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REPORT ON
DRILL HOLE TEST SURVEYS
AT QUEEN HILL, ZEEHAN, TASMANIA
ON BEHALF OF
GIPPSLAND MINERALS N.L.

OPEN FILE

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REPORT ON
DRILL HOLE TEST SURVEYS
AT QUEEN HILL, ZEEHAN, TASMANIA
ON BEHALF OF
GIPPSLAND MINERALS N.L.

BY

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SYDNEY, N.S.W.

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C O N T E N T S

Summary

QUEEN HILL

Introduction	Page 1
Geology	Page 2
The Methods	Page 3
Discussion of Results	Page 5
Conclusions	Page 13

MONTANA

Introduction	Page 16
Discussion of Results	Page 16
Conclusions	Page 17

Appendix - Additional Work at Queen Hill

Plate 6 - Energisation from G26, Vp & IP data profile. Scale 1:2500

Figure 1 - Location Map

QUEEN HILL

- Plate 1 - Three array drill hole logs G6 and G9
- Plate 2 - Energisation from G6, Vp and IP Data
- Plate 3 - Energisation from G6 Equipotential map, Scale 1:500
- Plate 3a- As above, Scale 1 inch = 500 feet
- Plate 4 - Energisation from G9, Vp & IP data profiles Scale 1:2500
Equipotential Map, Scale 1:500
- Plate 4a- Detail from above, equipotential map, Scale 1 inch = 50ft

MONTANA

Plate 5 - Oblique Gradient IP and Resistivity data profiles.

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GEOPHYSICAL CONSULTANTS AND CONTRACTORS

S U M M A R Y

Down hole surveys conducted on the Queen Hill prospect on behalf of Gippsland Minerals N.L. have demonstrated

(i) the application of the three array down hole log to ascertain the in situ properties of the body and
(ii) application of Mise-a-la-Masse techniques. The work was greatly hampered by the unavailability of open holes due to caving.

It is concluded that these surveys can make material contributions to the interpretation of the structure and therefore the planning of a detailed evaluation drilling programme.

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REPORT ON
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INTRODUCTION

From the 15th to 21st November, 1972, Seigel Associates Australasia Pty. Ltd. executed induced polarization and resistivity down hole surveys and mass energisation equipotential surveys at Queen Hill, near Zeehan, Tasmania. These surveys were performed at the request of Mr. C. Barnes, B.Sc. Chief Geologist of Gippsland Minerals N.L. The field work was under the immediate direction of Mr. E. Hope with local assistants being provided by Gippsland Minerals N.L. Technical supervision of the project was provided by Mr. A.W. Howland-Rose who visited the site between 16th and 20th November, 1972.

The objectives of the survey were:

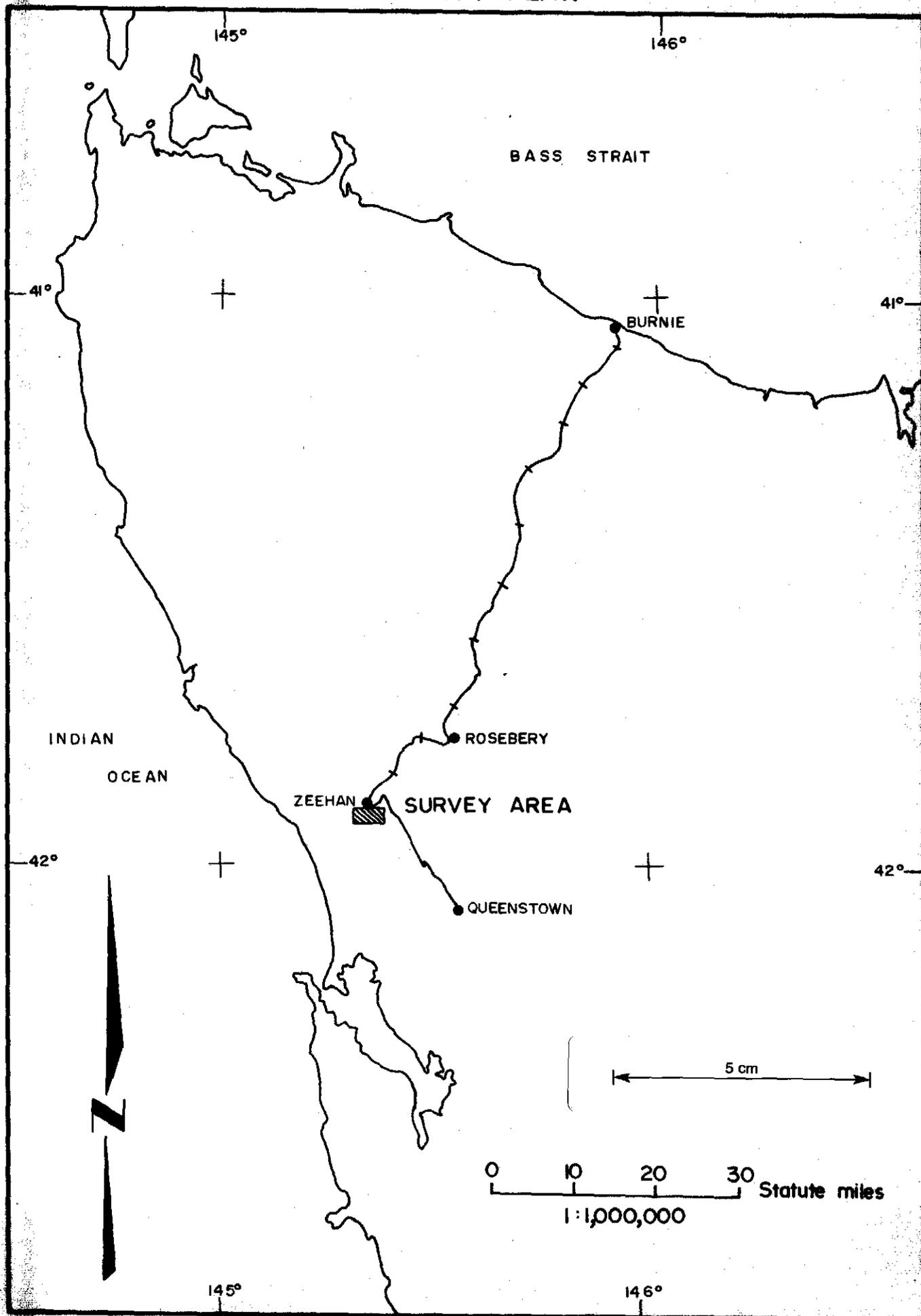
1. To log the induced polarization and resistivity characteristics of the Gippsland and Clarkes ore zones, mineralised shear zones, graphite zones and the enclosing host rocks.

QUEENHILL PROSPECT

Figure 1

LOCALITY PLAN

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Page - two

2. To test and evaluate the applicability of drill hole techniques to the exploration of the Queen Hill and other similar bodies.
3. To test the electrical continuity of sulphide ore, sulphide shear fillings and graphite zones between intersections in the various diamond drill holes.
4. To ascertain the strike extent of a number of graphite and sulphide intersections.

GEOLOGY

The geological sequence consists of approximately north-north-east striking slates and shales, steeply dipping to the east, wedged between massive quartzite to the east and spilites to the west. It is in the shale-slate unit that the two known and perhaps interconnected mineralised zones occur, both of which have a semi-conformable strike with the enclosing host rocks.

Clarkes lode consists of pyrite, galena, sphalerite, stannite, pyrrhotite with significant silver values, while the Gippsland body, the main purpose of the present investigation, consists of pyrite, pyrrhotite, cassiterite with quartz and fluorite as gangue minerals. In all some

Page - three

1 million tons have been outlined averaging 1.45% tin. This body plunges steeply to the north-east.

THE METHODS

In the present survey two down hole techniques were applied. The following very brief and simplified comments are made on these methods.

1 - Three Array Logging: This method was used to ascertain conductivity (resistivity) and induced polarization characteristics of the ore zones, fault zones and host rocks.

In this case the logging tool used consisted of a current (pole) electrode and two potential (dipole) electrodes down hole with a further current electrode at infinity. The current pole and potential dipole electrodes were equi-spaced at 5 foot intervals in this application, which sums information for a diameter of approximately 5 feet around the hole. A diagrammatic representation of the tool together with the current flow lines and equipotential surfaces are shown in Plate 1.

2 - Energisation of the Sulphides: (Mise-a-la-Masse). Once the sulphides making up the zone of interest have been

Page - four

proved to be conductive relative to the enclosing host rocks and to the overburden, a current electrode is placed in the sulphide zone with further current electrodes placed at a distance from the body to approximate an infinite. The sulphide zone in effect becomes a pole source and current flow will be at right angles to the surface of the conducting sulphides, and therefore the equipotential surfaces will parallel the shape of this conductor. A potential dipole is used on surface to trace out the projection of the conductive sulphides on surface. In practice, however, the distant electrode cannot act as an infinite and the gradient of the potential field on the distant electrode side will be steeper than on the reverse side. A multiplicity of distant electrodes will give the same results as a true infinite. This technique, however, was not thought to be necessary in this case.

In the present circumstances large potential differences spanning three orders of magnitude were recorded and therefore it was not necessary to correct the results for distance from the potential. The potential of a pole source within a medium is given by the relation:

$$V_p = \frac{\rho I}{2\pi r}$$

V_p = voltage, ρ = resistivity I = current
 r = distance to source

Page - five

As stated above, the large potential anomaly associated with the energisation in all three cases at Queen Hill makes a correction of academic interest only.

DISCUSSION OF RESULTS

Drill Hole Logs, G6 & G9

Induced polarization and resistivity drill hole logs were carried out down hole G6, which intersected both Clarkes lode and the Gippsland body. G9 which intersected both sulphides carrying tin and graphite was also logged.

The data is presented on Plate 1 at the following scales: distance down hole, 1 inch = 10 feet, chargeability, 1 inch = 40 milliseconds and the resistivity (conductivity) has been presented on a 2 inch logarithmic cycle. The L/M ratios, being normal, have not been plotted. In addition, a scale diagrammatic representation of the 5 foot three array logger used in holes G6 and G9 are shown. The potential field, current paths and volume samples are displayed.

Drill Hole G6: The background resistivities recorded above, between and below the two lodes is of the order of 200 to 300 ohm-meters (0.005 mhos/meter) with a sharp increase in resistivity to 600 ohm-meters (0.002 mhos/meter) below 317 feet. The main feature associated

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Page - six

with both zones is a sharp decrease in resistivity. Through Clarkes lode the resistivity is less than 0.1 ohm-meters between 242 feet and 245 feet and through the Gippsland body, 0.4 ohm-meters (2.5 mhos/meter) between 287 feet and 292 feet. A broader low is however also associated with both zones from 232 feet to 250 feet and from 272 feet to 293 feet respectively. These lows both have sharp boundaries at about the positions stated. Both zones recorded higher chargeability backgrounds on either side of the low, with geometric effects producing negative values as the logger passed through the mineralisation.

The conductivity width values of Clarkes lode and the Gippsland body through the main and broad lows are as follows:

<u>Body</u>	<u>Broad Low only</u>	<u>Main Low only</u>
Clarkes	0.6 mhos	20 mhos
Gippsland	0.7 mhos	5 mhos

These conductivity width products certainly explain the clear response recorded by the BMR on the self potential surveys in 1962 (unpublished). It should, however, be noted that the self potential method requires that electrically continuous sulphides traverse the water table. Therefore, had the Gippsland body or Clarkes lode have occurred wholly

Page - seven

below the water table no self potential anomaly would have been produced.

Drill Hole G9: The background resistivities observed in this hole were similar to those observed in G6.

A graphite band having a width of less than the spacing of the logger used (i.e. 5 feet) at a depth of 133 feet was seen to be conductive. The maximum conductivity width product expected would be of the order of 1 mho or less which would be submerged in the geologic noise background in any surface electromagnetic survey.

The sulphide zone centred at a depth of 227 feet gave a conductance of less than 0.025 mhos/meter (40 ohm-meters) which, although more conductive than the environment, is some 200 to 400 times more resistant than the material logged in the Clarkes and Gippsland ore sections in G6.

No appreciable above background induced polarization anomalies were located above background over either section.

Equipotential Survey

Energisation from G6: Having clearly established the conductive nature of the Gippsland body, an electrode was

Page - eight

emplaced in the most conductive section of the ore zone and a single distant electrode emplaced to the west. It should be noted that this is not quite equivalent to an infinite due to the large effective size of the Gippsland body (which makes up the pole source) with respect to the distant electrode. Therefore certain predictable distortions in the potential field will occur.

The results of the energisation of the Gippsland body are displayed on Plates 2, 3 and 3a. The data profiles are at a scale of 1:2500 with stations having been read at 12.5 meter intervals along the metric grid lines at 1950N, 1925N, 1900N, 1875N, 1850N, 1800N, 1750N, 1700N and 1650N. The vertical scales were 1 centimeter = 10 milliseconds and a 5 centimeter log cycle was used for the potential (Vp). As the current utilised over the whole survey did vary, Vp has been plotted directly. The equipotential contour map is presented at a metric scale of 1:500 (Plate 3) and also on a footage scale of 1 inch = 50 feet (Plate 3a).

The equipotential field recorded varies from over 1000 millivolts to the west over the spilite section to less than 1 millivolt over the ore zones. Distinct twin potential lows were recorded on lines 1750N, 1800N and 1850N centred at 662E & 690E, 670E & 712.5E and 675E & 730E

Page - nine

respectively. To the south on line 1700N only a broad low was recorded having Vp values some 10 times greater than on the lines immediately to the north. No significant low was recorded on line 1650N.

On line 1875N the largest low recorded on the survey (less than 0.5 millivolts) was recorded at 710E and a distinct shoulder was recorded at 737.5E. Line 1900N shows a broad low from 700E to 750E. There is no evidence of any material low on either of the lines 1925N or 1950N to the immediate north.

The contour pattern is unique except between lines 1850N and 1875N where a distortion is evident. The low at 710E/1875N may be continuous with that at 730E/1850N rather than 675E/1850N as per the contour map. Careful geologic deduction should help resolve this.

When electrically continuous conductive material is energised in this mode, certain distortions in the resultant potential field occur due to the position of the distant electrode and the geometry of the body itself. A steeper gradient in the potential field will be seen on the distant electrode side. This distortion is present on this survey, but in this case is also due to the steep

Page - ten

eastern dip of the body.

In addition, the surface manifestation of the conductive energised body will be significantly greater than the true width of the body due to the divergent current paths as the insulator immediately above ground surface is approached. The equipotential pattern will therefore magnify the size of the body along the traverse. In this case the magnification may be between 1.5 and 2 times.

Although the interpretation of induced polarization data in mise-a-la-masse surveys is complex, these were recorded for each station in the present survey as no material electromagnetic coupling was observed on most stations. It is perhaps significant that the induced polarization response occurs to the west, up dip from the resistivity low. This, and the fact that material potential lows were not recorded over sulphides on the surface which are a supposed surface projection of the Gippsland body, suggests that partial oxidation between sulphide grains has resulted in material reduction in conductivity nearer to surface. Simple testing of surface sulphide samples gave very variable results inferring confirmation of this conclusion.

Page - eleven

Energisation from G9: The sulphide intersection centred at 227 feet was energised and the resultant profiles are plotted on Plate 4 at the scale of 1:2500 with vertical scales of 1 cm = 10 milliseconds and a 5 cm log cycle was used for the Vp. The equipotential map is also presented on Plate 4 at the scale of 1:500 and on Plate 4a at the scale of 1 inch = 50 feet.

Some five lines were surveyed at 12.5m intervals, namely 1850N, 1875N, 1900N, 1925N and 1950N.

The purpose of the survey was to check the electrical continuity of the sulphide minerals in this hole with that of the Gippsland body. Immediately prior to this mise-a-la-masse survey, down hole work had inferred that this mineralisation was not electrically continuous with the Gippsland body. The purpose of this survey was to trace this mineralisation which also carries tin values.

The results obtained were quite unexpected. A circular low of some 10 milliseconds was defined around a distinctly resistive mass reaching a high Vp value of over 500 millivolts. The geological significance of this is still not fully understood at this time. What is significant is that this mineralisation is not in electrical continuity with the

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Page - twelve

Gippsland body. The Vp low is sharp on every line, with accompanying high positive and negative values. The inference is that the top of this electrically continuous material is close to surface.

A comparison of the two equipotential contour maps (Plates 3 and 4) shows that the twin lows recorded over the Gippsland body (Plate 3) are distorted along the line of the Vp low which resulted from the energisation of the sulphides in G9 (Plate 4).

One possible explanation is that this Vp low represents a mineralised flat dipping fault which cuts and effectively displaces the body. This possibility should be investigated in the field.

When the graphite in G9 was energised, very similar results to those obtained by energising the sulphides were obtained over the two lines surveyed. This suggests that these two conductors are linked electrically. The proposed shear therefore may either be graphite or sulphide.

Testing electrical continuity between holes: Unfortunately not many diamond drill holes were open and therefore individual sulphide intersections could not be traced between holes. In this area down hole surveys should be

Page - thirteen

undertaken immediately after the completion of the diamond drill holes.

CONCLUSIONS

1. The mineralisation making up the Clarkes lode and the Gippsland body are conductive and capable of detection by the Turam or Turair electromagnetic methods.
2. The close proximity of these two conductive bodies makes it difficult, if not impossible, to resolve them with this method.
3. The twin lows noted on lines 1750N, 1800N, 1850N and perhaps 1875N and 1900N may be due to a flexure in the Gippsland body (conversations with C. Barnes, December, 1972). It should be noted that the distance between these lows is exaggerated.
4. The equipotential data infers that the body comes closest to surface on lines 1850N and 1875N.
5. The equipotential field infers the body is not present on line 1700N or to the south, at least not at "shallow" depths.

Page - fourteen

6. Also the data on line 1925N infers the bodies to be present only at depth on this line and to the north.
7. The discontinuity observed between lines 1850N and 1900N may be due to a flat dipping mineralised or graphitic shear zone which, although not in electrical continuity with the body, is responsible for a displacement in the body.
8. An early application of this technique in the exploration programme may have resulted in a more rapid evaluation of the near surface potential of the prospect.
9. Holes should be logged and surveyed immediately upon completion. The reassessment of Vp only down exploration holes energising the body from G6 would assist the location of the orebody in near miss cases. Variable spaced logs would also assist in this purpose. It should be noted that equipotential surveys down a number of drill holes can be contoured as sections, The resulting patterns can assist in the detection of bodies electrically continuous with that which is energised.
10. Finally it is concluded that the down hole techniques employing energisation of sulphide intersections and

Page - fifteen

measuring the resultant potential field both on surface and down hole, as the drilling programme proceeds, will materially assist in the programming of further drill holes. In addition, the progressive construction of a three dimensional equipotential field model should resolve many of the structural problems. Such techniques are meaningfully employed overseas in programmes where orebody and host rock resistivity contrasts are as those observed at Queen Hill.

Page - sixteen

SOME COMMENTS ON
RECONNAISSANCE GRADIENT INDUCED POLARIZATION TEST SURVEY
MONTANA MINE AREA, ZEEHAN, TASMANIA

INTRODUCTION

Some three test lines using an oblique gradient array were surveyed over the Montana area. Traverse positions were paced only and no permanent grid was established.

DISCUSSION OF RESULTS

The data profiles are presented on Plate 5 at the horizontal scale of 1 inch = 50 feet. Vertical scales used were 1 inch = 10 milliseconds and the resistivity was presented on a 2 inch log cycle.

No detailed surface or subsurface geology is available which shows the position of the Montana lodes. The orientation of the distinct pyrrhotite mineralisation which occurs between the two Montana silver lead lodes is unknown, as is the structure of the area. The oblique gradient array was used in an attempt to maximise the effect of what may be a narrow target.

The results indicate very low gradients which may be due, in part, to unstable current flow. The electrode positions had to be placed in accessible positions as time did not

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Page - seventeen

permit accurate surveying or line cutting.

On line 00 a large chargeability anomaly of over 35 milliseconds occurs centred at 065N and is associated with a fall in resistivity of more than 50%. The maximum width of the source of this anomaly is about 25 - 30 feet and the top of the source is considered to be shallow.

Line 100E has a number of distinct resistivity lows together with an unusual chargeability pattern. Resistivity lows were recorded at 100N and 225N.

A distinct chargeability high of 45 milliseconds above background was recorded on line 200E between 60N and 125N accompanied by a 90% fall in resistivity. The source is considered to be shallow.

CONCLUSIONS

These test lines were run on a rapid reconnaissance basis only. No material conclusions can be drawn from the work carried out. It is recommended that should detailed information be required from the area, a formal grid be established and a detailed turam electromagnetic and perhaps induced polarization survey be carried out on a close spaced grid.

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Page - eighteen

Respectfully submitted on behalf of:

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GEOPHYSICIST

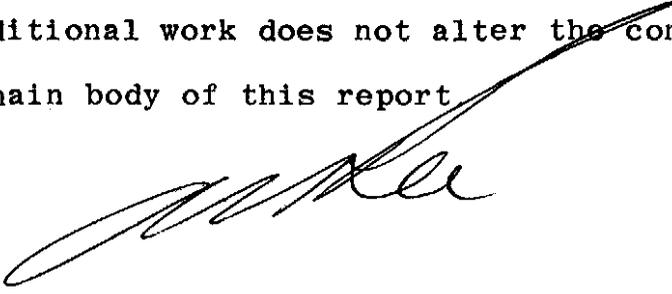
APPENDIX

On the 6th December, 1972 Mr. E. Hope logged hole G26 and in addition energised the large 85 ft. sulphide intersection at a depth of 800 feet and carried out a single equipotential survey from 700E to 850E on line 1800N. These results are presented on the plate marked "Appendix".

The major feature is an eastward shift in the western boundary of the sulphide zone by some 80 meters. As the distant electrode is on the western side the eastern boundary is not so clearly seen.

This result indicates that although the Gippsland body is electrically continuous, it exhibits conductivity zoning. These results clearly show the eastern dip of the body. A second feature is that only one low is seen. This must indicate a simplified cross section at depth.

This additional work does not alter the conclusions reached in the main body of this report



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GEOPHYSICIST

JANUARY, 1973

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APPENDIX 'D/H I.P.'

INDUCED POLARIZATION AND ITS

DRILL HOLE APPLICATIONINDUCED POLARIZATION

The chief application of Induced Polarization (IP) is the direct detection of disseminated metallic sulphides. In the method used by Seigel Associates Australasia Pty. Ltd., a pulsed direct current (two seconds on-time, two seconds off-time, two seconds reverse current and two seconds off-time) is sent into the ground by a pair of current electrodes. A pair of spaced potential electrodes are then used to measure the (primary) voltage during each pulse, and the induced polarization potential (secondary voltage) after each pulse. The equipment basically consists of a generator and transmitter for the current and a receiver for measuring the voltage between the potential electrodes.

The behaviour of IP in a medium can best be compared to an electrical circuit consisting of a condenser and resistor in parallel. The condenser is charged during the current flow and when the current is interrupted, the stored charge (IP) is discharged in the circuit. All rocks have an IP effect, but with metallic sulphides and some other minerals, the IP effect is particularly strong and a large decaying secondary

Page - two

voltage results.

For these metallic sulphides, the condenser effect or induced polarization phenomena is caused by the accumulation of charge at the boundaries between electronic and ionic conducting material. To express the induced polarization between the two potential electrodes, the receiver integrates the area under the voltage decay curve during the time interval from 0.45 to 1.1 seconds after termination of each primary current pulse. This integral is normalised with respect to the prior primary voltage, to give the fundamental induced polarization characteristic, the chargeability or 'M' measurement. It is expressed in units of one millisecond.

An integral part of IP surveys is resistivity measurements which are of primary importance in determining geological features to aid the interpretation. The apparent electrical resistivity (ohm-meters) between the potential electrodes is calculated by dividing the measured primary voltage by the current density for an assumed homogeneous medium.

DRILL HOLE I.P.

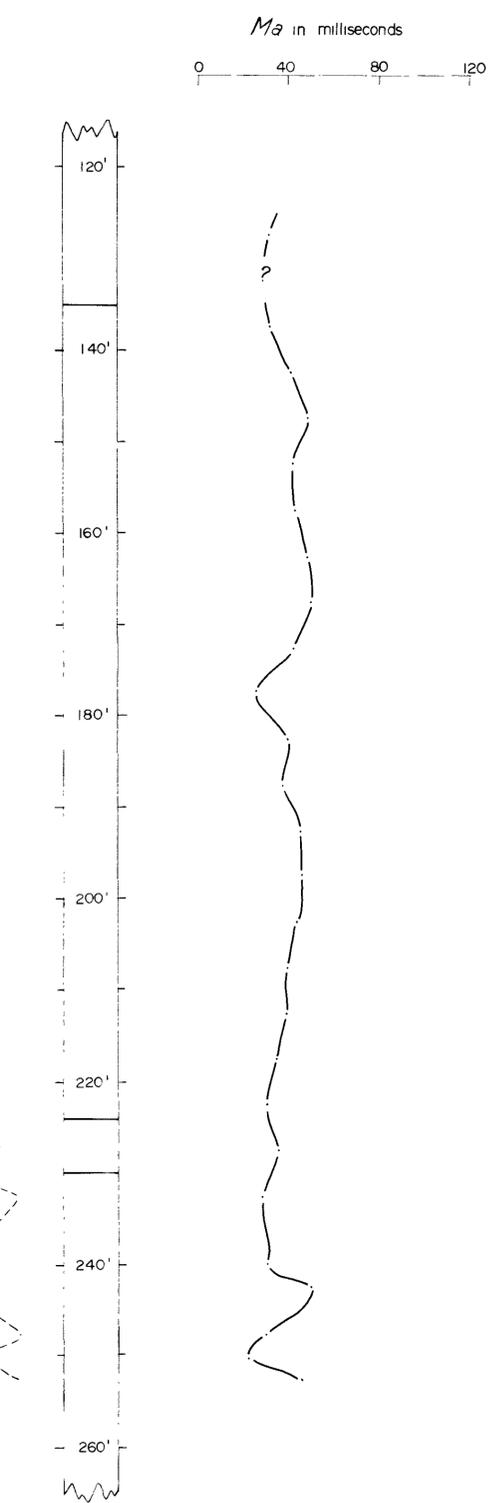
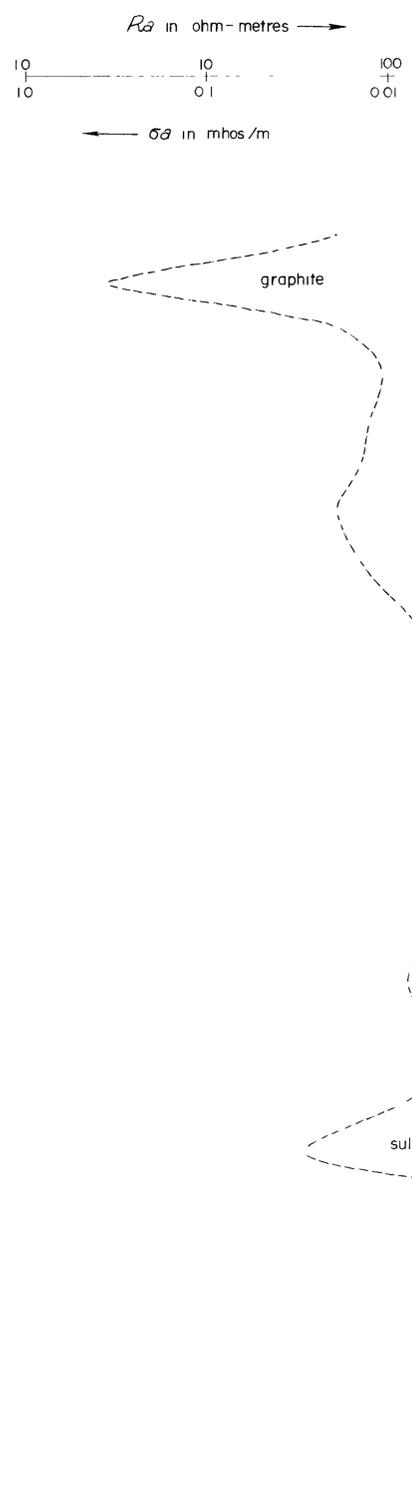
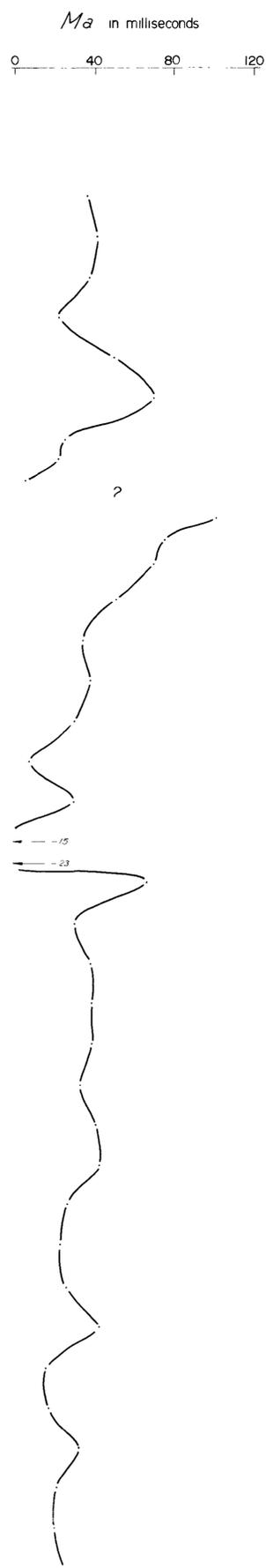
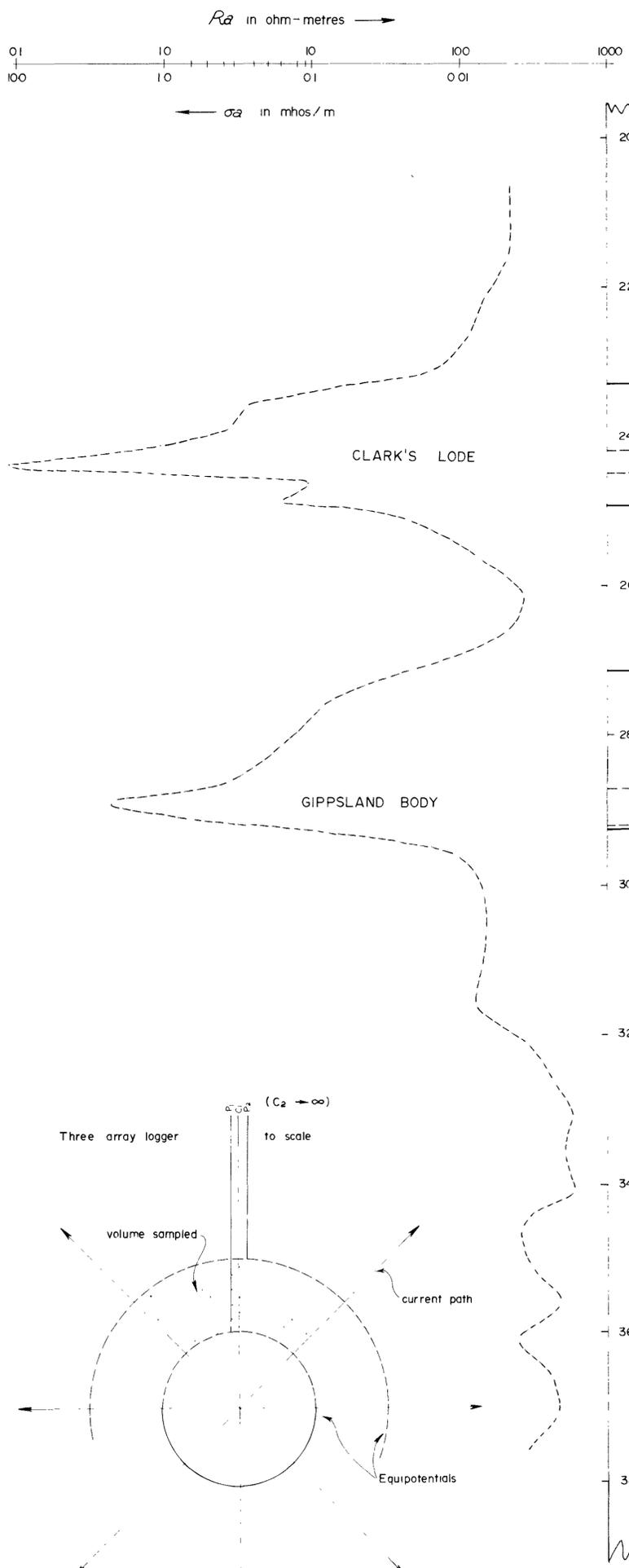
The main application of drill hole IP is in the logging of IP in a drill hole and the detection of an "off-hole"

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Page - three

high chargeability region in an apparently barren hole.

The field procedures are very similar to surface profiling and the most common methods are two and three electrode arrays. The three electrode array consists of three equi-spaced electrodes (two potential and one current) in the drill hole, and a current electrode at a great distance away on the surface (at infinity). A slight variation to this configuration is the two array. It consists of two electrodes in the drill hole (a potential and current electrode) and a potential electrode and a current electrode at infinity. By varying the spacing of the electrodes (with two array, 10ft, 50 ft., 100 ft., and 200 ft. spacings are usually used), it is possible to detect a region of high chargeability and determine its distance from the hole. Once a significant anomaly is obtained, its bearing is determined by placing the two current electrodes on the surface at an equal distance on either side of the collar, lowering one potential electrode down the hole and measuring primary and secondary voltage response with respect to a reference electrode on the surface near the collar. A positive response indicates that the source of the anomaly lies in the direction of the negative current electrode and vice versa.



D.D.H.-G9

GIPPSLAND MINERALS N. L.

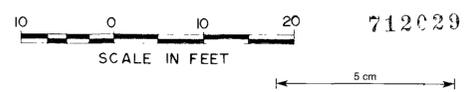
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THREE ARRAY DRILL HOLE LOGS
G6 & G9

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500E 550 600 650 700 750 800 850 900 950E

L 1950 N

L 1925 N

L 1900 N

L 1875 N

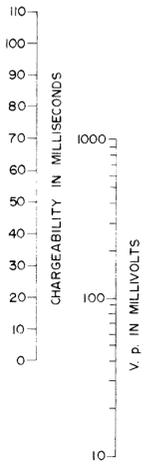
L 1850 N

L 1800 N

L 1750 N

L 1700 N

L 1650 N



LEGEND

CHARGEABILITY SCALE : 1cm = 10 Milliseconds
Base Level = 20 Milliseconds
SYMBOL - - - - -

V. p. SCALE 5cm = 1 Logarithmic Cycle
Base Level = 100 Millivolts
SYMBOL - - - - -

GIPPSLAND MINERALS N.L.

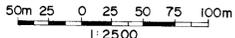
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GIPPSLAND OREBODY
energisation from G6
Vp. & I.P. DATA PROFILES

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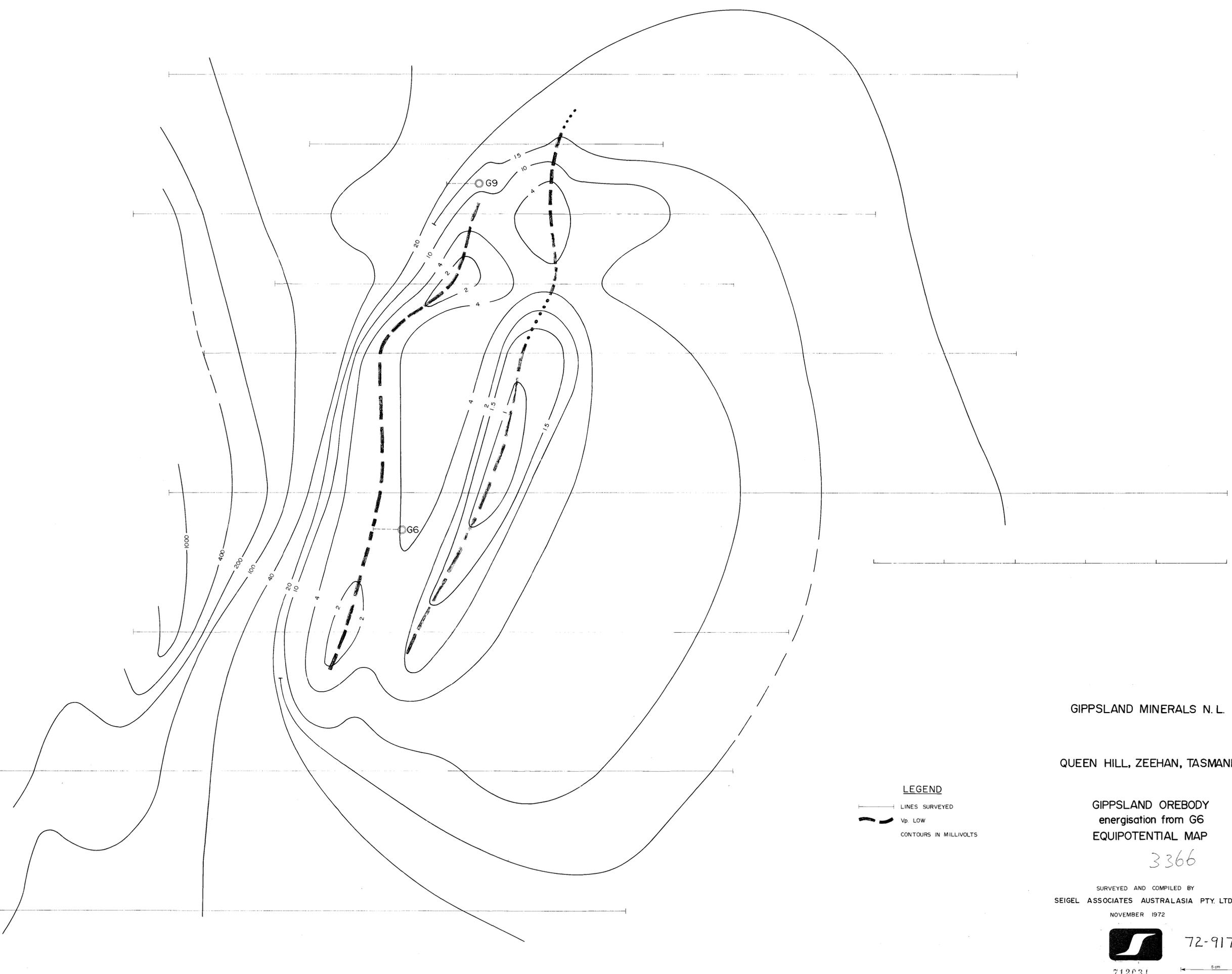


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500E 525 550 575 600 625 650 675 700 725 750 775 800 825 850 875 900 925 950 975E

L 1950 N
L 1925 N
L 1900 N
L 1875 N
L 1850 N
L 1800 N
L 1750 N
L 1700 N
L 1650 N



LEGEND
 ——— LINES SURVEYED
 - - - Vp LOW
 ——— CONTOURS IN MILLIVOLTS

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GIPPSLAND OREBODY
 energisation from G6
 EQUIPOTENTIAL MAP

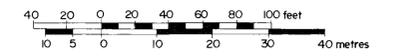
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500E 525 550 575 600 625 650 675 700 725 750 775 800 825 850 875 900 925 950 975E

L 1950 N
L 1925 N
L 1900 N
L 1875 N
L 1850 N
L 1800 N
L 1750 N
L 1700 N
L 1650 N



LEGEND

- LINES SURVEYED
- - - Vp LOW
- CONTOURS IN MILLIVOLTS

GIPPSLAND MINERALS N. L.
 QUEEN HILL, ZEEHAN, TASMANIA

GIPPSLAND OREBODY
 energisation from G6
 EQUIPOTENTIAL MAP

5 cm

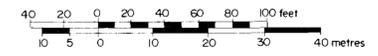
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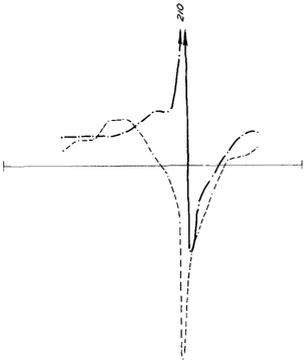


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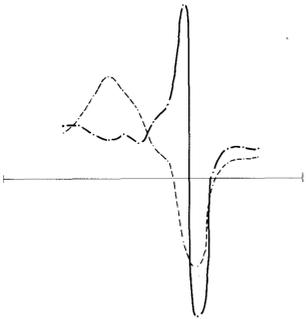


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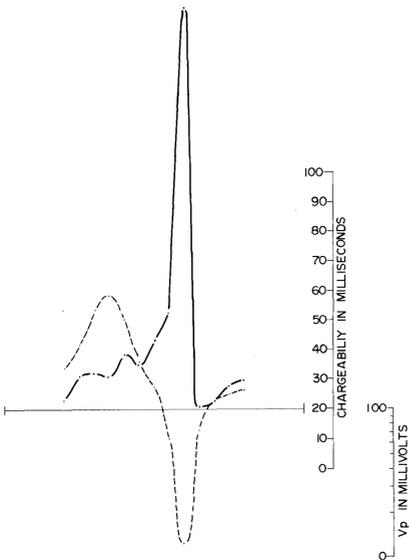
L 1950 N



L 1925 N



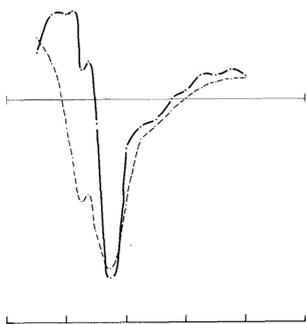
L 1900 N



L 1875 N

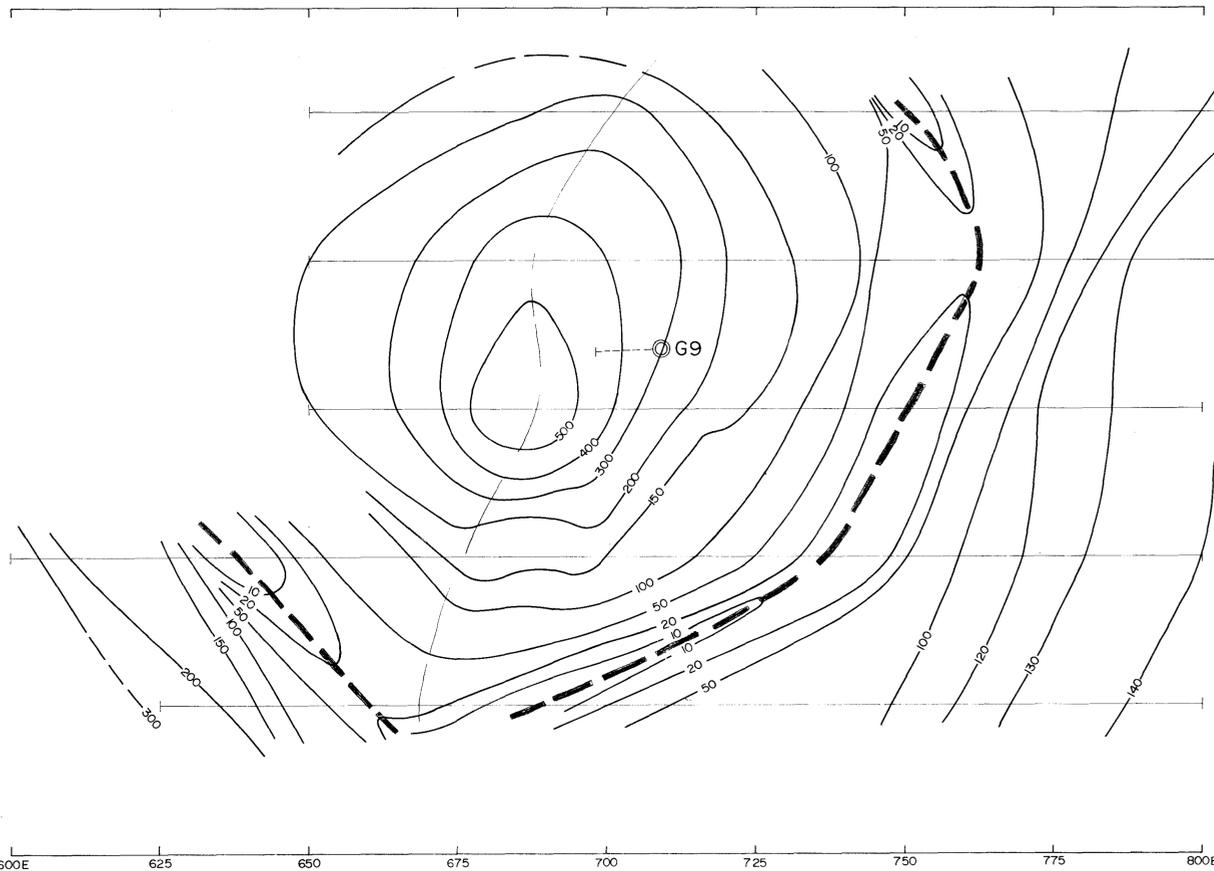


L 1850 N



50m 25 0 25 50 75 100m

DATA PROFILES
SULPHIDE ENERGISATION FROM G9
@ 1:2500



L 1950 N

L 1925 N

L 1900 N

L 1875 N

L 1850 N

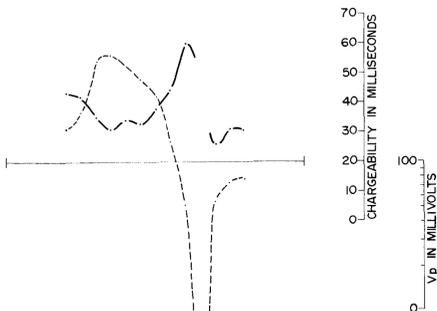
600E 625 650 675 700 725 750 775 800E

40 20 0 20 40 60 80 100 feet
10 5 0 10 20 30 40 metres

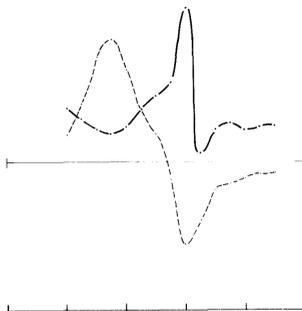
EQUIPOTENTIAL MAP
SULPHIDE ENERGISATION FROM G9
@ 1:500

600E 650 700 750 800 850E

L 1925 N ZONE 2



L 1900 N ZONE 2



50 25 0 25 50 75 100m

DATA PROFILES
GRAPHITE ENERGISATION FROM G9
@ 1:2500

LEGEND

- SURVEYED LINES
- ~ Vp LOW
- CONTOURS IN MILLIVOLTS
- CHARGEABILITY SCALE: 1cm = 10 Milliseconds
Base Level = 20 Milliseconds
SYMBOL: —
- Vp SCALE: 5cm = 1 Logarithmic Cycle
Base Level = 100 Millivolts
SYMBOL: - - - - -

GIPPSLAND MINERALS N. L.

QUEEN HILL, ZEEHAN, TASMANIA

SULPHIDE & GRAPHITE SHEAR ZONE
energisation from G9
Vp. & I.P. DATA PROFILES,
EQUIPOTENTIAL MAP

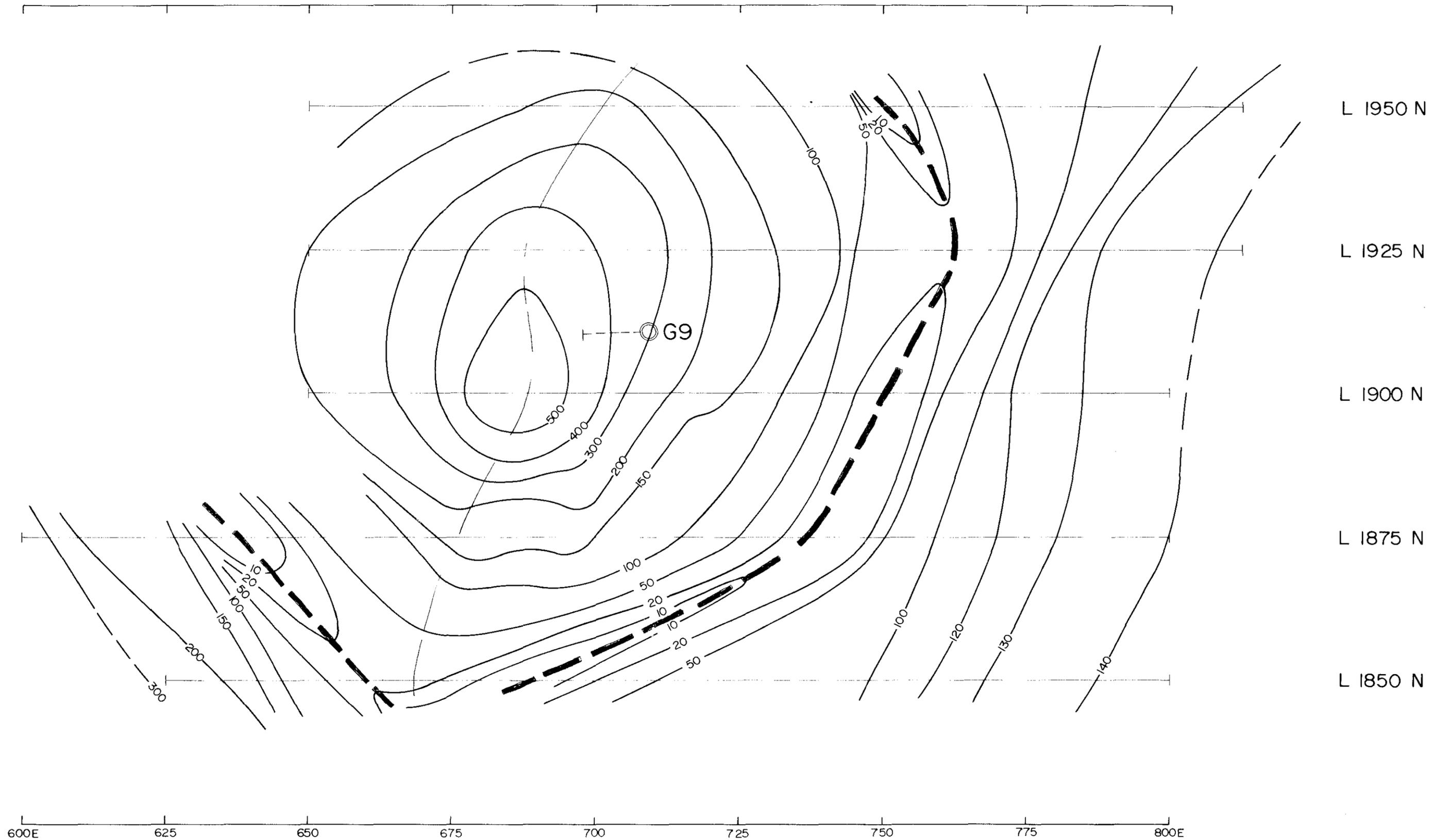
SURVEYED AND COMPILED BY
SEIGEL ASSOCIATES AUSTRALASIA PTY. LTD.

NOVEMBER 1972

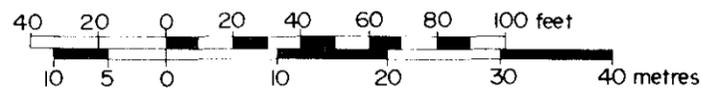
712033



72-917



600E 625 650 675 700 725 750 775 800E



EQUIPOTENTIAL MAP
SULPHIDE ENERGISATION FROM G9

L 1950 N

L 1925 N

L 1900 N

L 1875 N

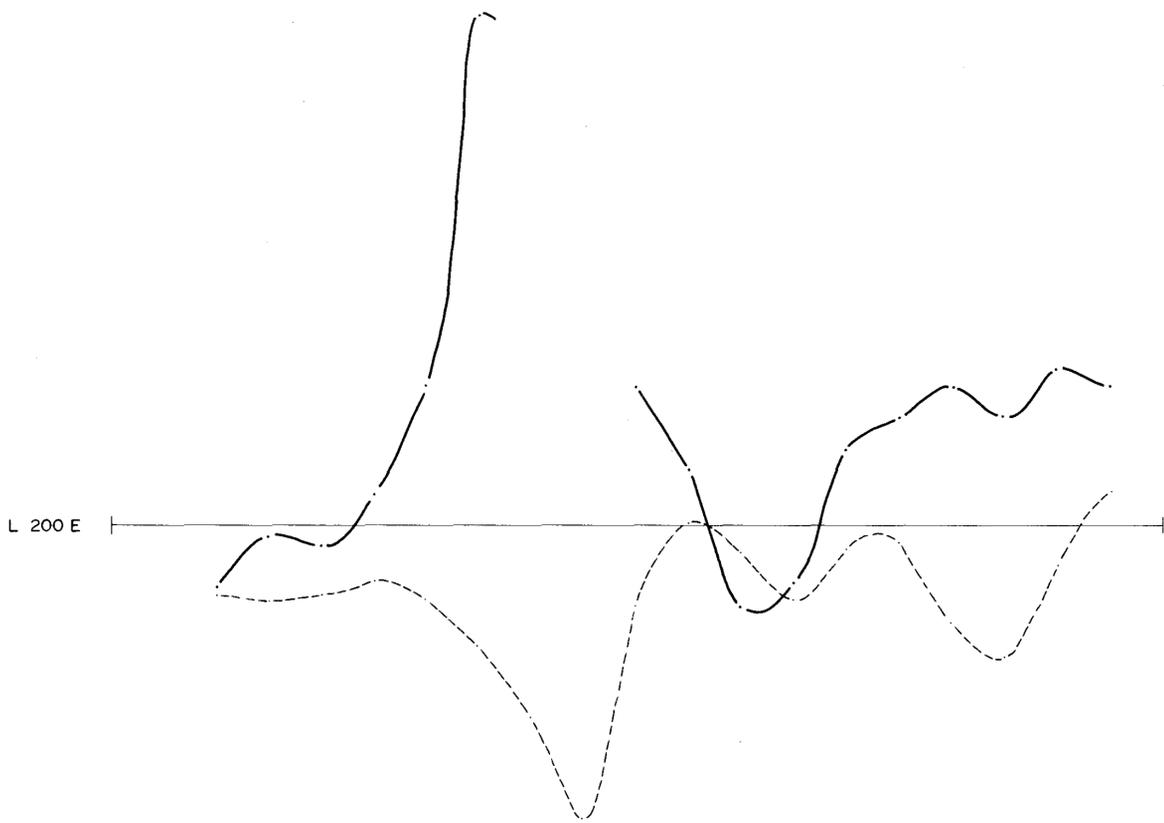
L 1850 N

712034

72-917

PLATE 4 (a)3369

100S 50 00 50 100 150 200 250 300 350 400N



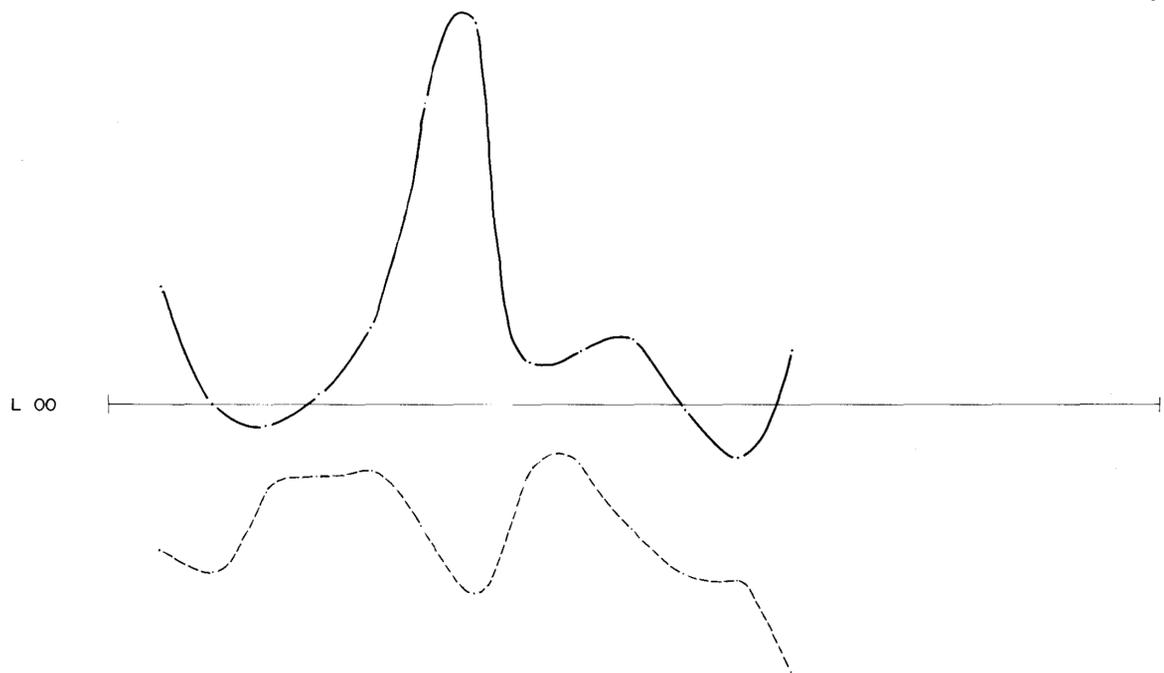
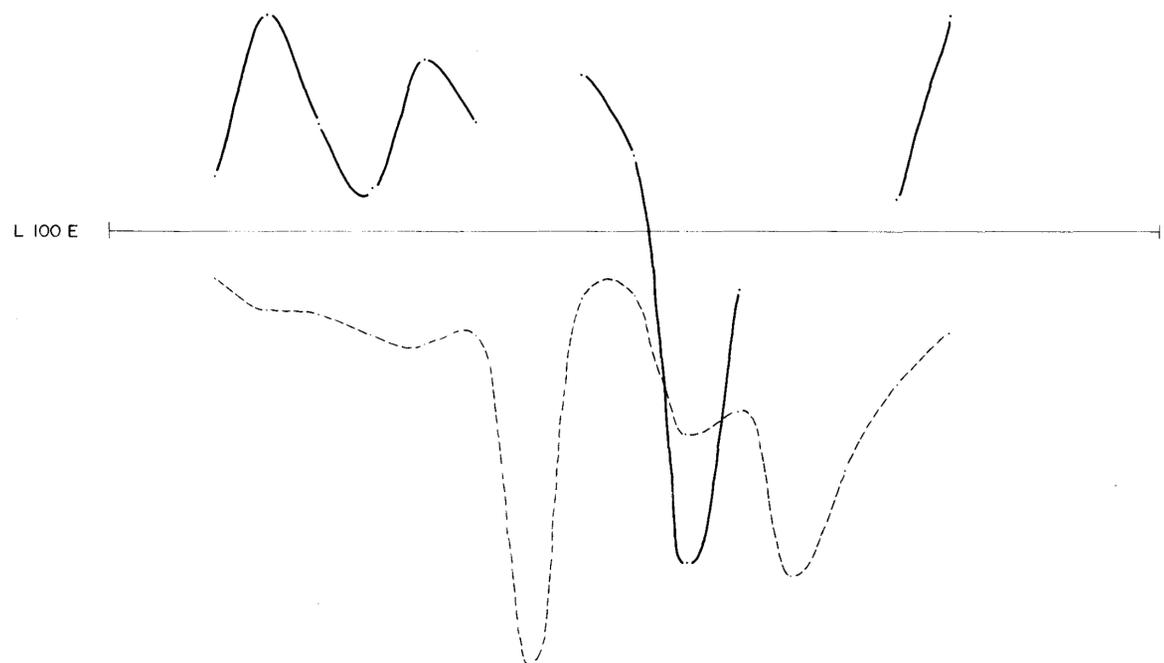
CHARGEABILITY IN MILLISECONDS

RESISTIVITY IN OHM-METRES

LEGEND

CHARGEABILITY SCALE : 1" = 10 Milliseconds
Base Level = 20 Milliseconds
SYMBOL = ————

RESISTIVITY SCALE : 2" = 1 Logarithmic Cycle
Base Level = 100 Ohm-metres
SYMBOL = - - - - -



GIPPSLAND MINERALS N. L.

MONTANA, ZEEHAN, TASMANIA

**GRADIENT I.P. SURVEY
DATA PROFILES
712035**

5 cm

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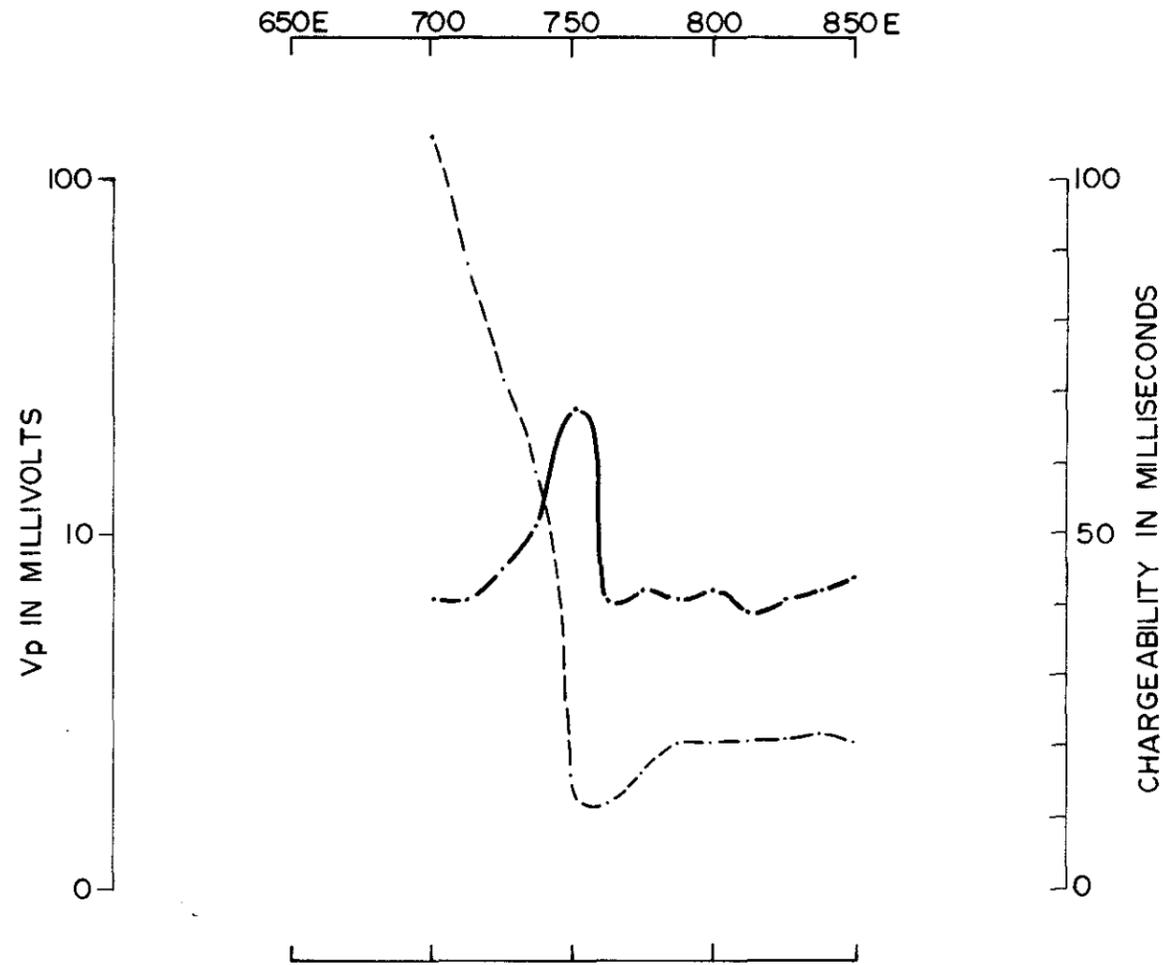
72-917

50 0 50 100
SCALE IN FEET

GIPPSLAND MINERALS N.L.

QUEEN HILL, ZEEHAN, TASMANIA

GIPPSLAND OREBODY
energisation from G26
Vp. & I.P. DATA PROFILE



LEGEND

CHARGEABILITY SCALE : 1cm. = 10 Milliseconds
SYMBOL = 

V p. SCALE 5cm. = 1 Logarithmic Cycle
SYMBOL = 

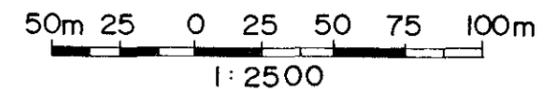
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712036



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JOB No. TAS. 008

SHEET 1 of 1

APPENDIX

3371