

5038

1974 GEOPHYSICAL REPORT

ON THE

DEER CLAIM GROUP

SITUATED ON

NORTHERN VANCOUVER ISLAND

IN THE

NANAIMO MINING DIVISION

AT COORDINATES

50° 46' NORTH LAT.

128° 05' WEST LONG.

APPROXIMATELY 8 MILES

NORTH OF HOLBERG B.C.

OWNED BY

CITIES SERVICE MINERALS CORPORATION

SURVEYED BY

MORRISON & DE PAOLI

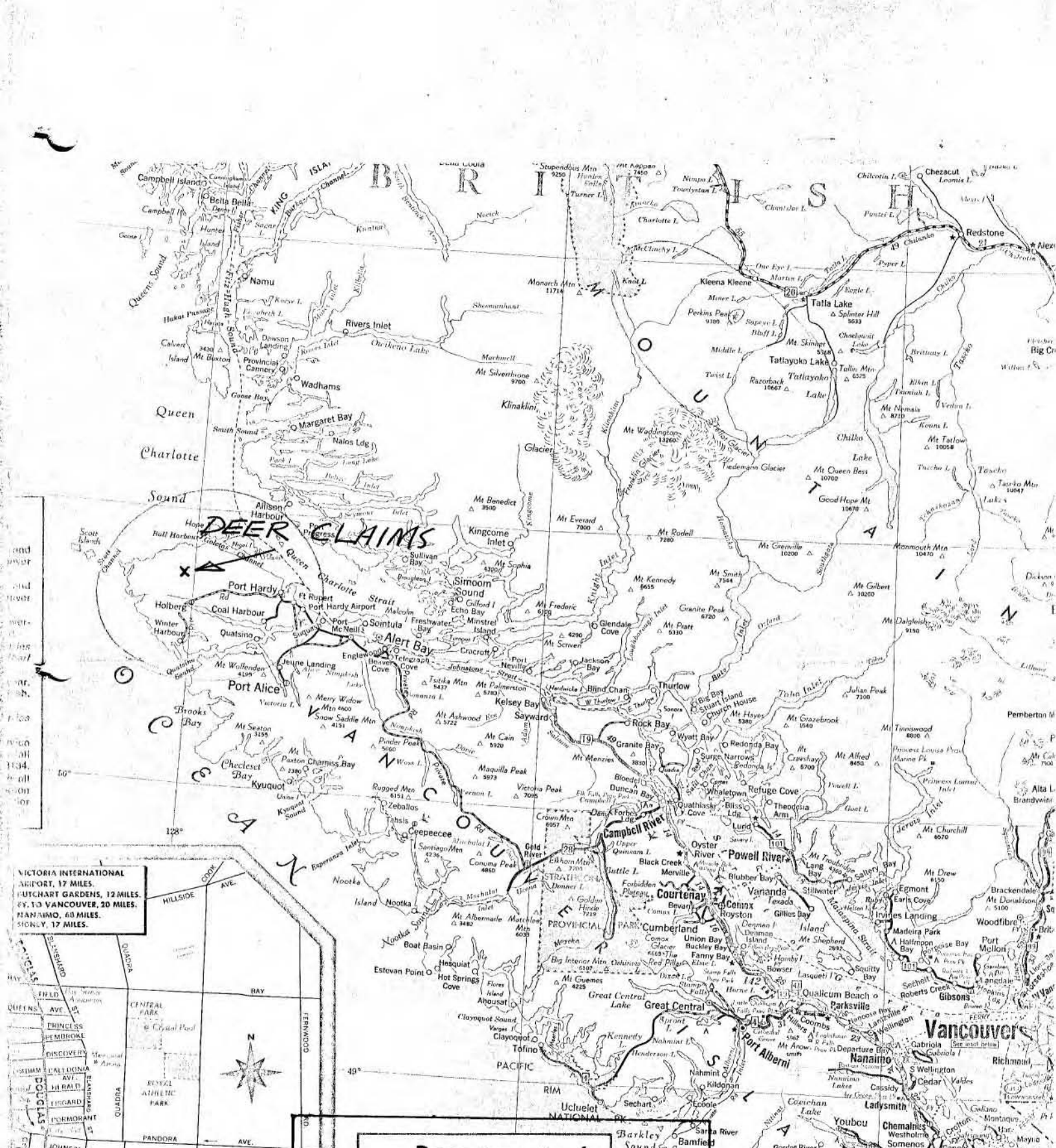
JUNE 1974

5038
102I/16E

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5038 MAP

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VICTORIA INTERNATIONAL AIRPORT, 17 MILES.
 HUTCHART GARDENS, 12 MILES.
 10 VANCOUVER, 20 MILES.
 NANAIMO, 60 MILES.
 SIDNEY, 17 MILES.

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 5038 MAP #1

FIG-1
 SCALE 1" = 31 MILES

INTRODUCTION

During the period May 30 to June 7, 1974, 6.6. line miles of induced polarization surveying were completed over the Deer Claim Group in Northern Vancouver Island in the Province of British Columbia. The work was carried out for Cities Service Minerals Corporation, by Morrison and De Paoli, geophysical contractors and consultants.

LOCATION & ACCESS

The Deer Claim Group is located in northern Vancouver Island at coordinates $50^{\circ}46'$ North Latitude and $128^{\circ}05'$ West Longitude. The claims are situated immediately northwest of Knob Hill approximately 8 miles north northwest of Holberg.

No road access exists to the property and men and equipment for the survey were airlifted by helicopter from Elephant Crossing 2 miles northwest of Holberg.

GRID CONTROL

Control for the survey consisted of a cut and flagged, chain and compass grid. The baseline extends for 6000 feet at azimuth 300° and seven perpendicular cross lines spaced 1000 feet apart were surveyed. In addition, a portion of one claim line in the southern portion of the Claim Group was also surveyed. (See claim map Figure 2)

GENERAL GEOLOGY (After K. E. Northcote 1970)

The claims straddle an inferred major contact between the volcanic Bonanza Subgroup of Upper Triassic Age and the Island Intrusive belt which varies in composition from diorite to granite.

The southern portion of the property is underlain by arenites and tuffs of the Bonanza Formation that are intruded by late stage quartz monzonite dykes.

Interest in the property is focused on anomalous copper values obtained in a 1973 geochemical rock and soil sampling program.

INDUCED POLARIZATION SURVEY

1) Introduction & Theory

An induced polarization survey was executed over the Deer Claim Group to test for the possibility of a subsurface concentration of copper sulphides.

Induced polarization as a geophysical measurement refers to the 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. 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 (ground water) to electronic in the metallic minerals present in the rock.

2) Instrumentation and Procedure

A McPhar Induced Polarization System Model P660 was employed for the survey. Percent frequency effect and apparent resistivity measurements were obtained in the frequency domain using a low frequency of 0.3 hertz and a high frequency of 5.0 hertz.

The transmitter is a manually variable voltage source. Its output current is regulated and kept constant for large loads and input voltage changes. The power was obtained from a 2.5 KW- 400 hertz motor generator.

The maximum output current is 5.0 amps. The maximum output voltage is 690 volts.

The receiver is a potentiometer type, where the amplified and filtered signal is compared with a reference voltage.

A dipole-dipole in line array was utilized for the survey. The dipole length was 200 feet and readings were taken to four separations (i.e. $a=200'$; $n=1,2,3,4$). Set-up stations for the packboard mounted generator and transmitter were selected on each grid line from which currents were directed to each transmitting dipole. Current electrodes consisted of five foot stainless steel rods. Receiving dipole ground contact was made with porous pots filled with a solution of copper sulphate.

DATA PRESENTATION

The data has been presented in a vertical section or pseudosection profile for each line in Figures 3(a) - (h) after page 11. Each pseudosection displays the apparent resistivity, in $\rho_a/2$ ohm-feet, the calculated metal factor and the percent frequency effect. In addition, the contoured second separation apparent resistivity values and second separation percent frequency effect values ($n=2$) are shown in plan view in Figures 4 and 5 respectively. Figure 6 is an interpretational map relating the geophysical data to possible geological parameters. Figure 3 (h), the claim line traverse has not been presented in plan since it is south of the grid. Its position is marked on the claim map (Figure 2).

WORK SUMMARY

- 1) 7.8 miles cut, flagged and chained grid lines May 23 to May 30, 1974.
- 2) 6.6 miles Induced Polarization Survey May 30 to June 7, 1974.

RESULTS & INTERPRETATION

A continuous induced polarization anomaly was obtained in the southern portion of the grid area. It has a strike length of 4,000 feet and ranges in width from 100' to 800'. It is characterized by percent frequency effects ranging from 6% to a high of 11% P.F.E. in an assigned background of 3% P.F.E. In this environment, the anomalous P.F.E. zone obtained is interpreted to reflect 1.5% to 3% total sulphides by volume. The only other portion of the grid area containing P.F.E. values greater than 6% occurs on Line 3 West at 18+00 W., where one isolated measurement of 8.7% P.F.E. was obtained.

As a general statement high apparent resistivity values were obtained over most of the survey area. No resistivity layering was encountered on the grid area and shallow overburden (less than 30 feet) is interpreted.

Two belts of low apparent resistivity were defined by the survey. The first belt parallels and occurs immediately south of the baseline, it has no associated P.F.E. anomaly. The second series of low resistivities values lie further south and correlate well with the 6% to 11% P.F.E. anomaly.

No anomalous P.F.E. values were noted on the claim line traverse, however, inverse resistivity layering is indicated. The resistivity values are anomalously high near surface and then decrease with depth. The possibility exists that a highly resistive surface layer, acting as an insulator is masking the intrinsic polarizability of underlying rock.

CONCLUSION

While executing the survey several volcanic rocks containing minor amounts of pyrite were noted in outcrops south of the baseline. One outcrop of Island Intrusive rock was noted in the northern portion of the survey grid area. An inferred contact between Island Intrusive and Upper Triassic Bonanza volcanic rocks has been suggested by K.E. Northcote, which would traverse the property. The first belt of resistivity lows immediately south of the baseline may be a reflection of this contact if faulting has also occurred. The exact position of the contact can only be defined by geological mapping. One possible location has been selected and is marked in Figure 6.

The source of the southern P.F.E. anomaly would appear to be pyrite mineralization within volcanic rocks. Genesis of the pyrite could be explained by an increased pyritization within the volcanic rocks near the Island Intrusive contact.

RECOMMENDATIONS

The southern P.F.E. anomaly should be prospected, possibly along the creek which drains westward, to geologically determine the source of the induced polarization anomaly. If no copper sulphide mineralization is observed, no further work is recommended.

Respectfully Submitted:

Garry De Paoli

G.M. De Paoli, Geophysicist, B.Sc.
MORRISON & DE PAOLI I.P. SURVEYS

June 1974
Holberg, B.C.

J. W. Murton
J. W. Murton, P. Eng.



STATEMENT OF EXPENDITURES INCURRED FOR ASSESSMENT PURPOSES ON
THE DEER MINERAL CLAIMS, NANAIMO M.D. MAY 22 - JUNE 7/74

Linecutting & Chaining

G. Hawkins - Geologist 8 days @ \$43.20/day	\$ 345.60
B. Day - Field Assistant 8 days @ \$36.40/day	291.20
W. Murton - Office & Supervision 3 days @\$73.80/day	221.40

I. P. Survey

Morrison & De Paoli I.P. Surveys	
7 operating days @\$250.00/day	1,750.00
5 standby days @\$100.00/day	500.00
K. Ronneseth - Geophysical Assistant 12 days @\$28.00/day	340.80
R. Yorke - Geophysical Assistant 12 days @\$28.40/day	340.80
G. Hawkins - Supervision 12 days @\$43.20/day	518.40

Camp Costs

79 man days @\$15.20/man day	1,200.80
------------------------------	----------

Transportation

Vancouver to Holberg & Return	120.00
Truck Rentals: 2 trucks @\$500.00/month (\$1000 x 12/30)	400.00
1 truck @\$380/month (\$380 x 17/30)	215.30
Gas & Oil	57.00

Helicopter to property & return:

2 men in .7 hours	
2 men out & I.P. in 1.3 hours	
I.P. out & extra line 3.1 hours	
Total 5.1 hours @\$264.68/hour	1,349.86

Miscellaneous

350.00

Total \$8,001.16

Declared before me in the Cities of
Nanaimo B.C., this 9th day of
July 1974 A.D.

G. Phillips

SUB-MINING RECORDER

J. W. Murton
 J. W. Murton, P. Eng.



MORRISON & DePAOLI I.P. SURVEYS
GEOPHYSICAL CONTRACTORS & CONSULTANTS

VANCOUVER (604) 299-4964
TORONTO (705) 687-2009
JUNE 14, 1974

CITIES SERVICE MINERALS CORP.,
#405-1200 WEST PENDER STREET,
VANCOUVER 1, B.C.

RE: Induced Polarization Survey over the Deer Claim Group.	
7 Operating Days @ \$250.00 per day \$1750.00
5 Standby and Travel Days @ \$100.00 per day \$500.00
Total Amount Due and Payable <u>\$2250.00</u>

Yours very truly,

D.F. Morrison
D.F. MORRISON

DFW/gmd

581 E-2 geophysical
JFM

oh. bar

DEER CLAIMS at JUNE 30, 1974

<u>Claim #</u>	<u>Record #</u>	<u>Expiry Date</u>	<u>Claim #</u>	<u>Record #</u>	<u>Expiry Date</u>
Deer 1	36727	March 20, 1975	Deer 51	36924	July 9, 1974
2	28	" " "	52	25	" " "
3	29	" " "	53	26	" " "
4	30	" " "	54	27	" " "
5	31	" " "	55	28	" " "
6	32	" " "	56	29	" " "
7	33	" " "	57	30	" " "
8	34	" " "	58	31	" " "
9	35	" " "	59	32	" " "
10	36	" " "	60	33	" " "
11	37	" " "	61	34	" " "
12	38	" " "	62	35	" " "
13	39	" " "	63	36	" " "
14	40	" " "	64	37	" " "
15	41	" " "	65	38	" " "
16	42	" " "	66	39	" " "
27	36900	July 9, 1974	67	40	" " "
28	01	" " "	68	41	" " "
29	02	" " "	69	42	" " "
30	3	" " "	70	43	" " "
31	4	" " "	71	44	" " "
32	5	" " "	72	45	" " "
33	6	" " "			
34	7	" " "			
35	8	" " "			
36	9	" " "			
37	10	" " "			
38	11	" " "			
39	12	" " "			
40	13	" " "			
41	14	" " "			
42	15	" " "			
43	16	" " "			
44	17	" " "			
45	18	" " "			
46	19	" " "			
47	20	" " "			
48	21	" " "			
49	22	" " "			
50	23	" " "			

C E R T I F I C A T I O N

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, British Columbia 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 5 years in Northern Ontario, Quebec, Manitoba, Western U.S.A., Yukon Territoritoes 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 Deer Claim Group nor do I expect to receive any.
5. That the information contained herein was compiled as a result of an Induced Polarization Survey conducted during the period May 30 to June 7, 1974.

G. M. DePaoli
Geophysicist, B. Sc.

Holberg, B.C.
26 June 1974

C E R T I F I C A T I O N

I, DENNIS F. MORRISON, of the City of Gravenhurst, in the Province of Ontario, hereby certify as follows:

1. That I have First Year University credits at the University of Waterloo, Waterloo Ontario.
2. That I was employed as an electronic technician during 1962-1966 for the Bell Telephone Company of Canada in Toronto.
3. That I was employed by McPhar Geophysics as an Induced Polarization Operator and Crew Chief during the period 1967-1971.
4. That I have been self-employed as an independent Induced Polarization Contractor from 1971-1974.
5. That I have comprehensive induced polarization operating experience in Newfoundland, Nova Scotia, Quebec, Ontario, Manitoba, B.C., Yukon Territories and Northwest Territories and Panama.
6. That I have no interest directly or indirectly in the Deer Claim Group nor do I expect to receive any.

D. F. MORRISON

Holberg, B.C.
26 June 1974

C E R T I F I C A T I O N

I, J. W. Murton, of North Vancouver, British Columbia, do hereby certify that:

I am a member of the Association of Professional Engineers of the Province of British Columbia, registered in 1972, No. 8324.

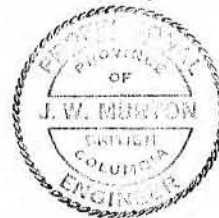
I am a graduate of the University of Manitoba with a B.Sc. in Geology.

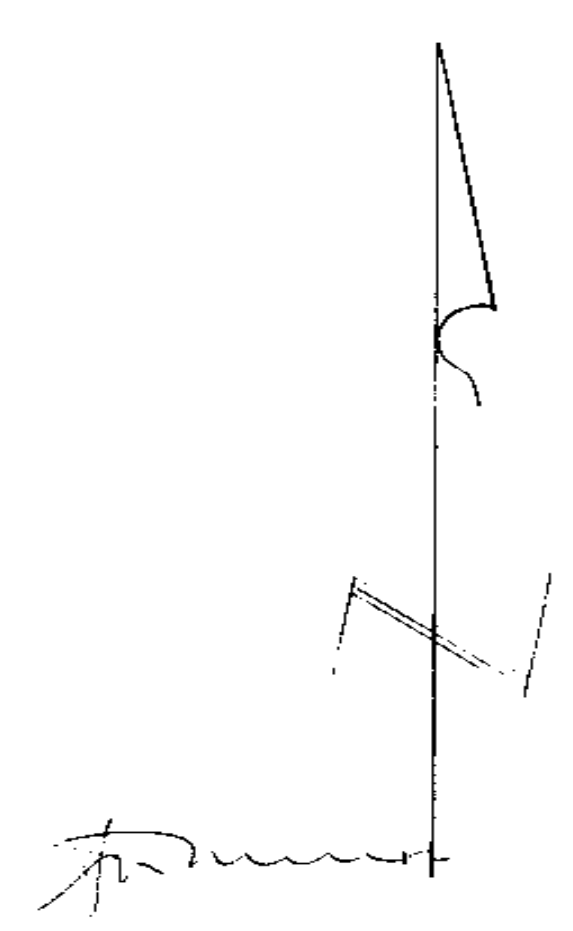
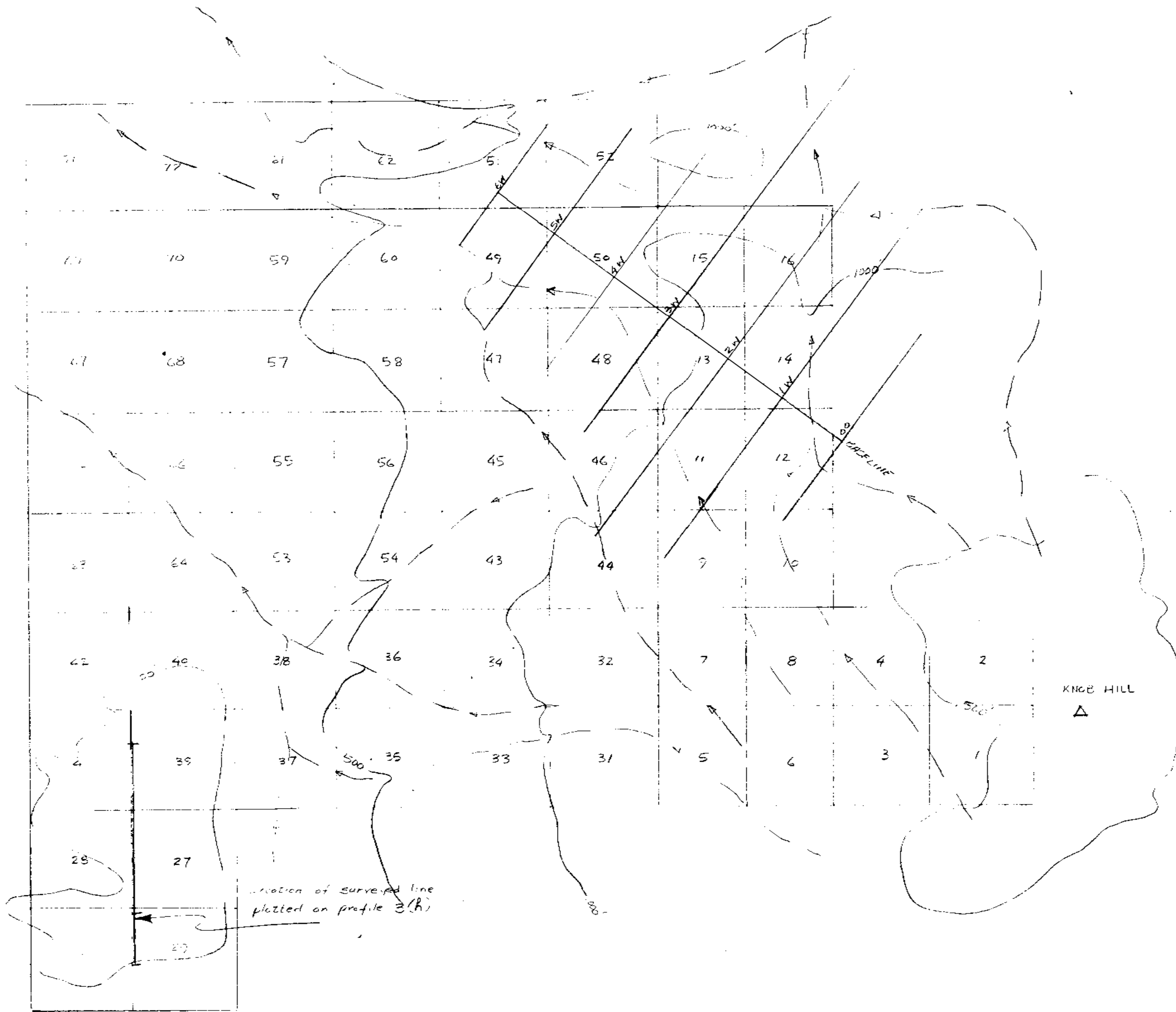
I have been a practising Engineer and Geologist since 1960 in Manitoba, Saskatchewan, British Columbia, South Western U.S.A. and Alaska.

Vancouver, B.C.

July 4, 1974


J. W. Murton, P. Eng.



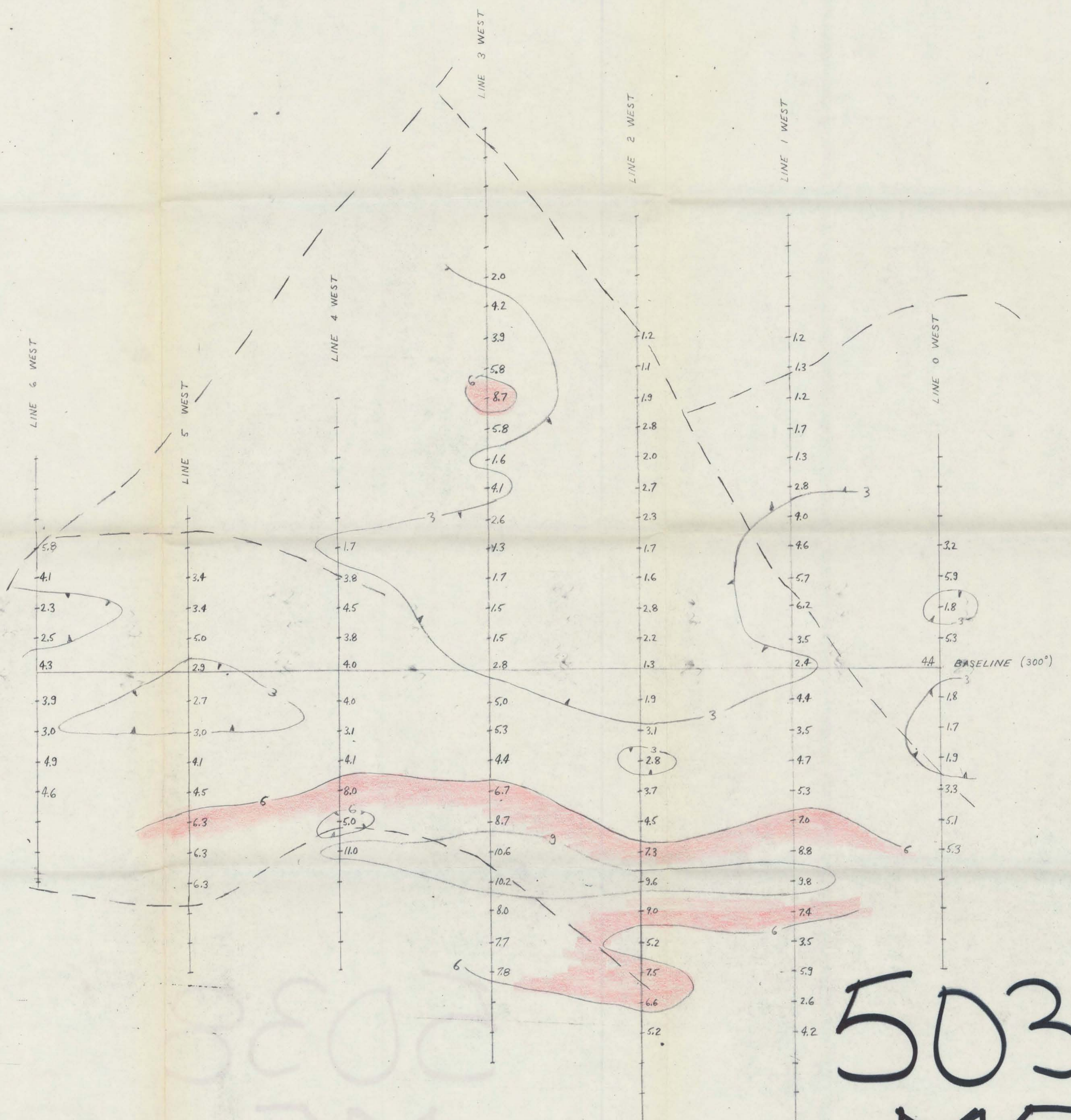


128° 05'
 APPROXIMATE
 50° 45'

5038
 M2

CITIES SERVICE MINERALS CORP.		Department of
VANCOUVER B.C. CANADA		Mines and Petroleum Resources
CLAIM MAP		ASSESSMENT REPORT
DEER CLAIMS		NO. 5038 MAP #2
SCALE IN FEET	0 1000 2000 3000	
DATE: JULINE 1974	N.T.S. No.	
DRAWN BY: LWM	DRAWING No: 2	
REVISION:		

To Accompany 1974 GEOPHYSICAL REPORT BY
 G.M. DEPAOLI & L.W. MURTON PENG. CLAIM NO. 5038



LEGEND

- GRID LINE AND STATION
- - - STREAM
- 6.1 PERCENT FREQUENCY EFFECT (P.F.E.)
- P.F.E. CONTOUR
- CONTOUR INTERVAL 3, 6, 9, 12
- SURVEY ARRAY
- DIPOLE - DIPOLE $a=200'$ $N=2$

J. V. Murton

PROFESSIONAL
ENGINEER
OF
BRITISH
COLUMBIA

CITIES SERVICE MINERALS CORP.
VANCOUVER B.C.

CONTOURED PLAN P.F.E. MAP, N=2
DEER CLAIM GROUP

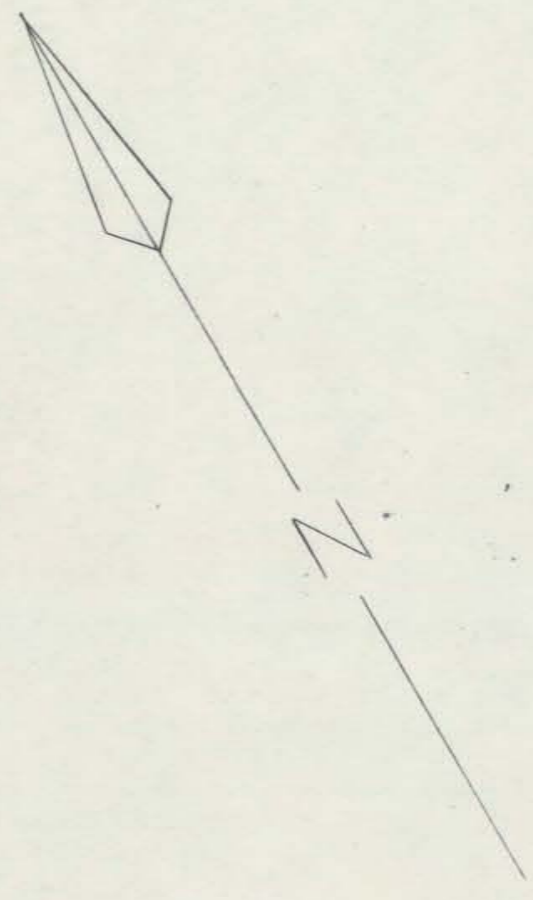
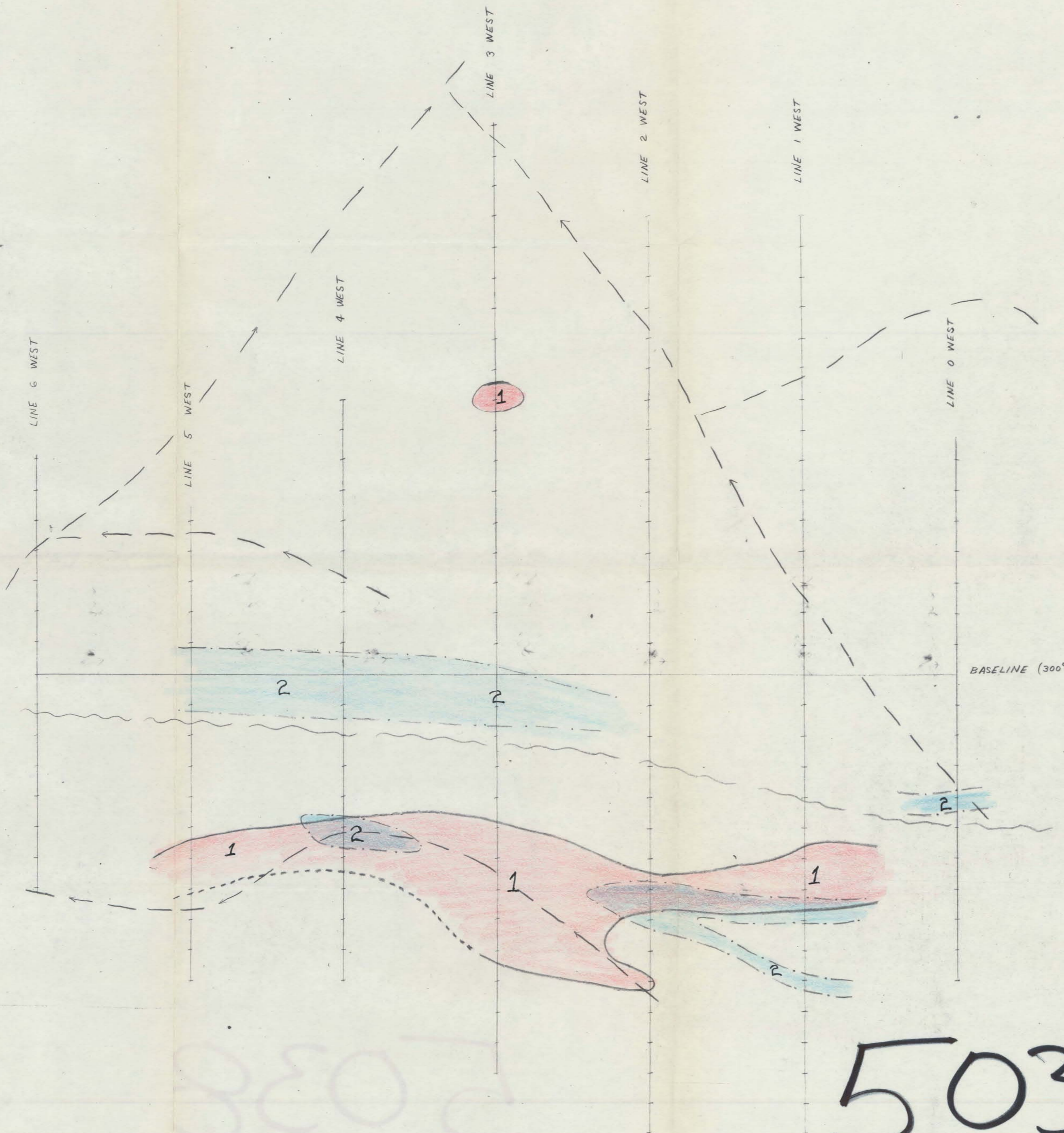
DATE - JUNE 1974 SCALE 1"=400' DRAWN BY - G. DEPAOLI

TO ACCOMPANY 1974 GEOPHYSICAL REPORT
BY G.M. DEPAOLI AND J.V. MURTON, P. ENG.

NANAIMO B.C.

5038
M5

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 5038 MAP #5



LEGEND

- GRID LINE AND STATION
- STREAM
- 1 — LOW SULPHIDE ZONE, DEDUCED, INFERRED ESTIMATED TO CONTAIN 1.5-30% SULPHIDES BY VOLUME
- 2 — AREAS OF LOW RESISTIVITY < 200 $\frac{\rho}{ft}$ OHM-FT.
- POSSIBLE CONTACT BETWEEN ISLAND INTRUSIVE ROCK TO THE NORTH AND UPPER TRIASSIC BONANZA VOLCANIC UNIT TO THE SOUTH.

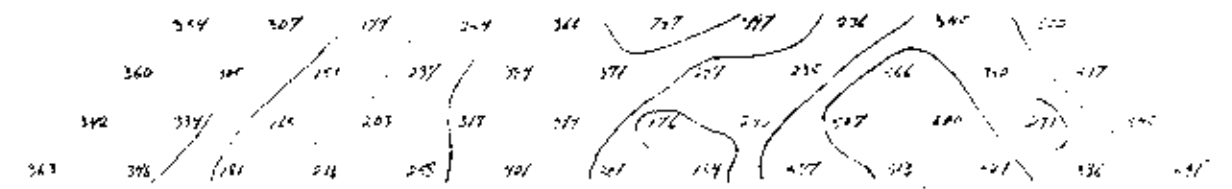
J. W. Murton
 PROFESSIONAL ENGINEER
 PROVINCE OF BRITISH COLUMBIA
 J. W. MURTON

CITIES SERVICE MINERALS CORP. VANCOUVER B.C.		Department of Mines and Petroleum Resources
INTERPRETATION MAP DEER CLAIM GROUP		ASSESSMENT REPORT NO. 5038 MAP #6
DATE - JUNE 1974	SCALE 1" = 400'	DRAWN BY - G. DEPAOLI
TO ACCOMPANY 1974 GEOPHYSICAL REPORT BY G.M. DEPAOLI AND J.W. MURTON, P. ENG.		HANAIMO M.D. FIGURE 6

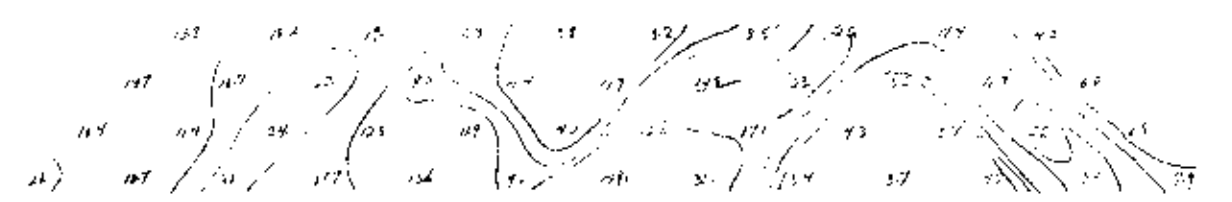
5038
M6

C.F. 1

100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370 380 390 400 410 420 430 440 450 460 470 480 490 500 510 520 530 540 550 560 570 580 590 600 610 620 630 640 650 660 670 680 690 700 710 720 730 740 750 760 770 780 790 800 810 820 830 840 850 860 870 880 890 900 910 920 930 940 950 960 970 980 990 1000



CITIES SERVICE MINERALS CORP
 NORTHERN VANCOUVER ISLAND, B.C.
 DEER GROUP CLAIMS
 HIGH POWER I.P.
 DIPOLE - DIPOLE ARRAY
 FREQ = 5.0 + 0.3 HZ.
 DATE = MAY 30, 1974
 OPERATORS = MORRISON + DEPAOLI



LINE 0 WEST

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 5038 MAP #3a

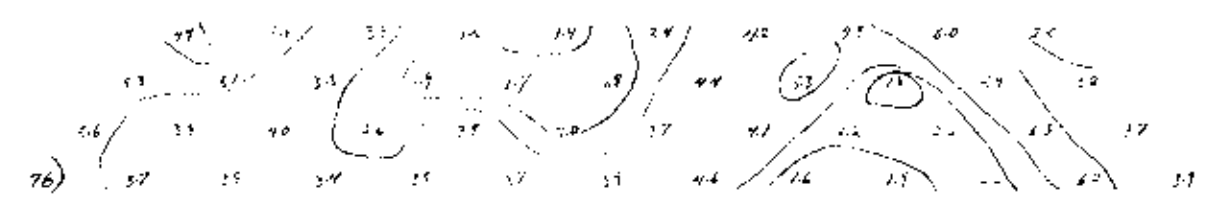
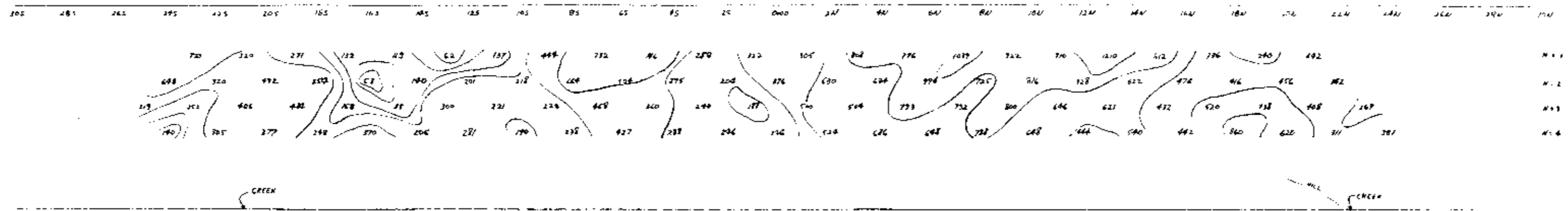
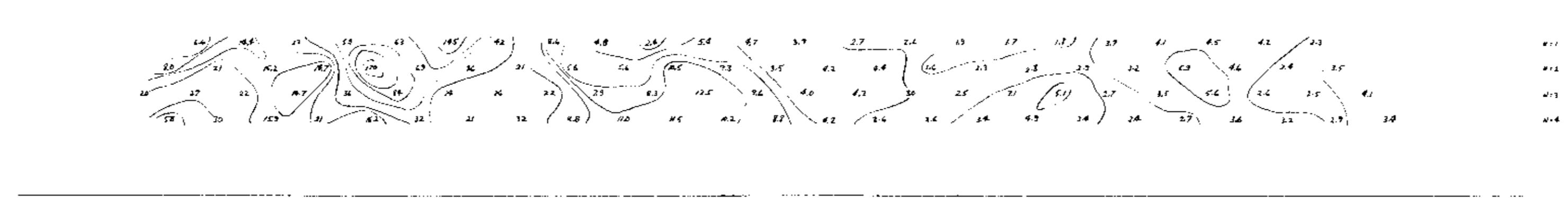


FIGURE 3(a)

LINE 2 WEST



CITIES SERVICE MINERALS CORP.
 NORTHERN VANCOUVER ISLAND, B.C.
 DEER GROUP CLAIMS
 HIGH POWER I.P.
 DIPOLE - DIPOLE ARRAY
 FREQ:- 50 + 0.3 HZ
 DATE- JUNE 3, 4, 1974
 OPERATORS- MORRISON + DEPAOLI



LINE 2 WEST

Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 NO. 5038 #3c

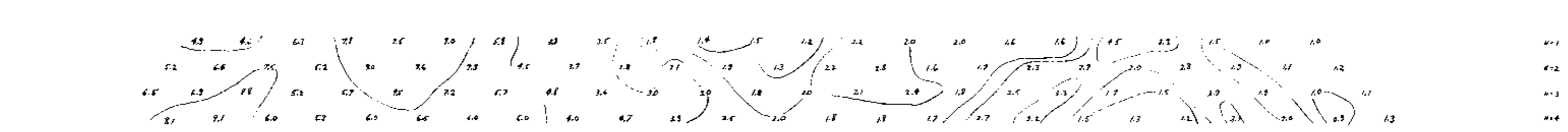


FIGURE 3(c)

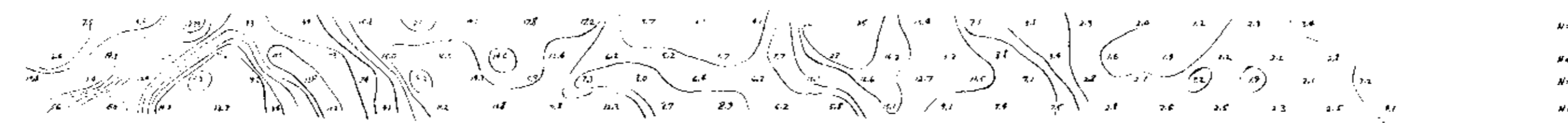
321 287 205 185 153 205 185 145 125 105 85 65 45 25 500 400 300 200 100 50 0 50 100 150 200 250 300 350 400 450 500 550 600 650 700 750 800 850 900 950 1000



NOTE: LINE STATIONS TO THE SOUTH MARKED AS NORTH FROM E.L.

CITIES SERVICE MINERALS CORP
 NORTHERN VANCOUVER ISLAND B.C.
 DEER GROUP CLAIMS
 HIGH POWER I.P. (DIPOLE - DIPOLE)
 FREQ: 5.0 + 0.3 KHZ.
 DATE: MAY 31, 1974
 OPERATORS: MORRISON + DEPALLI

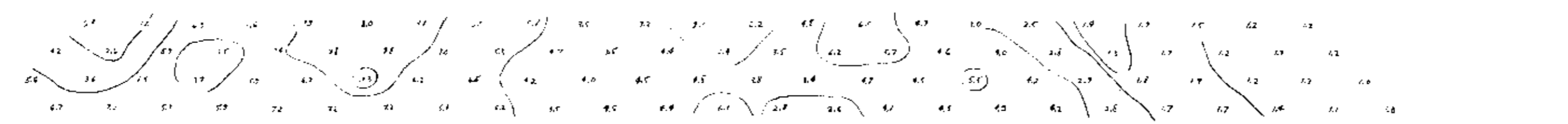
See/2P



LINE: 1 WEST

M.E

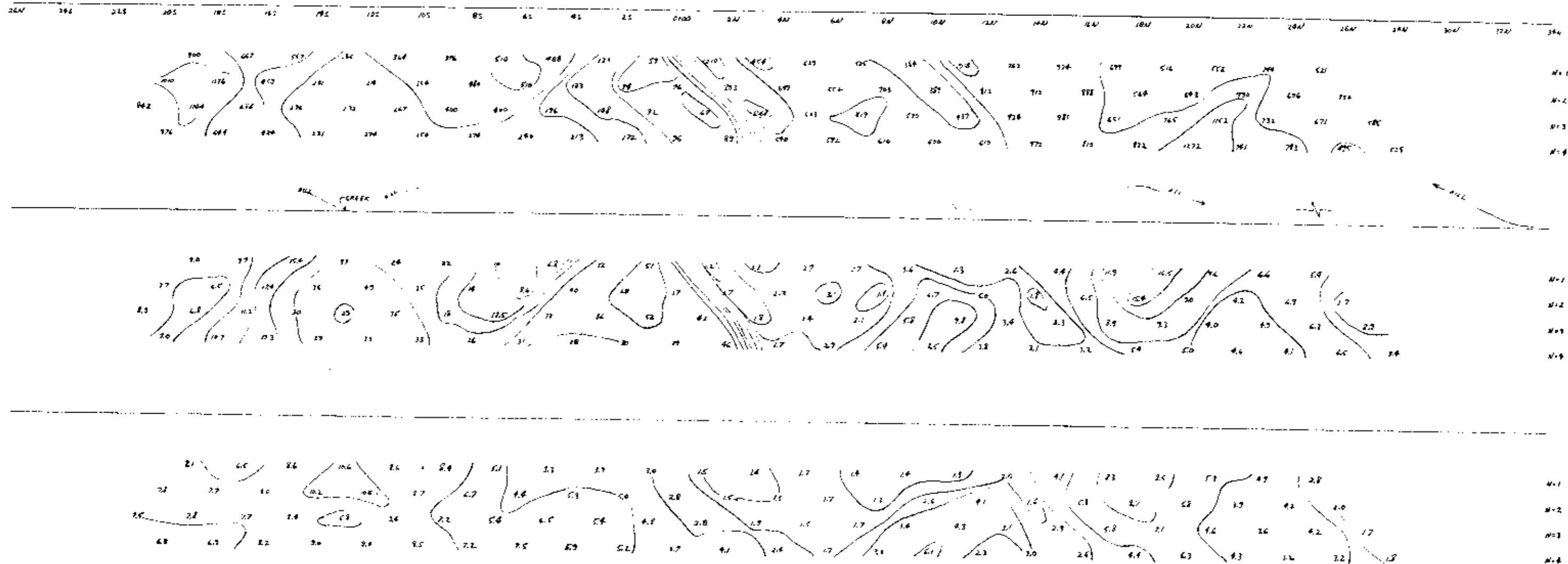
Department of
 Mines and Petroleum Resources
 ASSESSMENT REPORT
 No. **5038** MAP #3b



F.E.

FIGURE 3(b)

LINE 3 W.



J.C./27

CITIES SERVICE MINERALS CORP
 NORTHERN VANCOUVER ISLAND, BC
 DEER GROUP CLAIMS
 HIGH POWER I.P.
 DIPOLE - DIPOLE ARRAY
 FREQ = 5.0 + 0.3 HZ
 DATE = JUNE 4, 5, 1974
 OPERATORS - MORRISON + DEPAOLI

LINE 3 WEST

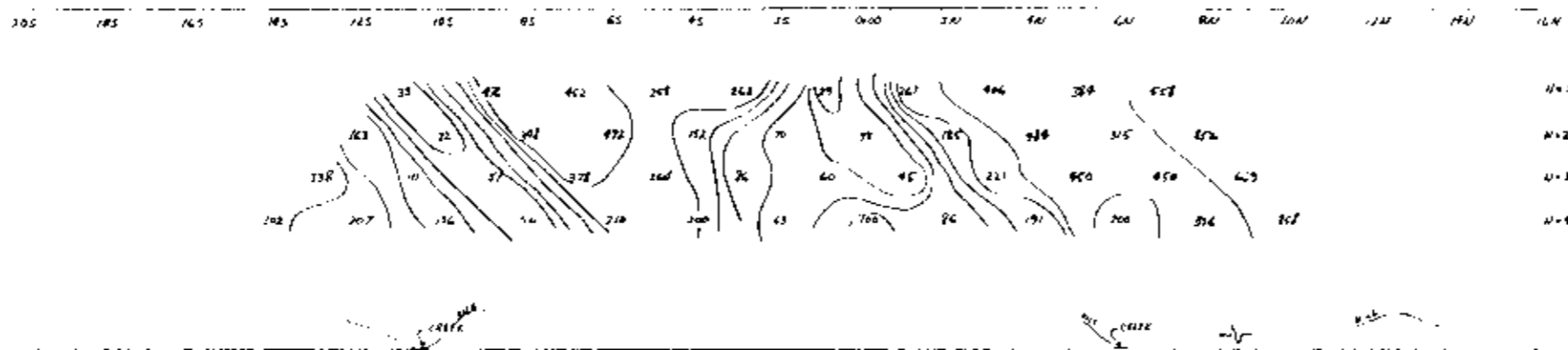
M.F.

Department of
 Mines and Geoscience Resources
 ASSESSMENT REPORT
 NO. 5038 #3d

F.E.

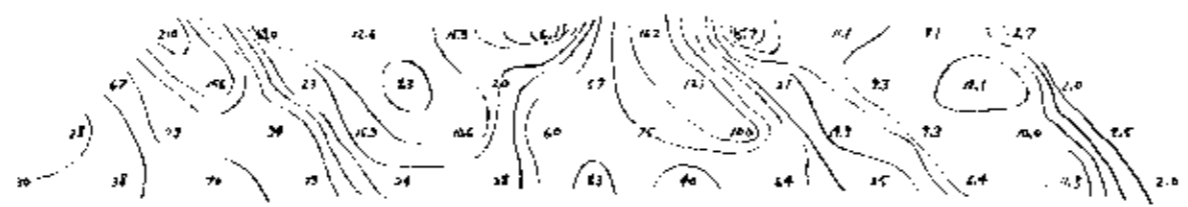
FIGURE 314,

LINE 4 W.



3(a)/2π

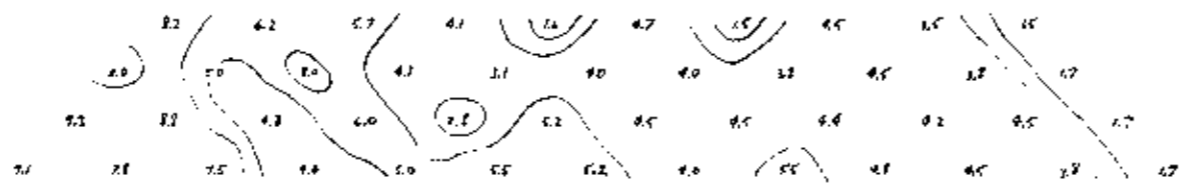
CITIES SERVICE MINERALS CORP
 NORTHERN VANCOUVER ISLAND, B.C.
 DEER GROUP CLAIMS
 HIGH POWER I.P.
 DIPOLE - DIPOLE ARRAY
 FREQ = 5.0 ± 0.3 HZ
 DATE = JUNE 5, 1974
 OPERATORS = MORRISON + DEPAOLI



LINE 4 WEST

M.F.

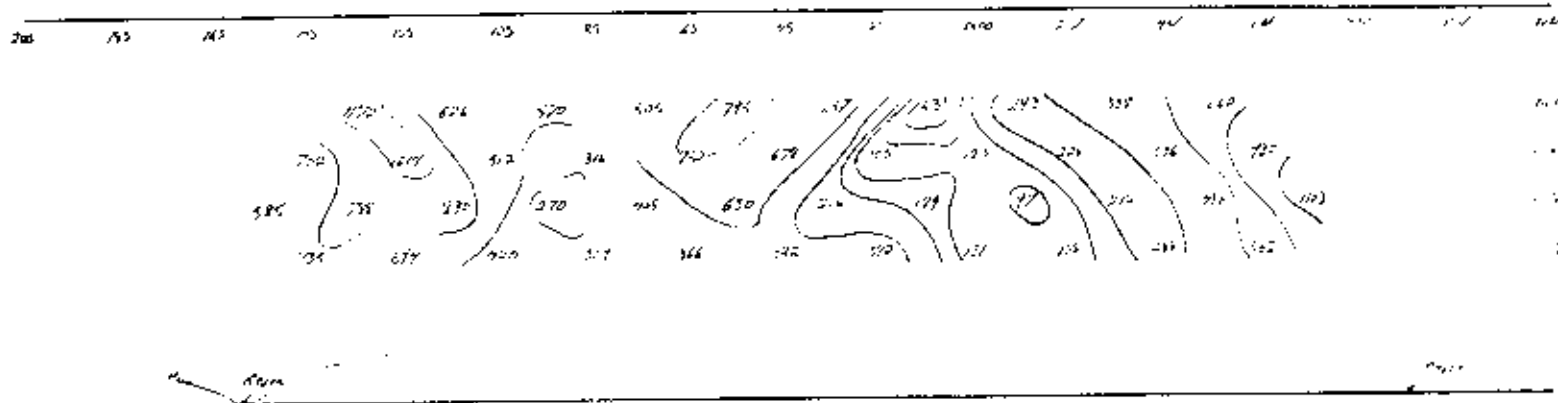
Department of
 Mines and Geology Resources
 ANSE REPORT
 NO. 5038 #3c



F.E.

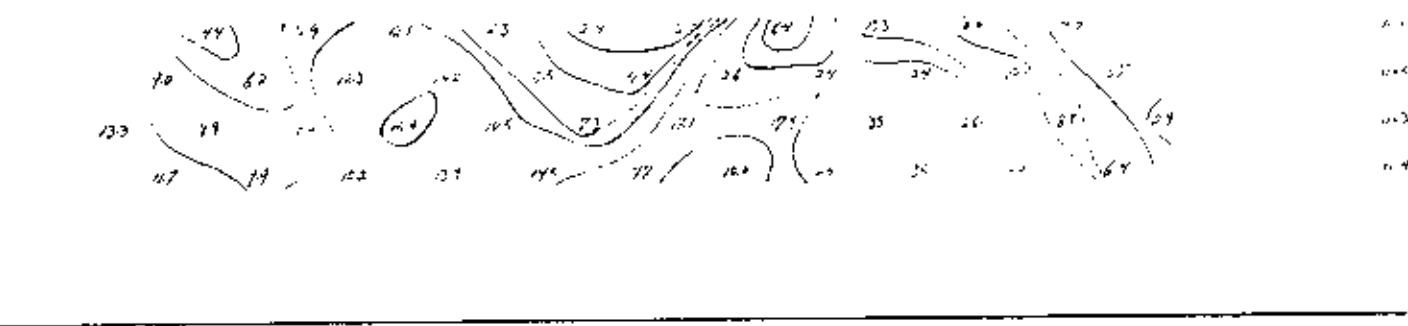
FIGURE 3(re)

L. 5W



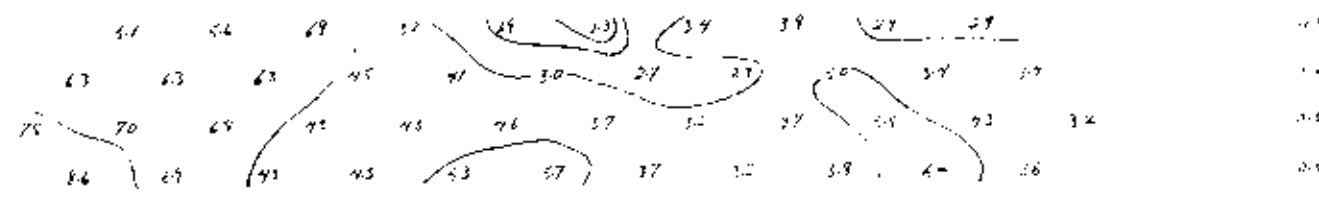
100
100
100
100

CITIES SERVICE MINERALS CORP
 NORTHERN VANCOUVER ISLAND, B.C.
 DEER GROUP CLAIMS
 HIGH POWER I.P.
 DIPOLE - DIPOLE ARRAY
 FREQ - 5.0 + 0.3 HZ.
 DATE - JUNE 6, 1974
 OPERATORS - MORRISON + DEPAOLI



100
100
100
100

LINE - 5 WEST

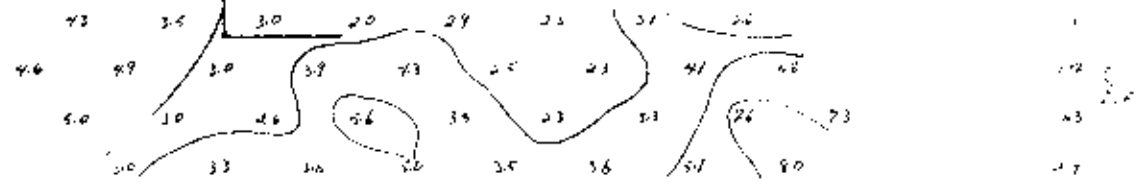
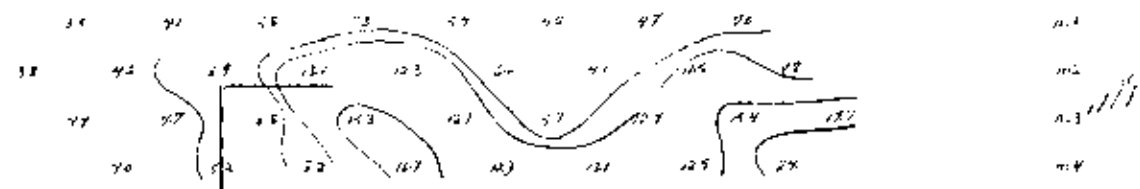
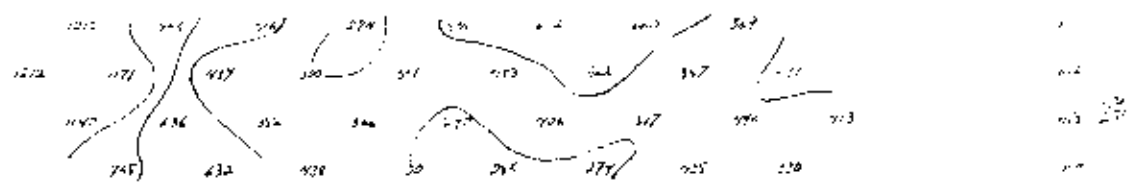
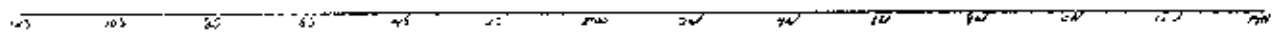


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100
100

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FIGURE 3(f)

Line 6 West



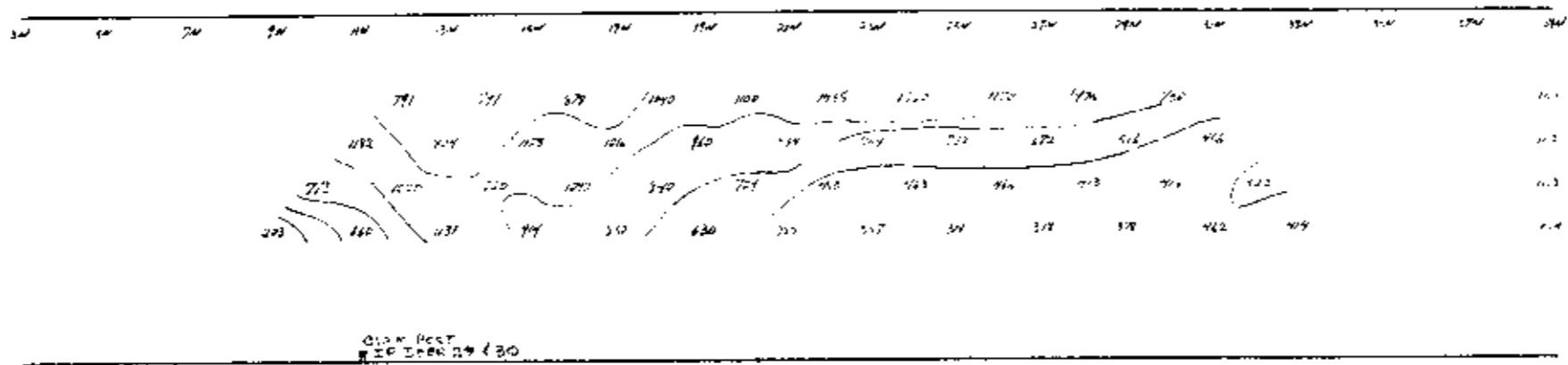
CITIES SERVICE MINERALS CORP.
NORTHERN VANCOUVER ISLAND, B.C.
SEER GROUP CLAIMS
HIGH POWER I.P.
DIPOLE - DIPOLE ARRAY
FREQ. = 5.0 * 0.3 HZ.
DATE = JUNE 7, 1974
OPERATORS = MORRISON + DEPAOLI

LINE 6 WEST

Department of
and Petroleum Resources
ASSESSMENT REPORT
5038 MAP **#3g**

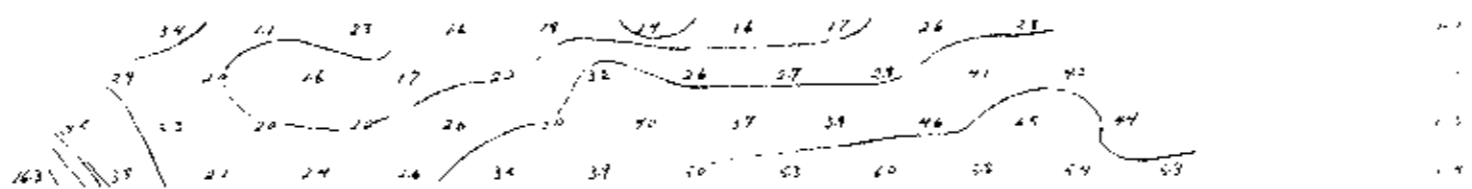
FIGURE 3(g)

CLAIM LINE



CITIES SERVICE MINERALS CORP.
NORTHERN VANCOUVER ISLAND, B.C.
DEER GROUP CLAIMS
HIGH POWER I.P.
DIPOLE - DIPOLE ARRAY
FREQ - 5.0 + 0.3 HZ.
DATE - JUNE 7, 1974
OPERATORS - MORRISON + DEPAOLI

CLAIM LINE



Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. **5038** MAP # **3h**

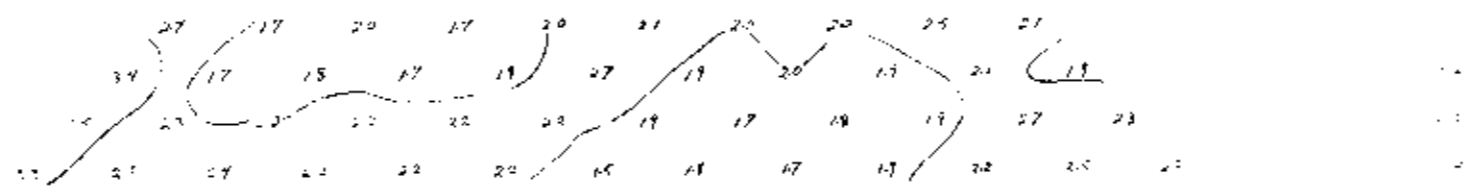


FIGURE 3 (A)