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MAJOR MINING LIMITED

EXPLORATION LICENCE 28/88 - ZEEHAN

ANNUAL REPORT FOR PERIOD 19TH MAY 1989* TO 31ST OCTOBER 1989

AMG REFERENCE POINTS ADDED

(* Date acquired from His Grace, The Most Noble, The Duke of Avram)

Major Mining Limited,
P.O. Box 510,
Rockdale NSW 2216

A. Howland-Rose
for Major Mining Limited
October, 1989

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INTRODUCTION

During the year, on 19th May, 1989, Major Mining Limited acquired the Exploration Licences EL 28/88, EL 3/89, EL 5/89, EL 13/89 (Zeehan) from His Grace, The Most Noble, the Duke of Avram. These licences have now been consolidated into one, namely, EL 28/88.

Since the acquisition, a preliminary investigatory geophysical survey was carried out over the exploration licence and over the Comstock lode in the adjacent exploration lease. These surveys are intended to act as pathfinder surveys for the summer exploration season which is to commence in November/December 1989.

EXPLORATION PHILOSOPHY

The main thrust of the company's exploration efforts will be directed to locating deposits of the 'Comstock Lode' type with the objective of exploiting their small to medium tonnage high grade deposits.

Geophysical methods will be employed to search for such deposits. Any significant anomalies will be further investigated by trenching and/or drilling.

The basis for the above approach is derived from the following information:

Geology

A thick sequence of Proterozoic sediments in the form of a complex anticlinorium is exposed in the Zeehan area. The sequence is predominantly Oonah quartzite. These sequences are followed by the Crimson Creek Formation and Dundas groups of sediments of Cambrian age. Sequences of Ordovician Gordon limestones followed.

Mineralisation

The Zeehan district has several distinct mineral deposit types:

Tin deposits occur within and in close proximity to the contact of the intrusive Devonian Heemskirk granite. The mineralisation consists of fissure veins and replacements of cassiterite-pyrrhotite-pyrite.

Lead-silver-zinc The bulk of lodes occur as fracture fillings having a north-north-west strike and are most often adjacent to west-north-west faults. While the actual tonnages of individual deposits were recorded as small (50,000-200,000t), the grades were extremely high, with combined lead-zinc grades well in excess of 20% being common, with high silver content (e.g. 12 oz/ton from the Spray Mine).

Zinc Carbonate hosted lead zone deposits which some workers have inferred could be similar to the Irish type deposits, are a legitimate target within the Gordon Limestone areas.

Mining History

The **Zeehan Field** was the scene of active mining during the period 1886 until the end of World War I. The chief mines were Silver Queen, Western and Oceana with many smaller deposits also being mined such as Comstock, Sylvesters, Tasmania, Swansea etc. The majority of production was silver and lead, with zinc not being able to be extracted from the ore. Production has been intermittent with the Oceana Mine within the Gordon Limestone closing in 1960.

The **Heemskirk Tin Field** has been worked from 1876 until prior to World War II. The main deposit was the Federation Mine, with numerous smaller deposits having been intermittently mined for the last 100 years.

Summary

1 The area is highly prospective for additional high grade zinc, lead, silver lode deposits of the Comstock type, and it is intended that geophysical methods will be applied to their discovery.

2 The Gordon Limestone areas will be explored for lead-zinc deposits of the "Irish"type, again using geophysical methods as the primary tool.

3 Further geological mapping of the southern margin of the Heemskirk Granite followed by geological and geophysical surveys over selected targets is programmed.

WORK CARRIED OUT DURING THE REPORTING PERIOD

During the reporting period (May to October, 1989), the work carried out by Major Mining Limited consisted of:

1) A study of the available data (which is continuing)
2) A geophysical survey over the Comstock Lode in the adjacent ML, and for 1000 metres east into EL 28/88.

Note: No details of work carried out to the date of transfer of leases is available to Major Mining Limited.

SURVEY DETAILS

The details of the results are herewith appended in a report prepared by Scintrex Pty. Ltd. on behalf of Major Mining Limited.

CONCLUSIONS AND RECOMMENDATIONS

Conclusions and recommendations are contained in the report referred to above.

PROPOSED FUTURE WORK

Further geophysical surveys are proposed for the licence area and will commence as early in the field season as possible. Self-potential will be used in areas having suitable conditions, and gradient array Electrical Induced Polarization in areas which are subject to water-logging and also for detailing self-potential anomalies.

It is proposed that the two self-potential anomalies located in the test survey should receive further attention, probably by trenching. However, this will be delayed until the additional geophysical work is assessed.

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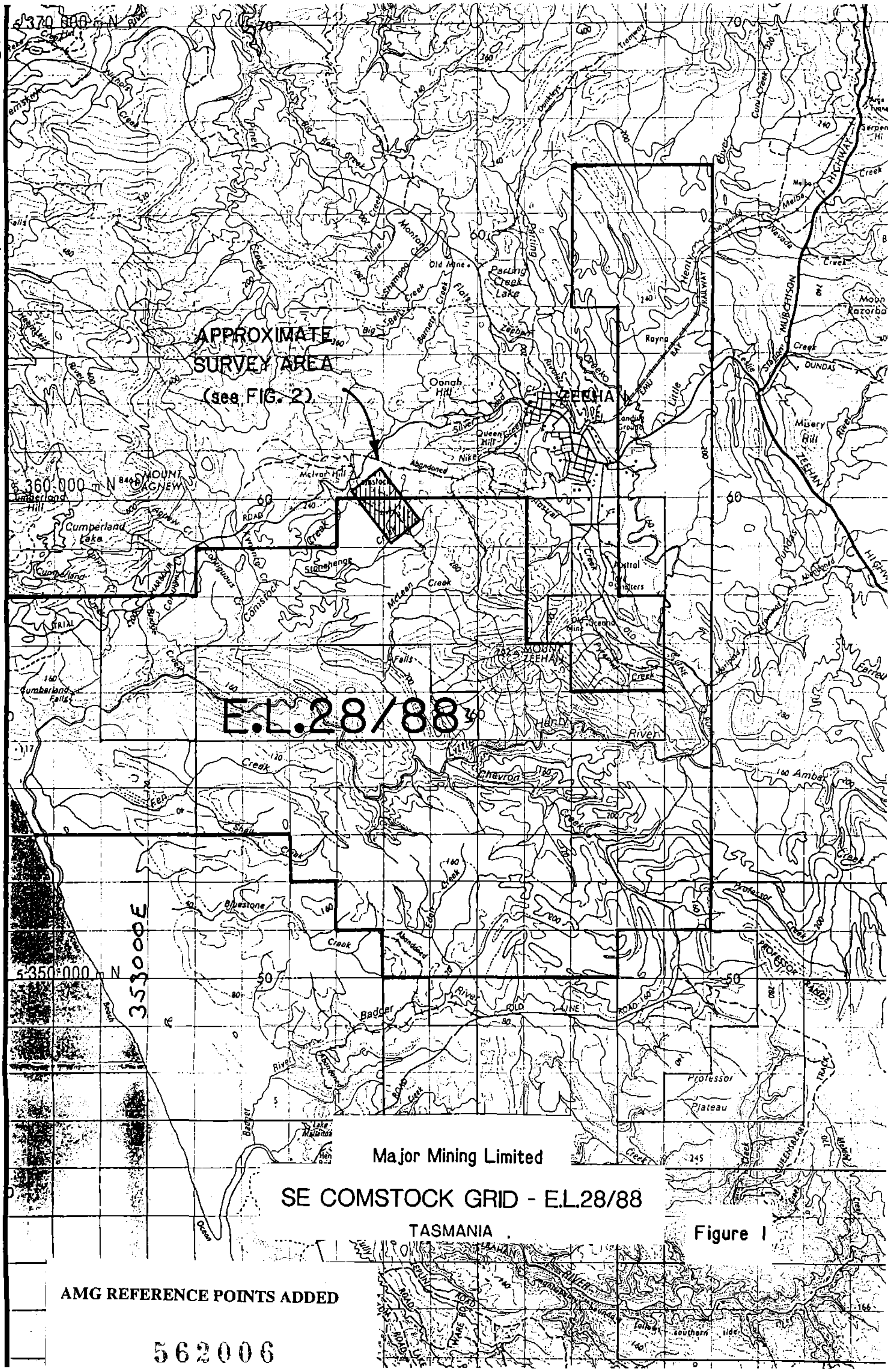

AMG REFERENCE POINTS ADDED

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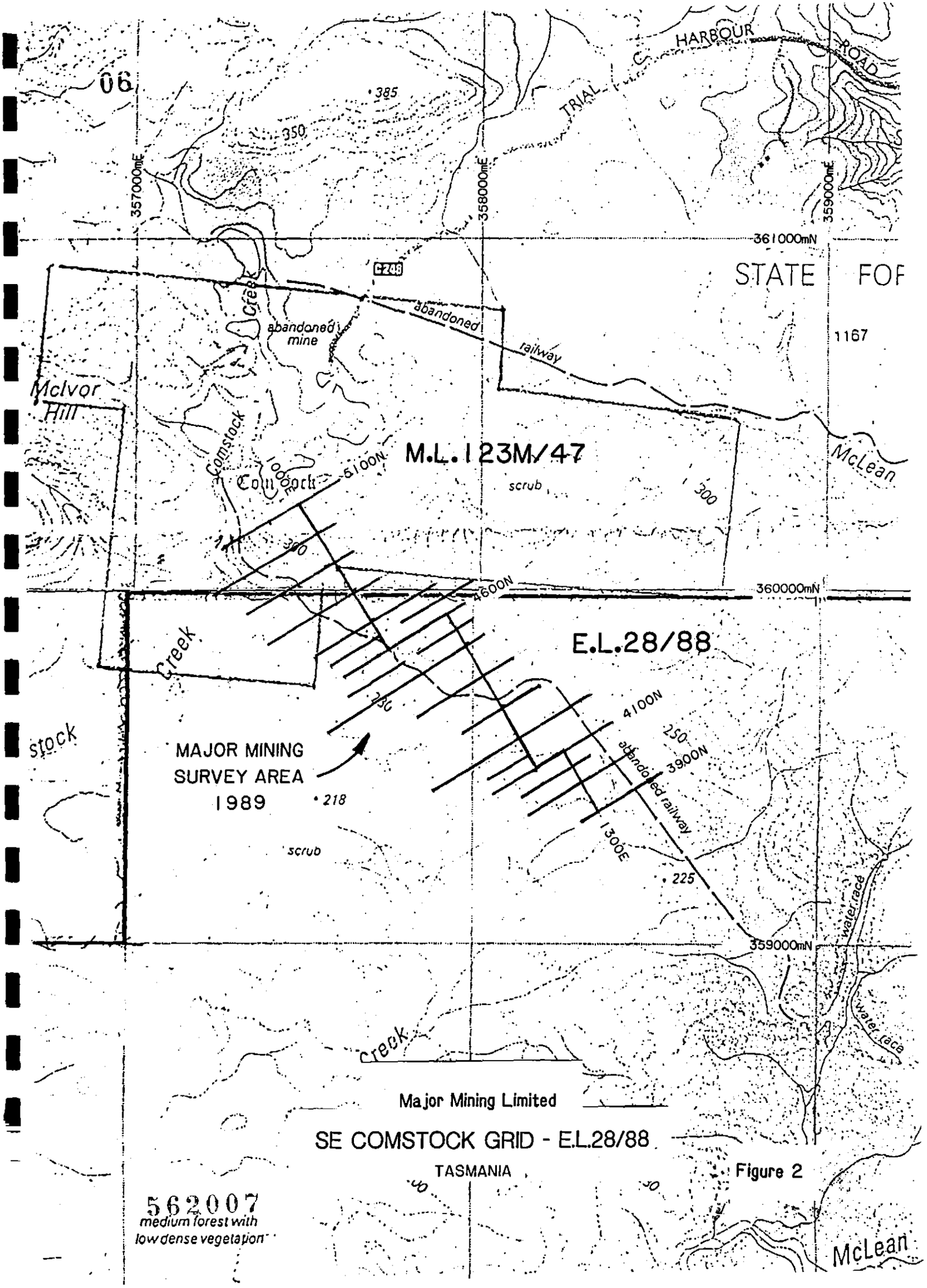

Major Mining Limited

SE COMSTOCK GRID - E.L.28/88

TASMANIA

Figure 2

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SCINTREX

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OPEN FILE

A REPORT ON
GEOPHYSICAL TEST SURVEYS
OVER THE COMSTOCK LEAD ZINC SILVER LODE
AND AREAS TO THE EAST THEREOF
WITHIN E.L. 28/88, ZEEHAN AREA, TASMANIA
ON BEHALF OF
MAJOR MINING LIMITED

89-3046 V2/2

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File Ref. EL 28/88
- 7 NOV 1989
Doc. Ref.
Action Officer | Initials
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PRIVATE AND CONFIDENTIAL

A REPORT ON GEOPHYSICAL TEST SURVEYS OVER THE COMSTOCK LEAD ZINC SILVER LODE AND AREAS TO THE EAST THEREOF WITHIN E.L. 28/88, ZEEHAN AREA, TASMANIA ON BEHALF OF MAJOR MINING LIMITED

BY

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OCTOBER, 1989
TAS-127

SCINTREX

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SCINTREX PTY. LTD.

GEOPHYSICAL CONSULTANTS AND CONTRACTORS

SUMMARY

A geophysical test survey over the Comstock Lode involving the self-potential, induced polarization, resistivity and gravity methods, has revealed a significant series of anomalies at Comstock.

A reconnaissance survey run to the grid south-east, has located two anomalies of interest. "Area A' is of greatest interest and "Area B" of lesser interest. Both warrant further investigation by trenching.

Further self-potential surveys are recommended as a reconnaissance method within the exploration licence. Anomalies should be followed up by electrical induced polarization and (perhaps) by gravity methods.

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INTRODUCTION

At the request of Dr. F. Corbett, Chairman of Major Mining Limited, Scintrex Pty. Ltd. executed a series of test surveys over the Comstock lode within ML 123M/47 and along strike thereof in order to assess the use of the self-potential, resistivity, induced polarization and gravity methods in the search for lodes of the Comstock type.

The work was carried out by Scintrex Pty. Ltd. geophysicist Mr. P. Brown,BSc. and assisted by geophysicist Mr. M. Joint,BSc. over some ten production days between 20th July and 9th August, 1989. The author visited the area during the execution of the survey.

The work over the Comstock Lode was carried out with the kind permission of Mr. M. Bendall, Principal of Oceania Tas. Pty. Ltd., (the licence holder subject to transfer from Electrolytic Zinc).

THE GRID

The geophysical grid was established as a reconnaissance grid only, with the north-west south-east baselines being pegged at 100 metre intervals with 2 metres star pickets, with the traverses being marked by flagging only, except for that section of the traverses which joins the three staggered baselines.
The lines were positioned at 045° magnetic.

The approximate boundary between ML 123M/47 has been marked on all geophysical maps.

NATURE OF MINERALISATION

The predominant minerals within the lode material consist of sphalerite, galena and pyrite with the former making up about 20%-30% of the bulk. Simple resistance measurements at the pit showed values of the order of 1000 ohm-metres. While the tests were not exhaustive, the clear inference is that the mineralisation would not be expected to be conductive or be seen as a significant conductor in any EIP, MIP or EM geophysical method.

BRIEF NOTES ON THE METHODS

As it was understood that a distinct self-potential anomaly was associated with the Comstock Lode, this was the first method considered. As the test survey has demonstrated, there is in fact a distinct self-potential anomaly of about 500 millivolts. It is also understood that a similar anomaly exists over the Sylvester Lode.

There are two considerations arising from the above, namely,

a) The apparently high resistivity within the sphalerite rich lode material, and

b) Over the topographically low areas, there are areas of water-logged button grass plains.

The former may, in areas of high internal resistivity, preclude a self-potential anomaly being formed, while conductive near surface waters within the boggy areas will similarly preclude the formation of self-potential anomalies.

Therefore, while the self potential method can be applied quite effectively in the area as a whole, those areas which are overlain by waterlogged glacials or alluvium cannot be considered to have been exhaustively covered. In addition, those deposits which do not have sufficient electronic conduction within the body to allow the oxidation/reduction reaction to proceed, similarly will not be detected by the method.

Also, as graphitic shales exhibit self-potential, self-potential anomalies can have non-economic sources.

The other methods used in the test surveys were Electrical Induced Polarization (EIP) in the gradient geometry, and a gravity line over each of the very small areas over which EIP was carried out.

DISCUSSION OF RESULTS

The Comstock Lode Area

The **self- potential survey** was carried out over the Oceania Pty. Ltd. ground between the south-eastern flank of the Comstock pit and the boundary of the Major Mining Limited ground to the south-east. The data is shown in contour format on Plate 1, at the scale of 1:2500 and shows a distinct negative self-potential anomaly of about 500 millivolts over the zone, thus confirming the self-potential anomaly.

Within the Oceania ground, a further significant anomaly of 500 millivolts was defined at 925E on line 4900N, very close to the Majors grid. A further response of about 300 millivolts was defined at 850E on line 5000N. While both these responses have been contoured trending south-east north-west, the wide reconnaissance spacing together with the short wavelength of events along the survey lines makes this an unreliable guide to strike and extent. It would appear that lines at least 50 metres apart will be required to detail these anomalies. Bearing in mind these limitations, the areas of interest for further investigation are shown in red on the contour map. Those areas within the Oceania Pty. Ltd. area are worthy of further investigation.

A very limited **electrical induced polarization (EIP) survey** was conducted over the Comstock open pit. Time did not permit a comprehensive survey.

The electrode separation used was 200 metres, with the gradient current dipole placed at 5000N/1150E and 5100N/850E. Short sections of lines 5050N, 5100N and 5150N were surveyed at 25 metre intervals using a 20 metre potential dipole.

The observed resistivities are quite low ranging from less than 10 ohm-metres to in excess of 70 ohm-metres. While the scope of the survey was too limited to reach concise conclusions, the low resistivities appear to be

associated with the mineralisation and their enclosing rocks.

The electrical induced polarization data shows a range of values between 70 millivolts/volt (at 900E/5150N and at 1060E/5050N) and 33 millivolts/volt. The contour presentation suggests that the polarization over the pit itself is slightly less (33 to 42 millivolts/volt) than the immediate surroundings, but since the detailed geology is not available, it could be that the sphalerite rich zone is less polarizable than the surrounding sulphide (graphite?) halo.

A single gravity line was run between 900E and 1020E on line 5100N. The terrain corrected data shows a sharp gravity response of about 0.3 milligals over the pit, and a further similar maximum inferred at or to the west of 900E.

Conclusions

From the limited survey carried out over the Comstock Lode it can be concluded that:-

1 There is a distinct self-potential anomaly associated with the Comstock Lode. The high resistivity of the sphalerite rich samples implies that the anomaly may be generated by the conductive sulphide sections (and/or graphite) associated with the mineralisation.

2 Anomalously low resistivities were recorded over the Comstock Lode area, with the lowest (10 to 20 ohm-metres) being to the immediate east and west of the body.

3 The induced polarization data shows the whole of the test area to have levels two to four times normal background, with the highest values lying outside the known mineralisation (but still being twice background over it). This suggests that disseminated sulphides (and/or graphite) may be responsible for the higher polarization, with the lower

polarization over the body itself being due to the higher volume of non-polarizable sphalerite.

4 A small, but quite definite 0.3 milligal gravity anomaly was discerned from the terrain corrected data.

It is thus concluded that further geophysical exploration for similar bodies could consist of:

a) Reconnaissance self potential surveys at 100 metre line intervals, locally to 50 metres for detail over areas where water-logged glacials will not render the data unreliable.

b) Localised EIP surveys in the gradient array, but over a slightly larger area to gauge background and structure, and, **perhaps**

c) localised gravity surveys.

In (a) to (c) above, the limitations of self-potential anomalies from graphite, the possibility of no self-potential anomaly over water-logged glacials, and from zinc rich sources, should be borne in mind when reviewing the data on a progressive basis.

Surveys to South-East of Comstock

A **self potential** survey was carried out extending from the north-west corner of EL28/88 for about 1000 metres to the south-east. The grid lines were put in in a south-west north-east orientation at right angles to the presumed strike. The self potential survey was carried over three sections; lines 5100N to 4600N, 4600N to 4200N and from 4200N to 3900N.

Area A

The most significant series of anomalies occurred in the south-east of the area, and the maximum trended across the lines with an east west strike. The anomaly was defined as follows:

Line 4200N	absent	
Line 4150N	1090E and 1110E	(200 millivolts)
Line 4100N	1120E and 1160E	(150 millivolts)
Line 4050N	1165E	(140 millivolts)
Line 4000N	1250E	(120 millivolts)
Line 3900N	1360E	(70 millivolts)

Old workings were recorded on the most northerly lines, 4100N and 4150N.

A very limited EIP survey was carried out over the three lines 4150N, 4100N and 4050N with the energising current electrode placed on line 4100N at 1000E and 1300E. Each of the two self potential maxima have an associated electrical induced polarization anomaly. In the west, the self potential anomaly centred from 1100E/4150N to 1120E on 4100N has a 45 millivolts/volt response situated parallel to, and 40 metres to the west. The second discrete self-potential response recorded on line 4100N at 1160E to 1165E on 4050N is almost coincident with a 35 to 37 millivolts/volt EIP response. While the self-potential data **implies** an extension to the east of 300 metres, no EIP was carried out to check this.

Unlike the Comstock area, the resistivities recorded were much higher being from 200 ohm-metres to 300 ohm-metres.

The gravity survey located an anomalous response of 0.4 milligals, about the same order as at Comstock, centred at 1110E with a lesser peak of 0.3 milligals at 1140E.

The anomaly in Area A would appear to warrant further investigation by trenching as it has a self-potential response, induced polarization anomaly and a gravity signature similar to that observed at Comstock.

Area B

A self potential anomaly centred at 1220E on line 4600N and extending across lines 4550N, 4500N to line 4400N at 1300E was recorded which was up to 200 millivolts negative with respect to local background. This significant anomaly is inferred to have a parallel source trending east from 1250E/4600N.

The first zone noted above, showed up as an abnormally low **resistivity** of 15 ohm-metres (on line 4550N) on the small gradient array set up for the purpose of checking the self-potential anomaly. The **electrical induced polarization** response over the self-potential negative was highly variable. A 54 millivolts/volt reading was obtained on line 4550N coincident with the self potential zone, with very variable readings from 50 millivolts/volt to 26 millivolts/volt being recorded to the west of the self-potential anomaly.

A short **gravity** line run from 1150E to 1270E on line 4550N showed a local increase of 0.15 milligals, about half that seen over Comstock. This is centred at 1230E coincident with the highest self-potential maximum.

While worthy of ground follow-up by trenching, the anomaly in Area B is of secondary interest to that defined in Area A.

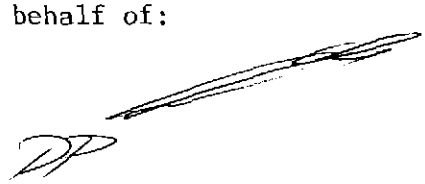
CONCLUSIONS AND RECOMMENDATIONS

1 The Comstock Lode is seen as giving a moderate self potential field of 500 millivolts, a gravity high of 0.3 milligals, low resistivities of 20 ohm-metres ±, and is surrounded by an induced polarization high.

2 In the reconnaissance survey of EL 28/8, two areas having similar characteristics are designated Area A, while a zone of lesser interest has been designated Area B. Both are recommended for investigation by trenching as, to a greater and lesser extent respectively, they have the characteristics of the Comstock Lode.

3 On the present evidence it would appear that self-potential at 100 metre/50 metre line intervals, followed up by limited electrical induced polarization (and perhaps gravity) would be a reasonable geophysical approach to locate "Comstock Type" bodies, always bearing in mind the limitation imposed by the method, the body characteristics, and environment.

Respectfully submitted on behalf of:
SCINTREX PTY. LTD.



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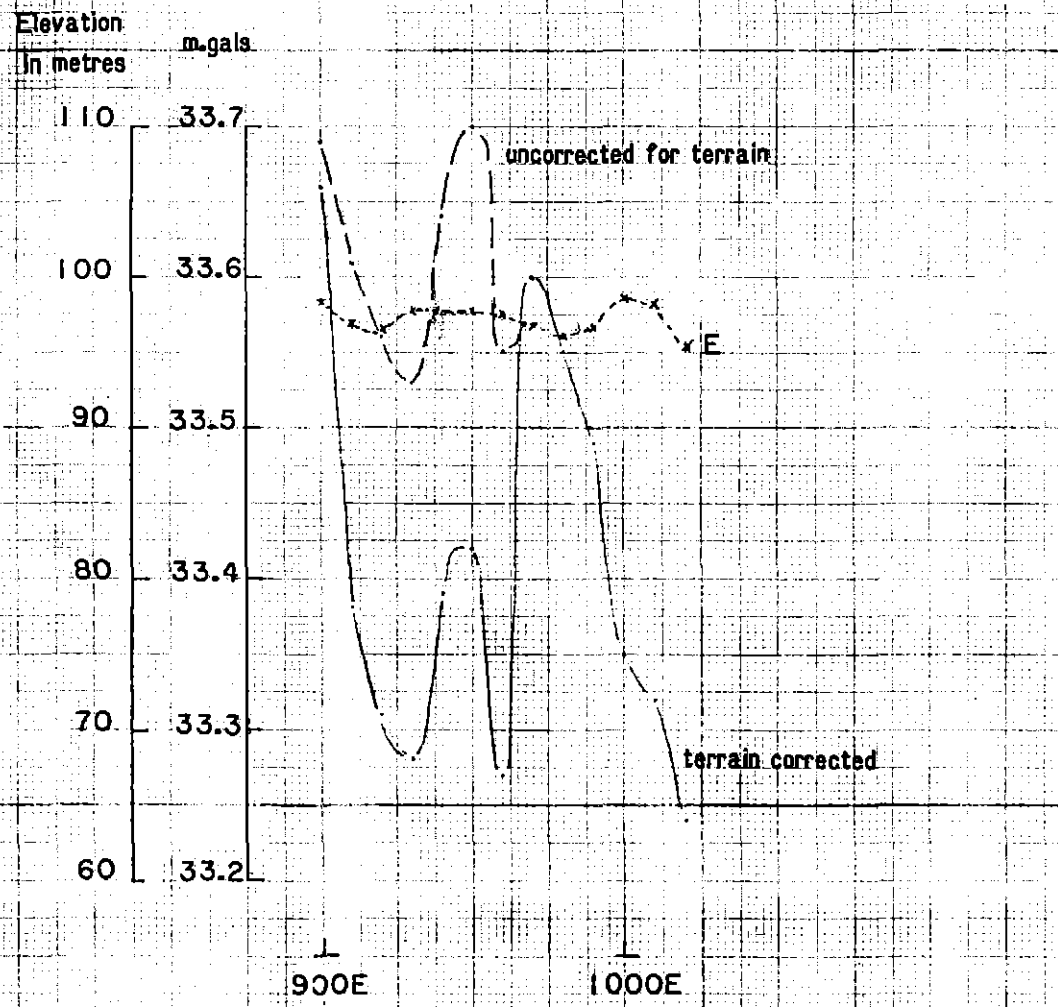
Geophysicist

SE Comstock
GRAVITY DATA
TAS-127

Line 5100N



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SE Comstock

GRAVITY DATA

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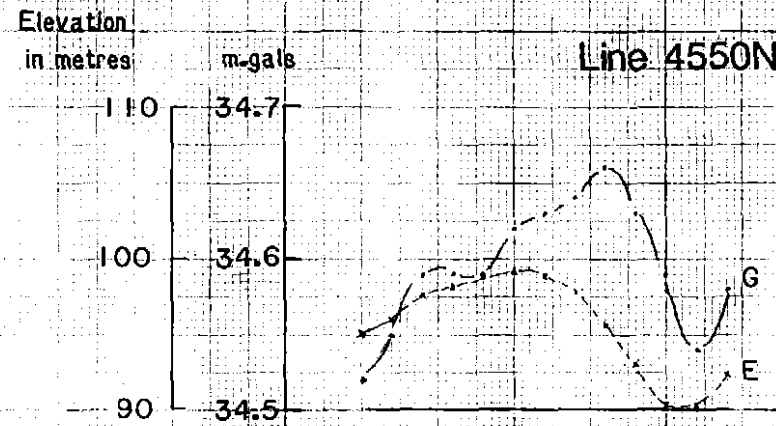

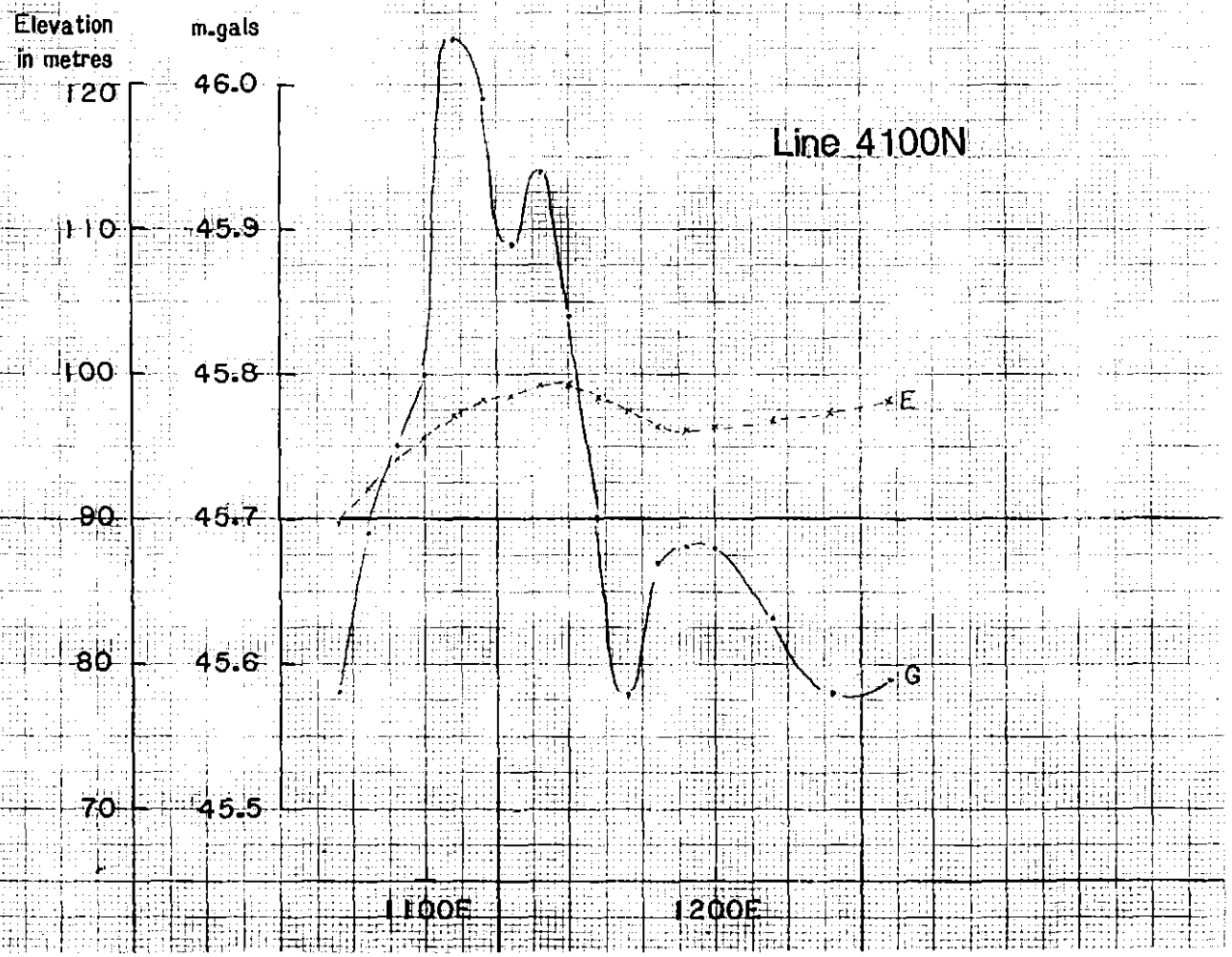

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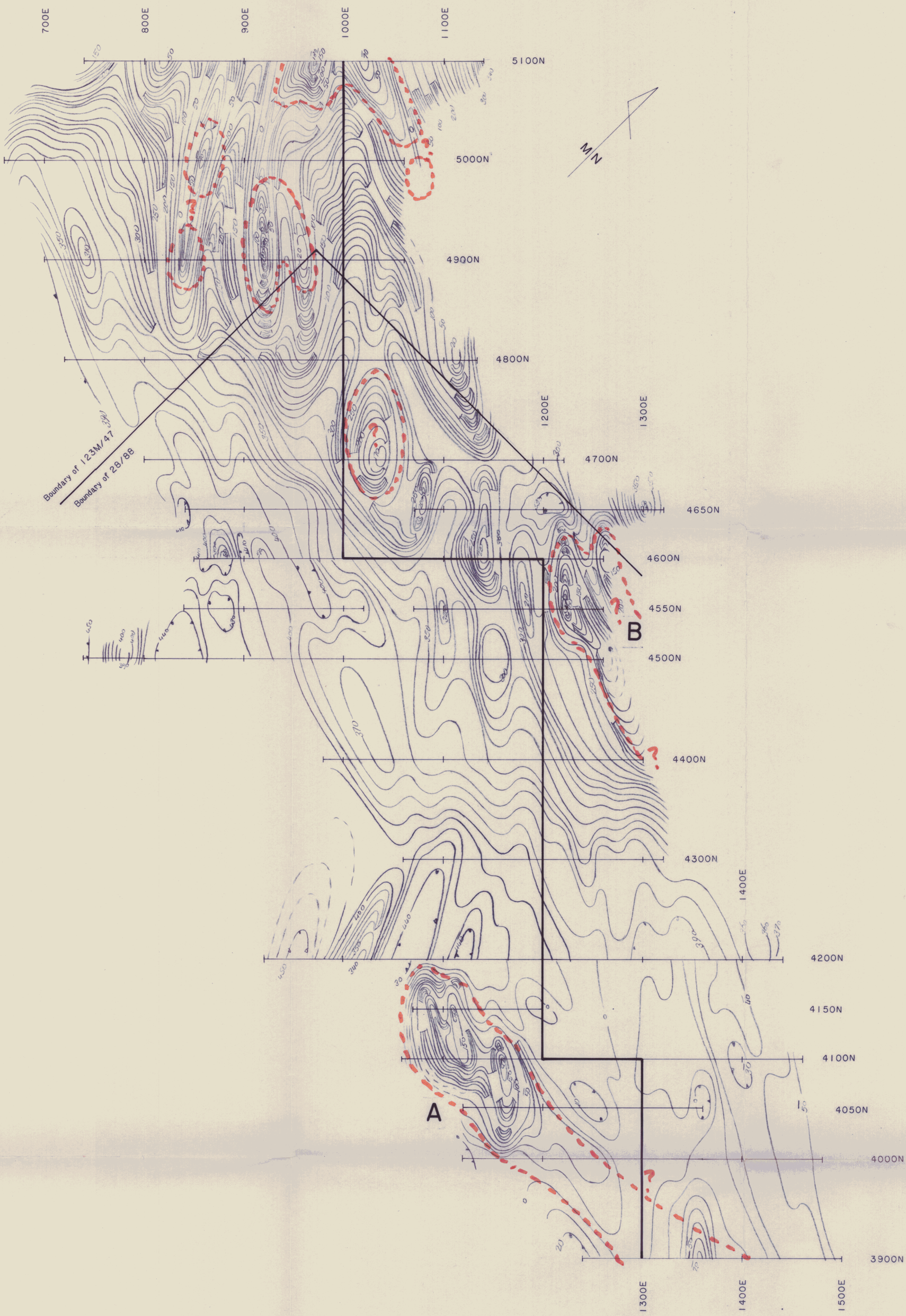

NOTE: Baselines and connecting traverses pegged with 2m star pickets at 100m intervals.

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MAJOR MINING LIMITED

SE COMSTOCK

NR. ZEEHAN – TASMANIA

SELF POTENTIAL SURVEY

CONTOURS

SURVEYED AND COMPILED BY

SCINTREX

AUGUST 1989

SCALE 1:2500m

Job No.TAS-127

PLATE 1

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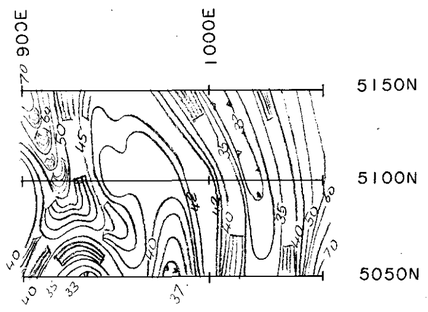
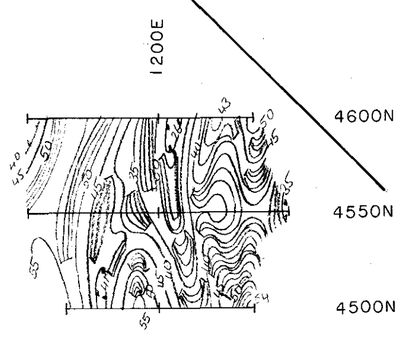
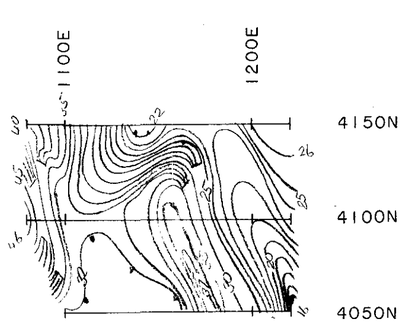


Boundary of 123M/47

Boundary of 28/88





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SE COMSTOCK

NR. ZEEHAN – TASMANIA

GRADIENT ARRAY EIP SURVEY
CHARGEABILITY CONTOURS

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SCINTREX

AUGUST 1989

SCALE 1:2500m

Job No.TAS-127

PLATE 2

562025

5 cm

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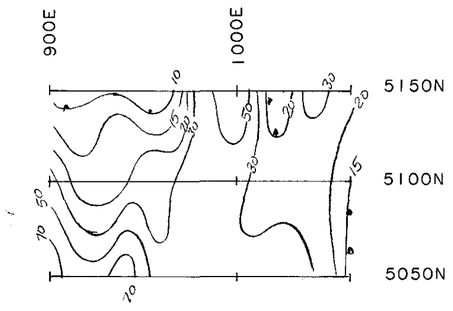
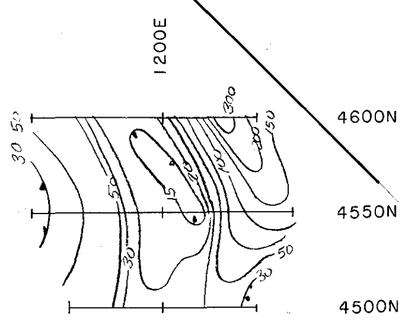
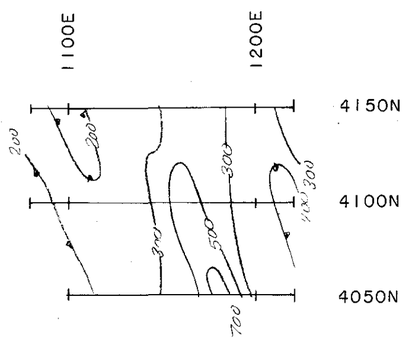


Boundary of 123M/47

Boundary of 28/88





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MAJOR MINING LIMITED

SE COMSTOCK

NR. ZEEHAN – TASMANIA

GRADIENT ARRAY EIP SURVEY
RESISTIVITY CONTOURS

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5 cm

AUGUST 1989

SCALE 1:2500m

Job No.TAS-127

PLATE 3

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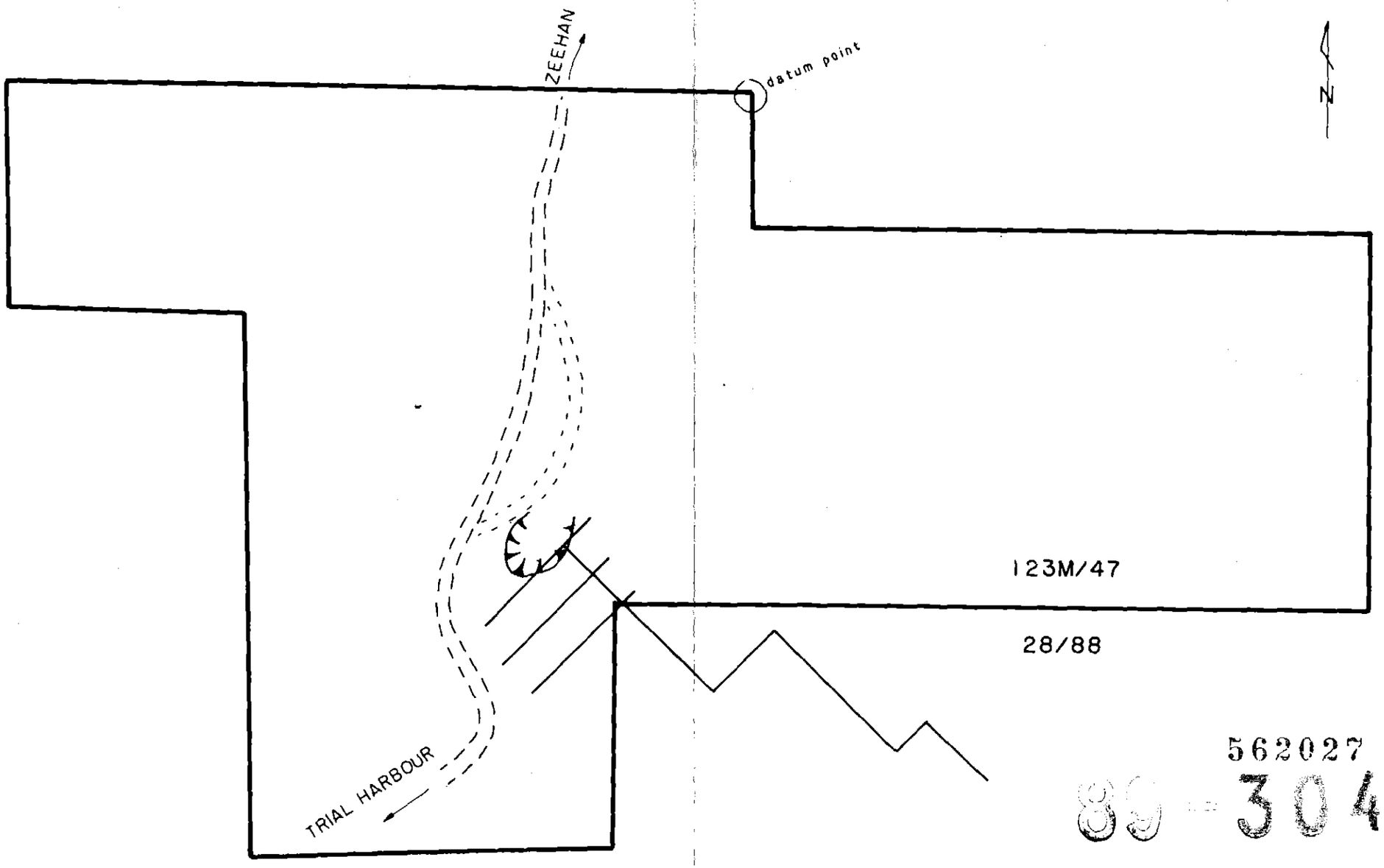

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APPROXIMATE GRID LOCATION
SE COMSTOCK

TAS-127