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A REPORT ON

AN ELECTRICAL INDUCED POLARIZATION SURVEY

IN THE ARGENT DAM AREA

NEAR RENISON BELL, WEST COAST TASMANIA

ON BEHALF OF

RENISON LIMITED

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PRIVATE AND CONFIDENTIAL

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ON BEHALF OF
RENISON LIMITED

E.L. 42/71.

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SYDNEY, N.S.W.

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TAS-032

CONTENTS

Data presented on master sheets provided by Renison Limited (11 sheets, Lines 1, 3, 5, 7, 9, 11, 13, 15, 17, 19, 21)

WARNING ON THE SCALES USED FOR THE PRESENTATION OF THE CHARGEABILITY DATA

The scale used to present the induced polarization data on the 1:5000 master sheet is: 1 centimetre = 10 milliseconds. This scale nowhere near adequately displays the data to show the detail contained therein. A scale of 1 centimetre = 2 milliseconds to 4 milliseconds at most, would be required to accomplish this.

As detail along lines was the major objective of this survey, such a scale is strongly recommended when the detailed 1:2000 sheets are drawn up in due course.

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SUMMARY

Some 220 induced polarization responses considered to be anomalous with respect to their local chargeability background were located over the 28 kilometres of survey carried out on the eleven lines of the Argent Dam grid. Almost all sources appear to be predominantly disseminated in nature, and no anomalies typical of the Renison Type, namely highly conductive and chargeable accompanied by a significant total field disturbance, were located.

As was the objective, a very detailed picture along lines was obtained with many narrow chargeable sources being located. Each significant response is discussed in detail.

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INTRODUCTION

On about twenty six production days between 5th January, and 7th February, 1976, some 28 kilometres were surveyed variously with moving source and fixed source electrical induced polarization by a two operator Scintrex Pty. Ltd. crew.

These surveys were undertaken at the request of Mr. L.A. Newnham, Chief Geologist of Renison Limited and were under the immediate direction of Renison site geologist Mr. J. Kellegher, while overall geophysical supervison was undertaken by Mr. A.W. Howland-Rose.

The objective of these surveys was to map the electrical properties in detail *along lines* with the best *resolution* possible to gain detailed information on *each line*, rather than to gain a regional picture *as a whole*. Thus, where possible and where practical, a larger current dipole gradient array using a small potential dipole was used. This procedure has been seen to be a successful mapping technique elsewhere

in the Renison area; for instance at Mt. Lindsay.

DISCUSSION OF RESULTS

Scope of Presentation

The data has been drafted onto standard Renison sheets kindly provided by Renison Limited. The scales used in this presentation were as follows:

Horizontal scale	1:5000
Vertical Scales:	Resistivity 5 centimetres = 1 log cycle (Ohm-metres)
	Chargeability 1 centimetre = 10 milliseconds

Onto the profiles provided, Renison has drawn in the topography and the total magnetic field as measured by Renison. The latter data is presented on the plate at a coarse scale of 1 centimetre = 500 gammas and a fine scale of 1 centimetre = 100 gammas. The topography is shown at a scale of 1 centimetre = 50 metres.
It is considered that the 1:5000 scale together with the chargeability scale of 1 centimetre = 10 millisecond, is totally unsuitable to display the *detailed* geophysical characteristics which are the objective of this survey. Thus this report is based on the detailed field data sheets which were drawn up at the horizontal scale of 1:2000 with a chargeability scale of 1 centimetre = 2 milliseconds. All anomaly numbers refer to these sheets which are held in Sydney.

Those areas where logistics and/or the suspicion of horizontal or near horizontal strata precluded the use of gradient array, were surveyed using a pole-dipole array. The spacings chosen were a = 20 at n = 1, 2, 3 and 4. This data is highly complex in form and is impossible to display at the scales on the standard sheets. Thus, only n = 2 is shown over these sections.

It is understood that detailed 1:2000 scale sheets will eventually be drawn up over the area. When this is done, it is recommended that the chargeability data be displayed thereon at a scale of 1 centimetre = 2 milliseconds to 1 centimetre = 4 milliseconds, in order that the detail obtained in this survey can be adequately presented.

Interpretation

Some notes on the nature of the data are set down below in order that parameters used can be appreciated in geological terms.

Gradient Array: In the case of the gradient array, *positional information* is excellent, but depth estimates rely on profile shape, and then only give a *"maximum depth"*. An additional inhibiting factor of course is *resolution* of the potential dipole used. In this survey the potential dipole employed was 20 metres, thus it is not possible to resolve the depth better than *within 10 metres*. Thus many of the 10 metre determinations may in fact

either outcrop, or lie within a few metres of surface. The plotted position of the data represents a summation of the characteristics of the material immediately below that point between the potential dipoles.

Similarly the *width* of bodies is not easy to determine for narrow zones having a width less than half the dipole spacing used. Thus, estimated maximum widths are educated guesses at best. However, the wider zones are resolved more accurately.

The *attitude* of a chargeable zone can only really be gauged with any precision in the centre of the gradient array and providing the body has strongly contrasting resistivity and chargeability characteristics to the enclosing rock units.

All field measurements were taken between slope distances along lines. This will, in steep areas, produce errors in the calculated apparent resistivity, however, these errors will be arithmetic, and as significant changes in resistivity are logarithmic, this source of error is not significant. In assessing the position of the source in areas of extreme terrain, it *does not* lie vertically below the plotted position of the anomaly, but *normal to the "local slope"*. All positions in the text refer to source positions normal to the local slope.

Moving Source Arrays: For the moving source arrays such as pole-dipole, *depth information* is *excellent*, but width and attitude are difficult to define with any precision. For multiple sources within the resolution of the electrode geometry, positional information may be difficult to obtain in some instances. For this reason multiple effective spacings are employed.

The plotted position of the data *does not* represent the characteristics of the material immediately below the point of measurement, but of a complex volume between the potential electrode and its proximity to the current pole.

These arrays are materially influenced by near surface variations in oxidation and superficial cover, and of course, as their resolution and penetration are inter-related, an increase in one results in a decrease in the other.

Massive versus Disseminated Sources: It is worth noting in the context of interpretation that the IP effect is proportional to the *total surface area* of the chargeable material *presented*. Thus, *per volume*, fine grained material will cause a significantly larger induced polarization response than coarse grained material, and 'massive' chargeable material still less of a response. The substantial electrical induced polarization anomalies noted over 'massive' bodies are not due to the 'massive' sections of that body, but due to the disseminated sulphide halo that

surrounds them, and the partially oxidised section above them (which has the effect of *increasing* the total surface area of the sulphides by intergranular oxidation). These factors are important considerations in the study of the data in this report.

Survey Procedure

For the most part the survey employed large current dipoles of 800 metres to 1600 metres, always with a 20 metre potential dipole. Certain sections which were considered to have a horizontal to semi-horizontal strata were surveyed using a pole-dipole array with an "a" spacing of 20 metres and "n" values of 1 to 4 inclusive as this array is considered to couple best with horizontal bodies.

The line spacing is approximately 400 metres. The intermediate lines are due to be cut and surveyed in the 1976/77 season.

Gradient Data

Some twenty three current dipoles were employed as follows:

Current Dipole	Line	Co-ordinates
700W - 2300W on line 1	1	1550W - 1920W
	3	2950W - 3210W
800W - 2400W on line 3	1	10W - 810W
	3	1250W - 2090W
	5	1450W - 2270W

Current Dipole	Line	Co-ordinates
1600W - 3200W on line 3	1	750W - 1590W
	3	2050W - 3000W
	5	2210W - 3150W
800E - 800W on line 3	3	10W - 490W
	5	10W - 670W
0 - 1600W on line 3	3	450W - 1290W
	5	610W - 1510W
800W - 2400W on line 9	7	1150W - 2070W
	9	1180W - 2080W
	11	1110W - 2030W
1700W - 3300W on line 9	7	2030W - 3010W
	9	2180W - 3160W
	11	2550W - 2990W
1750W - 3350W on line 9	9	2020W - 2200W
	11	1910W - 2940W
1500W - 500E on line 13	11	10W - 590W
	13	10W - 370W
1500W - 00 on line 13	11	570W - 1210W
	13	310W - 1010W
600W - 2100W on line 13	13	1010W - 1820W
	15	150W - 970W
1500W - 3000W on line 13	13	1780W - 2850W
	15	920W - 1910W
200W - 600E on line 18	17	10W - 390W

Current Dipole	Line	Co-ordinates
200E - 600W on line 18	17	330W - 770W
	19	10W - 410W
200W - 800W on line 18	17	730W - 970W
	19	390W - 630W
600W - 1400W on line 18	17	1130W - 1550W
	19	750W - 1190W
200E - 1400W on line 18	17	730W - 950W
	19	410W - 570W
200W - 1000W on line 18	17	950W - 1170W
1000W - 1800W on line 18	17	1530W - 1820W
	19	1190W - 1470W
200W - 1000W on line 19	19	550W - 810W
1000W - 100W on line 20	21	10W - 510W
1400W - 600W on line 20	21	490W - 910W
1800W - 1000W on line 20	21	890W - 1110W

Pole-Dipole Data

The sections of lines surveyed were as follows:

Line	Co-ordinates
5	3100W - 3390W
7	10E - 1260W
7	2940W - 3330W
9	10W - 1240W
9	3020W - 3250W

Line	Co-ordinates
11	10E - 350W
11	2940W - 3270W
13	2760W - 3030W
15	10E - 200W
15	1820W - 2070W
17	10E - 700W

LINE BY LINE DESCRIPTION

Due to the very wide 400 metre spacing between lines, no correlation between lines is really possible. Therefore a line by line description is the only meaningful method.

A *General Comment* describes the main features of the line as a whole, and *Detailed Comments* that follow will describe each of the induced polarization anomalies in detail.

In order to facilitate the description of each anomaly, the following shorthand code has been adopted:

F/T: From/to

C: Centre(s)

A/B: Anomaly (in milliseconds) against background (in milliseconds)

RC: Resistivity contrast against background in % of background (0= no change)

M: Magnetic correlation in gammas with respect to background

D: Interpreted maximum depth in metres respectively, with reference to C above.

Each anomaly has a reference number which refers to the original exaggerated data plots held in Sydney.

LINE 1

General Comment: To the east of about 875W, the background chargeability is about 20 millisecond, while to the west of this the background remains between 12 and 14 milliseconds. This *suggests* a rock sequence change; if so, the magnetic field and resistivity data do not reflect this change.

East of 260W the chargeability level rises to about 26 milliseconds to the end of the line at 00. The background resistivities remain a low 150 ohm-metres (± 50). This separate zone is probably a distinct rock unit, being conductive and containing fairly evenly distributed chargeable material such as sulphides and/or graphite.

The resistivity between about 1400W and 500W remains at about 800 ±200 ohm-metres. To the east and west of this point, resistivity backgrounds become about 300 ohm-metres ± 100 ohm-metres. These gross changes may also reflect rock type changes, but are not reflected in either the proton precession magnetics or chargeability data.

DETAILED COMMENTS

#001/2: F/T:360W-470W C:370W, 430W A/B:6/20, 6/20 RC: 0, 20%
M:0, 0 D:30M, 60M (?)

These are relatively minor responses.

#003/5: F/T:620W-760W C:650W, 710W, 745W A/B:8/20, 20/20, 12/20
RC:0, 50%, 250% M:0, 0, 0 D:60M, 30M, 35M

Disseminated sulphides and/or graphite lenses could cause these responses.

#006/7: F/T:780W-850W C:800W, 840W A/B:20/20, 28/20 RC:0, 60%
M:0, 0 D:42M, 35M

These essentially disseminated sulphide or graphitic sources are considered to be narrow, especially the response at 840W which is somewhat conductive.

#008: F/T:980W-1010W C:990W A/B:16/14 RC: 0 M:0 D:20M

This narrow source, interpreted as being from disseminated sulphide and/or graphite, has a profile shape which suggests a westerly dip.

#009/10: F/T:1050W-1100W C:1062W, 1090W A/B:11/14, 13/14
RC:0, 0 M:0, 0 D:20M, 20M

Interpreted source is two narrow chargeable horizons at less than the minimum dipole (20 metres).

#011: F/T: - C:1150W A/B:8/14 RC:0 M:0 D:20M

Narrow disseminated sulphide/graphite source at a shallow depth is interpreted for this response.

#012/14: F/T:1230W-1360W C:1250W, 1310W, 1350W A/B:12/14, 13/14, 10/14 RC:200%, 0, 0 M:0, 0, 0 D:?, ?, 15M

A multiplicity of narrow, on or near surface, disseminated sulphide/graphite sources are interpreted over this section.

#015: F/T: - C:1405W A/B:8/14 RC:0 M:0 D:30M

Disseminated sulphide and/or graphite over 20 metres in width and possibly on or near surface, is the interpreted source. The slight asymmetry *suggests* an east dip.

#016: F/T:1480W-1520W C:1500W A/B:16/14 RC:50% M:0 D:40 M

The source is interpreted as being a narrow, relatively conductive zone probably surrounded by disseminated sulphides and/or graphite. The asymmetry of the anomaly form *suggests* an east dip to the causative mineralisation.

#017: F/T:1590W-1660W C:1610W RC:200% M:0 D:40M

Disseminated sulphide/graphite within a *resistive* host is the interpreted source.

#018/19: F/T:1700W-1880W C:1710W, 1765W A/B:8/14, 11/14
RC: 0; 25% M:0, 0 D:20M, 20M

The most conductive section which has an apparent resistivity of *less than* 70 ohm-metres and whose width is certainly *less than* the dipole used (namely 20 metres) is centred *between* the two chargeability peaks at 1710W and 1765W. The interpretation for this section could be more "massive" or/and coarse grained sulphides/graphite centred at 1735W surrounded by disseminated material.

#020: F/T:1800W-1830W C:1810W A/B:8/14 RC:0 M:0 D:35M

Disseminated sulphide/graphite over 20 metres in width is the interpreted source for this response.

#021: F/T:1880W-1905W C:1890W A/B:28/14 RC:35% M:0 D:33M

Low *apparent* resistivities of 80 ohm-metres are accompanied by high chargeabilities. The source is a relatively conductive and chargeable zone surrounded by disseminated sulphides and graphite.

LINE 3

General Comment: The line can be divided into a number of sections as follows:

00 - 920W Apparent resistivities remain between 400 and 1000 ohm-metres with the background chargeability being about 24

milliseconds with a large number of wide to narrow chargeabilities superimposed thereon, most of which show little associated change in apparent resistivity.

920W - 1180W Apparent resistivities vary about the 1000 ohm-metres mark, while chargeability base level changes from 22 milliseconds at 920W to 12 milliseconds at 1100W with one narrow chargeable source superimposed thereon.

1180W - 2180W Apparent resistivity base level remains between 500 and 1100 ohm-metres while chargeability base level remains at about 22 milliseconds with large numbers of chargeability anomalies superimposed thereon, most of which show some depression in resistivity base level. A very sharp contact with the next section to the west is seen as indicated by a five fold increase in apparent resistivity and a characteristic decrease in chargeability to as low as 4 milliseconds.

2180W - 2480W Four to five fold increases in apparent resistivity on both the eastern and western boundaries of the section to 800-900 ohm-metresm with relatively low resistivities of 200 ohm-metres in the centre. A gradual increase in background chargeability from 8 milliseconds at 2200W to 22 milliseconds at 2400W with very minor anomalies superimposed thereon.

There is some suggestion that this section is the mirror image

of that described above between 920W and 1180W.

2480W - 3070W Low apparent resistivities of about 250 ohm-metres are background over this section, while 20 - 22 milliseconds background chargeabilities have a number of substantial induced polarization anomalies superimposed on them, a number of which show marked depressions in apparent resistivity.

3070W - 3200W (end of line) While no change in the low 180 - 200 ohm-metres background resistivity observed over the boundary, the background chargeability falls sharply at 3070W to 6-8 milliseconds.

All the above units represent significant changes in geophysical properties. Therefore, it is considered that all the above units represent discernible rock type changes.

DETAILED COMMENTS

#022: F/T:020W-088W C:050W A/B: 24/22 RC:45% M:0 D:55M

Disseminated graphite and/or sulphides within a slightly more conductive unit is the source.

#023/4: F/T:180W-340W C:270W, 300W A/B:19/25, 17/25 RC:0, 0
M:0, 0 D:55M(?), 30M(?)

Within a broad chargeable section, probably due to multiple

sources, two anomalies stand out. All are due to disseminated material contained within a host which really shows no contrast with the enclosing rocks.

#025: F/T:420W-460W C:440W A/B:5/30 RC:200% M:0 D:35M

This minor response is again considered to be disseminated sulphide/graphite material within a host which is relatively resistive with respect to the enclosing rock types.

#026/8: F/T:480W-600W C:498W, 530W, 585W A/B:9/24, 10/24, 3/24
RC:250%, 350%, 0 M:0, 0, 0 D:25M, 50M, 20M

These three relatively moderate responses are due to disseminated sulphide/graphite within resistive sources - particularly #027.

#029: F/T:622W-698W C: ? A/B:8/24 RC:150% M:0 D:20M

This broad response from a resistive source is due to disseminated material. The source is shallow, perhaps on surface.

#030: F/T:728W-762W C:750W A/B:12/24 RC:75% M:0 D:30M

Disseminated material over a width of about 20 metres is the interpreted source.

#031: F/T:796W-830W C:812W A/B:8/24 RC:0 M:0 D:30M

This small response is again interpreted as disseminated sulphide and/or graphite.

#032/3: F/T:858W-920W C:872W, 902W A/B:7/24, 3½/24 RC:40%, 50% M:0,0, D:30M, 15M

These somewhat more conductive chargeability responses are interpreted as variations of chargeable material with rock type.

#034: F/T:1042W-1062W C:1050W A/B:19/16 RC:70% M:0 D:20M

The substantial but narrow (less than 20 metres) response is associated with a 30% drop in background resistivity to 700 ohm-metres. Disseminated sulphide/graphite is the suggested source.

#035/6: F/T:1140W-1180W C:1152W, 1170W A/B:3/22, 19/22 RC:0, 40% M:0, 0 D: ?, 20M

While #035 is an insignificant response, the substantial narrow, shallow response at 1170W comes from a disseminated graphite/ sulphide host within a more conductive host. The maximum width of the zone is 10 metres.

#037/8: F/T:1342W-1440W C:1360W, 1400W A/B:13½/22, 28/22 RC:0, 45% M:0, 0 D:20M, 50M

#037 is relatively minor, but the substantial anomaly #038 has a conductive host. The 300 ohm-metre apparent resistivities still infer a disseminated or at least if massive, an electrically discontinuous source.

#039/41: F/T:1500W-1675W C:1514W, 1542W, 1650W A/B:17/22, 11/22 13½/22 RC:50%, 0, 150%M:0, 0, 0 D:25M, ?, 30M

All three anomalies lie within a locally higher background (26-27 milliseconds), and in much lower apparent resistivities (350 versus 800 ohm-metres) than the enclosing rocks. Thus all three responses are probably disseminated sulphide and/or graphite within a more conductive rock unit.

#042: F/T: - C:1710W A/B:6/22 RC:110% M:0 D:25M

This is a very minor unit which could be due to the variations of chargeable material within the rock unit itself.

#043: F/T:1766W-1808W C:1784W A/B:8/22 RC:0 M:0 D:30M

Minor response from disseminated graphite/sulphide. Width - perhaps 20 metres.

#044: F/T:1840W-1860W C:1850W A/B:8/22 RC:0 M:0 D:20M

Very narrow (less than 10 metres) source on change in rock type. Disseminated sulphides/graphite the probable source.

#045: F/T:1880W-1936W C:1910W A/B:6/22 RC:300% M:0 D:50M

Broad disseminated sulphide and/or graphite source in a more resistive host is the source here.

#046/7: F/T:1962W-2000W C:1974W, 1988W A/B:14/22, 19/22
RC:130%, 0 M:0, 0 D:20M, 20M

These two extremely large chargeability anomalies are probably due to a more electrically continuous source centred at 1975W over the *smaller* chargeability but over the substantial *fall* in resistivity, while the disseminated source over the resistive section produces the large chargeability response. The width of the sources of each response is probably less than 10 metres.

#048/50: F/T:2034W-2175W, C:2060W, 2130W, 2166W A/B:22/15, 22/15 19/15 RC:0, 75%, 30% M:0, 0, 0 D:50M, 35M, 10M

These three truly substantial electrical induced polarization responses must be due to very considerable quantities of disseminated chargeable material over the entire section between 2034W and 2175W. The peaks really represent local concentrations.

#051/2: F/T:2500W-2630W C:2512W, 2605W A/B:9/24, 17/24 RC:0, 0 M:0, 0 D:25M, 50M

These two substantial anomalies are due to disseminated graphite and/or sulphides within a rock unit which shows a relatively low resistivity of 250 ohm-metres.

#053/4: F/T:2664W-2735W C:2675W, 2710W A/B:6/24, 14½/24
RC:150%, 0 M:0, 0 D:20M, 50M

These responses are associated with some increase in the apparent resistivity. Therefore the host material to chargeable disseminated

graphite and/or sulphides is more resistive.

#055/6: F/T:2800W-2855W C:2820W, 2842W A/B:16/23, 7/23
RC:45%, 0 M:0, 0 D:25M, 20M

These responses are almost certainly on surface and the 55% fall in apparent resistivity to 95 ohm-metres in the centre of the zone, understates the conductivity of the centre of this zone. A conductive core surrounded by disseminated chargeable material (graphite and/or sulphide) is the interpreted source.

#057/60: F/T:2880W-3063W C:2890W, 2940W, 3004W, 3052W A/B:4/20, 10/20, 4/20, 2/20 RC:0, 0, 0, 0 M:0, 0, 0, 0 D:15M, 30M, 35M, 15M

Within a broad zone from 2880W to 3063W which is itself twice normal background, a number of distinct peaks were located, the most significant of which is at 2940W. There is no real change in the low 250 ohm-metres apparent resistivity. The sources of these responses are considered to be greater segregations of sulphides and/or graphite within a unit which is highly chargeable.

LINE 5

General Comments: There are no magnetically responsive units on this line.

0 - 250W Over this section of the line, the apparent resistivities

remain above 1000 ohm-metres while the base level for chargeability is about 20 milliseconds. A number of substantial induced polarization responses were recorded from hosts which were only slightly more conductive than the enclosing rock units.

260W - 900W From east to west the apparent resistivities fall from about 800 ohm-metres to about 400 ohm-metres while the background chargeability remains a very high 30 ±2 milliseconds. There are no chargeability anomalies over this section *relative to* this background. It is suggested that the rocks which underlie this unit must carry a fairly uniform and high (say 1%) by volume sulphide and/or graphite. It should be noted that the more finely divided the chargeable material the greater per volume will be the induced polarization effect.

900W - 1040W A significant reduction in apparent resistivity to less than 100 ohm-metres is associated with a very highly chargeable zone described under anomalies #065 and #066 below.

1040W - 1880W Over this section the apparent resistivities are a fairly uniform 800±200 ohm-metres while the apparent chargeability level is about 22 milliseconds (when adjusted for electrode position). This is a section which shows few changes in chargeability and no significant anomalies were recorded.

1880W - 2820W Over this section resistivity increases unevenly

from 800 ohm-metres in the east to in excess of 2000 ohm-metres in the west, while chargeability shows a great variation. A number of moderate and large chargeabiltiy anomalies were defined.

2820W - 3400W After a rapid fall off in resistivity from in excess of 2000 ohm-metres at 2770W to 400 ohm-metres at 2900W, apparent resistivities remain between 400 and 800 ohm-metres. The chargeability background increases from about 10 milliseconds in the east to 22-24 milliseconds in the west.

The above sections are not as distinct as those delineated on the previously described lines. Also they show little to no correlation with Line 3.

DETAILED COMMENTS

#061/4: F/T:045W-220W C:60W, 110W, 150W, 200W A/B:13/20, 11/20, 11/20, 13/20 RC:0, 65%, 80%, 60% M:0, 0, 0, 0 D:20M, 20M, 20M 35M

All these responses show some reduction in the apparent resistivity level, however, the 500 - 1000 ohm-metres level certainly infers the source to be disseminated in nature.

#065: F/T:920W-955W C:940W A/B:8/30 RC:200% M:0 D:40M(?)

As this response is associated with high 600 ohm-metre resistivities, the source is considered to be disseminated graphite and/or sulphides

#066: F/T:970W-1030W C:990W A/B:36/20 RC:15% M:0 D:40-60M

This substantial 36 milliseconds anomaly is associated with a 95% fall in apparent resistivity to 80 ohm-metres. As the width of the conductive section is *less than* the potential dipole, namely, 20 metres, the *actual* resistivity is considerably less. Therefore the centre of the source could be "massive" graphite and/or sulphides, but is certainly surrounded by appreciable quantities of disseminated material.

#067: F/T:2085W-2115W C:2100W A/B:6/26 RC:0 M:0 D:35M

This relatively small response may be due to disseminated graphite and/or sulphides within a host which shows no conductive contrast with the adjoining rocks.

#068: F/T:2150W-2190W C:2170W A/B:8/26 RC:0 M:0 D:50M

Comments as per #067

#069: F/T: - C:2250W A/B:10/20 RC:0 M:0 D:30M

This response from a disseminated source either sulphides and/or graphite, is considered to be relatively narrow, certainly less than 20 metres.

#070/1: F/T:2420W-2525W C:2470W, 2515W A/B:18/18, 20/16
RC:60%, 30% M:0, 0 D:30M, 20M

The entire section between 2420W and 2525W can be considered to

be anomalous and the rock beneath contains of the order of 2% by volume of chargeable material. Two distinct peaks at 2470W and 2515W (and perhaps 2435W) show local segregations. The sources could be subsurface.

#072: F/T:2605W-2640W C:2630W A/B:20/14 RC:0 M:0 D:40M

This substantial above background response is from a disseminated source with apparently sharp contrast with the enclosing material. No increase in conductivity was noted across the anomaly. The asymmetry of form suggests an east dip to the source.

#073: F/T:2750W-2780W C:2770W A/B:6/20 RC:0 M:0 D:30M

Again a disseminated source is interpreted and like #072, an east dip is inferred by the asymmetry of the anomaly.

#074/7A: F/T:2800W-3390W C:2880W, 3020W, 3070W, 3130W, 3190W
A/B:6/22, 8/24,10/24, 12/24, 10/24 RC:0, 50%, 60%, 0, 0
M:0, 0, 0, 0, 0, D:20M, 70M, 70, 20M, 20M

All the above anomalies represent sources of variable quantities of chargeable material from essentially disseminated sulphide/ graphite within the rock unit below.

LINE ?

General Comment:

00 - 1560W Over this section the resistivity background remains

a high 1500 to 2000 ohm-metres, while the chargeability base level is between 10 and 12 milliseconds. This is relatively low by the standard seen on previous lines, also the apparent resistivity is relatively high in comparison with that observed on previous lines. A number of highly chargeable zones were located, all of which, to some degree, show a decrease in apparent resistivity over the zone.

1560W - 2400W Over this section, apparent resistivity backgrounds remain at about the 500 ohm-metre level while the background chargeability level is about 10 to 12 milliseconds. However, the *"average"* chargeability over this section is nearer 30 - 35 milliseconds, as a large number of highly anomalous chargeability zones occur.

2400W - 2800W While the apparent resistivity background increases to about 800 ohm-metres, the apparent chargeability background increases to 16 milliseconds. Almost the entire section is anomalously chargeable.

2800W - 3300W (end of line) The background resistivity increases to about 1600-2000 ohm-metres , while the background chargeability decreases to about 6 milliseconds. A number of chargeability zones occur within this section. In form and level, this section is similar to that observed between 00 and 1560W suggesting a similar geological unit over both sections.

Each of the above sections probably represents different geological

units, but it is not possible to guess what these in fact are.

DETAILED COMMENTS

#078: F/T:00-080W C:050W A/B:30/10 RC:5% M:0 D:>10M

The pole-dipole data shows this anomaly to be broad and perhaps sub-outcropping at about 050W. The source is disseminated sulphides and/or graphite for although the apparent resistivity falls to only 50% of background, the *absolute* resistivity of 200 ohm-metres is not sufficient to infer a truly conductive source. If, however, the material is "massive", but electrically discontinuous (e.g. Pb-Zn) this would be a typical signature.

#079: F/T: - C:260W A/B:8/10 RC:250% M:0 D:>20M

Disseminated chargeable material in a host relatively resistive to the enclosing rocks is the source of this response.

Between 460W and 660W, multiple sources occur, the largest two of which are #080 and #081

#080: F/T:440W-560W C:510W A/B:32/10 RC:30% M:0 D:60M

Although more conductive than the enclosing rocks by over three fold, the 600-700 ohm-metre resistivity remains too high for anything other than a disseminated source. The source increases in significance with depth.

#081: F/T:580W-640W C:610W A/B:50/10 RC:0.5% M:0 D:20M

The greater than 90% fall in apparent resistivity from about 2000 ohm-metres to about 150 ohm-metres probably *understates* the degree of conduction within the main source as the greatest conductivity is seen on the largest spacing which means that the source becomes *more conductive* with depth. Also the chargeability increases significantly with spacing therefore the chargeability of the source increases with depth as the overlying cover is penetrated. The source is interpreted as being semi-massive graphite and/or sulphides surrounded by an appreciable disseminated halo.

#082/6: F/T:900W-1180W C:*910W, 990W, 1030W, 1070W, 1150W A/B:22/10, 35/10, 35/10, 24/10, 16/10 RC:0, 50%, 0, 500% 60% M:0, 0, 0, 0, 0 D: 20M, 20M, 20M, 20M, 20M

*Interpreted position from pole-dipole. Over this 180 metre section, a number of individual sources were recorded within a generally chargeable section. The interpreted source positions are as above. All show increased chargeability with depth as spacing increases. All are interpreted as coming from essentially disseminated sources (graphite or sulphides).

#087/92: F/T:1500W-1870W C:1540W, 1630W, 1690W, 1770W, 1820W, 1850W A/B:18/10, 30/10, 30/10, 26/10, 22/10, 36/10 RC:300% 0, 0, 0, 0, 50% M:0, 0, 0, 0, 0, 0 D:ALL ABOUT 20M

The entire section between 1500W and 1870W remains above 28 - 30 milliseconds and is anomalous. The specific anomalies above

represent local concentrations of chargeable material within this unit. The interpreted sulphide and/or graphite content is of the order of 2% by volume over the entire section, however, if the material occurs as very fine grained material, considerably less by volume would be required.

Between 1930W and 2880W the average chargeability remains above 22 milliseconds. A large number of narrow, shallow, slightly higher than background responses occur, which represent local concentrations of chargeable material within this unit, but are not considered anomalies as such. The sources are considered to either outcrop or sub-outcrop. However, one truly anomalous zone was defined, namely #093.

#093: F/T - C:2390W A/B:35/16 RC:0.5% M:0 D:25M

This response occurs on the contact between a highly resistive (2000 ohm-metres) rock unit to the west and a less resistive (100 ohm-metres) unit to the east. The source has an *apparent* resistivity of less than 50 ohm-metres, but as the source width is almost certainly less than the dipole used, namely 20 metres, the *actual* resistivity must be very much less. Therefore, a "massive" source is very likely. The 55 milliseconds chargeability associated with this response infers a good disseminated halo around the body. A lack of *any* magnetic response infers that pyrrhotite or magnetite, if present, play little part in causative mineral assemblage. Sulphides and/or graphite are certainly the

source.

#094/5: F/T:2890W-3120W C:3000W, 3090W A/B:36/8, 32/8 RC:0, 90% M:0, 0 D:20M, 15M

These two large chargeability anomalies are contained within a generally higher zone of 12 milliseconds above the 6 - 8 millisecond background. The source centred at 3000W is probably of the order of 30 to 40 metres wide and is about 20 metres deep and of a disseminated nature, as the apparent resistivity reaches about 2000 ohm-metres. The anomaly at 3090W is due to a source at a depth of about 15 metres and may in part be "semi-massive" because the anomaly mainly comes from the disseminated halo. 1% - 2% sulphides and/or graphite are the source under the anomaly peaks.

LINE 9

General Comments: This line bears some similarities to the previously described line 7 some 400 metres to the south.

00 - 1450W The resistivity base level varies between 1000 and 2500 ohm-metres, while the chargeability background is about 10 milliseconds on which two zones carry multiple chargeable and conductive sources.

This section is the equivalent to 00 - 1560W on line 7 and reflects the same geological unit.

1450W - 2840W West of 2100W the apparent resistivity background is about 400 - 500 ohm-metres and east of that point is about 200 ohm-metres. Over-all the chargeability background can be considered to be about 16 to 18 milliseconds. A large number of substantial chargeability responses occur superimposed on this background.

This section is equivalent to the two sections 1560W-2400W and 2400W-2800W seen on line 7, with 7/2400W being equivalent to about 9/2100W.

2840W - 3300W After a sharp fall in chargeability at 2820W the background becomes 8-10 milliseconds, while the background resistivity remains about 300 ohm-metres in the east and 800 ohm-metres in the west. A number of chargeable and conductive sources occur on this line.

This section is similar to that seen on the western end of line 7 west of 2800W.

DETAILED COMMENTS

#096: F/T:100W-180W C:*150W A/B:45/10 RC:10% M:0 D:10M

**interpreted position from pole-dipole.* The minimum width of the source is interpreted to be of the order of 30 metres. The source is considered to be disseminated or electrically discontinuous

sulphides or graphite within a host conductive with respect to the enclosing rock unit. The sulphide/graphite % in the centre section of the source must be up to 2%-4% by volume depending on average grain size.

#097: F/T:240W-270W C:250W* A/B:42/10 RC:5%-10% M:0 D:20M

**Interpreted position from pole-dipole.* This response becomes more substantial with increasing electrode spacing inferring greater importance with depth as the overburden is penetrated. The source is considered to be essentially disseminated or electrically discontinuous graphite and/or sulphides. There is a possible east dip which may be shallow(?)

Between 900W and 1220W some three responses (#098/#100) were recorded. The interpreted characteristics from the pole-dipole data are as follows:

#098: F/T:900W-990W C:*950W SOURCE WIDTH:*50M A/B:40/10
RC:5% M:0 D:*30M

* *Interpreted from pole-dipole data.* This zone, in part, may have a massive or semi-massive section, but although the apparent resistivity goes down to 5% of the background, the still high absolute value of 130 ohm-metres infers a disseminated source. The width of the zone is interpreted as 30 to 50 metres. The form of the various anomalies caused by the multiple spacing, suggests a shallow east dip (??)

#099: F/T:1030W-1080W C:*1050W SOURCE WIDTH:*40M A/B:20/10
RC:0 M:0 D:20M

* *Interpreted from pole-dipole data.* The source of this reponse is disseminated sulphide and/or graphite in a resistive (1000 ohm-metres) source. The form of the multiple anomalies caused by the pole-dipole array *infer* a shallow east dip.

#100: F/T:? C:*1190W A/B:60/10 RC:0.6% M:0 D:*5M-10M

**Interpreted from pole-dipole data.* The narrow shallow zone causes over 100 millisecond anomalies on the larger spacings and so indicates the importance of this source with increasing depth. The truly massive fall in apparent resistivity to less than 50 ohm-metres indicates that the narrow centre section of the source is probably semi-massive to massive. An east dip is inferred.

Between 1450W and 1940W, the *entire* section remains about 35 milliseconds background. The individual peaks #101 to #106 at 1535W, 1580W, 1670W, 1765W, 1820W (minor) and 1875W respectively, represent local concentrations of chargeable material within this unit which can be considered anomalous. The form of the profile suggests *maximum* depths to source no greater than 20 metres in all cases, and the sources may in fact outcrop or sub-outcrop in most cases.

#107/8: F/T:2070W-2125W C:2090W, 2120W A/B:13/14, 22/14
RC:0, 40% M:0, 0 D:20M, 30M

Disseminated sulphides/graphite are the suggested source to these anomalies.

#109: F/T: - C:2220W A/B:12/16 RC:0 M:0 D:20M

The source is again disseminated sulphides or graphite. There is a *suggestion* of an east dip from the asymmetry of profile.

#110/1: F/T:2320W-2410W C:2330W, 2400W A/B:8/20,12/20 RC:0, 50% M:0, 0 D:20M, 20M

Disseminated chargeable material is the interpreted source.

#112/3: F/T:2620W-2690W C:2640W, 2680W A/B:25/22, 25/22 RC:40%, 40% M:0, 0 D:20M, 20M

Disseminated graphite/sulphide within this somewhat more conductive (260 ohm-metres) than background (900 ohm-metres) source, is the interpreted source. The profile form suggests an east dip to that source.

#114/6: F/T:2705W-2820W C:2720W, 2775W, 2800W A/B:17/12, 22/12 19/12 RC:0, 60%, 0 M:0, 0, 0 D:20M, 20M, 20M

Again disseminated chargeable material (graphite and/or sulphide) is the interpreted source.

#117: F/T:2895W-2940W C:2920W A/B:13/8 RC:60% M:0 D:30M

Disseminated sulphides/graphite is the interpreted source. An east dip to the source is possible.

#118/9: F/T:2980W-3100W C:3010W(?), 3060W A/B:14/12, 22/12
RC:25%, 15% M:0, 0 D:30M, 30M

The whole zone between 2980W and 3100W is absolutely chargeable therefore the rock unit itself contains anomalous chargeable material over the entire section.

#120/1: F/T:3160W TO THE WEST OF 3300W C:3200W, 3260W A/B:14/18
22/18 RC:0, 0 M:0, 0 D:20M, 20M

The entire section west of 3160W to the end of the line has anomalous chargeability of about 30 ±4 milliseconds within this 500-800 ohm-metre section. Two somewhat more chargeable peaks are interpreted as being due to concentrations of chargeable material in disseminated form.

LINE 11

General Comments: This is the first line on which significant changes in the total magnetic field were observed. Changes of up to 800 gammas above background were noted between 2500W and 2600W and are described in more detail below.

Only two divisions could be made in the line as follows:

00 - 1100W Over this section the background resistivities vary about 1000 ohm-metres while the background chargeabilities vary about the 14 millisecond mark. Superimposed on this section a number of highly chargeable and often conductive sources were

located in two zones. Without a doubt this section of the line is equivalent to 00 - 1450W on line 9, and in particular, the section 830-1100W on this line is equivalent to 1270W-1450W on the previous line.

1100W - 3300W (end of line) West of 1100W resistivities vary in a cyclical fashion from as low as 150 ohm-metres to 1000 ohm-metres, but at this stage it is not possible to correlate these with sections to the north and south due to the 400 metre spacing between lines. For the most part the background chargeability remains about 20 milliseconds or so.

Possible points of correlation between this and the previous lines are(i) large induced polarization responses from a relatively conductive source at 2640W (#112/3) may be equivalent to an even more substantial response at 2100W (#139/40)
(ii) also a quiet section of low chargeability between 2240W and 2320W on this line and 2420W to 2900W on line 9.

DETAILED COMMENTS

#122: F/T:00-080W C:*122W A/B:32/22 RC:30% M:0 D:20M

* *Interpreted from pole-dipole data.* This highly significant induced polarization response is interpreted as coming from essentially disseminated sulphide and/or graphite in a somewhat more conductive (200 ohm-metres) host than the more resistive

(800 ohm-metres) enclosing rocks.

A second smaller but similar zone was defined at 010W (#122A)

#123: F/T:140W-190W C:160W A/B:10/10 RC:0 M:0 D:20M

Disseminated sulphides and/or graphite within a resistive host is the interpreted source.

#124: F/T:250W-300W C:280W A/B:36/14 RC:20% M:0 D:30M

The whole 20 metres source width of the zone is both highly chargeable and conductive. The percentage sulphides and/or graphite suspected over this section is up to 2½%

#125/8: F/T:580W-830W C:610W, 710W, 750W, 810W A/B:48/14, 25/14 36/14, 18/14 RC:20%, (15%-15%), 70% M:0, 0, 0, 0 D:40M, 20M, 20M, 20M

The entire section between 580W and 830W is anomalously chargeable, the *average* chargeability being about 18 - 20 milliseconds above background, inferring a 1%-2% chargeable material content over the entire section, depending on grain size. The lowest apparent resistivity of about 100 ohm-metres (against a background of 1000 ohm-metres) was located at 730W with higher chargeability to the immediate east and west (#126 and #127 respectively). Thus the lowest apparent resistivity may represent a "more massive" section of sulphides and/or graphite.

Anomaly #125 has a narrow conductive section within the source where width is less than the 20 metre dipole employed. Thus the apparent resistivity recorded of 200 ohm-metres certainly *understates* the true conductivity of the source. Note that the chargeability response *extends beyond* the apparent resistivity low, thus perhaps a "more massive" section is surrounded by a disseminated halo.

All zones *may* outcrop or sub-outcrop.

#129/32: F/T:1080W-1250W C:1095W, 1130W, 1190W, 1235W A/B:12/18 20/18, 25/18, 20/18 RC:0, 0, 0, 35% M:0, 0, 0, 0 D:20M, 25M, 40M, 20M

The local anomalies #129/32 were identified *within* a section which is entirely chargeable, thus they represent local concentrations of sulphides within a rock unit entirely chargeable.

#133: F/T:1290W-1450W C:1310W A/B:22/18 RC:60% M:0 D:20M

Within a rock unit itself anomalously chargeable above background, a broad source some 30 metres wide and slightly conductive with respect to the enclosing rocks was located. The source is disseminated sulphides and/or graphite.

#134/7: F/T:1520W-1830W C:1530W, 1610W, 1715W, 1810W A/B:24/20, 18/20, 12/20, 42/20 RC:65%, 60%, 60%, 25% M:0, 0, 0, 0 D:20M, 30M, 30M, 20M

The most significant response within the chargeable zone between

1520W and 1830W were anomalies #134 and particularly #137 which reached over 64 milliseconds above the 22 millisecond background. Also the significant resistivity low of 150 ohm-metres (25% of background) confirms the source to be conductive with respect to the enclosing rocks.

#138/40: F/T:1990W-2130W C:(2030W), 2070W, 2110W A/B:-100/26, 40/16, 80/20 RC:15%, 15%, 15% M:0, 0, 0, D:30M, 30M, 30M,

These three anomalies are perhaps the most interesting feature observed on the present survey. They certainly represent very substantial quantities of disseminated chargeable material within a conductive host. The inferred quantity may be as high as 10% by volume over some section while *overall* 3%-5% is considered certain. These quantities appear to occur over the entire 80 metre section, inferring a whole rock unit to be so anomalously chargeable. The substantial negative response in #138 is a geometric effect which is difficult to interpret in detail, although substantial *internal, near-surface* polarization is inferred by it.

#141: F/T: - C:2220W A/B:20/4 RC:60% M:0 D:20M

Small disseminated sulphide (graphite) source fairly close to surface.

#142/3: F/T:2335W-2400W C:2350W, 2380W A/B:30/4, 12/14 RC:0,0

M:0, 0 D:20M, 20M

The absolute resistivities of 600-700 ohm-metres infer the source to be disseminated in nature.

#144/7: F/T:2450W-2920W C:2470W, 2670W, 2780W, 2845W A/B:8/26, 6/26, 33/26, 16/26, RC:0, 0, 0, 0 M:NOT DIRECT D:30M, 30M, 40M, 10M,

The source is considered to be disseminated chargeable material (graphite or sulphides) within the entire rock unit between 2450W and 2920W. The individual peaks above, represent concentrations within this unit whose chargeability is a high 26 milliseconds.

#148/50: F/T:2980W TO END OF LINE AT 3250W C:3000W, 3090W, 3240W A/B:22/10 40/10, 28/14 RC:20%, 30%, 5% M:0, 0, 0 D:20M, 20M, 20M

The entire section between 2980W and the end of the line at 3250W is anomalously chargeable. However, three distinct peaks were observed each of which shows a dramatic decrease in apparent resistivity inferring a conductive host to the mineralisation. The interpreted source therefore is disseminated and semi-interconnected sulphide and/or graphite.

LINE 13

General Comment: The major correlative feature between lines 11 and 13 is a magnetic response which infers a correlation between 2590W on line 11 and 2470W on line 13. In respect of chargeability

and apparent resistivity, the line shows no distinctive zoning as has been observed on lines 1 to 9.

DETAILED COMMENTS

Background chargeabilities between 00 and 780W remain about 30 milliseconds while resistivity varies from 150 ohm-metres to 1000 ohm-metres. Within this section a relatively minor chargeability response was defined.

#151: F/T:560W-600W C:580W A/B:10/30 RC:40% M:0 D:30M

The source is broad and somewhat more conductive than the enclosing rock units. However, the 200 ohm-metre resistivities infer a disseminated source.

#152/3: F/T:920W-990W C:935W, 980W A/B:12/18, 46/18 RC:50%, 35% M:0, 0 D:20M, 20M

These two narrow sources are interpreted as being due to near surface disseminated material within a slightly conductive host.

#154: F/T:1080W-1175W C:1120W A/B:20/22 RC:0 M:0 D:20M

Over the 90 metre section between 1080W and 1175W the apparent chargeability remains above 10 milliseconds above background, while a broad peak of 20 milliseconds above background was observed centred at about 1120W. This anomaly is due to disseminated

chargeable material perhaps graphite or sulphides of 1½%-1% by volume over the entire section.

#155: F/T: - C:1210W A/B:15/20 RC:60% M:0 D:20M

The source of both the conductivity and chargeability of this anomaly is much narrower than the potential dipole used. Therefore, the 100 ohm-metre resistivity certainly *understates* the degree of conductivity within the source. A narrow near surface conductive and chargeable body is the interpreted source.

#156/7: F/T:1300W-1460W C:1370W, 1450W A/B:20/12, 20/10 RC:50% 70% M:0, 0 D:20M, 20M

The entire section between 1300W and 1460W is 20 milliseconds above background. The two peaks defined, merely show segregations of chargeable material above the average for the unit. The entire unit is considered to contain 1% sulphide and/or graphite equivalent by volume

#158: F/T: - C:1550W A/B:24/10 RC:70% (40%) M:0 D:20M

This anomaly is characteristic of a narrow less than 10 metres wide source, which in part is more conductive than the enclosing rock units. The source may sub-outcrop. The lower chargeabilities over the more conductive portion at 1570W may be due to more conductive material presenting a lesser surface area for the IP phenomenon to occur.

#159/60: F/T:1650W-1760W C:1680W, 1730W A/B:15/12, 17/12 RC:40%, 70% M:0, 250γ(?) D:25M, 30M

The background chargeabilities of 12 milliseconds were observed over the entire section. As the apparent resistivities remain a high 250 ohm-metres in spite of a reduction against the higher 500-800 ohm-metres background, the source is considered to be disseminated in nature. #160 has a magnetic response of 250γ associated with it, which infers the presence of pyrrhotite and/or magnetite. The magnetic response itself indicates, however, that the pyrrhotite and/or magnetite itself cannot be the cause of the anomaly.

#161/3: F/T:1810W-1960W C:1850W, 1910W, 1950W A/B:27/10, 25/10, 25/10 RC: 0, 0, 0 M:0, 0, 0 D:30M, 25M, 25M,

This response is considered to correlate to anomalies #138-140 on line 11. The entire section between 1810W and 1960W over 150 metres wide, is 20 milliseconds above background, inferring a sulphide or sulphide equivalent of about 1% by volume in disseminated form. Resistivities remain a relatively high 800-1000 ohm-metres.

#164: Between 2060W and 2780W the entire section remains above 22 milliseconds and is not really anomalous. However, a small response of 2 - 6 milliseconds above background at 2400W correlates with #144 on line 11 *providing* the magnetic 'marker' at 2470W is a valid correlative between lines 11 and 13.

#165/7: F/T:2600W-2700W C:2610W, 2650W, 2690W A/B:10/26, 16/26, 30/24 RC:0, 0, 0 M:0, 0, 0 D:20M, 20M, 20M

A series of three chargeable responses of increasing importance from east to west are due to sub-cropping disseminated sulphides or graphite sources. The correlation between anomalies on lines 11 and 13 are #145 ≡ #165 #146 ≡ #167 respectively, *providing* the magnetic marker is correct.

#168: F/T: - C:2765W A/B:18/20 RC:(SEE BELOW) M:0 D:20M

The disseminated source lies on the contact between two rock units of quite different apparent resistivity. To the west the apparent resistivity is a high 4000 ohm-metres (granite ?), while to the east the resistivity is about 800 ohm-metres. This anomaly may be the correlative of that observed on line 11 at 3000W (#148).

#169: F/T:2900W-2990W C:*2950W A/B:34/16 RC:15% M:+100γ D:30M

* *Interpreted from pole-dipole data.* This anomaly has a broad source of the order of 40 metres in width. The very significant reduction in apparent resistivity from 2000 ohm-metres to 150 ohm-metres over the source shows it to be conductive. However, the material causing the induced polarization anomaly is still of a disseminated, or if massive, electrically discontinuous nature. The associated 100γ magnetic response infers the presence of magnetite and/or pyrrhotite, *but* this could only account for a minor proportion of the anomaly observed.

LINE 15

General Comment: No clear correlation can be seen between lines 15 and 13. This line differs fundamentally from lines 1 to 13 inclusive in that substantial magnetic field distortion occurs between 950W and 1600W, inferring the presence of magnetite and/or pyrrhotite. For the most part there is a general correlation between increased magnetic field and increased apparent resistivity, indicating that the magnetic material is of a disseminated nature. One isolated case was where increased chargeability coincided with increased magnetic field.

DETAILED COMMENTS

#170: F/T:060W-120W C:080W A/B:70/30 RC:60% M:0 D:20M

The 180 ohm-metres resistivities coincident with the substantial 100 millisecond anomaly, infers a disseminated source of up to 5% by volume over the entire interpreted source width of 20 to 25 metres. Although the apparent resistivity shows a 60% drop, and the host is conductive with respect to the enclosing rocks, the source *is not* massive. The anomaly becomes greater in magnitude with depth.

#171: F/T:160W-200W C:170W A/B:19/22 RC:80% M:0 D:20M

A shallow, narrow, disseminated sulphide and/or graphite source is the interpreted cause of this anomaly.

#172: F/T:270W-310W C:290W A/B:31/21 RC:80% M:0 D:30M

This source is over 25 metres in width and conductive with respect to the enclosing rocks. The most conductive section occurs at 280W where an apparent resistivity of 180 ohm-metres was recorded. As the source of the *conductive* section is appreciably narrower than the dipole of 20 metres, it grossly understates the conductivity of that section. Therefore a massive or semi-massive *'core' may* occur at the centre of this broadly disseminated zone.

#173: F/T:490W-525W C:510W A/B:10/20 RC:200% M:0 D:30M

A disseminated graphite/sulphide from within a host *resistive* with respect to the enclosing rocks.

#174: F/T: - C:570W A/B:7/20 RC:80% M:0 D:10M(?)

Very narrow (>10metres) disseminated source at or near surface is the interpreted source.

#175/8: F/T:600W-740W C:610W, 645W 690W, 720W A/B:6/20, 12/20, 14/20, 9/20 RC:0, 0, (40%-40%) M:0, 0, 0, 0 D:20M, 20M, 20M, 20M

The anomalous chargeability was recorded over the entire section between 600W and 740W. The peaks recorded above are concentrations of the disseminated causative chargeable material.

#179: F/T: - C:790W A/B: 6/18 RC:250% M:0 D:25M

Disseminated sulphides within a host *resistive* (1000 ohm-metres) with respect to the enclosing material (500 ohm-metres) is the source of this anomaly.

#180: F/T:895W-920W C:910W A/B:13/14 RC:80% M:0 D:20M

Although the source is narrow as seen on the apparent resistivity profile and is conductive, it is nevertheless considered that the causative material is disseminated. The width of the disseminated, more resistive section is no greater than 10 metres, and the maximum depth 20 metres, but the source probably subcrops. An east dip is inferred.

#181: F/T:1130W-1170W C:1150W A/B:10/14 RC:300% M:400γ-500γ (SEE BELOW) D:40M

The source is certainly disseminated sulphides/graphite within a *resistive* (1800 ohm-metres) source with respect to the enclosing (800 ohm-metres) rocks. Either side of the chargeable response, 400γ-500γ above background magnetic responses were recorded, which infer the presence of magnetite and/or pyrrhotite. But these alone would not be the cause of the responses observed on this line. The asymmetry of the form of the chargeability profile infers a moderate *east* dip.

#182: F/T:1230W-1260W C:1240W A/B:4/14 RC:250% M:350γ-400γ D:25M

This small 4 millisecond response coincides with increased

magnetic field of 350γ-400γ *and* a 250% increase in apparent resistivity. Thus the source is either magnetite and/or pyrrhotite in the main, in disseminated form and in a resistive source.

#183/4: Small increases due to slightly higher than background were noted at 1310W and at 1410W. The entire section between about 1200W and 1540W is anomalous and coincides with a broad magnetic high which reaches a peak of 400γ at 1400W. The form of the resistivity increase over the section coincides with that of the magnetics. Thus the rock unit producing these anomalies is both resistive and contains disseminated magnetite.

#185/7: F/T:1680W-1820W C:1690W, 1730W, 1790W A/B:7/20, 11/20, 9/20 RC:0, 50%, 0 M:0, 0, 0 D:20M, 20M, 20M

Broad disseminated sulphide and/or graphite source within a slightly more conductive rock unit than background, is the interpreted source. The absence of any appreciable magnetic signature infers no magnetite or no appreciable quantities of pyrrhotite to contribute to the source.

#188: F/T: - C:1970W A/B:5/10 RC:1000% M:+150γ D:20M

The source of the minor anomaly is a narrow (10m?) source containing magnetite and/or pyrrhotite (with perhaps minor graphite and/or sulphides) in a highly resistive (4000 ohm-metres) source with respect to the enclosing material (magnetite in granite?)

#189: F/T:2040W - (OPEN) C:2070W(?) A/B:20/10 RC:40% M:0 D:20M

The source lies at 2070W or just west of this point and is highly chargeable, and probably subcrops. The source is disseminated in nature and is contained within a somewhat more conductive than background source.

LINE 17

General Comment: The apparent chargeability backgrounds remain at about 18 milliseconds over the entire line. The apparent resistivities on the other hand are a relatively high 1000 ohm-metres between 1800W (the end of the line) and 900W to 500 ohm-metres between 900W and 160W, east of which they gradually decrease to 100 ohm-metres at 00.

It is noticeable that the most resistive section between about 900W and 1520W *coincides with* the most distinct magnetic field areas. In general, the most resistive sections are always the most magnetic. Therefore the underlying rock unit is resistive and carries disseminated magnetite therein. The form of the magnetic responses *suggests* a series of moderate to shallow east dipping sources.

DETAILED COMMENTS

Between 00 and 120W the chargeabilities remain at about 20

milliseconds, while apparent resistivities decline from west to east. The underlying rock unit is therefore of high, but still normal, background.

#190: F/T: - C:190W A/B:48/10 RC:50% M:0 D:20M

This very substantial chargeability anomaly is interpreted as coming from a shallow (perhaps subcropping) source which is slightly more conductive than the enclosing material.

#191: F/T:230W-270W C:250W A/B:15/18 RC:60% M:0 D:30M

This broad relatively minor anomaly is due to minor segregations of disseminated chargeable material within the underlying rock unit.

#192/4: F/T:420W-500W C:430W, 460W, 490W A/B:6/20, 20/20, 8/20
RC:0%, 50%, 70% M:0, 0, 0 D:20M, 20M, 20M

The above three anomalous responses are caused by three narrow individual sources in close proximity. Although #193 and #194 are more conductive than the enclosing rocks, all three are caused by disseminated source material.

#195: F/T:550W-590W C:575W A/B:12/18 RC:60% M:0 D:20M

This broad source is due to disseminated chargeable material contained within a rock unit somewhat more conductive than the enclosing rock unit.

#196: F/T:630W-740W C:(640W, 670W, 710W) A/B:10/18 RC: UP TO 50% M:0 D:20M

Disseminated chargeable material of low order (½%) is the source under this anomaly.

#197: F/T:910W-950W C:930W A/B:6/16 RC:200% M:+300γ D:60M

This somewhat minor response is interpreted as being due to disseminated magnetite/pyrrhotite (with perhaps other chargeable material also) within a resistive rock unit.

#198: F/T:980W-1040W C:1035W A/B:UP TO 24/18 RC:80% M:0 D:20M

Disseminated graphite and/or sulphide is again the interpreted source for the anomaly.

#199/201: F/T:1210W-1310W C:1230W, 1270W, 1310W A/B:6/18, 8/18, 7/18 RC:80%, 80%, 80% M:0, 0, 0 D:20M, 20M, 20M

Disseminated sulphide and/or graphite are considered the *major* source of the response. No direct correlation with any local distortions in the magnetic field were observed, however, the higher magnetic *background* may lift the chargeability background if due to magnetite and/or pyrrhotite in parts.

#202: F/T:1720W TO 1820W OPEN TO WEST C:AT, OR WEST OF 1820W A/B:20/10+ RC:20% AT 1820W M:0 D:?

At the western end of this line a gradual increase in the chargeability

from the 18 millisecond background to in excess of 39 milliseconds from 1720W to 1820W. There is a sympathetic decrease in apparent resistivity to 300 ohm-metres from the background of 1300 ohm-metres or so. The source is obviously disseminated material which contributes to the conductivity of the rock unit. The magnetic field is quiet over the response, therefore the source is entirely disseminated sulphide or graphite, with magnetite (and/or pyrrhotite) making a contribution to the higher background chargeability only.

LINE 19

General Comment: A general increase in apparent resistivity from east to west was noted on this line as follows: between 00 and 570W the background remains at about 400 ohm-metres, between 570W and 1090W the resistivity background increases to about 1000 ohm-metres and west of 1090W the background resistivity is about 2000 ohm-metres.

On this line the apparent chargeability background remains at about the same level (18 to 20 milliseconds) as on the previous line, but on the whole the induced polarization responses are less numerous and are of smaller amplitude.

As observed on previous lines, the most magnetically disturbed areas can be generally correlated to the most resistive zones.

Therefore the characteristics of the causative unit are the magnetic disturbance and that it is both highly resistive and that the magnetite is disseminated throughout the unit.

Correlation between this line and line 17 is difficult, however, when line 18 is cut and surveyed, a fairly detailed correlation should be possible, both via the magnetic and resistivity data.

DETAILED COMMENTS

#203: F/T:050W-090W C:075W A/B:8/20 RC:0 M:0 D:40M

Disseminated sulphides or graphite are the interpreted source for this relatively minor response. The profile asymmetry *suggests* an east dip.

#204: F/T:160W-200W C:190W A/B:8/22 RC:0 M:+200γ D:20M

Normal variation of chargeable material within the host rock could cause this minor response. Also the increase of 200γ in the total magnetic field infers that either magnetite and/or pyrrhotite makes a contribution to the chargeability observed. However, the magnetite would not cause the anomaly itself. However, if the magnetic response was due to pyrrhotite then this material *could* account for the 8 millisecond chargeability response in itself.

#205: F/T:280W-320W C:300W A/B:8/20 RC:60% M:0 D:40M

Disseminated sulphide and/or graphite or variations within the chargeable minerals within the rock unit could account for this response.

#206: F/T:340W-490W C: - A/B:6/20 RC:0 M:NO DIRECT D:20M

Variations in chargeable material within this rock unit could cause slightly higher background levels.

#207: F/T: - C:570W A/B:6/20(?) RC:(SEE BELOW) M:0 D:20M

This small response is due to a disseminated sulphide/graphite source on or in close proximity to a major resistivity change centred at about 570W.

#208: F/T:780W-850W C:790W A/B:8/18 RC:110% M:+300γ D:20M

The source for this response is again disseminated chargeable material to which magnetite and/or pyrrhotite may make a contribution. The asymmetry of the profile suggests a west dip to the source.

#209: F/T:970W-1030W C:1000W A/B:9/20 RC:90% M:400γ AT 1000W D:40M

This anomaly is the most significant on this line in terms of amplitude and width. The source is again disseminated with the magnetic minerals causing the magnetic field disturbance contributing to this response - at least in part.

#210: F/T:1060W-1110W C:1070W A/B:7/19 RC:(SEE BELOW) M:0
D:30M?

This essentially disseminated response is centred over a marked change in apparent resistivity from 700 ohm-metres in the east to in excess of 4000 ohm-metres in the west. The source could be disseminated sulphides on, or in close proximity to, this contact. The absence of any magnetic response rules out magnetite as a major source, although pyrrhotite *could* be a contributor to the response recorded.

LINE 21

General Comment: On the extreme eastern section of the line between *040W and 00*, the resistivity is a very high 2000 ohm-metres after which it falls dramatically to as low as 70 ohm-metres.

Between *040W and 330W* the resistivity base level can be considered to be about 150 ohm-metres, although a range of between 70 and 400 ohm-metres was actually observed.

Over the eastern portion of the above section, east of 280W, the chargeability base level remained a relatively high 24 milliseconds.

From *330W to 640W* the apparent resistivity base level is about

600 ohm-metres with the chargeability base level being about 18 milliseconds throughout the section.

From *640W to the end of the line at 1120W*, the background apparent resistivity was about 1500 ohm-metres, while the apparent chargeability remained at about the 16 to 20 milliseconds level.

The magnetic field shows a gradual rise from background on either flank of the line to a broad relative 'high' of about 350γ above this level between 400W and 800W. The *impression* is of a deeper seated source than on the lines to the north.

DETAILED COMMENTS

#211: F/T:020W-060W C:040W A/B:11/24 RC:(SEE BELOW) M:RELATIVE LOW D:40M

This significant response of 11 milliseconds was observed centred over a most dramatic change in apparent resistivity from 2000 to 70 ohm-metres over 20 metres or so. The source must therefore be associated with chargeable material in close proximity to that contact. It is clear that *part of* the causative material may be conductive, but if so, the *major* properties of the anomaly observed come from a disseminated source. A slightly higher magnetic field over the resistive unit infers magnetite (or pyrrhotite) within that granite(?) unit.

#212: F/T:110W-150W C:130W A/B:6/24 RC:(SEE BELOW) M:0 D:30M

Between anomalies #211 and #212 a resistivity low of 100-70 ohm-metres exists. Anomaly #212 occurs on the western contact of this low and is of lower amplitude (6 milliseconds above 24 milliseconds) but of the *same form*. In the main, the response comes from essentially disseminated material.

#213: F/T: - C:340W A/B:10/14 RC:200% M:0 D:>10M

This striking 10 milliseconds anomaly is from a narrow (less than 10 metres wide) source which probably outcrops. The source is disseminated in nature.

#214: F/T:390W-435W C:410W A/B:8/16 RC:180% M:0 D:35M

The absolute apparent resistivity of 1000 ohm-metres associated with this 8 milliseconds 50% above background anomaly, infers a disseminated sulphide source.

#215: F/T:545W-580W C:560W A/B:4/20 RC:150% M:0 D:20M

This is a small anomaly from a minor concentration of disseminated chargeable material within a relatively resistive host (150% above background).

#216: F/T: - C:650W A/B:10/21 RC:200% M:0 D: >10M

A further striking anomaly from a resistive host containing disseminated chargeable material. The source is certainly

on, or a few metres only below, surface.

#217: F/T:710W-740W C:730W A/B:12/21 RC:0 M:RELATIVELY LOW D:20M

This, one of the most striking anomalies located on this line, has a disseminated sulphide or graphite source. The asymmetry of the profile form very strongly suggests an east dip to the causative material.

#218/20: F/T:860W-1050W C:900W, 975W, 1030W A/B:6/18, 10/18, 9/18 RC:0, 0, 200% M:0, 0, 100γ(BROAD) D:20M

This 180 metre wide zone of 1500 ohm-metres resistivity background, has a generally higher 6 to 8 millisecond chargeability background, inferring a disseminated chargeable source.

CONCLUSIONS

1 - The objective of the survey was to locate detailed features along lines rather than to provide interline correlation. Thus, as a vast amount of detailed information was obtained in this survey, the object can be deemed to have been achieved.

2 - On the whole, those areas showing the larger positive distortions in the earth's magnetic field can be correlated with the locally more resistive sections. Thus the magnetic

unit is also resistive.

3 - Rarely is any correlation seen between positive magnetic responses and above local background chargeability. Thus for the most part, magnetite makes little or no contribution when present and is the favoured source of the magnetic response. If pyrrhotite were the source of the magnetics, a larger quantity by volume would be required to create the magnetic distortions logged, and, by virtue of the greater induced polarization response from pyrrhotite, a positive correlation with chargeability would have been expected.

4 - By far the majority of anomalies defined in this survey were due to a disseminated source. The actual size of the anomaly as such is not necessarily a guide to quantity, as the IP response depends on the *total surface area presented* and thus the finer the grain size the greater the anomaly *per volume % sulphides*.

5 - Those anomalies which *may, in part*, be due to more massive sulphides or graphite sources, are as listed below. It should be noted that none of these has a direct associated magnetic signature.

Line 1 #018/9, #021

Line 3 #055

Line 5 #066

Line 7 #078, #081, #093, #095

Line 9 #099, #100, #115(?)

Line 11 #127/8, #125, #138/40

Line 13 #155

Line 15 #170

Line 17 -

Line 19 -

Line 21 #211, #212

6 - The general induced polarization and apparent resistivity characteristics observed over each unit are as follows:

Crimson Creek Formation: fairly resistive on the whole (1000 ohm-metres) and generally increase in resistivity from east to west. Background chargeability is generally a "high normal" of the order of 18 to 20 milliseconds. The anomalies located on this background are generally moderate (6-10 milliseconds) and are from non-conductive sources.

Renison Mine Sequence Equivalent: Generally less resistive than the Crimson Creek Formation (about 800 ohm-metres) and has a higher 22 milliseconds plus chargeability background. The induced polarization anomalies superimposed thereon are more substantive (to 15 milliseconds) and more extensive than within the Crimson Creek Formation.

Oonah Formation: Much less resistive than the above units (150 ohm-metres) with very much higher background chargeabilities of up to 35 milliseconds. The most substantial induced polarization anomalies (to 100 milliseconds) from conductive sources occur within this unit.

7 - The lines were too widely separated to be able to correlate between lines in detail, although where such correlations are inferred, reference is made to them in the text.

Should additional interspaced lines be surveyed next season as is presently programmed, it is anticipated that an excellent contour interpretation of chargeability and resistivity will represent the major and minor trends of the underlying rock units.

The Author looks forward to having detailed discussions in the near future on the data discussed in this report.

Respectfully submitted on behalf of:

SCINTREX PTY. LTD.

A.W. HOWLAND-ROSE, MSc,DIC,AMAusIMM,FGS.

GEOPHYSICIST

CRIMSON CREEK GRID

ARGENT DAM

EMU BAY RAILWAY

RENISON MINE GRID

MURCHISON HIGHWAY

LEGEND

Road

Mining Track

5 cm

RENISON LIMITED

E.L. 42/71

ARGENT GRID

GEOLOGIST	J.P. Kelleher	SCALE 1:5,000 METRES	
DRAUGHTSMAN	P.A. Carson	100 0 100 200	
DATE	31.12.75		
REVISIONS		DRAWING No	
	464066	1505	

1505

76-1159 Vol 2|2

Geochemistry
ppm
50 200
180
40 160
140
30 120
100
20 60
60
10 40
20
0 0

BASELINE

I.P Data
Resistivity in Ohm. Metres (----)
Chargeability in Milliseconds (——)
60
10000
7000 40
5000
3000 20
2000
1000 0

Total Magnetic Field (δ)
63000 65000
800 64000
(----) (——)
600 63000
Scale Scale
400 62000
Fine Coarse
200 61000
62000 60000

FINE SCALE

1000

Topography & Geology.
(m)
700
600
500
400
300
200
(m) Height above Sea Level + 2000m
100

Dunkley Tram
Start of Line 1
Creek Creek Creek Creek Creek Creek Creek Creek Creek Dunkley Tram

1800 1600 1400 1200 1000 800 600 400 200 0

RENISON LIMITED	DRAWN J P K
ARGENT GRID	TRACED K A C
LINE 1	DATE Jan '76
SECTIONS LOOKING N-W 1506	SCALE 1:5000
SCALE. 1:5000 METRES	DRAWING No.

I.P
Chargeability
gradient array
pole-dipole array
Resistivity
gradient array
x---x---x pole-dipole array (a = 20m, n=2)
I.P. Surveyed by SCINTREX (TAS - 032)

MAGNETICS
5000 δ Scale
1000 δ Scale

GEOCHEMISTRY
Sn
Cu
Pb
Zn
As
W

5 cm

76-1159 Vol 2/2
A64087

Geochemistry
p.p.m.

50 200
180
40 160
140
30 120
100
20 80
60
10 40
20
0 0

BASELINE

I.P. Data

Resistivity in Ohm-Metres (----)
Chargeability in Milliseconds (——)

10000 60
7000
5000 40
3000
2000 20
1000 0

Total Magnetic Field (δ)

63000 65000
800 64000
600 Scale (----) Scale (——) 63000
400 Fine Scale Coarse Scale 62000
200 61000
62000 60000

FINE SCALE

3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200 0

Topography & Geology.

Height above Sea Level + 2000 m (m)

700
600
500
400
300
200
100

Creek Creek Creek Creek Creek Road

3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200 0

RENISON LIMITED	DRAWN J.P.K.
ARGENT GRID	TRACED J.A.C.
LINE 3 1507	DATE Jan '76
SECTIONS LOOKING N-W	SCALE 1:5000
SCALE. 1:5000 METRES	DRAWING No.

100 0 100 200 300

I.P
Chargeability
gradient array
pole-dipole array
Resistivity
gradient array
pole-dipole array (a = 20m, n = 2)
I.P. Surveyed by SCINTREX (TAS - 032)

MAGNETICS
5000 δ Scale
1000 δ Scale

GEOCHEMISTRY
Sn
Cu
Pb
Zn
As
W.

5 cm

75-1159 Vol. 2/2

464068

Geochemistry
ppm
50 200
180
40 160
140
30 120
100
20 60
60
10 40
20
0 0

BASELINE

I.P. Data
Resistivity in Ohm-Metres (---)
Chargeability in Milliseconds (—)
60
8000
7000 40
5000
3000 20
2000
1000 0

Total Magnetic Field (δ)
63000 65000
800 64000
600 63000
Fine Scale (----)
Coarse Scale (—)
400 62000
200 61000
62000 60000

FINE SCALE

3000 2000 1000 0

Topography & Geology.
Height above Sea Level + 2000 m (m)
(m)
700
600
500
400
300
200
100

Creek Creek Creek Creek Road Road Creek Road

464069

3400 3200 3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200 0

RENISON LIMITED	DRAWN J P K
ARGENT GRID	TRACED K A C
LINE 5 1508	DATE Jan '76
SECTIONS LOOKING N-W	SCALE 1:5000
SCALE. 1:5000 METRES	DRAWING No.

I.P
Chargeability
—·—·— gradient array
—×—×— pole-dipole array
Resistivity
— — — gradient array
x— — —x— — —x pole-dipole array (a=20m, n=2)
I.P. Surveyed by SCINTREX (TAS-032)

MAGNETICS
5000 δ Scale
1000 δ Scale

GEOCHEMISTRY
Sn
Cu
Pb
Zn
As
W

5 cm

76-1159 Vol 2/2

Geochemistry

ppm

50 200
180
40 160
140
30 120
100
20 60
60
10 40
20
0 0

BASELINE

I.P. Data

Resistivity in Ohm - Metres (----)

Chargeability in Milliseconds (—)

10000 60
7000
5000 40
3000
2000 20
1000 0

Total Magnetic Field (δ)

63000 65000

800 (-----) 64000

600 Fine Scale 63000

Coarse Scale

400 62000

200 61000

62000 60000

FINE SCALE

5000 4000 3000 2000 1000 0

Topography & Geology.

Height above Sea Level + 2000 m (m)

700
600
500
400
300
200
100

Creek Creek Creek Creek Creek Road Road Creek Creek

5200 5000 4800 4600 4400 4200 4000 3800 3600 3400 3200 3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200 0

464070

RENISON LIMITED

ARGENT GRID

LINE 7

SECTIONS LOOKING N-W 1503

SCALE. 1:5000 METRES

100 0 100 200 300

DRAWN	J.P.K.
TRACED	J.A.C.
DATE	Feb '76
SCALE	1:5000
DRAWING No.	

I.P

Chargeability

— · — · — gradient array

— x — x — x pole-dipole array

Resistivity

— · — · — · — gradient array

x — — x — — x pole-dipole array (a=20m, n=2)

I.P. Surveyed by SCINTREX (TAS - 032)

MAGNETICS

5000 δ Scale

1000 δ Scale

GEOCHEMISTRY

Sn

Cu

Pb

Zn

As

W

5 cm

76-1159 Vol 2/2

BASELINE

Geochemistry
ppm
50 200
180
40 160
140
30 120
100
20 60
60
10 40
20
0 0

I.P. Data
Resistivity in Ohm - Metres (---)
Chargeability in Milliseconds (—)
60
40
20
0
10000
7000
5000
3000
2000
1000

Total Magnetic Field (δ)
63000 65000
800 64000
600 63000
Fine Scale (----) 400 62000
Coarse Scale (—) 200 61000
62000 60000

FINE SCALE

3600 3200 2800 2400 2000 1600 1200 1000 800 600 400 200 0

Topography & Geology.
Height above Sea Level x 2000 (m)
700
600
500
400
300
200
100

Creek Creek Creek Creek Creek Road Creek Creek Road

3200 3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200 0

464071

RENISON LIMITED	
ARGENT GRID LINE 9	
SECTIONS LOOKING N.W. 1510	
SCALE. 1:5000 METRES 100 0 100 200 300	

DRAWN	J.P.C.
TRACED	F.A.C.
DATE	Feb '76
SCALE	1:5000
DRAWING No.	

IP
Chargeability
gradient array
pole-dipole array
Resistivity
gradient array
pole-dipole array (a=20m, n=2)

MAGNETICS
5000 δ Scale
1000 δ Scale

GEOCHEMISTRY
Sn
Cu
Pb
Zn
As
W.

I.P. Surveyed by SCINTREX (TAS-032)

5 cm

76-1159 Vol. 2/2.

Geochemistry

p.p.m.

50 200
180
40 160
140
30 120
100
20 80
60
10 40
20
0 0

BASELINE

I.P. Data

Resistivity in Ohm-Metres (----)

Chargeability in Milliseconds (——)

10000 60
7000
5000 40
3000
2000 20
1000 0

Total Magnetic Field (γ)

63000 65000
800 64000
600 63000
Scale (----) Fine
Scale (——) Coarse
400 62000
200 61000
62000 60000

FINE SCALE

3000 2000 1000

Topography & Geology.

Height above Sea level x 2000 m

(m)

700
600
500
400
300
200
100

Creek Creek Road Creek & Road Creek Road

7200 3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200

464072

RENISON LIMITED

ARGENT GRID

LINE 11

SECTIONS LOOKING N.W 1511

SCALE. 1:5000 METRES

0 100 200 300

DRAWN	J.P.K.
TRACED	P.A.C.
DATE	Jan '76
SCALE	1:5000
DRAWING No.	

I.P

Chargeability
gradient array
pole-dipole array

Resistivity
gradient array
x---x---x pole-dipole array (a=20m, n=2)

I.P. Surveyed by SCINTREX (TAS - 032)

MAGNETICS

5000 γ Scale

1000 γ Scale

GEOCHEMISTRY

Sn
Cu
Pb
Zn
As
W

5 cm

76-1159 Vol 2k

Geochemistry
ppm
50 200
180
40 160
140
30 120
100
20 60
60
10 40
20
0 0

BASELINE

I.P. Data
Resistivity in Ohm-Metres (----)
Chargeability in milliseconds (—)
60
20000
40
3000
20
2000
1000 0

Total Magnetic Field (δ)
63000 65000
800 64000
600 63000
Scale (----) Fine
400 62000 Scale (—) Coarse
200 61000
62000 60000

SCALE

FINE SCALE

1000 2000 1000 0

Topography & Geology.
Height above Sea Level + 2000 m (m)
700
600
500
400
300
200
100

Creek Creek Creek Creek Road Road Creek Road Road Road Creek Creek Road in creek Creek Creek

3000 2800 2600 2400 2200 2000 1800 1600 1400 1200 1000 800 600 400 200 0

464073

RENISON LIMITED	
ARGENT GRID	
LINE 13 1512	
SECTIONS LOOKING N-W	
SCALE 1:5000 METRES	
DRAWN	J.P.K.
TRACED	K.A.C.
DATE	Jan '76
SCALE	1:5000
DRAWING No.	

I.P.
Chargeability
gradient array
x—x—x pole-dipole array
Resistivity
gradient array
x---x---x pole-dipole array (a=20m, n=2)
I.P. Surveyed by SCINTREX (TAS – 032)

MAGNETICS.
5000 δ Scale
1000 δ Scale

GEOCHEMISTRY.
Sn
Cu
Pb
Zn
As
W

5 cm

76-1159 Vol. 2/2

Geochemistry
ppm
50 200
40 160
30 120
20 80
10 40
0 0

BASELINE

I.P. Data
Resistivity in Ohm Metres (----)
Chargeability in Milliseconds (—)
10000 60
7000
5000 40
3000
2000 20
1000 0

Total Magnetic Field (δ)
63000 65000
800 64000
600 63000
Fine Scale (----) Coarse Scale (—)
400 62000
200 61000
62000 60000

FINE SCALE

2000 1800 1600 1400 1200 1000 800 600 400 200

Topography & Geology.
Height above Sea Level × 2000 m (ft) (m)
700
600
500
400
300
200
100

Creek Creek Creek Road Creek Road Road Road Road

464074

2000 1800 1600 1400 1200 1000 800 600 400 200

RENISON LIMITED	DRAWN J P K
ARGENT GRID	TRACED F A C
LINE 15 1513	DATE Jan '76
SECTIONS LOOKING N.W.	SCALE 1:5000
SCALE 1:5000 METRES	DRAWING No.

100 0 100 200 300

IP
Chargeability
gradient array
pole-dipole array
Resistivity
gradient array
pole-dipole array (a = 20m, n = 2)
I.P. Surveyed by SCINTREX (TAS - 032)

MAGNETICS
5000 δ Scale
1000 δ Scale

GEOCHEMISTRY
Sn
Cu
Pb
Zn
As
W

5 cm

76-1159 Vol. 2/R

Geochemistry
ppm
50 200
180
40 160
140
30 120
100
20 80
60
10 40
20
0 0

BASELINE

I.P. Data
Resistivity in Ohm metres (---)
Chargeability in Milliseconds (—)
10000 60
9000
8000
7000 40
6000
5000
4000 20
3000
2000
1000 0

Total Magnetic Field (δ)
63000 65000
800 64000
600 63000
Scale (----) Fine
Scale (—) Coarse
400 62000
200 61000
62000 60000

FINE SCALE

1000 0

Topography & Geology.
Height above Sea Level + 2000 ft (m)
700
600
500
400
300
200
100

Creek Creek Creek

1800 1600 1400 1200 1000 800 600 400 200 0

464075

5 cm

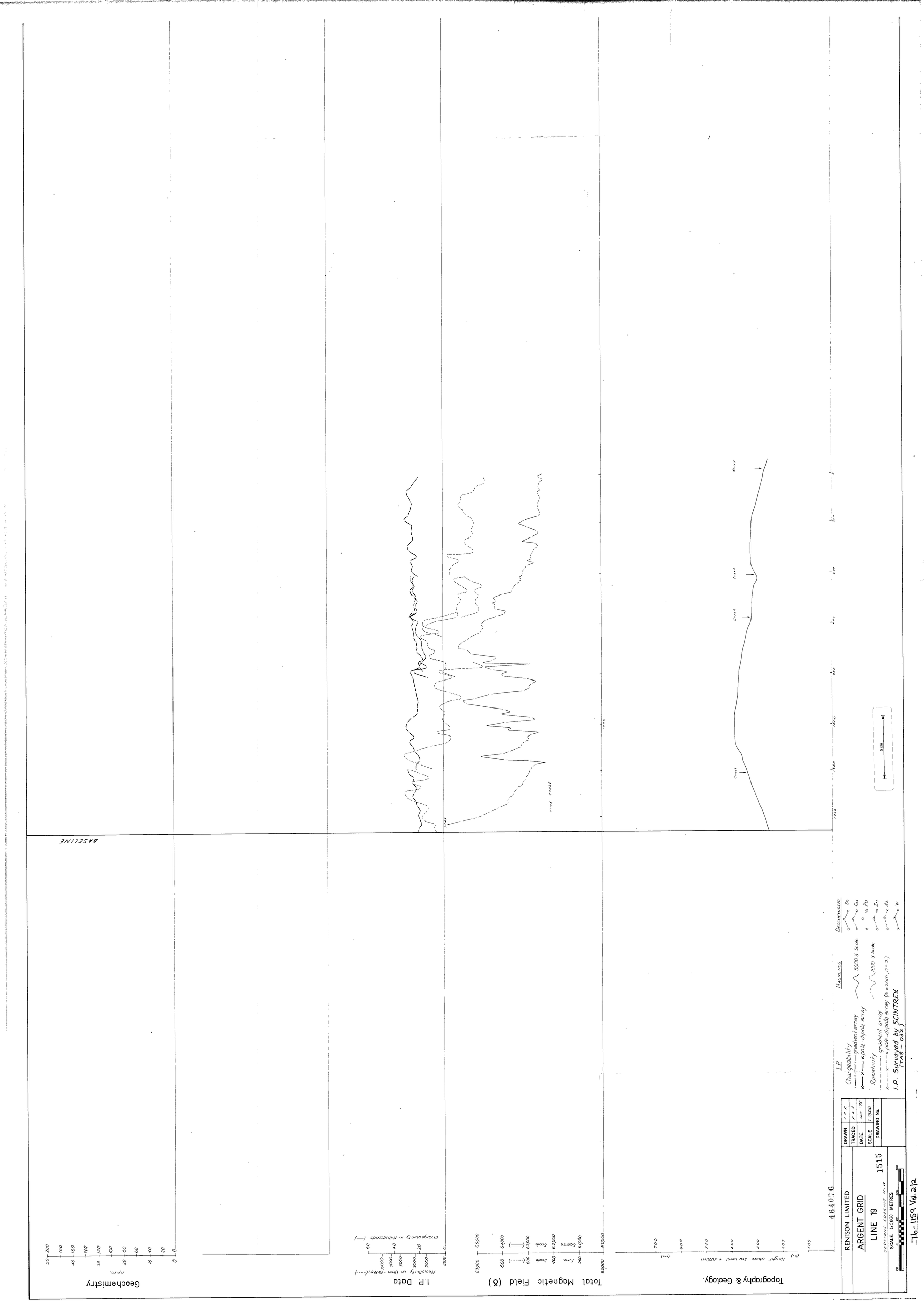
RENISON LIMITED	DRAWN: J P K
ARGENT GRID	TRACED: F A C
LINE 17 1514	DATE: Jan '76
SECTIONS LOOKING N-W	SCALE: 1:5000
SCALE. 1:5000 METRES	DRAWING No.

I.P
Chargeability
gradient array
x— x— x pole-dipole array
Resistivity
gradient array
x- - -x- - -x pole-dipole array (a=20m, n=2)
I.P. Surveyed by SCINTREX (TAS - 032)

MAGNETICS
5000 δ Scale
1000 δ Scale

GEOCHEMISTRY
Sn
Cu
Pb
Zn
As
W

76-1159 Vol 2/2


BASELINE
Geochemistry
ppm.
I.P. Data
Resistivity in Ohm-Metres (---)
Chargeability in milliseconds (—)
Total Magnetic Field (δ)
Topography & Geology.
Height above sea level + 2000m
LP
Chargeability
gradient array
pole-dipole array
Resistivity
gradient array
pole-dipole array (a = 20m, n = 2)
MAGNETICS
5000 γ Scale
1000 γ Scale
GEOCHEMISTRY
Sn
Cu
Pb
Zn
As
W
I.P. Surveyed by SCINTREX
(TAS - 032)
5 cm
RENISON LIMITED
ARGENT GRID
LINE 19
1515
DRAWN
TRACED
DATE
SCALE 1:5000
DRAWING No.
SCALE: 1:5000 METRES
-76-1159 Vol.2(2)

Geochemistry

ppm

50 200
40 160
30 120
20 80
10 40
0 0

BASELINE

I.P. Data

Resistivity in Ohm-Metres (---)

Chargeability in Milliseconds (—)

10000 60
7000 40
5000
3000 20
2000
1000 0

FINE SCALE

Total Magnetic Field (δ)

63000 65000
64000
600 63000
Fine Scale (----)
Coarse Scale (—)
400 62000
200 61000
62000 60000

1000

Topography & Geology.

Height above Sea Level x 2000 m (m)

700
600
500
400
300
200
100

464077

CLEAR

1000

1000 800 600 400 200 0

RENISON LIMITED	DRAWN: J P K
ARGENT GRID	TRACED: I A C
LINE 21	DATE: Jan '76
SECTIONS LOOKING N.W.	SCALE: 1:5000
SCALE 1:5000 METRES (100 0 100 200 300)	DRAWING No. 1516

I.P
Chargeability
— · — · — gradient array
x — x — x pole-dipole array
Resistivity
· · · · · · · · · gradient array
x- - -x- - -x pole-dipole array (a = 20m, n = 2)
I.P Surveyed by SCINTREX (TAS - 032)

MAGNETICS
5000 δ Scale
1000 δ Scale

GEOCHEMISTRY
Sn
Cu
Pb
Zn
As
W

5 cm

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