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ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD.

WEST COAST DEPARTMENT

Geophysical Surveys

Progress Report No. 3

Test Surveys at Pinnacles

26/4/1950

BPS

TCR 02-4790

879002

*Mr. Cottle
Mr. Cohen
Ken Seal file*

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
West Coast Department

Rosebery,
9th May, 1950.

MEMORANDUM to :

SUPERINTENDENT

Attached please find Geophysical Progress Report No. 3 on work at the Pinnacles.

Results generally give negative results, but self-potential indications could possibly be followed up at a later date.

I believe that the possible anomalies indicated by that method lie in an area of unfavourable rock type.

GH.
Asst. Superintendent

GH:YL
Encl.

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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED.

West Coast Department.

GEOPHYSICAL SURVEYS

Progress Report No.3Geophysical Test Surveys at Pinnacles.INTRODUCTION.

Some geophysical test surveys were carried out on the Pinnacles area during the period 22nd to 24th February. The methods used were geomagnetic, self potential and resistivity. A magnetic logging examination of drill core from some of the Pinnacles drill holes was made during November 1949. The results of all investigations appear on the accompanying plates and are described in this report.

The Pinnacles area has been well tested by means of drill holes, costeans and pits. Very little ore has been discovered but some promising mineralised zones were found. A large part of the area of interest consists of open button grass country, carrying scree type overburden which proved to be too thick for practicable testing by means of costeans or pits. This area lies between the Central and Southern workings and is the part where the aid of geophysics was needed most in the first instance.

The drilling completed in the vicinity of the Central workings revealed the existence of a tuff bed, but otherwise, the known mineralisation occurrences are confined to massive pyroclastic types of rock. The accompanying Plate 1 shows some geological features and the positions of test survey traverses.

RESULTS OF SURVEYS.

The geomagnetic survey results are shown on accompanying Plate 2 in the form of vertical force profiles. The traverses have crossed a wide zone of massive pyroclastics, black & grey slates, tuffs near the Central workings and other rocks in the vicinity of Strong's Alluvial workings. It will be noticed that the geomagnetic conditions are very uniform. The few slight variations present cannot be regarded as anomalies of interest. The uniform nature of the geomagnetic conditions is in keeping with the magnetic logging results which revealed no appreciable magnetisation in either rock or mineralised specimens.

The accompanying Plate 3 shows magnetic logging results for drill holes 34, 36 & 40. In the presentation of these results

a dot is placed at the position of each non-magnetic specimen tested and, where necessary, a stroke is placed at the position of any magnetic specimen, the length of the stroke being proportional to the magnetisation of the specimen concerned. All Pinnacles specimens tested were non-magnetic. During the field operations numerous hand specimens from the exposed mineralised body in the deep costean on the Southern workings were tested and found to be non-magnetic.

A comparison of the Pinnacles geomagnetic results with those of Rosebery area is of interest and suggests that, in the latter environment, pyrrhotite and magnetite is more abundant than at Pinnacles.

The self potential survey results are shown on the accompanying Plate 2, in the form of potential profiles. These show broad undulations with superimposed irregularities. Of the former, the trough centred at Station 7/ Traverse AE, could be due to the spontaneous polarisation of a sulphide body lying below overburden of substantial thickness. The results on Traverse AH show, what could be, portion of a similar feature, centred at Station 9. If additional work on a number of traverses in this vicinity showed these anomalies to be part of a 'negative centre' of appreciable dimensions, such a feature might be worth testing on the grounds that it could be due to a mineralised body concealed by scree overburden. On the other hand, the broad undulations referred to, and others present in the results, could be due to broad geological features not connected with mineralisation.

Of the superimposed irregularities, the trough centred near Station 2/ Traverse AF might be of most interest because it occurs adjacent to the near-surface lightly mineralised body exposed in the nearby costean. There seems to be no justification for regarding the other irregularities as features of interest.

The mineralised zones intersected by drill holes show a very small amount of total sulphides and it is unlikely that such bodies would produce satisfactory self potential anomalies.

The resistivity measurements were made near the Central workings and in the deep costean on the Southern workings. The former results are shown on the accompanying Plate 2. At the Central workings measurements were made along Traverses AH & AI, using a constant electrode separation of 100 feet, and two depth probes were completed at the positions stated on Plate 2.

The resistivity profiles along Traverses AH & AI are similar to the extent that they each show resistivity values of the same high order, but no definite conclusions can be formed from the results concerning rock trends from one traverse to the other. The depth probe results show the existence of complex

sub-surface resistivity conditions which would tend to make resistivity investigations rather futile as a means of determining geological structure, or the distribution of mineralisation, in the vicinity of Central workings.

It is of interest to find that the prevailing general ground resistivity at Pinnacles, for separations up to 150 feet, is of the order 60,000 ohm cms. This high value is typical of many West Coast regions.

Resistivity measurements were made in the deep costean at the Southern workings to determine the order of resistivity of the exposed mineralised body. The results obtained are set out below.

<u>Position</u>	<u>Separation</u>	<u>Resistivity</u>
North Wall	3 feet	10,500 ohm cms.
"	6 "	6,470 " "
"	8 "	16,700 " "
South Wall	3 feet	2,500 ohm cms.
"	6 "	5,150 " "
"	8 "	5,100 " "

These results indicate that this particular mineralised body is not in the 'conductor' class although its average resistivity is substantially lower than the average ground resistivity measured at Central workings. The conclusion that this body is not a conductor is not surprising when one considers the low assay values and high amount of silicification present.

CONCLUSIONS.

As a result of the test surveys and other investigations completed to date, the following views are held concerning geophysical surveys at Pinnacles.

1. The prospects of obtaining any useful aid to exploration from full scale geomagnetic surveys appears to be practically nil.
2. It is possible that detailed self potential surveys would provide some useful information.
3. The existence of high general ground resistivity is favourable for the application of electromagnetic methods of survey. These might produce useful results if there are present mineralised bodies containing considerably more total sulphides than is present in the Southern workings mineralised body.
4. The gravity meter could be used satisfactorily on the Pinnacles terrain. A gravity survey might produce useful information concerning geological trends. The use of this method as a primary means of discovering mineralised bodies at Pinnacles

4.

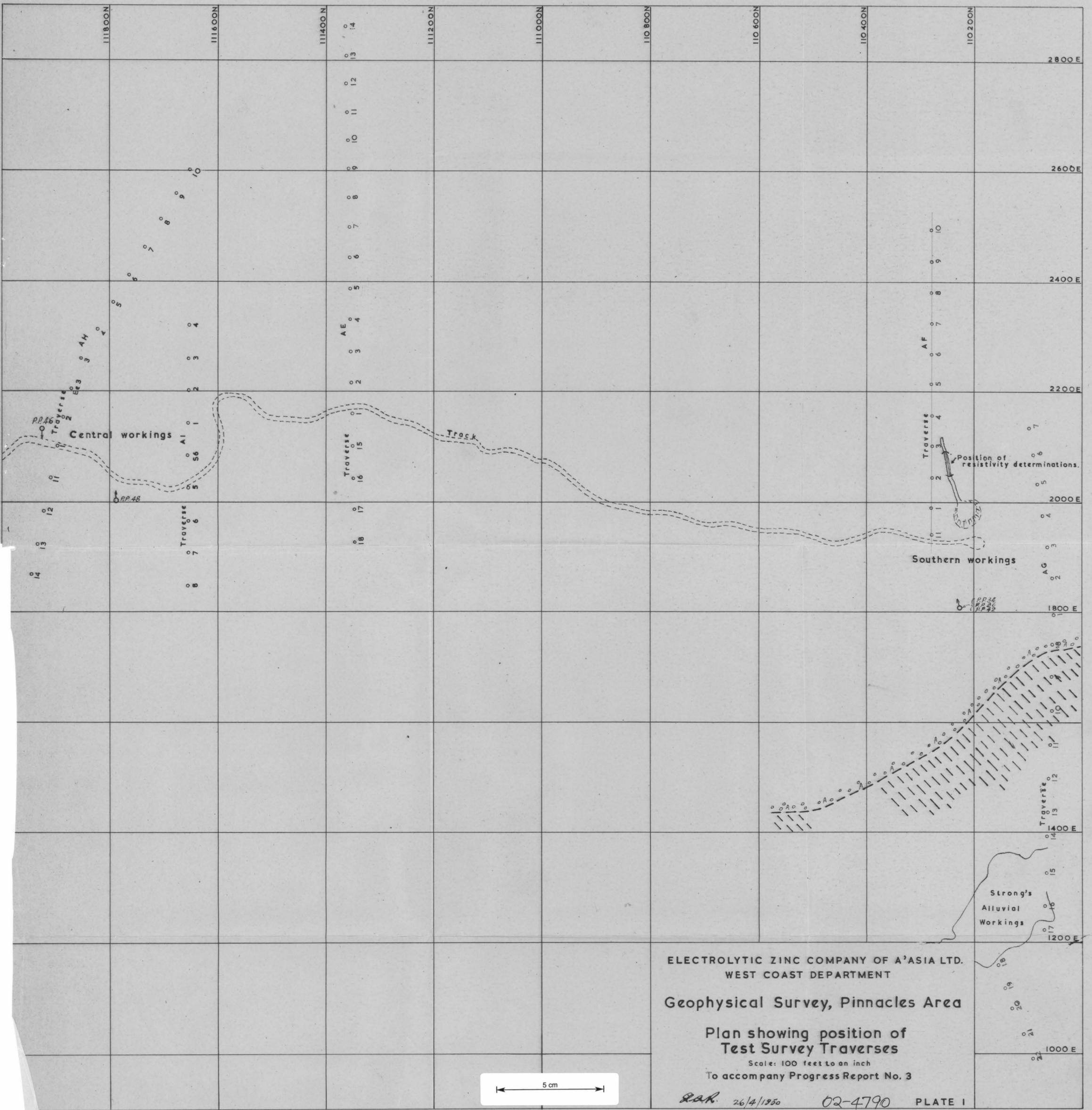
is not favoured, because the known bodies of interest are very silicious and are, therefore, a type which might be considered unlikely to include high density deposits.

5. It is believed that the prospects of success using geophysical methods at Pinnacles are not good. It is therefore considered that, from the geophysical point of view, a low priority should be allotted to any plans for full scale surveys at Pinnacles.

Roseville. 26/4/1950.

L. A. Richardson

(L. A. Richardson)
CONSULTANT GEOPHYSICIST.



ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD.
WEST COAST DEPARTMENT

Geophysical Survey, Pinnacles Area

Plan showing position of
Test Survey Traverses

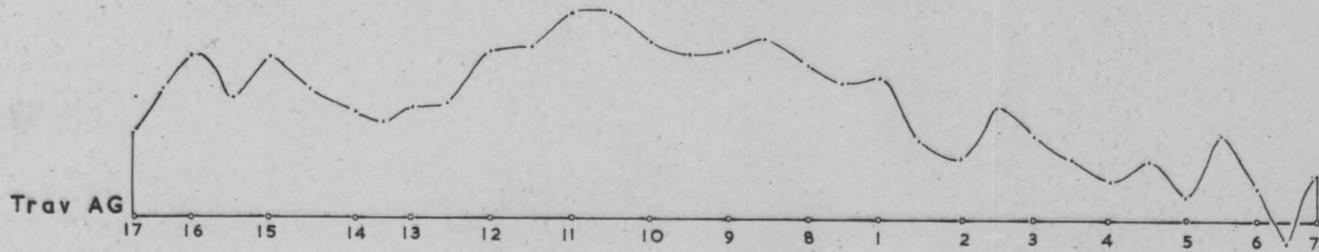
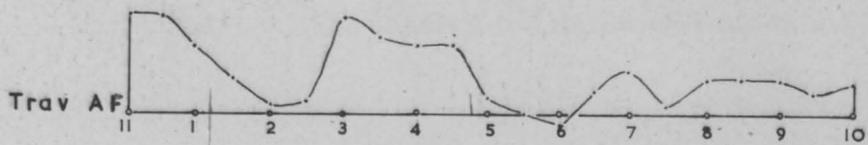
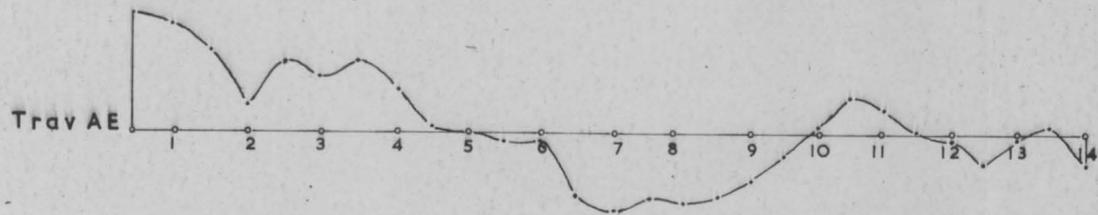
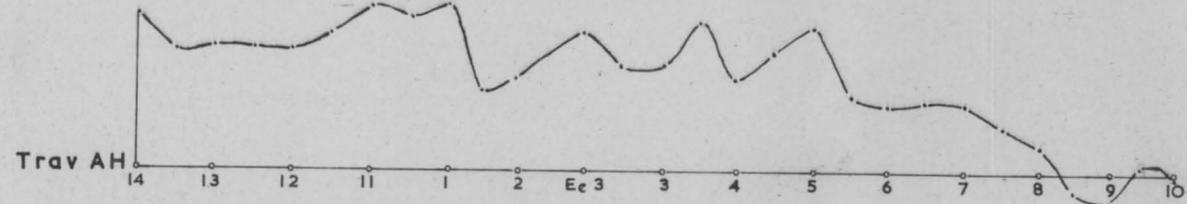
Scale: 100 feet to an inch
To accompany Progress Report No. 3

RAK. 26/4/1950 02-4790 PLATE I

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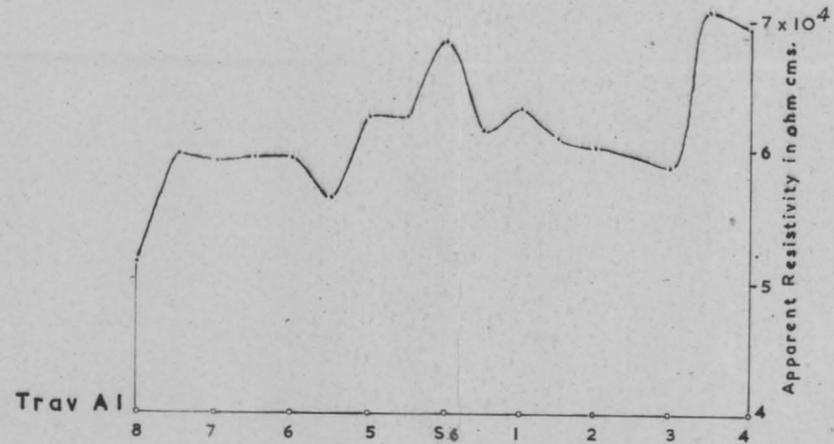
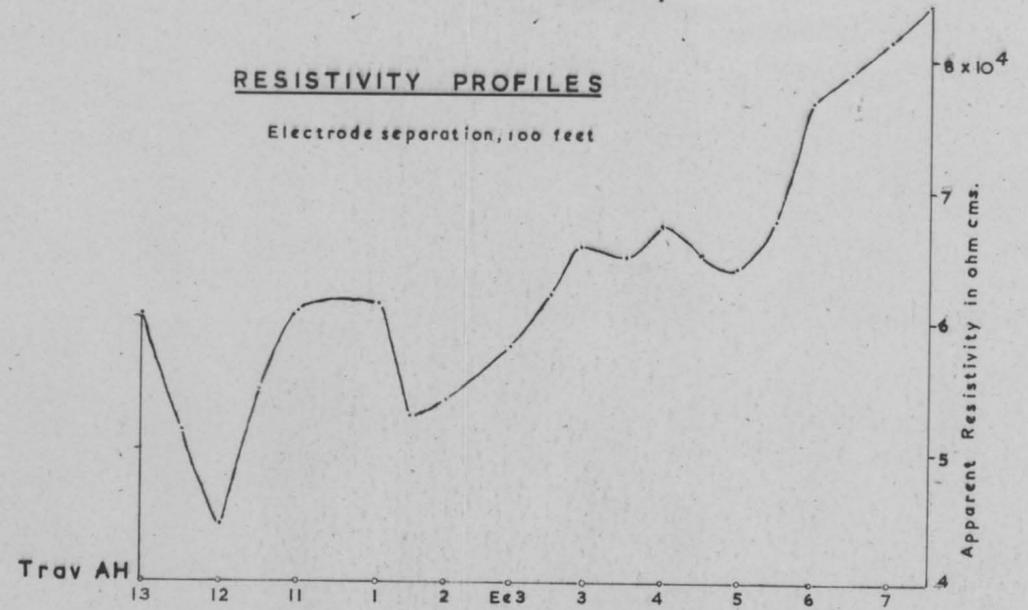
SELF POTENTIAL PROFILES

Scale: Hor. 100 feet to an inch
Ver. 50 millivolts to an inch



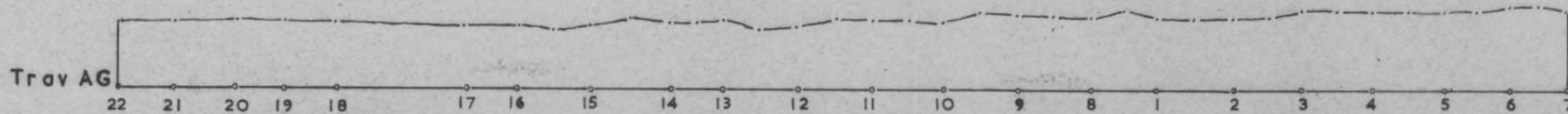
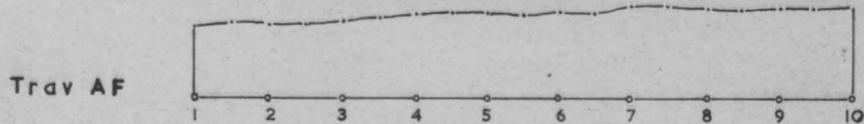
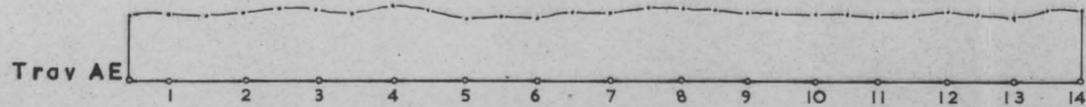
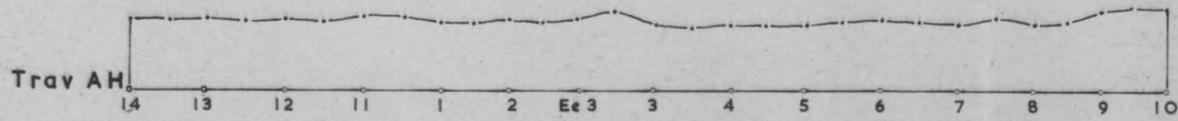
RESISTIVITY PROFILES

Electrode separation, 100 feet



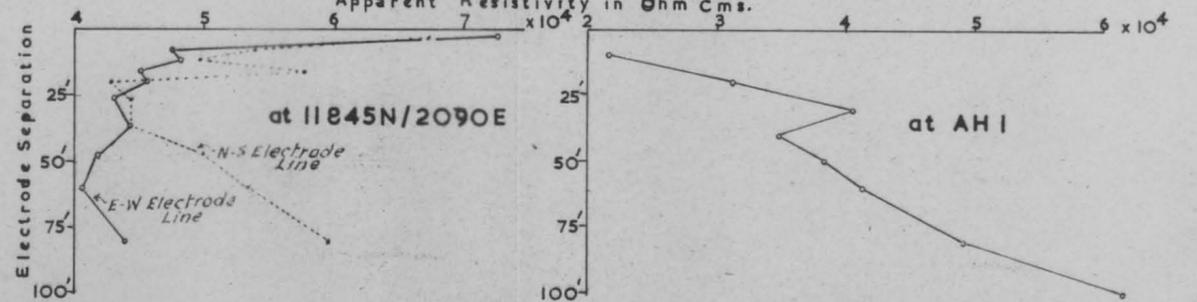
GEOMAGNETIC PROFILES

Scale: Hor. 100 feet to an inch
Ver. 100 gammas to an inch



RESISTIVITY DEPTH PROBES

Apparent Resistivity in Ohm Cms.



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WEST COAST DEPARTMENT

Geophysical Survey, Pinnacles Area
Plate showing Test Survey Results

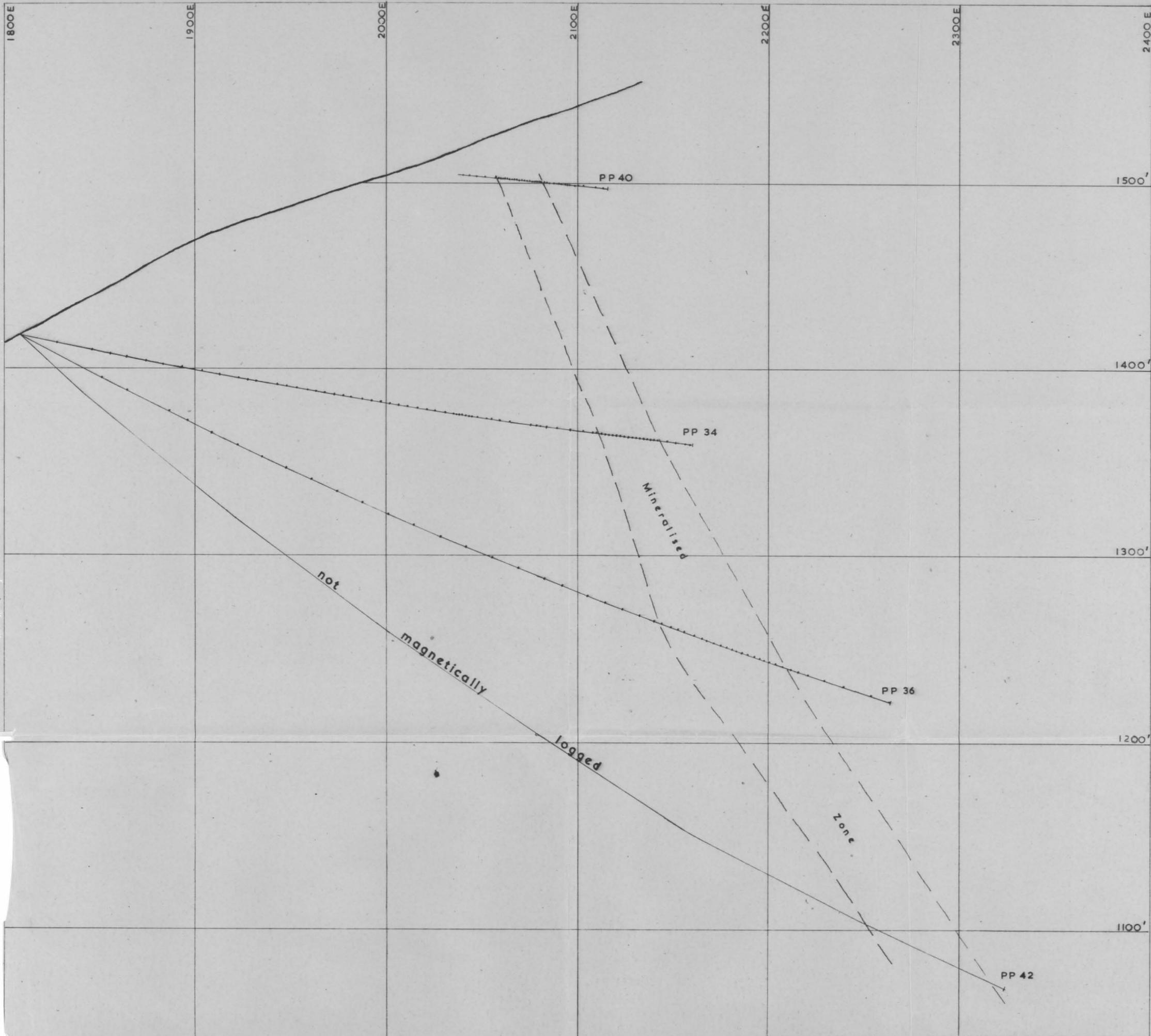
To accompany Progress Report No. 3

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L.A.R. 26/4/1950 02-4790

PLATE 2



ELECTROLYTIC ZINC COMPANY OF A'ASIA LTD.
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**Magnetic Logging Results
Pinnacles Prospect Drill Holes**

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Scale: 40 feet to an inch

To accompany Progress Report No. 3

LAB 26/4/1950 02-4790 PLATE 3

