

SUMMARY REPORT ON EXPLORATION

OF

**SPECIAL PROSPECTORS' LICENCES
NO. 12 & 13**

**ZEEHAN MINING FIELD
TASMANIA**

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PLACER PROSPECTING PTY. LIMITED

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SUMMARY REPORT ON EXPLORATION OF
SPECIAL PROSPECTORS' LICENCES NO. 12, 13
ZEEHAN MINING FIELD, TASMANIA

These S.P.L.s were taken up as part of a broad investigation of the Zeehan Mineral Field.

Work was initially centred on the Oonah Mine and Queens Hill Mines to the north west of these S.P.L.s and which were both held under option. It was hoped in the early stages of investigation that sufficient knowledge and encouragement would be found in the Oonah - Queens Hill area to allow exploration for extension and repetition of the rich base metal - stannite ore bodies previously mined in the Oonah area.

Considerable technical difficulties were encountered in diamond drilling but sufficient information was gained to suggest that there was only a lower potential for the discovery of major tonnages of ore. A rapid variation in ore type due to different mixtures of sulphides raised doubts regarding the intensity of the primary target ore of the base metal - stannite Oonah type. Finally, the option areas were abandoned and our surface exploration concentrated on SPLs No. 12 and 13.

Field work was directed mainly towards investigating whether any connection can be postulated on structural grounds, between any of the major lodes previously considered to be separate entities because of different wall rocks, differing strikes of lodes, or variable mineralogy. It was thought possible that limited geochemistry could assist in this, as our orientation soil sampling work showed that positive base metal anomalies could be found over known near surface mineralisation. On purely technical grounds, a full geochemical survey was not implemented due to the evidence of frequent contamination of the lower lying areas, and to the fact that several areas of apparent interest seemed to extend beyond the S.P.L. boundaries. The potential prizes and geological indications did not warrant geo-physical survey or underground exploration.

An attempt was made to investigate whether there was any significant change in mineralisation when a structurally controlled line of mineralisation passed from Oonah Formation rocks into Crimson Creek Formation rocks. This occurs on the Spray Lodes and our work suggested that mineralisation does not continue from one Formation to another. Early surface prospecting was located in Crimson Creek shales along the northern continuation of the Spray Lodes and a strong geochemical anomaly was obtained from ironstone capped rocks in the same area. There was little record available of the type or intensity of the mineralisation but it was assumed to have been of less attractive grade than to the south on this line where lodes lie within what may have been the more favourable Oonah Formation.

The general impression of the area covered by our S.P.L.s as being one of numerous relatively small, well defined structurally controlled lodes was being strengthened by this surface work. The general area cannot be regarded as an area of tin potential, for, although isolated assays of 1 - 2% Sn have been returned, as a rule the ores contain only traces of tin. A thorough test of the main Manganese Hill lode confirms this observation.

Base metal mineralisation is related to at least three fracture directions only one of which parallels the strike of rock units.

The Spray Lodes cut across the mapped boundary between Oonah Quartzites and Slates and the softer shales of the Crimson Creek Formation. Photo geological interpretation shows at least six structural lines sub-parallel to the Spray Lodes, of which at least two are definitely related to known mineralisation.

The Manganese Hill Lodes may represent a different direction of structural control to that at the Spray. At Manganese Hill, mineralisation appears to be in Crimson Creek shales and pyroclastics whereas the Spray Lodes cut across harder Oonah Quartzite and Shale Formation rocks.

The following comments can be made:

1. The west and southwest portions of S.P.L.12 show four types of lead mineralization, of which two types are more or less peculiar to the mines at which they were noted. This is discussed in points 4 and 5.

2. Along the Balstrup Fault Zone, for one mile east and west of the Spray Mine, lodes occur which are subparallel to the Spray lodes and are of similar mineralogical composition. The four main Spray lodes (only two exploited) strike NNW, and consist principally of galena; antimony becomes important in depth. Insufficient information is available on other lodes in the area to tell if the presence of antimony is unusual. Antimonial lead ores are known from the Nike and from Manganese Hill as well. To the east along the Balstrup Fault the following mines occur:

- (a) The Central Balstrup Mine. Lodes with galena and some siderite; striking NNW.
- (b) The Montague No. I Mine. Galena lodes strike east west.
- (c) The Maxim Mine. Galena lodes strike NNW.
- (d) The North Austral Workings. Galena lodes strike from NNW to NNE.

To the west along the Balstrup Fault:

Near the junction of Grubbs tram and the Comstock tram, there are several small lodes carrying galena which are subparallel to the Spray lodes. They become pyritic, and then lose their NNW direction proceeding to the west.

Thus, there is a two mile zone of lodes subparallel to the Spray lodes. This is a feature which tends to rule out the theory of a narrow Spray shear zone.

3. Proceeding west along the Balstrup fault, into the Comstock area, the mineralisation is entirely pyritic-sphalerite-galena, with chalcopryite in some places. These lodes strike NE to NW and are generally wide and massive, in contrast to the narrow fissure lodes of the Spray area and lode widths of thirty feet are not uncommon. Most of this area is held under lease by the EZ Company.

4. The concentration of workings along the Balstrup Fault is repeated along the Tenth Legion Fault. Both of these faults mark the boundary between the Oonah Formation and the Crimson Creek Formation.

The workings along or near the Tenth Legion fault include:

(a) The T.L.E. Mine.

At this mine pyrite-galena-sphalerite bearing lodes NNE.

(b) The Stonehenge Mine.

The lodes strike NNE and consist of Pyrite, sphalerite and galena. Chalcopryite is also present.

(c) The North Tasmanian Mine.

Two types of lode occur here:

(1) NNW lodes of composition pyrite, sphalerite and galena.

(2) A NW lode of very fine grained galena disseminated through shale. This is the only occurrence of this type of mineralization noted in the Zeehan district.

(d) The Tasmanian Mine.

Galena, pyrite, sphalerite lodes striking NNW.

(e) The Swansea Mine.

A peculiar lode consisting of pale green sphalerite, galena, and siderite. All other sphalerites observed in the Zeehan field were the black or brown iron rich varieties.

5. The Spray No. 1 lode was found to be semi-continuous from the vicinity of the Spray mine to near the Nike Mine. In this area the lode occurs wholly within the Crimson Creek Formation, and has only been tested

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at depth in the northern extensions of the Spray Mine. A geochemical anomaly was detected over the lode. The Spray No. 1 lode has long been believed to continue to the south, into the Wave and Nubeena workings. The weak geochemical anomaly (if any) over the expected outcrop position of the lode and the absence of surface workings in the intervening area suggest that it does not continue into these workings.

A series of notes and comments on the main areas of mineralization have been compiled from field reports.

THE COMSTOCK AREA.

The Comstock area is that near the junction of the Comstock tram (now a road) and the Trial Harbour Road. The area embraces the Comstock Mines and various less important mines such as the Susannite, and Boss.

Most of this area is currently held under lease by the E.Z. Company.

The area is characterized by zinc-pyrite ore bodies and have been worked mainly for the contained galena. Near the boundary of the lease area, adjacent to the Comstock tram, is an ironstone outcrop about 200' in width. As far as the S.P.L. boundaries are known at present, it lies just outside our area. This ironstone outcrop has been tested only by a small shaft situated on the eastern boundary of the outcrop.

TASMANIAN AREA.

This area is also known as the South Comstock. It is characterized by a variety of lode types.

1. Pyrite, iron-rich sphalerite, galena.
2. Galena, siderite and resin blend (very pure, pale yellow or green sphalerite).
3. Very fine grained galena disseminated in shale. Types (1) and (3) are found at the North Tasmanian Mine. Type (1) is the typical Comstock ore. Type (3) occurs only at the Swansea Mine.

North Tasmanian Mine.

Outcrop is generally poor in this area, but in the vicinity of the North Tasmanian Mine there is a persistent conglomerate marker bed which aids mapping. In addition several trenches were cut during a government prospecting campaign, and these provide some rock exposures.

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Mapping in the region suggested a syncline in the Crimsone Creek formation near its junction with the highly contorted Oonah Formation. This general idea is upheld by the limited amount of information available from three diamond drill holes put down by the Department of Mines in 1953. They did not indicate much mineralization, but the core recoveries were only from 6% to 8½%.

The mineralization is believed to be localized in shale. It is believed that the lodes lie along a fault or joint, and that the lodes develop when the fault intersects shale. In the region of the Department of Mines drilling campaign, below the workings, greywacke is present. This however is only a narrow bed, some 20' or 30' in thickness, lying within a thick shale formation.

Spray Mine.

A summary of comments by Loftus Hills, and of personal observations.

The rich ore shoots above No. 4 level have been stoped out. Below this level apparently the antimony content of the ore rises and it did not pay to do much stoping. Galena becomes subordinate.

On the No. 6 (lowest level) shortly before the mine closed down, the following assay result was obtained:

Pb. 14%,Sb. 11%,Cu. 2%,Ag. 23 ozs/ton.

This was a bulk of face samples over a length of sixty feet and a width of 6'. This ore was not stoped. The No. 1 lode had an assay wall on one side, so this assay width is probably that of the main mineralized section, embracing solid ore.

The Spray No. 1 lode continues to the north of the main workings, to the vicinity of the Nike Mine. In this section the lode is almost wholly within the Crimson Creek Formation. Ore has been obtained from the lode within this Formation, but the bulk of the production has come from within the Oonah Formation. No exploration in depth has been done on the lode in this area with the exception of the northern extensions of the Spray workings. These are only partly accessible at the present and there is little record of their extent in the available literature on the mine. Partial access was gained to what is probably the old G adit. It could be seen that this adit had been taken out at least 10' high (water prevented observation of the full height) and 6' wide. This evident stoping on the lode is not recorded. At least one drive exists vertically below this adit, but access to that drive is only via the main shaft, now flooded. A geochemical anomaly was obtained over the lode to the north of the workings.

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In the past it has been regarded that the best prospects of extension of the Spray lodes lay to the south of the main workings. However the weak geochemical anomaly recorded over the No. 1 lode to the south of the workings suggests that this lode does not persist. Surface workings suggest that the No. 3 lode does persist.

Conclusion.

The prospects of a large tonnage (in excess of 1,000,000 tons) are relatively poor. The narrowness of the lodes (maximum of 10') and the lack of ore at shallow depth, would prevent open cut operations. Within the Oonah Formation, the presence of graphite renders geophysical methods of little value, though they could be of use in the Crimson Creek formation.

Geochemical exploration was found to be a suitable exploration tool in both formations.

MANGANESE HILL.

Balstrups Adit.

Most of the workings are still accessible, though a large section is separated by deep water and could not be visited. The only section in a dangerous condition is the No. 1 cross cut east. This is not standing well. Sampling done to date has been confined to the most easily accessible sections. To gain a complete picture it would be necessary to sample the old stoped areas, and the section cut off by water, in particular the cross cut at the beginning of the inaccessible section. Sampling of this would be necessary to obtain a measure of the width of mineralization.

The only lead sulphide mineralization observed consisted of dump material probably from the winzes to deeper workings. At the portal of the adit, galena and other lead bearing sulphides are fairly common but at the level of the adit the ore is almost completely oxidized.

Another feature is the deep weathering of the Crimson Creek Formation. It is possible that some of this weathering is due hydrothermal alteration and an attempt was made to examine other deep workings in this formation to check this. The workings on the Comstock tram to the north west of the Spray Mine are too shallow to be of much use and, as at the Manganese Hill, the rocks are highly weathered. The size of the stopes suggests that there may have been more ore taken out of Manganese Hill than is recorded.

Of minor interest are the lead minerals found at the portal of Balstrups Adit. As well as galena these include another lead mineral possibly a lead antimony sulphide.

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GEOCHEMICAL SURVEY.Anomalies in the Oonah Foundation.Traverse 1.

The anomalies found correspond to lodes which have at least, to some extent, been explored by underground workings. Only No. 3 lode is believed to have been economic where crossed by the traverse line. It was very rich in silver and the size of the silver anomaly allows fairly safe belief that there are no lodes of similar strength crossed by this traverse. This lode is now only accessible from one adit the rest being blocked by falls. In the one accessible adit (60' below outcrop) the lode is completely oxidized. Secondary lead and silver minerals occur. It ranges from 1' to 3' in width and consists of soft brown pug and gossan. Owing to the narrowness of this lode and the amount of stoping done, it is difficult to imagine a large tonnage of ore being present.

Traverse 2.

The traverse could have been extended having started in an anomaly. There is only one small pit as evidence of surface mineralization.

Traverse 3.

This traverse started and finished in anomalous areas. A feature of this traverse was the strength of its lead peaks, but the over-all configuration of the lead values established from traverse I was too low. One possible reason for this was that this traverse is the closest of the four to the old lead smelters, and as the traverse was on a high exposed ridge, there may have been an unnaturally high background due to contamination. Normally contamination of this nature does not extend more than a few inches below the surface, but it was possible that the fairly low clay content of the soil and the abundant rainfall have combined to increase this depth. The sample depth used was the same as in the first and second traverses.

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Anomalies in the Crimson Creek Formation.

Traverse 4.

The fourth traverse is the only one with underlying Crimson Creek Formation rocks. It is immediately apparent from lithology, that a different background content of metallic elements is expected in this area. The soil is iron rich and has a high clay content. Only a rough guess at background can be made in this area as the traverse crossed most of the formation without, leaving the "anomalous" shear zone. The formation is fault bounded so some mineralization would not be unexpected near the faults. A feature of this traverse is the high zinc content relative to the other traverses. This traverse crossed the same lodes as the other traverses, and neglecting lateral zoning, this must be a function of the soil type. Lateral zoning cannot be entirely neglected at the present as sphalerite seems more common in this area at the present limited stage of examination.

The soil fraction analysed would be expected to have a lesser effect on this traverse. The soil overlying the Oonah Formation is very stony and sieving enriches the sample in clay content, and thus in metallic content.

A background of 100 ppm lead allows identification of three main zones of anomalously high metal content. A minimum content of one ppm silver has a similar effect. The zinc content does not show much variation except in the very high lead and silver anomalies at the northern end of the traverse.

The silver anomalies are in general agreement with the lead anomalies. A feature of the lead and the silver anomalies is their sharpness which does tend to indicate that the iron and clay rich soil does restrict secondary dispersal.

Relation to Known Mineralization.

All the main Spray lodes cut this traverse. At sample point 145 there is a shaft put down reportedly for silver. This shaft is referred to as Moyles and is the northward extension of the Spray No. 3 lode according to Loftus Hills. Iron Stone is fairly common over the whole area and the iron rich soil may facilitate its formation. Where sampled it does seem to be carrying significant lead and silver values.

It is possible to trace the Spray No. 1 lode from near the main shaft through the traverse line near samples 154-155, to a small adit near the Comstock tram. Driving along this lode was carried out first by the Mt. Zeehan Silver Lead Mines Ltd., and their "G" adit is still accessible via a later adit put in in about 1930. There is extensive stoping under foot in the only section accessible at the moment. These workings belie the old reports that there was little mineralization in this area. One of the miners who worked in the area during the depression reports that the antimony content was very high in this region.

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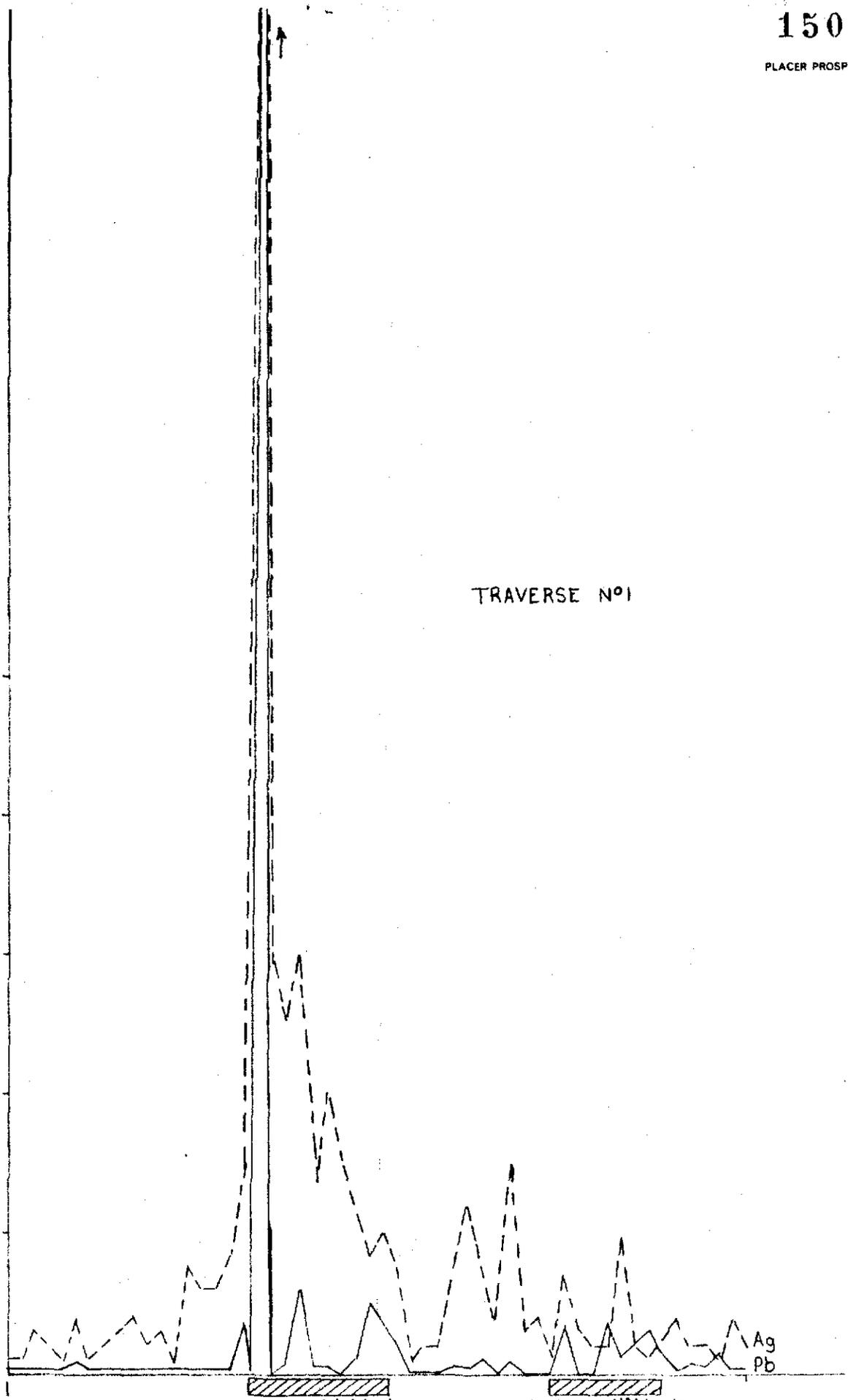
PLACER PROSPECTING PTY. LIMITED

PPM. Ag 5
PPM. Pb 1000

TRAVERSE N°1

5
4
3
2
1
0

800
600
400
200



Spray 3 & 4 Lodes

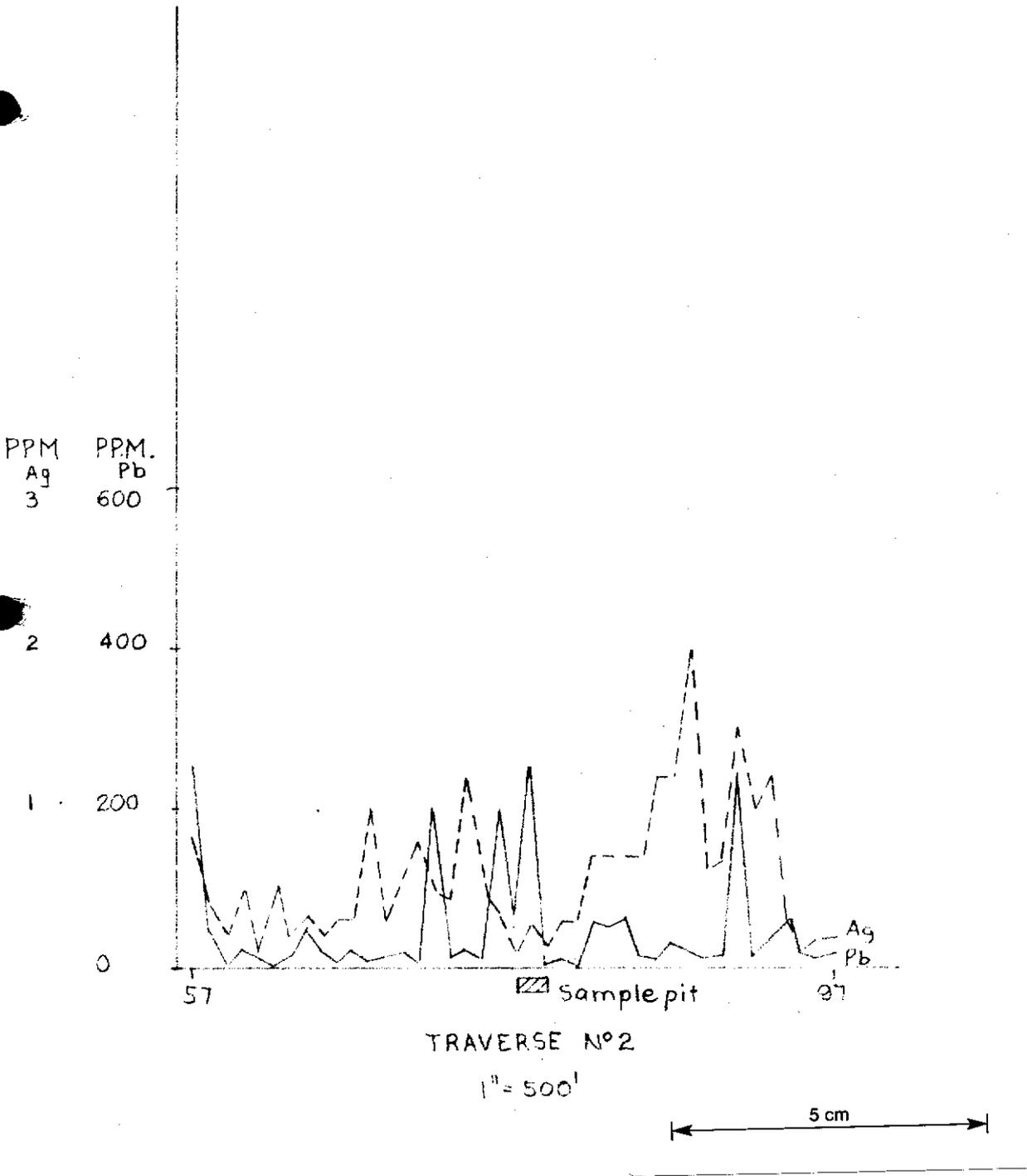
Spray N°1 Lode

1" = 500'

5 cm

Ag
Pb

009



010

5 cm

PPM Ag
5

PPM Pb
1000

4

800

600

2

400

1

200

0

100

TRAVERSE 3

136

137

Moyles

TRAVERSE 4

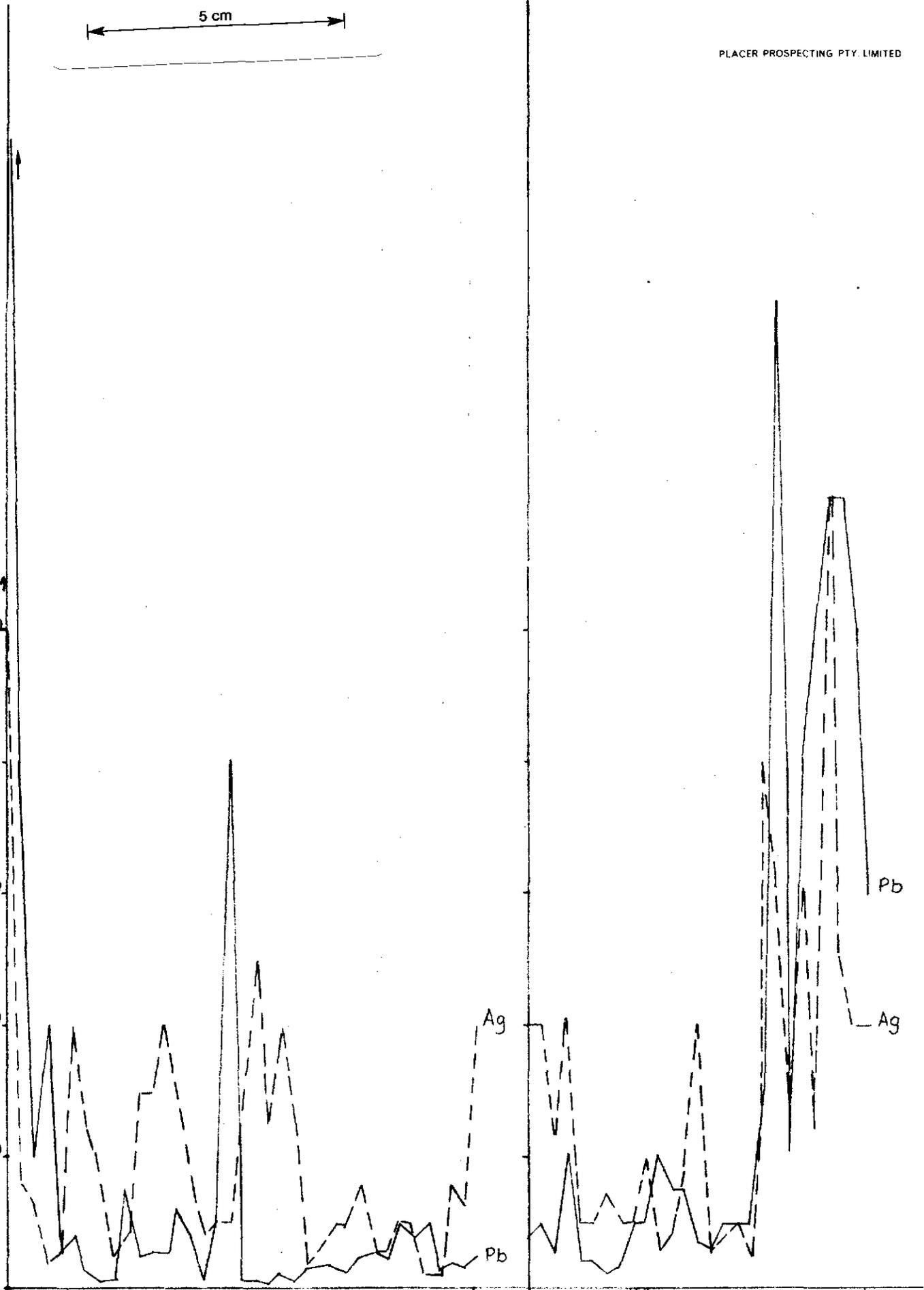
163

Pb

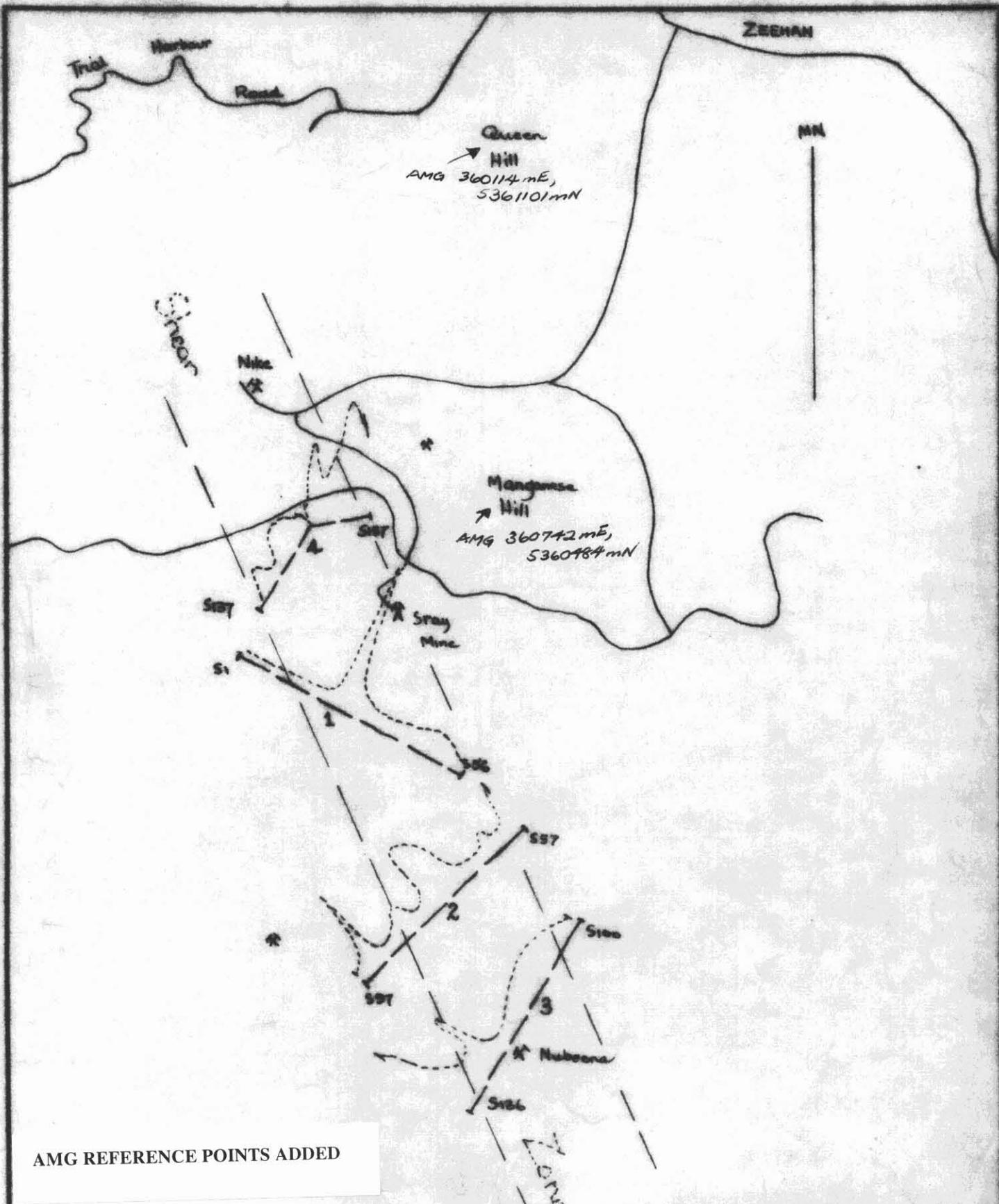
Ag

Ag

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011



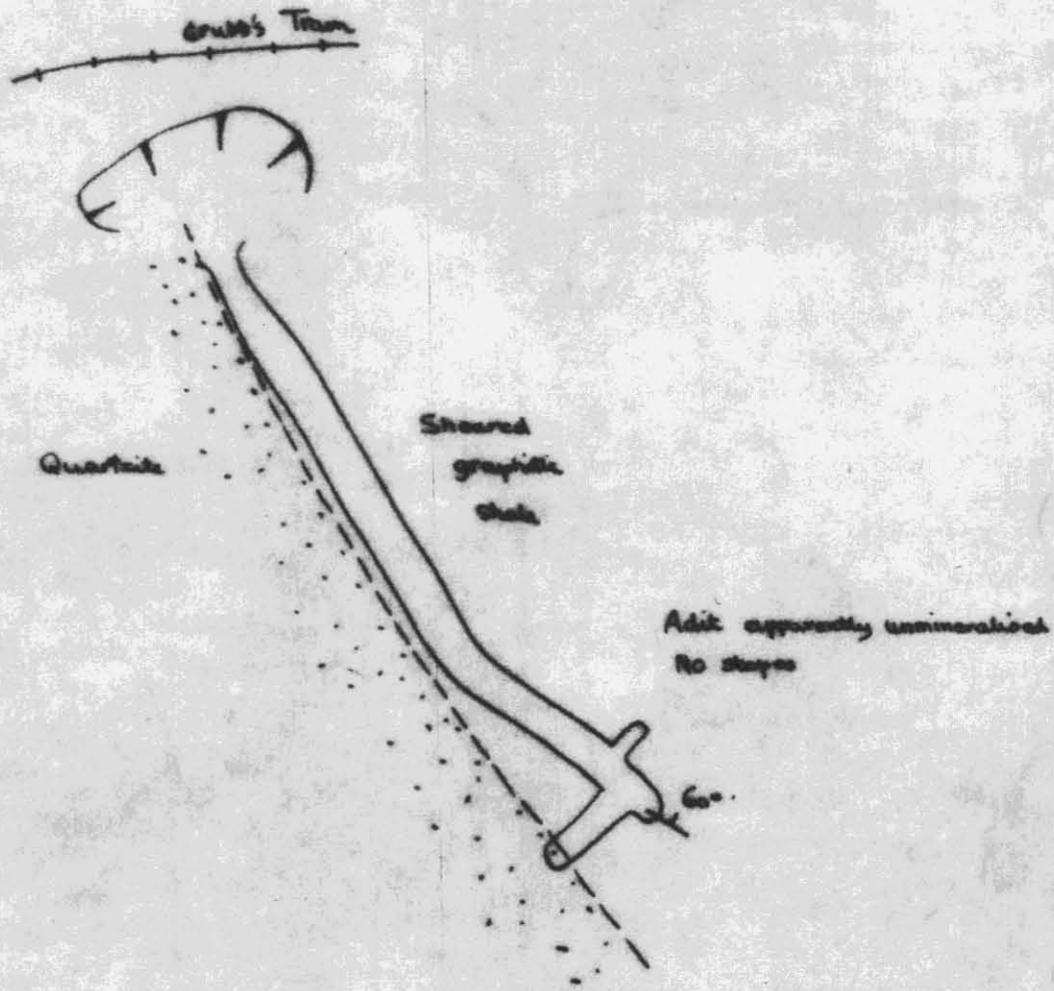
AMG REFERENCE POINTS ADDED

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 Geochronal line showing lead value graph.

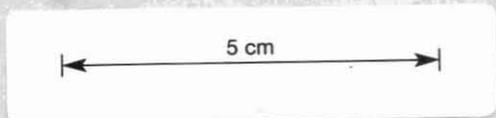
5 cm

Plasma Property of Joints	
Geochronal Sample Plan in relation to Lofius Hills proposed Spray Shear Zone	
Date: 6-7-66	Geology by: R.W.B.
Scale: 1" = 1000'	Drawn by: R.W.B.

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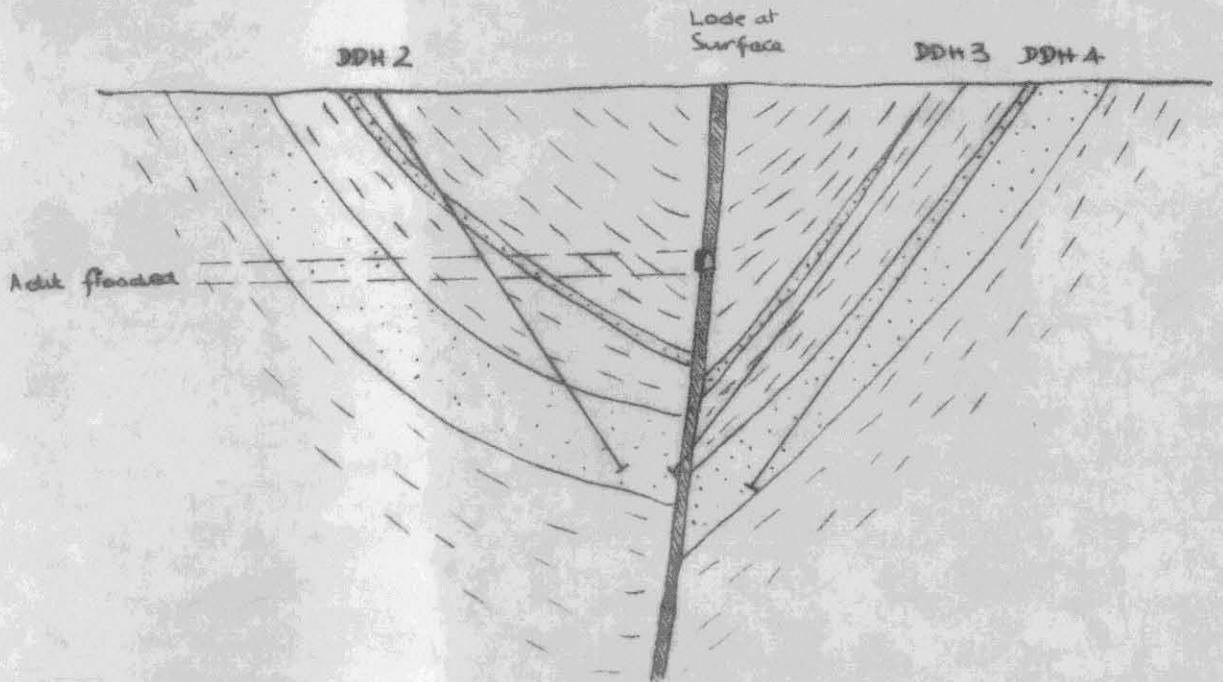
MN.



Placer Prospecting, Inc. limited	
Adit near junction of Grubb's and Comstock Trans.	
Date: 26-9-66	Geology by: RVL
Scale: 40' = 1"	Drawn by: RVL

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5 cm

Placer Prospecting Pty Limited	
North Tasmanian Mine	
Section	
Date: 18-11-66	Geology by: RWL
Scale: 40' = 1"	Drawn by: RWL

LIST OF PLANS:

Zeehan Geological Plan

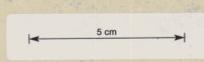
4 ch' : 1"

Zeehan SPL Area Geochemical Sample Plan

1 inch : 4 ch.



ZEEHAN GEOLOGICAL PLAN



- Silurian
- Cambrian Gimson Cr For
- Donah Formation Proterozoic Volcanics
- Donah Formation Shales slates and quartzites

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PLACER PROSPECTING PTY. LTD.

SCALE: 4 CH. ' = 1" Plan No.

DRAWN: R. Lewis
DATE: 25.11.66

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TO ZEEHAN

MANGANESE HILL

NUBEENA

GEOCHEMICAL TRAVERSE 3

ARGENT FLAT

SPRAY

JL WAVE

GEOCHEMICAL TRAVERSE 2

NO. 1 ADIT

MAIN SHAFT

SPRAY NO. 2 Lode

GEOCHEMICAL TRAVERSE 1

NIKE QUIGLEYS ADIT

GEOCHEMICAL TRAVERSE 4

GEOLOGIC BOUNDARIES

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ZEEHAN SPL AREA Geochemical Sample Plan

5 cm

GEOLOGY: RWL	PLACER PROSPECTING PTY. LTD.
DATE: 29/7/66	SCALE: 1inch=4ch. PLAN No. 95
Survey: Air photos	