REPORT ON
INDUCED POLARIZATION SURVEY
IN THE
CRANBROOK AREA, B.C.
FOR
PLACID OIL COMPANY
BY
CANADIAN AERO MINERAL SURVEYS LIMI

82G/5W.

GEOPHYSICAL (INDUCED POLARIZATION) REPORT

JIM, CAT, CAROL, NEIL CLAIMS.

Cranbrook Area
Fort Steele Mining Division
British Columbia

Placid Oil Company -- June - November, 196
W. Schuur, M.Sc. -- December 28, 1967.

11774

1174
PART 2

REPORT ON
INDUCED POLARIZATION SURVEY
IN THE
CRANBROOK AREA, B.C.
FOR
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Project No. 7074

REPORT ON

INDUCED POLARIZATION SURVEY

IN THE

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Project No. 7074

OTTAWA, Ontario,
December 28, 1967.

W. Schuur, M.Sc.,
Geophysicist.

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S U M M A R Y

During the period from June 20 till August 23 and from September 15 till November 13, 1967, Canadian Aero Mineral Surveys Limited conducted an induced polarization survey, covering approximately 100 line miles in the Cranbrook area, B.C. for Placid Oil Company. A total of 18 anomalous zones has been outlined, most of which follow a northeastern or northwestern trend, directions also disclosed by the apparent resistivity contour map. The anomalous zones have been classified as first, second and third priority follow-up targets and, whenever possible, drill hole locations were determined, from where most advantageously the various structures, corresponding with the individual anomalous zones, could be tested.

The following Canadian Aero Mineral Surveys Limited personnel were associated with the survey.

A.R. Brazeau, P.Eng. Valleyfield, P.Q.	Geophysicist.
K. Mann Cranbrook, B.C.	Geophysical Assistant
W. Moore Cranbrook, B.C.	Geophysical Assistant
D. Fitzsimmons Ottawa, Ontario.	Draftsman
W. Schuur, MSc. Ottawa, Ontario.	Geophysicist

All further personnel, necessary for the field operations, were provided by Placid Oil Company.

III. GEOLOGY

The following publications and maps have been used as a reference for the geology of the area:

1. Geological Survey of Canada, Memoir 207, Cranbrook Map-Area, B.C. (1" = 1 mile) 1937.
2. Geological Survey of Canada, Memoir 228, Nelson East Half, B.C. (1" = 4 miles) 1941.
3. Transactions of C.I.M.M. Volume 48, 1945, p. 645 - 617.
4. Geological Survey of Canada, Preliminary Map 15 - 1957 St. Mary Lake, B.C. (1" = 1 Mile).
5. Geological Survey of Canada, Paper 58-10, Fernie Map Area, West Half, B.C. (1" = 2 Miles).
6. Geological Survey of Canada, Preliminary Map 11-1960, Fernie, West Half, B.C. (1" = 2 Miles).

IV. DISCUSSION OF RESULTS

a) Jim and Jim South Claim Groups

A total of 181,200 line feet was surveyed in this area, not including a considerable amount of detailing, carried out over anomalous areas. The Jim claim group area has been surveyed before the August break-up and results have been discussed in the Preliminary Report, previously submitted. Since in the light of later information obtained in the Cranbrook Area, a review of data appears to be appropriate, a re-evaluation of the various anomalous zones will be made below.

Data obtained over the Jim and Jim South claim groups is presented in profile form on sheets 1, 2 and 3. In contour form this data is incorporated in the two contour maps accompanying this report. Please note that the scale of the maps is not exactly as indicated, since master copies had to be prepared from existing, stretched ozalid copies. The same does of course apply to the other areas surveyed.

The general chargeability background value in this area is in the order of 4-5 milliseconds (millivolt seconds). The average resistivity value appears to be in the order of 800 ohm meters. Both from the resistivity and from the chargeability contour maps two distinct trends are recognizable in this area, to wit: one in a northeast direction, the other approximately perpendicular to this. It seems logical to assume some relationship between these trends and faulting, since no correlation exists with

known geological strike directions or the geomorphology of the area.

The general background chargeability value, as observed on the contour map, is approximately 4-6 milliseconds. Chargeability readings of twice the background value are considered anomalous, and based on this a number of anomalous zones has been outlined in the area. These zones have been labelled from "A" to "J". With the exception of the anomalous zone "A", which falls mainly in between lines 45 and 50W from stations 0 till 25N., the anomalies appear to line up along a northeastern trend.

As stated above, Zone "A" falls chiefly in between two traverses and as a result resolution over the anomaly is poor. A comparison of the readings obtained with the 200 feet and the 400 feet spacing indicates a flat lying, fairly continuous source, which comes close to surface and near the survey line (at stations 12+40N and 20+50N, line 45W). The area of above normal chargeability values shows average resistivities of approximately 600 ohm meters and stands out as a low resistivity zone surrounded by mostly northwest trending resistivity highs. At the time of writing of this report no magnetic data was available for the Jim claim group to assess any magnetic correlation. To test the nature of the source material, it is suggested that a drill hole be collared at either 12+50N or 20+50N on line 45W, to be drilled in a N80°W direction at an angle of 50° for at least 250 feet. An average of up to 3% by volume of polarizable material can be expected in the structure.

Zones "B" and "C" are two parallel anomalous zones situated in the southern part of the Jim survey grid. They follow

the northeastern trend and extend more or less continuously for approximately 4800 feet. The northernmost zone "B" exhibits a rather shallow dip to the northwest over its southwestern part, while it appears to be sub-horizontal over its northeastern part. In line with zone "B", approximately ½ mile northeast from its northern end, another anomaly is located, which has been labelled "G". It is likely that this zone belongs to the same system as zone "B". No correlation between apparent chargeability and resistivity values exists over the southeastern part of zone "B", but over the northeastern part of the zone and over zone "G" a marked increase in resistivity coincides with the increase in chargeability readings.

The best location for a drill hole to test the source of zone "B" is at 21S on line 30W, to be drilled S20°E at an inclination of 70°. This hole is expected to intersect the source material within 250' from surface. The source is estimated to consist of up to 2½% average by volume of polarizable material.

An alternative drillhole location would be at 10S on line 10W, where a vertical hole should intersect the source of the anomaly within 300 feet from surface. An amount of up to 2% average by volume of polarizable material can be expected.

The burial of the source of anomalous zone "C", which runs parallel to and south of zone "B", appears to be deeper than the previous zone. Approximately the same shallow dip is indicated in the southwestern part of the zone (around 28S, 30W) but in the

northeastern continuation this dip appears to be southeasterly. At the same time, the single structure indicated in the southwestern part appears to have been replaced by two more or less parallel bodies, both of which are at a shallower depth here than elsewhere in the zone. The very high readings obtained on the 100 feet spacing on line 10W are possibly due to some cultural cause and have not been used for interpretation. At the same time they might indicate a near vertical extension of the main structure to near surface, in which case trenching and shallow drilling would locate its source. For testing this zone, which does not seem to have any resistivity expression over its entire length, the following drill hole location is suggested: collar at 22S, 10W and drill N20°W at an angle of 75° for at least 250 feet. This anomalous zone is the only one in the Jim area, of which the re-evaluation of the data has markedly changed the concept of geometry.

Of the remaining anomalous zones outlined in the Jim area, only zone "D" exhibits the size and amplitude to warrant immediate follow-up. The anomalous zones "E", "F" and "G" are of too small extent or too low amplitude for a first or second priority rating. This concept may be changed, however, if additional geochemical and ground magnetometer data become available. The location of zone "H" on line 45E coincides with a railway crossing. The apparent steep dip and the appreciable decrease in resistivity makes one suspect that a cultural source is involved. Zone "D" is made up of three more or less separate anomalies in echelon along the same northeastern trend as was shown by zones "B" and "C", and by the resistivity contour

map. The anomalies fall mainly southeast of an area of resistivity readings above 2000 ohm meters and, especially the northeastern anomaly, has good correlation with low resistivity values of less than 500 ohm meter. The structure appears to be sub-horizontal around 42N on line 15E and the recommended drill hole location is therefore 42+00N, 15+00E, to be drilled vertically for at least 300 feet. A maximum of up to 2½% average by volume of polarizable material could be expected in this feature.

In Jim South area, only one, fairly wide, anomalous area has been indicated. It is located at the eastern end of the grid and is still open to the east. Maximum chargeability values over zone "J" fall in the 20 milliseconds range, indicating an amount of up to 3% average by volume of polarizable material. The zone itself consists of three more or less isolated anomalies, each of which appears to be due to a rather small, sub-horizontal source. Depth of burial for the individual anomalies is approximately the same and probably in the order of 200 - 300 feet. Amplitudes are sufficiently high to warrant follow-up and it is suggested that the anomaly just north of tie line "B" on line 25E be drilled first. A vertical hole collared at 62S, 25E, to be drilled for at least 350 feet should obtain the most conclusive results. Further testing of zone "J" should depend on the results of this hole and should be carried out by collaring on 66S, 25E and 50S, 20E, both to be drilled vertically for 350 feet.

b) Carol Claim Group

The induced polarization survey in this area covered a total of 19.0 line miles, not counting 8.1 line miles done by detailing. The apparent resistivity contour map over this grid shows very little variation in conductivity. The background value is in the order of 500 ohm meter against a maximum value of 2000 ohm meter and a minimum of 300 ohm meter. The apparent chargeability contour map however shows large changes in polarization characteristics On the basis of the chargeability values, the area can be roughly divided in two parts, a northern half with background values in the order of 2-3 milliseconds and a southern half with a background value probably in the order of 8-10 milliseconds.

No anomalies were observed in the northern part of the area. The southern area, however, appears to be strongly anomalous. Within this anomalous belt, two more or less separate anomalous zones can be distinguished, separated from each other by an approximately northeast striking band of chargeability readings in the order of 8-10 milliseconds. The same magnitude of chargeabilities was obtained at the western part of the anomalous belt and therefore was taken as background value.

Within the two major zones of anomalous chargeability readings a total of four units can be distinguished, which have been labelled from "K" to "N".

Unit "K" is more or less half circular zone in the western part of the anomalous belt, surrounding a core with readings in the 8-10 milliseconds range. Amplitudes in zone "K" are as high

as 20 milliseconds, indicating an average of up to 2½% of polarizable material by volume. The southern part of the zone exhibits a close correlation with the only high resistivity zone present in the Carol claim group. The corresponding structure appears to be sub-horizontal with mainly variations of depth of burial causing the changes in polarization responses. Depth of burial appears to be fairly shallow, in the order of 100 feet below surface. The northern extension of the zone has no correlation with resistivity and appears to be more confined in space. A shallow dip towards the north is indicated on line 50E around 4S, where an amount of up to 2½% by volume of polarizable material can be expected. The slightly higher magnetic readings at stations 2 and 3 south on line 50 are not sufficiently significant to provide a further clue to the nature of the source material. It is suggested that unit "K" be tested both at 6+00S on 47+50E, to be drilled vertically for at least 250 feet and at 26+00S on line 35+00E, to be drilled south along the line at an angle of 70° for at least 300 feet.

In the eastern anomalous zone a total of three anomalous units can be distinguished. Of these, the most interesting both for size and amplitude is zone "L" in the southeastern part of the grid. Within this unit three separate bands have been outlined, each striking approximately east-west. No detailing was carried out over the southern band located around 8S on line 80E, where a reading of 23.8 milliseconds was observed. Indications on line 75E are that the body dips rather flatly to the south. Again, the

slightly higher magnetic readings at 8S on lines 75E and 80E are not diagnostic for the source material to be expected. The central anomalous band, with peak values at 2S on lines 70, 75 and 80E and at 0 and 2N on respectively lines 85 and 90E, comprises the highest anomalous readings in this zone.

A maximum reading of 39 milliseconds with the 200 feet spacing was obtained over this zone at 3N on 90E, indicating a possible amount of up to 6% average by volume of polarizable material in a flatly south dipping structure. No magnetic data was available over the easternmost lines, but on the lines 70 and 80E, a weak magnetic zone correlates with the induced polarization anomaly. Resistivity values over zone "L" tend to be rather low but this appears more readily explained by a general change in rock type. The northern band seems to be intimately linked with the central band except possibly for its eastern extension, where they are probably split in two separate structures. An intermediate dip to the south is indicated for the northern structure, which may contain up to 5% average by volume of polarizable material. The nature of the source material is uncertain, but lack of magnetic correlation tends to exclude the presence of pyrrhotite. To test the various bands in zone "L", the following drillhole locations are suggested:

In the southern band a vertical hole should be collared at 8+00S, 80+00E, to be drilled for at least 300 feet.

For the central band a vertical hole should be collared

at 1+00N on line 90+00E, to be drilled for at least 250 feet.

For the northern band the best location is 3+00N, 80+00E, to be drilled N along the line for at least 300 feet at an angle of 70°.

The remaining anomalous zones "M" and "N" in the eastern belt are rather narrow structures, which in the light of the high overall background values do not appear too interesting. The feature related to zone "M" dips flatly to the north at line 90E, 20N. No detailing was done over this zone on line 95E, which leaves some doubt about the real continuation of the structure. However, the zone as outlined on the contour map follows the general trend of the anomalous belt which is thought the most probable strike of the feature. Based on this interpretation the best location for a drill hole to test the source material of this feature would be at 16N, 92+50E, to be drilled vertically for at least 250 feet. The source of zone "N" appears to be deep seated and sub-horizontal. No magnetic correlation is present with this feature as could be expected over this rather deep, flat lying body. On the basis of present data no drilling can be recommended on this anomaly.

c) Cat Claim Group

The Cat claim group adjoins the Jim group to the west. A total of 20.7 line miles has been surveyed in this area, of which 3.7 line miles with detailing. A total of 5 zones has been outlined in this area in which the chargeability readings observed were at least twice the average background value of 4-6 milliseconds. These

zones have been labelled from "O" through "S". The strongest anomalies are obtained in zone "Q", situated in the northern extreme of the claim group. The zone is still open to the north and the east. Detailing over this feature on line 105E reveals a sheet-like body dipping flatly to the south at a depth of burial of approximately 100 feet at 46N, 95W. The zone relates well with an area of high resistivity and with some apparent banding in magnetic data. It is thought to be a good drilling target with an expected amount of up to 5% average by volume of polarizable material. The best drill hole location appears to be at 42N, 95W to be drilled vertically for at least 200 feet.

Just northeast of a wedge-shaped area with very low chargeability readings, in the order of 2 milliseconds, and straddling its boundary, anomalous zone "P" is outlined. It actually consists of two separate zones which for convenience have been labelled as one. The western part of the zone appears to correspond with a sheet-like body, dipping very flatly to the north as indicated by the data obtained on line 125W. In the eastern half, the dip appears to be shallow to the south. Good correlation exists between chargeability readings and high resistivity values, suggesting a possible connection between an increase in polarizable material and silisification or any other process that tends to increase resistivity. The fair magnetic activity observed in the area is not directly correlatable with the I.P. targets. Some of the magnetic anomalies are, however, of sufficient amplitude to be caused by pyrrhotite in the amounts

necessary to explain the induced polarization anomalies. If drilling of zone "P", which is still open to the west, is considered, the following drillhole locations are suggested:

a) Collar at 35N on line 125W, drill vertically for 200 feet.

b) Collar at 13N on line 90W, drill vertically for 200 feet.

In between zone "P" and "Q" and parallel to zone "P" the I.P. survey outlined another band of anomalous chargeability readings, which was labelled "O". This zone, with peak amplitudes of 14 milliseconds on the 400 feet spacing and 17.0 on the 200 feet spacing, has good correlation with a high resistivity zone. Some magnetic correlation is also present. The zone appears to be best explained as a sub-horizontal sheet-like body at a depth of approximately 100 feet. The amount of polarizable material expected over this zone is in the order of 1½%, which should make it a low priority drilling target only. A vertical hole of 200 feet collared at 30N on line 105W should test the structure adequately.

The reading of 15.2 milliseconds obtained at 4S on line 115W together with the slightly higher reading on the 100 feet spacing on the same line, were decisive to include this otherwise weak zone "S" in the anomaly listings. Over the western part of the zone some fairly high magnetic readings were obtained. The correlation of I.P. with resistivity appears to be negative: a zone of lower than the average 800 ohm meters resistivity value corresponds with the I.P. feature. The structure indicated by the I.P. data appears to be a sheet-like body, flatly dipping to the south. An

amount of up to 1½% average by volume of polarizable material may be expected over this feature, which places it in the same category as zone "O". If drilling is considered, a vertical hole collared at 2S on line 110W, to be drilled for 200 feet, is suggested.

On the south end of line 115W, correlating with a zone of high resistivity readings, two more or less isolated anomalous chargeability values have been labelled zone "R". Detailing over this zone is inconclusive and no magnetic data is available to lend this anomaly additional support. An extension of the traverse and further I.P. work is needed to be able to evaluate the anomaly.

Along the southeastern border of the Cat area a narrow band of slightly above background chargeability readings has been outlined. This band correlates fairly well with a zone of higher resistivity readings. A very irregular magnetic pattern is observed over the general area of the zone but it is not directly correlatable with it. Detailing was carried out around 12S on line 85W, to define the shape and electrical properties of the zone, which, at this particular spot, appears to consist of two sub-horizontal slabs at a depth of approximately 100 feet. The data obtained with the 200 feet spacing suggests that up to 2% of polarizable material average by volume can be expected over the zone. Since the anomalous band, with considerable herringboning probably partly due to insufficient topographical control, lines up with zone "A" of Jim claim group, it has not been labelled anew. If drilling of this zone is considered, it could be done effectively from 12+00S on line 85W,

where two holes are suggested: one to be drilled N45°W at an angle of 70° for at least 300 feet, the other S45°E at -70° for at least 300 feet.

V. CONCLUSIONS AND RECOMMENDATIONS

The induced polarization survey in the Cranbrook area has been successful in outlining a good many anomalous zones, most of which look sufficiently promising to be followed up by drilling. Many of the anomalous zones correlate with zones of high resistivity, which, if due to silicification or tourmalinization, could prove an interesting factor according to the geologic setting of the area. Although for part of the grid, surveyed by induced polarization methods, ground magnetic data was available, no definite conclusions could be drawn from the latter.

Based on the combined induced polarization and resistivity data the following anomaly listing has been prepared. At the same time drill hole locations are given, from which the zones may be tested most advantageously.

Jim and Jim South claim groups

First priority

None.

Second priority

Zone "A": Collar at either 12+50N or 20+50N on line 45W, drill N80°W at -50° for at least 250 feet.

Zone "B": Collar at 21S on line 30W, drill S20°E at -70° for 250 feet.

or collar at 10S on line 10W, drill vertically for at least 300 feet.

Zone "C": Collar at 22S on line 10W, drill N20°W. at -75° for at least 250 feet.

Zone "D": Collar at 42N, 15E, drill vertically for at least 300 feet.

Zone "J": Collar at 62S, 25E, drill vertically for at least 350 feet.

Third priority

Zones "E", "F", "G", no drilling recommended.

Carol claim group

First priority

Zone "L": Collar at 1+00N, 90+00E, drill vertically for at least 250 feet.

Collar at 3+00N, 80+00E, drill N. along line at -70° for at least 300 feet.

Second priority

Zone "K": Collar at 6+00S, 47+50E, drill vertically for at least 250 feet.

Collar at 26+00S, 35+00E, drill S. along line at -70° for at least 300 feet.

Zone "L": Collar at 8+00S, 80+00S, drill vertically for at least 300 feet.

Third priority

Zone "M": Collar at 16N, 92+50E, drill vertically for at least 250 feet.

Zone "N": No drilling recommended.

Cat claim group

First priority

Zone "Q": Collar at 42N, 95W, drill vertically for at least 200 feet.

Second priority

Zone "P": Collar at 13N, 90W, drill vertically for 200 feet.

Third priority

Zone "O": Collar at 30N, 105W, to be drilled vertically for 200 feet.

Zone "P": Collar at 35N, 125W, drill vertically for 200 feet.

Zone "A": Collar at 12S, 85W, drill N45°W. at -70° for at least 300 feet.

Collar at 12S, 85W, drill S45°S. at -70° for at least 300 feet.

Zone "S": Collar at 2S, 110W, drill vertically for 200 feet.

Zone "R": No drilling recommended.

Respectfully submitted,

OTTAWA, Ontario,
December 28, 1967.

W. Schuur, M.Sc.
Geophysicist.

APPENDIX I

A. EQUIPMENT

The equipment used by Canadian Aero Mineral Surveys Limited is the high sensitivity D.C. pulse-type I.P. unit Mk. V, built by Sharpe Instruments Limited. A current on-time of 1.5 seconds and a measuring time of 0.5 seconds are employed. A choice of 3 power units is available with this equipment, of respectively 1.2 k.w., 2.5 k.w. and 7.5 k.w. output to match requirements in specific areas. For surveys requesting a very high stable power source a 10 k.w., Volkswagen engine driven, power unit is also available.

B. FIELD PROCEDURE

All electrode configurations in common use in resistivity surveying like dipole-dipole, two array, three array, Wenner and Schlumberger configuration, can be used for DC induced polarization surveying. Canadian Aero Mineral Surveys Limited preferably uses the three array because of low coupling effect and high effective penetration. With this array one current electrode is placed at "infinity", a distance of at least 5 times the maximum spacing used during the survey from any survey station. The other current electrode and the two potential electrodes are equally spaced in line along the survey traverses.

In many areas high resistive bedrock is overlain by good conducting soils, which effectively prevent current to enter the

bedrock. To be able to obtain information about bedrock, spacings used have to be 20 and more times the depth of the overburden. In such cases, using any of the usual arrays, it is not possible to detect the presence of small or moderate sized bodies. Under these circumstances the gradient or rectangle method is both feasible and desirable. It reduces the effect of masking, retains a high degree of resolution and has good depth penetration. With this method, the two current electrodes are placed along a traverse at a mutual distance of 4000' or more. The potential electrodes are kept within the middle third of the current electrode spacing. For each current electrode set-up a rectangle of dimensions 1/3 X 1/4 the current electrode spacing is surveyed. For the gradient array method the potential electrode spacing is usually kept within 1/20 of the current electrode spacing.

For the other electrode configurations the electrode spacing depends primarily on required depth of penetration and size of body expected. Most common spacings for reconnaissance survey with the three array are the 400' and 200'. Readings are normally taken at 200' intervals along the lines, but in areas of interest this interval is reduced to 100'. In some cases anomalous areas are further detailed using additional spacings - 800', 400', 200', 100' and 50' - to provide information as regards the change of electrical properties with depth.

At each observation point both the primary voltage - steady state voltage - and secondary voltage - transient voltage or overvoltage - are observed. The primary voltages are converted

by formula to apparent resistivities expressed in units of ohm meters. Secondary voltages are measured by integration and divided by their corresponding primary voltages to obtain the apparent chargeabilities. The chargeability expressed in units of milli-volt seconds per volt or milliseconds is the I.P. characteristic of the medium.

C. DATA PRESENTATION

Results are presented as combined apparent resistivity and apparent chargeability profiles. Resistivities are plotted at a logarithmic scale of 2" = 1 cycle. Apparent chargeabilities are plotted at a scale of 1" = 5 milliseconds. Apparent chargeability readings obtained with the reconnaissance spacing are also presented on a contour map. For the surveys done with the gradient method, contouring is done separately for each block, due to irregularities in the current distribution in the various blocks. For all other electrode configurations contouring is done continuously over the entire survey area.

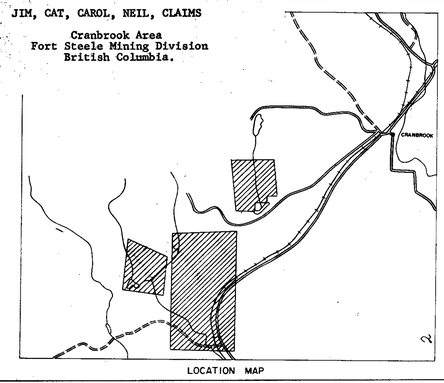
ENCLOSURE NO 1

to accompany

GEOPHYSICAL (INDUCED POLARIZATION) REPORT

JIM, CAT, CAROL, NEIL, CLAIMS

Cranbrook Area
Fort Steele Mining Division
British Columbia.



LOCATION MAP

INDUCED POLARIZATION SURVEY

CHARGEABILITY CONTOUR PLAN

CRANBROOK AREA

BRITISH COLUMBIA

FOR

PLACID OIL COMPANY

BY

CANADIAN AERO Mineral Surveys LTD.
OTTAWA & TORONTO
ONT., CANADA

DEC 28, 1967

APPROX.

LEGEND

ELECTRODE CONFIGURATION	3 ARRAY
ELECTRODE SPACING	400 FEET
CONTOUR INTERVAL	2 MILLISECONDS
INDEX CONTOUR	
INTERMEDIATE CONTOUR	

SCALE

1 INCH = 660 FEET

CA.M.S. 7064

1174

NEW LAKE

KIAKHO LAKES

KIAKHO

JIM SMITH LAKE

JIM SMITH LAKE PROV. PARK

Jim Smith Creek

Palmer Bar Creek

CANADIAN PACIFIC RAILWAY

BASE LINE A

BASE LINE B

BASE LINE C

BASE LINE D

BASE LINE E

TIE LINE A

TIE LINE B

TIE LINE C

TIE LINE D

125W 100W 75W 50W 40W 30W 25W 18W 12W 10W 0 25E 50E 75E 100E

LOCATION MAP

INDUCED POLARIZATION SURVEY

RESISTIVITY CONTOUR PLAN

CRANBROOK AREA

BRITISH COLUMBIA

FOR

PLACID OIL COMPANY

BY

CANADIAN AERO Mineral Surveys LTD.

OTTAWA & TORONTO ONT., CANADA

DEC 28, 1967

LEGEND

ELECTRODE CONFIGURATION	3 ARRAY
ELECTRODE SPACING	400 FEET
CONTOUR INTERVAL	500 OHM-METERS
INDEX CONTOUR	
INTERMEDIATE CONTOUR	

SCALE

1 INCH = 660 FEET

(APPROX)

Department of Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1174 MAP # 3

ENCLOSURE NO 2 1174

to accompany

GEOPHYSICAL (INDUCED POLARIZATION) REPORT

JIM, CAT, CAROL, NEIL, CLAIMS

Cranbrook Area
Fort Steele Mining Division
British Columbia.

C.A.M.S. 7074

48 N
44 N
40 N
36 N
32 N
28 N
24 N
20 N
16 N
12 N
8 N
4 N
B.L.A
4 S
8 S
12 S
16 S
20 S
24 S
28 S
32 S
36 S
40 S

L.50W L.45W L.40W L.35W L.30W L.25W L.10W L.5W 0 L.5E

RESISTIVITY SCALE
(ohm meters)
100 200 300 500 1000

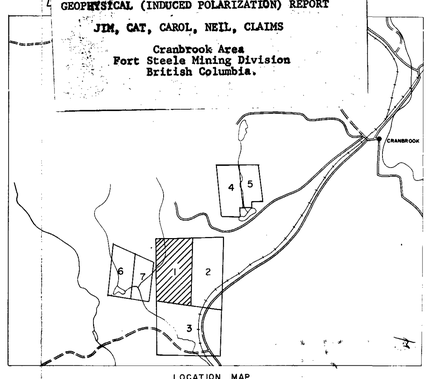
ENCLOSURE NO 3

to accompany

GEOPHYSICAL (INDUCED POLARIZATION) REPORT

JIM, CAT, CAROL, NEIL, CLAIMS

Cranbrook Area
Fort Steele Mining Division
British Columbia.



LOCATION MAP

INDUCED POLARIZATION SURVEY

PROFILE PRESENTATION

CRANBROOK AREA

BRITISH COLUMBIA

FOR

PLACID OIL COMPANY

BY

CANADIAN AERO Mineral Surveys LTD.
OTTAWA & TORONTO
ONT, CANADA

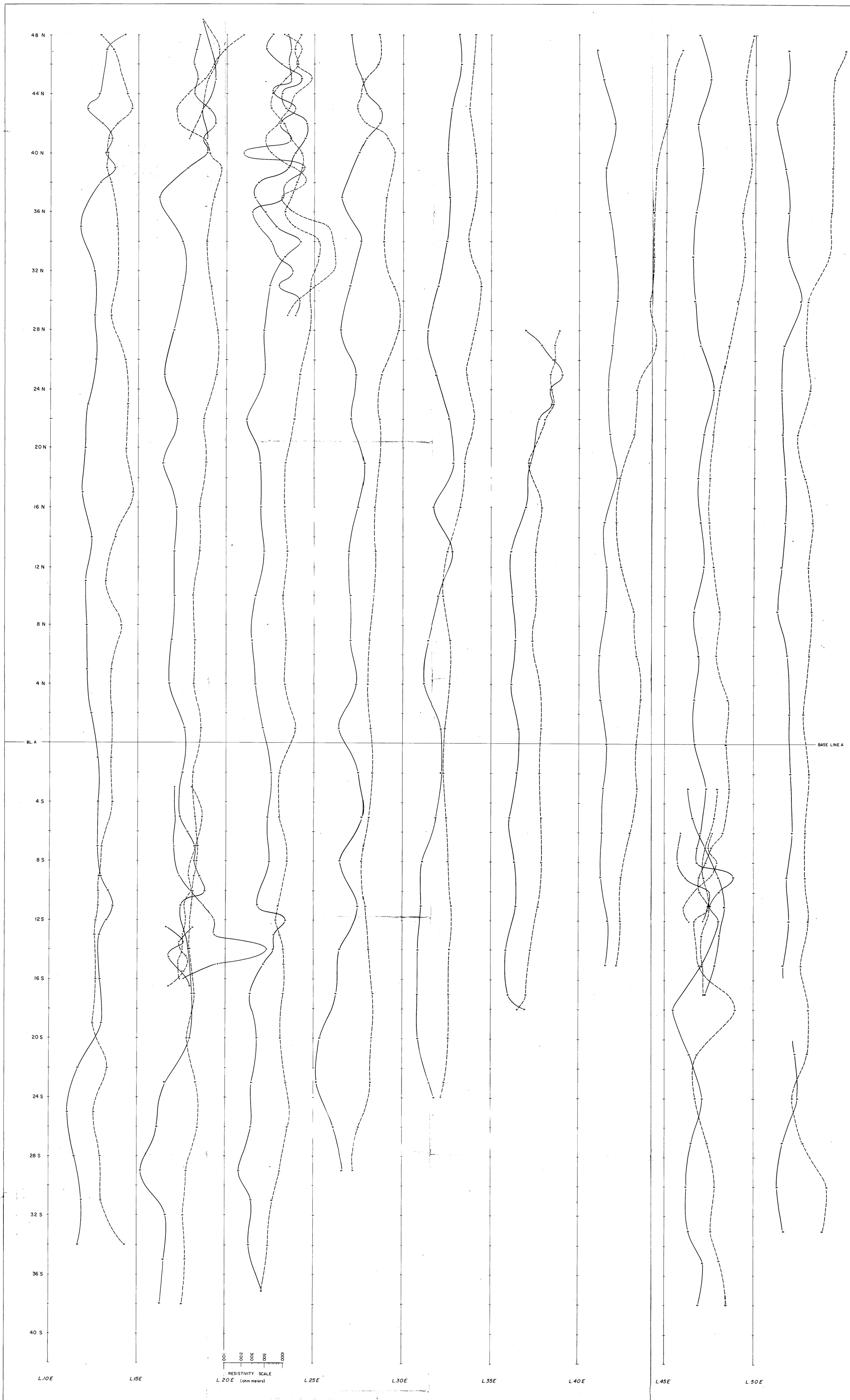
DEC 23 1967

(APPROX)

L
ELECTRODE CONFIGURAT
ELECTRODE SPACING....
CHARGEABILITY
x
°
Δ
▲
S
APPARENT CHARGEABILI
APPARENT RESISTIVITY.
SCALE 1 IN
NOTE LINES NO

117

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1171 MAP #1



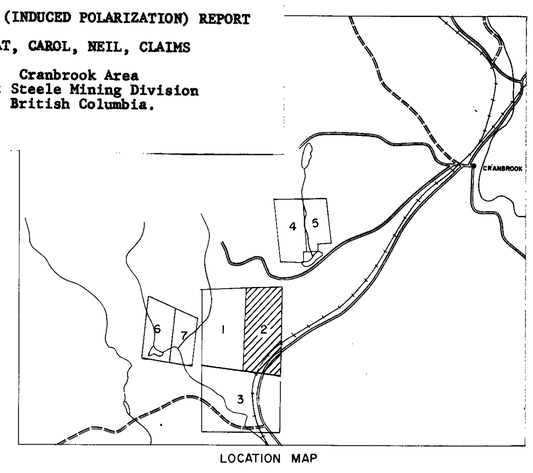
ENCLOSURE NO 4

to accompany

GEOPHYSICAL (INDUCED POLARIZATION) REPORT

JIM, CAT, CAROL, NEIL, CLAIMS

Cranbrook Area
Fort Steele Mining Division
British Columbia.



LOCATION MAP

INDUCED POLARIZATION SURVEY

PROFILE PRESENTATION

CRANBROOK AREA

BRITISH COLUMBIA

FOR

PLACID OIL COMPANY

BY

CANADIAN AERO Mineral Surveys LTD.
OTTAWA & TORONTO ONT, CANADA

DEC 29/67

LEGEND

ELECTRODE CONFIGURATION . . . . . 3 ARRAY

ELECTRODE SPACING . . . . . SEE INDEX

CHARGEABILITY	RESISTIVITY
X—— ——X	X- - - - - X a = 100'
Y—— ——Y	Y- - - - - Y a = 200'
A—— ——A	A- - - - - A a = 400'
	A- - - - - A a = 600'

SCALE

APPARENT CHARGEABILITY . . . . . 1" = 5·0 MILLISECONDS

APPARENT RESISTIVITY . . . . . 2" Λ CYCLE 100-1000 Λm

1 INCH = 200 FEET

NOTE: LINES NOT SPACED TO SCALE

(APPROX.)

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 1174 MAP 4

1174

C.A.M.S. 7074

L50W L45W L40W L35W L30W L25W L20W L15W L10W L5W 00 L5E L10E L15E L20E L25E L30E

36S 40S 44S 48S 52S 56S 60S 64S 68S 72S 76S 80S 84S 88S 92S 96S

NO READINGS

NO READINGS

LINE NOT CUT

NO PICKETS AFTER 74+00S

SWAMP

SWAMP

NB NO RESISTIVITY READINGS

NB NO RESISTIVITY READINGS

SMALL SIGNAL (Vp=0.07-0.02S)

NB NO RESISTIVITY READINGS

NO PICKETS AFTER 74+00S

NB NO RESISTIVITY READINGS

NB LINE 15E AT 70.0-90.0FT FROM RAILWAY

SWAMP AREA

HIGHWAY & RAILWAY

HIGHWAY & RAILWAY

HIGHWAY & RAILWAY APPROX.

HIGHWAY & RAILWAY APPROX.

NB NO RESISTIVITY READINGS (4+40O) FROM L30E TO L5W

BASE LINE 0

RESISTIVITY SCALE
(Ohm meters)

100 200 300 500 800 1000

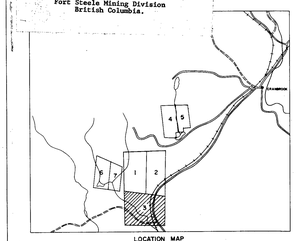
ENCLOSURE NO 5

to accompany

GEOPHYSICAL (INDUCED POLARIZATION) REPORT

JIM, CAT, CAROL, NEIL, CLAIMS

Cranbrook Area
Fort Steele Mining Division
British Columbia.



LOCATION MAP

INDUCED POLARIZATION SURVEY

PROFILE PRESENTATION

CRANBROOK AREA

BRITISH COLUMBIA

FOR

PLACID OIL COMPANY

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CANADIAN AERO Mineral Surveys LTD
OTTAWA & TORONTO ONT, CANADA

DEC. 28/1967

LEGEND

ELECTRODE CONFIGURATION..... 3 ARRAY
ELECTRODE SPACING..... SEE INDEX

CHARGEABILITY

RESISTIVITY

a = 100'
a = 200'
a = 400'
a = 600'

SCALE

APPARENT CHARGEABILITY..... 1" = 5·0 MILLISECONDS
APPARENT RESISTIVITY 2" /\ CYCLE 100-1000 a.m

1 INCH = 200 FEET

NOTE: LINES NOT SPACED TO SCALE

(APPROX)

C.A.M.S. 7074

1174

L10E L15E L20E L25E L30E L35E L40E L45E L50E L55E

46N 42N 38N 34N 30N 26N 22N 18N 14N 10N 6N 2N BASE LINE D 2S 6S 10S 14S 18S 22S 26S 30S 34S 38S 40S 44S 48S 50S 52S

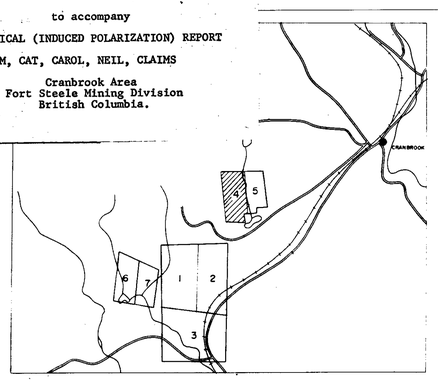
BL.D

RESISTIVITY SCALE
(ohm meters)
100 200 300 500 1000

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT
NO. 1174 MAP 8

ENCLOSURE NO 6

to accompany
GEOPHYSICAL (INDUCED POLARIZATION) REPORT
JIM, CAT, CAROL, NEIL, CLAIMS
Cranbrook Area
Fort Steele Mining Division
British Columbia.



INDUCED POLARIZATION SURVEY

PROFILE PRESENTATION

CRANBROOK AREA

BRITISH COLUMBIA

FOR

PLACID OIL COMPANY

BY

CANADIAN AERO Mineral Surveys LTD.
OTTAWA & TORONTO ONT, CANADA
DEC 28,1967

(APPROX)

LEGEND

ELECTRODE CONFIGURATION ..... 3 ARRAY
ELECTRODE SPACING ..... SEE INDEX

CHARGEABILITY RESISTIVITY
a= 100'
a= 200'
a= 400'
a= 600'

SCALE

APPARENT CHARGEABILITY ..... 1" = 5.0 MILLISECONDS
APPARENT RESISTIVITY ..... 2"/1 CYCLE 100 - 1000 ohm m

SCALE 1 INCH = 200 FEET
NOTE LINES NOT SPACED TO SCALE

1174

34N

30N

26N

22N

18N

14N

10N

6N

2N

0 BASE LINE D

2S

6S

10S

14S

18S

22S

26S

30S

BL.D

L 95E

CHARGEBILITY
L 90E

L60E L65E L70E L75E L80E L85E L90E L95E L100E

RESISTIVITY SCALE
(ohm meters)

100 200 300 500 1000

ENCLOSURE NO 7

to accompany

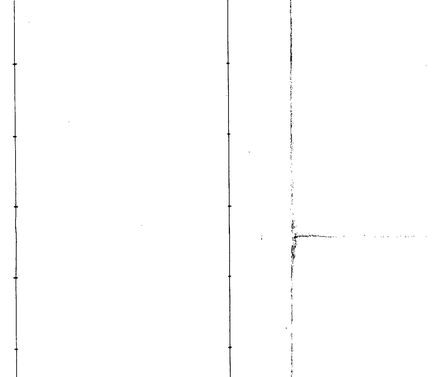
GEOPHYSICAL (INDUCED POLARIZATION) REPORT

JIM, CAT, CAROL, NEIL, CLAIMS

Cranbrook Area
Fort Steele Mining Division
British Columbia.

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 1174 MAP 8



INDUCED POLARIZATION SURVEY

PROFILE PRESENTATION

CRANBROOK AREA

BRITISH COLUMBIA

FOR

PLACID OIL COMPANY

BY

CANADIAN AERO
Mineral Surveys LTD.
OTTAWA & TORONTO
ONT, CANADA

DEC 28 1967

(APPROX)

LEGEND

ELECTRODE CONFIGURATION ..... 3 ARRAY
ELECTRODE SPACING ..... SEE INDEX

CHARGEABILITY RESISTIVITY

a= 100'
a= 200'
a= 400'
a= 600'

SCALE

APPARENT CHARGEABILITY 1" = 50 MILLISECONDS
APPARENT RESISTIVITY 2"/ CYCLE 100 - 1000 ohm

SCALE 1 INCH = 200 FEET

NOTE LINES NOT SPACED TO SCALE

1174

CAMS 7074

50N
46N
42N
38N
34N
30N
26N
22N
18N
14N
10N
6N
2N
00
2S
6S
10S
14S
18S
22S
26S
30S
34S
38S
42S

BL. A

BASE LINE A

L120W
L115W
L110W
L105W
L100W
L95W
L90W
L85W
L80W

ENCLOSURE NO 8

to accompany

GEOPHYSICAL (INDUCED POLARIZATION) REPORT

JIM, CAT, CAROL, NEIL, CLAIMS

Cranbrook Area
Fort Steele Mining Division
British Columbia.

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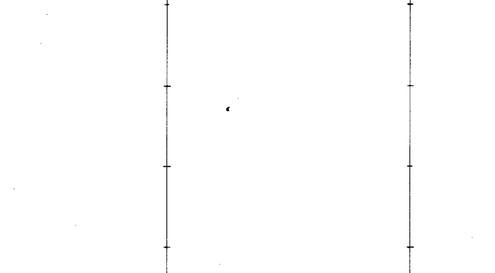

LOCATION MAP

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 1174 MAP 9

INDUCED POLARIZATION SURVEY

PROFILE PRESENTATION

CRANBROOK AREA

BRITISH COLUMBIA

FOR

PLACID OIL COMPANY

BY

CANADIAN AERO Mineral Surveys LTD.
OTTAWA & TORONTO
ONT, CANADA

DEC 28, 1967

(APPROX.)

LEGEND

ELECTRODE CONFIGURATION ..... 3 ARRAY
ELECTRODE SPACING ..... SEE INDEX

CHARGEABILITY RESISTIVITY

x x x x a= 100'
o o o o a= 200'
Δ Δ Δ Δ a= 400'
▲ ▲ ▲ ▲ a= 600'

SCALE

APPARENT CHARGEABILITY ..... 1" = 5·0 MILLISECONDS
APPARENT RESISTIVITY ..... 2"/1 CYCLE 100 - 1000 Ω m

SCALE 1 INCH = 200 FEET

NOTE LINES NOT SPACED TO SCALE

100 200 300 500 1000

C.A.M.S. 7074

1174

L85W L80W L75W L70W L65W L60W L55W L50W

BL A

42N 38N 34N 30N 26N 22N 18N 14N 10N 6N 2N 00 BASE LINE A 2S 6S 10S 14S 18S 22S 26S 30S 34S 38S 42S 46S 50S

RESISTIVITY SCALE (ohm meters) 200 300 500 1000

ENCLOSURE NO 9

to accompany

GEOPHYSICAL (INDUCED POLARIZATION) REPORT

JIM, CAT, CAROL, NEIL, CLAIMS

Cranbrook Area
Fort Steele Mining Division
British Columbia.

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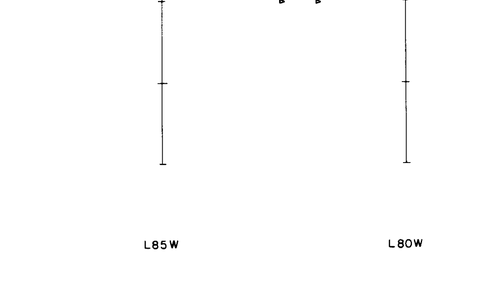

LOCATION MAP

INDUCED POLARIZATION SURVEY

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CRANBROOK AREA

BRITISH COLUMBIA

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CANADIAN AERO Mineral Surveys LTD
OTTAWA & TORONTO ONT, CANADA

DEC. 28, 1967

(APPROX)

LEGEND

ELECTRODE CONFIGURATION ..... 3 ARRAY

ELECTRODE SPACING ..... SEE INDEX

CHARGEABILITY RESISTIVITY

X a = 100'
o a = 200'
Δ a = 400'
▲ a = 600'

SCALE

APPARENT CHARGEABILITY ..... 1" = 5·0 MILLISECONDS

APPARENT RESISTIVITY ..... 2"/1 CYCLE 100 - 1000 Ωm

SCALE 1 INCH = 200 FEET

NOTE LINES NOT SPACED TO SCALE

L.A.M.S. 7074

1174