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1977 GEOPHYSICAL REPORT ON MORICE MOUNTAIN PROSPECT RAIN CLAIMS 1-7

93L/7W

BY:

GARRY M. DEPAOLI GEOPHYSICIST, B.Sc.

DATE:

JUNE, 1977

MINERAL RESOURCES BRANCH
ASSESSMENT REPORT

NO

1977 GEOPHYSICAL REPORT ON MORICE MOUNTAIN PROSPECT RAIN CLAIMS 1-7

located in

NORTHERN BRITISH COLUMBIA

in the

OMENICA MINING DIVISION

approximately

17 KILOMETRES SOUTH OF HOUSTON AT COORDINATES 54°16' N.LAT.; 126°49' W. LONG.

work for

CITIES SERVICE MINERALS CORPORATION

work by

MORRISON I.P. SURVEYS

work period

MAY 5-9, 17,18, 1977

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12 PLAN RESISTIVI	FY N=2	FIGURE 4			IN PO	CKET	
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INTRODUCTION

The Morice Mountain Copper Prospect is located in north central British Columbia. The property consists of the Rain Claims 1-7, containing a total of 18 units and are owned by John Bot of Smithers, B.C. The claims are currently under an option agreement with Cities Service Minerals Corporation and are being investigated for the possibility of a brecciated copper deposit.

During the period May 5-9, 17,18 1977 a total of 14.2 kilometres of induced polarization/resistivity surveying were completed over the property. The work was carried out by Morrison I.P. Surveys upon the request of Cities Service Minerals Corporation and under the direct supervision of D.A. Silversides. The following report describes the instrumentation, field procedure and results obtained from the survey.

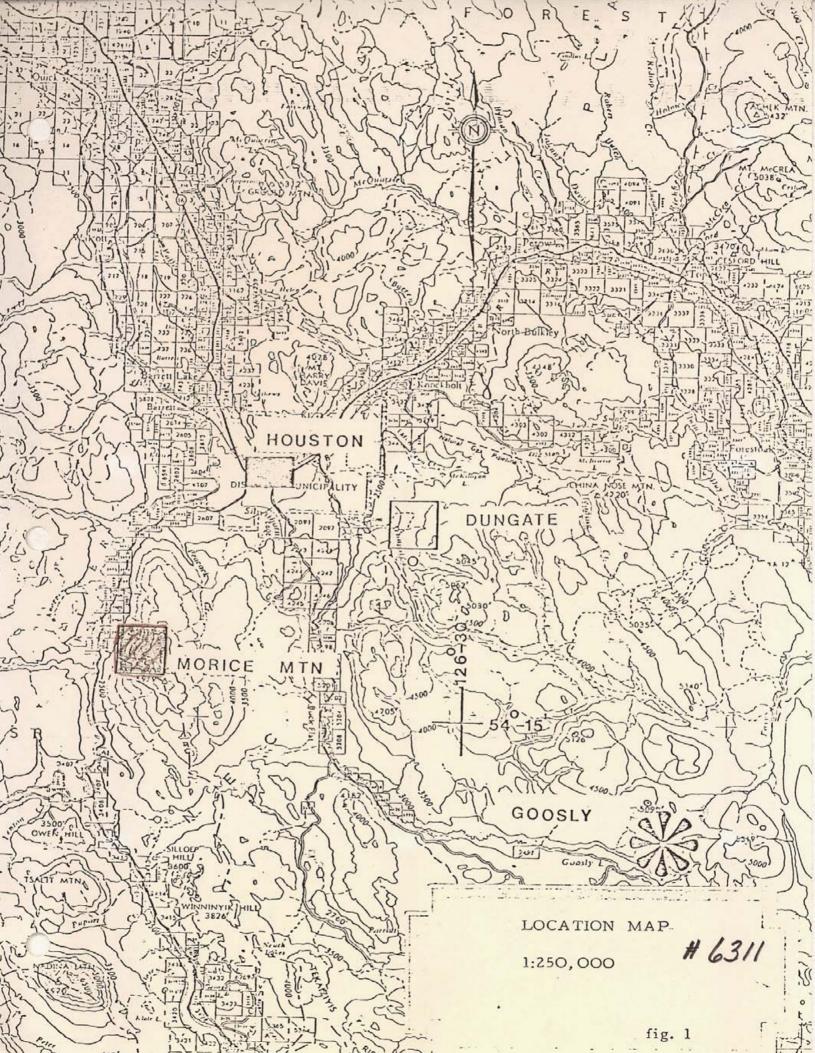
LOCATION AND ACCESS

The Morice Mountain Prospect is located in north central British Columbia approximately 17 kilometres south of Houston. It lies on the west slope of Morice Mountain within the Omenica Mining Division at 54°16' N. Latitude and 126°49' W. Longitude within NTS Block 93 L.

Access is via the Morice Lake Forestry road to mile 11, then via a bush road requiring a four wheel drive vehicle.

GRID CONTROL

The control grid consists of 15 kilometres of cut, chained and flagged lines. The baseline strikes east-west and extends



for 1.35 kilometres. It is labelled as 90 N. Ten perpendicular crosslines spaced 150 metres apart were surveyed. Emplacement of the grid was done by line of sight picketing.

GENERAL GEOLOGY

The property is underlain by a volcanic sequence of basic to rhyolitic tuffs and flows of the Jurassic Hazelton Group. Several small stocks of quartz-feldspar porphyry and porphyritic granodiorite of Eocene age intrude the volcanics.

Several copper, copper-molybdenum and copper-zinc showings are known on the Claim Group which have received previous exploration work. The current area of interest is focused on a north breccia zone consisting of angular fragments of lithic tuff healed by quartz-pyrite-chalcopyrite.

INDUCED POLARIZATION SURVEY

INTRODUCTION AND THEORY

Geologic mapping over most of the area of interest is hindered by extensive overburden. Two preliminary I.P. traverses conducted in the late summer of 1976 over the exposed breccia revealed that it was weakly polarizable and had a high apparent resistivity. As a result a more comprehensive I.P. survey was undertaken to define the limits of the breccia. Apparent resistivity data taken concurrently is useful in inferring overaburden depths, defining abrupt lithological changes and assessing the importance of any I.P. effects obtained.

The term induced polarization means the electrical separation

(ie. separation of charges) induced by an applied electric field. The cause of this polarization is changes in the mobilities of ions within a rock. At the interfaces between zones of different mobilities, excesses or deficiences of ions occur; the concentration gradients developed oppose the current flow and cause a polarizing effect. When mineral grains block the pore passages of rocks and a current is applied, a concentration of ions builds up at the electrolyte (water) - metal interface while awaiting an electrochemical reaction which must occur before the electric charge can be transferred from an ion in the electrolyte to a free electron in the metal. The forces which oppose the current flow are said to polarize the interface and the added voltage necessary to drive the current across the barrier is known as overvoltage.

It takes a finite time to build up overvoltage and one finds that the impedances of the zones (Warburg Impedance) decreases with increasing frequency. In the frequency domain system that was employed the decrease in the Warburg Impedance was measured between current applied at 0.3 and 5.0 hertz.

INSTRUMENT AND PROCEDURE

A multiple frequency McPhar induced polarization system, Model P660, was employed in measuring the polarization and resistivity parameters. The transmitter is a manually variable voltage source. The output current can be selected from both polarities and varies from direct current to automatically alternating output frequencies of 0.05, 0.1, 0.3, 1.25 and 5.0 hertz. Power was obtained from a $2\frac{1}{2}$ KW - 400 hertz motor generator. The maximum output current for the transmitter is 5.0 amp., while the maximum output voltage is 690 volts.

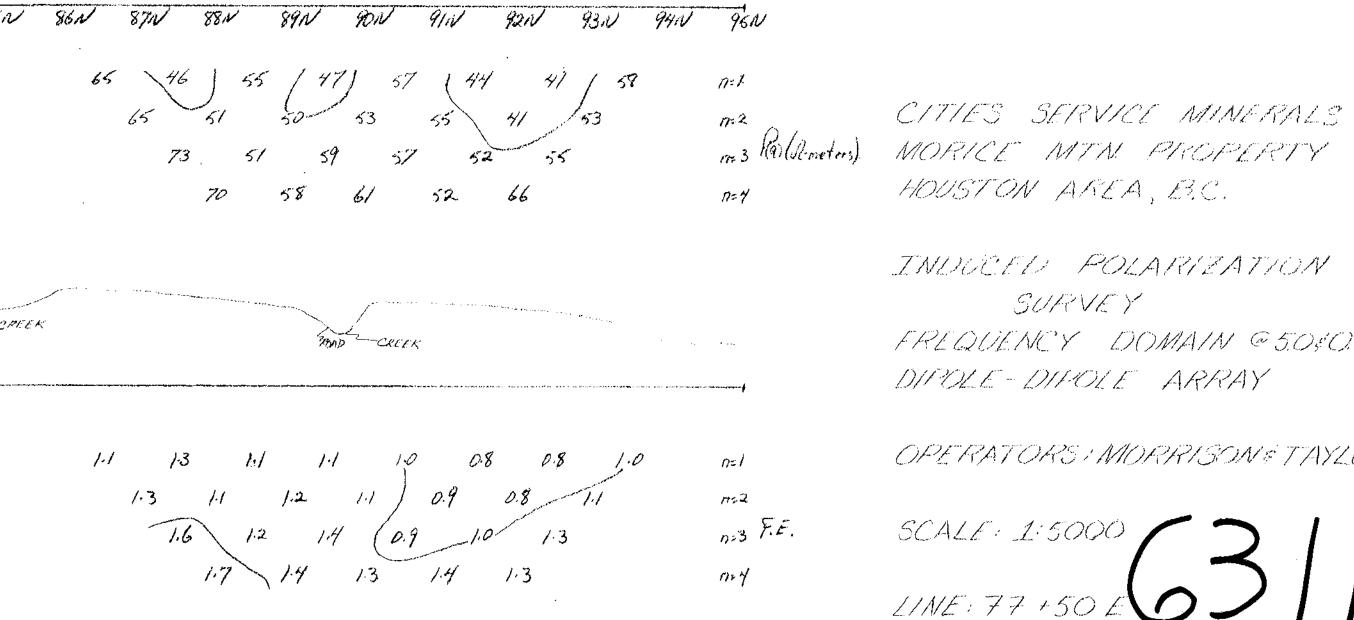
The receiver employed was the A.C. P660 Model. This is a potentiometer type where the amplified and filtered signal is compared with a reference voltage. It is powered by six 9 volt alkaline transistor batteries and draws 7.5 ma. Total weight including carrying case and batteries is 2.2 kilograms.

A symetrical in line dipole-dipole array was employed in the survey. The dipole length was 100 metres and measurements were taken to 4 separations (N=1,2,3,4). Survey procedure required the preparation of a "set-up" station near the center of each line. The transmitter and its motor generator power supply remained stationary at the set-up position and wires in increasing 100 metre intervals were strung out in both directions. Care was taken to ensure that the wires were well separated to prevent inductive coupling effects. The ends of the wires were connected to 4 foot stainless steel rods which had been hammered into the ground. Where possible the receiving dipole alto utilized the stainless steel rods for electrode connections. Once the receiver dipole moved past the last steel rod ground connections were made via porous pots. Radio contact between the receiver and transmitter operators coordinated power on and off periods.

PRESENTATION OF DATA

The data is plotted in 13 pseudosections, Figures 3 (a-m) after Page 9. The pseudosections are verical profile plots displaying apparent resistivities in ohm metres and percent frequency effect values. All of the pseudosections are plotted on a scale of 1: 5,000 except for Figure 3c. Here a segment of Line 77+50 E was resurveyed employing a 300 metre dipole length and this data is plotted on a scale of 1: 15,000. Contoured plan maps of the second separation (N=2) apparent resistivity and percent frequency effect data have also been prepared in Figures 4 and 5 respectively. An interpretation of the data is presented in Figure 6.

LINE 77+50E.



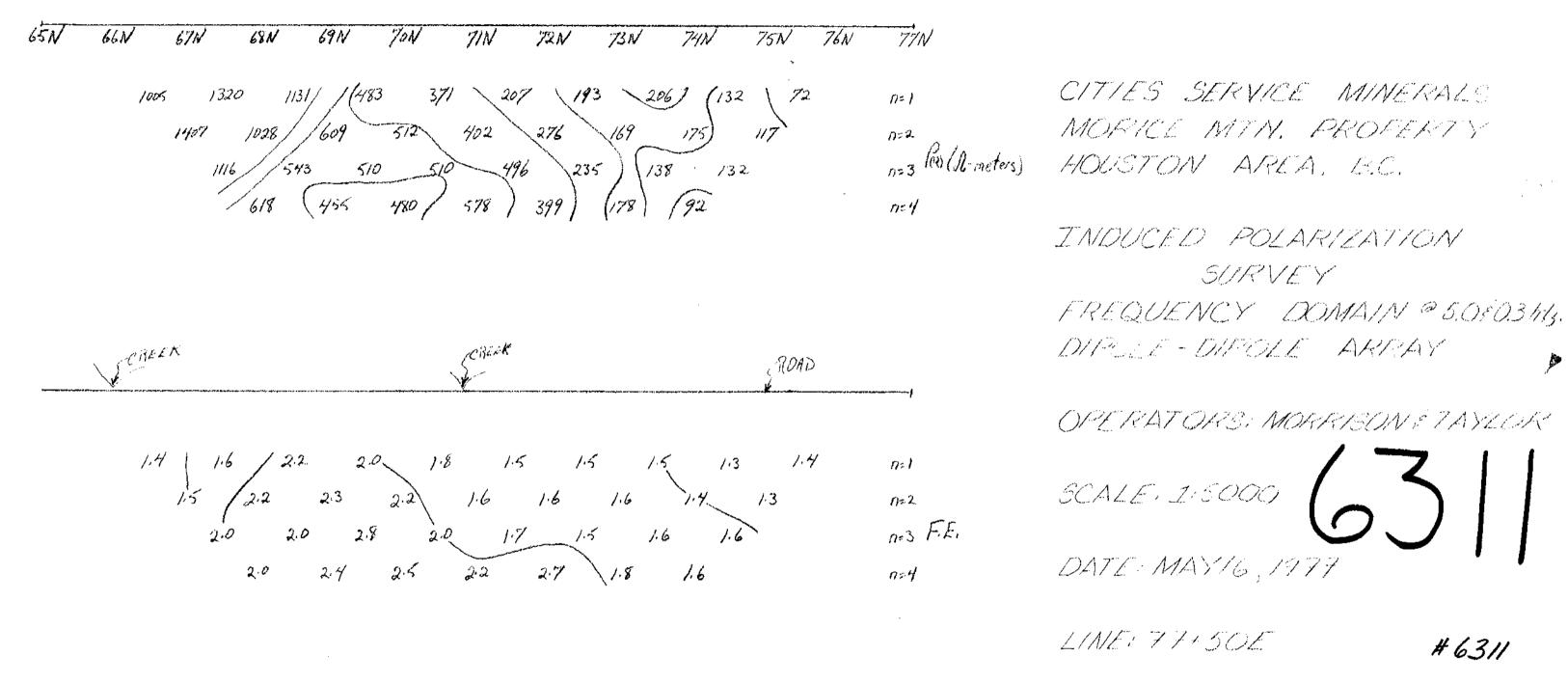
HOUSTON AREA, B.C.

INDUCEO POLARIZATION SURVEY FREQUENCY DOMAIN @ 5.0\$0.3113. DIPOLE - DIFFOLE ARRAY

OPERATORS: MORRISON & TAYLOR

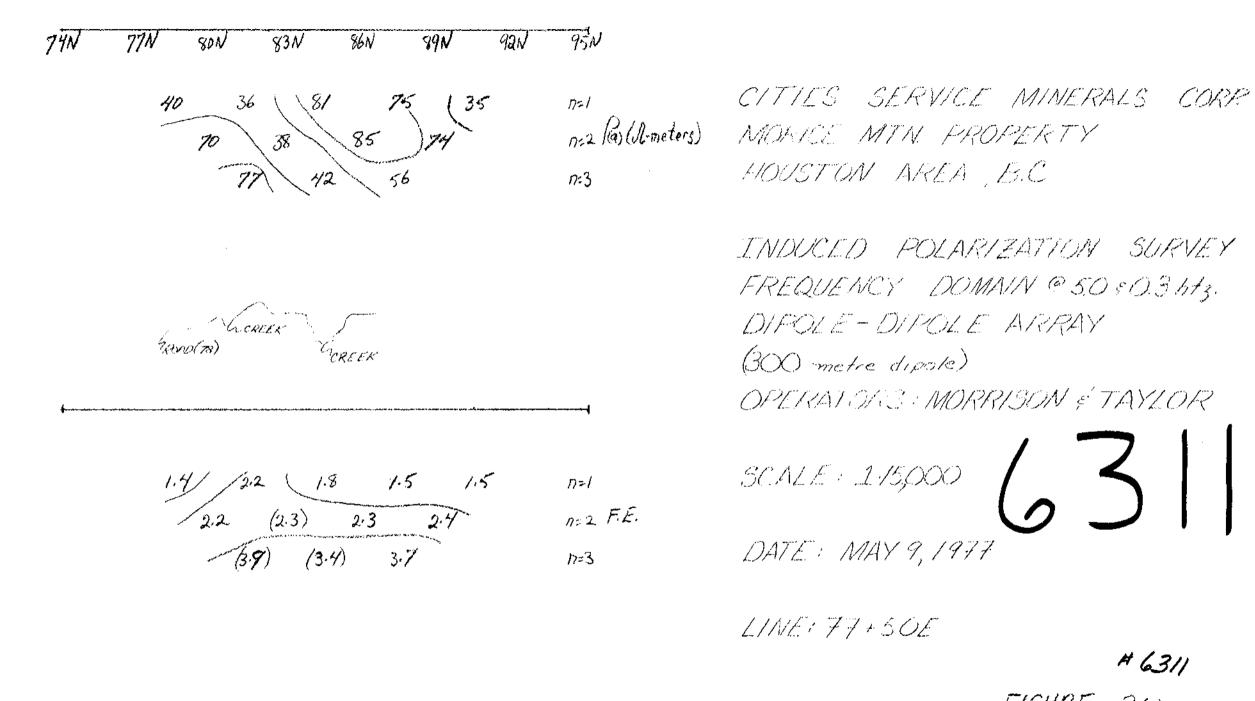
DATE: MAY , 1977

FIGURE 3 (a)



LINE 77+50E.

FIGURE 3(6)

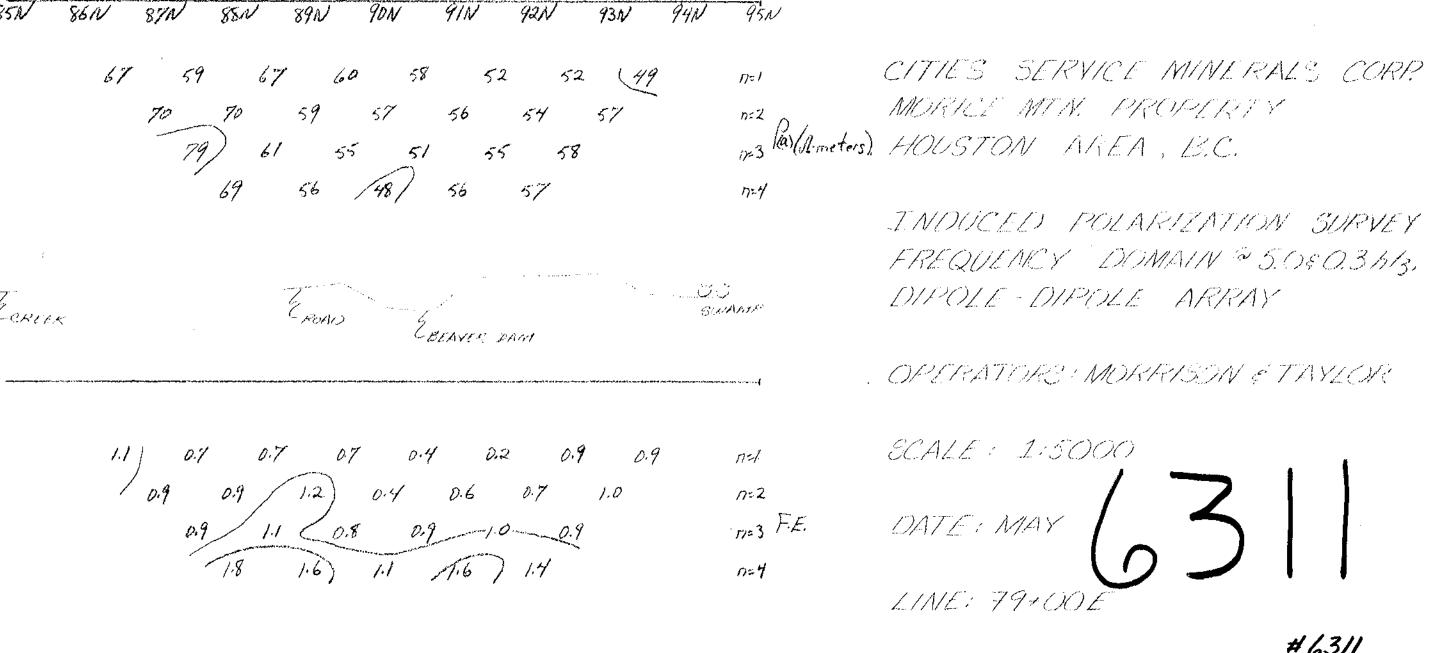


LINE 77+50E

FIGURE

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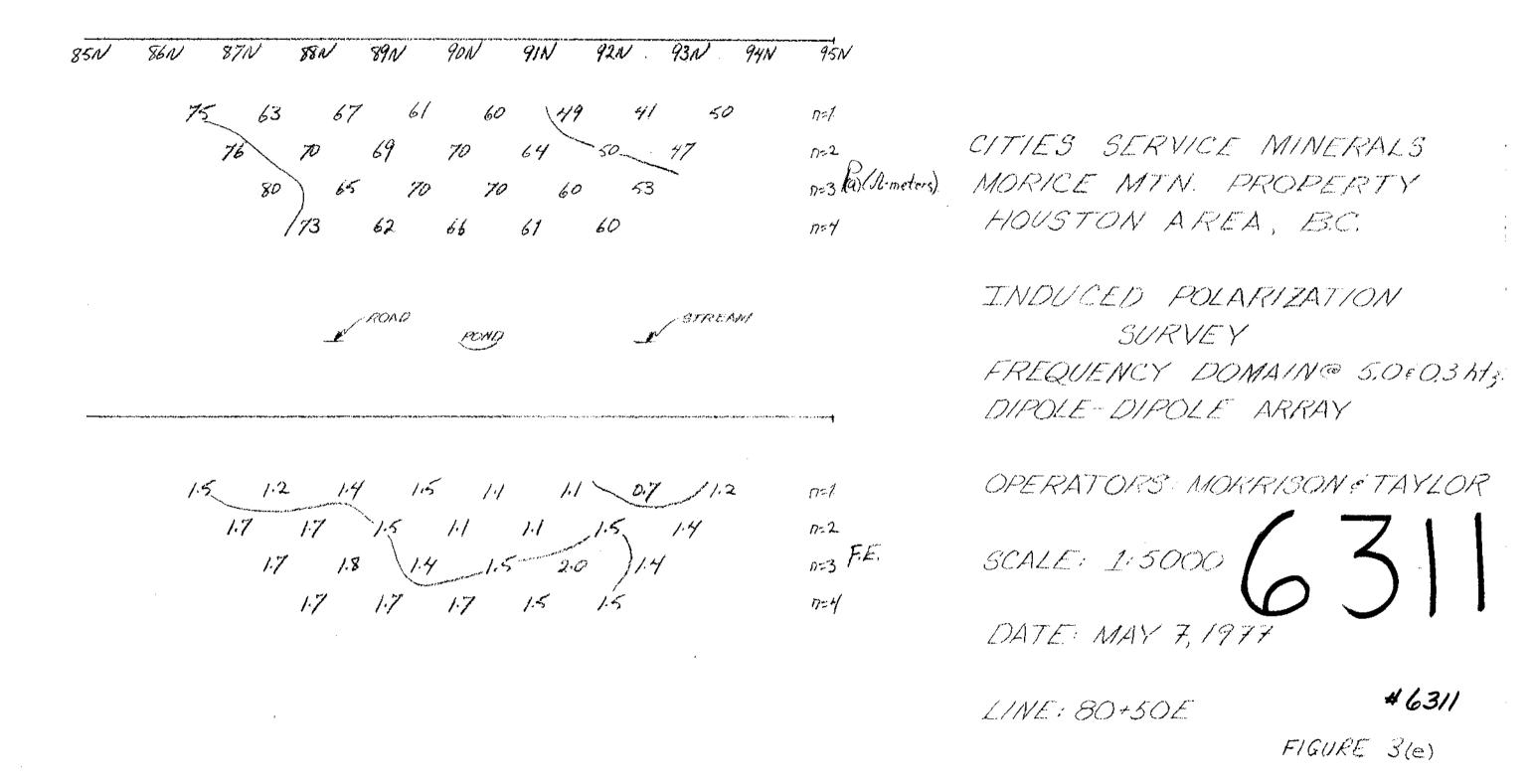
LINE 79+00 E.



#6311

FIGURE

LINE 80+50E.



LINE 82+00E.

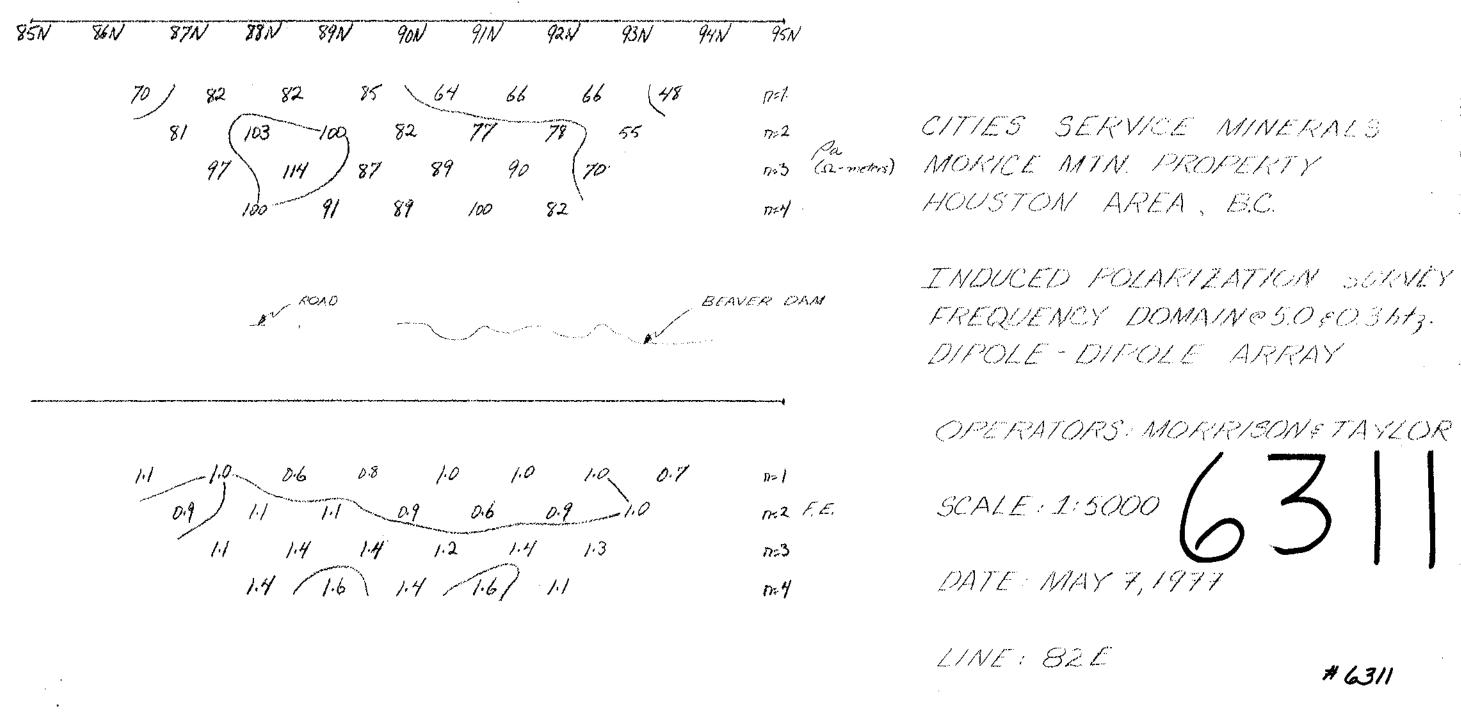
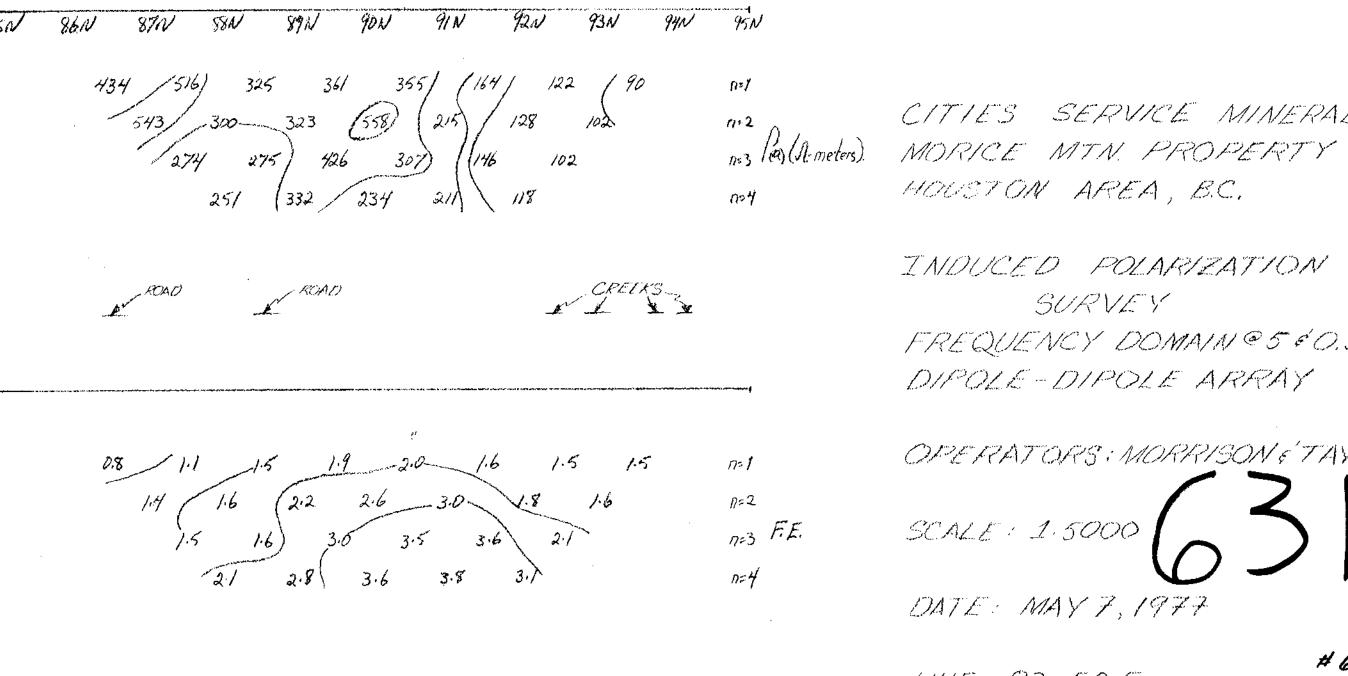


FIGURE 3(4)

LINE 83+50F.



CITIES SERVICE MINERALS

INDUCED POLARIZATION SURVEY FREQUENCY DOMAIN @5 & O.3 htz. DIPOLE - DIPOLE ARRAY

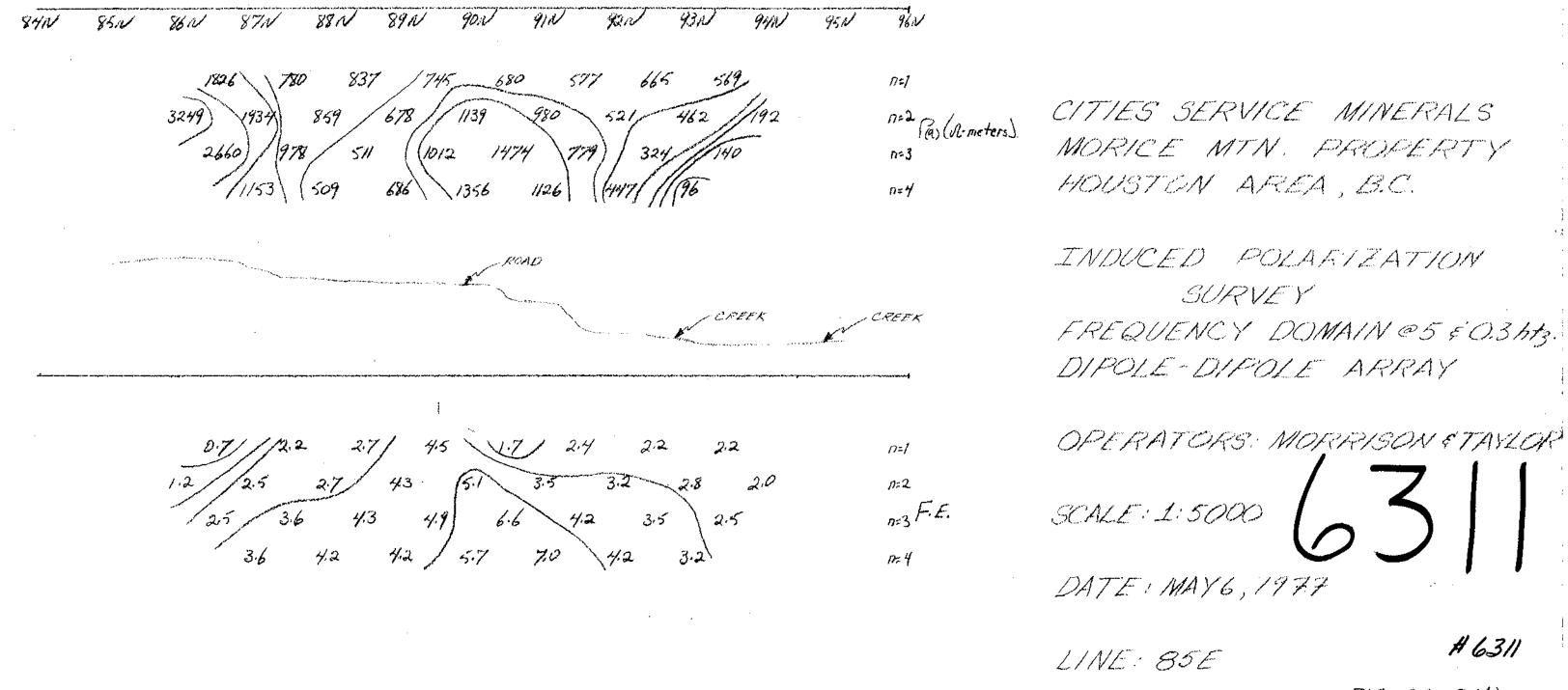
OPERATORS: MORRISON & TAYLOR

DATE: MAY 7, 1977

LINE : 83+50E

6311

FIGURE 3(9)



LINE 85E (84150E)

FIGURE 3(A)

CITIES SERVICE MINERALS MORICE MIN. PROPERTY HOUSTON AREA, B.C.

INDUCED POLARIZATION SURVEY FREQUENCY DOMAIN @ 5 & 0.3 htg. DIPOLE - DIPOLE ARRAY

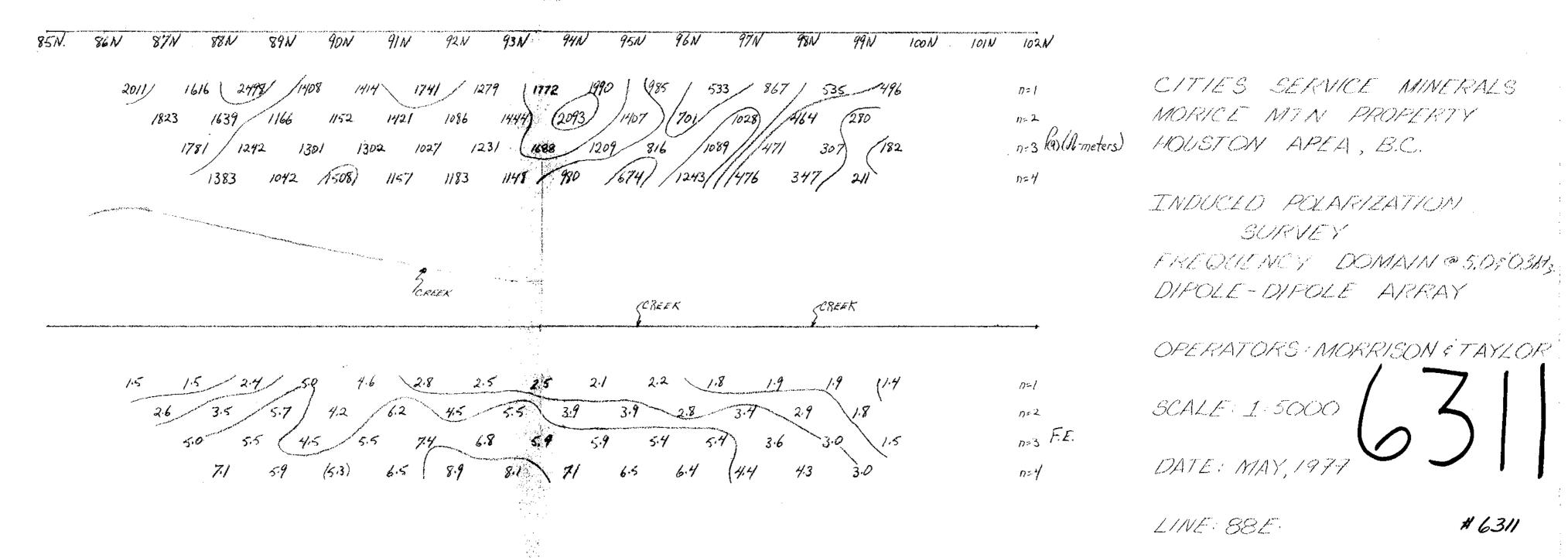
OPERATORS: MORRISON & TAYLOR

DATE: MAY 6, 1977

LINE: 86+50

#6311

FIGURE 3 (1)



LINE 88E

FIGURE 3(1)

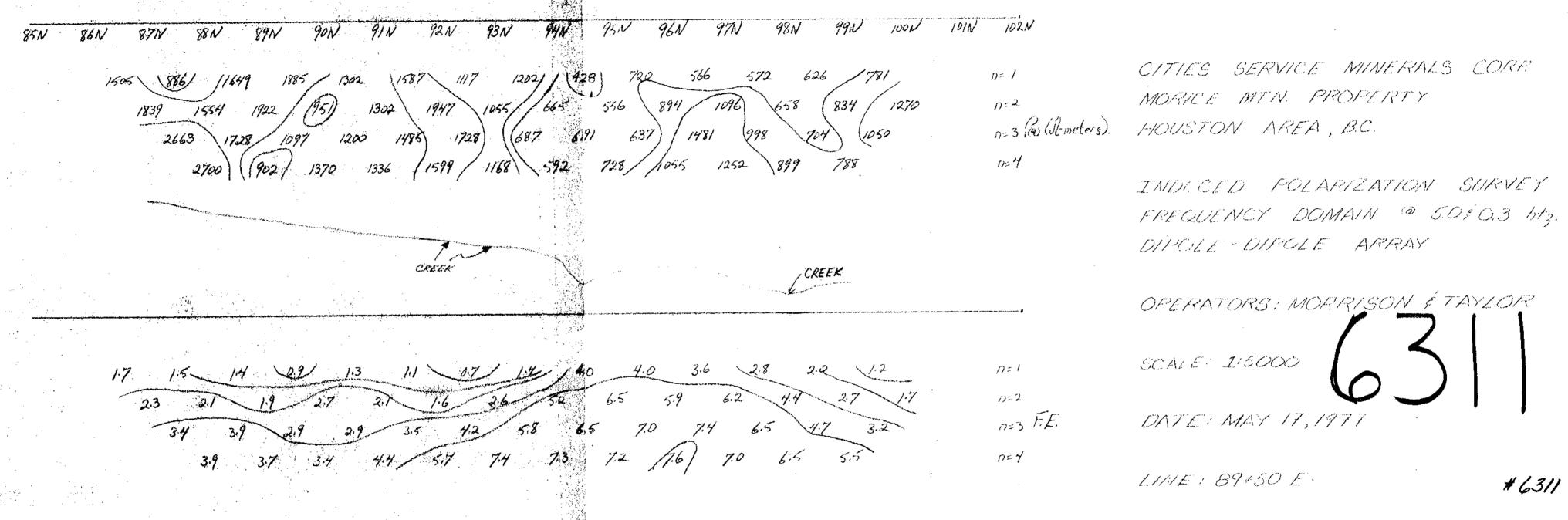
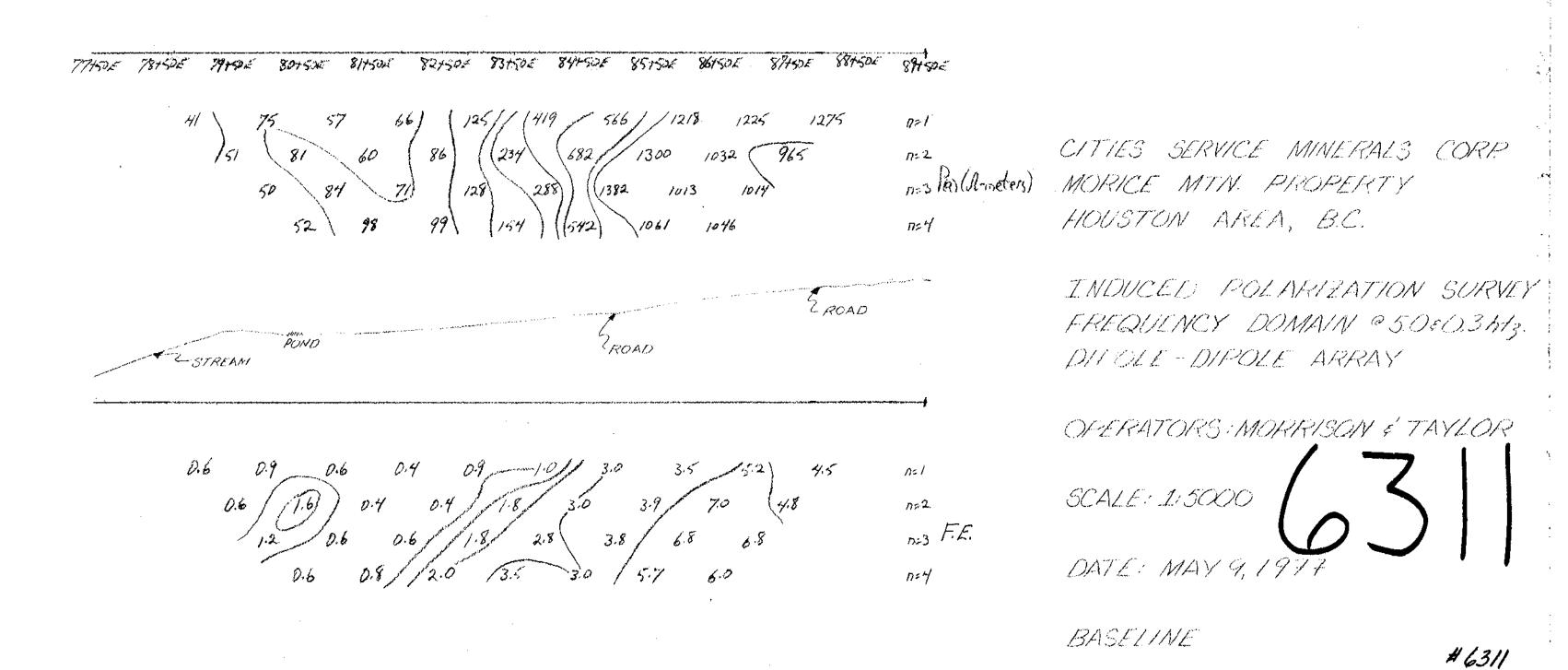


FIGURE 3 (A)



BASE LINE.

FIGURE 3(m)

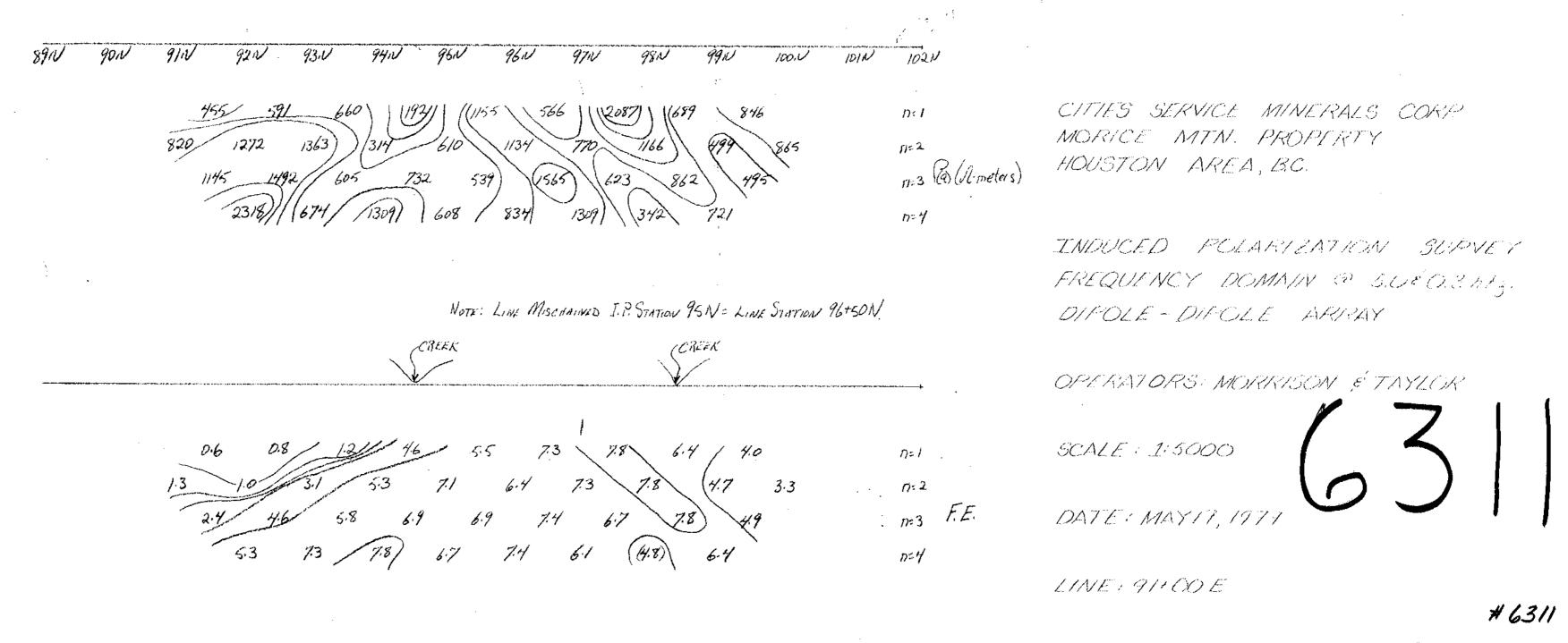


FIGURE 3(2)

RESULTS AND INTERPRETATION

Weakly anomalous percent frequency effects of 3.0 to 7.5% were obtained on Lines 85+00 E through to 91+00 E and remain: open to the northeast. The interpreted size and approximate shape of the polarizable source causing these effects is shown in Figure 6. The size of the polarizable source shown was interpreted from the second separation data (N=2), and thus is the approximate size at a depth of 100 to 150 metres. Pseudosection analysis indicates the source broadening further with depth. Aside from Line 91+00 E (Figure 31), most of the pseudosection plots were weakly to non-anomalous on the first separation. This would suggest that the top of the polarizable source does not extend to surface. An attempt to estimate the possible depth of the polarizable source on each line is shown in Figure 6. In general the depth to source increases as one proceeds southwest.

The anomaly is associated with high resistivities, generally greater than 1,000 ohm metres. The anomaly also encompasses the main showing of the breccia on Line 86+50 E near the Baseline. The first explanation for the anomaly would be that it is reflecting an extension of the lithic tuff breccia. Another explanation, generated by the interpreted depth to the top of the source of the anomaly, would be a second mineralized lithological unit which to date has not been observed.

A large outcrop of diorite occurs on the south end of Line 86+50 E. It is reflected by high apparent resistivities, greater than 2,000 ohm metres and background PFE values.

Low uniform apparent resistivities dominate the west end of the grid. PFE values here are often less than 1%. This signature is most often caused by heavy overburden and as displayed in Figure 6 an overburden depth of greater than 150 metres is interpreted.

The sharp increase in apparent resistivity values and their linearity in the central portion of the grid area (See Figure 4) suggests the presence of a northeast trending fault, which would cross the baseline in the vicinity of 83+50 E. Should this fault exist it may have controlled the northwestern limit of the polarizable source causing the IP anomaly.

CONCLUSIONS AND RECOMMENDATIONS

A weak, but relatively large IP anomaly measuring 200 x 900 metres, and still open to the northeast was obtained. The magnitude of the PFE values would normally be interpreted to reflect 1 to 3% total sulphides by volume. However, because of inferred masking by overlying rock and the volumetric averaging inherent in the IP technique the possibility exists for zones of higher sulphide concentrations.

The immediate source for the anomaly would appear to be a lithic tuff breccia containing weak pyrite and chalcopyrite. A second consideration would be a larger unexposed mineralized lithological unit of which the breccia is a small part.

The entire anomaly and the area along strike to the northeast should be thoroughly prospected. Should no adequate explanation of the anomaly be obtained the following drill hole is recommended to test for economic sulphides:

DD#1 proposed at coordinates 96+50 N; 91+00 E drilled vertically to a depth of 250 metres.

RESPECTFULLY SUBMITTED

GARRY M. DEPAOLI

GEOPHYSICIST, B.Sc.

JUNE 6, 1977 108 MILE RANCH. B.C.

CERTIFICATION

I Garry M. DePaoli of the Village of 100 Mile House, in the Province of British Columbia, HEREBY CERTIFY AS FOLLOWS:

- 1. That I am a graduate of the University of British Columbia, Vancouver, B.C. with a Bachelor of Science Degree in Combined Honours Geophysics and Geology. (1969)
- 2. That I have practiced my profession as a Geophysicist continuously for the past 8 years in Northern Ontario, Quebec, New Brunswick, Manitoba, Western USA, Alaska, Yukon Territories and British Columbia.
- 3. That I am a member in good standing of the Society of Exploration Geophysicists. The Geological Association of Canada, The Canadian Institute of Mining and Metallurgy, and the B.C. Society of Exploration Geophysicists.
- 4. That I have no interest directly or indirectly in the Morice Mountain Prospect nor do I expect to receive any.

GARRY M. DEPAOLI GEOPHYSICIST, B.Sc.

JUNE 6, 1977 108 MILE RANCH, B.C.

CERTIFICATION

I Dennis F. Morrison, of the Village of Washago, in the Province of Ontario, HEREBY CERTIFY AS FOLLOWS:

- 1. That I have attended the University of Waterloo for 2 years enrolled in the Faculty of Science.
- 2. That I was employed with Bell Canada as an electronic technician during the period 1964 to 1967.
- 3. That I was employed with McPhar Geophysics as an Induced Polarization Operator from 1967 to 1970.
- 4. That I have operated as an independent Induced Polarization Contractor from 1970 to the present.
- 5. That I have induced polarization operating experience in Newfoundland, Nova Scotia, New Brunswick, Quebec, Ontario, Manitoba, British Columbia, Yukon and Northwest Territories, Alaska and the Republic of Panama.
- 6. That I have no interest directly or indirectly in the Morice Mountain Prospect nor do I expect to receive any.

DENNIS F. MORRISON

MAY 20, 1977 SMITHERS, B.C.

ASSESSMENT DETAILS

WORK SUMMARY

14.2 Kilometres of induced polarization/resistivity surveying. May 5-9, 17,18, 1977

PERSONNEL

Dennis F. Morrison

IP Contractor

Morrison IP Surveys

P.O. Box 418, Gravenhurst,

Ontario

PoC 1G0

Garry M. DePaoli

Consulting Geophysicist 108 Ranch, Comp. #162, RR#1

100 Mile House, B.C. VOk 2E0

Blair Taylor

Geophysicist

122 West 45 Ave.,

Vancouver, B.C.

Richard Routhier

Geophysical Assisstant

P.O. Box 1055, Smithers B.C. VOJ 2NO

Neal McGarry

Geophysical Assisstant

813 Glenwood Drive

Delta, B.C.

COST STATEMENT

14.2 Kilometers I.P. survey (Dennis Morrison, I.P. contractor)		\$3,873.79
11.2 Kilometers line cutting (Gerard Auger, line cutting contractor)		\$1,325.00
	TOTAL	\$5, 198. 79

DENNIS F. MORRISON

John 3311. INDUCED POLARIZATION SURVEYS

May 21, 1977

Chities (Service Of inerals Corp., 405-1200 Fred Pender At., Vancouver, B.C. V6E-259

In account with Dennie J. Morrison P.O., Box 418. Graenhurst, Ontario Paris I. A armey Morice Mountain Property, Houston Area, B.C.

Atandly and Travel Days: 2@ 175 day ... 350 glultotal Brain Fees . # 2450.

Extra Lahour Costs ... 405.00 April 20% handling ... 81.00

Expenses (receipts attacked). 701. 2 plus 10% handling. 70 12

Truck Expenses....
(9days @ 1850 /day) -- · /66. 30

TOTAL EXPENSES 1423

S81F-15 TOTAL now payable and due

79 3873 ⁷1

Yours truly, PHONE 705-687-2009

P.O. BOX 418, GRAVENHURST, ONT.

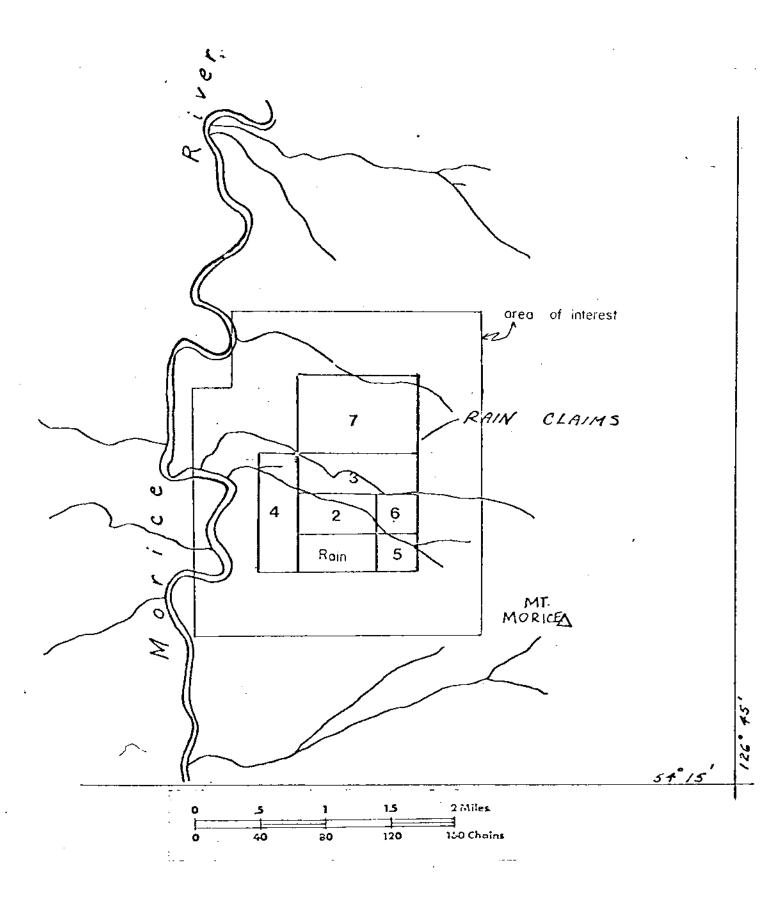
STATEMENT

in account with ion inemetate eans. GERARD AUGER It sharestate the operatt Line Cutting & Staking — Geo. Chem, Mag. & E.M. from a P.O. Box 1055, Phone 847-2834 SMITHERS, B.C. 1:04/12 1977 M Cities Services BEE-MOORE PRINTING LTD. Hay 71 Lene en lleria. Houston arla 1200 meter 2.000 1,000 80 + 30 B 1,000 82100 1 1,000. 83 + 50 E 1.000 85+00 E 1,000 86 +50 E 1,000 88 +00 E 1,000 90 +50 E 1,000 @ 175 12 per mile 7 miles = 1,225 02 500 miles @ 0.20 -- Jule for Instructions: Do Not Return Permane

LIST OF CLAIMS

J. Bot is the holder of the following claims:

Rain 1 - 236	-2 units	-due Feb., 1978
Rain 2 - 237	-2 units	-due Feb., 1978
Rain 3 - 341	-3 units	-due July 6, 1977
Rain 4 - 342	-3 units	-due July 7, 1977
Rain 5 - 343	-1 unit	-due July 8, 1977
Rain 6 - 344	-1 unit	-due July 8, 1977
Rain 7 - 327	-6 units	-due July 23, 1977



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LOCATION OF RAIN CLAIMS fig. 2

