

5941

1976 GEOPHYSICAL REPORT ON
THE MORRISON LAKE COPPER PROSPECT
(WW & EW CLAIMS)

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GEOPHYSICIST, B.Sc.

Date: JUNE 19, 1976.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 5941 MAP

1976 GEOPHYSICAL REPORT ON
THE MORRISON LAKE COPPER PROSPECT
(WW & EW CLAIMS)

located in

NORTH CENTRAL BRITISH COLUMBIA

in the

OMENICA MINING DIVISION

approximately

65 AIR KILOMETRES NORTHEAST OF SMITHERS
AT COORDINATES $55^{\circ}10'$ N. LAT., $126^{\circ}20'$ W. LONG.

owned by

CITIES SERVICE MINERALS CORPORATION

work by

MORRISON & DePAOLI
GEOPHYSICAL SURVEYING & CONSULTING

work period

JUNE 4 to 15, 1976

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INTRODUCTION

The Morrison Lake Copper Prospect is located in North Central British Columbia. The property consists of two Mineral Claims, EW and WW containing 15 and 20 units respectively. It is owned by Cities Service Minerals Corporation and is currently being investigated for the possibility of a Tertiary Porphyry Copper Deposit. During the period June 4 to June 15, 1976 a total of 19 kilometres of induced polarization / resistivity surveying were completed over the property. The following report describes the instrumentation, field procedure and the results obtained from the survey.

The work was executed by Morrison & DePaoli, Geophysical Surveying & Consulting upon the request of Cities Service Minerals Corporation and under the direct supervision of D.A. Silversides.

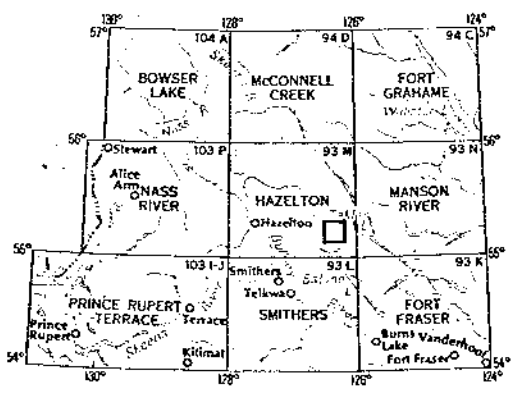
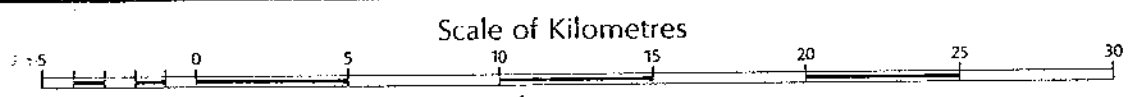
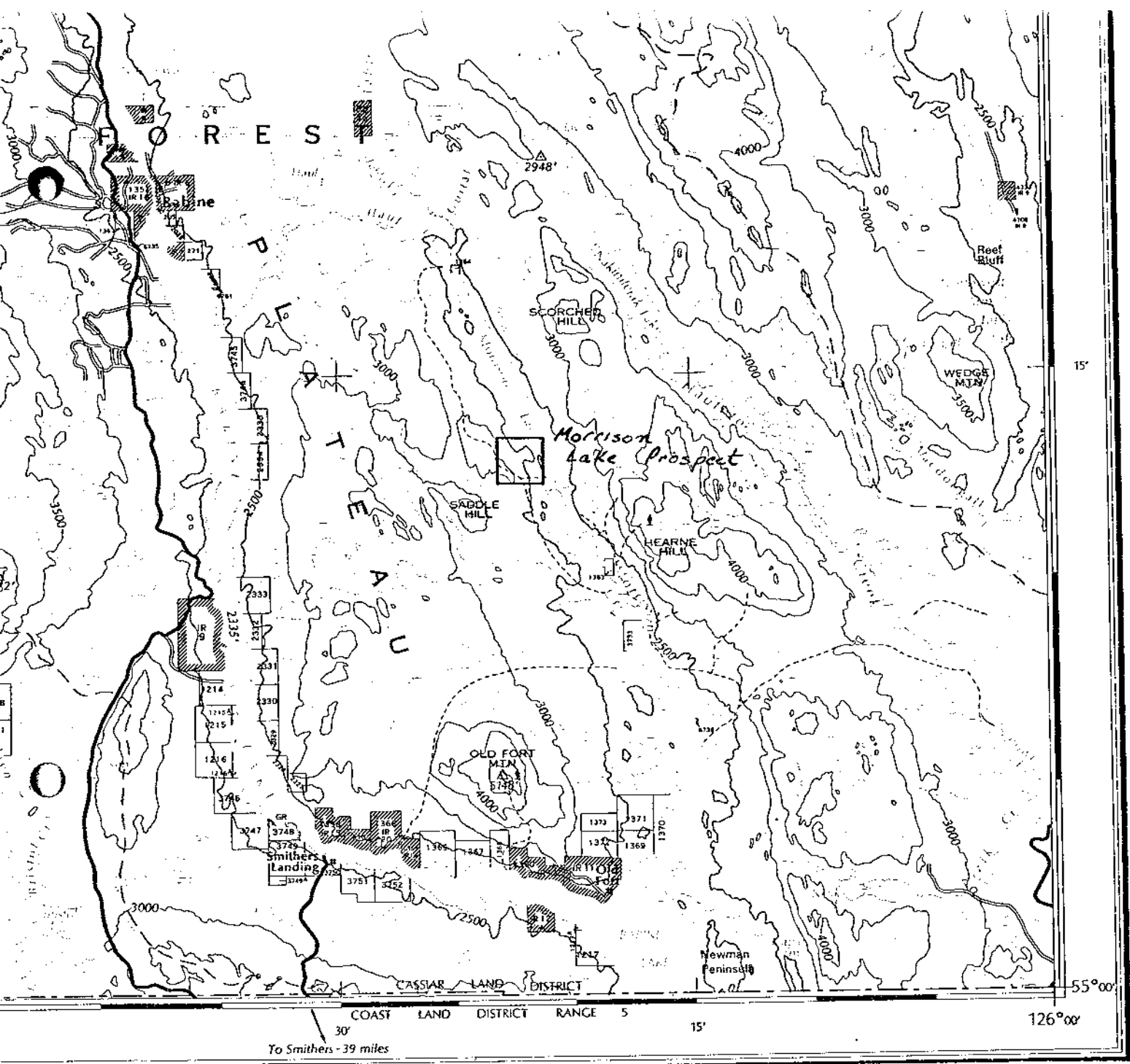
LOCATION AND ACCESS

The Morrison Lake Copper Prospect is situated in north central B.C. approximately 65 air kilometres from Smithers. It lies within the Omenica Mining Division at $55^{\circ}10'$ N. Latitude and $126^{\circ}20'$ W. Longitude. It is located in relatively hilly country which rises to an elevation of 3500 feet off the southwest shore of Morrison Lake.

Access is via helicopter or float equipped, fixed wing aircraft from Smithers. Some previous work in the Morrison Lake area has been carried out in the winter, with the use of bulldozers barged to the head of Babine Lake.

GRID CONTROL

The control grid consists of 19 kilometres of cut, picketed and



LOCATION MAP

Fig. 1.

chained lines. The baseline is 2,500 metres long and strikes at azimuth 135°. Eleven crosslines spaced at 250 metre intervals were emplaced by line of sight picketing.

GENERAL GEOLOGY

Argillite and its hornfelsed equivalent and biotite hornblende feldspar porphyry dominate the grid area. The sedimentary rocks are part of the Jurassic Hazelton Group, whereas the porphyry is assigned to the "BFP's" of the Babine Lake Copper Deposits. The argillite is metamorphosed to a fine grained biotite hornfels adjacent to the intrusion.

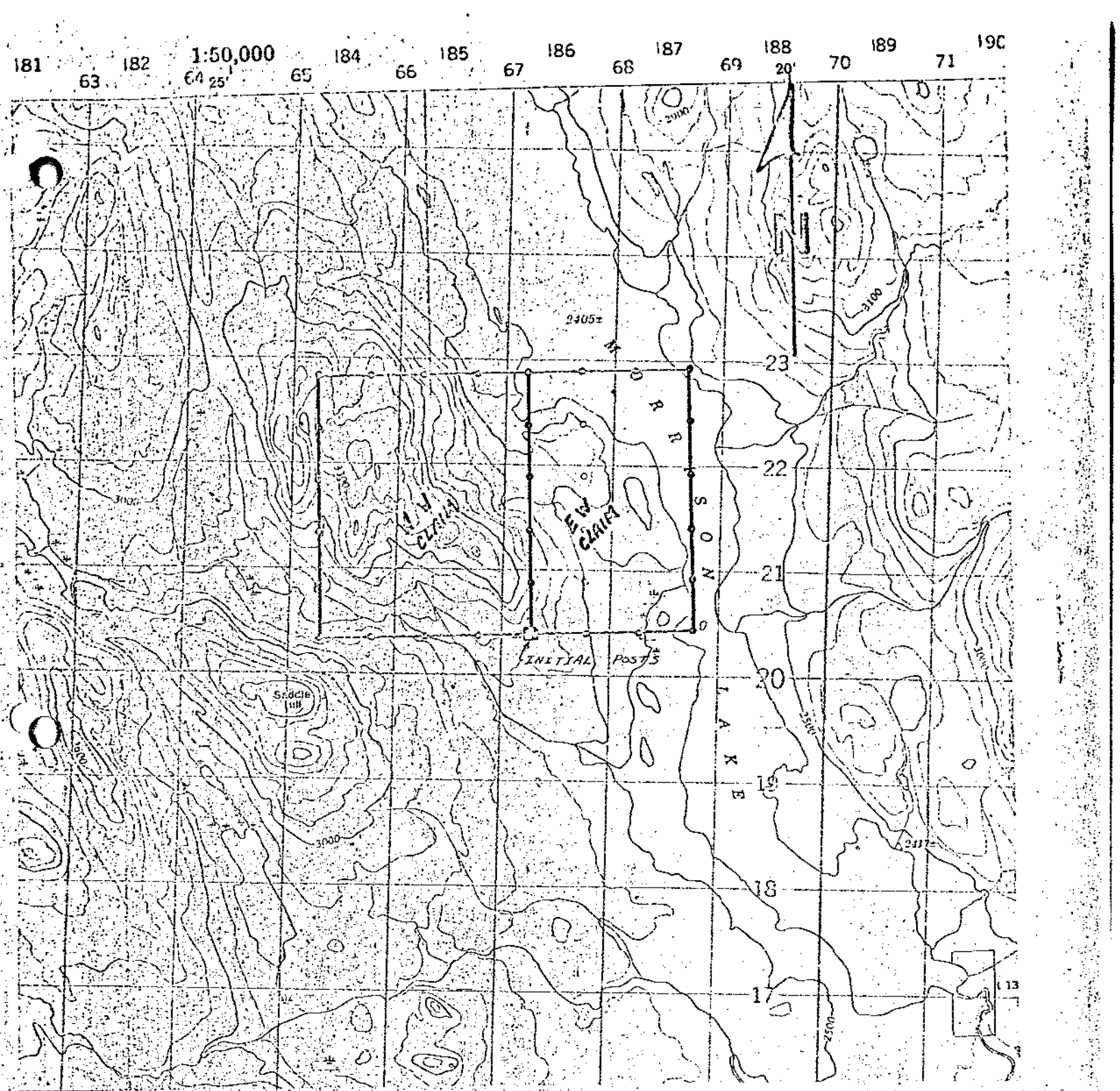
Pyrite and pyrrhotite mineralization is found over an extensive area, particularly in the hornfels of the southern and western margins of the main stock. Chalcopyrite is found in hornfels within veinlets of pyrite and pyrrhotite. Within the intrusion there are some showings of molybdenite, chalcopyrite, bornite and pyrite associated with quartz veinlets and fractures.

The area has received previous exploration work as the Bee Claims during 1965-1967 and as the Wolf Claims during 1968-1969.

INDUCED POLARIZATION SURVEY

INTRODUCTION AND THEORY

Induced polarization measurements were undertaken to determine the lateral and vertical distribution of sulphides within 200 metres of ground surface over the grid area. Knowledge of the total sulphide distribution is an important aid in determining mineral zoning patterns associated with porphyry copper deposits. Apparent resistivity



MORRISON LAKE COPPER PROSPECT

Location of the WW & EW Claims

- 93 MW

1:50,000

Fig. 2

data taken concurrently is useful in inferring overburden depths, defining abrupt lithological changes and assessing the importance of any IP 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 deficiencies 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 this barrier is known as "overvoltage".

It takes a finite time to build up overvoltages and one finds that the impedances of these 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 hertz and current applied at 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.

On this survey the low and high frequencies employed were 0.3 and 5.0 hertz. Power was obtained from a $2\frac{1}{2}$ KW \approx 400 hertz motor generator. The maximum output current for the transmitting system

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.

An 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 station 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 also 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 twelve pseudosections, Figures 3 (a)-(1) after Page 10. The pseudosections are vertical profile plots displaying apparent resistivities in ohm metres and percent frequency effect values. Contoured plan maps of the first separation (N=1) 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.

RESULTS AND INTERPRETATION

The Plan PFE map (Figure 5) is characterized by anomalous PFE values encircling a central east west trending PFE low. To a first approximation this PFE low is coincident with a ground magnetometer anomaly high is interpreted as reflecting biotite feldspar porphyry intrusive rocks. The largest surface exposure of biotite feldspar porphyry which occurs on Line 2+50 W between stations 2+50 S and 6+00 S lies within the above PFE low and the ground magnetometer anomaly. Thus it would appear that the main mass of the intrusion contains a low sulphide content.

The anomalous PFE values which encircle the main mass of the intrusion have been grouped into 2 anomalies. (See Figure 6)

Anomaly "A" which lies along the northwestern, western and a southern portion of the PFE low is attributed to pyrite mineralization within a fine-grained biotite hornfels zone adjacent to the intrusion. In support of this interpretation many outcrops of pyritized hornfels have been observed within the anomaly.

Anomaly "B" is more difficult to explain. It occurs along a gently sloping sidehill and also in somewhat swampy ground. To date no outcrops have been located over this anomaly. The southeastern side of the anomaly is coincident with a weak copper geochemical anomaly. This anomaly is not coincident with the ground magnetic anomaly, however the ground magnetic contours do exhibit a weak and interesting arcuate pattern along the western end of the anomaly. This pattern may suggest a redistribution of magnetite.

A wide range of apparent resistivities arranged in a relatively complex pattern is observed in Figure 4. Resistivity values below 50 ohm metres and in some instances less than 1 ohm metre and below the sensitivity of the induced polarization equipment is interpreted to reflect graphitic argillite beds. These extremely low apparent resistivities occur on the northeast corner of the grid, along the northern ends of Lines 7+50 W, 5+00 W and 2+50 W and between 6+00 S

and 7+00 S on Line 12+50 W. In contrast a large resistivity high characterized by values greater than 3000 ohm metres dominates much of the southern portion of the grid. This resistivity high is coincident with a ridge top and straddles both hornfels and intrusive rock types. First separation apparent resistivity values over the intrusive on Line 2+50 W range between 1847 and 2405 ohm metres, while hornfel rocks noted between 7+50 S and 8+00 S on Line 2+50 E are reflected by values of 2533 and 3285 ohm metres. Thus it is possible that in certain areas the metamorphosed hornfel rocks exhibit higher apparent resistivities than the intrusion.

The apparent resistivity values associated with PFE anomaly "B" are somewhat lower than those normally associated with the intrusive and higher than those associated with argillite. Values range from 1000 to 200 ohm metres with the center of the PFE anomaly reflected as a resistivity low. Should sulphides within intrusive rocks be the source of anomaly "B" then the implied increase in fracturing may explain the lower apparent resistivity values.

CONCLUSIONS

1. The main portion of the exposed biotite feldspar porphyry stock and its extensions as interpreted from the magnetic data contains less than 2% total sulphides by volume.
2. The intrusion has generated an extensive hornfelsed zone which contains 2 to 4% pyrite.
3. The possibility exists that PFE Anomaly "B" is reflecting a 3 to 4% total sulphide concentration within a more fractured phase of the intrusion. Because of the excellent geological setting and the proximity to a known economic deposit this possibility should be thoroughly investigated.

RECOMMENDATIONS

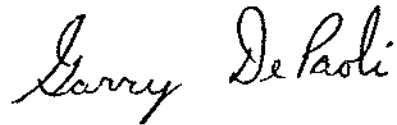
Detailed geological mapping and geochemical soil sampling should be carried out over PFE Anomaly "B". Should surface mapping be unsuccessful in determining the source of this anomaly, then the following diamond drill hole is recommended:

Coordinated 2+50 S ; 5+00 E

Azimuth True North at -50°

Depth 300 metres

RESPECTFULLY SUBMITTED



GARRY M. DePAOLI,
GEOPHYSICIST, B.Sc.

JUNE 19, 1976
SMITHERS, B.C.

CERTIFICATION

I Garry M. DePaoli, of the city of Burnaby, 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 7 years in Northern Ontario, Quebec, 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 Morrison Lake EW & WW Claims nor do I expect to receive any.
5. That the information contained herein was compiled under my direction and supervision during the period June 4 to June 15, 1976.

GARRY M. DePAOLI,
GEOPHYSICIST, B.Sc.

June 19, 1976
Smithers, 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 - 1967.
3. That I was employed with McPhar Geophysics as an Induced Polarization Operator during the period 1967-1970.
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 Morrison Lake EW & WW Claims nor do I expect to receive any.

DENNIS F. MORRISON

June 19, 1976
Smithers, B.C.

ASSESSMENT DETAILSLIST OF CLAIMS

Claim EW 15 units	Record # 65 (8)	Record Date: August 7
Claim WW 20 units	Record # 64 (8)	Record Date: August 7

WORK SUMMARY

19 kilometres of induced polarization/resistivity surveying
June 4 to June 15, 1976

19 kilometres of line cutting
May 25 to June 3, 1976

PERSONNEL -- I. P. Crew

Dennis F. Morrison

IP Contractor, Morrison & DePaoli
Geophysical Surveying & Consulting
P.O. Box 418, Gravenhurst,
Ontario P0C 1G0

Garry M. DePaoli

Geophysicist, Morrison & DePaoli
Geophysical Surveying & Consulting
5305 E. Georgia Street
Burnaby 2, B.C. V5B 1V3

Donald F. Penner

Geologist,
#206 3300 Oak Street,
Vancouver, B.C.

Roy A. Throssell

Geophysical Assistant
P.O. Box 494 Lumby, B.C.

LINE CUTTERS

Gerard Auger

Line cutting contractor
Zobnie Road
Smithers, B.C.

M. Lovstrom

Line cutter
Laidlaw Road
Smithers, B.C.

R. Perreault

Line cutter -
3651 - 4th Avenue
Smithers, B.C.

M. Thomas

c/o G. Auger
Zobnie Road
Smithers, B.C.

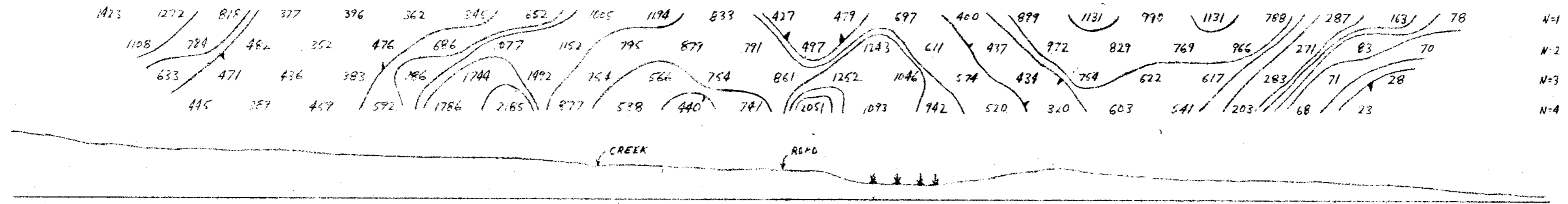
COSTS

Helicopter	\$ 3,058.44
I.P. Contractor Charge	4,353.26
Line Cutting Contractor Charge	2,206.00
Room & Board	
4 line cutters - May 25 - June 3, 1976	
10 days x 4 men @ 12. /man/day	480.00
4 I.P. Crew - June 4 - 15, 1976	
12 days x 4 men @ 12. /man/day	<u>576.00</u>
TOTAL	<u>\$ 10,673.70</u>

BASELINE

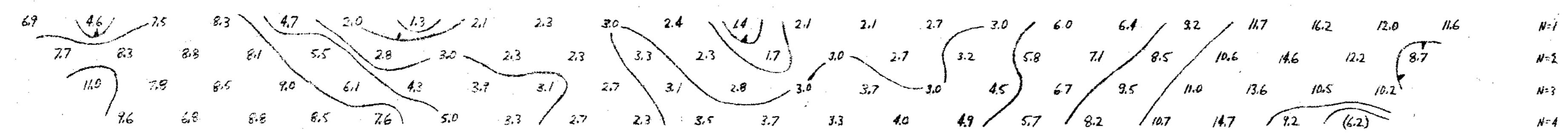
12+50W 11+50W 10+50W 9+50W 8+50W 7+50W 6+50W 5+50W 4+50W 3+50W 2+50W 1+50W 0+50W 0+50E 1+50E 2+50E 3+50E 4+50E 5+50E 6+50E 7+50E 8+50E 9+50E 10+50E 11+50E 12+50E

BASELINE



N=1
N=2
N=3
N=4

$\rho(a)$
OHM METRES
SCHEMATIC TOPOGRAPHY



N=1
N=2
N=3
N=4

P.F.E.

CITIES SERVICE MINERALS CORP.
MORRISON PROSPECT
BABINE LAKE AREA

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON + DEPAOLI

SCALE: 1:5,000
DATE: JUNE 6, 14, 15 1976

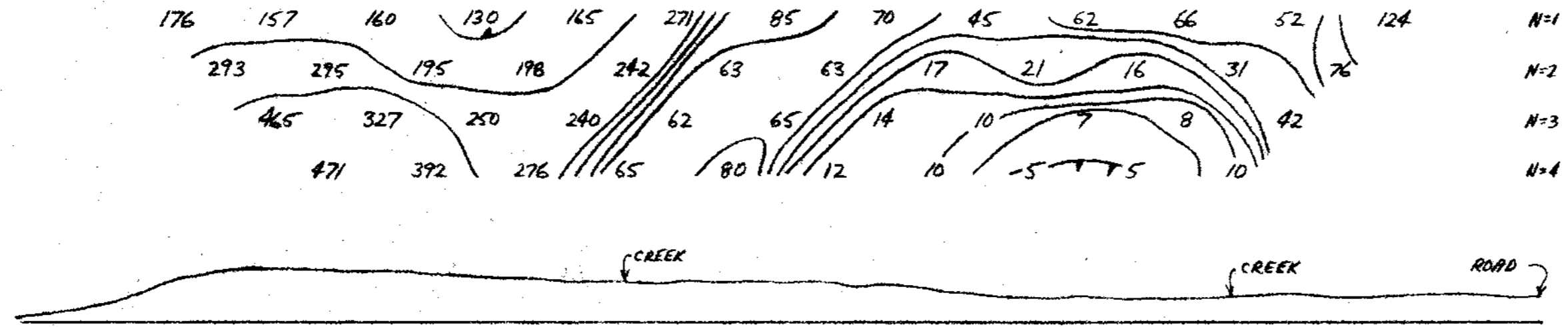
BASELINE

JUN 15 1976

FIGURE 3(a)

LINE 12+50 E

10S 9S 8S 7S 6S 5S 4S 3S 2S 1S 0 1N 2N 3N 4N 5N

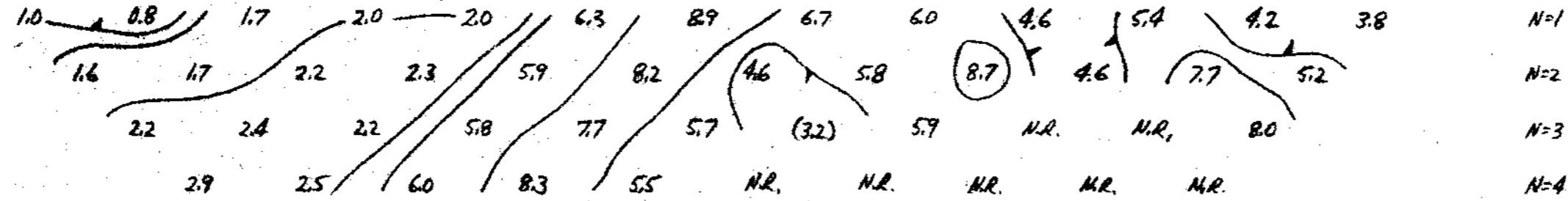


SCHEMATIC TOPOGRAPHY

CITIES SERVICE MINERALS CORP.
MORRISON PROSPECT
BABINE LAKE AREA

$f(a)$
OHM METRES

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON & DEPAOLI



P.F.E.

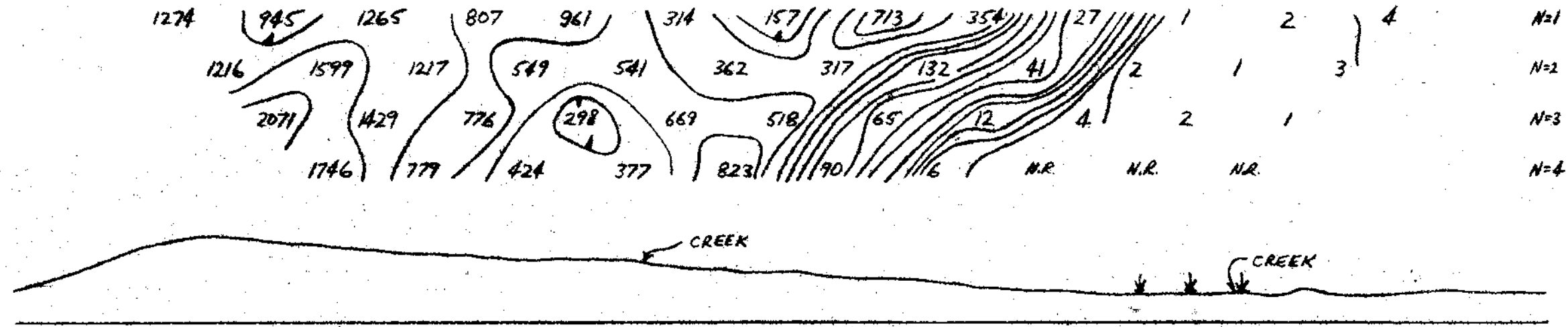
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DATE : JUNE 7, 1976

LINE : 12+50 E

FIGURE 3 (b)

LINE 10+00E

10S 9S 8S 7S 6S 5S 4S 3S 2S 1S 0 IN 2N 3N 4N 5N

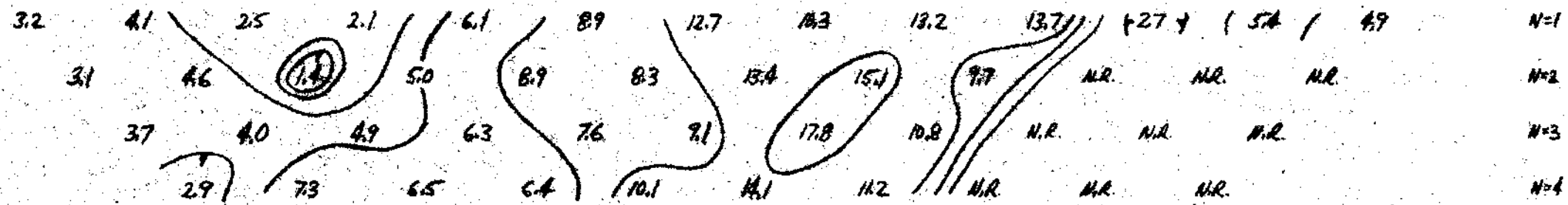


(a)
DHM METRES

SCHEMATIC
TOPOGRAPHY

CITIES SERVICE MINERALS CORP.
MORRISON PROSPECT
BABINE LAKE AREA

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON + DEPAOLI



P.F.E.

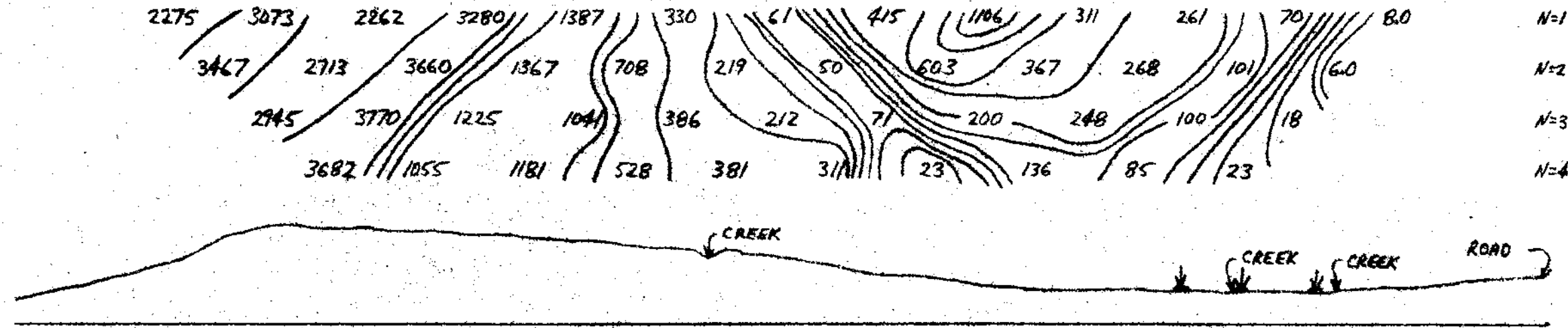
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DATE : JUNE 6, 1976

LINE : 10+00E

FIGURE 3(a)

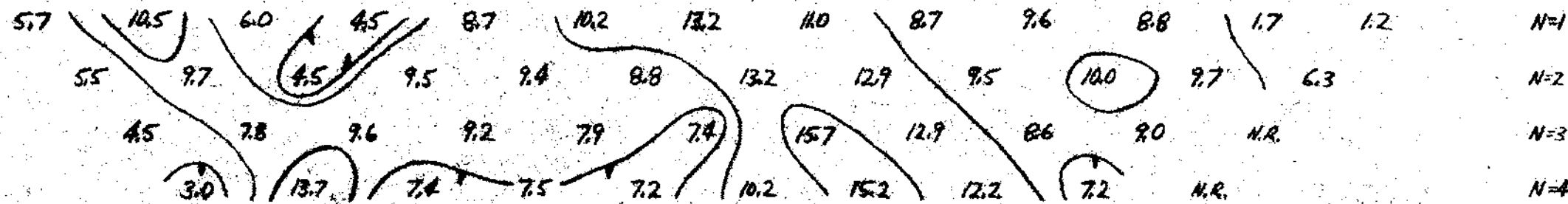
LINE 7+50E

10S 9S 8S 7S 6S 5S 4S 3S 2S 1S 0 IN 2N 3N 4N 5N



N=1
N=2
N=3
N=4

P(a)
OHM METRES
SCHEMATIC TOPOGRAPHY



N=1
N=2
N=3
N=4

P.F.E.

CITIES SERVICE MINERALS CORP.
MORRISON PROSPECT
BABINE LAKE AREA

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON + DEPAOLI

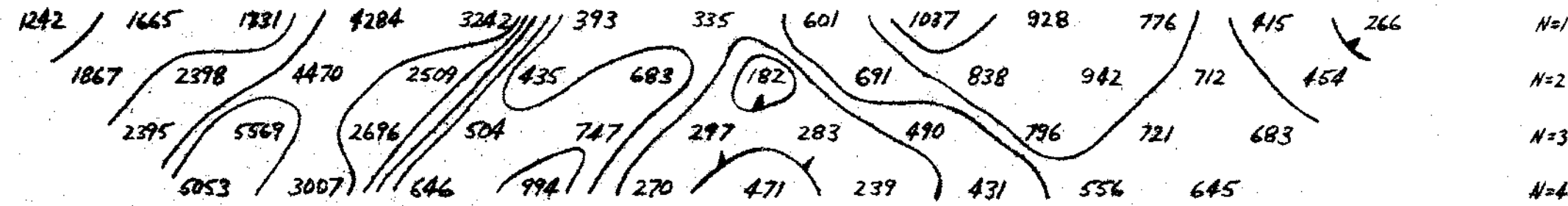
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LINE 7+50E

FIGURE 3(d)

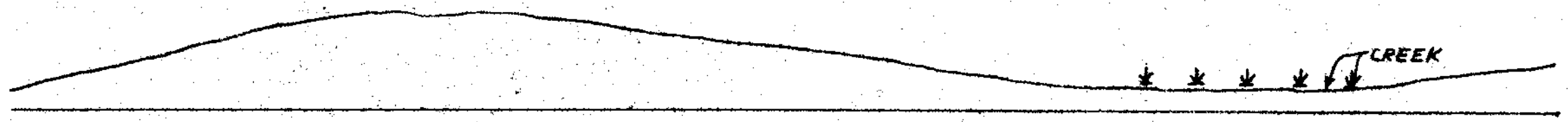
LINE 5+00 E

10S 9S 8S 7S 6S 5S 4S 3S 2S 1S 0 1N 2N 3N 4N 5N

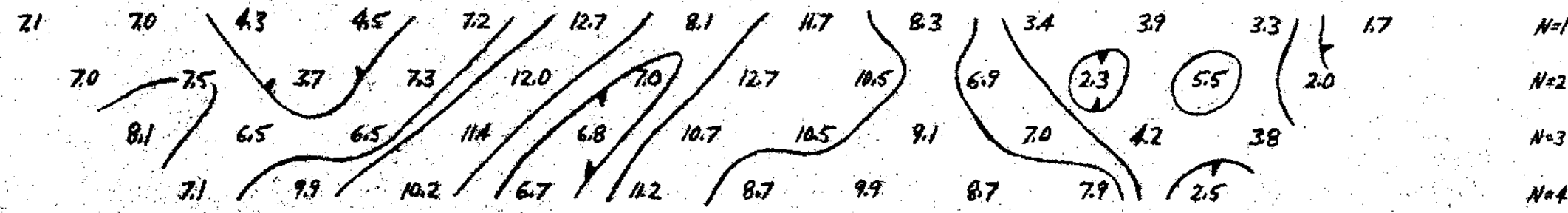


N=1
N=2
N=3
N=4

$\rho(a)$
OHM METRES



SCHEMATIC TOPOGRAPHY



N=1
N=2
N=3
N=4

P.F.E.

CITIES SERVICE MINERALS CORP
MORRISON PROSPECT
BABINE LAKE AREA

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON & DEPAOLI

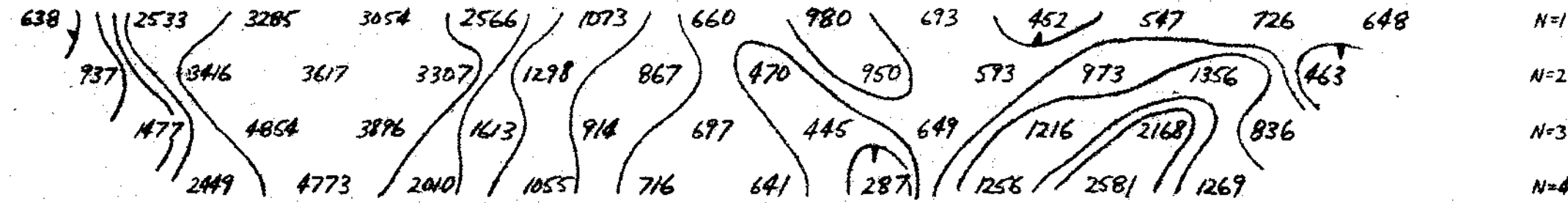
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DATE: JUNE 5, 1976

LINE 5+00 E

FIGURE 3(e)

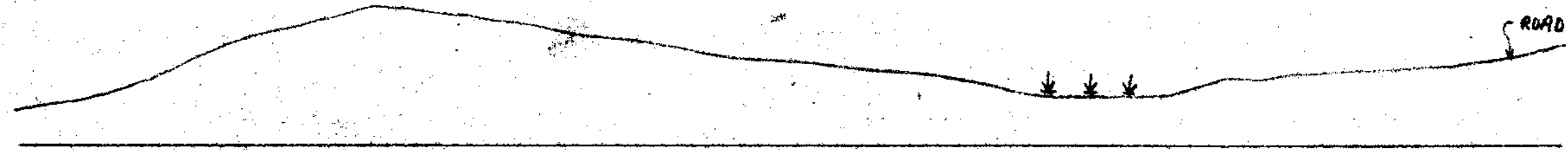
LINE 2+50 E

10S 9S 8S 7S 6S 5S 4S 3S 2S 1S 0 1N 2N 3N 4N 5N

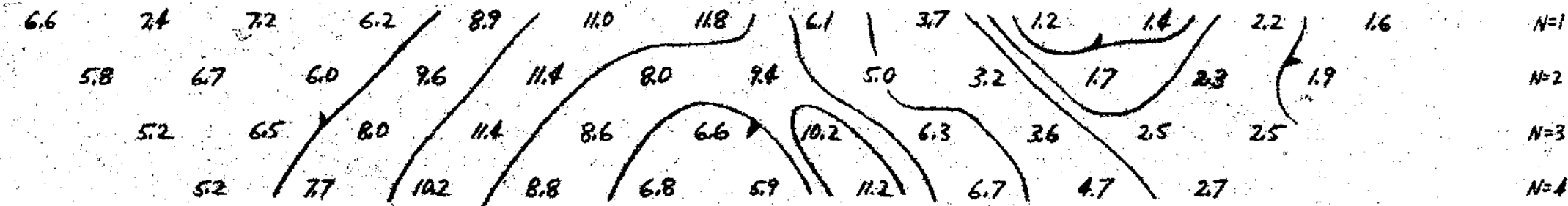


N=1
N=2
N=3
N=4

$\rho(a)$
OHM-METRES



SCHEMATIC TOPOGRAPHY



N=1
N=2
N=3
N=4

P.F.E.

CITIES SERVICE MINERALS CORP.
MORRISON PROSPECT
BABINE LAKE AREA

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON + DEPAOLI

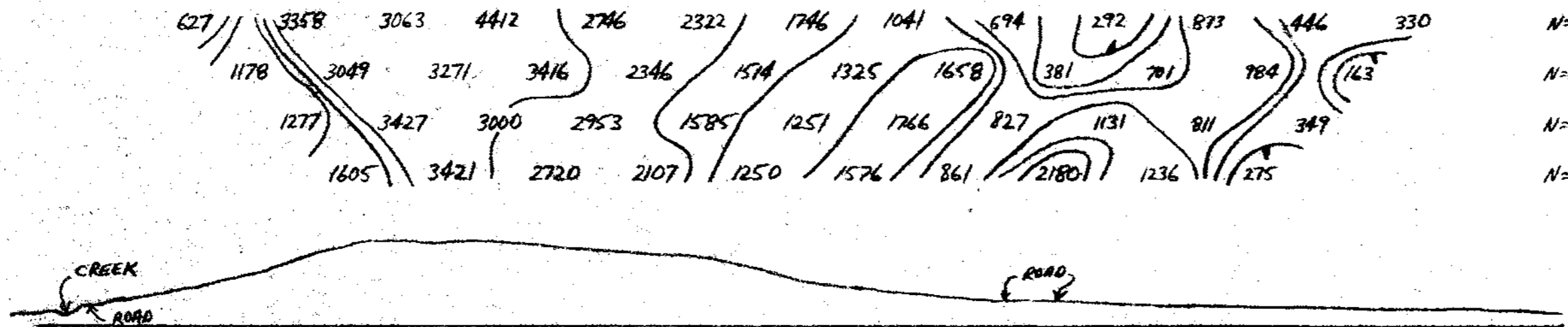
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LINE 2+50 E

FIGURE 3(a)

LINE 0+00

10S 9S 8S 7S 6S 5S 4S 3S 2S 1S 0 1N 2N 3N 4N 5N



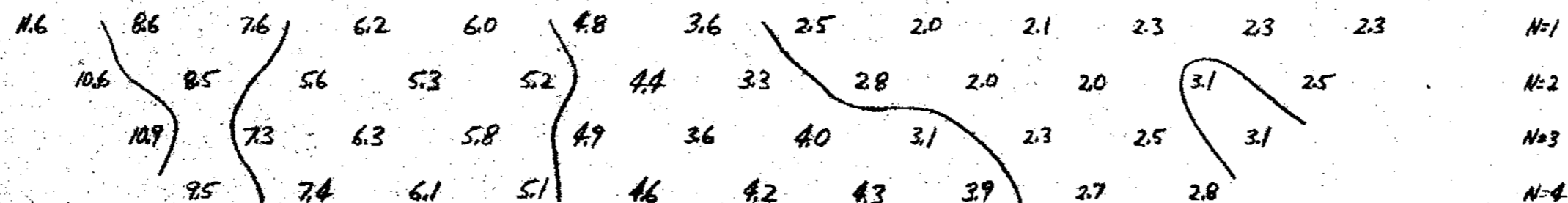
N=1
N=2
N=3
N=4

ρ_{ca}
OHM METRES

SCHEMATIC
TOPOGRAPHY

CITIES SERVICE MINERALS CORP.
MORRISON PROSPECT
BABINE LAKE AREA

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON + DEPAOLI



N=1
N=2
N=3
N=4

P.F.E.

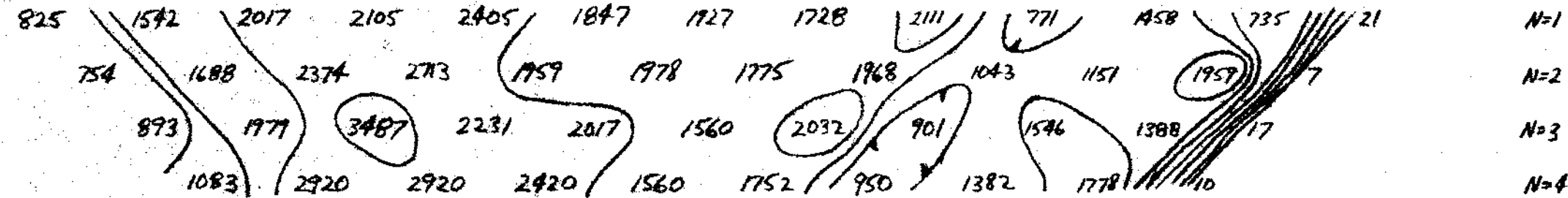
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DATE : JUNE 8, 1976

LINE: 0+00

FIGURE 3(9)

LINE 2+50 W

10S 9S 8S 7S 6S 5S 4S 3S 2S 1S 0 1N 2N 3N 4N 5N



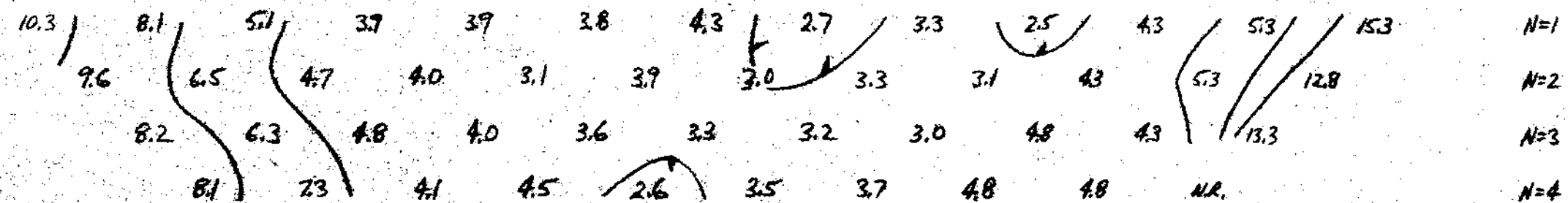
N=1
N=2
N=3
N=4

P(α)
0.0M METRES

SCHEMATIC
TOPOGRAPHY

CITIES SERVICE MINERALS CORP.
MORRISON PROSPECT
BABINE LAKE AREA

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON + DEPAOLI



N=1
N=2
N=3
N=4

P.F.E.

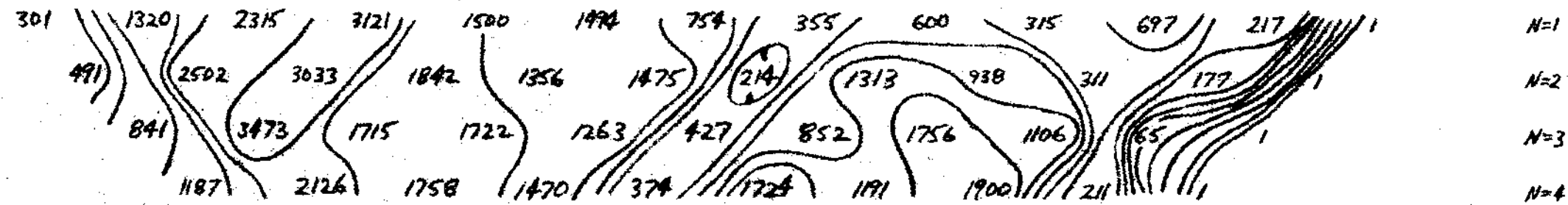
SCALE : 1:5,000
DATE : JUNE 11, 1976

LINE : 2+50 W

FIGURE 3(A)

LINE 5+00W

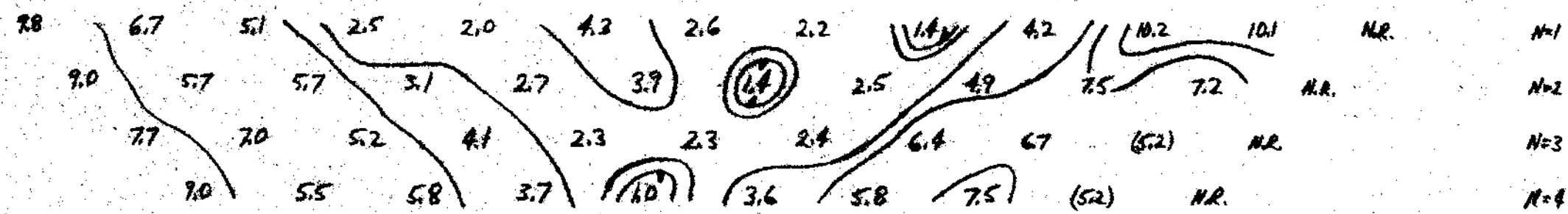
10S 9S 8S 7S 6S 5S 4S 3S 2S 1S 0 1N 2N 3N 4N 5N



P(a)
ONM METRES
SCHEMATIC TOPOGRAPHY

CITIES SERVICE MINERALS CORP.
MORRISON PROSPECT
BABINE LAKE AREA

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON + DEPAOLI



P.F.E.

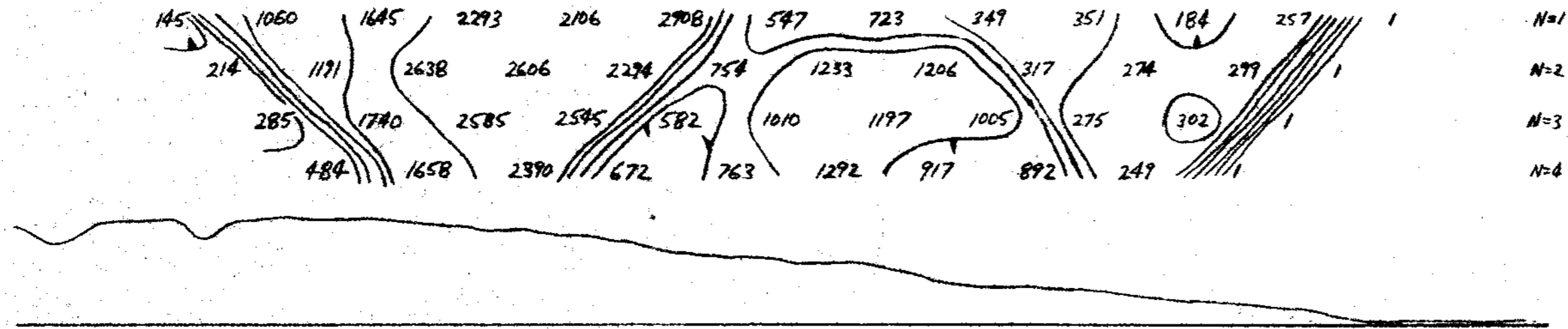
SCALE: 1:5,000
DATE: JUNE 11, 15 1976

LINE: 5+00 W

FIGURE 3(c)

LINE 7+50 W

105 95 85 75 65 55 45 35 25 15 0 1N 2N 3N 4N 5N

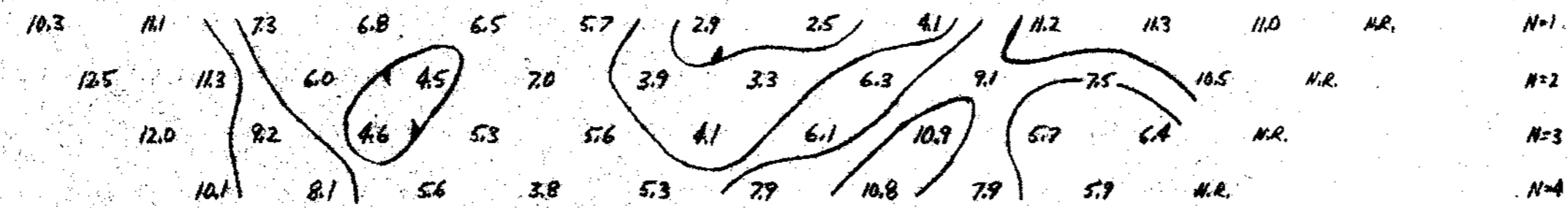


N=1
N=2
N=3
N=4

P
OHM METRES

CITIES SERVICE MINERALS CORP
MORRISON PROSPECT
BABINE LAKE AREA

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON + DEPAOLI



N=1
N=2
N=3
N=4

P.F.E.

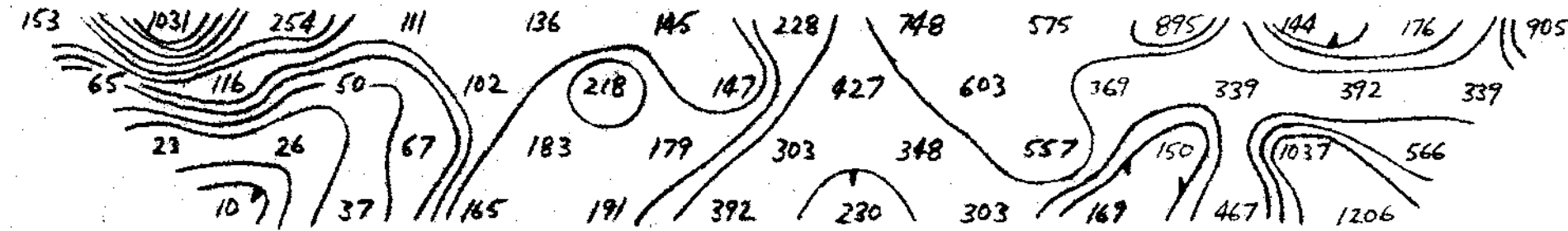
SCALE : 1:5,000
DATE : JUNE 12, 14 1976

LINE: 7+50 W.

FIGURE 3 (f)

LINE 10+00 W

10S 9S 8S 7S 6S 5S 4S 3S 2S 1S 0 1N 2N 3N 4N 5N



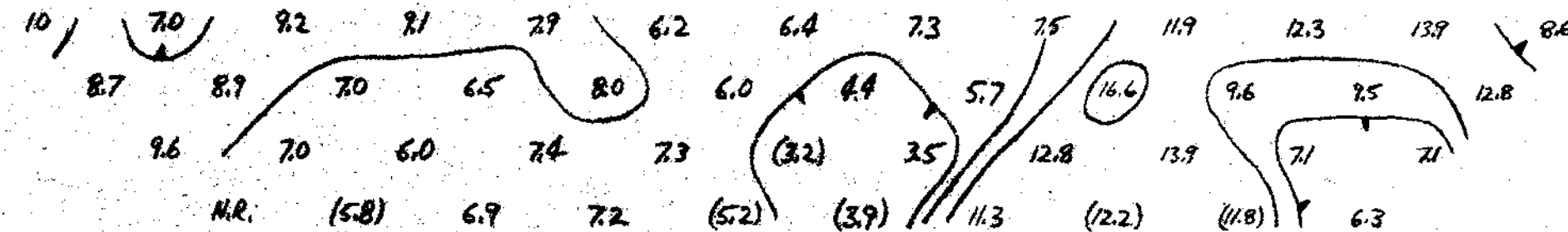
N=1
N=2
N=3
N=4

SCHEMATIC
TOPOGRAPHY

CITIES SERVICE MINERALS CORP.
MORRISON PROSPECT
BABINE LAKE AREA

$P(a)$
OHM METRES

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON + DEPAOLI



N=1
N=2
N=3
N=4

P.F.E.

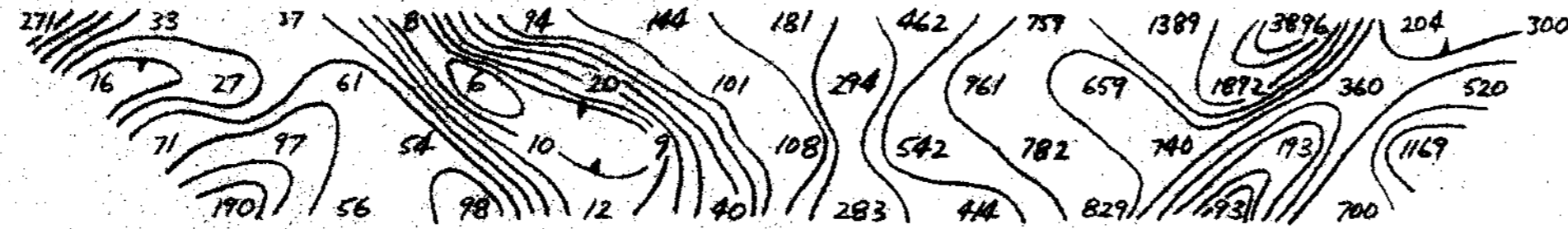
SCALE: 1:5,000
DATE: JUNE 12, 14 1976

LINE: 10+00 W

FIGURE 3(N)

LINE 12+50 W

10S 9S 8S 7S 6S 5S 4S 3S 2S 1S 0 IN 2N 3N 4N 5N



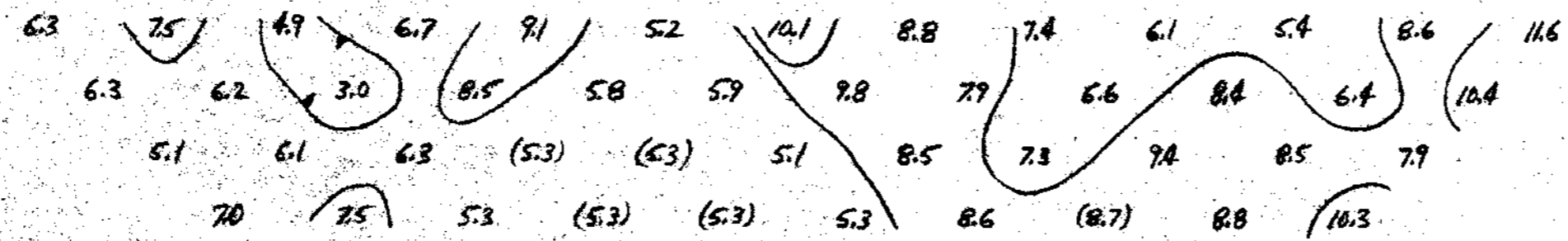
N=1
N=2
N=3
N=4

P(a)
OHM - METRES

SCHEMATIC TOPOGRAPHY

CITIES SERVICE MINERALS CORP
MORRISON PROSPECT
BABINE LAKE AREA

P-660 FREQUENCY DOMAIN I.P.
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
OPERATORS: MORRISON & DEPAOLI



N=1
N=2
N=3
N=4

P.F.E.

SCALE: 1:5,000
DATE: JUNE 13, 1976

LINE: 12+50 W



THE GOVERNMENT OF THE PROVINCE OF BRITISH COLUMBIA

DEPARTMENT OF MINES AND PETROLEUM RESOURCES

FORM B (Section 51) MINERAL ACT

Mining Recorder's Office: RECORDED

JUL 28 1976

AT SMITHERS, B.C.

Affidavit on Application to Record Work

1. I, D.A. Silversides Agent for Cities Service Minerals Corporation
405-1200 West Pender St. 405-1200 West Pender St.
Vancouver, B.C., V6E 2S9 Vancouver, B.C., V6E 2S9
Free Miner's Certificate No. 143296 Free Miner's Certificate No. 143292
Date issued Dec 29, 1975 Date issued Dec. 29, 1975

MAKE OATH AND SAY:

2. I have done, or caused to be done, work on the WW claim of 20 units and the EW claim of 15 units Mineral Claim(s)

Record No.(s) 64(8) and 65(8)

Situate at West side of Morrison Lake, 93MTW in the Omineca Mining Division, to the value of at least \$ 7000.00 dollars. Work was done from the 22nd day of May 1976, to the 15 day of June 1976.

3. The following is a detailed statement of such work done in the 12 months in which such work is required to be done.

D. GEOLOGICAL, GEOCHEMICAL, GEOPHYSICAL (Includes line cutting) (State type of work)

Table with 2 columns: Description of work and COST. Includes entries for 19 Kilometres of line cutting and 19 Kilometres of I.P. / resistivity surveys, with a total cost of \$10,673.70.

I wish to apply \$ 7000.00 of this work to the claims listed below. (State number of years to be applied to each claim and its month of record)

one year to each of the WW claim of 20 units and the EW claim of 15 units, both claims recorded in August.

NOTE—Dollar value of work done under A, B, C, or D sections, totalling \$200, may be applied as one year's work.

Who paid for the above-described work?

Name Cities Service Minerals Corporation
Address 405-1200 West Pender St.
Vancouver, B.C., V6E 2S9.

If you intend to claim a refund of cash in lieu under the provisions of the Mineral Act, you must make application on this affidavit under A, B, C, or D sections as applicable.

4. That I have not and will not use the work declared herein in any way for the purposes of obtaining tax exemption on a Crown-granted mineral claim under the terms of the Taxation Act.

SWORN and subscribed to at Smithers this 28th day of July 1976, before me B McLeod S.M.R. D.A. Silversides

* This affidavit may be taken by a person empowered to take affidavits by the Evidence Act of British Columbia.

Affidavit on Application to Record Work

SUPPORTING INVOICES

Morrison & DePaoli - I.P. Contractors

Gerard Auger - Line Cutting Contractors

Okanagan Helicopters

P.O. Box 418
Gravenhurst, Ontario
POC 1G0
(705) 689-5925

MORRISON & DEPAOLI
Geophysical Surveying & Consulting

5305 E. Georgia
Burnaby 2, B.C.
V5B 1V3
(604) 299-4964

JUNE 19, 1976.

CITIES SERVICE MINERALS CORPORATION,
#405 1200 WEST PENDER STREET,
VANCOUVER, B.C.

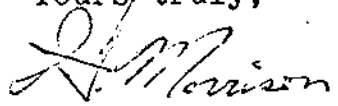
RE: Induced Polarization Surveying Over The
Morrison Lake EW & WW Claims.

9½ Operating Days @ \$300.00 per day	....	\$2,850.00
3½ Standby, Travel and Bad Weather Days @ \$175.00/day	....	\$612.50
SubTotal Basic Fees	....	<u>\$3,462.50</u>
Vehicle Expense 13 Days @ \$12.84 per day	....	\$166.92
Extra Labour Costs Two men @ \$55.68 per Day for 13 days	....	<u>\$723.84</u>
Total Cost Now Due and Payable	....	<u>\$4,353.26</u>

Please Make Payment To:

Morrison & DePaoli
P.O. Box 418,
Gravenhurst, Ontario
POC 1G0

Yours truly,


MORRISON & DEPAOLI

M&D/gmd.

STATEMENT

in account with

GERARD AUGER

Line Cutting & Staking - Geo. Chem, Mag. & E.M.

P.O. Box 1055, Phone 847-2834

SMITHERS, B.C. June 10, 1976

M. Citic Minerals Corp.

* 405 - 1200 W. Pender St.

Vancouver, B.C.

SEE MOORE PRINTING LTD.

May-June 76

Line cutting
Provision Lab area.

\$
@ 200.⁰⁰ per mile
~~17,750~~
17,750 meters = 11.03 miles

∴ cost = 11.03 × 200.⁰⁰ = \$ 2206.⁰⁰

Paid
check
2826
June 22.

Pay this Amount.

H. A. Silverman

SI F-10 geological
JRM
H2



OKANAGAN HELICOPTERS LTD.
 HEAD OFFICE:
 439 AGAR DRIVE, INTERNATIONAL AIRPORT SOUTH
 VANCOUVER, B.C. V7B 1A5
 TEL. (604) 278-8502 TELEX: 04-503883

ACCOUNT NUMBER **10710 113888**

FLIGHT DATE **22 05 76** (DAY MONTH YEAR)
 INVOICE DATE **2 1976**

BASE NO. 170	BASE Smithers	AIRCRAFT TYPE 206B	TYPE OF CONTRACT X	Smithers	054
CHARTERER'S BILLING ADDRESS Cities Service Minerals Corp 405-1200 W. Pender Vancouver B.C.			HOURLY MINIMUM (7 TO 23 DAYS) X	16 DAYS OR MORE	FLIGHT LOCATION Bloomfield
PURCHASE ORDER NO.			NO. OF PASSENGERS	FREIGHT LBS.	FLIGHT LOCATION 40364
IND. CLASS 03			AIRCRAFT REG. NO. FOA Q	PILOT Base	
STATE OF AIRCRAFT			UNSERVICABLE	STORIED	PILOT
ENG. NAME 1 Base			PILOT		

OPERATION		TAKE-OFF	LAND	FLYING TIME
Move Camp from Potos Lake To				
MORRISON Lake				
<i>Pay 35.00 to geophysical Morrison from HK</i>				
PRINT NAME OF PERSON AUTHORIZED TO SIGN				
EXTRA CHARGES OR ADJUSTMENTS		ZONE <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D	3.1	
AMOUNT		NON-REVENUE	REVENUE	AMOUNT
		3	2,8345.00	966.00
CUST. SUP. (FUEL HRS.)		OUR FUEL	66 GALS. @ 40.80	52.80
		OUR FUEL	GALS. @	
		OUR FUEL	GALS. @	
		OUR OIL	2.8 HRS. @ 10.80	2.24
		EXTRA CHARGES OR ADJUSTMENTS		
SIGNED FOR CHARTERER BY D. S. Sides		TOTAL \$ 1021.04		

INVOICE

THE CARRIAGE OF PASSENGERS, BAGGAGE AND GOODS BY AIRCRAFT IS SUBJECT TO THE TERMS AND CONDITIONS OF THE AIRCRAFT CHARTER AGREEMENT WHICH IS AVAILABLE TO THE CHARTERER UPON REQUEST. THE CHARTERER SHALL BE RESPONSIBLE FOR OBTAINING ALL NECESSARY PERMITS AND LICENSES FOR THE OPERATION OF THE AIRCRAFT AND FOR THE PAYMENT OF ALL TAXES AND FEES THEREON. THE CHARTERER SHALL ALSO BE RESPONSIBLE FOR THE PROTECTION AND SAFETY OF THE AIRCRAFT AND FOR THE PROTECTION OF THE AIRCRAFT FROM DAMAGE AND LOSS. THE CHARTERER SHALL ALSO BE RESPONSIBLE FOR THE PROTECTION AND SAFETY OF THE PASSENGERS AND FOR THE PROTECTION OF THE PASSENGERS FROM DAMAGE AND LOSS. THE CHARTERER SHALL ALSO BE RESPONSIBLE FOR THE PROTECTION AND SAFETY OF THE AIRCRAFT AND FOR THE PROTECTION OF THE AIRCRAFT FROM DAMAGE AND LOSS.

SIGNED FOR CARRIER BY *[Signature]*



OKANAGAN HELICOPTERS LTD.
 HEAD OFFICE:
 438 AGAR DRIVE, INTERNATIONAL AIRPORT SOUTH
 VANCOUVER, B.C. V7B 1A5
 TEL: (604) 278-5502 TELEX: 04-508883

ACCOUNT NUMBER		10710	113892
FLIGHT DATE	25	05	76
	DAY	MONTH	YEAR
			INV. DATE

CHARTERER'S BILLING ADDRESS

BASE NO.	BASE	AIRCRAFT TYPE	TYPE OF CONTRACT - X		SMITHERS	054
170	Smithers	206B	<input checked="" type="checkbox"/> HOURLY	DAILY MINIMUM (TO 23 DAYS)	30 DAYS OR MORE	
Cities Service MISCALCO CORP			IND. CLASS	AIRCRAFT REG. NO.	Bloomfield	0364
405-1200 W Powder			03	FOA Q	PILOT	PILOT
Vancouver B.C.			STATE OF AIRCRAFT - X			
V6E 2J6			UNSERVICABLE	STORER	PILOT	PILOT
PURCHASE ORDER NO.		NO. OF PASSENGERS	FREIGHT LBS.		ENG. NAME - 1	Base
					ENG. NAME - 2	

OPERATION		TAKE-OFF	LAND	FLYING TIME
Move in line cutting crew				1.2
R. Silverides geologist Proj 581-1- Morrison				
PRINT NAME OF PERSON AUTHORIZED TO SIGN				
EXTRA CHARGES OR ADJUSTMENTS		ZONE <input type="checkbox"/> A <input checked="" type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D		1.2
		NON-REV. HRS.	REV. HRS.	TARIFF
		0.1	1.1	345.00
		CUST. SUP. (FUEL HRS.)	OUR FUEL	25 GALS. @ 0.80
			OUR FUEL	20.00
			GALS. @	
			OUR FUEL	
			GALS. @	
			OUR OIL	1.1 HRS. @ 0.80
			EXTRA CHARGES OR ADJUSTMENTS	88
			TOTAL	\$ 400.38

INVOICE

THE CARRIAGE OF PASSENGERS, BAGGAGE AND GOODS BY OKANAGAN HELICOPTERS LTD. IS SUBJECT TO THE TERMS, CONDITIONS AND LIMITATIONS OF LIABILITY SET FORTH IN THE TARIFF. LIABILITY FOR LOSS OR DAMAGE TO GOODS IS LIMITED TO THE AMOUNT PAID FOR THE FREIGHT. WE ACCEPT AN EXTRACT OF WHICH IS AVAILABLE FOR EXAMINATION AT THE OFFICE OF OKANAGAN HELICOPTERS LTD.

SIGNED FOR CHARTERER BY
 R. Silverides

SIGNED FOR CARRIER BY



OKANAGAN HELICOPTERS LTD.
 HEAD OFFICE:
 439 AGAR DRIVE, INTERNATIONAL AIRPORT SOUTH
 VANCOUVER, B.C. V7B 1A5
 TEL. (604) 278-5502 TELEX: 04-508883

ACCOUNT NUMBER		10710		113952	
FLIGHT DATE	30	05	76	INV. RATE	TYPE OF PAYMENT
DAY	MONTH	YEAR			
BASE NO.		BASE	AIRCRAFT TYPE	TYPE OF CONTRACT - X	
170		Smithers	206B	Smithers 054	
IND. CLASS.		AIRCRAFT REG. NO.	FLIGHT LOCATION		FLIGHT LOCATION
03		FON4	Blum fall		0364
STATE OF AIRCRAFT - R.		UNSERVICEABLE		STORED	
PURCHASE ORDER NO.		NO. OF PASSENGERS	NO. OF FREIGHT LBS.		
ENG. NAME - 1		Base			
ENG. NAME - 2					

CHARTERER'S BILLING ADDRESS

Cities Service Minerals Corp
 405 - 1200 W. Pender
 Vancouver B.C.
 V6E 2J6

OPERATION	TAKE-OFF	LAND	FLYING TIME
Smithers - Mission - Smithers			9
Grassy Run to Mission H/C			

Grassy Run to Mission H/C
 581F-10 gals/gal

OUR TERMS ARE DUE & PAYABLE UPON RECEIPT OF INVOICE.
 Interest of 11.9% per month will be charged if not paid
 within 15 days from date of invoice.

PRINT NAME OF PERSON AUTHORIZED TO SIGN

EXTRA CHARGES OR ADJUSTMENTS	AMOUNT	ZONE	A	B	C	D	AMOUNT
		0.1		0.8	3/5	00	252.00
CUST. SUP. (FUEL HRS.)		OUR FUEL	18 GALS. @ 810.80				14.40
		OUR FUEL	GALS. @				
		OUR FUEL	GALS. @				
		OUR OIL	0.8 HRS. @ 80.80				64
		EXTRA CHARGES OR ADJUSTMENTS					
		TOTAL	\$				267.04

SIGNED FOR CHARTERER BY
 J. S. [Signature]

SIGNED FOR CARRIER BY
 [Signature]

INVOICE

THE CARRIAGE OF PASSENGERS, BAGGAGE AND CARGO BY AIR IS SUBJECT TO THE TERMS, CONDITIONS AND LIMITATIONS OF THE AIR CARRIER'S TARIFFS AND REGULATIONS. THE AIR CARRIER ACCEPTS NO LIABILITY FOR LOSS OF OR DAMAGE TO GOODS OR PROPERTY OF PASSENGERS OR CARGO. THE AIR CARRIER'S LIABILITY IS LIMITED TO THE AMOUNT OF THE TARIFFS AND REGULATIONS. THE AIR CARRIER'S LIABILITY IS LIMITED TO THE AMOUNT OF THE TARIFFS AND REGULATIONS.



OKANAGAN HELICOPTERS LTD.
 HEAD OFFICE:
 433 AGAR DRIVE, INTERNATIONAL AIRPORT SOUTH
 VANCOUVER, B.C. V7B 1A5
 TEL: (604) 278-5502 TELEX: 04-508883

ACCOUNT NUMBER		10710		113982	
FLIGHT DATE	160676	DAY	MONTH	YEAR	INV. DATE

CHARTERER'S BILLING ADDRESS

BASE NO.	BASE	AIRCRAFT TYPE	TYPE OF CONTRACT - X		SMITH'S	54
170	Smith's	206B	HORLY	DAILY MINIMUM 1 TO 29 DAYS	30 DAYS OR MORE	FLIGHT LOCATION
Cities Service Divco Inc. Corp.			IND. CLASS		AIRCRAFT REG. NO.	Blomfield
405-1200 W. Pender			03		FOA4	364
Vancouver B.C.			STATE OF AIRCRAFT - X		PILOT 1	PILOT 2
			UNSERVICABLE		STORED	PILOT 2
			ENG. NAME - 1		Base	
			ENG. NAME - 2			
PURCHASE ORDER NO.	NO. OF PASSENGERS	FREIGHT LBS.				

OPERATION	TAKE-OFF	LAND	FLYING TIME
Smith's - Morrison Lake Area			
Move F.P. Peew out + Move Fly Camp			2.4
<i>Perf. by</i>			
<i>Pl. S. Lavelle - 5811 H/B</i>			

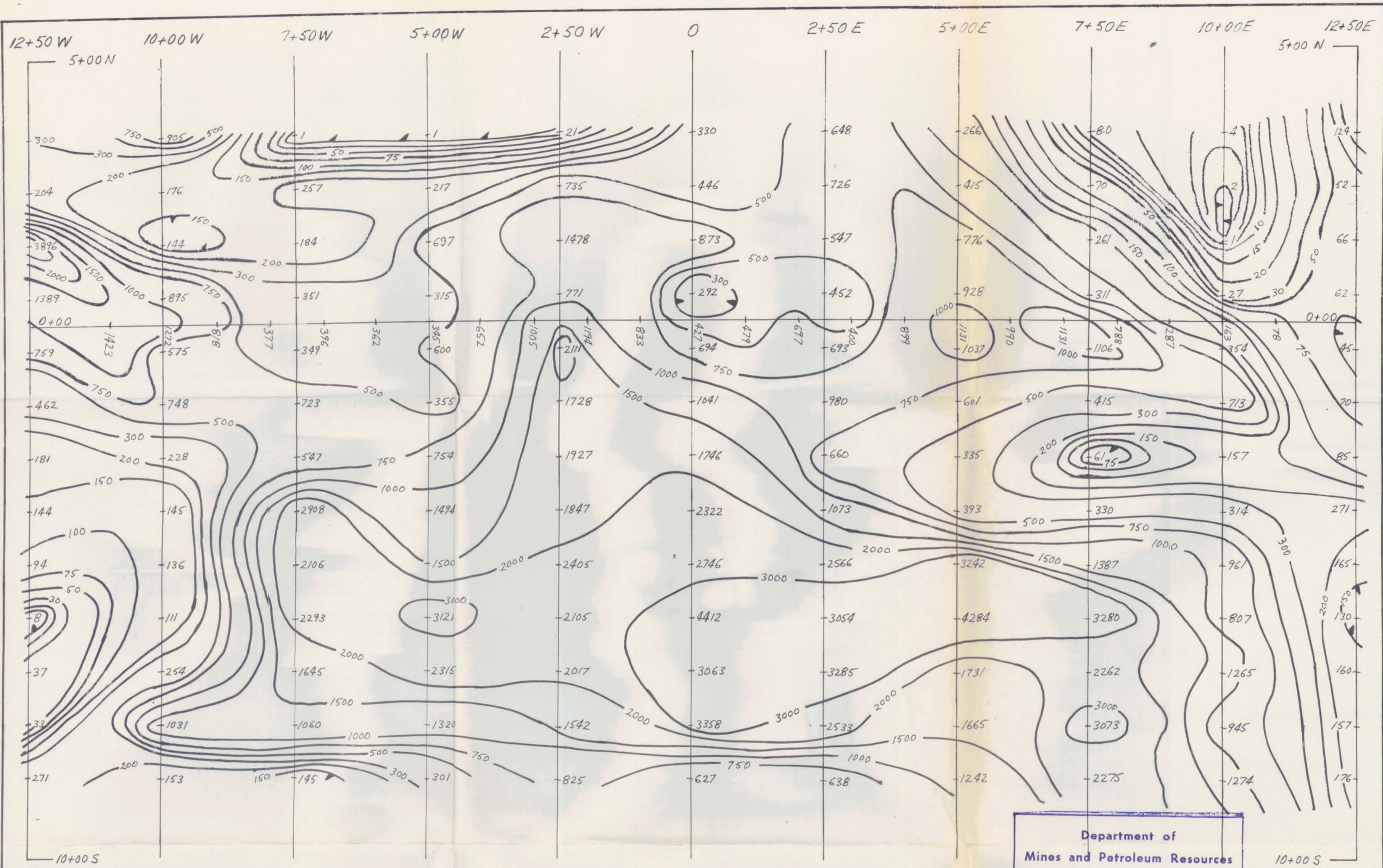
OUR TERMS ARE DUE & PAYABLE UPON RECEIPT OF INVOICE.
 Interest of 1 1/2% per month on amount due within 15 days from date of invoice.

PRINT NAME OF PERSON AUTHORIZED TO SIGN				ZONE <input checked="" type="checkbox"/> A <input type="checkbox"/> B <input type="checkbox"/> C <input type="checkbox"/> D		2.4
NO. OF PASSENGERS	NO. OF HOURS	EXTRA CHARGES OR ADJUSTMENTS	AMOUNT	NON REV. HRS.	REV. HRS.	TARIFF
					2.4	315.00
						756.00
						44.00

THE CARRIAGE OF PASSENGERS, BAGGAGE AND GOODS BY OKANAGAN HELICOPTERS LTD. IS SUBJECT TO THE TERMS, CONDITIONS AND LIMITATIONS OF LIABILITY SET FORTH IN THE CHARTER OF PASSENGERS AND BAGGAGE. LIMITED TO \$50,000 PER PERSON AND \$100,000 PER BAGGAGE. THIS LIMITATION DOES NOT APPLY TO THE CARRIAGE OF PASSENGERS OR BAGGAGE BY AIRCRAFT OPERATED BY OKANAGAN HELICOPTERS LTD. UNDER A CHARTER OF PASSENGERS AND BAGGAGE.

SIGNED FOR CHARTERER BY	SIGNED FOR CARRIER BY	OUR FUEL	OUR OIL	EXTRA CHARGES OR ADJUSTMENTS	TOTAL
<i>D. S. Lavelle</i>	<i>[Signature]</i>	5.5 GALS. @ 0.80	2.4 HRS. @ 0.80		\$ 801.90

INVOICE



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5941 MAP #1

LEGEND

- PICKET LINE
- APPARENT RESISTIVITY IN OHM METRES
- APPARENT RESISTIVITY CONTOUR INTERVAL
1.0, 1.5, 2.0, 3.0, 5.0, 7.5, 10.0, 15, 20, 30, 50, 75, 100, 150, 200, 300, 500, 750, 1000, 1500, 2000, 3000

P660 FREQUENCY DOMAIN IP
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
DIPOLE LENGTH = 100 METRES
OPERATORS: MORRISON & DEPAOLI
Claim location on fig. 6

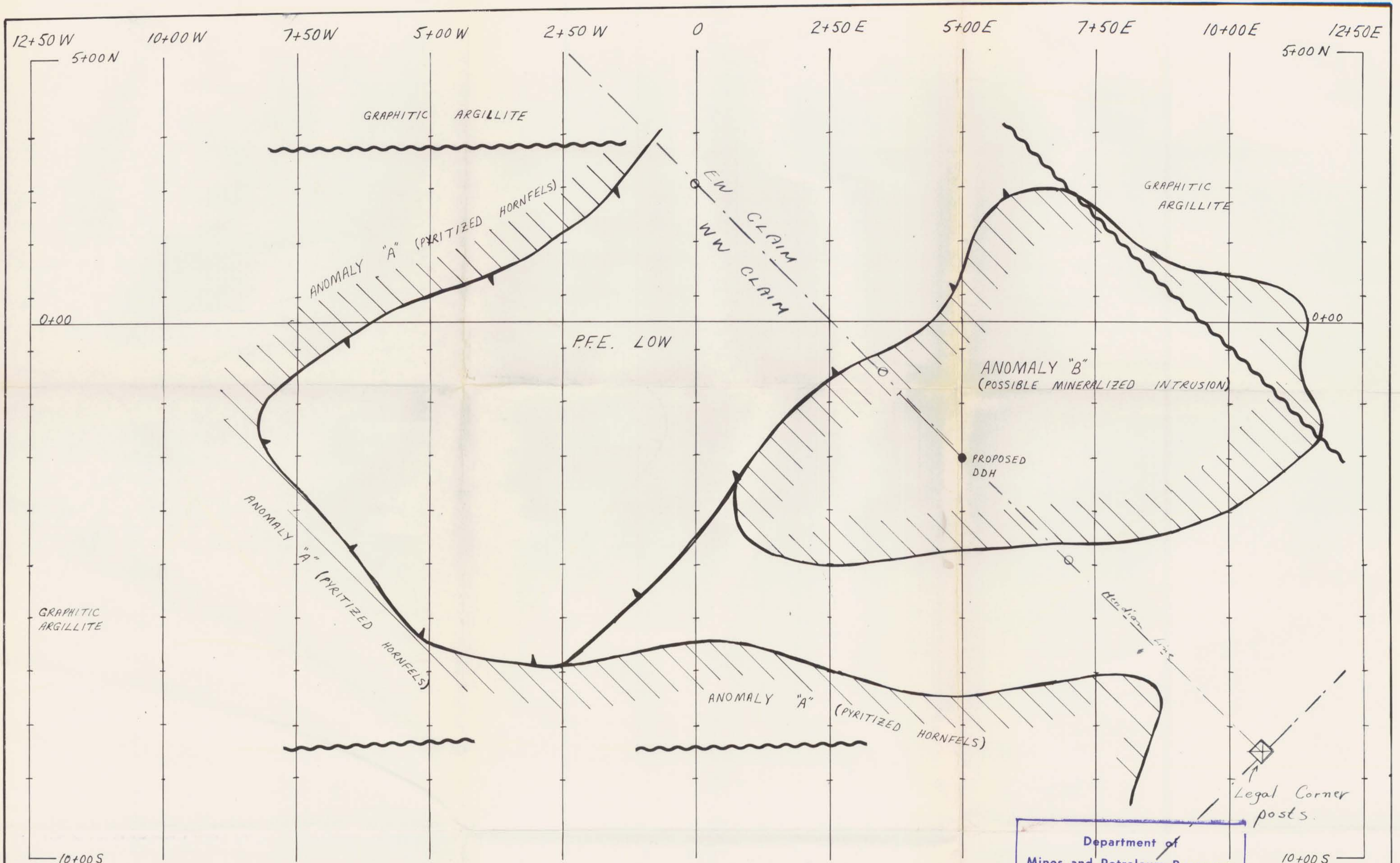
M-1
N
5941

CITIES SERVICE MINERALS CORP.
VANCOUVER B.C. CANADA




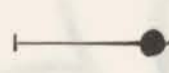
**MORRISON LAKE CU PROSPECT
PLAN RESISTIVITY N=1**

SCALE IN METRES

DATE: JUNE 19, 1976	N.T.S. No.:
DRAWN BY: G.M.D.	DRAWING No. FIGURE 4
GEOLOGIST: TO ACCOMPANY 1976 GEOPHYSICAL REPORT ON MORRISON LAKE CU PROSPECT BY GARRY M. DEPAOLI	



LEGEND

-  PFE LOW
-  PFE ANOMALY
-  POSSIBLE FAULT
-  RECOMMENDED D.D.H.

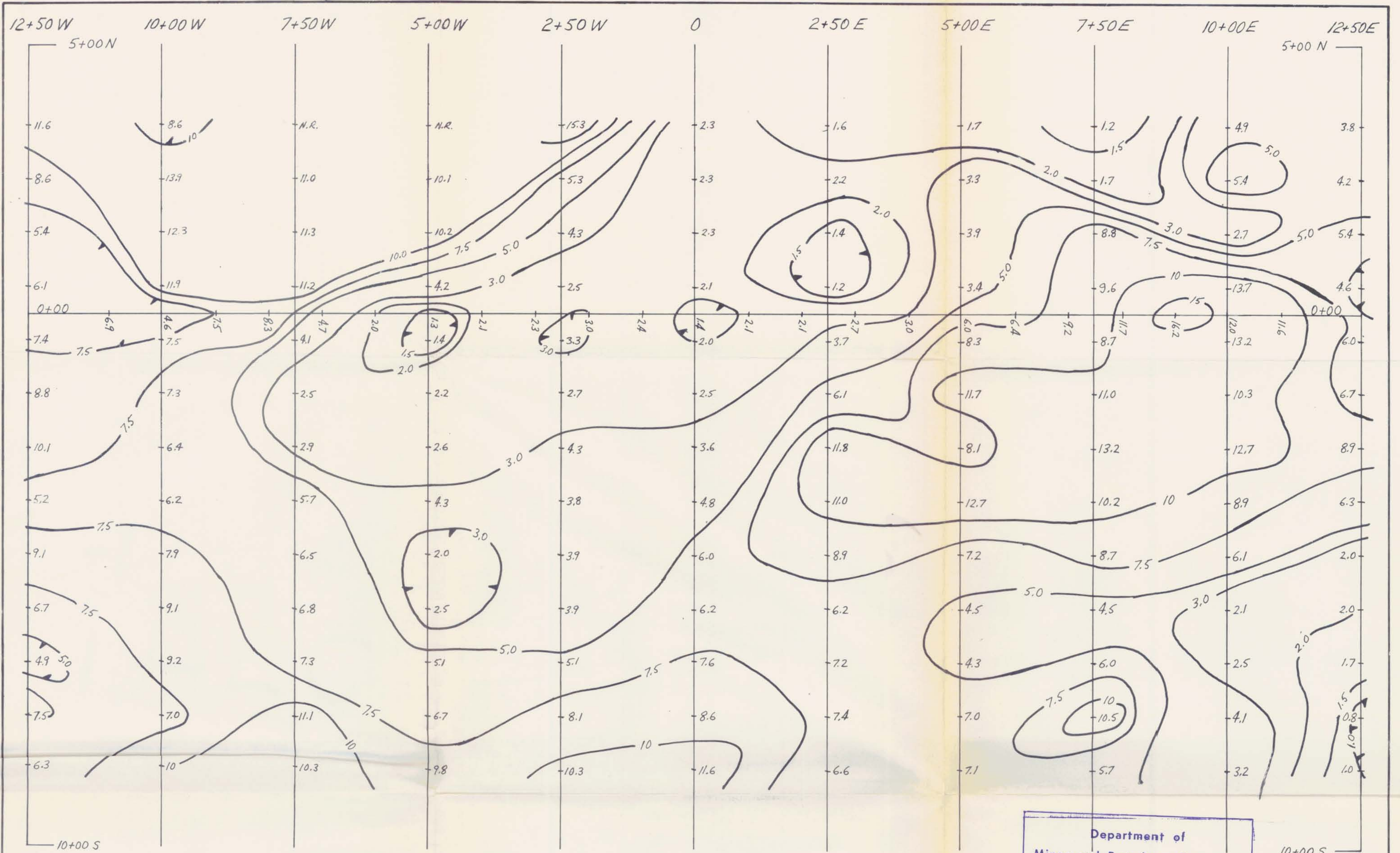
Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5941 MAP #3

CITIES SERVICE MINERALS CORP.
VANCOUVER B.C. CANADA

**MORRISON LAKE CU PROSPECT
GEOPHYSICAL INTERPRETATION**

SCALE IN METRES		0	100	200	300
DATE: JUNE 19, 1976	N.T.S. No.:				
DRAWN BY: G.M.D.	DRAWING No.: FIGURE 6				
GEOLOGIST: TO ACCOMPANY 1976 GEOPHYSICAL REPORT ON MORRISON LAKE CU PROSPECT BY GARRY M. DEPAOLI					

5941 M-3



LEGEND

- PICKET LINE
- PERCENT FREQUENCY EFFECT
- PFE CONTOUR
CONTOUR INTERVAL
1.0, 1.5, 2.0, 3.0, 5.0, 7.5, 10.0, 15.0

P660 FREQUENCY DOMAIN IP
0.3 AND 5.0 HERTZ
DIPOLE - DIPOLE ARRAY
DIPOLE LENGTH = 100 METRES
OPERATORS: MORRISON + DEPAOLI
Claim location on Fig. 6.

5941

M-2

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5941 MAP #2

CITIES SERVICE MINERALS CORP.
VANCOUVER B.C. CANADA

MORRISON LAKE CU PROSPECT
PLAN PFE N=1

SCALE IN METRES 0 100 200 300

DATE: JUNE 19, 1976 N.T.S. No.:

DRAWN BY: G.M.D. DRAWING No: FIGURE 5

GEOLOGIST: TO ACCOMPANY 1976 GEOPHYSICAL REPORT ON MORRISON LAKE CU PROSPECT BY GARRY M. DEPAOLI