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PROGRESS REPORT ON EXPLORATION OF EXPLORATION LICENCE 1/62 (MT. BLACK) DURING 1973-74.

74-1034

R.E. WILLIAMS

Rept. No. 117 July, 1974

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ABSTRACT

Exploration of Exploration Licence 1/62, held 100% by the Electrolytic Zinc Co. of A'Asia, continued during 1973-74 at a similar rate to that of 1972-73. Although no new orebodies were located, significant mineralisation at South Hercules and Koonya was effectively tested with diamond drilling. The West Hercules soil geochemical anomaly was further examinied and diamond drilled with discouraging results.

Reconnaissance geological , geochemical and geophysical examination of the Primrose Pyroclastic, which host the Rosebery and Hercules orebodies, is substantially completed. Although considerable surface examination of EL. 1/62 remains to be completed, the main effort during 1974-75 will be directed to diamond drilling of the zones of greatest potential for Rosebery type mineralisation. Diamond drilling programmed for 1974-75 has previously been reported by Burton (1974).

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1. INTRODUCTION

Exploration licence 1/62 (Mt. Black) has been held since January 1962 and is subject to six monthly renewal. This report covers all exploration during 1973-74 for repetitions of the Rosebery-Hercules type mineralisation within the Primrose Pyroclastic unit of the Mt. Read Volcanics which form the major part of E.L. 1/62.

2. ACCESS

Approximately 200,000 feet of grid lines were cut during 1973-74 to enable systematic geological mapping, soil geochemical sampling and the conduct of ground geophysical surveys. To facilitate access to these survey grids a total of three miles of four wheel drive tracks were constructed by bull-dozing contractors and two old foot tracks were cut out, see plates 1, 2 and 3.

Access was bulldozed for diamond drilling at West Hercules and at Koonya-Grand Centre.

3. GEOLOGY AND STRUCTURE

Although further mapping has increased knowledge of the statigraphy of the Primrose Pyroclastics, the basic sequence described by Reinhardt (1973) is still accepted. The interpretation of the structure has been modified slightly and ash flow textures are being more widely recognised.

A Topographic Plans

The lack of recent topographic maps at suitable scales has reduced the quality of geological mapping presented during previous years. During 1972-73 Lands Department contoured topographic plans at a scale of 20 chains to 1 inch were enlarged to 1: 10,000 scale to provide a topographic base for data compilation. With the rugged topography on E.L.1./62, this scale is not adequate to plot fact mapping with any degree of clarity. For this report only interpreted geological plans at 1: 10,000 scale have been produced.

During 1974-75 topographic plans of the Primrose Pyroclastics within E.L.1./62 are to be produced by the Lands Department at 1: 5000 scale. Rosebery townsite and Mine area are to be produced at 1: 1000. The 1: 1000 scale topographic plans previously prepared of the Hercules Mine area have clearly justified the small cost involved with the resulting improvement in the ability to accurately collect and record data. Aerial photographs, purchased through Cominco Exploration Pty. Ltd., have enabled plotting of many recently constructed access tracks and other cultural detail not indicated on the Lands Department plans.

B Geological Mapping

Detailed grid mapping, presented at a scale of 1: 2500, has been partially completed over the area between Rosebery Mine and the railway bridge over the Pieman River, and between 2400S Dalwitz grid and the Southern boundary of E.L.1/62. See plates 16,17, & 18

Mapping by University students for post graduate qualifications has covered selected areas of the Primrose Pyroclastics. The areas involved are detailed in section 7 of this report.

The relationship of the Rosebery Group to the Primrose Pyroclastics remains a problem. A cutting for the flume from Rosebery to the new Bobadil tailings dam provides excellent exposures of the Rosebery Group but the contact with the Primrose Pyroclastics is not exposed.

C Structure

The current structural interpretation of the Primrose Pyroclastics is shown in figure 1 and on the plates 4,5 & 6. The weakness in this interpretation is the difficulty in establishing that the Rosebery host rock horizon continues north west from Rosebery Mine and then swings south in an anticlinal closure to continue south as the Primrose and Barker crossing shales through Jupiter to West Hercules. Without distinctive alteration or a recognisable marker horizon, it is almost impossible to determine whether the ash flow units in the critical areas are hanging wall or footwall rocks. Most of the critical areas have a cover of glacial overburden. A similar problem exists in tracing the Hercules horizon north from Hercules Mine and around into a

synclinal closure with the Dalwitz horizon.

During 1974-75 the possibility of an anticlinal closure of the Rosebery host rocks and the Primrose shale will be fully investigated.

If this structural interpretation can be established conclusively, the number of strike miles of potential host rock horizon will be increased significantly.

Diamond drilling of the West Hercules prospect, from lithological data and sedimentary facings, supports the interpretation of an anticlinal axis between Hercules Mine and West Hercules.

D Mineralisation

A major soil geochemical anomaly centred on 400E and 2400S Dalwitz grid was costeaned without exposing any mineralisation, several grey shale units are present in both costeans and chip sampling results indicate back ground. basemetal values similar to those of the soil geochemistry.

During grid mapping a gossanous outcrop within chloritic schists was located at 2400S and 1195E or the Dalwitz grid. The gossanous material extends for at least 150 feet along strike and numerous assays and mineragraphic examination confirms the gossan to result from basemetal mineralisation. See table 1 and Whittle (1974). Further sampling and an induced polarization geophysical survey will preceed any diamond drilling of this gossan.

TABLE 1

Gossan from 2400S, 1195E Dalwitz Grid

Sample No.	Cu.	Pb.	Zn.	Ag.	Au.	
0/4435	700	800	2000	4	-	ppm
36	1200	1650	3700	9	-	
4447	560	780	840	12	0.1	
48	250	400	540	4	< 0.1	
49	440	480	185	4	0.2	
50	270	420	260	4	0.2	
51	680	1400	2000	37	0.2	
52	135	160	425	3	< 0.1	

4. GEOPHYSICS

Scintrex Pty. Ltd., Contractors, performed all the geophysics completed on E.L. 1/62 during 1973-74. The three reports provided by Scintrex are included in the Appendix of this report.

Gradient array induced polarization was the only geophysical technique used on a systematic basis during 1973-74.

Experiments were conducted to test the application of:

(1) Magnetic induced polarization
(11) Down hole electrical geophysics
(111) Resistivity depth soundings

to exploration in E.L. 1/62.

A Induced Polarization

During 1972-73 the Turair and Turam electromagnetic systems were used extensively on E.L. 1/62 with doubtful success. The major difficulty of any electrical geophysical technique in the search for Rosebery-Hercules type sulphide mineralisation is the comparatively high resistivity of sphalerite in contrast to the other ore minerals.

This difficulty is of less consequence when the induced polarization method is used. As induced polarization was relatively successful in the West Hercules area, the method will be applied with reasonable confidence in 1974-75 to trace sulphide rich lithologies under areas of extensive glacial cover.

B. Magnetic Induced Polarization

Experiments were conducted at South Hercules, Koonya and Rosebery Mine with the magnetic induced polarization technique. No results were obtained over Rosebery Mine or Koonya due to the difficulty in passing sufficient current into the ground. The results at South Hercules are encouraging and a description of the method and the results obtained are contained in the Appendix to this report.

C. Downhole Electrical Geophysics

The South Hercules mineralizations was investigated with drill hole to drill hole and drill hole to surface electrical geophysics. This investigation is included in Appendix and is discussed in Throop (1974a)

D. Resistivity Depth Soundings

A trial survey at Bobadil, immediately north of Rosebery Mine, was carried out by Scintrex to determine whether resistivity would be a successful technique to estimate the thickness of the glacial cover over the Cambrian Bedrock. Previous attempts to costean through extensive areas of glacials have been expensive and unsuccessful. The resistivity depth soundings gave reasonably reliable estimations of the depth to bedrock. During 1974-75 further depth soundings will be carried out by company personnel using equipment hired from Scintrex.

Results from previous geophysical surveys have been replotted at 1: 10000 scale.

5. GEOCHEMISTRY

A. Soil Geochemistry

Soil Geochemistry continued to be the main reconnaissance method in the search for mineralization. During 1974-75 soil sampling will be completed over all the known areas of Primrose Pyroclastics on E.L. 1/62.

Soil sampling intervals and methods of data handling have changed since the 1972-73 Annual Report (Reinhardt 1973). The sample interval has been reduced from 100 feet to 50 feet on the lines traversing access strike with collection of "C" horizon material and analysis of the -80 fraction.

Sample co-ordinates and assay data is now recorded in a form suitable for computer input. At the present stage all data is being handled manually by plotting assays onto plans at a scale of 1: 2500, contouring as per population breakdowns and then reducing this data to 1: 10000 scale with a mechanical pantograph.

Contouring of soil sample data has been based on populations derived by cummulative frequency plots of the data without any regard to bedrock geology, or soil and vegetation types. During 1974-75 research will be directed into refining the treatment of the soil sample data.

Further orientation soil sampling was conducted to test the validity of "A" and "C" soil horizons. This data has been summarised by Throop (1974b). Further orientation studies are obviously necessary. Soil geochemical results for all soil sampling conducted over the E.L. 1/62 are included as Plates 7 to 15 in this report. Brief descriptions

of the data collected is listed below:

1) Bobadil 1: 10000 sheet (Plates 7,8 & 9)
The extensive glacial cover over the area of interest has reduced the effectiveness of soil geochemistry with only rare point anomalies being present.

11) Koonya 1: 10000 Sheet (Plates 10,11 & 12)
Excluding several short follow-up lines, soil sampling was restricted to the area between Hercules Mine and the Salisbury Prospect.

The Results for the area between 2600 N and 5600 N Hercules grid are discussed in Throop (1974b).

Although there is extensive glacial cover over the remainder of the area sampled, the Jupiter copper prospect shows as a distinct anomaly and there is a reasonable geochemical anomaly on 14400N Hercules Grid. This anomaly appears to be uphill and immediately east of a continuous NNE trending geochemical anomaly which is presumed to be a sedimentary rock unit which may be continuous from the Barkers Crossing shales to the shale in the Jupiter Pb-Zn prospect. Follow-up soil sampling is required over this anomaly as the area has no previously known mineralisation. The more significant results on line 14400N Hercules grid are:-

Sample No.	Co-ords	Cu.	Pb.	Zn.	Ag.
S2703	300W	30	1400	295	4 p p m
S2704	350W	50	1150	640	3

111) White Spur 1:10000 Sheet (Plates 13,14 & 15)
Sampling has been restricted to follow-up sampling in the West Hercules area and the sampling of the Dalwitz Horizon southwards towards the Southern boundary of E.L. 1/62. Results for West Hercules are discussed in section 6 of this report. Follow-up sampling was required at South Dalwitz but no mineralisation has yet been located by soil sampling. Little soil geochemical response is evident over a gossanous outcrop at 2400S, 1195E on the Dalwitz Grid. (See Section 3 this report)

Currently soil samples are being analysed for Cu, Pb, Zn, and Ag. The following are observations on the effectiveness of the results.

Cu: Displays less correlation with the sedimentary units but extremely good correlation with mineralisation.
Probably due to the higher mobility of Cu in an acid environment it appears to be the more useful element in areas of glacial cover.

Pb: Pb appears to be ineffective where glacial cover is present, probably due to its low mobility and its ready precipitation by organic material. Where glacials and heavy soil cover is absent, Pb appears to correlate extremely well with the known sedimentary horizons and with known mineralisation.

Zn: Zn, due to its higher mobility, appears to be more responsive than Pb when glacial cover is present, otherwise the response from Zn is similar to that of Pb except that it does not reflect mineralization as well.

Ag: No contoured plans at 1 : 10000 scale have been prepared but any results greater than 2 ppm are considered to represent some form of sulphide mineralization.

B. Stream Sediment Geochemistry

A limited number of -80 mesh stream sediment samples were collected during routine soil sampling and geological mapping. These results agree reasonably well with those of the 1970-71 stream sediment sampling.
Extremely high results obtained in the West Hercules - Ring River area during 1970-71 were checked by extending cut lines over the area of interest. Neither soil sampling or stream sediments collected from the poorly developed streams support the results obtained in 1970-71. An attempt to resample the streams as they had been previously sampled was not successful as the topography made reaching the original sample sites extremely difficult. The samples collected during this resampling do not support the high results obtained in 1970-71. The 1970-71 sampling of this area can no longer be considered valid. All data is included in Figures 3 & 4 and tables 2 & 3.

C. Research - Gossans

The response expected in geochemical soil sampling has a relation to the form of the mineralisation immediately underlying the soil and overburden. Orientation studies completed on E.L. 1/62 indicate sub-outcropping sulphide mineralisation can be located by present soil sampling techniques. The geochemical response to be expected when the surface expression of mineralisation is represented by gossans has not been investigated in sufficient detail. Gossans developed over the Koonya mineralisation and over the ore presently being mined in the Rosebery opencut were examined by Whittle (1974). These gossans are extremely leached and also affected by varying degrees of supergene

TABLE 2.

ANALYSES FOR STREAM SEDIMENT

SAMPLING WEST HERCULES AREA 1970-71

	Cu (ppm)	Pb (ppm)	Zn (ppm)
1	800	1450	2900
2	10	100	230
3	5	140	120
4	800	2100	30000
5	520	2900	28000
6	260	1400	15000
7	340	2400	12000
8	-	5800	19000
9	1000	450	35000
10	1100	11000	110000
11	1500	14000	170000
12	540	6000	6200
13	410	4000	7000
14	10	1100	90
15	370	2700	10000
16	55	1800	1800
17	1200	4800	35000
18	750	4200	20000
19	420	1800	8000

(N.B. Sample Nos. assigned 1974)

TABLE 3.

ANALYSES FOR CHECK STREAM SEDIMENT SAMPLING 1973-74

	Cu (ppm)	Pb (ppm)	Zn (ppm)
S 301	10	265	40
S 302	15	430	85
S 303	20	945	190
S 304	45	3200	3800
S 305	10	140	140
S 306	20	2500	405
S3312	35	205	320
S3313	20	270	95
S3314	30	240	430
S3315	65	130	200
S3316	75	105	230
S3317	35	55	70
S3318	50	90	190
S3319	25	125	220
S3320	20	120	290
S3321	20	340	615
S3322	20	155	240
S3323	20	260	735
S3324	15	150	280
S3325	25	150	420

ferruginisation by the deposition of colloform exotic limonite from ground waters.
Assays of these gossans, especially those from the Rosebery opencut, suggest that leaching of Zn from the original ore of probably 15 to 20% Zn has been intense. See assays Table 4. Although present soil sampling techniques would be expected to locate gossans under normal soil cover, it is extremely unlikely that significant mineralisation, when expressed by a gossan, would be detected through any thickness of glacial overburden.

TABLE 4

GOSSANS DEVELOPED OVER MASSIVE Cu - Pb - Zn SULPHIDE MINERALISATION.

Sample No.	Location	Cu.	Pb.	Zn.	Ag.	Au.
O/4453	Koonya	2000	2200	1200	92	3.0ppm
54	"	2800	1100	870	96	2.9ppm
O/4460	R'bery O'Cut	760	8800	2800	3600	10.6ppm
R.O 7595	" "	300	8000	1000	175	0.7ppm

D. Research - Mercury

Limited field tests were conducted at South Hercules with a mercury vapour collection system. Investigation of the background Mercury content of various lithologies has commenced and at this stage no conclusive results have been obtained.

6. DIAMOND DRILLING

During 1973/74 a total of 7796 feet of exploratory diamond drilling was completed away from the mine areas. This does not include the diamond drilling of the South Hercules mineralisation which is covered by Throop (1974A). The prospects diamond drilled are described below.

A. White Spur Prospect DDH WSP191

WSP191, coords 7200S, 320W White Spur Grid, see

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Figure 4 was drilled to test a turam anomaly which was considered to be related to Turair Conductor 7. See Scintrex report Tas 009 in Reinhardt (1973). No significant mineralisation and no feature which may have generated a turam anomaly was intersected. The turam anomaly is not particularly strong and is probably related to a surface effect or a water filled shear zone. No further drilling is planned.

B. West Hercules Prospect DDH[S] WHP192 WHP193

Additional soil geochemistry and gradient array induced polarisation were completed over the major Pb-Zn soil geochemical anomaly at West Hercules. See Reinhardt (1973) and Figures 5,6 & 7 and Plates 13,14 15 this report. Soil sample traverses were completed over the soil anomaly on 200 feet line spacing with samples taken every 50 feet. These defined the anomaly as shown in Figure 5. Gradient array induced polarization geophysics was also carried out over the West Hercules area. See Scintrex Report Tas 017 in the Appendix to this report.

Due to the inaccessibility of the ideal drill sites in the West Hercules area, the geophysical and geochemical anomalies were eventually diamond drilled from up slope. See Figures 6 & 7 . The two holes drilled, WHP192 and WHP193, adequately tested the anomalies and satisfactorily explained the geophysical anomalies. Induced polarization anomalies A & E are both due to pyrite within shales and siltstones while anomaly B is due to disseminated py-gn-sp within siliceous lithic tuffs which are considered to be Hercules "footwall tuffs".

DDH WHP192 was completely sampled, either by chip or split sampling and the shales and volcanics present, which correlate with the

position of the soil geochemical anomaly, do not have background base metal values of sufficient magnitude to explain the anomaly. The most likely explanation is the down slope dispersion from weathering of the mineralization. which correlates with the position of I.P. anomaly B., to the shale horizon, which correlates with I.P. anomaly A, where the base metal cations could be fixed by the clay weathering products produced by the shale. This would explain why the geochemical anomaly parallels the geology.

The sediments intersected in WHP192 indicates the sequence is west facing and thus the interpretation of an anticlinal axis between West Hercules and Hercules Mine appears valid. No further drilling of the West Hercules area is recommended at the present stage.

C. North Hercules Prospect: DDH^S NHP194, NHP195

These two diamond drill holes, drilled to test a geochemical anomaly, are covered in Throop (1974B). No significant mineralisation was intersected.

D. Koonya Prospect: DDH^S KP196 to KP201 inclusive

The Koonya-Grand Centre mineralisation is located within pyroclastics considered to be footwall to the Rosebery Mine host rocks. Previous examination, other than the early prospecting phase, appears to have been restricted to geological examination and a self potential geophysical survey in 1950-52. The 1952 Annual Report of the Geology Department West Coast Mines, suggests 3500 to 4000 tons of ore grading 5.7%Pb, 7.2% Zn. 0.3% Cu and 1.8 oz Ag/t between the two adit levels at Koonya. During the Natone Valley I.P. Survey, a single line was run over the Koonya area without detecting any significant anomaly.

The Turair airborne E.M. survey carried out over the Mt. Black Licence in 1972, produced only a single weak anomaly in the Koonya-Grand Centre area, with no apparent success in detecting either the Koonya Pb-Zn mineralisation or the Grand-Centre Py-Cp mineralisation. (Linford 1972)

Stream sediment sampling in 1969-71 (?) detected anomalous copper in the stream into which the Grand Centre adit drains. This anomaly is probably enhanced by contamination.

Inspection of the Koonya-Grand Centre environment suggested a zone 1800' long by 200' wide of altered footwall pyroclastics within which disseminated pyrite mineralisation is ubiquitous.

Three diamond drill holes, KP196, 197, 198 were completed as an initial programme with a further three holes, KP199-201, being drilled to follow-up the mineralisation intersected in KP196. Drill hole layout is shown in Figure 8, cross sections in Figures 9 to 13 and mineralisation intersected in Table 5. The footwall rock to the mineralisation in KP196, is a distinctive pale cream to a pink lithic tuff and provides an excellent marker horizon. KP199, the first of the follow-up holes to KP196, failed to intersect this distinctive footwall unit and KP200 and KP201 were completed to provide additional information on the structure. The structure is still not fully understood and although folding is undoubtedly present, the possibility of a fault between KP196 and KP199 is suspected. Detailed comparison of the rock types in these drill holes is programmed for 1974/75 to enable prediction of the footwall target zone before deepening KP199. Further drilling around KP196 will depend entirely on the deepening of KP199 but it already appears likely that this is not an ore position.

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TABLE 5

ASSAY DATA FOR KOONYA PROSPECT DIAMOND DRILLING

Hole No.	From	To	Interval	Pb	Zn	Cu	Remarks
KP196	385.7'	405.5'	19.8'	2.61%	8.41%		
KP197	535.0'	545.0'	10.0'	0.18%	1.78%	0.08%	
	550.0'	555.0'	5.0'	0.3 %	1.4 %	0.05%	
KP198	350.0'	357.4'	7.4'	0.1 %	0.1 %	1.76%	
KP199	243.0'	248.0'	5.0'	0.1 %	1.0 %	0.03%	Failed
	512.5'	517.5'	5.0'	2.3 %	4.4 %	0.08%	to reach
	548.0'	553.0'	5.0'	0.2 %	2.0 %	0.06%	target
KP200	Barren						
KP201	362.0'	367.0'	5.0'	0.73%	1.76%	0.17%	

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No follow-up drilling is planned around the copper mineralisation intersected in KP198. Three diamond drill holes are to be drilled in 1974/75 to test the Rosebery host rock horizon immediately east of the Koonya-Grand Centre area.

7. RESEARCH

In addition to investigating the effectiveness of geochemical and geophysical methods, as discussed previously in Sections 4 & 5 of this report, several University students have been permitted to use the Mt. Black licence as the subject for parts of post graduate theses. This research work is listed below:

C.J. Eastoe - submitted his honours thesis, the "Geological & Geochemical Variation In The Rosebery Host Rock Horizon" to the University of Tasmania in December 1973.

F. Fitzgerald for a honours thesis at the University of Tasmania, is currently studying the geochemical variation in the Hercules Mine and the petrology & structure of the White Spur area.

R.L. Smith for a masters thesis at the University of Melbourne is studying geochemical variation in the Rosebery Mine and the petrology and structure of the area between Rosebery, Jupiter and Koonya.

G. Green for Ph.D thesis at the University of Tasmania is also studying geochemical variation in the Rosebery Mine. As part of this thesis G. Green has completed detailed mapping between Mt. Read and Farrell Junction.

During 1974 it is expected that support will be given to at least one Honours Thesis, possibly with a geochemical bias.

8. PROGRAMME FOR 1974-75

Diamond drilling during 1974-75 is to be increased over the footage drilled 1973-74. The majority of the programme proposed for 1974-75 is adequately covered by Burton (1974). A minimum footage of 21000 feet is to be drilled for exploration purposes on E.L. 1/62.

Reconnaissance phase exploration of the Primrose Pyroclastics will be completed during 1974-75. Investigation of the remaining areas of Cambrian volcanic rocks on E.L. 1/62 will be commenced with the Henty Fault Zone area between the Sterling Valley Mine and the southern boundary of E.L. 1/62 being of prime interest.

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Howland-Rose, A.W. (1974). A report on electrical and magnetic induced polarization surveys in the Rosebery area Tasmania. Report No. Tas - 017A. Unpublished report by Scintrex Pty. Ltd., See Appendix this report.

Howland Rose, A.W. (1974). Brief comments on the feasibility of resistivity depth soundings over glacial moraine using samples of depth determinations made at Bobadil near Rosebery, Tasmania, Report No. Tas. - 022. Unpublished report by Scintrex Pty. Ltd., See Appendix this report.

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APPENDIX

1. Howland Rose, AW (1973) Report on gradient and down electrical induced polorization surveys, Hercules grid, West Coast, Tasmania. Rept. No. Tas. 017 Unpubl. report by Scintrex Pty. Ltd.

2. Howland-Rose AW (1974) A report on electrical and magnetic induced polorization surveys in the Rosebery area Tasmania. Rept. No. Tas - 017A. Unpubl. rept. by Scintrex Pty. Ltd.

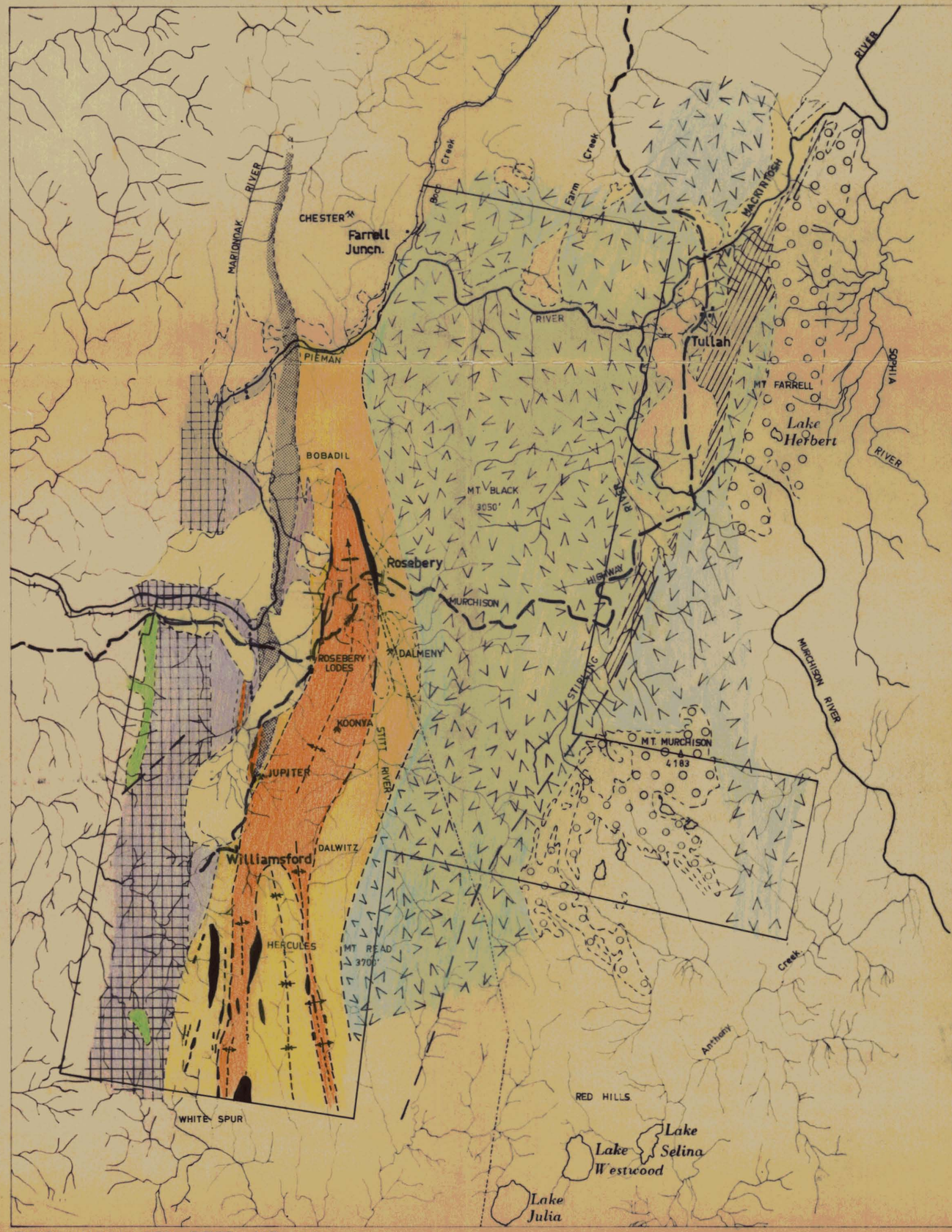
3. Howland Rose AW (1974) Brief comments on the feasability of resistivity depth soundings over glacial moraine using samples of depth determinations made at Bobadil near Rosebery, Tasmania, Rept. No. Tas. - 022. Unpub. report by Scintrex Pty. Ltd.

4. Whittle, AWG (1974) Gossans Rosebery area. Unpubl. rept. to Electrolytic Zinc Co. of A'Asia by A.W.G. Whittle & Associates.

5. Diamond Drill hole logs.
WSP 191, WHP 192 - 193; KP196 - 201

6. Geochemical Soil Sample Data Sheets 1973 - 74 (Director of Mines copy only).

GEOLOGICAL MAP OF THE ROSEBERY - TULLAH - WILLIAMSFORD AREA SHOWING MT BLACK EXPLORATION LICENCE 1/62



L E G E N D.

PLEISTOCENE

MORAINE AND FLUVIOGLACIAL DEPOSITS.

ORDOVICIAN

JUKES BRECCIA AND OWEN CONGLOMERATE

CAMBRIAN

CRIMSON CREEK ARGILLITE

ROSEBERY GROUP

MUNRO CREEK SLATE

WESTCOTT ARGILLITE

WILLIAMSFORD VOLCANICS.

SALISBURY CONGLOMERATE

NATONE VOLCANICS

STITT QUARTZITE

CHAMBERLAIN SHALE

MOUNT READ VOLCANIC GROUP

UNDIFFERENTIATED VOLCANICS

FARRELL SLATES

MOUNT BLACK VOLCANICS

PRIMROSE PYROCLASTICS — HANGINGWALL / FOOTWALL.

SHALE LENSES

SERPENTINITE & GABBRO

SCALE

5 cm

1 2 3 MILES

184

576030

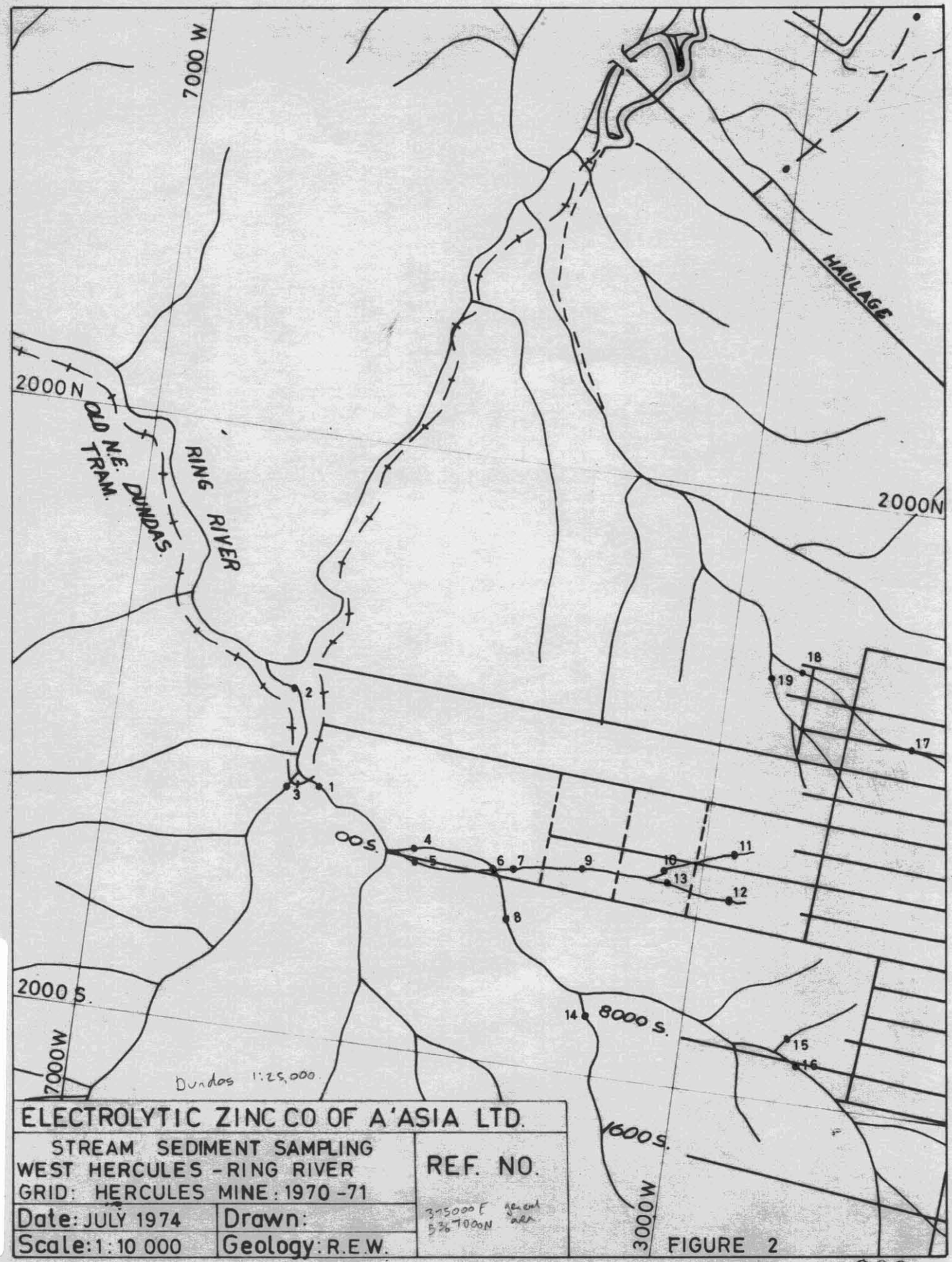
74-1034

E.Z.CO. W.C.M. GEOL. DEPT. XR. 126.

029

FIGURE 1

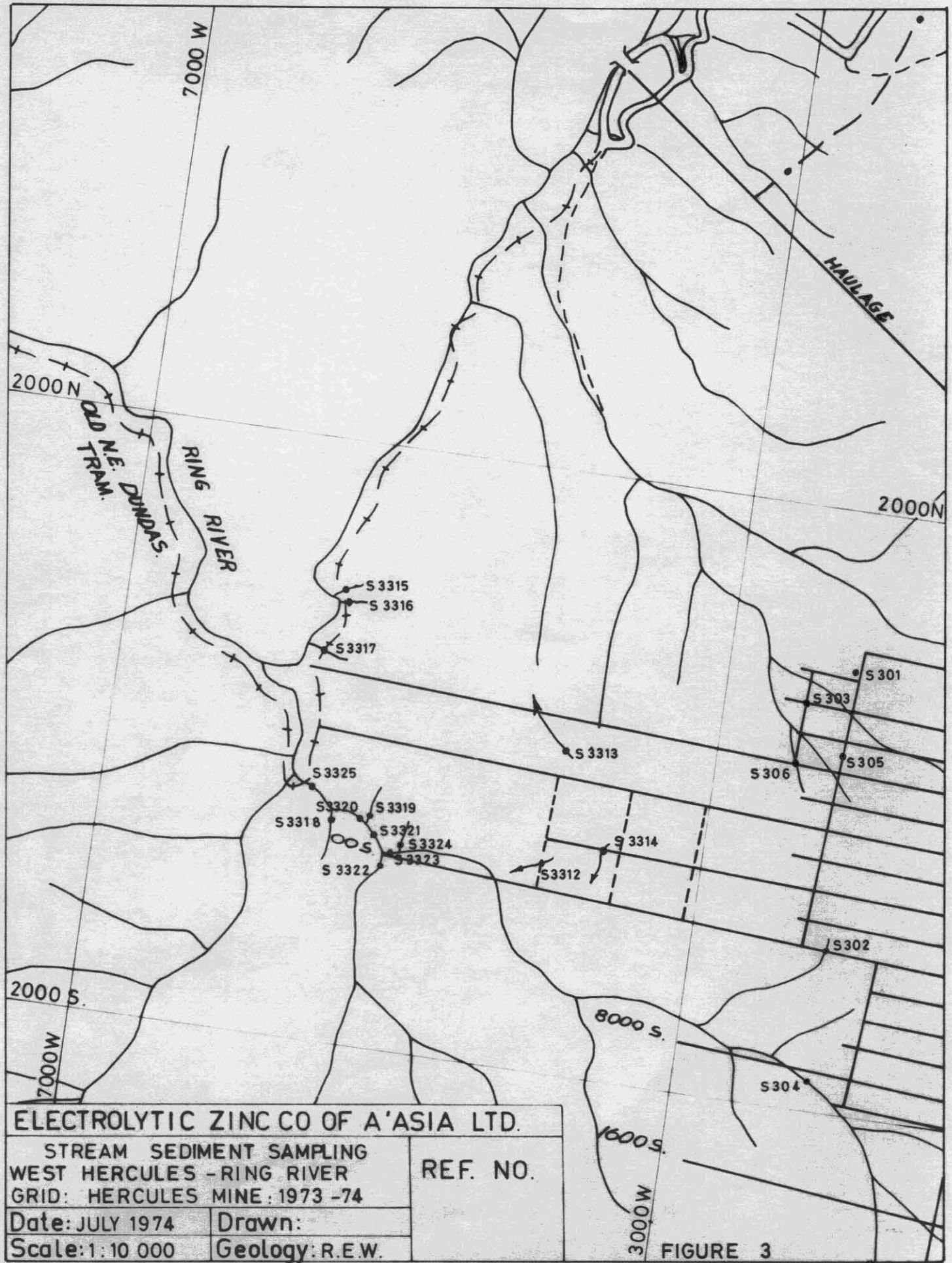
576031



ELECTROLYTIC ZINC CO OF A'ASIA LTD.		
STREAM SEDIMENT SAMPLING WEST HERCULES - RING RIVER GRID: HERCULES MINE: 1970 -71		REF. NO.
Date: JULY 1974	Drawn:	375000 E general area 536700N
Scale: 1: 10 000	Geology: R.E.W.	

FIGURE 2

576032

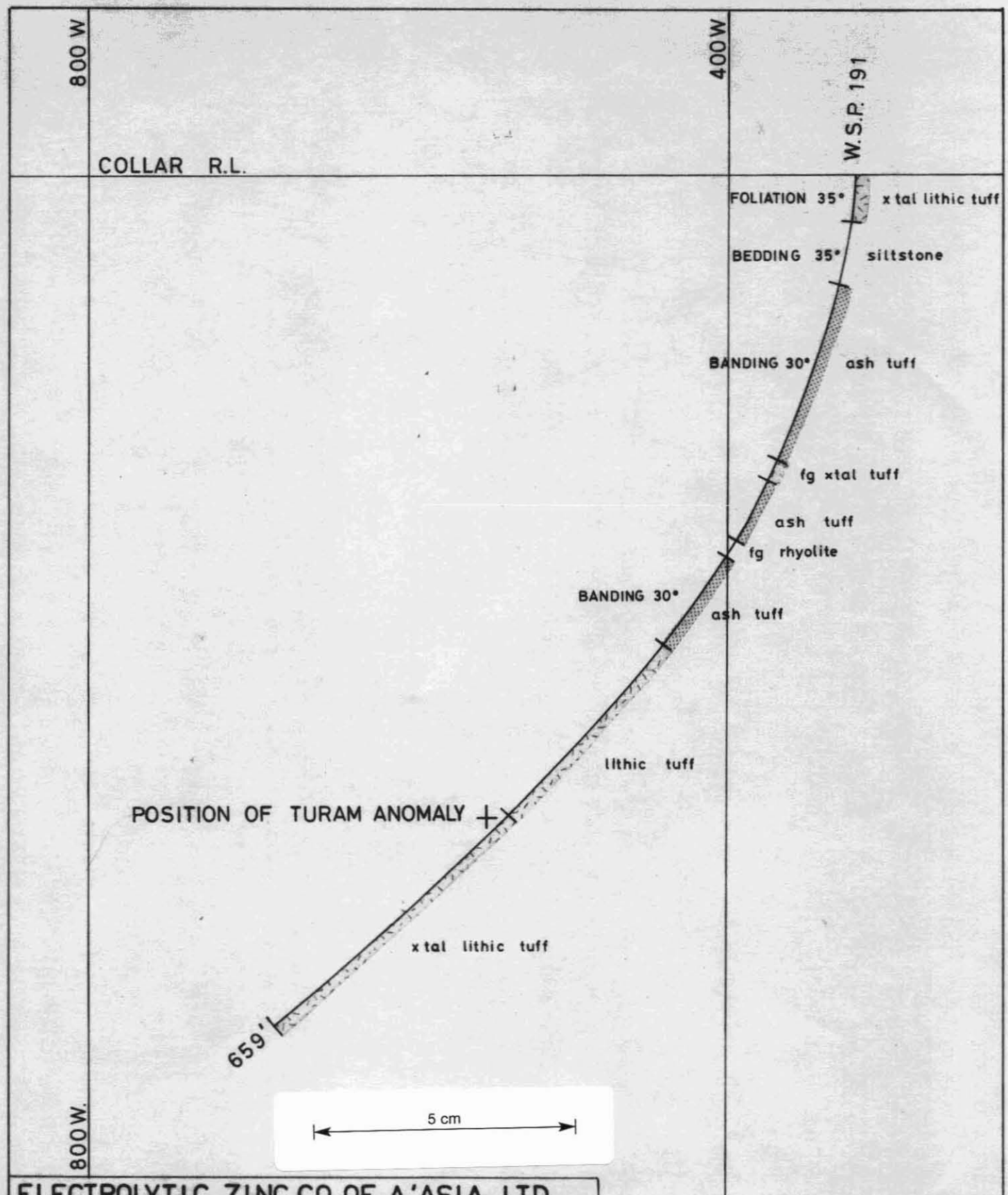


5 cm

ELECTROLYTIC ZINC CO OF A'ASIA LTD.		
STREAM SEDIMENT SAMPLING WEST HERCULES - RING RIVER GRID: HERCULES MINE: 1973 -74		REF. NO.
Date: JULY 1974	Drawn:	
Scale: 1:10 000	Geology: R.E.W.	

FIGURE 3

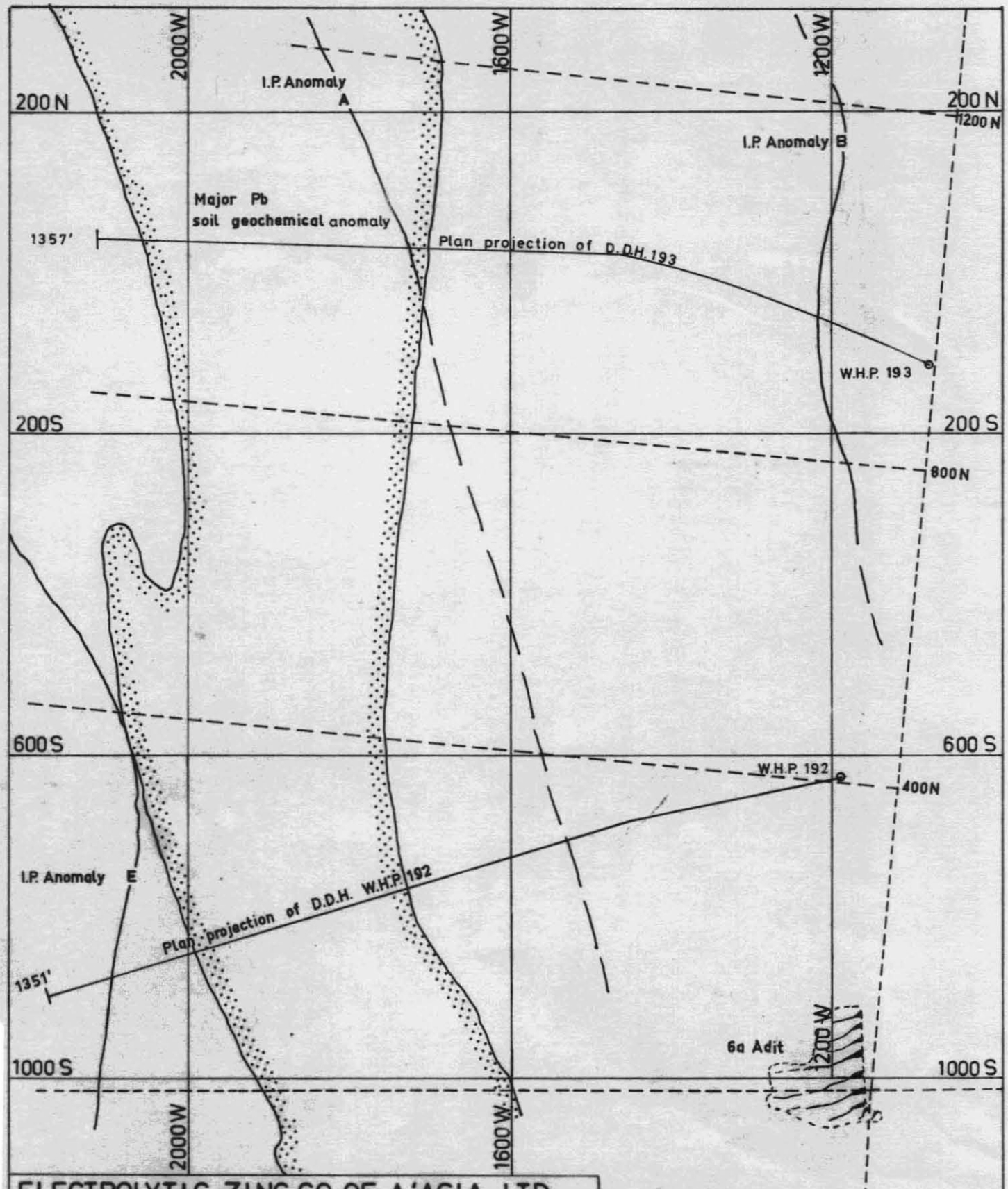
576033



ELECTROLYTIC ZINC CO OF A'ASIA LTD.		
CROSS SECTION THROUGH 7200 S. WHITE SPUR GRID SHOWING D.D.H. W.S.P. 191		REF. NO. Z.D. 26
Date: JUNE 1974	Drawn:	
Scale: 1:1000	Geology: R.E.W.	

FIGURE 4

576034



5 cm

ELECTROLYTIC ZINC CO OF A'ASIA LTD.

WEST HERCULES PROSPECT
PLAN OF
GEOPHYSICS & GEOCHEMISTRY

REF. NO.
ZD 19

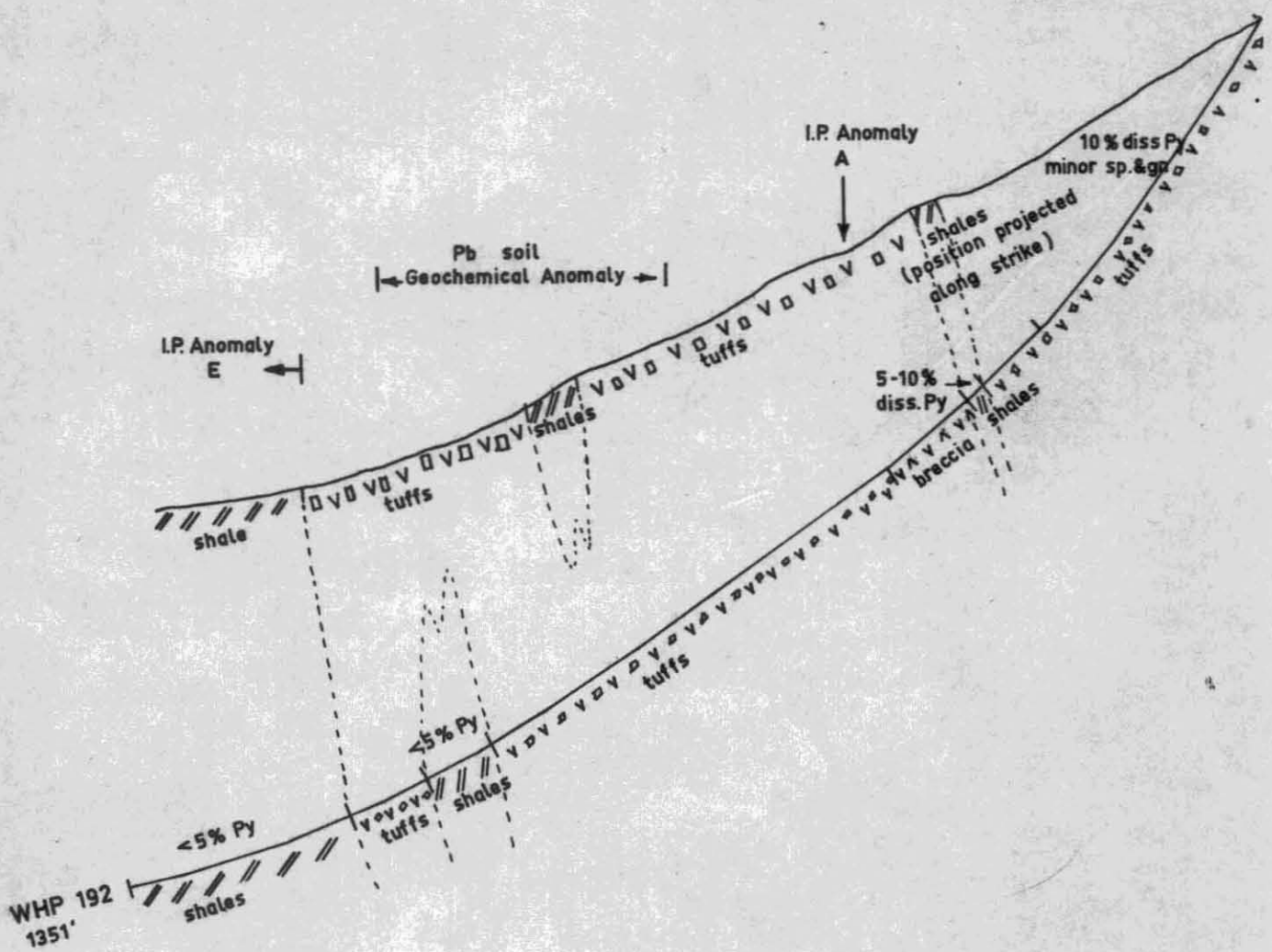
Date: 11-2-74 | Drawn: R.A.H
Scale: 1: 2000 feet | Geology: R.E.W.

Hercules grid ——
White Spur grid ----

FIGURE 5

033

576035

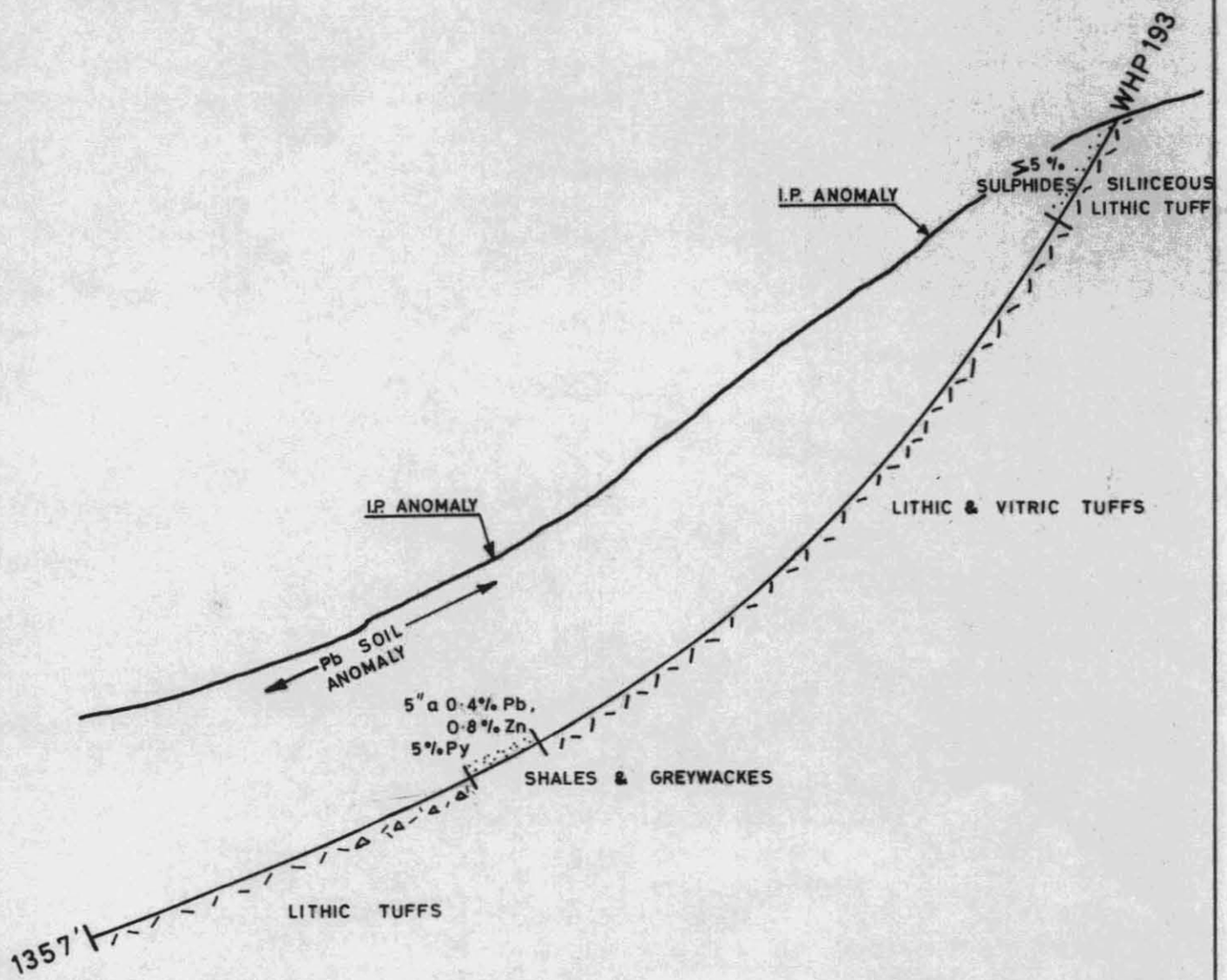


ELECTROLYTIC ZINC CO OF A'ASIA LTD.		
CROSS SECTION SHOWING W.H.P. 192		REF. NO.
Date: 5-2-74	Drawn: R.A.H.	Z.D.17
Scale: 1:2000 feet	Geology: R.E.W.	

5 cm

FIGURE 6

576036



ELECTROLYTIC ZINC CO OF A'ASIA LTD.		
WEST HERCULES PROSPECT SECTION THROUGH W.H.P. 193 LOOKING NORTH		REF. NO. ZD 25
Date: MAY 1974	Drawn:	
Scale: 1:1000	Geology: R.E.W.	

5 cm

FIGURE 7

576037

4000 W

3000 W

UPPER ADIT

-70° K.P 200

LOWER ADIT

-55° K.P. 196

-85° K.P. 201

KOONYA WORKINGS

11 000 S

-65° K.P. 199

11 000 S

TURAIR ANOMALY

-55° K.P. 197

N° 3a ADIT

12 000 S

3000 W

12 000 S

-56°

-60° K.P. 198

GRAND CENTRE WORKINGS

4000 W

LEGEND

DRILL HOLE SYMBOLS

- HOLE FAILED TO REACH TARGET
- MINERALISATION - BARREN
- MINERALISATION - WEAK
- MINERALISATION - POSSIBLE ORE GRADE

5 cm

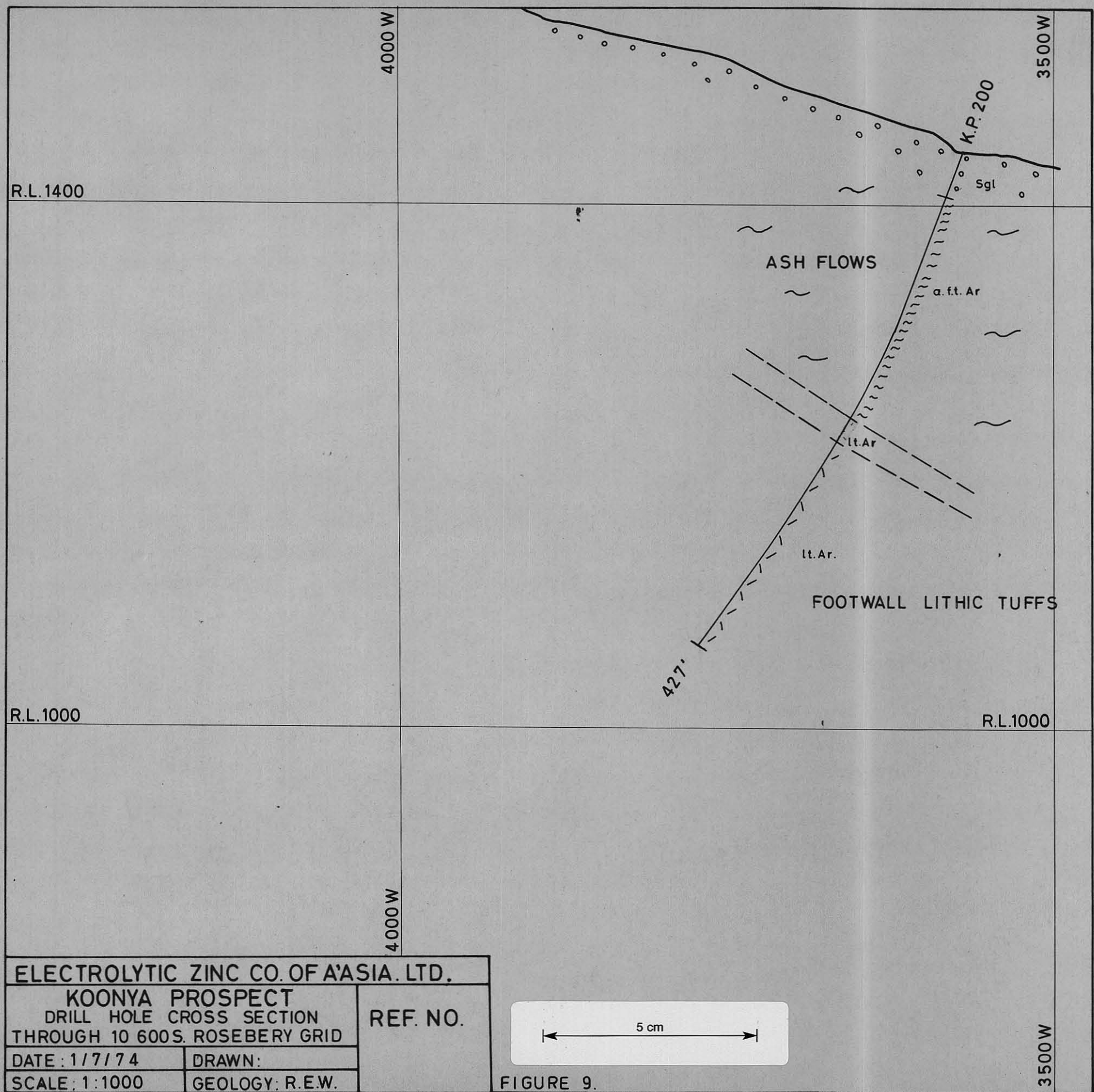
ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

KOONYA PROSPECT
DRILL HOLE LAYOUT
GRID: ROSEBERY MINE

REF. NO.

DATE : 27/6/74	DRAWN:
SCALE : 1 : 2500	GEOLOGY: R.E.W.

FIGURE 8.



ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.		
KOONYA PROSPECT DRILL HOLE CROSS SECTION THROUGH 10 600S. ROSEBERY GRID		REF. NO.
DATE: 1/7/74	DRAWN:	
SCALE: 1:1000	GEOLOGY: R.E.W.	

FIGURE 9.

576039

4000W

3500W

K.P. 196

K.P. 201

DRIVE ON MINERALISATION
(LOWER ADIT)

R.L. 1400

< 5% Py.

aft Ar.

Sgl

5 - 10% Py.

fgt Ac.

mnr. Py.

aft Ar

ASH FLOWS

10% Py.

f.g.sil.t.A

10% Py.

f.g.sil.t.A.

10% Py.

f.g.sil.t.A.

5 - 10% Py.

< 5% Py.

f.g. sil.t.A.

19·8'@ 8·41% Zn. 2·61% Pb.
(385·7' - 405·5')

f.g.t.Ac.

5% Py.

ltAr

10% Py.

fmg. sil.t.AsqPy.

10% Py.

fmg. af (?) ltAr

5'@ 0·73% Pb. 1·7% Zn.
(362' - 367')

mnr. Py.

ltAr.

5 - 20% Py.

mnr Sp-Gn

fmg.sil. ltAr

556'

sl.ltAr

mnr. Py.

xtltAr

FOOTWALL LITHIC TUFFS

mnr. Py.

sil. ltAr

522'

R.L. 1000

4000 W

3500W

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.		
KOONYA PROSPECT DRILL HOLE CROSS SECTION THROUGH 10 800 S. ROSEBERY GRID		REF. NO.
DATE : 1 / 7 / 74	DRAWN:	
SCALE: 1 1000	GEOLOGY: R.E.W.	

5 cm

FIGURE 10.

576040

4000 W

3500 W

R.L.1400

K.P.199

R.L. 1400

Sgl.

mnr. Sulphs

aft Ar

R.L.1000

R.L.1000

fg xt Ar

637'

4000 W

3500 W

ELECTROLYTIC ZINC CO. OF AASIA. LTD.		
KOONYA PROSPECT DRILL HOLE CROSS SECTION THROUGH 11000 S. ROSEBERY GRID		REF. NO.
DATE: 28 / 6 / 74	TRACED: R.A.H.	
SCALE: 1:1000	GEOLOGY: R.E.W.	

5 cm

FIGURE 11.

039

576011

4000 W

3500 W

R.L.1400

R.L. 1400

K.P. 197

Sgl.

lt.Ar.

mnr. Sulphs

aft Ar

5% Sulphs.

lt.Ar.

R.L.1000

R.L.1000

10 '@ 0·18% Pb. 1·78% Zn. (535'-545')
5' @ 0·3% Pb. 1·4% Zn (550'-555')

5% Sulphs.

uxt Ar.

5% Sulphs

ltAr

mnr. Sulphs

767'

4000 W

3500 W

ELECTROLYTIC ZINC CO. OF AASIA. LTD.

KOONYA PROSPECT
DRILL HOLE CROSS SECTION
THROUGH 11600 S. ROSEBERY GRID

REF. NO.

DATE: 28/6/74	TRACED: R.A.H.
SCALE: 1:1000	GEOLOGY: R.E.W.

5 cm

FIGURE 12.

040

576042

4000 W

3500 W

GRAND CENTRE COPPER MINERALISATION

R.L.1400

R.L. 1400

K.P 198

Sgl.

mnr. Py

<5% Py.

aftAr

5-10% Py.

<5% Py

10% Py

5% Py

lxtAr

aftAr

5% Py

lt & vltAr

5-20% Py

350'- 357·4'

7·4' @ 1·76% Cu.

lt & vltAr

5-20% Py

mnr. Py

lt & vltAr

457'

R.L.1000

R.L.1000

4000 W

3500 W

ELECTROLYTIC ZINC CO. OF AASIA. LTD.		
KOONYA PROSPECT DRILL HOLE CROSS SECTION THROUGH 12 000S. ROSEBERY GRID		REF. NO.
DATE: 27/6/74	TRACED: R.A.H.	
SCALE: 1:1000	GEOLOGY: R.E.W.	

5 cm

FIGURE 13.

041

576043

GENERAL GEOLOGICAL LEGEND.

GRANULARITY. (Prefix)

fmg	Fine to medium grained.
fg	Fine grained.

FABRIC. (Prefix)

t	Tuff.
v	Vitric.
x	Crystal.
l	Lithic.
b	Breccia.
af	Ash Flow.
fb	Flow banded, brecciated.
p	Porphyritic.
m	Massive.
sch	Schistose.
ox	Oxidised.

ROCK TYPES.

A	Acid rock unclassified.
Ar	Rhyolite.
Av	Acid Volcanics.
Id	Dacite.
Md	Dolerite.
Sgl	Glacials.
Ssh	Shale.
Sbs	Black Shale.
Sct	Chert.

MINERALOGY (Suffix)

f	Feldspar.
q	Quartz.
c	Chlorite.
cb	Carbonate.
s	Serecite.
py	Pyrite.
sil	Silicified.

This legend is used for: Figures - 4, 9, 10, 11, 12, 13,
Plates - 16, 17, 18.

FIGURE 14.

FARRELL JUNCTION

ENU BAY RAILWAY

FARRELL TRAMWAY

PIEMAN RIVER

MURCHISON RIVER

TULLAH

ROSEBERY GRID

13 100 N

12 300 N

11 500 N

10 700 N

9 900 N

9 100 N

8300 N

6 700 N

5 900 N

5 100 N

4 300 N

3500 N

3400 N

TAILINGS DAM

DAM

Bobadil Creek

Holts Creek

Scintrex 743-322

AMG
377000E
5374000N

LEGEND

- BOUNDARY OF E.L 1/62
- FOUR WHEEL DRIVE TRACKS CONSTRUCTED 1973-74
- WALKING TRACKS CUT OUT 1973-74.
- CUT GRID LINES
- GRID LINES CUT, SOIL SAMPLED ETC 1973-74
- GRID LINES CUT BY JUNE 1974 FOR 1974-75.
- DIAMOND HOLES DRILLED 1973-74.
- GEOPHYSICS (With Scintrex Report No.) 1973-74.

74-1034

SHEET LAYOUT

576044

BOBADIL

KOONYA.

WHITE SPUR.

5 cm

ELECTROLYTIC ZINC CO OF A'ASIA LTD

PROJECT MT. BLACK EL. 1/62. TAS

BOBADIL.

FIELD ACTIVITIES 1973 - 74.

SCALE 1:20000 ROSEBERY GRID REF NO

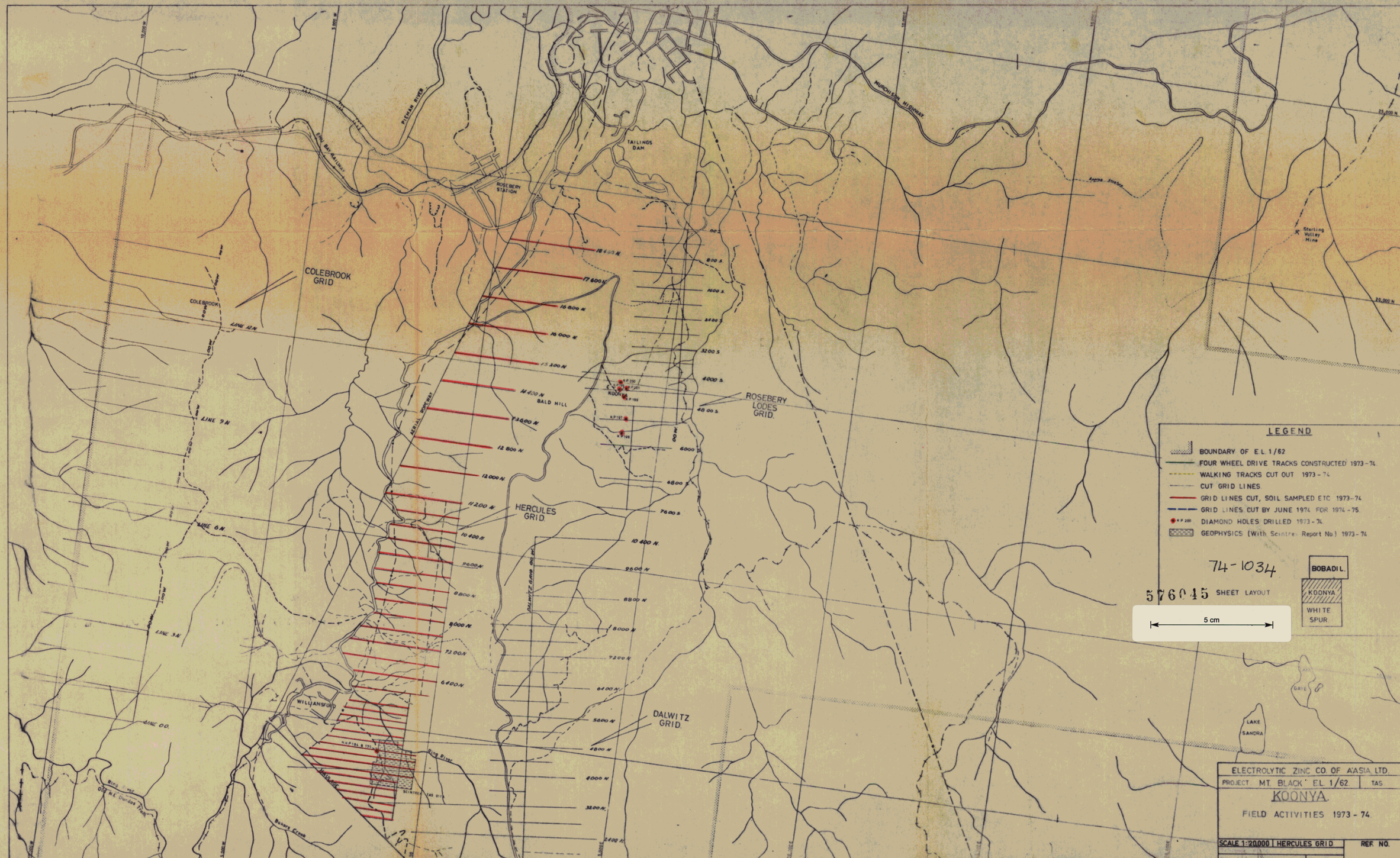
Reference

Date 5/74 Drawn

AMG REFERENCE POINTS ADDED

PLATE 1.

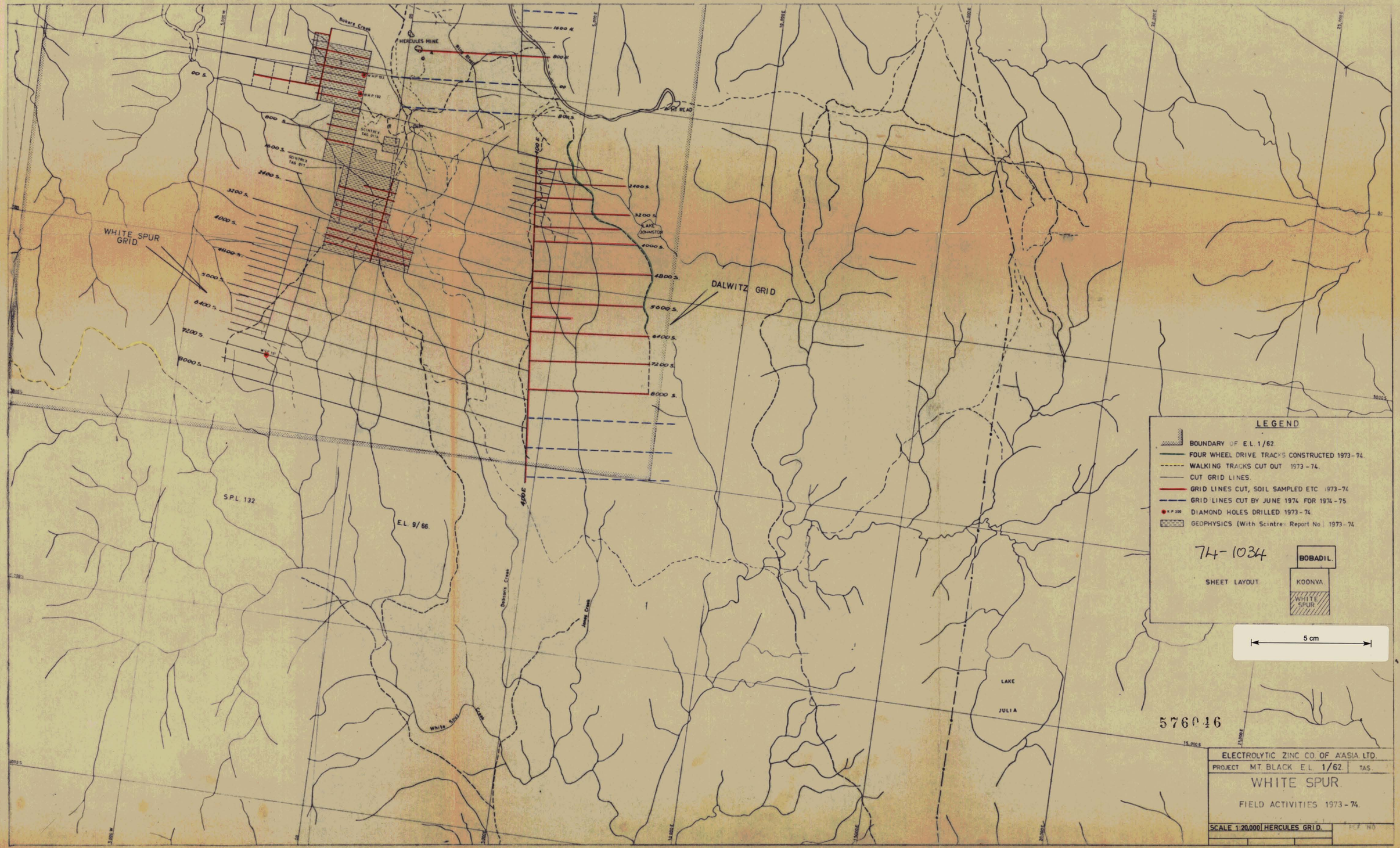
1629



COLEBROOK GRID
HERCULES GRID
ROSEBERY LODES GRID
DALWITZ GRID
TAILINGS DAM
ROSEBERY STATION
PIEMAN RIVER
MURCHISON HIGHWAY
AERIAL ROPEWAY
BALD HILL
KOONYA
WILLIAMSFORD
LAKE SANDRA
Starling Valley Mine
LINE 12 N
LINE 9 N
LINE 6 N
LINE 3 N
LINE 0 0
18 400 N
17 600 N
16 800 N
16 000 N
15 200 N
14 400 N
13 600 N
12 800 N
12 000 N
11 200 N
10 400 N
9600 N
8800 N
8000 N
7200 N
6400 N
5600 N
4800 N
4000 N
3200 N
2400 N
800 S
1600 S
2400 S
3200 S
4000 S
4800 S
6000
6800 S
7600 S
LEGEND
BOUNDARY OF E.L. 1/62
FOUR WHEEL DRIVE TRACKS CONSTRUCTED 1973-74
WALKING TRACKS CUT OUT 1973-74
CUT GRID LINES
GRID LINES CUT, SOIL SAMPLED ETC 1973-74
GRID LINES CUT BY JUNE 1974 FOR 1974-75
DIAMOND HOLES DRILLED 1973-74
GEOPHYSICS (With Scintrex Report No.) 1973-74
74-1034
576045 SHEET LAYOUT
BOBADIL
KOONYA
WHITE SPUR
5 cm
ELECTROLYTIC ZINC CO. OF A'ASIA LTD.
PROJECT MT. BLACK EL. 1/62
TAS
KOONYA
FIELD ACTIVITIES 1973-74
SCALE 1:20,000
HERCULES GRID
REF. NO.

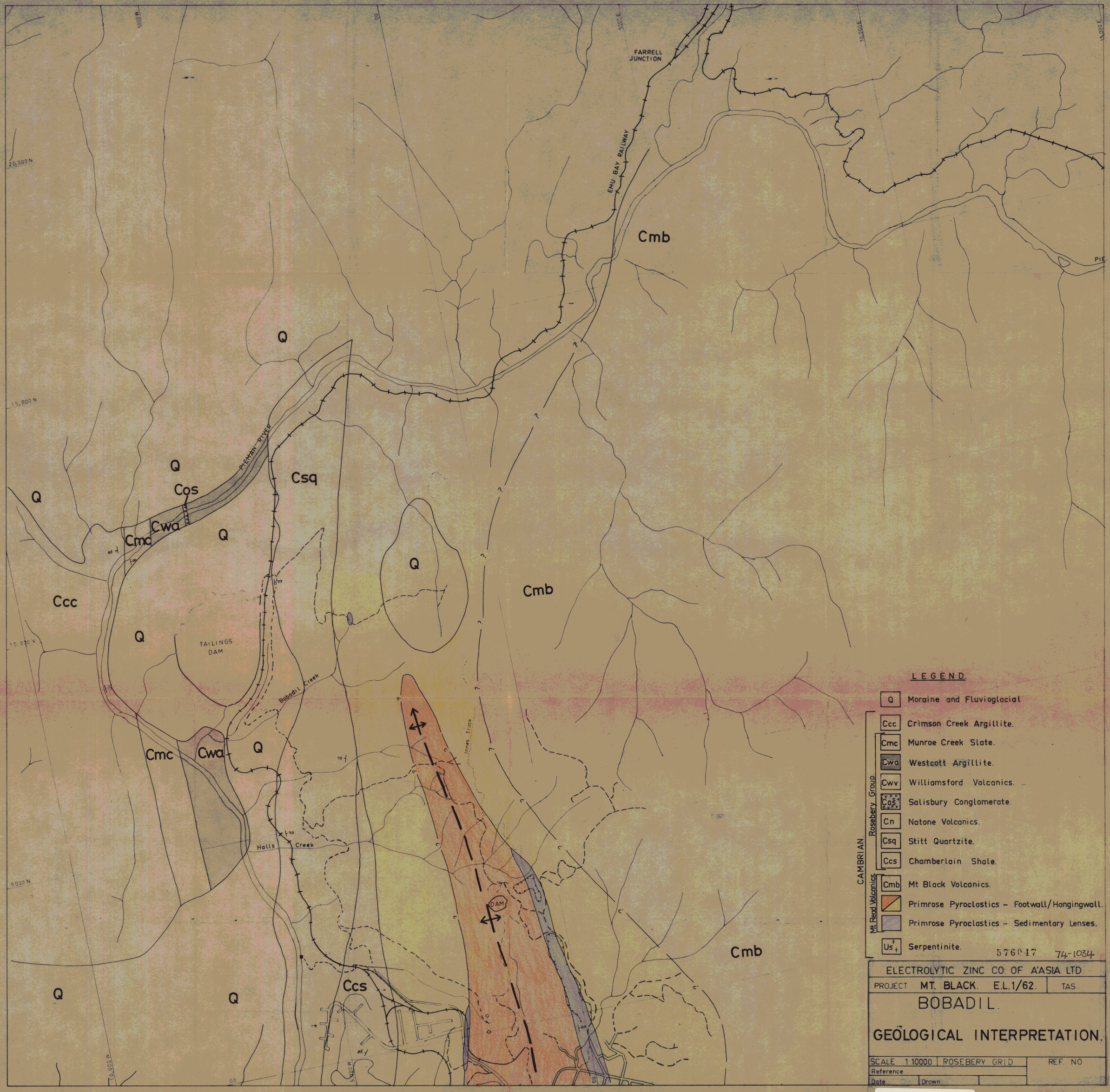
PLATE 2.

1630



HERCULES MINE
Bakers Creek
Ring River
MT READ
LAKE JOHNSTON
WHITE SPUR GRID
DALWITZ GRID
S.P.L. 132
E.L. 9/66
Dobson's Creek
Jones Creek
White Spur Creek
LAKE JULIA
LEGEND
BOUNDARY OF E.L. 1/62.
FOUR WHEEL DRIVE TRACKS CONSTRUCTED 1973-74.
WALKING TRACKS CUT OUT 1973-74.
CUT GRID LINES.
GRID LINES CUT, SOIL SAMPLED ETC 1973-74
GRID LINES CUT BY JUNE 1974 FOR 1974-75
DIAMOND HOLES DRILLED 1973-74.
GEOPHYSICS (With Scintrex Report No.) 1973-74
74-1034
SHEET LAYOUT
BOBADIL.
KOONYA
WHITE SPUR
5 cm
576046
ELECTROLYTIC ZINC CO. OF A'ASIA LTD.
PROJECT MT. BLACK E.L. 1/62. TAS.
WHITE SPUR.
FIELD ACTIVITIES 1973-74.
SCALE 1:20,000 HERCULES GRID.

1631 PLATE 3.



LEGEND

- Q — Moraine and Fluvioglacial
- CAMBRIAN
  - Rosebery Group.
    - Ccc — Crimson Creek Argillite.
    - Cmc — Munroe Creek Slate.
    - Cwa — Westcott Argillite.
    - Cwv — Williamsford Volcanics.
    - Cos — Salisbury Conglomerate.
    - Cn — Natone Volcanics.
    - Csq — Stitt Quartzite.
    - Ccs — Chamberlain Shale.
  - Mt Read Volcanics.
    - Cmb — Mt Black Volcanics.
    - Primrose Pyroclastics – Footwall/Hangingwall.
    - Primrose Pyroclastics – Sedimentary Lenses.
- Us — Serpentinite.

576047 74-1034

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK. E.L.1/62. | TAS.

BOBADIL.

GEOLOGICAL INTERPRETATION.

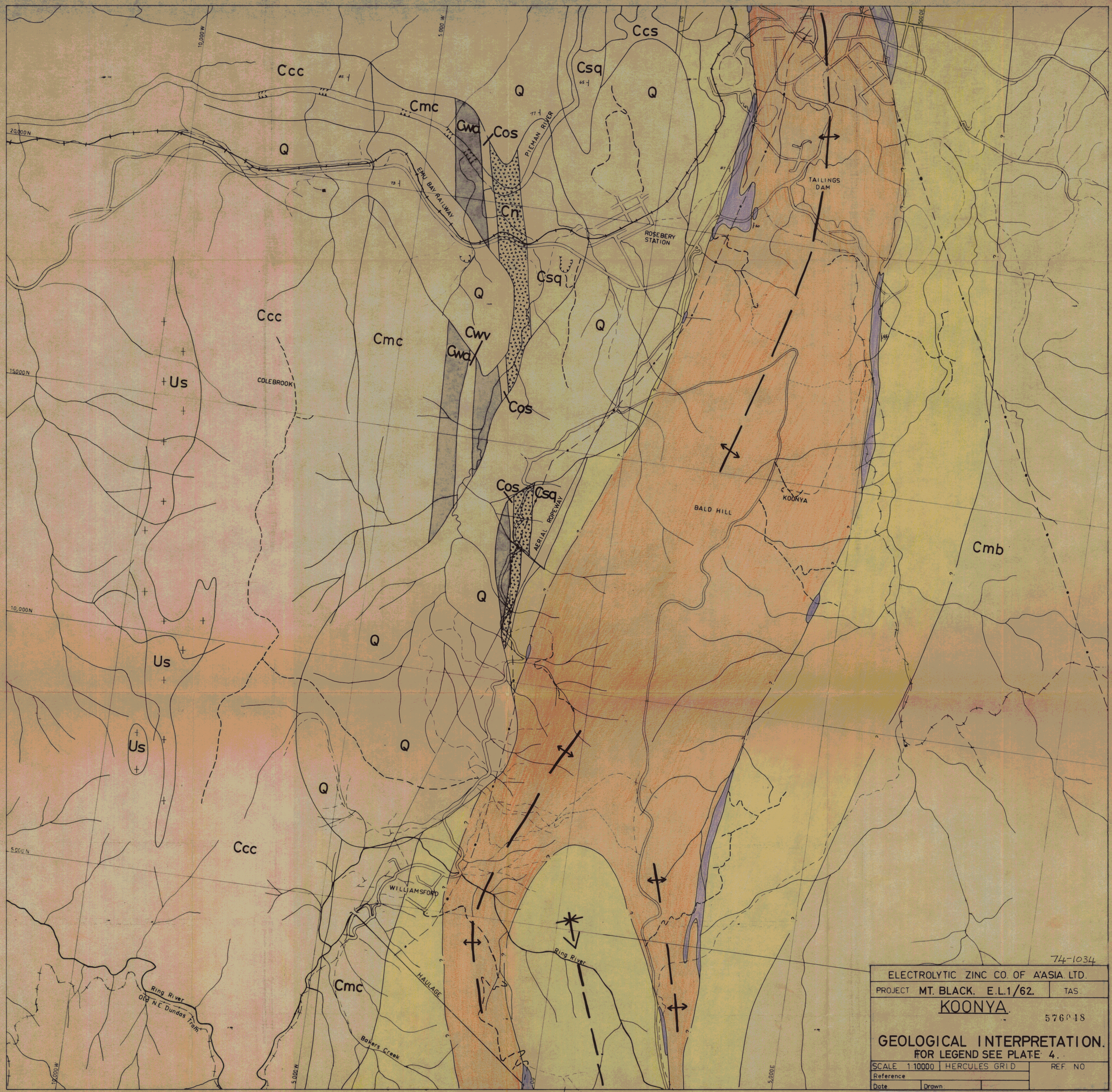
SCALE 1:10000 | ROSEBERY GRID | REF. NO

Reference

Date | Drown

5 cm

1632 PLATE 4.


Ccc
Cmc
Cwa
Cos
Q
Csq
Ccs
Cn
Cwv
Us
Cmb
PIEMAN RIVER
EMU BAY RAILWAY
ROSEBERY STATION
TAILINGS DAM
COLEBROOK
AERIAL ROPEWAY
BALD HILL
KOONYA
WILLIAMSFORD
HAULAGE
Ring River
Old N.E. Dundas Tram
Bakers Creek
20,000 N
15,000 N
10,000 N
5,000 N
10,000 W
5,000 W
5,000 E
74-1034
ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.
PROJECT MT. BLACK. E.L.1/62.
TAS.
KOONYA.
576048
GEOLOGICAL INTERPRETATION.
FOR LEGEND SEE PLATE 4.
SCALE 1:10000
HERCULES GRID
REF. NO
Reference
Date
Drawn
5 cm

1633

PLATE 5.

Cmc

Ccc

Us

Cmb

Baker's Creek

HERCULES MINE

Ring River

Dam

MT READ

LAKE JOHNSTON

Dobson's Creek

Jones Creek

White Spur Creek

00

5,000 W

5,000 E

10,000 E

5000 S

10,000 S

15,000 S

20000 S

576049

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK. E.L.1/62. | TAS.

WHITE SPUR. 74-1034

GEOLOGICAL INTERPRETATION.

FOR LEGEND SEE PLATE 4.

SCALE 1:10000	HERCULES GRID	REF. NO
Reference		
Date:	Drawn:	

5 cm

1634 PLATE 6.

5000 N

00

5000 E

10,000 E

15,000 E

20,000 N

15000 N

13100 N.

12300 N.

11500 N

10700 N

9900 N.

9100 N

10,000 N

8300 N

6700 N

4300 N.

3500 N.

5000 N

2400 N

10000 W

5000 N.

00

5000 E

≤ 2 p.p.m.

> 2 ≤13 p.p.m.

> 13 ≤ 35p.p.m.

> 35 p.p.m.

576050

74-1034

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK E.L. 1/62. TAS.

BOBADIL

Cu SOIL GEOCHEMISTRY.

SCALE 1:10000 ROSEBERY GRID

REF. NO

Reference

Date 6/74. Drawn

5 cm

1635

PLATE 7.

5,000E

10,000E

15,000E

20,000 N

15000 N

13100 N.

12300 N.

11500 N

10700 N

9900 N.

9100 N

10,000N

8300 N

6700 N

4300 N.

3500 N

5000N

2400 N

10,000 W

5,000 W.

00

5000 E

≤ 45 p.p.m.

> 45 ≤ 150 p.p.m.

> 150 <200 p.p.m.

≥ 200 p.p.m.

576051

74-1034

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK E.L. 1/62. TAS.

BOBADIL

Pb SOIL GEOCHEMISTRY.

SCALE 1:10000 ROSEBERY GRID

REF. NO.

Reference .

Date 6/74 Drawn.

5 cm

PLATE 8.

1636

5000W

00

5000E

10,000E

15,000E

20,000 N

15000 N

13100 N.

12300 N.

11500 N

10700 N

9900 N.

9100 N.

8300 N.

10,000N

6700 N

4300 N.

3500 N.

5000N

2400 N

10,000 W

5000 W.

00

5000E

≤ 25 p.p.m.

> 25 ≤ 65 p.p.m.

> 65 < 120 p.p.m.

≥ 120 p.p.m.

576052

74-1034

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK. E.L. 1 / 62. | TAS.

BOBADIL

Zn SOIL GEOCHEMISTRY.

SCALE 1:10000 ROSEBERY GRID | REF. NO

Reference

Date 6/74 | Drawn.

5 cm

PLATE 9.

1637

10,000 W

5000 W

0

5000 E

20,000 N

15,000 N

12,000 N

5000 N

LINE 12 N.

LINE 9 N

LINE 6 N.

LINE 3 N.

LINE 00

100 W

18 400 N.

17 600 N.

16 800 N

16 000 N

15 200 N

14 400 N.

13 600 N

12 800 N.

12 000 N.

11200 N.

10 400 N.

9600 N

8800 N.

8000 N.

7200 N.

6400 N.

5600 N.

4800 N.

4000 N.

3200 N.

2400 N.

00 S.

800 S

1600 S.

2400 S.

3200 S.

4000 S.

4800 S.

5600 S.

6400 S.

7200 S.

8000 S.

DALWITZ GRID 0 D W.

HERCULES GRID 2600N – 5600N.

- < 45 p.p.m.
- 46 – 150 p.p.m.
- 151 – 170 p.p.m.
- > 170 p.p.m.

COLEBROOK GRID.

- < 60 p.p.m.
- > 60 < 200 p.p.m.
- > 200 p.p.m.

ALL GRIDS EXCEPT COLEBROOK GRID & HERCULES GRID FROM 2600N – 5600N.

- ≤ 2 p.p.m.
- > 2 ≤13 p.p.m.
- > 13 ≤ 35 p.p.m.
- > 35 p.p.m.

576053 74-1034

ELECTROLYTIC ZINC CO OF A'ASIA. LTD.

PROJECT MT. BLACK E.L. 1/62. TAS.

KOONYA

Cu SOIL GEOCHEMISTRY.

SCALE 1:10000 HERCULES GRID REF NO

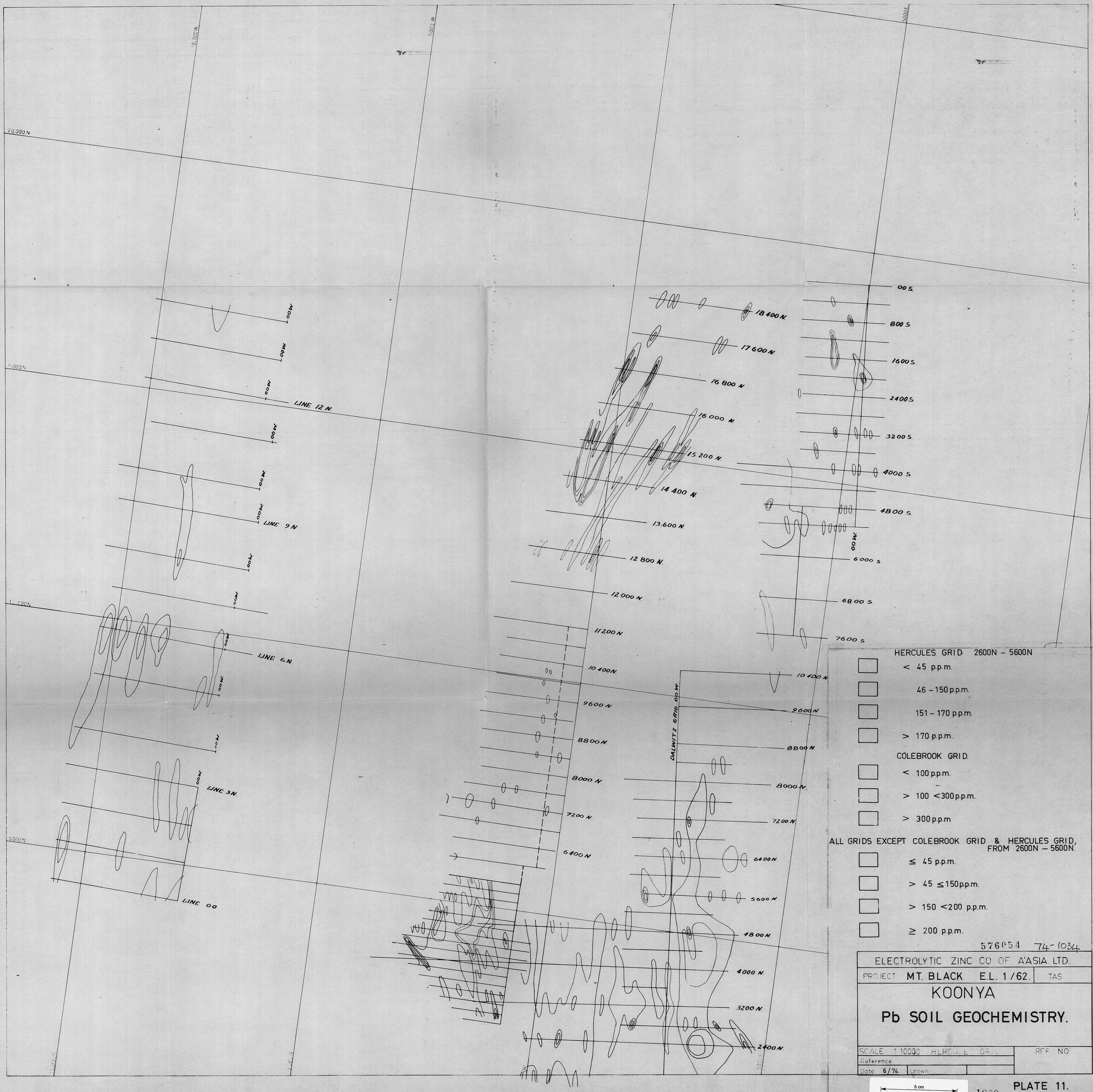
Reference

Date 6/74 Drawn

5 cm

PLATE 10.

1638



HERCULES GRID 2600N – 5600N

- < 45 p.p.m.
- 46 – 150 p.p.m.
- 151 – 170 p.p.m.
- > 170 p.p.m.

COLEBROOK GRID.

- < 100 p.p.m.
- > 100 <300 p.p.m.
- > 300 p.p.m

ALL GRIDS EXCEPT COLEBROOK GRID & HERCULES GRID, FROM 2600N – 5600N.

- ≤ 45 p.p.m.
- > 45 ≤150 p.p.m.
- > 150 <200 p.p.m.
- ≥ 200 p.p.m.

576054 74-1034

ELECTROLYTIC ZINC CO OF A'ASIA LTD.

PROJECT MT. BLACK E.L. 1/62. TAS

KOONYA

Pb SOIL GEOCHEMISTRY.

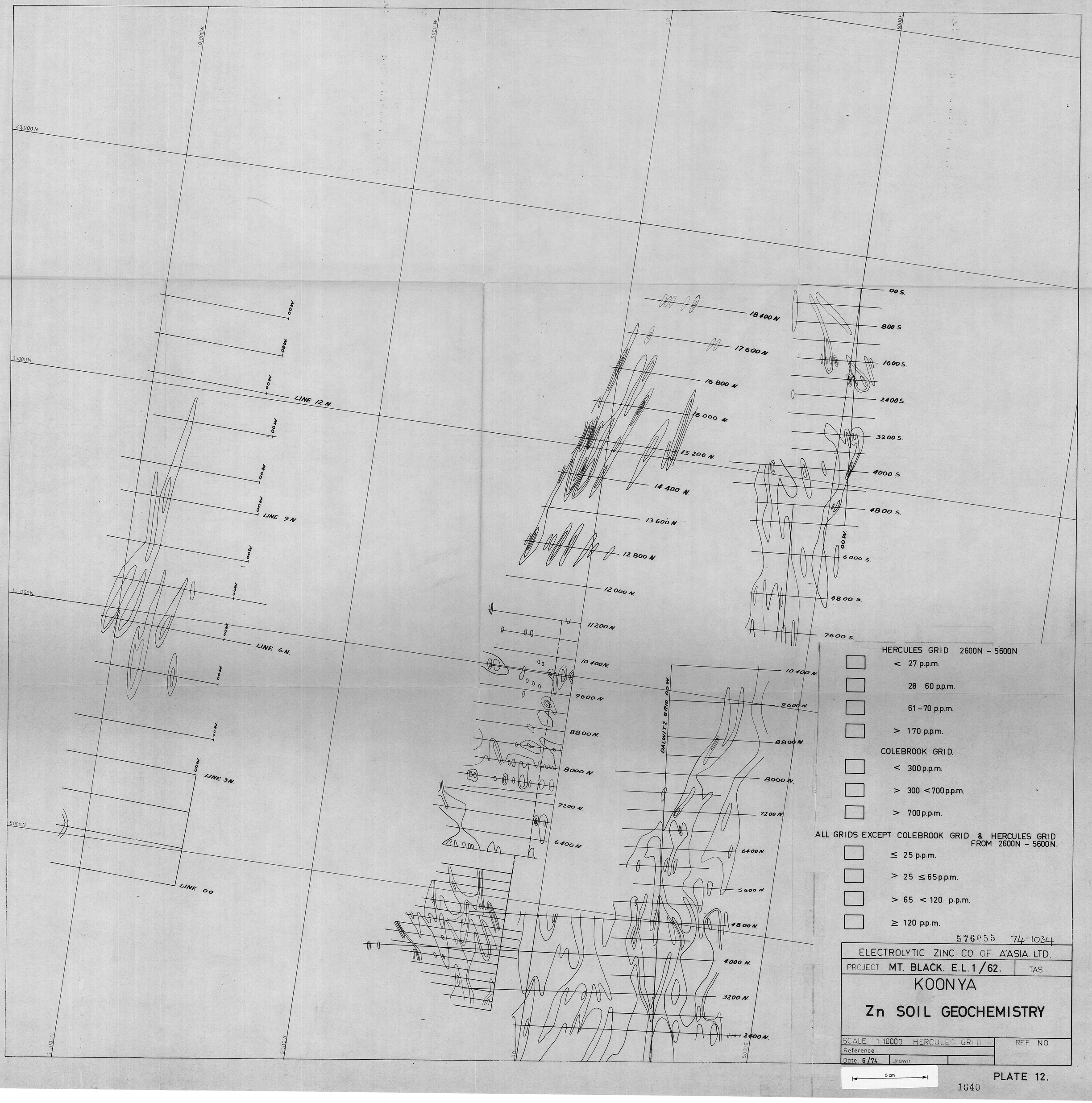
SCALE 1:10000 HERCULES GRID REF NO

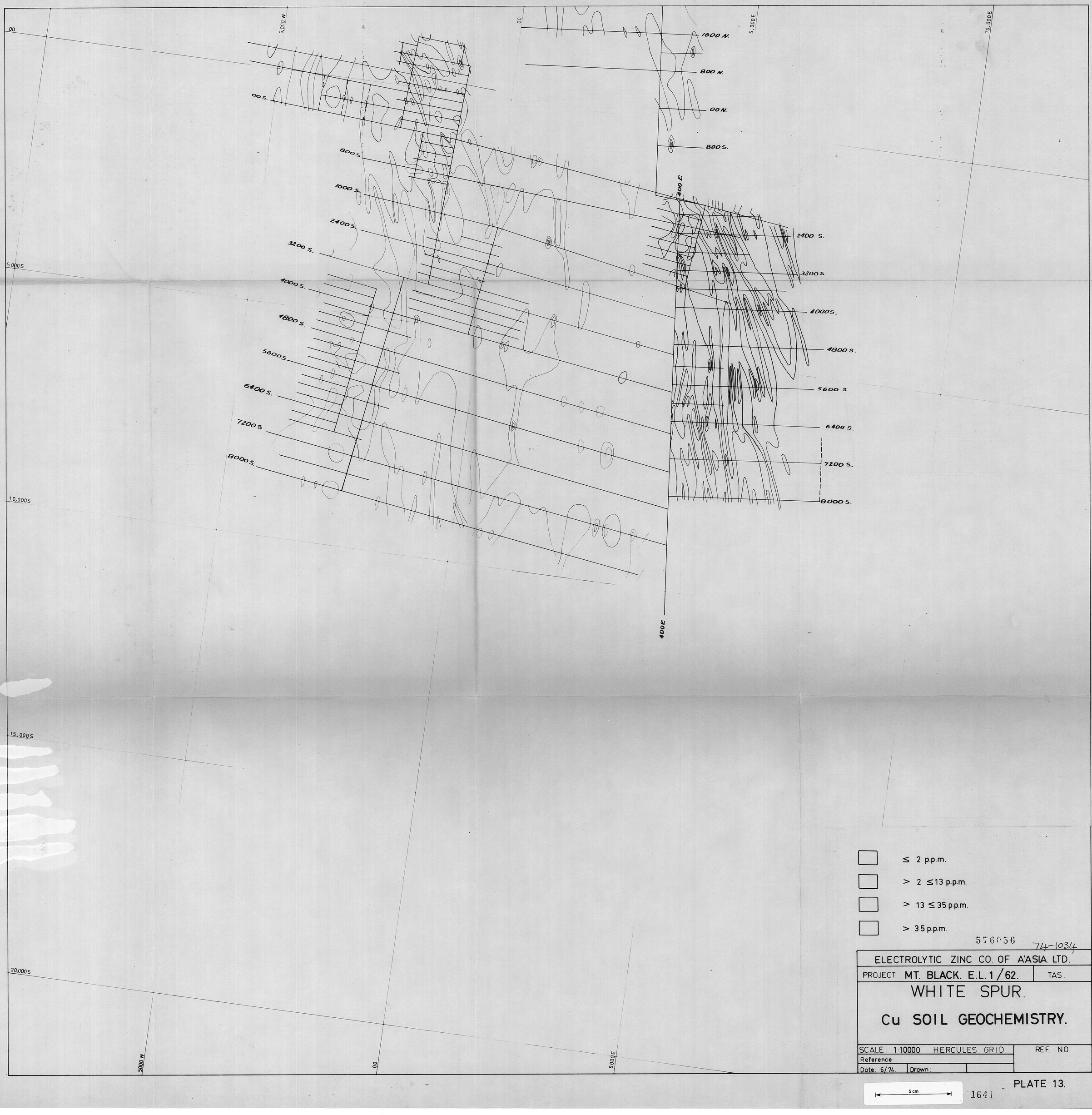
Reference

Date 6/74. Drawn

5 cm

1639 PLATE 11.


10,000 W
5000 W
0
5000 E
20,000 N
15000 N
10,000 N
5000 N
LINE 12 N.
LINE 9 N.
LINE 6 N.
LINE 3 N.
LINE 00
00W.
18 400 N.
17 600 N.
16 800 N.
16 000 N.
15 200 N.
14 400 N.
13 600 N.
12 800 N.
12 000 N.
11200 N.
10 400 N.
9600 N.
8800 N.
8000 N.
7200 N.
6400 N.
5600 N.
4800 N.
4000 N.
3200 N.
2400 N.
00 S.
800 S.
1600 S.
2400 S.
3200 S.
4000 S.
4800 S.
5600 S.
6400 S.
7200 S.
8000 S.
DALWITZ GRID 00 W.
HERCULES GRID 2600N – 5600N
< 27 p.p.m.
28 60 p.p.m.
61 – 70 p.p.m.
> 170 p.p.m.
COLEBROOK GRID.
< 300 p.p.m.
> 300 < 700 p.p.m.
> 700 p.p.m.
ALL GRIDS EXCEPT COLEBROOK GRID & HERCULES GRID FROM 2600N – 5600N.
≤ 25 p.p.m.
> 25 ≤ 65 p.p.m.
> 65 < 120 p.p.m.
≥ 120 p.p.m.
576055 74-1034
ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.
PROJECT MT. BLACK. E.L. 1/62.
TAS.
KOONYA
Zn SOIL GEOCHEMISTRY
SCALE 1:10000 HERCULES GRID
REF NO
Reference
Date 6/74
Drawn
5 cm
PLATE 12.
1640



576056

74-1034

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK. E.L. 1/62. TAS.

WHITE SPUR.

Cu SOIL GEOCHEMISTRY.

SCALE 1:10000 HERCULES GRID

REF. NO.

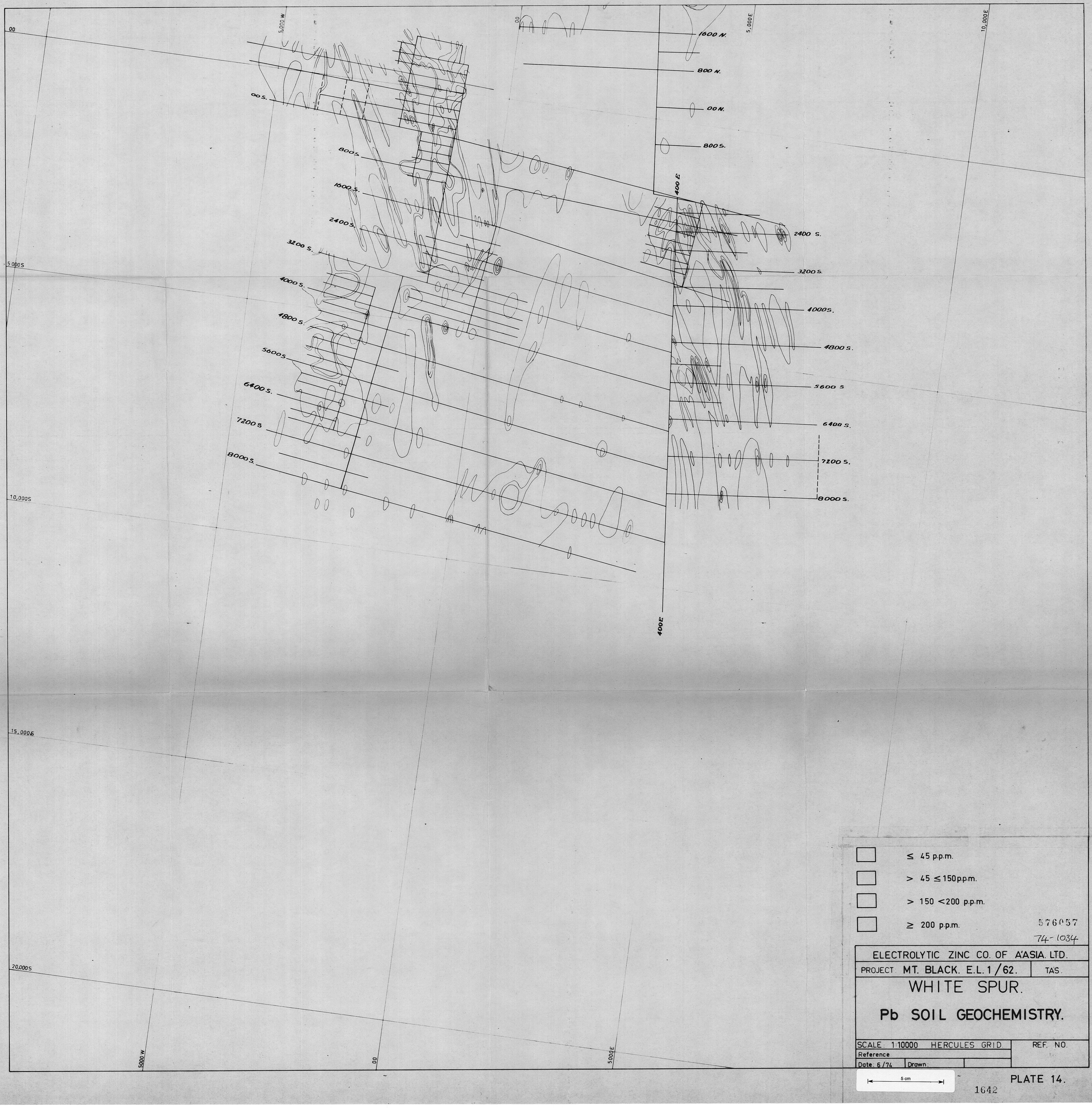
Reference

Date. 6/74. Drawn:

5 cm

PLATE 13.

1641



	≤ 45 p.p.m.
	> 45 ≤ 150 p.p.m.
	> 150 < 200 p.p.m.
	≥ 200 p.p.m.

576057

74-1034

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK. E.L. 1/62. | TAS.

WHITE SPUR.

Pb SOIL GEOCHEMISTRY.

SCALE: 1:10000 HERCULES GRID | REF. NO.

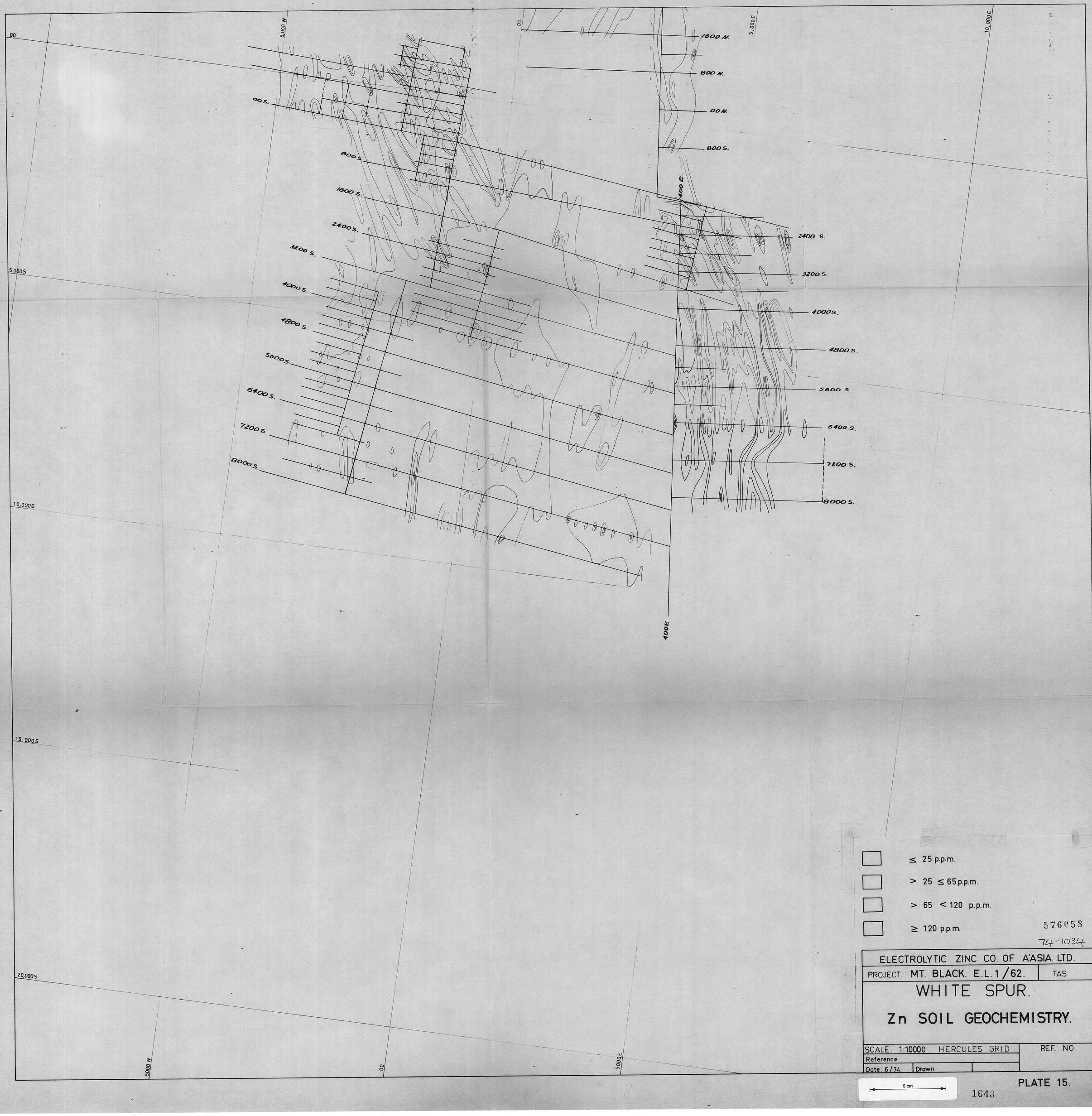
Reference

Date: 6/74 | Drawn:

5 cm

PLATE 14.

1642



- ≤ 25 p.p.m.
- > 25 ≤ 65 p.p.m.
- > 65 < 120 p.p.m.
- ≥ 120 p.p.m.

576058

74-1034

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK. E.L. 1/62. | TAS.

WHITE SPUR.

Zn SOIL GEOCHEMISTRY.

SCALE 1:10000 HERCULES GRID | REF. NO.

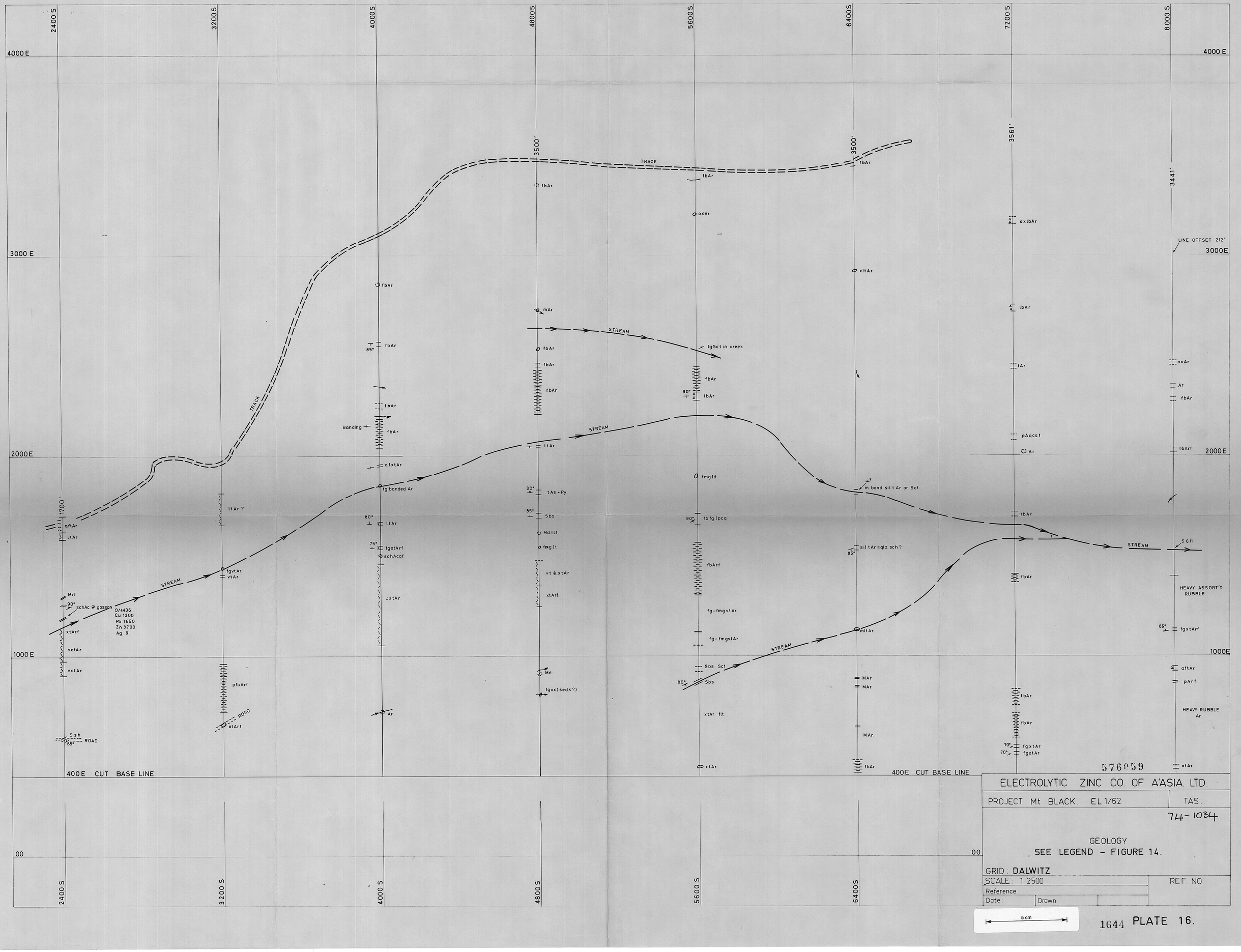
Reference

Date. 6/74 | Drawn:

5 cm

PLATE 15.

1643



ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT: Mt. BLACK. EL 1/62 | TAS.

74-1034

GEOLOGY

SEE LEGEND - FIGURE 14.

GRID: DALWITZ

SCALE 1:2500 | REF. NO

Reference:

Date: | Drawn:

5 cm

1644 PLATE 16.

13100 N | 12300N | 11500N | 10700N | 9900N | 9100N

1000 E — 1000 E

00 — CUT BASE LINE — CUT BASELINE — 00

1000 W — 1000 W

2000 W — 2000W

3000 W — 3000W

E.B.R.

TRANSMISSION LINE

aftAr
xtArqf
xtArqf
xtArqf
qtz eyes Ar gf
lbAr (Sbs frag?)
lbAr
fgxt or vtAr
vtAr
CREST OF RIDGE
pArf
xtAr fq
xtArq
qtz eye Ar

pArf
ltAr
glacial flt
pArf
oxt Ar flt
aftAr
oxltAr
fbAr
fbAr
fbpArf
TRIG POINT
fbAr, qtz, qcb veins
fbpArf
fbpArf
fg oxAr
fbpArf

80°
Sbs
STREAM
oxtAr
pArf
oxltAr
fbAr
oxAr RUBBLE
pArf
oxAv
STREAM
60°

INNES TRACK (APPROX.)

1827'
1850'
1850'

NOT MAPPED (JULY '74)
NOT MAPPED (JULY '74)
NOT MAPPED (JULY '74)

9900 N
9100 N

576060

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT: Mt BLACK. EL 1/62 | TAS.

74-1034

GEOLOGY
SEE LEGEND – FIGURE 14.

GRID: ROSEBERY

SCALE: 1:2500 | REF. NO.

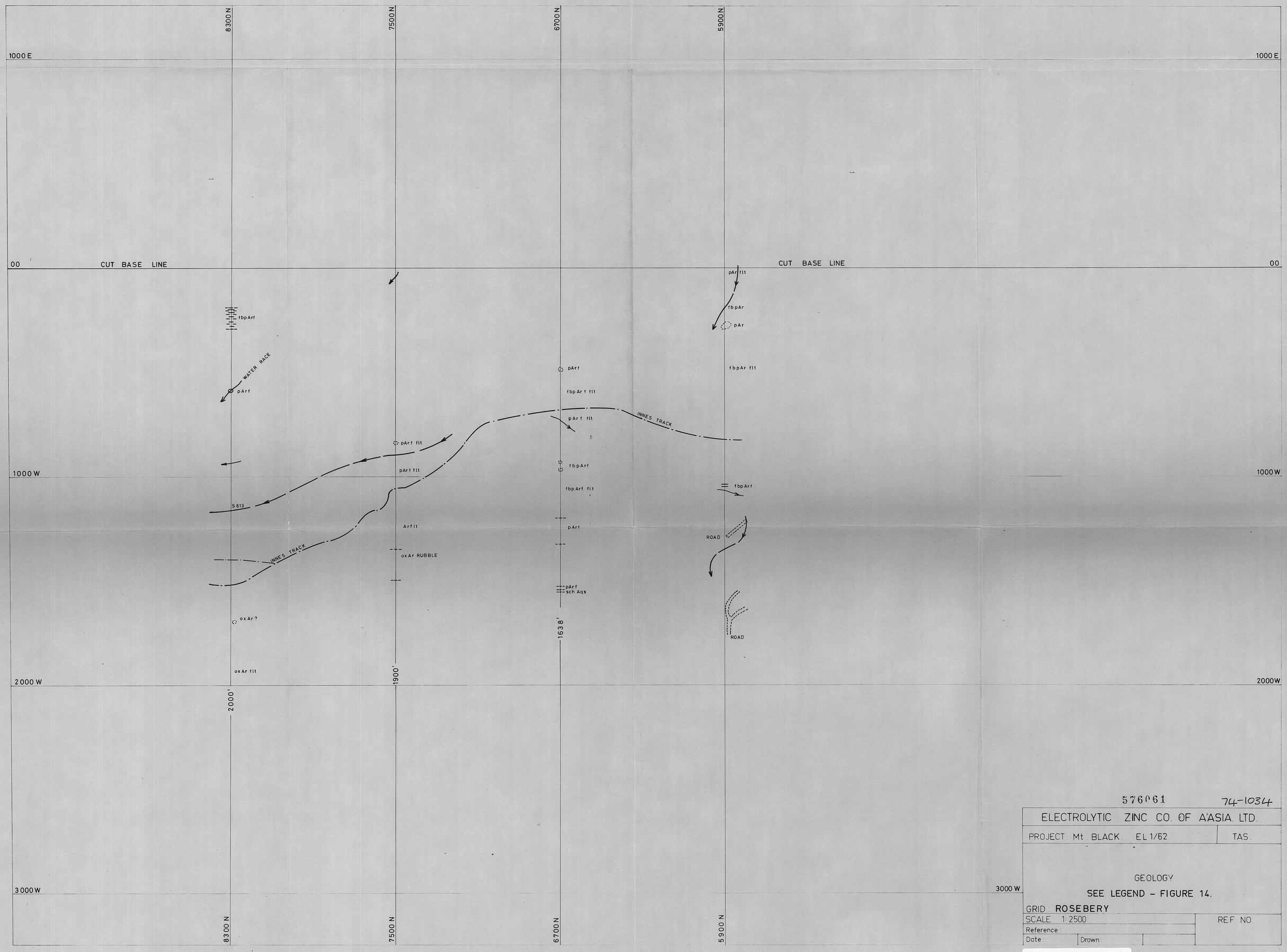
Reference:

Date: | Drawn:

5 cm

1645

PLATE 17.



576061 74-1034

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.	
PROJECT: Mt. BLACK. EL 1/62	TAS.
GEOLOGY SEE LEGEND - FIGURE 14.	
GRID: ROSEBERY	
SCALE: 1:2500	REF. NO.
Reference:	
Date: Drawn:	

5 cm

1646

PLATE 18.

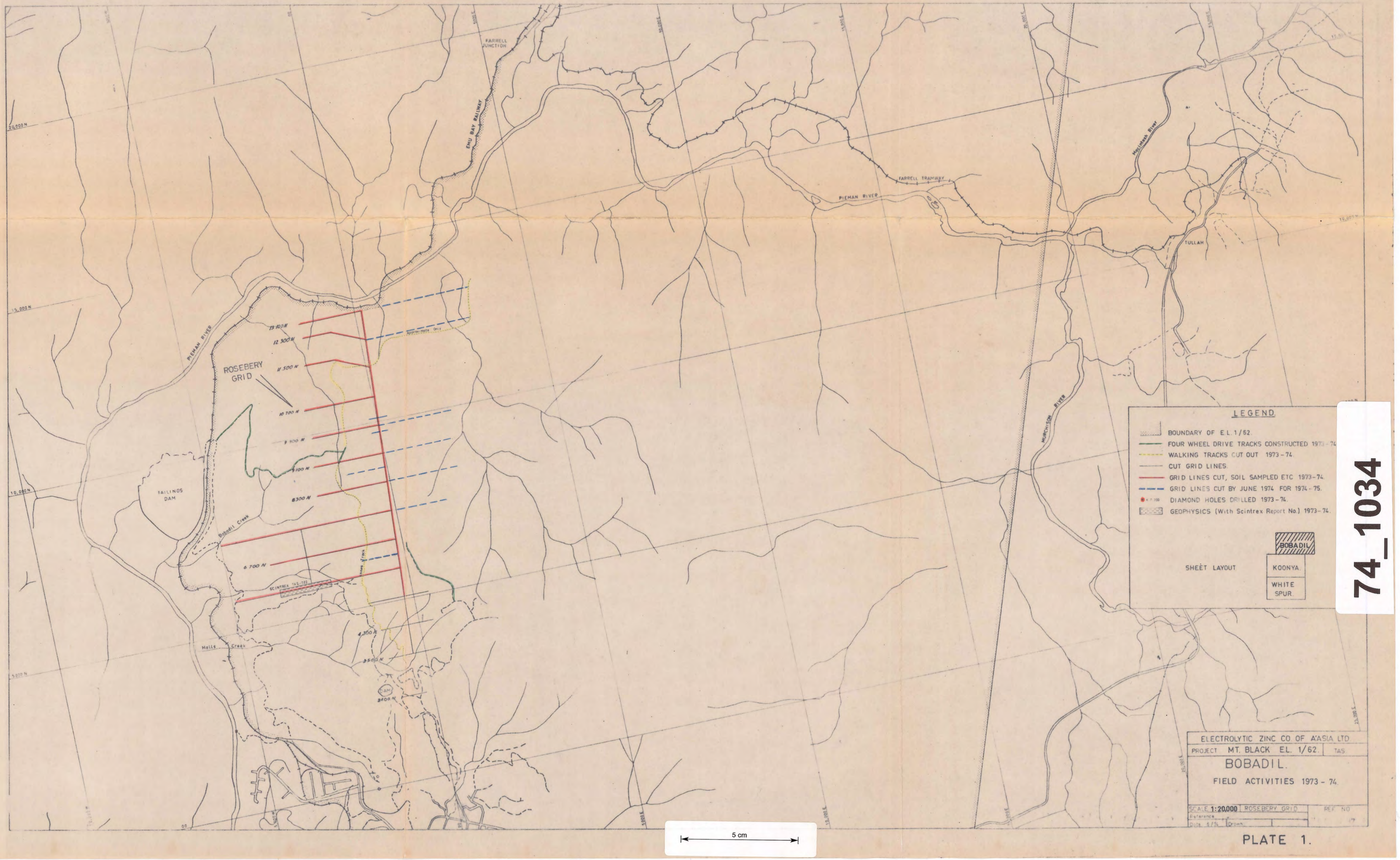
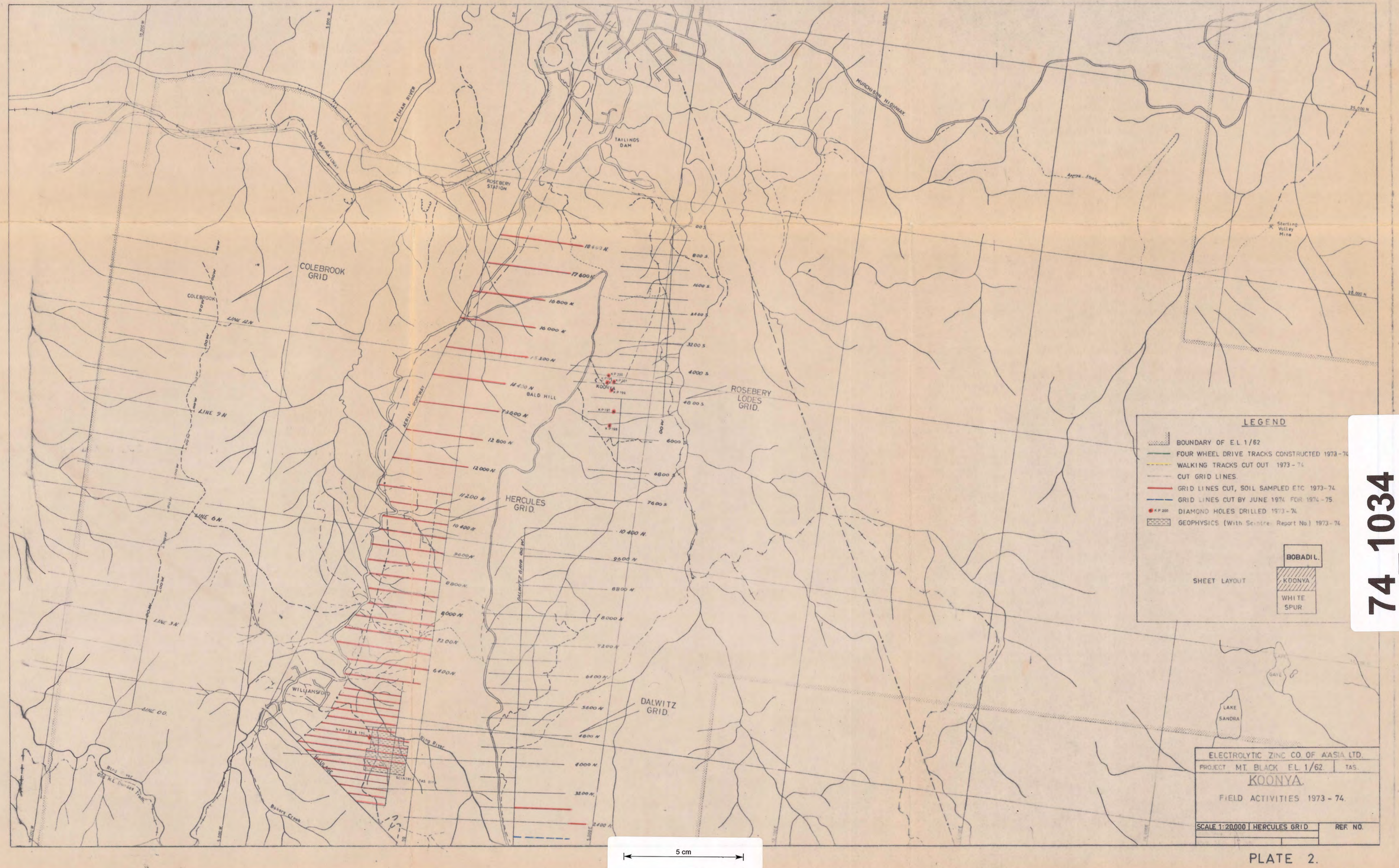


PLATE 1.

74_1034



LEGEND

- BOUNDARY OF E.L 1/62
- FOUR WHEEL DRIVE TRACKS CONSTRUCTED 1973-74
- WALKING TRACKS CUT OUT 1973-74
- CUT GRID LINES.
- GRID LINES CUT, SOIL SAMPLED ETC 1973-74.
- GRID LINES CUT BY JUNE 1974 FOR 1974-75.
- KP 200 DIAMOND HOLES DRILLED 1973-74
- GEOPHYSICS (With Scintrex Report No.) 1973-74

SHEET LAYOUT

ELECTROLYTIC ZINC CO. OF AASIA LTD.

PROJECT MT. BLACK E.L. 1/62. | TAS.

KOONYA.

FIELD ACTIVITIES 1973-74.

SCALE 1:20,000 | HERCULES GRID | REF. NO.

5 cm

PLATE 2.

74_1034

WHITE SPUR GRID

DALWITZ GRID

HERCULES MINE

Slate River

Bakers Creek

ART ROAD

LAKE JOHNSTON

LAKE JULIA

S.P.L. 132

E.L. 9/66

Dobsons Creek

Jones Creek

White Spur Creek

LEGEND

- BOUNDARY OF E.L. 1/62.
- FOUR WHEEL DRIVE TRACKS CONSTRUCTED 1973-74.
- WALKING TRACKS CUT OUT 1973-74.
- CUT GRID LINES.
- GRID LINES CUT, SOIL SAMPLED ETC 1973-74.
- GRID LINES CUT BY JUNE 1974 FOR 1974-75.
- K.P. 200 DIAMOND HOLES DRILLED 1973-74.
- GEOPHYSICS (With Scintrex Report No.) 1973-74.

SHEET LAYOUT

BOBADIL.
KOONYA
WHITE SPUR

5 cm

ELECTROLYTIC ZINC CO. OF A'ASIA LTD.

PROJECT MT. BLACK E.L. 1/62. TAS.

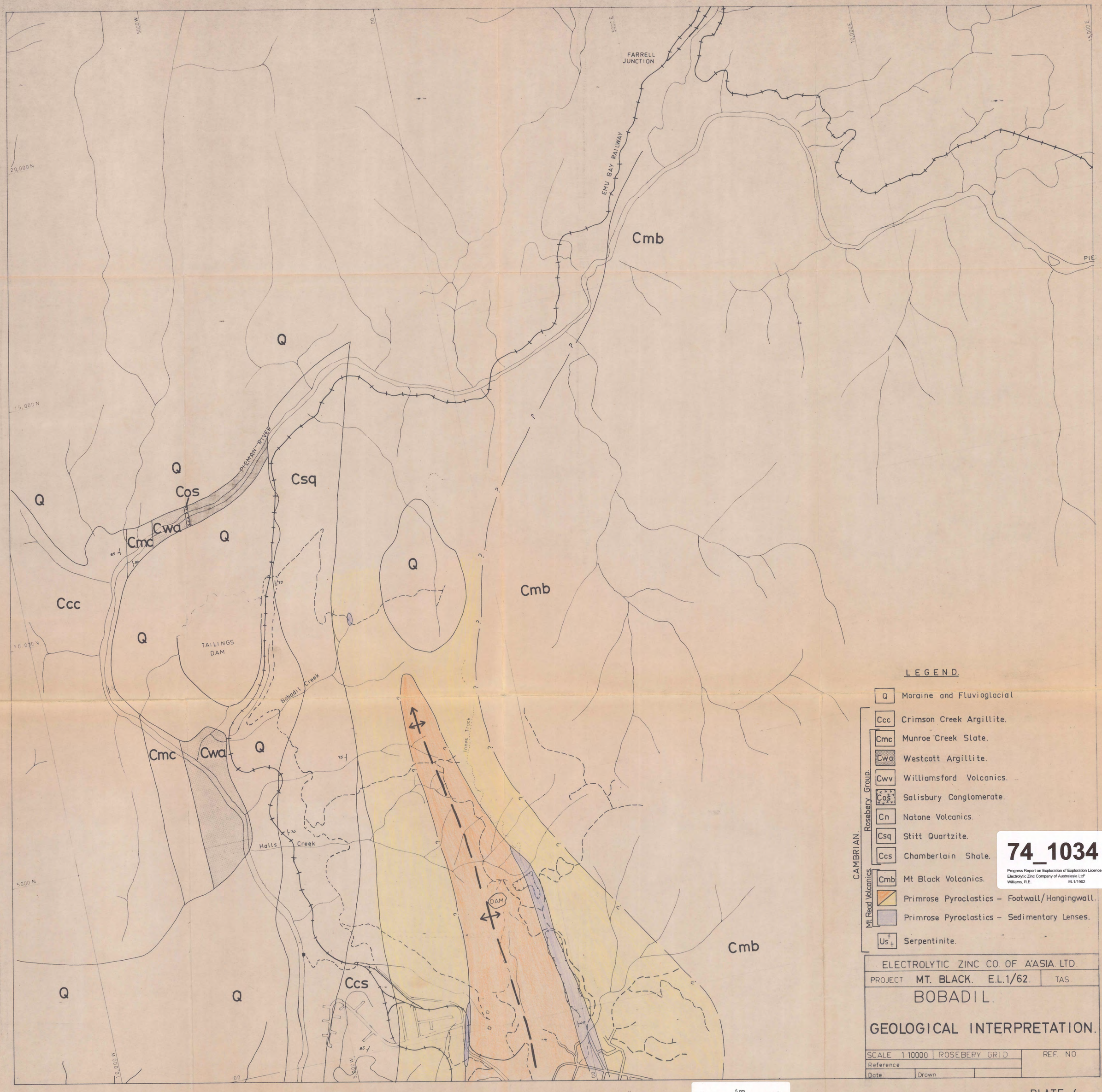
WHITE SPUR.

FIELD ACTIVITIES 1973-74.

SCALE 1:20,000 HERCULES GRID. DWG. NO

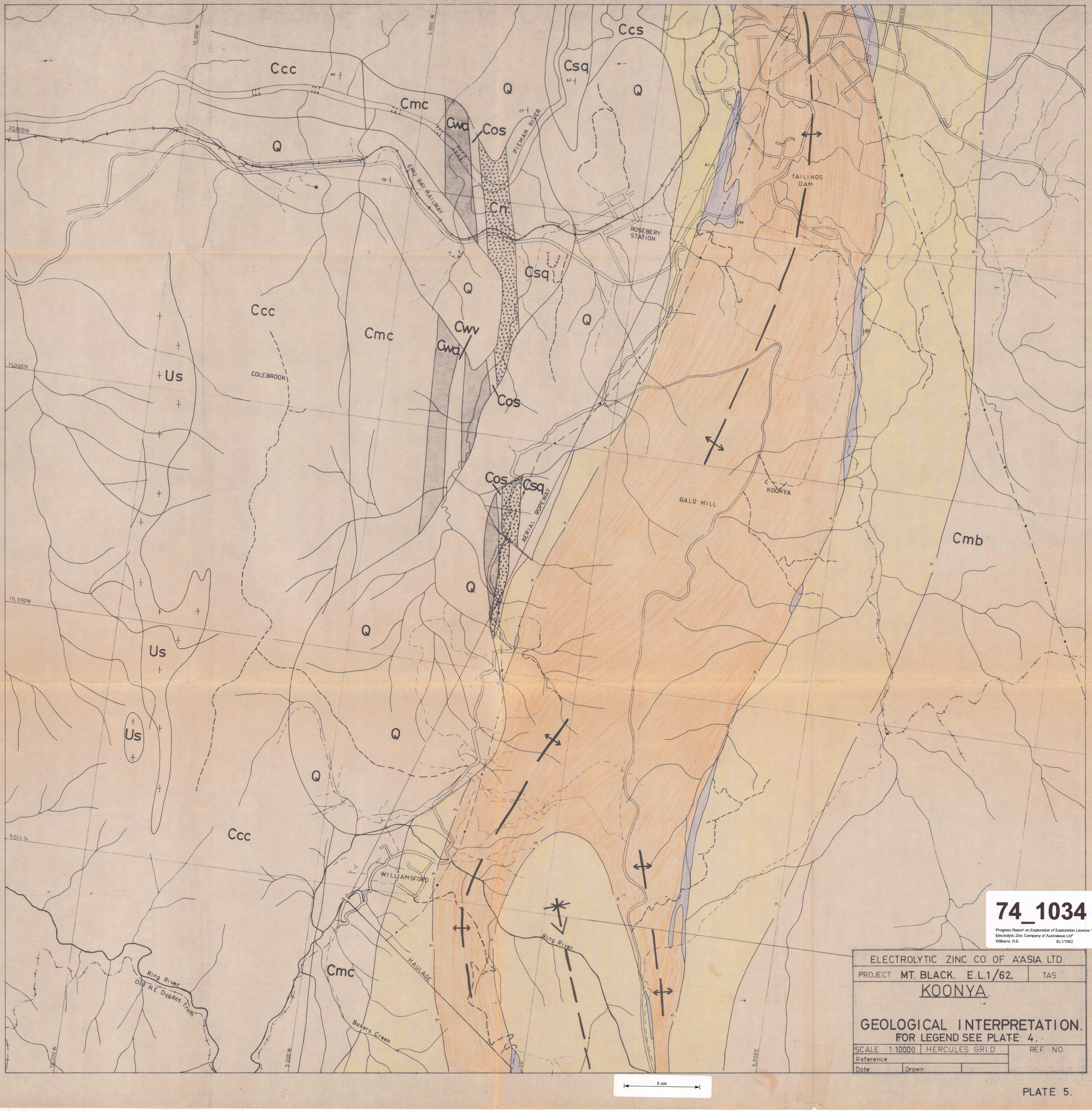
PLATE 3.

74_1034



74_1034
Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd*
Williams, R.E. EL1/1962

PLATE 4.



74_1034

Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd"
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.		
PROJECT MT. BLACK. E.L.1/62.		TAS.
KOONYA.		
GEOLOGICAL INTERPRETATION.		
FOR LEGEND SEE PLATE 4.		
SCALE 1:10000	HERCULES GRID	REF. NO
Reference		
Date	Drawn	

5 cm

PLATE 5.

Cmc

Ccc

Us

Cmb

Baker's Creek

HERCULES MINE

Ring River

Dam

MT READ

LAKE JOHNSTON

Dobson's Creek

Jones Creek

White Spur Creek

5,000 N

00

5,000 E

10,000 E

5,000 S

10,000 S

15,000 S

20,000 S

5,000 W

00

5,000 E

10,000 E

5 cm

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK. E.L.1/62. TAS.

WHITE SPUR.

GEOLOGICAL INTERPRETATION.

FOR LEGEND SEE PLATE 4.

SCALE 1:10000 | HERCULES GRID. | REF. NO.

Reference

Date: | Drawn:

PLATE 6.

74_1034

Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd*
Williams, R.E. EL1/1962

5000 W

00

5000 E

10,000 E

15,000 E

20,000 N

15000 N

13100 N.

12300 N.

11500 N

10700 N

9900 N.

9100 N

8300 N.

6700 N

4300 N.

3500 N.

2400 N

10,000 N

5000 N

10,000 W

5000 W

00

5000 E

≤ 2 p.p.m.

> 2 ≤13 p.p.m.

> 13 ≤ 35p.p.m.

> 35 p.p.m.

74_1034

Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd"
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK E.L. 1/62. TAS.

BOBADIL

Cu SOIL GEOCHEMISTRY.

SCALE 1:10000 ROSEBERY GRID

Reference

Date 6/74. Drawn.

REF. NO.

5 cm

PLATE 7.



74_1034

Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd*
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK E.L. 1/62. TAS

BOBADIL

Pb SOIL GEOCHEMISTRY.

SCALE 1:10000 ROSEBERY GRID REF. NO

Reference

Date 6/74 Drawn

PLATE 8.

5000 N

00

5000 E

10,000 E

15,000 E

20,000 N

15000 N

13100 N

12300 N

11500 N

10700 N

9900 N

9100 N

8300 N

10,000 N

6700 N

4300 N

3500 N

5000 N

2400 N

10,000 W.

5,000 W.

00

5000 E

≤ 25 p.p.m.

> 25 ≤ 65 p.p.m.

> 65 < 120 p.p.m.

≥ 120 p.p.m.

74_1034

Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd*
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK. E.L. 1 / 62. | TAS

BOBADIL

Zn SOIL GEOCHEMISTRY.

SCALE 1 10000 ROSEBERY GRID | REF NO

Reference

Date 6/74 | Drawn

5 cm

PLATE 9.



74_1034
Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd*
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO OF A'ASIA LTD.

PROJECT MT. BLACK E.L. 1/62. TAS

KOONYA

Cu SOIL GEOCHEMISTRY.

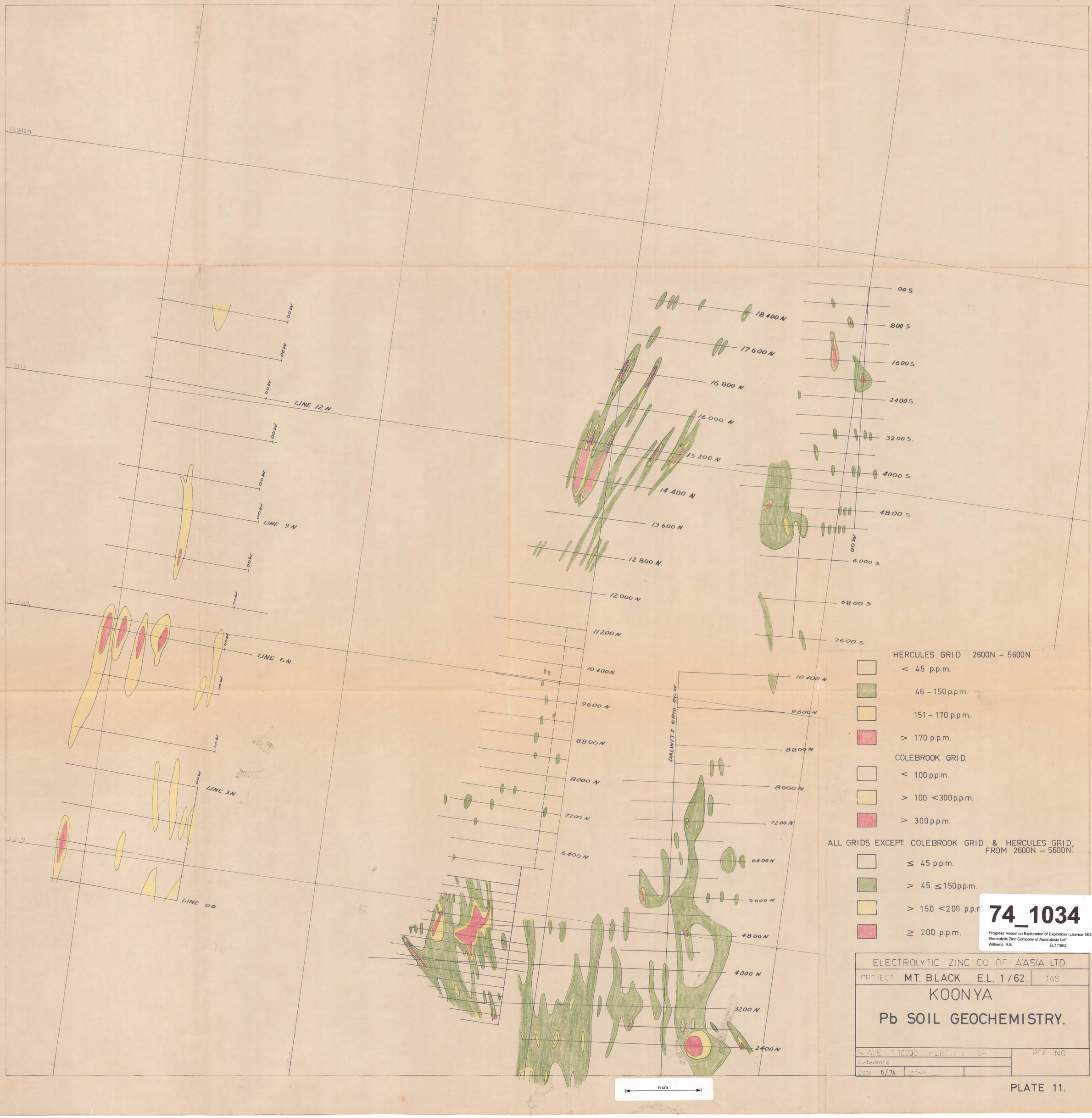
SCALE 1:10000 HERCULES GRID

Reference

Date 6/74. Drawn

REF NO

PLATE 10.



HERCULES GRID 2600N – 5600N

- < 45 p.p.m.
- 46 – 150 p.p.m.
- 151 – 170 p.p.m.
- > 170 p.p.m.

COLEBROOK GRID.

- < 100 p.p.m.
- > 100 <300 p.p.m.
- > 300 p.p.m

ALL GRIDS EXCEPT COLEBROOK GRID & HERCULES GRID, FROM 2600N – 5600N.

- ≤ 45 p.p.m.
- > 45 ≤150 p.p.m.
- > 150 <200 p.p.m
- ≥ 200 p.p.m.

74_1034
Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd*
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO OF A'ASIA LTD.

PROJECT MT. BLACK E.L. 1/62. TAS

KOONYA

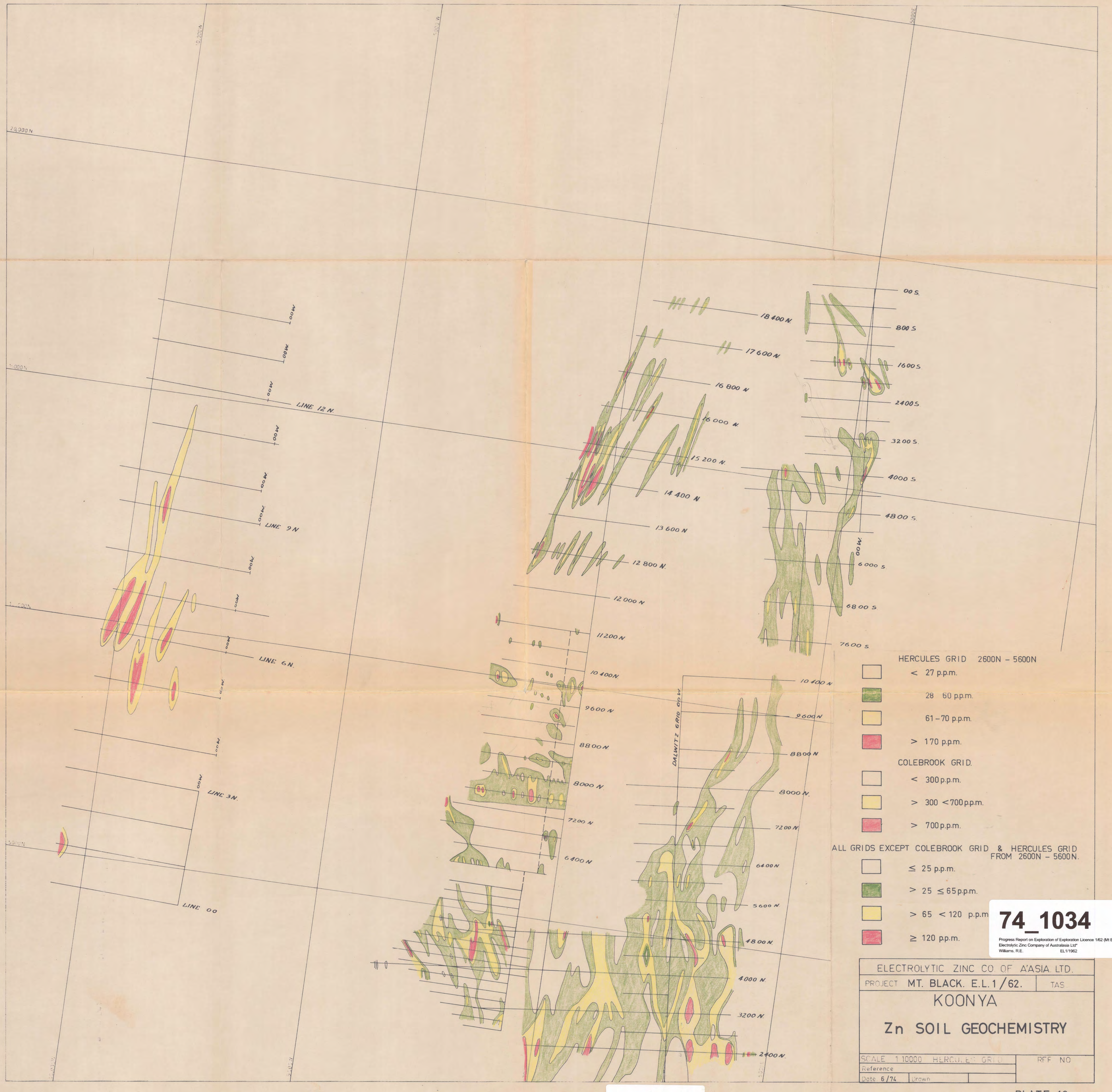
Pb SOIL GEOCHEMISTRY.

SCALE 1:10000 HERCULES GR. REF NO

Reference

Date 6/74. Drawn

PLATE 11.



74_1034
Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd"
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK. E.L. 1/62. TAS

KOONYA

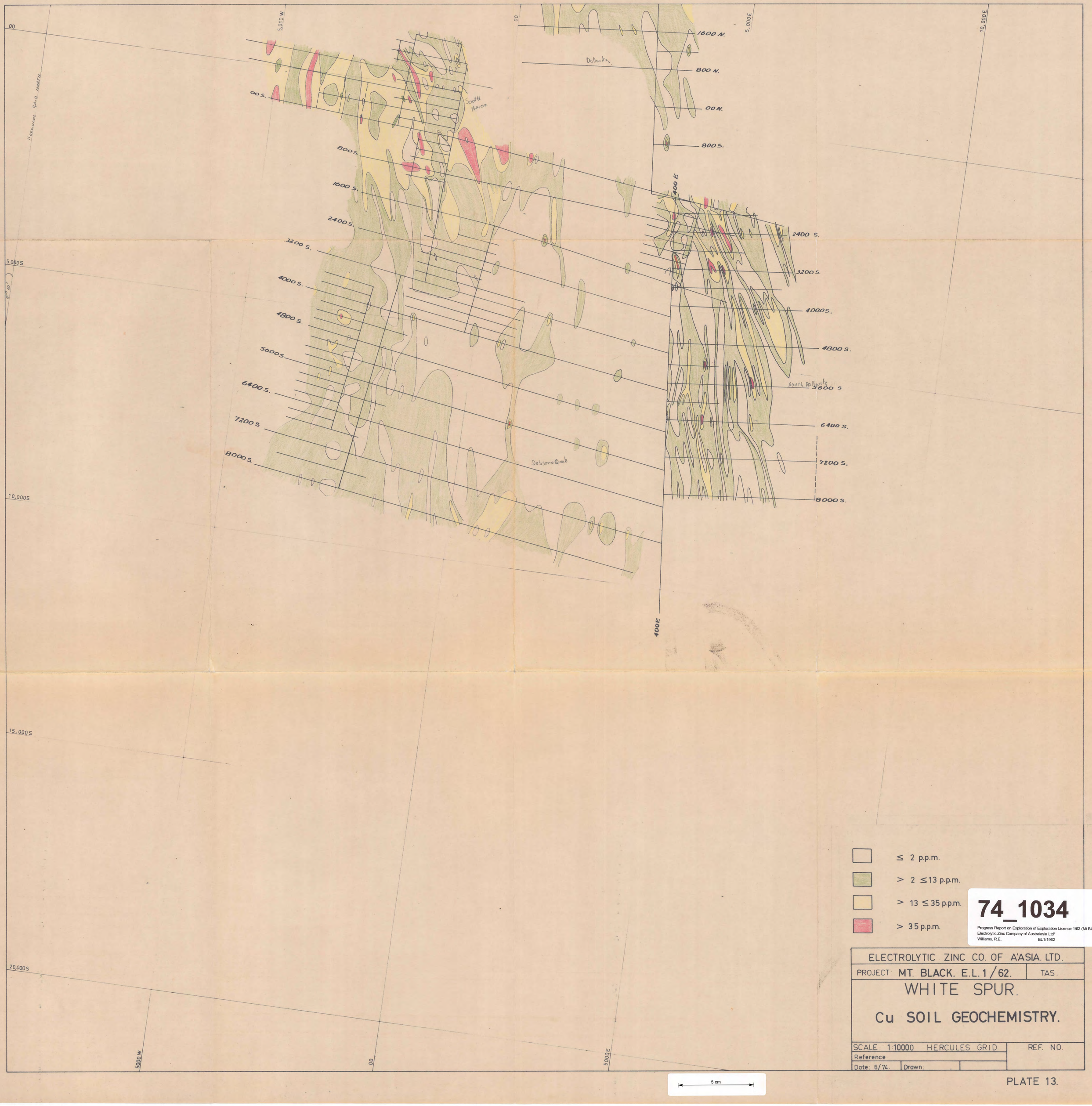
Zn SOIL GEOCHEMISTRY

SCALE 1:10000 HERCULES GRID REF NO

Reference

Date 6/74 Drawn

PLATE 12.



≤ 2 p.p.m.

> 2 ≤13 p.p.m.

> 13 ≤ 35 p.p.m.

> 35 p.p.m.

74_1034

Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd*
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT: MT. BLACK. E.L.1/62. TAS.

WHITE SPUR.

Cu SOIL GEOCHEMISTRY.

SCALE: 1:10000 HERCULES GRID | REF. NO.

Reference

Date: 6/74. Drawn:

5 cm

PLATE 13.



≤ 45 p.p.m.

> 45 ≤ 150 p.p.m.

> 150 < 200 p.p.m.

≥ 200 p.p.m.

74_1034
Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd*
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK. E.L. 1/62. TAS.

WHITE SPUR.

Pb SOIL GEOCHEMISTRY.

SCALE 1:10000 HERCULES GRID REF. NO.

Reference

Date 6/74 Drawn

5 cm

PLATE 14.



≤ 25 p.p.m.

> 25 ≤ 65 p.p.m.

> 65 < 120 p.p.m.

≥ 120 p.p.m.

74_1034
Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd"
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT MT. BLACK. E.L. 1/62. TAS.

WHITE SPUR.

Zn SOIL GEOCHEMISTRY.

SCALE 1:10000 HERCULES GRID REF. NO.

Reference

Date: 6/74 Drawn:

PLATE 15.



ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT: Mt. BLACK. EL 1/62 | TAS.

GEOLOGY
SEE LEGEND - FIGURE 14.

GRID: DALWITZ
SCALE: 1:2500
Reference
Date: | Drawn
REF NO

PLATE 16.

5 cm

74_1034

Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd"
Williams, R.E. EL1/1962

13100 N | 12300N | 11500N | 10700N | 9900N | 9100N

1000 E — 1000 E

00 — CUT BASE LINE — CUT BASELINE — 00

1000 W — 1000 W

2000 W — 2000W

3000 W — 3000W

E.B.R.

TRANSMISSION LINE

aftAr
xtArqf
xtArqf

xtArqf
qtz eyes Ar gf

lbAr (Sbs frag?)
lbAr

fgxt or vtAr

vtAr — CREST OF RIDGE

pArf

xtAr fq

xtArq
qtz eye Ar

TRANSMISSION LINE

1827'

pArf

ttAr
glacial flt

pArf

oxt Ar flt

aftAr

oxltAr

fbAr
fbAr

fbpArf — TRIG POINT — CREST OF RIDGE

fbAr; qtz, qcb veins

fbpArf
fbpArf

fg oxAr

60°

fbpArf

1850'

STREAM

80°

Sbs

oxtAr

pArf

oxltAr

fbAr

oxAr RUBBLE

pArf

oxAv

1850'

STREAM

INNES TRACK (APPROX.)

NOT MAPPED (JULY '74)

NOT MAPPED (JULY '74)

NOT MAPPED (JULY '74)

9900 N

9100 N

5 cm

74_1034

Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd*
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT: Mt. BLACK. EL 1/62 | TAS.

GEOLOGY
SEE LEGEND – FIGURE 14.

GRID: ROSEBERY
SCALE: 1:2500 | REF. NO.
Reference:
Date: | Drawn:

PLATE 17.

8300 N
7500 N
6700 N
5900 N
1000 E
00
CUT BASE LINE
1000 W
2000 W
3000 W
2000'
1900'
1638'
fbpArf
WATER RACE
pArf
pArf flt
fbpAr flt
fbpAr f flt
INNES TRACK
fbpArf
fbpArf flt
S 613
Arf flt
oxAr RUBBLE
pArf sch Aqs
oxAr?
oxAr flt
fbpAr
ROAD
5 cm

74_1034

Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd"
Williams, R.E. EL1/1962

ELECTROLYTIC ZINC CO. OF A'ASIA. LTD.

PROJECT Mt BLACK. EL 1/62 | TAS.

GEOLOGY

SEE LEGEND – FIGURE 14.

GRID ROSEBERY

SCALE 1:2500 | REF NO

Reference

Date | Drawn

PLATE 18.

000

576062

REPORT ON
GRADIENT AND DOWN HOLE
ELECTRICAL INDUCED POLARIZATION SURVEYS
HERCULES GRID, WEST COAST TASMANIA
ON BEHALF OF
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

315.04/12T

REPORT ON
GRADIENT AND DOWN HOLE
ELECTRICAL INDUCED POLARIZATION SURVEYS
HERCULES GRID, WEST COAST TASMANIA
ON BEHALF OF
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

while spun?

001

576063

PRIVATE AND CONFIDENTIAL

REPORT ON
GRADIENT AND DOWN HOLE
ELECTRICAL INDUCED POLARIZATION SURVEYS
HERCULES GRID, WEST COAST TASMANIA
ON BEHALF OF
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

BY

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

SYDNEY, N.S.W. OCTOBER, 1973

TAS-017

576064

CONTENTS

Summary – missing not on microfiche

Introduction Page 1

Discussion of Results

Gradient Array Electrical Induced Polarization Survey Page 2

Drill Hole Surveys Page 11

Hercules Mine Grid Page 14

Conclusions and Recommendations Page 15

Appendix 'I.P.'

Figure 1 - Locality Plan

Plate 1 - Sheets 1 and 2 - Gradient Array Data Profiles

Plate 2 - Hercules and Hercules Mine Grid - Three Array Detail

Plate 3 - Chargeability Contour Map

Plate 4 - Down Hole Surveys

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REPORT ON
GRADIENT AND DOWN HOLE
ELECTRICAL INDUCED POLARIZATION SURVEYS
HERCULES GRID, WEST COAST TASMANIA
ON BEHALF OF
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

INTRODUCTION

On 16 production days between 15th October and 1st November, 1973 Scintrex Pty. Ltd. executed gradient, three array, down hole logging and applied potential electrical induced polarization surveys on behalf of Electrolytic Zinc Company of Australasia Limited on the Hercules Mine and Hercules grids.

The survey was under the immediate direction of Mr. B. Ekstrom assisted by Mr. L. Jones of the staff of Scintrex Pty. Ltd. Additional field hands were provided by Electrolytic Zinc Company of Australasia Limited. The technical supervision of the project was undertaken by the author.

The objectives of the survey were as follows:

1 - To locate and delineate possible segregations of economic sulphides of the type located on line 8S of the South Hercules grid.

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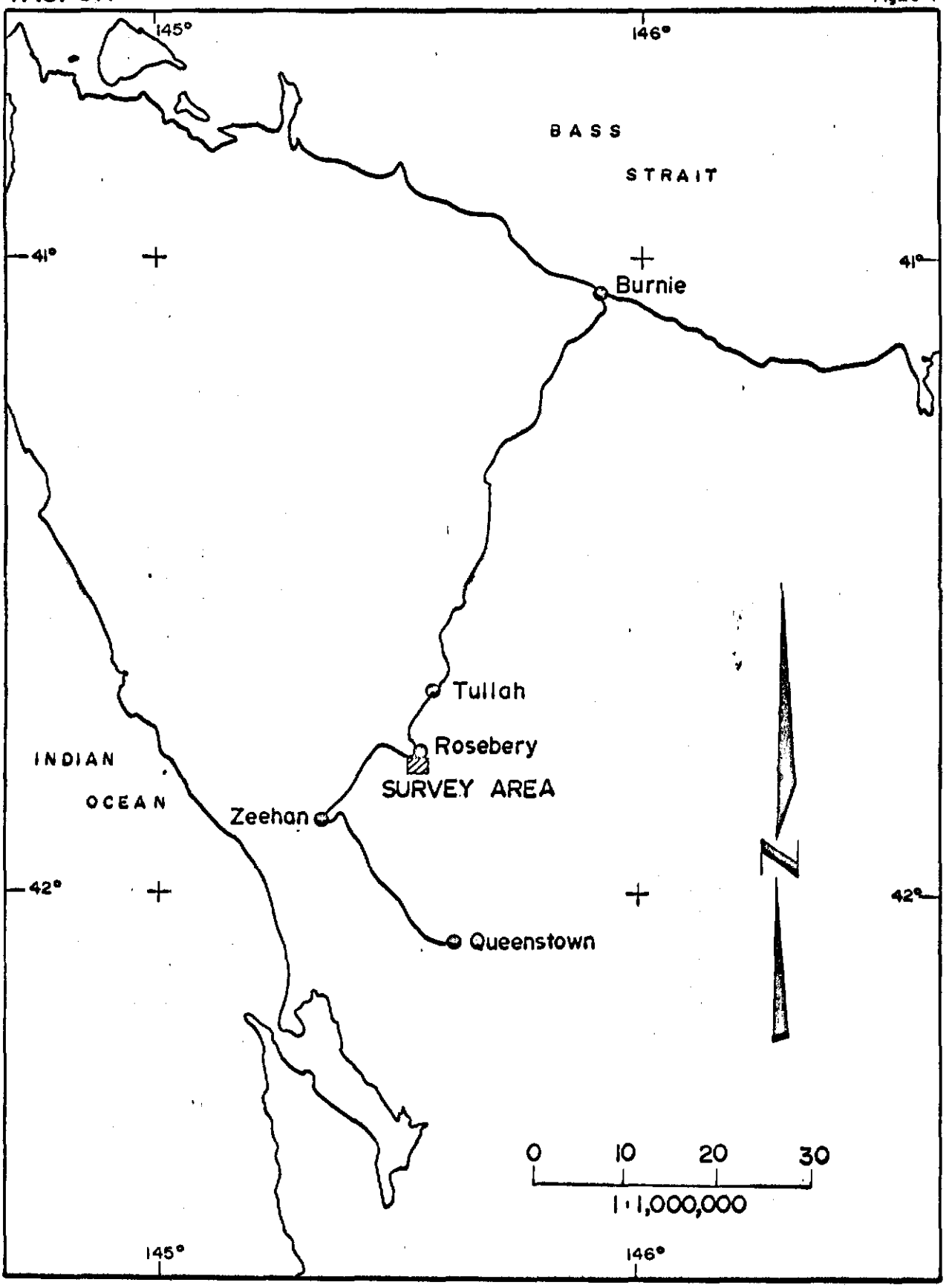
TAS. 017 LOCALITY PLAN

Figure 1



5 cm

2 - To investigate the electrical characteristics of the lead/zinc mineralisation located on the South Hercules grid.

3 - To trace the above using an applied potential method.

The electrical induced polarization method is briefly described in Appendix 'I.P.'.

DISCUSSION OF RESULTS

GRADIENT ARRAY ELECTRICAL INDUCED POLARIZATION SURVEY

The electrical induced polarization gradient array survey data profiles are presented on Plate 1, Sheets 1 and 2, on a horizontal scale of 1 inch = 200 feet. The vertical scales used are 1 inch = 10 milliseconds for chargeability while the resistivity is shown on a two inch log cycle and expressed in ohm-metres. The L/M ratios were recorded throughout, the majority falling within the range 0.8 $\pm$ 0.1 As these are normal they have not been drafted.

The following current dipoles were used to establish potential fields:

23W and 7E on 12N	(3000')	Lines 18N, 16N, 14N, 12N, 10N, 8N, 6N, 4N
15W and 5E on 4N	(2000')	Lines 6N, 4N, 2N, 00
18W and 22E on 8S	(4000')	Lines 2S, 4S, 6S, 8S, 10S, 12S, 14S, 16S

8W and 22E on 24S (3000') Lines 17S, 18S, 20S, 22S, 24S, 26S, 28S

8W and 22E on 36S (3000') Lines 30S, 32S, 34S, 36S, 38S, 40S

3E and 33E on 36S (3000') Lines 30S, 32S, 34S, 36S, 38S, 40S

Plate 2 shows the results of detailed three-array surveys carried out over anomalies on the Hercules and Hercules Mine grids. The vertical scales are as for Plate 1 but with a 1 inch = 100 feet horizontal scale.

Plate 3 displays a contour interpretation of the chargeability data at the scale of 1 inch = 200 feet. Chargeabilities have been contoured from all six current dipoles surveyed and in addition the current dipole 00 to 20E on line 4S, surveyed last season, has been included as an inset.

Although contouring should be confined within each block, along-strike conditions made inter-block contouring valid over most of the area. Across strike matching was, as would be expected, not good due to the non-identical volumes sampled at array extremeties. The boundaries and electrode positions for each block are shown on Plate 3.

Unfortunately the various grid plans supplied by Electrolytic Zinc do not agree in detail, therefore in the last season's

work there remains an element of doubt in location.

The normal range of apparent resistivities recorded in the area varied from 1000 ohm-metres to just less than 10,000 ohm-metres while the apparent chargeability values ranged from 6 to 45 milliseconds.

Each anomalous zone of induced polarization response is described in detail below.

ZONE A: This anomaly is extremely well defined on lines 10N, 12N, 14N and 16N at 6.5W, 7.8W, 8.8W and 9.8W respectively. The width of the source is estimated to be of the order of 80 feet to 120 feet and dips steeply to the west with respect to the local slope. Three array detail carried out on line 10N at a = 25 feet and a = 50 feet resolves two narrow zones within the zone defined by the gradient array. In addition the maxima at about 6.6W shows a six to seven fold increase in conductivity as opposed to the mere 25% increase recorded on the gradient array. This conductive chargeable zone is therefore considered to be narrow, say 5 to 6 feet and contained within a zone of electrically discontinuous massive and/or disseminated sulphide. The percentage by volume indicated within the conductive zone is 5% to 10% sulphide while over the zone as a whole, 3% was indicated.

The maximum indicated depths are of the order of 20 feet. A percussion or diamond drill hole is recommended to investigate zone A on this line (10N).

A southern extension to the zone is inferred on line 8N at about 5.75W, on line 6N at about 5.5W and on line 4N at about 4.5W.

ZONE B: Excellent responses of 20 and 15 milliseconds were recorded at 1.4W and 1.9W on lines 8N and 10N. There is very little depression in the apparent resistivity profile indicating little increase in conductivity within the source. The width of the source is considered to be of the order of 120 feet and the profile shape infers a steep west to vertical dip with respect to the local slope. Detailed three array confirms the above width determination.and infers a maximum depth for the zone of about 25 feet.

To the north the zone can be traced across lines 12N, 14N and perhaps 16N by a series of very minor highs. To the south the zone is open.

Drilling is recommended on line 10N.

ZONE C: is seen only on line 16N at 12.0W as a definite high but may occur on line 14N as a shoulder and is open to the

north. As there is no associated reduction in conductivity a disseminated or electrically discontinuous nature to the source is considered likely. The curve shape infers a moderate west dip to the source.

ZONE D: The extreme western sectors of lines 12N, 10N, 8N, 6N and 4N show increasingly high chargeabilities to in excess of 40 milliseconds. It is nor clear from the data as to whether this is due to the western electrode for the current dipole being emplaced in highly chargeable material or highly chargeable material being present on the west of these lines. Should the sediment recorded in the area be graphitic it is considered that they could form the source material. If so a graphite and/or disseminated sulphide content of up to 4% to 8% by volume is inferred over at least 400 to 600 feet of strike width. A major change in characteristics was recorded west of about 11W-12W on line 6N, 13W on line 8N and west of about 11W on line 4N. Here the increase in bulk chargeability was associated with 40 millisecond apparent chargeabilities.

It is considered of importance to identify the source. If geological mapping is unable to accomplish this, then a single gradient line should be run so as to close the anomaly to the west prior to any exploratory drilling.

ZONE E: A distinct well defined induced polarization high was defined centred at 9.5W on line 00 having a width of the order of 100 feet. The 20 millisecond above background anomaly recorded infers a sulphide or sulphide equivalent of 2% to 4%. The source is probably disseminated as the resistivity rises somewhat over the entire zone of induced polarization. Chargeability levels remain high to as far as 6.5W but again a disseminated source is suspected.

To the south the zone is open but to the north a distinct anomaly was located at 9.5W on 2N with a subsidiary peak at 7.5W and on line 4N a much broader chargeability high was recorded between 8W and 11W. It should be noted that although the shape and magnitude of the induced polarization response varies over this zone the resistivity pattern remains identical on lines 0, 2N and 4N. Further north shoulders on lines 6N and 8N at 12.5W and 13.5W may represent a northern extension.

ZONE F: An excellent response of the order of 20 milliseconds showing some slight reduction in resistivity was recorded centred at 5.3W on line 10S. The source is inferred to be broad and the asymmetry of the profile infers a very steep west dip. The resistivity and induced polarization data infers a northerly extension for this zone on lines 8S and perhaps 6S at 5.5W and 6.5W respectively. Lines 12S and 14S

were not surveyed sufficiently far to the west to cover this zone, but on line 16S a response similar in both magnitude and form was recorded at 3W. Similarly lines 17S, 18S and 20S were not surveyed to the west but on lines 22S, 24S 26S and 28S excellent responses were recorded west of 00, at 00, west of 200E and 250E respectively. The source appears to be broad and of the order of 150 feet to 200 feet wide and most lines show some increase in conductivity over the chargeable zone. To the north of 24S inclusive the source has an inferred steep west or vertical dip, however, on lines 26S and 28S a much shallower west dip is inferred (As usual these dips are with respect to the local slope).

The inferred strike length of this zone is of the order of 3000' together with the fact that black shales have been recorded in the vicinity of these anomalies tends to suggest a purely formational origin. However, the fact that significant geochemistry has also been recorded parallel to this zone tends to increase its interest. Exploratory drilling is recommended after close spaced rock chip geochemical sampling over the anomalies on lines 24S, 16S and 10S which are considered to have the shallowest sources. Alternatively should weather and ground conditions permit the HGG-3 mercury spectrometer could be used.

ZONE G: An anomaly of some 10 milliseconds above background was recorded on lines 8S and 10S between 3.00E and 6.00E and between 3.50E and 6.25E respectively. The source can be traced north and south through low amplitude chargeability maxima to 2S and 14S respectively. There is little reduction in apparent resistivity over the anomaly and therefore the source is either disseminated and/or electrically discontinuous in form.

ZONE H: This zone can be traced from line 17S to perhaps as far south as 24S but reaches its maximum development on line 20S between 9.40E and 11.00E. The source is electrically discontinuous or disseminated with a bulk sulphide content of between 1% and 2% over the 150 feet width. Any further investigation of the source should take place on line 20S.

ZONE I: This zone of moderate induced polarization response shows good development from 12.50E on line 14S to 12.00E/ 13.50E on line 20S, but can be traced yet further to 11.50E on 30S. North of 18S inclusive some conduction was noted within the chargeable source, however, to the south the source is resistive. Close ground follow-up is recommended on lines 14S to 20S.

ZONE J: Minor but positive responses were recorded on lines 32S and 34S centred at about 15.50E and 15.00E respectively.

The symmetry and form of the profile suggests a moderate to steep east dip on line 34S and a vertical dip on line 32S from a disseminated sulphide source of 3/4% to 1½% sulphides over perhaps 80 or so feet.

ZONE K: A broad low amplitude zone of high polarization was recorded on lines 22S, 24S, 26S and 28S at 3.50E, 4.50E, 5.00E and 5.80E respectively. On the former two lines the chargeability response is coincident with a three fold increase in conductivity. Very low amplitude highs can be traced north to as far as 2S and south into Zone L. It seems likely that this zone is of formational origin.

ZONE L: Two minor responses of about 5 milliseconds above background from 50 to 80 feet disseminated sulphide source were defined centred at 7.50E and 8.70E on lines 32S and 34S respectively. The anomaly is best defined on line 34S where any further ground investigation should take place. The source is considered to be formational in origin, which, with Zone K, can be traced for a strike length of over 3600 feet.

DRILL HOLE SURVEYS

The data is presented in Plate 4. Down hole scale is 1 inch = 25 feet and surface profiles are at a scale of 1 inch = 50 feet. The applied potential down hole and surface values are expressed in millivolts and plotted directly on a two inch log scale. The three array log also uses a two inch log scale and the data is expressed in ohm-metres. Chargeability is expressed in milliseconds at the scale of 1 inch = 10 milliseconds.

THREE ARRAY LOG

Diamond drill hole H866 was logged for chargeability and resistivity using a three array logger having a spacing of 5 feet (the diagrammatic representation of the volume sampled is shown on Plate 4) The apparent resistivities with the exception of the main zone of mineralisation ranged between 200 and 300 ohm-metres. From a low base level a number of distinct chargeability zones were recorded.

Zone A: Anomalous induced polarization effects were recorded over some 10 feet centred at about 102 feet. The 30 millisecond peak infers a 3% to 6% sulphide content which was confirmed by 3% to 5% sulphides in the core. The sulphides were slightly more conductive than the host rocks, however, they were contained within a 25 feet wide zone of eight times the local

resistivity.

Zone B: At about 120 feet an anomaly of similar magnitude was recorded from a source at about 115 feet. This coincides with the recorded position of 2½% galena and 3% pyrite.

Zone C: A sharp 50 millisecond anomaly at 130 feet from a source at about 125 feet was coincident with the recorded position of 5% to 8% pyrite. This zone was resistive, therefore a disseminated source is inferred.

Zone D: A source at about 175 feet gave a 15 millisecond response which infers a sulphide content of 1½% to 3%. In fact 5% pyrite was recorded at this point.

Zones E and F: The main anomalous chargeability was recorded from a source between 220 feet and deeper that 282 feet, the limit of the penetration of the logging tool.

Zone E is that zone showing decreasing resistivity and high chargeabilities of the order of 90 milliseconds centred at about 235 feet. Pyrite was recorded over this anomaly.

Zone F is centred at about 260 feet and is characterised by a source about 25 feet in width having high chargeability

to in excess of 110 milliseconds and in addition is conductive with apparent resistivity of the order of 4 to 10 ohm-metres being recorded over the central 15 feet. The potentially economic mineralisation consisting of 15% pyrite and 12% galena with perhaps 3/4% copper is coincident with this zone.

It was concluded from these logs that the zone of interest was both highly chargeable as expected and also exhibited conduction within the zone of highest economic mineralisation, whereas other chargeable sulphide zones showed no such conduction. The drill hole log entirely confirmed the results of the surface gradient array on which the drill hole was based.

It was therefore decided to employ an applied potential method to trace the mineralisation from hole to hole and from line to line. Briefly the system in this case employed two matched distant electrodes 1000 feet east and west of the drill hole as one pole and the second pole was inserted within the conductive zone. This current dipole geometry will result in a good approximation of a pole source and an infinte electrode. The resultant potential field using a common fixed electrode is plotted for each of the four drill holes logged; H866, 867,905 and 907 and for the two lines surveyed, 8S and 10S.

The source of the induced polarization response recorded between depth of 30 and 50 feet is unknown but is probably due to drill

hole casing.

The results clearly demonstrate that although the body has local conduction within it, i.e. in the hole and near surface, the body is not conductive as a whole. An induced polarization response at a depth of 265 feet in H867 confirms the continuity of the mineralisation but not the conduction between holes H866 and H867. As no such responses were recorded for drill holes H905 and H907 it must be concluded that these bodies are not electrically continuous along strike.

HERCULES MINE GRID

Plate 2 displays detailed three array electrical induced polarization data at spacings of 25 feet and 50 feet between 00 and 6W on line 16N.

The maximum depths to the top of the chargeable material over the entire zone between 2W and 5W are between 30 and 50 feet. Extremely conductive zones of some 30 times background were recorded between 4.3W and 5.00W and between 2.0W and 3.0W At both these locations artificial conductors (pipes and railway line) have been recorded, but are not considered to be the sole source for these anomalies. It is therefore recommended that this zone be investigated further by percussion or diamond drilling from convenient sites. The zones of greatest interest being between 2.0W and 3.0W and

between 4.5W and 5.0W at a maximum depth of about 50 feet.

CONCLUSIONS AND RECOMMENDATIONS

From the drill hole work it must be concluded that:

a) Although the mineralisation may be electrically continuous over a few feet or tens of feet, the body is not electrically continuous as a whole.

b) The mineralisation is inferred to be continuous between holes H866 and H867 but not between these holes and H905 and H907.

c) Should the mineralisation intersected and logged be typical of the Hercules bodies as a whole (and this has yet to be demonstrated) then an electromagnetic method such as Turam or Turair is not truly applicable for the search for Hercules type mineralisation.

d) Caution should be exercised in extending the conclusions reached in the logging of these essentially limited deposits to the remainder of the Hercules field or the more distant Rosebery deposits.

e) The best method at present appears to be to locate and define zones of chargeability using an electrical induced polarization

method such as gradient array and then attempt by geochemical or geological means to assess the possible economic interest of each zone.

With respect to the present gradient survey on the Hercules grid the following conclusions can be drawn:

1) The interest of each of the twelve zones located in the present survey must be assessed from a standpoint other than the gradient array data. This is due to the fact that although the target mineralisation is certain to be polarizable and may also be relatively conductive locally, segregations of formational pyrite and graphite may also have similar characteristics.

2) The choice of the "best anomalies" should be tempered by the comments above, but on purely geophysical grounds the following anomalies are considered to be of interest:

   Zone A line 10N

   Zone B line 10N

   Zone E line 2N

   Zone F line 10S

   Zone G line 8S

3) As mentioned in previous reports the assessment of dip is at best a guesstimate and is relative to local slope.

Similarly the depth and direction of the source are normal to local slope. This would be expected to influence drilling programme specifications in some areas.

4) Where detailed, the anomalous responses were seen to come from sources whose maximum depths were of the order of 50 feet below surface. Where not detailed, the maximum depths are impossible to gauge with accuracy but are estimated to be of the order of 100 to 150 feet.

The substantial expense involved in drill site preparation is fully realised by the author. Therefore as the method utilised has necessarily to the indirect one of locating and defining the disseminated enclosing pyritic halo, additional investigating ground procedures are considered essential to establish priorities before diamond or percussion drilling. For this reason and also that the author cannot judge the most practical sites or lines on which to drill, no specific drilling recommendations have been made.

The detailed follow-up work is recommended to consist of auger geochemical sampling at close spaced intervals across and down slope of each significant induced polarization high. In addition where (and if) the weather conditions permit, HGG-3 surveys should be undertaken in the vicinity of each significant induced polarization response.

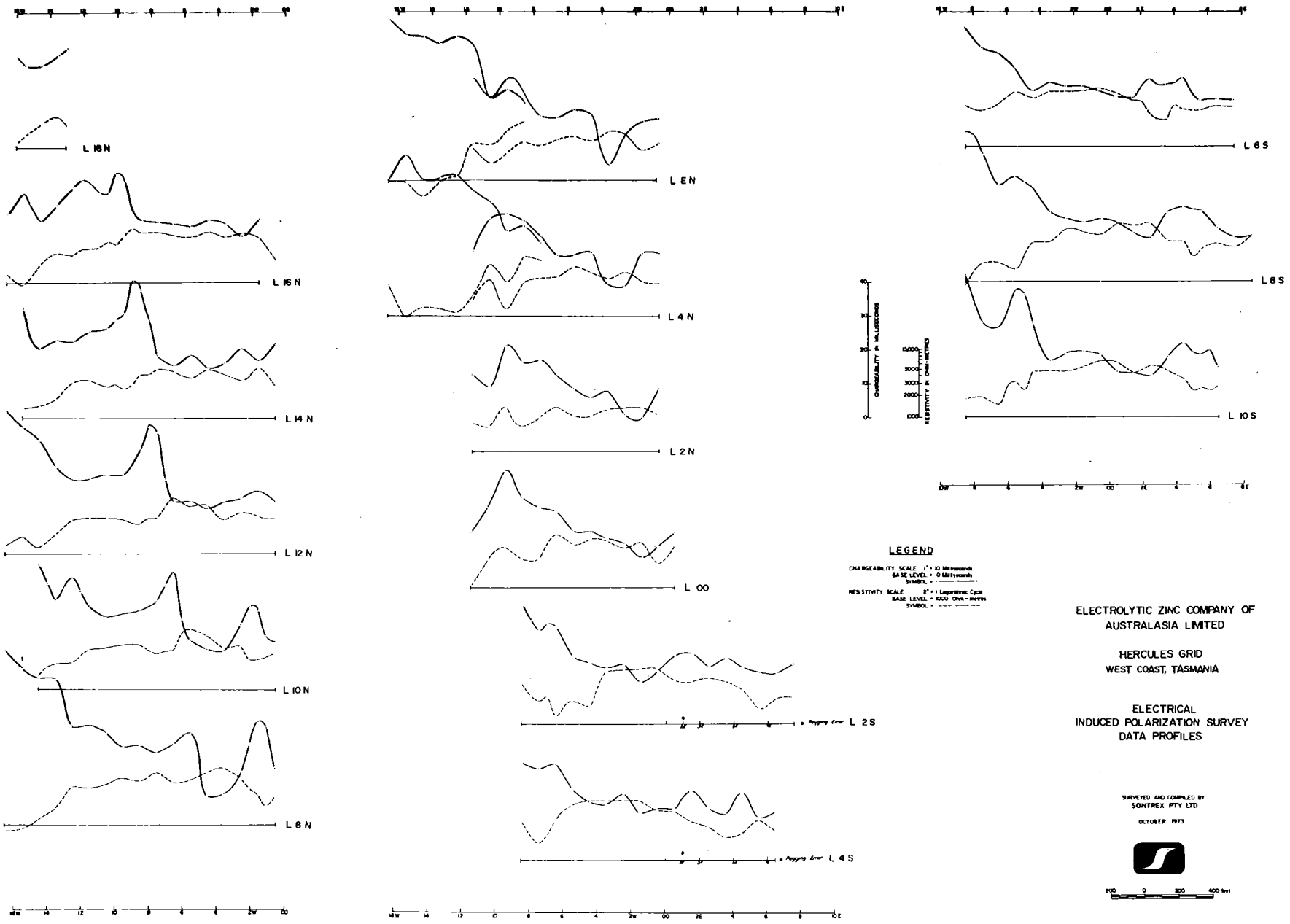
As a general recommendation the source of each induced polarization response considered significant should be drilled at the maximum depth estimated in the text, or at 150 feet and against the slope guesstimated in the text in the absence of more reliable geological information. As mentioned in the text, the depth estimates are normal to local slope and the directions of dip estimated relative to local slope.

Respectfully submitted on behalf of:

SCINTREX PTY. LTD.

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

GEOPHYSICIST


L 18N
L 16N
L 14N
L 12N
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L 8N
L 6S
L 8S
L 10S
L 4N
L 2N
L 00
L 2S
L 4S
LEGEND
CHARGEABILITY SCALE
BASE LEVEL
SYMBOL
RESISTIVITY SCALE
BASE LEVEL
SYMBOL
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
HERCULES GRID
WEST COAST, TASMANIA
ELECTRICAL
INDUCED POLARIZATION SURVEY
DATA PROFILES
SURVEYED AND COMPILED BY
SONTREX PTY LTD
OCTOBER 1973
JOB No TAS 017 SHEET 1 of 2 PLATE 1

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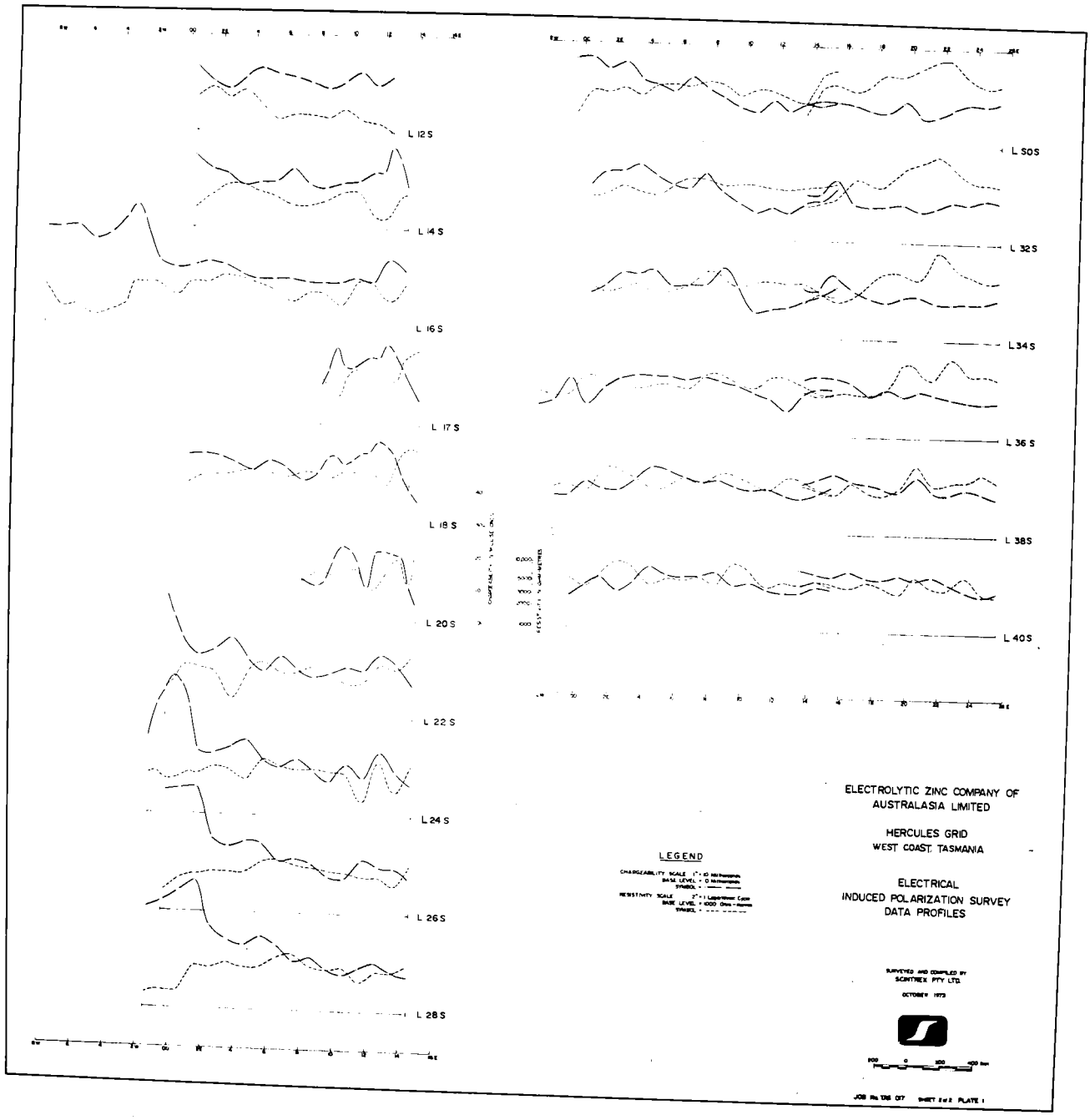
L 12 S
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LEGEND
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
HERCULES GRID
WEST COAST, TASMANIA
ELECTRICAL
INDUCED POLARIZATION SURVEY
DATA PROFILES
SURVEYED AND COMPILED BY SCINTREX PTY LTD.
OCTOBER 1973

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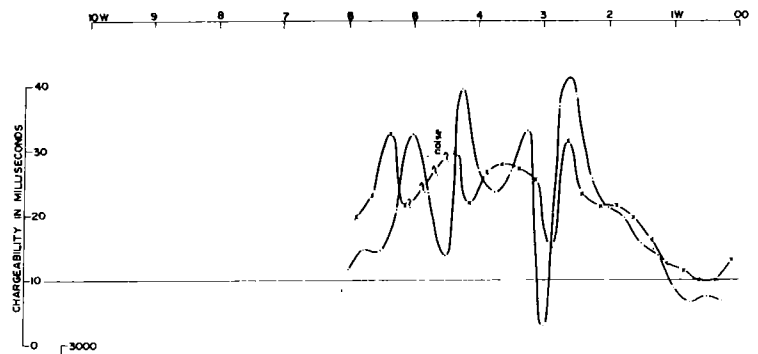
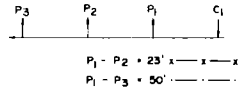
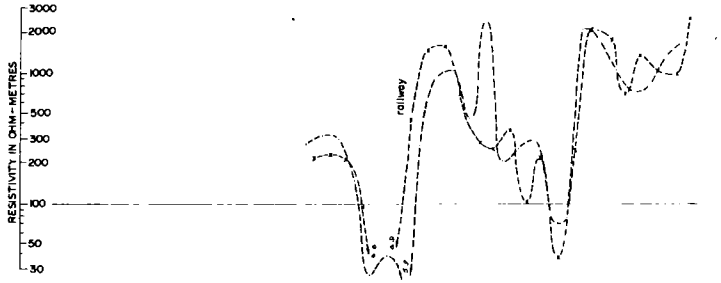
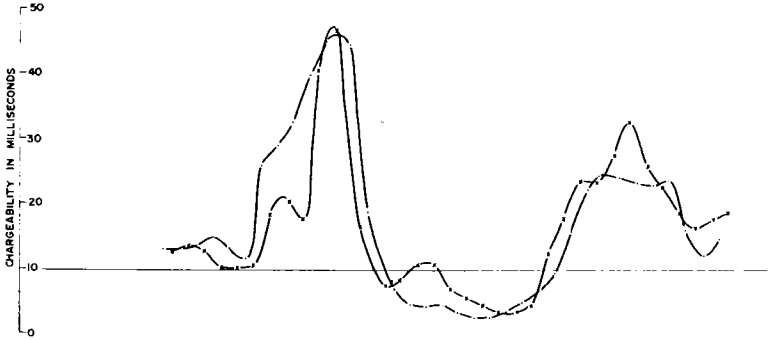


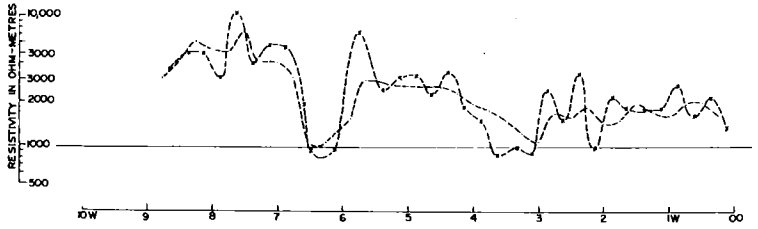




L 16 N
(Hercules Mine Grid)



L 10 N
(Hercules Grid)



ELECTROLYTIC ZINC COMPANY OF
AUSTRALASIA LIMITED

HERCULES MINE GRID &
HERCULES GRID
WEST COAST, TASMANIA

ELECTRICAL INDUCED POLARIZATION
THREE ARRAY DETAIL
DATA PROFILES

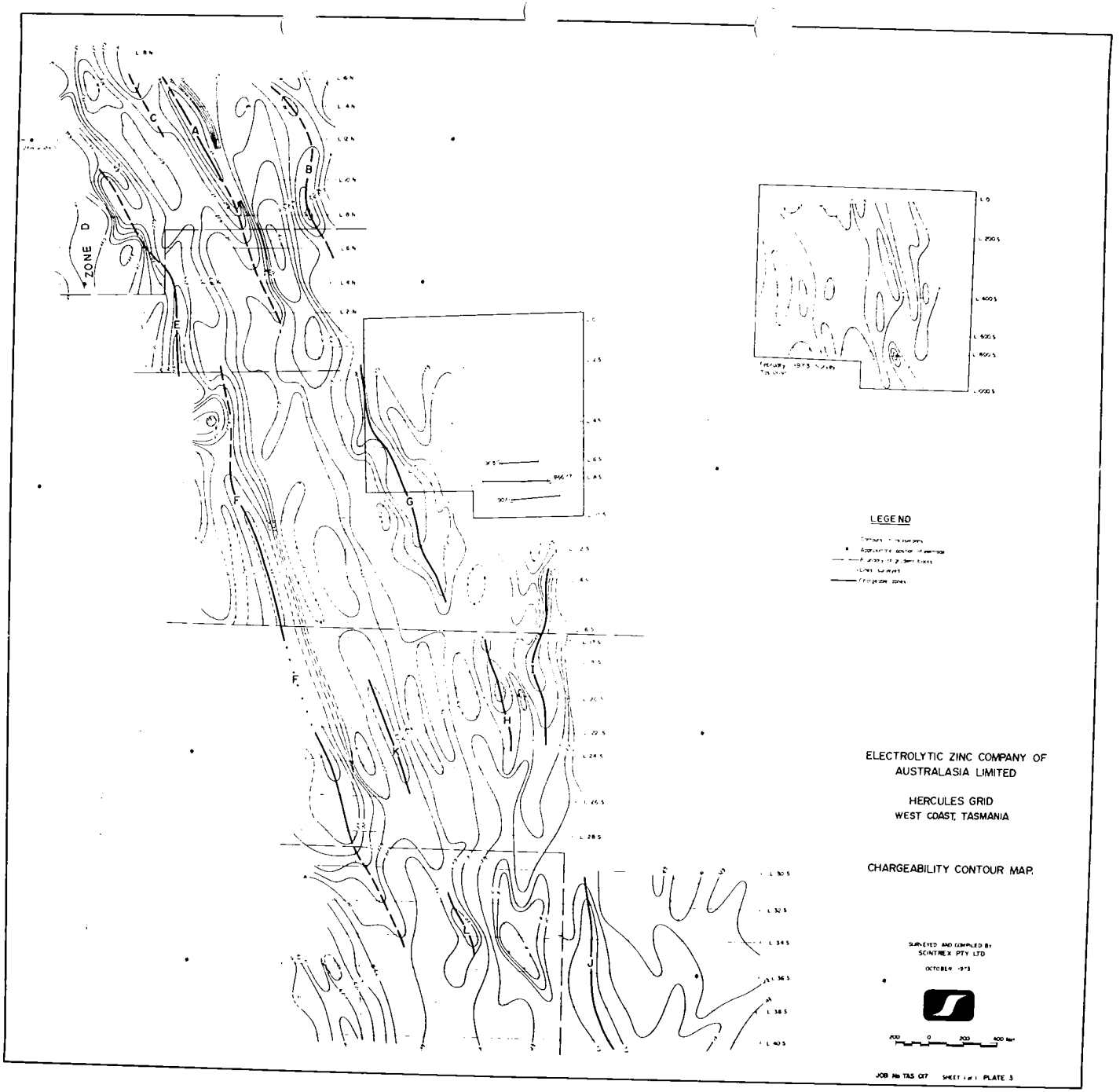
SURVEYED AND COMPILED BY
SCINTREX PTY LTD.

OCTOBER 1973

100 0 100 200 feet

JOB No. TAS. 017 SHEET 1 of 1 PLATE 2

5 cm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ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
HERCULES GRID
WEST COAST, TASMANIA
CHARGEABILITY CONTOUR MAP.
SURVEYED AND COMPILED BY SCINTREX PTY LTD
OCTOBER 1973
JOB No TAS 017 SHEET 1 of 1 PLATE 3

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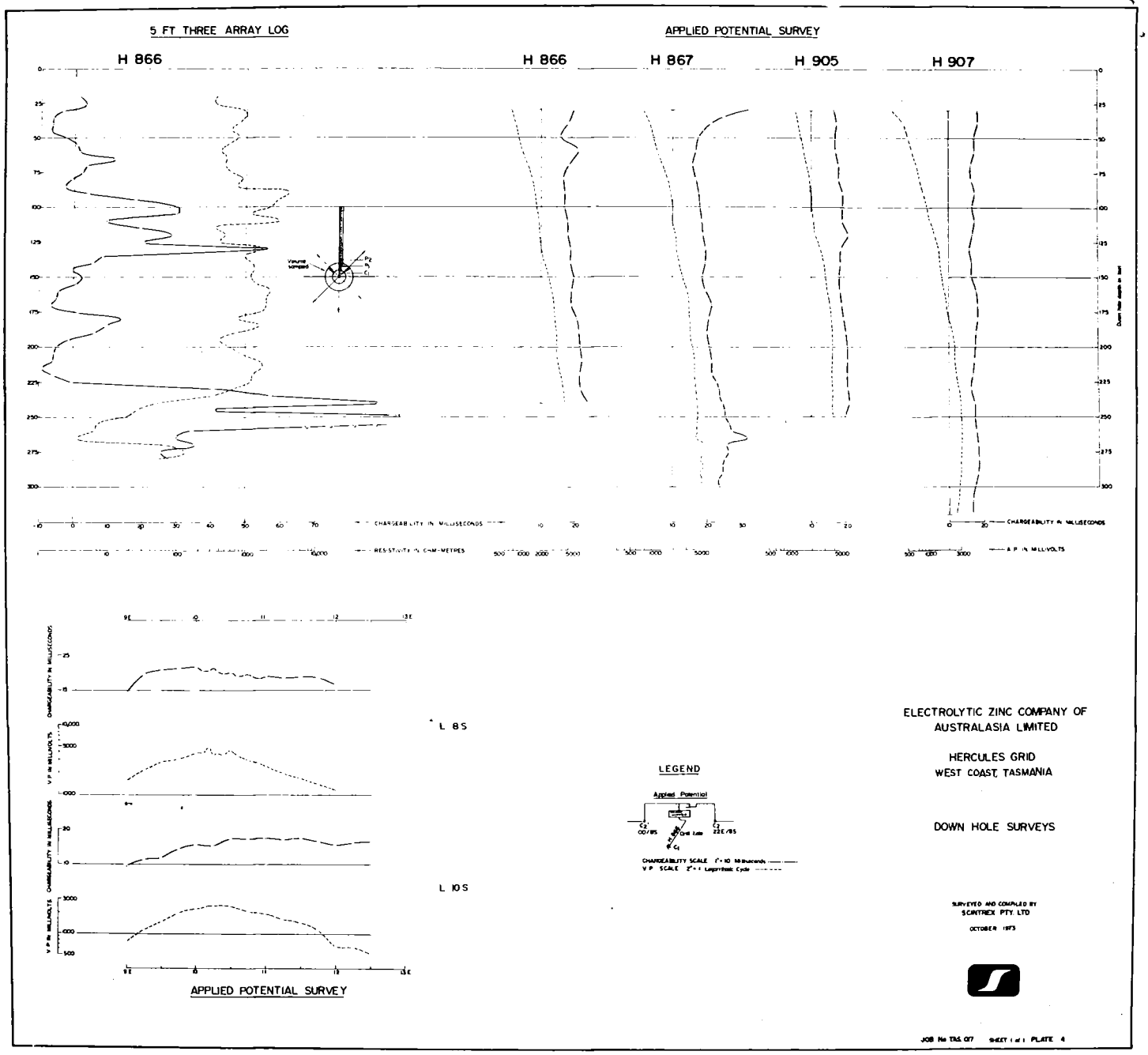
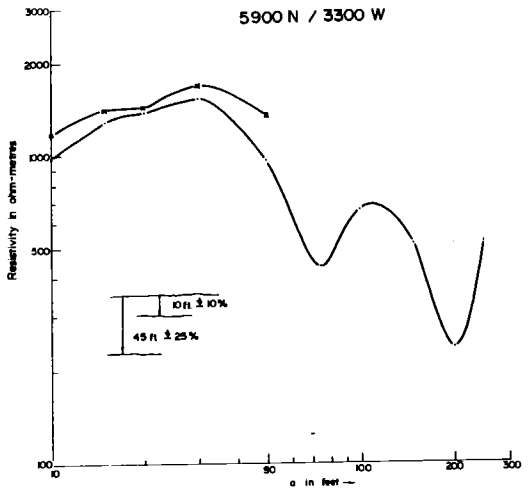

5 FT THREE ARRAY LOG
H 866
APPLIED POTENTIAL SURVEY
H 866
H 867
H 905
H 907
CHARGEABILITY IN MILLISECONDS
RESISTIVITY IN OHM-METRES
A.P. IN MILLIVOLTS
L 8S
L 10S
APPLIED POTENTIAL SURVEY
LEGEND
Applied Potential
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED
HERCULES GRID
WEST COAST, TASMANIA
DOWN HOLE SURVEYS
SURVEYED AND COMPILED BY SCINTREX PTY. LTD
OCTOBER 1973
JOB No TAS 017 SHEET 1 of 1 PLATE 4

5 cm

5900 N / 3300 W



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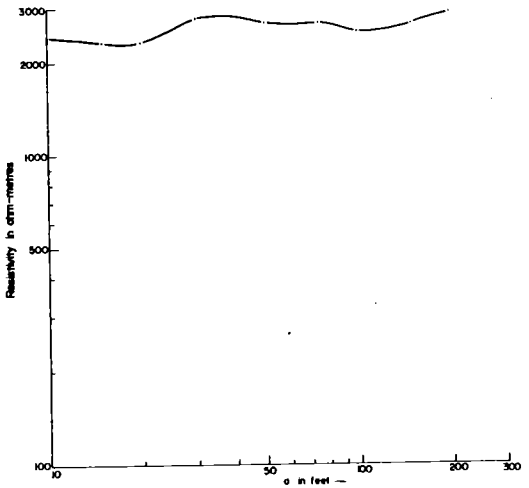

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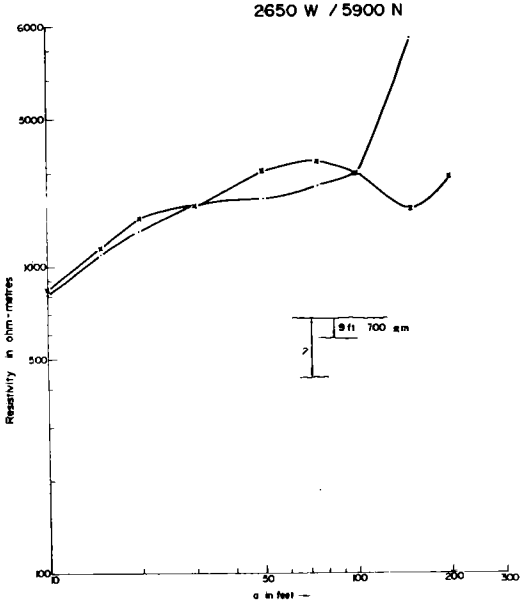


——— ALONG LINE
x——x ACROSS LINE

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

BOBADILL, NEAR ROSEBERY
WEST COAST, TASMANIA

SCHLUMBERGER ELECTRICAL SOUNDINGS

SURVEYED AND COMPILED BY
SCINTREX PTY LTD.

JOB No. TAS. 022 SHEET 1 of 1 PLATE 1

APPENDIX 'I.P.'

INTRODUCTION

For the benefit of those who are unfamiliar with the Induced Polarization method in general, or with the pulse-type method in particular, a few introductory remarks will be directed on the Induced Polarization, or overvoltage, phenomenon. Those who wish a fuller treatment of the subject are directed to Seigel (1962), which paper also includes an extensive list of references.

Induced Polarization in its broadest sense means a separation of charge to form an effective dipolar (polarised) distribution of electrical charges throughout a medium under the action of an applied electric field. When current is caused to pass across the interface between electrolyte and a metallic conducting body, double layers of charge are built up at the interface, in the phenomenon known to electrochemists as "overvoltage". This is the phenomenon which can be utilised for the detection of metallic conducting, rock-forming, minerals such as most sulphides, arsenides, a few oxides and, unfortunately, graphite. In addition, effective dipolar charge distribution occurs to some extent in all rocks, due to ion-sorting in the fine capillaries in which the current is passing.

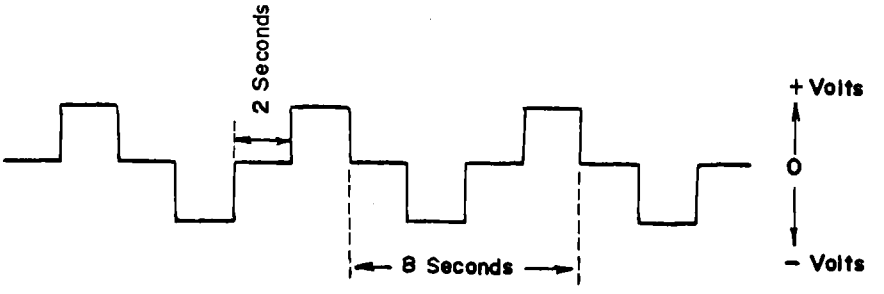
Induced Polarization responses may therefore arise from metallic or non-metallic agencies. Fortunately, the latter generally falls within fairly low and narrow limits. for almost all rock types, although there is still no reliable criterion for differentiating overvoltage responses from graphite and metallic sulphides, or for distinguishing between the responses of one type of sulphide and another. Despite these limitations the Induced Polarization method has amply demonstrated its value in mineral exploration since its initial development as a useful exploration tool in 1948 (ed. Wait, 1959).

DESCRIPTION OF METHOD AND EQUIPMENT

For the present programme the pulse or time domain system was employed, using a Scintrex Induced Polarization unit. The standard current-wave form with the unit is two seconds on-time and two seconds off-time. (see Figure 1). This unit features the Newmont type self-triggered receiver which operates remote from the current transmitting equipment. Three fundamental quantities are measured with this unit - the chargeability of 'M' measurement, the 'L' measurement and the resistivity.

The receiver integrates the area under the decay curve during the time interval from 0.45 seconds to 1.1. seconds

MEASUREMENTS TAKEN



Energising frequency is o square wave having a frequency of 0·125 cps.

FIELD MEASUREMENTS MADE

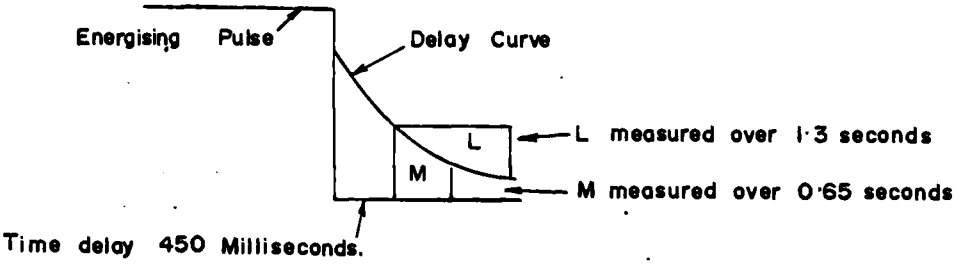


Fig. 1

after termination of the primary current pulse. This integral normalised with respect to its corresponding primary voltage is the chargeability or 'M' measurement, that is, the fundamental Induced Polarization characteristic. It is in units of milliseconds. The Induced Polarization phenomena is dependent on the existence of electronically conducting material within the matrix of ionically conducting material. The chargeability is therefore a measure of the presence of electronically conducting material within the ground being tested.

The second quantity measured is the area over the transient decay curve between 0.45 seconds and 1.75 seconds of the current off-time. This measurement is designated the 'L' measurement and is also in units of milliseconds. The ratio L/M gives a curve factor related to the shape of the transient voltage curve, and is a measure of the rate of decay of the transient voltage. This is of secondary diagnostic value in that the rate of decay of the transient voltage is partially a function of particle size. A large L/M ratio reflects a short time constant, commonly associated with finely disseminated sulphide or graphite, whereas a small L/M ratio reflects the longer time constants associated with the larger sized metallic particles.

The L/M ratio is also effective in determining the presence of electromagnetic coupling effects. With the Scintrex Induced Polarization unit, electromagnetic coupling effects are essentially eliminated by an 0.45 second delay-time following termination of the primary current pulse before measurement of the transient voltage commences. However, in extremely low resistivity areas coupling may occur. Under these conditions the presence of electromagnetic coupling can distort the Induced Polarization response, and it is extremely important to know when this occurs. The presence of such coupling is immediately recognizable from the L/M ratios.

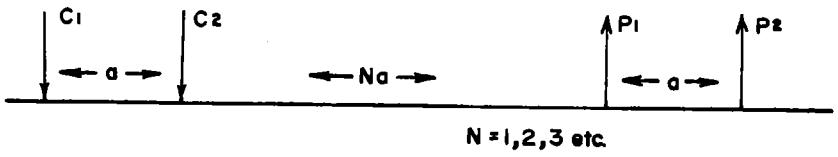
Resistivity measurements are also made as an integral part of all Induced Polarization measurement using the Scintrex Induced Polarization unit. The resistivity values are of primary importance in determining subsurface geological features such as contact zones, faulting, etc., and are of assistance in mapping the geology in general.

Electrode geometries (see Figure 2) utilised in obtaining field measurements are important and no one electrode array is applicable for all conditions. In areas where a low resistivity oxidised surface layer overlies a much higher resistivity freshrock, a high degree of

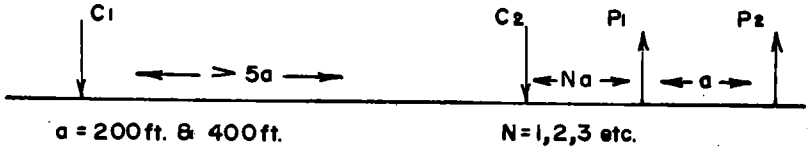
COMMONLY USED ELECTRODE ARRAYS

CLOSE – COUPLED ARRAYS

DIPOLE – DIPOLE



POLE – DIPOLE



GRADIENT ARRAY

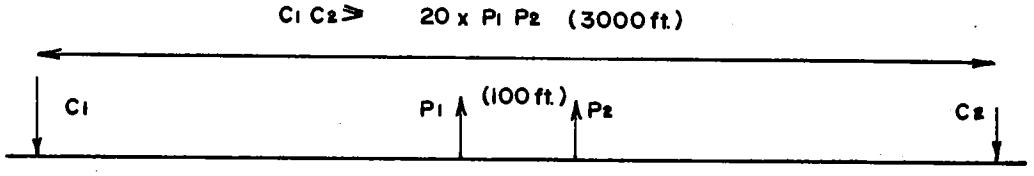


Fig. 2

masking occurs using any of the close-coupled arrays, such as pole-dipole or dipole-dipole. An electrode spacing many times greater than the depth to freshrock must be used in order to obtain responses reasonably representative of the freshrock. With such large electrode spacings the physical properties are effectively averaged over so large a volume that we lose the ability to detect moderate sized bodies of polarizable material. However, under these conditions the gradient array is both feasible and desirable in that it minimises the effects of masking and at the same time has a high degree of resolution for small targets.

In the present areas of investigation, abnormal induced polarization responses may be expected to arise from the electronically conducting sulphide minerals such as pyrite, pyrrhotite, chalcopyrite and pentlandite, plus graphite and magnetite. The response from magnetite has been found to be quite variable and somewhat unpredictable, reflecting the great variation in the mode of electrical conduction in this material. It is not always possible to differentiate between these potential sources of high chargeability from the Induced Polarization and resistivity data alone. Complementary geophysical, geochemical and geological data enable a more complete interpretation to be made of the Induced Polarization data.

REFERENCES

Seigel, 1962 "Induced Polarization and Its Role in Mineral Exploration" H.O. Seigel, Canadian Mining and Metallurgical Bulletin, April, 1962.

ed. Wait, 1959 "Overvoltage Research and Geophysical Applications" editor J.R. Wait, Pergamon Press, London, 1959.

APPENDIX TO

REPORT

TAS - 017

APPLIED POTENTIAL SURVEY

OVER DDH H903

HERCULES GRID

ROSEBERY TASMANIA

ON BEHALF OF

THE ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

is not electrically continuous as a whole".

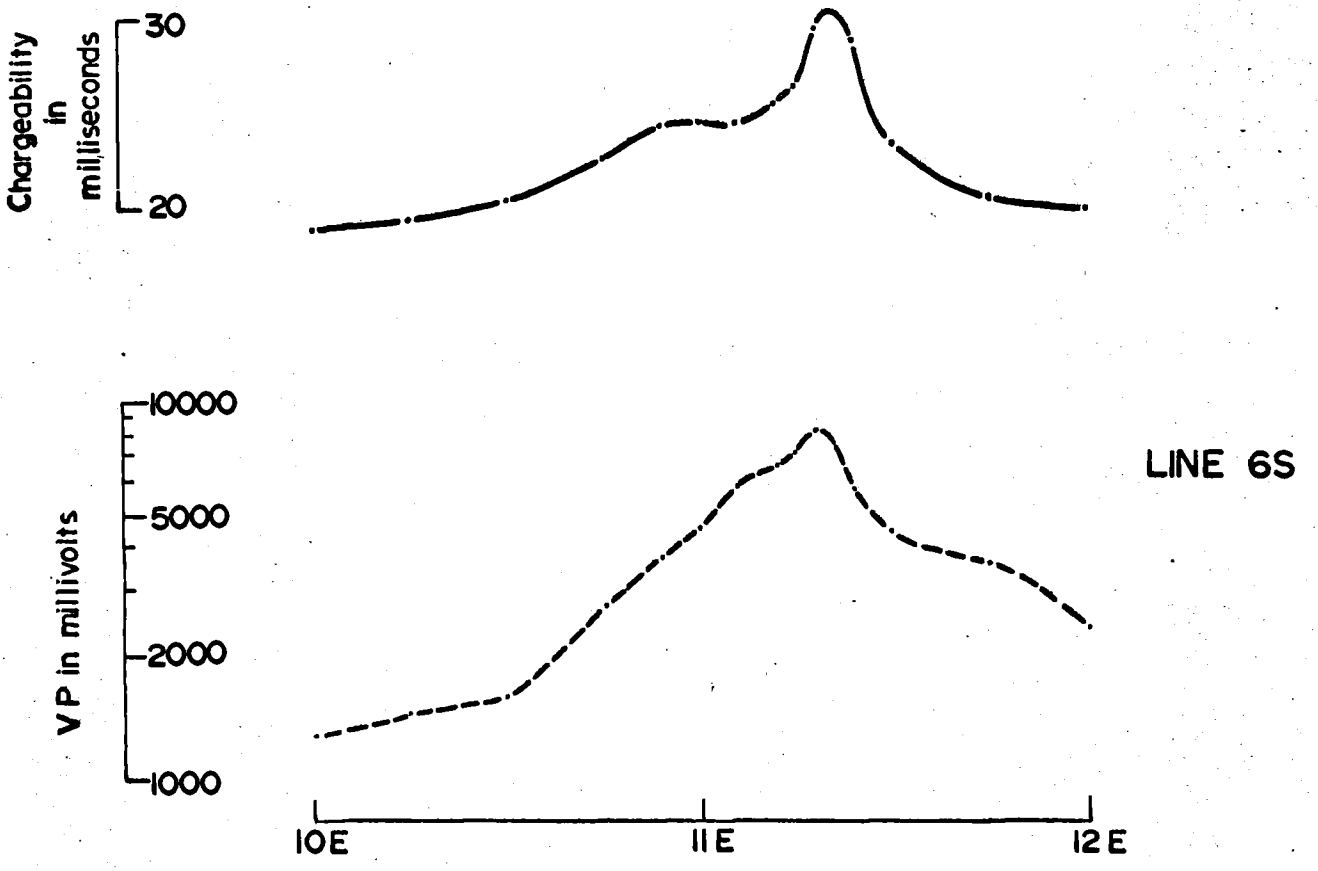
2 - This information together with subsequent drilling infers only limited conduction within this lead-zinc body of only limited extent. Quite obviously larger bodies of higher grade material would be expected to show greater electrical conductivity than this zone of only limited extent.

Respectfully submitted on behalf of:

SCINTREX PTY. LTD.

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

GEOPHYSICIST



ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

APPLIED POTENTIAL SURVEY

APPENDIX TO REPORT TAS-017

FEB. 74

0-7

576084

APPENDIX TO

REPORT

TAS - 017

APPLIED POTENTIAL SURVEY

OVER DDH 5

HERCULES GRID

ROSEBERY TASMANIA

ON BEHALF OF

THE ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

DISCUSSION OF RESULTS

The plate displays the surface data on a horizontal scale of 1 inch = 50 feet with the Vp expressed in millivolts on a two inch log cycle while the chargeability is expressed in milliseconds at the scale of 1 inch = 10 milliseconds.

The positioning of electrodes was as follows - one pole was placed within the mineralised zone at a depth of about 80 feet, and matched electrodes placed at 00 and 22E on the same line (6S), formed the effective infinite. A stationary potential was positioned at 13.5E on line 7.5S and the moving electrode was moved along the line at 50 to 10 feet intervals as required.

A distinct applied chargeability anomaly of about 10 milliseconds together with a 2000 millivolt applied potential response with respect to normal, were recorded at 11.30E. This clearly indicates the mineralisation to be electrically continuous between the point of energisation in the diamond drill hole and surface at about 11.30E.

CONCLUSIONS

1 - The conclusions remain as per those on page 15 of the report, TAS-017, namely "that the body is electrically continuous over a few feet or a few tens of feet, but

029

576656

is not electrically continuous as a whole".

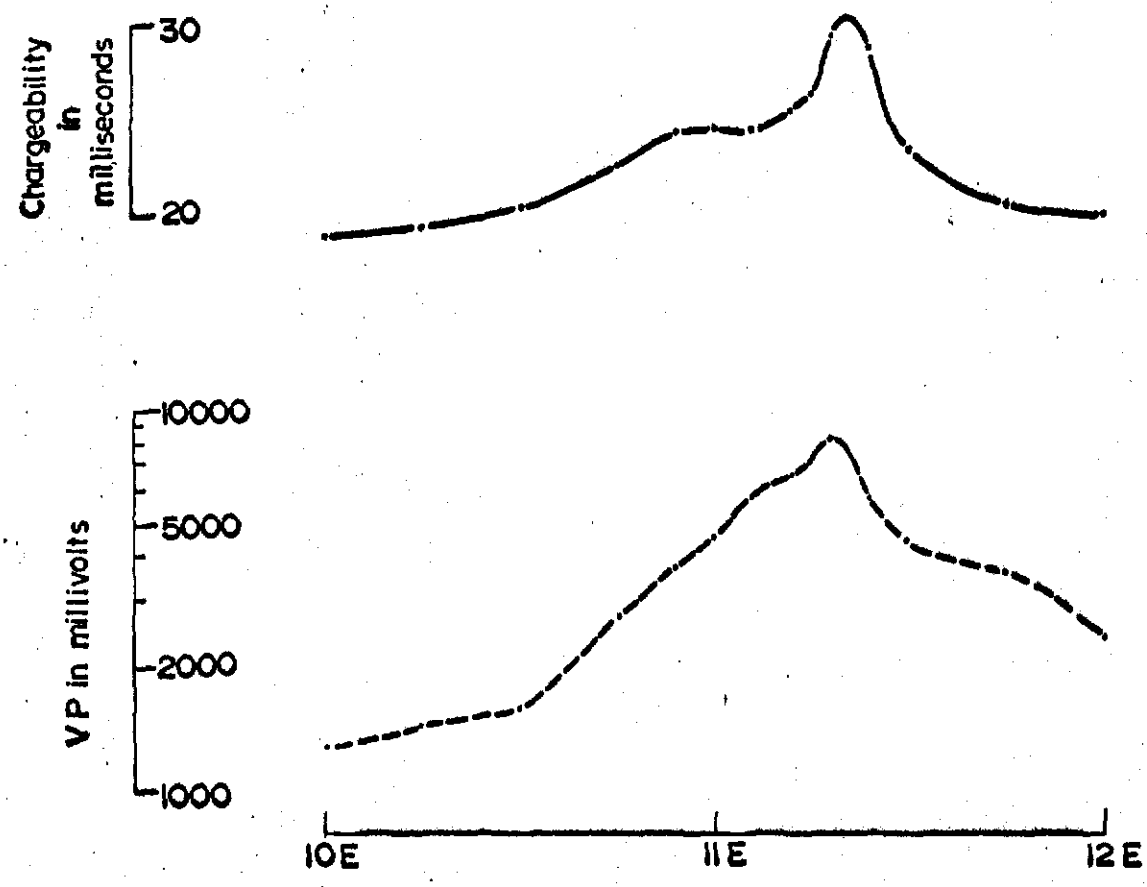
2 - This information together with subsequent drilling infers only limited conduction within this lead-zinc body of only limited extent. Quite obviously larger bodies of higher grade material would be expected to show greater electrical conductivity than this zone of only limited extent.

Respectfully submitted on behalf of:

SCINTREX PTY. LTD.

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

GEOPHYSICIST

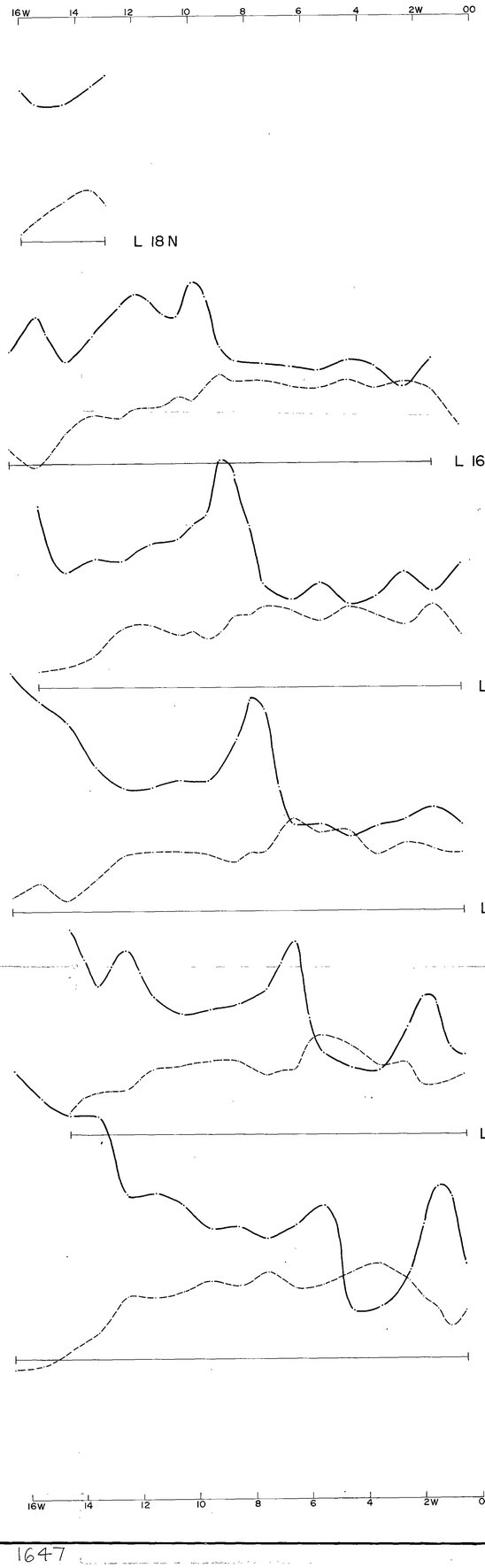


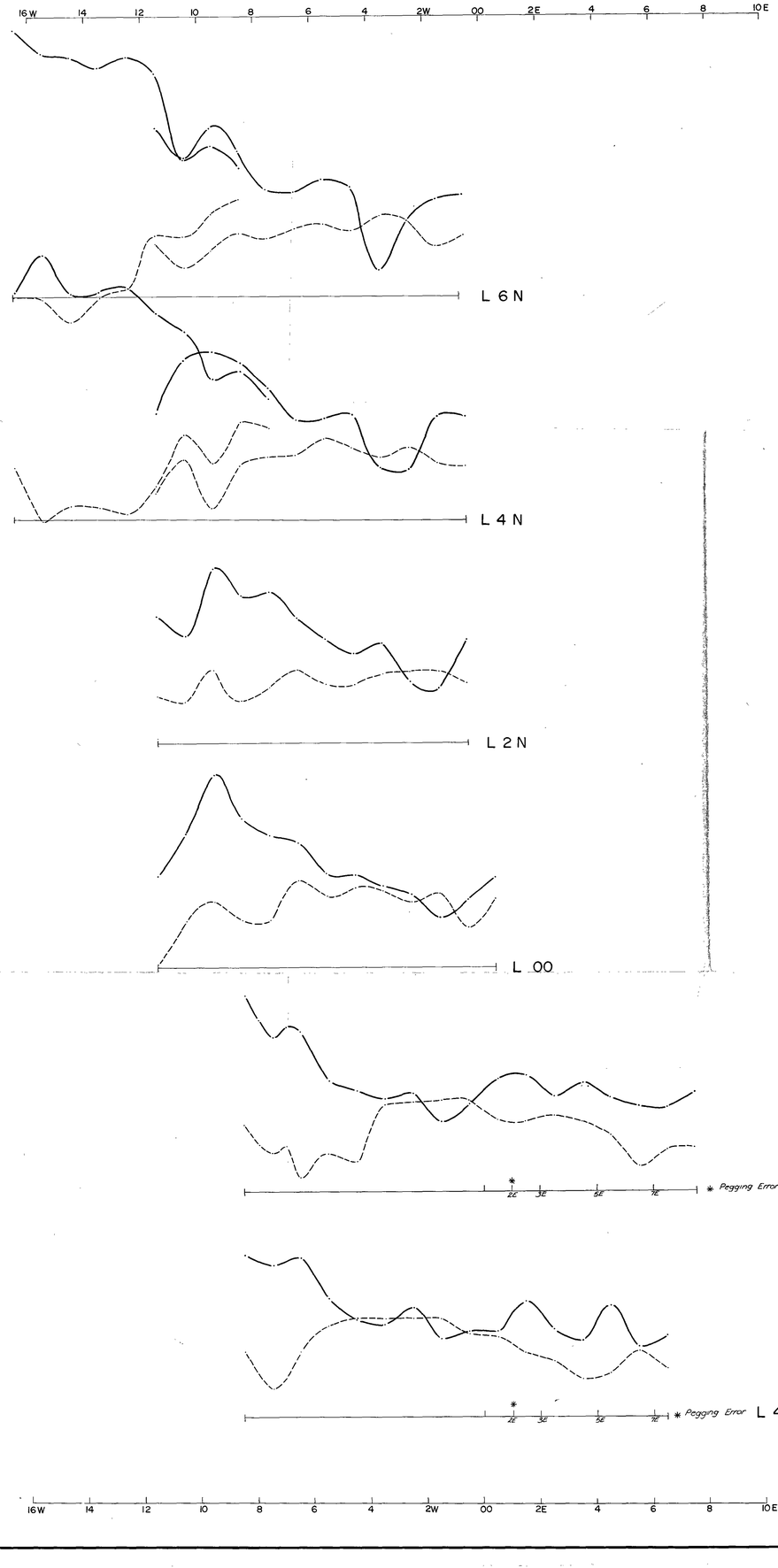
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

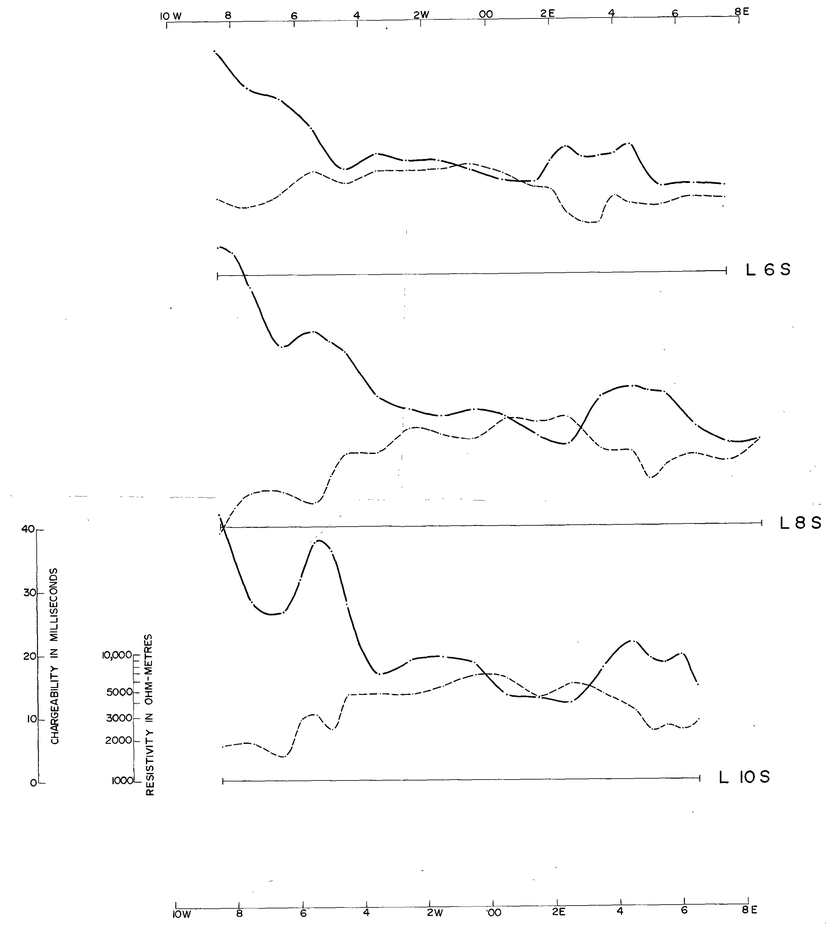
APPLIED POTENTIAL SURVEY

APPENDIX TO REPORT TAS-017

FEB. 74







LEGEND

CHARGEABILITY SCALE 1" = 10 Milliseconds
BASE LEVEL = 0 Milliseconds
SYMBOL = ·——·——·

RESISTIVITY SCALE 2" = 1 Logarithmic Cycle
BASE LEVEL = 1000 Ohm - metres
SYMBOL = ·— — ·— — ·

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

HERCULES GRID
WEST COAST, TASMANIA

ELECTRICAL INDUCED POLARIZATION SURVEY DATA PROFILES

576088

5 cm

SURVEYED AND COMPILED BY
SCINTREX PTY. LTD.

OCTOBER 1973

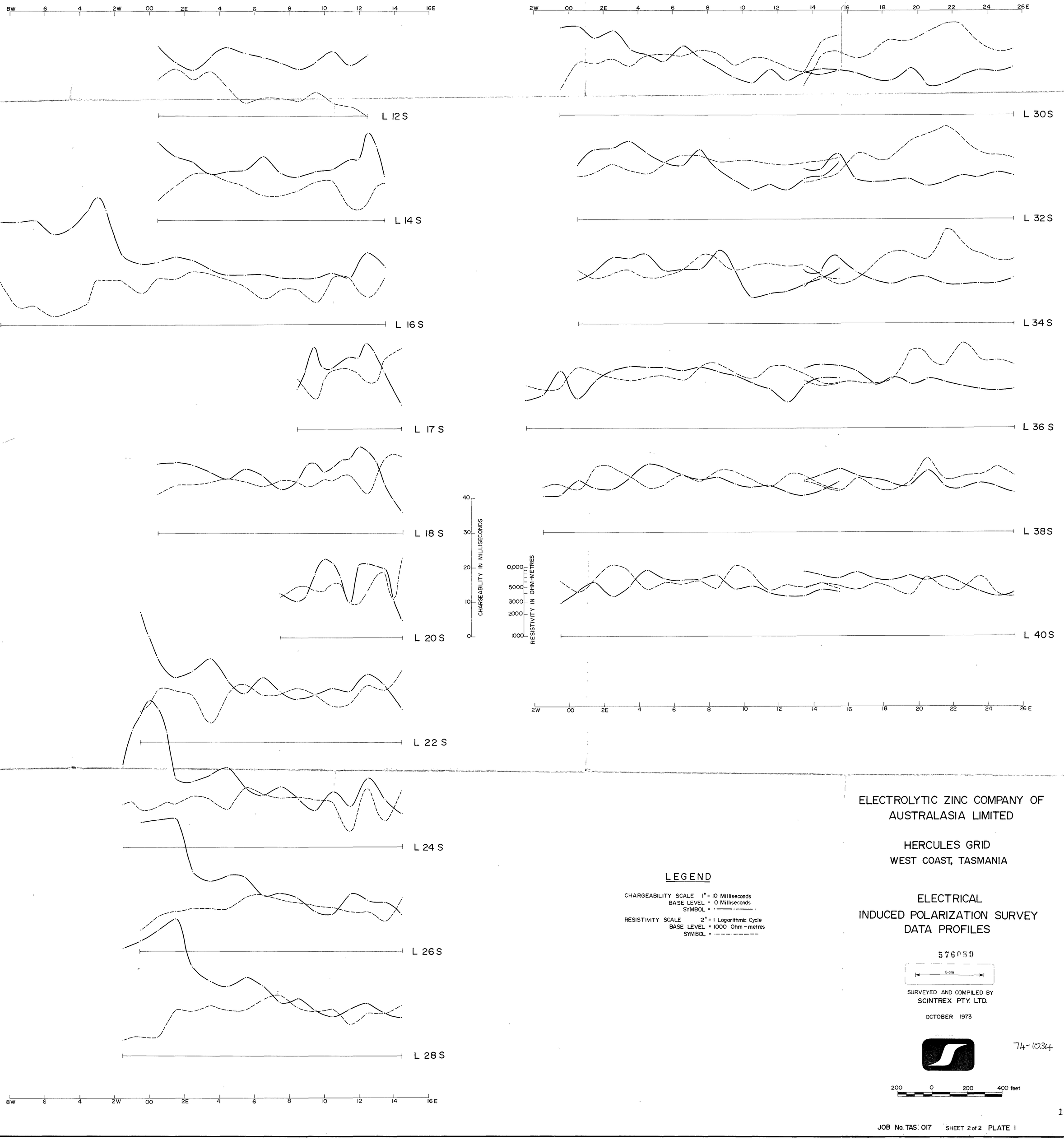
74-1034

200 0 200 400 feet

JOB No. TAS. 017 SHEET 1 of 2 PLATE 1

1647

1647



LEGEND

CHARGEABILITY SCALE 1" = 10 Milliseconds
BASE LEVEL = 0 Milliseconds
SYMBOL = ·——·——·

RESISTIVITY SCALE 2" = 1 Logarithmic Cycle
BASE LEVEL = 1000 Ohm-metres
SYMBOL = ·– – –·– – –·

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

HERCULES GRID
WEST COAST, TASMANIA

ELECTRICAL
INDUCED POLARIZATION SURVEY
DATA PROFILES

576089

5 cm

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SCINTREX PTY. LTD.

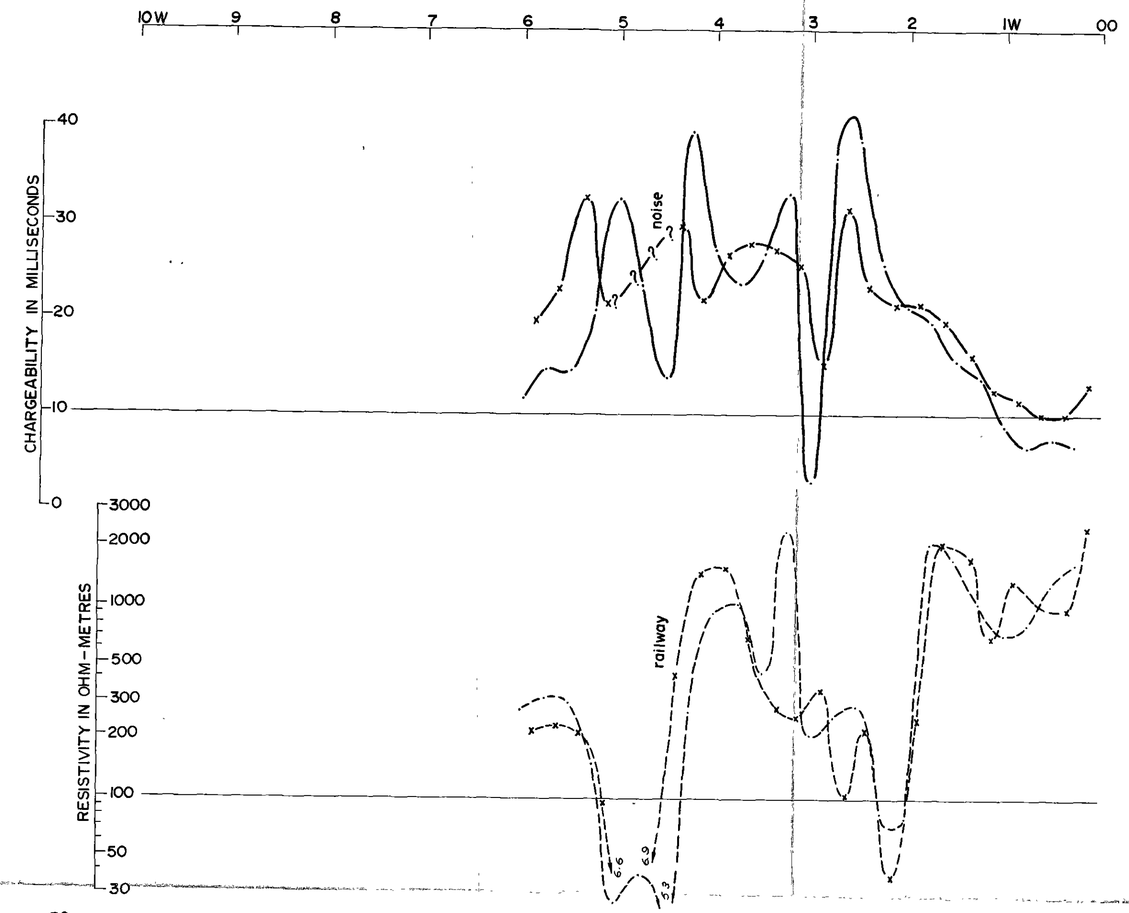
OCTOBER 1973

74-1034

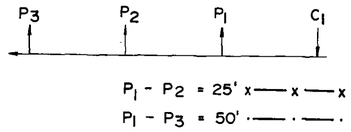
200 0 200 400 feet

1648

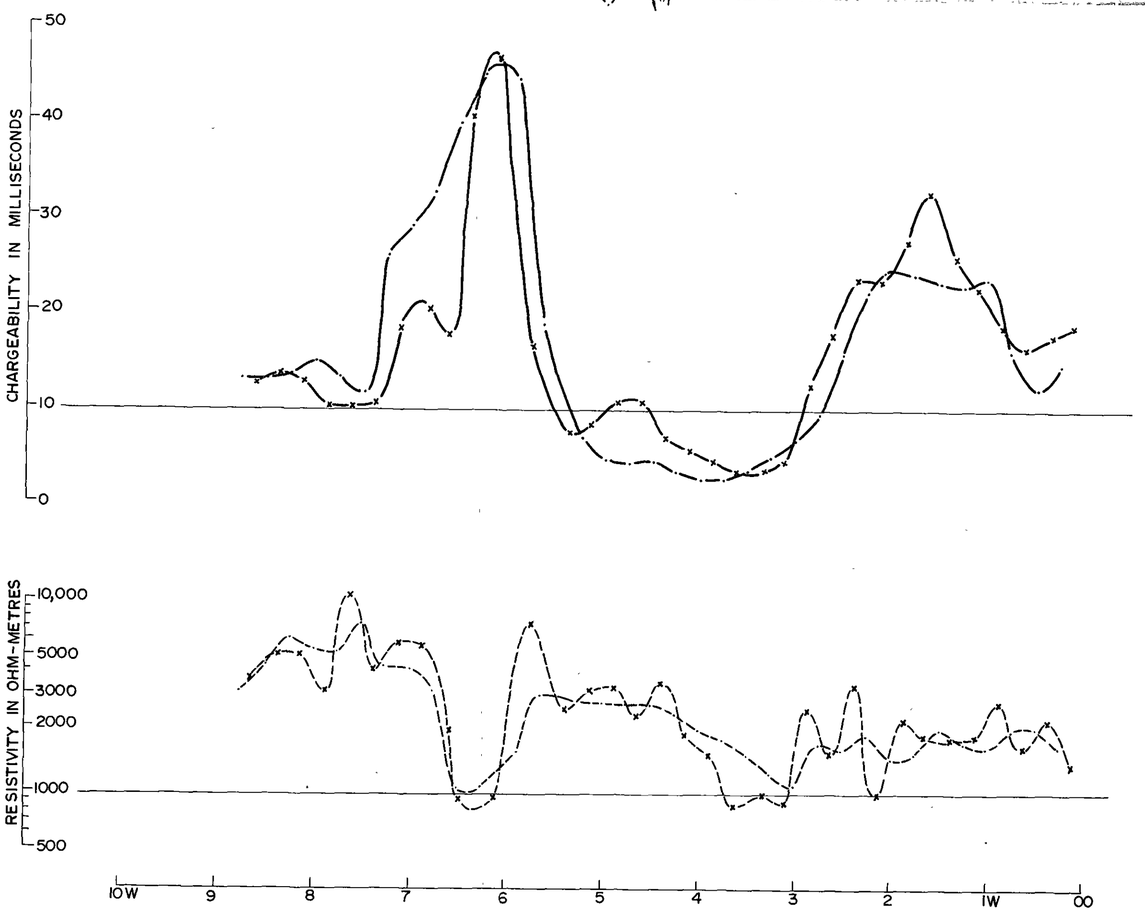
JOB No. TAS. 017 SHEET 2 of 2 PLATE 1



L 16 N
(Hercules Mine Grid)



$P_1 - P_2 = 25'$ x——x——x
$P_1 - P_3 = 50'$ ·——·——·



L 10 N
(Hercules Grid)

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

HERCULES MINE GRID & HERCULES GRID

WEST COAST, TASMANIA

ELECTRICAL INDUCED POLARIZATION
THREE ARRAY DETAIL
DATA PROFILES

576090

5 cm

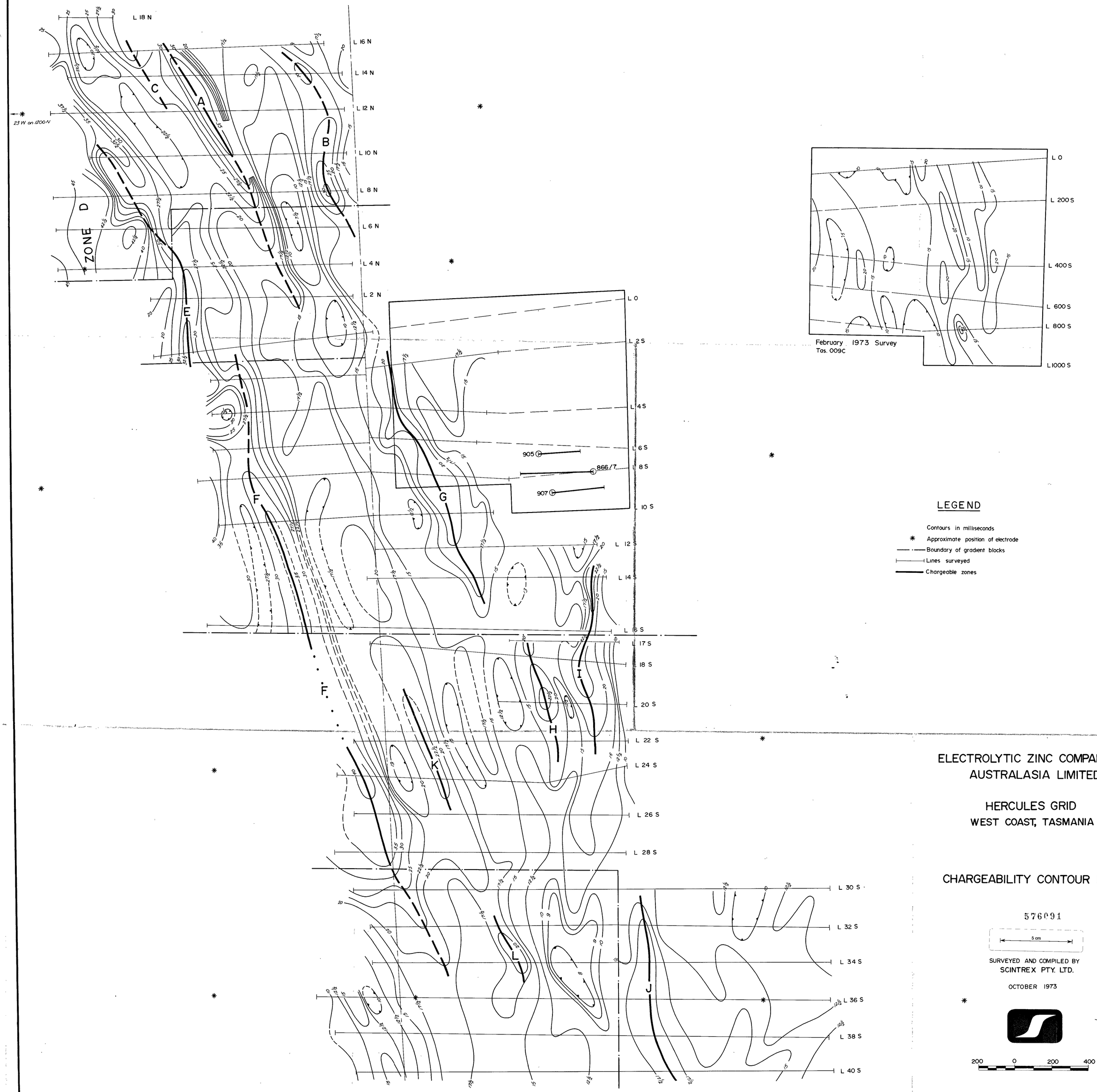
SURVEYED AND COMPILED BY
SCINTREX PTY. LTD.

OCTOBER 1973

74-1034

100 0 100 200 feet

JOB No. TAS. 017 SHEET 1 of 1 PLATE 2



February 1973 Survey
Tas. 009C

LEGEND

- Contours in milliseconds
- ✱ Approximate position of electrode
- Boundary of gradient blocks
- Lines surveyed
- Chargeable zones

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

HERCULES GRID
WEST COAST, TASMANIA

CHARGEABILITY CONTOUR MAP

576091

5 cm

SURVEYED AND COMPILED BY
SCINTREX PTY. LTD.

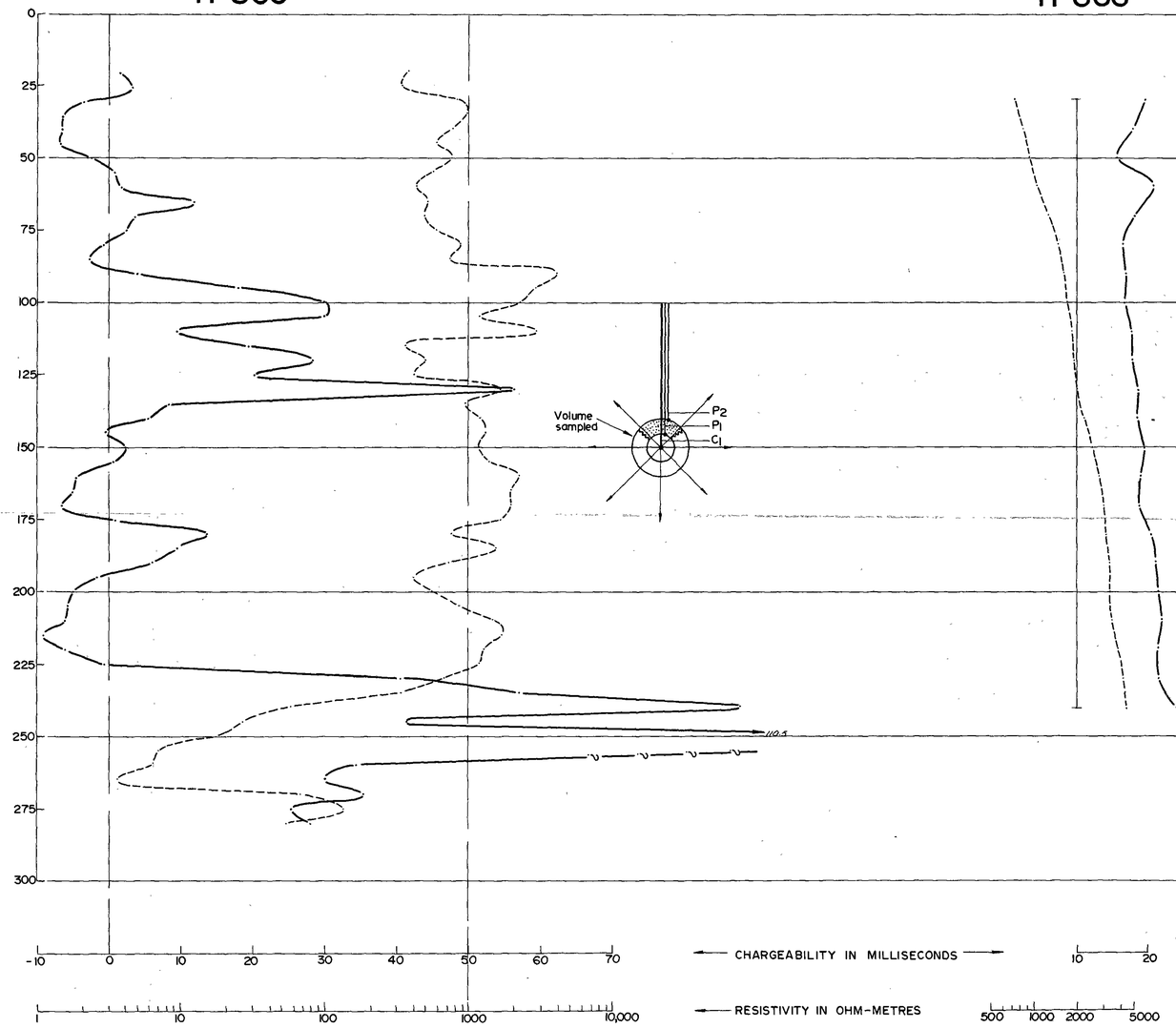
OCTOBER 1973

74-1034

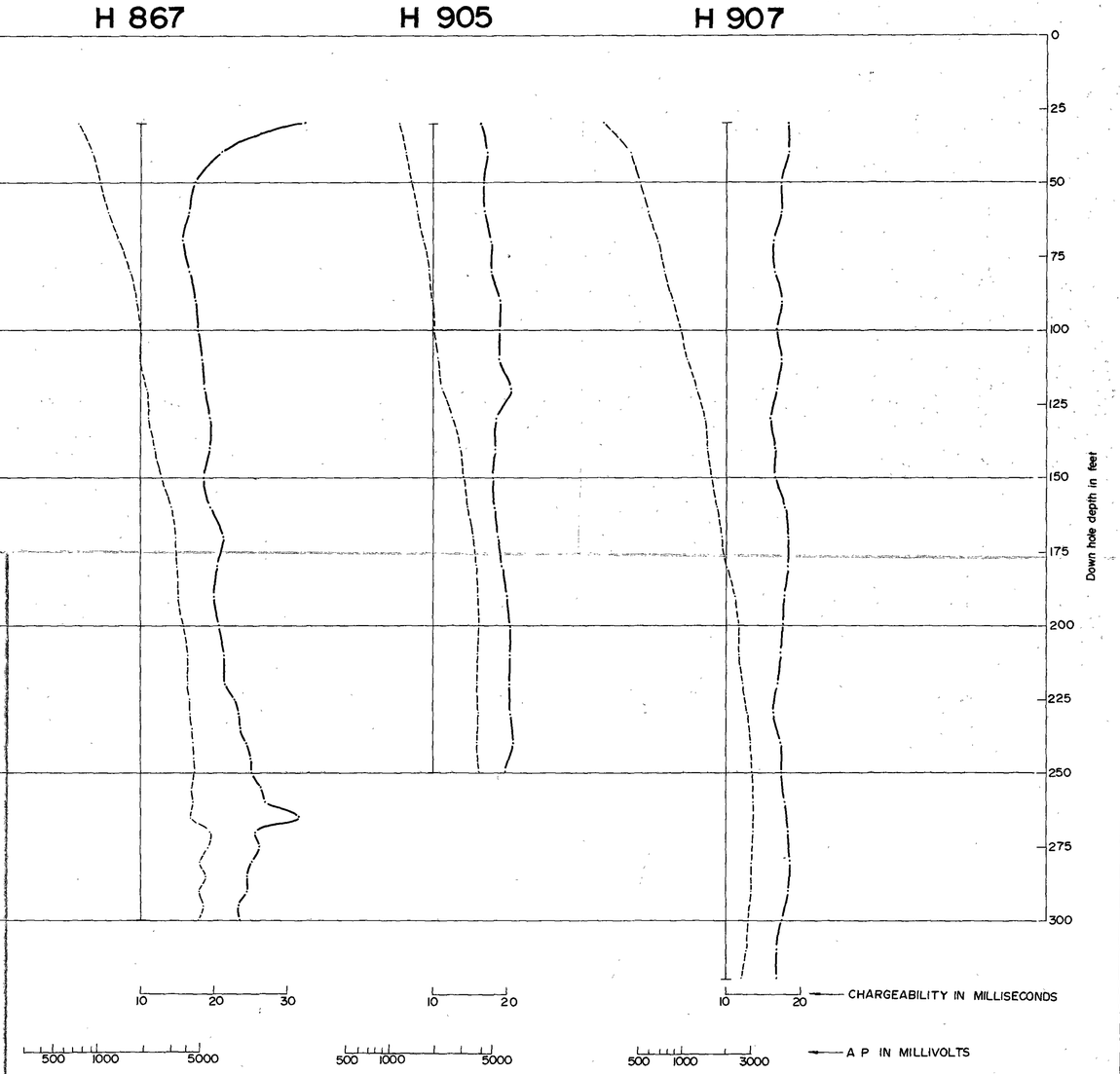
200 0 200 400 feet

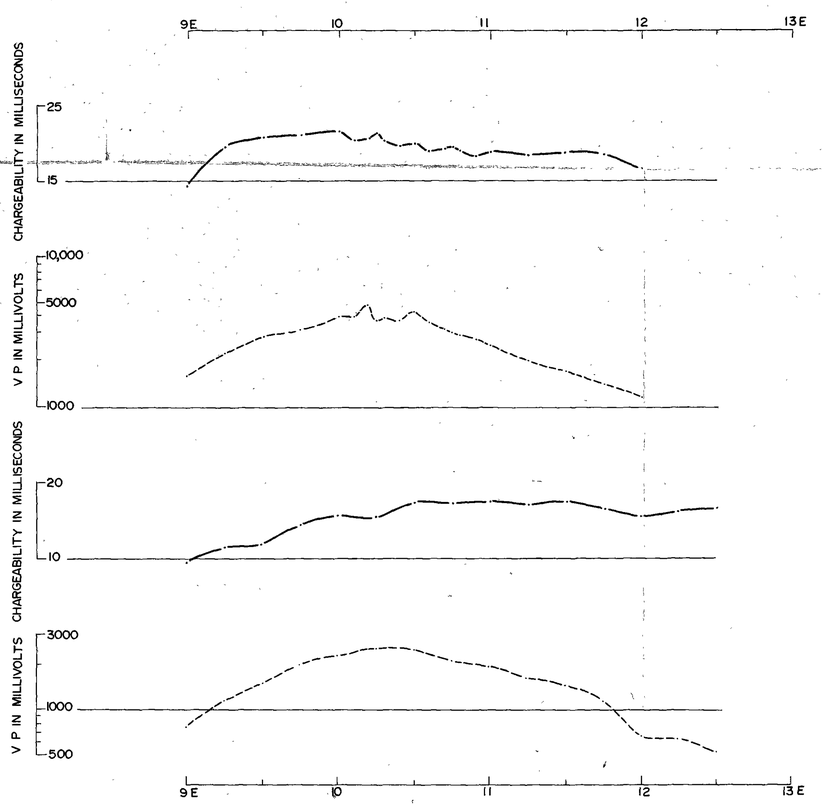
JOB No. TAS. 017 SHEET 1 of 1 PLATE 3

5 FT. THREE ARRAY LOG



APPLIED POTENTIAL SURVEY

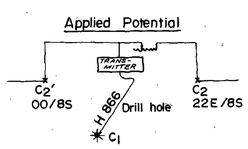




APPLIED POTENTIAL SURVEY

LEGEND

Applied Potential



CHARGEABILITY SCALE 1" = 10 Milliseconds

V P SCALE 2" = 1 Logarithmic Cycle

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

HERCULES GRID
WEST COAST, TASMANIA

DOWN HOLE SURVEYS

576092

5 cm

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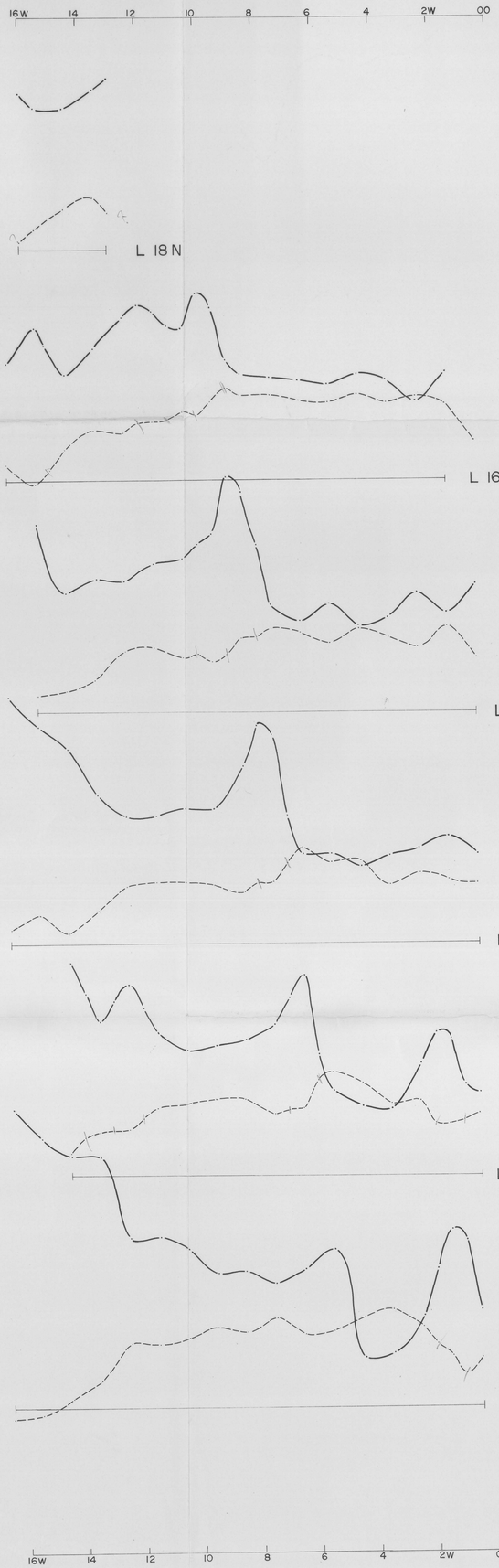
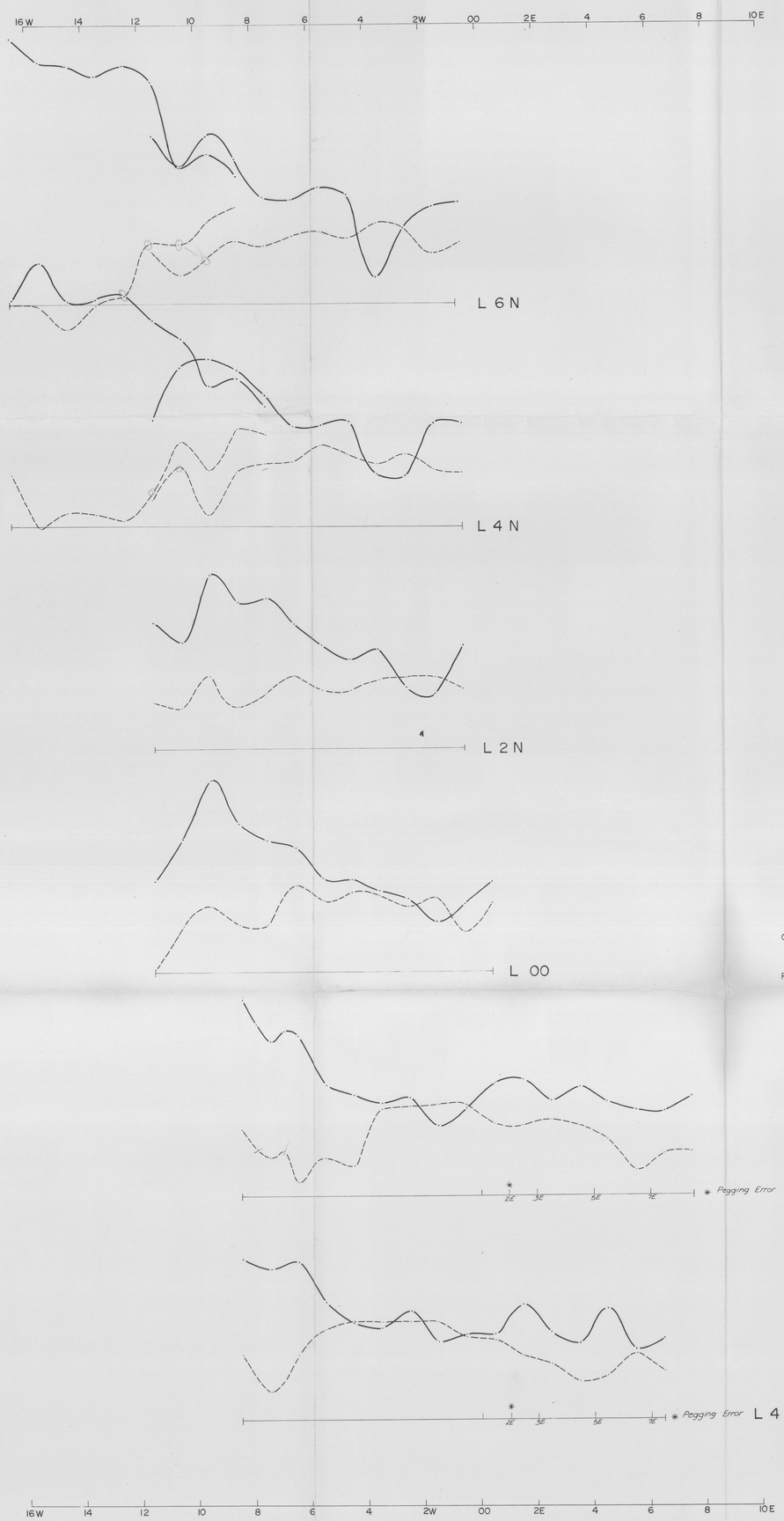
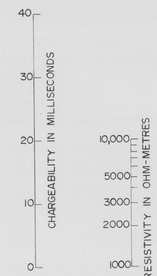
OCTOBER 1973

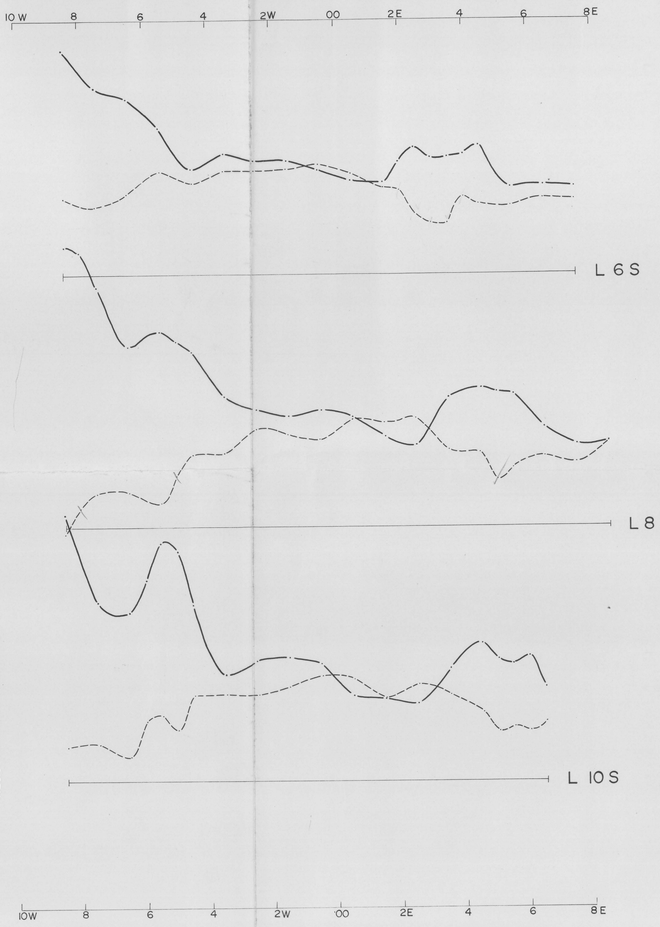
74-1034

JOB No. TAS. 017 SHEET 1 of 1 PLATE 4









LEGEND

CHARGEABILITY SCALE 1" = 10 Milliseconds
BASE LEVEL = 0 Milliseconds
SYMBOL = ·——·——·

RESISTIVITY SCALE 2" = 1 Logarithmic Cycle
BASE LEVEL = 1000 Ohm-metres
SYMBOL = ·— — — —

5 cm

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

W. HERCULES GRID
WEST COAST, TASMANIA

ELECTRICAL INDUCED POLARIZATION SURVEY DATA PROFILES

74_1034

Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd"
Williams, R.E. EL1/1962

SURVEYED AND COMPILED BY
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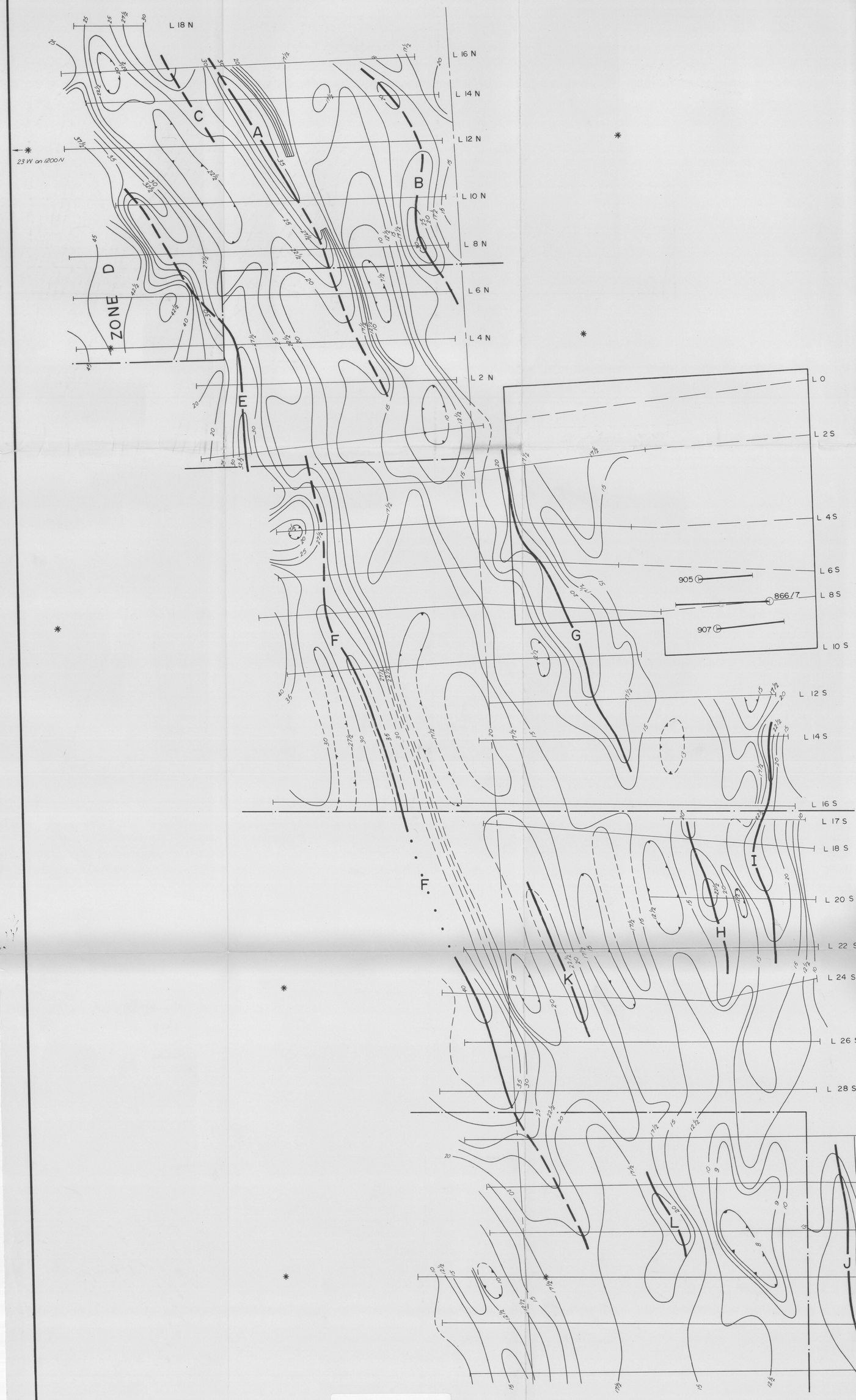
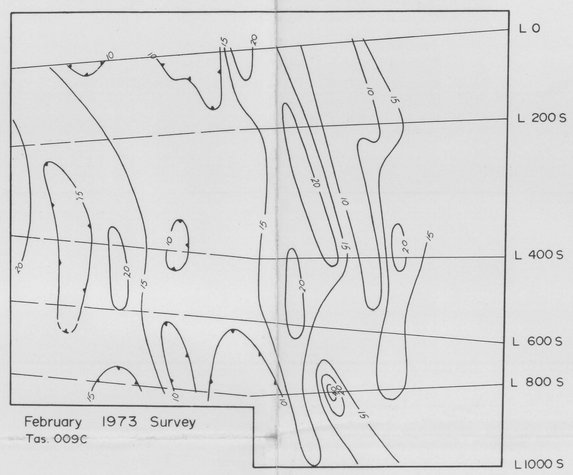
OCTOBER 1973

200 0 200 400 feet

JOB No. TAS. 017 SHEET 1 of 2 PLATE 1





LEGEND

- Contours in milliseconds
- Approximate position of electrode
- Boundary of gradient blocks
- Lines surveyed
- Chargeable zones

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

white Spur

HERCULES GRID

WEST COAST, TASMANIA

CHARGEABILITY CONTOUR MAP

74_1034

Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd*
Williams, R.E. EL1/1962

SURVEYED AND COMPILED BY
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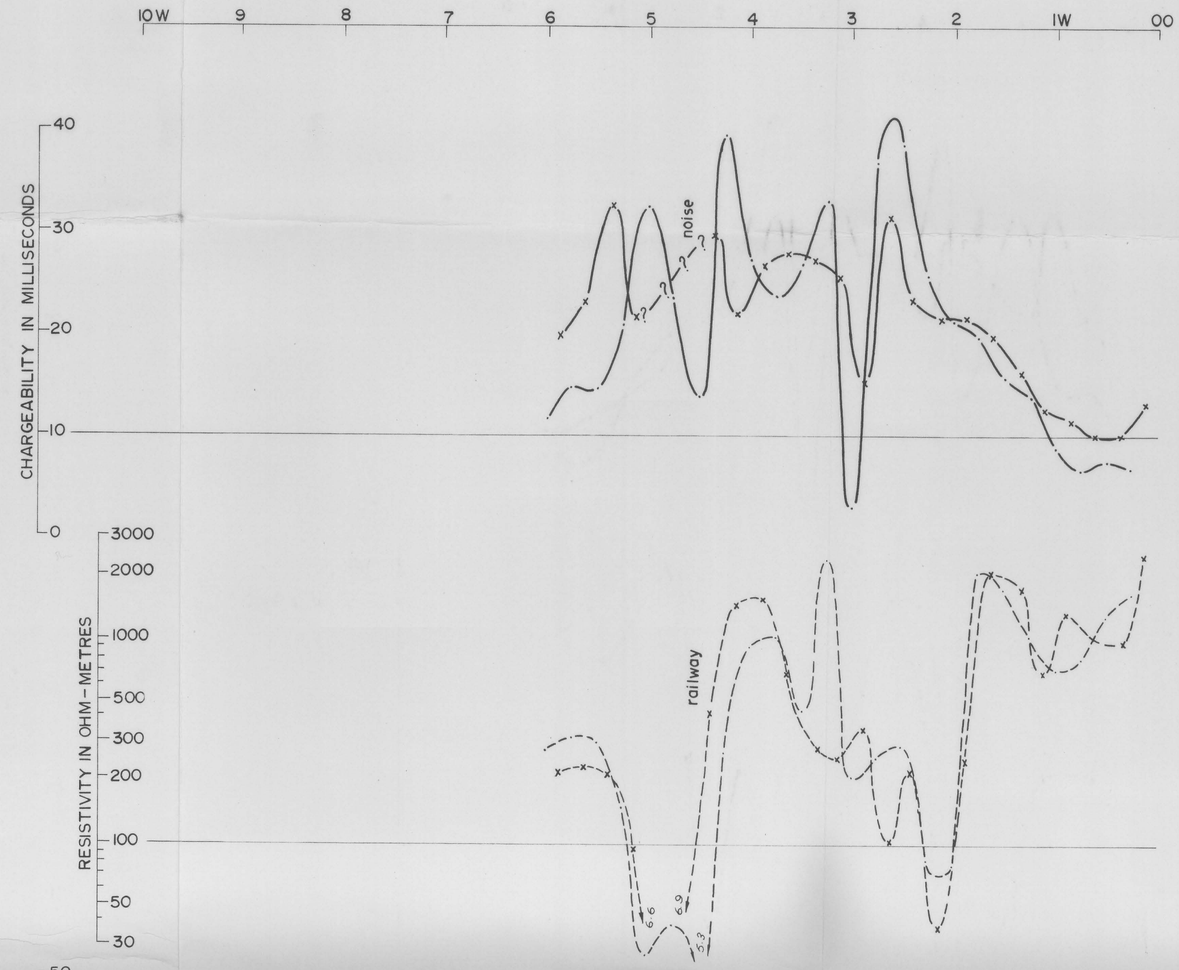
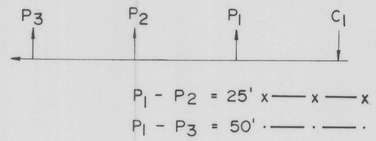
OCTOBER 1973

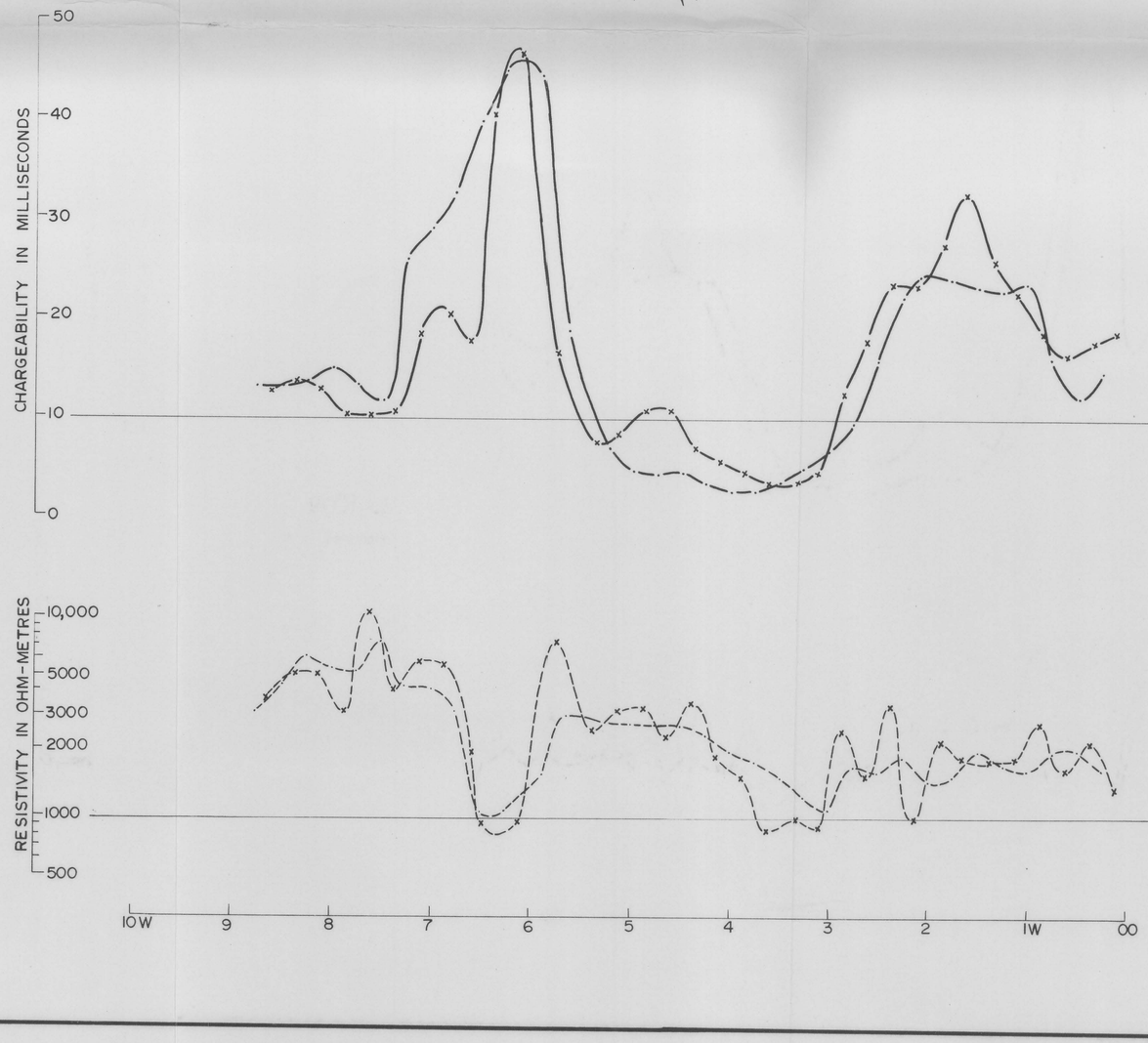
200 0 200 400 feet

JOB No. TAS. 017 SHEET 1 of 1 PLATE 3



L 16 N
(Hercules Mine Grid)





L 10 N
(Hercules ~~Grid~~).
white spur

5 cm

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

HERCULES MINE GRID &
~~HERCULES GRID~~
white spur
WEST COAST, TASMANIA

ELECTRICAL INDUCED POLARIZATION
THREE ARRAY DETAIL
DATA PROFILES

SURVEYED AND COMPILED BY
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OCTOBER 1973

100 0 100 200 feet

JOB No. TAS. 017 SHEET 1 of 1 PLATE 2

74_1034
Progress Report on Exploration of Exploration Licence 1/62 (Mt Bla
Electrolytic Zinc Company of Australasia Ltd"
Williams, R.E. EL1/1962

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576093

74-1034

A REPORT ON

ELECTRICAL AND MAGNETIC INDUCED POLARIZATION SURVEYS

IN THE ROSEBERY AREA, TASMANIA

ON BEHALF OF

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

001

576094

PRIVATE AND CONFIDENTIAL

A REPORT ON
ELECTRICAL AND MAGNETIC INDUCED POLARIZATION SURVEYS
IN THE ROSEBERY AREA, TASMANIA
ON BEHALF OF
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

BY

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

SYDNEY, N.S.W.

APRIL, 1974

TAS - 017A

002

576095

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Summary	
Introduction	Page 1
North Hercules - Gradient Array Survey	
Discussion of Results	Page 2
Conclusions and Recommendations	Page 4
Magnetic Induced Polarization Test Survey-	
South Hercules Grid	
Discussion of Results	Page 5
Conclusions	Page 9
Recommendations	Page 11

Appendix 'IP'
Appendix 'MIP'
Appendix 'IPR-8'

not here (not essential)

Plate 1 - Gradient Array Data Profiles

Plate 2 - MIP Data Profile

SCINTREX PTY. LTD.

Formerly

SEIGEL ASSOCIATES AUSTRALASIA PTY. LTD.

GEOPHYSICAL CONSULTANTS AND CONTRACTORS

SUMMARY

A gradient array Electrical Induced Polarization carried out over the North Hercules grid defined one anomaly of significance which is recommended for further investigation.

Of the attempted MIP infill test surveys, only that over the South Hercules lead zinc show yielded significant results. These, however, show the promise of the method as a tool for distinguishing between disseminated graphitic and pyritic shales and the "massive" sulphide mineralisation of the lead zinc orezones.

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TELEPHONE 21 6934. TELEGRAMS "SCINTREX" PERTH

6 TRAMORE PLACE, KILLARNEY HEIGHTS, N.S.W. 2087
TELEPHONE 451 5367. TELEGRAMS "SCINTREX" SYDNEY

004

576097

A REPORT ON
ELECTRICAL AND MAGNETIC INDUCED POLARIZATION SURVEYS
IN THE ROSEBERY AREA, TASMANIA
ON BEHALF OF
ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

INTRODUCTION

A short gradient electrical induced polarization survey was carried out over the North Hercules grid on 2½ days between April 5th and 7th, 1974. A magnetic induced polarization survey was carried out over the lead-zinc zone on the South Hercules grid on half a day on 5th April, 1974.

The survey was under the direction of Mr. B. Ekstrom of the staff of Scintrex Pty. Ltd., and was executed with field assistants and logistical support provided by the Electrolytic Zinc Company of Australasia Limited.

The survey was undertaken at the request of Mr. C. Burton, Chief Geologist, of West Coast Mines, a division of the Electrolytic Zinc Company of Australasia Limited.

The object of the survey was to locate and define zones of anomalous induced polarization response within the grid area.

Appendices 'IP', 'MIP' and 'IPR-8' briefly describe the methods employed.

NORTH HERCULES - GRADIENT ARRAY SURVEY

DISCUSSION OF RESULTS

The data profiles are presented in Plate 1 at a horizontal scale of 1 inch = 200 feet and vertical scales of 1 inch = 10 millivolts/volt and a two inch log cycle for resistivity.

A single current dipole was employed with electrodes at 18.5W and 1.5E on line 40N to survey sections on lines 36N, 38N, 40N, 42N, 44N and 46N. A 100 feet potential dipole was used at 100 feet to 50 feet intervals.

The Scintrex IPR-8 receiver was employed on this survey, and the units of induced polarization are expressed in millivolts/volt, whereas previous surveys employed the Scintrex IPR-7 which describes the results in milliseconds. The relationship is described in detail in Appendix 'IPR-8', but one millisecond is approximately equal to $1\frac{1}{2}$ millivolts.

The observed resistivities range between 2000 ohm-metres and 9000 ohm-metres, but the background can be considered to be of the ordre of 3000 to 4000 ohm-metres. The receiver was programmed on a Mode 23 which recorded M_1, M_3, M_5, of which

only M_3 was plotted in Plate 1. The background chargeabilities observed were 8 millivolts/volt over most lines, which is equivalent to about 5 milliseconds. The decay form shows a very slight increase from M_1 to M_5 which indicates a normal decay form, and therefore a normal grain size to the chargeable material making up this background response.

A line by line description is given below:

Line 36N Two zones of weak anomalous induced polarization were defined on this line at 12.5W to 14W, open to the west, and from 3.5W to 4.5W. The former is associated with no appreciable drop in apparent resistivity and the latter with a 75% reduction. However, the absolute resistivity values are high, indicating either a disseminated source, or if massive, the sulphides arenot electrically continuous. The inferred concentrations of sulphides are of the order of ½% or less.

Line 38N West of 12.5W the chargeabilities rise to over twice background at 14W, and are still open to the west. Only a slight reduction in resistivity was recorded which is not considered to be significant. Therefore, again the source is either disseminated or, if massive, electrically discontinuous sulphides.

Minor increases in chargeability were noted at 8W and east of 4W, neither of which are considered of major significance.

Line 40N and 42N Only minor variations in the 8 millivolts/volt background were observed on these lines.

Line 44N At 9.8N a major response of 10 millivolts/volt superimposed on the normal background was defined coincident with a broad 45% reduction in apparent resistivities. This anomaly is assessed to have a steep east dip, is less than 100 feet in width and has a maximum depth to the top of the body of 50 to 60 feet.

The source is assessed to be either coarsely disseminated or electrically discontinuous and massive in nature, particularly at 10W. The M_5 value is invariably slightly greater than M_1, but at 10W M_1, M_3 and M_5 are 16.5, 17.7 and 19.2 respectively, indicating a nearer surface coarse grained source.

Line 46N At about 10.5W a minor 3 millivolts/volt response and an associated minor resistivity low may be the correlative of the above described anomaly.

CONCLUSIONS AND RECOMMENDATIONS

The only significant anomaly from a geophysical standpoint

was that located at 9.8W on line 44N. The response here is considered to be typical of that expected over "Hercules" type mineralisation, and should its economic potential be confirmed, further investigation by diamond drilling is recommended to intersect at a depth of 80 to 100 feet normal to the local slope, below station 9.8W. The hole should be drilled from east to west if terrain permits.

MAGNETIC INDUCED POLARIZATION TEST SURVEY - SOUTH HERCULES GRID CENTRED AT 10E/8S

DISCUSSION OF RESULTS

The original gradient induced polarization survey is described in Report TAS-009, while the mercury vapour soil gas survey is described in Report TAS-012, and the induced polarization and resistivity logging are described in Report TAS-017

The purpose of this test survey was to ascertain the characteristics of internal polarization currents within the mineralised zone in an attempt to develop a method for differentiating these from the disseminated pyritic shale horizons which occur within the favourable geological sequence.

In order to ascertain typical internal polarization data from known graphitic and disseminated pyritic shales and mineralised zones, magnetic induced polarization tests were attempted over known zones. Unfortunately the very high resistivities precluded the acquisition of meaningful data in the time domain.

Magnetic Induced Polarization Parameters

The paramaters used in the discussion of the data profiles are as follows:

The normalised magnetic field H_N is calculated from the primary magnetic field H_P by dividing it by the magnetic field that would be observed for a given current if a uniform medium existed. That is, if uniform conductivity existed in the ground, the value of H_N would be 1.00 at all locations. This parameter is a dimensionless quantity and is expressed as a percentage.

The chargeability M is expressed in terms of milligammas per gamma being the ratio of the secondary magnetic field for a particular slice divided by the primary magnetic field.

The normalised secondary magnetic field H_S is the H_P times the chargeability M divided by the primary current I_P (H_PM/I_P) and is expressed in milligammas per ampere

for each slice of M measured. The convention used for presentation of the MIP chargeability effect in this survey is as follows: where the polarization effect observed is due to the fundamental polarization current within the chargeable body the sign of the chargeability is defined as being negative, whereas when the return current effect dominates, the chargeability response will be positive.

The magnetic induced polarization data profile is presented on Plate 2 at the following scales:

Horizontal scale	1: 1200 (1 inch = 100 feet)	
Vertical scales:	M_3	1 inch = 5 milligammas/gamma
	H_N	1 inch = 20%
	H_S	1 inch = 2 milligamma/ampere

Base levels for the data are respectively, 1 milligammas/gamma 100% and 0 milligammas/ampere, for M_3, H_N and H_S.

The current dipole used to energise the zone was positioned along strike at 9.5E on lines 6S and 10S. The energisation was a two second on, two second off and reverse square wave, while the receiver employed a two second programme with a standard three slices (Mode 23) and some detail with six slices (Mode 26). These programmes are detailed in Appendix 'IPR-8'.

The magnetic induced polarization response over the mineralised zone extends from 9.3E to 10.4E, and is a substantial 7 to 8 milligammas/gamma above background. Typical external (positive) polarization currents were observed on either side of the polarizable body. These positive shoulders represent the complementary external current flow to the internal (negative) flow within the body.

Three distinct internal induced polarization peaks were recorded at 9.25E, 9.75E and 10.25E. At these points the decay form was as follows:

	M_1	M_2	M_3	M_4	M_5	M_6
9.25E	-1.4	.	-2.6	.	-3.6	.
9.75E	-3.5	-4.7	-5.8	-6.8	-7.8	-9.0
10.25E	-3.2	.	-4.9	.	-6.1	.

All show a distinct and diagnostic increase in response with longer time delay. The long time constant (a low frequency) response is characteristic of "massive" "coarse grained" material. Finely disseminated graphite or pyrite has quite the reverse form, namely $M_1 > M_2 > M_3 > M_4 > M_5 > M_6$.

The normalised magnetic field H_N shows very highly anomalous values east of about 9.5E, with correspondingly very low values west of this point. This asymmetry of response clearly indicates a relatively conductive rock unit.west

of this point. Therefore the anomaly lies on the contact between two rock units of markedly different electrical properties.

A detailed examination of the horizontal magnetic field shows only one of the three induced polarization peaks to be both conductive and chargeable, and this was situated at 10.25E. It is significant that the gradient IP survey described in TAS-009C, in no way disputes these results in detail. With the magnetic induced polarization response at 9.25E there is no evidence of an increase in conductivity in the H_N profile, while the EIP gradient anomaly shows no decrease in the recorded apparent resistivities.

The MIP peak at 9.75E is, however, not seen on the EIP gradient data, whereas the MIP data shows it up well.

Outside the anomalous zone, the decay form shows quite the reverse, namely $M_1 > M_3 > M_5$. A typical result is at station 8.75E and 11.00E where the results were as follows:

	M_1	M_3	M_5
11.00E	+0.8	+3.0	+3.3
8.75E	+5.0	+4.6	+8.6

CONCLUSIONS

Because of the extremely resistive rock units in the Rosebery

area, tests over disseminated pyrite and graphite horizons in the area were precluded. I have drawn on experience elsewhere to form the conclusions.

With reference to the mineralisation at 10E on line 8S in particular, the following conclusions can be drawn.

1 - An examination of the internal (MIP) and external (EIP) polarization currents yielded similar conclusions, but the MIP data is able to distinguish the "massive"and "coarse grained" mineral assemblages from those of disseminated pyrite.

2 - The very strong bias in the later channels in the MIP data clearly demonstrated a long time constant for the decay of the induced polarization body. This is entirely consistent with the nature of the mineralisation intersected in the diamond drill holes in the area.

3 - An examination of the normalised horizontal field clearly shows the mineralisation to occur over the contact of two rock units of constrasting resistivity. The mineralisation is, however, quite clearly determined to be electrically discontinuous, with only minor narrow and localised conductivity. (The latter was seen by the Turam survey).

In general, the following conclusions can be drawn on the applicability of the method to the region as a whole.

The magnetic induced polarization test surveys were carried out in the time domain. As the method depends on the magnetic field associated with current flow, it follows that the very resistive conditions will limit the effectiveness of the system in the time domain where the noise levels will be high.

In these circumstances the signal to noise ratio will be much improved in the frequency domain.

RECOMMENDATIONS

From the very limited test at Hercules, it is quite apparent that the mineralisation shows up as having very long decay times. This is as expected from the mineral assemblages, and similar to decays obtained over like mineralisation in many areas. As this contrasts strongly with the response over the finely disseminated bodies surveyed in the West Coast, it is strongly recommended that MIP surveys be carried out in the frequency domain, at two widely separated frequencies selected to distinguish the "massive" lead/zinc mineralisation from the disseminated pyritic and graphitic shales, as soon as a system is available in Australia.

I look forward to discussing this report with you in the near future.

Respectfully submitted on behalf of:

SCINTREX PTY. LTD.

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

GEOPHYSICIST

APPENDIX 'MIP'

MAGNETIC INDUCED POLARIZATION

The MIP method measures the magnetic response due to the polarization currents flowing in the ground that are made up of the fundamental polarization current within the chargeable body and its return currents. Being able to measure the magnetic field due to the polarization current within the chargeable body a far more fundamental measurement with associated characteristics is obtained. The polarization current within the body is very concentrated and is in the opposite sense to the inducing current and the return current.

The magnetic field due to the inducing current shows where the primary current is flowing and hence where conductive or resistive zones are.

FIELD PROCEDURE

A longitudinal current array is normally applied so that the current is passed along the long axis or strike direction of sulphide bodies likely to be encountered in the survey area. A fixed current electrode configuration is employed with current electrodes separated by 2A where A is the minimum length of bodies desired to locate in the survey area. If there is one well defined horizon of interest then the current electrodes are normally placed reasonably on this line. The cable joining the current electrodes may be the shortest

distance between them or when a single well-defined horizon of interest is present, then the current is layed in a U shape avoiding the horizon. In this way the magnetic field from the cable will not obscure the favourable horizon.

With a current electrode separation of 2A, a block about 2A long x A wide may be covered. This is not a rigid limitation, however, and they may be exceeded somewhat providing the magnetic field has an adequate strength.

The horizontal magnetic field at right angles to the current flow is measured, that is, along the direction of the survey line. The distance between stations may vary between 25 and 60 metres depending on the size of body of interest and its depth.

The primary current into the ground is a standard two seconds on-off wave form. Using the IPR-8 receiver, the primary magnetic field H_p due to the primary current I_p flow in the ground is measured. When this is switched off, the decaying secondary current produces a secondary magnetic field H_s. The IPR-8 receiver can measure up to six slices in the decay curve produced by the secondary magnetic field, as shown in Appendix IPR-8. Each slice

is normalised for a standard decay curve, and the primary magnetic field, to give the chargeability parameter. The chargeability with the induced polarization phenomena is defined as the constant relating the primary to the secondary magnetic field, or current or electric field depending on what measuring technique is applied.

APPENDIX IPR-8

I INTRODUCTION

The basic equipment required for an Induced Polarization survey consists of a transmitter, a receiver, wire and electrodes.

Most time domain induced polarization transmitters transmit square waves with equal "on" and "off" times. Polarity is automatically changed between the pulses. The waveform shown below indicates how the current is usually transmitted. The pulse times range from 1 to 8 seconds.

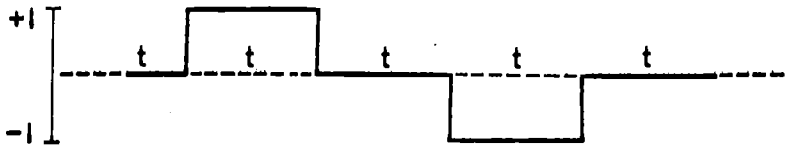


FIGURE 1A

The transmitter is powered by batteries (portable type units) or a motor driven generator. Scintrex manufactures various time domain induced polarization transmitters ranging in power from 25 watts to 15 kw. The choice of a transmitter depends on various factors such as: the electrode spacings to be employed, contact resistance and the resistivity of the subsurface. The IPR-8 receiver is designed for use with any time domain induced polarization transmitter.

The IPR-8 time domain induced polarization receiver is of the state-of-the-art design, packaged in a rugged and portable manner. Using integration and automatic normalization, it measures the characteristics of an induced polarization decay curve set up by overvoltage and other effects occurring in rocks. When induced polarization effects (such as due to metallic-non metallic interfaces in rocks) occur, the waveform received at the receiver is not the same square wave as transmitted by the transmitter. The waveform shown below indicates the sort of wave distortion which is caused by the induced polarization phenomena.

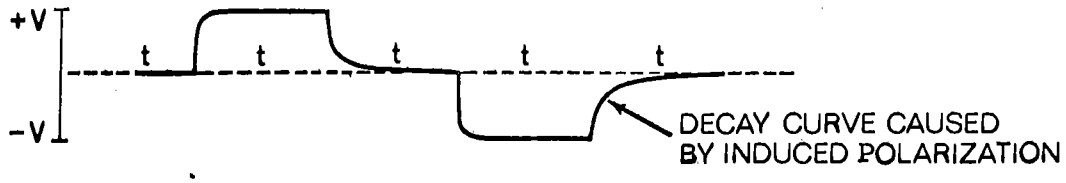


FIGURE 1B

II SPECIFICATIONS

The IPR-8 has the following specifications:

Input Impedance	3 megohms
Primary Voltage (Vp) Range	300 microvolts full scale to 40 volts full scale in 10 ranges
Accuracy of Vp Measurement	±3% of full scale
Vs/Vp Ranges	20 and 100 mV/V full scale
Vs/Vp Accuracy	±3% of full scale
Primary SP Buckout Range	±1 volt
Accuracy of SP Measurement	±3%, ±5 mV
Automatic SP Tracking Range	6 x Vp, maximum ±1 volt
Continuity Meter Reading	0 - 500 k ohms
50 or 60 Hz Powerline Rejection	-50 db (300x)*
Low Pass Filter	6 db/octave with fc = 20 Hz and 12 db/octave with fc = 36 Hz
Required Stability of Transmitter Timing	Need only exceed measuring program selected (1 or 2 seconds)
Operating Temperature Range	-30°C to +60°C
Dimensions	320 mm x 135 mm x 160 mm
Weight, Complete with Lid and Batteries	3.6 kg
Power Supply	4 D cells - Eveready No. 1050 or equivalent; estimated battery life 2 months intermittent duty at 25°C 1 Alkaline cell Eveready No. E91 or equivalent; estimated life 1 year

* 50 or 60 Hz depending on power system.

I11 QUANTITIES MEASURED BY THE IPR-8

Figure 2 shows the different parameters measured by the IPR-8. The usual measurements are Vp, the received primary voltage and "M", a parameter related to the transient curve. The Vp measurement is used in resistivity calculations while M is the chargeability (induced polarization) parameter. In addition, absolute values of the self-potential (SP) can be measured.

In all cases, the M quantity measured by the IPR-8 is the mean value of the transient voltage over a selected time interval to which the following normalizations have been applied:

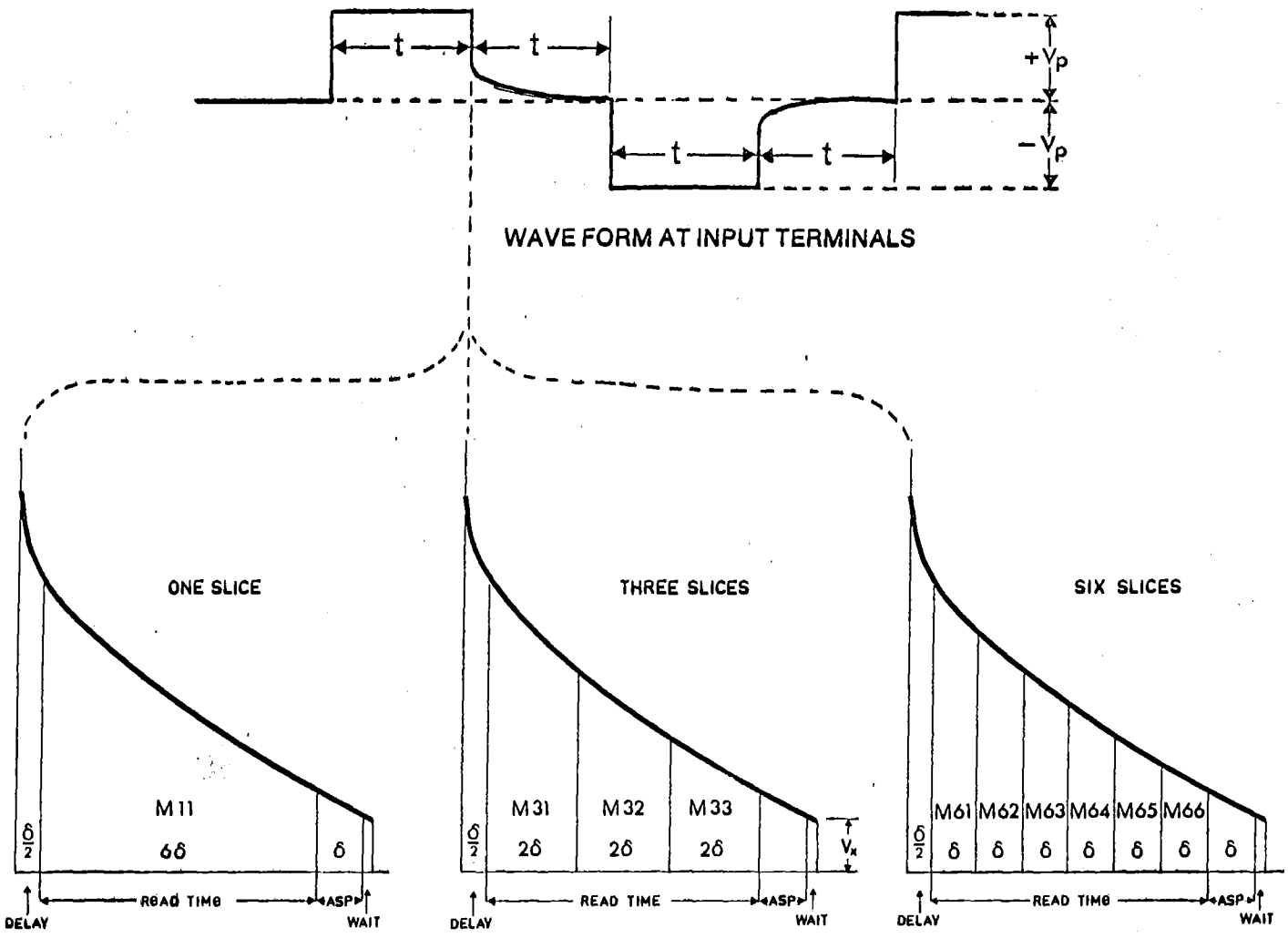
- normalization for the length of the integration interval
- normalization for the primary steady state voltage (Vp)
- normalization for curve shape
- normalization for number of pulses

The units of the quantities measured are, therefore, dimensionless and are normally expressed in "millivolts per volt".

In the various modes of operation the transient voltage following the interruption of the primary current pulse is either integrated over one long period of time or sliced into either 3 or 6 slices. By using 6 slices, a good record of the decay curve shape can be obtained. The 3 slice mode gives some curve shape information and provides an economical standard mode in which to operate. The centre slice of this mode is reasonably close to the measurement made by the Scintrex IPR-7 and other receivers of the "Newmont Type", while the first and last slices can be used for a rapid check of curve shape. A more precise relationship is, however, presented later in this section.

Figure 2 shows the actual times used. For the receiver to operate, the transmitter timing may be any time period of one second or greater (i.e. $t \geq 1$ second) although transmitter and receiver timings of 2 seconds are considered normal for most surveys. Equal on and off timing assures the best noise rejection as the signal is averaged over the longest possible time, and the automatic self-potential adjustment is made closest to the reading time.

With the receiver set at t = 1 second, the decay ($\delta/2$) from the current-off time to the commencement of the measurement is 65 milliseconds and the slice width (δ) is 130 milliseconds. With the receiver set at t = 2 seconds the delay is 130 milliseconds and the slice width is 260 milliseconds. Fuller information on the programs is available from the tables in Figure 2.



t sec.	δ	delay time	waiting time	M 11				M 31			M 32			M 33			length
				from	to	mean	length	from	to	mean	from	to	mean	from	to	mean	
1	130	65	25	65	845	455	780	65	325	195	325	585	455	585	845	715	260
2	260	130	50	130	1690	910	1560	130	650	390	650	1170	910	1170	1690	1430	520

t sec.	M 61			M 62			M 63			M 64			M 65			M 66			length
	from	to	mean	from	to	mean	from	to	mean	from	to	mean	from	to	mean	from	to	mean	
1	65	195	130	195	325	260	325	455	390	455	585	520	585	715	650	715	845	780	130
2	130	390	260	390	650	520	650	910	780	910	1170	1040	1170	1430	1300	1430	1690	1560	260

FIGURE 2

PARAMETERS MEASURED WITH TIMES OF RECEIVER PROGRAM IN MILLISECONDS.

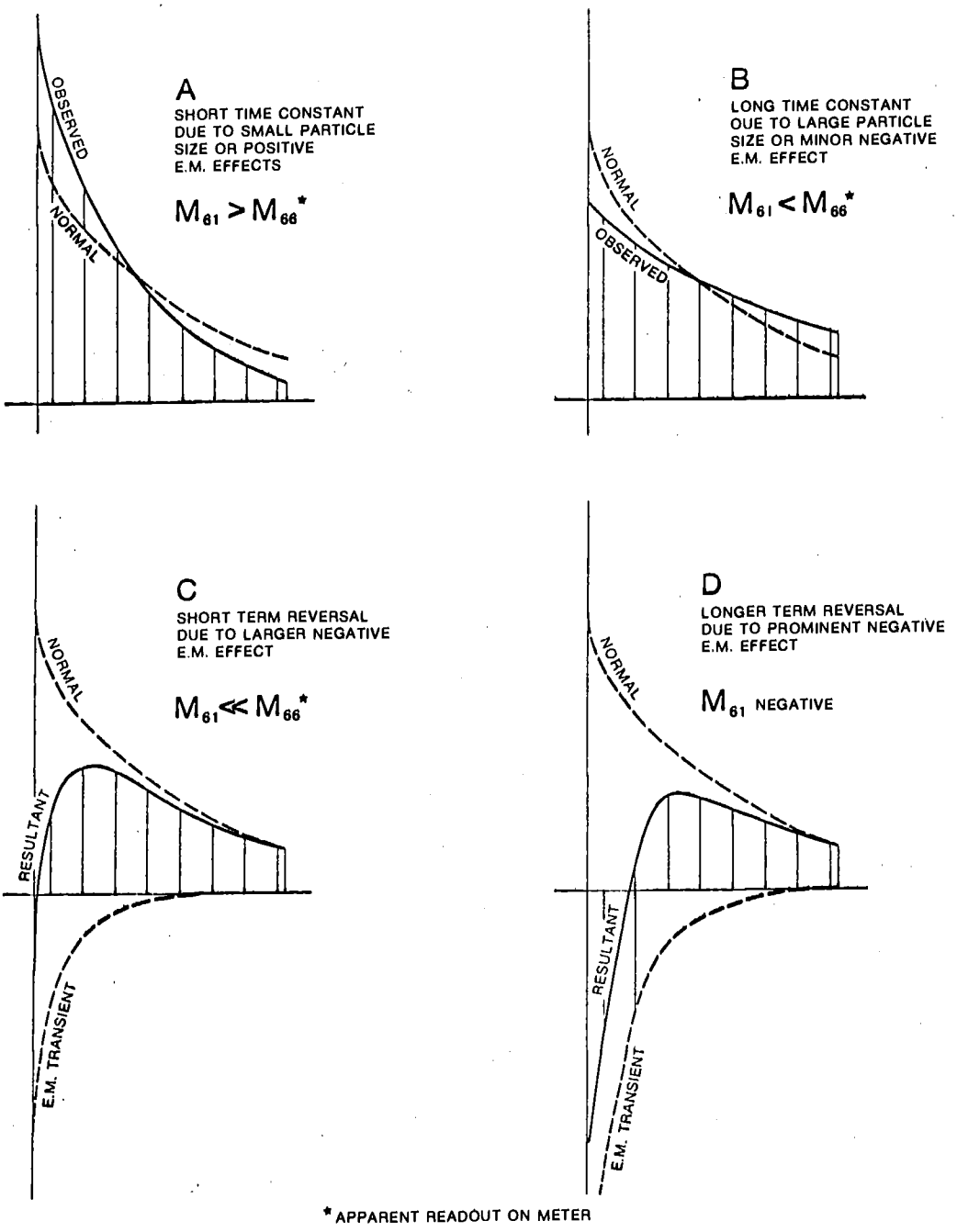


FIGURE 3

THE SIGNIFICANCE OF CURVE SHAPE INFORMATION GAINED USING 6 SLICE READINGS.

Each integration is normalized with respect to the Standard Induced Polarization Decay Curve which has been established by Newmont Exploration Limited. (ref. Dolan and McLaughlin in bibliography) This is achieved by choosing the sensitivities of the integrators so, that if the curve shape is normal, all slices within a given mode show the same amplitude of measurement. A further normalization is built in for the slice width, be it full, one-third or one-sixth of the total integration period. The net effect is that the reading will be the same regardless of the slice measured, providing that a standard transient decay curve form is present and that the same measuring cycle is used for transmitter and receiver (1 second or 2 seconds). Any departure from this standard curve form will be immediately obvious to the operator, without performing any calculations. For instance, a steeper decay will give a higher reading on earlier slices than on later slices. Reconstruction of the actual decay curve is easily effected by using the correction factors given in Table 1.

The shape of a time domain induced polarization decay curve can be altered by electromagnetic or interline coupling, by variations in the average size or degree of interconnection of the metallic particles in the bedrock or by other I.P. sources. Figure 3 illustrates the advantage of breaking the decay curve into slices. Utilizing only one wide slice, there is no indication of the shape of the decay curve. Positive electromagnetic coupling effects or small particle size may give rise to an abnormally short time constant (Case A) which, for multi-slice modes will be indicated by higher normalized readings of the earlier slices with respect to the later slices. An increase in the later slices over the earlier ones (Case B) may imply a longer time constant due to a minor negative EM transient or I.P. responses from large metallic particles, etc. Cases C and D, where the values of the initial slices are considerably reduced or are even negative, show the effect of negative EM transients of increasing amplitude.

A system of symbols has been created to indicate each of the measurable slices.

The general symbol is M_{txy} where:

- t is the timing chosen (i.e. 1 or 2 seconds)
- x is the number of slices in the mode chosen (i.e. 1, 3 or 6)
- y is the number of the slice referred to (i.e. 1, 2, 3, 4, 5 or 6)

Wherever two subscripts only are given, eg. M_{32}, it is understood to apply equally for t = 1 sec. or t = 2 sec.

A chargeability reading is defined by the following formula:

$$M = \frac{V_s \cdot 1000}{V_p} \quad \text{in mV/V}$$

where $$V_s = \frac{t_1 \int^{t2} V_s \, dt}{t_r} + V_x$$

and t_1 = time at beginning of slice

t_2 = time at end of slice

V_x = residual transient voltage at the end of the automatic self potential correction

$t_r = t_2 - t_1$, i.e. the integrating period

Chargeability values, uncorrected for curve shape, can be easily calculated if required. Normalizations for all slices are made using the M_{232} value as reference. In other words, there is no curve shape normalization applied to this slice; the M_{232} readout is, therefore, directly as measured. The same statement holds for the M_{132} slice, however, its value is one-half the value for M_{232} provided that the transmitter timing matches the receiver timing.

To restore the true transient curve shape (M true), the observed M readings (M read) are multiplied by the factors in Table 1.

TABLE 1

$$M_{true} = M_{read} \bullet k_1$$

Slice	k_1	
M_{11}	1.09	
M_{31}	1.47	
M_{32}	1.00	← NORMAL
M_{33}	0.81	
M_{61}	1.68	
M_{62}	1.27	
M_{63}	1.06	
M_{64}	0.94	
M_{65}	0.85	
M_{66}	0.78	

For the ideal "normal" I.P. transient curve form $M_{2xy} = 2M_{1xy}$ where M_{2xy} is for a 2-second on-off transmitter cycle and M_{ixy} is for a 1-second on-off cycle. The relationship between readings taken with differing transmitter and receiver timings is more complicated, particularly if the curve shapes are not normal.

Table 1 still applies for the case where the transmitting times are longer than the receiving times in order to reconstruct the relative curve shape.

Relationship between IPR-8 and "Newmont Type" Receiver Measurements

The "Newmont Type" receivers (eg. Scintrex IPR-7) integrate the area under the transient curve from 0.45 seconds to 1.1 seconds. This is then multiplied internally be an instrumental factor to obtain the chargeability M in milliseconds.

For a normal decay curve form, the approximate relationship between the IPR-8 measurements and the Newmont Type chargeability is given by M_{232} (in mV/V) = M_N (in milliseconds) • 0.7.

APPENDIX 'I.P.'

INTRODUCTION

For the benefit of those who are unfamiliar with the Induced Polarization method in general, or with the pulse-type method in particular, a few introductory remarks will be directed on the Induced Polarization, or overvoltage, phenomenon. Those who wish a fuller treatment of the subject are directed to Seigel (1962), which paper also includes an extensive list of references.

Induced Polarization in its broadest sense means a separation of charge to form an effective dipolar (polarised) distribution of electrical charges throughout a medium under the action of an applied electric field. When current is caused to pass across the interface between electrolyte and a metallic conducting body, double layers of charge are built up at the interface, in the phenomenon known to electrochemists as "overvoltage". This is the phenomenon which can be utilised for the detection of metallic conducting, rock-forming, minerals such as most sulphides, arsenides, a few oxides and, unfortunately, graphite, In addition, effective dipolar charge distribution occurs to some extent in all rocks, due to ion-sorting in the fine capillaries in which the current is passing.

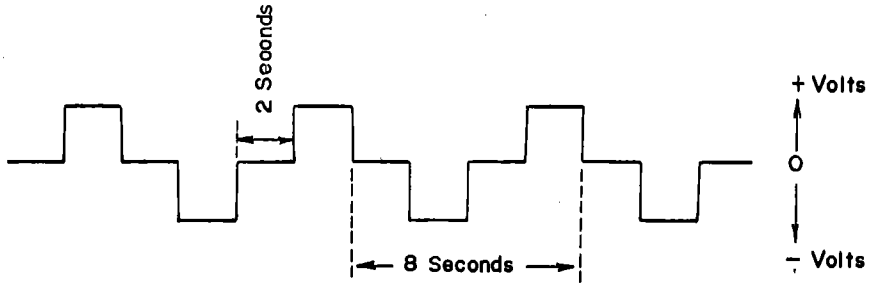
Induced Polarization responses may therefore arise from metallic or non-metallic agencies. Fortunately, the latter generally falls within fairly low and narrow limits for almost all rock types, although there is still no reliable criterion for differentiating overvoltage responses from graphite and metallic sulphides, or for distinguishing between the responses of one type of sulphide and another. Despite these limitations the Induced Polarization method has amply demonstrated its value in mineral exploration since its initial development as a useful exploration tool in 1948 (ed. Wait, 1959).

DESCRIPTION OF METHOD AND EQUIPMENT

For the present programme the pulse or time domain system was employed, using a Scintrex Induced Polarization unit. The standard current-wave form with the unit is two seconds on-time and two seconds off-time. (see Figure 1). This unit features the Newmont type self-triggered receiver which operates remote from the current transmitting equipment. Three fundamental quantities are measured with this unit - the chargeability of 'M' measurement, the 'L' measurement and the resistivity.

The receiver integrates the area under the decay curve during the time interval from 0.45 seconds to 1.1. seconds

MEASUREMENTS TAKEN



Energising frequency is a square wave having a frequency of 0·125 cps.

FIELD MEASUREMENTS MADE

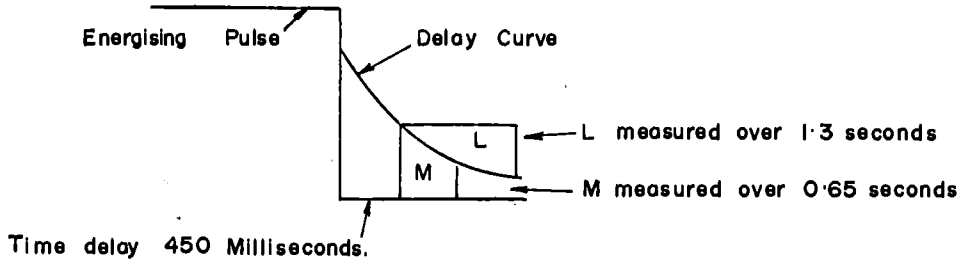


Fig. 1

after termination of the primary current pulse. This integral normalised with respect to its corresponding primary voltage is the chargeability or 'M' measurement, that is, the fundamental Induced Polarization characteristic. It is in units of milliseconds. The Induced Polarization phenomena is dependent on the existence of electronically conducting material within the matrix of ionically conducting material. The chargeability is therefore a measure of the presence of electronically conducting material within the ground being tested.

The second quantity measured is the area over the transient decay curve between 0.45 seconds and 1.75 seconds of the current off-time. This measurement is designated the 'L' measurement and is also in units of milliseconds. The ratio L/M gives a curve factor related to the shape of the transient voltage curve, and is a measure of the rate of decay of the transient voltage. This is of secondary diagnostic value in that the rate of decay of the transient voltage is partially a function of particle size. A large L/M ratio reflects a short time constant, commonly associated with finely disseminated sulphide or graphite, whereas a small L/M ratio reflects the longer time constants associated with the larger sized metallic particles.

The L/M ratio is also effective in determining the presence of electromagnetic coupling effects. With the Scintrex Induced Polarization unit, electromagnetic coupling effects are essentially eliminated by an 0.45 second delay-time following termination of the primary current pulse before measurement of the transient voltage commences. However, in extremely low resistivity areas coupling may occur. Under these conditions the presence of electromagnetic coupling can distort the Induced Polarization response, and it is extremely important to know when this occurs. The presence of such coupling is immediately recognizable from the L/M ratios.

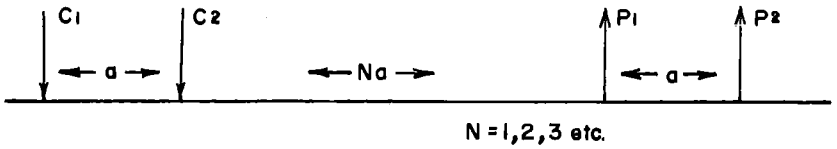
Resistivity measurements are also made as an integral part of all Induced Polarization measurement using the Scintrex Induced Polarization unit. The resistivity values are of primary importance in determining subsurface geological features such as contact zones, faulting, etc., and are of assistance in mapping the geology in general.

Electrode geometries (see Figure 2) utilised in obtaining field measurements are important and no one electrode array is applicable for all conditions. In areas where a low resistivity oxidised surface layer overlies a much higher resistivity freshrock, a high degree of

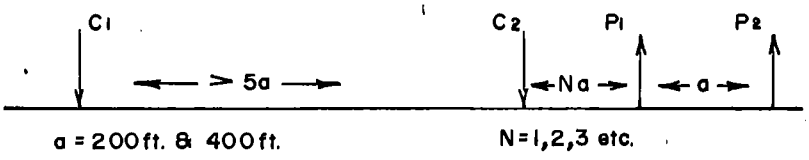
COMMONLY USED ELECTRODE ARRAYS

CLOSE – COUPLED ARRAYS

DIPOLE – DIPOLE



POLE – DIPOLE



GRADIENT ARRAY

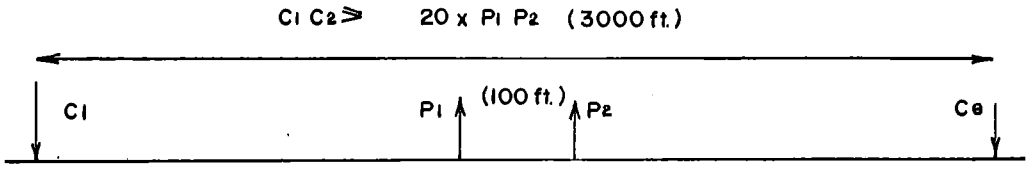


Fig. 2

masking occurs using any of the close-coupled arrays, such as pole-dipole or dipole-dipole. An electrode spacing many times greater than the depth to freshrock must be used in order to obtain responses reasonably representative of the freshrock. With such large electrode spacings the physical properties are effectively averaged over so large a volume that we lose the ability to detect moderate sized bodies of polarizable material. However, under these conditions the gradient array is both feasible and desirable in that it minimises the effects of masking and at the same time has a high degree of resolution for small targets.

In the present areas of investigation, abnormal induced polarization responses may be expected to arise from the electronically conducting sulphide minerals such as pyrite, pyrrhotite, chalcopyrite and pentlandite, plus graphite and magnetite. The response from magnetite has been found to be quite variable and somewhat unpredictable, reflecting the great variation in the mode of electrical conduction in this material. It is not always possible to differentiate between these potential sources of high chargeability from the Induced Polarization and resistivity data alone. Complementary geophysical, geochemical and geological data enable a more complete interpretation to be made of the Induced Polarization data.

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SEIGEL ASSOCIATES AUSTRALASIA PTY. LTD.
GEOPHYSICAL CONSULTANTS AND CONTRACTORS

February, 1974

THE MAGNETIC INDUCED POLARIZATION METHOD

by

Graham Linford, Ph.D.

I - THE METHOD

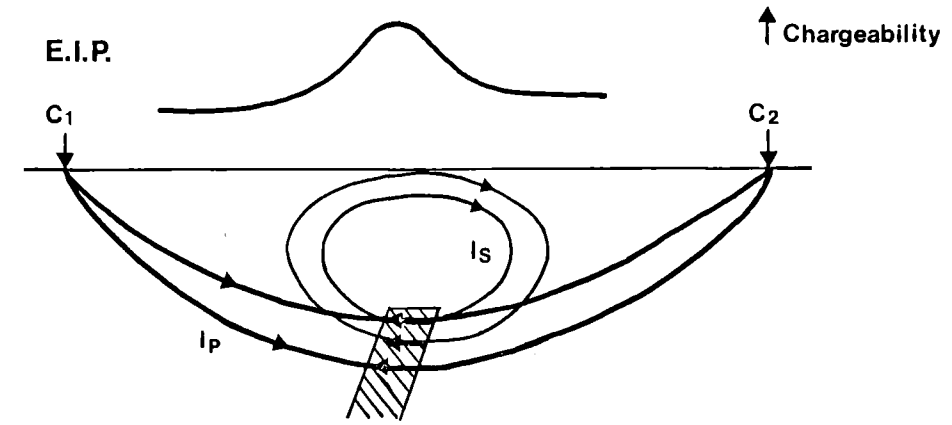
Magnetic induced polarization (MIP) is essentially a completely new geophysical method, that gives in general, a more fundamental measurement than electrical induced polarization (EIP), and eliminates or minimizes most of the present problems with EIP in extreme conditions. In this respect, its advantages are such that it should revolutionize exploration procedures in these extreme electrical conditions.

To understand the basic concept of MIP and its advantages, it is simplest to consider current flow in the time domain (pulse) as illustrated in Figure 1. Firstly, beginning with EIP (Figure 1a), the primary current I_p flowing in the ground, produces within a chargeable body, opposing induced current dipoles. The constant relating the primary current to the opposing induced current dipole, is the chargeability of the body.

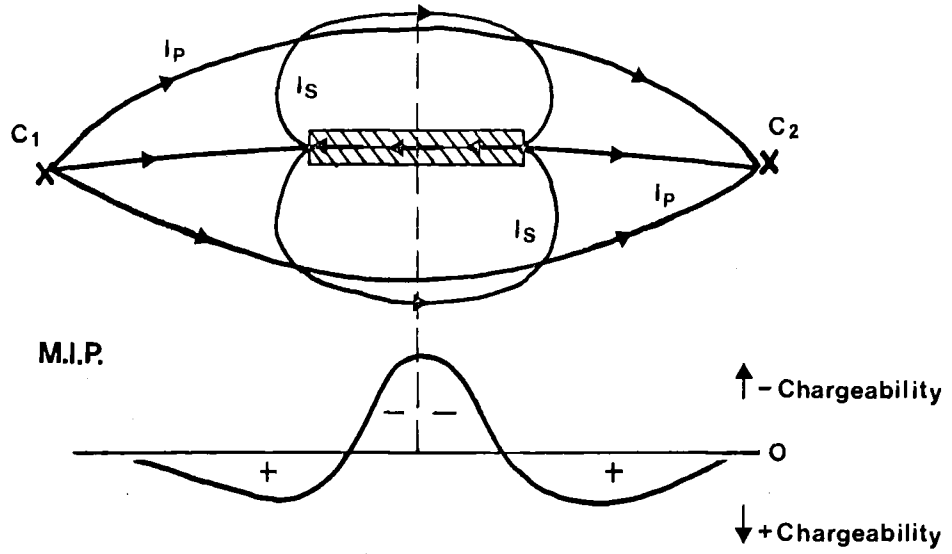
When the primary current is switched off, these induced current dipoles discharge in return current loops forming secondary currents. It is noteworthy that returning currents have the same direction as the primary current while the interior current inside the chargeable body formed by the induced current dipoles, is in the opposite direction.

With EIP we measure the electrical potential drop due to the current flow at the surface with two potential electrodes. When the primary current is on, the primary voltage drop V_p is measured, and when off, the secondary voltage drop V_s due to the secondary current is measured; the apparent chargeability M is the constant relating V_p and

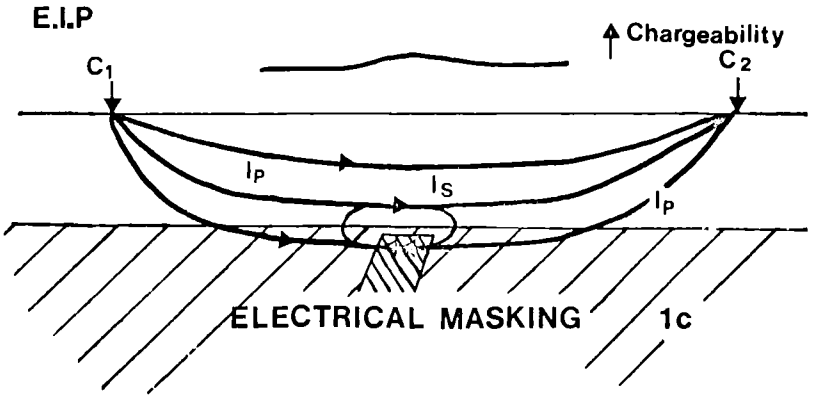
ILLUSTRATION OF CURRENT FLOW WITH M.I.P. & E.I.P.



CROSS SECTION 1a



PLAN & PROFILE 1b



ELECTRICAL MASKING 1c

FIGURE 1

V_S. The maximum chargeability is observed immediately above the body where the return current is strongest.

With MIP exactly the same current electrodes as EIP are used, but instead, if there is a preferred horizon they are normally placed on line with it. In Figure 1b, a plan view, the primary current I_p produces opposing induced current dipoles in the chargeable body. When the primary current is switched off, the interior current dipoles which form essentially a line current, discharge as the return current loops on either side of the chargeable body.

When the primary current is on, its associated primary magnetic field H_p is recorded, and when off, the secondary magnetic field due to polarization currents in the ground. If a profile is surveyed across the body, the return currents on either side of it, produce positive chargeability, but over the body, the concentrated interior polarization current dominates and a negative chargeability is observed. Present convention, is to plot negative chargeability up and positive down, so an anomalous profile as shown in Figure 1b is produced.

Thus in contrast to EIP which only measures the electrical voltage due to the return currents, MIP measures the magnetic responses due to the fundamental polarization current within the chargeable body and its return currents. Being able to measure the negative magnetic field due to the polarization current within the chargeable body a far more fundamental measurement with associated characteristics is obtained.

From the above outline, the advantages of MIP over EIP become immediately evident:

With EIP electrical masking is a major problem where the overburden and/or weathered rock is highly conducting in comparison to the second layer or freshrock within which the chargeable material of interest occurs. Here, the return current is short-circuited immediately within the bottom of the conducting layer, and little or no return current reaches the surface, as shown in Figure 1c.

This short-circuiting of the return current occurs regardless of what power is pumped into the ground or even if the current electrodes are put down drill-holes.

With MIP the same thing occurs with the return current, but we can still measure the magnetic field due to polarization currents at depth, i.e. the negative interior current flow and the return currents on either side, so that the basic anomalous response remains.

Another electrical problem is in regions with a highly resistive surface layer, such as sand. Here little potential electrode contact can be achieved resulting in little return current near the surface and capacitive coupling. With MIP, the detecting magnetometer needs of course no ground contact, thus eliminating the problem.

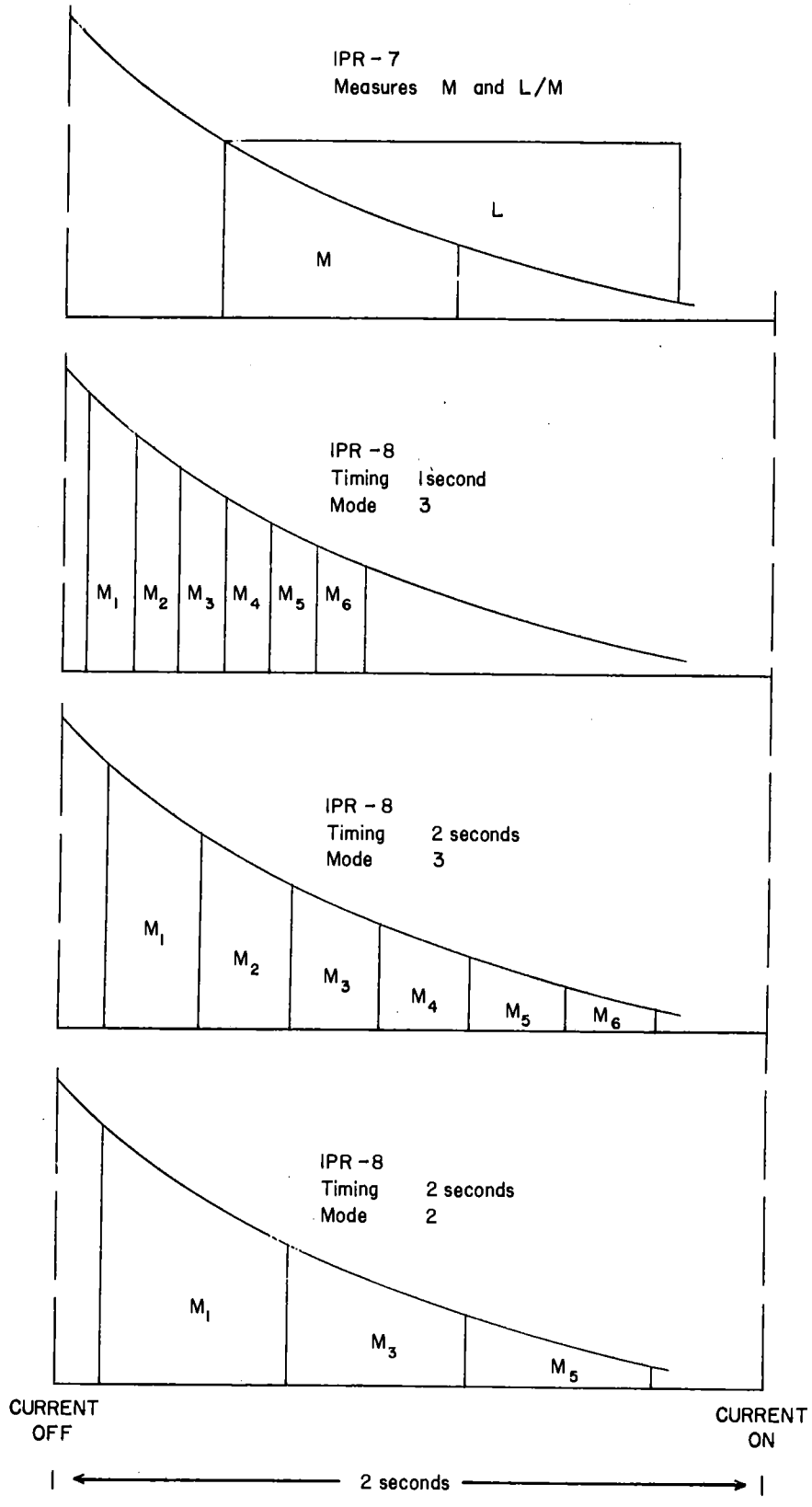
EIP is basically a surface phenomenon depending on the number of chargeable particles so that it emphasizes disseminated rather than massive sulphides. MIP in contrast is an interior current measuring system and so will emphasize massive sulphides in the presence of disseminated sulphides, because of the larger interior currents.

The final advantage of MIP is that we measure the characteristics of the interior polarization current rather than its return current. That is, a more fundamental measurement is achieved, and unique decay curve characteristics of the interior current are obtained. With EIP these characteristics are distorted or filtered by the medium through which it passes so that most of this detail is lost.

II - INSTRUMENTATION

A Scintrex MFM-3 fluxgate magnetometer with a sensitivity of 5 milligammas is used to measure the magnetic field with the ambient magnetic field being biased out. The resultant time dependent signal that represents the varying magnetic field due to the inducing and induced currents as well as any geomagnetic fluctuation, is connected to the IPR-8 receiver. The IPR-8 has its own buck-out for the geomagnetic variations.

The primary current into the ground is a standard two seconds on-off wave form. Using the IPR-8 receiver, the primary magnetic field H_P due to the primary current I_P flow in the ground is measured. When this is switched off, the decaying secondary current produces a secondary magnetic H_S. The IPR-8 receiver can measure up to six slices in the decay curve produced by the secondary magnetic field as shown in Figure 2. Each slice is normalized for a standard decay curve and the primary magnetic field, to give the chargeability parameter. The important application of decay curve information is where various minerals have different decay rates. This is often spoken of in terms of changing rates or frequency components. With the IPR-8 the multiple channel readout provides an immediate field indication of an anomalous curve shape. The various slices of the decay curve are equivalent to a frequency sweep.



MEASUREMENT OF DECAY CURVE

2 SECOND PULSE

FIGURE 2

III - FIELD PROCEDURE

A longitudinal current array is normally applied so that the primary current is passed along the long axis or strike direction of sulphide bodies likely to be encountered in the survey area. A fixed current electrode configuration is employed with current electroded separated by 2A where A is the minimum length of bodies desired to locate in the survey area. If there is one well defined horizon of interest then the current electrodes are normally placed reasonably on this line. The cable joining the current electrodes may be the shortest distance between them, or when a single well-defined horizon of interest is present, then the current is layed in a U shape avoiding the horizon. In this way the magnetic field from the cable will not obscure polarization responses arising from a deposit on the favourable horizon.

With a current electrode separation of 2A, a block about 2A long x A wide may be covered. This is not a rigid limitation however, and they may be exceeded somewhat providing the magnetic field has an adequate strength.

The horizontal magnetic field at right angles to the current flow is measured, that is, along the direction of the survey line. The distance between stations may vary between 30 and 60 metres depending on the size of body of interest and its depth.

The following parameters are used:

The normalised magnetic field H_N is calculated from the primary magnetic field H_P by dividing it by the magnetic field that would be observed for the given current if a uniform medium existed. That is, if uniform conductivity existed in the ground, the value of H_N would be 1.00 at all locations. This parameter is a dimensionless quantity and is expressed in a percentage.

The chargeability M is expressed in terms of milligammas per gamma, being the ratio of the secondary magnetic field for a particular slice divided by the primary magnetic field.

The normalised secondary magnetic field H_s is the H_p value times chargeability M divided by the primary current I_p, $(H_pM/1_p)$ and is expressed in milligammas per ampere, for each slice of M measured. The sign convention for presentation of the MIP chargeability is, where the polarization response observed is due to the fundamental polarization current within the chargeable body, the sign of the chargeability is negative, and where the return current response dominates, the chargeability response is positive. That is, the sign is as observed with the IPR-8 receiver.

CASE HISTORIES

Sherlock Bay - Western Australia

MIP test work was carried out over this nickel-copper sulphide deposit where earlier electrical induced polarization in 1971 had shown a serious electrical masking problem. The survey area is over, in part, tidal mud flats and the rock beneath the surface layers is relatively fresh. The land is flat and covered by alluvial sand gravel to a variable depth averaging about 12 metres. The rock is weathered but fresh rock is encountered about 30 metres subsurface. The nickel copper sulphide deposit is contained within volcanic and mafic intrusive rocks forming part of the Archean Pilbara block of NWW Australia.

The ore is quartz magnetite-amphibole-chlorite sulphide schist enclosed with an ophiolite sequence. Drilling has intersected mineralization in two contiguous zones with a total length of about 5000 ft., an average of at least 50 ft., and an almost vertical depth of about 3000 ft. The average grade of nickel is .5% with a nickel:copper of 5 : 1. There is .6% chalcopyrite and 5% magnetite and 4% pyrite.

The Sherlock Bay Figure 3 presents the time domain MIP results on Line 68E and the EIP gradient array results on Lines 40E and 68E. The geology shown at the surface is based on the drill intersections expolated from 300 ft. and 2000 ft. subsurface. There is a small displacement but this is due to the ore body snaking vertically.

Line 40E is a genuine EIP case history showing a weak IP anomaly. To the east this weak anomaly is gradually lost because of increased electrical masking and on Line 68E, the EIP chargeability and resistivity are almost uniform illustrating the classic masking problem.

With the MIP on Line 68E a well defined anomalous chargeability response is shown about 26N over the known mineralization. This profile illustrates that the electrical masking problem due to a conducting overburden can be eliminated with the MIP method, and meaningful and resolving H_N and M data can be obtained in areas where previously with EIP little useful information was received.

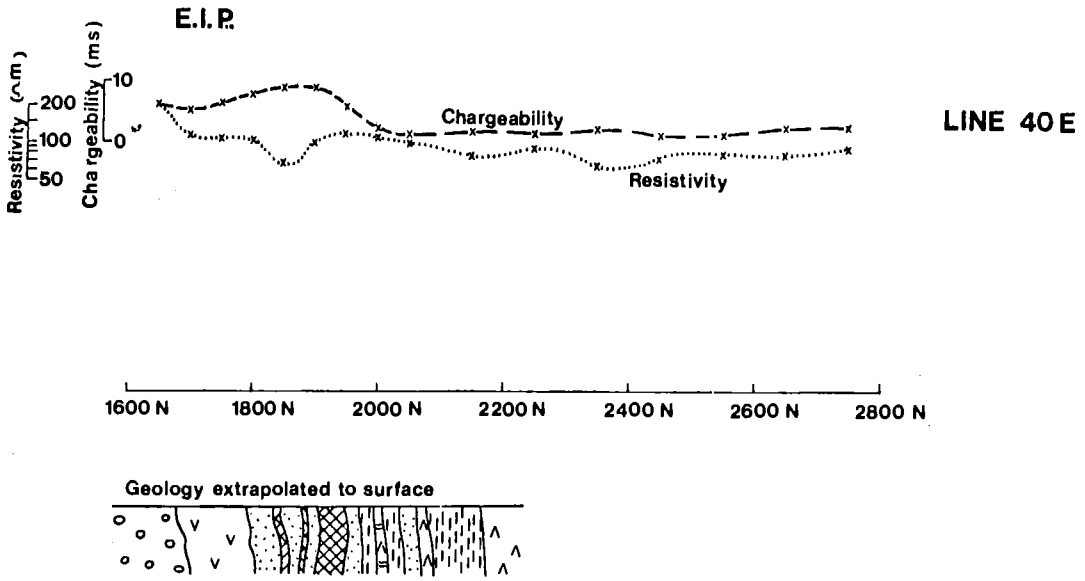
Jan Shoot - Kambalda, Western Australia

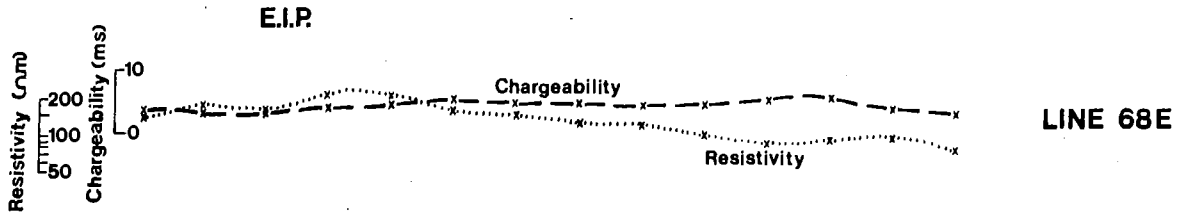
Figure 4 presents the MIP profile and geological cross-section over this small ore body. Its strike length is 400 ft. and the geology of the area is complex; the massive nickel sulphides are in talc carbonate and are surrounded by graphitic and sulphidic sediments.

The MIP data shows two significant chargeability anomalies at 4N and 0.5N over the nickel sulphides. The normalized magnetic field indicates that little primary current is flowing through the ore bodies. Most of the primary current is flowing in conducting sedimentary bands to the north.

These results merely illustrate the application of the method in a simple case history, there being no real geophysical problem in this area.

SHERLOCK BAY
M.I.P. TESTS





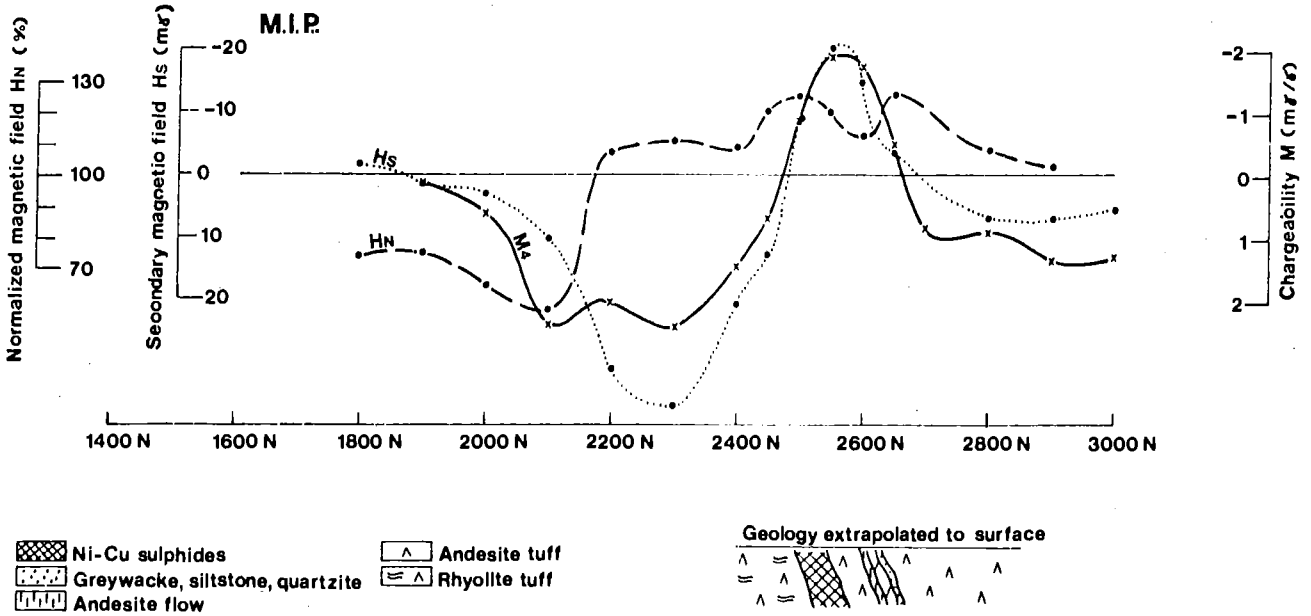
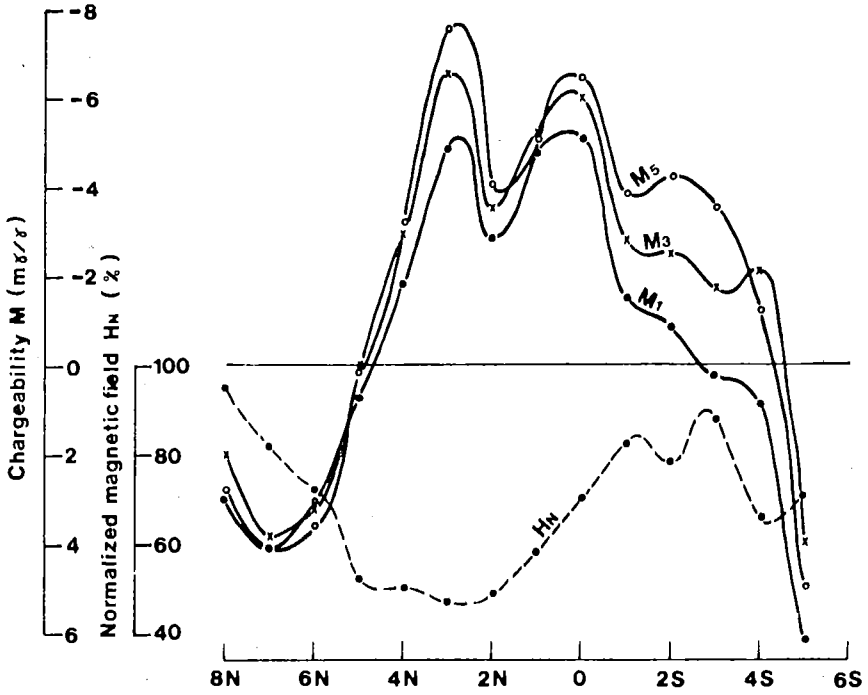


FIGURE 3

JAN SHOOT–COGGAN GRID

M.I.P. TESTS

TIME DOMAIN : t = 2 second pulse
C_1 C_2 = 800'



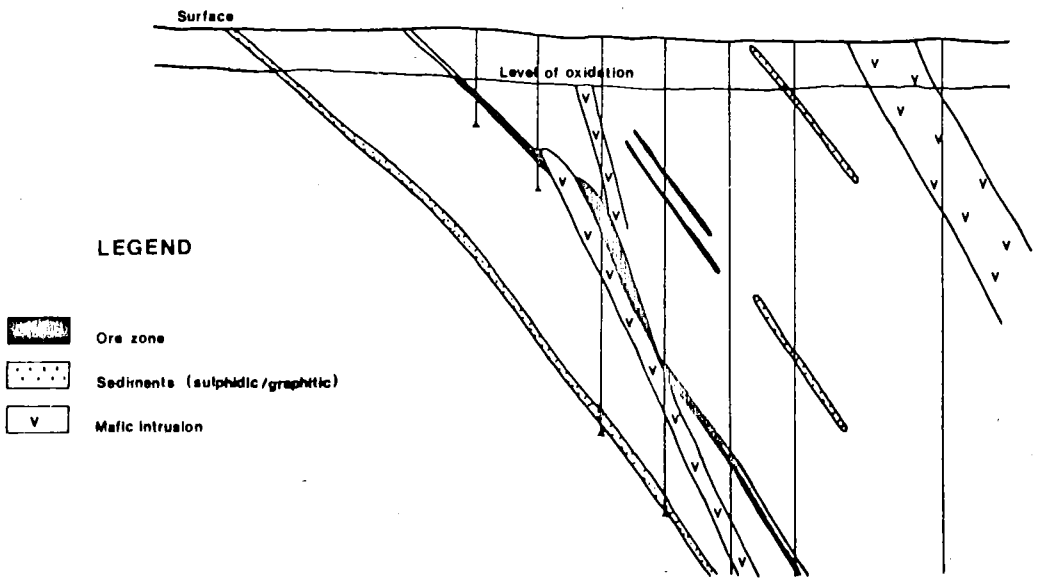


FIGURE 4

Lake Lefroy - Hunt Shoot- Western Australia

Figure 5 shows a general plan of the Hunt Shoot at Lake Lefroy, Western Australia and the surveyed MIP profile and geological section from drilling.

Massive and disseminated nickel ore occur on or about the faulted contact between the ultramafic and basalt. The lake sediments are 10 - 15 ft. thick and the level of oxidation is 90 - 100 ft. The three ore bodies are shown in plan which by and large plunge 20 - 30 degrees to the south-east. The two western bodies do not sub-outcrop while the one about 101500W is sub-outcropping.

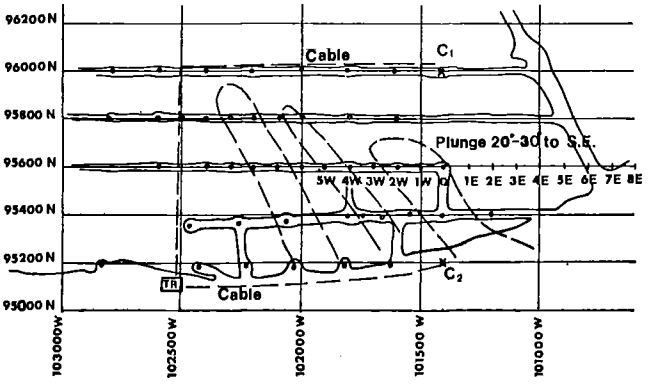
This is an extreme geophysical environment, the lake sediments having a resistivity of about 0.1 ohm.metres, while the oxidized rock probably increases to a few ohm.metres. The resistivity of the ultramafic within several hundred feet of the surface is about 800 ohm.metres. Nickel sulphide ore at Kambalda usually has a resistivity of 0.01 ohm.metres or less.

An 800 ft. array was set up with electrodes on the surface.

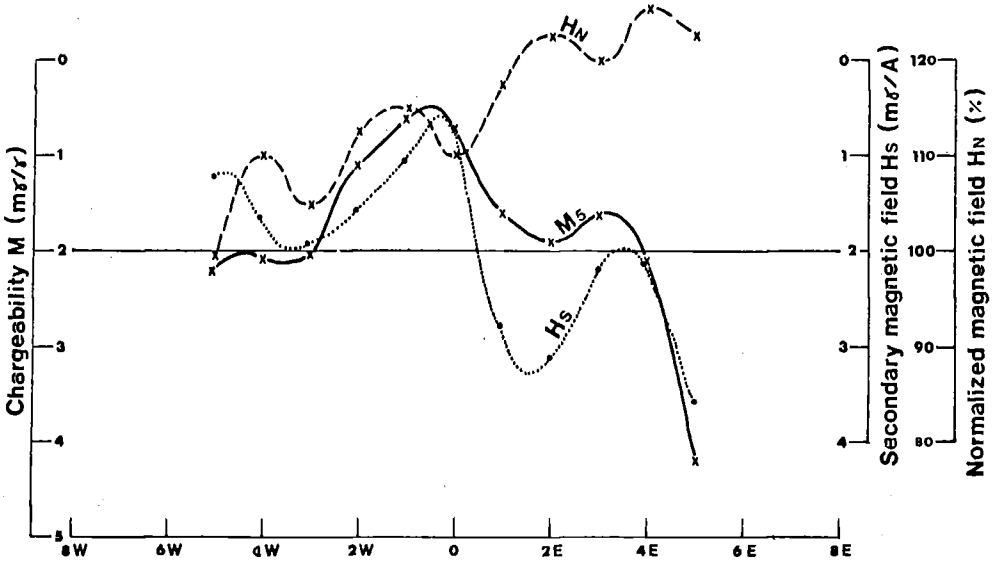
A standard 2 second pulse was applied and using mode 2 and timing 2. Extremely good magnetic signals were obtained because of the low resistivities and consequently high currents. This is in contrast to EIP where low resistivities mean low voltages and noisy signals.

A major MIP anomaly between 00 and 1W is shown, that extends to 3W and corresponds to the sub-outcropping disseminated ore body. A weak MIP anomaly is shown at 4.5W which corresponds to massive ore 300 ft. subsurface. Another very weak MIP response is evident at 3.2E. This area as yet has not been drilled, but it could be related to sulphides being on line with the general structure. The secondary field, which indicates where the polarization current is flowing, clearly shows the three zones.

LAKE LEFROY M.I.P. TEST
PART OF HUNT SHOOT



2 SECOND PULSE



CROSS SECTION 95600 N

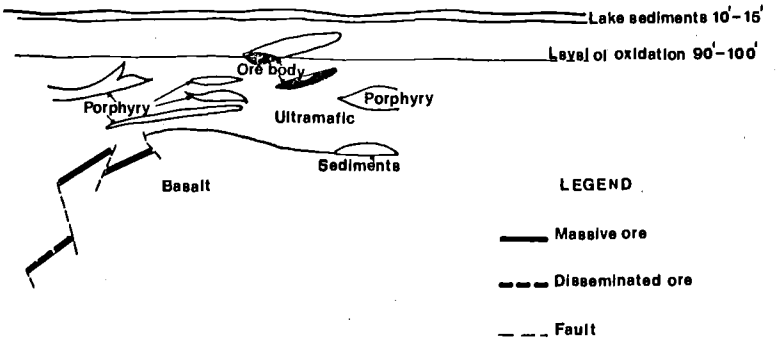


FIGURE 6

M and H_S have a general background level of 2. The anomalous values do not go negative although they do decrease towards zero. The return polarization currents, which are short-circuiting immediately above the ore zones, are producing the dominant component. There are probably various other sources of currents. We are seeing the superimposed magnetic response of the fundamental polarization current within the ore bodies on this background level.

Summarizing, the Lake Lefroy results show that MIP can operate in a region with a highly conducting overburden, and produce significant anomalies.

SUMMARY

Three Western Australian case histories are presented and two of these clearly show the ability of MIP to obtain significant anomalies in low resistivity areas where previously no useful EIP results were possible, thus opening the door to a new era in exploration in low resistivity environments.

Other case histories with MIP will be made available shortly that illustrate its ability: (1) to emphasize massive sulphides in the presence of disseminated; (2) to operate successfully in a region with 40 ft. of sand cover, (3) to clearly differentiate between graphitic shales and various metallic sulphide sources.

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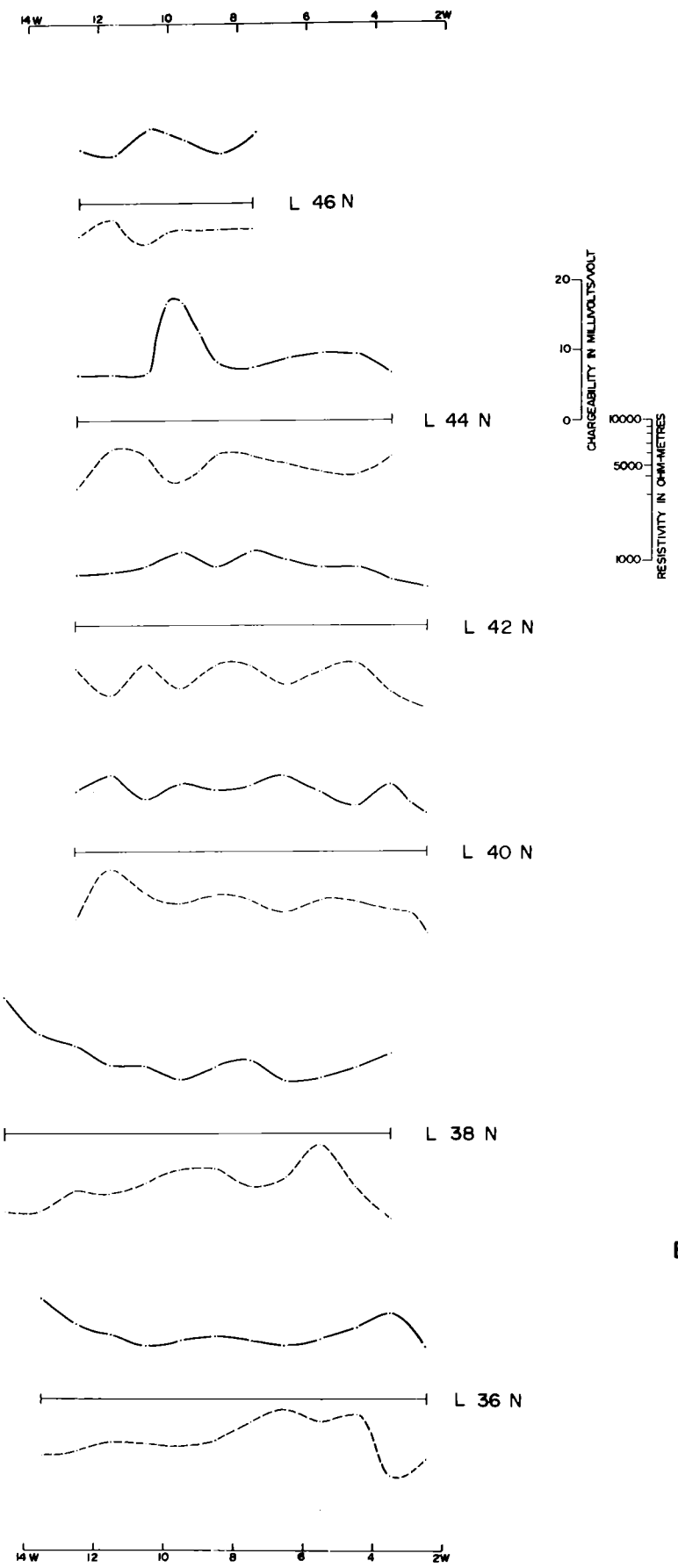


LEGEND

CHARGEABILITY SCALE, 1" = 10 Millivolts/volt
BASE LEVEL = 0
SYMBOL = ·——·——·

RESISTIVITY SCALE, 2" = 1 Logorithmic cycle
BASE LEVEL = 10000 Ohm-metres
SYMBOL = ·— — —·— — —·

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

NORTH HERCULES GRID
WEST COAST, TASMANIA

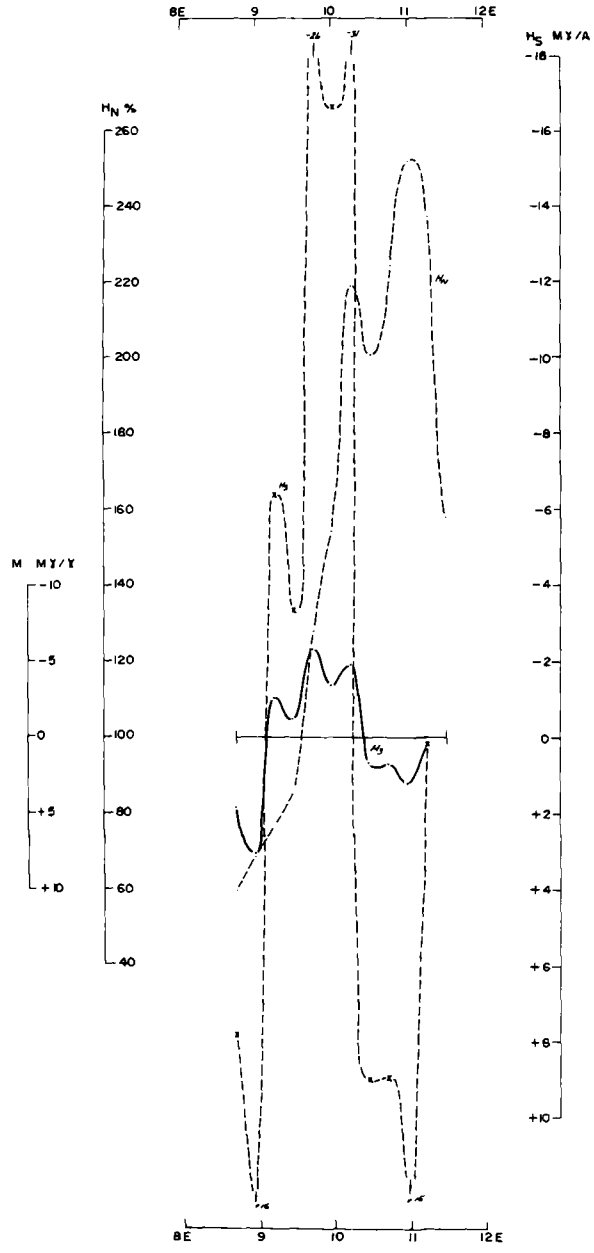
GRADIENT ARRAY
ELECTRICAL INDUCED POLARIZATION
DATA PROFILES

SURVEYED AND COMPILED BY
SCINTREX PTY. LTD.

APRIL 1974

200 0 200 400 feet
1:2400

JOB No TAS. 017 A SHEET 1 of 1 PLATE 1



LEGEND

GHARGEABILITY, M, 1" = 5 Milligamma /gamma
Base level = 0
Subscript denotes slice presented
Symbol = ·——·——· M_S

NORMALIZED MAGNETIC FIELD, H_N,
1" = 20 %
Base level = 100 %
Symbol = ———

SECONDARY MAGNETIC FIELD, H_S,
1" = 2 Milligamma /amp
Base level = 0
Symbol = x——x——x

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

SOUTH HERCULES GRID
WEST COAST, TASMANIA

MAGNETIC INDUCED POLARIZATION DATA PROFILE

SURVEYED AND COMPILED BY
SCINTREX PTY. LTD.
APRIL 1974

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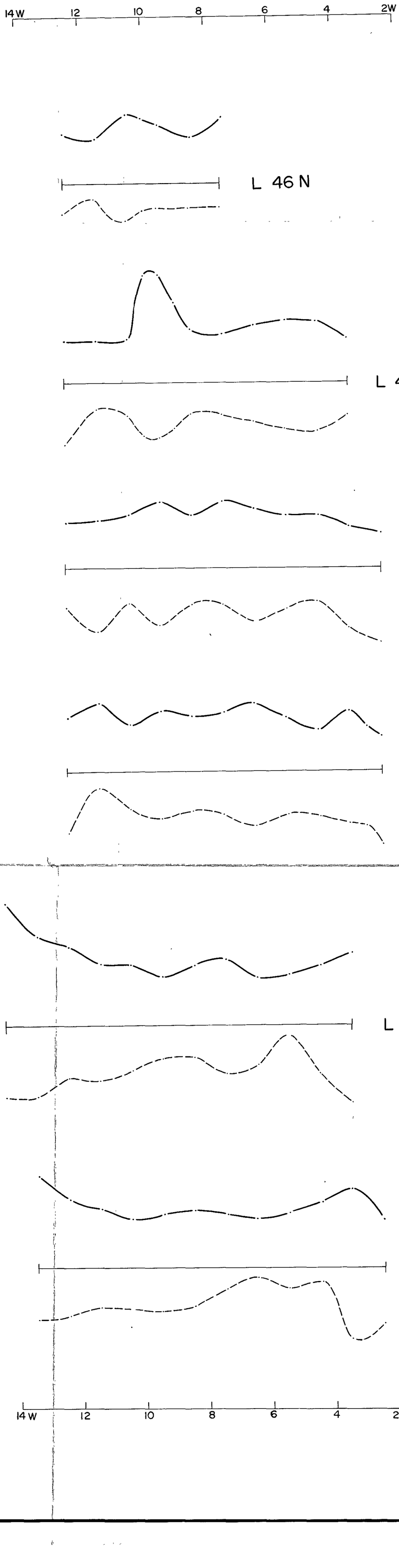
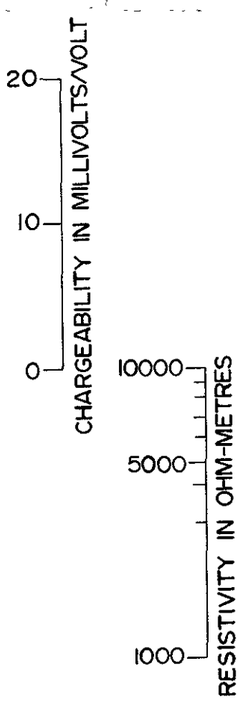
1 1200

JOB No. TAS. 017A SHEET 1 of 1 PLATE 2





LEGEND

CHARGEABILITY SCALE, 1" = 10 Millivolts/volt
BASE LEVEL = 0
SYMBOL = ·——·——·

RESISTIVITY SCALE, 2" = 1 Logarithmic cycle
BASE LEVEL = 10000 Ohm-metres
SYMBOL = ·— — —·— — —·

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

NORTH HERCULES GRID
WEST COAST, TASMANIA

GRADIENT ARRAY
ELECTRICAL INDUCED POLARIZATION
DATA PROFILES

576109

5 cm

SURVEYED AND COMPILED BY

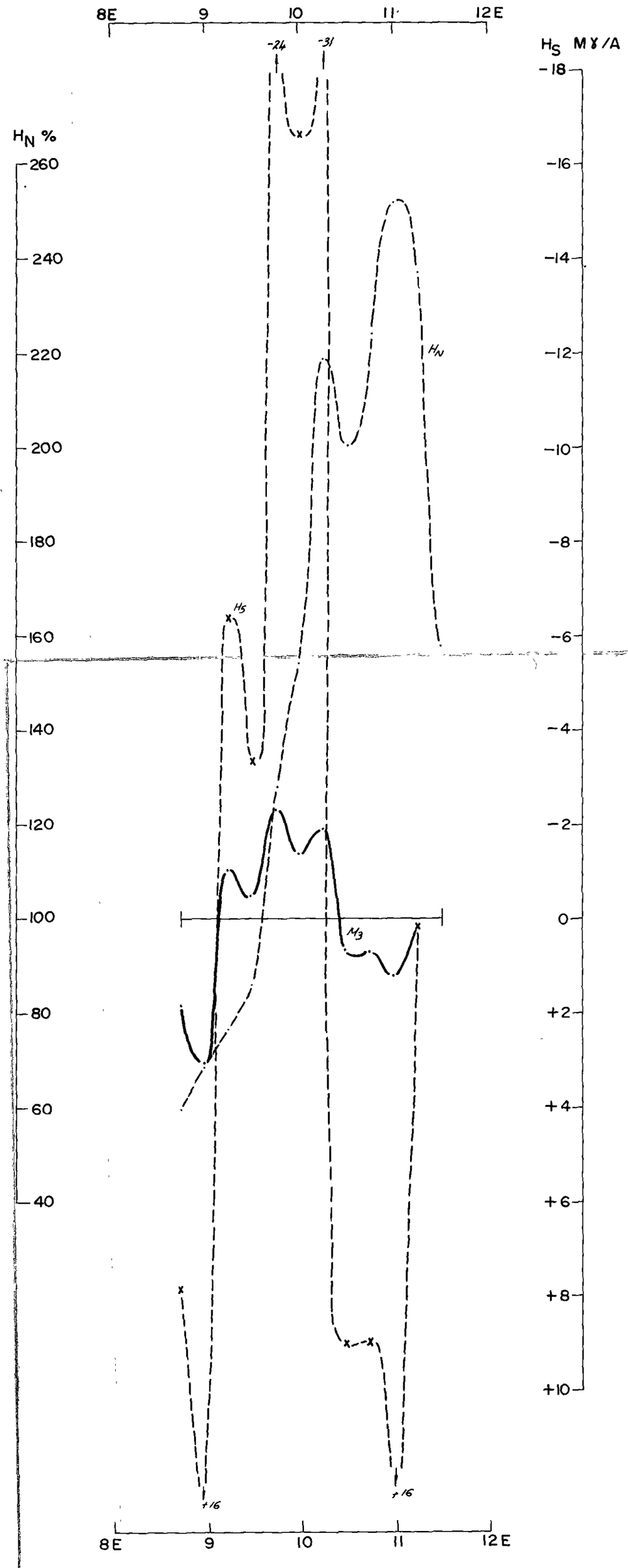
SCINTREX PTY. LTD.

APRIL 1974

74-1034

200 0 200 400 feet
1:2400

JOB No. TAS. 017 A SHEET 1 of 1 PLATE 1



LEGEND

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Base level = 0
Subscript denotes slice presented
Symbol = ·——·——· M_3

NORMALIZED MAGNETIC FIELD, H_N,
1" = 20 %
Base level = 100 %
Symbol = ·———·———·

SECONDARY MAGNETIC FIELD, H_S,
1" = 2 Milligamma / amp
Base level = 0
Symbol = x——— x——— x

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

SOUTH HERCULES GRID
WEST COAST, TASMANIA

MAGNETIC INDUCED POLARIZATION DATA PROFILE

576110

5 cm

SURVEYED AND COMPILED BY

SCINTREX PTY. LTD.

APRIL 1974

74-1034

100 0 100 200 feet
1:1200

JOB No. TAS. 017 A SHEET 1 of 1 PLATE 2

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018

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BRIEF COMMENTS ON THE FEASIBILITY OF RESISTIVITY DEPTH SOUNDINGS OVER GLACIAL MORAINE USING EXAMPLES OF DEPTH DETERMINATIONS MADE AT BOBADILL, NEAR ROSEBERY TASMANIA ON BEHALF OF ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

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PRIVATE AND CONFIDENTIAL

BRIEF COMMENTS ON THE FEASIBILITY OF RESISTIVITY DEPTH SOUNDINGS OVER GLACIAL MORAINE USING EXAMPLES OF DEPTH DETERMINATIONS MADE AT BOBADILL, NEAR ROSEBERY TASMANIA ON BEHALF OF ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

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GEOPHYSICIST

SYDNEY, N.S.W.

APRIL, 1974

TAS - 022

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Introduction	Page 1
Method	Page 1
Discussion of Results	Page 3
Conclusions and Recommendations	Page 5

Plate 1 - Data Profiles

BRIEF COMMENTS ON THE FEASIBILITY OF RESISTIVITY DEPTH SOUNDINGS OVER GLACIAL MORAINE USING EXAMPLES OF DEPTH DETERMINATIONS MADE AT BOBADILL, NEAR ROSEBERY TASMANIA ON BEHALF OF ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

INTRODUCTION

On 4th April, 1974, operator B. Ekstrom and geophysicist A.W. Howland-Rose of Scintrex Pty. Ltd., together with Mr. W. Hill, geologist of the Electrolytic Zinc Company of Australasia Limited, carried out electrical soundings at three locations on the Bobadill grid, with a view to ascertaining the feasibility of the method in this area.

Appendix 'RSP-6' is a copy of the field manual which describes the procedures and instrumentation used.

METHOD

This method employs a small potential dipole, within a larger current dipole. The enclosed figure shows a diagrammatic representation of the current paths and the resultant potential field. The current potential is kept in place and the current electrodes are progressively expanded. As the current dipole is increased, progressively

deeper penetration is achieved by the array. In this way a depth sounding is made.

It is often necessary to carry out two soundings at right angles to ascertain the local inhomogeneities. If the soundings give similar results, the interpretation can be considered reliable, and the section approaches horizontal layers. If not, inhomogeneous resistivity distribution and/or non horizontal formations are present.

The resultant data can be matched to standard curves and an interpretation of the depths and resistivities of each zone estimated.

The interpretation of multi-layer curves is complex and as the system is to be applied to essentially two layer situations of supposedly conductive moraine overlying more resistive bedrock, only simple interpretation has been attempted here. It is proposed that the method will be able to be applied by Electrolytic Zinc Company of Australasia Limited's personnel from data collection to interpretation, in due course.

The data is processed using the formula set down below. The (Vp/I) term is read directly from the RSP-6, and 'K' is either calculated from the formula, or from graphs

constructed for the purpose.

$$\text{Apparent Resistivity } R = \pi \left(\frac{a^2}{b} - \frac{b}{4}\right) \left(\frac{Vp}{I}\right)$$

$$= K\frac{Vp}{I}$$

where 'I' is in amps, Vp in millivolts (the value recorded on the receiver is Vp/I) and 'K' is the constant which is tabulated below (a and b are in feet).

Some examples of 'K' factors are given below:

a	b = 3	5	10	25	50
10	0.031				
20	0.127	0.075			
40	0.510	0.509	0.151		
60	1.15	0.638	0.342	0.132	
100	3.19	1.913	0.955	0.377	
150	7.18	4.31	2.151	0.856	0.419
200	12.8	7.66	3.828	1.526	0.754

DISCUSSION OF RESULTS

The potential dipole selected for the survey was 4 feet, and the initial current potential used was 10 feet with progressive intervals to 250 feet as follows:

10, 15, 20, 30, 50, 75, 100, 150, 200 and 250 feet.

The data for two mutually perpendicular soundings at

5900N/3300W and 5900N/2000W, together with a single sounding at 2650N/5900W, are shown in Plate 1. The vertical scale is in ohm-metres and the horizontal scale is in feet, both expressed on a five inch log cycle.

Brief remarks on each sounding are made below:

5900N/3300W At current electrode separations greater than 30 feet, the two profiles show a marked divergence, indicating inhomogeneity or/and non-horizontal layering.

The data suggests resistivity contrasts at 10 feet and 45 feet, but contrary to expectations, the material at depth is conductive.

5900N/2000W The profile here shows no change in resistivity with increasing electrode spacing. This, together with the absolute resistivity of 2500 ohm-metres suggests that the cover in the area is superficial and that rock outcrop is within a few feet of surface.

2650N/5900W On this expander the profiles are similar out to electrode spacings of as great as a=100. Resistivity contrasts are suggested by the data at about 9 feet and at about 80 feet.

CONCLUSIONS AND RECOMMENDATIONS

1 - The curve shapes recorded in the area at 5900N/3300W and at 2650N/5900W are complex, but simple interpretations have been made. It is considered that soundings in the area should show much simpler forms, as the moraine generally has resistivities in the range of 50 ohm-metres to 300 ohm-metres, compared with bedrock resistivities of 5000 ohm-metres and more, in the Rosebery area.

2 - It is considered that Electrolytic Zinc Company of Australasia Limited's personnel will be able to collect data sufficient for the diagnostic interpretation of simple horizontal layering situations between glacial moraine and resistive bedrock.

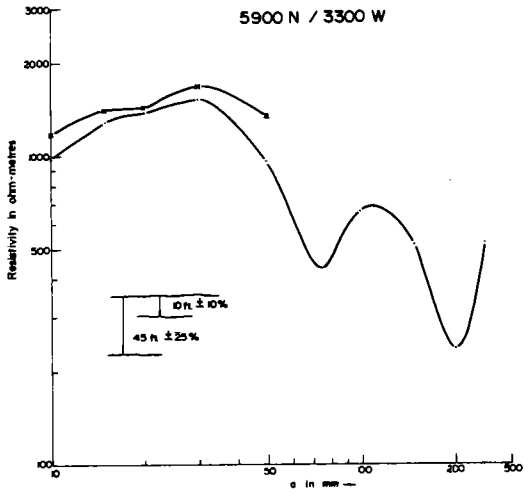
3 - It is recommended that further soundings be carried out by Electrolytic Zinc Company of Australasia Limited to test feasibility of the system.

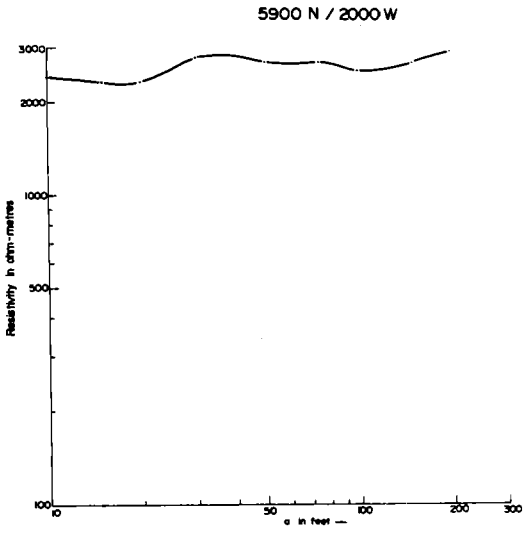
Respectfully submitted on behalf of:

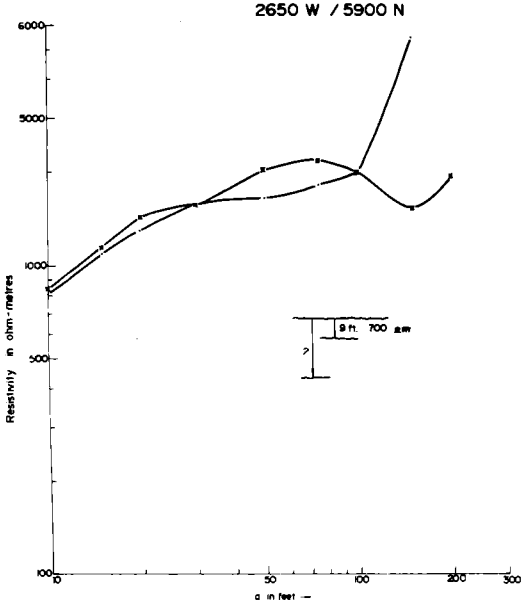
SCINTREX PTY. LTD.

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

GEOPHYSICIST







ALONG LINE

ACROSS LINE

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

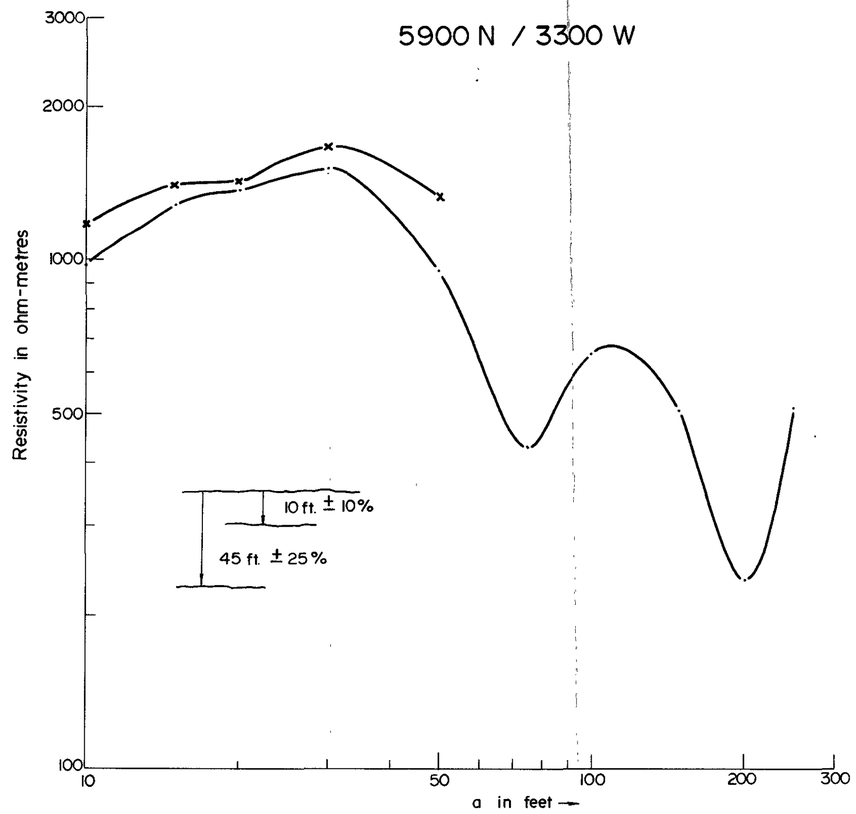
BOBADILL, NEAR ROSEBERY
WEST COAST, TASMANIA

SCHLUMBERGER ELECTRICAL SOUNDINGS

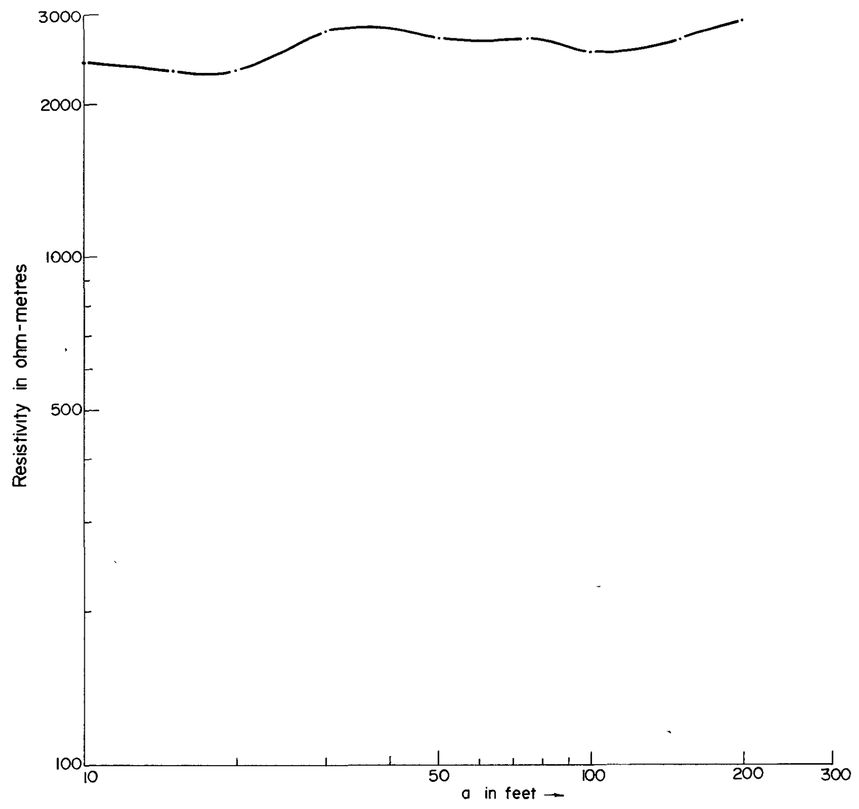
SURVEYED AND COMPILED BY
SCINTREX PTY. LTD.

JOB No. TAS. 022 SHEET 1 of 1 PLATE 1

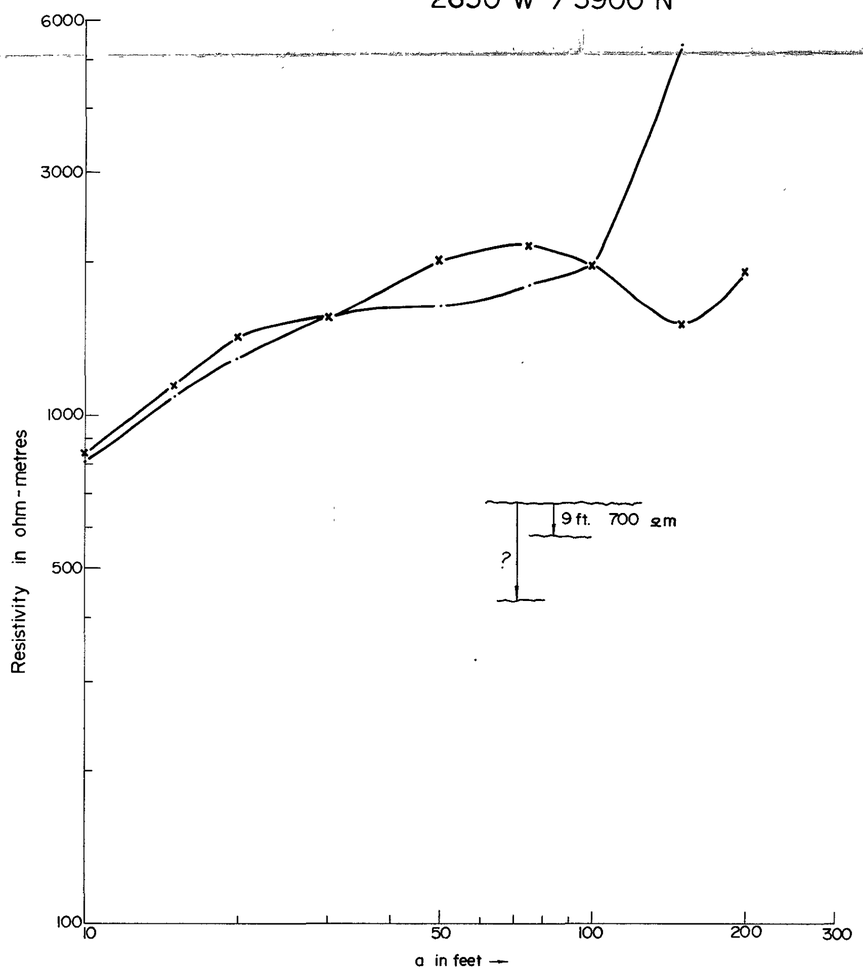
5900 N / 3300 W



5900 N / 2000 W



2650 W / 5900 N



·——· ALONG LINE
×——× ACROSS LINE

ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED

BOBADILL, NEAR ROSEBERY WEST COAST, TASMANIA

SCHLUMBERGER ELECTRICAL SOUNDINGS

576119

5 cm

SURVEYED AND COMPILED BY

SCINTREX PTY. LTD.

74-1034

JOB No. TAS. 022 SHEET 1 of 1 PLATE 1

028

576120

A.W.G. WHITTLE & ASSOCIATES.

MINERALOGICAL REPORT.

Report EZ/33.

GOSSANS: ROSEBERY AREA.

(REW.FB 18.4.74)

West Coast Mines

Rosebery.

DISTRIBUTION:

Copies 1 & 2 - Mr. R.E. Williams, Rosebery.
May 10, 1974.

GOSSANS: ROSEBERY AREA.

The report describes from polished sections, the mineralogical and textural characteristics of six gossans which were submitted by the Manager, West Coast Mines. From the boxwork and goethite replicas, the original sulphide mineralogy has been interpreted. Examples of these specific textures are illustrated.

Sample R. 07596 is not a gossan; but all of the others are. Amongst the true gossans, there are three which display very excessive degrees of leaching, viz. O/4454, O/4460, R.07595. However, even in these three examples the finest phase of sulphides has persisted without oxidation because of their complete locking within the quartz or baryte gangue.

In addition to the normal degree of leaching which attends gossan development, these samples display varying degrees of supergene ferruginisation by the deposition of colloform exotic limonite from groundwaters.

SOUTH DALLWITZ PROSPECT O/4451.

Pb 1400ppm: Zn 2000ppm: Cu 680ppm: Ag 37ppm: Au 0.2ppm.

Pyrite-magnetite-galena-sphalerite-tetrahedrite gossan.

The salient feature exhibited by a section cut transversely to the structure of this gossan, is the evidence of copious mineralisation along the cleavage structure of the very fine grained fissile host rock. The host rock has been completely ferruginised, but the goethite replicas of the oriented silicate minerals are judged to have been mainly sericite or chlorite.

The host rock also contained fine grained quartz and magnetite which are distributed as strings of granules in the cleavage planes.

This might reasonably be interpreted as fissile altered acid volcanic material, rather than a normal argillaceous sediment.

Elongate, unreplaced relics of this host rock are distributed erratically through the mineralised zone; and they are accompanied by very prominent magnetite aggregates which are only marginally oxidised to hematite. Limonite-impregnated secondary clay minerals, which developed from the silicate components of the host rock, are dispersed amongst the goethite boxwork and replicas of the ore mineral assemblage.

The spread of the ore minerals was along the host rock cleavages, apparently following shears. There is a limited amount of gangue quartz; probably the magnetite was the main gangue mineral.

Within the sheared-mineralised zones there are numerous goethite replicas of pyrite of 1-2 mm size. They are commonly associated with slightly martitised magnetite aggregates of similar size.

The content of galena is expressed as goethite replicas, and as boxwork with (100) and (111) crystallographic characteristics. These range in size from 0.5 to 1.0 mm. However, there are also complexed boxworks which formed from binary grains of galena-tetrahedrite; and these appear as elongate cellular forms of 1.3 X 0.5 mm maximum size, oriented along the shears. These exhibit the galena structure complexed with the contour type tetrahedrite structure.

There are separate tetrahedrite boxworks of 0.25-0.5 mm size; and separate open galena structures which merge into ferruginised goethite replicas. The latter have a size of 1.6 X 0.8 mm. The largest open cellular galena forms were 2.5 X 2.5 mm, but these have been extensively disintegrated by leaching with the loss of most of the cell walls.

The content of sphalerite is manifest in acutely angular sponge boxwork of 1.3 X 1.3 mm maximum size. There are no recognisable structures from chalcopyrite, hence it would appear that the copper content of the gossan was inherent mainly in the tetrahedrite. Since there are retained in the unoxidised magnetite, sparse minute inclusions of chalcopyrite of less than 0.01 mm size, minor copper also emanates from this source.

The sparse quartz gangue retains in the unoxidised state, grains of both galena and sphalerite of less than 0.02 mm size. Particles of galena are more common than those of sphalerite.

The strange feature of the gossan is the abundant and widespread magnetite which displays only marginal martitisation in an environment of highly advanced oxidation and leaching. This may be due to the stability of magnetite in an environment of positive Eh and low pH created by the oxidation of the sulphides.

The illustrations, Figs. 1 and 2 provide examples of the galena and tetrahedrite boxwork, while Fig. 3 shows the minute specks of chalcopyrite in magnetite.

KOONYA PROSPECT. O/4453.

Pb 2200ppm: Zn 1200ppm: Cu 2000ppm: Ag 92ppm: Au 3.0 ppm.

Zoned-banded quartz-pyrite-sphalerite-galena-tetrahedrite gossan.

The gossan has a banded structure, and it contains copious quartz, limonite-impregnated clays, sulphide boxwork, and minute relic sulphide grains. The impression is that the whole sample is lode material since no part of it has the characteristics of host rock. The clay minerals may have been entrained portions of host rock, but the main mass was a banded-zoned quartz-sulphide lode assemblage.

The zoned structure follows the megascopically visible structure of the gossan. There are three distinguishable zones within the specimen.

The thickest zones consist of quartz with copious euhedral pyrite boxwork of 0.05-0.5 mm size; with or without elongate areas of limonitic clay mineral. Boxwork from other sulphides is not distinguishable in the pyritic zones, but the gangue quartz retains as unoxidised inclusions, numerous galena particles of 0.015 mm maximum size, and lesser numbers of pyrite granules of 0.030 mm maximum size.

In thinner (1-3 mm) discontinuous zones there are acutely angular

sphalerite boxworks of 0.5 X 0.3 mm maximum size; isometric pyrite leach voids, boxwork and replicas of 0.2-0.4 mm size; and contour type tetrahedrite boxwork of 0.2-0.4 mm size. The associated quartz contains preserved minute galena and pyrite.

Further thinner (1-3 mm) zones, which are also discontinuous along the banded structure, embody galena boxwork in which the (111) partitions have been variably obscured by secondary microcrystalline limonite. The galena boxwork occupies one end of these zones, and tetrahedrite boxwork occupies the other end. Beyond the extremities, these zones merge into the broader zones of pyritic boxwork. The galena boxwork is in complexed aggregates of cells of several mm X 1 mm; while the tetrahedrite cells are less than 1 mm in size, with lobulate external forms. The associated quartz contains copious galena granules, as well as smaller numbers of pyrite granules.

Chalcopyrite does not appear as preserved granules in the quartz, nor are there any quadrangular boxwork structures. Presumably the tetrahedrite provided the copper characteristic of the gossan.

Figs. 4 and 5 provide examples of sphalerite boxwork.

KOONYA PROSPECT. O/4454.

Pb 1100ppm: Zn 870ppm: Cu 2800ppm: Ag 96ppm: Au 2.9ppm.

Leached quartz-tetrahedrite-pyrite sphalerite-galena gossan.

Apart from vague evidence of banding, there is little distinguishable structure in the gossan. Its main feature is its very extensively leached nature, and the preponderance of residual gangue quartz. Most of the sulphide boxwork was apparently disintegrated; and scarcely enough of the internal partitions remains to aid diagnosis of the former sulphide species. In addition to quartz, there remain colloform banded deposits of secondary limonitic clays, and the original intergranular deposits of colloform limonite.

The quartz in the gossan retains specks of unoxidised sulphide

grains despite the advanced leaching. These include numerous galena granules of 0.001-0.030 mm size, fewer granules of sphalerite of 0.01 mm average size, minute prisms of ilmenite, and very sparse pyrite.

Tetrahedrite boxwork is the most prominent sulphide indicator. Examples range in size from 1.5 X 1.0 mm to 2-3 mm. The larger ones display inclusions of the boxwork of pyrite of 0.1-0.4 mm size indicating that these were developed from binary intergrowths, Fig. 6.

There are in the area of the section, several sphalerite boxworks of 0.5 X 0.5 mm maximum size, but only one small remnant of galena boxwork still displaying parts of the (111) partitions. Poorly preserved pyrite boxwork is apparent here and there, but it does not appear to have been a very prominent mineral. Chalcopyrite boxwork is absent.

The dominance of tetrahedrite boxwork probably accounts for the high copper and silver contents of the gossan. In view of the apparent sparse distribution of galena boxwork, the bulk of the lead content would be contributed by the numerous preserved galena granules.

ROSEBERY OPEN CUT. O/4460.

Pb 8800ppm: Zn 2800ppm: Cu 760ppm: Ag 3600ppm: Au 10.6ppm.
Highly leached-ferruginised quartz-baryte-base metal sulphide gossan.

Only about 30% of the original gossan remains in this sample. The remainder has been disintegrated and removed by leaching; and it has been replaced to some extent by colloform banded and microcrystalline massive limonite.

A few remnants of pyritic boxwork, and vague indications of other varieties of sulphide boxwork may be distinguished amongst the fillings of the voids by the exotic limonite. Accordingly, little can be said about the original assemblage.

A large proportion of the metal contents exists as preserved sulphide granules in quartz and baryte. The silver is manifest in

widespread small groups of native metal granules of 0.001-0.020 mm size, within the exotic limonite cavity fillings, Fig. 7.

Baryte and quartz were major gangue components, and there were apparently some silicates which are persistent as secondary limonitic clay deposits in open spaces.

There is an abundance of galena particles of 0.001-0.030 mm size within quartz and baryte. These also contain copious preserved sphalerite with a maximum size of 0.06 mm, as well as a few binary sphalerite-galena grains, and occasional tetrahedrite. These minerals, and the native silver are in sufficient abundances to account for much of the geochemical characteristics, but it is also probable that some base metal is occluded by the secondary limonite. The latter comment may apply particularly to copper.

Cu 0·03% Fe 6·8% ROSEBERY OPEN CUT. R.O 7595.
Pb 0·8% Ag 175g/t
Zn 0·1% Au 0·7g/t (geochemistry not available)

Leached-ferruginised quartz-baryte-pyrite-galena-sphalerite-tetrahedrite gossan.

Although this gossan has been modified by extensive leaching, and by subsequent refilling of the voids by exotic colloform banded microcrystalline limonite deposits, there remains a good enough range of the original sulphide boxwork forms to characterise the original ore.

Quartz and baryte gangue, with an irregularly granular texture, formed some 25-30% of the original assemblage; and neither has been affected by the leaching. These, and the relics of sulphide boxwork are presently encrusted by the subsequent deposits of exotic limonite, Fig. 8.

The quartz and baryte retain preserved sulphide granules. These include major galena with lesser numbers of sphalerite and pyrite, as well as rutile and ilmenite. Most of the sulphide granules are

less than 0.02 mm in size, while the titania minerals are somewhat larger. Very sparse minute particles of native silver were noted within the colloform limonite.

The relic boxwork includes the structures found in the foregoing samples, but since they are all fairly small, this appears to have been fine grained ore.

Galena (100) cleavage boxwork was best preserved, and it is quite widespread. Structures ranging in size from 0.1-0.4 mm can be distinguished; and in addition, there are examples of the boxwork of former binary intergrowths. The latter include galena-pyrite; galena-tetrahedrite; and galena-sphalerite complexes, each of which had a maximum size of 0.5 mm.

Single sphalerite boxwork of 0.3-0.5mm size; and single rhombic carbonate cells of 0.06 mm size, are also visible.

It is predicted that this gossan should exhibit high lead and zinc, and lower copper and silver values.

Cu 0.03%
Pb 4.8%
Zn 0.3%
Fe 6.8%

HERCULES "A" LODE OPEN CUT. R.O 7596.

Ag 4.1g/t
Au 0.6g/t

(geochemistry not available)

Ferruginised-silicified-tourmalinised acid volcanic: non-gossanous.

There are no characteristics which would prompt the classification of gossan in the case of this rock. It may be a slightly gossanous rock with geochemical values, but it is not the gossan of lode material.

This is interpreted as the ferruginised and silicified equivalent of a very highly tourmalinised, formerly sericitised acid volcanic rock. It presently consists of the earthy limonite pseudomorphs of fine flakey silicates, probably sericite and chlorite; of fine grained quartz; silicified tourmaline sheaves; and small amounts of disseminated rutile and ilmenite.

There are veins of quartz in various parts of this rock, but only small amounts of this contain minute galena grains; the rest is barren in respect to all sulphides.

There is no positive evidence in boxwork or replicas, of the existence of sulphides other than sparse pyrite in the ferruginised host rock.

The geochemistry of this rock should be of a low order of magnitude, although some exotic scavenged base metals may have been picked up by the secondary limonite.

A.W.G. Whittle & Associates,
Mineralogical Consultants.

May 10, 1974.

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576129

ELECTROLYTIC ZINC (AUSTRALASIA) LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. WSP 191
Sht 1 of 2

		Footage	Direction	Dip.	Footage	Direction	Dip.		
LOCATION	E.L. 11/62 MT BLACK – WHITE SPUR GRID.							COLLAR DIP. – 85°	TOTAL DEPTH 659'
OBJECTIVE	TO TEST TURAM ANOMALY (D.H.R.)	100'	–	-71.5°	500'	252°M	-42°	DIRECTION GRID WEST (273°M)	HOLE SIZE BQ
		200'	–	-63°	600'	–	-41°	R.L.	COMMENCED 5-7-73
RESULT	NO REASONABLE EXPLANATION FOR TURAM ANOMALY:	300'	250°M	-55°				COORDINATES 7200S, 3[illegible]W	COMPLETED -7-73
THE TURAM ANOMALY DOES NOT APPEAR PARTICULARLY SIGNIFICANT ON REEXAMINATION		400'	–	-49.5°					LOGGED BY R.E.N.

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag-oz	Au-dwts	Fe%	CORE REC'D RUN	SHORT
0	34'	Pale grey green felspar xtal lithic tuff; weakly oxidised; oxidation strong on joints etc. ~~Tuff~~ Foliation core < 35°	Nil					NO MINERALISATION PRESENT.						0-14'	7
														14-48'	0
														48-58'	2'
														58-659'	0
34'	70'	Pale grey weakly banded siltstone Bedding core < 35° Core very broken Moderate oxidation 50-55'													
70'	185'	U.f.g ash tuff, siliceous, rarely banded Banding core < 30° 125-127' Brecciated 140-170' banding strongly contorted 170' Minute ~~pt~~ flecks													
185'	198'	U.f.g. felspar crystal tuff, massive, siliceous.													
198'	242'	U.f.g. ash tuff (as for 70-185') 225' Minor breccia with chl cement 228-234' " " 238-240' " "													
242'	253'	Autobrecciated f.g cherty rhyolite													
253'	314'	Massive f.g siliceous ash tuff; contains fine felspar xls. Banding core < 30° but varies to 0°													
	–	258' Xls of felspar & chlorite													

001

576130

ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. WSP 191
Sheet 2 of 2.

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%			CORE REC'D RUN	SHORT
253	319'	(cont'd)	Nil														
		287' Brecciated with chl. vns.															
		305' Core < 30° for banding															
319'	392'	Massive lithic tuff, rare shards.															
		Shale fragments < 6 cms to 345'															
		345'+ shale fragments to 1cm; xts in															
		matrix. Foliation core < 30°.															
392'	464'	Lithic tuff (rhyolitic); pink coloured															
		lithic fragments in pink coloured matrix;															
		rare black shale fragments															
		443 - 445' 3 narrow bands of black shale															
		(facing down hole?)															
		448' narrow band of black shale															
		456' - 464' Brecciated with massive															
		qtz veining, rare py shelvages.															
464'	659'	Massive feldspar crystal lithic tuff;															
		lithic fragments are predominantly															
		massive f.g. rhyolite.															
		A varying degree of pink colouration															
		is present within the lithic															
		fragments, the matrix and crystals															
		present – is this due to albite?															
		525' Mnr. qtz veining.															
		END OF HOLE 659.'															

002

576131

ELECTROLYTIC ZINC (TASMANIA) LTD
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. WHP 192. Sht. 1 of 6

LOCATION WEST HERCULES PROSPECT
OBJECTIVE TO TEST SOIL GEOCHEMICAL & GRADIENT ARRAY I.P. ANOMALIES ON LINES 005, 200N & 400N WHITE SPUR GRID.
RESULT
NO SIGNIFICANT MINERALISATION.

Footage	Direction	Dip.	Footage	Direction	Dip.
100'	—	−57°	500'	—	−41°
200'	254°M	−56°	600'	249°M	−36°
300'	—	−50·15°	700'	—	−36°
400'	216°M.?	−45°	800'	248°M	−36½

COLLAR DIP. −60·5° DIRECTION 254°M. R.L. COORDINATES White Spur 400N 70W
TOTAL DEPTH 1351' HOLE SIZE BQ to 560' AQ to 1351'
COMMENCED 6th Dec 1973 COMPLETED 21st Jan 1974. LOGGED BY R.E. WILLIAMS.

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag	Au-dwts	Fe%	CORE REC'D RUN	CORE REC'D SHORT
0	15'6"	NX core, drilled thru rock fill; no core retained.												0-15'6"	No core
							Nil							NO CORE	
15'6"	37'6"	"Footwall Agglomerate": v.f.g. siliceous fragments (possibly derby frags) in a f.g. grey sericite matrix. Foliation ∠ 30°	10% dis euhedral py	D4545	15'6"	20'6"	5·0	0·7	1·1	0·02			2·5	Loss	From
			2% dis gn; rare clots of gn	D4546	20'6"	25'6"	5·0	0·2	0·2	<0·01	3 ppm		1·8	15'6"	to 437
				D4547	25'6"	30'6"	5·0	0·4	0·3	0·01	6 ppm		2·0		
37'6"	47'0"	Massive f.g. siliceous rhyolite as above bit without the foliation.	8% dis py; stringers 20% py rare 2% dis gn.	D4548	30'6"	37'6"	7·0	0·5	0·7	0·02	4 ppm		0·9		
				D4549	37'6"	42'6"	5·0	0·3	0·3	<0·01	3 ppm		0·7		
47'0"	49'0"	f.g. derby material & fe ox., py banding. Banding contorted and brecciated	8% dis & banded py	D4550	42'6"	47'0"	4·6"	0·8	1·6	0·11	10 ppm		1·7		1
				D4551	47'0"	49'0"	2·0	0·6	0·2	<0·01	6 ppm		2·3		
49'0"	79'0"	f.g. pale green lithic tuff; frags not distinct but are pale grey in colour, are f.g. & derby, <5 cms in length; Fragments elongated at 30° Occ 2% cb veining	< 5% dis py.	C0001	49'0	59'0	Chip	0·0340 3·0	0·0535	0·0010	2 ppm				
				C0002	59'0	69.0	"	0·75%	0·0470	0·0002	0·0002				
				C0003	69.'0	79·0	"	0·0285	0·0355	0·0002	0·0001				
										0045					
79'0	90'0"	f.g. pale green lithic tuff as above bit with clots of cb or felspar	5% dis py	D4552	79'0"	84'6"	Nil	0·1	0·1	<0·01 .0020	2 ppm		1·1		
			2% dis gn	D4553	84'6"	90'0"	"	0·1	0·1	<0·01 .0055	2 ppm		0·1		
90'0"	97'6"	f.g. pale grey to green lithic tuff; lithic fragments are not distinctive.	3% dis py	D4554	90'0"	94'0"	"	0·1	0·1	<0·01	2 ppm		0·1		
			2% " gn	D4555	94'0"	97'6"	"	0·2	0·4	0·01	3 ppm		0·9		
97'6"	102'0"	as above	5% gn, 1% sp, 3% py as patches	D4556	97'6"	102'0"	"	0·4	1·9	0·08	10 ppm		2·1		
102'0"	105'0"	as above but pale grey	3% gn, 1% sp, 3% dis py.	D4557	102'0"	105'0"	"	0·4	0·3	<0·01	3 ppm		1·4		
105'0"	106'0"	Alt. altered with dis sulphides & foliation core ∠ 30°	10% dis py, 4% dis sp, 1% dis gn	D4558	105'0"	106'0"	"	0·1	0·1	<0·01	2 ppm		0·1		
106'0"	111'0"	Pale grey lithic tuff; lithic frags f.g. & derby	5% dis gn mnr dis py, sp.	D4559	106'0"	111'0"	"	0·2	0·3	0·02	2 ppm		2·3		
111'0"	302'0"	As above	Mnr dis py & gn < 5%	C0004	111'0	121'0	Chip	0·0030	1·7500	0·0045	0·0001				
		121' 6" band of Alt with 10% dis py.		C0005	121'0	131'0	"	0·0260	0·9500	0·0020	0·0001				
		132' – 138' 2% cb veining to 18"		C0006	131'0	141'0	"	0·0270	0·0475	0·0055	0·0001				
				C0007	141'0	151'0	"	0·0060	1·5500	0·0165	0·0002				
				C0008	151'0	161'0	"	0·0080	1·7500	0·0055	0·0001				
		162', 167'-170' 2% cb veining.		C0009	161'0	171'0	"	0·0500	0·0160	0·0120	0·0002				
				C0010	171'0	181'0	"	0·0110	0·0055	0·0030	<0·0001				

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ELECTROLYTIC ZINC CO. OF AUSTRASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. RHP 192 Sht 2 of 6

LOCATION	Footage	Direction	Dip.	Footage	Direction	Dip.	COLLAR DIP.	TOTAL DEPTH
OBJECTIVE	900'	–	-34½°	1130'	–	-23°	DIRECTION	HOLE SIZE
	975'	–	-33°	NO FURTHER SURVEYS			R.L.	COMMENCED
RESULT	1000'	250°M	–	AS HOLE TOO FLAT.			COORDINATES	COMPLETED
	1050'	249°M	-28°					LOGGED BY

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	CORE REC'D SHORT
5'	302'	(Contd)		C0011	181'0	191'	Chips	0·0345	2·20%	0·0020	<0·0001				
		180'-182' ¼-cm veining; 182-187' Other frags Rediminel?	Minr py, gn	C0012	191'	201'	"	0·0435	0·0235	0·0075	0·0001				
		191', 193', 196', 199' ¼ cm veining		C0013	201'	211'	"	0·0520	0·90%	0·0010	<0·0001				
		207' ¼ cm veining		C0014	211'	221	"	0·0330	0·65%	0·0005	<0·0001				
		213', 215', 219' ¼-cm veining		C0015	221'	231'	"	0·0140	0·0270	0·0060	<0·0001				
				C0016	231'	241'	"	0·0030	0·0095	<0·0002	<0·0001				
		235' ¼ cm veining		C0017	241'	251'	"	0·0035	0·0045	<0·0002	<0·0001				
		247' foliation conc < 40°		C0018	251'	262'	"	0·0040	0·0060	<0·0002	<0·0001				
				D4560	262'	267'	SPLIT	0·1	0·09	<0·01	2ppm		0·7		
			262-273' patchy 5% py, 3% gn diss.	D4561	267'	273'	"	<0·01	0·05	0·03	4ppm		0·6		
		274-282 ¼ cm veining		C0019	273'	283'	Chips	0·0215	0·0380	0·0100	0·0001				
			293'-297' 5% patchy py.	C0020	283'	293'	"	0·0375	0·0565	0·0100	0·001				
				D4562	293'	297'	SPLIT	0·2	0·4	0·09	8ppm		0·8		
302'	355'	Lithic tuff: frags mod smaller than previously; ? pumice clasts; Tuff is probably welded; 314', 317' Minor ¼-cm veining		C0021	297'	302'	Chips	0·0585	0·0225	0·0060	0·0002				
				C0022	302'	322'	"	0·0140	0·0125	0·0002	0·0001				
				C0023	322'	342'	"	0·0015	0·0265	<0·0002	<0·0001				
				C0024	342'	355	"	0·0015	0·0120	<0·0002	<0·0001				
355'	356'	Sericitic tuff: foliation conc < 50°		D4563	355'	356'	SPLIT	0·1	0·1	<0·01	2ppm		0·9		
356'	377	Crystal lithic tuff; 5% fels x-ls, dominantly lithic frags < 1cm, fine flow like text.	rare py.	C0025	356'	377'	Chips	0·0010	0·0220	<0·0002	<0·0001				
			362' 4" patch of 20% py.												
377'	401'	Lithic tuff, as above but less fels x-ls. Narrow bands of fg tuff; ± ll tuff		C0026	377'	389'	"	0·0035	0·70%	0·0002	0·0001				
				C0027	389'	401'	"	0·0060	0·0340	0·0002	0·0001				
401'	432'	Massive fg ash tuff; rare pumice lithic tuff bands; undulant banding in part More ll towards 432' Contact < 40°	no mineralisation	C0028	401'	416'	"	0·0415 ~~0·0310~~	0·0425	0·0010	0·0001				
				C0029	416'	432'	"	0·0480 ~~0·0070~~	0·0215 ~~0·0215~~	0·0020	0·0001				

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. WHP 192
Sheet 3 of 6

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%			CORE REC'D RUN	CORE REC'D SHORT
432'	441'	Narrow 3" band of fels xt tuff then siliceous		C0030	432'	441'	Chip	0.0080	1.55%	0.0010	0.0001					No core loss	
		lithic tuff with qtz cb veining								~~[illegible]~~						to 437'	
441'	447'	strongly bleached ox frag xt tuff		C0031	441'	447'	"	0.0400	0.0320	0.0020	0.0001					437'-447'	1'
447'	451'	Ox f.g. banded shale, brecciated etc.		C0032	447'	451'	"	1.25%	0.0485	0.0095	0.0003						
451'	467'6"	Banded black shale & siltstone bedding <35°-40°	5-10% diss euhedral py.	D4564	451'	459'	Stut	0.1	0.1	<0.01	4 ppm		1.3				
		Some bands strongly oxidised.		D4565	459'	467'6"	"	0.1	0.3	0.03	5 ppm		2.6				
467'6"	510'	Volcanic breccia; lithic frags to 9" dia.		C0033	467'6"	490'	Chip	0.0125 ~~0.0050~~	0.0100	0.0020	0.0004						
		frags includes black shales, xt tuffs, vt tuffs		C0034	490'	510'	"	0.0050 ~~[illegible]~~	0.0060 ~~[illegible]~~	0.0005	0.0001						
		matrix contain felsp xts.															
510'	567'	as above but no large shale frags.		C0035	510'	530'	Chip	0.70%	0.70%	0.0010	0.0004						
				C0036	530'	550'	"	0.0290	0.0490	0.0005	0.0001				540'	BQ	
				C0037	550'	567'	"	0.0120	0.0115	0.0002	0.0001					AQ	
567'	627'	as above but fragments smaller		C0038	567'	587'	Chip	0.0020	0.0075	0.0002	0.0001						
		∴ lithic tuff. probably more xts in matrix		C0039	587'	607'	"	0.0060	0.0100	0.0002	0.0001						
				C0040	607'	627'	"	0.0010	0.0040	0.0002	0.0001						
627'	737'	xt lithic tuff; matrix & rock frags		C0041	627'	647'	Chip	0.0010	0.0040	0.0002	0.0001						
		have orange colour; pink fels xts;		C0042	647'	667'	"	0.0010	0.0030	<0.0002	<0.0001						
		lithic frags are ~~same~~ same composition		C0043	667'	687'	"	0.0015	0.0035	<0.0002	<0.0001						
		but some have black matrix.		C0044	687'	707'	"	0.0010	0.0030	<0.0002	<0.0001						
		669'-674' as above but not pink															
		694'-704' " " " "															

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY — TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. WHP 192
Sheet 4 of 6

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%			CORE REC'D RUN	SHORT
7'	737'	(Cont'd)		C0045	707'	727'	Chips	0.0010	0.0035	<0.0002	0.0001						
				C0046	727	737	"	0.0035	0.0045	<0.0002	<0.0001						
737'	985'	Dominantly pale grey-green xt lithic tuffs as above, patches of pink coloured xt lithic tuff. xt are felspar banding < 30°		C0047	737'	757'	"	0.80%	0.0455	0.0115	0.0001						
				C0048	757'	777'	"	0.0010	0.0030	<0.0002	<0.0001						
				C0049	777'	797'	"	0.0010	0.0030	<0.0002	<0.0001						
				C0050	797'	817'	"	0.0020	0.0040	<0.0002	<0.0001						
	800			C0051	817'	837'	"	0.0010	0.0040	0.0002	0.0001						
				C0052	837'	857'	"	0.0015	0.0060	0.0005	0.0001						
				C0053	857'	877'	"	0.0010	0.0055	0.0002	<0.0001						
				C0054	877'	897'	"	0.0070	0.0160	0.0005	0.0001						
				C0055	897'	917'	"	0.0020	0.0065	0.0002	<0.0001						
	900			C0056	917'	937'	"	0.0015	0.0070	0.0005	<0.0001						
				C0057	937'	957'	"	0.0110	0.0140	0.0010	0.0001						
				C0058	957'	977'	"	0.0080	0.0150	0.0002	<0.0001						
				C0059	977'	985'	"	0.0025	0.0070	0.0010	0.0001						
				B4566	985'	990'	Small	0.1	0.1	<0.01	3 ppm		1.4				
				B4567	990'	995'	"	0.1	0.09	<0.01	3 ppm		1.3				
				B4568	995'	1000'	"	0.2	0.6	0.04	5 ppm		2.0				
				B4569	1000'	1007'	"	<0.01	0.3	0.03	5 ppm		1.7				
985'	1057'	Interbedded black, grey shales and tuffaceous sandy beds; — dominantly black shales.	Mnr stringers of massive py < 5% diss py.	C0060	985'	1007'	Chip	0.65%	6.6%	0.0020	0.0002	←	High Zn due to narrow vein of sp.				

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. WHP 192
Sheet 5 of 6

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	CORE REC'D SHORT
985'	1057'	(cont'd). Bedding core < 45°	Mnr stringers of massive py	C0061	1007'	1017'	Chips	0.0045	0.0125	0.0040	0.0001				
		Graded bedding in numerous beds.	< 5% diss py.												
		suggests facing is up down the		C0062	1017'	1037	"	0.0125	0.0360	0.0050	0.0004				
		hole (as west facing)													
		Cb bands well in shale		C0063	1037'	1057'	"	0.0045	0.0190	0.0030	0.0002				
		Mnr distinctly tuffaceous bands													
1057'	1092'	Pale grey coloured lithic tuff. Fragments		C0064	1057'	1077'	"	0.0050	0.0120	0.0010	0.0001				
		include black shales and dark													
		acid volcanic fragments. Tuff is		C0065	1077	1092'	"	0.0030	0.0065	0.0005	<0.0001				
		almost completely lithic fragments –													
		– little matrix material.													
		1072 – 5" band of Sbss < 45°													
		1073 – 1" " " "													
		tuff becomes finer grained down hole.													
1092'	1102'	Gradual change to ash flow lithic tuff; includes		C0066	1092'	1102'	"	0.0030	0.0195	0.0005	<0.0001				
		Sbs fragments; dulent flow text.													
		1102' – 4" black shale band.													
1102'	1135'	f.g. ash tuff; pale grey colour; includes		C0067	1102'	1122'	"	0.0055	0.85%	0.0002	<0.0001				
		fine flat & lithic fragments													
				C0068	1122'	1135'	"	0.0050	0.0010	<0.0001	<0.0001				
1135'	1164'	Interbedded black shales and dark grey	< 5% diss py; mnr stringers py												
		tuffaceous greywackes – Dominantly black		C0069	1135'	1150'	"	0.0095	0.0100	0.0045	0.0001				
		shales bedding core < 50°													
				C0070	1150'	1164'	"	0.0035	0.0070	0.0040	0.0001				
1164'	1209'	Grey tuffaceous greywackes – with mnr		C0071	1164'	1179'	"	0.0050	0.0120	0.0020	0.0001				
		shale bands.													
				C0072	1179'	1194'	"	0.0025	0.0065	0.0020	0.0001				
				C0073	1194'	1209'	"	0.0045	0.0075	0.0030	0.0002				
1209'	1351	Interbedded grey & black shales with mnr	< 5% diss py; mnr stringers py												
		coarser grained greywacke units < 65°		C0074	1209'	1223'	"	0.0085	0.0580	0.0060	0.0004				
		Numerous sedimentary structures													

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. WHP 192
Sheet 6 of 6

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%			CORE REC'D RUN	SHORT
1209'	1351	(cont'd) suggest facing to be downhole i.e. west facing	< 5% dis py, more stringer of py	C0075	1223'	1237'	Chips	0.0025	0.0080	0.0056	0.0002						
		Mnr qtz-cb veining		C0076	1237'	1251'	"	0.0045	0.0100	0.0050	0.0001						
		bedding core < 60°		C0077	1251'	1271'	"	0.0040	0.0125	0.0030	0.0001						
				C0078	1271'	1291'	"	0.0100	0.0225	0.0035	0.0001						
				C0079	1291'	1311	"	0.0040	0.0130	0.0025	0.0002						
				C0080	1311'	1331'	"	0.0035	0.0115	0.0040	0.0001						
				C0081	1331'	1351'	"	0.0090	0.0145	0.0040	0.0002						
		1351' END OF HOLE.															

N.B. Sampling:
1/ Normal split sampling

2/ C number series is chip sampling over 10' or 20' intervals. This sampling consisted of taking small chips of core every (a) ~2' for 10' chip interval
(b) ~3' " 20' " "

/008

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ELECTROLYTIC ZINC CO. OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. WHP 193 Sheet 1 of 4

LOCATION EL. 1/62 MT BLACK: WEST HERCULES	Footage	Direction	Dip.	Footage	Direction	Dip.	COLLAR DIP. −63°	TOTAL DEPTH 1357'
OBJECTIVE TO TEST GEOCHEMICAL SOIL & INDUCED POLARIZATN ANOMALIES	100'	286°M	−59°	500'	282°M	−45½	DIRECTION 292°M	HOLE SIZE 0-443 BQ/443-1357
RESULT GEOPHYSICAL ANOMALIES EXPLAINED (DSS. PY)	200'	285·5M	−56°	600'	277°M	−42°	R.L.	COMMENCED 23 - 1 - 74
	300'	282°M	−51½	700'	265°M	−39°	COORDINATES	COMPLETED 22 - 2 - 74
	400'	—	−48½	800'	278°M	−33°		LOGGED BY R.E.W.

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	SHORT
0	119'	Siliceous lithic tuff; in part massive; most has f.g. grey siliceous fragments, some augen shaped in a f.g. siliceous matrix	Rare py (< 5%) Rare gn, sp.												
119'	175'	f.g. pale grey vitric tuff, narrower dark blue green bands due to increased chlorite content. 140' – moderate oxidation	mnr veins of g-cb < 30°	1											
175'	197'	Dominantly pale green vitric tuff with clots of cb or bleached felspar Clots suggest crude banding < 30° Narrow bands of pale grey vitric tuff. 178 – 184' mod – strongly oxidised													
197'	251'	Variable lithic, vitric and vitric lithic tuff. Erratic large g-cb clots and aggregates of cb clots. 234-251' – Cb oolites?	231 - 234 | 5% disp py in mnr gn, sp.												
251'	855'	Pale grey-green lithic tuff; chlorite on mnr cleavage planes gives banding < 30-45° Strongly leached in part – after cb?													

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ELECTROLYTIC ZINC CO. OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. WHP193
Sheet 2 of 4

LOCATION
OBJECTIVE
RESULT

Survey Data: Acid tube would not go past 1100'. Radiolite not giving reproducable results.

Footage	Direction	Dip.
870'	266°M	–
900'	–	-26°
1000'	–	-22½°
1090'	–	-22°

Footage	Direction	Dip.
1100'	–	-21½°

COLLAR DIP.	TOTAL DEPTH
DIRECTION	HOLE SIZE
R.L.	COMMENCED
COORDINATES	COMPLETED
	LOGGED BY

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag-oz	Au-dwts	Fe%	CORE REC'D RUN	SHORT
251	855'	(contd).													
		377' Base of oxidation Marine lithic tuff, pomice and flow textures													
		550' as above: pink alteration (albitisation?) present.													
		767' - base of pink alteration 767' - 855' lithic tuff as above but without pink alteration	730' 5 cms wide q-cb vns at ∠30°												
			782' q-cb vn with py.												
			832', 835' 2½-cb vns 840", 845' " " "												

010

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ELECTROLYTIC ZINC CO OF AUSTRALASIA LTD
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. DDH 193 Sheet 3 of 4

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	SHORT
555	862	Pale grey-green ash tuff.													
862	880	Banded pale grey to black shale Bedding core < 60° Sedimentary structures suggest facing is up down hole	5% dis & thin mes. bands py												
			880'-880'5" Mass sulphide with sulphide (grey black) = stibnite?	D4193	880'	880'5"	5"	0·4	0·8	0·04	26g/t.		32·2		
880'	899'	Tuffaceous greywacke, lithic frags in a silty matrix.													
899'	939'	Banded shales as above and fine ash tuff bands interbedded. Also Narrow bands of tuffaceous greywacke with frags to 2 cms. Bedding core < 60° Sedimentary structures suggest facing is up down the hole	5% dis. py												
939'	956'	Banded and in part graded lithic tuff with mas ash tuff interbands													
956'	1357'	Coarse lithic tuff; some fragments reach breccia size. Lithic fragments are variable in composition and include fragments of black shale, pumice and other felsic volcanics. Matrix contains between 5 & 30% felspar (variable)													

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY — TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. WHP193 Sheet 4 of 4

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	CORE REC'D SHORT
956'	1357'	(cont'd)													
		1070' minor pink alteration (albite?)													
		1120' – 1357' pink alteration (albite?) more common & more intense.													
		Eg. lithic frags especially altered.													
		1170' – 1357' lithic fragments < 2 cms dia (no breccia size frags).													
			1266' 3 cms with g-cb vn.												
			1302' " " " "												
		1290' – 1357' Numerous narrow (½ cms) g-cb veins	1330' 6 & 4 cms " " vns.												
			1356' 5 cms " " vn.												
		1357' END OF HOLE													
		NB: This hole similar to WHP192.													

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ELECTROLYTIC ... CO. OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP 196
Sheet 1 of 4

LOCATION KOONYA PROSPECT EL 1/62 (MT BLACK)	Footage	Direction	Dip.	Footage	Direction	Dip.	COLLAR DIP. -55.5	TOTAL DEPTH 556'
OBJECTIVE TO TEST GRAND-CENTRE — KOONYA MINERALISATION	100'	244°M	-54°	500'	250°M	-37°	DIRECTION 247°M -	HOLE SIZE 0-10' BQ, 10-556' A
NOT SPECIFICALLY TO TEST KOONYA Pb-Zn MINERALISATION	200'	246°M	-48°	100'	~~Acid tube~~	-52°	R.L. 1462.64	COMMENCED 9-4-74
RESULT	300'	248°M	-44°	200'	Acid	-45°	COORDINATES ~10800S, 3670W RG	COMPLETED 18-4-74
	400	250°M	-39°	400'	tube.	-36°	10797.7S 3679.7W RG.	LOGGED BY REW. & BH.

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	Pb%	Zn%	Cu%	Ag-oz	Au-dwts	Fe%			CORE REC'D RUN	SHORT
0	2'	BXT Core of glacial boulder - core not retained.															
2'	129'	Pale grey & green ash flow tuff, distinct chloritic fiamme	< 5% diss py; mnr cp mnr qtz - cb vns.														
		Core < of chlorite fiamme 70°	9' - 11.5' - 20% diss py														
		Weak ox to 90'															
			113', 116', 118' - 3" wide qtz vns with Cp & siderite.														
		(106' T/S															
129'	187.5'	fg. chl tuff w. chl veining	5-10% diss euh py Qtz veining continues														
187.5'	250'	fg. siliceous tuff with variable dissem py, numerous narrow chl. vns Mnr. qtz - cb veins	Py - finely diss & in massive bands of dissem euh. py xts average 10% py.														
			198.25' - 199.75' 10-15% dissem	D4635	198.25	199.75	1.5'	0.3	0.2	1.05	46g/t		5.3%				

013

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY — TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP 196
Sheet 2 of 4

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	SHORT
			(contd) euhed py; <5% Cp as blebs to 3 cms												
		(206' - T/s													
			203.5 – 204.5 - 35% dissem py	D4636	203.5	204.5	1.0	0.3	0.7	0.05	NIL		15.7		
250'	276'	fg. siliceous tuff with rare chl veining, variable py.	Average 10% diss py												
			255.5' to 265.5' 15-20% diss py	D4637	255.5	260.5	5.0	0.2	0.2	0.02	NIL		14.2		
				D4638	260.5	265.5	5.0	0.2	0.2	0.02	2g/t		10.6		
276'	316'	fg. siliceous tuff with abundant chl. veining & chl. patches = possible fiamme etc.	10% diss euh. py												
			301.5' 3cms wide qtz vn with Cp & gn												
			309.5' 3 cms wide band of dissem py & gn												
316'	336'	fg. siliceous tuff with mnr chl veining brecciated in places & healed with chl veining; mnr cb veining.	<5% diss py, mnr gn sp.												
336'	352'	fg. pale green siliceous tuff; white specks = hailinised felspar xts. Cb, qtz-cb veining weak to mod.													
352'	385.7'	fg. pale green siliceous tuff with pale green chl. veining; brecciated in part & healed by chl veining	Average <5% dissem py mnr gn, sp. Rare narrow bands of py, gn, sp.	D4639	356.0'	361.0'	5.0'	1.0	1.0	0.03	8g/t		2.3		
				D4640	361.0	366.0	5.0'	0.7	2.3	0.06	8g/t		3.2		

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ELEC[illegible] OF ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP 18
Sheet 3 of 4

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	CORE REC'D SHORT
			(cont'd)	D4641	366·0	368·5	2·5'	0·4	0·8	0·03	1 g/t		2·3		
			372·1' to 373·1' band of 5% Sp	D4642	368·5	372·1	3·6'	3·6	2·4	0·06	23 g/t		3·2		
			3% gn, 20% py	D4643	372·1	373·1	1·0'	3·3	16·6	0·33	48 g/t		7·7		
				D4644	373·1	377·6	4·5'	0·7	0·9	0·02	5 g/t		2·0		
				D4645	377·6	381·2	3·6'	2·0	2·6	0·03	12 g/t		2·3		
				D4646	381·2	385·7	4·5'	0·1	0·8	0·03	3 g/t		4·1		
385·7	387·7	Massive sulphide 15 - 20% cll, 2½ cb Crude & contorted banding of sulphides	40% Sp, 5% gn, 40% Py	D4628	385·7	387·7	2·0'	1·7	36·6	0·09	26 g/t		10·4		
387·7	390·8	fg. Silicified tuff.	Patchy bands and stringers of disem to massive sulphides 3-5% Sp, gn, py	D4629	387·7	390·8	3·1'	1·9	7·5	0·05	27 g/t		5·3		
390·8	393·5	fg. Silicified tuff (cll 2½ cb rock)	Mnr cons & disem sulphides < 5% Py, Sp, gn total	D4630	390·8	393·5	2·7'	0·8	1·9	0·03	12·6 g/t		5·2		
393·5	395·5	" " "	Patchy bands and stringers of disem to mas. sulphides	D4631	393·5	395·5	2·0'	5·1	6·7	0·05	42 g/t		7·1		
			10% Py 10% gn, 5% sp	D4632	395·5	397·75	2·25'	4·9	10·8	0·05	40 g/t		6·1		
395·5	397·75	" " "	as above but 10% sp												
397·75	401·8	" " "	1% Sp, 2% Py	D4633	397·75	401·8	4·05	0·5	0·9	0·03	89 g/t		4·9		
		Brecciated & cb veined.													
401·8	405·5	" " "	Stringers & bands of semi-massive sulphides 10% gn 10-15% py 3% sp.	D4634	401·8	405·5	3·7'	4·6	6·4	0·05	31 g/t		7·3		
405·5	414'	fg. pale grey green siliceous tuff Mnr cll veining	Mnr diss py, blebs of gn												
414'	536'	Siliceous lithic tuff, maximum size of fragments 5 cms.; fragments have pink alteration = alkali alteration? Mnr fg - cb veining	Mnr diss py.												

19·8'
@ 2·61% Pb
8·41% Zn

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY — TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP196
Sheet 4 of 4

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	SHORT
414	536	(contd)													
		(519' - T/S													
536'	556'	light cream siliceous xl tuff. with kaolinised felspar xls													
		END OF HOLE 556'													

016

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ELEC[illegible] ZINC CO. OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

EASTMAN / ACID TEST

HOLE No. KP 197 — Sheet 1 of 5

LOCATION KOONYA PROSPECT : MT BLACK EL 1/62	Footage	Direction	Dip.	Footage	Direction	Dip.	COLLAR DIP. −55°	TOTAL DEPTH 767'
OBJECTIVE 800' spaced grid drilling of KOONYA – GRAND CENTRE	100'	—	−52°	400'	264° RG	−42°	DIRECTION 248° M.	HOLE SIZE 0–90' BQ 90–767' AQ
mineralised & altered zone	110'	264° RG	−55°	500'	265° RG	−40° / −37½°	R.L. 1362.9'	COMMENCED 20 – 4 – 74
RESULT Minor mineralisation only but is	200'	265° RG	−52½°	600'	265° RG	−37°	COORDINATES 11615.6'S	COMPLETED 2 – 5 – 74
Stopped in rock type similar to that which is footwall to	300'	265° RG	−48° / −48	700'	266° RG	−35°	3700.6 W	LOGGED BY R.E. WILLIAMS

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	Pb%	Zn%	Cu%	Ag-oz	Au-dwts	Fe%	CORE REC'D RUN	SHORT
0	22'	Poor core recovery of glacial material;												0–17'	16.5
		mainly boulders of Mt Read Volcanics.												17'–20'	2.5
22'	27'	Poorly consolidated sandy tillite												20–22	1.5
27'	32'	Poor core recovery of glacial material;												22–27	4'
		mainly boulders of Mt Read Volcanics.												27–32	4.5
32'	72'	Very poor core recovery; core very broken;	patches of massive py: mnr											32–37	4.5
		dominantly pale green c.g. lithic	overall.											40.5–44	2.5
		tuff; siliceous in part.												44'–47.5	1'
														47.5–49.7	1'
														49.7'–53'	2'
72'	165'	Sheared c.g. lithic tuff, siliceous in part	< 5% diss py											53'–56'	2'
		with variable chlorite content. Some												56'–59'	2'
		fragments to 5 cms. ∴ possibly												59–62	1'
		agglomeratic in part – fragments												63.25'–67'	2'
		dominantly chloritic but some are	139' – massive qtz vns to .5'											67'–69.3	1.8
		v. f.g. siliceous volcanics.												69.3–71.3	1'
		foliation core < 30–40° – fragments												71.3–77	3'
		also sheared and aligned.												81–88	1'
		Weak qtz-ch veining rare large												NO OTHER	
		qtz ± ch veins to ⅔' 10 cms.												CORE LOS	
165'	184'	f.g. lithic tuff, brecciated in part	< 5% diss py.												
		pale grey in colour.													
184'	247	f. to c.g. siliceous lithic tuff. – in part	5–10% py.												
		brecciated.	195 – 199' 15–20% py as	D4858	195'	199'	4.0'	<0.1	0.1	0.02			8.4		
			stringers & heavy dissem-												

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP 197 Sheet 2 of 5

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	SHOR
			216' - 227' - 20% py in stringers & narrow patches and finely disem patches.	D4859	216' 224'	227' 227'	11·0'	<0·1	<0·1	<0·01			7·5		
247'	274'	Siliceous lithic tuff with patchy chl. veining. Core ∠ of pys 45°	10% diss py												
274'	282'	Narrow f.g. lithic tuff. Weak chl veining	5% disem py												
282'	291'	f.g. lithic tuff? – banded in part = reworked tuff: Banding appears to be compositional with chl ons // to banding: Core ∠ of banding is 70°	5% disem each py.												
291'	352'	as above but with narrow f.g. tuff as the dominant rock type Narrow bleached zones at 300' & 322' Core ∠s vary from 40° to 80° gradual contact with unit below.	5% disem each py. Rare qtz ons with assoc py. patchy zones of 5-10% py												
352'	387'	Grey f-mg lithic tuff	5-10% diss each py with rare stringers of massive py												
387'	417·5'	as above but with patches of qtz-fels or qtz-cb: possibly a reworked tuff.	as above.												
417·5	462'	Grey coloured f-mg reworked(?) lithic tuff Rare qtz ons: weak qtz-cb veining	5% diss each py: Rare patches of heavily diss py.												

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KR 197
Sheet 3 of 5

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	CORE REC'D SHORT
175	462'	(cont'd)	Minor sulphides (py, cp, sp) associated with qtz ons.												
462'	535'	Pale grey-green lithic tuff Bleached zones @ 502' Weak narrow irregular qtz-cb veining	5% disem fg. sulphides Minor stringers of massive py ± cp Minor qtz ons with associated py, cp gn - with bleached zones.		535'	545'		0.12	1.78	0.08					
					550'	555'		0.3	1.4	0.05					
535'	558'	Siliceous fg. schistic or schistic xtal. tuff. Weak minor qtz-cb veining.	5% disp py: minor stringers of gn & sp mineralisation. 542-545' - stringers aggregating about 1' of 5% sp, 3% gn.	D4860	535'	542'	7.0'	<0.1	1.6	0.01			2.8		
				D4861	542'	545'	3.0'	0.6	2.2	0.16			4.9		
				D4862	545'	550'	5.0'	0.1	0.5	<0.01			2.8		
				D4863	550'	555'	5.0'	0.3	1.4	0.05			2.5		
				D4864	555'	558'	3.0	0.2	0.8	<0.01			3.4		
558'	577'	Pale grey fmg lithic or xtal lithic tuff. Narrow zones of intense qtz cb veining & brecciation.	5% disem sulphides, minor stringers of py - gn - sp.	D4865	558'	565'	7.0'	0.3	0.8	0.01			2.4		
				D4866	565'	570'	5.0'	<0.1	0.4	0.01			4.1		
				D4867	570'	577'	7.0'	<0.1	0.3	<0.01			2.8		
577'	603'	Dark grey coloured lithic tuff with fragments up to 1 cms.; zones of fmg lithic tuff: Qtz-cb veining & siliceous gash filling.	as above.												
603	667.	Cream coloured lithic crystal tuff, siliceous fg. matrix. Lithic fragments	Minor disem. py-gn-sp (<5%) 5 cm stringer of gn-sp at 662'.												

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. K197 Sheet 4 of 5

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC RUN	CORE REC SHO
603'	667'	are mainly v.fg. siliceous rhyolite.	Mnr qtz vns with py-gn (≤ 5cms)	D4868	622	623	1.0'	<0.1	2.0	0.04			3.7		
(cont'd)		Felspar xtls probably albite.													
		Fragment size ranges to 3 cms. but													
		fragments dominantly ≤ 1 cms.													
667'	685'	Rock type as above but fragments	Mnr sulphides assoc'd with												
		dominantly larger in size	qtz veinery.												
		Narrow qtz - ch veinery and													
		qtz veins to 3 cms													
		Rock has a variable pink													
		alteration colouring = alkalization?													
685'	690'	Rock type as abve but with	Stringers to 10 cms of												
		abundant clasts and stringers	massive py with mnr cp.	D4869	687'	690'	3.0'	<0.1	0.2	0.71			13.2		
		of massive sulphides													
690'	700'	Lithic tuff with fg siliceous fragments	Mnr disn py with stringers												
		in v.fg. siliceous matrix; Mnr	of py at 698'												
		qtz - ch veining													
700'	720'	Pale cream to grey fine lithic													
		tuff with fragments to 2 cms.													
		Massive qtz veining 704' - 705'													
720	767	Ash flow lithic tuff - rare lithic	Mnr disen sulphs (py?)												
		fragments to 3 cms. Devitrified													
		pumice fragments to 3 cms													

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP197
Sheet 5 of 5

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%			CORE REC'D RUN	SHORT
720	767	(cont'd) Rock is pale cream to grey colour.															
		END OF HOLE.															

021

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ELECTROLYTIC ZINC CO. OF A'ASIA LTD
ROSEBERY – TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP 198
Sheet 1 of 3

LOCATION KOONYA PROSPECT EL 1/62 MT BLACK	Footage	Direction	Dip.	Footage	Direction	Dip.	COLLAR DIP. – 60°	TOTAL DEPTH 457'
OBJECTIVE TO TEST GRAND CENTRE COPPER MINERALISATION	100'	248°M	-56°	300'	AT →	-48°	DIRECTION 258°M	HOLE SIZE 0-80' BQ 80' – 457' AQ
HOLE COLLARED WITH AZIMUTH OF GRID WEST TO HIT COPPER SHOOT	100'	A.T. →	-59°	400'	248°M	-47°	R.L. 1358.3'	COMMENCED 4 - 5 - 74
RESULT HOLE APPARENTLY DEFLECT BACK TO GRID WEST.	200'	248°M	-51½°				COORDINATES ~1200S; 3825'W	COMPLETED 10 - 5 - 74
MINOR Cp mineralisation 7.4' of 1.76% Cu from 350' to 357.4'	300'	248°M	-50°				12016.02S 3833.5W RG.	LOGGED BY R.E. WILLIAMS

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	Pb%	Zn%	Cu%	Ag-oz	Au-dwts	Fe%	CORE REC'D RUN	CORE REC'D SHORT
0	5.5'	Glacial Boulders - Mt Read Volcanics.									g/t			0-3'	2'
														3'-5.5'	2'
5.5'	20'	Ox lithic tuffs (ash flows?)												5.5'-8'	1'
		Pale green chloritic fragments (framme?)												8-9.5'	1.6'
		where not oxidised. Oxidation produces												9.5'-57'	—
		pink to brown colouration												57-59.6	1.0'
		lithic fragments & foliation core < 30°												59.6-62'	—
		Core very broken.												62'-64.8	1.0'
20'	80'	Pale grey-green ash flow tuff. Chloritic	Mnr diss py.											64.8-203'	—
		framme to 3 cms	59.5 - 6" qtz vn.											203'-208'	1.5'
		framme & schistosity core < 30°	62.0' - 65.0' qtz vn.											208-457'	NIL.
		Core very broken													
80'	178'	As above.	< 5% diss euhedral py.												
		Rare fragments of massive py - replacing	144' - 160' 5-10% diss euh.												
		framme?	py & rare bands of 20% py.												
		Weak qtz - cb veining - irregular core < s													
		Framme & schistosity core < 30-40°													
		Core very broken		D4836	144'	150'	6.0'	<0.1	<0.1	0.22	2		5.2		
				D4837	150'	155'	5.0'	<0.1	<0.1	0.60	4		6.1		
				D4838	155'	160'	5.0'	<0.1	<0.1	0.27	2		5.2		

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY — TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP198
Sheet 2 of 3

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%			CORE REC'D RUN	SHORT
											g/t						
	183.5'	Sheared pyritic ash flow tuff; fragments to 3 cms; pale grey-green - more sericitic than above unit. foliation core < 45°	5% diss euh. py														
	208'	Pyritic lithic xtal tuff - sandy texture, massive (no foliation)	10% diss py; stringers of massive py up to 2 cms.														
	223'	lithic tuff - probably an ash flow chl fragments (fiamme?) to 3 cms	5% diss py														
	281'	Pale cream to grey lithic and vitric lithic tuffs. Pale grey when unaltered; cream colour is due to bleaching. Weak to intense irregular qtz-cb veining have massive qtz veins	~~5/10% diss py~~ ~~283.5~~ 223 - 281' 5% diss py 227' - 9" qtz vn. Mnr py on joint planes.														
	296'		5-10% diss py 283.5'-285' Mnr stringer of py-cp with qtz-cb veining ~2% cp.	D4839	283.5'	285'	1.5'	<0.1	<0.1	0.55	4		6.7				
	304'	as above but bleached	301' 9" qtz vn with stringers of cp (total ~ 1" of massive cp)	D4840	300	301	1.0'	<0.1	<0.1	4.52	30		7.9				
	404	Siliceous pale grey f.g. lithic tuff & vitric lithic tuff.	304 - 328.5 <5% diss py mnr stringers of 30% py														

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ELECTROLYTIC ZINC CO OF A'ASIA LTD
ROSEBERY — TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP198
Sheet 3 of 3.

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%			CORE REC'D RUN	SHORT
304	404'	(cont'd) Weak to moderate qtz-cb veining									g/tonne						
		vning core <s 20°-60°															
			328.5'-404' - irregular disseminat	D4841	328.5'	335'	6.5'	<0.1	<0.1	0.28			5.2				
			of py, mnr cp; py 5-20%	D4844	335'	340'	5.0'	<0.1	<0.1	0.08			4.9				
			with irregular patches of 30%	D4845	340'	345'	5.0'	<0.1	0.2	0.14			7.1				
			dissem eak py	D4846	345'	350'	5.0'	<0.1	<0.1	0.16			5.5				
			Weak stringer mineralisation	D4847	350'	355	5.0'	<0.1	<0.1	1.22			6.9	} 7.4' @			
			say 1" every 5' of 50% cp	D4848	355'	357.4'	2.4'	<0.1	<0.1	2.88			15.9	} 1.76% Cu			
			355'-357.4' more intense	D4849	357.4'	365'	7.6'	<0.1	<0.1	0.12			5.9				
			stringer mineralisation	D4850	365'	370'	5.0'	<0.1	<0.1	0.37			8.2				
			with 10% cp, 20-30% py.	D4851	370'	375'	5.0'	<0.1	<0.1	0.21			5.6				
				D4852	375'	380'	5.0'	<0.1	<0.1	0.28			6.1				
				D4853	380'	385'	5.0'	<0.1	<0.1	0.10			6.1				
				D4854	385'	390'	5.0'	<0.1	<0.1	0.16			6.1				
				D4855	390'	395'	5.0'	<0.1	<0.1	0.09			5.2				
				D4856	395'	400'	5.0'	<0.1	<0.1	0.43	6		8.3				
				D4857	400'	404'	4.0'	<0.1	<0.1	0.27	3		6.3				
										1.76							
404'	457'	As above but bleached.	mnr py														
		Weak to mod qtz cb veining															

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576153

See also report 75-1126

EL [illegible] ZINCO. OF AUSTRALIA LTD
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP 199 Sheet 1 of 3

LOCATION	KOONYA PROSPECT Mt BLACK EL 1/62	Footage	Direction	Dip.	Footage	Direction	Dip.	COLLAR DIP.	−65°	TOTAL DEPTH	637 ft
OBJECTIVE	To intersect the Zn mineralization of KP 196	100′	243°M	−62°	500′	−	−43° AT.	DIRECTION	~245°M	HOLE SIZE	BQ 0-60, AQ 60-637
	[illegible] south 200′ South & 200′ down dip.	200′	245°M	−57°	600′	242°M	−35°	R.L.	1396.4	COMMENCED	13th MAY 74
RESULT	[illegible] sphalerite intersected between 262′-558′	300′	−	−49° AT.				COORDINATES	10999.8S	COMPLETED	17th MAY 74
	Zone 111 (low Pb hole). Best mineralisation 5′ @ 2.3% Pb 4.4% Zn (512.5′-517.5′)	400′	246°M	−43°					3557.6W	LOGGED BY	B H

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag-oz	Au-dwts	Fe%	CORE REC'D RUN	CORE REC'D SHOR
0	31′	Glacial debris												0-2	1
		Owen conglomerate + Mt Read Volcanics												2-55	2·7
														55-7	1·25
31	60	Pale green coarse grain ash flow tuff	Minor disem py.											7-8	·5
		fine chlorite stringers cutting	½" qtz vein 56′											8-12	2·75
		parallel to foliation < 30°	minor chalcopyrite 58·5′											12-14	1
														14-17	2·75
160	68	Pale green ash flow-tuff	Minor disem py < 1%											17-22	4·75
		fine grained	½" qtz vein											22-27	4·4
		chlorite streaks parallel to												27-31	3·9
		foliation ∠ 45°												31-35	2·5
														35-37	·5
68	92	Pale green ash flow tuff	trace only py											37-39	·5
		abundant pumice + chl stringers	1" pyrite zone 81·5′											39-43	3
			½" qtz vein 78-79′											43-47	3
			leached 77-87											47-50	2
														50-52	1
92	105	Pale green ash flow tuff	102-103′ silicified + leached											52-53	0
		minor pumice + chlorite stringers	disem py 1-5%											53-55	0
		< 60° to core												55-58	1
														58-637	0
105	153	Pale green ash flow tuff	heavily pyritic 123-132′												
		abundant pumice	as disem. and stringers												
			of granular pyrite 5-10%												
			elsewhere pyrite < 3%												
			½" qtz vein 146′ and 138												

025

576154

ELECTRO ZINC CO OF A'ASIA LTD
ROSEBERY — TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. RS 199 Sht 2 of 3.

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	CORE REC'D SHORT
53	235	Pale green ash flow tuff	disem. py <2%												
		numerous pramme and chlorite	1-3" qtz chlorite veins 177												
		stringers	188, 206, 210, 212, 217, 222 223												
			230, 230½, 233, 234, 235												
			1" qtz carb. vein 195'												
			½" pyrite blebs 225'												
			trace chalcopyrite 212', 223												
235	469	Pale green ash flow tuff	sphalerite as small												
		numerous chlorite stringers	stringers, blebs, and within												
		all core unbroken	qtz veins	D5504	238	243	5	0·1	0·1	0·04	11 g/t		4·4		
		silicified + leached zones	242-254 1-2% sph	D5501	243	248	5	0·1	1·0	0·03	2 g/t		3·1		
		@ 354-358'	267-322 trace	D5505	248	251	3	<0·1	0·5	<0·01	5 g/t		1·8		
		361-362	~~391-392 10% sph~~	D5506	251	254½	3½	0·2	0·7	0·01	11 g/t		2·7		
		378-399	407-427 trace												
		418-419	427-441 1%	D5502	435	440	5	0·2	0·7	0·01	4 g/t		4·0		
			Chalcopyrite blebs 299, 361	D5507	427	431	4	0·2	0·5	<0·01	3 g/t		3·3		
			Pyrite 235-281 disem 1%	D5508	431	435	4	0·1	0·4	0·02	21 g/t		2·9		
			281-284 5%	D5509	440	442	2	0·1	0·7	0·05	8 g/t		4·7		
			284-317 1%												
			317-337 3-5%												
			337-376 trace	D5512	477	481½	4½	0·2	0·8	<0·01	37 g/t		2·6		
			401-469 1-2%	D5513	498	502	4	0·2	1·0	<0·01	6 g/t		2·5		
				D5514	512½	517½	5	2·3	4·4	0·08	74 g/t		2·9		
469	558	Pale - whitish green ash - flow tuff	sphalerite as stringers, blebs	D5515	525	530	5	0·2	0·9	0·01	98 g/t		2·1		
		- less chlorite	and within qtz veins	D5516	530	535	5	<0·1	0·6	<0·01	6 g/t		2·4		
		Less chlorite stringers more distinct	469-497 trace	D5517	535	538½	3½	0·1	0·6	<0·01	4 g/t		2·3		
			497-538 1%	D5510	542½	548	5½	0·1	0·9	0·01	15 g/t		2·4		
			538-556 1%	D5503	548	553	5	0·2	2·0	0·06	10 g/t		3·2		
			includes 2·5" 10-15% banded	D5511	553	556	3	0·5	1·5	0·01	8 g/t		2·7		
			in qtz chlorite vein 549'												
			Chalcopyrite in qtz chl vein 551												

026

576155

ELEC[illegible]ZINC CO OF A'ASIA LTD
ROSEBERY — TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP199
Hole 3 of 3

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	CORE REC'D SHORT
			Pyrite 469-558 minor												
558	559	Pale green cg crystal-lithic tuff Minute stringers rare Very broken core - minor fault or shear													
559	637	Pale green fine grained crystal tuff Minute stringers rare very small minor Minute qtz veins													
	END	HOLE 637'													

027

576156

ELECTR[illegible] ASIA LTD
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP 200

		Footage	Direction	Dip.	Footage	Direction	Dip.				
LOCATION	[illegible] BLACK E.L. ROSEBERY							COLLAR DIP.	−70°	TOTAL DEPTH	[illegible] feet
OBJECTIVE	[illegible] HOLE TO KP196 INTENDED TO	100'	—	−67°				DIRECTION	GRID WEST (R.C.)	HOLE SIZE	[illegible]
INTERSECT	MINERALISATION [illegible] 200' DOWN DIP	200'	—	—				R.L.	1437.2'	COMMENCED	[illegible]
RESULT	[illegible] SPHALERITE MINERALISATION (180' TO 200') ONLY	300'	—	−55°				COORDINATES	10600.05' RG.	COMPLETED	[illegible]
	PASSED INTO "FOOTWALL" ROCKS AT 240' — STRUCTURE ?	415'	—	−48°					3556.8 W RG.	LOGGED BY	

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag-oz	Au-dwts	Fe%	CORE REC'D RUN	SHORT
0	37	Glacial Debris												5	3.3
		Owen Conglomerate + Mt Read												2	1
		Volcanics												3.5	2
														3	1.9
														3.5	2.5
														2.7	1.7
														3.3	2.6
														3.6	1.6
														3.9 6	3.4
37	50	Ash flow tuff	qtz vein 47.5											6.5	5.[illegible]
		2-3 cms feamme +	Chalcopyrite bleb 47.5											3	2.2
		chlorite stringers 30-50°	pyrite trace only											2	.3
														2	.6
														2	.5
														2	0
														2	0
50	53	Pale green lithic tuff	pyrite trace only											1.5	.1
		chlorite stringers (very broken core)												1.5	0
														2.8	.3
53	55.8	Pale green ash flow tuff												2.2	.2
		feamme 2-3 cms + chlorite stringers 60°												2	.2
55.8	57	Pale green lithic tuff	pyrite trace only												
		very granular appearance													
		several chlorite stringers													

028

576157

ELECT... ...CO OF A'ASIA LTD
ROSEBERY ...ASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP2...0
Sheet 3 of 3

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%	CORE REC'D RUN	SHORT
[illegible]	69	Pale green ash flow tuff chlorite stringers 60° decrease in chlorite content	qtz vein 64' pyrite < 1%												
69	70	Pale green lithic tuff													
70	98	Pale green ash flow tuff fiamme + chlorite stringers 45°	qtz chlorite veins 71, 74, 75 75-76, 78, 89, 96, 98 galena (?) 74' trace in vein sphalerite 74, 75 trace in vein pyrite trace only												
[illegible]	103	Quartz sep schist. Essentially yellowish with minor green chlorite Except intense pyrite chlorite zone at 103' for 2"	10% pyrite 103'												
[illegible]	218	Fine grained pale green ash flow tuff chlorite stringers 10-90° average 60° 214-217 numerous holes (5% rock) (volatile zone?)	qtz chlorite veins 106, 117, 122, 126, 130, 137, 138, 143, 144, 148, 153 153, 171, 172, 177, 189, 199, 204, 205 pyrite 1-5% Sphalerite localized in chlorite stringers 179, 182, 183, 184, 185, 185½, 186, 187, 188, 189, 190, 191, 193, 194, 197, 198, 199 (between 179-199 < 1%) Chalcopyrite 179' trace												
218	240	Pale green lithic tuff	qtz carb veins 217, 221, 226, 231 Sphalerite trace 223, 224 225, 226, 227, 228, 233, 235												

029

576158

EL[illegible] [illegible]SIA LTD
ROS[illegible] - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. [illegible]

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%			CORE REC'D RUN	SHOR
[illegible]		KOONYA FOOTWALL ROCKS(?)															
240	[illegible]	Pale pink albitized(?) vitric lithic tuff	qtz chl veins 240, 243, 255,														
		fine main siliceous volcanics fragments	264, 265, 268, 269, 270														
		in a fine siliceous chlorite rich matrix															
		numerous fine chlorite stringers <60°															
282	363	Pale pink vitric - lithic - crystal tuff	¼" qtz vein 320														
		chlorite stringers rare	¼" carbonate vein 336														
		core angle 90°	qtz carb vein 350														
363	375	Pink vitric - crystal tuff.															
		massive, chlorite rare															
375	412	Pale pink vitric lithic tuff	qtz chl veins, 399, 406														
		(minor crystals)	qtz carb 409														
412	427	Pale pink slightly broken core		D4870	424	425	1 ft	<0.1	0.2	<0.01			1.0				
		Vitric lithic tuff.															
		minor fine chlorite stringers.															
		(albitization has possibly affected															
		the chlorite or possible Zn or Fe															
		carbonate/silicate). Test split															

030

74-1034

576159

KP201

ELL... ROSS...

DIAMOND DRILL HOLE RECORD

1 3

LOCATION	NEAR EL 1/62 MT BLACK.	Footage	Direction	Dip.	Footage	Direction	Dip.	COLLAR DIP.	-35°	TOTAL DEPTH	522'
OBJECTIVE	TO INTERSECTION IN KP196 — INTENDED	100'	265°M	-51°	500'	-	-51°	DIRECTION	270° RL.	HOLE SIZE	B-10' NX 10-40' BQ-40'
TO INTERSECT THE MINERALISATION 400' DOWN DIP.		200'	265°M	-76.5°				R.L.	1412·8	COMMENCED	27th May 1974
RESULT	CHANGE IN DIP = FOLD? WEAK MINERALISATION ONLY.	300'		-64°			EAST/WEST	COORDINATES	10,800·05	COMPLETED	5th June 1974
	331'-336'5" 5' @ 0·73/Pb 1·7% Zn.	400'	265°M	-61°			-61°		3511·0 N	LOGGED BY	R.E. WILLIAMS

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag-oz	Au-dwts	Fe%	CORE REC'D RUN	SHOR
0	10'	NQ core - discarded on site — glacial boulders.												0-24'	Glac (part core disc
10'	24'	BQ core - glacial boulders. - mainly Owen Conglomerate.												100% Core recovery except for: 24·5-27	2·
24'	31	Pale cream-grey ash flow xtal tuff; augen like primary texture with core < 45°. Weakly oxidised, felspar xtls to 1mm.												49·0-51	1·5
														80-81·5'	1·0
														115-117'	1·0
														177-179'	0·5
31'	77·5'	As above but feldspar rich. - pale olive green except where oxidised on joints and shears (?) — more chloritic. Augen texture absent to 2 cms max. Rare chlorite femme to 2cms max Schistosity core < 35°	Minor qtz veining with minor py Minor disc py.											334·1-335·1	0
77·5'	227'	Pale grey-green ash flow tuff. Occ. femme to 3 cms in a pale grey fg. matrix - matrix is sericite-chl.-qtz Schistosity core & femme < 45°.	3% disc py 5-10% disc py. Weak fine qtz-cb veining												

031

576160

[illegible] A LTD
[illegible] TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. K 201 [illegible] 3

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%			CORE REC'D RUN	SHORT
227'	242'	Pale green-grey fmg reworked(?) lithic tuff: Crude layering core < 30° Erratic chl. veining	5% diss py Weak fine qtz-cb veining														
242'	256'	Pale cream fmg siliceous tuff — — sericite qtz pyrite schist Schistosity core < 45°	10% diss f.g. py in part 5-10% overall diss py.														
256'	350'	Variable fmg ash flow(?) lithic tuff Colour from pale grey to pale grey-green Varies from massive fmg lithic tuff to probable ash flow tuffs with chl fiamme and unchloritised flattened pumice fragments. Fine chl & chl-cb veining	10% diss ash py; mnr cp narrow areas of 15% diss py														
350'	367'	Massive fmg siliceous lithic tuff irregular chl veining Schistosity core < 35°	5-20% diss py; Mnr sp-gn														
				D5030	352.0	354.5	2.5	0.15	0.09	<0.01	1 g/t		12.0				
			362.5 Stringer of sp, gn, py, cp	D5031	354.5	357.0	2.5	0.04	0.03	<0.01	1		11.6				
			over 5" 20% sp 5% gn 2% cp	D5032	357.0	359.5	2.5	0.06	0.08	0.01	1		9.7				
			365'-366' 5% sp; 5% gn	D5033	359.5	362.0	2.5	0.08	0.10	<0.01	NIL		4.9				
			Sp-gn associated with weak qtz cb veining	D5034	362.0	364.5	2.5	0.35	2.1	0.29	8		6.7				

032

576161

ELEC[illegible] ASIA LTD
ROSE[illegible] TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. KP201
Sheet 3 of 3

FOOTAGE FROM	FOOTAGE TO	ROCK DESCRIPTION	MINERALISATION	SAMPLE NO.	FROM	TO	CORE REC'D	ASSAY DATA Pb%	Zn%	Cu%	Ag - oz	Au - dwts	Fe%			CORE REC'D RUN	SHORT
350'	367'	(contd)	362.5'-367.0' 5' @ 0.73% Pb 1.7% Zn	D5035	364.5	367.0	2.5	1.1	1.3	0.05	11 g/t		4.8				
367'	402'	Pale cream siliceous lithic tuff lithic fragments, up to 3 cms, are mostly v.f.g. siliceous volcanic fragments; in a f.g siliceous matrix. Variable pink alteration = albitization.	Mnr py Weak qtz & qtz-ch veining.														
402'	420'	Similar to above but has xtals present — = xtal lithic tuff. Pale cream in colour and has less siliceous matrix.	as above														
420	522	As for 367'-402'	as above														
NB.	367'	— 522' = same footwall as in KP196, KP197, KP200. 522' is END OF HOLE															

033

576162

PROJECT: HERCULES GRID.

CO-ORDINATES
LINE: 18400N
FROM: 2700E
TO: 1500E

SAMPLED BY: CJB., SC.
DATE: FEB 74.

MATERIAL: SOIL
DEPTH: 'C' HORIZON

BOOK N°
SHEET N°
JOB N°

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	00 23 00	18400 W	2700 E		10	10	5	<1	
S	23 01		2650		5	10	15	<1	
S	23 02		2600		<2	25	10	<1	
S	23 03		2550		<2	20	10	<1	
S	23 04		2500		<2	30	5	<1	
S	23 05		2450		110	475	15	<1	
S	23 06		2400		2	15	5	<1	
S	23 07		2350		<2	10	5	<1	
S	23 08		2300		<2	10	10	<1	
S	23 09		2250		<2	10	5	<1	
S	00 23 10		2200		<2	20	10	<1	
S	23 11		2150		<2	90	15	<1	
S	23 12		2100		<2	10	5	<1	
S	23 13		2050		<2	10	2	<1	
S	23 14		2000		<2	10	2	<1	
S	23 15		1950		<2	20	20	<1	
S	23 16		1900		<2	10	5	<1	
S	23 17		1850		<2	15	10	<1	
S	23 18		1800		<2	10	10	<1	
S	23 19		1750		<2	10	2	<1	
S	00 23 20		1700		<2	10	2	<1	
S	23 21		1650		<2	10	5	<1	
S	23 22		1600		<2	10	2	<1	
S	23 23		1550		<2	10	2	<1	
S	23 24		1500 E		2	15	10	<1	

034

576163

PROJECT: MT BLACK HERCULES GRID

CO-ORDINATES — LINE: 18400N ; FROM: 1450E ; TO: 450E

SAMPLED BY: CJB., SC

DATE: FEB 74

MATERIAL: SOIL

DEPTH: 'C' HORIZON

BOOK N°

SHEET N°

JOB N°

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	00 23255	18400W	1450E		5	70	90	<1	
S	23256		1400		<2	10	10	<1	
S	23257		1350		<2	15	20	<1	
S	23258		1300		<2	5	<2	<1	
S	23259		1250		<2	15	35	<1	
S	00 23260		1200		<2	10	<1	<1	
S	23261		1150		<2	10	5	<1	
S	23262		1100		<2	5	5	<1	
S	23263		1050		<2	5	5	<1	
S	23264		1000		2	20	15	<1	
S	23265		950		5	105	55	1	
S	23266		900		<2	20	10	<1	
S	23267		850		2	85	40	<1	
S	23268		800		2	30	25	<1	
S	23269		750		2	40	35	<1	
S	00 23270		700		2	25	10	<1	
S	23271		650		<2	50	15	<1	
S	23272		600		6	65	20	<1	
S	23273		550		<2	10	15	<1	
S	23274		500		<2	10	5	<1	
S	00 23275		450E		<2	10	15	<1	
S									

FIELD SILVANITED

035

576164

PROJECT: HERCULES GRID

CO-ORDINATES
LINE: 17600N
FROM: 2450E
TO: 1250E

SAMPLED BY: C.J.B., S.C.

DATE: FEB 74.

MATERIAL: SOIL

DEPTH: 'C' HORIZON'

BOOK N°

SHEET N°

JOB N°

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	002354	17600N	2450E		<2	10	5	<1	
S	2355		2400		<2	10	10	<1	
S	2356		2350		<2	10	5	<1	
S	2357		2300		<2	10	2	<1	
S	2358		2250		<2	20	15	1	
S	2359		2200		<2	30	15	1	
S	2360		2150		<2	40	15	<1	
S	2361		2100		<2	40	15	<1	
S	2362		2050		10	90	30	1	
S	2363		2000		5	35	20	<1	
S	2364		1950		25	70	40	1	
S	2365		1900		20	50	45	1	
S	2366		1850		<2	20	10	<1	
S	2367		1800		<2	15	10	<1	
S	2368		1750		<2	30	10	<1	
S	2369		1700		<2	10	2	<1	
S	2370		1650		<2	20	10	<1	
S	2371		1600		<2	15	5	<1	
S	2372		1550		<2	10	2	<1	
S	2373		1500		<2	10	<2	<1	
S	2374		1450		<2	15	<2	<1	
S	2375		1400		<2	10	2	<1	
S	2376		1350		2	10	5	<1	
S	2377		1300		<2	10	2	<1	
S	2378		1250E		5	20	20	1	

036

576165

PROJECT: HERCULES GRID

CO-ORDINATES — LINE: 17600N — FROM: ~~2600E~~ 1200E — TO: 200E.

SAMPLED BY: CJB, SC.

DATE: FEB. 74.

MATERIAL: SOIL

DEPTH: 'C' HORIZON.

BOOK Nº

SHEET Nº

JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	23799	17600N	1200E		5	45	20	<1	
S	23800		1150		<2	10	2	<1	
S	23801		1100		<2	10	2	<1	
S	23802		1050		<2	10	<2	<1	
S	23803		1000		<2	10	2	<1	
S	23804		950		<2	10	2	<1	
S	23805		900		<2	5	2	<1	
S	23806		850		<2	5	10	<1	
S	23807		800		<2	10	10	<1	
S	23808		750		<2	10	2	<1	
S	23809		700		<2	10	2	<1	
S	23810		650		2	15	5	<1	
S	23811		600		2	20	15	<1	
S	23853		550		15	165	90	1	
S	23852		500		2	30	15	<1	
S	23851		450		<2	30	10	<1	
S	23850		400		<2	15	10	<1	
S	23849		350		2	20	20	<1	
S	23848		300		2	20	10	<1	
S	23847		250		325	40	55	<1	
S	23846		200E		<2	20	15	<1	

037

576166

PROJECT: MT BLACK · HERCULES GRID.

CO-ORDINATES — LINE: 16800N. FROM: 6SDE. TO:

SAMPLED BY: C.B. — ADM.

DATE: FEB '74

MATERIAL: SOIL

DEPTH: 'C' HORIZON.

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 02659	16800N	650E		40	100	50	1	
S 02660		600		680	440	105	1	
S 2661		550		75	25	10	<1	
S 2662		500		5	25	30	<1	
S 2663		450		5	10	30	<1	
S 2664		400		40	10	30	<1	
S 2665		350		5	15	35	<1	
S 2666		300		2	15	10	<1	
S 2667		250		2	10	5	<1	
S 2668		200		2	20	10	<1	
S 2669		150		2	10	10	<1	
S 02670		100		10	195	55	<1	
S 2671		50E		5	55	25	<1	
S 2672		0		35	320	150	2	
S 2673		50W		25	150	50	1	
S 02674	V	100W		<2	20	20	<1	

038

576167

PROJECT: MT BLACK. GRID: HERCULES.

CO-ORDINATES: LINE: 16000 N. FROM: 390 W TO: 980 E.

SAMPLED BY: C.B. A.D.M.

DATE: FEB '74

MATERIAL: SOIL

DEPTH: C HORIZON.

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
NO SAMPLE	16000 N	390 W		2	[illegible]	[illegible]	[illegible]	
S002638		370 W		<2	20	35	<1	
37		320		<2	20	40	<1	
36		270		<2	20	45	<1	
35		220 W		<2	20	10	<1	
S002634		30 E		<2	15	10	<1	
33		80		<2	15	10	<1	
32		130		2	35	15	<1	
31		180		25	130	45	1	
S002630		230		10	85	20	1	
29		280		5	35	15	<1	
28		330		20	170	60	1	
27		380		<2	10	10	<1	
26		430		<2	20	10	<1	
25		480		<2	10	10	<1	
24		530		<2	15	5	<1	
23		580		30	95	150	1	
22		630		<2	10	15	<1	
21		680		<2	10	2	<1	
S002620		730		<2	10	2	<1	
19		780		2	15	10	<1	
18		830		2	10	2	<1	
17		880		2	15	15	<1	
16		930		<2	10	5	<1	
S002615		980 E		<2	10	2	<1	

039

576168

PROJECT: MT. BLACK. GRID: HERCULES.

CO-ORDINATES — LINE: 16000N; FROM: 1030E; TO: 1730E

SAMPLED BY: C.B. - A.D.

DATE: FEB '74.

MATERIAL: SOIL

DEPTH: C HORIZON.

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S002614	16000N	1030E		<2	10	2	<1	
13		1080		<2	20	5	<1	
12		1130		<2	5	2	<1	
11		1180		<2	10	5	<1	
S002610		1230		<2	10	5	<1	
09		1280		<2	10	10	<1	
08		1330		<2	15	10	<1	
07		1380		2	20	10	<1	
06		1430		5	20	20	<1	
05		1480		5	10	10	<1	
04		1530		10	110	35	<1	
03		1580		15	120	90	<1	
02		1630		2	30	30	<1	
01		1680		SAMPLE MISSING				
S002600	V	1730E		10	60	50	<1	

040

576169

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
MT. BLACK: HERCULES GRID	LINE: 16800 N.	C.B — ADM.	SOIL ~~"C" HORIZON~~.	SHEET Nº
	FROM: 1900E.	DATE	DEPTH	JOB Nº
	TO: 700E	FEB '74	"C" HORIZON.	

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S002639	16800N	1900E		<2	20	5	<1	
S 2640		1850		<2	15	2	<1	
S 2641		1800		<2	10	2	<1	
S 2642		1750		<2	15	5	<1	
S 2643		1700		<2	15	10	<1	
S		1650						
S ZMC		1600						
Road.		1550						
S 2644		1500		<2	20	5	<1	
ZMC		1450						
Road		1400						
S 2645		1350		<2	10	5	<1	
S 2646		1300		<2	15	<2	<1	
S 2647		1250		<2	20	5	<1	
S 2648		1200		<2	10	10	<1	
S 2649		1150		<2	10	2	<1	
S 2650		1100		<2	10	10	<1	
S 2651		1050		2	10	5	<1	
S 2652		1000		<2	15	10	<1	
S 2653		950		<2	10	5	<1	
S 2654		900		2	15	5	<1	
S 2655		850		2	5	5	<1	
S 2656		800		2	20	10	<1	
S 2657		750		<2	10	10	<1	
S 2658		700E		<2	10	10	<1	

041

576170

PROJECT: HERCULES

CO-ORDINATES
LINE: 15200N
FROM: 1600E
TO: 400E

SAMPLED BY: AM. CB
DATE: FEB 74

MATERIAL: SOIL
DEPTH: 'C' HORIZON

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 27161	1500N	1600E		2	40	15	<1	
S 27171		1550		2	110	30	1	
S 27181		1500		10	85	20	<1	
S 27191		1450		65	450	80	3	
S 27201		1400		10	110	50	<1	
S 27211		1350		20	140	25	1	
S 27221		1300		45	160	45	1	
S 27231		1250		5	40	20	<1	
S 27241		1200		2	25	10	<1	
S 27251		1150		10	40	20	<1	
S 27261		1100		5	35	15	<1	
S 27271		1050		60	105	30	1	
S 27281		1000		40	90	30	1	
S 27291		950		165	310	75	2	
S 27301		900		10	40	30	1	
S 27311		850		2	10	10	<1	
S 27321		800		5	60	20	1	
S 27331		750		<2	10	10	<1	
S 27341		700		2	20	10	<1	
S 27351		650		<2	15	5	<1	
S 27361		600		<2	15	10	<1	
S 27371		550		<2	20	10	<1	
S 27381		500		2	40	25	1	
S 27391		450		<2	25	10	<1	
S 27401	1500N	400E		<2	30	10	<1	

042

576171

PROJECT: HERCULES

CO-ORDINATES
LINE: 15200N
FROM: 350E
TO: 650W

SAMPLED BY: AM., CB
DATE: FEB 74

MATERIAL: SOIL
DEPTH: 'C' HORIZON

BOOK Nº
SHEET Nº
JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	27401	1520 N	350 E		<2	30	20	<1	
S	27402		300		10	65	40	1	
S	27403		250		<2	20	10	<1	
S	27404		200		2	40	30	1	
S	27405		150		2	25	20	<1	
S	27406		100		2	20	15	<1	
S	27407		50 E		<2	20	5	<1	
S	27408		000		2	25	10	<1	
S	27409		50 W		2	20	15	<1	
S	27500		100		20	340	115	2	
S	27501		150		10	100	75	1	
S	27502		200		15	115	65	1	
S	27503		250		5	55	35	<1	
S	27504		300		10	125	95	1	
S	27505		350		2	40	20	<1	
S	27506		400		20	165	120	1	
S	27507		450		10	65	50	<1	
S	27508		500		15	580	180	1	
S	27509		550		5	135	60	<1	
S	27600		600		10	280	155	<1	
S	27611	1520 N	650 W		2	120	125	<1	

043

576172

PROJECT: HERCULES

CO-ORDINATES — LINE: 14ADON — FROM: 1100E — TO: 100W

SAMPLED BY: AM. CB

DATE: FEB 74

MATERIAL: SOIL

DEPTH: 'C' HORIZON

BOOK N°

SHEET N°

JOB N°

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	26750	14400N	1100E		2	40	10	<1	
S	26760		1050		<2	20	10	<1	
S	26770		1000		10	85	20	<1	
S	26780		950		<2	30	10	<1	
S	26790		900		<2	15	2	<1	
S	26800		850		<2	20	5	<1	
S	26811		800		<2	25	10	<1	
S	26822		750		<2	30	5	<1	
S	26833		700		<2	25	10	<1	
S	26843		650		20	90	30	1	
S	26855		600		5	30	15	<1	
S	26866		550		<2	20	5	<1	
S	26877		500		<2	20	10	<1	
S	26888		450		<2	20	5	<1	
S	26894		400		<2	55	5	<1	
S	26910		350		<2	70	10	<1	
S	26941		300		<2	30	5	<1	
S	26952		250		<2	30	2	<1	
S	26963		200		<2	75	10	<1	
S	26974		150		<2	25	2	<1	
S	26985		100		<2	100	10	<1	
S	26996		50E		10	55	10	1	
S	26997		000		<2	50	35	<1	
S	26988		50W		20	135	100	1	
S	26999		100W		10	45	25	1	

044

576173

PROJECT: HERCULES

CO-ORDINATES — LINE: 14400N; FROM: 150W; TO: 900W

SAMPLED BY: AM.. CB

MATERIAL: SOIL

BOOK N°

SHEET N°

JOB N°

DATE: FEB 74

DEPTH: 'C' HORIZON

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 27CC	14400N	150W		<2	15	5	<1	
S 27C1		200		2 [illegible]	20	10	<1	
S 27C2		250		15	195	90	1	
S 27C3		300		30	1400	295	4	
S 27C4		350		50	1150	640	3	
S 27C5		400		15	240	190	1	
S 27C6		450		2	60	15	<1	
S 27C7		500		10	170	140	1	
S 27C8		550		10	220	80	1	
S 27C9		600		20	380	145	2	
S 27D0		650		30	830	75	1	
S 27D1		700		15	340	80	1	
S 27D2		750		<2	20	15	<1	
S 27D3		800		5	55	45	<1	
S 27D4		850		20	60	75	<1	
S 27D5	14400N	900W		<2	20	10	<1	

045

576174

PROJECT: MT. BLACK. HERCULES GRID

CO-ORDINATES — LINE: 13600N; FROM: 1000E; TO: 1190W

SAMPLED BY: R.S., A.M.

DATE: 22/2/74

MATERIAL: "C HORIZON"

DEPTH:

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
2762	1360 N	100 E		<2	30	5	<1	
2763		95 E		<2	25	2	<1	
2764		90 E		<2	15	2	<1	
2765		85 E		<2	25	<2	<1	
2766		80 E		<2	10	2	<1	
2767		75 E		<2	25	<2	<1	
2768		70 E		<2	20	2	<1	
2769		65 E		<2	10	<2	<1	
2770		60 E		<2	20	2	<1	
2771		55 E		<2	10	<2	<1	
2772		50 E		<2	10	<2	<1	
2773		45 E		<2	10	2	<1	
2774		40 E		<2	10	2	<1	
2775		35 E		<2	10	<2	<1	
2776		30 E		<2	10	<2	<1	
2777		25 E		<2	20	<2	<1	
2778		20 E		<2	20	2	<1	
2779		15 E		<2	15	2	<1	
2780		10 E		<2	20	2	<1	
2781		5 E		10	65	40	<1	
2782		0 E		<2	50	2	<1	
2783		5 W		<2	50	5	<1	
2784		10 W		2	40	2	<1	
2785		15 W		5	55	20	<1	
2786	1360 N	20 W		<2	20	5	<1	

046

576175

PROJECT: MT. BLACK. HERCULES GRID.

CO-ORDINATES — LINE: 136CON; FROM: 250W; TO: 1190W

SAMPLED BY: R.S., A.M.

MATERIAL: "C HORIZON"

DATE: 22/2/74

DEPTH:

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
27871	136CON	250W		<2	20	2	<1	
27872		300W		<2	20	2	<1	
27873		350W		<2	15	20	<1	
27874		400W		<2	10	2	<1	
27875		450W		<2	10	5	<1	
27876		500W		<2	10	2	<1	
27877		550W		<2	15	<2	<1	
27878		600W		<2	10	2	<1	
27879		650W		<2	20	2	<1	
27880		700W		<2	15	2	<1	
27881		750W		<2	10	2	<1	
27882		800W		<2	10	<2	<1	
27883		850W		<2	10	2	<1	
27884		900W		2	20	15	<1	
27885		950W		2	25	15	<1	
27886		1000W		<2	15	5	<1	
27887		1050W		2	10	5	<1	
27888		1100W		2	30	30	<1	
27885		1150W		<2	15	10	<1	
27886	136CON	1190W		335	4000	7000	21	← UNDER MAGNAGE

047

576176

PROJECT: MT. BLACK

GRID: HERCULES

CO-ORDINATES — LINE: 12800N; FROM: 650W; TO: 1400W

SAMPLED BY: R.E.W.

DATE: 26-3-74

MATERIAL: SOIL

DEPTH: "C" HORIZON.

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 30260	12800N	650W		<2	20	5	<1	
27		700		10	60	100	1	
28		750		15	20	110	1	
29		800		<2	10	5	<1	
S 30300		850		<2	20	35	<1	
31		900		<2	5	10	<1	
32		950		5	35	30	<1	
33		1000		2	10	10	<1	
34		1050		<2	15	5	<1	
35		1100		<2	20	10	<1	
36		1150		10	30	50	<1	
37		1200		5	50	35	<1	
38		1250		5	40	65	<1	
39		1300		25	135	320	<1	
S 30400		1350		<2	10	10	<1	
41	V	1400W		2	10	40	<1	

Aerial reference @ 1460W

048

576177

PROJECT: MT BLACK

GRID: HERCULES

CO-ORDINATES
LINE: 12800N
FROM: 600E
TO: 600W.

SAMPLED BY: REN.

DATE: 26/3/74

MATERIAL: Soil

DEPTH: "C" HORIZON'

BOOK N°
SHEET N°
JOB N°

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	30 01	12800N	600E		10	20	10	1	
	02		550		10	10	20	1	
	03		500		5	10	25	1	
	04		450		10	40	20	1	
	05		400		10	45	50	1	
	06		350		5	20	10	1	
	07		300		2	15	5	1	
	08		250		2	20	5	1	
	09		200		2	15	5	1	
S	30 10		150		2	10	10	1	
	11		100		2	20	10	1	
	12		50E		10	140	50	1	
	13		00		10	65	15	1	
	14		50W		5	10	20	1	
	15		100		20	130	60	1	
	16		150		30	40	40	1	
	17		200		2	25	10	1	
	18		250		5	50	10	1	
	19		300		2	15	10	1	
S	30 20		350		5	35	10	1	
	21		400		10	35	20	1	
	22		450		70	140	70	1	
	23		500		25	75	50	1	
	24		550		10	40	10	1	
	25		600W		2	20	10	1	

045

576178

PROJECT: MT BLACK. HERCULES. MINE GRID.

CO-ORDINATES — LINE: 12000N. FROM: 320 E TO: 980 W

SAMPLED BY: ADM.

DATE: 19/4/74

MATERIAL: SOIL

DEPTH: "C" HORIZON

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.	DESCRIPTION
S003207	12000N	320E		<2	10	15	<1	380
08		270E		<2	15	15	<1	
09		220E		<2	10	5	<1	370
3210		170E		<2	5	5	<1	
11		120E		2	10	5	<1	360
12		70E		<2	15	15	<1	
13		20E		2	10	10	<1	350
14		30W		2	10	10	<1	
15		80		2	15	10	<1	340
16		130		<2	10	10	1	
17		180		2	10	10	<1	330
18		230		<2	5	5	<1	
19		280		<2	10	5	<1	320
S003220		330W		<2	5	5	<1	
21		380		<2	10	2	<1	310
22		430		<2	15	10	<1	
23		480		<2	10	5	<1	300
24		530		25	20	10	<1	
25		580		<2	15	10	<1	290
26		630W		2	20	15	<1	
27		680		2	15	25	<1	280
28		730		2	15	15	<1	
29		780		5	15	10	<1	270
S003230		830		2	10	5	<1	
31		880W		2	15	6	<1	260

050

576179

PROJECT: MT [redacted] BLACK
HERCULES MINE GRID

CO-ORDINATES
LINE: 12000 N.
FROM: 930 W
TO: 1680 W

SAMPLED BY: ADM.
DATE: 19/4/74

MATERIAL: Soil
DEPTH: "C" HORIZON.

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S003232	12000N	930W		5	15	10	<1	
33		980		<2	15	5	<1	250
34		1030		<2	15	5	<1	
35		1080		2	20	10	<1	240
36		1130		<2	15	5	<1	
37		1180		<2	10	5	<1	230
38		1230		2	10	5	<1	
39		1280W		<2	15	5	<1	220
S003240		1330		<2	10	5	<1	
41		1380		<2	10	5	<1	210
42		1430		<2	10	2	<1	
43		1480		<2	10	5	<1	200
44		1530		<2	10	5	<1	
45		1580		<2	10	2	<1	190
46		1630		5	40	25	<1	
S003247		1680W		10	25	25	1	180

051

576180

PROJECT: MT BLACK

GRID: HERCULES MINE GRID

CO-ORDINATES
LINE: 11200 N
FROM: 22W
TO: 1200W

SAMPLED BY: ADM. K.M.

DATE: 4 - 12 - 73

MATERIAL: SOIL

DEPTH: B/C HORIZON

BOOK N°

SHEET N°

JOB N°

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	676	11200N	22W		2	15	10	1	
S	677		50		<2	25	20	2	
S	678		100		2	20	10	1	
S	679		150		<2	10	2	1	
S	680		200		<2	15	10	1	
S	681		250		2	20	40	<1	
S	682		300		<2	10	10	<1	
S	683		350		<2	10	15	<1	
S	684		400		<2	15	10	<1	
S	685		450		<2	5	20	<1	
S	686		500		<2	10	10	<1	
S	687		550		<2	10	20	<1	
S	688		600		10	25	15	1	
S	689		650		2	10	10	<1	
S	690		700		2	10	20	<1	
S	691		750		<2	5	10	<1	
S	692		800		2	5	10	<1	
S	693		850		<2	10	10	<1	
S	694		900		<2	15	15	<1	
S	695		950		<2	10	10	<1	
S	696		1000		<2	10	10	<1	
S	697		1050		<2	5	10	<1	
S	698		1100		15	30	15	<1	
S	699		1150		<2	10	10	<1	
S	700		200W		<2	5	5	<1	

052

576181

PROJECT: MT BLACK

GRID: HERCULES MINE

CO-ORDINATES
LINE: 1120ON
FROM: 1250W
TO: 2000W

SAMPLED BY: ADM KM

DATE: 4 - 12 - 73

MATERIAL: SOIL

DEPTH: "C HORIZON"

BOOK Nº

SHEET Nº

JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTI
S	701	1120ON	1250W	50	<2	15	2	<1	
S	702		1300		2	15	5	<1	
S	703		1350		<2	10	5	<1	
S	704		1400		<2	10	5	<1	
S	705		1450		<2	15	2	<1	
S	706		1500		2	20	10	<1	
S	707		1550		<2	10	10	<1	
S	708		1600		<2	10	10	<1	
S	709		1650		<2	5	2	<1	
S	710		1700		2	15	5	<1	
S	711		1750		<2	10	5	<1	
S	712		1800		2	15	2	<1	
S	713		1850		<2	10	<2	<1	
S	714		1900		10	20	20	<1	
S	715		1950		<2	20	105	<1	
S	716		2000E/W		<2	20	175	<1	

053

576182

PROJECT: MT. BLACK.

GRID: JUPITER

CO-ORDINATES
LINE: 10,800 N.
FROM: 36 W.
TO: 1650 W.

SAMPLED BY: R.S. / K.M.

DATE: 11/12/73

MATERIAL:

DEPTH: "C"

BOOK N°
SHEET N°
JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
00045	10800N	1250W		<2	20	2	<1	
0046		1300		<2	10	<2	<1	
0047		1350		<2	25	<2	<1	
0048		1400		2	20	5	<1	
0049		1450		<2	10	2	<1	
0050		1500		<2	10	5	<1	
0051		1550		<2	20	15	<1	
0052		1600		<2	15	5	<1	
0053	V	1650		5	20	30	<1	
		1700						
		1750						

054

576183

PROJECT: Mt. BLACK.

GRID: SOPTER.

CO-ORDINATES
LINE: 10,800 N.
FROM: 36 W.
TO: 1650 W.

SAMPLED BY: R.S./K.M.

DATE: 11/12/73

MATERIAL:

DEPTH: "C"

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
500002	10800N	36W		15	20	25	<1	
921		50W		10	25	15	<1	
922		100		10	15	10	2	
923		150		2	10	10	2	
924		200		<2	15	10	2	
925		250		<2	5	5	<1	
926		300		<2	15	5	<1	
927		350		10	35	25	<1	
928		400		5	15	5	2	
929		450		5	10	10	<1	
930		500		<2	5	<2	<1	
931		550		10	10	<2	1	
932		600		<2	15	<2	1	
933		650		<2	15	<2	<1	
934		700		<2	15	<2	<1	
935		750		<2	15	2	<1	
936		800		<2	10	<2	<1	
937		850		<2	20	2	<1	
938		900		<2	15	10	<1	
939		950		10	25	20	<1	
940		1000		15	50	35	<1	
941		1050		2	10	<2	<1	
942		1100		<2	15	10	<1	
943		1150		10	15	40	1	
944		1200		<2	20	<2	<1	

055

576184

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
Mt Black Hercules Mine Grid.	LINE: 10400N FROM: 00 TO: 1200W.	AAM – KM.	Soil Samples	SHEET Nº
		DATE: 14/11/73.	DEPTH: 'C' Horizon.	JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S000398	10400N	00	50	2	10	5	<1	
399		50		5	15	10	<1	
S000400		100		2	20	5	<1	
401		150		10	10	10	<1	
02		200		10	5	5	<1	
03		250		2	10	5	<1	
04		300		2	10	5	<1	
05		350		2	15	5	<1	
06		400		2	15	5	<1	
07		450		2	15	10	<1	
08		500		<2	10	5	<1	
09		550		<2	10	5	<1	
10		600		<2	10	5	<1	
11		650		2	25	25	<1	
12		700		2	20	5	<1	
13		750		2	10	5	<1	
14		800		2	15	5	<1	
15		850		2	15	5	<1	
16		900		80	25	10	1	
17		950		4	10	10	1	
18		1000		175	10	5	<1	
19		1050		<2	5	5	<1	
20		1100		2	10	5	<1	
21		1150		20	10	5	<1	
S000422		1200W		10	20	10	<1	

056

576185

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
MT. BLACK	LINE: 10400 N.	AJM. - K.M.	SOIL SAMPLES.	SHEET Nº
HERCULES MINE GRID.	FROM: 1250W	DATE	DEPTH	JOB Nº
	TO: 1892 W.	14/11/73.	'C' HORIZON	

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S000423		12500		2	20	10	<1	
24		1300		5	30	15	<1	
25		1350		5	15	15	<1	
26		1400		2	5	15	<1	
27		1450		5	15	20	<1	
28		1500		2	15	20	<1	
29		1550		<1	10	5	<1	
30		1600		<1	10	5	<1	
31		1650		2	15	5	<1	
32		1700		<1	15	5	<1	
33		1750		<1	10	10	<1	
34		1800		<1	10	20	<1	
~~35~~		~~1850~~						
~~36~~		~~1872~~						

057

576186

PROJECT: MT BLACK. — JUPITER GRID.

CO-ORDINATES — LINE: 10000 N — FROM: 1250 W. — TO: 1900 W.

SAMPLED BY: AM - S.C.

DATE: 13/12/73.

MATERIAL: SOIL

DEPTH: "C" HORIZON.

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTIO
S 00175	10000 N	1250 W		2	10	10	<1	
76		1300		2	15	10	<1	
77		1350		2	15	20	<1	
78		1400		2	10	15	<1	
79		1450		2	10	15	<1	
S 00180		1500		2	10	15	<1	
81		1550		<2	30	30	<1	
82		1600		5	20	110	<1	
83		1650		5	20	85	<1	
84		1700		2	40	115	2	
85		1750		2	20	60	<1	
86		1800		2	5	125	<1	
87		1850		<2	10	80	<1	
S 00188		1900 W		<2	5	30	<1	

58

058

576187

PROJECT: MT BLACK — HERCULES MINE GRID.

CO-ORDINATES — LINE: 9600N — FROM: 00 — TO: 1200 W

SAMPLED BY: A.M. — K.H.

DATE: 31/1/73.

MATERIAL: SOIL

DEPTH: "C" HORIZON

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S00358	9600W	00	50	2	2	10	<1	
59		50		2	2	10	<1	
60		100		2	1	10	<1	
61		150		2	1	10	<1	
62		200		2	1	5	<1	
63		250		2	1	5	<1	
64		300		2	2	20	<1	
65		350		2	1	10	<1	
66		400		2	3	10	<1	
67		450		2	1	10	<1	
68		500		2	1	10	<1	
69		550		2	2	10	<1	
70		600		2	2	10	<1	
71		650		20	6	10	1	
72		700		40	6	15	1	
73		750		5	2	10	<1	
74		800		10	1	5	<1	
75		850		12	1	5	<1	
76		1000		20	4	5	<1	
77		950		10	1	5	<1	
78		1000		30	1	5	<1	
79		1050		5	1	5	<1	
80		1100		30	3	5	<1	
81		1150		2	2	5	<1	
S00382		1200		2	1	5	<1	

059

576188

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
Mt. Black. Hercules Mine Grid.	LINE: 9600N FROM: 1250W TO:	ADM. — K.M.	Soil Samples.	SHEET Nº
		DATE: 13/11/73	DEPTH: "C" Horizon.	JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S000383	9600N	1250W	50	2	10	5	4	
384		1300		2	10	2	4	
385		1350		2	10	5	4	
386		1400		2	5	2	4	
387		1450		15	40	15	4	
388		1500		2	5	5	4	
389		1550		2	10	15	4	
390		1600		2	10	5	4	
391		1650		2	10	5	4	
392		1700		2	10	2	4	
393		1750		2	10	5	4	
394		1800		2	5	5	4	
395		1850		2	5	5	4	
396		1900W		2	10	5	4	

060

576189

PROJECT: MT BLACK

HERCULES MINE GRID.

CO-ORDINATES
LINE: 9200N
FROM: 2000W.
TO: 800W.

SAMPLED BY: ADM
DATE: 11/12/73

MATERIAL: SOIL
DEPTH: "C" HORIZON.

BOOK N°
SHEET N°
JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S001200	9200N	2000W		60	90	50	<1	
01		1950		<2	5	10	<1	
02		1900		<2	<5	2	<1	
03		1850		<2	10	5	<1	
04		1800		<2	5	2	<1	
05		1750		<2	<5	2	<1	
06		1700		2	10	2	<1	
07		1650		<2	10	2	<1	
08		1600		2	10	2	<1	
09		1550		<2	<5	2	<1	
10		1500		5	15	2	<1	
11		1450		<2	15	5	<1	
12		1400		<2	<5	<2	<1	
13		1350		<2	5	5	<1	
14		1300		<2	10	10	<1	
15		1250		2	10	<2	<1	
16		1200		2	10	<2	<1	
17		1150		<2	<5	5	<1	
18		1100		<2	5	<2	<1	
19		1050		<2	5	2	<1	
20		1000		2	10	2	<1	
21		950		<2	15	25	<1	
22		900		<2	5	10	<1	
23		850		<2	20	10	<1	
S00124		800W		<2	10	10	<1	

061

576190

PROJECT: MT. BLACK

HERCULES · MINE GRID.

CO-ORDINATES
LINE: 9200N
FROM: 750W
TO: 50W

SAMPLED BY: AGH.
DATE: 11/12/73

MATERIAL: SOIL
DEPTH: "C" HORIZON.

BOOK N°
SHEET N°
JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S001225	9200N	750W		<2	10	5	<1	
26		700		10	60	25	1	
27		650		<2	10	15	<1	
28		600		<2	20	20	<1	
29		550		<2	20	15	<1	
30		500		<2	15	2	<1	
31		450		<2	20	10	<1	
32		400		<2	10	5	<1	
33		350		<2	10	10	<1	
34		300		<2	40	35	<1	
35		250		<2	15	10	1	
36		200		<2	15	5	<1	
37		150		2	20	10	1	
38		100		<2	10	15	1	
S001239		50W		<2	16	5	1	

062

576191

PROJECT: MT BLACK

GRID HERCULES MINE GRID

CO-ORDINATES
LINE: 8800N
FROM: 1200W
TO:

SAMPLED BY: ADM + S.C.
DATE: 11/12/73

MATERIAL: SOIL
DEPTH: 'C' HORIZON"

BOOK N°
SHEET N°
JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S00265	8800N	1250W		<2	10	5	<1	
66		1360		<2	15	5	<1	
67		1350		<2	25	10	<1	
68		1400		<2	10	2	<1	
69		1450		<2	20	5	<1	
70		1500		<2	10	2	<1	
71		1550		<2	10	<2	<1	
72		1600		<2	15	2	<1	
73		1650		<2	10	<2	<1	
74		1700		<2	5	<2	<1	
75		1750		<2	<5	<2	<1	
76		1800W		<2	10	10	<1	

063

576192

PROJECT: MT BLACK

HERCULES MINE GRID.

CO-ORDINATES LINE: 8800N.

FROM: 00W

TO: [redacted]W. 1,200W

SAMPLED BY: AM - S.C.

DATE: 11/12/73.

MATERIAL: SOIL

DEPTH: "C" HORIZON.

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu.	Pb	Zn	Ag	DESCRIPTION
S00124 0	8800N	000W		<2	10	5	1	
41		050		<2	10	20	<1	
42		100		<2	20	20	<1	
43		150		<2	15	20	<1	
44		200		<2	20	25	<1	
45		250		<2	10	15	<1	
46		300		<2	20	25	1	
47		350		<2	15	15	<1	
48		400		<2	5	10	<1	
49		450		<2	5	10	<1	
50		500		<2	5	10	<1	
51		550		<2	10	10	<1	
52		600		<2	20	15	<1	
53		650		<2	10	10	<1	
54		700		<2	10	20	<1	
55		750		10	55	50	<1	
56		800		5	70	55	1	
57		850		<2	30	15	<1	
58		900		<2	25	20	<1	
59		950		<2	20	25	<1	
60		1000		<2	10	10	<1	
61		1050		<2	10	10	<1	
62		1100		<2	20	10	<1	
63		1150		<2	10	5	<1	
64		1200W		<2	15	10	<1	

064

576193

PROJECT: MT BLACK

Grid - Hercules

CO-ORDINATES
LINE: 8400 N
FROM: 1884 W
TO: 00 W

SAMPLED BY: BT/RS/KM

DATE: 13/12/'73

MATERIAL:

DEPTH: 1c

BOOK No:
SHEET No:
JOB No:

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S001400	8400N	1884W		2	20	50	L1	
1401		1850		L2	5	60	L1	
1402		1800		2	10	30	L1	
1403		1750		L2	10	50	L1	
1404		1700		L2	10	20	L1	
1405		1650		L2	5	15	L1	
1406		1600		L2	5	5	L1	
1407		1550		L2	10	30	L1	
1408		1500		2	15	90	L1	
1409		1450		2	5	15	L1	
1410		1400		L2	10	10	L1	
1411		1350		2	20	15	L1	
1412		1300		L2	15	5	L1	
1413		1250		2	15	5	L1	
1414		1200		2	15	10	L1	
1415		1150		2	20	10	L1	
1416		1100		2	20	10	L1	
1417		1050		5	25	20	L1	
1418		1000		2	15	55	L1	
1419		950		L2	15	20	L1	
1420		900		2	20	30	L1	
1421		850		5	10	30	L1	
1422		800		2	20	45	L1	
1423		750		5	20	55	L1	
1424		700		2	10	75	L1	

065

576194

PROJECT: MT BLACK
Cond - Hercules

CO-ORDINATES
LINE: 3400 N
FROM: 1884 W
TO: 00 W.

SAMPLED BY: BT/ RS/KM
DATE: 13/12/73

MATERIAL:
DEPTH: 61

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S001425		650		2	20	15	L1	
1426		600		2	20	50	L1	
1427		550		L2	5	40	L1	
1428		500		2	15	65	L1	
1429		450		2	15	20	L1	
1430		400		L2	20	10	L1	
1431		350		2	25	55	L1	
1432		300		5	25	40	L1	
1433		250		5	70	65	1	
1434		200		5	75	75	L1	
1435		150		2	50	55	L1	
1436		100		2	30	35	L1	
1437		50		L2	20	30	L1	
S001438		00		2	40	80	L1	

066

576195

PROJECT: MT. BLACK

GRID: HERCULES

CO-ORDINATES
LINE: 8000 N.
FROM: ~~1850~~ 00 W.
TO: 1850 W.

SAMPLED BY: R.S. | B.T. | K.M.

DATE: 13/12/73

MATERIAL:

DEPTH: "C"

BOOK No.
SHEET No.
JOB No.

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.	DESCRIPTION
5001439	8000N	00W		2	20	60	1	
1440		50		2	15	35	<1	
1441		100		2	15	20	<1	
1442		150		<2	10	60	<1	
1443		200		<2	10	25	<1	
1444		250		<2	20	40	<1	
1445		300		<2	20	20	<1	
1446		350		2	15	40	1	
1447		400		<2	10	25	<1	
1448		450		2	10	45	<1	
1449		500		<2	10	15	<1	
1450		550		2	10	45	<1	
1451		600		<2	10	60	<1	
1452		650		2	20	55	1	
1453		700		<2	25	80	1	
1454		750		<2	20	65	<1	
1455		800		2	20	50	<1	
1456		850		2	10	75	<1	
1457		900		<2	15	45	<1	
1458		950		<2	15	35	<1	
1459		1000		2	15	80	<1	
1460		1050		<2	15	55	<1	
1461		1100		2	10	85	<1	
1462		1150		<2	10	45	<1	
1463		1200		2	20	25	<1	

067

576196

PROJECT: MT. BLACK.

GRID: HERCULES.

CO-ORDINATES — LINE: 8000 N. FROM: 00 W TO: 1850 W

SAMPLED BY: R.S/D.T./Kon.

DATE: 13/12/79

MATERIAL:

DEPTH: 'C'

BOOK N°

SHEET N°

JOB N°

DESCRIPTIO

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag
501446	8000N	1250W		2	20	25	<1
1465		1300		2	20	85	1
1466		1350		2	20	55	1
1467		1400		2	20	45	<1
1468		1450		2	25	30	<1
1469		1500		2	15	40	<1
1470		1550		<2	15	15	<1
1471		1600		2	20	40	<1
1472		1650		<2	15	20	<1
1473		1700		<2	15	20	<1
1474		1750		<2	5	15	<1
1475		1800		2	10	10	<1
1476		1850		2	10	15	<1

068

576197

PROJECT: Mt Black

Grid: HERCULES

CO-ORDINATES
LINE: 7600N
FROM: 2150 W
TO: 00 W

SAMPLED BY: N.W / K.M / S.C. / R.S.

DATE: 17/12/73

MATERIAL:

DEPTH: "C"

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S00160	7600N	2150W		2	15	10	1	
16001		2100		3	15	45	1	
16002		2050		3	20	40	1	
16003		2000		2	15	50	1	
16004		1950		2	15	45	1	
16005		1900		3	25	160	1	
16006		1850		2	10	95	1	
16007		1800		2	15	175	1	
16008		1750		5	25	80	1	
16009		1700		2	15	35	1	
16010		1650		2	15	60	1	
16011		1600		2	5	40	1	
16012		1550		2	5	45	1	
16013		1500		3	10	35	1	
16014		1450		2	15	55	1	
16015		1400		2	20	45	1	
16016		1350		3	65	80	1	
16017		1300		2	10	65	1	
16018		1250		2	10	50	1	
16019		1200		5	5	60	1	
16020		1150		5	10	170	1	
16021		1100		2	5	95	1	
16017		1050		2	10	55	1	
16023		1000		2	5	60	1	
16024	V	950		2	5	75	1	

069

576198

PROJECT: Mt Black

Grid: HERCULES

CO-ORDINATES — LINE: 7600N — FROM: 2150 W — TO: 00 W

SAMPLED BY: N.W/K.M/S.C/R.S.

DATE:

MATERIAL:

DEPTH: "C"

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
1625	7600N	900W		<2	15	40	<1	
1626		850		2	10	65	<1	
1627		800		2	10	125	<1	
1628		750		2	10	130	<1	
1629		700		<2	10	200	<1	
1630		650		<2	15	70	<1	
1631		600		2	20	15	<1	
1632		550		<2	10	30	<1	
1633		500		2	15	60	<1	
1630		450		2	10	40	<1	
1635		400		2	10	50	<1	
1636		350		<2	10	80	<1	
1637		300		2	15	85	<1	
1638		250		2	10	55	1	
1639		200		2	5	40	<1	
1640		150		<2	10	80	<1	
1641		100		2	10	70	<1	
1642		50		<2	5	45	<1	
1643	V	00		<2	5	50	<1	

070

576199

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
MT BLACK	LINE: 7200N	A. McK. M.	Soil samples	SHEET Nº
HERCULES MINE GRID	FROM: 00W	DATE	DEPTH	JOB Nº
	TO: 1200W	13/11/73	"C" Horizon	

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
5 0307	7200N	000W	50	2	15	20	1	
08		050W		2	5	5	2	
9		100		2	10	5	2	
10		150		2	20	5	2	
11		200		2	10	5	2	
12		250		2	10	5	2	
13		300		2	5	5	2	
14		350		2	5	5	2	
15		400		2	5	5	2	
16		450		2	10	10	2	
17		500		2	5	5	2	
18		550		2	10	10	2	
19		600		2	10	15	2	
20		650		2	5	5	2	
21		700		2	10	5	2	
22		750		2	10	5	2	
23		800		2	10	7	2	
24		850		2	10	10	2	
25		900		2	15	10	2	
26		950		2	15	15	2	
27		1000		2	10	10	2	
28		1050		2	30	15	2	
29		1100		2	10	5	2	
30		1150		2	15	10	2	
31		1200W		2	15	10	2	

071

576200

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
MT BLACK HERCULES MINE GRID	LINE: 7200N FROM: 1250 W TO: 2450 W	K.M. A.D.M^c	Soil	SHEET Nº
		DATE 13/11/73	DEPTH "C" Horizon	JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 0332	7200N	1250W	50	<1	10	10	<1	
33		1300		<1	10	15	<1	
34		1350		<1	10	10	<1	
35		1400		<1	5	10	<1	
36		1450		<1	10	5	<1	
37		1500		<1	145	10	<1	
38		1550		<1	15	10	<1	
39		1600		<1	15	5	<1	
40		1650		<1	15	5	<1	
41		1700		<1	15	5	<1	
42		1750		<1	25	5	<1	
43		1800		<1	20	5	<1	
44		1850		<1	15	5	<1	
45		1900		<1	20	5	<1	
46		1950		<1	60	5	<1	
47		2000		<1	60	10	<1	
48		2050		<1	50	10	<1	
49		2100		<1	50	10	<1	
50		2150		<1	25	5	<1	
51		2200		<1	20	5	<1	
52		2250		<1	20	10	<1	
53		2300		<1	10	5	<1	
54		2350		<1	5	2	<1	
55		2400		<1	5	2	<1	
356		2450		<1	5	2	<1	
357				15	70	105	<1	

072

576201

PROJECT: MT BLACK.

GRID: HERCULES

CO-ORDINATES
LINE: 6800N
FROM: 2400W
TO: 1250W

SAMPLED BY: R.S./BT./KM
DATE: 17/12/73

MATERIAL: SOIL
DEPTH: "C" HORIZON

BOOK N°
SHEET N°
JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 01550	6800N	2400W		10	35	65	<1	
51		2350		5	20	90	<1	
52		2300		<2	20	70	<1	
53		2250		<2	20	65	<1	
54		2200		2	15	45	<1	
55		2150		2	35	45	<1	
56		2100		2	25	50	<1	
57		2050		<2	35	55	<1	
58		2000W		<2	20	50	<1	
59		1950		<2	20	50	<1	
S 01560		1900		<2	10	35	<1	
61		1850		<2	5	20	<1	
62		1900		<2	135	15	<1	
63		1750		<2	15	2	<1	
64		1700		<2	10	20	<1	
65		1650		<2	10	20	<1	
66		1600		<2	20	15	<1	
67		1550		<2	10	2	<1	
68		1500W		<2	15	20	<1	
69		1450		<2	10	20	1	
S 01570		1400		<2	10	25	1	
71		1350		<2	10	25	<1	
72		1300		<2	10	20	<1	
S 01573		1250W		<2	10	20	<1	

073

576202

PROJECT: MT BLACK.

GRID: HERCULES

CO-ORDINATES
LINE: 6800 N
FROM: 1200 W
TO: 00

SAMPLED BY: RS./RT./KM.

DATE: 17/12/73

MATERIAL: SOIL -80#

DEPTH: "C" HORIZON.

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 01574	6800 N	1200 W		<2	5	10	<1	
75		1150		<2	5	20	<1	
76		1100		<2	10	15	<1	
77		1050		<2	10	20	<1	
78		1000 W		<2	15	10	<1	
79		950		<2	10	20	<1	
S 00158 0		900		<2	15	<2	1	
81		850		<2	10	10	<1	
82		800		<2	10	5T	<1	
83		750		<2	20	35	<1	
84		700		<2	15	20	<1	
85		650		<2	20	25	<1	
86		600		<2	10	15	<1	
87		550		<2	10	10	<1	
88		500 W		<2	10	15	<1	
89		450		<2	10	15	<1	
S 00159 0		400		<2	10	20	<1	
91		350		10	75	125	<1	
92		300		2	15	10	<1	
93		250		5	30	40	1	
94		200		5	40	50	1	
95		150		5	40	85	1	
96		100		5	30	35	1	
97		50 W		2	10	15	<1	
S 1598		00		2	20	20	<1	

074

576203

PROJECT: MT BLACK.

GRID: JUPITER.

CO-ORDINATES
LINE: 6400N.
FROM: 2100 W.
TO: 900 W.

SAMPLED BY: ADM.

DATE: 23/11/73.

MATERIAL: SOIL SAMPLES

DEPTH: "C" HORIZONS.

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S000500	6400 N	2100 W		10	35	20	41	
501		2050		7	15	10	41	
502		2000		3	25	15	41	
503		1950		15	40	40	41	
504		1900		5	10	15	41	
505		1850		7	15	10	41	
506		1800		4	20	10	41	
507		1750		4	10	10	41	
508		1700		5	20	15	41	
509		1650		4	10	20	41	
510		1600		4	20	20	41	
511		1550		4	15	15	41	
512		1500		4	10	15	41	
513		1450		4	10	10	41	
514		1400		3	10	10	41	
515		1350		3	10	10	41	
516		1300		4	20	15	41	
517		1250		2	10	15	41	
518		1200		4	10	25	41	
519		1150		4	15	10	41	
520		1100		3	15	10	41	
521		1050		4	10	5	41	
522		1000		3	10	5	41	
523		950		4	10	5	41	
S000524	V	900		4	10	5	41	

075

576204

PROJECT: Mt Blacks.

GRID: Jupiters.

CO-ORDINATES
LINE: 6400 N
FROM: 850 W
TO: 50 W.

SAMPLED BY: A.J.V.

DATE: 23/1/73.

MATERIAL: Soil Samples

DEPTH: "C" Horizon

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTIO
S 000525	6400 N	850 W		2	10	10	.4	
526		800		2	10	5	.2	
527		750		2	15	5	.2	
528		700		2	10	5	.2	
529		650		2	10	5	.2	
530		600		2	10	5	.2	
531		550		2	10	5	.2	
532		500		2	15	5	.2	
533		450		2	10	5	.2	
534		400		2	5	10	.4	
535		350		2	10	10	.4	
536		300		2	25	25	.1	
537		250		2	25	25	.1	
538		200		2	25	25	.1	
539		150		2	25	10	.1	
540		100		2	25	25	.1	
541	V	50		10	25	10	.2	

076

576205

PROJECT: MT. BLACK.

GRID: HERCULES MINE (JUPITER)

CO-ORDINATES
LINE: 6000 N.
FROM: 2150 W.
TO: 950 W.

SAMPLED BY: A.D.M.

DATE: 17/12/73

MATERIAL: SOIL

DEPTH: "C" HORIZON.

BOOK No.

SHEET No.

JOB No.

DESCRIPTION

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu.	Pb.	Zn.	Ag
6001500	6000N	2150W.		25	105	70	1
01		2100		5	15	35	<1
02		2050		<2	15	30	<1
03		2000		<2	15	70	<1
04		1950		<2	20	30	<1
05		1900		<2	15	35	<1
06		1850		<2	10	50	<1
07		1800		<2	20	25	<1
08		1750		<2	10	35	<1
09		1700		<2	15	25	<1
10		1650		<2	10	70	<1
11		1600		<2	10	45	<1
12		1550		2	30	65	<1
13		1500		<2	10	65	<1
14		1450		<2	10	10	2
15		1400		<2	10	10	<1
16		1350		<2	10	10	<1
17		1300		<2	10	10	<1
18		1250		<2	10	50	<1
19		1200		<2	10	35	<1
20		1150		<2	10	30	<1
21		1100		<2	45	2	<1
22		1050		<2	15	30	<1
23		1000		<2	10	15	<1
24	V	950		<2	15	10	<1

077

576206

PROJECT: MT. BLACK.

WHITE SPUR GRID

CO-ORDINATES
LINE: 1800N
FROM: 1650 W
TO: 1250 W

SAMPLED BY: A.D.M.

DATE: 22/6/73

MATERIAL: SOIL SAMPLES.

DEPTH: "C" HORIZON.

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag
S 0275	1800N	1650W		<5	65	20	<1
276		1600		<5	55	20	<1
277		1550		<5	70	45	<1
278		1500		<5	40	15	<1
279		1450		<5	30	10	<1
280		1400		<5	45	10	<1
281		1350		<5	40	5	<1
282		1300		<5	30	5	<1
S 0283		1250W		<5	55	20	<1

072

576207

PROJECT: MT BLACK

GRID. WHITE SPUR

CO-ORDINATES
LINE: 400N
FROM: 1550W
TO: 2900W

SAMPLED BY: A.M.

DATE: MAY '74

MATERIAL: SOIL SAMPLES

DEPTH: 9"

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTIO
S 32 84	400N	1550W	50	10	45	65	1	
85		1600		10	50	60	1	
86		1650		10	65	45	1	
87		1700		10	90	40	<1	
88		1750		10	70	45	<1	
89		1800		5	65	40	1	
90		1850		10	110	60	1	
91		1900		20	230	75	1	
92		1950		15	135	60	2	
93		2000		25	165	85	2	
94		2050		10	90	50	2	
95		2100		15	100	50	2	
96		2150		10	80	35	1	
97		2200		5	55	30	1	
98		2250		10	80	35	1	
S 00 32 99		2300		10	130	25	1	
S 00 33 00		2350		15	155	60	2	
1		2400		10	155	75	1	
2		2450		15	135	70	1	
3		2500		10	150	60	1	
4		2550		20	210	110	1	
5		2600		10	90	35	1	
6		2650		10	95	140	1	
7		2700		10	70	35	1	
S 00 33 08		2750W		5	80	30	1	

029

576208

PROJECT: BAT BLACK GRID WHITE SPUR

CO-ORDINATES
LINE: 400N
FROM: 2750W
TO: 2900W

SAMPLED BY: A.M.

DATE: MAY '74

MATERIAL: SOIL SAMPLES

DEPTH: 9"

BOOK N°
SHEET N°
JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
53309	400N	2900W		10	55	30	<1	
310	400W	2850		10	105	45	1	
311	400N	2900		10	95	40	<1	
1								

080

576209

PROJECT: MT. BLACK. GRID - WHITE SPUR

CO-ORDINATES — LINE: 200N; FROM: 0W; TO: 1200W

SAMPLED BY: M.M. - K.M.

DATE: OCT '73.

MATERIAL: SOIL SAMPLES

DEPTH: 'C' HORIZON

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	As	DESCRIPTION
S 0090	200N	00W		10	70	20	<1		
91		50W		5	70	15	<1		
92		100		5	145	25	<1		
93		150		5	275	20	<1		
94		200		10	160	55	6		
95		250		10	165	25	<1		
96		300		5	115	15	<1		
97		350		5	75	20	<1		
98		400		5	120	20	<1		
99		450		10	70	10	<1		
0100		500		5	65	10	<1		
101		550		10	225	50	<1		
102		600		10	115	20	<1		
103		650		20	725	60	<1		
104		700		10	260	25	1		
105		750		20	1250	70	1		
106		800		35	2700	50	2		
107		850		35	2300	105	1		
108		900		10	1130	60	<1		
109		950		20	165	55	<1		
110		1000		20	205	70	1		
111		1050		30	45	140	1		
112		1100		20	250	45	1		
113		1150		15	70	65	1		
114		1200		25	55	60	1		

081

576210

PROJECT: MT. BLACK. GRID :- WHITE SPUR

CO-ORDINATES
LINE: 200 N
FROM: 1250 W
TO: 1500 W

SAMPLED BY: ADM. — K.M.

DATE: OCT. '73

MATERIAL: SOIL SAMPLES

DEPTH: 'C' HORIZON

BOOK Nº

SHEET Nº

JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	115	200 N	1250 W		10	65	35	1	
	116	〃	1300		15	50	65	1	

082

576211

PROJECT: Mt. Black

WHITE SPUR GRID

CO-ORDINATES
LINE: 16N
FROM: 1250 W
TO: 1600 W

SAMPLED BY: D.M.V.

DATE: 22/10/73

MATERIAL: Soil Samples

DEPTH: "C" Horizon

BOOK N°
SHEET N°
JOB N°

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	02671	1600N	1250W		10	120	40	1	
	2668		1300W		<5	75	20	1	
	2669		1350W		10	95	35	1	
	2670		1400W		5	55	50	<1	
	2671		1450W		25	1450	140	2	
	2672		1500W		40	1500	185	2	
	2673		1550W		5	35	15	<1	
S	02674		1600W		<5	35	5	<1	

083

576212

PROJECT: MT. BLACK.
GRID: WHITE SPUR.

CO-ORDINATES
LINE: 1400N
FROM: 00 W.
TO: 1200 W.

SAMPLED BY: AM - K.M.
DATE: OCT. '73

MATERIAL: SOIL SAMPLES
DEPTH: "C" HORIZON

BOOK Nº
SHEET Nº
JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	As	DESCRIPTION
S	0032	1400N	00W		10	30	40	<1		
	33		50		10	135	40	<1		
	34		100		5	150	30	<1		
	35		150		5	110	20	<1		
	36		200		<5	170	15	<1		
	37		250		5	260	50	<1		
	38		300		20	365	65	<1		
	39		350		15	350	50	<1		
	40		400		5	140	30	<1		
	41		450		<5	40	20	<1		
	42		500		<5	55	25	<1		
	43		550		<5	20	10	<1		
	44		600		<5	25	20	<1		
	45		650		<5	20	50	<1	20	
	46		700		5	115	65	1	40	
	47		750		5	135	60	1	50	
	48		800		15	295	170	2	30	
	49		850		5	150	50	1	40	
	50		900		<5	95	30	<1	60	
	51		950		5	170	70	1	50	
	52		1000		5	220	105	1	50	
	53		1050		5	135	90	1	50	
	54		1100		5	130	80	1	50	
	55		1150		15	235	110	1	40	
S	0056		1200		10	140	110	1	50	

084

576213

PROJECT: MT. BLACK.

GRID: WHITE SPUR

CO-ORDINATES
LINE: 1400N
FROM: 1250 W.
TO: 1400 W

SAMPLED BY: ADM — KM.

DATE: OCT. '73.

MATERIAL: SOIL SAMPLES.

DEPTH: "C" HORIZON

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.	As	DESCRIPTION
5 00057	1400N	1250W		25	345	325	32		
58		1300		45	1400	135			2
59		1350		10	2245	120			1
60	W	1400		10	70	60	<	1	

085

576214

PROJECT: Mt. Black.

GRID WHITE SPUR

CO-ORDINATES
LINE: LOOON
FROM: OOW
TO: 1500W

SAMPLED BY: ADM - KM

DATE: Oct. '73

MATERIAL: Soil Samples

DEPTH: "C" Horizon

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	As	DESCRIPTION
B0001	1000N	00W		15	105	145	<1		
2		50		20	210	165	<1		
3		100		5	230	30	<1		
4		150		20	215	270	<1		
5		200		10	150	105	<1		
6		250		5	165	45	<1		
7		300		5	130	55	<1		
8		350		10	195	25	<1		
9		400		<5	120	30	<1	<20	
10		450		5	135	25	<1	<20	
11		500		5	90	45	<1	<20	
12		550		15	165	60	<1	<20	
13		600		<5	60	10	<1	30	
14		650		35	615	1830	5	1.4%	
15		700		20	3500	75	2	130	
16		750		10	420	70	1	70	
17		800		10	305	55	1	90	
18		850		10	1110	75	1	50	
19		900		20	730	55	2	40	
20		950		45	1350	120	3	50	
21		1000		70	940	275	3	60	
22		1050		30	235	430	2	100	
23		1100		15	165	95	1	<20	
24		1150		10	60	50	<1	30	
25		1200		10	50	50	<1	20	

086

576215

PROJECT: MT. BLACK.

GRID: WHITE SPUR

CO-ORDINATES
LINE: 1000 N
FROM: 1250 W
TO:

SAMPLED BY: MM - KM.

DATE: Oct '73.

MATERIAL: Soil Samples.

DEPTH: "C" Horizon

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	As	DESCRIPTION
S0026	1000N	1250W	50	10	60	37	.1		
27		1300		15	40	65	.1		
28		1350		35	350	750	.2		
29		1400		20	70	60	.1		
30		1450		15	75	60	.1		
31		1500		40	70	100	.1		

087

576216

PROJECT: Mt. Black.
GRID - White Spur

CO-ORDINATES
LINE: 600 N
FROM: 1250 W
TO: 1400 W

SAMPLED BY: AM - K.M
DATE: Oct '73

MATERIAL: Soil Samples
DEPTH: 'C' Horizon

BOOK Nº
SHEET Nº
JOB Nº
DESCRIPTIO

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag
S	0086	600N	1250W		15	40	50	1
	87	↓	1300		20	40	113	1
	88		1350		15	45	70	1
	89		1400		15	40	45	1

088

576217

PROJECT: Mt. Black.
GRID:- White Spur.

CO-ORDINATES
LINE: 200S.
FROM: 00W
TO: 800W

SAMPLED BY: ADM. K.M.
DATE: Oct '73

MATERIAL: Soil Samples.
DEPTH: "C" Horizon

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES S/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	As	DESCRIPTION
S 0134	200S	00W		15	170	50	<1		
135		50		40	1600	135	1		
136		100		50	2900	1100	2		
137		150		55	3200	2700	2		
138		200		65	4555	1320	2		
139		250		50	2600	520	2		
140		300		10	195	95	1		
141		350		5	165	20	<1		
142		400		5	115	30	<1		
143		450		5	165	40	1		
144		500		10	465	115	1		
145		550		15	565	340	1		
146		600		15	480	85	1		
147		650		125	2000	1340	4		
148		700		60	1900	740	2		
149		750		15	320	90	1		
150		800		15	64	45	1		

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25 26 27 28 29 30 31 32 33 34 35 36 37 38 39 40 41 42 43 44 45 46 47 48 49 50 51 52 53 54 55 56 57 58 59 60 61 62 63 64 65 66 67 68 69 70 71 72 73 74 75 76 77 78

089

576218

PROJECT: MT. BLACK

GRID :- WHITE SPUR.

CO-ORDINATES — LINE: 600 S; FROM: 00 W; TO: 800 W

SAMPLED BY: MR. K.M.

DATE: OCT. '73

MATERIAL: SOIL SAMPLES

DEPTH: "C" HORIZON

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	As	DESCRIPTION
S 0117	600S	00W		20	340	95	1	40	
118		50		30	460	125	1	40	
119		100		10	210	55	<1	40	
120		150		30	595	120	1	40	
121		200		10	205	35	<1	40	
122		250		10	135	30	<1	40	
123		300		10	130	55	<1	<20	
124		350		10	100	45	<1	30	
125		400		20	145	95	1	50	
126		450		25	260	100	1	50	
127		500		20	285	55	1	<20	
128		550		20	300	90	1	50	
129		600		20	310	90	1	50	
130		650		30	180	200	1	50	
131		700		5	190	30	<1	50	
132		750		5	110	30	<1	20	
133		800		10	75	30	<1	30	

090

576219

PROJECT: MT BLACK.

WHITE SPUR GRID.

CO-ORDINATES
LINE: 900 S.
FROM: 1300 E.
TO: 800 E.

SAMPLED BY: WM.

DATE: 19/12/73

MATERIAL: SOIL.

DEPTH: "C" HORIZON.

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S00170	900S	1300E		2	30	30	.1	
01		1275		2	30	30	.1	
02		1250		5	220	185	.1	
03		1225		3	175	105	.1	
04		1200		3	90	30	.1	
05		1175		12	50	20	.1	
06		1150		2	30	20	.1	
07		1125		2	60	80	.1	
S00170 8		1100		10	960	90	.2	
S00170 9		1075						
S00170 10		1050		2	110	55	.1	
11		1025		45	750	175	.2	
12		1000		30	380	165	.1	
13		975		35	400	225	.1	
14		950		30	320	155	.2	
15		925		5	210	75	.1	
16		900		5	160	330	.1	
17		875		50	150	60	.1	
18		850		22	70	30	.1	
19		825		1	60	60	.1	
20		800	C	52	90	40	.1	

091

576220

PROJECT: MT BLACK. — WHITE SPUR GRID

CO-ORDINATES — LINE: 900S. — FROM: 1200E. — TO: 800E.

SAMPLED BY: N. W.

DATE: 19/12/73.

MATERIAL: SOIL

DEPTH: "A" HORIZON.

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTIC
S001650	900S	1300E	25	5	30	30	<1	
651	"	1275		10	90	75	<1	
652		1250		10	80	95	1	
653		1225		5	130	120	2	
654		1200		25	640	880	12	
655		1175		10	120	440	2	
656		1150		10	160	200	6	
657		1125		10	175	255	1	
658		1100		35	390	150	1	
659		1075		30	400	115	4	
S001660		1050		15	370	135	1	
661		1025		5	70	30	4	
662		1000		25	3000	145	6	
663		975		20	2800	130	5	
664		950		25	2100	140	6	
665		925		5	280	30	3	
666		900		10	310	160	4	
667		875		10	155	35	3	
668		850		5	230	20	2	
669		825		5	2400	60	3	
S001670		800E		15	1750	140	9	

092

576221

PROJECT: MT BLACK.

GRID: WHITE SPUR.

CO-ORDINATES — LINE: 1000 S. FROM: 00 TO: 800 W.

SAMPLED BY: A.M. — K.M.

DATE: 29/10/73.

MATERIAL: SOIL SAMPLES

DEPTH: 'C' HORIZON.

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 0284	1000S	000W		<5	555	15	2	
285		50		<5	30	5	<1	
286		100		5	75	40	<1	
287		150		<5	55	20	<1	
288		200		<5	50	20	<1	
289		250		<5	55	20	1	
290		300		5	145	70	1	
291		350		<5	70	45	1	
292		400		5	65	25	2	
293		450		30	525	565	3	
294		500		15	355	70	1	
295		550		15	215	65	1	
296		600		30	140	100	1	
297		650		15	135	55	<1	
298		700		20	235	155	1	
299		750		10	115	75	<1	
S 0300		800W		25	195	175	1	

093

576222

PROJECT: MT BLACK — WHITE SPUR GRID.

CO-ORDINATES — LINE: 1600 S. — FROM: 875 E — TO: 800 E

SAMPLED BY: N.W.

DATE: 19/12/73.

MATERIAL: SOIL

DEPTH: "A" HORIZON.

BOOK N°

SHEET N°

103 N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 001694	1600S	875E		10	215	45	2	
695		850E		5	145	65	1	
696		825		10	200	95	1	
S 001697	V	800E		2	95	25	1	

576223

094

PROJECT: MT BLACK. WHITE SPUR AREA.

CO-ORDINATES
LINE: 1600S.
FROM: 1500E
TO: 900E

SAMPLED BY: N.W.
DATE: 19/12/73.

MATERIAL: Soil
DEPTH: "A" Horizon

BOOK Nº
SHEET Nº
JOB Nº
DESCRIPTION

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb.	Zn.	Ag.
S001671	1600S	1500E		10	105	340	<1
72		1475E		10	100	300	<1
S001673		1450E		2	40	30	<1
NO SAMPLE		1425E					
S001674		1400E		<2	35	25	<1
NO SAMPLE		1375					
S001675		1350		2	30	20	<1
76		1325		2	80	30	<1
77		1300		5	70	25	7
78		1275		20	880	140	64
79		1250		20	350	95	16
S001680		1225		20	580	95	14
81		1200		30	3800	105	6
82		1175		15	680	55	3
83		1150		15	310	105	3
84		1125		10	155	45	2
85		1100		10	200	60	3
86		1075		35	430	95	4
87		1050		10	130	30	<1
88		1025		10	195	20	1
89		1000		10	125	15	<1
S001690		3975		5	100	20	1
91		950		15	225	30	1
92		925		10	130	20	1
93		900E		10	150	50	1

095

576224

PROJECT: AT BLACK — WHITE SPUR GRID.

CO-ORDINATES — LINE: 1600 S. — FROM: 875 E — TO: 800 E

SAMPLED BY: ADH

DATE: 19/12/73.

MATERIAL: SOIL

DEPTH: 'C' HORIZON.

BOOK N°

SHEET N°

JOB N°

DESCRIPT

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Mg.
S001743	1600S	875E		10	10	40	1
744		850		5	15	20	2
745		825		5	15	45	2
S001746		800E		2	05	30	1

090

576225

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
MT BLACK.	LINE: 16008.	[illegible]	SOIL	SHEET Nº
WHITE SPUR GRID.	FROM: 1500E	DATE 19/12/73.	DEPTH "C" HORIZON	JOB Nº
	TO: 900E			

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S001720	1600S	1500E		2	50	40	<1	
21		1475		<2	40	10	<1	
S001722		1450		<2	40	70	<1	
NO SAMPLE		1425		<2	20	[illegible]	<1	
S001723		1400		<2	20	70	<1	
NO SAMPLE		1375						
24		1350		2	65	20	1	
25		1325		<2	175	10	1	
26		1300		2	75	20	1	
27		1275		5	265	50	16	
28		1250		10	330	35	16	
29		1225		45	350	25	12	
S001730		1200		20	1500	65	6	
31		1175		10	370	35	3	
32		1150		5	175	35	2	
33		1125		10	210	35	3	
34		1100		10	130	40	4	
35		1075		20	350	50	4	
36		1050		5	140	20	1	
37		1025		10	145	45	1	
38		1000		10	155	30	1	
39		975		5	120	35	1	
S001740		950		10	155	25	1	
41		925		5	100	25	1	
42		900E		5	100	20	1	

097

576226

PROJECT: MT. BLACK

GRID:- WHITE SPUR

CO-ORDINATES — LINE: 2600 S; FROM: 1400 E; TO: 200 E

SAMPLED BY: ADM — K.M.

DATE: OCT. '73

MATERIAL: SOIL SAMPLES

DEPTH: "C" HORIZON

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 0209	2600S	1400E		<5	20	10	<1	
210		1350		<5	25	10	<1	
211		1300		<5	30	10	<1	
212		1250		10	45	55	1	
213		1200		5	40	20	<1	
214		1150		<5	35	10	<1	
215		1100		<5	120	10	<1	
216		1050		5	205	90	1	
217		1000		<5	60	10	<1	
218		960		<5	50	20	1	
219		900		5	290	50	6	
220		850		<5	40	10	<1	
221		800		<5	120	15	1	
222		750		5	115	10	1	
223		700		<5	50	15	<1	
224		650		<5	65	10	1	
225		600		10	60	10	1	
226		550		5	45	20	1	
227		500		10	75	15	<1	
228		450		5	60	15	1	
229		400		<5	45	10	<1	
230		350		5	50	5	<1	
231		300		<5	50	10	<1	
232		250		<5	45	5	<1	
S 0258		200E		5	315	50	2	

092

576227

PROJECT: MT. BLACK.

GRID:- WHITE SPUR

CO-ORDINATES
LINE: 2600 S
FROM: 150 E
TO: 00 E

SAMPLED BY: ADM. — K.M.

DATE: OCT. '73

MATERIAL: SOIL SAMPLES

DEPTH: "C" HORIZON

BOOK Nº

SHEET Nº

JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	0234	2600S	150E		15	585	120	2	
	235		100		5	70	25	1	
	236		50		10	125	80	2	
S	0237		00E		10	160	110	1	

039

576228

PROJECT: MT. BLACK. GRID :- WHITE SPUR

CO-ORDINATES: LINE : 2800S; FROM : 00E; TO : 1200 E

SAMPLED BY: ADM. K.M.

DATE: OCT '73

MATERIAL: SOIL SAMPLES

DEPTH: "C" HORIZON

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 0228	2800S	00E		5	21	20	<1	
229		50		5	18	30	1	
230		100		5	185	25	<1	
231		150		<5	70	10	<1	
232		200		<5	40	10	<1	
233		250		<5	30	5	<1	
234		300		<5	25	<5	<1	
235		350		<5	30	5	<1	
236		400		<5	20	10	<1	
237		450		<5	35	10	<1	
238		500		<5	40	15	<1	
239		550		<5	35	15	<1	
240		600		5	90	20	<1	
241		650		<5	40	10	<1	
242		700		<5	35	25	<1	
243		750		<5	35	15	2	3
244		800		<5	50	20	1	
245		850		<5	90	20	1	
246		900		<5	45	10	<1	
247		950		<5	55	5	<1	
248		1000		<5	190	5	<1	
249		1050		<5	175	20	<1	
250		1100		20	125	15	2	
251		1150		<5	30	10	<1	
S 0252		1200E		<5	20	10	1	

100

576229

PROJECT: MT. BLACK.

GRID :- WHITE SPUR.

CO-ORDINATES
LINE : 2800S
FROM : 1250 E
TO : 1400 E

SAMPLED BY: ADM. - K.M.

DATE: OCT '73

MATERIAL: SOIL SAMPLES.

DEPTH: "C" HORIZON

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 0263	2800S	1250E		10	60	25	1	
264		1300		<5	65	15	1	
265		1350		<5	20	5	<1	
S 0266		1400E		<5	25	5	<1	

101

576230

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
GRID - WHITE SPUR	LINE: 3200 S	B.T.	SOIL	SHEET Nº
	FROM: 5100 E	DATE	DEPTH	JOB Nº
	TO: 5800 E	28/12/73	C - HORIZON	

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S001076	3200	5100	50	5	40	40	1	
77		5150		2	50	40	<1	
78		5200		2	50	30	<1	
79		5250		<2	40	20	<1	(OLD CO-ORDS)
80		5300		2	45	25	<1	
81		5350		2	50	20	<1	
82		5400		<2	40	25	<1	
83		5450		<2	35	20	<1	
84		5500		<2	40	15	<1	
S001085		5550		2	50	15	<1	
86		5600		5	45	20	<1	
87		5650		<2	35	20	<1	
88		5700		<2	40	20	<1	
89		5750		<2	20	20	<1	
90		5800		2	85	50	1	

102

576231

PROJECT: MT BLACK

GRID: WHITE SPUR

CO-ORDINATES
LINE: 3600S
FROM: 1400E
TO: 00

SAMPLED BY: ADM - K.M.

DATE: Oct '73

MATERIAL: SOIL SAMPLES

DEPTH: C HORIZON

BOOK Nº

SHEET Nº

JOB Nº

DESCRIPTION

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag
36514E	3600S	1400E		<5	30	15	<1
		1350E		<5	15	10	<1
		1300E		<5	10	10	<1
		1250E		<5	20	15	<1
		1200E		<5	35	15	<1
		1150E		<5	20	10	<1
		1100E		<5	10	5	<1
		1050E		<5	15	5	<1
		1000E		<5	15	10	<1
		950E		<5	10	15	<1
		900E		<5	15	15	<1
		850E		<5	60	15	<1
		800E		<5	50	25	<1
		750E		<5	40	20	<1
		700E		<5	25	80	<1
		650E		<5	20	15	<1
		600E		<5	35	35	<1
		550E		<5	25	20	<1
		500E		<5	30	20	<1
		450E		<5	20	10	<1
		400E		<5	45	15	<1
		350E		<5	40	15	<1
		300E		<5	40	45	<1
		250E		<5	35	25	<1
		200E		<5	30	15	<1

103

576232

continued

PROJECT: MT. BLACK

GRID: ~~ROSEBERY LOBES~~ WHITE SPUR

CO-ORDINATES
LINE: 3600S
FROM: 1400E
TO: 00

SAMPLED BY: ADM – K.M.

DATE: Oct '73

MATERIAL: SOIL SAMPLES

DEPTH: C HORIZON

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag	DESCRIPTION
363 C	3600S	150E		<5	50	20	<1	
E		100E		<5	20	20	<1	
E		50E		<5	35	15	<1	
00		00		<5	35	25	<1	

104

576233

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
MT. BLACK	LINE: 3600 S	N.W. / R.M.		SHEET Nº
GRID: WHITE SPUR	FROM: 2500E	DATE	DEPTH	JOB Nº
	TO: 1450 E	8/1/94	"C"	

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
1828	3600 S	2500 E		2	30	10	<1	
1829		2450		5	45	10	<1	
1830		2400		5	65	15	<1	
1831		2350		<2	10	10	<1	
1832		2300		2	45	10	<1	
1833		2250		2	90	15	<1	
1834		2200		2	65	10	<1	
1835		2150		<2	10	15	<1	
1836		2100		5	25	15	<1	
1837		2050		<2	25	15	<1	
1838		2000		2	20	10	<1	
1839		1950		<2	20	10	<1	
1840		1900		<2	10	10	<1	
1841		1850		<2	15	10	<1	
1842		1800		<2	20	5	<1	
1843		1750		<2	20	10	<1	
1844		1700		<2	15	10	<1	
1845		1650		2	20	10	<1	
1846		1600		<2	20	10	<1	
1847		1550		2	10	5	<1	
1848		1500		5	10	2	<1	
1948		1450		<2	20	5	<1	

105

576234

PROJECT: MT BLACK

GRID:- WHITE SPUR

CO-ORDINATES — LINE: 3800 S. FROM: 1400 E TO: 200 E

SAMPLED BY: ADM. K.M.

DATE: Oct '73

MATERIAL: Soil Samples.

DEPTH: "C" HORIZON

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 0151	3800S	1400E		45	40	55	41	
152		1350		5	105	215	41	
153		1300		10	160	340	41	
154		1250		45	30	60	41	
155		1200		45	15	30	41	
156		1150		45	10	10	41	
157		1000		45	20	15	41	
158		1050		5	35	20	41	
159		1000		45	30	20	41	
160		950		45	40	15	41	
161		900		45	35	10	41	
162		850		45	40	10	41	
163		800		45	35	20	41	
164		750		45	30	20	41	
165		700		45	40	15	41	
166		650		45	15	15	41	
167		600		45	30	15	41	
168		550		45	30	15	41	
169		500		45	30	10	41	
170		450		45	25	10	41	
171		400		45	15	15	1	
172		250		45	30	15	1	
173		800		45	25	15	41	
174		250		45	40	10	41	
175		200E		45	45	20	41	

106

576235

PROJECT: MT. BLACK

GRID :- WHITE SPUR

CO-ORDINATES
LINE : 3800 S
FROM : 150E
TO : 00E

SAMPLED BY: ADM - K.M.

DATE: OCT '73.

MATERIAL: SOIL SAMPLES

DEPTH: "C" HORIZON

BOOK N°
SHEET N°
JOB N°

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	0176	3800S	150E		45	45	20	.1	
	177		100		45	60	10	.1	
	178		50		45	100	10	.1	
	179		00E		45	140	40	.1	

107

576236

PROJECT: GOLD & WHITE SOIL

CO-ORDINATES
LINE: 6000-S
FROM: 5800-E
TO: 6000-E

SAMPLED BY:

DATE: 28-12-73

MATERIAL: SOIL.

DEPTH: C-HORIZON

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
[illegible]	6000	5800	50	2	25	10	<1	
[illegible]		5850		2	20	5	<1	
[illegible]		5900		2	25	2	<1	
[illegible]		5950		5	35	15	<1	
[illegible]		6000		5	20	2	1	
[illegible]		6050		2	25	20	<1	
[illegible]		6097		2	30	20	<1	

103

576237

PROJECT: GRID - WHITE SPUR

CO-ORDINATES
LINE: 4800 S
FROM: 5000 E
TO: 6050 E

SAMPLED BY:

MATERIAL: SOIL.

DATE: 28/12/73

DEPTH: C-HORIZON.

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
5001	4800	5000	50	<2	20	10	<1	
25	1	5050		<2	30	5	<1	
26	1	5100		<2	35	15	<1	
27	V	6050		5	60	15	<1	

109

576238

PROJECT: COID - WHITE SPUR

CO-ORDINATES
LINE: 5600 S
FROM: 6300 E
TO: 6550 E

SAMPLED BY:

MATERIAL: Soil

BOOK Nº:
SHEET Nº:
JOB Nº:

DATE: 29-12-73

DEPTH: C-HORIZON

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
800123	5600	6300	50	<2	26	25	<1	
800124		6350		2	30	25	1	
800125		6400		<2	20	20	<1	
800126		6450		<2	40	30	<1	
800127		6500		<2	15	15	<1	
800128		6550		<2	20	20	<1	

BLANK CORDS

110

576239

PROJECT: MT. BLACK.

WHITE SPUR GRID.

CO-ORDINATES
LINE: 6400S
FROM: 6200E
TO: 6300E

SAMPLED BY: -

DATE: 28 - 12 - 73

MATERIAL: SOIL

DEPTH: 'C' HORIZON

BOOK N°
SHEET N°
JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 0 0 1 4 7 6	6 4 0 0 S	6 2 0 0 E		2	1 0	1 5	< 1	
S 0 0 1 4 7 7	1	6 2 5 0		< 2	3 0	1 0	< 1	
1 4 7 8	1	6 3 0 0 E		< 2	3 5	1 0	< 1	

111

576240

PROJECT: MT. BLACK

GRID: WHITE SPUR

CO-ORDINATES
LINE: 8000S
FROM: 3450E
TO: 2050E

SAMPLED BY: K.M. N.W.

DATE: 8/1/74

MATERIAL: SOIL

DEPTH: "C HORIZON"

BOOK N°
SHEET N°
JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 01888	8000S	3450E		5	85	45	1	
889		3350		2	135	30	1	Co-ords as shown on fig
890		3250		30	50	150	2	
891		3150		20	80	60	1	
892		3050		35	60	70	1	
893		2950		10	45	20	1	
894		2850		30	150	95	1	
895		2750		30	60	55	1	
896		2650		20	70	45	1	
897		2550		40	140	70	1	
898		2450		35	130	60	2	
S 01899		2350		25	100	70	1	
S 01540		2250		5	70	40	<1	
S 0141		2150		5	75	20	<1	
S 01542		2050E		10	75	50	<1	

112

576241

PROJECT: MT. BLACK
ROSEBERY MINE GRID

CO-ORDINATES
LINE: 2400N
FROM: 200W
TO: 750W

SAMPLED BY: K.M. & REN.
DATE:

MATERIAL: SOIL.
DEPTH: 'C' HORIZON

BOOK N°
SHEET N°
JOB N°

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	C1801	2400N	200W		47	10	25	<1	
S	C1803		250		2	15	15	<1	
S	C1805		300		7	15	18	1	
S	C1807		350		2	5	10	<1	
S	C1809		400		3	25	30	1	
S	C1811		450		15	55	20	1	
S	C1813		500		2	5	15	<1	
S	C1815		550		3	45	25	2	
S	C1817		600		2	25	15	2	
S	C1819		650		2	10	20	<1	
S	C1821		700		2	15	10	<1	
S	C1823		750		3	25	15	2	
S	C1825		800		35	150	130	1	
			850			NOT SAMPLED - ROAD			
			900			6		1	
S	C1827		950		25	30	85	1	

113

576242

PROJECT: MT BLACK

GRID: ROSEBERY MINE

CO-ORDINATES
LINE: 2400N
FROM: 200W
TO: 950W

SAMPLED BY: K.M. REW

DATE: 19-12-73

MATERIAL: SOIL.

DEPTH: "A HORIZON"

BOOK Nº

SHEET Nº

JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	1800	2400W	200W		10	45	50	<1	
S	1802		250		3	25	40	<1	
S	1804		300		3	40	70	1	
S	1806		350		10	35	60	<1	
S	1808		400		10	75	110	1	
S	1810		450		10	45	35	1	
S	1812		500		5	55	40	<1	
S	1814		550		30	140	210	2	
S	1816		600		5	55	55	<1	
S	1818		650		15	75	60	<1	
S	1820		700		5	15	25	1	
S	1822		750		5	30	50	<1	
S	1824		800		50	340	220	3	
			850		NOT SAMPLED			ROAD	
			900		"	"	"	"	
S	1826		950		35	145	220	2	

114

576243

PROJECT: MT BLACK

GRID: ROSEBERY MINE

CO-ORDINATES
LINE: 5900N.
FROM: 4500 W.
TO: 3200 W.

SAMPLED BY: ADM — D.M.

DATE: MARCH '74

MATERIAL: SOIL

DEPTH: C HORIZON.

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S002807	5900N	4500W		10	60	30	1	
08		4450		2	10	10	<1	
09		4400		<2	10	5	<1	
S002810		4350		2	10	10	<1	
11		4300		2	5	10	<1	
12		4250		2	20	15	<1	
13		4200		<2	15	10	1	
14		4150		5	10	10	<1	
15		4000		<2	5	5	<1	
16		3950		<2	10	5	<1	
17		3900		<2	15	10	<1	
18		3850		2	15	5	<1	
19		3800		<2	10	5	<1	
S002820		3750		<2	5	2	<1	
21		3700		<2	10	5	<1	
22		3650		<2	10	10	1	
23		3600		2	20	10	1	
24		3550		<2	10	5	<1	
25		3500		<2	10	5	1	
26		3450		<2	10	5	<1	
27		3400		<2	10	5	<1	
28		3350		<2	10	10	<1	
29		3300		<2	10	10	<1	
S002830		3250		<2	10	5	1	
S002831		3200W		2	20	15	<1	

115

576244

PROJECT: MT BLACK.

GRID: ROSEBERY MINE

CO-ORDINATES
LINE: 5900N.
FROM: 3150W
TO: 2250W.

SAMPLED BY: AM — D.N.

DATE: MARCH '74.

MATERIAL: SOIL.

DEPTH: C HORIZON.

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S002832	5900N	3150W		<2	10	10	<1	
33		3100		<2	15	10	1	
34		3050		<2	10	5	<1	
35		3000		<2	10	10	1	
36		2950		<2	15	10	<1	
37		2900		5	20	15	1	
38		2850		<2	10	10	1	
39		2800		<2	10	10	1	
S002840		2750		<2	15	10	1	
41		2700		<2	10	10	<1	
42		2650		<2	15	10	<1	
43		2600		<2	10	10	1	
44		2550		<2	5	10	1	
45		2500		10	45	30	<1	
46		2450		<2	10	10	<1	
47		2400		<2	10	10	<1	
48		2350		2	10	10	1	
49		2300		<2	5	10	1	
S002850		2250W		<2	10	10	1	

116

576245

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
Mt Black Grid: Rosebert Mine	LINE: 5900N FROM: 1700W TO: 2150W	Adm. R.J	Soil	SHEET Nº
		DATE: April '74	DEPTH: C Horizon	JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.	DESCRIPTION
[illegible]46	5900N	1700W		<2	10	10	<1	
47		1750		<2	5	10	<1	
48		1800		<2	20	30	<1	
49		1850		<2	10	10	<1	
50		1900		<2	10	10	<1	
51		1950		<2	15	15	<1	
52		2000		<2	15	15	<1	
53		2050		2	5	10	<1	
54		2100		<2	10	5	<1	
[illegible]55		2150W		<2	10	10	<1	

117

576246

PLOTTED

PROJECT: MT BLACK

ROSEBERY MINE GRID

CO-ORDINATES
LINE: 5900N
FROM: 1250W
TO: 1700W

SAMPLED BY: R.M.

DATE: 26 "NOV 73

MATERIAL: SOIL SAMPLES

DEPTH: "C HORIZON"

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S C5E7	5900N	1250W	50	7	25	10	<1	
S 68		1300	2	2	40	20	1	
S 69		1350		2	15	10	<1	
S 70		1400		2	10	10	<1	
S 71		1450		2	10	15	<1	
S 72		1500		3	10	15	<1	
S 73		1550		2	10	5	<1	
S 74		1600		1	5	10	<1	
S 75		1650		2	15	5	<1	
S C5E76		1700W		2	10	10	<1	

118

576247 PLOTTED

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
MT BLACK. ROSEBERY MINE GRID	LINE: 5900N FROM: 00W TO: 1200W	K. M.	SOIL SAMPLES	SHEET Nº
		DATE: 26" NOV. 73	DEPTH: "C HORIZON"	JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	542	5900N	00W		30	75	20	1	
S	43		50		5	35	15	<1	
S	44		100		10	35	10	<1	
S	45		150		10	35	20	1	
S	46		200		15	45	25	<1	
S	47		250		5	125	40	1	
S	48		300		2	50	15	1	
S	49		350		2	35	10	<1	
S	50		400		10	75	40	1	
S	51		450		5	60	25	<1	
S	52		500		<2	20	5	<1	
S	53		550		[illegible]	15	<2	<1	
S	54		600		<2	20	<2	<1	
S	55		650		<2	15	5	<1	
S	56		700		<2	45	15	<1	
S	57		750		2	[illegible]	15	<1	
S	58		800		2	55	25	1	
S	59		850		2	30	20	1	
S	60		900		2	65	65	1	
S	61		950		<2	25	10	<1	
S	62		1000		<2	15	10	<1	
S	63		1050		<2	25	5	<1	
S	64		1100		<2	35	15	<1	
S	65		1150		<2	35	15	<1	
S	566		1200W		2	25	15	<1	

119

576248

PLOTTED

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
MT BLACK	LINE: 6700 N	A. McC	SOIL SAMPLES	SHEET Nº
ROSEBERY MINE GRID	FROM: 00 W	DATE	DEPTH	JOB Nº
	TO: 1200 W	26th Nov 1973	"C HORIZON"	

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	0577	6700N	00W	50	2	10	10	<1	
S	578		50		2	15	10	<1	
S	79		100		2	10	5	<1	
S	80		150		2	10	5	<1	
S	81		200		<1	10	5	<1	
S	82		250		2	40	20	1	
S	83		300		5	50	15	<1	
S	84		350		5	25	20	<1	
S	85		400		5	30	20	<1	
S	86		450		2	40	15	<1	
S	87		500		2	40	15	<1	
S	88		550		2	35	15	<1	
S	89		600		10	55	25	1	
S	90		650		5	55	25	1	
S	91		700		5	35	15	1	
S	92		750		5	15	40	1	
S	93		800		2	55	25	1	
S	94		850		2	60	60	1	
S	95		900		<1	35	35	1	
S	96		950		2	20	35	1	
S	97		1000		<1	25	30	1	
S	98		1050		<1	35	40	1	
S	99		1100		<1	35	25	<1	
S	600		1150		<1	40	35	1	
S	601		1200W		<1	35	40	<1	

120

576249

PLOTTED

PROJECT: MT BLACK. ROSEBERY MINE GRID

CO-ORDINATES
LINE: 6700N
FROM: 1250W
TO:

SAMPLED BY: A. Mc

DATE: 26 NOV 73

MATERIAL: SOIL SAMPLES

DEPTH: "C HORIZON"

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 6602	6700N	1250W	50	<1	20	20	<1	
S 6603		1300		10	10	50	<1	
S 6604		1350		2	30	20	<1	
S 6605		1400		2	10	15	<1	
S 6606		1450		2	20	25	<1	
S 6607		1500		20	10	30	<1	
S 6608		1550		20	10	15	<1	
S 6609		1600		20	40	75	<1	
S 6610		1639W		2	60	45	1	

121

576250

PLOTTED

PROJECT: MT. BLACK.. PROP: ROSEBERY MINE

CO-ORDINATES — LINE: 7500N; FROM: 00W; TO: 1000W

SAMPLED BY: KM.

DATE: 10/12/73

MATERIAL: SOIL

DEPTH: 'C' HORIZON

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S								
S A C	7 5 0 0	0 0 0 0		< 2	1 0	2	< 1	
S A 1	7 5 0 0	5 0		2 0	5 0	3 0	1	
S A 2	7 5 0 0	1 0 0		2	5	5	< 1	
S A 3	7 5 0 0	1 5 0		< 2	1 5	1 0	< 1	
S A 4	7 5 0 0	2 0 0		5	3 0	1 0	1	
S A 5	7 5 0 0	2 5 0		7 0	4 5	6 0	< 1	
S A 6	7 5 0 0	3 0 0		5	3 5	1 5	1	
S A 7	7 5 0 0	3 5 0		5	2 0	1 5	< 1	
S A 8	7 5 0 0	4 0 0		< 2	1 0	1 0	< 1	
S A 9	7 5 0 0	4 5 0		5	2 5	4 0	1	
S B 0	7 5 0 0	5 0 0		5	5 5	7 5	1	
S B 1	7 5 0 0	5 5 0		< 2	3 0	1 5	< 1	
S B 2	7 5 0 0	6 0 0		5	6 5	1 0	< 1	
S B 3	7 5 0 0	6 5 0		< 2	4 0	1 5	< 1	
S B 4	7 5 0 0	7 0 0		< 2	6 0	2 0	< 1	
S B 5	7 5 0 0	7 5 0		< 2	8 5	3 0	< 1	
S B 6	7 5 0 0	8 0 0		5	8 0	5 5	2	
S B 7	7 5 0 0	8 5 0		< 2	5 0	5 0	< 1	
S B 8	7 5 0 0	9 0 0		5	1 4 5	1 5 5	1	
S B 9	7 5 0 0	9 5 0		# 6	4 0	3 0	< 1	
S C 0	7 5 0 0	1 0 0 0		2	3 5	1 5	< 1	

122

576251

PLOTTE

PROJECT: MT. BLACK.
GRID: ROSEBERY MINE

CO-ORDINATES
LINE: 7500 N
FROM: 1050 W
TO: 2000 W.

SAMPLED BY: K.M.
DATE: 10/12/73

MATERIAL: SOIL
DEPTH: "C HORIZON"

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.	DESCRIPTION
S								
S 561	7500	1050		5	55	35	2	
S 562	7500	1100		2	25	20	1	
S 563	7500	1150		2	30	25	<1	
S 564	7500	1200		5	20	20	<1	
S 565	7500	1250		5	40	60	1	
S 566	7500	1300		5	45	80	1	
S 567	7500	1350		5	25	15	<1	
S 568	7500	1400		10	35	25	1	
S 569	7500	1450		2	20	10	1	
S 570	7500	1500		5	30	20	<1	
S 571	7500	1550		2	20	15	<1	
S 572	7500	1600		5	20	25	1	
S 573	7500	1650		10	30	40	<1	
S 574	7500	1700		5	25	20	<1	
S 575	7500	1750		2	20	20	<1	
S 576	7500	1800		<2	15	15	<1	
S 577	7500	1850		<2	20	25	<1	
S 578	7500	1900		<2	15	35	<1	
S [illegible]								

123

576252

PROJECT: MT BLACK

GRID: ROSEBERY.

CO-ORDINATES — LINE: 7500 S. FROM: 1950 W. TO: 3150 W.

SAMPLED BY: A.G.M.

DATE: MARCH '74

MATERIAL: SOIL.

DEPTH: C HORIZON.

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 00290 7	7500N	1950W		5	25	15	<1	
08		2000W		2	15	5	<1	
09		2050		<2	10	10	<1	
S 00290 10		2100		<2	5	5	<1	
11		2150		<2	10	10	<1	
12		2200		<2	10	15	<1	
13		2250		<2	15	10	1	
14		2300		<2	10	10	<1	
15		2350		<2	10	10	1	
16		2400		<2	5	5	<1	
17		2450		2	10	20	1	
18		2500W		2	10	10	1	
19		2550		<2	15	5	<1	
S 00290 20		2600		<2	10	10	<1	
21		2650		<2	10	10	<1	
22		2700		<2	10	10	<1	
23		2750		2	40	600	2	
24		2800		<2	15	20	<1	
25		2850		<2	15	10	<1	
26		2900		<2	10	10	<1	
27		2950		2	15	10	<1	
28		3000W		2	10	10	<1	
29		3050W		2	10	5	<1	
S 00290 30		3100		2	10	10	<1	
31		3150W		2	10	5	<1	

124

576253

PROJECT: MT BLACK
GRID: ROSEBERY.

CO-ORDINATES
LINE: 7500 N
FROM: 3200 W.
TO: 4400 W.

SAMPLED BY: ADM.
DATE: MARCH '74

MATERIAL: SOIL
DEPTH: C HORIZON.

BOOK N°
SHEET N°
JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S00297 32	7500N	3200W		<2	10	10	<1	
33		3250		2	15	5	<1	
34		3300		2	15	5	<1	
35		3350		<2	10	2	<1	
36		3400		2	10	5	<1	
37		3450		2	10	10	<1	
38		3500		2	25	10	<1	
39		3550		2	10	5	<1	
S00297 40		3600		5	10	5	<1	
41		3650		<2	10	5	<1	
42		3700		<2	10	5	<1	
43		3750		5	20	20	1	
44		3800		5	25	20	<1	
45		3850		5	20	15	<1	
46		3900		2	10	10	<1	
47		3950		10	40	20	<1	
48		4000		5	20	10	<1	
49		4050		5	20	10	<1	
S00297 50		4100		5	20	20	<1	
51		4150		5	10	10	1	
52		4200		5	15	20	1	
53		4250		10	25	10	1	
54		4300		10	20	15	1	
55		4350		10	15	15	<1	
S00297 56		4400W		10	15	15	1	

125

576254

PROJECT: MT BLACK.

GRID: ROSEBERY.

CO-ORDINATES
LINE: 7500 N.
FROM: 4450 W.
TO: 4850 W.

SAMPLED BY: A.J.M.

DATE: MARCH 74

MATERIAL: SOIL

DEPTH: C HORIZON.

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 002957	7500 N	4450 E		2	10	10	1	
58		4500		2	5	10	1	
59		4550		5	10	10	1	
S 002960		4600		2	25	10	1	
61		4650		2	20	10	1	
62		4700		5	15	20	1	
63		4750		5	10	10	1	
64		4800		5	5	10	1	
S 002965		4850		2	10	5	1	

126

576255 PLOTTED

PROJECT: MT. BLACK
GRID: ROSEMERY MINE

CO-ORDINATES
LINE: 8300 N
FROM: 1200 W
TO: 2000 W

SAMPLED BY: KM.
DATE: 10/12/73

MATERIAL: SOIL
DEPTH: "C HORIZON"

BOOK N°
SHEET N°
JOB N°

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	0000	8300	1200		<2	25	5	<1	
S	9004	8300	1250		<2	10	2	<1	
S	9005	8300	1300		<2	10	<2	<1	
S	9006	8300	1350		<2	10	<2	1	
S	9007	8300	1400		<2	15	5	1	
S	9008	8300	1450		10	20	10	1	
S	9009	8300	1500		2	25	10	1	
S	9010	8300	1550		<2	30	15	1	
S	9011	8300	1600						
S	9012	8300	1650						
S	9013	8300	1700						
S	9014	8300	1750						
S	9015	8300	1800						
S	9016	8300	1850						
S	9017	8300	1900						
S	9018	8300	1950						
S	9019	8300	2000						
S									
S									
S									

127

576256 Rotter

PROJECT: MT. BLACK. GRID: ROSEBERY MINE

CO-ORDINATES — LINE: 8300 N; FROM: 00W; TO: 2000 W

SAMPLED BY: KM.

DATE: 10/12/73

MATERIAL: SOIL

DEPTH: 'C' HORIZON

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 879	8300	00		5	65	20	1	
880	8300	50		5	60	25	<1	
881	8300	100		5	70	25	1	
882	8300	150		<2	50	10	<1	
883	8300	200		<2	30	15	<1	
884	8300	250		2	35	20	1	
885	8300	300		2	55	55	1	
886	8300	350		<2	20	10	<1	
887	8300	400		<2	15	2	<1	
888	8300	450		<2	20	2	<1	
889	8300	500		<2	20	<2	<1	
890	8300	550		2	30	25	2	
891	8300	600		20	130	200	<1	
892	8300	650		10	30	15	1	
893	8300	700		2	20	2	<1	
894	8300	750		2	20	10	<1	
895	8300	800		5	85	260	2	
896	8300	850		<2	15	10	<1	
897	8300	900		<2	10	2	<1	
898	8300	950		<2	10	5	1	
899	8300	1000		<2	15	<2	1	
900	8300	1050		<2	10	5	1	
901	8300	1100		<2	10	2	1	
902	8300	1150		2	20	5	1	

128

576257 PLOTTE

PROJECT: MT. BLOCK. GRID: ROSEBERY MINES

CO-ORDINATES — LINE: 9100 N. FROM: 00 W. TO: 2000 W.

SAMPLED BY: R.S./A.M./K.M. DATE: 7/12/73

MATERIAL: DEPTH:

BOOK N° SHEET N° JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
5000	9100 N	000 W		2	10	15	<1	
5001		050		<2	10	10	<1	
5002		100		2	10	10	<1	
5003		150		<2	10	5	<1	
5004		200		<2	10	5	<1	
5005		250		<2	25	5	1	
5006		300		<2	25	5	<1	
5007		350		<2	15	10	<1	
5008		400		2	10	10	<1	
5009		450		2	5	10	<1	
5010		500		2	10	10	<1	
5011		550		5	10	15	<1	
5012		600		<2	10	2	<1	
5013		650		<2	10	5	<1	
5014		700		<2	10	2	<1	
5015		750		<2	10	2	<1	
5016		800		<2	15	5	<1	
5017		850		<2	20	10	<1	
5018		900		<2	25	10	<1	
5019		950		<2	20	20	<1	
5020		1000		2	35	40	<1	
5021		1050		<2	20	10	<1	
5022		1100		<2	15	10	<1	
5023		1150		<2	10	25	<1	
5024		1200		2	30	40	<1	

129

576258 PLOTTED

PROJECT: MT BLACK. GRID: ROSEBERY MINE.

CO-ORDINATES: LINE: 9.100 N. FROM: 00 W. TO: 2000 W.

SAMPLED BY: R.S. | A.M. | K.M.

DATE: 7/12/73.

MATERIAL:

DEPTH:

BOOK No:

SHEET No:

JOB No:

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
000824	9100N	1200W		<2	30	80	<1	
825		1300		<2	5	20	<1	
826		1350		<2	<5	5	<1	
827		1400		<2	5	<2	<1	
828		1450		<2	10	2	<1	
829		1500		<2	5	<2	<1	
830		1550		<2	5	15	<1	
831		1600		<2	<5	10	<1	
832		1650		<2	30	10	<1	
833		1700		<2	<5	5	<1	
834		1750		<2	65	10	<1	
835		1800		<2	20	10	<1	
836		1850		<2	10	10	<1	
837		1900		2	30	10	<1	
838		1950		2	70	10	<1	
839		2000		<2	20	<2	<1	

130

576259

PROJECT: MT. BLACK.
GRID: ROSEBERY MINE.

CO-ORDINATES
LINE: 9900 N.
FROM: 00 W.
TO: 1982 W.

SAMPLED BY: K.M.
DATE: 5/12/13

MATERIAL: Soil
DEPTH: "C" HORIZON

BOOK Nº
SHEET Nº
JOB Nº
DESCRIPTI

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag
S 000 713	4900 N	00 W		< 2	20	25	< 1
714		50		< 2	60	575	< 1
715		100		< 2	35	60	< 1
720		150		< 2	10	40	< 1
721		200		2	10	10	< 1
722		250		2	10	10	< 1
723		300		< 2	5	5	< 1
724		350		< 2	10	10	< 1
725		400		< 2	5	5	< 1
726		450		< 2	10	5	< 1
727		500		< 2	5	5	< 1
728		550		2	10	5	< 1
729		600		< 2	10	10	< 1
730		650		< 2	10	20	< 1
731		700		< 2	10	10	< 1
732		750		2	20	10	< 1
733		800		5	40	15	< 1
734		850		< 2	15	10	< 1
735		900		< 2	15	15	< 1
736		950		< 2	20	20	< 1
737		1000		2	10	15	< 1
738		1050		< 2	5	15	< 1
739		1100		< 2	5	20	< 1
740		1150		< 2	10	10	< 1
741	W	1200		< 2	10	< 2	< 1

131

576260

PROJECT: MT. BLACK.

GRID: ROSEBERY MINE

CO-ORDINATES
LINE: 9900 N.
FROM: 00 W.
TO: 1982 W.

SAMPLED BY: K.A.

DATE: 5/12/73

MATERIAL

DEPTH

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
576282	9900N	1250W		2	10	<2	<1	
783		1300		<2	5	<2	<1	
784		1350		<2	10	<2	<1	
785		1400		<2	10	2	<1	
786		1450		10	50	40	<1	
787		1500		<2	15	2	<1	
788		1550		<2	10	<2	<1	
789		1600		<2	10	<2	<1	
790		1650		<2	10	<2	<1	
791		1700		<2	40	30	1	
792		1750		<2	15	10	<1	
793		1800		<2	15	10	<1	
794		1850		<2	15	10	<1	
795		1900		<2	10	10	1	
796		1950		2	10	10	1	
576797	9900N	1982W		<2	15	16	1	

132

576261

PROJECT: MT. BLACK.
GRID: ROSEBERY MINE.

CO-ORDINATES
LINE: 10,700 N.
FROM: 00 W.
TO: 2000 W.

SAMPLED BY: R.S./A.M./K.M.
DATE: 7/12/73

MATERIAL:
DEPTH: "C"

BOOK N°
SHEET N°
JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
7600758	10700N	00W.		<2	10	5	1	
759		50		<2	10	10	<1	
760		100		<2	10	5	<1	
761		150		<2	10	5	<1	
762		200		<2	10	5	<1	
763		250		2	10	5	<1	
764		300		5	15	10	<1	
765		350		2	5	10	<1	
766		400		2	15	10	<1	
767		450		<2	10	10	<1	
768		500		<2	15	10	<1	
769		550		<2	10	10	<1	
770		600		2	10	5	<1	
771		650		2	10	5	<1	
772		700		<2	10	10	<1	
773		750		<2	15	<2	<1	
774		800		<2	10	<2	<1	
775		850		<2	10	2	<1	
776		900		<2	10	<2	<1	
777		950		<2	35	5	<1	
778		1000		<2	10	<2	<1	
779		1050		<2	10	<2	<1	
780		1100		<2	15	<2	<1	
781		1150		<2	15	<2	<1	
782		1200		<2	10	10	<1	

133

576262

PROJECT: MT. BLACK GRID: ROSEBERY MINE.

CO-ORDINATES
LINE: 10700 N.
FROM: 00 W.
TO: 2000 W.

SAMPLED BY: R.S / A.M. / R.M.

DATE: 7/12/73

MATERIAL

BOOK N°

SHEET N°

JOB N°

DEPTH

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
00078[illegible]	10700N	1250W		<2	10	10	<1	
7884		1300		<2	15	2	<1	
7885		1350		<2	10	5	<1	
7886		1400		<2	10	5	<1	
7887		1450		<2	20	15	<1	
7888		1500		<2	15	10	<1	
7889		1550		<2	20	<2	<1	
7890		1600		<2	25	5	<1	
7891		1650		<2	10	10	<1	
7892		1700		<2	10	10	<1	
7893		1750		<2	10	10	<1	
7894		1800		<2	20	10	<1	
7895		1850		<2	5	5	<1	
7896		1900		<2	10	10	<1	
7897		1950		<2	10	10	<1	
7898	"	2000		2	15	15	<1	

134

576263

PROJECT: MT BLACK. ROSEBERY MINE GRID.

CO-ORDINATES — LINE: 11500N; FROM: 00W; TO: 1200W.

SAMPLED BY: A.M. - R.W.

DATE: 20/12/78

MATERIAL: Soil

DEPTH: "C" HORIZON

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S00180	11500N	00W		<2	20	2	<1	
81		50		<2	30	10	<1	
82		100		<2	45	5	<1	
83		150		<2	10	10	<1	
84		200		<2	5	2	<1	
85		250		2	10	10	<1	
86		300		<2	5	5	<1	
87		350		<2	20	10	<1	
88		400		10	10	10	1	
89		450		2	20	45	2	
S00190		500		5	20	5	<1	
91		550		2	10	10	<1	
92		600		<2	5	2	<1	
93		650		<2	5	5	<1	
94		700		2	45	2	<1	
95		750		<2	5	2	<1	
96		800		2	45	2	<1	
97		850		<2	5	<2	<1	
98		900		<2	5	10	<1	
99		950		<2	10	10	<1	
S00200		1000		<2	5	2	<1	
01		1050		<2	5	<2	<1	
02		1100		<2	10	2	<1	
03		1150		<2	10	10	<1	
S00204		1200W		<2	20	10	<1	

135

576264

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
MT BLACK	LINE: 11500 N	ADM. - R.W.	SOIL	SHEET Nº
ROSEBERY. MINE GRID.	FROM: 1250 W	DATE 20/12/73	DEPTH "C" HORIZON	JOB Nº
	TO: 1850 W			

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.	DESCRIPTION
S001875	11500 N	1250 W		2	30	10	<1	
76		1300		<2	15	5	<1	
77		1350		<2	20	5	<1	
78		1400		<2	10	<2	<1	
79		1450		<2	5	2	<1	
S001880		1500		<2	<5	5	<1	
81		1550		2	10	10	<1	
82		1600		<2	5	10	<1	
83		1650		<2	10	10	<1	
84		1700		<2	30	25	<1	
85		1750		<2	10	10	<1	
86		1800		<2	10	5	<1	
S001887		1850		<2	5	10	<1	

136

576265

PROJECT: MT BLACK. ROSEBERY MINE GRID.

CO-ORDINATES — LINE: 12300N; FROM: 00W; TO: 1200W.

SAMPLED BY: K.M.

DATE: 20/12/73

MATERIAL: SOIL

DEPTH: "C" HORIZON.

BOOK Nº

SHEET Nº

JOB Nº

DESCRIPTION

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb.	Zn	Ag.
S 01900	12300N	0		2	10	10	<1
01		50		10	40	25	<1
02		100		2	40	40	<1
03		150		<2	10	10	<1
04		200		<2	5	10	<1
05		250		<2	<5	10	<1
06		300		2	40	20	<1
07		350		<2	10	2	<1
08		400		<2	5	10	<1
09		450		<2	<5	5	<1
S 01910		500		2	15	10	<1
11		550		<2	10	5	<1
12		600		2	10	20	<1
13		650		<2	15	2	<1
14		700		<2	10	5	<1
15		750		<2	10	2	<1
16		800		5	15	10	<1
17		850		2	10	2	<1
18		900		<2	10	5	<1
19		950		<2	10	2	<1
S 01920		1000		<2	10	<2	<1
21		1050		2	10	<2	1
22		1100		5	35	20	<1
23		1150		<2	10	5	<1
S 01924		1200W		2	10	5	<1

137

576266

PROJECT: MT BLACKS — ROSEBERY MINE GRID.

CO-ORDINATES — LINE: 12300N — FROM: 1250W — TO: 1800W

SAMPLED BY: K.H.

DATE: 20/12/73

MATERIAL: SOIL

DEPTH: "C" HORIZON.

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.	DESCRIPTION
SC019225	12300N	1250W		<2	40	20	<1	
26		1300		<2	10	2	<1	
27		1350		<2	10	2	<1	
28		1400		2	25	15	1	
29		1450		<2	20	20	<1	
SC019330		1500		<2	10	<2	<1	
31		1550		<2	15	5	<1	
32		1600		<2	10	2	<1	
33		1650		<2	20	10	<1	
34		1700		<2	15	5	<1	
35		1750		<2	10	2	<1	
36		1800W		<2	10	<2	<1	

133

576267

PROJECT: MT BLACK

GRID: ROSEBERY GRID

CO-ORDINATES
LINE: 13100N
FROM: 00W
TO: 1200W

SAMPLED BY: K.M.

DATE: 2-1-74

MATERIAL: SOIL

DEPTH: "C HORIZON"

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S00175	13100N	00W	50	<2	5	10	<1	
				<2	35	2	<1	
				2	16	15	<1	
				<2	10	5	<1	
				5	20	20	<1	
				2	10	2	<1	
				<2	10	2	<1	
				<2	10	<2	<1	
				<2	5	<2	<1	
				5	20	15	<1	
				2	10	5	<1	
				<2	10	10	<1	
				<2	10	5	<1	
				<2	35	2	<1	
				<2	40	5	<1	
				<2	10	5	<1	
				<2	10	2	<1	
				<2	10	<2	<1	
				<2	10	5	<1	
				2	10	5	<1	
S00176				<2	15	2	<1	
				<2	5	<2	<1	
				<2	10	2	<1	
				<2	10	10	<1	
				<2	10	5	<1	

103

576268

PROJECT: MT BLACK

GRID - RASBERRY GRID

CO-ORDINATES
LINE: 13100 N
FROM: 1250W
TO: 1800W

SAMPLED BY: K.M.

DATE: 2-1-74

MATERIAL: SOIL

DEPTH: "C HORIZON"

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
				2	20	15	<1	
				<2	10	5	<1	
				2	10	5	<1	
				<2	20	15	<1	
				<2	10	2	<1	
				<2	15	15	<1	
				<2	10	2	<1	
				<2	10	5	<1	
				<2	15	5	<1	
				2	20	20	<1	
				<2	5	2	<1	
				<2	<5	2	<1	

240

576269

PROJECT: MT BLACK.

GRID: BALLWIN2.

CO-ORDINATES

LINE: 28CON.

FROM: 1500E

TO: 300E

SAMPLED BY: AGM — H.R.W.

DATE: APRIL '74.

MATERIAL: SOIL.

DEPTH: "C" HORIZON.

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.
*	S00030571	2800N	1500E		10	70	115	1
*	S00030572		1450		5	65	35	1
*	S00030573		1400		5	65	40	<1
*	S00030574		1350		2	25	10	<1
*	S00029801		1300		<2	15	10	<1
	29811		1250		<2	25	15	<1
	29822		1200		<2	25	15	<1
	29833		1150		<2	40	20	1
	29844		1100		10	150	90	1
	29855		1050		<2	20	20	<1
	29866		1000		<2	35	20	<1
	29877		950		<2	30	10	<1
	29888		900		<2	35	40	<1
	29899		850		5	60	40	1
	S00029900		800		10	60	40	1
	29911		750		10	65	45	1
	29922		700		10	55	30	1
	29933		650		5	40	40	1
	29944		600		<2	25	40	<1
	29955		550		10	70	50	1
	29966		500		10	50	70	1
	29977		450		10	80	70	1
	S00029988		400		5	25	30	<1
	29999		350		5	35	35	<1
	S00030000		300E		5	65	35	<1

* NOTE CAREFULLY.

141

576270

PROJECT: MT BLACK
GRID: DALWITZ.

CO-ORDINATES
LINE: 2800N.
FROM: 250E
TO: 00E

SAMPLED BY: ADM - H.R.W.
DATE: APRIL '74.

MATERIAL: SOIL
DEPTH: "C" HORIZON

BOOK N°
SHEET N°
JOB N°
DESCRIPTI

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.
S003201	2800N	250E		5	55	30	.1
02		200		5	40	50	.1
03		150		.2	20	15	.1
04		100		2	85	45	1
05		50		10	100	100	1
S003206		00E		5	95	50	.1

142

576271

PROJECT: MT BLACK. GRID: DALWIT2.

CO-ORDINATES — LINE: 2400N. FROM: 1950E TO: 1450E

SAMPLED BY: ADM - H.R.W.

DATE: APRIL '74.

MATERIAL: SOIL

DEPTH: "C" HORIZON.

BOOK N° / SHEET N° / JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S00S060	2400N	1950E		42	25	10	41	
S00297 0		1900		10	60	35	41	
71		1850		10	95	50	41	
72		1800		15	85	340	2	
73		1750		20	210	110	1	
74		1700		25	195	75	1	
75		1650		5	25	15	41	
76		1600		42	20	10	41	
77		1550		42	35	15	41	
78		1400		5	70	40	41	
S00279		1450		10	110	110	1	

143

576272

PROJECT: MT BLACK. DALWITZ GRID.

CO-ORDINATES — LINE: 800N. FROM: 2900W. TO: 1700W

SAMPLED BY: AJW.

DATE: APRIL '74.

MATERIAL: SOIL

DEPTH: "C" HORIZON.

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTIC
S00324 8	800N	2900W		5	70	15	1	
49		2850		5	100	25	1	
S00325 0		2800		30	135	60	1	
51		2750		15	90	35	<1	
52		2700		10	85	30	<1	
53		2650		5	75	20	<1	
54		2600		35	80	25	1	
55		2550		10	100	30	1	
66		2500W		20	95	45	<1	
57		2450		10	45	15	<1	
58		2400		15	55	20	<1	
59		2350		15	25	15	<1	
S00326 0		2300		2	20	5	<1	
61		2250		<2	25	5	<1	
62		2200		<2	25	5	<1	
63		2150		<2	15	2	1	
64		2100W		10	40	5	1	
65		2050		2	35	5	1	
66		2000		<2	25	5	<1	
67		1950		<2	25	5	<1	
68		1900		15	35	10	1	
69		1850		10	30	5	<1	
S00327 0		1800		5	30	5	<1	
71		1750		2	35	10	<1	
S00327 2		1700W		<2	25	5	<1	

144

576273

PROJECT: MT BLACK. DALWITZ GRID.

CO-ORDINATES — LINE: 800N; FROM: 1650W; TO:

SAMPLED BY: A.M.V.

DATE: APRIL '74

MATERIAL: SOIL

DEPTH: "C" HORIZON.

BOOK N°

SHEET N°

JOB N°

DESCRIPT

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag
S003273	800N	1650W		42	25	10	<1
74		1600		2	20	5	<1
75		1550		2	15	5	<1
76		1500		42	30	5	<1
77		1450		5	30	5	<1
78		1400		10	70	105	<1
79		1350		2	15	10	<1
S003280		1300		42	15	10	<1
81		1250W		2	15	10	<1
82		1200		2	10	5	<1
83		1150		2	10	15	<1

145

576274

PROJECT: Mt Black.

GRID: S. Dalwitz.

CO-ORDINATES
LINE: 2000 S.
FROM: 2200E
TO: 1000E

SAMPLED BY: [illegible] - R.J.

DATE: MARCH '74

MATERIAL: Soil

DEPTH: C HORIZON.

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.	DESCRIPT
S002851	2000S	2200E		2	15	10	41	
52		2150		2	15	20	1	
53		2100		10	25	40	1	
54		2050		2	10	10	41	
55		2000E		2	10	10	41	
56		1950		5	15	20	1	
57		1900		5	10	20	1	
58		1850		10	15	20	1	
59		1800E		5	25	55	1	
S002860		1750		5	20	20	41	
61		1700		5	15	40	41	
62		1650		2	30	20	41	
63		1600E		5	30	20	41	
64		1550		5	25	20	41	
65		1500		2	25	10	41	
66		1450		10	30	20	41	
67		1400E		20	50	40	1	
68		1350		10	35	30	41	
69		1300		10	90	25	41	
S002870		1250		20	150	60	41	
71		1200E		15	45	35	1	
72		1150		10	40	30	41	
73		1100		10	35	35	1	
74		1050		20	60	65	1	
S002875		1000E		10	60	45	1	

146

576275

PROJECT: Mt BLACK

GRID: S. DALWITZ.

CO-ORDINATES
LINE: 2000S.
FROM: 950E
TO: 400E

SAMPLED BY: ADM - R.J.

DATE: MARCH '74

MATERIAL: SOIL

DEPTH: C HORIZON

BOOK Nº
SHEET Nº
JOB Nº
DESCRIPTI

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.
S002876	2000S	950E		10	50	30	1
877		900		5	30	20	<1
878		850		2	25	15	<1
879		800E		5	60	40	1
S002880		750		10	85	100	1
881		700		10	145	90	1
882		650		15	250	80	1
883		600E		75	125	110	2
884		550		30	160	85	2
885		500		5	145	20	<1
886		450		2	30	10	1
S002887		400E		10	40	60	1

576276

147

PROJECT: Mt Black
Dalwitz Grid.

CO-ORDINATES
LINE: 2400S.
FROM: 400E
TO: 1600E.

SAMPLED BY: Mn. - S.C.
DATE: 12/12/78.

MATERIAL: Soil
DEPTH: "C" Horizon

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/SS	CO-ORDINATES E/W	INTERVAL +/-	Cu.	Pb	Zn	Ag	DESCRIPTION
S000954	2400S	400E		30	660	405	2	
55		450		40	130	255	3	
56		500		5	35	15	<1	
57		550		5	100	20	<1	
58		600		10	350	90	1	
59		650		15	100	110	2	
60		700		10	205	75	1	
61		750		10	90	80	1	
62		800		10	235	80	1	
63		850		15	120	100	1	
64		900		5	80	50	<1	
65		950		2	80	40	<1	
66		1000		5	90	60	<1	
67		1050		2	80	40	<1	
68		1100		10	145	70	<1	
69		1150		5	90	150	<1	
70		1200		05	100	60	<1	
71		1250		2	100	20	<1	
72		1300		10	40	30	<1	
73		1350		10	45	25	<1	
74		1400		90	310	310	1	
75		1450		40	215	460	1	
76		1500		15	115	60	1	
77		1550		2	20	25	<1	
S000978		1600		<2	35	2	<1	

148

576277

PROJECT: NT BLACK

DALLWITZ GRID.

CO-ORDINATES
LINE: 2400 S.
FROM: 1650 E.
TO: 1700 E

SAMPLED BY: [illegible] AMSC

DATE: 12/12/73.

MATERIAL: SOIL

DEPTH: 'C' HORIZON

BOOK Nº

SHEET Nº

JOB Nº

DESCRIPTIO

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag
000979	2400S	1650E		42	25	20	<1
000980	"	1700E		42	25	10	<1

149

576278

PROJECT: MT. BLACK

GRID: DALWITZ

CO-ORDINATES
LINE: 2400S
FROM: 2850 E
TO: 1700E

SAMPLED BY: HRW. ADM

DATE: 26-3-74

MATERIAL: SOIL

DEPTH: "C" HORIZON.

BOOK Nº
SHEET Nº
JOB Nº
DESCRIPTION

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag
S	3135	2400S	2850E		5	20	10	1
	36		2800		10	55	15	1
	37		2750		10	50	20	1
	38		2700		20	250	280	3
	39		2650		2	15	10	1
	40		2600		20	230	40	2
S	3141		2550		20	100	110	3
	42		2500		5	40	20	1
	43		2450		10	40	40	2
	44		2400		2	20	10	1
	45		2350		2	10	10	1
	46		2300		2	15	10	1
	47		2250		10	70	10	1
	48		2200		10	90	20	1
	49		2150		10	60	160	2
S	3150		2100		5	30	30	1
	51		2050		35	50	220	2
	52		2000		5	30	20	1
	53		1950		5	35	25	1
	54		1900		10	65	30	1
	56		1550		15	80	20	4
	57		1800		2	40	10	1
	58		1750		5	35	10	1
	58	↓	1700		5	40	10	1

150

576279

PROJECT: MT BLACK

GRID: DALWITZ

CO-ORDINATES
LINE: 2800S
FROM: 1800E
TO: 400E

SAMPLED BY: A.D.M.; BRW
DATE: 26-3-74

MATERIAL: Soil
DEPTH: "C" Horizon

BOOK Nº
SHEET Nº
JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTIO
S	30761	2800S	1800E		10	40	15	1	
	62		1750		5	40	10	<1	
	63		1700		5	20	10	1	
	64		1650		40	170	60	1	
	65		1600		15	120	30	1	
	66		1550		5	40	10	1	
	67		1500		5	20	30	1	
	68		1450		2	25	10	1	
	69		1400		5	20	10	1	
S	30770		1350		20	120	60	1	
	71		1300		10	70	55	1	
	72		1250		20	105	70	1	
	73		1200		10	55	20	1	
	74		1150		10	70	20	1	
	75		1100		35	200	50	4	
	76		1050		10	55	85	1	
	77		1000		10	80	40	1	
	78		950		10	105	30	1	
	79		900		10	80	30	1	
S	30880		850		2	50	10	<1	
	81		800		2	45	10	1	
	82		750		10	90	15	1	
	83		700		5				
	84		650		10	180	45	1	
	85		600		2	80	20	1	

151

576280

PROJECT: MT. BLACK

GRID: DALWITZ

CO-ORDINATES
LINE: 2800 S
FROM: 550E
TO: 400E

SAMPLED BY: A.D.M., [illegible]

DATE: 26 - 3 - 74

MATERIAL: Soil

DEPTH: "C" Horizon

BOOK Nº

SHEET Nº

JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTI
9	3086	2800S	550E		2	70	10	<1	
	87		500		5	65	20	1	
	88		450		10	450	60	1	
	89		400E		15	670	90	1	

152

576281

PROJECT: MT BLACK. DALWITZ GRID.

CO-ORDINATES — LINE: 3200S. FROM: 400E TO: 1600E

SAMPLED BY: R.S. – S.C.

DATE: 12/2/72.

MATERIAL: SOIL

DEPTH: "C" HORIZON

BOOK Nº

SHEET Nº

JOB Nº

DESCRIPTIO

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag
S00135 0	32005	400E		2	165	20	<1
51		450		2	160	20	<1
52		500		2	180	15	<1
53		550		2	255	40	<1
54		600		5	355	50	<1
55		650		20	345	270	1
56		700		<2	50	220	<1
57		750		<2	25	15	<1
58		800		<2	40	30	<1
59		850		<2	15	10	<1
60		900		<2	15	10	<1
61		950		<2	30	10	1
62		1000		<2	30	5	1
63		1050		5	120	30	1
64		1100		10	135	60	1
65		1150		10	125	60	2
66		1200		45	940	185	2
67		1250		30	760	180	2
68		1300		40	560	120	2
69		1350		20	315	40	1
70		1400		20	295	50	1
71		1450		<2	20	40	<1
72		1500		80	760	380	2
73		1550		25	375	90	2
S00174		1600E		20	130	95	2

153

576282

PROJECT: MT BLACK — DARLINTZ GRID

CO-ORDINATES — LINE: 32005 — FROM: 1150E — TO: 1900E

SAMPLED BY: R.S. - S.C.

DATE: 12/12/78

MATERIAL: SOIL

DEPTH: "C" HORIZON

BOOK N°

SHEET N°

JOB N°

DESCRIP

SAMPLE NUMBER	CO-ORDINATES N/S.	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag
S 00125	32005	1650E		2	35	10	<1
76	1	1700		<2	30	10	<1
77	1	1750		5	35	10	<1
78	1	1800		<2	20	10	<1
79	1	1850		<2	40	10	<1
S 00130	1	1900E		<2	25	10	<1

576283

154

PROJECT: MT. BLACK.

GRID: S. DALWITZ.

CO-ORDINATES
LINE: 3200 S.
FROM: 3000 E
TO: 1950 E

SAMPLED BY: [illegible] - R.J.

DATE: MARCH '74

MATERIAL: SOIL

DEPTH: C HORIZON.

BOOK Nº

SHEET Nº

JOB Nº

DESCRIPTI

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.
S 002886	3200S	3000E		5	30	25	1
89		2950		2	5	15	<1
90		2900		10	40	15	1
S 002891		2850		2	20	20	1
92		2800		5	30	30	1
93		2750		2	15	15	1
94		2700		2	20	15	1
95		2650		2	20	10	<1
96		2600		2	5	15	1
97		2550		2	10	10	1
98		2500		2	10	10	1
99		2450		2	10	10	1
S 002900		2400		5	20	20	<1
01		2350		10	25	25	1
02		2300		5	20	20	<1
03		2250		5	20	30	1
04		2200		10	45	40	1
05		2150		2	20	15	<1
S 002906		2100E		2	10	10	<1
NO SAMPLE ROAD		2050					
		2000					
		1950E					

155

576284

PROJECT: MT. BLACK

GRID: DALWITZ

CO-ORDINATES
LINE: 3600 S
FROM: 1650 E
TO: 2600 E

SAMPLED BY: ADM, HRW

DATE: 26-3-74

MATERIAL: Soil

DEPTH: "C" Horizon

BOOK N°

SHEET N°

JOB N°

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	3115	3600S	1650E		5	65	20	1	
	16		1700		10	200	45	1	
	17		1750		2	50	30	1	
	18		1800		<2	20	15	1	
	19		1850		2	35	20	1	
S	3120		1900		2	30	20	1	
	21		1950		2	20	20	<1	
	22		2000		5	35	15	<1	
	23		2050		2	25	15	1	
	24		2100		5	20	20	1	
	25		2150		10	35	40	1	
	26		2200		2	20	15	<1	
	27		2250		2	20	15	1	
	28		2300		2	20	15	<1	
	29		2350		2	10	10	1	
S	3130		2400		2	10	10	<1	
	31		2450		2	20	10	<1	
	32		2500		5	20	20	1	
	33		2550		2	15	10	1	
	34		2600E		<2	15	5	<1	
			2650						

156

576285

PROJECT: MT. BLACH

GRID: DALWITZ

CO-ORDINATES
LINE: 3600 S
FROM: 400 E
TO: 1600 E

SAMPLED BY: A.D.M; JRW.

DATE: 26-3-74

MATERIAL: SOIL

DEPTH: "C" Horizon

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Horizon +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 30900	3600S	400E		10	35	30		1
901		450		2	50	30		1
902		500		5	170	60		1
903		550		2	180	30		1
904		600		2	100	30		1
905		650		5	90	20		1
906		700		2	80	15		1
907		750		K2	20	10		1
908		800		2	20	10		1
909		850		K2	20	10		1
S 31000		900		K2	20	10		1
001		950		K2	25	10		K1
002		1000		K2	10	10		K1
003		1050		2	30	20		1
004		1100		2	25	10		K1
005		1150		5	40	10		1
006		1200		10	20	10		1
007		1250		5	50	20		K1
008		1300		10	90	40		1
009		1350		10	60	20		K1
S 31100		1400		10	35	15		K1
011		1450		5	55	20		K1
012		1500		5	50	20		1
013		1550		2	35	10		K1
014		1600		5	70	35		1

157

576286

PROJECT: MT BLACK
MALMITZ GRID.

CO-ORDINATES
LINE: 4000 S
FROM: 400 E
TO: 1600 E

SAMPLED BY: K.M.
DATE: 12/12/73

MATERIAL: SOIL
DEPTH: "C" HORIZON.

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb.	Zn	Ag.	DESCRIPTION
S00127	4000S	400E		2	75	30		1
28		450		<2	40	25	<1	
29		500		<2	50	25	<1	
S00130		550		<2	65	20	<1	
31		600		5	50	40		1
32		650		10	80	75		2
33		700		5	75	25		1
34		750		10	145	80		1
35		800		5	120	25	<1	
36		850		2	190	15	<1	
37		900		2	125	15	<1	
38		950		2	110	30	<1	
39		1000		2	175	75		1
S00140		1050		<2	60	20	<1	
41		1100		<2	30	20	<1	
42		1150		2	35	20	<1	
43		1200		2	40	20	<1	
44		1250		2	50	10	<1	
45		1300		<2	60	10	<1	
46		1350		5	80	20	<1	
47		1400		5	50	15	<1	
48		1450		5	30	10	<1	
49		1500		2	35	15	<1	
S00150		1550		2	35	10	<1	
S00151		1600E		<2	10	<5	<1	

158

576287

PROJECT: MT BLACK — BAUMTZ GRID

CO-ORDINATES — LINE: 4000S — FROM: 1650 — TO: 2850

SAMPLED BY: K.M.

DATE: 12/12/73

MATERIAL: SOIL

DEPTH: "C" HORIZON

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S.	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 00130 2	4000S	1650E		<2	25	10	<1	
03		1700		<2	15	10	<1	
04		1750		10	35	25	<1	
05		1800		20	200	70	1	
06		1850		15	180	40	1	
07		1900		2	35	15	<1	
08		1950		15	155	20	<1	
09		2000		25	160	30	<1	
S 00131 0		2050		5	55	25	<1	
11		2100		2	40	10	<1	
12		2150		2	30	10	<1	
13		2200		20	100	125	1	
14		2250		<2	20	10	<1	
15		2300		<2	20	10	1	
16		2350		25	70	215	1	
17		2400		10	40	55	1	
18		2450		10	40	90	1	
19		2500		20	65	170	2	
S 00132 0		2550		15	70	230	1	
21		2600		10	70	180	2	
22		2650		20	135	40	1	
23		2700		15	60	50	1	
24		2750		5	45	20	1	
25		2800		5	25	10	<1	
S 00132 6		2850		10	50	30	1	

159

576288

PROJECT: MT BLACK — DALWIZ GRID.

CO-ORDINATES — LINE: 4000 S — FROM: 2900 E — TO: 3000 E

SAMPLED BY: K.M

DATE: 12/12/73

MATERIAL: SOIL

DEPTH: "C" HORIZON

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIP
S001327	4000S	2900E		2	20	10	<1	
28	"	2950		5	30	15	1	
S001329	"	3000E		<2	15	10	<1	

160

576289

PROJECT: MT BLACK

GRID: DALWITZ

CO-ORDINATES LINE: 4800S

FROM: 2900E

TO:

SAMPLED BY: R.S.

DATE: 14/12/73

MATERIAL: SOIL

DEPTH: "B HORIZON"

BOOK N°

SHEET N°

JOB N°

DESCRIPT

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Intercept +/-	Cu	Pb	Zn	Ag
S00151	4800S	2900E		20	65	65	1
82		2950		10	40	45	1
83		3000		10	50	40	<1
84		3050		10	35	25	<1
85		3100		<2	10	10	<1
86		2150		2	25	15	<1
87		3200		5	20	20	<1
88		3250		5	20	20	<1
89		2300		<2	10	15	<1
90		3350		2	20	15	<1
91		3400		<2	10	30	<1
92		3450		<2	15	15	<1
93		3500		<2	10	20	<1

161

576290

PROJECT: MT BLACK. STH. DALWITZ GRID.

CO-ORDINATES — LINE: 4800S. FROM: 1650E TO: 2850E

SAMPLED BY: R.S.

DATE: 14/12/73

MATERIAL: SOIL

DEPTH: "C HORIZON"

BOOK Nº

SHEET Nº

JOB Nº

DESCRIPT

SAMPLE NUMBER	N/S	E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	
S00125	4800S	1650		10	60	320		L1
26		1700		10	75	75		L1
27		1750		5	70	165		L1
28		1800		10	80	170		L1
29		1850		5	100	195		1
S00130		1900		15	140	90		1
31		1950		20	105	185		L1
32		2000		15	110	200		1
33		2050		5	60	130		L1
34		2100		10	65	110		L1
35		2150		5	35	65		L1
36		2200		5	30	65		L1
37		2250		15	100	210		L1
38		2300		5	20	145		L1
39		2350		5	40	180		L1
S00140		2400		10	55	150		L1
41		2450		5	35	70		L1
42		2500		5	15	35		L1
43		2550		5	15	40		L1
44		2600		10	55	70		L1
45		2650		5	55	50		L1
46		2700		15	60	165		L1
47		2750		20	50	335		L1
48		2800		20	65	180		L1
S00149		2850		35	100	175		1

162

576291

PROJECT: MT BLACK.
STH. WALWITZ GRID.

CO-ORDINATES
LINE: 4800S.
FROM: 400E
TO: 1600E.

SAMPLED BY: R.S.
DATE: 14/12/73.

MATERIAL: SOIL
DEPTH: "C" HORIZON

BOOK N°
SHEET N°
JOB N°
DESCRIPT

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	W.	Pb	Zn	Ag.	
S001100	4800S	400E		5	35	35	K	1
01		450		5	240	60	K	1
02		500		5	75	40		1
03		550		2	45	35	K	1
04		600		5	35	20	K	1
05		650		10	20	5	K	1
06		700		2	25	10	K	1
07		750		5	40	20	K	1
08		800		10	35	25	K	1
09		850		15	75	130		1
S001110		900		5	55	15	K	1
11		950		5	150	110	K	1
12		1000		5	80	60	K	1
13		1050		10	65	70	K	1
14		1100		5	35	95	K	1
15		1150		2	10	55	K	1
16		1200		5	25	55	K	1
17		1250		5	25	50	K	1
18		1300		2	10	25	K	1
19		1350		2	15	40	K	1
S001120		1400		2	30	55	K	1
21		1450		5	45	95	K	1
22		1500		2	30	45	K	1
23		1550		2	20	70	K	1
S001124		1600E		5	40	105	K	1

163

576292

PROJECT: MT. BLACK

GRID: DALWITZ

CO-ORDINATES
LINE: 52005
FROM: 1500 E
TO: 400 E

SAMPLED BY: A.D.M; H.R.W.

DATE: 27-3-74

MATERIAL: SOIL

DEPTH: "C" Horizon

BOOK N°
SHEET N°
JOB N°
DESCRIPT

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.
31882	3[illegible]	1500 E		2	30	15	<1
883		1450		10	96	40	<1
884		1400		2	30	10	<1
885		1350		42	15	10	<1
886		1300		5	15	15	<1
887		1250		2	15	20	<1
888		1200		40	270	70	<1
889		1150		10	65	30	<1
31890		1100		5	50	25	<1
891		1050		5	40	20	1
892		1000		5	40	20	<1
893		950		10	220	100	1
894		900		20	100	115	1
895		850		40	530	40	<1
896		800		5	65	30	1
897		750		5	60	15	<1
898		700		5	50	20	<1
899		650		10	80	20	1
32000		600		42	15	20	<1
30442		550		2	55	30	<1
443		500		2	35	15	<1
444		450		5	50	30	<1
30445		400		10	65	50	<1

164

576293

PROJECT: MT BLACK
GRID: DALWITZ

CO-ORDINATES
LINE: 5600S
FROM: 1550 E
TO: 400 E

SAMPLED BY: A.D.M.
DATE: 4 - 1 - 74

MATERIAL: SOIL
DEPTH: "C HORIZON"

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPT
S00178	S600S	1550E		<2	20	2	<1	
S00179		1525E		2	40	25	<1	
S00180		1500E		5	100	25	<1	
S00181		1475E		<2	25	20	<1	
S00182		1450E		<2	40	15	<1	
S00183		1425E		<2	50	25	<1	
S00184		1400E		2	145	40	<1	
S00185		1375E		<2	10	25	<1	
S00186		1350E		20	115	40	<1	
S00187		1325E		105	340	85	<1	
S00188		1300E		5	65	30	<1	
S00189		1275E		2	80	80	<1	
S00190		1250E		15	255	65	1	
S00191		1225E		5	95	30	<1	
S00192		1200E		45	295	85	<1	
S00193		1175E		10	200	105	1	
S00194		1150E		10	180	50	1	
S00195		1125E		<2	620	80	<1	
S00196		1100E		10	480	55	<1	
S00197		1075E		10	395	100	<1	
S00198		1050E		<2	145	50	<1	
S00199		1025E		5	150	40	1	
S00200		1000E		2	30	20	1	
S00201		975E		2	210	50	1	

165

576294

PROJECT: MT BLACK

GRID: DALWITZ

CO-ORDINATES
LINE: 5600S
FROM: 1650E
TO: 2850E

SAMPLED BY: A.D.McC.

DATE: 3-1-74

MATERIAL: SOIL

DEPTH: "C HORIZON"

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 00 04 61	5600S	1650E	50	30	160	290	<1	
62		1700		<2	20	40	<1	
63		1750		25	120	65	<1	
64		1800		5	60	50	<1	
65		1850		15	85	55	<1	
66		1900		5	40	25	<1	
67		1950		<2	10	45	<1	
68		2000		<2	30	45	<1	
69		2050		<2	30	35	1	
S 00 04 70		2100		10	60	60	1	
71		2150		2	20	60	1	
72		2200		<2	55	35	<1	
73		2250		65	435	170	<1	
74		2300		35	125	50	<1	
75		2350		<2	15	15	<1	
76		2400		10	120	90	<1	
77		2450		20	200	50	<1	
78		2500		15	70	55	<1	
79		2550		10	50	50	3	
S 00 04 80		2600		10	25	130	1	
81		2650		5	15	75	<1	
82		2700		<2	15	45	<1	
83		2750		2	15	30	<1	
84		2800		<2	20	20	<1	
85		2850		<2	10	20	<1	

166

576295

PROJECT: MT BLACK

GRID: DALWITZ

CO-ORDINATES
LINE: 5600S
FROM: 2900E
TO: 3450E

SAMPLED BY: A.D.Mc

DATE: 3 - 1 - 74

MATERIAL: SOIL

DEPTH: "C HORIZON"

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S00046	5600S	2900E		<2	20	15	<1	
57		2950		<2	10	15	<1	
58		3000		<2	<5	15	<1	
59		3050		2	25	20	<1	
60		3100		2	5	15	<1	
61		3150		<2	15	20	<1	
62		3200		2	10	10	<1	
63		3250		<2	15	15	<1	
64		3300		<2	20	20	<1	
65		3350		<2	5	20	<1	
66		3400		<2	20	15	<1	
S00047		3450E		<2	10	20	<1	

167

576296

PROJECT: MT. BLACK

GRID: DALWITZ

CO-ORDINATES
LINE: 6000 S
FROM: 1500 E
TO: 400 E

SAMPLED BY: HRW, A.L.M.

DATE: 27-3-74

MATERIAL: SOIL

DEPTH: "C" Horizon

BOOK N°

SHEET N°

JOB N°

DESCRIPTION

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Increm +/-	Cu	Pb	Zn	Ag
3159		1500E		5	25	30	41
3160		1450		10	75	50	41
61		1400		2	10	30	41
62		1350		42	15	5	41
63		1300		5	55	20	41
64		1250		30	165	70	41
65		1200		5	70	20	41
66		1150		2	130	30	41
67		1100		10	170	110	1
68		1050		5	90	110	1
69		1000		10	110	80	1
3170		950		15	100	60	1
71		900		5	55	30	1
72		850		10	40	30	1
73		800		15	95	80	1
74		750		10	40	80	1
75		700		15	90	50	1
76		650		2	30	10	41
77		600		10	80	15	1
78		550		5	25	15	1
79		500		2	30	20	41
3180		450		5	30	25	41
81		400E		42	10	10	41

168

576297

PROJECT: MT BLACK.

GRID: DALWIT 2.

CO-ORDINATES
LINE: 6400 S
FROM: 2900 E
TO: 3500 E

SAMPLED BY: SC.

DATE: 14/12/73

MATERIAL: SOIL

DEPTH: "C"

BOOK Nº

SHEET Nº

JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag	DESCRIPT
>	C1C663	6400S	2900E		<2	10	30	<1	
	664		2950		<2	25	25	<1	
	665		3000		<2	10	10	<1	
	666		3050		<2	10	15	<1	
	667		3100		<2	15	15	<1	
	668		3150		<2	10	20	<1	
	669		3200		<2	5	15	<1	
	670		3250		<2	10	30	<1	
	671		3300		<2	15	15	<1	
	672		3350		<2	5	15	<1	
	673		3400		<2	5	5	<1	
	674		3450		<2	10	10	<1	
>	C1C675	↓	3500E		<2	5	15	<1	

169

576298

PROJECT: MT BLACK

GRID: PALMITZ

CO-ORDINATES
LINE: 6400S
FROM: # 1650E
TO: 2850 E

SAMPLED BY: SC

DATE: 14/12/73

MATERIAL: SOIL

DEPTH: "C"

BOOK N°

SHEET N°

JOB N°

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	Interval +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 038	6400S	1650E		5	45	30	<1	
39		1700		5	30	20	<1	
40		1750		5	30	20	<1	
41		1800		<2	15	15	<1	
42		1850		2	10	10	<1	
43		1900		5	80	50	<1	
44		1950		5	30	25	<1	
45		2000		2	20	15	<1	
46		2050		<2	15	10	<1	
47		2100		<2	10	15	<1	
48		2150		<2	20	15	<1	
49		2200		2	30	40	<1	
50		2250		15	70	205	1	
51		2300		5	20	80	<1	
52		2350		10	45	120	<1	
53		2400		5	40	170	<1	
54		2450		5	20	70	<1	
55		2500		5	15	35	<1	
56		2550		5	15	70	<1	
57		2600		10	45	235	<1	
58		2650		10	30	225	<1	
59		2700		<2	10	125	<1	
60		2750		<2	20	65	<1	
61		2800		<2	15	20	<1	
62		2850		<2	10	15	<1	

170

576299

PROJECT: MT BLACK

GRID: DALNITZ.

CO-ORDINATES LINE: 6400S

FROM: 400E

TO: 1600E

SAMPLED BY: S.C.

DATE: 14/12/73

MATERIAL: SOIL

DEPTH: "C"

BOOK Nº

SHEET Nº

JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S.	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.	DESCRIPTION
S 013	6400S	400E		55	1200	390	2	
14		450		2	25	10	<1	
15		500		<2	5	10	<1	
16		550		<2	10	10	<1	
17		600		<2	10	15	<1	
18		650		2	15	10	<1	
19		700		10	50	40	<1	
20		750		5	25	25	<1	
21		800		2	20	45	<1	
22		850		5	55	55	<1	
23		900		10	25	30	<1	
24		950		<2	25	25	<1	
25		1000		15	65	160	<1	
26		1050		10	75	115	<1	
27		1100		20	95	170	1	
28		1150		10	60	145	<1	
29		1200		50	85	190	2	
30		1250		10	65	95	1	
31		1300		5	25	30	<1	
32		1350		5	35	20	<1	
33		1400		15	65	55	<1	
34		1450		2	20	30	<1	
35		1500		2	15	10	<1	
36		1550		10	55	70	<1	
37		1600		2	15	15	<1	

171

576300

PROJECT: MT BLACK

GRID: DALWITZ.

CO-ORDINATES
LINE: 7200 S
FROM: 1050 E
TO: 400 E

SAMPLED BY: K.M.

DATE: 8/11/73

MATERIAL: SOIL

DEPTH: "C HORIZON"

BOOK Nº

SHEET Nº

JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTIO
S	0449	7200S	1050E						
S	48		1000						
S	47		950						
S	46		900						
S	45		850						
S	44		800						
S	43		750						
S	42		700						
S	41		650						
S	40		600						
S	39		550						
S	38		500						
S	37		450						
S	36		400E						

172

576301

PROJECT	CO-ORDINATES	SAMPLED BY	MATERIAL	BOOK Nº
MT BLACK	LINE: 7200S	K.M.	SOIL	SHEET Nº
GRID: DALWITZ	FROM: 2300E	DATE 19-11-73	DEPTH "C HORIZON"	JOB Nº
	TO: 1100E			

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTIO
S 00474	7200S	2300E		35	255	60	2	
73		2250		15	120	60	2	
72		2200		15	95	50	1	
71		2150		20	105	40	<1	
70		2100		15	60	70	1	
69		2050		25	70	135	1	
68		2000		30	75	205	1	
67		1950		20	45	195	1	
66		1900		20	60	100	1	
65		1850		20	50	95	1	
64		1800		2	25	15	<1	
63		1750		2	30	15	<1	
62		1700		15	100	40	<1	
61		1650		2	25	20	<1	
60		1600		2	35	55	<1	
59		1550		5	35	35	<1	
58		1500		5	50	30	<1	
57		1450		5	45	35	<1	
56		1400		5	35	40	<1	
55		1350		10	50	40	<1	
54		1300		15	120	25	<1	
53		1250		10	70	70	1	
52		1200		25	95	55	<1	
51		1150		10	50	25	<1	
50		1100		5	35	20	<1	

176

576302

PROJECT: MT BLACK

GRID: DALWITZ

CO-ORDINATES
LINE: 72005
FROM: 3550 E
TO: 2350 E

SAMPLED BY: K.M.

DATE: 19/11/72

MATERIAL: SOIL

DEPTH: "C HORIZON"

BOOK Nº

SHEET Nº

JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S	00499	72005	3550E						
S	98		3500						
S	97		3450						
S	96		3400						
S	95		3350						
S	94		3300						
S	93		3250						
S	92		3200						
S	91		3150						
S	90		3100						
S	89		3050						
S	88		3000						
S	87		2950E						
S	86		2900						
S	85		2850						
S	84		2800						
S	83		2750						
S	82		2700						
S	81		2650						
S	80		2600						
S	79		2550						
S	78		2500						
S	77		2450						
S	76		2400						
S	75		2350E						

576303

174

PROJECT: MT BLACK

GRID: DALWITZ

CO-ORDINATES
LINE: 8000S
FROM: 2900E
TO: 3441E

SAMPLED BY: A DM.
DATE: 27/11/73

MATERIAL: SOIL SAMPLES
DEPTH: "C HORIZON"

BOOK Nº
SHEET Nº
JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag.	DESCRIPTION
S	664	8000S	2900E		5	15	10	<1	
S	665		2950		5	15	15	<1	
S	666		3000		5	10	10	<1	
S	667		3050		5	20	10	<1	
S	668		3100		5	15	5	<1	
S	669		3150		5	15	5	<1	
S	670		3200		5	10	5	<1	
S	671		3250		5	15	5	<1	
S	672		3300		5	10	5	<1	
S	673		3350		5	15	10	<1	
S	674		3400		5	20	5	<1	
S	675		3441E		5	15	10	<1	

175

576304

PROJECT: MT BLACK

GRID DALWITZ

CO-ORDINATES
LINE: 80005
FROM: 1650E
TO: 2850E

SAMPLED BY: ADM

DATE: 27/11/73

MATERIAL: SOIL SAMPLES

DEPTH: "C HORIZON"

BOOK Nº

SHEET Nº

JOB Nº

	SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTI
S	0634	80005	1650E						
S	40		1700						
S	41		1750						
S	42		1800						
S	43		1850						
S	44		1900						
S	45		1950						
S	46		2000						
S	47		2050						
S	48		2100						
S	49		2150						
S	50		2200						
S	51		2250						
S	52		2300						
S	53		2350						
S	54		2400						
S	55		2450						
S	56		2500						
S	57		2550						
S	58		2600						
S	59		2650						
S	60		2700						
S	61		2750						
S	62		2800						
S	63		2850E						

176

576305

PROJECT: Mt. Black.

GRID: S. Dalwitz.

CO-ORDINATES
LINE: 8000S.
FROM: 400E
TO: 1600E

SAMPLED BY: ADM.

DATE: 27-4-73.

MATERIAL: Soil Samples.

DEPTH: "C" Horizon.

BOOK Nº
SHEET Nº
JOB Nº

SAMPLE NUMBER	CO-ORDINATES N/S	CO-ORDINATES E/W	INTERVAL +/-	Cu	Pb	Zn	Ag	DESCRIPTION
S 00614	8000S	400E	50	12	20	30	<1	
S 615		450		12	25	10	<1	
S 616		500		2	20	10	<1	
S 617		550		12	20	10	<1	
S 618		600		5	40	20	<1	
S 619		650		6	35	20	<1	
S 620		700		10	35	25	<1	
S 621		750		2	80	10	<1	
S 622		800		5	60	15	<1	
S 623		850		10	100	30	<1	
S 624		900		10	50	20	<1	
S 625		950		15	65	40	<1	
S 626		1000		35	140	50	<1	
S 627		1050		10	90	20	<1	
S 628		1100		10	80	35	<1	
S 629		1150		35	180	50	1	
S 630		1200		65	110	75	<1	
S 631		1250		10	60	20	<1	
S 632		1300		20	60	40	<1	
S 633		1350		5	75	45	<1	
S 634		1400		15	55	35	<1	
S 635		1450		15	70	40	<1	
S 636		1500		5	45	40	<1	
S 637		1550		10	200	165	1	
S 638		1600		5	75	65	1	