2747

Department of
Mines and Petroleum Resources
ASSESSMENT REPORT

NO. 2747 MAP .....

REPORT ON INDUCED POLARIZATION AND MAGNETOMETER SURVEYS ON SOME P AND PY CLAIMS SALMO AREA, BRITISH COLUMBIA ON BEHALF OF PYRAMID MINING CO. LTD.

by

Jon G. Baird, B.Sc., P.Eng.

November 13, 1970

CLAIMS:

Name	Record Numbers
PY 1 to 13	12991 to 13003
PY 14 to 19	12947 to 12952
PY 25 to 31	12958 to 12964
P 34 and 35	13740 and 13741

LOCATION:

Salmo area, British Columbia
West bank of the Salmo River
Approximately 4 miles northeast of Remac, B. C.
Nelson Mining Division
117° 49° SE

DATES OF FIELD SURVEY:

September 15 to October 3, 1970

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SUMMARY

An induced polarization survey has revealed rather widespread increased chargeability responses which are thought to arise mainly from rock forming minerals such as pyrite, graphite or sericite which may occur in sedimentary rocks. The magnetic survey has revealed some areas of increased magnetic intensity which may be underlain by intrusive rock types.

Percussion drilling has been carried out in two areas selected mainly on the basis of the chargeability results. No commerical values were encountered and the small amount of core recovered indicates that sericite and possibly pyrite contributed to the increased chargeability responses.

Further investigations, in particular a geochemical survey, may be warranted if geological theory indicates that any area of increased chargeability may be underlain by the favourable Reeves Limestone.

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INTRODUCTION

During the period September 15th to October 3, 1970, a geophysical field party under the direction of Mr. Christian Zogg, executed induced polarization and magnetometer surveys on some P and PY Claims, Salmo area, British Columbia, on behalf of Pyramid Mining Co. Ltd. The survey was under the general supervision of the writer who visited the property during the course of the work.

The property lies about 15 miles south-southwest of Salmo and about 4 miles northeast of Remac where the Reeves McDonald Mine is located. The property is reached by a good gravel road suitable for a car. Glacial drift covers most of the surface of the property and topographic relief may be described as hilly although in places it is quite steep. Most of the area of the property is forested.

The claims covered, in whole or part, by this survey are listed on the title page of this report and are shown on Plate 2 on a scale of 1" = 400'. These claims are held by Pyramid Mining Co. Ltd.

Seigel Mk VII time-domain (pulse-type) induced polarization equipment has been employed on this property. The transmitting unit had a rating of 2.5 kilowatts and equal on and off times of 2.0 seconds. The receiving unit was a remote, ground-pulse type triggered by the rising and falling primary voltages set up in the ground by the transmitter.

The integration of the transient polarization voltages takes place for 0.65 seconds after a 0.45 second delay time following the termination of the current on pulse.

The purpose of an induced polarization survey is to map the subsurface distribution of metallically conducting mineralization beneath the grids covered. In the present area such mineralization could include galena, chalcopyrite, pyrite and other metallic sulphide minerals. Also, metallic minerals such as graphite and magnetite as well as non-metallic minerals such as chlorite and sericite can give responses not always distinguishable from sulphide mineralization.

The three electrode array was employed for the survey. For this electrode array, one current electrode and two potential electrodes traverse the profiles with an interelectrode spacing called "a". The second or "infinte" current electrode is placed a distance greater than 5a from the measuring point which is defined as the midpoint between the moving current electrode and the near potential electrode. A schematic representation of the electrode array is shown on Plate 4. For the reconnaissance survey observations were taken for a = 400' and a = 200', the distance between observations being 200'. For additional detail parts of two profiles were covered, with a = 100' and a = 50'.

A Scintrex MF-1 magnetometer was used for the magnetic survey. This is a vertical force fluxgate instrument with a reading accuracy of ± 5 gammas on the finest scale. Baselevel and diurnal corrections were made by establishing base stations which were read as near to hourly intervals as possible. Readings were taken each 100' along the survey lines.

On the present property, a baseline was laid out oriented N 22° E and grid lines were established perpendicular thereto at 400' intervals. The average line length was about 4000' and the survey totalled approximately 13.2 line miles.

GEOLOGY

The geology of the present property has been studied by L. J. Manning and Associates and is the subject of their reports. As well, there are several government publications describing the geology of the surrounding area.

The property is mainly underlain by quartzite, argillite, phyllite and limestone intruded by granitic rocks. The outcrops which have been mapped reveal that the sedimentary rocks occur in bands striking just east of north. Since the area is heavily faulted however, it is difficult to predict which rocks may underlie the overburden covered parts of the grid.

The target of the present survey was a lead-zinc replacement type of ore body occurring within the Lower Cambrian Reeves Limestone similar to the deposit being mined at the Reeves McDonald Mine a few miles southwest of the property.

DISCUSSION OF RESULTS

Plate 2, on a scale of 1" = 400' is an interpretation of the chargeability, resistivity and magnetic results. Boundaries of areas exhibiting increased chargeabilities, decreased resistivities and increased magnetic intensities are shown.

Plate 3, also on a scale of 1" = 400' is a magnetic contour

plan. The corrected values in gammas have been shown for each station and contoured with a 100 gamma contour interval.

Plate 4 shows the chargeability and resistivity results in profile form. The vertical scales are 1" = 10.0 milliseconds for chargeability and 2" = 1 logarithmic cycle with the line trace taken as 1000 ohm-meters for resistivity. The horizontal scale is 1" = 400' although in order to accommodate the profiles, the interline spacing is not to scale. Symbols described in the legend have been used to designate observations taken with the various electrode spacings.

The chargeability profiles indicate that the chargeability values in the southeastern part of the grid range from 1.0 to 5.0 milliseconds, a low and uniform, non-metallic background range. With such a background a uniform subsurface distribution of 1% by volume of metallically conducting mineralization is expected to increase chargeabilities by approximately 10.0 milliseconds. Since the target of the present survey may be limited in size and since sphalerite, (which is not detectable by the induced polarization method) may be an important ore mineral, the peak observed chargeability may be much less than the true chargeabilities expected for the amount of sulphide mineralization in the body. For this reason observed chargeability responses in excess of about 8.0 milliseconds and indicative of bodies of favourable dimensions may warrant further investigation.

From the profiles and the interpretation on Plate 2 it is seen that about 40% of the grid area exhibits chargeabilities in excess of 8.0 milliseconds and ranging up to one peak value of 34.0 milliseconds. We may conclude that the rocks in these areas contain from 1% to 3% by

volume of metallically conducting minerals such as sulphide or graphite, or higher percentages by volume of minerals such as sericite or chlorite which also give increased chargeability responses.

One area, centred about a line running from 6 E on L 36 N to about 10 E on L 48 N exhibits peak chargeabilities in excess of 15.0 milliseconds. These responses are interpreted to arise from an isolated body from 400' to 1000' in width which approaches to within 15' of the ground surface and which contains the equivalent of 1% by volume of metallically conducting material. Another more localized increased chargeability response occurs centred at 5 E on L 60 N. This anomaly is interpreted to arise from a body no greater than 100' in width, steeply east dipping and containing somewhat in excess of 1% by volume of metallically conducting material. No evidence of such a body is seen on adjacent lines 400' away.

A reconnaissance line, the results of which are shown on the bottom of Plate 4, was run in the area just south of the Salmo River from about 10 E to 20 E of the grid. High chargeabilities and low resistivities on the west end of this line are thought to correspond to black argillite which is seen to outcrop.

The resistivities range from below 100 ohm-meters to peak values of about 10,000 ohm-meters. Two rather extensive areas shown on Plate 2 exhibit resistivities of less than 1000 ohm-meters. The remainder of the grid shows resistivities generally in the few thousands of ohm-meters.

Changes in resistivity can be caused by changes in the type or thickness of the overburden or changes in the character of the bedrock. In places the 200' spacing resistivities are of lower amplitude than the 400' spacing values. This would indicate that in these areas a near

surface layer of low resistivity, likely overburden, overlies higher resistivity bedrock. Detailed surveying employing at least three electrode spacings is necessary to determine the thickness of the overburden layer. On L 44 N and L 60 N where such detail has been carried out, the depth of overburden does not appear to be much in excess of 10' to 20'. In other parts of the grid however, it could be considerably deeper. Since similar curve forms are seen for both reconnaissance electrode spacings it is likely that the major resistivity changes shown on Plate 2 indicate changes in the character of the rocks rather than changes in the overburden.

The magnetic contours on Plate 3 reveal a distorted, somewhat random pattern with a total magnetic relief of about 3000 gammas. The areas of highest magnetic intensities have been shown on Plate 3. These areas are interpreted as underlain by rocks of higher magnetic susceptibility than surrounding rocks and are possibly intrusives. Some of the more intense distortions within these zones may be caused by near surface lenses of magnetic material. The sharp magnetic distortions centred near 10 E on L 72 is interpreted to arise from a narrow, dike-like body located as shown on Plate 2 and dipping at about 45° to the west.

CONCLUSIONS AND RECOMMENDATIONS

The present induced polarization survey has revealed that much of the survey grid is underlain by rocks containing the equivalent of 1% to 3% by volume of metallically conducting material. Since the increased responses are so widespread, such material is probably formational in nature and may be pyrite, graphite or minerals such as sericite occurring within sedimentary rocks, however the possibility

that base metal type sulphides may occur in part of this area can not be ruled out.

The high chargeability zone mentioned above as lying between lines 36 N and 48 N has been chosen for further exploration because of its relative isolation, size and apparent metallic content. As well it coincides in part with a possible intrusive body and exhibits increased resistivities, geophysical characteristics which might be expected from a scarn zone. A percussion drill hole collared at 8 + 50 E on L 44 N approximately 200' in length and drilled at -45° to the west has been completed in this area. No commerical values were encountered and the one foot of core taken from the bottom of the hole contained sericite and traces of pyrite. There is no indication of the occurrence of the Reeves Limestone and geochemical surveying over the increased chargeability area did not reveal any anomalous values.

A similar drill hole collared at 5 + 25 E on L 60 N was undertaken to investigate the narrow body in that area. The results were identical to the first hole.

Further investigation of this grid might consist of a geochemical soil sampling programme in the areas of increased chargeabilities however geological studies apparently indicate that these areas may not be underlain by the favourable Reeves Limestone. In this case, further exploration may not be warranted.

Respectfully submitted,

SEIGEL ASSOCIATES LIMITED

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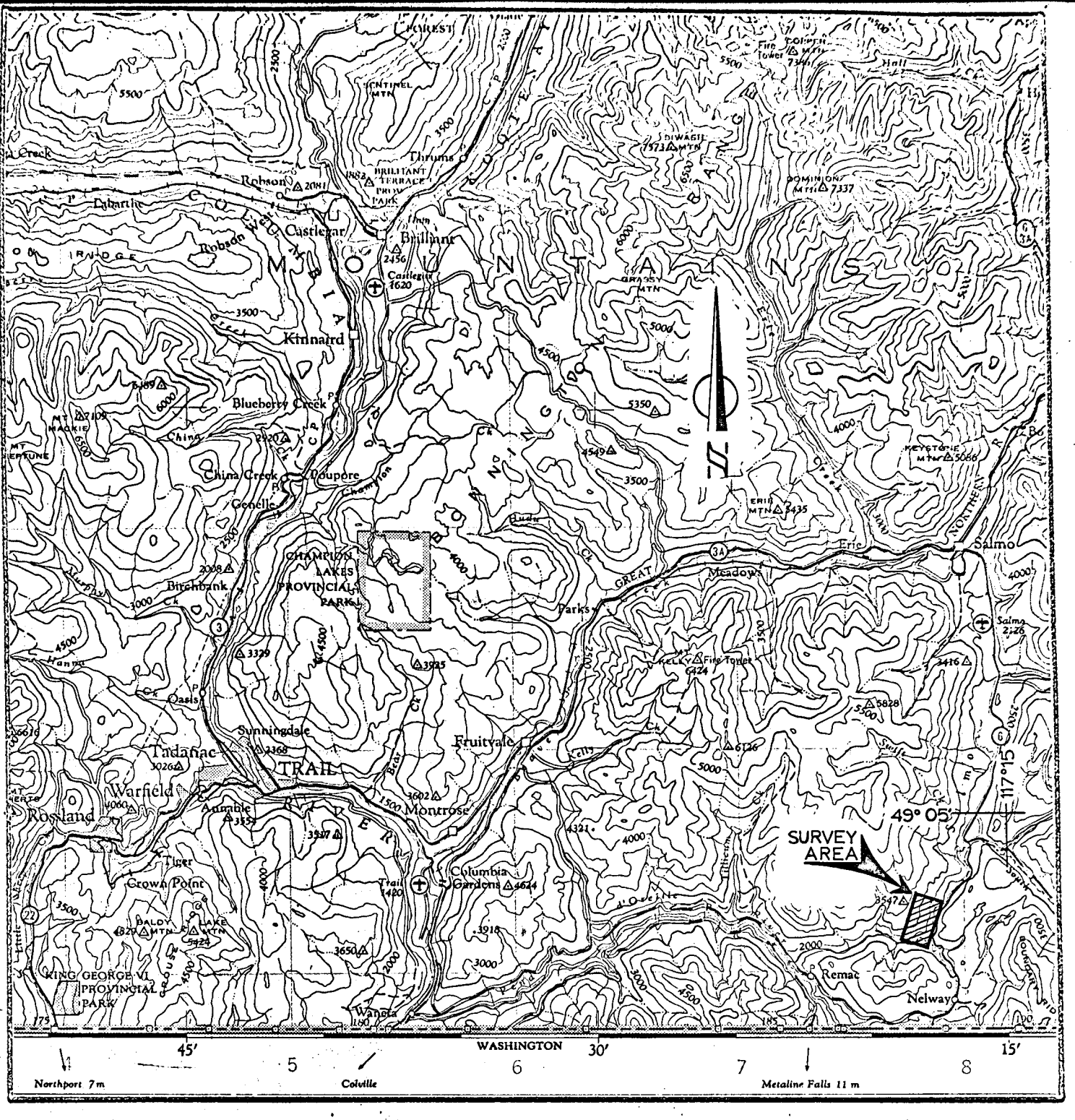
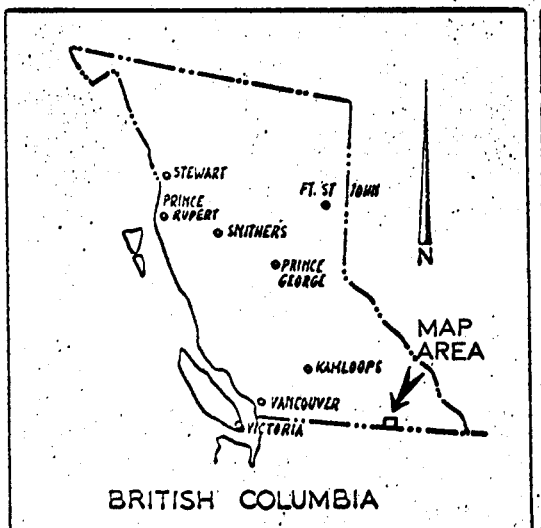
Geophysicist

Vancouver, B. C.
November 13, 1970





PYRAMID MINING CO. LTD.

LOCATION MAP

SALMO AREA BRITISH COLUMBIA

4 miles 0 4 miles

Survey by
SEIGEL ASSOCIATES LTD.
Sept. 1970

PLATE 1

32 W 28 24 20 16 12 8 4 0 4 8 12 16 20 24 28 32 36 E

P - 37 P - 36 P - 35 P - 34 PY 31 PY 32 PY 29 PY 30 PY 27 PY 28 PY 25 PY 26 PY 2

PY 19 PY 18 PY 17 PY 16 PY 15 PY 14 PY 13 PY 12 PY 10 PY 9 PY 8 PY 7 PY 6 PY 11 PY 5

L 84 N L 80 N L 76 N L 72 N L 68 N L 64 N L 60 N L 56 N L 52 N L 48 N L 44 N L 40 N L 36 N L 32 N L 28 N L 24 N L 20 N L 16 N L 12 N L 8 N

LEGEND

- AREA OF INCREASED CHARGEABILITIES, GENERALLY IN EXCESS OF 8.0 MILLISECONDS
- AREA OF LOWER RESISTIVITIES, GENERALLY BELOW 1000 OHM-METRES
- AREA OF INCREASED MAGNETIC INTENSITIES GENERALLY IN EXCESS OF 500 GAMMAS
- LOCATION OF NARROW BODY OF HIGH CHARGEABILITY
- LOCATION OF NARROW MAGNETIC BODY
- COMPLETED PERCUSSION DRILL HOLE

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TO ACCOMPANY A GEOPHYSICAL REPORT
BY J. G. BAIRD DATED NOVEMBER 13, 1970

M-2

PLATE 2

PYRAMID MINING COMPANY LIMITED

SALMO AREA, BRITISH-COLUMBIA

GEOPHYSICAL INTERPRETATION AND CLAIMS

SCALE 1" = 400'

400' 0 400' 800'

SURVEY BY SEIGEL ASSOCIATES LTD. SEPT. 1970

J.G. Baird

30 W 28 24 20 16 12 8 4 W 0 4 E 8 12 16 20 24 28 30 E

84 N
80 N
76 N
72 N
68 N
64 N
06 N
56 N
52 N
48 N
44 N
40 N
36 N
32 N
28 N
24 N
20 N
16 N
12 N
8 N
4 N
0 N

LEGEND

520 540 — LINETRACE WITH MAGNETIC VALUES IN GAMMAS

400 500 — 100 GAMMA CONTOUR INTERVAL

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TO ACCOMPANY A GEOPHYSICAL REPORT
BY J.G. BAIRD DATED NOVEMBER 13, 1970

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PLATE 3

PYRAMID MINING COMPANY LIMITED

SALMO AREA BRITISH COLUMBIA

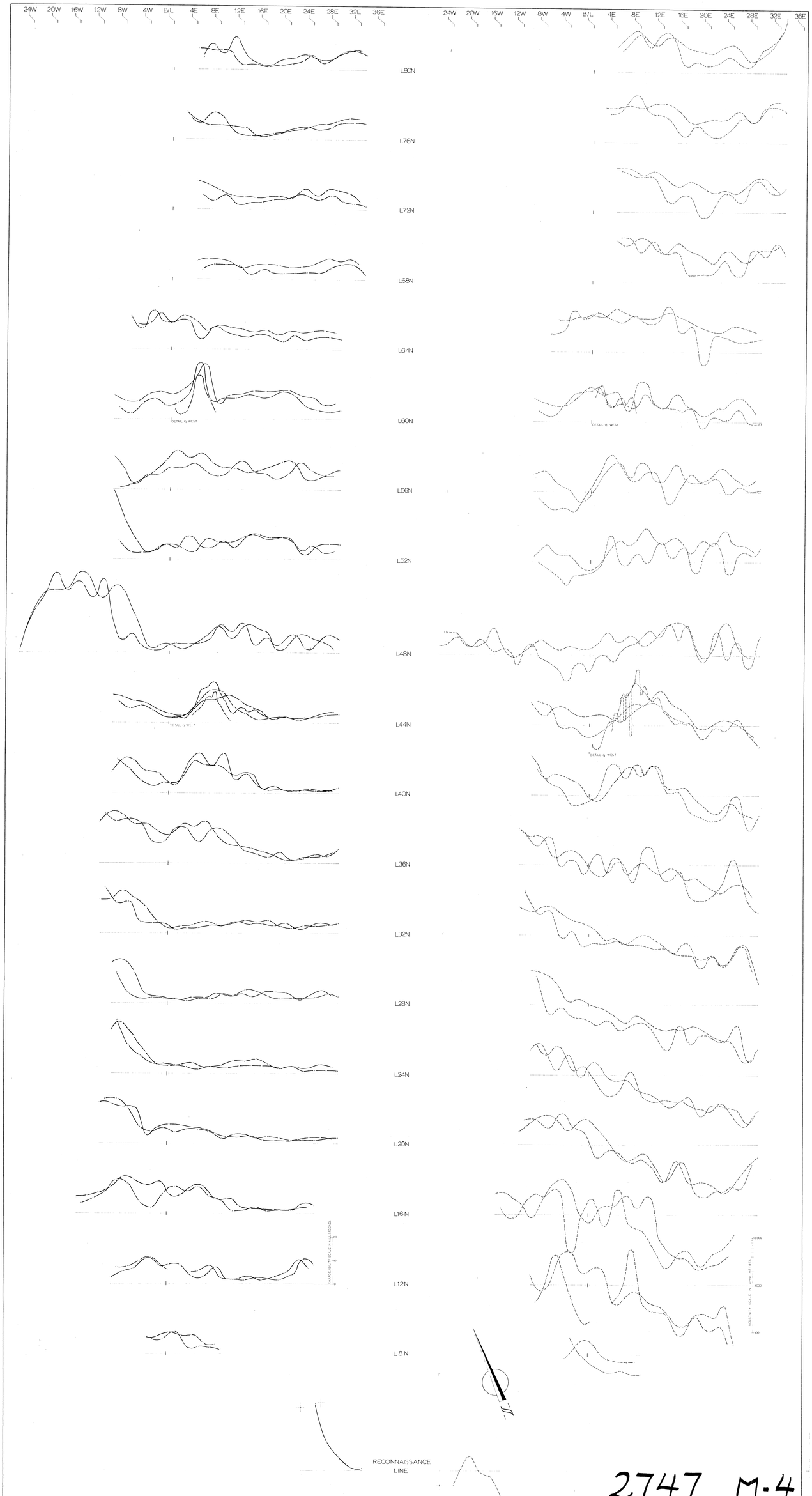
MAGNETOMETER SURVEY

SCALE 1" = 400'

400' 0 400' 800'

SURVEY BY SEIGEL ASSOCIATES LTD. SEPT. 1970

J.G. Baird



RECONNAISSANCE LINE

LEGEND

— CHARGEABILITY SCALE
T ELECTRODE SPACING
a 1 400
a 1 200
a 1 100
a 1 50
= RESISTIVITY SCALE
T ELECTRODE SPACING
a 1 400
a 1 200
a 1 100
a 1 50

T = 1 SECOND
MILLISECONDS

LOGARITHMIC CYCLE WITH LINE TRACE TAKEN AS 1000 OHM-METRES

NOTES

CENTRE LINE OF INSTRUMENTATION

THREE ELECTRODE ARRAY

Moving current electrode

Potential electrode

Plotting point

Q EAST OF ARRAY UNLESS INDICATED OTHERWISE

INTERLINE SPACING NOT TO SCALE

TO ACCOMPANY A GEOPHYSICAL REPORT BY JD BAIRD DATED NOVEMBER 13, 1970

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PLATE 4

PYRAMID MINING COMPANY LIMITED

SALMO AREA - BRITISH COLUMBIA

INDUCED POLARIZATION SURVEY

CHARGEABILITY AND RESISTIVITY PROFILES

SCALE 1" = 400'

400' 0 400' 800'

SURVEY BY SEIGEL ASSOCIATES LTD. SEPT. 1970