Geophysical Report Eldorado, Bonanza, Ben, Hoss, Adam, Little Joe and Saloon 180-#541-#8351 Mineral Claims

Liard Mining Division

W.G. Cooper Esso Minerals Canada August 1980



#### GEOPHYSICAL REPORT

Eldorado, Bonanza, Ben, Hoss, Adam, Little Joe, and Saloon Mineral Claims (Klappan Project - 2151)

Owners: Texasgulf Canada Ltd. and

Esso Resources Canada Limited

Liard Mining Division

NTS 104H/12E, 13E

LAT. 57° 45' LONG. 129° 40'

by

W.G. Cooper

August, 1980

for

ESSO MINERALS CANADA - a division of

Esso Resources Canada Limited
600 - 1281 West Georgia Street
Vancouver, B.C.

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18	11	11	11	4880 E	11	11
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#### **SUMMARY**

Magnetometer and induced polarization surveying were carried out on the Eldorado, Bonanza, Ben, Hoss, Adam, Little Joe and Saloon mineral claims, located in the Klappan River area of northwestern B.C. The target is copper (± molybdenum, gold) mineralization associated with sub-volcanic intrusive porphyries similar to the porphyry copper-gold deposits located on the nearby Red-Chris property.

Three anomalous IP zones were detected, two of which have high Cu geochemical values. Two of the zones are recommended for testing.

#### A. INTRODUCTION

This report deals with the geophysical surveys completed on the Eldorado, Bonanza, Ben, Hoss, Adam, Little Joe and Saloon mineral claims.

The purpose of the surveying was to assist in the interpretation of previous geological, geochemical and geophysical data in order to define drill targets.

Induced polarization surveying was done over the entire grid, while magnetometer surveying was restricted to extensions of a previous magnetometer survey.

#### 1. Location and Access

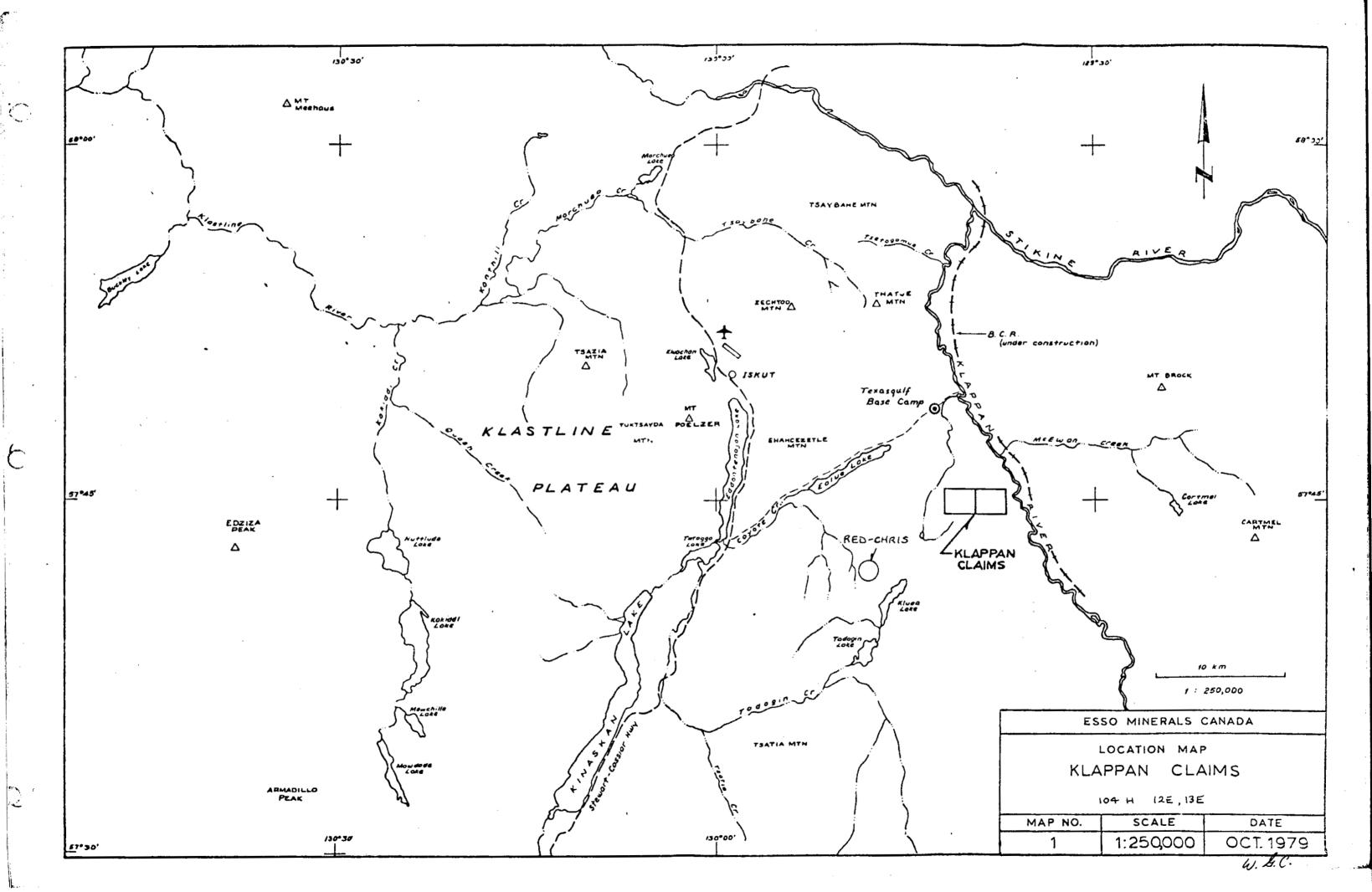
The Eldorado-Bonanza property is located west of the Klappan River and about 8 kilometers southeast of Ealue Lake, as shown on Map 1. The property is 20 kilometers southeast of Iskut on the Cassiar-Stewart road.

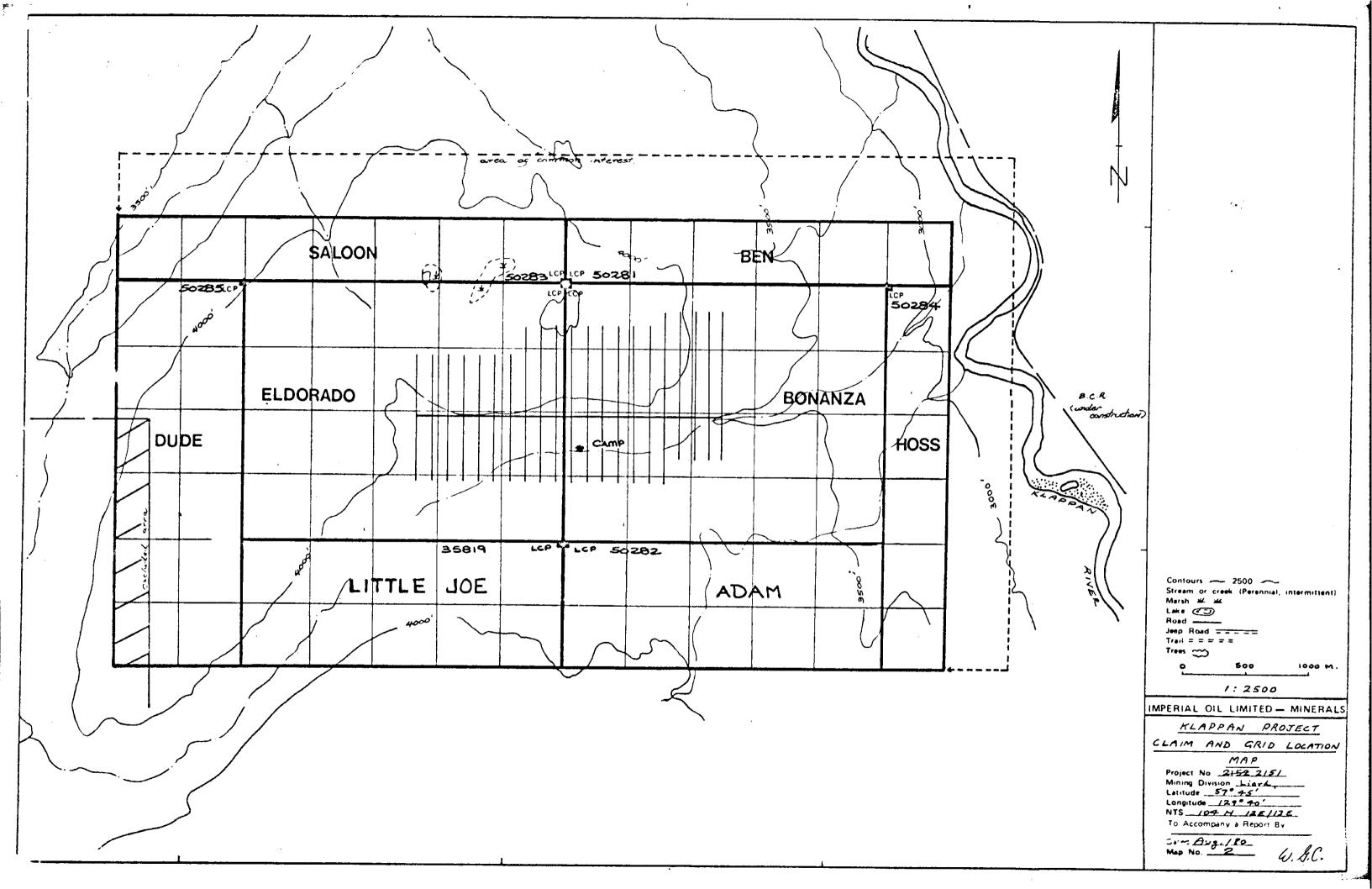
Access is by helicopter from Iskut or from Ealue Lake.

Terrain on the property varies from moderately hilly on the north to flat and swampy over the south and west portions of the claim group. Overburden on the south part of the survey grid is fairly deep (in excess of 8.0 meters) and is characterized by a clay layer, representing an old lake bottom.

#### 2. Property

The property consists of the Eldorado and Bonanza claims (40 units), owned by Texasgulf Canada Ltd. and the Ben, Hoss, Adam, Little Joe,





Saloon and Dude claims (51 units) owned by Esso Resources Canada Limited. For purposes of filing assessment work, the claims have been grouped into the Doc (Bonanza, Ben, Hoss, Saloon - 39 units) and Kitty (Eldorado, Adam, Little Joe - 40 units) groups. A separate report will be applied for assessment credit on the Dude claim.

Claim	<u>Units</u>	Record No.	Anniv. Date	Due
Eldorado	20	29	August 13	1985
Bonanza	·20	30	August 13	1985
Ben	6		June 27	1981
Hoss	6		June 27	1981
Adam	10		June 27	1981
Little Joe	10		June 27	1981
Saloon	7		June 27	1981
Dude	12		June 27	1981

The location of the claims and the survey grid are shown on Map 2.

#### 3. History of Property

Texasgulf Canada Ltd. first became interested in the area of the Eldorado-Bonanza claims in 1975, when geochemical silt samples indicated high copper values in creeks draining the area. Follow up prospecting located intrusive float with copper sulphides. After staking the Eldorado and Bonanza claims, Texasgulf conducted linecutting, geochemical sampling surveys, geological mapping, magnetic surveying and I.P. surveying during 1976 and 1977. The I.P. survey done by Texasgulf was done with the Time Domain

method using an electrode interval of 30 meters and a transmitter source of 250 watts. No work was done on the Prospect in 1978.

In 1979, Esso Resources Canada Limited was granted an option on the Eldorado-Bonanza property, and during 1979 conducted geochemical work including extensions of the previous survey grid, additional conventional soil sampling and 'bedrock surface' soil sampling.

## 4. Summary of 1980 Program

Work carried out on the property in 1980 to July 26, includes additional claim staking, extension of the survey grid, induced polarization survey of the entire grid and magnetometer surveying of all extensions of the original grid surveyed by Texasgulf.

Linecutting consisted of 9,000 meters (9.0 kilometers) of extension to the grid and was done between June 2 to 10, 1980.

Induced Polarization surveying was done between June 24 and July 26, and consisted of 24 line kilometers. The survey was done using the Frequency Domain method, with a transmitter power source of 2.5 kw. Lines 6200 E to 6680 E were surveyed using a 30 meter dipole, and lines 4280 E to 6200 E using a 60 meter dipole. Line 4880 E was also surveyed using a 90 meter dipole.

#### B. TECHNICAL DATA AND INTERPRETATION OF RESULTS

## 1. Magnetometer Survey

#### a) Procedure and Theory:

A Geometrics G-816 portable proton magnetometer was used. This instrument measures the total magnetic field strength, by measuring the frequency at which protons (hydrogen atoms) precess about the direction of the earth's magnetic field. The magnetic field strength, which is directly proportional to the frequency, is digitally displayed.

Readings were taken at 30 meter intervals along the survey lines, and at 15 meter intervals in anomalous areas. To correct for diurnal variations, base stations were first established within the survey area. Readings were taken at these base stations at the beginning and end of each traverse. The differences in the readings at these base stations were linearly distributed over the other readings along the traverse.

### b) Results:

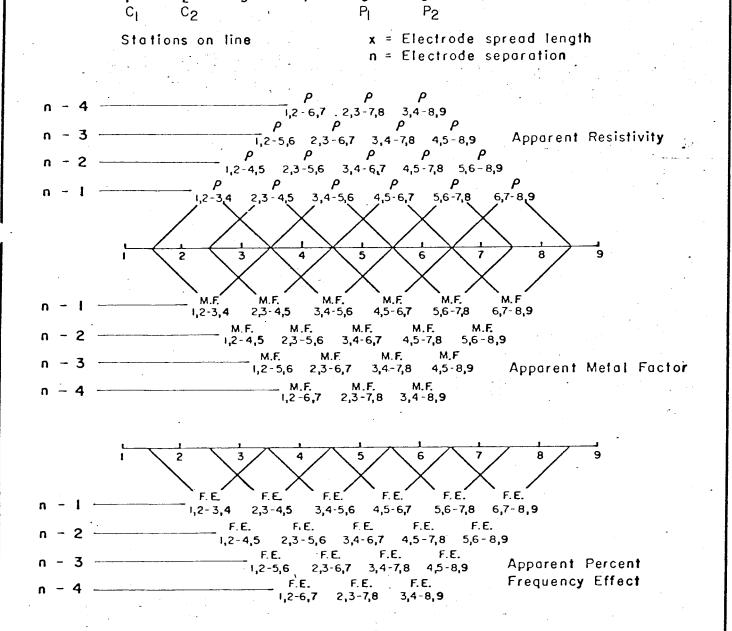
The corrected magnetic readings are presented on Map 3, and the contoured map is presented on Map 4.

#### 2. I.P. Survey

## a) Procedure and Theory:

The survey was carried out using a variable frequency induced polarization system (P660) manufactured by McPhar Geophysics of Toronto.

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



The system consisted of a motor generator powered transmitter (2.5 kw) delivering current through a pair of grounded electrodes, marked  $C_1$  and  $C_2$  in Fig. 1. The current was passed through the ground at two frequencies; 5.0 Hz and 0.3 Hz. The resulting potentials were measured by a second electrode pair ( $P_1$  and  $P_2$ , Fig. 1), with a highly stable and sensitive polentiometer turned to the above frequencies.

The data recorded in the field consisted of the current flowing through electrodes  $C_1$  and  $C_2$ , the observed voltage between electrodes  $P_1$  and  $P_2$  and the percent of change in the observed voltages at the two frenquencies. This latter parameter is referred to as percent frequency effects (PFE).

From the field data, the apparent resistivity, Pa (ohm-m) was calculated by dividing the observed voltage at 5.0 Hz by the current and multiplying by a geometric constant which depends on the type and size of electrode array used. The metal factor, M.F. (mhos/m) is obtained by dividing the PFE by Pa and multiplying by 1000.

#### b) Results:

The results were plotted in pseudo sections as shown in Fig. 1. The pseudo sections for lines 6680 E to 6200 E with a dipole length of 30 meters are presented in figures 2 to 6. The pseudo sections for lines 6200 E to 4280 E, with a dipole length of 60 meters are presented in figures 7 to 23. Line 4880 E was surveyed using a 90 meter dipole length and the results are presented in figure 24.

#### 3. Interpretation

The 1976-77 magnetometer surveying detected an east-west trending magnetic high (maximum 800 gammas) south of the baseline. It was also

suggested that the area contains two rock types of differing magnetic susceptibilities. From the additional information obtained by this year's magnetometer survey, the east-west trend is not detected east of line 6200 E. Another east-west trend of smaller amplitude (maximum 200 gammas) was delineated in the northern section of the grid area. This trend could represent a third rock type in this area.

The induced polarization survey has detected 3 anomalous zones, shown on Map 5. These are described below:

## Zone A Lines 4520 E to 5360 E at about 5150 N.

This zone has a relatively weak I.P. response. The P.F.E.'s are only 2 to 3 times higher than background, and the resistivity does not drop too appreciably. The zone may continue to the west, as the response on line 4520 E appears at n-2 and n-3 separations.

## Zone B Lines 5480 E to 6560 E at about 5150 N.

This zone is the largest of the three, and is interpreted from both the 60 m dipole and 30 m dipole work. The I.P. responses are relatively stronger and vary in this zone. P.F.E.'s are 2 to 3 times higher than background in the west and 4 to 5 times higher in the east. Also the depth to the zone appears to decrease from west to east.

#### Zone C Lines 6440 E to 6680 E at about 5600 N.

This is the smallest and has the weakest I.P. responses of the three zones. The resistivities along this zone show a decrease with increase in depth, and the P.F.E.'s are about 2 times higher than background. The responses get stronger to the east and possibly this zone continues east of line 6680 E.

#### C. CONCLUSIONS AND RECOMMENDATIONS

The magnetic survey has delineated a rock type of higher susceptibility south of the base line, and to the north of this rock type, the I.P. survey has outlined 3 anomalous zones. Two of the zones (A and B) are directly north of the contact.

Both zones A and B have associated bedrock Cu geochemical anomalies, and it is recommended that these zones should be tested before future work is continued. Based on the results from the testing, all the data should be reviewed, and recommendations made at that time regarding future work in this area.

W. S. Cooper



**APPENDIX** 

# COST STATEMENT

# Linecutting I.P. and Magnetometer Surveys

Line Cutting Costs (9.0 line-kilometers)							
Jesmex Developments (Contract crew-June 2-10)							
18 man-days at \$150/day	=	\$ 2,400					
Camp costs-18 man-days at \$20/day	=	360					
Transportation							
(Iskut-Property and return) - 3.0 hrs. at							
\$375/hr. (Frontier Helicopters)	=	\$ <u>1,175</u>					
Sub total			\$ 3,935				
Geophysical Surveys							
I.P. and Magnetometer Survey Crew (June 24-Jul	y 26)						
- 33 man-days at \$75/day	=	\$ 2,475					
- 33 man-days at \$65/day	=	2,145					
- 33 man-days at \$55/day	=	1,815					
- 33 man-days at \$45/day	=	1,485	\$ 7,920				
Camp Support Costs							
132 man-days at \$20/man-day			2,640				
Equipment Rental							
I.P. Equipment (33 days)			2,876				
Report Writing and Data Reduction							
I.P. Data Reduction	= ,	\$ 500					
Report Writing and Map Preparation							
8 man-days at \$75/day	=	<u>600</u>	\$ 1,100				

# Transportation

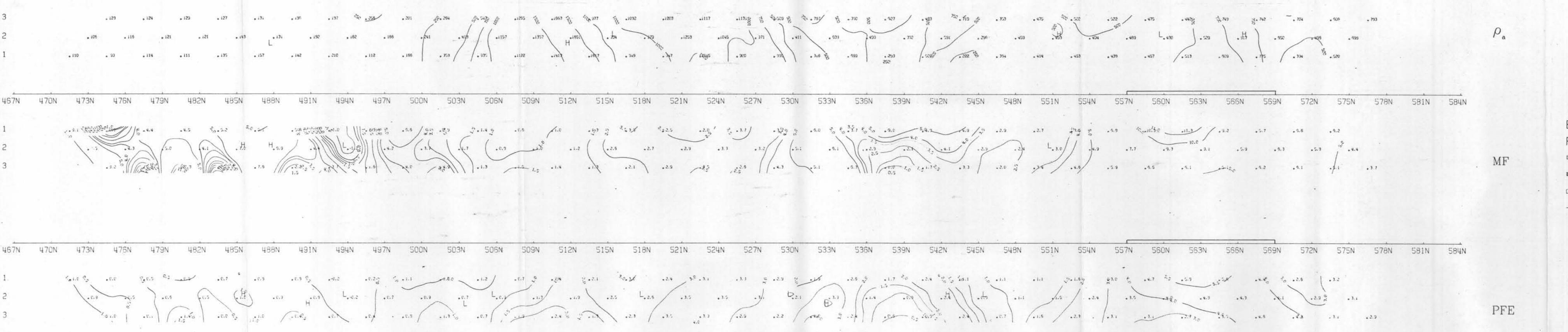
# Mobilization

Toronto to Watson Lake	\$	1,299	
Watson Lake to Ealue Lake (B.CYukon Air)		726	
Ealue Lake to Property (Frontier Helic.)		1,523	
<u>Demobilization</u>			
Property to Ealue Lake (Frontier)	\$	892	
Ealue Lake to Watson Lake (B.CYukon)		726	
Watson Lake to Vancouver	-	490	\$ 5,656
TOTAL COSTS			\$ 24,127



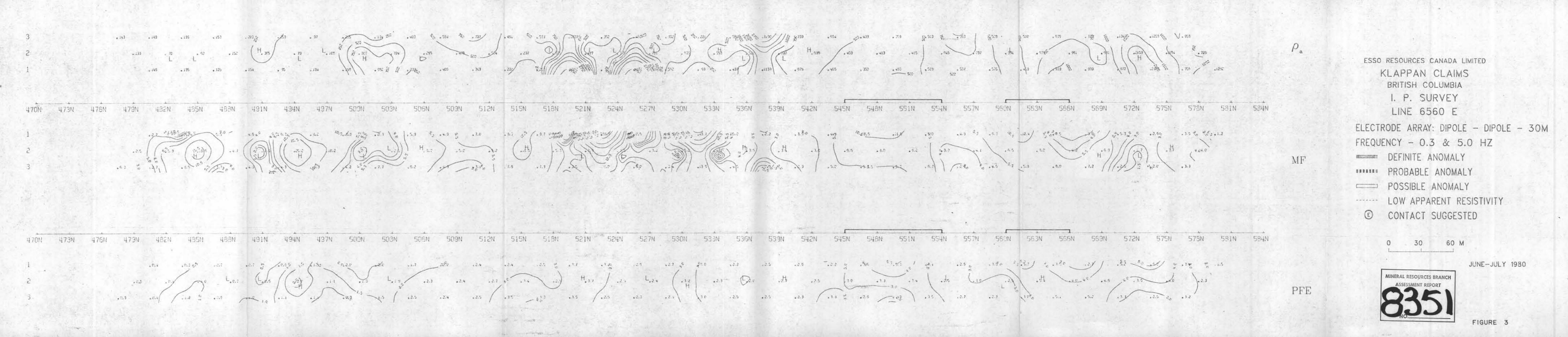
## Author's Qualifications

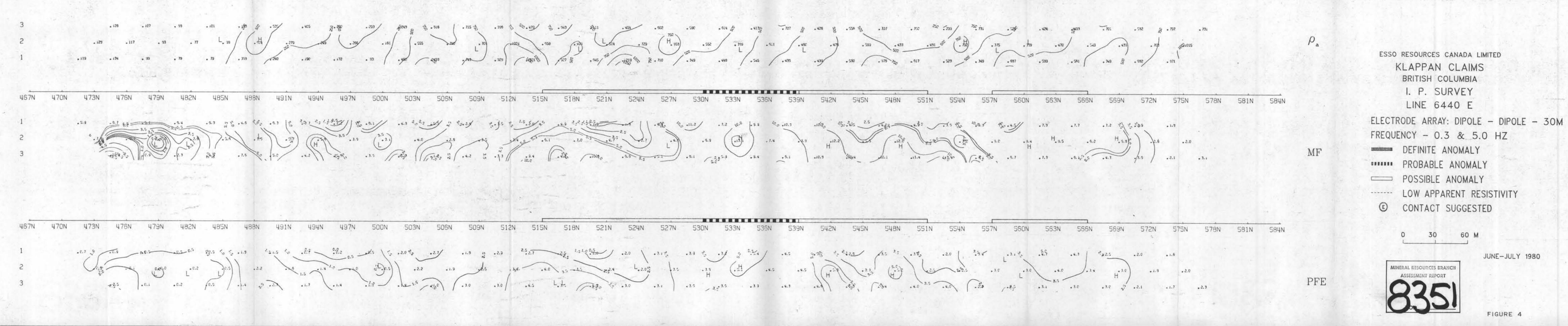
W. G. Cooper attended the University of Waterloo, Waterloo, Ontario, between 1975 - 1979, graduating with a B.Sc. (Honors) degree in Earth Sciences. From 1975 to 1979 Mr. Cooper was employed during the summer months by Esso Minerals Canada, to conduct Magnetometer, Electromagnetic, Gravity, and Induced Polarization surveying. Presently he is employed by Esso Minerals Canada as a geophysicist.



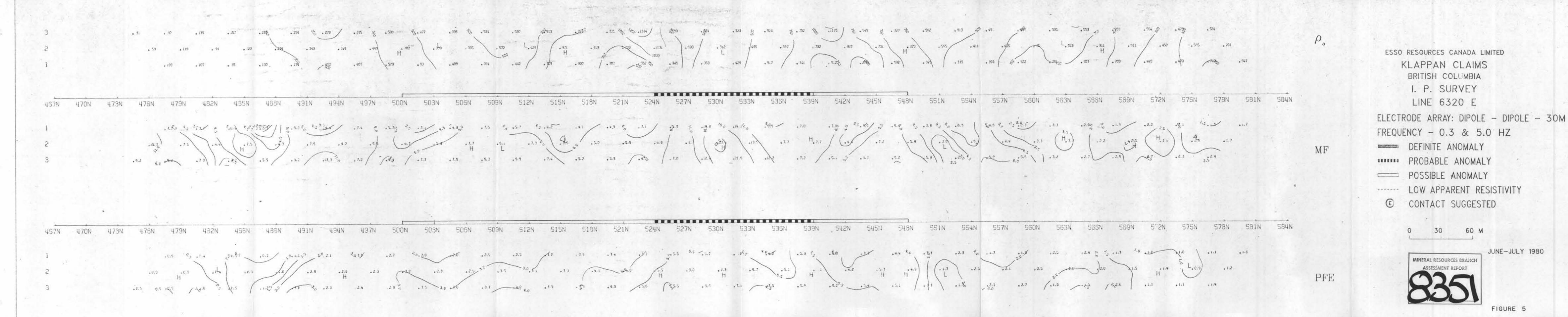
ESSO RESOURCES CANADA LIMITED KLAPPAN CLAIMS BRITISH COLUMBIA I. P. SURVEY LINE 6680 E ELECTRODE ARRAY: DIPOLE - DIPOLE - 30M FREQUENCY - 0.3 & 5.0 HZ DEFINITE ANOMALY PROBABLE ANOMALY POSSIBLE ANOMALY ----- LOW APPARENT RESISTIVITY © CONTACT SUGGESTED

SURE 2

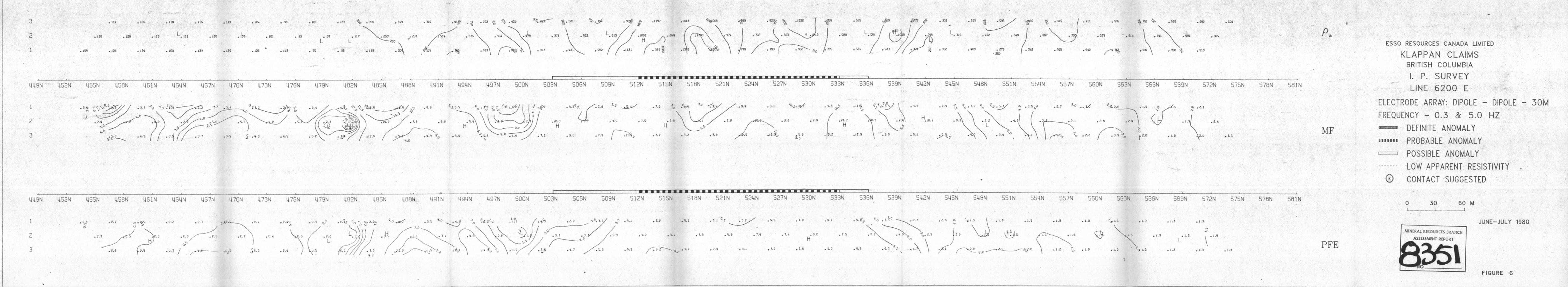


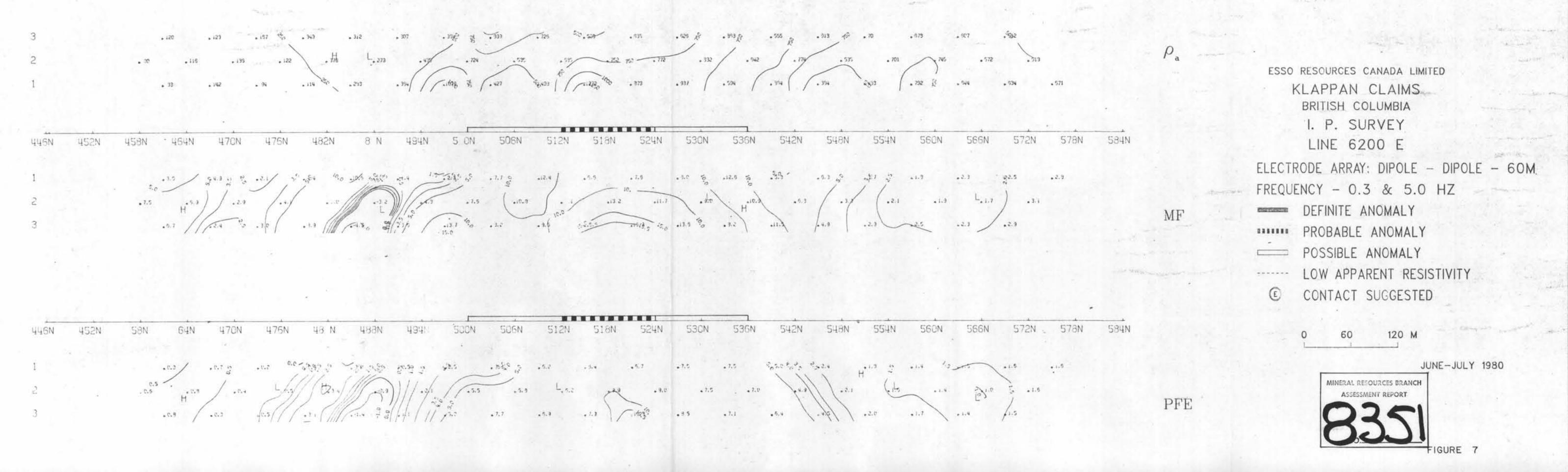


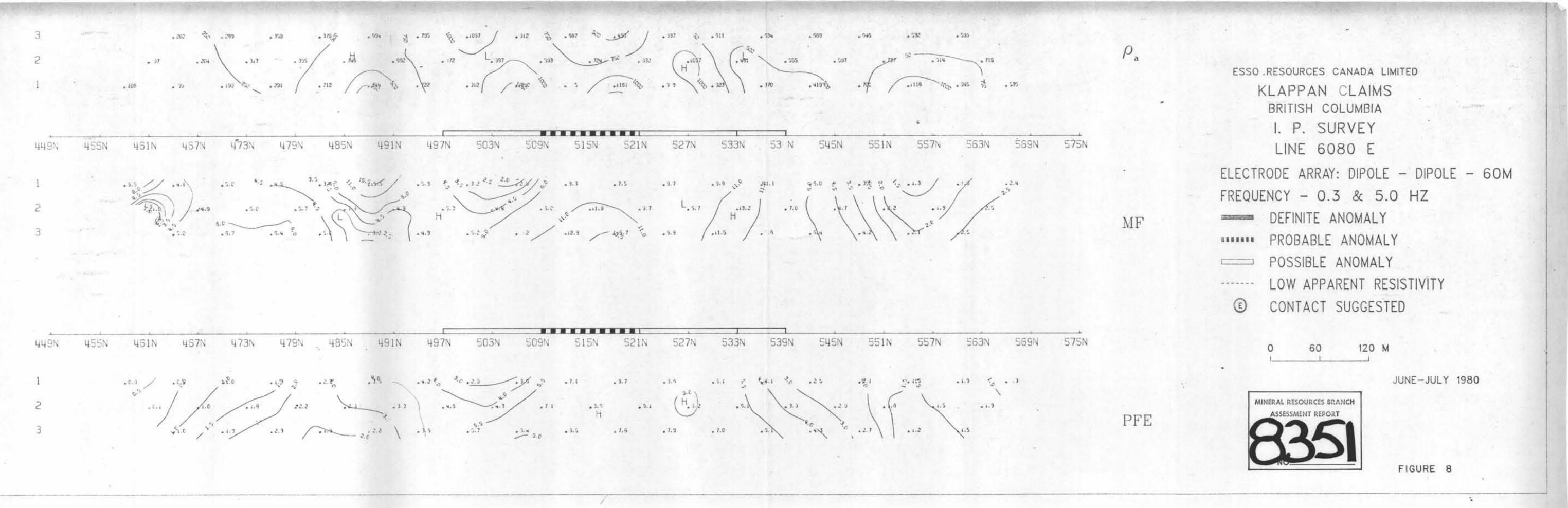
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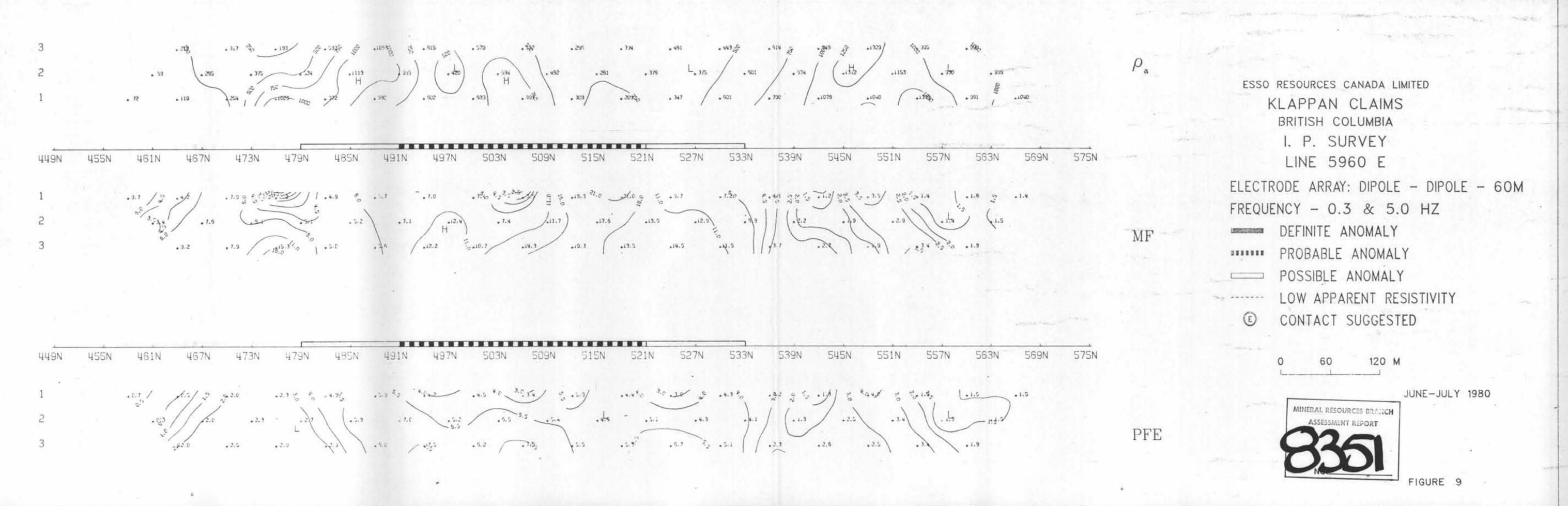


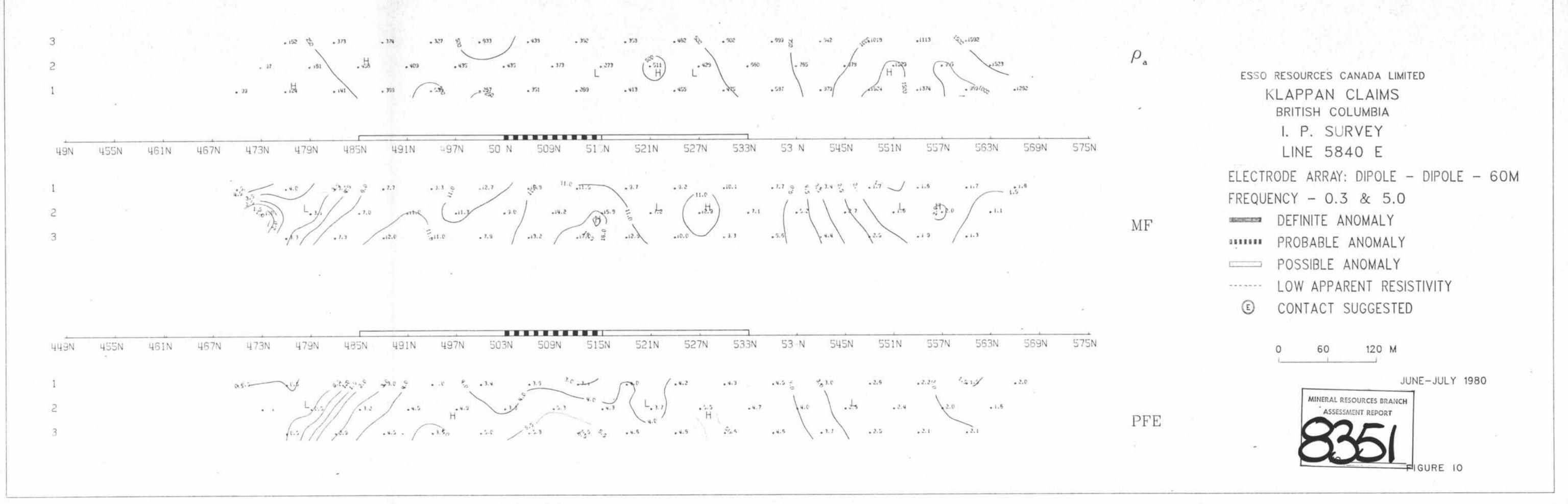
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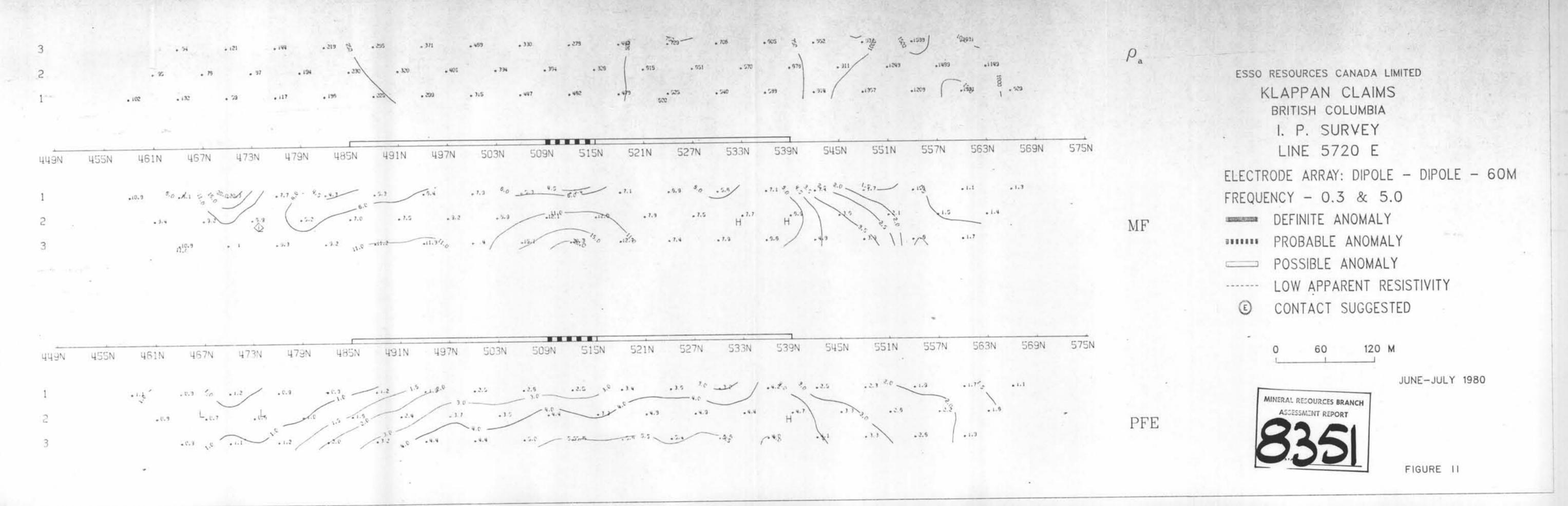


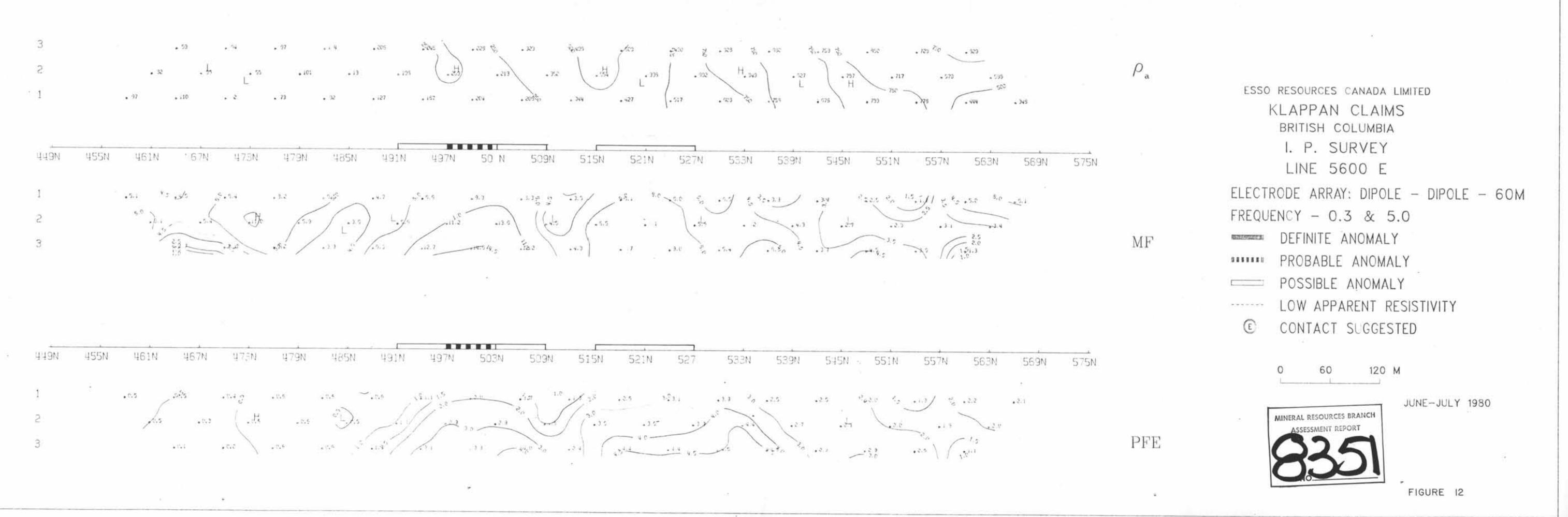


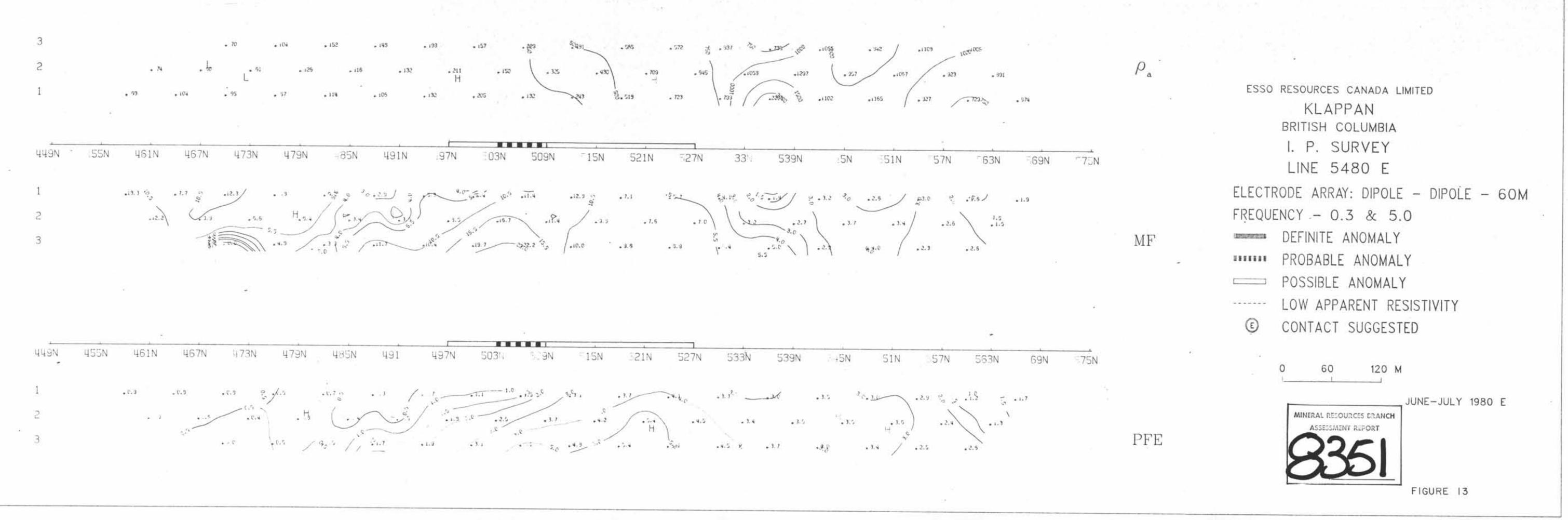


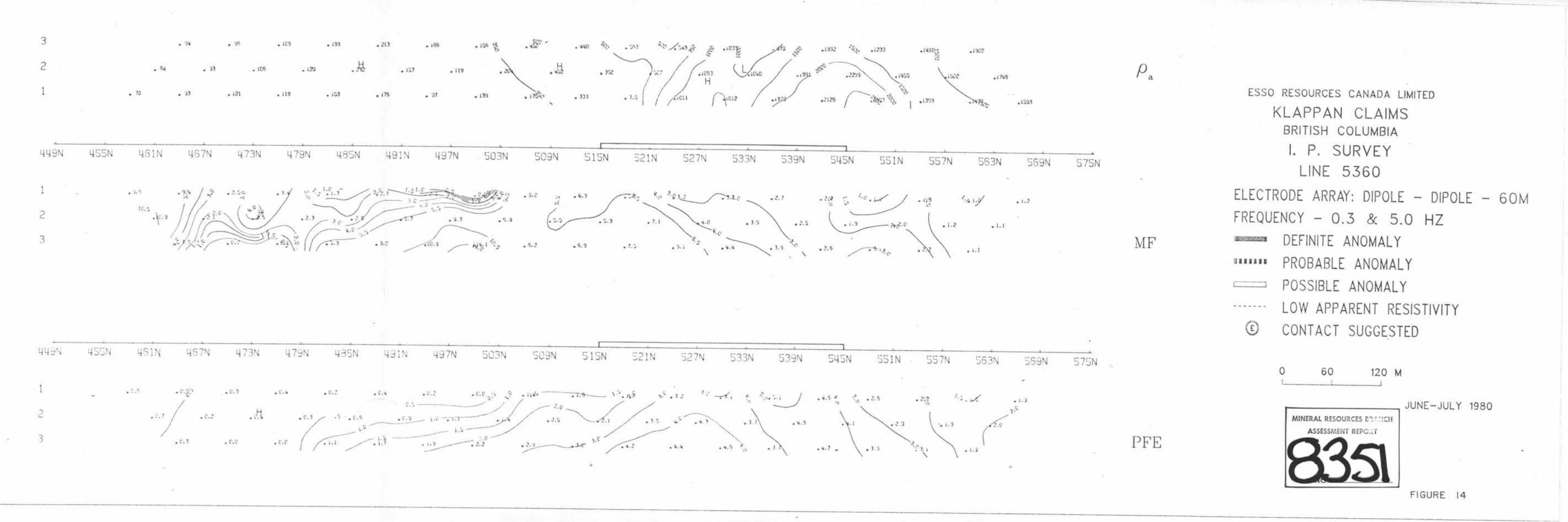


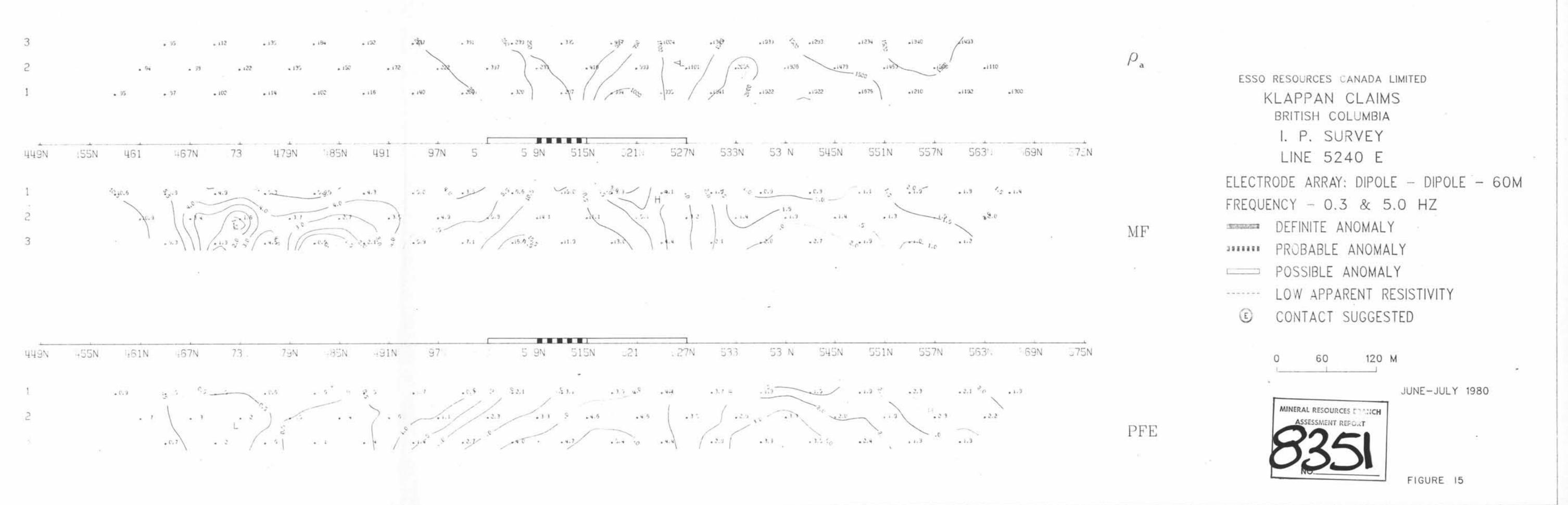




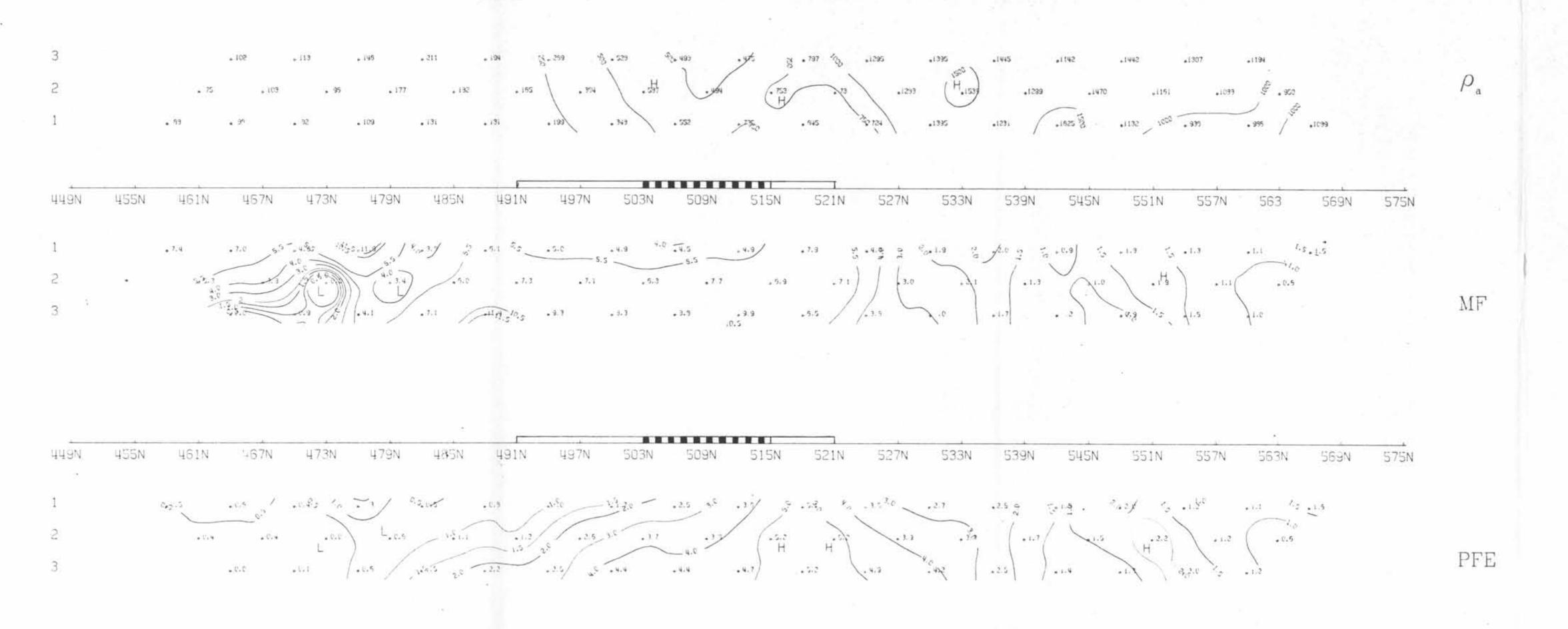








v.S.C.



KLAPPAN CLAIMS
BRITISH COLUMBIA

I. P. SURVEY
LINE 5120 E

ELECTRODE ARRAY: DIPOLE - DIPOLE - 60M

FREQUENCY - 0.3 & 5.0 HZ

DEFINITE ANOMALY

PROBABLE ANOMALY

POSSIBLE ANOMALY

----- LOW APPARENT RESISTIVITY

© .CONTACT SUGGESTED

0 60 120 M

JUNE-JULY 1980

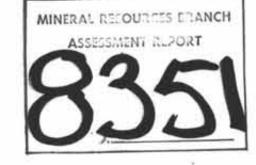
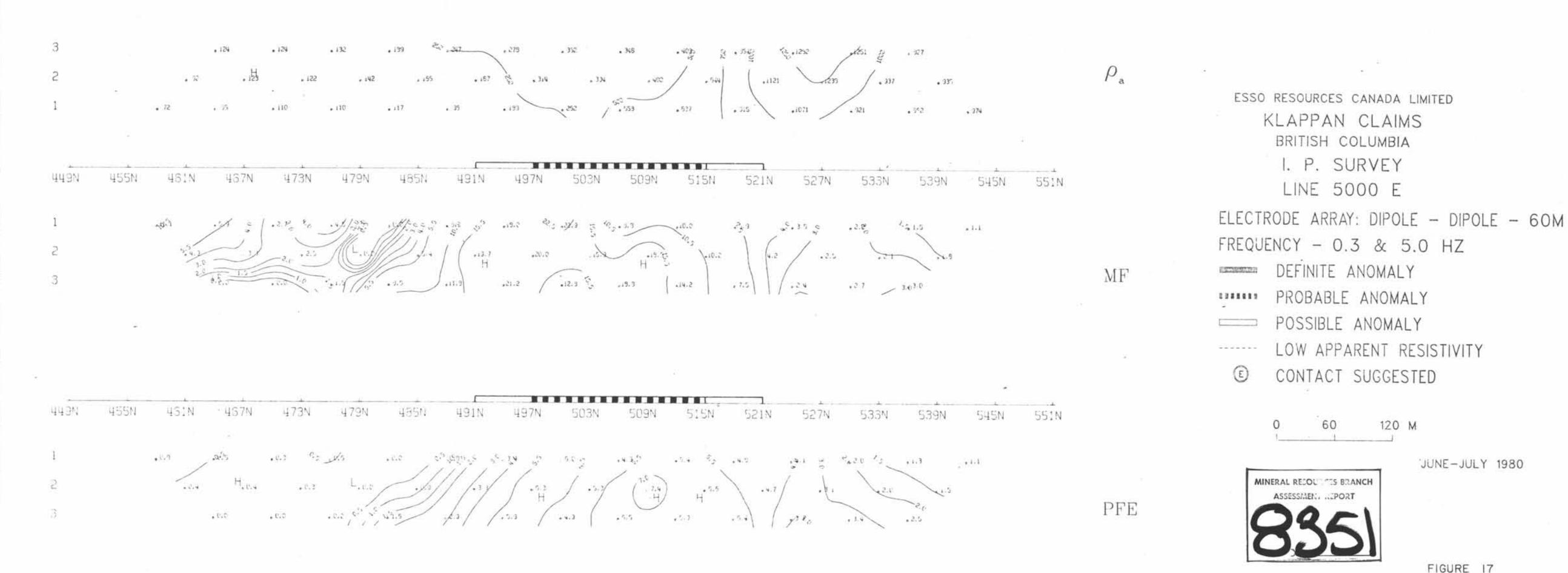
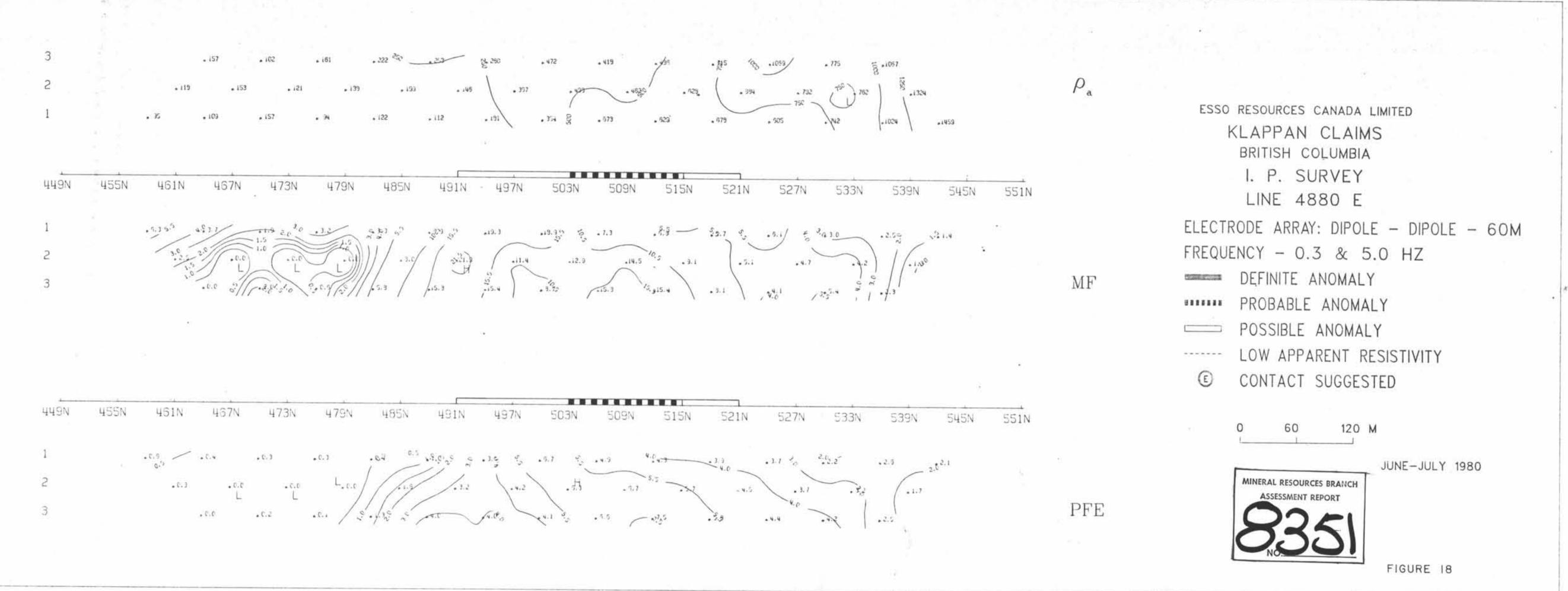


FIGURE 16

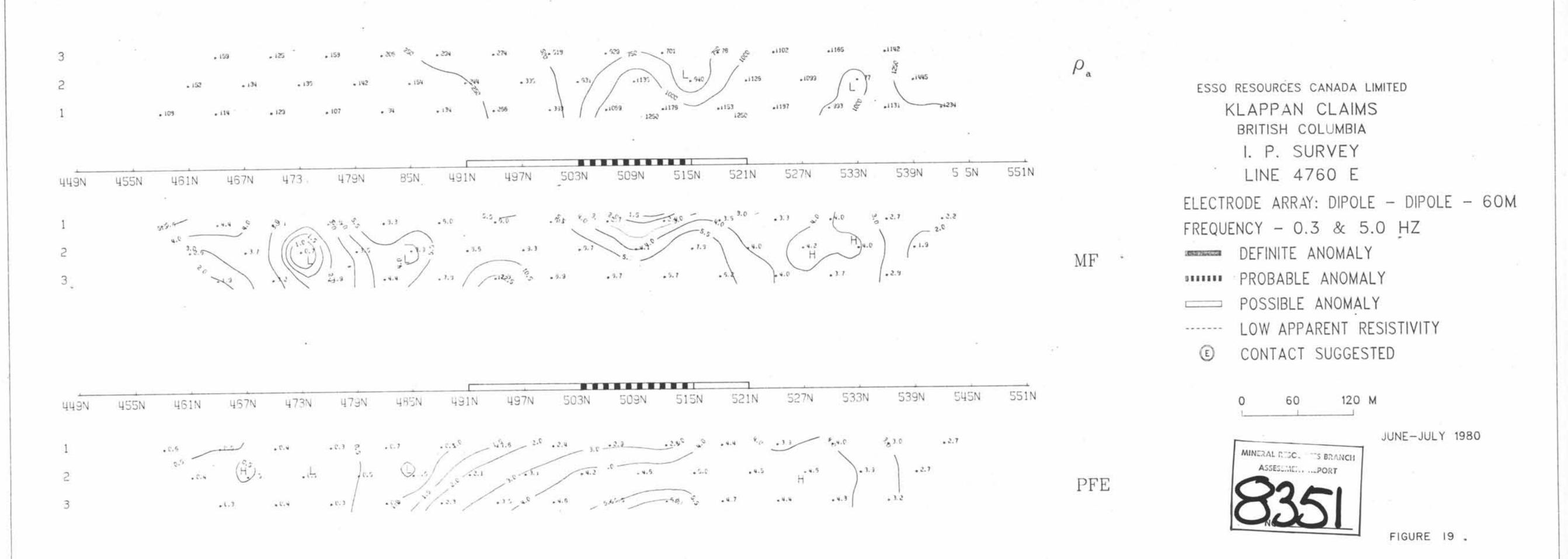


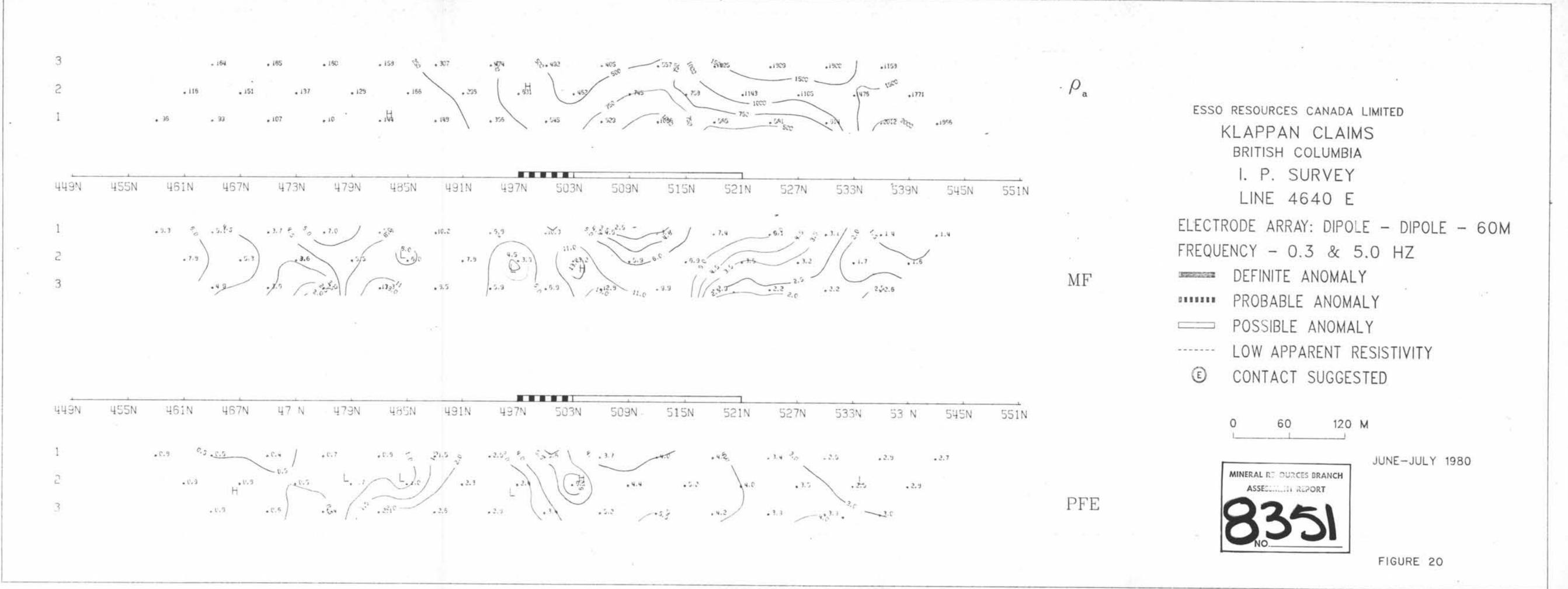
1. 6

1. S.C.



1. A.C.





W. S.C.

