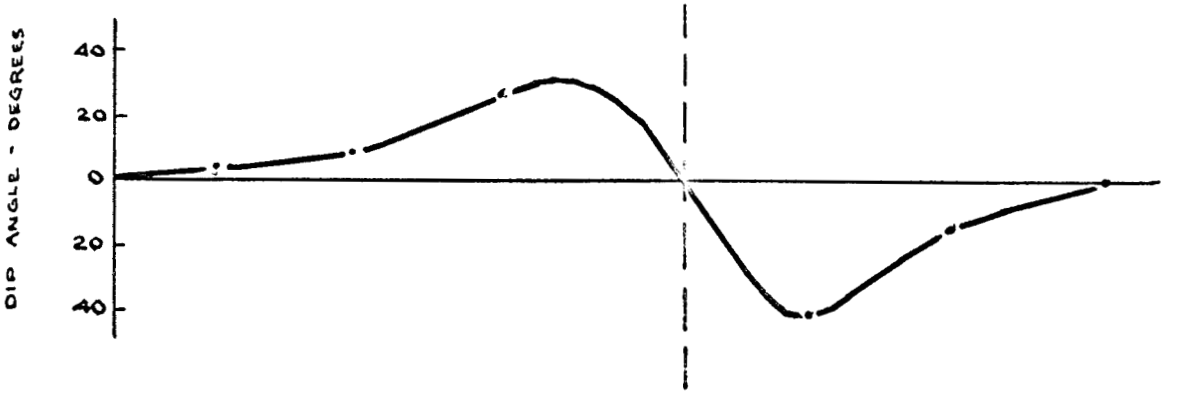


FIGURE 3.

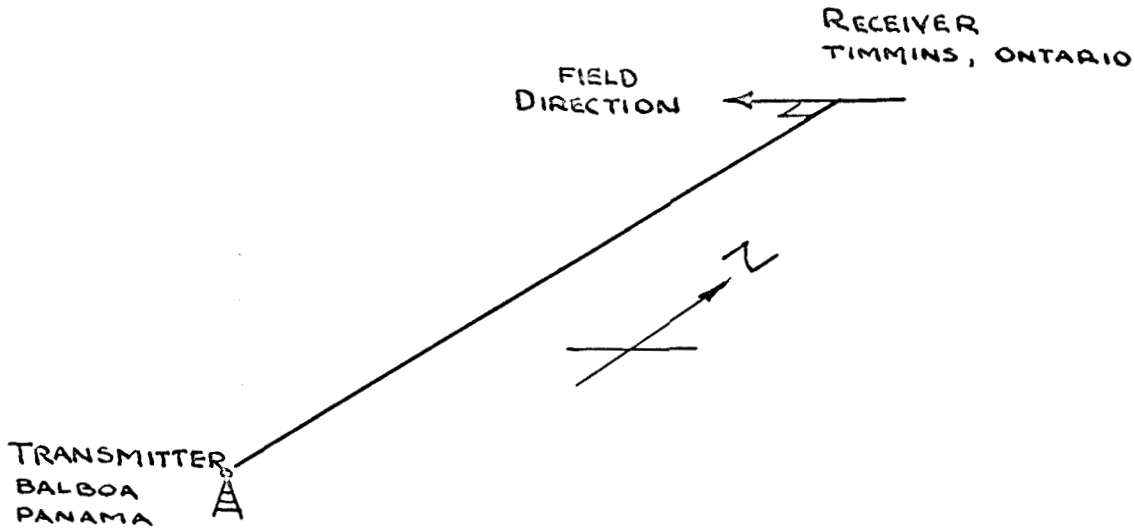


THE VERY LOW FREQUENCY RADIO TRANSMITTING STATIONS

The purpose of these stations is to broadcast over large distances navigational and other information for use by ships and submarines. Numerous stations are situated around the globe and a considerable number are in the process of construction. Operational stations are located at Cutler Maine, Annapolis Maryland, Fort Collins Colorado, Seattle Washington, Balboa Panama, Rugby England, Lualualei Hawaii, Guam and N.W. Cape Australia. The frequency range used varies between 12 and 24 KC's and is thus 10 times higher than the normal frequencies used in mineral prospecting. This results in the RADEM method being more sensitive to lower conductivity and smaller sized bodies than normal EM equipment.

The direction of the magnetic component of the field from a VLF station is horizontal and perpendicular to the line between the operator and the transmitting station (see Figure 4). In this example

FIGURE 4.



the receiver at Timmins, Canada, is using the Panama Station that is due south of Timmins. The normal field direction in this case will be horizontal in an east-west direction. This field would couple with a north-south striking conductor. Thus for maximum coupling and therefore best results select a transmitter station located in the same direction as the geological strike. With the Timmins, Ontario, example Panama should be used in areas of north-south geological strike and Seattle Washington in areas of east-west strike. If the geological strike is not known then it is best to read two stations that are located in directions perpendicular to each other.

The U.S. naval VLF stations are shut down for periods of 4 to 8 hours every week for routine maintenance. This shutdown schedule is published by the U.S. Navy and is forwarded to RADEM users by Crone Geophysics.

OPERATION OF THE RADEM RECEIVER:

- Turn the unit ON by means of the ON-OFF switch. This can be left on all day since the battery drain is very low.
- Turn the station selector switch to the station you wish to use.
- Adjust the volume control knob such that the signal can be clearly heard.

CRONE GEOPHYSICS LIMITED

979 LAKESHORE ROAD E.
PORT CREDIT, ONTARIO

TELEPHONE 274-3704

CASE HISTORY # 1 March 1, 1968

Two Radem (VLF Radio EM) Traverses in the Timmins Area, Ontario.

The use of the VLF radio transmitters as an EM primary field source is not new, but rather one of the oldest and earliest (1929) EM methods. The recent revival of this method is due to the greatly increased power and reliability of the transmitter stations. The method still has, however, its original advantages and limitations. If used properly it can be very effective; if pushed beyond its basic limitations disappointing results will be obtained. The following two profiles illustrate this point.

The first profile, over the Canadian Jamieson Mine near Timmins, illustrates the ability of the method to detect the three in echelon ore bodies. This is rather remarkable from three aspects: 1) no other EM method (horizontal loop, vertical loop - fixed and broadside, or JEM) was capable of detecting even one of these ore lenses; 2) the traverse crossed the yard of a producing mine, thus operating in an area of high hydro noise; 3) the dip angles obtained were very large, +30° to -30°.

The ore lenses are excellent conductors, but were not detected by previous EM surveys, due to their being discontinuous and of limited size.

The second profile, also from the Timmins area, is a traverse over a strong conductor buried below 75 ft. of clay and sand overburden. The RADEM profile fails to detect the conductor which is clearly outlined by the dual frequency vertical loop survey. (Note: The ratio of low frequency, 480 cps, to high frequency, 1800 cps, is unity.) This illustrates the inability of the VLF - EM method to penetrate the overburden. The VLF - EM method will produce large tilt angles from the clay bed itself. These large angles will occur towards the edge of the clay bed and thus complicate interpretation in these areas.

Conclusion: The VLF - EM method is a highly effective and rapid reconnaisance tool. It is limited by its high frequency and the inability to interpret from the results the conductivity and shape of the conductor. Until more experience is gained, this method should be used in shallow (less than 30 ft.) overburden areas.

J. Duncan Crone,
Geophysicist.

CASE HISTORY # 1

RADEM PROFILES OVER CANADIAN JAMIESON MINE, TIMMINS, ONTARIO.

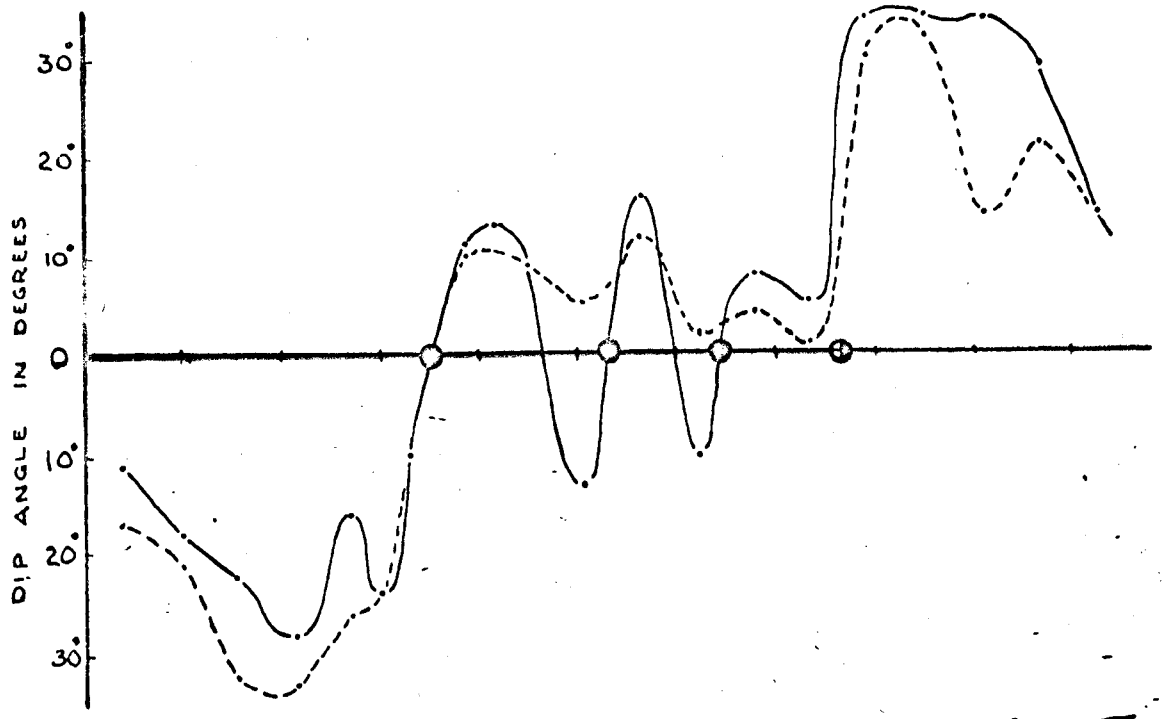
Scale 1" = 20°; 1" = 200'

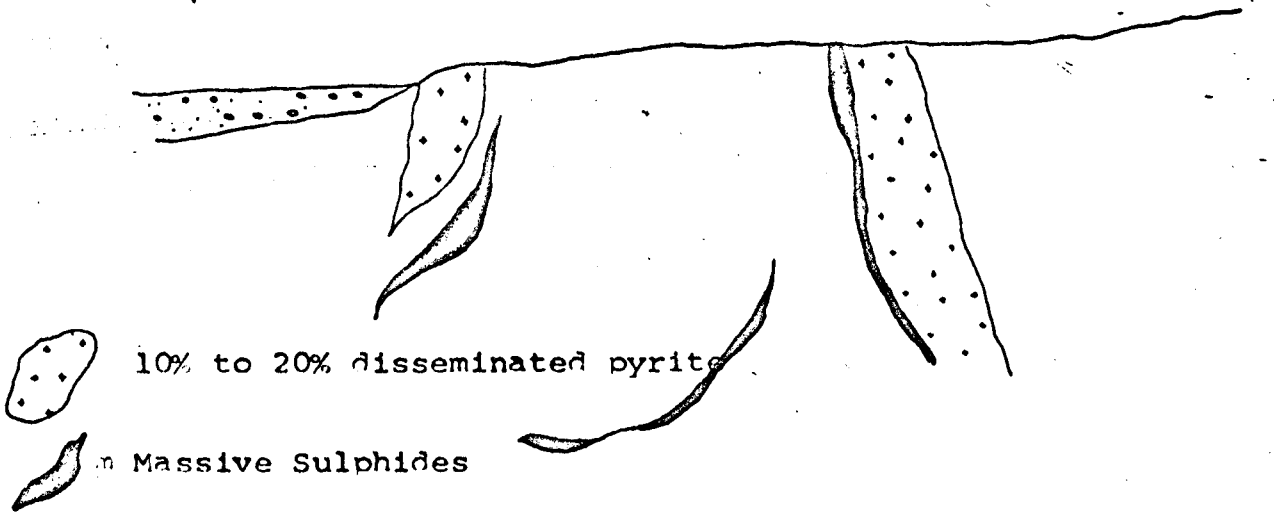
—.— Annapolis 21.4 kcs

- - - - - - Panama 24.0 kcs

—○— True Cross-Over

—⊖— Indicated Cross-Over





10% to 20% disseminated pyrite

Massive Sulphides

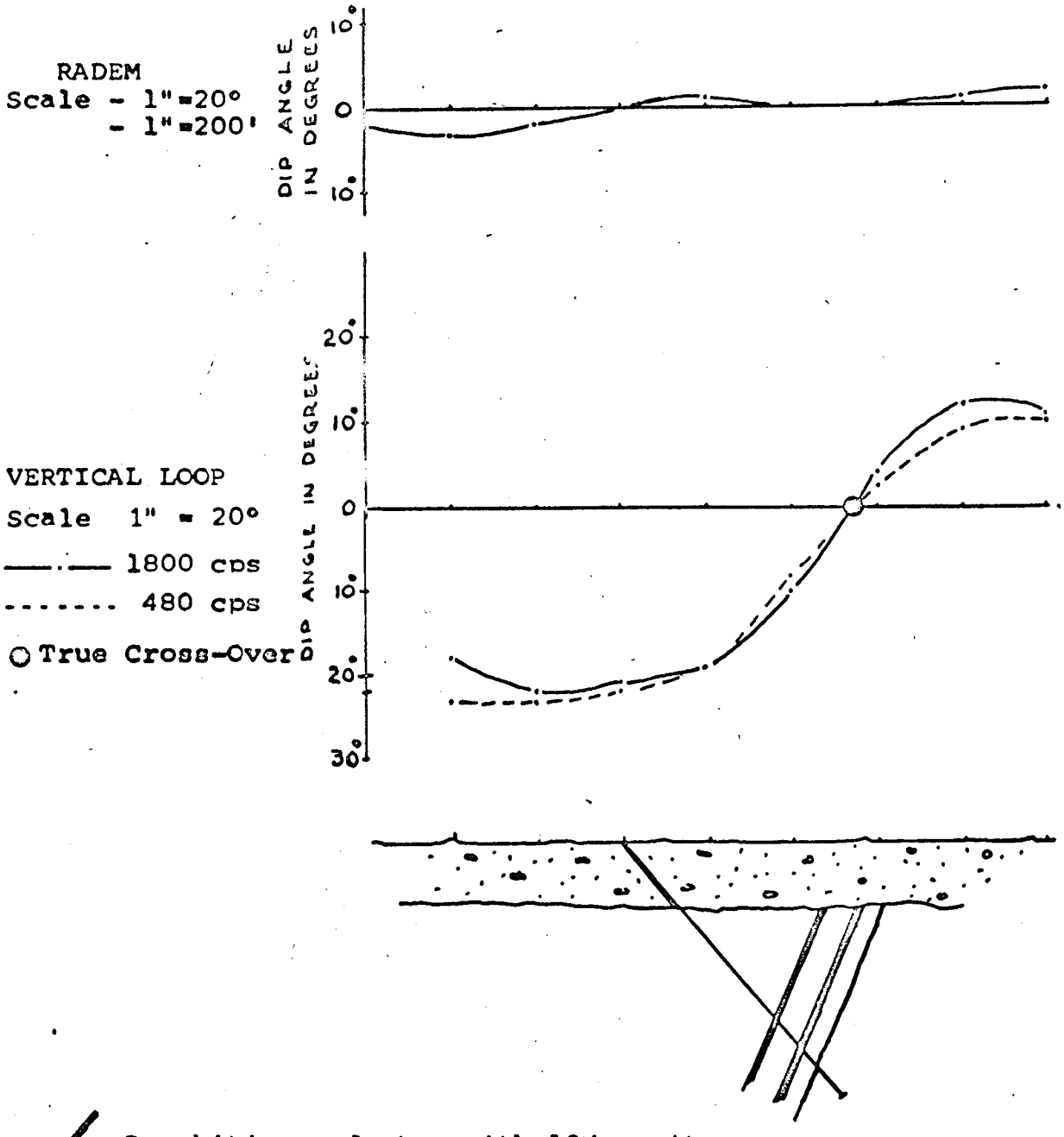
Sizes of ore lenses - 105,000, 135,000 and 280,000 tons

Only one of the ore lenses outcrops

Overburden is shallow over mineralized area.

CASE HISTORY # 1

RADEM AND DUAL FREQUENCY VERTICAL LOOP TRAVERSES OVER AN EXCELLENT CONDUCTOR BURIED AT MODERATE DEPTH (75'), TULLY TOWNSHIP, TIMMINS, ONTARIO.



Depth of overburden = 75'

Overburden extends for at least one mile in all directions

APPENDIX V

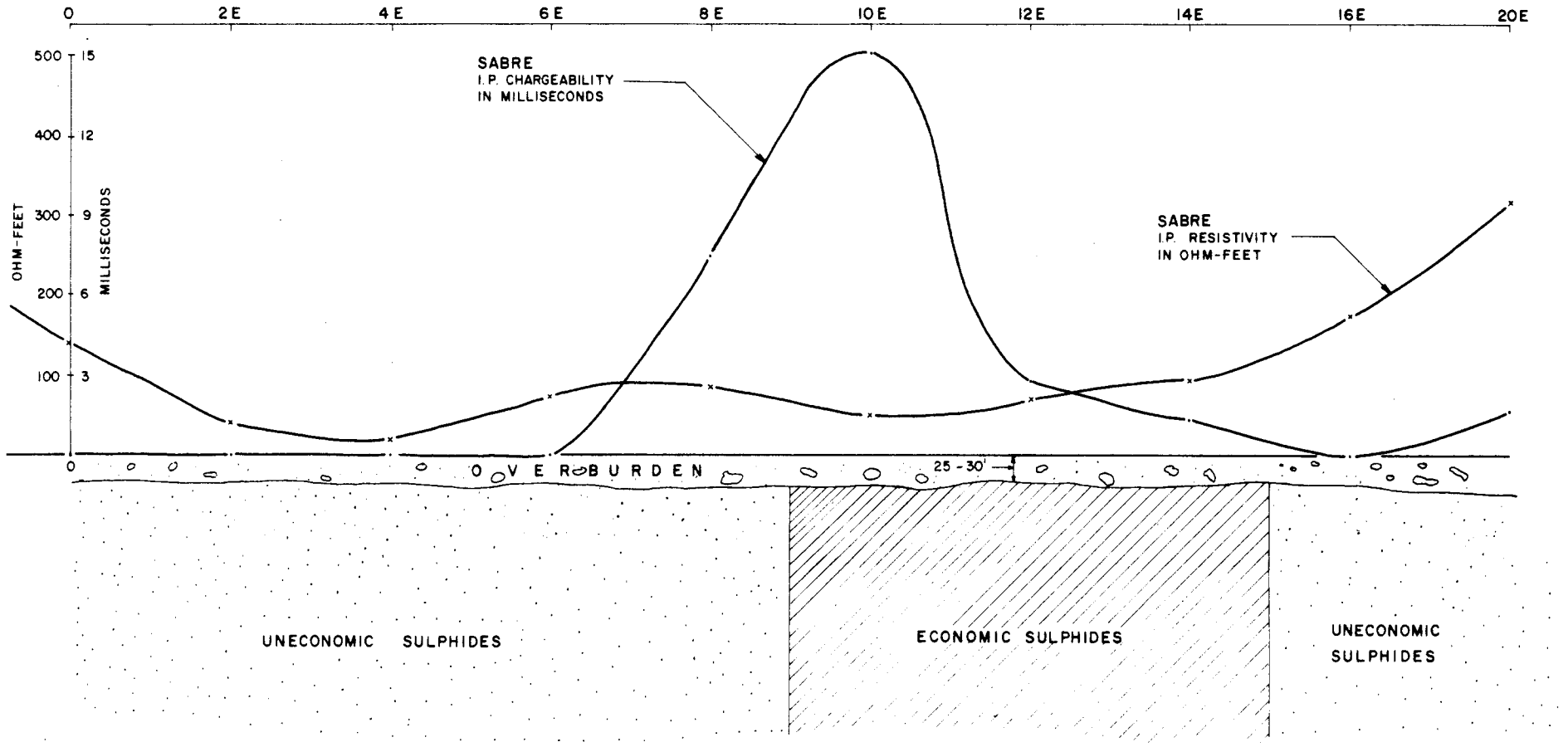
"SABRE" I. P. SPECIFICATIONS

INDUCED POLARIZATION:

The Sabre Portable Pulse Type instrument is a 500 watt unit capable of 3 or 4 hundred foot penetration as shown on the accompanying profiles. Very little reduction in anomaly intensity was noted over the northern limb of Noranda's Newman ore body, where it is covered by 100 feet of glacial till.

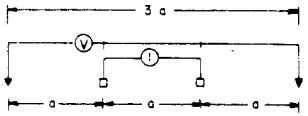
Because of its light weight, the "Sabre" is ideal for reconnaissance work. Using a 400 foot Wenner array, Radem (V.L.F./E.M.), and Magnetometer readings can be taken, soil samples collected, and the chargability and resistivity determined by a 4 man crew simultaneously in open bush without pre-existing lines. Cut lines are necessary only in areas of high magnetic intensity where it is impossible to maintain a straight line by compass.

The "SABRE" at NEWMAN



INSTRUMENT

SABRE - PORTABLE PULSE TYPE
500 WATTS a = 400' WENNER ARRAY



NOTE:

GEOLOGICAL DATA COURTESY OF NORANDA EXPLORATION Co. LTD.

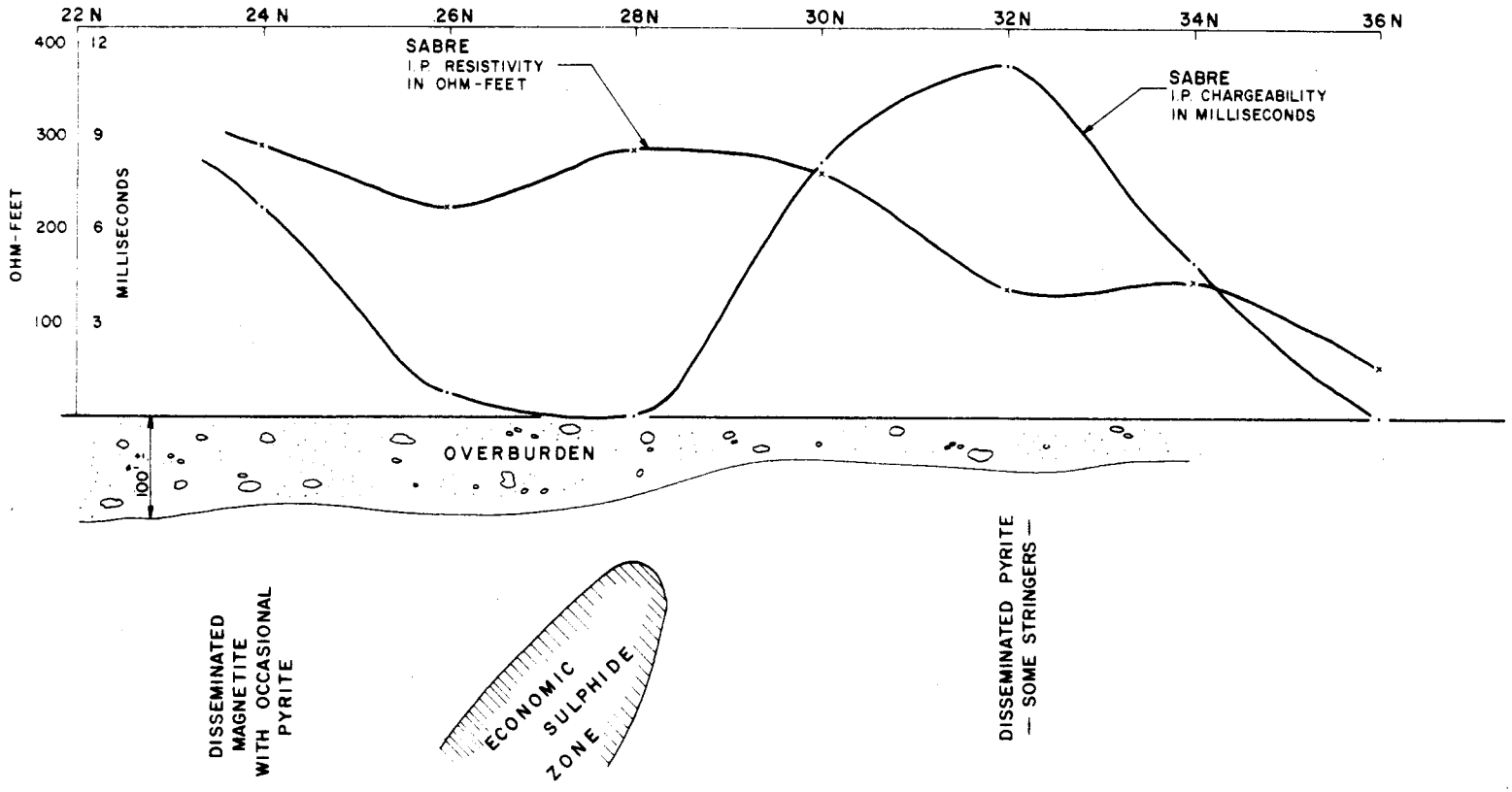
LINE 20 N

NEWMAN PROPERTY

AT

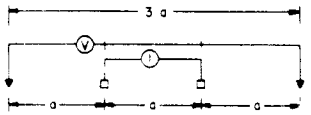
BABINE LAKE, B.C.

Evergreen Explorations Ltd.



INSTRUMENT

SABRE - PORTABLE PULSE TYPE
500 WATTS a = 400' WENNER ARRAY



NOTE:

GEOLOGICAL DATA COURTESY OF
NORANDA EXPLORATION Co. LTD

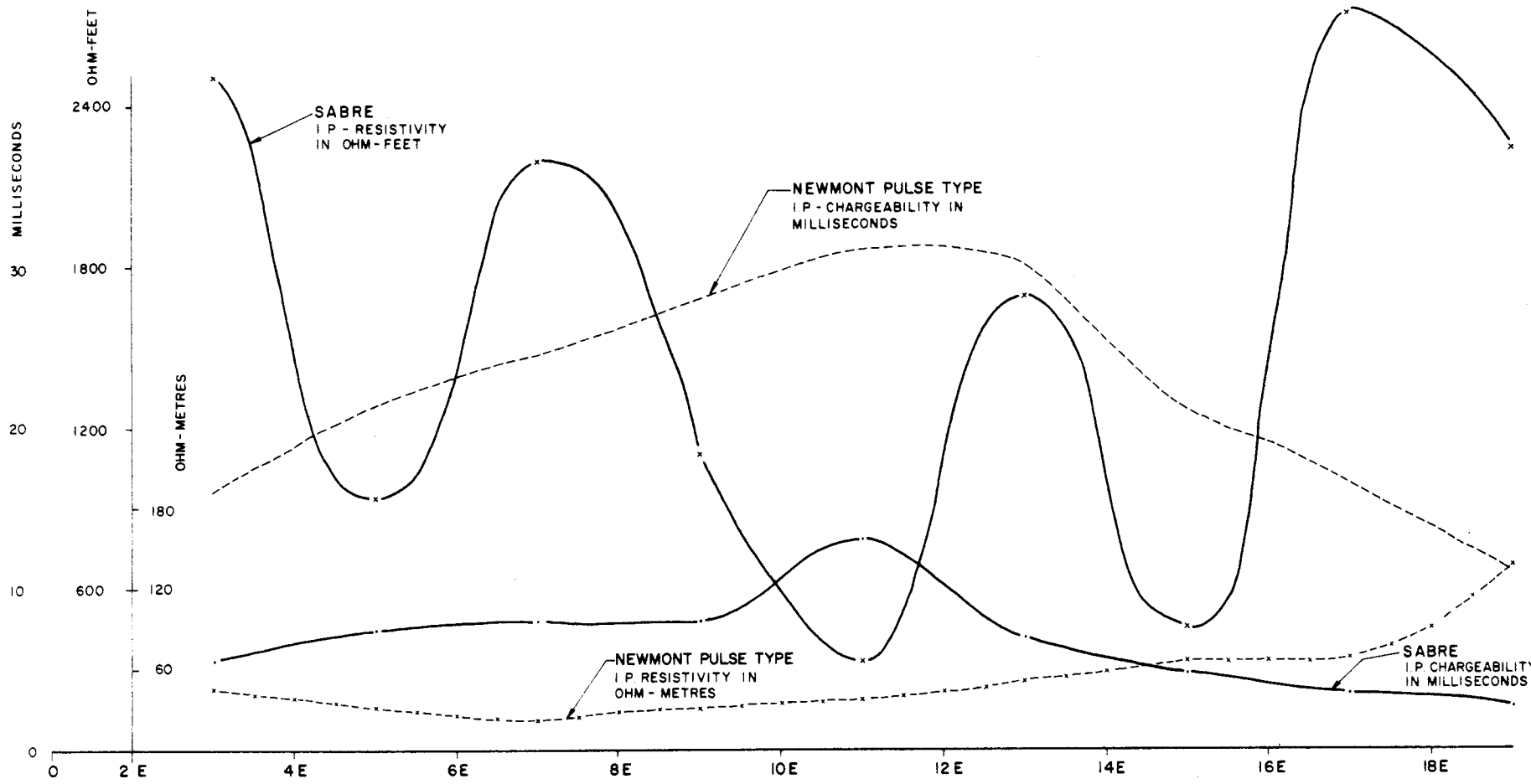
LINE 25 E

NEWMAN PROPERTY

AT

BABINE LAKE, B.C.

Evergreen Explorations Ltd.



INSTRUMENTS:

SABRE - PORTABLE PULSE TYPE
500 WATTS a = 200' WENNER ARRAY

NEWMONT - PULSE TYPE
7500 WATTS n = 1, a = 200' POLE-DIPOLE

NOTE

SURVEY PERMISSION COURTESY OF
CYPRUS EXPLORATION CORPORATION LTD.

LINE 16 N

BIG ONION PROSPECT

AT

SMITHERS, B.C.

Evergreen Explorations Ltd.

Evergreen Explorations Ltd.

- R. WOOLVERTON
  GEOLOGIST, P.ENG.
- R. C. O'BRIEN
  FIELD SUPERVISOR
- JOHN C. OSWALD & CO., C.A.'s
  ACCOUNTANTS:

635 - 789 W. PENDER ST
VANCOUVER 1, B.C., CANADA

CONTRACT EXPLORATION

• 5424 HALIFAX ST., BURNABY 2, B.C., CANADA. PHONE - 299-6998
• P.O. BOX 604, SMITHERS, B.C., CANADA PHONE - 847-3523

1/3 - 113
1/3 - 114
1/3 - 148

RECEIVED
JAN 14 1971

January 11, 1971.

Searchlight Exploration Corporation Ltd.,
c/o Cyrpus Explorations Corp. Ltd.,
510 West Hastings Street,
Vancouver 2. B.C.

I N V O I C E #23 (Bulkley Valley Project)

CHARGES FOR MONTHS OF NOVEMBER AND DECEMBER -

	No. of man days	Rate		
Personnel				
Operators	8	$ 40	$ 240.00	
Helpers	18	25	450.00	
Supervision	2	75	150.00	
			840.00	
Equipment				
Truck	5 days	20	100.00	
Room & board	26	15	390.00	
Disbursements		Chq. #		
B.C. Telephone Co.		854	3.40	V
Sandman Motel (Smithers)		873	72.00	V
Sandman Motel (Smithers)		R.W. #29	10.00	V
Tilden Rent-a-Car		R.W. #29	17.15	V
Sundry meals		R.W. #29	17.38	V
Tilden Rent-a-car		925	103.20	V
B.C. Telephone Co.		853	25.30	V
John C. Oswald & Co.		960	100.00	V
			348.43	
		Total invoice	$1,678.43	

V - copies of incoives attached

Suggested allocation (for your records) -

1/3 Dunalta #113	$ 559.48
1/3 Deep Creek #148	559.48
1/3 anom 5 & 7 New Steady #114	559.47
As above	$ 1,678.43

E & O E John C Oswald & Co.
Accountants

Evergreen Explorations Ltd.

- R. WOOLVERTON
  GEOLOGIST, P.ENG.
- R. C. O'BRIEN
  FIELD SUPERVISOR
- JOHN C. OSWALD & CO., C.A.'s
  ACCOUNTANTS:

635 - 789 W. PENDER ST
VANCOUVER 1, B.C., CANADA

CONTRACT EXPLORATION

- 5424 HALIFAX ST., BURNABY 2, B.C., CANADA, PHONE - 299-6998
- P.O. BOX 88, SMITHERS, B.C., CANADA PHONE - 847-3523

RECEIVED
DEC 4 1970

November 30, 1970.

Searchlight Exploration Corporation Ltd.,
c/o Cyprus Explorations Corp. Ltd.,
510 West Hastings Street,
Vancouver 2. B.C.

INVOICE #22 (Bulkley Valley Project)

CHARGES FOR MONTHS OF AUGUST
TO OCTOBER INCLUSIVE -

	No. of man days		Rate		
Personnel					
Geologist	2		$ 75	$ 150.00	
Operators	9		40	360.00	
				510.00	
Equipment					
Truck	8 days	@	$20	160.00	
Disbursements		Chq. #			
B.C. Airlines		699		11.20	V
B.C. Telephone Co.		701		26.85	V
Sandman Motel (Smithers)		810		50.00	V •
Bulkley Hotel		811		30.00	V •
Lakeside Motel		815		50.00	V •
G.H. Adomeit & Co.		818		10.50	V •
Pacific Western Airlines		Woolverton #27		122.50	V
Cab fare		"		7.00	
				308.05	
• Plus 10% on $140.50				14.05	
				322.10	
		Total invoice		$ 992.10	

V - copies of invoices attached

E & O E

John C Oswald & Co.
Accountants

Evergreen Explorations Ltd.

CONTRACT EXPLORATION

- R. WOOLVERTON
  GEOLOGIST, P.ENG.
- R. C. O'BRIEN
  FIELD SUPERVISOR
- JOHN C. OSWALD & CO., C.A.'s
  ACCOUNTANTS

635 - 789 W PENDER ST
VANCOUVER 1, B.C., CANADA

- 5424 HALIFAX ST., BURNABY 2, B.C., CANADA. PHONE - 299-6998
- P.O. BOX 604, SMITHERS, B.C., CANADA PHONE - 847-3523

August 25, 1970.

Searchlight Exploration Corporation Ltd.,
c/o Cyprus Explorations Corp. Ltd.,
510 West Hastings Street,
Vancouver 2. B.C.

INVOICE #21 (Bulkley Valley Project)

CHARGES FOR JULY -

	No. of man days		Rate		
Personnel					
Geologist	4		$ 75	$ 300.00	
Operators	9		40	360.00	
				660.00	
Equipment					
Truck	3	days @	$ 20	60.00	
Auto	3	days @	10	30.00	
Field and field office				25.00	
				115.00	
Room & board	13 man days @		$ 12	156.00	
Disbursements	**Chq. #**				
Crone Geophysics	582			160.00 •	V
B.C. Telephone Co.	600			27.10	V
Crone Geophysics	608			160.00 •	V
Greyhound Lines	Woolverton # 21			4.50	V
B.C. Airlines	Woolverton # 22			4.00	V
B.C. Telephone Co.	637			9.40	V
				365.00	
• plus 10% on $320.00				32.00	
				397.00	
	Total invoice			$ 1,328.00	

V - invoice attached to be photocopied and returned.

E & O E

John C Oswald & Co
Accountants

Evergreen Explorations Ltd.

CONTRACT EXPLORATION

- R. WOOLVERTON
  GEOLOGIST, P.ENG.
- R. C. O'BRIEN
  FIELD SUPERVISOR
- JOHN C. OSWALD & CO., C.A.'s
  ACCOUNTANTS:

635 - 789 W. PENDER ST.
VANCOUVER 1, B.C., CANADA

- 5424 HALIFAX ST., BURNABY 2, B.C., CANADA, PHONE - 299-6998
- P.O. BOX 604, SMITHERS, B.C., CANADA PHONE - 847-3523

July 23, 1970.

Searchlight Exploration Corporation Ltd.,
c/o Cyprus Explorations Corp. Ltd.,
510 West Hastings Street,
Vancouver 2. B.C.

INVOICE #20 (Bulkley Valley Project)

CHARGES FOR JUNE -

	No. of man days	Rate	
Personnel			
Geologist	11	$ 75	$ 825.00
Geophysical operators	92	40	3,680.00
Helpers	7	25	175.00
			4,680.00
Equipment			
Truck	24 days @	$ 20	480.00
Auto	6 days @	10	60.00
Magnetometer	per mo.		275.00
Sabre I.P	"		300.00
Field and field office	"		350.00
Claim tags (74)			18.50
			1,483.50

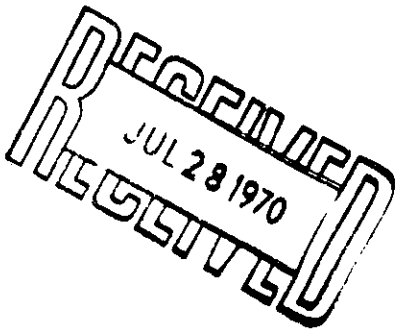
Disbursements	Chg. #		
B.C. Telephone Co.	511	28.60	V
Bulkley Hotel	530	6.75	V ●
Greyhound Lines	Woolverton # 19	3.75	V
Mining Recorder	"	5.00	
B.C. Airlines	"	4.00	V
Greyhound Lines	"	6.45	V
Interior Stationery	"	11.31	V *
Lakeside Motel & Coffee Shop	557	649.65	V *
Lakeside Motel & Coffee Shop	567	361.65	V ●
Lakeside Motel	568	298.30	V ●
John C. Oswald & Co.	569	275.00	V
B.C. Telephone Co.	584	56.40	V
General Store	O'Brien # 12	1.21	V *
Fay's Dept. Store	"	5.48	V ●
B.C. Airlines	"	23.70	V
Mining Recorder	"	340.00	V
Greyhound Lines	Woolverton # 20	4.50	V
	forward	2,081.75	

forward	$ 2,081.75
• plus 10% on $1,334.35	133.44
	2,215.19
Total invoice	$ 8,378.69

V - invoice attached to be photocopied and returned.

E. & O.E.

John C Dwelel & Co
Accountants



Evergreen Explorations Ltd.

- R. WOOLVERTON
  GEOLOGIST, P.ENG.
- R. C. O'BRIEN
  FIELD SUPERVISOR
- JOHN C. OSWALD & CO., C.A.'s
  ACCOUNTANTS

635 789 W PENDER ST
VANCOUVER 1 B.C. CANADA

CONTRACT EXPLORATION

- 5424 HALIFAX ST., BURNABY 2, B.C., CANADA PHONE - 299-6998
- P.O. BOX 604, SMITHERS, B.C., CANADA PHONE - 847-3523

June 16, 1970.

Searchlight Exploration Corporation Ltd.,
c/o Cyprus Explorations Corp. Ltd.,
510 West Hastings Street,
Vancouver 2. B.C.

INVOICE #19 (Bulkley Valley Project)

CHARGES FOR MAY -

	No. of men days	Rate		
Personnel				
Geologist	13	$ 75	$ 975.00	
Geophysical operators	34	40	1,360.00	
Assistants	47	25	1,175.00	
			3,510.00	
Equipment				
Truck	18 days @	$ 20	360.00	
Auto	7 days @	10	70.00	
Magnetometer	per mo.		275.00	
Field and field office			210.00	
Claim tags (20)			5.00	
			920.00	
Disbursements				
Lakeside Motel & Coffee Shop		Chq. 516	290.60	V *
John C. Oswald & Co.		" 526	150.00	V
MacKenzie Travel Service		" 532	152.00	V
Lakeside Motel & Coffee Shop		" 534	314.23	V *
Lakeside Motel		" 535	143.00	V *
Super Value		R.C. O'Brien #11	19.92	V *
B.C. Airlines		R. Woolverton #18	26.66	V
Mining Recorder		" "	100.00	V
Coachways		" "	2.20	V
Coachways		" "	3.75	V
Simon Fraser Inn		M. Thomsen #1	27.00	V *
Free Miners Certificates		"	15.00	V
Famous Restaurant		"	8.83	V *
Simon Fraser Inn		"	6.05	V *
Davy Crockett Inn		"	3.25	V *
			1,262.49	
• Plus 10% on $812.88			81.29	
			1,343.78	

V invoice attached (to be copied and returned)

Total invoice (forward) $ 5,773.78

113/1577.38

EASTERN ASSOCIATES REG'D
Box 3245,
Whitehorse, Yukon.

November 17th, 1970.

IN ACCOUNT WITH:

Cyprus Exploration,
510 West Hastings,
Vancouver, B. C.

RE: Linecutting

L4+00N	55+00W	
L4+00N	15+00E	
L4+00S	55+00W	
L4+00S	15+00E	
TL20+00	4+00S	
TL20+00W	8+00N	
TOTAL AN. 80 A		15,200 ft.
L12+00 NE	40+00	
L12+00 NW	30+00	
L 4+00NE	40+00	
L 4+ NW	30+00	
L 4+00SE	40+ 0	
L4+0 SW	30+00	
TL 5+00E	4+00S	
TL 5+00E	12+00N	
TOTAL AN. 8		22,600 ft.
L 4+00S	50+00W	
L 4+00N	50+00W	
L12+00N	50+00W	
L20+00N	50+00W	
L28+00N	50+00W	
BL30+00W	12+00S	
BL30+00W	36+00N	
TOTAL		29, 0 ft.

L4+00N	45+00W	25+00E	7,000ft.
L4+00S	45+00W	25+00E	7,000ft.
TL10+00	4+00N	3+00S	1,200ft.
TOTAL AN. 81			15,200 ft.
L8+00	60+00E	45+00W	
L8+00	60+00E	45+00W	
L8+00S	45+00E	35+00W	
L8+00S	60+00E	10+00W	
TL30+00E		32+00	
	22,500ft	16,700ft.	
TOTAL AN #7			39,200 ft
		TOTAL FEET	122,000 ft.
==23.106 Miles @ $100.00 per Mile			$2,310.60
Expenses			190.42
TOTAL COST			$ 2,501.02

APPROVED

RECEIVED
NOV 1970

Thanks You

113/604 98

THA

McPHAR GEOPHYSICS LIMITED

139 BOND AVENUE, DON MILLS, ONTARIO, CANADA

PHONE 429-...
TORONTO AREA CODE ...

CABLE-McPHAR
TORONTO

STATEMENT OF COST

Account # 113

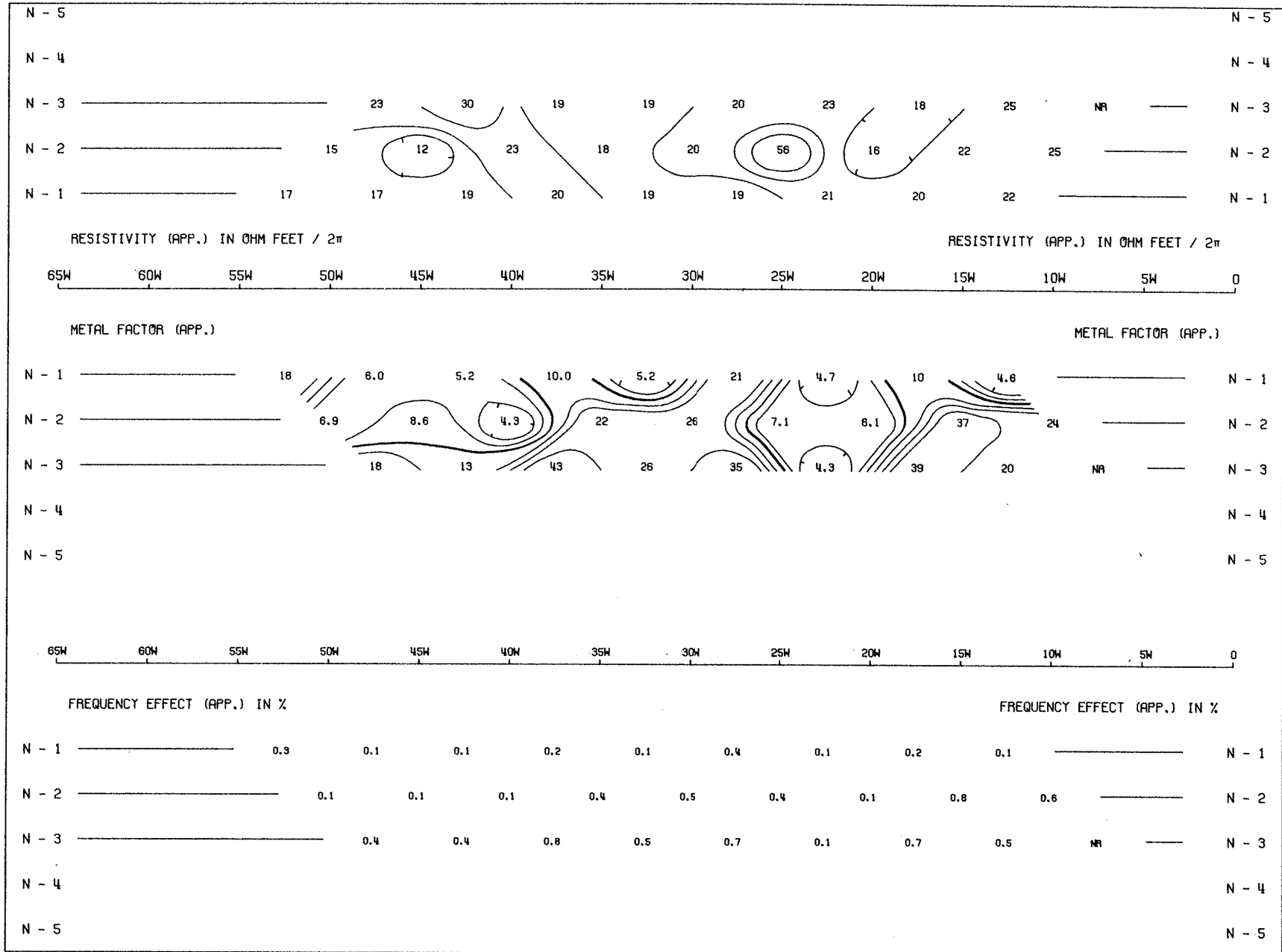
(1) **Searchlight Exploration Corporation**
North Dunalter Property

Date: October 21 - 25, 1970

Crew: 2 men R. Mertens, L. Harrison

Operating:

5 days Operating	@ $240.00/dat	$1,200.00
Expenses for all properties $2,586.28		
Prorated portion for North Dunalter		
5/33⅓ x $2,586.28		386.00
Extra Labour for all properties $4,845.60		
Prorated portion for North Dunalter		
5/33⅓ x $4,845.60		723.22
		$2,309.22



DWG. NO.- I.P.-5678-1

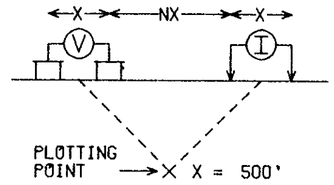
SEARCHLIGHT EXPLORATION CORPORATION

NORTH DUNALTER PROPERTY, BULKLEY VALLEY AREA

OMINECA M.D., B.C.

LINE NO.- 28N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE

PROBABLE

POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1970

APPROVED:

DATE: 2 Feb 71

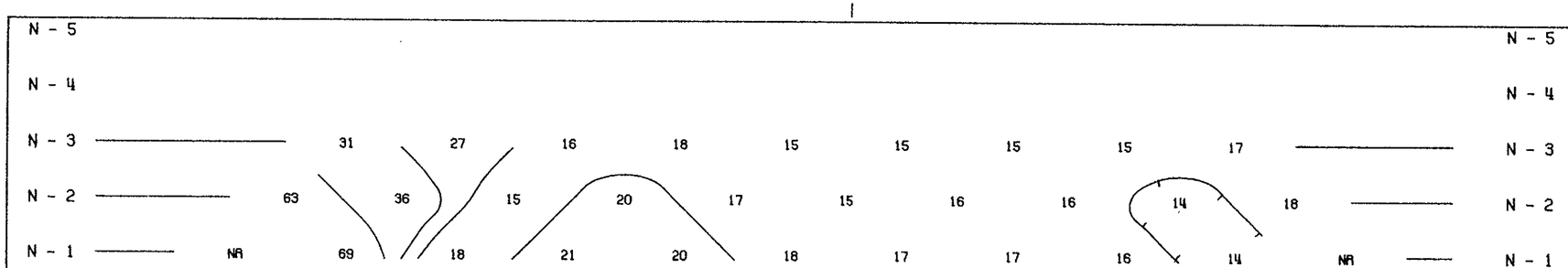
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

3048

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/65 COMPUTER AND A CALCOMP PLOTTER

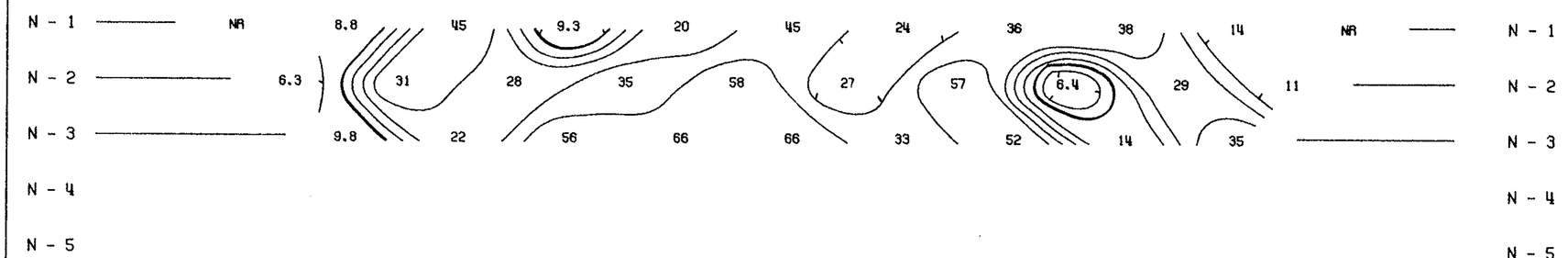


RESISTIVITY (APP.) IN OHM FEET / 2π

RESISTIVITY (APP.) IN OHM FEET / 2π

65W 60W 55W 50W 45W 40W 35W 30W 25W 20W 15W 10W 5W 0

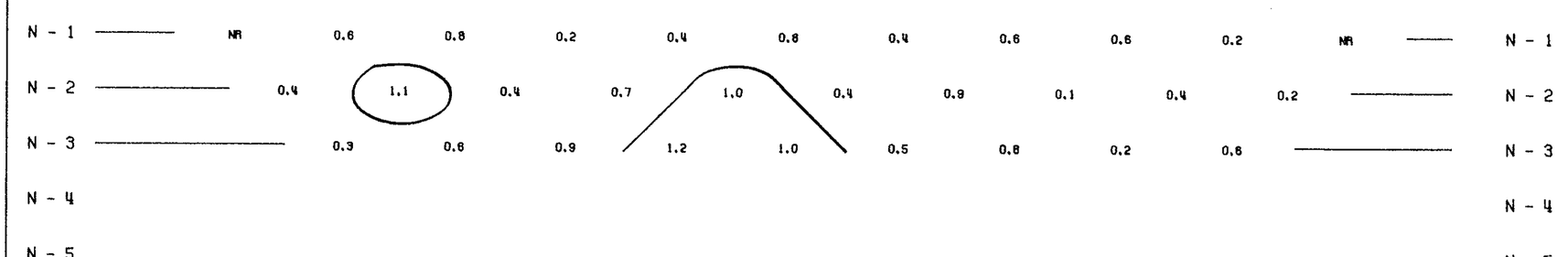
METAL FACTOR (APP.)



METAL FACTOR (APP.)

65W 60W 55W 50W 45W 40W 35W 30W 25W 20W 15W 10W 5W 0

FREQUENCY EFFECT (APP.) IN %



FREQUENCY EFFECT (APP.) IN %

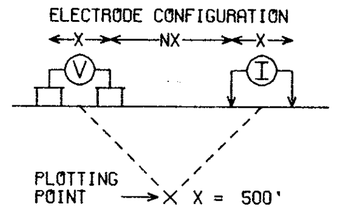
DWG. NO.- I.P.-5678-2

SEARCHLIGHT EXPLORATION CORPORATION

NORTH DUNALTER PROPERTY, BULKLEY VALLEY AREA
OMINECA M.D., B.C.

LINE NO.- 20N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1970

APPROVED:

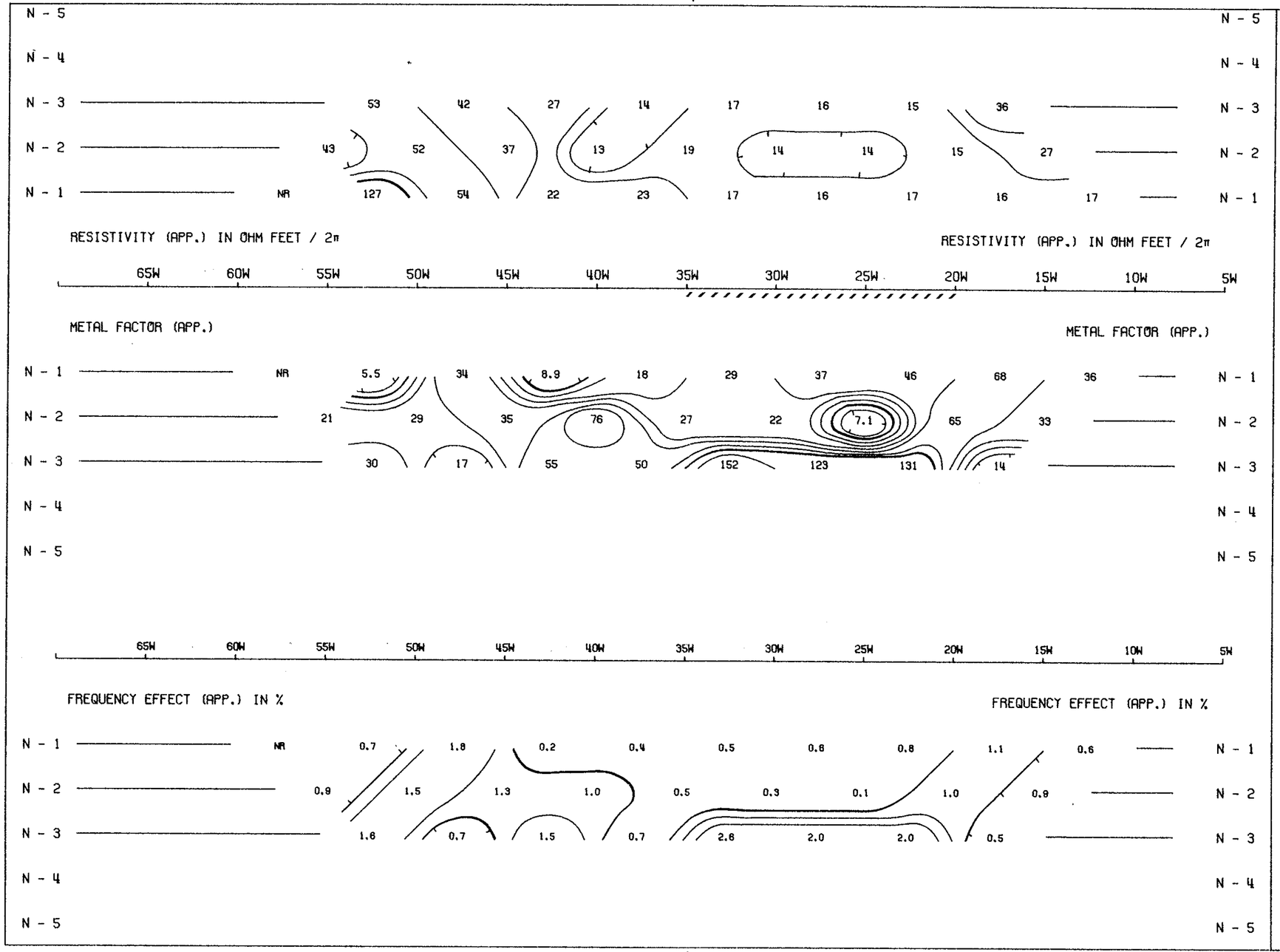
DATE: 2 Feb 71

NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/65 COMPUTER AND A CALCOMP PLOTTER



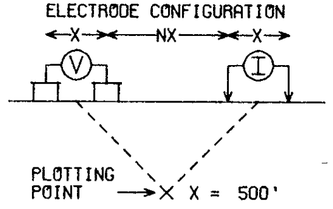
DWG. NO.- I.P.-5678-3

SEARCHLIGHT EXPLORATION CORPORATION

NORTH DUNALTER PROPERTY, BULKLEY VALLEY AREA
OMINECA M.D., B.C.

LINE NO.- 12N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE
PROBABLE
POSSIBLE

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1970

APPROVED:

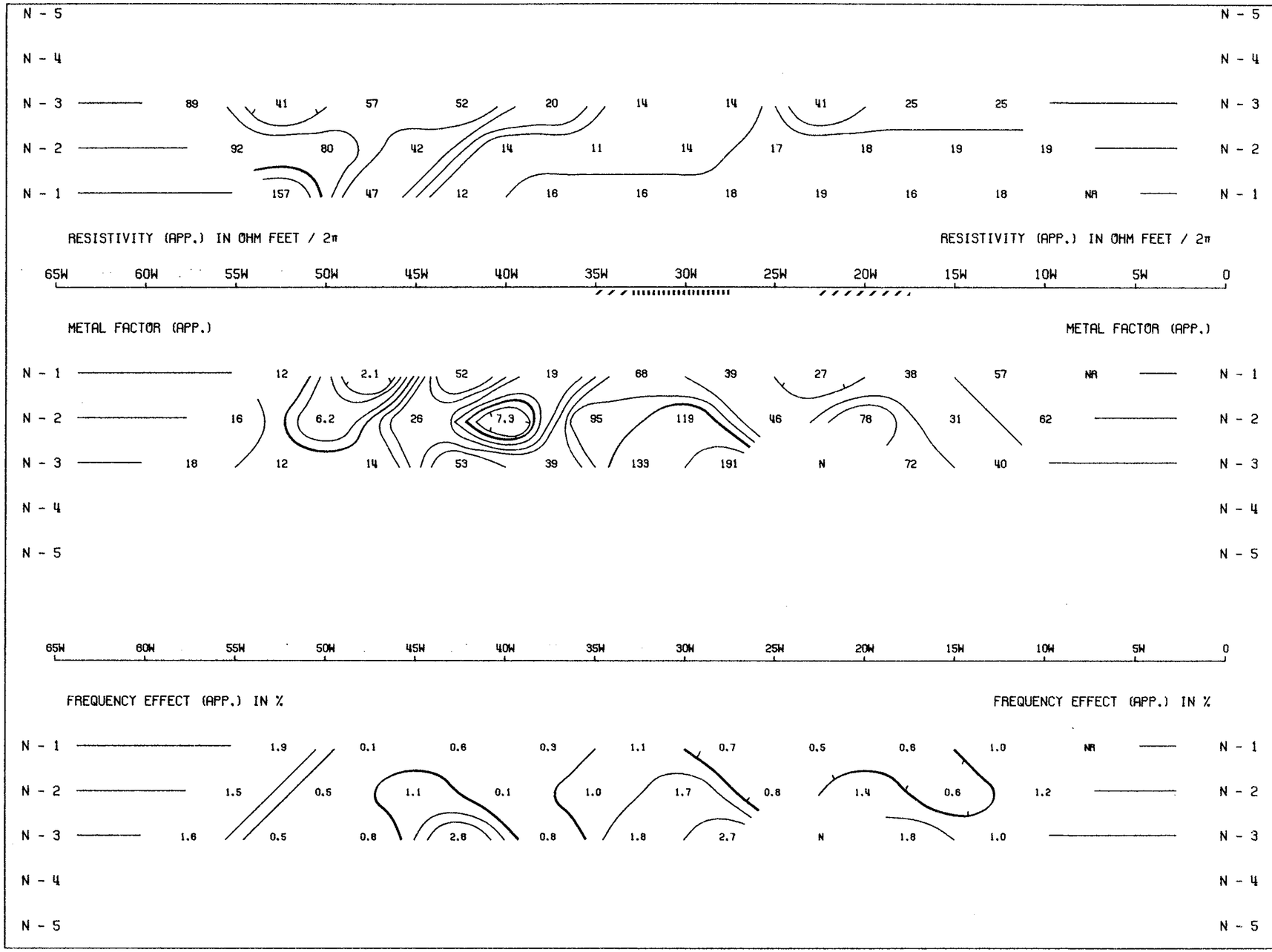
DATE: 2 Feb 76

NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/65 COMPUTER AND A CALCOMP PLOTTER



DWG. NO.- I.P.-5678-4

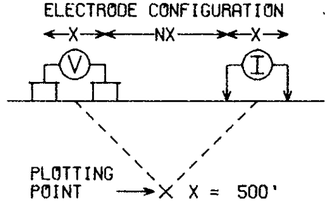
SEARCHLIGHT EXPLORATION CORPORATION

NORTH DUNALTER PROPERTY, BULKLEY VALLEY AREA

OMINECA M.D., B.C.

LINE NO.- 4N

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————

PROBABLE ||||||||||||||

POSSIBLE / / / / /

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1970

APPROVED: Mab

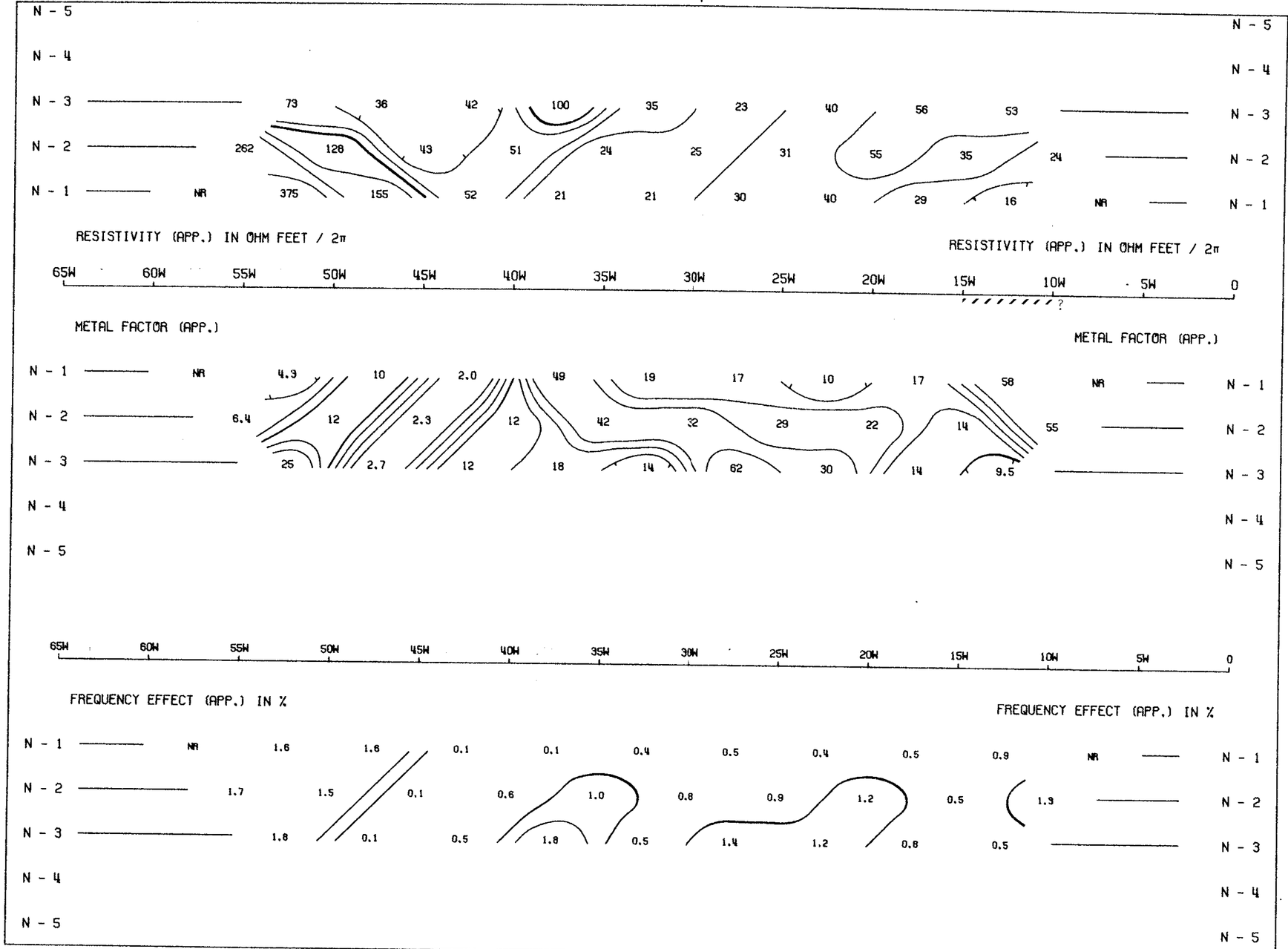
DATE: 2 Feb 71

NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/65 COMPUTER AND A CALCOMP PLOTTER



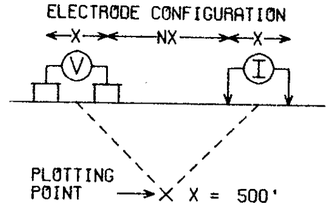
DWG. NO.- I.P.-5678-5

SEARCHLIGHT EXPLORATION CORPORATION

NORTH DUNALTER PROPERTY, BULKLEY VALLEY AREA
OMINECA M.D., B.C.

LINE NO.- 4S

ELECTRODE CONFIGURATION



SURFACE PROJECTION OF ANOMALOUS ZONES

DEFINITE ——————
PROBABLE ··········
POSSIBLE / / / / /

FREQUENCIES: 0.31-5.0 HZ

DATE SURVEYED: OCT 1970

APPROVED: [signature]

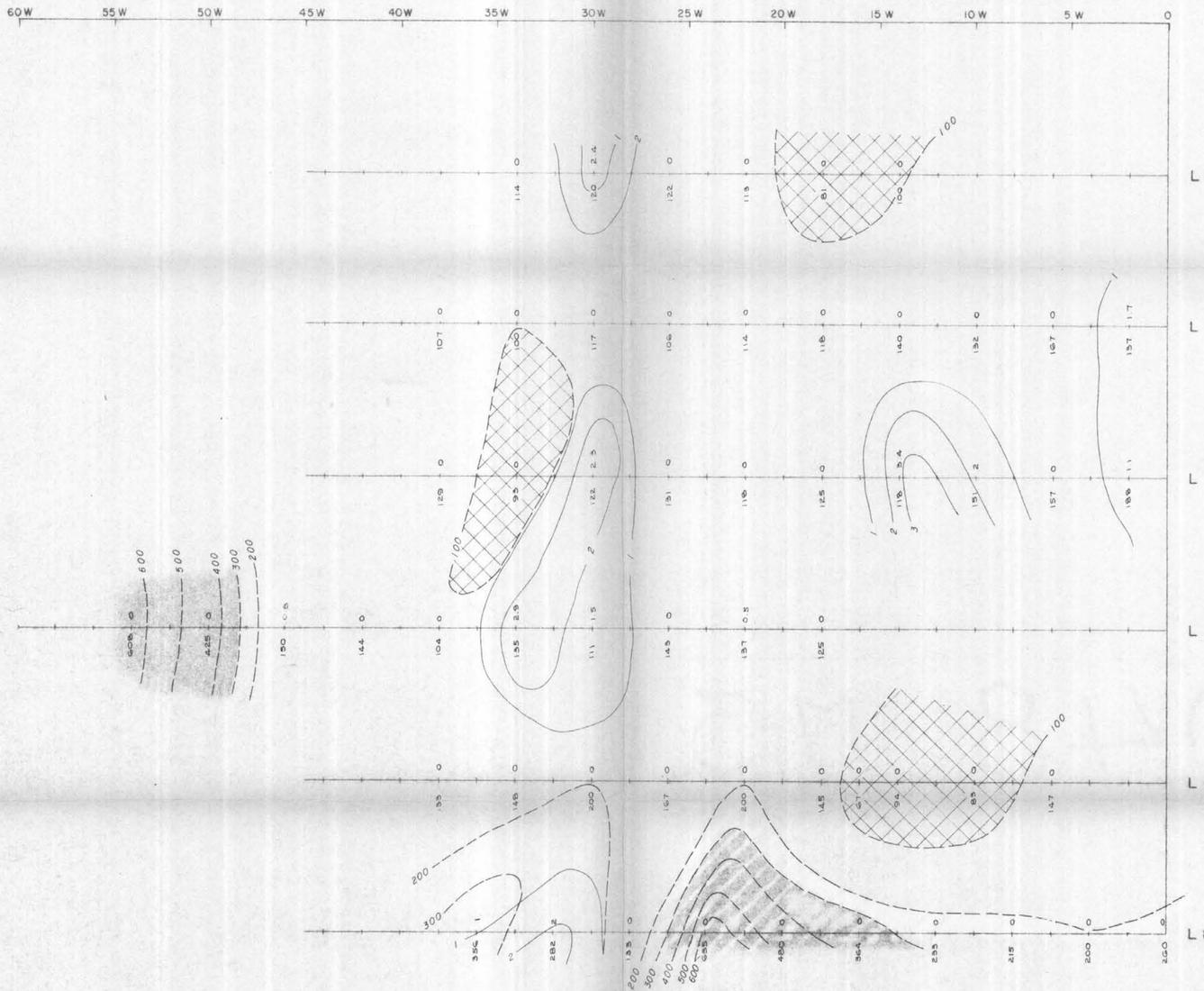
DATE: 2 Feb 71

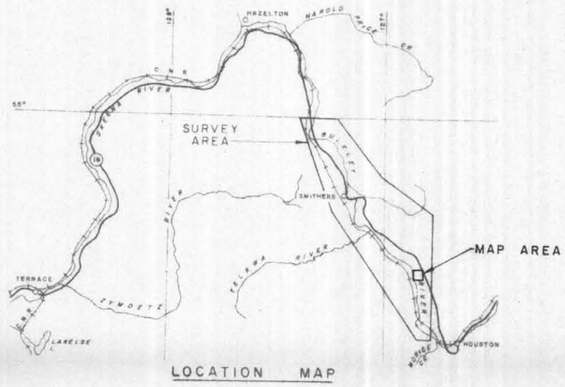
NOTE: CONTOURS AT LOGARITHMIC INTERVALS 1.-1.5-2.-3.-5.-7.5-10

McPHAR GEOPHYSICS

INDUCED POLARIZATION AND RESISTIVITY SURVEY

NOTE: THIS PLOT WAS PRODUCED WITH AN IBM 360/65 COMPUTER AND A CALCOMP PLOTTER

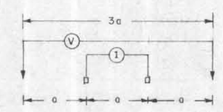




LOCATION MAP

INSTRUMENT

SABRE PULSE TYPE
(TIME DOMAIN)
400 FT. WENNER ARRAY



LEGEND

Grid line and survey station showing chargeability in milliseconds above restivity in OHM-feet below.

1 millisecond chargeability contours

100 OHM-feet resistivity contours

TO ACCOMPANY A GEOPHYSICAL REPORT BY R. WOOLVERTON, P ENG.
ON THE PAT. 1-24, ALICE 9-16, LORENE 1-8 & THE LESLIE 1-30 CLAIMS
DATED June 1, 1971
R. Woolvert

DUNALTER GROUP

3048 M-3

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3048 MAP #3

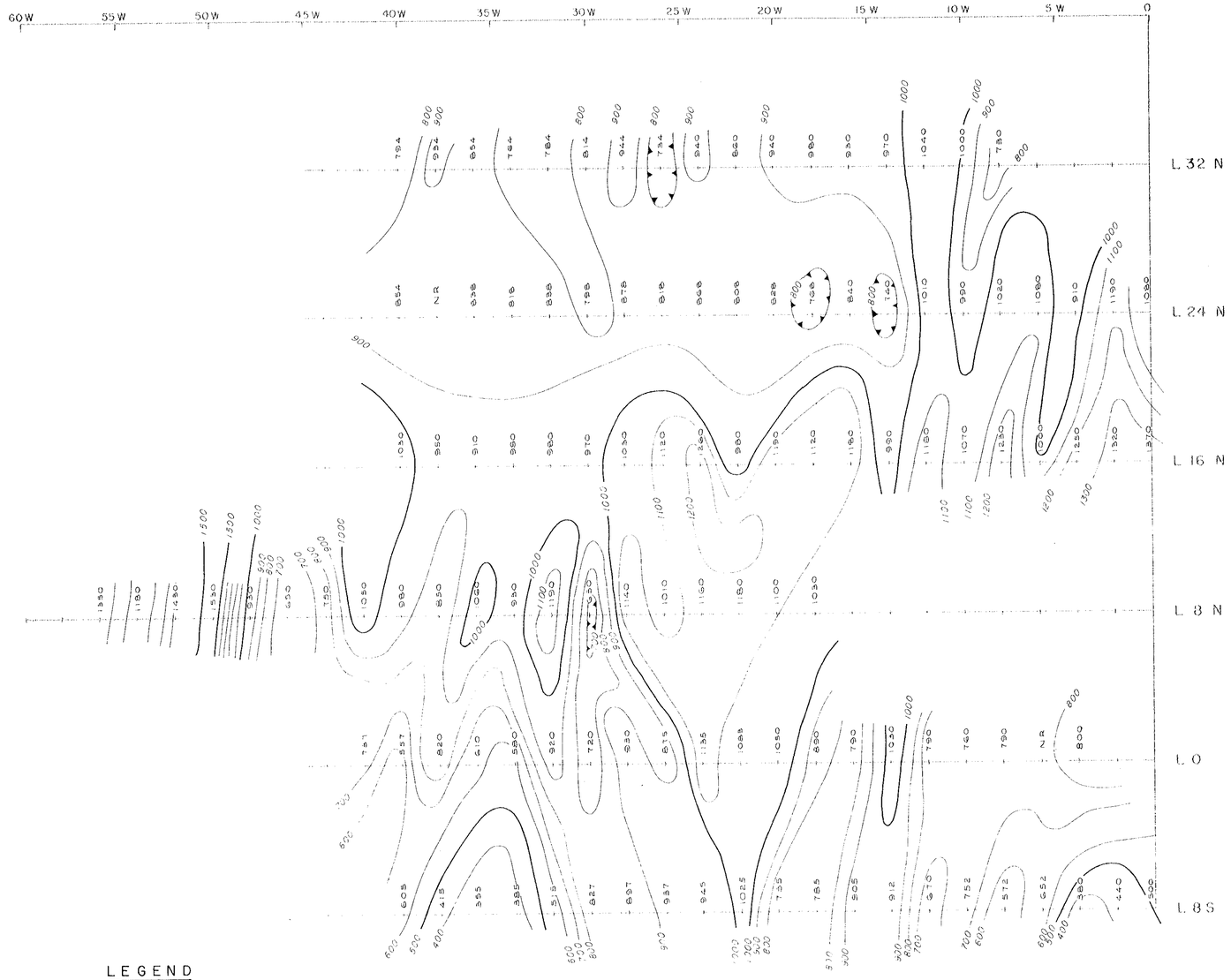
SEARCHLIGHT EXPLORATION CORP. LTD.

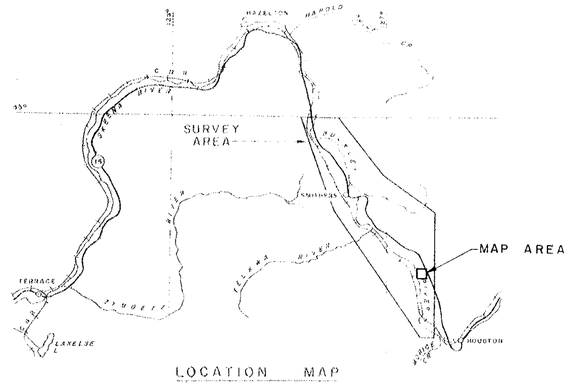
BULKLEY VALLEY PROJECT
ANOMALY Nº's 92, 93A & 95
INDUCED POLARIZATION SURVEY
CONTOUR PLAN
OMINECA M.D., B.C.

400 200 0 400 800
SCALE IN FEET

SURVEY BY EVERGREEN EXPLORATIONS LTD.
MAY - JUNE, 1970

MAP # 1





DUNALTER GROUP

3048 M-4

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3048 MAP #4

SEARCHLIGHT EXPLORATION CORP. LTD.

BULKLEY VALLEY PROJECT

ANOMALY Nº's 92, 93A & 95

MAGNETOMETER SURVEY

CONTOUR PLAN

OMINECA M.D., B.C.

400 200 0 400 800
SCALE IN FEET

SURVEY BY EVERGREEN EXPLORATIONS LTD.
MAY - JUNE, 1970

TO ACCOMPANY A GEOPHYSICAL REPORT BY R. WOOLVERTON, P. ENG.
ON THE PAT 1-24, ALICE 9-16, LORENE 1-8 & THE LESLIE 1-30 CLAIMS
DATED June 1, 1971

R. Woolverton

LEGEND

897 — Grid line and survey station showing magnetic intensity in gammas

Isomagnetic Contours

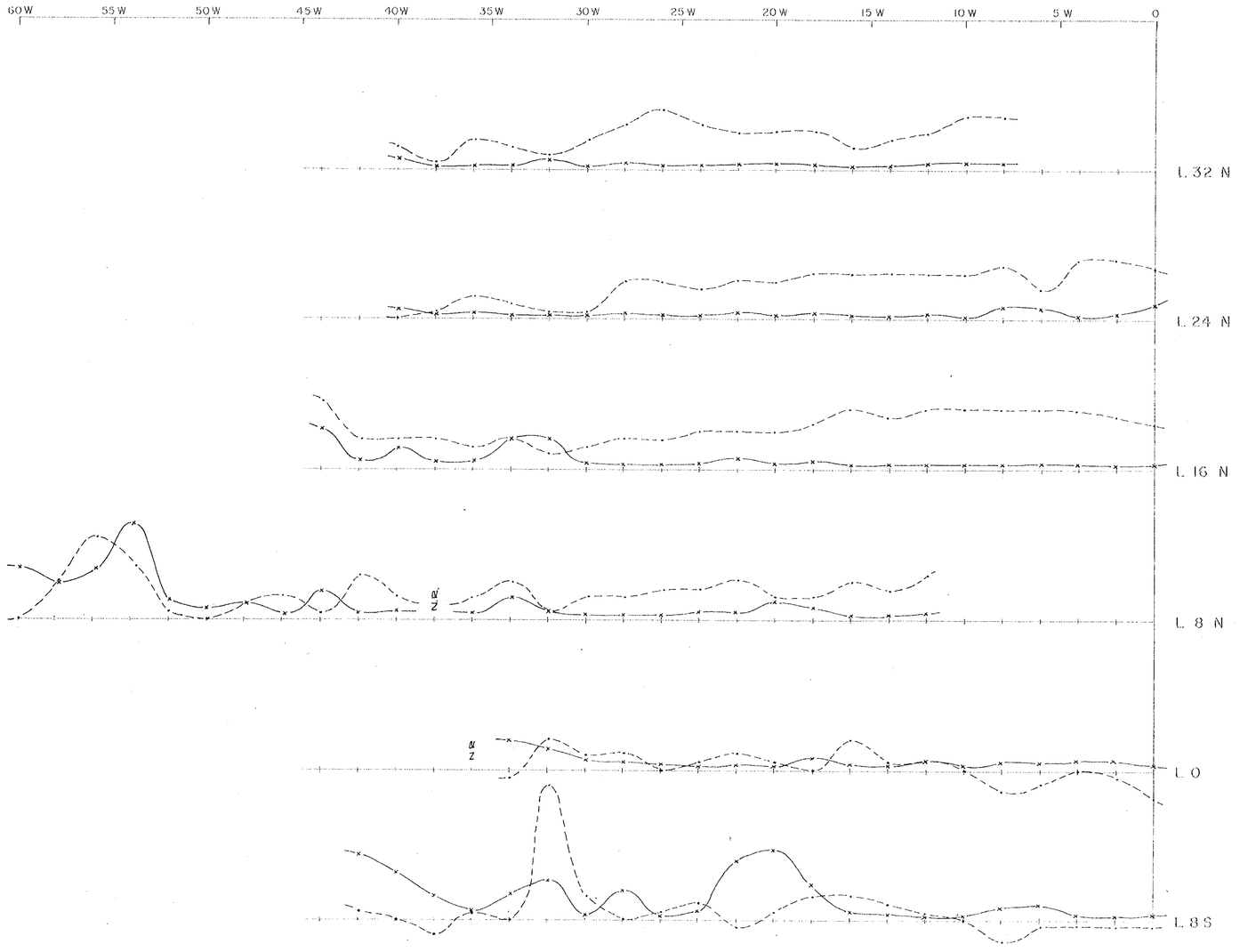
500 gammas

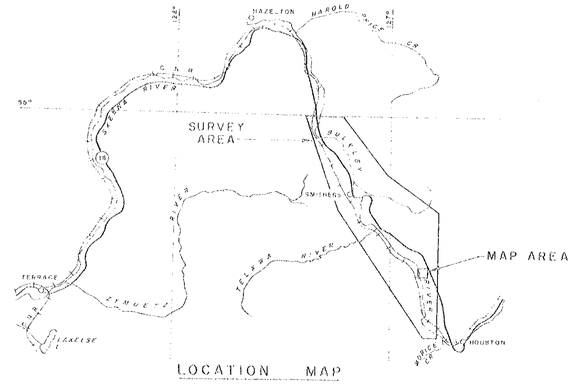
100 gammas

Mag. Depression

Map values in gammas plus 55,000 equals true magnetic intensity.

MAP #2





DUNALTER. GROUP

3048 M-5

TO ACCOMPANY A GEOPHYSICAL REPORT BY R. WOOLVERTON, P. ENG.
ON THE PAT 1-24, ALICE 9-16, LORENE 1-8 & THE LESLIE 1-30
CLAIMS DATED June 1, 1971

R. Woolvert

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3048 MAP #5

SEARCHLIGHT EXPLORATION CORP. LTD.

BULKLEY VALLEY PROJECT

ANOMALY Nº's 92, 93A & 95

RADEM SURVEY

SEATTLE, WASH. FREQUENCY

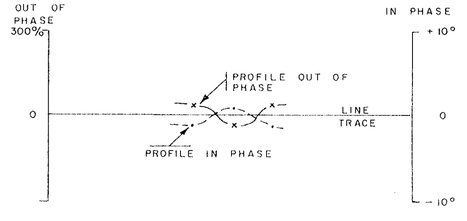
IN PHASE & OUT OF PHASE PROFILES

OMINECA M.D., B.C.

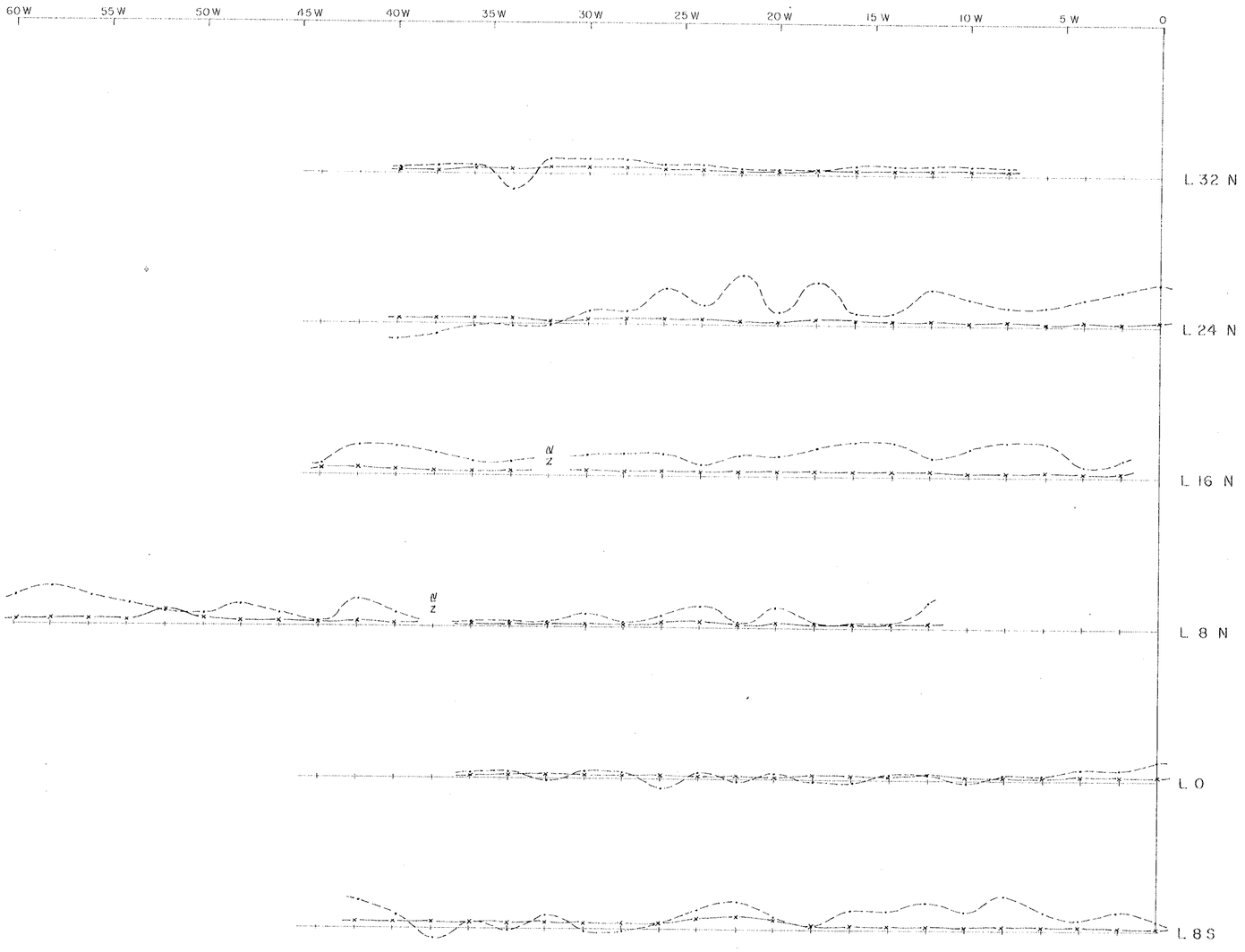
400 200 0 400 800
SCALE IN FEET

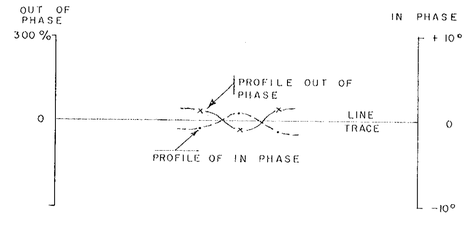
SURVEY BY EVERGREEN EXPLORATIONS LTD.

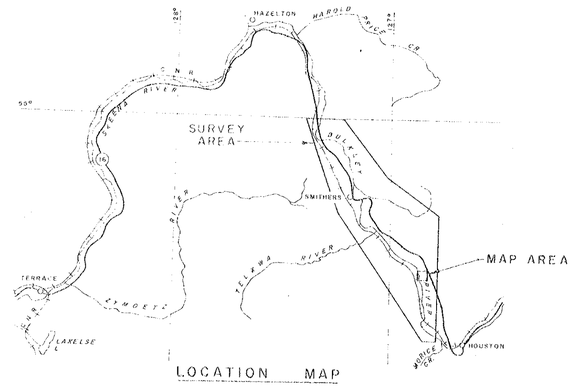
MAY - JUNE, 1970



MAP#3







LOCATION MAP

DUNALTER GROUP

3048 M-6

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 3048 MAP #6

SEARCHLIGHT EXPLORATION CORP. LTD.

BULKLEY VALLEY PROJECT

ANOMALY Nº's 92, 93A & 95

RADEM SURVEY

CUTLER, MAINE FREQUENCY

IN PHASE & OUT OF PHASE PROFILES

OMINECA M.D., B.C.

400 200 0 400 800

SCALE IN FEET

TO ACCOMPANY A GEOPHYSICAL REPORT BY R. WOOLVERTON, P. ENG. ON THE PAT 1-24, ALICE 9-16, LORENE 1-8 & THE LESLIE 1-30 CLAIMS DATED June 1, 1971

R. Woolverton

SURVEY BY EVERGREEN EXPLORATIONS LTD.

MAY - JUNE, 1970

MAP # 4