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MICROFILMED

A REPORT ON

INDUCED POLARIZATION SURVEYS

OVER THE MT. TYNDALL GRID

QUEENSTOWN AREA, N.W. TASMANIA

ON BEHALF OF

THE MOUNT LYELL MINING AND RAILWAY COMPANY LTD.

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PRIVATE AND CONFIDENTIAL

A REPORT ON INDUCED POLARIZATION SURVEYS OVER THE MT. TYNDALL GRID QUEENSTOWN AREA, N.W. TASMANIA

ON BEHALF OF

THE MOUNT LYELL MINING AND RAILWAY COMPANY LTD.

BY

A.W. HOWLAND-ROSE

M.Sc.,DIC,AMAusIMM,FGS.

GEOPHYSICIST

SYDNEY, N.S.W.

JAN - FEB, 1973

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C O N T E N T S

SCINTREX PTY. LTD.
Formerly
SEIGEL ASSOCIATES AUSTRALASIA PTY. LTD.
GEOPHYSICAL CONSULTANTS AND CONTRACTORS

SUMMARY

A gradient induced polarization reconnaissance survey was carried out over the Mt. Tyndall grid on behalf of The Mount Lyell Mining and Railway Company Limited by Scintrex Pty. Ltd. The resistivity and chargeability data from the survey together with magnetic data supplied by Mt. Lyell Mining & Railway Company Limited will assist in producing a more comprehensive geological map while the induced polarization data has indicated one potential zone of pyritisation and 17 individual anomalies worthy of thorough further investigation.

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A REPORT ON

INDUCED POLARIZATION SURVEYS

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QUEENSTOWN AREA, N.W. TASMANIA

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INTRODUCTION

At the request of Mr. K. Reid, Chief Geologist of The Mount Lyell Mining and Railway Company Ltd., Scintrex Pty. Ltd. carried out Induced Polarization surveys over the Mt. Tyndall grid on the eastern flank of Mt. Read.

The field party consisted of two operators, Mr. B. Ekstrom (Party Leader) and Mr. D. Robson, B.Sc. (assisting). On eighteen production days between 17th January and 14th February, 1973, some (50 Km) 150,000 line feet of gradient array induced polarization data was collected on 25 lines. In addition, pole-dipole detail was carried out on 6th March, an electrical sounding on 15th February and additional analyses on core samples were carried out on the 16th and 17th February.

PRODUCTIVITY 2.8 km/day for 2 crews → 1.4 km/crew day

Technical supervision for the survey was provided by Mr. A.W. Howland-Rose, M.Sc., who also visited the survey area on 25th January and 8th February, 1973.

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Figure 1

MT. TYNDALL AREA-EL 9/66

LOCALITY PLAN

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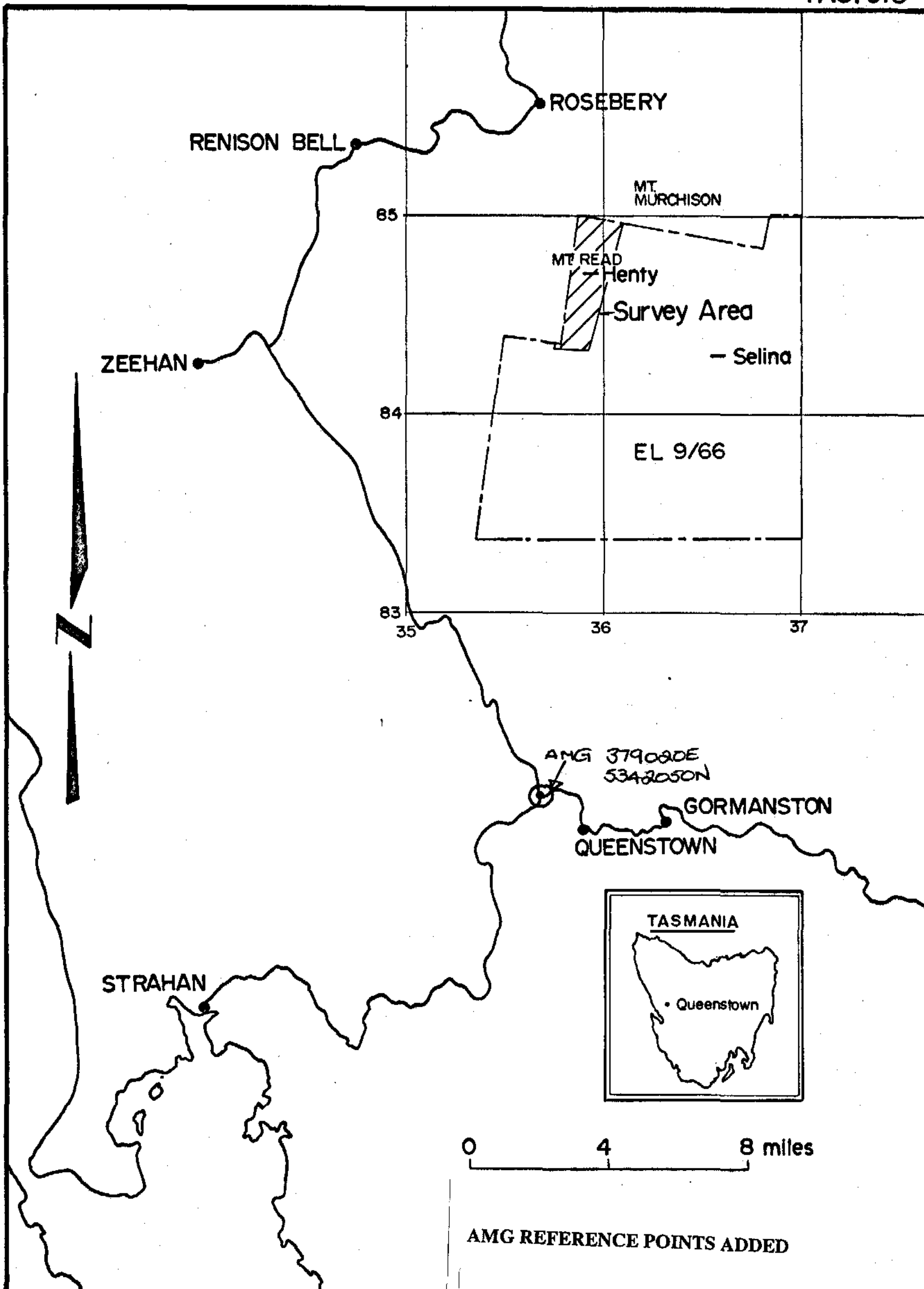
TAS. 016



AMG REFERENCE POINTS ADDED

5 cm

The objective of the survey was to map zones of significant disseminated pyritisation in an attempt to delineate areas favourable for the accumulation of copper deposits of the Mt. Lyell type.

The induced polarization method is briefly described in Appendix 'IP'.

METHOD

The Mount Lyell chalcopyrite orebodies occur within pyrite haloes. To test the magnetic susceptibility and conductivity of the mineralisation, Scintrex Pty. Ltd. carried out tests on diamond drill core from the Selina and Cape Horn areas. The former is an exploration area and the latter an economic deposit in which the grounded loop Turam method played a part in the discovery of the orebody. The object of these surveys was to establish the geophysical characteristics of the mineralisation in order to devise an efficient geophysical approach to the location of favourable zones in the Mt. Read area. The results of these tests are described in a report entitled "Conductivity, Susceptibility, Chargeability and Resistivity Tests of Diamond Drill Core on behalf of The Mount Lyell Mining and Railway Company Ltd." by A.W. Howland-Rose (Tas-004) and dated November, 1972.

The Cape Horn orebody was observed to have a weakly conductive halo of 0.10 to 0.30 mhos/meter (3 - 10 ohm-meters). It showed that the extensive pyrite developed to higher concentrations of 5% to 20% does not produce significant conductivity, but all significant electromagnetic conductors contained significant copper mineralisation, the latter acting as an electronic conductor between pyrite grains. However, not all significant chalcopyrite mineralisation proved to be conductive.

Consideration of the results of previous geophysical surveys in the Mt. Lyell area together with the results of the core tests, and bearing in mind the terrain in the survey area, it was decided that the best cost effective reconnaissance geophysical work would consist of large current dipole gradient array surveys over the entire area of interest. This together with a proton precession magnetometer survey was expected to yield the following information:

1. The resistivity, chargeability and magnetic data would, by displaying the various geophysical characteristics of the underlying rocks, materially aid the geological delineation of these rock types in this glacial moraine covered area.

2. The chargeability data would be expected to define areas of pyritisation within the survey area.

3. The near surface, relatively narrow, vein type sulphide deposits would be displayed by the induced polarization data, and where conductive, by the resistivity data.

It was anticipated that any areas of pyritisation defined in the surveys would be subject to Turam electromagnetic surveys, as well as careful geological examination and, where feasible, geochemical surveys.

Further narrow, conductive chargeable responses considered characteristic of the Cape Horn type deposits should receive especially careful ground follow-up.

DISCUSSION OF RESULTS

The results of the reconnaissance gradient induced polarization area on the whole, as expected. Broad areas were defined by magnetic, resistivity and chargeability mapping, which are related to the characteristics of the moraine covered underlying rocks. These features are discussed in Section'A'. In addition, some 98 induced polarization highs were defined, 17 of which should receive follow-up on a primary basis.

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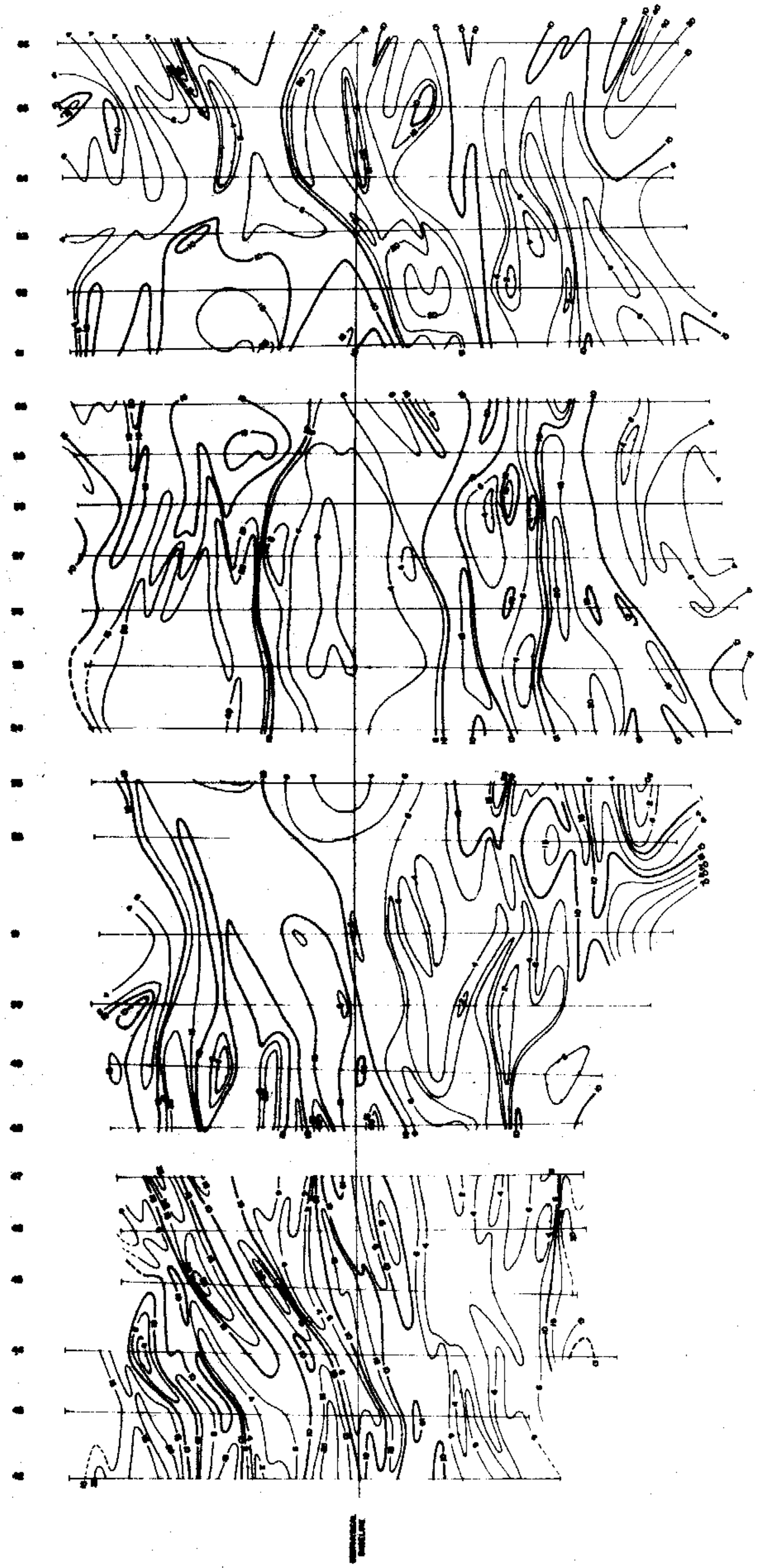


<u>LEGEND</u>

CONTOUR INTERVALS IN 1000's OF OHM-METRES

EACH CURRENT ELECTRODE PAIR SEPARATELY CONTOURED

THE MOUNT LYELL MINING AND RAILWAY COMPANY LTD.

MT. TYNDALL AREA
N.W. TASMANIA

GRADIENT ARRAY RESISTIVITY
CONTOUR MAP

SURVEYED AND COMPILED BY
SCINTREX PTY. LTD.
JAN-FEB 1973

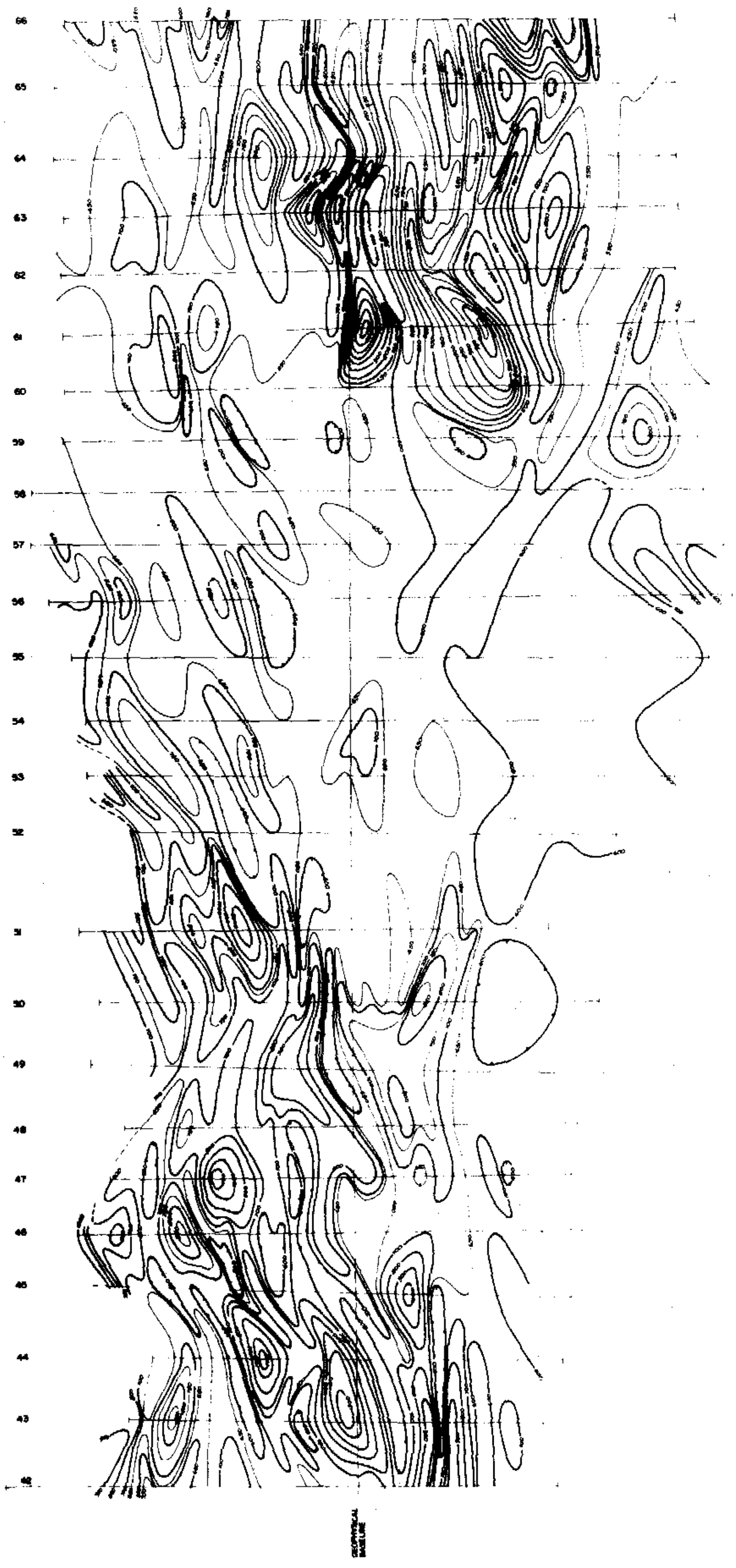
500 0 500 1000
Scale in feet

JOB No. TAS 016 SHEET 1 of 1 PLATE 2

5 cm

010

337011



LEGEND

BASE LEVEL 62000 GAMMAS (TOTAL FIELD)

THE MOUNT LYELL MINING AND RAILWAY COMPANY LTD.

MT. TYNDALL AREA
N.W. TASMANIA

GROUND MAGNETIC
CONTOUR MAP

SURVEYED AND COMPILED BY
SCINTREX PTY. LTD.

PLATE 3

5 cm

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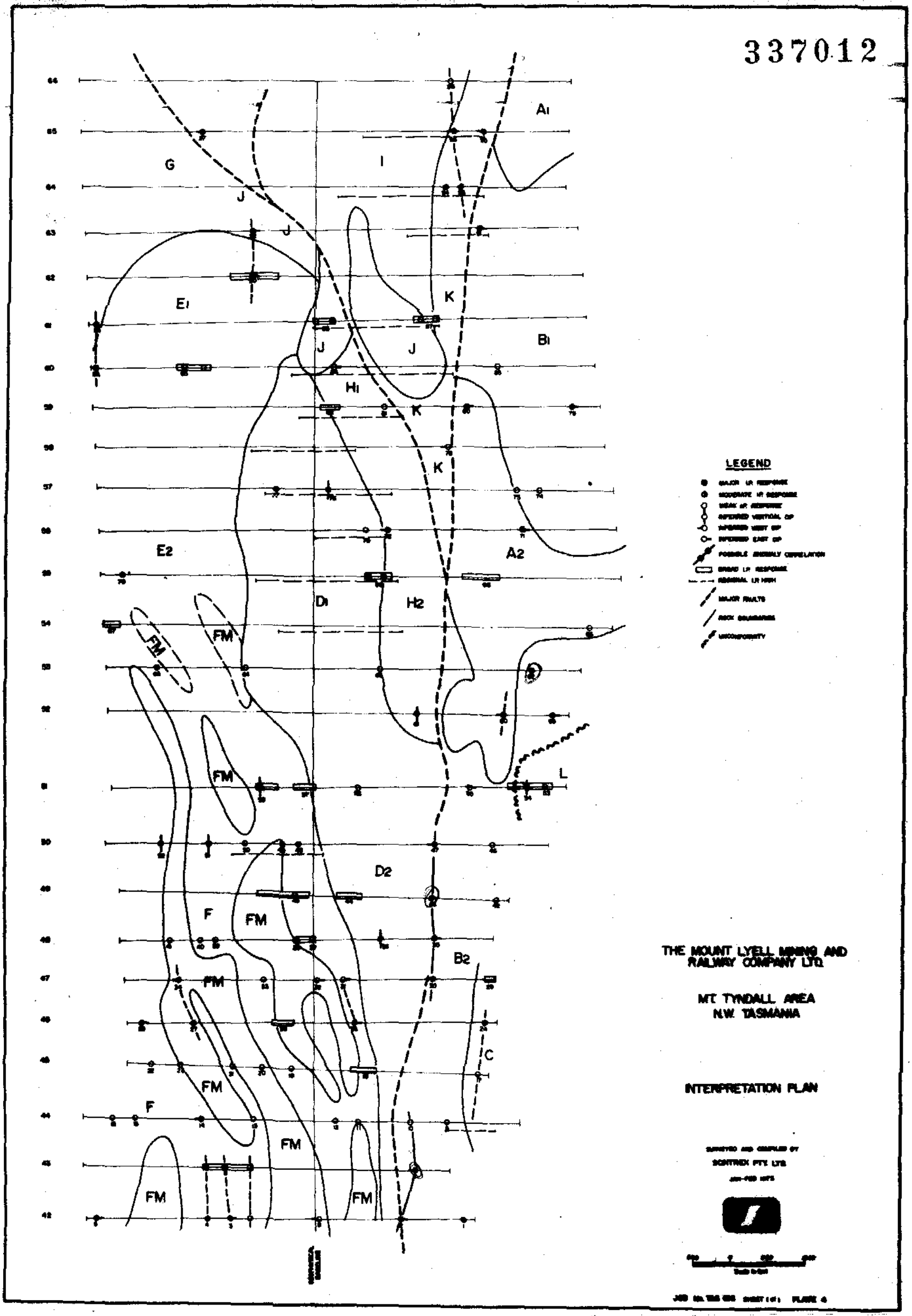

337012
LEGEND
THE MOUNT LYELL MINING AND RAILWAY COMPANY LTD.
MT. TYNDALL AREA
N.W. TASMANIA
INTERPRETATION PLAN
A1
A2
B1
B2
C
D1
D2
E1
E2
F
FM
G
H1
H2
I
J
K
L

5 cm

These anomalies are discussed in Section 'B'.

A - GEOPHYSICAL DATA AS AN AID TO GEOLOGICAL MAPPING

Plates 2 and 3 display contour interpretations of the resistivity and magnetic data respectively, while Plate 4 displays the interpretation of this data. All three plates utilise a 1 inch = 500 feet horizontal scale.

The resistivity data within the middle half to two-thirds of the gradient array survey, represents the relative physical characteristics of the material immediately below the plotting point. Major changes in resistivity levels indicate material changes in the physical characteristics of the rocks immediately below, and therefore indicate changes of rock type. The terrain and cover will not materially affect these results which, together with the geological data from the outcrop map, will enable a much improved geological map to be prepared. The magnetic data effectively respresents the characteristics of material in the vicinity of the measurement and can therefore differentiate material which on the basis of resistivity and/or chargeability does not appear significantly different.

Plate 2 displays a contour interpretation of the resistivity data. Each of the four 7000 foot or 8000 foot current dipole gradient blocks has been individually contoured and there is excellent correlation between adjacent contoured blocks. The apparent resistivity values recorded, range from less than 42 ohm-meters to in excess of 75,000 ohm-meters, but mostly lie in the range 2000 ohm-meters to 15,000 ohm-meters.

Plate 3 depicts a contour interpretation of the proton precession magnetometer data provided by Mt. Lyell Mining & Railway Company Ltd. and processed by Scintrex Pty. Ltd. This data has been smoothed for near surface effects and contoured after this smoothing. The relief ranges over about 2000 gammas but lies for the most part within 300 gammas. The absolute background level (total field) is in the order of 62,600 gammas.

Based on the electrical and magnetic properties recorded on the geophysical surveys, a physical property interpretation plan has been constructed. This is shown on Plate 4 together with proposed geological boundaries. These do not precisely coincide with those indicated by geological mapping as shown on the May, 1973 edition of the geological interpretation kindly provided by Mr. K. Wells. However, it is expected that a study of the outcrop map may well show up the reasons for the various discrepancies.

The general strike of the rocks as indicated by the resistivity data is grid north-north-west to north. The smoothed proton precession total field magnetometer data tends to confirm this. However, the lines were not always at a sufficient line interval to enable unique contouring of the data.

The mapped position of the major north-south trending fault some 1500 feet to the east of and semi-parallel to the geophysical baseline is, for the most part, in close proximity to a marked resistivity low. More often than not this low is coincident with low magnetic relief.

To the east of this fault the magnetic relief is low, while to the west the relief is somewhat higher in the central area, and significantly higher in the extreme northern and southern sections.

Each distinct unit is briefly discussed below and comment on its relationship to the interpreted geology is made.

Unit 'A_1' Some of the most resistive rocks in the area are located in the north eastern section to the east of the fault. Here, resistivities in excess of 40,000 ohm-meters were recorded. The quartz porphyry rhyolites mapped in this area would entirely account for this electrical resistance, especially if silicification was also present.

Unit 'B_1' To the immediate south, resistivities decreased to about 10% of those recorded over A_1 above. Although geological mapping did not differentiate A_1 and B_1, the material change in physical properties infer a major rock type change. The magnetic data shows no difference between these two units.

Unit 'A_2' Further high resistivities were recorded south of B_1. The contact between these two units has a north-north-west strike and can be clearly seen on both the magnetic and resistivity contour maps. The change, however, is not sharp and therefore may be compositional. A mapped contact between tuffs and rhyolites is not clearly ? ? displayed on the resistivity map.

Unit 'B_2' To the immediate east of the fault a less resistive zone was recorded running from line 42 to line 54, varying in width from 200 feet in the north to 600 feet in the south. This zone is mapped as tuffs and breccias. (area covered in scree)

Chloritic zone similar to further N. ?

Unit 'C_1' Some 600 feet east of the fault, and semi-parallel to it, a marked increase in resistivity was noted. This may represent a more silicified zone within the tuffs or perhaps a rhyolite lens. Significantly higher chargeabilities

Tyndall group?

were recorded over lines which cross this zone. This is considered to be a formational feature.

Unit 'D_1' West of the fault the most significant feature on the resistivity profiles south of line 60 is a marked broad resistivity low. The resistivity over this unit is some 10% of that recorded to the immediate east and west. In addition, the background chargeabilitites are significantly higher than recorded elsewhere. Also this zone has a number of induced polarization anomalies and shows variable resistivity about its base level of 3000 ohm-meters. The magnetic relief is generally low, but a number of small 600 gamma anomalies were recorded. A marked change in rock type is inferred by the rapid change in resistivity within a few hundred feet around the margin of Unit 'D_1'. No such contact was visible in the field file due to glacial moraine which the electrical sounding infers to be about 35 to 40 feet thick.

This unit is quite distinct and must be considered a separate entity.

Unit 'E_1' To the immediate north west of D_1, and to the west, extremely high apparent resistivities often in excess of 20,000 ohm-meters were recorded. The magnetic relief within E is somewhat greater than D_1, and the level of chargeability recorded is somewhat less than D_2. The areas differentiated by geological mapping as rhyolite and agglomerates are not reflected in the resistivity zoning in this area. To the south of E_2 increasingly greater magnetic relief was observed. These zones have been designated FM on Plate 4.

Units 'F' and 'FM' To the south of about line 50 the resistivity data shows significant changes. A series of distinct elongate zones having a significant reduction in apparent resistivity and low magnetic relief (F), alternate with zones of higher resistivity and higher magnetic relief (FM). The contrast between the former and the latter is four to five fold.

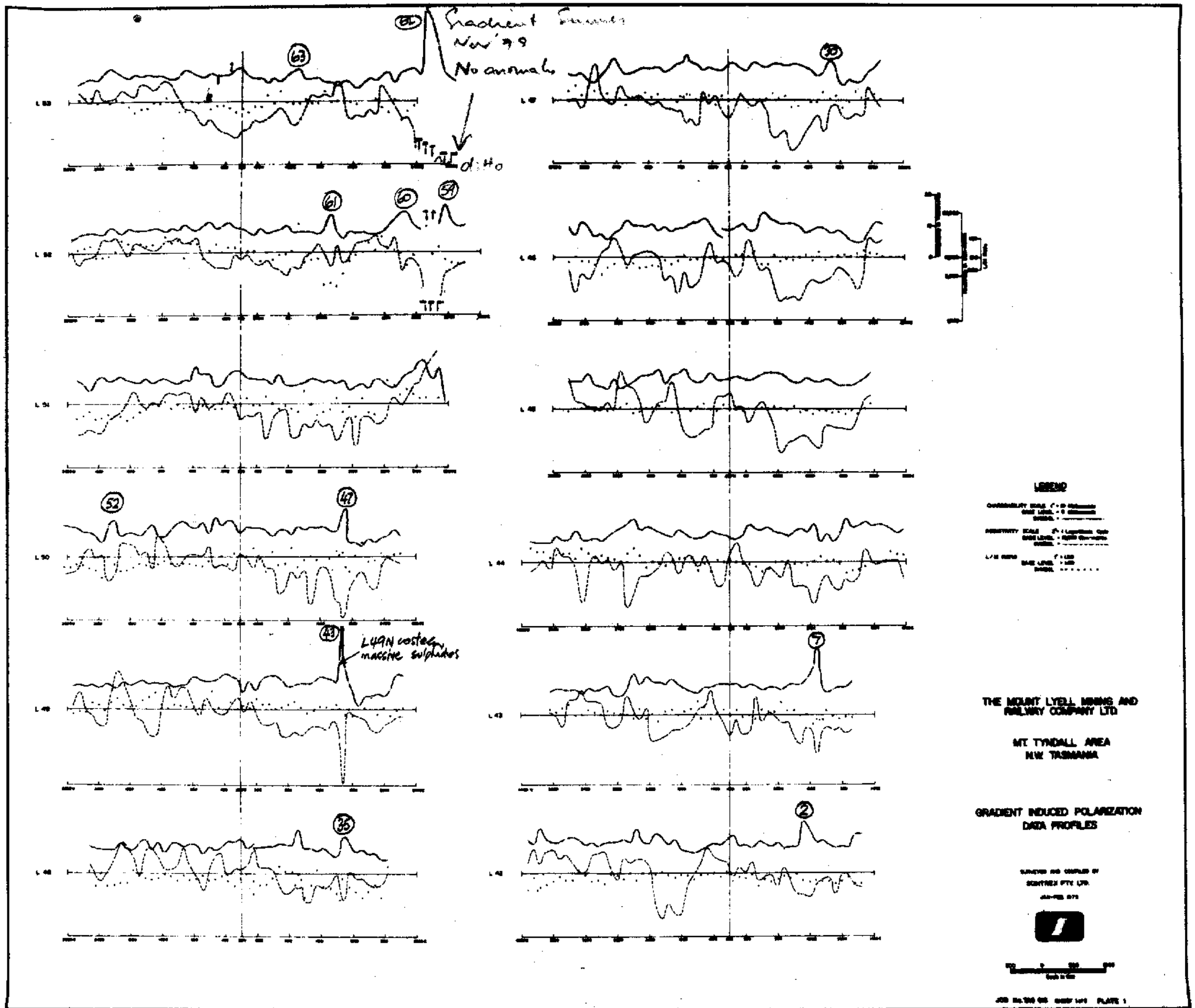
This distinct feature may be due to zones of higher magnetite concentration within the rhyolites mapped in this area.

Unit 'G' In the extreme north west of the area surveyed, characteristic changes in resistivity were recorded over scores of feet. These are most likely caused by compositional changes within the fine grained acid lavas mapped in the area. However, the resistivity data shows then to be a distinct unit.

Unit 'H' Between D_1 and the major north-south fault, a marked increase in resistivity was recorded between lines 52 and 60. The magnetic relief within the zone remains very low and the chargeability background is also relatively low. Agglomerates have been mapped just east of the baseline on lines 59 and 60 and this unit may represent these rock types.

Unit 'I' A significant grid north-north-east striking change in resistivity marks the boundary between units 'G', 'E' and 'H_1' to the west and 'I' to the north east. This change coincides with the mapped position of a fault. Unit 'I' exhibits marked magnetic relief which may in part be due to intermediate basic intrusives such as that recorded 1400 feet east of the baseline between lines 60 and 64. This, and other possible such intrusives have been designated as Unit 'J'.

Unit 'K' As the fault is approached, lower resistivities and magnetic relief are observed. In the north, areas of chloritic schists have been mapped along the fault lines. These have not been noted south of line 57, but may in fact extend along this zone. The magnetic and resistivity data is not diagnostic for the chloritic schists but their presence is suspected on lines 50, 51, 55 and perhaps 47 and 48 in the vicinity of the fault zone.



Gradient Survey
Nov '79
No anomaly
ditto
L49N costean, massive sulphides
LEGEND
THE MOUNT LYELL MINING AND RAILWAY COMPANY LTD
MT TYNDALL AREA
N.W. TASMANIA
GRADIENT INDUCED POLARIZATION DATA PROFILES
PLATE 1

5 cm

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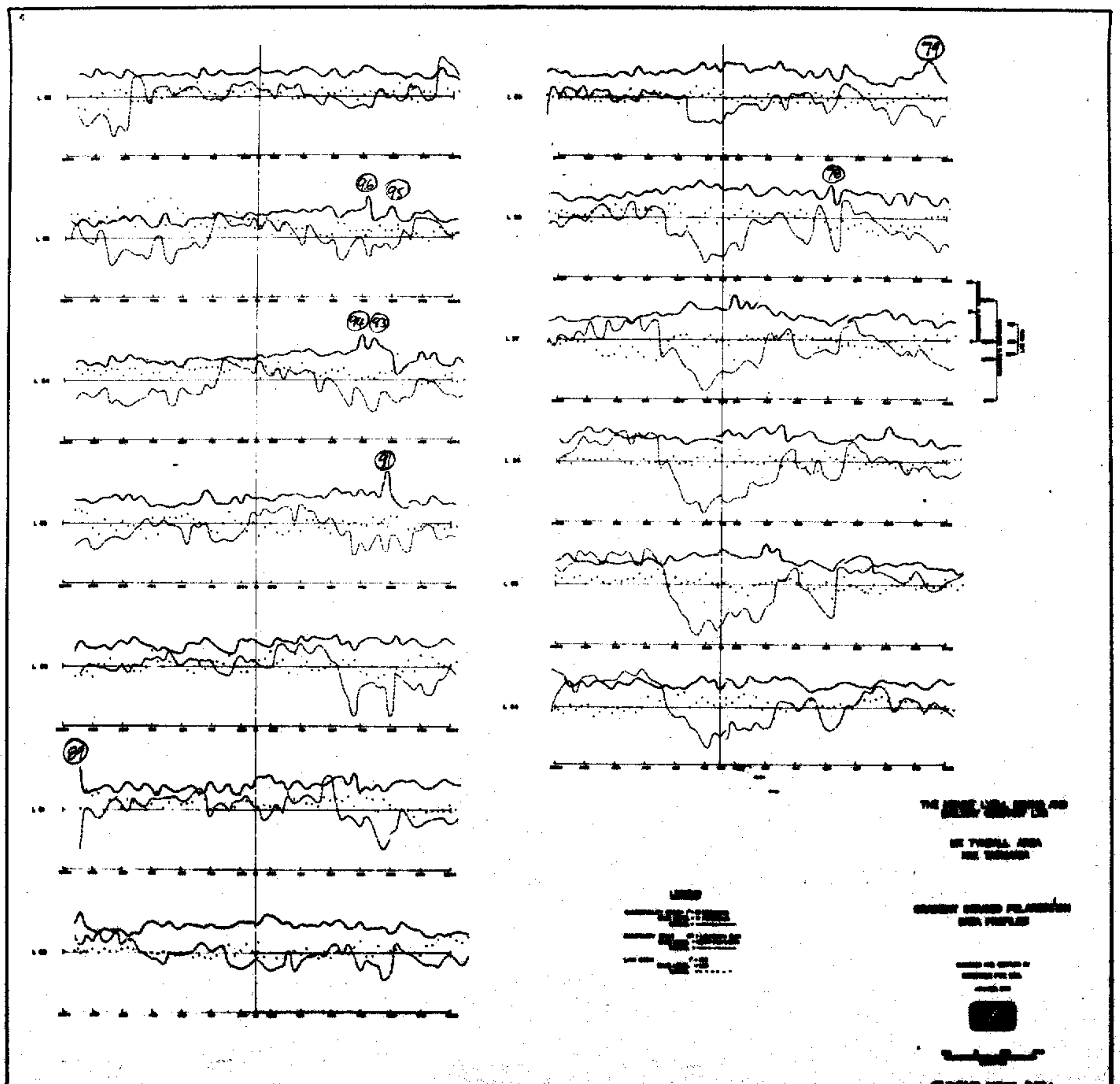


Unit 'L' West of about 2900E on line 51 apparent resistivities increase to in excess of 77,000 ohm-meters. This change marks the boundary between volcanics and conglomerate units across the unconformity.

B - INDUCED POLARIZATION DATA

Plate 1 (2 sheets) displays the induced polarization, resistivity and curve-shape data in profile form at a horizontal scale of 1 inch = 500 feet. The chargeability scale used is 1 inch = 10 milliseconds, while the resistivity is displayed on a 2 inch log cycle and expressed in ohm-meters and the L/M ratio is at 1 inch = 0.5

One of the original objectives of the survey was to map any large zones having anomalously high induced polarization responses, as these might represent pyritic haloes around copper mineralisation. These haloes were expected from the core test work to be weakly conductive. One such potential area has been defined and lies over, and slightly east of the geophysical baseline between lines 54 and 61, largely confined to rock unit 'D' and some 600 feet west of the mapped position of the fault. At first, the marked resistivity low over Unit 'D' was thought to be due, at least in part, to the overlying glacial moraine. However an electrical sounding showed this moraine to have a resistivity of about 9,000 ohm-meters and the underlying rocks of Unit 'D' about 2,000 ohm-meters. The chargeability of Unit 'D' at the point of sounding just north of line 55, was about 16 to 17 milliseconds and the depth of the 5 millisecond moraine, about 37 feet.

It is therefore recommended that (i) This zone be surveyed using Turam at 800 Hz or 400 Hz, (ii) Chargeability anomalies within this zone should be further investigated, particularly when accompanied by some conductivity.

Some 98 anomalous responses were recorded over the 25 lines surveyed. Each of these anomalies is briefly described below and a priority allotted to each. For the location of these anomalies refer to Plate 4 and/or Table I.

Anomaly 1 (Line 42) 50% above background, conductive source, secondary importance.

Anomalies 2, 7 and 10 (Lines 42, 43 & 44) These anomalies are conductive and the former two are in excess of twice background, are generally situated in lower than average resistivities but their background chargeabilities are normal. Anomaly due to electrically continuous sulphides. The anomaly symmetry has a steep dip to the west in the case of 7 and to the east in the case of 2. Strongly recommended for follow-up on a primary basis as they lie in close proximity to the fault and in a stratigraphically similar position to Anomaly 91 which is associated with copper mineralisation.

Anomaly 3 (Line 42) Moderate induced polarization response from conductive source. 90% fall in resistivity is considered significant. May correlate to Anomaly 8. Of secondary interest.

Anomaly 4 (Line 42) Minor response in resistive rocks. Near surface disseminated sulphides are the source. Of tertiary interest.

Anomaly 5 (Line 42) A small conductive anomaly whose source has an inferred east dip. A maximum depth of within 150 feet of the surface is inferred. Recommended for follow-up as a secondary target. (May correspond to Anomaly 15 on line 44).

Anomaly 6 (Line 42) Minor response with some conduction. Of tertiary interest only.

Anomaly 7 (Line 43) See Anomaly 2 above.

Anomaly 8 (Line 43) Three peaks within a zone of 50% above background chargeability. Of tertiary interest only.

These anomalies correlate with Anomalies 4 and 3 on line 42.

Anomaly 9 (Line 44) Minor high with some conduction, lies in a generally conductive region, but the source is not considered to be electrically continuous. Of secondary interest.

Anomaly 10 (Line 44) See Anomaly 2 above.

Anomaly 11 (Line 44) Very minor high, correlates with high resistivity and magnetics. The source may be magnetite. Of tertiary interest only.

Anomaly 12 (Line 44) On the west flank of a magnetic high and an 80% decrease in resistivity. Of secondary importance only.

Anomaly 13 (Line44) A minor response from a conductive source. Possible steep east dip. Of tertiary interest only.

Anomaly 14 (Line 44) This moderate response is coincident with an 80% drop in resistivity and a magnetic response. Has an inferred west dip. Worthy of follow-up as a target of secondary interest.

Anomalies 15 and 16 (Line 44) Two minor responses in relatively resistive rocks are considered of tertiary interest only.

Anomaly 17 (Line 45) This response is open to the east and is from a disseminated source within a resistive rock type. Correlates with anomalies 14 and 29. Of tertiary interest. Is probably formational. In Newton Creek Sst??

Anomaly 18 (Line45) A broad $2\frac{1}{2}$ millisecond chargeability high straddles a material change is resistivity. This could be due to a deeper source or a broad minor sulphide dissemination near surface. Of tertiary interest.

Anomaly 19 (Line 45) This minor, shallow response is associated with a material change in resistivity. Of tertiary interest only.

Anomaly 20 (Line 45) Another minor response also associated with a probable rock type change, a conductive source which also contains magnetite. Of secondary or tertiary interest only.

Anomalies 21, 22, and 23 (Line 45) These three minor responses are of tertiary interest at best.

Anomaly 24 (Line 46) The moderate twice background anomaly correlates with Anomalies 17 and 29. The source is disseminated and probably formational. Of tertiary interest only. N.C.S.t?

Anomaly 25 (Line 46) This induced polarization high has a correlation with a conductive shoulder on a proposed major rock type change. The marked depression in the L/M ratio indicates an electrically continuous source. It is considered of secondary interest.

Anomaly 26 (Line 46) A broad 2-4 millisecond high is associated with a change in resistivity and a magnetic response. Probably correlates with Anomalies 19 and 33. Of tertiary interest.

Anomaly 27 (Line 46) This minor anomaly correlates with a depression in resistivity. This response is of tertiary interest only.

Anomaly 28 (Line 46) A moderate response of 4-5 milliseconds above background has an inferred east dip and lies within a relatively conductive zone. Of tertiary interest only.

Anomaly 29 (Line 47) Correlates with Anomaly 24 in position but is conductive. This twice background zone is open to the east and the response is probably formational and is N.C. Sst? therefore of tertiary interest.

Anomalies 30, 35, 43 and 47 (Lines 47, 48, 49 & 50) A significant induced polarization response was recorded over a strike length in excess of 2000 feet. The source ranges in width from 80 feet to 100 feet, has a steep dip, probably to the east and is conductive. The anomaly is shallowest at 1400E on line 49 where a record 48 millisecond anomaly was recorded. At this point the chargeable material must be within a few tens of feet of surface. The depression in L/M ratio on Anomaly 47 on line 50, strongly suggests a larger than average grain size and in addition, some conductivity is inferred. However, the decay curves on the other lines are normal.

These anomalies are considered to be some of the most significant recorded in the area, and are in a similar stratigraphic position to Anomaly 91 which is known to be associated with copper mineralisation. Follow-up work is strongly recommended on a primary basis.

Anomalies 31 and 32 (Line 47) These are two minor responses associated with some reduction in resistivity. The asymmetry suggests an east dip. Anomaly 31 probably correlates with Anomaly 25 on line 46. The decay curve suggests somewhat more electrically continuous chargeable material as the source. Anomaly 32 lies on the west flank of a magnetic response. Of tertiary interest only.

Anomaly 33 (Line 47) A shallow 2 millisecond high was recorded at 600W coincident with a depression in resistivity. This minor response is centred in a 600 foot wide zone of weak to moderate induced polarization response. The L/M ratio infers a disseminated source. This anomaly is suggested for follow-up as a secondary or tertiary priority.

Anomaly 34 (Line 47) This significant twice background response has an inferred west dip. The L/M ratio is somewhat depressed over this anomaly and this, together with a 50% depression in resistivity, suggests some interconnection between the chargeable causative material. This response may correlate stratigraphically with Anomaly 27 on line 46. This response is recommended for follow-up work as a secondary target.

Anomaly 35 (Line 48) See Anomaly 30 above.

Anomaly 36 (Line 48) This significant narrow anomaly comes from a source considered to be within 100 feet of the surface. It has a steep dip and is probably disseminated. Of secondary interest.

Anomalies 37 and 38 (Line 48) These two minor responses of 2-3 milliseconds are within a relatively less resistive material. This anomaly probably correlates with the eastern section of Anomaly 45 on line 49. This zone is probably formational and therefore of tertiary interest only.

Anomaly 39 (Line 48) This minor, single station response is of minor interest only.

Anomaly 40 (Line 48) A 60% reduction in resistivity is accompanied by a small 4 millisecond induced polarization high, whose profile infers a steep west dip. This zone is of tertiary or secondary importance.

Anomaly 41 (Line 48) This minor, single station response is coincident with a magnetic and resistivity high. A disseminated source is suggested. Of minor importance.

Anomaly 42 (Line 49) This material induced polarization response is over a minor increase in resistivity. This zone may be associated with Anomalies 29, 24 and 17 to the south, which may be formational. This disseminated response is recommended for follow-up investigation as a secondary priority.

Anomaly 43 (Line 49) See Anomaly 30 above.

Anomaly 44 (Line49) A 300 foot wide, $3\frac{1}{2}$ millisecond induced polarization high within rock unit D_1 is recommended for follow-up on a secondary basis. A magnetic high was recorded on the west flank of this zone.

Anomaly 45 (Line 49) Two minor responses at 450W and 950W are associated with broad reductions in resistivity within a broad, 700 foot wide zone of higher than normal background resistivity. Of tertiary interest only.

Anomaly 46 (Line 50) A minor response from a disseminated source near the surface. Of minor interest only.

Anomaly 47 (Line 50) See Anomaly 30 above.

Anomalies 48, 49 and 50 (Line 50) A series of responses over 1000 feet within a general 50% above background chargeability level. Anomaly 49 is coincident with a magnetic high and Anomaly 50 occurs in the eastern flank of a magnetic high. The resulting data is a mirror image of the induced polarization profile, showing increased conduction within the host rocks coincident with the chargeable material. These zones are of tertiary interest only.

Anomaly 51 (Line 50) A narrow, minor high associated with a marked 70% reduction in resistivity. Of secondary interest. The asymmetry of the anomaly suggests a vertical or steep west dip. The maximum depth is considered to be of the order of 100 to 150 feet.

Anomaly 52 (Line 50) A significant twice background anomaly coincident with a 65% depression in the apparent resistivity is considered to be of primary to secondary importance. The depression in resistivity suggests greater conductivity within the host rocks, however, the L/M ratio infers a disseminated source. These inferences are not necessarily contradictory. The source is considered to come from within 100 to 150 feet and has either a vertical or steep west dip.

Anomalies 53 and 54 (Line 51) Within a broad chargeability high from 2950E to 3550E there is one major (54) and one minor (53) peak. This zone is coincident with the highest resistivities recorded in the area - over 77,000 ohm-meters. This rapid change clearly indicates the contact between the volcanics to the west and the silicified conglomerates to the east. The anomalous response may, in part, be due to

?? in conglomerat[e]

contact resistance problems. Nevertheless, this response should receive attention on a secondary basis.

Anomaly 55 (Line 51) A 150 foot wide, east dipping chargeability high is associated with a depression in the resistivity profile. This anomaly is recommended for follow-up as a target of tertiary importance.

Anomaly 56 (Line 51) This single station, 2½ millisecond anomaly is from a disseminated source on the east flank of a magnetic response and is of tertiary interest only.

Anomaly 57 (Line 51) A 300 foot wide, 2-3 millisecond response was recorded over a sharp change in resistivity. Of tertiary interest.

Anomaly 58 (Line 51) A narrow, minor response from a near vertical, near surface source is associated with a narrow 40% drop in resistivity. Also present is a minor magnetic high. This anomaly is of tertiary interest only.

Gradient Array, Nov 1979. Over the "anomaly" No anomaly recorded

Anomalies 59, 60 and 62 (Lines 52, 52 & 53) Extremely anomalous results were recorded at the extremeties of lines 52 and 53. Apparent resistivities of as low as 42 ohm-meters were recorded on line 53, and 262 ohm-meters on line 52.

Anomaly 62 consists of a 20 millisecond anomaly from a conductive source within perhaps 100 feet of surface and dipping steeply to the east. This anomaly must be followed up on a primary basis.

Similarly anomalies at 1770E (60) and 2450E (59) are of interest. Negative coupling was recorded between these highs which should be followed up on a secondary basis.

Appears to be correct!

The position of the gradient produces unstable conditions for the evaluation of Anomalies 59, 60 and 62. The most prudent approach (should surface cover preclude geological confirmation of the interest of these anomalies) would be to carry out additional geophysical work over these zones. Meanwhile the above priorities are allotted.

exposure O.K. - map.

Anomaly 61 (Line 52) A double background response of 6-7 milliseconds coincident with a significant depression in the resistivity is centred at 650E. The slight asymmetry of the curve form suggests a vertical or slight west dip. The decay curve indicates a much shorter time constant which infers a disseminated source. This response is recommended for follow-up on a primary or secondary basis.

Anomaly 63 (Line 53) A broad chargeability response with a 60% depression in resistivity was centred at about 600E. The profile asymmetry suggests a moderate west dip. The response occurs on the west flank of a magnetic anomaly. Of tertiary or secondary interest only. Interesting position

Anomaly 64 (Line 53) This very minor response associated with very slight conduction is of minor interest only.

Anomaly 65 (Line 53) A broad minor response associated with a local depression in the apparent resistivity is of tertiary interest only.

Anomaly 66 (Line 54) This minor response is of minor interest only.

Lines 54 to 59 Generally higher than background chargeabilities were recorded from 600W to 1100E on these lines. In addition the resistivity is about 10% of the average for the area over rock unit 'D'. These characteristics are those which might be expected from pyritisation as exists around known copper mineralisation in the Mt. Lyell area, and as such, should receive special attention. A number of particular anomalies within this zone have been recommended for individual follow-up, but additional investigation is warranted over this area as a whole.

Anomaly 67 (Line 54) The depression in resistivity accompanied by a doubling of chargeability to 12 milliseconds is open to the west. The source of this response should be investigated on a secondary basis.

Anomaly 68 (Line 55) A broad response from 2000E to 2400E is coincident with high apparent resistivities of 20,000 ohm-meters. This disseminated source is of minor interest.

Anomaly 69 (Line 55) Two minor responses close to the contact of rock units D_1 and H_2 should be further investigated on a tertiary basis.

Anomaly 70 (Line 55) This minor response is of tertiary interest only.

Anomaly 71 (Line 56) This east dipping response shows a minor depression in the resistivity profile. The anomaly is of tertiary interest only.

Anomalies 72 and 73 (Line 56) These two moderate responses occur within the eastern flank of rock unit 'D'. The asymmetry of the profile form infers a west dip. The sources of these responses should be sought on a secondary basis.

Anomalies 74 and 75 (Line 57) These two minor responses show no distortion in the resistivity profile and are of tertiary interest at best. They occur on the east and west flank of a magnetic response.

Anomalies 76 and 77 (Line 57) The form is a narrow near surface response of 50% above background, and the latter may be from a wider, deeper source. Both zones occur within rock unit 'D' and are of secondary or tertiary interest.

Anomaly 78 (Line 58) The depression in the resistivity profile suggests some weak conduction in and around the source while the lower L/M ratio suggests a larger than normal average grain size. In addition, the anomaly correlates with a magnetic high. The proximity of this source to the proposed position of the major fault requires further investigation on a primary basis.

Sample with others

Anomaly 79 (Line 59) A broad 7 millisecond anomaly is considered to have a west dip and should receive further attention on a secondary basis.

Anomaly 80 (Line 59) A moderate near surface response at 2250E has a narrow, east dipping disseminated source. Follow-up is recommended on a secondary basis.

Anomalies 81 and 82 (Line 59) These two minor responses occur in close proximity to rock unit D_1. Further investigation of these responses is warranted on a tertiary basis only.

Anomaly 83 (Line 60) This anomaly is of minor interest only.

Anomaly 84 (Line 60) A depression in the resistivity profile has a corresponding increase in chargeability of 3 milliseconds. Of tertiary interest only.

Anomaly 85 (Line 60) Two minor induced polarization responses were recorded from within a 450 feet wide chargeable zone. Lower resistivities were recorded in the area and the anomaly occurs on the eastern flank of a magnetic high. Of tertiary interest only.

Anomaly 86 (Line 60) A minor 30% depression in the resistivity is accompanied by a narrow but significant chargeability high of 6 to 7 milliseconds. To be followed up as a secondary target. A large anomaly (89) occurs along the inferred strike to the north and this may correlate with 86.

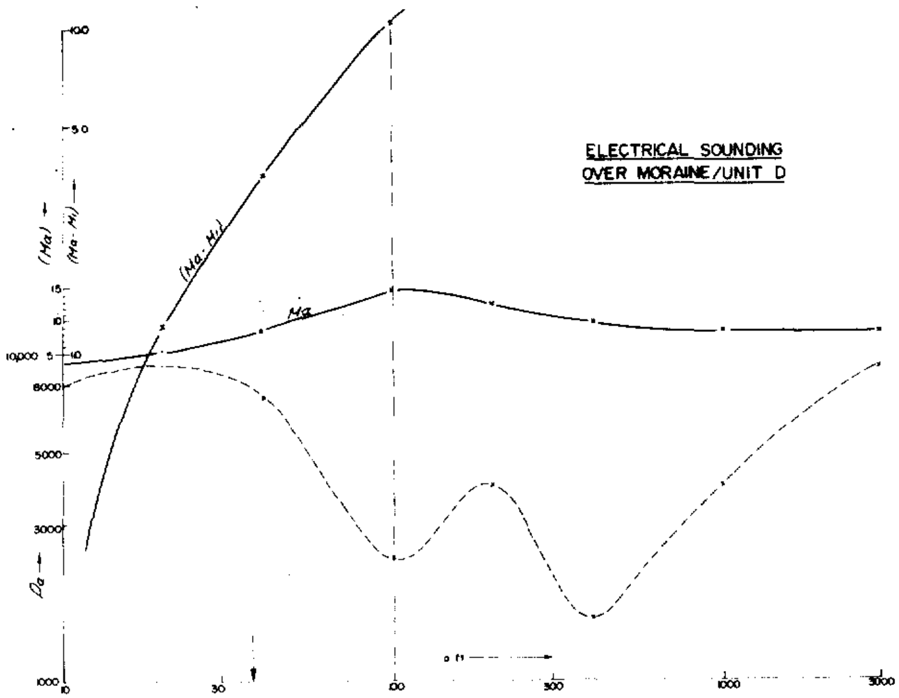
Anomaly 87 (Line 61) This zone is made up of two individual chargeability highs at 1650E and 1400E. Both are associated with a depression in the resistivity. The western anomaly occurs on the eastern flank of a magnetic high. This zone (and Anomaly 88 also) occurs within rock unit 'D'. Of tertiary or secondary interest only.

Anomaly 88 (Line 61) The two minor responses making up this anomaly occur on the eastern and western flank of a magnetic high. The zones lie within rock unit 'D' and are associated with a depression in the resistivity profile. Of tertiary interest only.

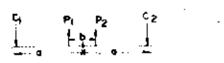
Anomaly 89 (Line 61) A material induced polarization high of 10 milliseconds coincident with an 80% depression in the resistivity profile is situated at about 2950W. The anomaly is open to the west, however, the source is considered to be shallow. Anomaly 86 is considered to be a southerly extension of this zone. This anomaly is recommended for follow-up as a primary or secondary target.

leave alone for moment

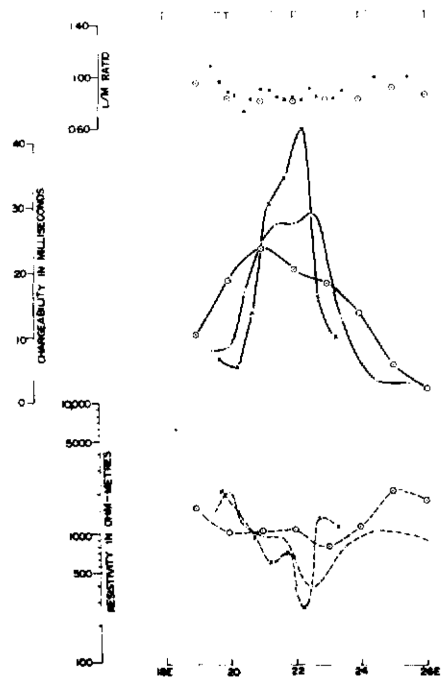
ELECTRICAL SOUNDING OVER MORAINE/UNIT D



SCHLUMBERGER ARRAY

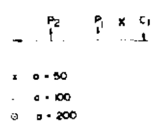


Centre 180 ft. North of line 55 on Base Line



POLE-DIPOLE DETAIL # 91

LEGEND



THE MOUNT LYELL MINING AND RAILWAY COMPANY LTD.

MT. TYNDALL AREA
N.W. TASMANIA

INDUCED POLARIZATION DETAIL

SURVEYED AND COMPILED BY
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JAN-FEB. 1973

200 0 200 400
Scale in feet

JOB No. TAS. 016 SHEET 1 of 1 PLATE 5

5 cm

Anomaly 90 (Line 62) A minor chargeability peak occurs at 850W within a zone of 50% above background which was recorded between 650W and 1200W. This maximum is not associated with any change in resistivity and therefore the source is probably wholly disseminated. The depression in the L/M ratio indicates a larger than normal average grain size for the chargeable material. This anomaly is of secondary or tertiary interest. Anomaly 92 to the immediate north is in a similar stratigraphic position.

Anomaly 91 (Line 63) This zone has a maximum width of some 50 to 70 feet and the source dips steeply to the east. A depression in the resistivity data infers some conduction and a minimal depression in the L/M ratio infers a slight increase in the average grain size of the conductive material. The proximity of this zone to the main fault and to copper mineralisation makes this a zone of primary interest. Detailed pole-dipole (Plate 5) confirms the interest of this body. The maximum depth is 50 feet. This anomaly bears similarities to 47-43-35-30 and 10-7-2.

Anomaly 92 (Line 63) This moderate induced polarization high of 5 milliseconds above the local 7 millisecond background probably represents the northern extension of Anomaly 90. It is on the eastern flank of a magnetic high and an absence of any depression in the resistivity profile infers a wholly disseminated zone. A marked depression in the L/M ratio infers a larger than average grain size to the source material. Of secondary interest.

Anomalies 93 and 94 (Line 64) These two local anomalies lie within a zone of higher chargeability in the low resistivity zone characteristic of the chlorite schists just west of the projected position of the fault. The sources are expected to lie within 50 to 100 feet of the surface. The proximity of these anomalies to the fault certainly accords these zones primary status. It is not thought at this stage that Anomaly 91 is associated with either of these zones. Additional local work would be required to ascertain this.

Anomalies 95 and 96 (Line 65) Anomaly 96 is similar in form to Anomaly 94 to which it probably correlates. Anomaly 95 is, however, different to Anomaly 93. Both Anomaly 95 and Anomaly 96 are associated with low resistivity and the former is in a similar stratigraphic position to Anomaly 91. Both zones should be followed up on a primary basis.

Anomaly 97 (Line 65) This moderate twice background response is associated with a distinct magnetic high and a marked change in resistivity in close proximity to the to the position of a possible fault line. This zone is recommended for follow-up as a target of secondary importance.

Anomaly 98 (Line 66) This minor response may represent the northerly extension of anomaly 96. A minor depression in the resistivity profile and a west flank association with a magnetic high are other significant features. Follow-up should depend on the results of work on Anomaly 91. Meanwhile the status awarded is tertiary.

In summary the 98 anomalies located in the present survey have the following priorities:

*Of PRIMARY interest: 2-7-10, 30-35-43-47, 52, 61, 62, 78 89, 91, 93, 94, 95 and 96. No

*Of SECONDARY interest: 1, 3, 5, 9, 12, 14, 20, 25, 33, 34, 36, 40, 42, 44, 51, (52), 53/54, 59, 60, (61), 63, 67, 72, 73, 76, 77, 79, 80, 86, 87, (89), 90, 92 and 97. No

Of TERTIARY interest: 4, 6, 8, 11, 13, 15, 16, 17, 18, 19, (20), 21, 22, 23, 24, 26, 27, 28, 29, 31, 32, (33), 37, 38, 39, (40), 41, 45, 46, 48, 49, 50, 55, 56, 57, 58, (63), 64,65,66, 68, 69, 70, 71, 74, 75, (76), (77), 81, 82, 83, 84, 85, (87), 88, (90), 98.

CONCLUSIONS

1. The resistivity, chargeability and magnetic surveys have enabled the area surveyed to be divided into a number of zones of unique characteristics. These zones reflect the physical properties of the underlying rocks and a study of these zones carried out in conjunction with the geological outcrop plan, should yield a more definitive geological map. The boundaries between the zones are often very sharp and indicate a rapid change in rock type.

2. A zone of higher than average chargeabilities was defined parallel to, and to the east of, the baseline between lines 54 and 59. These lines for the most part are within rock unit 'D' which has regionally low apparent resistivities. These characteristics are considered to be typical of local pyritisation noted around Mt. Lyell type orebodies, but the inferred degree of pyritisation appears to be somewhat less than those seen by the author.

3. Some 98 chargeability responses considered anomalous were defined. Of these, 17 are considered of primary interest.

4. The method employed appears, at this stage, to have been the most cost effective geophysical reconnaissance approach in the area.

RECOMMENDATIONS

1. An in depth examination of Plate 4 together with the geological outcrop plan should be made. From such a study it should be possible to produce a much improved geological map.

2. The possible pyritic halo delineated on, and to the east of, the geophysical baseline between lines 54 and 59 should be carefully investigated on the ground. Chargeability anomalies occurring within this zone should receive particular attention.

A Turam electromagnetic survey should be carried out over this zone should the geological data not disprove the area's potential.

It should be noted that even a well defined Turam conductor cannot necessarily expect to be observed as an induced polarization or resistivity anomaly as the latter are "volume" targets and the response parameter of the former is conductivity x width over an area. Therefore we are "seeing" quite different and unrelated features when applying electromagnetic and induced polarization techniques. It is perhaps significant that although some conduction was noted in the vicinity of many of the induced polarization anomalies defined in the present survey, in absolute terms this was minimal. The conduction noted in the Cape Horn ore zone would require a depression in the resistivity data of several orders of magnitude greater than that observed in the present survey. The volume dilution effect involved in induced polarization, only in parts accounts for the relatively high absolute values obtained. A Turam type electromagnetic or Magnetic Induced Polarization survey would emphasise the relatively narrow conductive zones, especially at depth.

3. The follow-up work should, where possible consist of geological mapping and rock geochemistry. However, where moraine cover precludes this approach it is highly desirable that close spaced moving source induced polarization and/or Turam electromagnetic surveys be carried out prior to further investigation by diamond drilling. This, in part, is required due to the nature of the gradient array data which yields accurate positional information but the assessment of depth is always a guesstimate at best. In addition, even

positional data can be inaccurate in steep terrain as the source is not vertically below the anomaly peak but normal to the "local" slope at the peak. Local geophysical detailing will define depth and position for further investigation by drilling.

No drilling recommendations have been made in this report due to the ambiguity of depth estimates from gradient data, topographic effects which cannot be evaluated in the absence of detailed local topographic maps and, the requirement for a geological evaluation of the location of the defined conductors.

We would be pleased to supply drilling targets as soon as you have assessed the data contained in this report.

Those induced polarization responses rated as primary targets should all receive further investigation while those of secondary interest should be followed up if possible. All anomalies of tertiary rating should only receive additional work where geological or geochemical data increases their possible economic interest. However, as always the geological environment is considered of far greater importance in the evaluation of a geophysical anomaly than the absolute magnitude of that anomaly. It is fully anticipated that a study of the geological setting of the chargeable zones defined in the present survey will radically alter the priority allotted on a geophysical basis only.

Respectfully submitted on behalf of:

SCINTREX PTY. LTD.

A.W. HOWLAND-ROSE,M.Sc.,D.I.C., AMAusIMM,FGS.
GEOPHYSICIST

TABLE I

Number	Line	Station	Grade	Dip	Priority
1	42	1200E	B ✓	?	Secondary
2	42	350E	A ✓	E	Primary
3	42	1950W	B ✓	E	Secondary
4	42	2250W	B ✓	?	Tertiary
5	42	3750W	B ✓	E	Secondary
6	42	750W	C ✓	W	Tertiary
7	43	200E ✓	A	W	Primary
8	43	2050/ 2650W	C ✓	-	Tertiary
9	44	850E	C ✓	?	Secondary
10	44	350E	C ✓	?	Primary
11	44	350W	C ✓	?	Tertiary
12	44	650W	C ✓	?	Secondary
13	44	1750W	C ✓	?	Tertiary
14	44	2450W	B ✓	W	Secondary
15	44	3350W	C ✓	?	Tertiary
16	44	3650W	C ✓	?	Tertiary
17	45	1950E	C	?	Tertiary
18	45	250/600E	C	-	Tertiary
19	45	550W	C ✓	?	Tertiary
20	45	950W	C	?	Secondary/ Tertiary
21	45	1350W	C ✓	?	Tertiary
22	45	2450W	C	?	Tertiary

Page - two

TABLE I

Number	Line	Station	Grade	Dip	Priority
23	45	2050W	C ✓	?	Tertiary
24	46	2450E	B ✓	?	Tertiary
25	46	700E	B ✓	E	Secondary
26	46	100/400W	C ✓	-	Tertiary
27	46	1450W	C	?	Tertiary
28	46	2150W	B ✓	E	Tertiary
29	47	2350E	C ✓	-	Tertiary
30	47	1650E	B ✓	W	<u>Primary</u>
31	47	450E	C ✓	E	Tertiary
32	47	100E	C ✓	E	Tertiary
33	47	600W	C ✓	?	Secondary/ Tertiary
34	47	1750W	B /	W	Secondary
35	48	1500E	A /	E	<u>Primary</u>
36	48	750E	A /	V	Secondary
37	48	150W	C /	-	Tertiary
38	48	350W	C /	-	Tertiary
39	48	1450W	C /	?	Tertiary
40	48	1650W	C /	?	Secondary/ Tertiary
41	48	2050W	C ✓	?	Tertiary
42	49	2250E	C	?	Secondary
43	49	1400E	A ✓	E	<u>Primary</u>
44	49	100/450E	C	-	Secondary

050

TABLE I

Anomaly	Line	Station	Grade	Dip	Priority
45	49	250/950W	C	-	Tertiary
46	50	2550E	C	?	Tertiary
47	50	1800E	B	W	Primary
48	50	50W	C	?	Tertiary
49	50	250W	C	?	Tertiary
50	50	750W	C	?	Tertiary
51	50	1250W	B	V	Secondary
52	50	1900W	B	V	Primary/ Secondary
53	51	3450E	C	?	Secondary
54	51	3200E	A	V	Secondary
55	51	2450E	C	E	Tertiary
56	51	950E	C	?	Tertiary
57	51	100/400E	C	-	Tertiary
58	51	350W	B	V	Tertiary
59	52	2450E	A	E	Secondary
60	52	1800E	A	W	Secondary
61	52	650E	A	V	Primary/ Secondary
62	53	2550E	A	?	Primary
63	53	600E	C	?	Secondary/ Tertiary
64	53	1250W	C	?	Tertiary
65	53	2450W	C	?	Tertiary
66	54	3550E	C	?	Tertiary

TABLE I

Anomaly	Line	Station	Grade	Dip	Priority
67	54	2750W	C	-	Secondary
68	55	2000/ 2500E	C	-	Tertiary
69	55	700/1050E	B	?	Tertiary
70	55	2550W	C	?	Tertiary
71	56	2850E	A	E	Tertiary
72	56	1050E	B	W	Secondary
73	56	750E	C	?	Secondary
74	57	3350E	C	?	Tertiary
75	57	3050E	C	?	Tertiary
76	57	550E	B	V	Secondary/ Tertiary
77	57	150W	C	?	Secondary/ Tertiary
78	58	2150E	C	W	Primary
79	59	3550E	B	E	Secondary
80	59	2250E	B	E	Secondary
81	59	1150E	C	?	Tertiary
82	59	300/550E	C	-	Tertiary
83	60	2450E	C	?	Tertiary
84	60	250E	C	E	Tertiary
85	60	1400/ 1850W	C	-	Tertiary
86	60	2950W	A	?	Secondary
87	61	1350/ 1700E	C	-	Secondary/ Tertiary

TABLE I

Anomaly	Line	Station	Grade	Dip	Priority
88	61	50/300E	C	-	Tertiary
89	61	2950W	A	?	Primary/ Secondary
90	62	850W	B	E	Secondary/ Tertiary
91	63	2200E	A	E	Primary
92	63	850W	B	E	Secondary
93	64	1950E	B	?	Primary
94	64	1750E	B	?	Primary
95	65	2250E	B	W	Primary
96	65	1850E	B	W	Primary
97	65	1550W	B	W	Secondary
98	66	1800E	C	?	Tertiary

APPENDIX 'I.P.'

INTRODUCTION

For the benefit of those who are unfamiliar with the Induced Polarization method in general, or with the pulse-type method in particular, a few introductory remarks will be directed on the Induced Polarization, or overvoltage, phenomenon. Those who wish a fuller treatment of the subject are directed to Seigel (1962), which paper also includes an extensive list of references.

Induced Polarization in its broadest sense means a separation of charge to form an effective dipolar (polarised) distribution of electrical charges throughout a medium under the action of an applied electric field. When current is caused to pass across the interface between electrolyte and a metallic conducting body, double layers of charge are built up at the interface, in the phenomenon known to electrochemists as "overvoltage". This is the phenomenon which can be utilised for the detection of metallic conducting, rock-forming, minerals such as most sulphides, arsenides, a few oxides and, unfortunately, graphite. In addition, effective dipolar charge distribution occurs to some extent in all rocks, due to ion-sorting in the fine capillaries in which the current is passing.

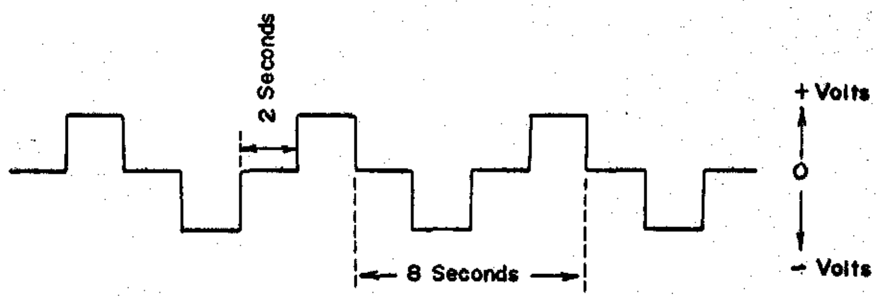
Induced Polarization responses may therefore arise from metallic or non-metallic agencies. Fortunately, the latter generally falls within fairly low and narrow limits. for almost all rock types, although there is still no reliable criterion for differentiating overvoltage responses from graphite and metallic sulphides, or for distinguishing between the responses of one type of sulphide and another. Despite these limitations the Induced Polarization method has amply demonstrated its value in mineral exploration since its initial development as a useful exploration tool in 1948 (ed. Wait, 1959).

DESCRIPTION OF METHOD AND EQUIPMENT

For the present programme the pulse or time domain system was employed, using a Scintrex Induced Polarization unit. The standard current-wave form with the unit is two seconds on-time and two seconds off-time. (see Figure 1). This unit features the Newmont type self-triggered receiver which operates remote from the current transmitting equipment. Three fundamental quantities are measured with this unit - the chargeability of 'M' measurement, the 'L' measurement and the resistivity.

The receiver integrates the area under the decay curve during the time interval from 0.45 seconds to 1.1 seconds

MEASUREMENTS TAKEN



Energising frequency is a square wave having a frequency of 0·125 cps.

FIELD MEASUREMENTS MADE

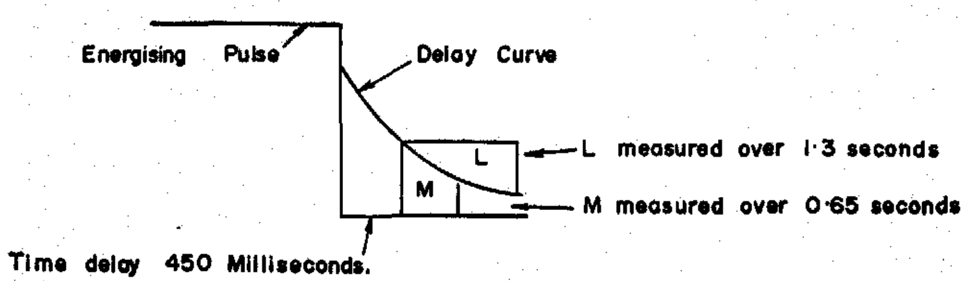


Fig. 1

after termination of the primary current pulse. This integral normalised with respect to its corresponding primary voltage is the chargeability or 'M' measurement, that is, the fundamental Induced Polarization characteristic. It is in units of milliseconds. The Induced Polarization phenomena is dependent on the existence of electronically conducting material within the matrix of ionically conducting material. The chargeability is therefore a measure of the presence of electronically conducting material within the ground being tested.

The second quantity measured is the area over the transient decay curve between 0.45 seconds and 1.75 seconds of the current off-time. This measurement is designated the 'L' measurement and is also in units of milliseconds. The ratio L/M gives a curve factor related to the shape of the transient voltage curve, and is a measure of the rate of decay of the transient voltage. This is of secondary diagnostic value in that the rate of decay of the transient voltage is partially a function of particle size. A large L/M ratio reflects a short time constant, commonly associated with finely disseminated sulphide or graphite, whereas a small L/M ratio reflects the longer time constants associated with the larger sized metallic particles.

The L/M ratio is also effective in determining the presence of electromagnetic coupling effects. With the Scintrex Induced Polarization unit, electromagnetic coupling effects are essentially eliminated by an 0.45 second delay-time following termination of the primary current pulse before measurement of the transient voltage commences. However, in extremely low resistivity areas coupling may occur. Under these conditions the presence of electromagnetic coupling can distort the Induced Polarization response, and it is extremely important to know when this occurs. The presence of such coupling is immediately recognizable from the L/M ratios.

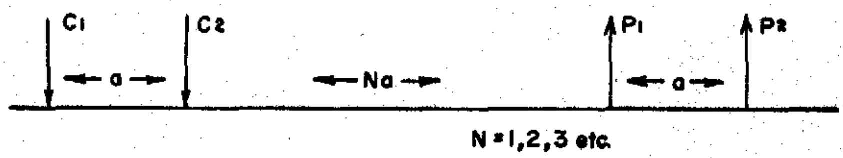
Resistivity measurements are also made as an integral part of all Induced Polarization measurement using the Scintrex Induced Polarization unit. The resistivity values are of primary importance in determining subsurface geological features such as contact zones, faulting, etc., and are of assistance in mapping the geology in general.

Electrode geometries (see Figure 2) utilised in obtaining field measurements are important and no one electrode array is applicable for all conditions. In areas where a low resistivity oxidised surface layer overlies a much higher resistivity freshrock, a high degree of

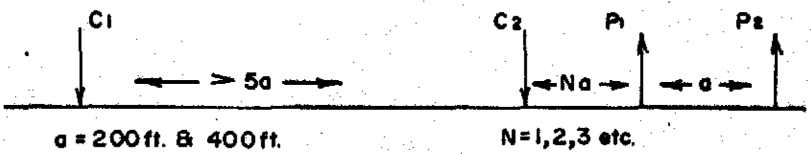
COMMONLY USED ELECTRODE ARRAYS

CLOSE – COUPLED ARRAYS

DIPOLE – DIPOLE



POLE – DIPOLE



GRADIENT ARRAY

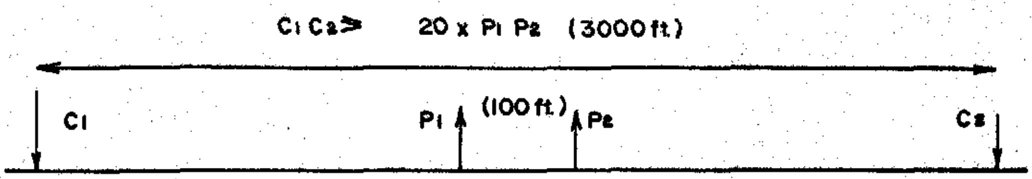


Fig. 2

masking occurs using any of the close-coupled arrays, such as pole-dipole or dipole-dipole. An electrode spacing many times greater than the depth to freshrock must be used in order to obtain responses reasonably representative of the freshrock. With such large electrode spacings the physical properties are effectively averaged over so large a volume that we lose the ability to detect moderate sized bodies of polarizable material. However, under these conditions the gradient array is both feasible and desirable in that it minimises the effects of masking and at the same time has a high degree of resolution for small targets.

In the present areas of investigation, abnormal induced polarization responses may be expected to arise from the electronically conducting sulphide minerals such as pyrite, pyrrhotite, chalcopyrite and pentlandite, plus graphite and magnetite. The response from magnetite has been found to be quite variable and somewhat unpredictable, reflecting the great variation in the mode of electrical conduction in this material. It is not always possible to differentiate between these potential sources of high chargeability from the Induced Polarization and resistivity data alone. Complementary geophysical, geochemical and geological data enable a more complete interpretation to be made of the Induced Polarization data.

061

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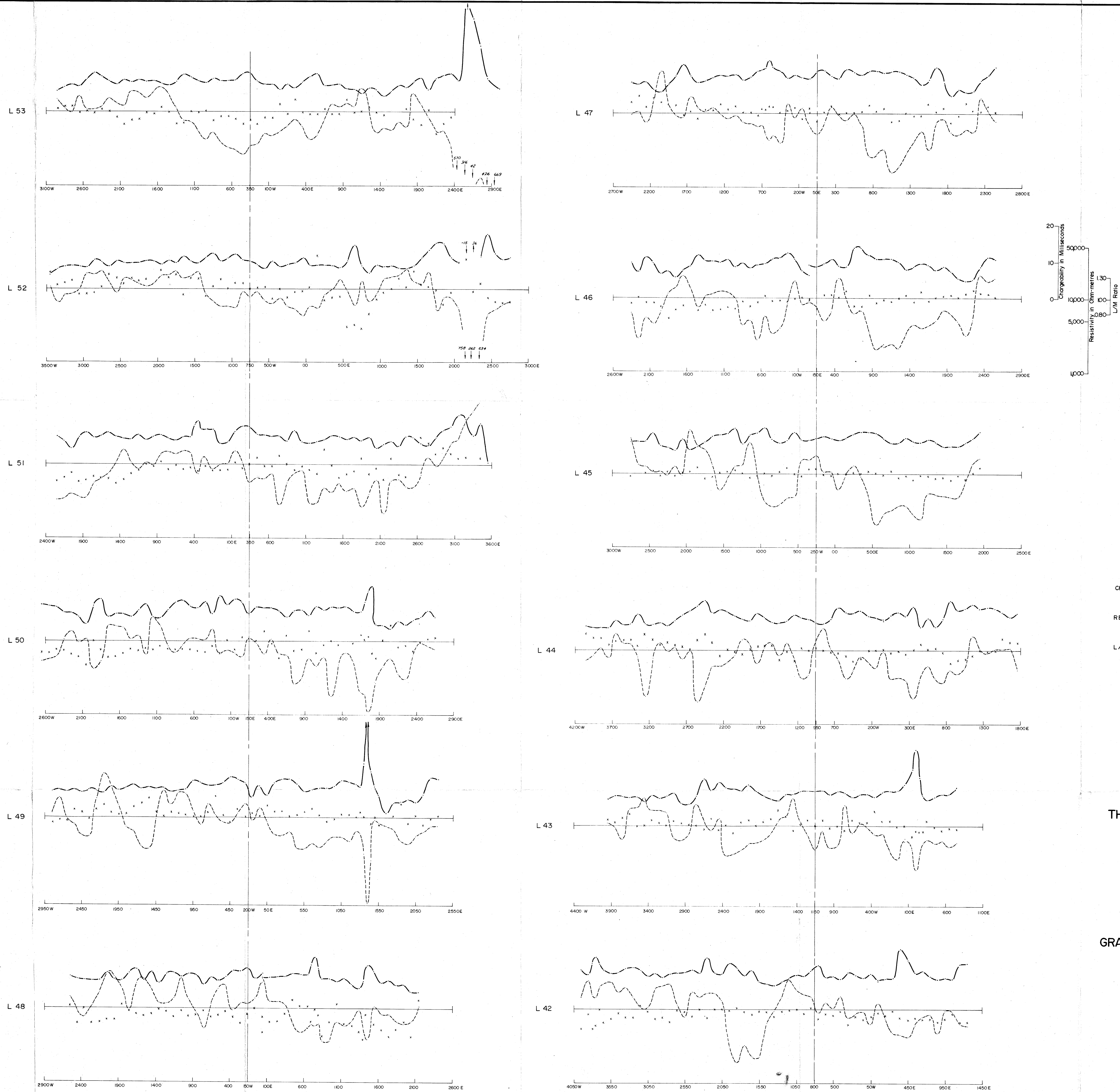
ed. Wait, 1959 — "Overvoltage Research and Geophysical Applications" editor J.R. Wait, Pergamon Press, London, 1959.



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LEGEND

CHARGEABILITY SCALE 1" = 10 Milliseconds
BASE LEVEL = 0 Milliseconds
SYMBOL = ——·——·——

RESISTIVITY SCALE 2" = 1 Logarithmic Cycle
BASE LEVEL = 10,000 Ohm-metres
SYMBOL = -·-·-·-·-

L/M RATIO 1" = 1.30
BASE LEVEL = 1.00
SYMBOL = x x x x x x x

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GRADIENT INDUCED POLARIZATION DATA PROFILES

337063

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JAN-FEB. 1973

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Scale in feet

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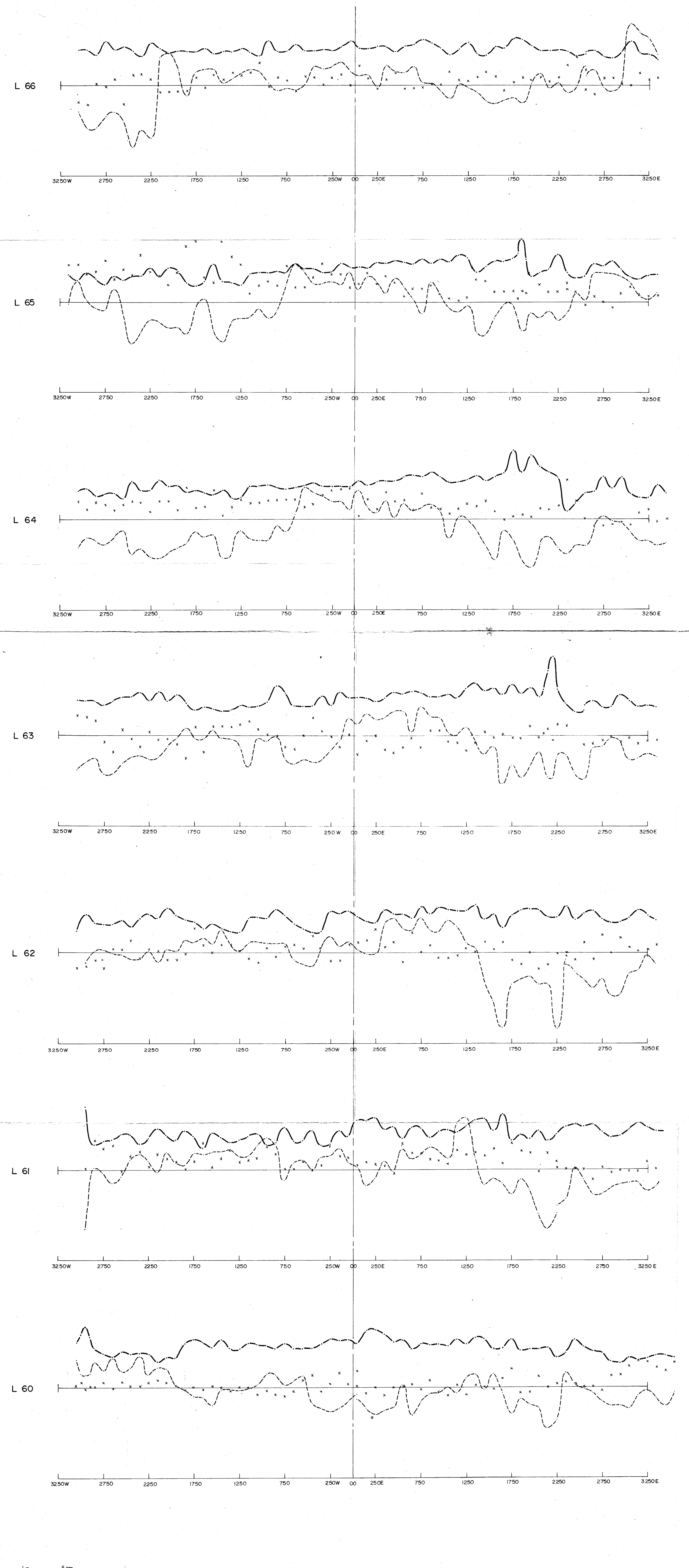
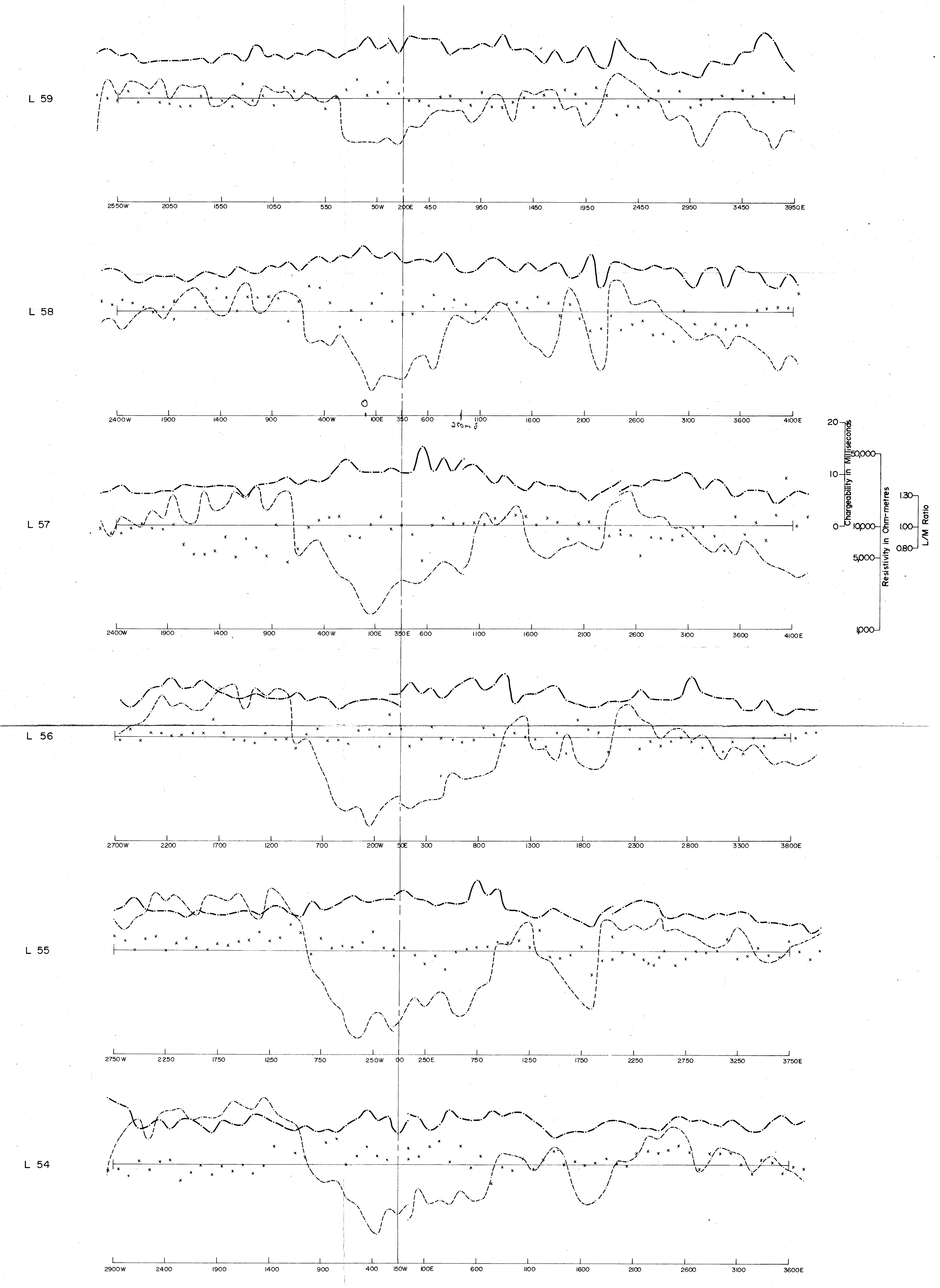
JOB No. TAS 016 SHEET 1 of 2 PLATE 1. 84-2223 vol 2





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RAILWAY COMPANY LTD.

MT. TYNDALL AREA
N.W. TASMANIA

GRADIENT INDUCED POLARIZA
DATA PROFILES

LEGEND

CHARGEABILITY SCALE : 1" = 10 Milliseconds
BASE LEVEL = 0 Milliseconds
SYMBOL = ·————·————·

RESISTIVITY SCALE 2" = 1 Logarithmic Cycle
BASE LEVEL = 10,000 Ohm-metres
SYMBOL = ·– – – ·– – – ·– –

L/M RATIO 1" = 1.30
BASE LEVEL = 1.00
SYMBOL = × × × × × ×

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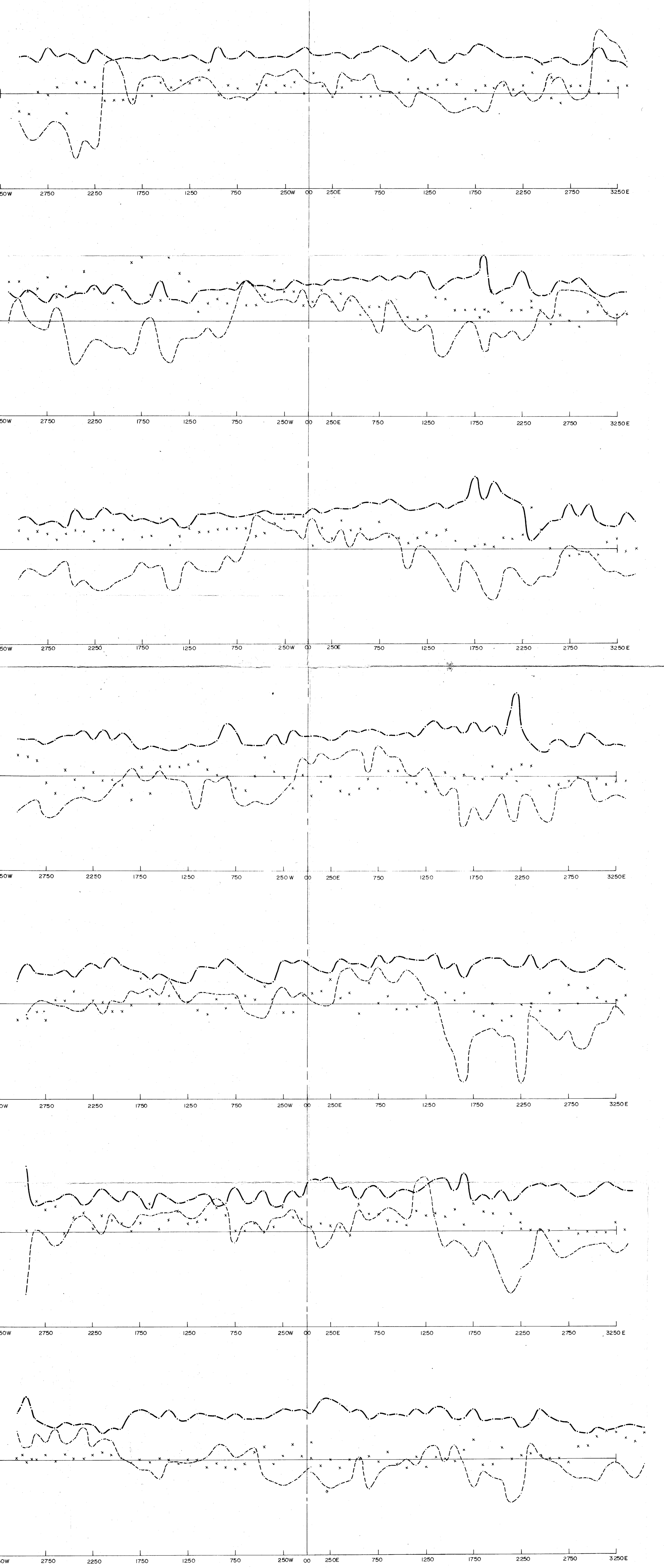
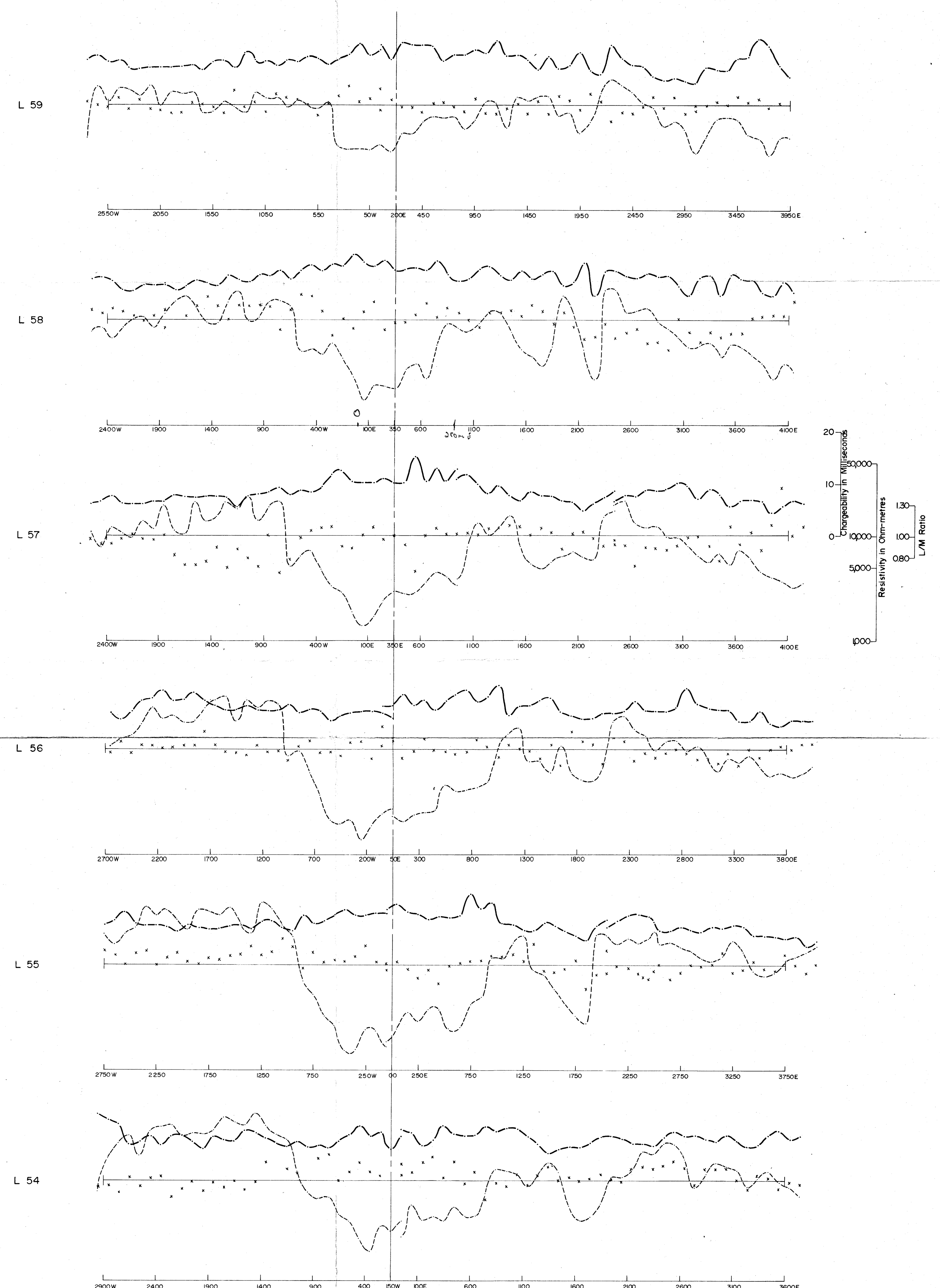
500 0 500 1000
Scale in feet

JOB No. TAS 016 SHEET 2 of 2 PLATE

002





LEGEND

CHARGEABILITY SCALE : 1" = 10 Milliseconds
BASE LEVEL = 0 Milliseconds
SYMBOL = ·————·————·

RESISTIVITY SCALE 2" = 1 Logarithmic Cycle
BASE LEVEL = 10,000 Ohm-metres
SYMBOL = ·———·———·——

L/M RATIO 1" = 1.30
BASE LEVEL = 1.00
SYMBOL = × × × × × ×

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GRADIENT INDUCED POLARIZATION DATA PROFILES

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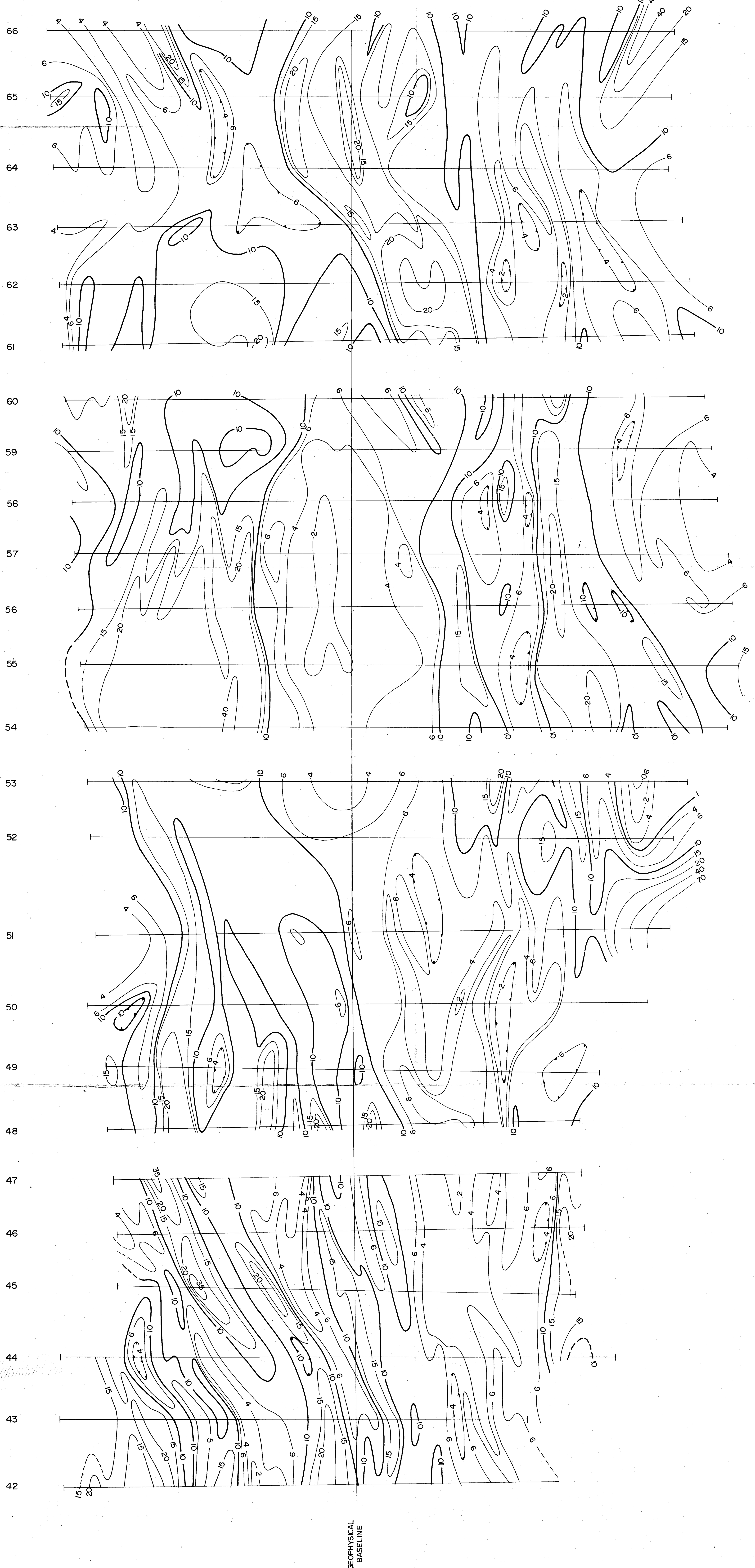
337064

5 cm

500 0 500 1000
Scale in feet

002

JOB No. TAS 016 SHEET 2 of 2 PLATE 1 84-2223 vol2



LEGEND

2,4,6 & 15 — CONTOUR INTERVALS IN 1,000's
10 — OF OHM-METRES

EACH CURRENT ELECTRODE PAIR SEPARATELY CONTOURED

THE MOUNT LYELL MINING AND RAILWAY COMPANY LTD.

MT. TYNDALL AREA N.W. TASMANIA

GRADIENT ARRAY RESISTIVITY CONTOUR MAP

337065

SURVEYED AND COMPILED BY
SCINTREX PTY. LTD.
JAN-FEB. 1973

5 cm

500 0 500 1000
Scale in feet

003

JOB No. TAS 016 SHEET 1 of 1 PLATE 2 84-2223 Vol 2

004

LEGEND

650
700

BASE LEVEL 62000 GAMMAS (TOTAL FIELD)

THE MOUNT LYELL MINING AND RAILWAY COMPANY LTD.

MT. TYNDALL AREA N.W. TASMANIA

GROUND MAGNETIC CONTOUR MAP

337066

SURVEYED AND COMPILED BY

SCINTREX PTY. LTD.

JAN-FEB. 1973

5 cm

500 0 500 1000

Scale in feet

004

JOB No. TAS. 016 SHEET 1 of 1 PLATE 3

84-2223 vol 2

THE MOUNT LYELL MINING AND RAILWAY COMPANY LTD.

MT. TYNDALL AREA
N.W. TASMANIA

INTERPRETATION PLAN

337067

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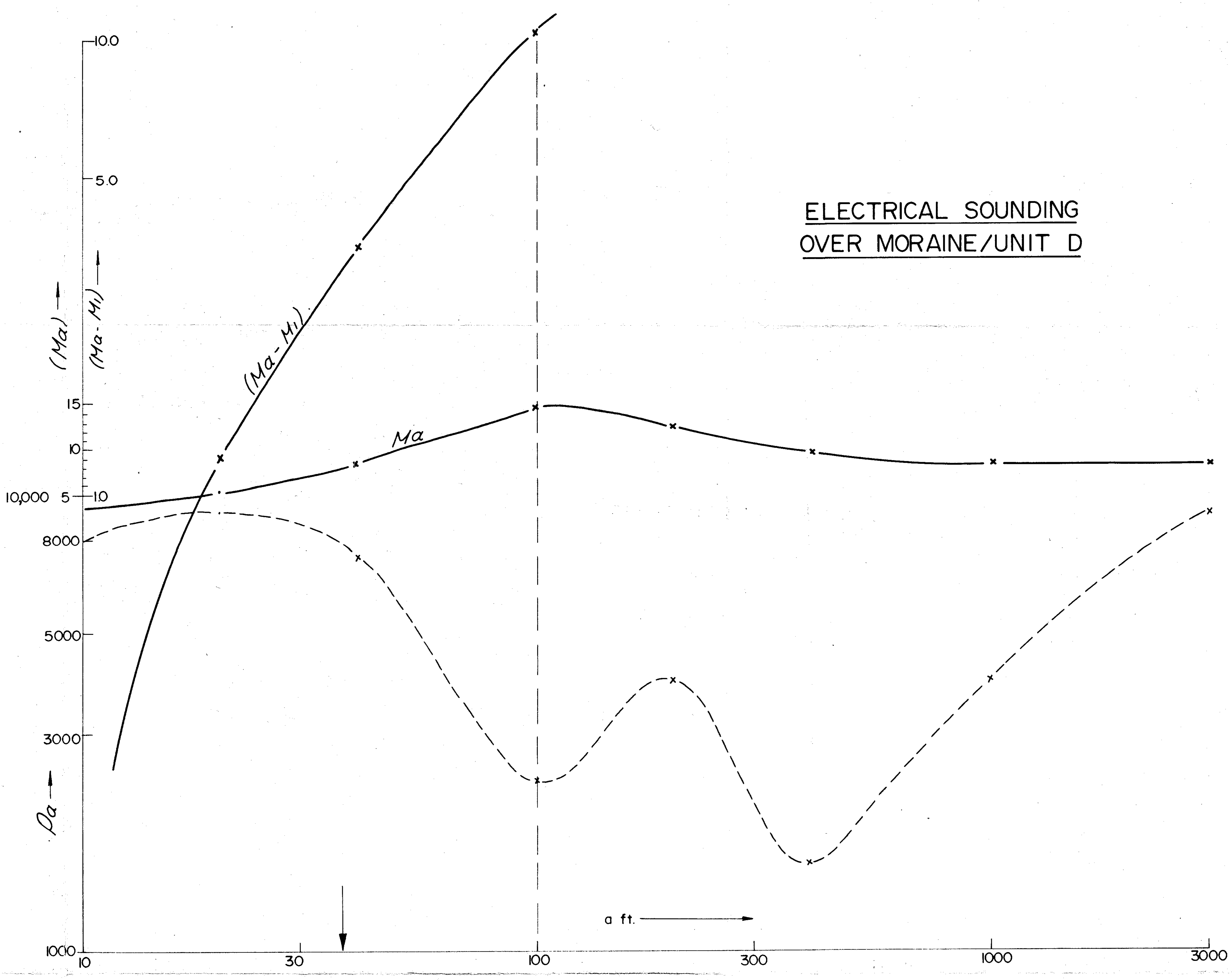
005

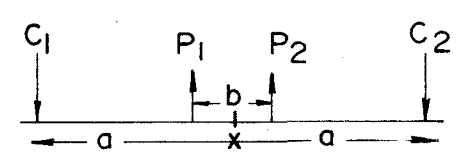
JOB No. TAS 016 SHEET 1 of 1 PLATE 4

84-2223 vol 2

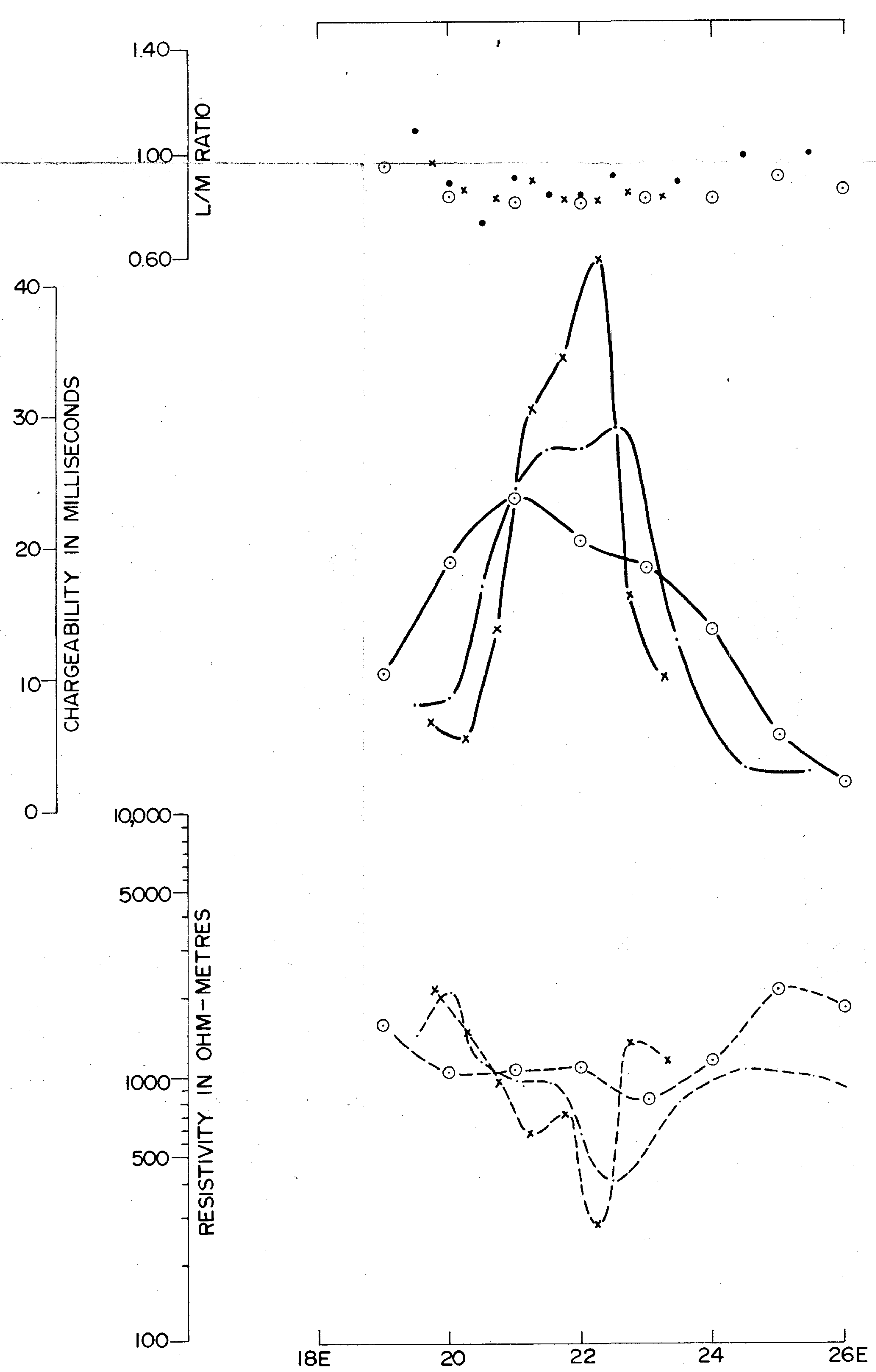
ELECTRICAL SOUNDING OVER MORAINE/UNIT D



SCHLUMBERGER ARRAY

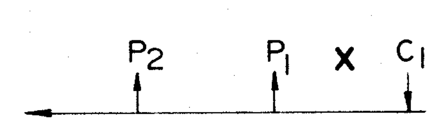


Centre 180 ft. North of line 55 on Base Line



POLE-DIPOLE DETAIL # 91

LEGEND



x a = 50

. a = 100

⊙ a = 200

THE MOUNT LYELL MINING AND RAILWAY COMPANY LTD.

MT. TYNDALL AREA N.W. TASMANIA

INDUCED POLARIZATION DETAIL

337068

SURVEYED AND COMPILED BY

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JAN-FEB. 1973

5 cm

200 0 200 400

Scale in feet

006

JOB No. TAS. 016 SHEET 1 of 1 PLATE 5

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