ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

West Coast Mines

THIRD REPORT ON INVESTIGATIONS AT TRIAL HARBOUR, TASMANIA

SPECIAL PROSPECTORS LICENCE NO.22

BY

C.C.J. BURTON

MAY 1972

REPORT NO. 107

AMG REFERENCE POINTS ADDED

001

CONTENTS

002

SUMMARY

The Trial Harbour licence covers an area of 15 square miles along the margin of the Heemskirk granite and extends south to incorporate a serpentinite intrusive. Mineralization is known to be associated with the emplacement of the granite and this area is considered geologically favourable for ore deposition. Extensive exploration work using geochemical and geophysical methods and geological mapping has been completed over a large proportion of the licence. A compilation of these results defined several target areas for more detailed examination. The most promising area of interest concerned nickel mineralization near the southern contact of the serpentinite body. Eleven drillholes covered this target and failed to intersect any significant sulphide mineralization. It is felt that the other areas rate at a considerably lower order of interest and do not warrant more exploration work. It is recommended that the company relinquish this licence area, when it comes up for renewal on the 9th June, 1972.

History of the Licence

The lease was originally granted to the company in 1964 for the purpose of evaluating the area for tin deposits. Early exploration work was concentrated within the Heemskirk granite and subsenquently migrated southwards to the Heemskirk-Oonah quartzite contact, still with tin as the prime objective. Since this work failed to uncover any significant mineralization the N.W. part of the licence area was relinquished. The nickel bearing potential of the Trial Harbour serpentinite intrusive then attracted attention and the majority of the exploration work during the last three years has been concentrated in and around this body.

Resume of Geological Exploration for the Period 1968-71.

A west-east base line was set up and north-south lines cut at 500 feet intervals extending from the edge of the granite to the southern boundary of the licence. A geochemical soil sampling program accompanied by geological mapping was carried out over this grid followed by a magnetometer survey. Subsequently, McPhar were contracted to complete an I.P. geophysical survey over those parts of the grid that previous work had suggested were of greatest interest. Primary target areas were then defined by coincident geophysical and geochemical anomalies in what were regarded as favourable geological settings.

The southern contact of the Trial Harbour serpentinite was selected for detailed examination. Geological mapping established the presence of siliceous gossans over a strike length of 4500 feet, although in some cases these are difficult to distinguish from the limonitic capping, which blankets much of the serpentinite.

.../2

A Sub-unit called silicified serpentinite was recognized on the eastern side of the area. A drillhole T.H.P. 136 completed in 1969 suggested that the gossans were surface expressions of pyrrhotite and pentlandite mineralization at depth. It was considered that these sulphides were a conductive source giving rise to an I.P. anomaly. An intersection of 10 feet of 1.05% Ni was initially reported but subsequent work has shown these assays to be suspect and a variable proportion of the nickel in these early assays is in silicate form.

At this stage all further work was suspended for nearly a year owing to a border dispute concerning the precise position of the southern boundary of the licence. Finally a decision was handed down by the Wardens court upholding the E.Z. companys' interpretation of the azimuths of the boundary lines.

Objectives of the 1971/72 Drilling Program.

The drilling program in 1971/72 was the logical continuation of the previous exploration work. The objective was to determine if the serpentinite body and particularly that area close to the southern contact contained economic mineralization. Earlier work consisting of old prospects and trenches and more recent geochemical and rock outcrop sampling, had established that the serpentinite was nickeliferous but that the habit of the mineralization and the geology of the body were definitely dissimilar to the nickel bearing ultramafics of Western Australia and the Sudbury basin.

.../3

The original concept was that an elongate nickel lode or series of lodes with a broad halo of lower grade mineralization might occur near the southern contact of the body. During the course of the drilling, this thinking changed and the possibility was mooted that a very large tonnage of low grade mineralization could be contained within the serpentinite.

Results of the Diamond Drilling.

The vital statistics of the drilling program are tabulated in Appendix 1 and the location and direction of the holes are indicated on figures 2 and 3 with individual sections on figure 4. The ten drillholes established that there is no economic mineralization in the southern part of the serpentinite body. The nickeliferous character of the body was substantiated with the total nickel content of most of the drillholes averaging between 0.2% Ni and 0.25% Ni. However, 50-60% of this nickel is in silicate form probably bound within the olivine crystal lattice and as yet there is no economic method of extracting nickel from the silicate compound. The best intersections occurred in T.H.P. 165 with 0.71 Ni/S over 3.5 feet and 0.36% Ni/S over 22 feet. The sulphide occurs as hairline irregular veinlets, spots and sparse disseminations in the form of pyrrhotite, pentlandite and minor pyrite.

The drilling showed that the siliceous gossans did appear to be related to a marginal enrichment in the sulphides. The I.P. anomalies did appear in some cases to be coincident with this same enrichment. Elsewhere they could possibly be correlated with leached, porous zones within the serpentinite and it is suggested that ground water might be the conductive source.

.../4

Magnetite can also be a conductive source but no marked concentration was noted either associated with the sulphide or the leached zones, although it may be the source for some of the I.P. anomalies elsewhere in the serpentinite body.

The extremely low overall grade of the sulphide mineralization, in the order of 0.1% Ni and the absence of significant higher grade sections renders this area of no further interest as an exploration prospect.

Other Areas of Interest within the Licence.

Several other areas are marked by coincident geophysical and/or geochemical anomalies, but have been rated with a lower degree of interest owing to limited size, or a less favourable geological environment or to a lower order of anomalous values. Only two of these received attention during the 1971/72 field season, namely the aeromag anomaly and Maynes mine.

1. Aeromag Anomaly in S.E. Area.

In 1957/58 Rio Tinto carried out an airborne magnetometer survey over a large area in Western Tasmania. The aeromagnetic map shows three anomalous highs in the Trial harbour lease. The most pronounced is the serpentinite body, the second is coincident with the Tenth legion magnetite showings and the third is of an unknown source. With the objective of determining this latter source a grid was cut and pegged over an area 5000 feet long and 2500 feet wide. These lines were surveyed using a M.F.2., fluxgate magnetometer and no anomalous values were recorded, in fact the area appeared magnetically very indisturbed. The outcrop along the Kynance river which cuts across the

anomalous zone was mapped and proved to be uniform non magnetic Crimson Creek hornfelsic sediments. It is concluded that the anomaly is misplaced with the possibility that the flight line may have veered to the north, where gabbros are known to outcrop and which carry veins and disseminations of magnetite.

2. Maynes Mine Area.

Three I.P. anomalies were recorded along line 19E where it parallels Pykes creek at the point where Maynes and Kelvin lode and alluvial tin showings are located. Very weak responses were recorded on line 18, 500 feet west and on line 19½ 250 feet east. A broad magnetic anomaly was recorded near Maynes mine on line 19E with no expression recorded on the adjacent lines.

Maynes workings exploited irregular cassiterite bearing quartz - tourmaline - pyrite veins which would not be expected to be the direct source of either magnetic or I.P. anomalies. There is no apparent dissemination of pyrite adjacent to the cassiterite mineralization.

Although the source of the anomaly remains unknown it is considered that if a sulphide body does exist it will have very limited dimensions. The reasons being that the anomalies are confined to a single line and the area is notorious for its diminutive pockets of ore. If a sulphide body did exist it would not be amenable to an open-cut operation. Chip samples of the tourmalinized quartzitic host rock at Maynes mine showed no tin values. No further work is recommended on this prospect.

3. Serpentmite Body on Line 22E.

A coincident I.P. and magnetometer anomaly occurs

on the south end of this line. An outcrop of serpentinite carrying pyrrhotite and pentlandite has been recorded. Detailed magnetometer work suggested that a plug like body in the order of 200 feet diameter exists here. Unmineralized serpentinite outcrops 1000 feet further east. Bearing in mind the lack of economic mineralization in the major serpentinite body there seems no justification in continuing further exploratory work on this plug of limited dimensions.

4. Eastern Margin of the Heemskirk Granite.

Many showings have been recorded along the margin of the Heemskirk granite. They are dominantly cassiterite and quartz with or without pyrite. Others are noted to contain sphalerite and galena. A few have been examined and in every case appear to be fracture fillings or replacements in greisen zones. Several have not been examined and are extremely hard to locate in the dense rain forest covering this area.

Conclusions.

As this report intimates and as previous reports on the licence substantiate, a large amount of exploratory work has been completed with no significant discoveries. It is felt that the potential for economic mineralization is poor as the most promising targets have been adequately tested. It is therefore recommended that this licence area be relinquished.

009

Appendix 1. Trial Harbour Diamond Drilling 1971/72.

Drillhole No:	Location:	Magnetic Bearing:	Dip:	Length:	Remarks:
T.H.P. 163	Line ½E, 2540S	180	-40	401	
164	Line 3E, 2500S	180	-35°	214'	0.37% Ni/S 142' - 147'.
165	Line 4E, 2500S	180	-35°	401'	0.71% Ni/S 81.5 - 84.5. 0.36% Ni/S 204' - 231'.
166	Line 1E, 2475S	180	-40	425'	
167	Line 5E, 2550S	180	-40	301'	
168	Line 6E, 2600S	180	-35	333'	
169	Line 1E, 2100S	180	-40	301'	
170	Line 6E, 2900S	180	-40	323'	0.40% Ni/S 285' - 290'.
171	Line 4E, 2400S	180	-40	303'	
172	Line 5E, 2800S	180	-35°	309'	

All drillholes B Q or B X Wireline size.

Appendix 2.

Geological Notes regarding the Serpentinite.

Thin sections made from samples taken from the drill-holes, indicate that the serpentinite body and the sulphides have been altered and recrystallized. This would satisfy the hypothesis that the body was intruded in the Cambrian and subsequently thermally metamorphosed in the Devonian. There is an unusual amount of carbonate in the serpentinite as diopside, dolomite and calcite. This would suggest that the body has undergone carbonate metasomatism with magnesium derived from the olivines and calcium derived from clinopyroxenes. There is no evidence within the licence area that the ultrabasic body invaded a dolomitic horizon which would account for the diopsidic alteration.

The silicified serpentinite persists as a mappable phase in depth and along strike. It is suggested that it may be a residual differentiate produced by the weathering and leaching of the magnesium and iron in the original body by percolating weakly acidic groundwaters. This could result in an highly siliceous rock containing an enrichment of less soluble chromite and nickel. This enrichment is not evident.

C. Burton.

E Z CO W CD GEOL. DEPT. 70 290.

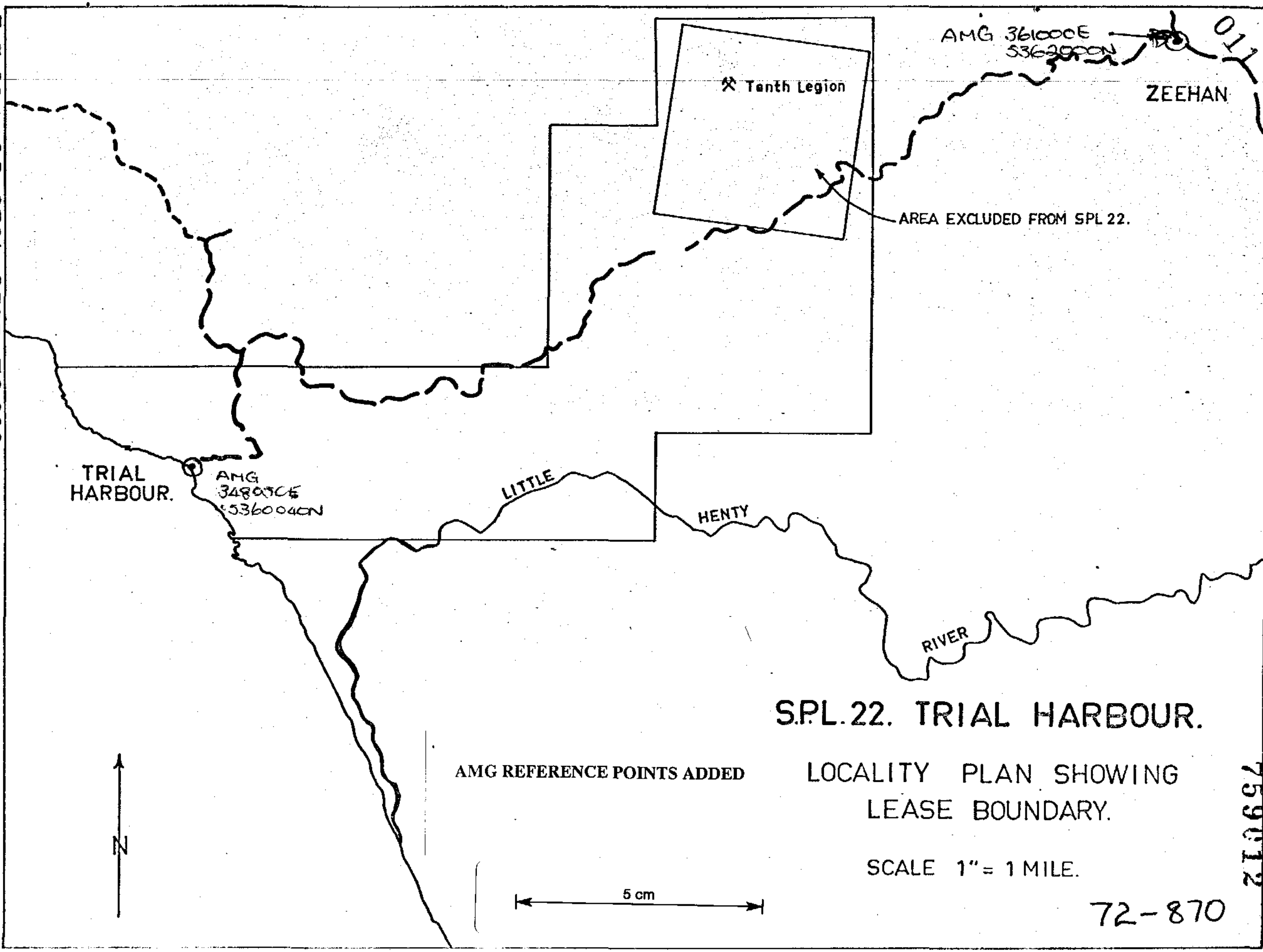
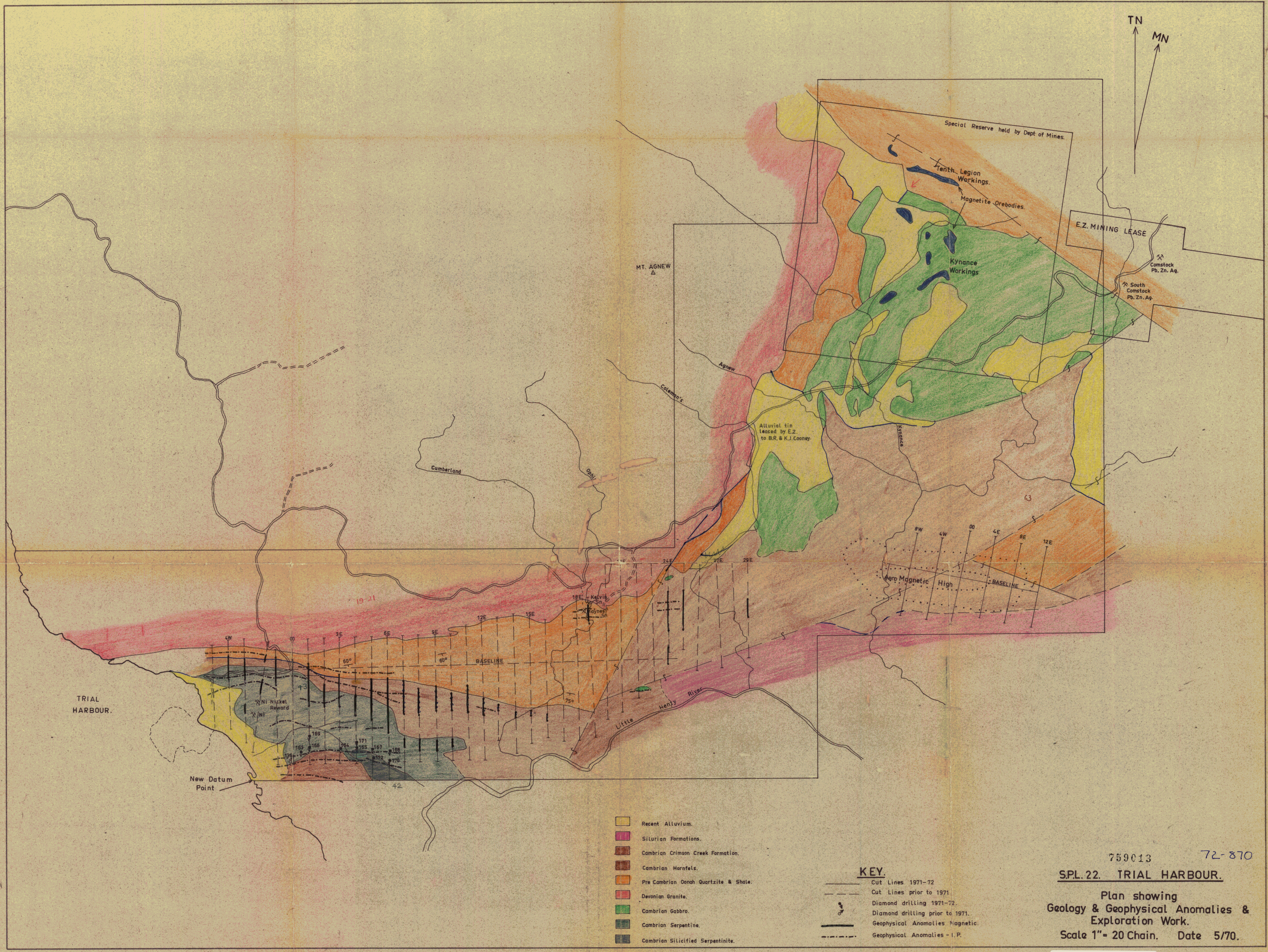


PLATE 1


TN
MN
Special Reserve held by Dept of Mines.
Tenth Legion Workings.
Magnetite Orebodies.
Kynance Workings
E.Z. MINING LEASE
Comstock Pb. Zn. Ag.
South Comstock Pb. Zn. Ag.
MT. AGNEW
Agnew
Coleman's
Cumberland
Ophir
Kynance
Alluvial tin leased by E.Z. to B.R. & K.J. Cooney.
63
8W
4W
00
4E
8E
12E
Aero Magnetic High
BASELINE
24E
27E
29E
18E
Kelvin Sn
Haynes Sn
19-21
12E
15E
4W
00
3E
6E
9E
60°
60°
BASELINE
75°
Ni Nickel Reward
Ni
43
169
163
166
164
171
165
167
168
136
172
170
42
Little Henty River
TRIAL HARBOUR.
New Datum Point
Recent Alluvium.
Silurian Formations.
Cambrian Crimson Creek Formation.
Cambrian Hornfels.
Pre Cambrian Oonah Quartzite & Shale.
Devonian Granite.
Cambrian Gabbro.
Cambrian Serpentine.
Cambrian Silicified Serpentinite.
KEY.
Cut Lines 1971-72
Cut Lines prior to 1971.
Diamond drilling 1971-72.
Diamond drilling prior to 1971.
Geophysical Anomalies Magnetic.
Geophysical Anomalies - I.P.

759013 72-870

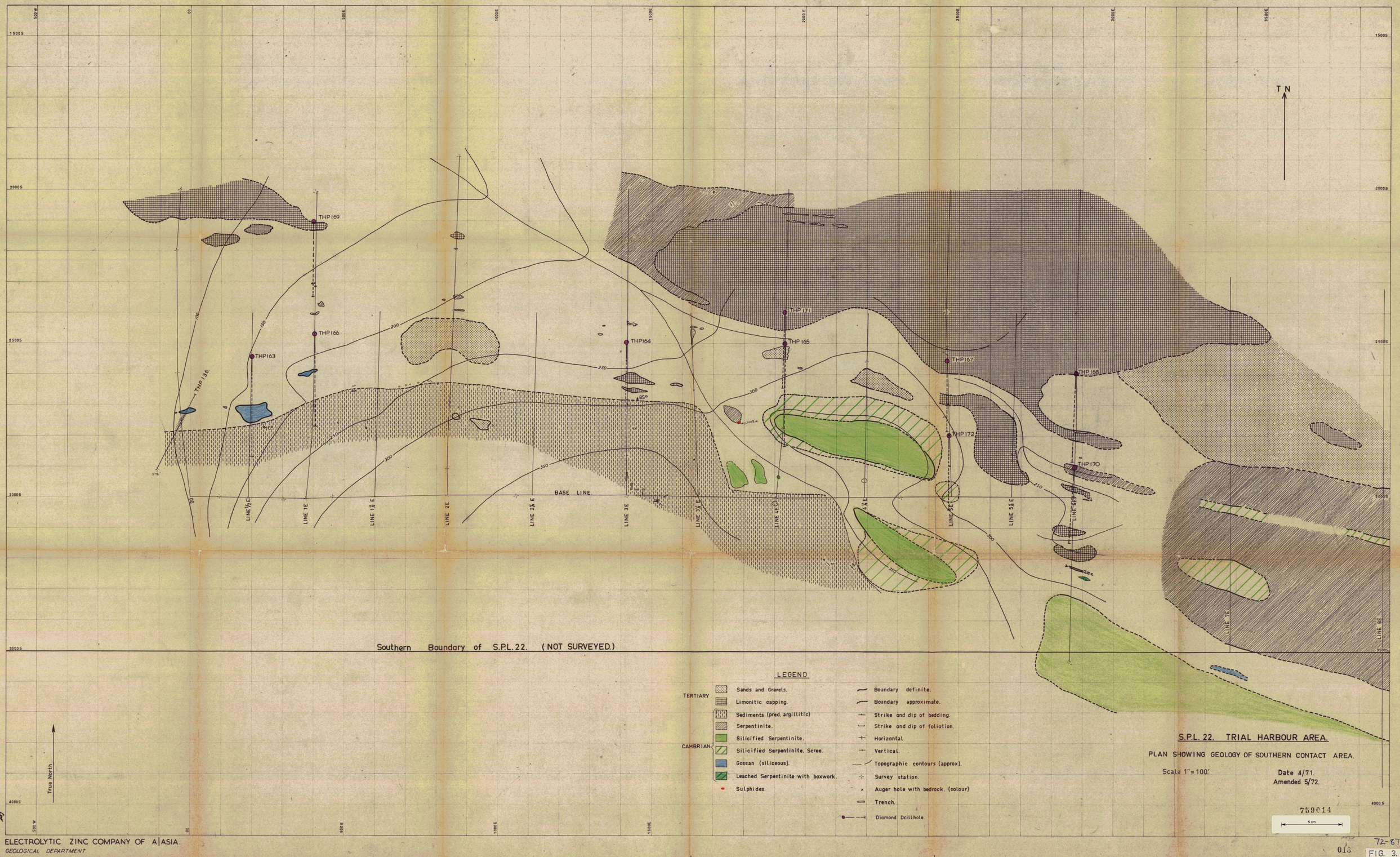
S.P.L. 22. TRIAL HARBOUR.

Plan showing
Geology & Geophysical Anomalies & Exploration Work.
Scale 1" = 20 Chain. Date 5/70.

E. Z. CO. W.C.M. GEOL. DEPT.

5 cm

012 FIG. 2.



S.P.L. 22. TRIAL HARBOUR AREA.

PLAN SHOWING GEOLOGY OF SOUTHERN CONTACT AREA.

Scale 1" = 100'

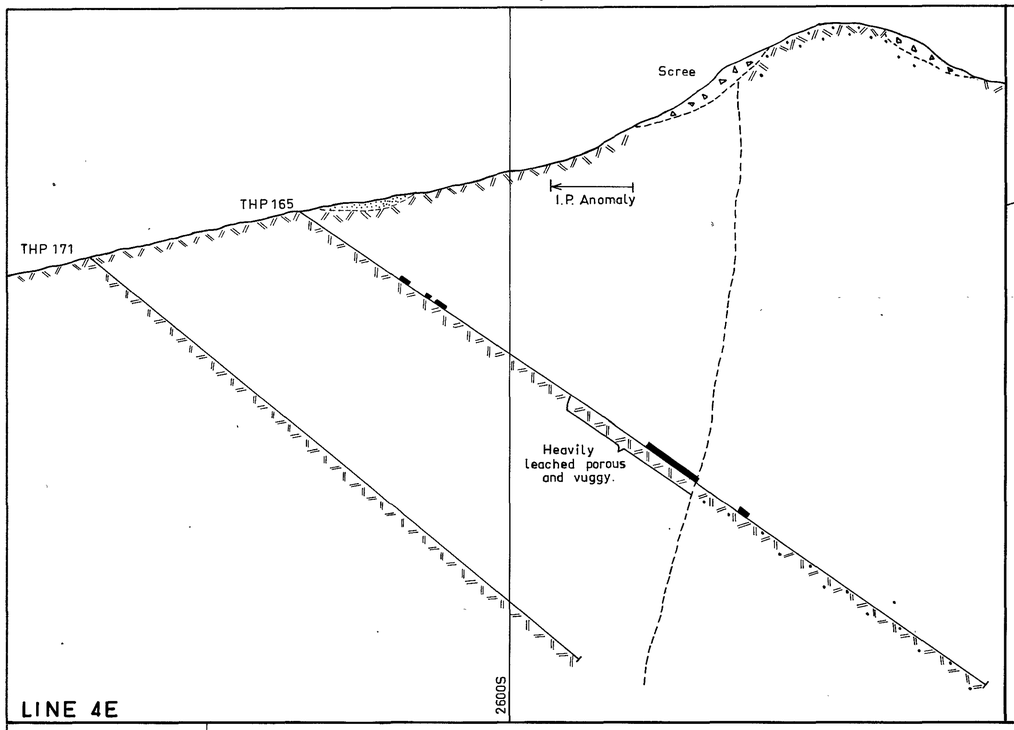
Date 4/71.
Amended 5/72.

759614

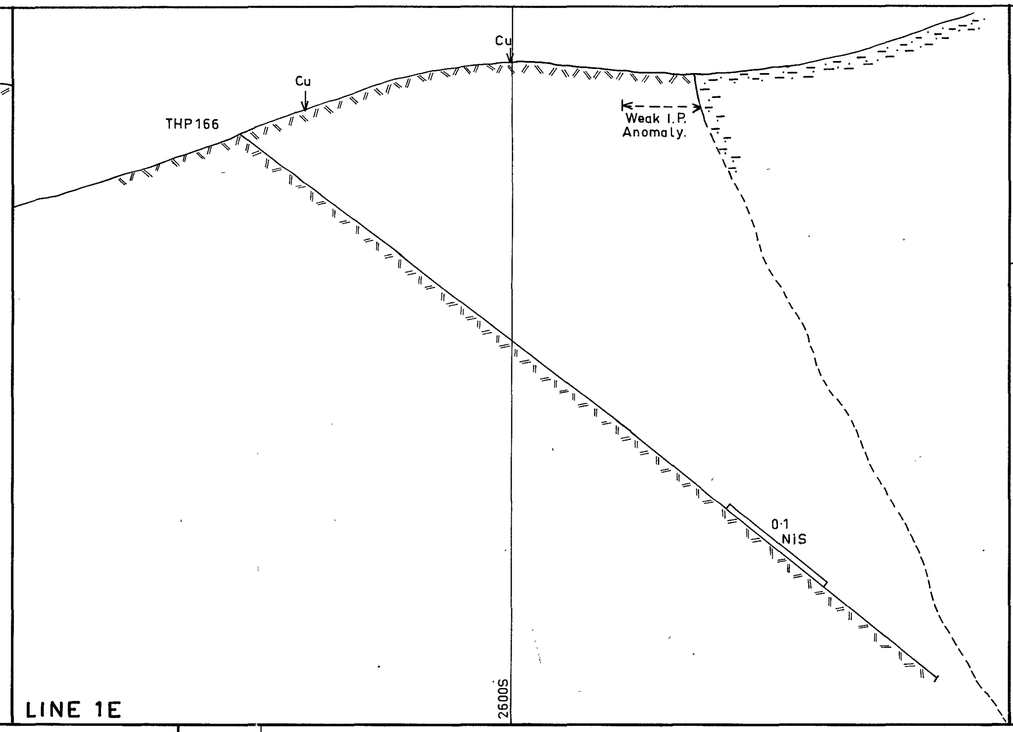
5 cm

ELECTROLYTIC ZINC COMPANY OF A|ASIA.
GEOLOGICAL DEPARTMENT.
Copy for: Date:

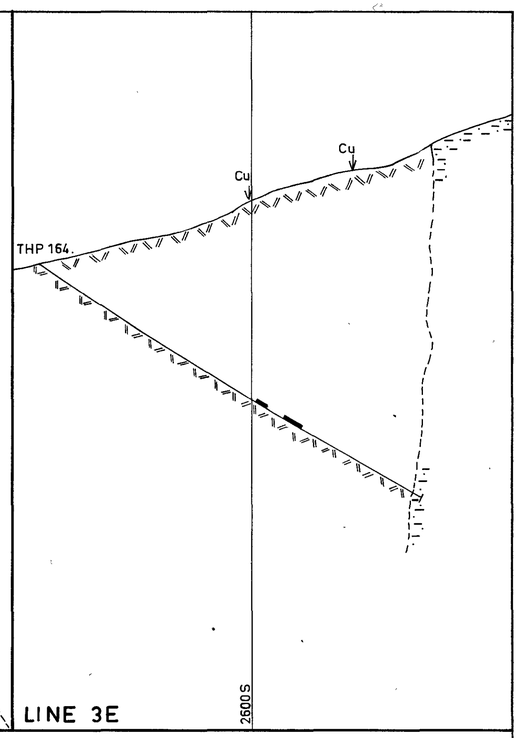
72-870
FIG. 3.



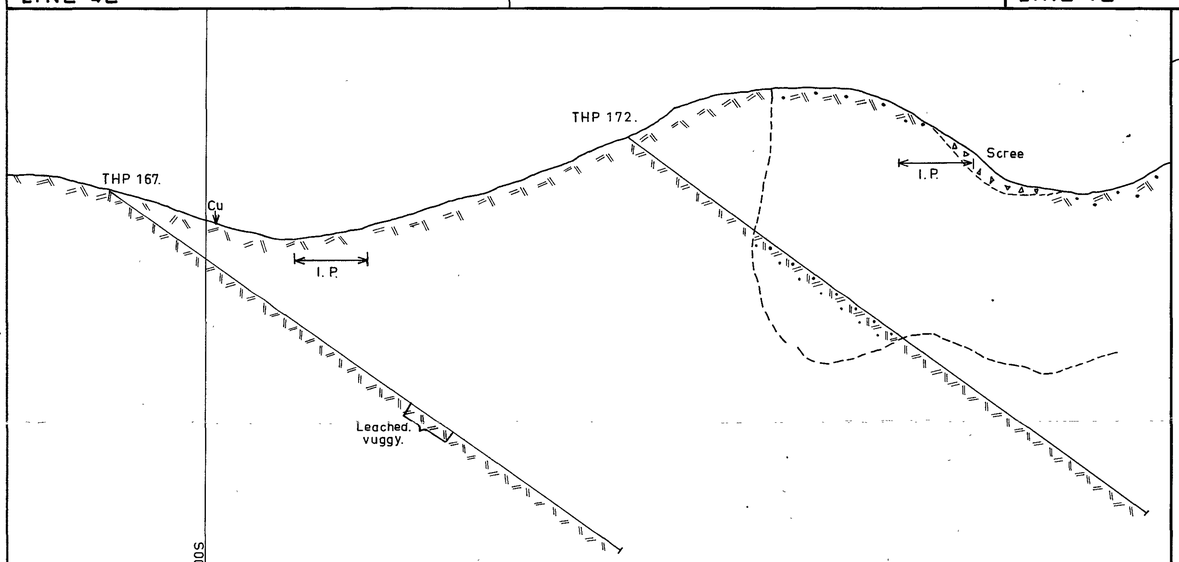
LINE 4E



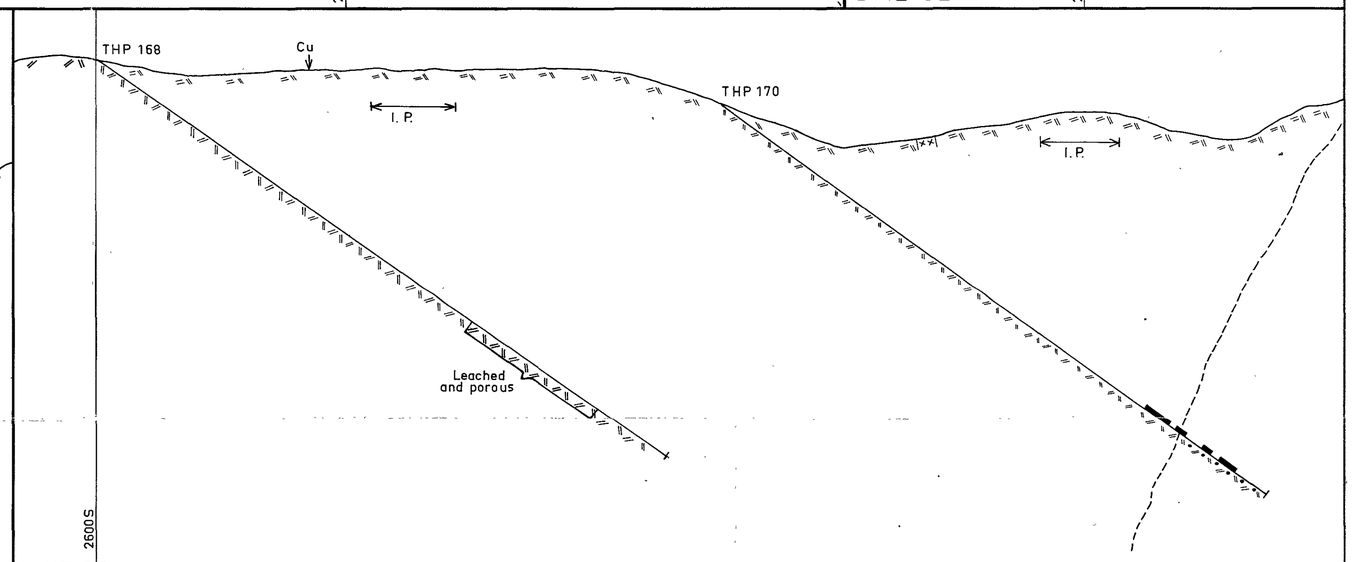
LINE 1E



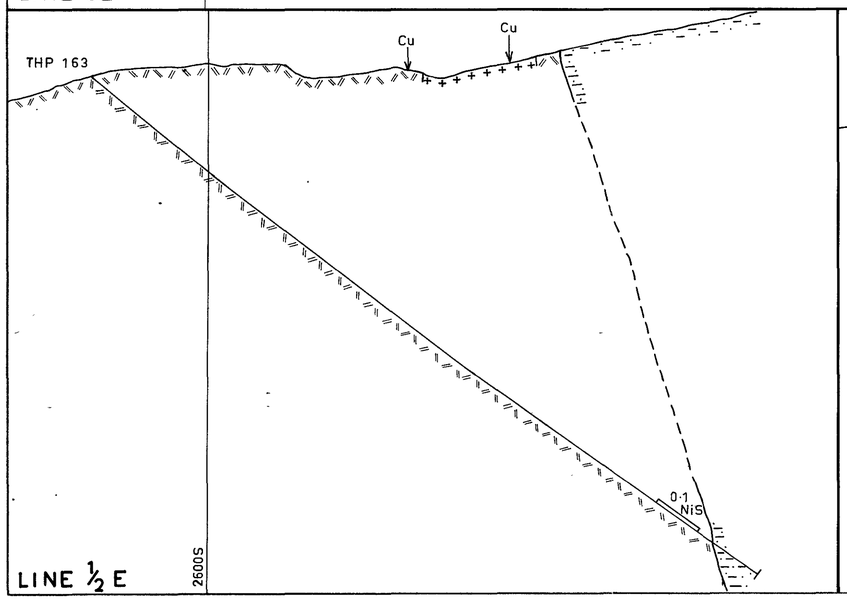
LINE 3E



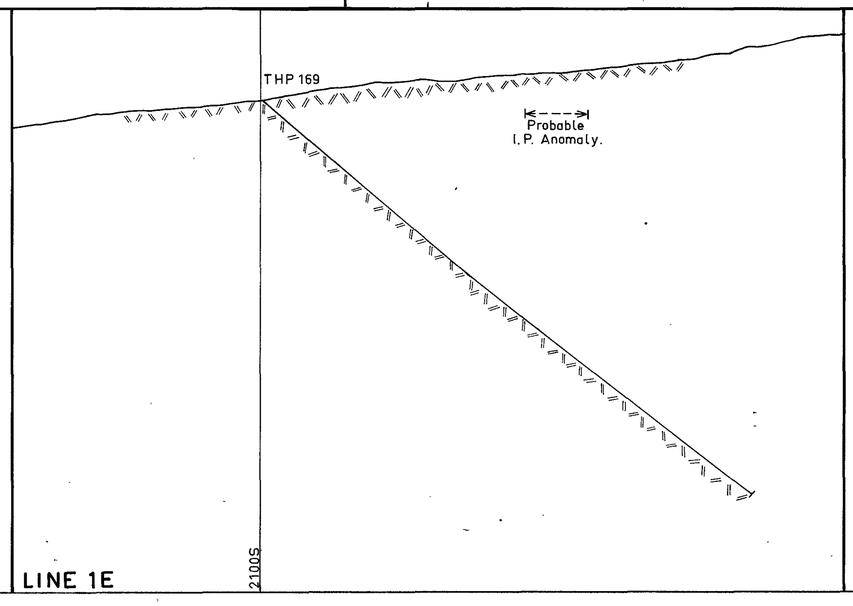
LINE 5E



LINE 6E



LINE ½ E



LINE 1E

S.P.L. 22. TRIAL HARBOUR.

SECTIONS SHOWING DIAMOND DRILLING.

All sections looking east.

Scale 1"- 40' May 1972.

C.C.J.B. / W.V.T.

KEY.

- Serpentinite.
- Silicified Serpentinite.
- Crimson Creek Hornfels.
- Siliceous Gossan.
- Cu — Geochemical Anomaly (Soil Sampling.)
- I.P. Anomaly.
- Nickel Sulphide Assays. average 0·2 – 0·3% NiS.

72-870

759015

E. Z. CO. W.C.M. GEOL. DEPT. V097.

5 cm

014

FIG. 4.