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**ELECTROLYTIC ZINC COMPANY OF AUSTRALASIA LIMITED**

**MINERAL RESOURCES DIVISION**

**EXPLORATION LICENCE**

**NO. 4/78 - ZEEHAN**

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MAY 1989

**REPORT ON DIAMOND DRILLING  
AT GRIEVES SIDING  
JANUARY - JUNE, 1989**

E.Z. REPORT NO. T241

K. VIRGOE

89-2981

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## 1.0 INTRODUCTION

### 1.1 Location and Title

E.L. 4/78 (Zeehan) of 208 km<sup>2</sup> was granted to Amoco Minerals on 14th July, 1978. In 1983 E.Z. and Amoco negotiated a joint venture to explore E.L. 4/78, with E.Z. as manager. E.Z. exploration in E.L. 4/78 commenced in October, 1983. In 1985 Amoco's title and interest were transferred to Cyprus Minerals.

E.L. 4/78 was reduced to 123 km<sup>2</sup> in July, 1984 and to 9 km<sup>2</sup> in July, 1988. The location and boundaries of the reduced E.L. are shown on Fig. 1.

Part of the old EL 4/78, the area around the Oceana mine, has been retained by Cyprus as RL8809 of 5 km<sup>2</sup>. This RL is not included in this report.

### 1.2 Previous Exploration and Mining

Early exploration and mining operations are summarized in E.Z. Report T177 (Jan 1984). All reports by Amoco Minerals on exploration in E.L. 4/78 are listed. For details see E.Z. Report T177. Further exploration by E.Z. to April, 1986 is detailed in E.Z. Reports T192, T205 and T215. E.Z. Report T229 summarizes all exploration to 1987 for carbonate hosted lead-zinc deposits.

The relinquishment report including exploration activity from April, 1987 to 31st May, 1988 (E.Z. Report T232) summarizes all exploration in EL.4/78 until April 1988.

The diamond drilling programme from May - July, 1988 is outlined in E.Z. Report T234.

### 1.3 Prospect Locations

Fig. 2 shows grid names and prospect locations in E.L. 4/78. There are eleven major blocks of Ordovician Limestone within E.L. 4/78, nine of which, including the Oceana block, are covered by grids.



001

360,000m

370,000m

SASSAFRAS

618005

ZEEHAN

3,360,000mN

LITTLE HENTY

Austral Valley

38M/77  
J.R.R. Enright-Mooney  
39M/77

60M/77  
Electrolytic Zinc Co. of Austral Ltd.  
4M/77

Oceana Valley

Excluded Area

PYRAMID

AREA 1  
RELINQUISHED  
1984

E.L. 4/78  
AREA RELINQUISHED 1988

MYRTLE

PROFESSOR

FEN CREEK

BAURA

AREA RETAINED  
1988

3,350,000mN

ROSE VALLEY

GRIEVES

AREA 2  
RELINQUISHED  
1984

11M/66  
Malcolm Bendall Mining Syndicate  
12M/66

AREA RELINQUISHED 1988

0 1 2 3 4 5km

5 cm

-  FAULT
-  GORDON LIMESTONE
-  AEROMAGNETIC ANOMALIES

PROJECT ZEEHAN E.L. 4/78	
LOCATION PLAN	
Compiled S.T.	Date
Drawn R.J.R.	Scale 1:100,000

**FIG. 2**

#### 1.4 Exploration Philosophy

The primary objective of the joint venture has been to explore for large carbonate hosted Pb-Zn deposits within the Ordovician Gordon Limestone. Exploration targets are modelled on the Irish style carbonate hosted deposits. Tin and base metal mineralization within the Cambrian basement shales and carbonates are secondary exploration targets.

#### 2.0 WORK COMPLETED January-June 1989.

##### 2.1 Diamond Drilling

During January - February 1989 three diamond drill holes were drilled in the Grieves Grid area. This drilling programme followed the intersection of a mineralised horizon at the base of the Gordon Limestone by diamond drill hole ZG1013. This hole intersected 5.3m of 6.13% Zn at a depth of 105.5 - 110.8m, (See E.Z. Report T234).

Three drill holes were subsequently planned to test the extent of this Zn rich horizon. ZG1014 was collared 100m back from ZG1013, and ZG1015 and ZG1016 were positioned approximately 100m along strike grid north and grid south of ZG1013.

Details of the 3 drill holes are outlined below:

Hole No: ZG1014  
 Coordinates: 48315N, 60900E (Grieves Grid)  
 Total Depth: 292.3m  
 Azimuth: 130 deg. mag.  
 Declination: 60 deg.  
 Drilling: 0 - 0.3 Tricone  
           0.3 - 145 HQ  
           145 - 292.3m HQ3

Hole No: ZG1015  
 Coordinates: 48399N, 60975E (Grieves Grid)  
 Total Depth: 177.6m  
 Azimuth: 110 deg. mag.  
 Declination: 60 deg.  
 Drilling: 0 - 5.0 Tricone  
           5.0 - 91.0 HQ  
           91.0 - 177.6m HQ3

Hole No: ZG1016  
Coordinates: 48145N, 60985E (Grieves Grid)  
Total Depth: 187.5m  
Azimuth: 130 deg. mag.  
Declination: 60 deg.  
Drilling: 0 - 4.0 Tricone  
4.0 - 80.0 HQ  
80.0 - 187.5m HQ3

Where possible, all holes were surveyed at 50m intervals using an Eastman Single Shot downhole camera.

Drill core was logged in detail. Sideritic, decomposed and recrystallised limestone was split and assayed for Cu, Pb, Zn, Au, Fe and Mn, at 2-3m intervals.

Analabs method AAS103 was used, employing AAS determination after total digestion in hot mixed acids.

PVC pipe was put down the drill holes in preparation for the downhole EM37 survey.

## 2.2 Geophysics

Mitre Geophysics carried out a downhole electromagnetic survey on the 3 drill holes. See Appendix 2 for the full report.

## 3.0 RESULTS RECEIVED

### 3.1 Diamond Drilling

Assay values from selected intervals of core from ZG1014, ZG1015 and ZG1016 were anomalous but disappointing.

The 3 diamond drill holes were drilled through the Gordon Limestone to its base, then through the underlying clay layer and 5-10m into the Moira Sandstone. The target depth for mineralisation was the 20-30m above the clay layer. This horizon had been intersected by ZG1013 and found to contain 5.3m of 6.13% Zn.

From Fig 3, it can be seen that the alteration zone associated with the mineralisation in ZG1013 can be extended grid north and south through to drill holes ZG1014 and ZG1016. This horizon is absent in ZG1015. Instead a 70m+ thick clay altered layer extends below the limestone.

Assay values from this alteration zone were the highest received with values up to 1550ppm Zn in ZG1014 and up to 5950ppm Zn in ZG1016. The highest assay for ZG1015 was also immediately above the clay and reached 740ppm Zn.

Another sideritic alteration zone can be traced between the 3 holes and an anomalous assay of 985ppm Zn was obtained from ZG1015. The highest value within this zone from ZG1014 and ZG1016 was 140ppm Zn for both holes.

All gold assay values were below the detection limit of 0.008ppm Au.

#### ZG1014 SUMMARY LOG

0	-	0.3	non core drilling
0.3	-	17.3	lime mudstone
17.3	-	20.9	lime mudstone with algal mats and birdseyes
20.9	-	36.0	lime mudstone with minor grainstone
36.0	-	41.0	lime mudstone with algal mats and birdseyes
41.0	-	61.3	lime mudstone and wackestone
61.3	-	62.7	lime mudstone with algal mats and birdseyes
62.7	-	112.3	lime mudstone and wackestone
112.3	-	114.5	lime mudstone with algal mats, birdseyes and a sideritic zone
114.5	-	160.0	lime mudstone
160.0	-	173.5	lime mudstone with birdseyes
173.5	-	186.3	lime mudstone
186.3	-	235.6	lime packstone
235.6	-	245.8	dolomitic sideritic lime mudstone
245.8	-	262.2	lime wackestone
262.2	-	265.3	sandy limestone interbedded with calcareous sandstone
265.3	-	280.5	lime mudstone with a sideritic zone
280.5	-	292.3	orange clay
292.3	-	292.3	Moina sandstone

ZG1014 was collared 115m behind ZG1013. The target depth for intersection of the mineralized horizon was 250-280m. The best assay was 1550 ppm Zn at a depth of 269.6-272.7m in decomposed dolomitic grainstone. This hole was extensively fault fractured along its entire length.

ZG1015 SUMMARY LOG

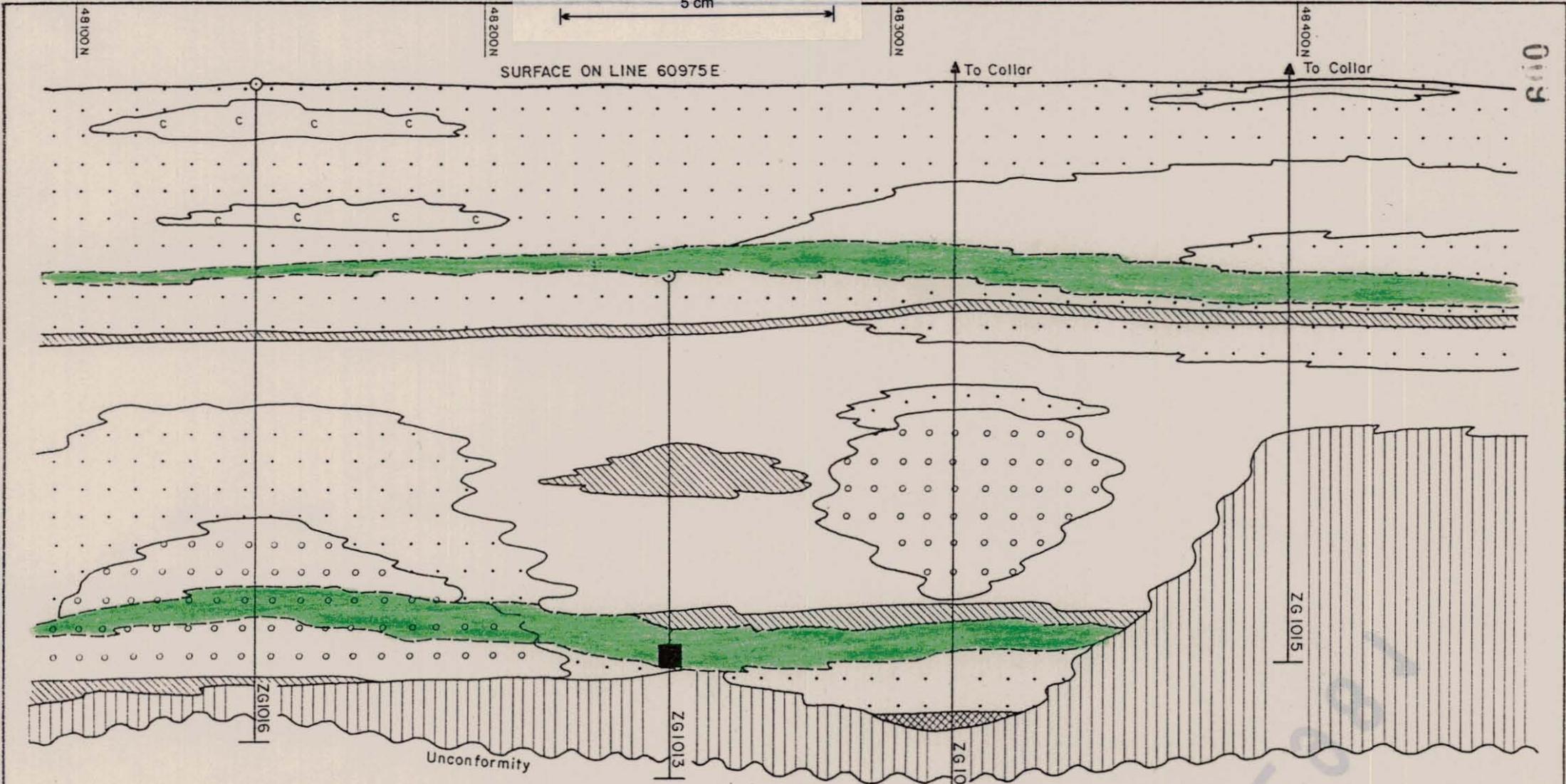
0	-	5.0	non core drilling
5.0	-	14.3	nodular lime mudstone
14.3	-	16.3	lime mudstone with algal mats and birdseyes
16.3	-	34.4	lime mudstone and wackestone
34.4	-	57.1	oxidised lime mudstone
57.1	-	65.3	lime mudstone and wackestone
65.3	-	74.8	sideritic oxidised lime mudstone
74.8	-	90.9	lime mudstone and wackestone
90.0	-	109.4	oxidised lime mudstone
109.4	-	121.7	grey clay
121.7	-	159.8	orange clay
159.8	-	177.6	clay interbedded with sandstone

ZG1015 is collared 155m along strike, grid north of ZG1013. The target depth for the mineralized horizon was 80-110m. The highest assay was 740 ppm Zn at a depth of 105.7-109.6m in fractured and oxidised lime mudstone. This hole was also extensively fault fractured along its entire length.

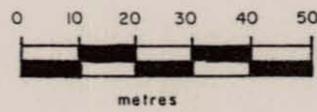
ZG1016 SUMMARY LOG

0	-	4.0	non core drilling
4.0	-	16.5	lime mudstone and wackestone with a cavity from 5.9 - 14.7m
16.5	-	18.1	oxidised lime mudstone
18.1	-	52.5	lime mudstone and minor wackestone with a cavity from 34.1 - 39.5m
52.5	-	55.2	sideritic limestone
55.2	-	73.5	lime mudstone and minor wackestone
73.5	-	77.2	oxidised lime mudstone
77.2	-	81.0	lime mudstone and wackestone
81.0	-	91.5	recrystallised lime mudstone with birdseyes
91.5	-	123.5	lime mudstone with minor wackestone
123.5	-	168.7	recrystallised grainstone and packstone with a sideritic zone
168.7	-	170.8	grey clay
170.8	-	177.0	orange clay
177.0	-	187.5	Moina sandstone

ZG1016 was sited 105m along strike grid south of ZG1013. The target depth was 140-170m. The highest assay was 5950 ppm Zn from 166.0-168.0m in leached oolitic grainstone.



-  Lime Mudstone & Wackestone.
-  Oolitic Grainstone.
-  Oxidised Lime Mudstone  
    ⊃ Algal mats, ⊃ Birdseyes
-  Cavity.
-  Interbedded Sandy Limestone  
& Limey Sandstone.
-  Clay.
-  Sideritic & Dolomitic  
Alteration Zone.
-  Zn. Rich Horizon.

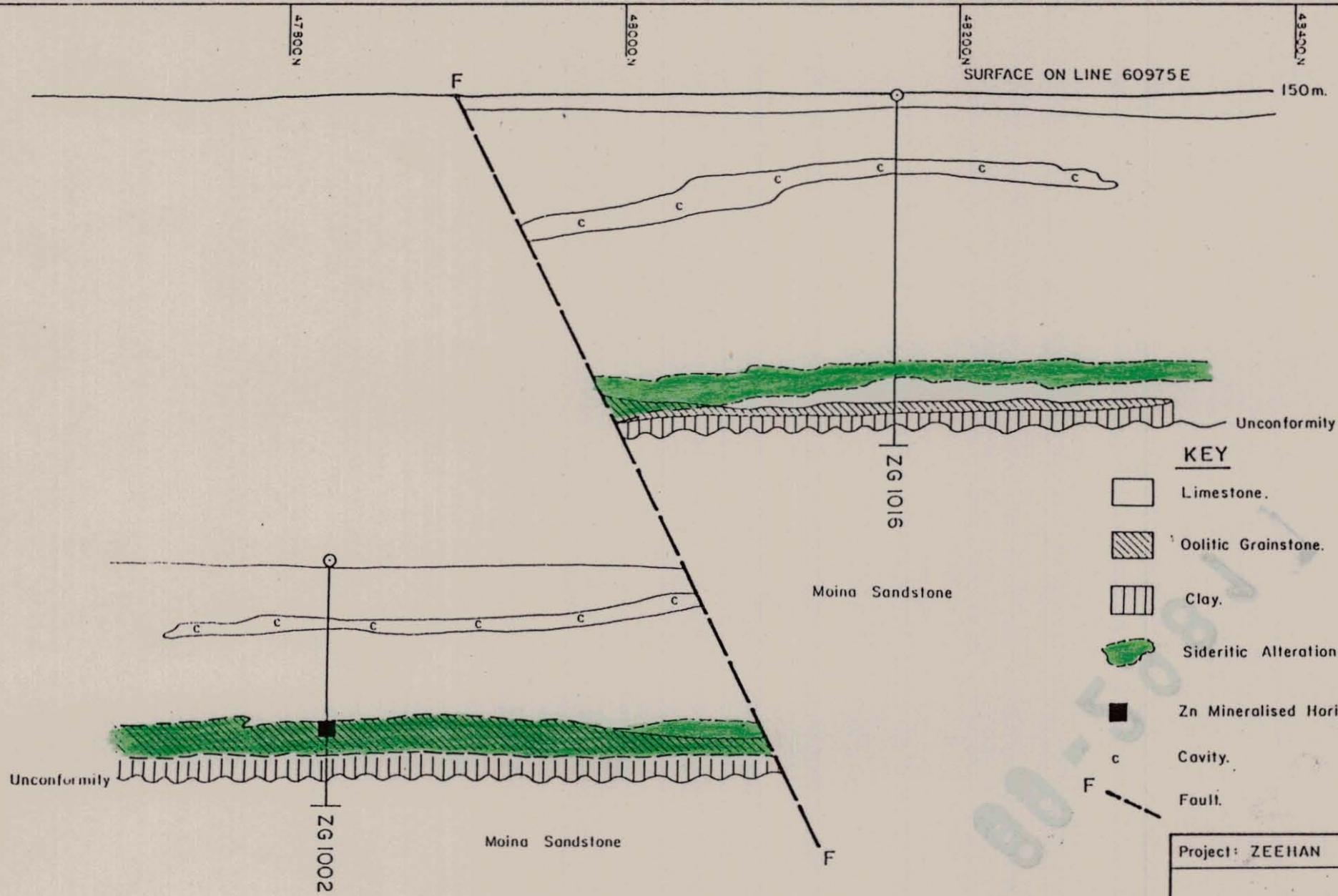


618010

Project: ZEEHAN E.L. 4/78	
<b>LONG. PROJECTION I</b>	
Compiled: K.J.V. Scale: 1:760	<b>Fig. 3</b>
Drawn: N.W.D.S. Date: 12-3-'89	

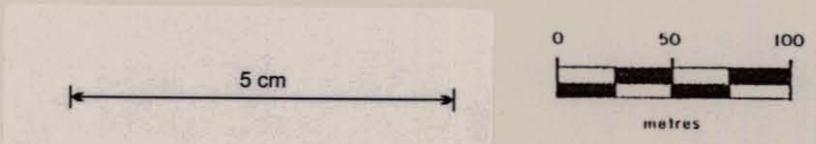
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618011



- KEY**
-  Limestone.
  -  Oolitic Grainstone.
  -  Clay.
  -  Sideritic Alteration Zone.
  -  Zn Mineralised Horizon.
  -  Cavity.
  -  Fault.

Project: ZEEHAN E.L. 4/78	
<b>LONG. PROJECTION II</b>	
Compiled: K.J.V. Scale: 1:333	<b>Fig. 4</b>
Drawn: N.W.D.S. Date: 12-3-'89	



### 3.2 Geology

The surface geology of the Grieves Grid area is shown on the Grieves Grid Geology Fact map (plate 1). This region is underlain by an Ordovician sedimentary sequence with the Gordon Limestone overlying the Moina Sandstone and being overlain by the Crotty Quartzite.

Detailed examination of the drill core and correlation between the drill holes (See Figures 3-7) has allowed:

\* Interpretation of the facies within the limestone sequence. This was necessary in order to recognize a deepening of the marine environment in response to possible synsedimentary faulting. Precipitation of base metals from mineralized fluids exhaled from such faults, into deeper water sediments, could produce the lead-zinc deposits sought.

\* The recognition of 2 sideritic and/or dolomitic alteration zones, the stratigraphically lowest one containing minor zinc mineralization.

Facies interpretation of the drill holes indicates a predominantly supratidal-upper intertidal environment characterised by pale grey oxidised lime mudstone with birdseyes and rare algal mat laminations. Interbedded with the mudstone are beach ridge deposits of oolitic grainstone, tidal channel deposits of bioclastic and fossiliferous packstone and grainstone, and intertidal lime mudstone and fine grained bioclastic wackestone.

Refer to Figs 8, 9, 10 and Appendix 1 - Drill Logs.

Two zones of sideritic and/or dolomitic alteration can be traced between the drill holes. The lower alteration zone of 10-15m thickness, occurs at the base of the Gordon Limestone and contains the mineralized horizon intersected by ZG1013. This is a 5.3m interval of 6.13% Zn at a depth of 105.5-110.8m. The lower zone can also be traced to drill hole ZG1002 (E.Z. Report No. T192), 360m along strike grid south and 195m in front of ZG1013, within a down faulted block. This hole intersected 8.2m of 2.02% Zn at a depth of 102.0 - 110.2m. However, the drilling of ZG1014, 15 and 16 to test the lateral extent of the mineralization indicated that no significant or continuous Zn rich horizons lie within this part of the Gordon Limestone.

The intervals of the upper alteration zone intersected by the drill holes are unmineralized.

Though no deepening of the marine environment was recognised as proposed by the Irish style model, mineralization of a minor nature has been previously found in the Grieves Grid area. Diamond drill holes ZG1002, ZG1007 and ZG1013, wacker drill holes ZWG1, ZWG3, ZWG4, ZWG22 and 5 out of 6 costeans have intersected Pb-Zn rich horizons. These horizons tend to occur either at the base of the Gordon Limestone in sideritic oolitic grainstone or just above supratidal lime mudstone deposits.

At the contact of the Gordon Limestone with the underlying Moina Sandstone is a soft clay layer, varying from 10 - 70+m in thickness. This unit is most likely the result of decomposition of a silty limestone bed by circulating ground fluids, moving along the limestone-sandstone contact.

The extensive fracturing of drill holes ZG1014 and ZG1015 supports the theory that the whole Gordon Limestone sequence has been faulted into its present position between the overlying Crotty Quartzite and underlying Moina sandstone.

### 3.3 Geophysics

The DHEM37 survey recorded some weak responses, however these are interpreted as the result of conductive clay sequences and/or faults and appear to be unrelated to any mineralized horizons.

Negative responses obtained from ZG1014 and ZG1015 are as yet unexplained.

## 4.0 DISCUSSION

EL.4/78 has been held by E.Z. in joint venture partnerships since 1983.

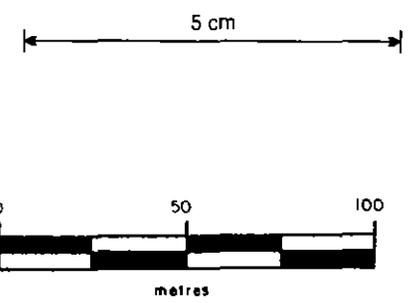
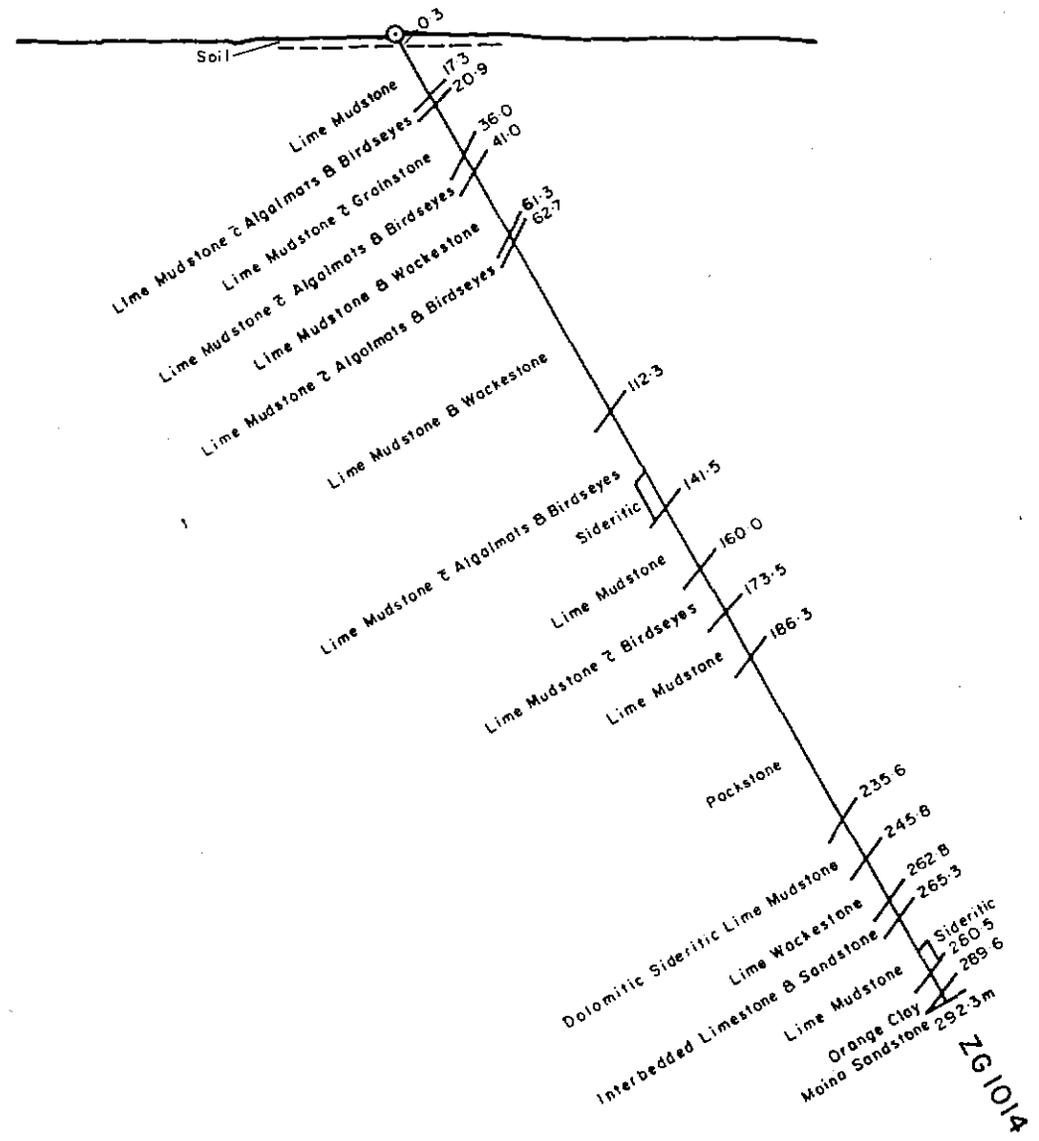
In this time intensive gridding, sampling, costeaning and geophysics has been carried out over the license area, followed by diamond and wacker drilling of geochemical and geophysical anomalies.

Though small zones of Zn and Pb mineralization have been intersected by a number of drill holes and costeans, follow up drilling has proved the mineralized horizons to be of a patchy and limited nature.

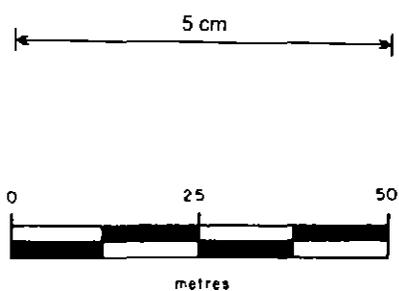
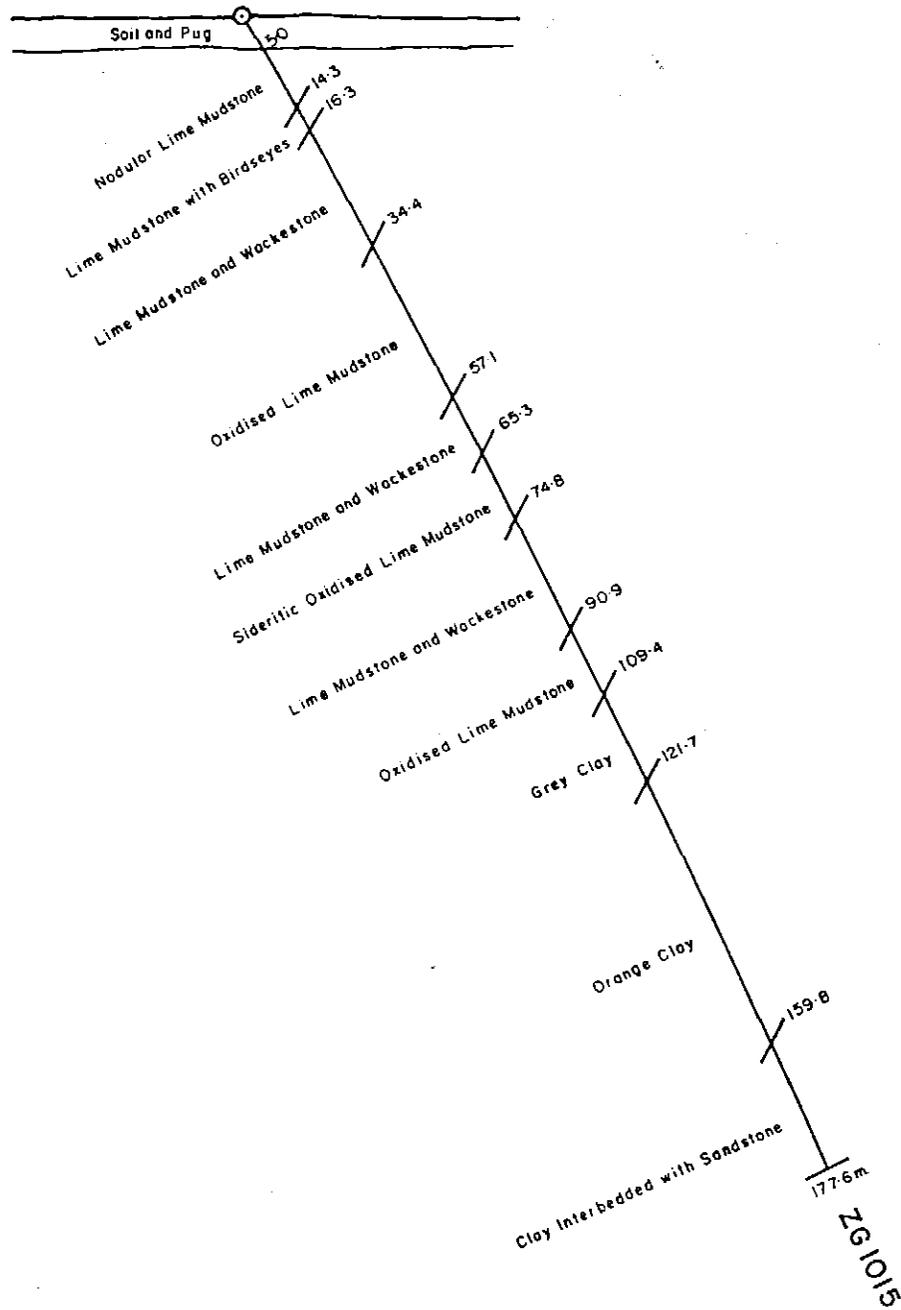
At this stage, E.Z. has exhausted all possible drill targets and no further exploration is warranted.

Relinquishment of the EL is recommended.

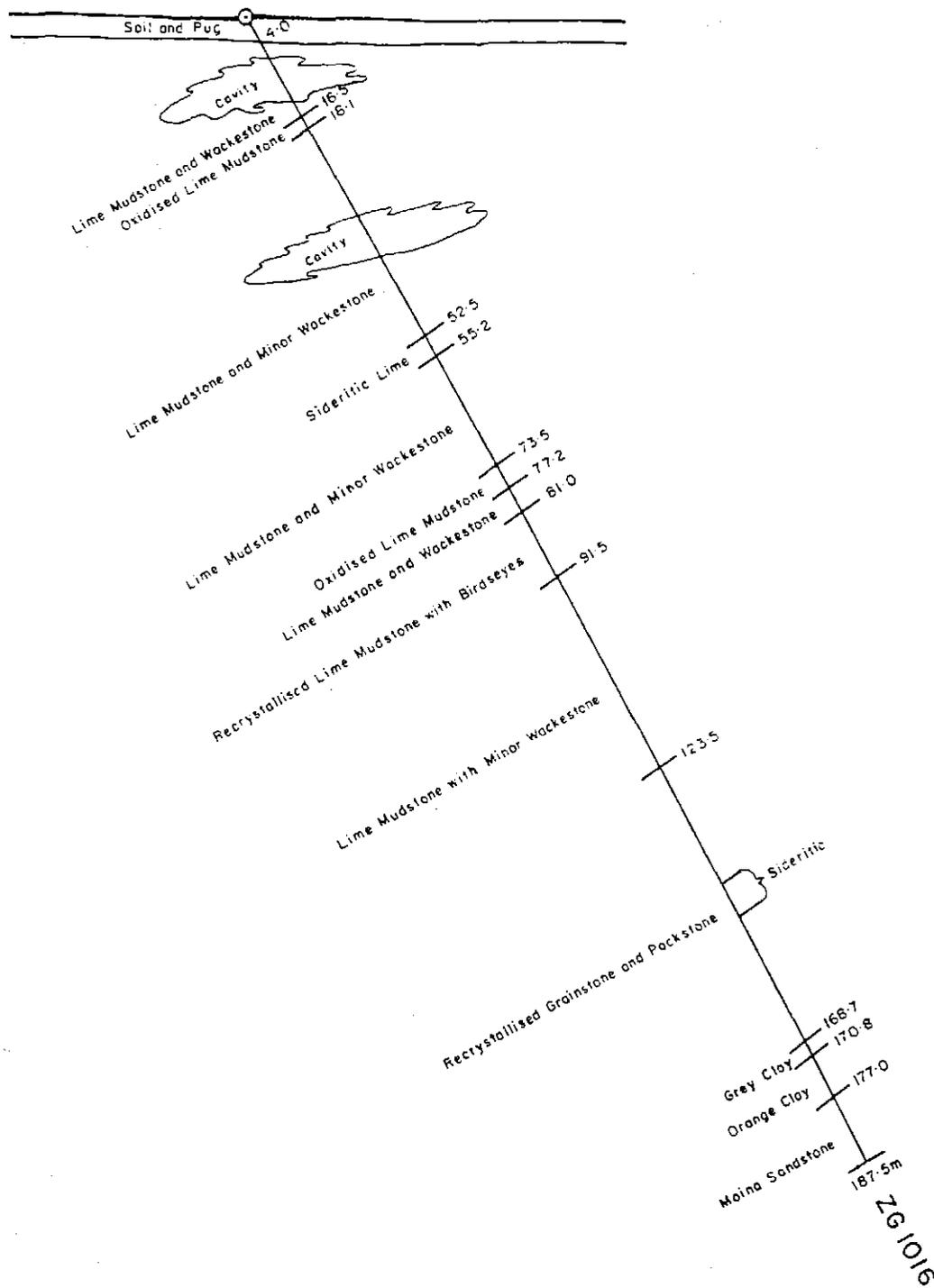
60800m E 60900m E 61000m E 61100m E 61200m E



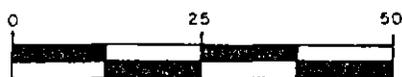
Project: ZEEHAN E.L. 4/78	
<b>CROSS SECTION</b> <b>ZG 1014</b>	
Compiled: K.J.V. Scale: 1:2000	Fig. 5
Drawn: N.W.D.S. Date: 5-3-'89	



Project: ZEEHAN E.L. 4/78	
<b>CROSS SECTION</b> <b>ZG 1015</b>	
Compiled: K.J.V. Scale: 1:1000	Fig. 6
Drawn: N.W.D.S. Date: 14-3-'89	

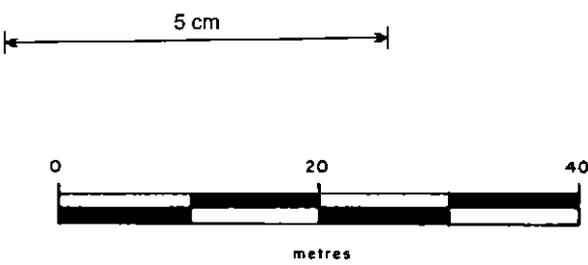
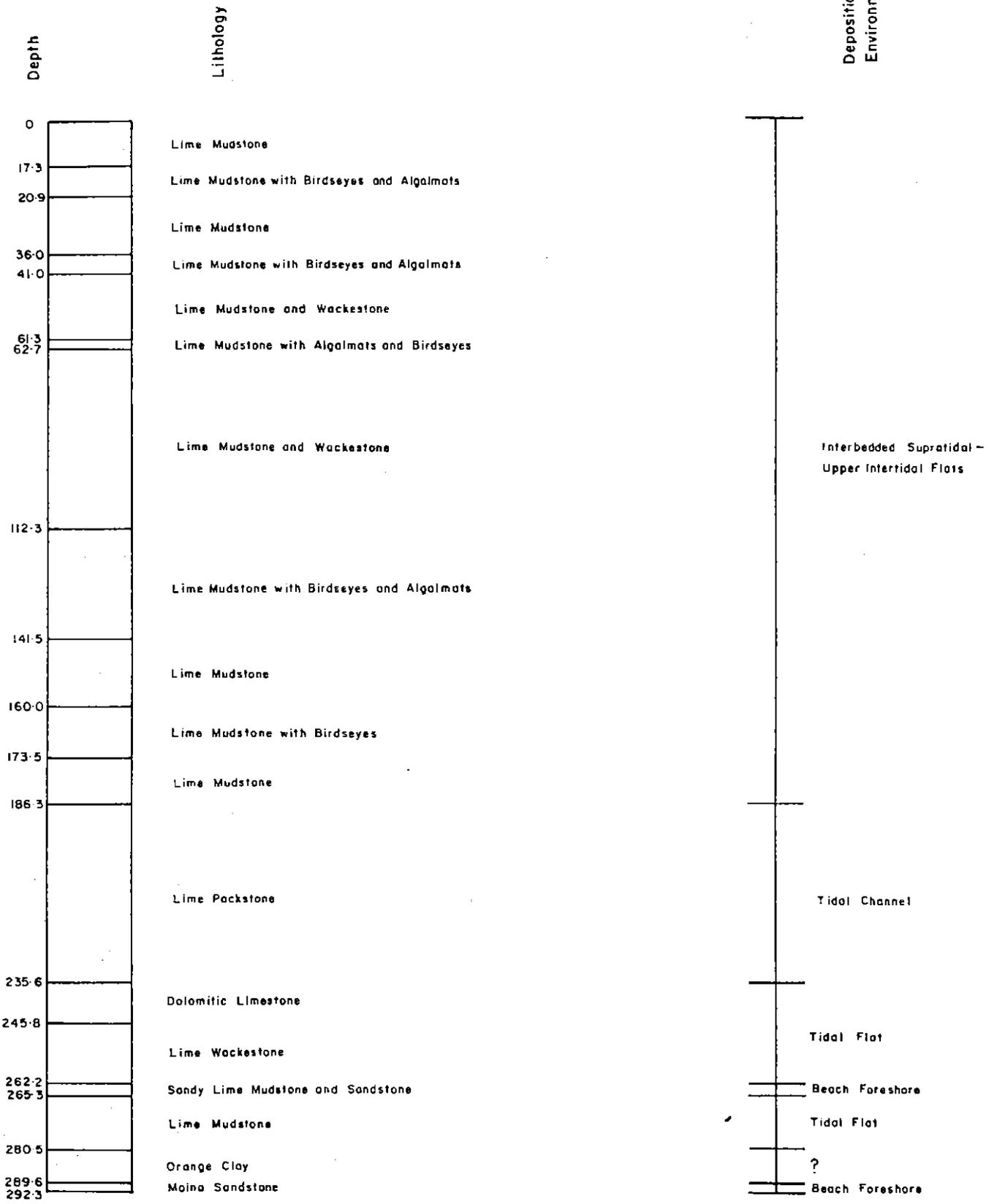


5 cm



metres

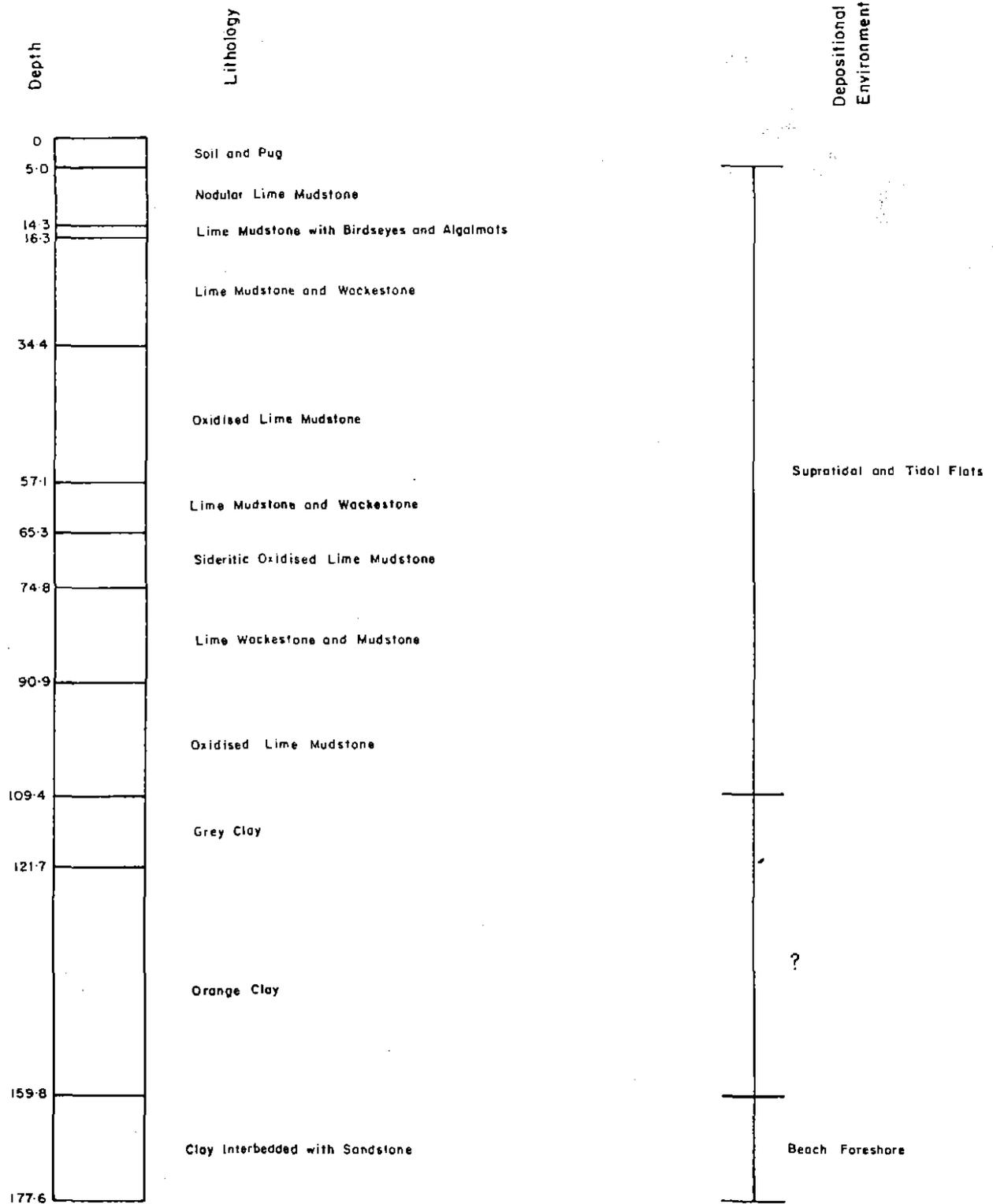
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<b>CROSS SECTION ZG 1016</b>	
Compiled: K.J.V. Scale: 1:1000	Fig. 7
Drawn: N.W.D.S. Date: 14-3-89	



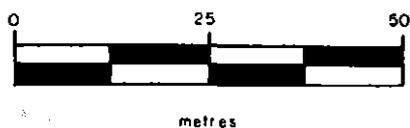
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ENVIRONMENT ZG 1014	
Compiled: K.J.V.	Scale: 1:1500
Drawn: N.W.D.S.	Date: 14-3-89
Fig. 8	

017

618018



5 cm



Project: ZEEHAN E.L. 4/78

ENVIRONMENT

ZG 1015

Compiled: K.J.V. Scale: 1:1000

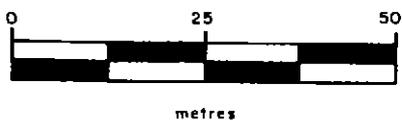
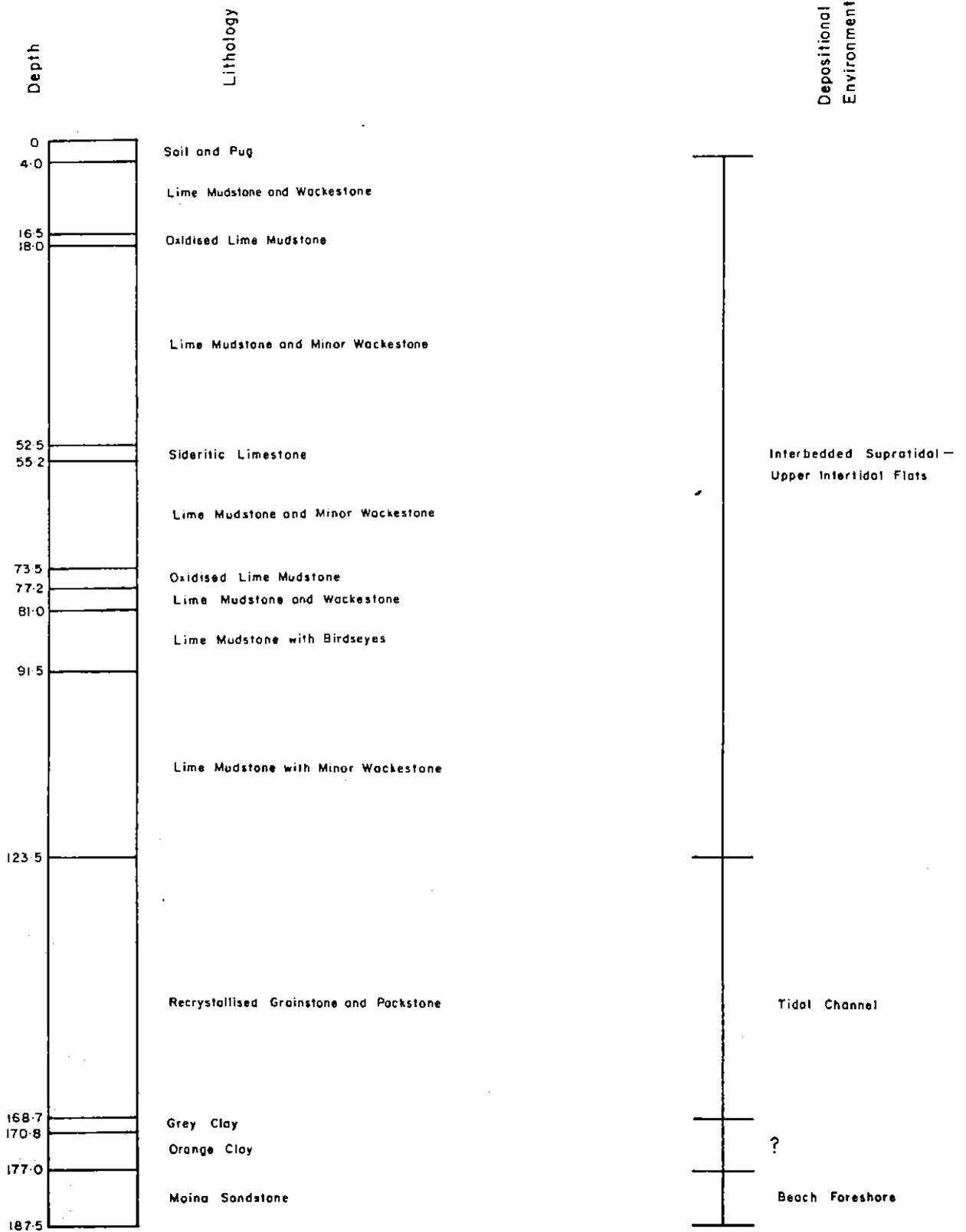
Drawn: N.W.D.S. Date: 14-3-'89

Fig. 9

018

618019

5 cm



Project: ZEEHAN E.L. 4/78	
<b>ENVIRONMENT</b>	
<b>ZG 1016</b>	
Compiled: K.J.V. Scale: 1:1000	Fig. 10
Drawn: N.W.D.S. Date: 14-3-89	

APPENDIX 1  
DIAMOND DRILL LOGS

6100

ELECTROLYTIC ZINC CO. OF AUSTRALIA LTD. ROSEBERY - TASMANIA										DIAMOND DRILL CORE RECORD										01 HOLE No. (3-7) ZG1014	
LOCATION Zeehan 4/78					TOTAL DEPTH 292.3 m					03 (magnetic)					02						
OBJECTIVE To intersect the mineralised horizon found in ZG1013, 100m up dip, grid west.					HOLE SIZE 0.3 - 1.5 Tricone HQ 2					8-12 Depth 0 m		13-16 Direction 130°		17-18-21 Dip 60°		8-12 Depth 154 m		13-16 Direction 148°		17-18-21 Dip 59°	
RESULT					COMMENCED 3.1.89					30		135		59.75		208		152°		59	
					COMPLETED 19.1.89					60		141		59		292.3		156		61	
					LOGGED BY K.K.					100		145		59.3		156		61		ORE DIP: (8-11) COLLAR DIP: (12-15) 60° DIRECTION (16-19) 130° R.L. (20-23) 48315 N, 60900 E CO-ORDS. 150 m LOCATION Grieges Grid	
DEPTH		ROCK DESCRIPTION	MINERALISATION	04										CORE REC'D							
FROM	TO			SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA						Sample Length	CORE REC'D						
								20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag -g/t	44-49 Au -g/t	50-55 Fe%								
0	0.3	NR													0.3	0.0					
0.3	17.3	Limestone, gy + dk gy, mudstone with rare nodules v. carbonaceous + fractured in places, 20cm of black sandy-silty material at 12.1m, 13.3-15.6 m a cavity, 16.3-16.5 m black pug	15cm brecciated calcite vein, minor calcite veinlets at 11.9m.												4.3	0.7					
															5.8	1.7					
															7.5	1.3					
															9.6	1.8					
															12.1	2.4					
															13.3-15.6	2.6					
															16.3	0.7					
															18.9	2.4					
17.3	20.9	Limestone, pl. gy, oxidised, mudstone with birdseyes, algal mats + deep stylolites, some scattered quartz grains 0.1-0.5mm associated with the algal mats, some distorted bedding, $\phi_{6a} = 75^\circ$ at 17.6m, 20.2m tensional stress lines at 35°	minor calcite veinlets + blebs, minor diagenetic pyrite												22.0	2.9					
															25.3	3.1					
															28.3	3.0					
															31.3	3.0					
															34.3	2.9					
															36.0	2.3					
															37.3	1.3					
															39.9	2.6					
															43.0	3.0					
20.9	32.0	Limestone, pl. gy + gy mudstone with dk gy wisps + stylolites, some bands of vague recrystallised carbonate sand + brachiopods, some rare quartz grains, v. carbonaceous in places.	minor calcite veinlets												46.2	3.0					
															49.3	3.1					
															52.3	3.1					
															55.3	3.0					
															58.3	3.0					
															61.3	2.7					
															64.3	3.0					
															67.3	3.0					

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

DIAMOND DRILL CORE RECORD

HOLE No. ZG1014

A 1124J

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D	
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag - g/t	44-49 Au - g/t	50-55 Fe%	RUN	SHORT
32.0	36.0	Limestone, gy mudstone with dk gy irregular wisps, leached in places, 32-33.5m of recrystallised carb sand + brachiopods, lost in + fractured, carbonaceous. cba = 55° at 33.3m (grading)	minor diagenetic pyrite on joint surfaces.												69.9	2.6
															72.1	2.1
															75.1	3.0
															77.3	2.2
															78.9	2.6
															81.3	2.7
															82.3	0.9
36.0	41.0	Limestone, pl gy mudstone with a 2m pl gy carb sand <sup>oolitic</sup> bed, mudstone of birdseyes, carb blebs, + algal mats, some scattered quartz grains, carbonaceous, cba = 60° at 40.5m	minor calcite veinlets												84.8	2.3
															86.6	1.4
															87.4	0.7
															88.2	1.0
															89.3	1.0
															89.8	0.4
															91.8	1.0
41.0	42.0	Limestone, pl gy mudstone with a few dk gy wisps + nodular bands, argillaceous.	minor calcite veinlets												93.1	1.2
															94.0	1.0
															96.0	2.0
															97.3	1.3
42.0	44.0	Limestone, gy + dk gy mudstone, patchy + nodular, carbonaceous, tensional stress at 35°	as above												99.6	1.4
															100.3	0.7
															102.4	1.2
															104.5	2.1
44.0	46.1	Limestone, gy + pl gy mudstone with a few patches + bands of oolitic greenstone, core leached in places.	as above, also calcite blebs												106.3	1.8
															107.4	0.8
															109.3	1.9
															112.3	3.0
															115.3	3.0
															116.3	0.8
															117.4	1.0
															118.3	1.0

ELECTROLYTIC ZINC CO. OF A'ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD				HOLE No. <u>ZC1014</u>										
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-11 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D	
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag g/t	44-49 Au g/t	50-55 Fe%	RUN	SHORT
46.1	52.9	Limestone, gy + dkgy mudstone with some bioclastic bands, a 20cm brachiopod layer and a few nodular layers, a few scattered gastropods are elongated along the cleavage, carbonaceous, cba = 50° at 47.2m (a shell band). tension lines = 30°	irregular calcite veinlets + blebs												121.3	3.0
															123.2	2.0
															126.4	3.2
															128.9	2.5
															130.3	1.4
															133.2	2.9
															135.7	1.8
															136.9	1.0
52.9	54.0	Limestone, plc gy oxidised mudstone with dkgy stylolites + 20cm of birdseyes/calcite blebs, extensional textures = 30°	minor diagenetic pyrite												137.5	0.6
															139.3	1.3
															142.3	3.0
															143.8	0.5
															144.1	1.5
54.0	57.1	Limestone, gy with dkgy patches + wisps, mudstone with a few scattered brachiopods, weakly carbonaceous, argillaceous, tensional stress lines = 30°	minor irregular calcite veinlets												145.3	1.1
															148.2	2.9
															151.3	2.9
															154.3	3.0
															157.3	3.0
															160.3	3.0
57.1	58.3	Limestone, gy mudstone with dkgy wisps + patches, few scattered brachiopods, argillaceous, weakly carbonaceous, core as rubble													163.3	3.0
															165.5	2.2
															168.6	3.1
															169.5	0.9
															172.3	2.8
58.3	62.7	Limestone, plc gy oxidised mudstone, a few birdseyes + algal mats, first lam is a quartz + carbonate fg grainstone, some areas of dkgy + gy mudstone, core broken + fractured in places, cba = 55° (algal lam) at 59.5m tensional stress lines = 30°													175.3	3.0
															176.9	1.6
															178.3	1.4
															181.3	3.0
															184.3	3.0
															187.3	3.0

ELECTROLYTIC ZINC CO. OF A'ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. 291014							A 11241	
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D	
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag - g/t	44-49 Au - g/t	50-55 Fe%	RUN	SHORT
62.7	66.3	Limestone, gy mudstone interbedded with fg bioclastic + fossiliferous wackestone with dkgy wisps, a few scattered quartz grains (2mm), mildly carbonaceous argillaceous tension lines = 35° at 65.1m	minor calcite veinlets												190.3	3.0
															192.3	3.0
															193.3	1.0
															195.9	2.6
															198.1	2.2
															199.3	1.2
															202.3	3.0
66.3	69.5	Limestone, dkgy + gy nodular mudstone, some scattered brachiopods + fg bioclasts, fawn silt patch + coarse sandy-gravel band at 68.3m, tension lines = 30° at 66.5m carbonaceous	irregular calcite veinlets												204.7	2.4
															206.1	2.4
															208.3	1.3
															209.9	1.7
															211.3	1.4
															213.8	2.6
															216.9	3.1
69.5	72.2	Limestone, gy + dkgy mudstone + fg bioclastic wackestone, few nodules, fractured + broken core, carbonaceous, tension lines = 40°	irregular calcite veinlets diagenetic py on broken + jointed surfaces												219.4	2.5
															221.4	2.0
															223.1	2.0
															225.7	2.6
															227.2	1.5
72.2	75.7	Limestone, gy mudstone with a few fg bioclastic bands + patches, + regular thin dkgy bands, some deep stylites, core fractured + broken cbs = 60° (graded beds)	diagenetic py on joint faces												229.3	2.0
															230.8	1.0
															232.8	0.5
															233.2	0.3
															core in	
															233.6	0.4
75.7	77.3	Limestone, gy wackestone of brachiopod shells interbedded with mudstone, a few nodular bands, core fractured + broken, + partly as rubble	as above												233.9	0.2
															235.3	1.0
															237.5	2.2
															238.9	1.4
															241.3	2.2

618024

ELECTROLYTIC ZINC CO. OF ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. <u>ZC1014</u>						A 11241	
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA						CORE REC'D	
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag g/t	44-49 Au g/t	50-55 Fe%	RUN
77.3	80.0	Limestone, gy + dtgy, patchy mudstone, 79.9 - 79.3 have bioclastic + fossiliferous wack-packstone of coral fragments, brachiopods + corals sands, core leached + oxidised in places												244.3	2.8
														245.8	2.6
														247.3	1.2
														249.1	1.8
														250.3	1.2
														251.8	1.5
80.0	85.3	Limestone, gy + dtgy nodular + banded mudstone, some fg bioclastic wackestone patches, core as rubble in places otherwise is fractured + broken, also core is decomposed + carbonaceous, dip = 50° (graded beds) 84.9m												253.2	1.4
														256.0	2.8
														258.1	2.1
														260.1	2.0
														261.9	1.8
														262.3	0.5
														265.2	2.9
85.3	93.2	Limestone, dtgy + gy nodular mudstone, coarse sand - gravel in places, carbonaceous, core as rubble + decomposed	pyrite on joint faces											267.4	2.2
														269.6	2.2
														271.3	2
														271.6	0.3
														272.0	0.0
93.2	100.5	Limestone, dtgy-gy + dtgy nodular mudstone, a few fg bioclastic wackestone patches, carbonaceous, some brown silt in stylolites + other cracks, core as rubble in places, otherwise fractured + broken tension lines = sub// to core	pyrite on joint faces											273.9	1.4
														275.6	1.3
														277.3	1.3
														278.9	0.0
														279.2	0.2
														280.3	0.2
														281.5	1.5
														284.5	3.0
														286.9	2.4
														287.8	3.1
														291.4	1.6
														core n	

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

DIAMOND DRILL CORE RECORD

HOLE No. ZG1014

A 11241

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D	
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag g/t	44-49 Au g/t	50-55 Fe%	RUN	SHORT
100.5	103.0	Limestone, ple gy oxidised mudstone, with algal mats + micro stylolites, v. fractured in places, argilloaceous cba = 65° at 102.4m (algal lam)													292.3	1.0
															EOH	
105.8	107.2	Limestone, ple gy oxidised mudstone, with algal mat laminations, stylolites, sandy gravel band (10cm) at end of interval, argilloaceous, v. fractured cba = 65° at 106.0 (algal lam)	moderate calcite veining, pyrite on joint faces													
103.0	105.8	Limestone, dk gy mudstone with ple gy recrystallised, coral frags, brachiopod patches, core fractured + broken.	moderate calcite veining													
107.2	112.3	Limestone, dk gy-gy, mudstone of uniform colour + texture, a few stylolites, v. carbonaceous	moderate calcite veining 107.2-109m, also fractured in this area, pyrite on joints													
112.3	119.0	Limestone, ple gy oxidised mudstone with scattered birdseyes + irregular 1mm brown silt wisps along cracks + stylolites, gy clay band 2cm wide at 113.7m, argilloaceous, core decomposed + broken in places.	growth of calcite crystals with moderate veining													

618026

025

ELECTROLYTIC ZINC CO. OF ASIA LTD.  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. 291014

A 11241

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D			
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag g/t	44-49 Au g/t	50-55 Fe%	RUN	SHORT		
119.0	126.4	Limestone, ple gy mudstone with birdseyes + stylolites, much of the core is decomposed + broken particularly 121.3 - 123.2 m, 15cm thick dk brown clay band at 121.5 m	119.0 - 121.5 m moderate calcite veining.															
126.4	131.3	Limestone, ple gy mudstone with algal mats + some distorted bedding, stylolites, argillaceous, cba = 65° at 230.9 m	diagenetic pyrite along joint surfaces.															
131.3	141.5	Limestone, ple gy oxidised mudstone, core v. broken, fractured, decomposed, argillaceous, core scattered with brown fawn silty patches + siderite stained areas, some clay + coarse sandy bands.	growth of calcite crystals on joint faces.															
141.5	152.5	Limestone, gy. dkgy mudstone with irregular dkgy wisps + patches, a few nodular bands, carbonaceous, some areas look like channel deposits in accumulation of clasts + fossils, but the core is v. broken, + fractured, 30cm white grainstone at 145m.	minor calcite veining py on joint faces.															

618027

0110

ELECTROLYTIC ZINC CO. OF ASIA LTD.  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. Z91014

A 11241

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D			
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag - g/t	44-49 Au - g/t	50-55 Fe%	RUN	SHORT		
152.5	163.5	Limestone, pl. gy oxidised mudstone with birdseyes, calcite blebs, + micro stylolites, fractured in places, argillaceous	pyrite on joint surfaces															
163.5	167.4	Limestone, pl. gy oxidised mudstone with stylolites filled with brown silt, a few scattered birdseyes, 30cm of brown cavity filling silt at 164.3 m	pyrite along joint surfaces															
168.9	173.5	Limestone, pl. gy oxidised mudstone with scattered birdseyes, deep stylolites + some gy bands of fg bioclastic wackestone, fractured in places, carbonaceous, argillaceous																
167.4	168.8	limestone, gy nodular + patchy mudstone, stylolites, argillaceous + fractured	pyrite along joint surfaces															
173.5	175.5	Limestone, gy mudstone with some deep stylolites + faint grading, small patches of recrystallised brachiopods, cba = 70° at 174.3 m	pyrite on joint surfaces															

618028

088

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

DIAMOND DRILL CORE RECORD

HOLE No. 291014

A11241

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D			
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag -g/t	44-49 Au -g/t	50-55 Fe%	RUN	SHORT		
175.5	180.3	Limestone, gy + dkgy wispy, patchy + nodular mudstone with fg bioclastic + brachiopod wackestone, a few recrystallised bryozoa + coral fragments, argillaceous 176.3 - 177.3 fractured core																
180.3	186.3	Limestone, gy + dkgy mudstone with some nodular, + fossiliferous (brachio, corallites, bryozoa) bands, deep stylolites, v carbonaceous, argillaceous cbr = 60° at 183.2m	25cm wide partly brecciated calcite vein at 183.3m, pyrite on joint faces															
186.3	189.3	Limestone, gy, pl + dkgy patchy + banded wackestone of scattered fg bioclasts, corallites, brachiopods, bryozoans, with some small granstone patches, brown silt at 187.3m for 10cm along fracture surface, last 20cm brecciated in clasts of lst within soft brown silty material, mildly leached																

618029

60

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

DIAMOND DRILL CORE RECORD

HOLE No. ZC1014

A11241

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	3-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D			
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag -g/t	44-49 Au -g/t	50-55 Fe%	RUN	SHORT		
189.3	195.7	Limestone, gy, pl + dk gy packstone of corallites, E.g. bioclasts, bryozoa, brachiopods, + clasts, good-poorly sorted, 192.5-192.7m brown clay filled cavity, argillaceous <1mm - 1/2 cm frag sizes,	190.3 - 192m moderate calcite veining															
195.7	198.2	Limestone, dkgy + black mudstone, decomposed, fractured tectonically, brecciated in places, carbonaceous, some veins of pyrite at 197.4m, one colonial coral fragments	moderate calcite veining															
198.2	210.0	Limestone, gy, dk + pl gy packstone + wackstone, composed mostly of clasts with some coral fragments, brachiopods, a few bands with calcite blebs/borders, argillaceous, carbonaceous, mild brecciation in places, 208.3-209.3 is black clayey material with deco 2st clasts, average grain size <1mm - 5cm, core mostly broken, tectonically fractured.																
210.0	212.5	Limestone, gy recrystallised packstone + wackstone with a "spotted" appearance, consisting of broken shell material + clasts, argillaceous, fractured, some deep stylites, carbonaceous, coral frags 7cm at 212.3m, $\phi = 60^\circ$ at 210m																

618030

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

DIAMOND DRILL CORE RECORD

HOLE No. 291014

A 11241

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA (ppm)							CORE REC'D		
FROM	TO							Sample Length	20-25 Pb	26-31 Zn	32-37 Cu	38-43 Mn	44-49	50-55	RUN	SHORT	
212.5	217.4	Limestone, gy, dk + ple gy mudstone containing recrystallised colonial fragments + clasts (5-7cm), v carbonaceous, last 1m is deco + brecciated, interval v fractured.															
217.4	232.3	Limestone, gy + ple gy packstone with some wackestone, consisting of carbonate fragments, sand + oolites + coral (colonial) frags, all textures vague due to recrystallisation, some areas have a 'swirling' pattern, 2 intervals 10cm long of ple gy oxidised mudstone with birdseyes, 20cm gravel-sandy band at 227 + 228m, core brecciated in places due to leaching of dolomitised areas, carbonaceous, argillaceous, core all fractured + broken															
232.3	235.6	Limestone, ple gy recrystallised oolite grainstone, argillaceous, core ss rubble		70873	234.3	236.5			80	255	<5	820					
235.6	245.8	Dolomitic Limestone, ple gy oxidised recrystallised grainstone of oolites, sand + shell frags, most textures destroyed by sideritic alteration (pale brown) + recrystallisation		70874	236.5	238.7			50	200	<5	580					
				70875	238.9	241.3			45	255	<5	485					
				70876	241.3	243.8											

ELECTROLYTIC ZINC CO. OF A'ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. <u>ZC1014</u>										
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA (ppm)								CORE REC'D		
FROM	TO							Sample Length	20-25 Pt	26-31 Zn	32-37 Cu	38-43 Mn	44-49	50-55	RUN	SHORT		
		core surface is cracked due to leeching, argillaceous, core as rubble in places.																
				70877	243.8	245.8			60	345	45	505						
245.8	253.2	Limestone, gy + dkgy + black, wackestone of scattered fg bioclasts with some nodular areas, first m is v. leached, core decomposed, fractured + carbonaceous		70878	245.8	248.0			55	985	45	825						
253.2	262.2	Limestone, gy + dkgy wackestone of fg bioclasts + bryozoa, core with a patchy appearance, core also leached, argillaceous + carbonaceous, black pug in some places 10cm long.	diagenetic pyrite on joint faces, minor calcite veining															
262.2	265.3	lily brown quartz sandstone interbedded with gy sandy limestone, the ss is well sorted with grading + cross bedding with a brown clay band 20cm long at 262.4m, the limestone is a recrystallised packstone of indistinguishable carb frags + sands, r is leached with a clayey band 20cm long at 262.5m, all core is broken + fractured, cba = 55° at 262.7m.																

ELECTROLYTIC ZINC CO. OF ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. <u>ZC1014</u>						A 11241	
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA (ppm)						CORE REC'D	
FROM	TO							Sample Length	20-25 Pb.	26-31 Zn.	32-37 Cu.	38-43 Mn	44-49	50-55	RUN
265.3	269.6	Limestone, gy recrystallised grainstone of vague carb sands, frags + oolites, frat 1 1/2 m is v. leached, sedimentary brecciation at 266.5m for 30 cm, some rare wisps of limy brown sandstone, core argillaceous + carbonaceous.	moderate calcite veinlets + veins, diagenetic pyrite on joint faces.												
269.6	273.9	Limestone, gy mudstone + recrystallised grainstone of carb frags, sand + oolites, core brecciated by dolomitisation, some <sup>thin</sup> clayey + sand-gravel bands, core v fractured + leached, 95 rubble in places.	moderate calcite veinlets.	70879	269.6	272.7		110	1550	65	635				
				70880	272.7	275.6		110	975	65	565				
				70881	275.6	280.5		570	1450	65	2650				
273.9	280.5	Limestone, ple gy oxidised grainstone? textures destroyed by sideritic alteration + recrystallisation, core surface with deep leached cracks + stylolites, 20cm of gy nodular limestone, clay band at 277.2 - 280.3m, core fractured, the last 20cm is interbedded fawn claystone and limestone in a swirling pattern (slumped?).													



001

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

DIAMOND DRILL CORE RECORD

01  
HOLE No. (3-7) ZG1015

LOCATION Zeehan 4/78

OBJECTIVE To intersect the mineralised horizon found in ZG1013, 100m along strike, grid north.

RESULT

TOTAL DEPTH 177.6m

HOLE SIZE 0-5.0 Tricone  
5.0-9.0 4 1/2  
9.0-177.6 HQ3

COMMENCED 20.1.89

COMPLETED 31.1.89

LOGGED BY K.V.

03			02		
8-12 Depth	13-16 Direction	17-18-21 Dip.	8-12 Depth	13-16 Direction	17-18-21 Dip.
57.0m	114°	63°			
109m	114.5	64.5			
170m	112.5	64			

ORE DIP. (8-11)  
COLLAR DIP. (12-15) 60°  
DIRECTION (16-19) 110°  
R.L. (20-23)  
CO-ORDS. 48399N, 60975E  
LOCATION Grievess Grid

DEPTH		ROCK DESCRIPTION	MINERALISATION	04										CORE REC'D	
FROM	TO			SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag - g/t	44-49 Au - g/t	50-55 Fe%	RUN
0.0	5.0	<u>non core drilling</u>												5.0	0.0
5.0	14.1	<u>Limestone, gy nodular mudstone with a few patches of fossiliferous (brachiopod) wackestone, some brecciation due to dolomitisation, nodules extended at 30° along cleavage lines, core very fractured argillaceous, carbonaceous.</u>	<u>minor calcite veinlets, diagenetic pyrite along brecciated clasts</u>											6.9	0.8
														8.4	1.1
														9.8	1.3
														12.2	conty
														13.7	1.5
														16.7	2.8
														19.7	2.4
														20.8	1.1
														21.8	0.9
14.1	16.4	<u>Limestone, plg gy oxidised mudstone, with birdseyes + a few algal mats, deep stylolites, 16.3-16.5m have a recrystallised grainstone, <math>\alpha_2 = 55^\circ</math> at 14.1m <math>\alpha_2 = 50^\circ</math> at 15.4m (algal mat).</u>	<u>diagenetic pyrite on joint faces</u>											23.4	1.5
														25.7	1.1
														28.3	2.6
														29.9	2.0
														30.9	0.7
														32.5	1.5
														33.9	1.4
16.4	18.7	<u>Limestone, gy patchy mudstone with some brecciation due to dolomitisation, argillaceous.</u>	<u>moderate calcite veinlets</u>											34.6	0.6
														35.4	0.8
														36.1	0.6
														37.0	0.9
18.7	29.4	<u>Limestone, gy mudstone, core leached with brecciation due to dolomitisation, some areas of black pug, carbonaceous, argillaceous, 80% of core as rubble, the rest is v. fractured.</u>	<u>minor calcite veinlets, diagenetic pyrite on joint faces</u>											38.4	1.4
														39.1	0.5
														40.1	1.0
														42.7	1.6
														43.7	0.8

ELECTROLYTIC ZINC CO. OF A'ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. <u>291015</u>									
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA								CORE REC'D	
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag-g/t	44-49 Au-g/t	50-55 Fe%	RUN	SHORT	
		19.5-19.7m the core is a pale brown grey colour with stylitic banding													44.6	0.8	
															46.7	2.0	
															48.4	1.6	
29.4	34.4	Limestone, dk gy - gy mudstone with some fg bioclastic + fossiliferous (brachiopod) wackestone bands, sideritic alteration in the last 1m, core v fractured, argillaceous	minor calcite veinlets, diagenetic pyrite on joints and as small patches (few mm) within the core												49.6	0.7	
															50.7	0.8	
															51.6	0.4	
															53.5	1.7	
															55.8	2.0	
															56.1	0.2	
34.4	42.7	Limestone, dk gy oxidised mudstone, quite homogeneous in colour + texture, last 2m contains birdseyes + calcite blebs that have been extended along cleavage lines at 20°, core with deep stylites, v fractured + argillaceous.													56.5	0.2	
															57.1	0.0	
															57.3	0.2	
															58.7	1.4	
															core	in	
															59.8	1.1	
															61.7	2.5	
															62.7	0.7	
															64.2	1.1	
42.7	57.2	Limestone, dk gy oxidised mudstone, core v fractured, 65% as rubble, sideritic wisps + calcite blebs cleaved at 25° from 44.6-45.3m, maybe a few areas of recrystallised grainstone but textures v vague, 50.7-51.6m have a pale brown grey band which is very argillaceous with a recrystallised calcite vein at 35°, core is argillaceous with deep stylites.	minor calcite veinlets, diagenetic pyrite on joints												64.9	0.8	
															66.2	1.0	
															66.7	0.5	
															67.6	0.3	
															70.6	2.6	
															72.1	1.1	
															74.8	2.1	
															76.7	1.9	
															78.1	1.2	
															79.7	1.6	
															82.3	2.3	
															83.4	0.8	

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

DIAMOND DRILL CORE RECORD

HOLE No. ZG1015

A 11241

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA (ppm)							CORE REC'D	
FROM	TO							Sample Length	20-25 Pb	26-31 Zn	32-37 Cu	38-43 Mn	44-49	50-55	RUN	SHORT
57.2	60.4	Limestone, pleg. gy mudstone with a few scattered recrystallised calcite blebs / bioclasts?, core fractured, argillaceous.	minor calcite veinlets diagenetic pyrite on joints												84.0	0.6
															85.3	1.2
															87.7	2.1
															89.2	1.0
															89.9	0.6
60.4	65.3	Limestone, gy mudstone + wackestone of recrystallised bioclasts, brachiopods + rare coral fragments, some nodular bands, core v. fractured + as rubble in places, tension cleavage lines at 50°.	minor irregular calcite veinlets.												90.4	0.5
															91.7	1.1
															92.4	0.2
															93.6	0.5
															95.0	0.5
															96.4	0.9
															97.7	0.6
65.3	67.6	Limestone, v. ple gy oxidised mudstone, a few rare birdseyes, ple brown sideritic alteration, argillaceous, core very fractured + as rubble in places.	minor calcite veinlets	70897	65.3	67.6		30	100	45	265				99.3	1.8
															100.6	0.9
															101.6	0.6
															102.8	1.2
															104.2	1.3
67.6	71.1	Limestone, ple gy mudstone with ple sideritic brown, alteration, v. argillaceous, 20cm of black pug at 70.4m, core v. fractured.	minor calcite veinlets	70898	67.6	70.6		30	45	45	460				104.9	0.5
															106.7	1.5
															108.1	0.8
															109.6	1.1
															109.9	0.3
71.1	74.8	Limestone, v. ple gy + ple gy oxidised recrystallised granstone + mudstone, ple brown sideritic alteration, core v. fractured + 50% is rubble, 71.1-71.9m is pug + decomposed limestone, argillaceous.	moderate - intense calcite veinlets	70900	73.1	75.5		45	140	45	485				110.8	0.8
															112.7	1.4
															115.7	2.8
															118.2	0.0
															118.5	1.5
															120.6	0.8
															121.7	0.9

618037

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

DIAMOND DRILL CORE RECORD

HOLE No. ZC1015

A-11241

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D	
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag -g/t	44-49 Au -g/t	50-55 Fe%		RUN
74.8	78.1	Limestone, gy + clay, patchy mudstone, argillaceous, decomposed, some scattered quartz grains, 80% of core is rubble.	minor calcite veinlets												122.8	1.0
															125.6	2.1
															128.5	1.6
															130.2	0.8
															130.9	0.1
78.1	82.7	Limestone, gy mudstone with recrystallized grainstone bands, some scattered quartz grains, 20% of core is rubble, the rest is fractured, argillaceous + mildly leached in places.	moderate calcite veinlets												133.3	1.4
															133.6	0.2
															136.7	3.0
															139.6	0.9
															140.6	0.9
															141.2	0.6
															142.4	1.0
82.7	84.7	Limestone, plegy + gy, a few birdseyes/calcite blebs?, core is rubble + black pug, argillaceous, carbonaceous, leached in places.	minor calcite veinlets												144.7	1.2
															146.2	1.5
															147.3	0.8
															148.7	1.0
															151.5	2.8
84.7	86.3	Limestone, gy mudstone with recrystallized brachiopod wackestone bands + patches, argillaceous, carbonaceous, core fractured.	minor calcite veinlets												153.0	1.3
															153.9	0.9
															156.4	2.5
															159.8	3.7
															162.7	2.0
86.3	87.7	Limestone, + plegy oxidised mudstone with recrystallised birdseyes/calcite blebs?, carbonaceous, argillaceous, last 10cm is a gy pug.													166.0	3.1
															169.0	2.5
															170.7	1.5
															172.7	1.0
															177.6	1.4
															EQM	

618038

ELECTROLYTIC ZINC CO. OF A'ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. <u>ZC1015</u>						A 11241		
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-11 FROM	14-19 TO	CORE REC'D	ASSAY DATA (ppm)						CORE REC'D		
FROM	TO							Sample Length	20-25 Pb	26-31 Zn	32-37 Cu	38-43 Mn	44-49	50-55	RUN	SHORT
87.7	90.9	Limestone, gy + plegy mudstone, a few nodular bands, some recrystallized pocketstone patches, v argillaceous, 80% of the core is rubble + the rest is fractured.														
90.9	99.3	Limestone, plegy + v plegy, oxidized mudstone, 70% core as rubble, a few areas of gy pug + gravel, core decomposed + leached, very argillaceous.	2 areas 15cm long of fractured calcite veins													
99.3	99.4	Limestone, gy clayey decomposed mudstone, argillaceous, very fractured	minor calcite veinlets													
99.6	101.5	Limestone, v plegy oxidized decomposed mudstone, clayey in places, fractured, argillaceous.	minor calcite veinlets	70882	99.5	102.8		35	340	<5	525					
101.5	104.3	Limestone, gy decomposed, clayey mudstone, areas of black pug + mud, 103.0 - 103.5m is plegy mudstone, very fractured.		70883	102.8	105.7		40	395	<5	405					
104.3	109.4	Limestone, plegy oxidized mudstone with plegy clayey areas, fractured + argillaceous.		70884	105.7	109.6		60	740	<5	530					

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ELECTROLYTIC ZINC CO. OF ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD										HOLE No. <u>ZG1015</u>		A 11241		
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D	
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag - g/t	44-49 Au - g/t	50-55 Fe%	FUN	SHORT
109.4	121.7	Clay, dkgy with a few orange bands, 120.2 - 1.03m gy sandy material of clay, quartz + pyrite grains.	scattered pyrite grains													
121.7	128.7	Clay, orange														
128.7	146.2	Clay, orange with pink + white bands.														
146.2	159.8	Clay, orange with a few gravel bands, 157.5 - 157.9m have red + plc orange angular clay fragments (2mm - 10cm) within a clay matrix.														
159.8	177.6	Clay interbedded with Sandstone, plc gy - plc orange, dominantly orange clay with a few grey fine grained sandstone bands, core fractured + decomposed.														
177.6	204															

618040

010

ELECTROLYTIC ZINC CO. OF ASIA LTD. ROSEBERY - TASMANIA				DIAMOND DRILL CORE RECORD										01 HOLE No. (3-7) <u>ZG1016</u>	
LOCATION <u>Zeehan 4/78</u>			TOTAL DEPTH <u>187.5m</u> <small>THRU 0-4.0</small>			03 (magnetic)						02			
OBJECTIVE <u>To intersect the mineralised horizon found in 2G1013, 100m along strike, grid south.</u>			HOLE SIZE <u>NB 0.0</u> <u>NB3 - 187.5m.</u>			8-12 Depth	13-16 Direction	17-18-21 Dip	8-12 Depth	13-16 Direction	17-18-21 Dip	ORE DIP. (8-11) COLLAR DIP. (12-15) <u>60°</u> DIRECTION (16-19) <u>130°</u> R.L. (20-23) CO-ORDS. <u>48145 N, 60985 E</u> LOCATION <u>Grievess Grid</u>			
RESULT			COMMENCED <u>2.2.89</u>			45m	129.5°	59°							
			COMPLETED <u>10.2.89</u>			85.3	130	60							
			LOGGED BY <u>K.V.</u>			145.0	135	61							
						187.0	136	61.5							
DEPTH		ROCK DESCRIPTION	MINERALISATION	04										CORE REC'D	
FROM	TO			SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA						RUN	SHORT
				Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag g/t	44-49 Au g/t	50-55 Fe%					
0.0	4.0	non core drilling										4.0	0.0		
4.0	5.9	Limestone, gy + dkgy mudstone + patches of wackestone, wackestone of bioclasts + brachiopods, also a few pellets, core brecciated due to dolomitisation, very argillaceous	2mm pyrite veinlet at 5.4m, pyrite on joint faces, minor calcite veinlets									5.9	1.4 cavity		
5.9	16.7	Cavity										16.7	0.0		
16.7	16.5	Pg, block + gy with some leached argillaceous nodular lime mudstone fragments.										16.8	0.1		
16.5	18.1	Limestone, v. pl. gy oxidised mudstone, first 1m is rubble, the rest is very fractured core very fractured + argillaceous, mildly leached, some deep stylolites										16.5	0.2		
18.1	21.0	Pg mud, block + grey with a few limestone fragments + one 30cm length of core, core of argillaceous + leached mudstone, with a network of stylolites + stress lines.										18.1	1.3		
												20.2	1.4		
												23.0	2.8		
												25.2	2.2		
												26.4	1.2		
												28.5	2.1		
												30.0	1.5		
												32.6	2.6		
												34.1	1.0		
												39.5	0.0 cavity		
												40.5	0.5		
												42.6	2.1		
												44.2	1.6 cavity		
												45.1	0.0		
												45.4	0.3		
												47.0	1.4		
												47.3	0.10		
												50.0	0.6 cavity		
												52.5	1.1		
												55.1	3.4		
												58.2	2.9		

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ELECTROLYTIC ZINC CO. OF A'ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD										HOLE No. <u>ZC1016</u>		A 11241		
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D	
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag - g/t	44-49 Au - g/t	50-55 Fe%	RUN	SHORT
21.0	25.4	Limestone, gy + dkgy mudstone with a few small bioclastic wackestone patches, first 1m is brecciated by dolomitization, 25.0 - 24.0m contains alternating bands of gy + dkgy mudstone, last 1m is nodular, core fractured r. v. argillaceous.													61.3	2.9
															64.4	2.9
															67.5	3.0
															70.5	3.0
															73.5	3.0
															76.5	1.5
															77.2	0.8
															79.5	2.3
25.4	28.5	Limestone, gy with some nodular bands and other layers with dkgy irregularly shaped bands, mudstone, 26.4 - 26.6m has dkgy oxidised lime mudstone layer, core fractured.	minor calcite veinlets												80.8	1.5
															82.3	1.3
															85.35	2.7
															86.0	0.65
															88.5	2.5
															90.5	1.7
28.5	30.2	Grey + Black pug with some fractured core pieces of nodular lime mudstone, very argillaceous.													93.5	3.0
															95.4	1.9
															97.4	2.0
															100.5	3.1
30.2	32.4	Limestone, gy nodular argillaceous mudstone, partly fractured, stress lines at 20° to the core.													101.7	1.1
															103.5	1.5
															107.6	4.1
															108.8	1.1
32.4	34.1	Limestone, gy argillaceous mudstone, very fractured, 80% of core is rubble.													110.1	1.2
															111.9	1.6
															113.9	2.0
															115.1	1.1
34.1	39.5	Cavity													117.1	1.8
															119.0	1.9
															121.5	2.5
															124.5	3.0

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043

ELECTROLYTIC ZINC CO. OF ASIA LTD.  
ROSEBERY - TASMANIA

DIAMOND DRILL CORE RECORD

HOLE No. ZC1016

A 11241

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-11 FROM	14-19 TO	CORE REC'D	ASSAY DATA (ppm)							CORE REC'D	
FROM	TO							Sample Length	20-25 Pb	26-31 Zn	32-37 Cu	38-43 Mn	44-49	50-55	RUN	SHORT
39.5	40.6	Limestone, ple gy + dkgy mudstone with a few recrystallised bioclastic/fossiliferous patches, algal mats in places, cbg = 85° at 40.3m, very argillaceous.	minor calcite veinlets												127.5	3.0
															130.3	2.5
															133.2	2.9
															135.2	2.0
															137.7	2.5
															139.8	1.0
40.6	43.0	Limestone, gy mudstone with a few recrystallised brachiopods, core fractured, leached + argillaceous.	one 10cm calcite vein with brecciated limestone clasts, minor calcite veinlets.												140.8	1.0
															142.2	1.1
															143.9	1.5
															145.5	1.4
43.0	45.3	Limestone, ple gy oxidised mudstone with a few algal mats, core argillaceous + fractured	minor brecciation due to a calcite vein												147.5	1.8
															150.6	3.1
															152.2	1.5
															153.7	1.4
45.3	52.5	Limestone, gy with dkgy wisps, mudstone that is argillaceous, fractured + mildly leached, core as clay in places, 47.3 - 50.4 a cavity.	minor calcite veinlets												156.8	3.1
															159.9	2.1
															161.2	1.3
															162.1	1.0
															164.6	1.4
															166.6	0.7
52.5	55.2	Limestone, ple gy, mildly sideritic, recrystallised, alot of irregularly shaped calcite blebs/shells? hard to distinguish any textures, lost in fractured, core argillaceous.		70885	52.5	54.5			210	140	25	265			168.7	1.1
															169.3	0.6
															171.0	1.6
															172.5	1.5
															174.6	2.1
															176.2	1.6
55.2	58.5	Limestone, ple gy - gy homogenous mudstone with some deep stylolites, a few thin dk gy bands, core argillaceous	minor calcite veinlets at 2.5°												178.5	2.3
															180.9	2.4
															182.5	1.4
															184.5	2.0
															187.5	3.0

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

DIAMOND DRILL CORE RECORD

HOLE No. 251016

A 11241

FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D		
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag - g/t	44-49 Au - g/t	50-55 Fe%	RUN	SHORT	
58.5	62.3	Limestone, gy with dk gy irregular wisps + patches, mudstone + fg bioclastic + fossiliferous (brachiopods) wackestone, some minor nodules.	minor irregular calcite veinlets														
62.3	67.5	Limestone, pleg-gy homogenous argillaceous mudstone, with stylolites + a few calcite blebs	calcite veinlets at 40°														
67.5	73.5	Limestone, gy with dk gy wisps, granstone + fg bioclastic wackestone, argillaceous, minor fracturing	irregular calcite blebs + veinlets.														
73.5	77.2	Limestone, v. pleg-gy + pleg-gy oxidised mudstone with deep black stylolites, minor patchy siderisation, 1m of pug clay + rubble associated with this interval, very argillaceous.	brecciation of the limestone within a 20cm calcite vein.														
77.2	81.0	Limestone, gy mudstone + minor wackestone with regular dark gy wisps + stylolites, a few minor nodules, last 40cm is pug + clay.	minor calcite veinlets at 30°														

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ELECTROLYTIC ZINC CO. OF A'ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. <u>261016</u>										
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA							CORE REC'D			
FROM	TO							Sample Length	20-25 Pb%	26-31 Zn%	32-37 Cu%	38-43 Ag .g/t	44-49 Au .g/t	50-55 Fe%	RUN	SHORT		
81.0	91.5	Limestone, plg gy recrystallised mudstone with birds-eye calcite blebs, keeled in places, a few scattered brachiopods, minor fracturing, r. argillaceous.																
91.5	95.4	Limestone, gy uniform recrystallised mudstone with minor wackestone of bioclasts + brachiopods, moderate fracturing.	moderate calcite veining.															
95.4	101.4	Limestone, gy mudstone with dkgy regular wisps + bands, some minor bioclastic wackestone + a few nodular bands, 2 10cm intervals of corallites + brachiopods, core argillaceous.																
101.4	108.3	Limestone, gy + dkgy mudstone with some recrystallised wackestone - pack stone patches, + a few nodular bands, first 70cm is a broken calcite vein, core fractured, mildly carbonaceous + argillaceous.																
108.3	114.9	Limestone, dkgy uniform mudstone, fractured + mildly carbonaceous.	minor calcite veinlets, minor diagenetic pyrite on core surface															

ELECTROLYTIC ZINC CO. OF A'ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. <u>291016</u>								A 11241	
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA (ppm)							CORE REC'D		
FROM	TO							Sample Length	20-25 Pt	26-31 Zn	32-37 Cu	38-43 Mn	44-49	50-55	RUN	SHORT	
114.9	117.1	Limestone, plegy recrystallised packstone + wackestone bioclasts + brachiopods, lot of calcite blebs which may have been fossils, core v. argilloceous															
117.1	123.5	Limestone, gy uniform mudstone with scattered brachiopods + bioclasts + a few nodular bands, core fractured + argilloceous															
123.5	128.3	Limestone, gy recrystallised mudstone + wackestone with regular minor dety wisps + a few packstone bands, a 10cm brown clay band at 127.6m, core argilloceous with minor fracturing															
128.3	142.2	Limestone, gy recrystallised packstone with white calcite "spots" - ostracods?, core fractured + decomposed in places, v. argilloceous.	70886	139.5	142.2			50	225	<5	195						
			70887	142.2	143.9			50	285	<5	165						
			70888	143.9	145.5			70	395	<5	220						
142.2	148.5	Limestone, plegy sideritic recrystallised packstone - grainstone, textures almost obliterated by the alteration, desp stylites, core v. argilloceous with minor fracturing, decomposed in places, 10cm of mg brown quartz ss at 146m, some scattered quartz grains 2mm	70889	145.5	147.4			120	460	<5	400						
			70890	147.4	149.9			35	140	<5	200						

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ELECTROLYTIC ZINC CO. OF A'ASIA LTD. ROSEBERY - TASMANIA		DIAMOND DRILL CORE RECORD						HOLE No. <u>ZG1016</u>						A 11241	
FOOTAGE		ROCK DESCRIPTION	MINERALISATION	SAMPLE No.	8-13 FROM	14-19 TO	CORE REC'D	ASSAY DATA (ppm)						CORE REC'D	
FROM	TO							Sample Length	20-25 Pb	26-31 Zn	32-37 Cu	38-43 Mn	44-49	50-55	RUN
142.2	148.5	throughout the limestone.													
148.5	151.5	Limestone, ple gy recrystallised oolitic + bioclastic grainstone, average grain size 5mm, from 149.5-150.5m are some clasts up to 2cm within a poorly sorted band, some scattered quartz grains throughout the limestone, core argillaceous with minor fracturing													
151.5	158.3	Limestone, gy recrystallised grainstone + packstone of bioclasts + oolites, average grain size = 2mm, from 156.5-156.9m have large irregularly shaped clasts, a few decomposed + fractured areas, core v. argillaceous + mildly leached.		70891	154.8	157.8		30	115	<5	275				
				70892	157.8	161.0		235	1250	<5	460				
158.3	166.6	Limestone, core as rubble, ple gy - fauna, probably a grainstone, mildly sideritic, core decomposed, argillaceous + sandy in places		70893	161.0	163.6		125	630	<5	635				
				70894	163.6	166.0		235	1400	<5	740				
166.6	168.7	Limestone, ple gy oolitic grainstone with ple yellow clayey wisps, core leached, argillaceous + partly fractured		70895	166.0	168.9		165	5950	<5	2250				

618047



APPENDIX 2

INTERPRETATION OF DHEM SURVEYS  
ZEEHAN EL. 4/78



# MITRE GEOPHYSICS PTY LTD

MINERAL EXPLORATION AND ENGINEERING CONSULTANTS

BUGGS LANE - ELLIOTT TASMANIA 7325 PHONE 004-363143

**INTERPRETATION OF DOWNHOLE ELECTROMAGNETIC  
SURVEYS, ZEEHAN (E.L. 4/78).**

for

North Broken Hill - Peko Pty Ltd

by

Dr J.R. Bishop



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**SUMMARY**

Downhole electromagnetic surveys have been carried out down three exploration holes within E.L. 4/78. The weak responses recorded are interpreted as being due to conductive clay sequences within the Gordon Limestone and/or faults. No anomalies due to mineralisation are indicated, but it is pointed out that a body of poorly conducting sulphides could occur unrecognised within the clays.



## INTRODUCTION

The Zeehan licence, E.L. 4/78 is held under a joint venture agreement between Cyprus Minerals and North Broken Hill with the latter now operating as manager. A number of holes have been drilled by NBH within the area. Three of these have been surveyed with downhole electromagnetics (DHEM). The results of these surveys are presented in this report with an interpretation.

## EXPLORATION TARGETS AND GEOLOGICAL SETTING

E.L. 4/78 covers an area of Ordovician Gordon Limestone, which lies within a series of steeply plunging synclines and anticlines. In the surveyed region (the Grieves grid), the limestone is of the order of 1km wide and dips at about 50° to the north. It is bounded to the north by a faulted contact with the Silurian Crotty Quartzite and to the south by a similar target contact with the Ordovician Moina Sandstone. The main target is a carbonate-hosted lead-zinc deposit with some similarities (but better grades) to the nearby old Oceana mine (described in Blissett, 1962). Such a deposit would be expected to be largely stratiform, although some stockworking, replacement veining, etc, is also likely to occur.

Sedimentary-hosted lead-zinc deposits are often poor conductors and may give EM responses comparable to those often observed over faults or weathered clay zones. However, DHEM surveys are likely to be more effective than surface EM surveys, with the receiver closer to the target and below the weathered surface layer. (UTEM surveys were conducted over the Grieves grid some years previously and a number of poor responses were obtained; see below.)

## SURVEY DETAILS

The Surveys were carried out by Geoterrex in February, 1989 using an EM37 system. Holes ZG1014, ZG1015 & ZG1016 were surveyed using one 200m x 400m transmitting loop. Figure 1 shows the position of this loop with respect to the drill hole collars. (The loop current was 17 amps at 25hz with a turn-off time of 0.228msecs.) A downhole station interval of 10m was used with some detailing at 5m. Reductions of the original 1:1000 profiles for the three holes are given in Figures 2, 3 & 4.

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\* This may be due to a coating of insulating sphalerite around the grains of galena. Thus even deposits with significant concentrations of lead may be poor conductors.



ZG1014 was surveyed down to 286m (EOH at 292m) and produced a fairly flat profile with minor responses at 220m and 270m which persisted to about channel 7. Early times are positive with late times negative for the length of the profile. ZG1015 was only surveyed to 113m (EOH at 178m): no responses were recorded, but again values changed sign between channels 10 and 11. ZG1016 was surveyed to 165m (EOH at 188m) and produced an all-positive profile with a weak response at 130-135m and a possible (much weaker) response at 95m.

### INTERPRETATION

The responses from DDH's ZG1014 and ZG1016 are similar to those which might be expected from poorly conductive mineralisation. However, the positive response indicates, for the loop - hole geometry applying here, that the sources lie around the holes. Thus, unless doughnut shaped sources are invoked with the drill holes passing through the empty centres, the likely causes of the anomalies are regional conductive features such as faults and possibly clayey sequences within the limestone. The deeper response in ZG1014, at 270m, is probably caused by currents induced in the faulted contact with the underlying sandstone (intersected at 290m). This confirms the zone 'E' defined by the surface UTEM (Bishop, 1985). The shallower response in ZG1014, at 220m, may be zone 'D' from the UTEM interpretation. However, due to the lack of any immediate economic interest in this interpretation, no extensive modelling was carried out to determine the exact positions of the sources. Nevertheless, some modelling has been done and Figure 5 shows a diagrammatic sketch of a single, north-dipping planar conductor intersected by DDH's 13, 14, 15 & 16 and the weak, positive responses that would result from such a body. (DDH 15 was blocked above this conductor and DDH 13 was not surveyed at all.)

The changes of sign in the profiles for ZG1014 and ZG1015 are unexpected and suggest that the above interpretation is perhaps too simplistic. The 'normal' change of sign encountered in DHEM surveys is due to migration of the induced current past the drill hole. A second alternative is for a sign change as the 'smoke-ring' of energy passes the drill hole. Neither explanation applies here. The first occurs as a very local response due to the close proximity of the migrating current to the drill hole and the second cannot

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\* The depths of the DHEM responses on the profiles are not necessarily the downhole depths to their sources, but rather are the depths to the minimum distances between drill hole and the surrounding current rings.



occur when the holes are entirely within the area of the transmitting loop. Macnae and Staltari (1985) note that a conductive host or overburden beneath a transmitter may produce a sign change but show, in their example, a change from negative to positive with increasing time (ie, the opposite to that observed here). Whatever the cause, it is unlikely to be due to a discrete source such as a mineral deposit and has been mentioned here merely to try and assist our understanding of some of the complexities of DHEM.

#### CONCLUSIONS AND RECOMMENDATIONS

The DHEM surveys of three Zeehan holes have responded to weak, regional conductive features such as faults and possibly clayey sequences within the limestone. However the presence of some mineralisation within the clay sequence and with similar electrical properties to our interpreted clays or faults cannot be excluded. Such a poor conductor would not produce its own closed system of induced currents and would not be recognised by a DHEM survey. Certainly at Oceana, the mineralisation, which has been shown to be poorly conducting, lies within a 'pug' zone and similar conditions can be expected within E.L. 4/78. Because of the doubt concerning the conductivity of the target mineralisation, it is recommended that downhole magnetometric resistivity (DHMMR) surveys be carried out in conjunction with any further DHEM surveys. As well as providing a much better response to poorly conducting mineralisation, this method also enables a more confident positioning of the source of a DHEM anomaly (Asten, 1988).

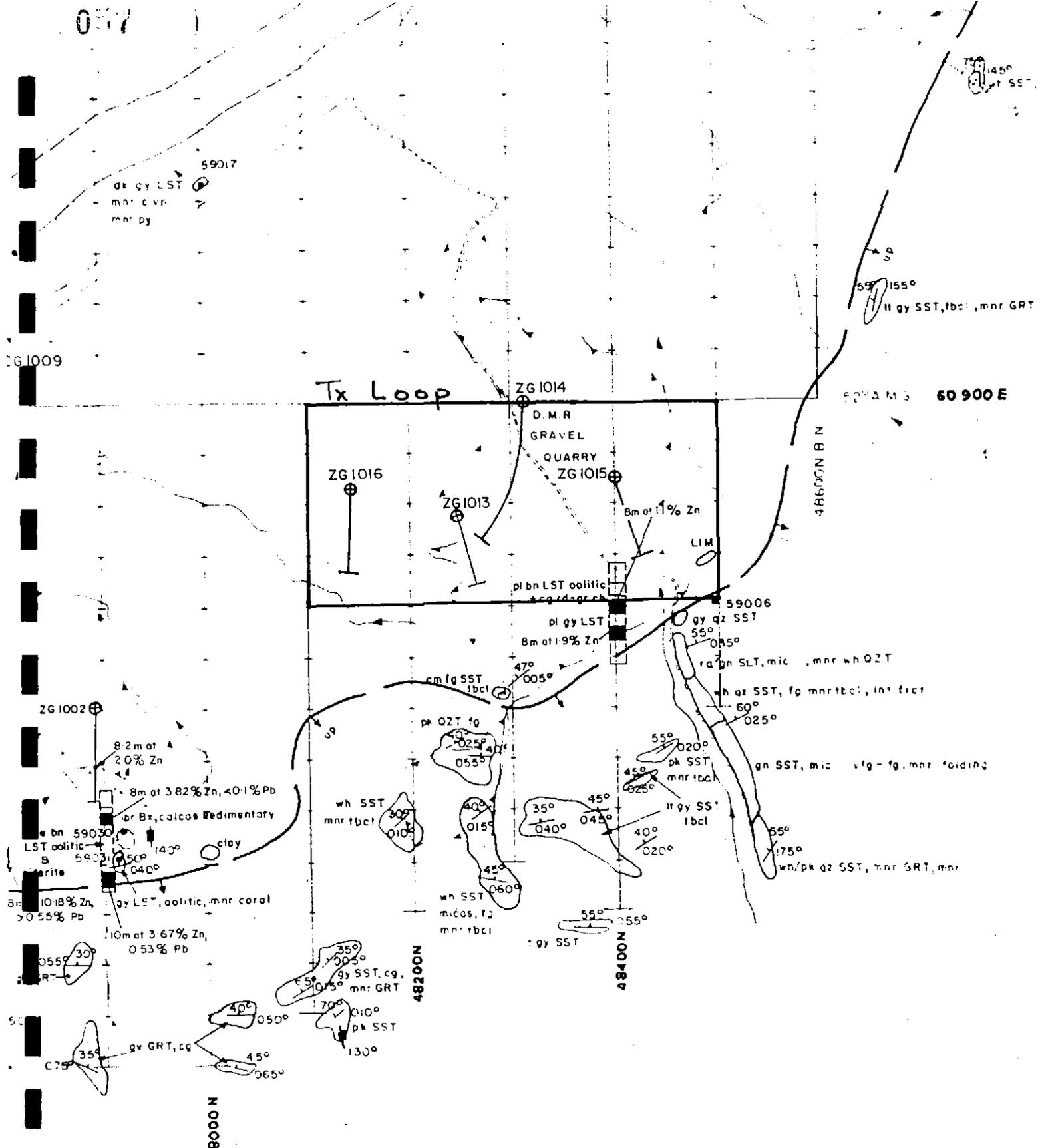
A change of sign at intermediate times across the profiles of ZG1014 and ZG1015 has not been satisfactorily explained, but is considered to be related to a conductive overburden or other regional conductors.

J.R. Bishop  
April, 1989



#### REFERENCES

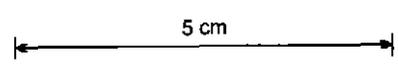
- Asten, M. W., 1988. The down-hole magnetometric resistivity (DHMMR) method. *Explor. Geophysics* 19, 1/2.
- Bishop, J.R., 1985. Interpretation of UTEM surveys over the Baura and Grieves grids. Mitre Geophysics report 85/05 for EZ.
- Blissett, A.H., 1962. Geological survey explanatory report to the one mile Zeehan geological map.
- Macnae, J. and Staltari, G., 1987. Classification of sign changes in borehole TEM decays. *Explor. Geophysics* 18, 3.



Zeehan DHEM  
Surveys

E.L. 4/78 (Grievess Grid)

1:5000

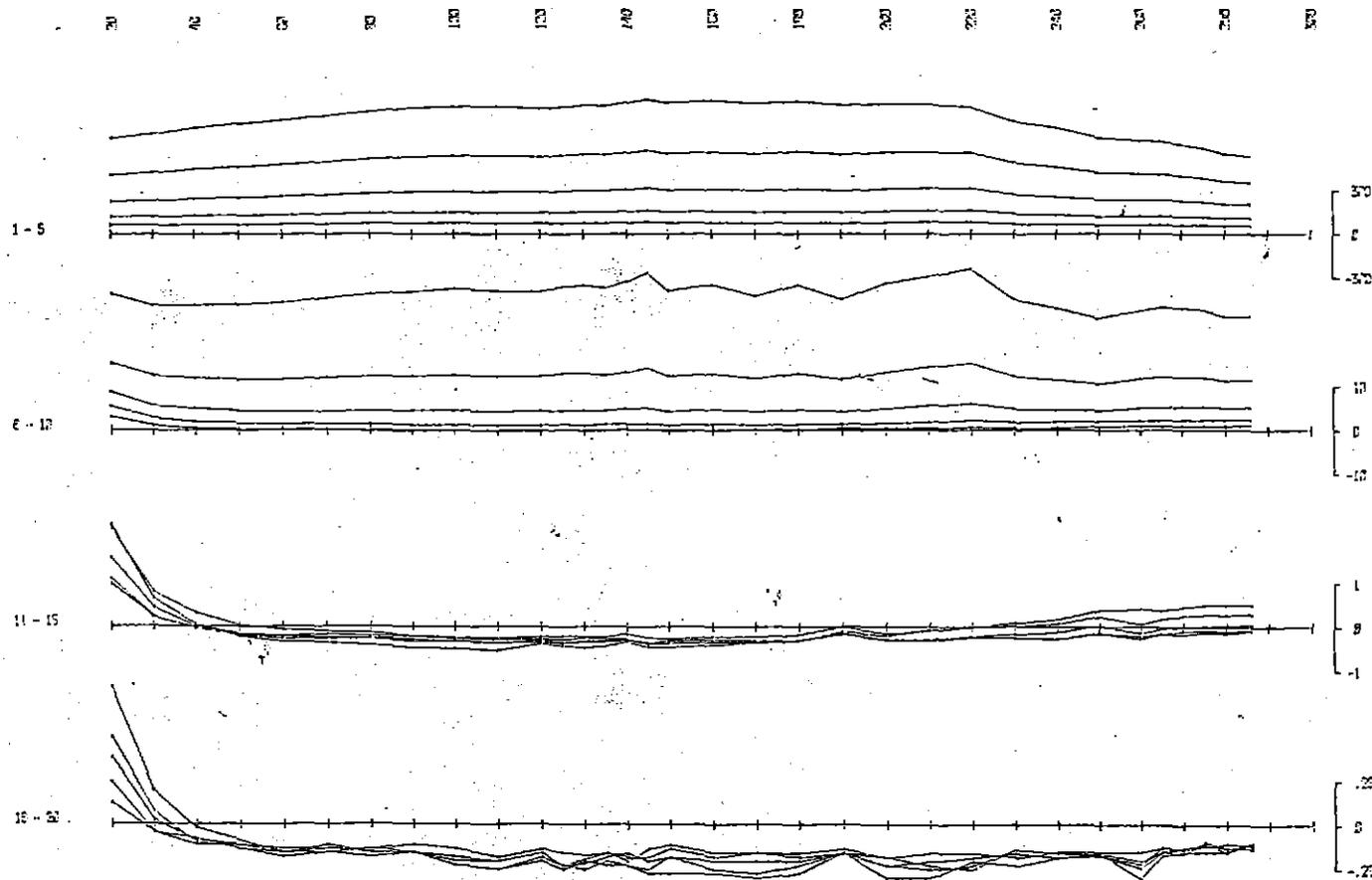


618058

NBH/M489/06

Fig 1.

AXIAL COMPONENT  $\vec{B} (z)$



nanovolts per amp metre squared

EM-37 058

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY (B)

TX LOOP SIDES : 40500N 81100E  
                  : 40500N 80900E  
TX LOOP SIZE : 400 m X 200 m  
TX TURN OFF TIME : 225 microseconds  
FIRST GATE TIME : 85.5 microseconds  
CURRENT : 17.0 amps  
FREQUENCY : 25 Hz  
INTEGRATION TIME : 1024 samples  
SYND MODE :  
HORIZONTAL SCALE : 1:1000  
SURVEYED BY : 6920  
DATE : 21/03/1998

SURVEYED AND COMPILED BY: GEDERREX PTY. LTD. PROJECT NO. 4-132

CLIENT : NTH BROKEN HILL-PEKO  
PROJECT : CRIEVES CRID.  
AREA : ZEEHAN TASMANIA  
BOREHOLE : Z01014 R  
TX LOOP : 1:1

Zeehan  
(E.L. 4/78)

DHEM SURVEYS  
ZG1014

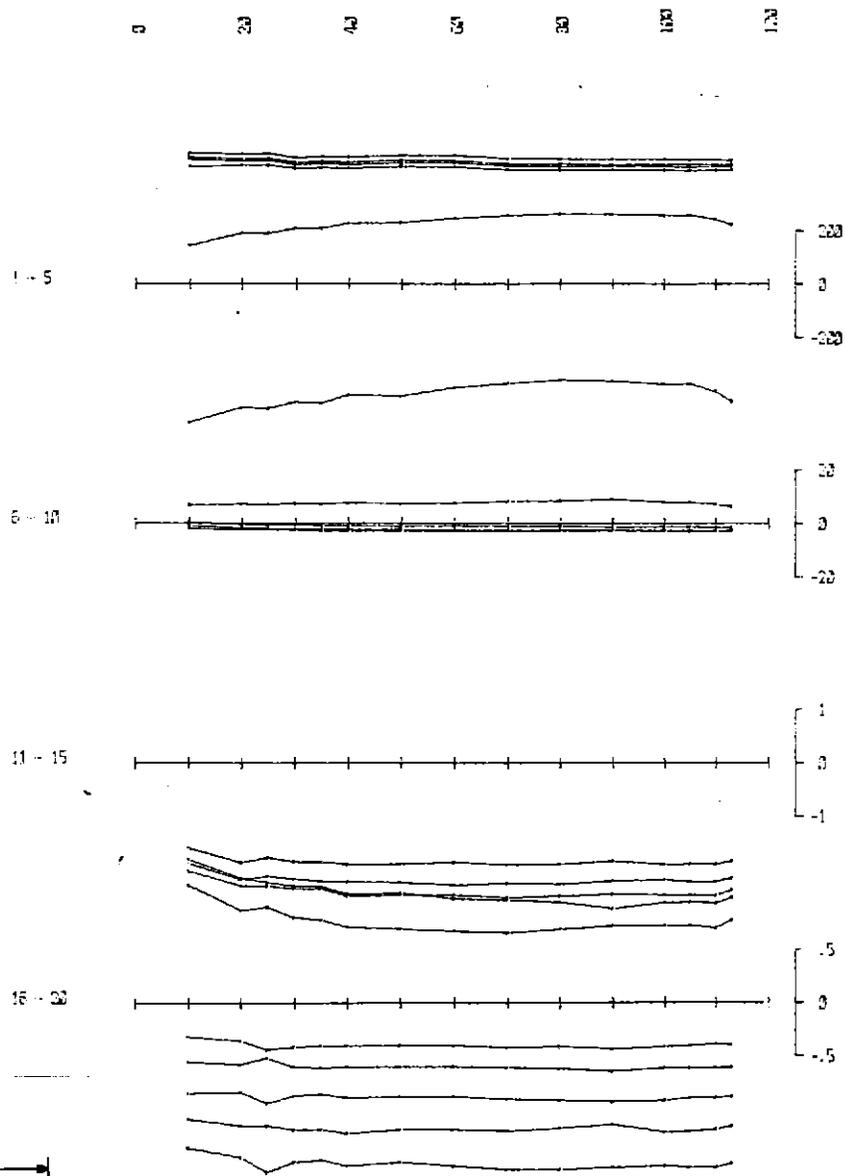
Fig 2

NB3H/M589/06

690819

5 cm

AXIAL COMPONENT  $\dot{B}(z)$



nanovolts per amp metre squared

Zeehan  
(E.L. 4/78)  
DHFM SURVEYS  
ZG1015

Fig 3.

NBH/M689/06

EM-37 0  
07  
60

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD  
TIME DERIVATIVE OF FLUX DENSITY  $\dot{B}$

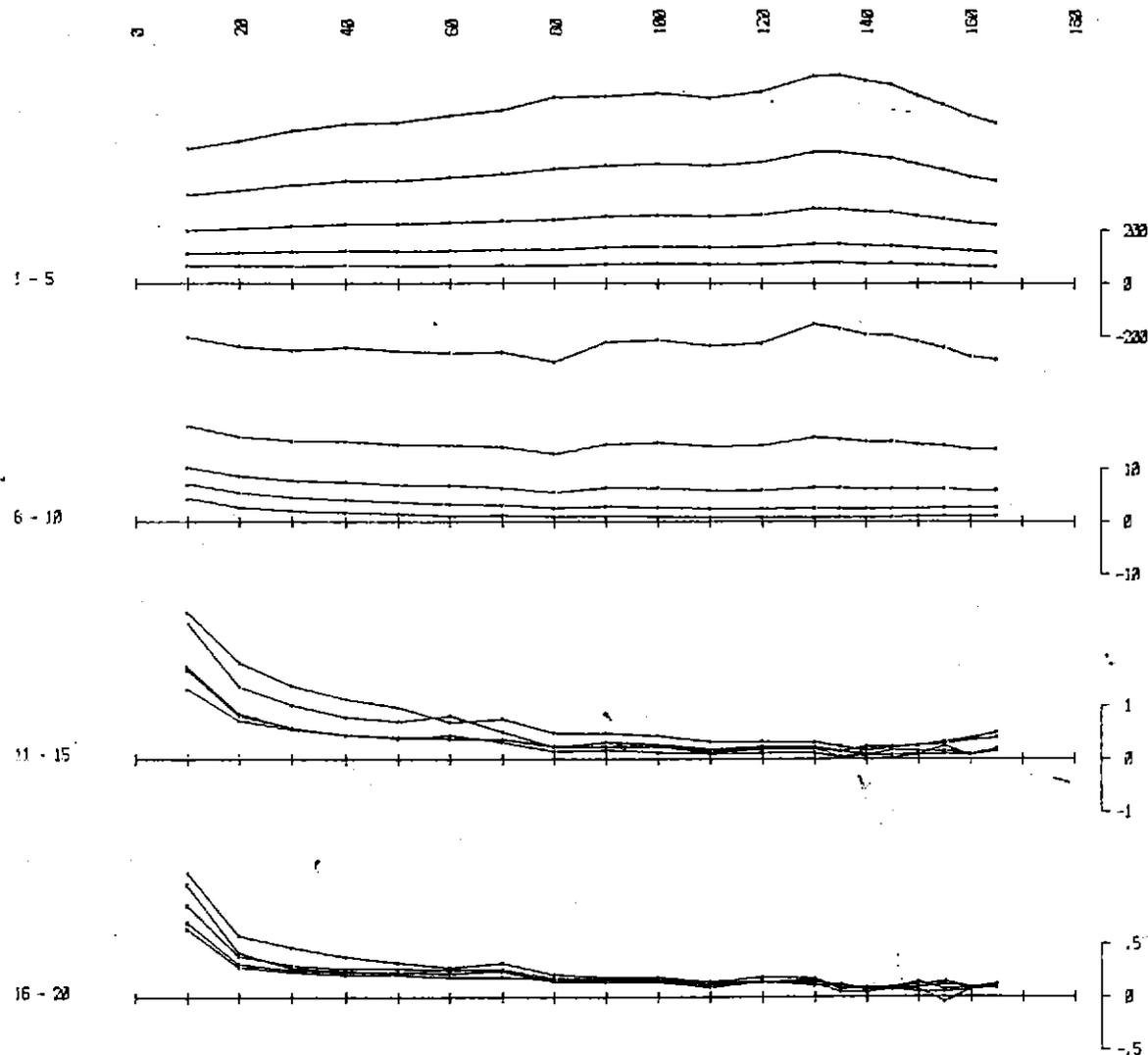
TX LOOP SIDES	45500N	21100E
	45120N	20900E
TX LOOP SIZE	422 m X 200 m	
TX TURN OFF TIME	200 microseconds	
FIRST DATE TIME	08.5 microseconds	
CURRENT	12.2 amps	
FREQUENCY	25 Hz.	
INTEGRATION TIME	1000 cycles	
SYNC MODE		
HORIZONTAL SCALE	1:1000	
SURVEYED BY	5020	
DATE	21/03/1978	

	SURVEYED AND COMPILED BY	PROJECT NO.
	GEOTREX PTY. LTD.	A-122

CLIENT	MTH BROKEN HILL-REMO		
PROJECT	GRIEWS GRID		
AREA	ZEEHAN TASMANIA		
BOREHOLE	ZG1015		A
TX LOOP	1		

0908T9

AXIAL COMPONENT  $\dot{B}$  (Z)



nanovolts per amp metre squared

EM-37

BOREHOLE SURVEY

ELECTROMOTIVE FORCE INDUCED BY SECONDARY FIELD

TIME DERIVATIVE OF FLUX DENSITY (Z)

TX LOOP SIDES : 48500N 63100E  
 : 49100N 62300E  
 TX LOOP SIZE : 400 m X 220 m  
 TX TURN OFF TIME : 220 microseconds.  
 FIRST GATE TIME : 68.5 microseconds.  
 CURRENT : 17.0 amps  
 FREQUENCY : 25 Hz.  
 INTEGRATION TIME : 1024 cycles  
 SYNC MODE :  
 HORIZONTAL SCALE : 1:1000  
 SURVEYED BY : SDEC  
 DATE : 29/02/1989

	SURVEYED AND COMPILED BY GEOTREX PTY. LTD.	PROJECT NO. 4-122
	CLIENT : NTH BROKEN HILL-PEKO PROJECT : CRIEVES GRID AREA : ZEEHAN TASMANIA BOREHOLE : ZG1016 A TX LOOP : 1	

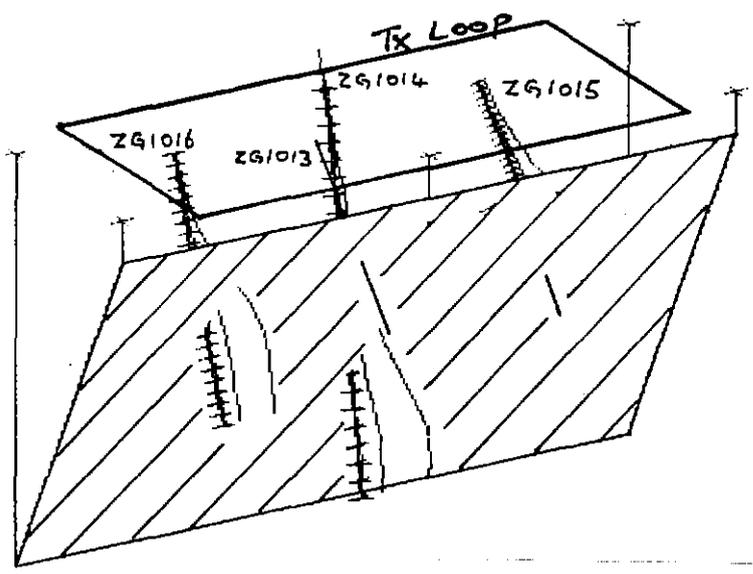
Zeehan  
 (E.L. 4/78)  
 DHEM SURVEYS  
 ZG1016

Fig 4.

190819

090

090126016



ZEEHAN DHEM SURVEYS

Diagrammatic  
Model

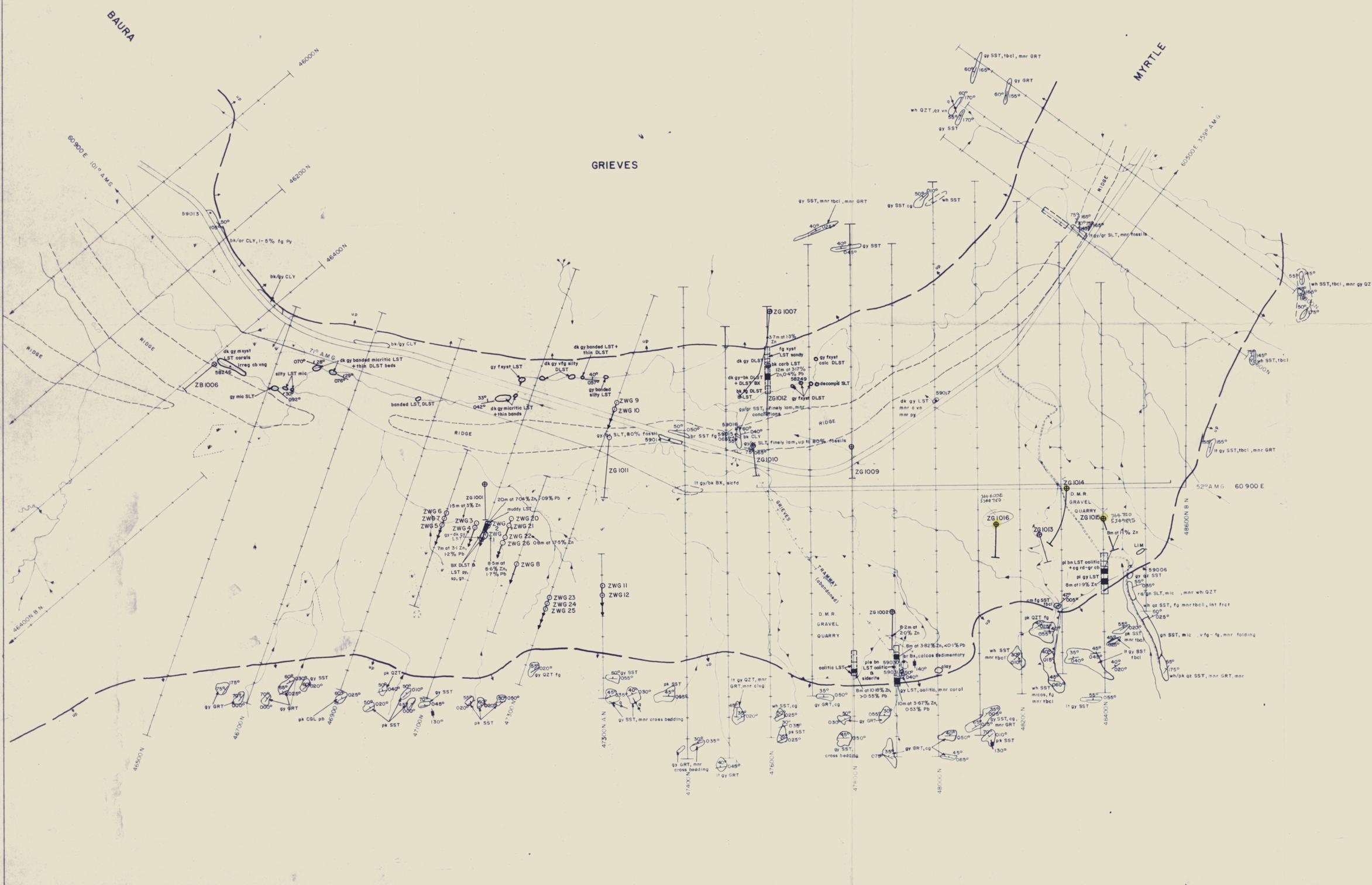
Fig 5.

NBH/MG89/06

REGISTERED USER  
MITRE GEOPHYSICS

MultiLoop  
© MITRE GEOPHYSICS LTD

618062



**LEGEND**

COLOUR	
pk - pink	wh - white
br - brown	bk - black
bl - blue	gr - green
gy - grey	yl - yellow
rd - red	or - orange
cr - cream	pl - pale
lt - light	dk - dark

TEXTURE	
fg - fine grained	foss - fossiliferous
mg - medium grained	sil - siliceous
cg - coarse grained	mic - micaceous
bxd - brecciated	ferr - ferruginous
clvd - cleaved	int - intense
shrd - sheared	wk - weak
calc - calcareous	v - very
carb - carbonaceous	pb - pebble
lam - laminated	cb - cobble
xbd - cross bedded	tr - trace
fb - thin bedded	in bd - inter bedded
tb - thick bedded	tblc - tubular
vn - veins, veining	frct - fractured

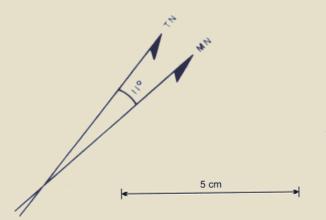
ROCK TYPE	
SST - sandstone	SLT - siltstone
LST - limestone	DLST - dolomite
BX - breccia	CGL - conglomerate
SH - shale	BSH - black shale
QZT - quartzite	LIM - ironstone
GRIT - grit	CLY - clay
PUG - pug	GRA - gravel

MINERALOGY or ALTERATION	
qt - quartz	py - pyrite
gn - galena	sp - sphalerite
lm - limonite	cp - chalcopyrite
cid - carbonated	sid - silicified
c - calcite	

ORDER	
Colour, Texture, Rock Type, Mineralogy or Alteration, Fossils	
e.g. dk gy mg foss SST or gy calc SH py or pl gy LST sid	

TOPOGRAPHICAL	
cut grid lines	joint
roads	joint - vertical
tracks	overturned
framways	bedding
power lines	bedding - vertical
rivers, creeks	quarries
swampy area	ZG 1001 Diamond Drill Hole
	Costean

⊕ Diamond Drill Hole - e.g. ZG1013  
 ○ Winkle Drill Hole - e.g. ZWG 22



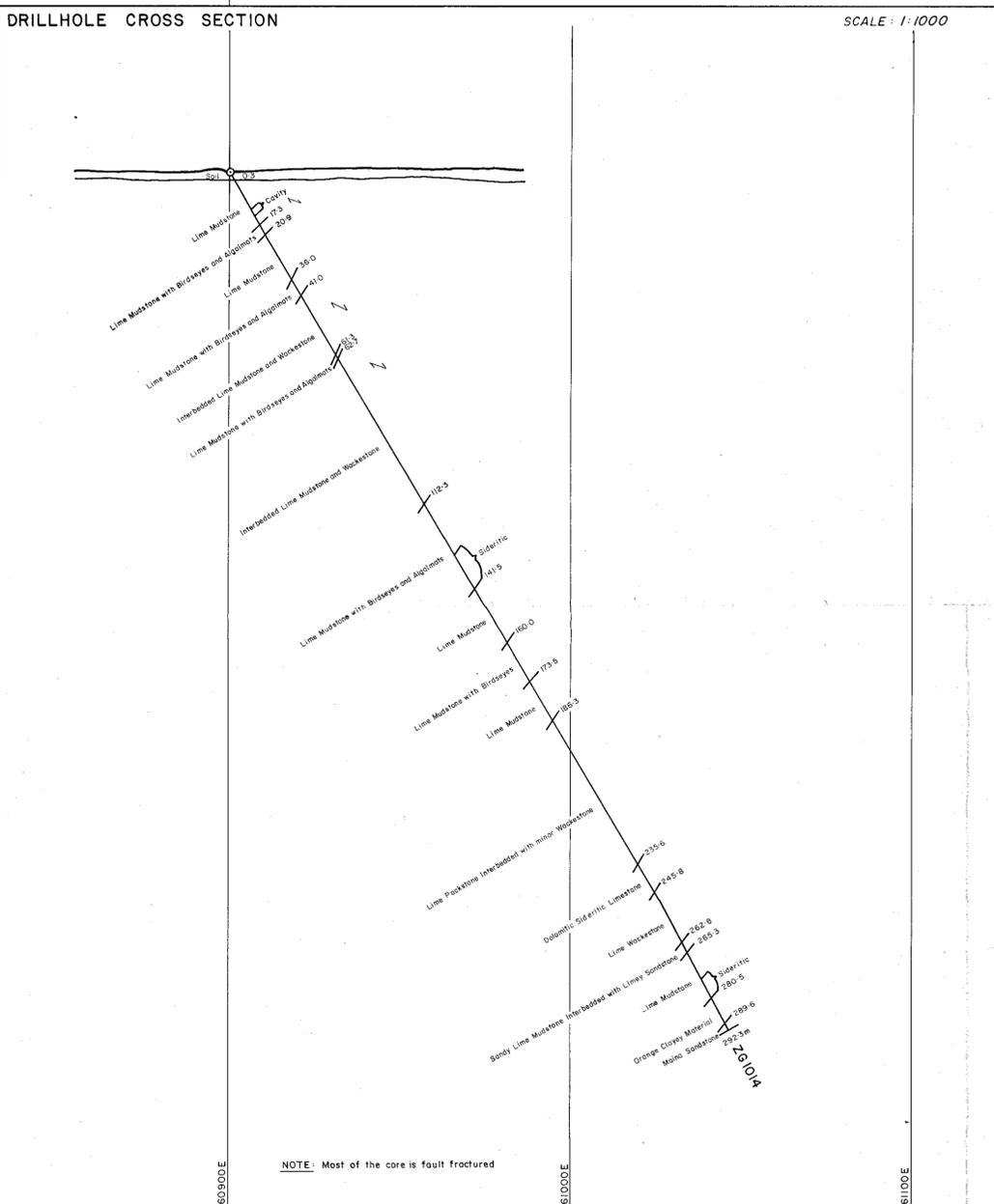
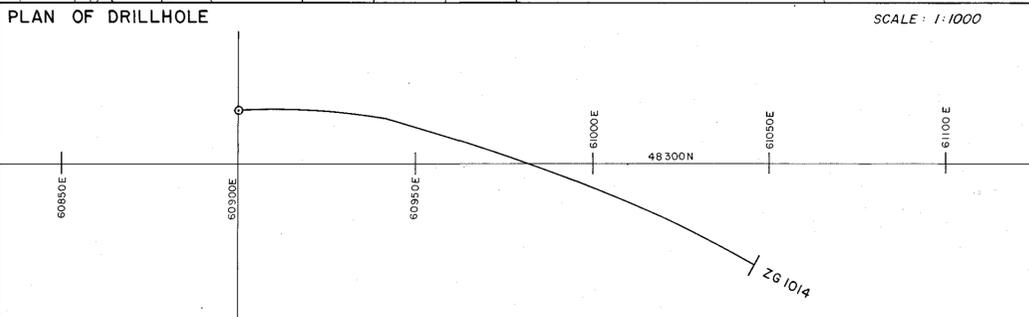
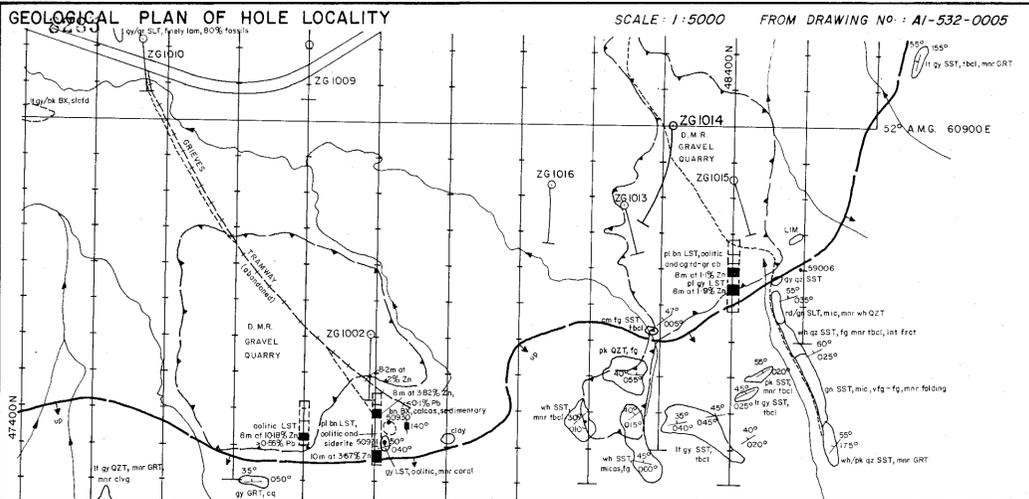
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PROJECT: EL 4/78 ZEEHAN TAS.

GRIEVES GRID 8284

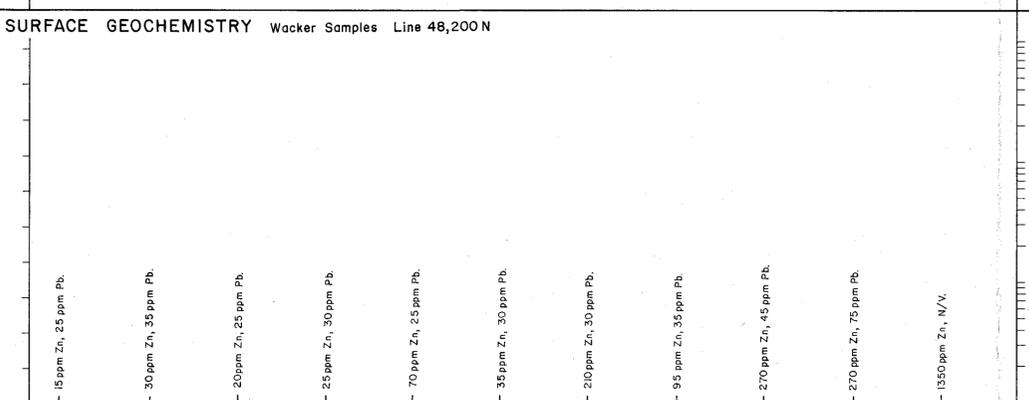
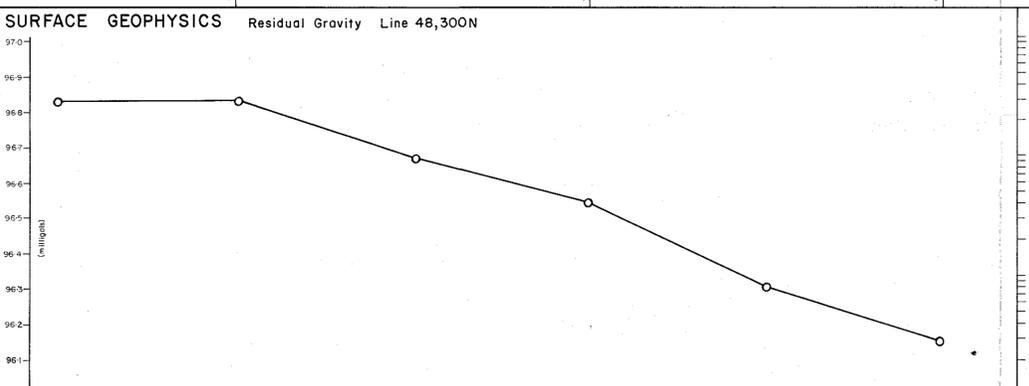
GEOLOGY (FACT)  
618063 89-2981

Scale 1:5000	Survey I.MAT	Revised NWDS 20-9-88
Reference A-78-60B	Date 16-11-83	REF No
Drawn R.J.R.	Checked G.L.K.	A1-532-0005



Lithology	Mineral'n	Depth (m)	GEOCHEMISTRY		GEOPHYSICS	
			Pb	Zn	Resistivity	Chargeability
		0				
		50				
		100				
		150				
		196.3				
		200				
		235.6				
		246.0				
		250				
		262.2				
		265.3				
		280.5				
		289.6				
		292.3				
		300				
		350				
		400				

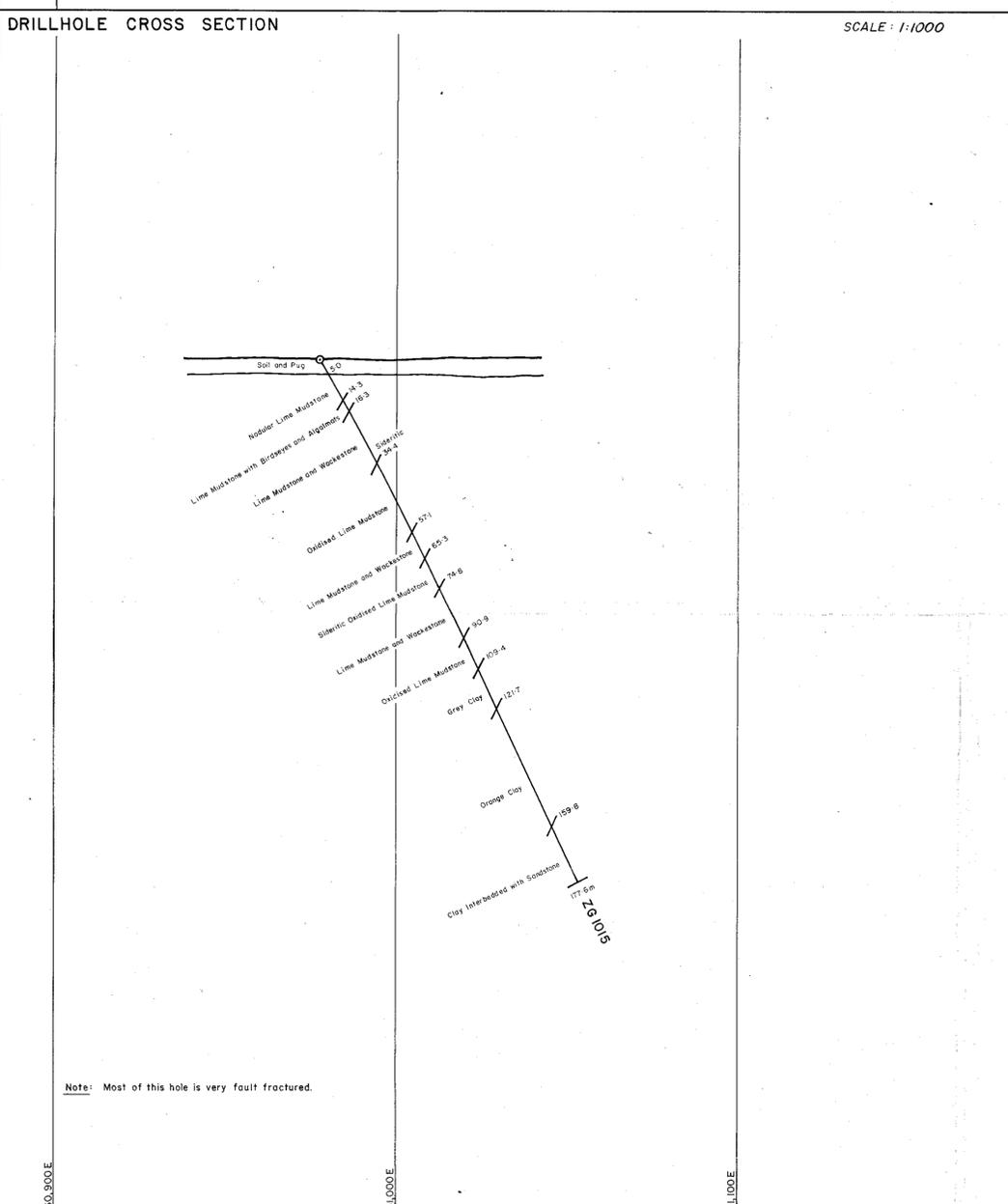
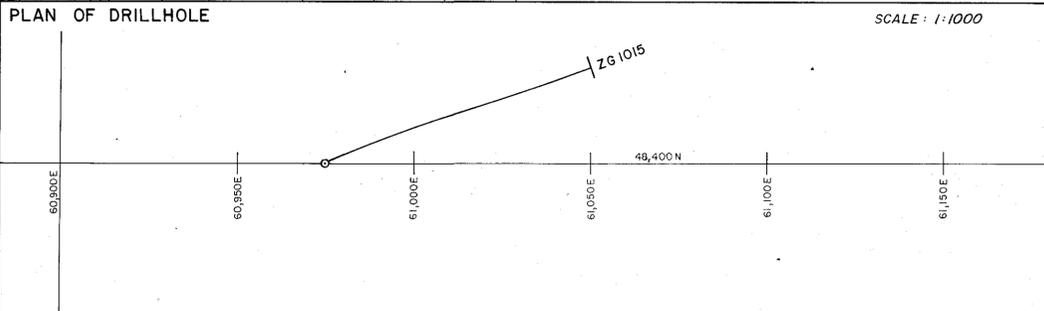
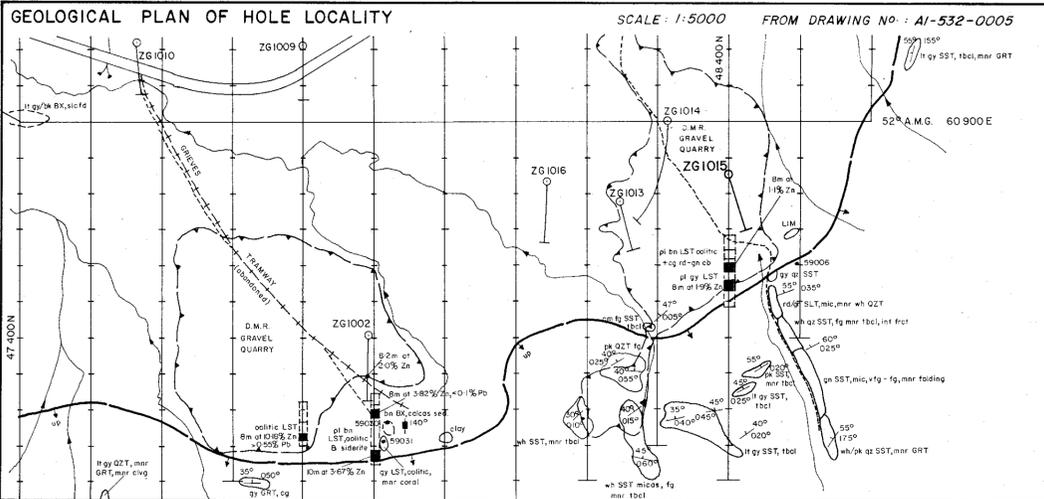
SUMMARY OF COMPLETED HOLE				SPECIFICATIONS OF PROPOSED HOLE			
CO-ORDINATES	NORTHING	EASTING	R. L.	CO-ORDINATES	NORTHING	EASTING	R. L.
LOCAL GRID A.M.G.	48315	60900	150m	LOCAL GRID A.M.G.			
	5349875	360650	150m				
AZIMUTH: 130°	DIP: -60°	TOTAL DEPTH: 292.3m		AZIMUTH:	DESIGNED DEPTH:		
COMMENCEMENT DATE: 3-1-'89				COMPLETION DATE: 19-1-'89			
INTERNAL SURVEY INFORMATION (Magnetic)				ANTICIPATED GEOLOGY			
DEPTH	AZIMUTH	DIP	DEPTH	AZIMUTH	DIP	NATURE OF TARGET AND ANTICIPATED DEPTH	
0m	130°	-60°	154m	148°	-59°		
30m	135°	-59° 75'	208m	152°	-59°		
60m	141°	-59°	291.4m	156°	-61°		
100m	145°	-59° 3'					
HOLE SIZE		FROM	TO	HOLE SIZE		FROM	TO
Tricone		0m	0.3m	HQ 3		145m	292.3m
HQ		0.3m	145m				
DRILLED GEOLOGY (SUMMARISED)							
DEPTH	LITHOLOGY	DEPTH	MINERALISATION AND SIGNIFICANT ASSAYS				
0-0.3m	NR.						
0.3-17.3m	Lime Mudstone.						
17.3-20.9m	Lime Mudstone with Birdseyes and Algolmats.						
20.9-36.0m	Lime Mudstone.						
36.0-41.0m	Lime Mudstone with Birdseyes and Algolmats.						
41.0-61.3m	Lime Mudstone and Wackestone.						
61.3-62.7m	Lime Mudstone with Birdseyes and Algolmats.						
62.7-112.3m	Lime Mudstone and Wackestone.						
112.3-141.5m	Lime Mudstone with Birdseyes and Algolmats.						
141.5-160.0m	Lime Mudstone.						
160.0-173.5m	Lime Mudstone with Birdseyes.						
173.5-186.3m	Lime Mudstone.						
186.3-235.6m	Lime Packstone and Wackestone.						
235.6-245.8m	Dolomitic Sideritic Limestone.						
245.8-262.2m	Lime Wackestone.						
262.2-265.3m	Sandy LST and Limey SS.						
265.3-289.6m	Lime Mudstone.						
289.6-292.3m	Orange Clayey Material.						
	Manganese Sandstone.						



DESIGNED BY:	DATE:
AIM OF HOLE: To intersect the mineralised horizon found at the base of the Gordon Limestone in ZG1013, 100m up dip, grid west.	
NOTES:	

LOGGED BY: K.J.V.	DATE: Jan, 1989			
SAMPLE DATA				
SAMPLE INTERVAL	SAMPLE NUMBERS	SAMPLE TYPE	ELEMENTS DETERMINED	LAB. METHOD
234.3-236.5m.	70873	Core	Cu, Pb, Zn, Fe, Mn.	103
236.5-238.9m.	70874	"		
238.9-241.3m.	70875	"		
241.3-243.8m.	70876	"		
243.8-245.8m.	70877	"		
245.8-248.0m.	70878	"		
248.0-272.7m.	70879	"		
272.7-275.6m.	70880	"		
275.6-280.5m.	70881	"		
NOTES:				
ELECTROLYTIC ZINC CO. OF ASIA LTD.				
PROJECT: ZEEHAN E.L. 4/78 TAS.				
SPECIFICATIONS AND SUMMARY OF RESULTS				
EXPLORATION DIAMOND DRILL HOLE No. ZG 1014 8285				
SCALE: As shown	Survey: K.J.V.	Revised:		
Reference:	Date: 16-3-'89	REF. No.		
Drawn: N.W.D.S.	Checked:	AI-532-0163		

89-2981

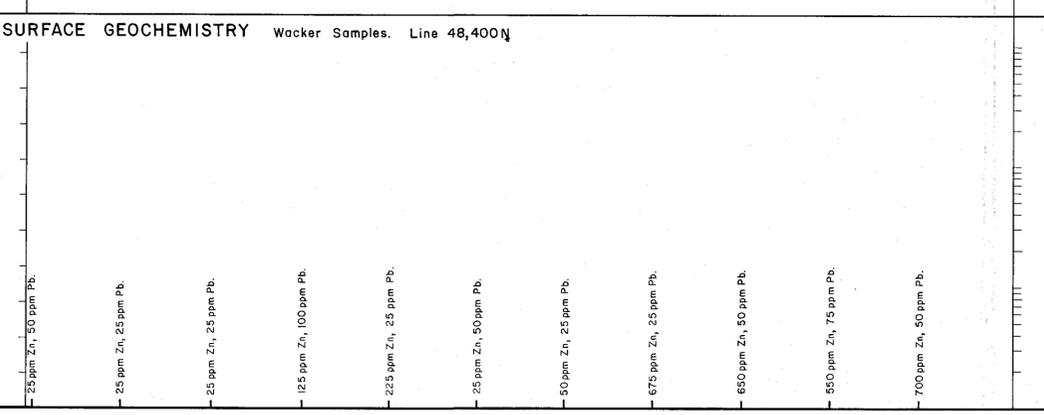
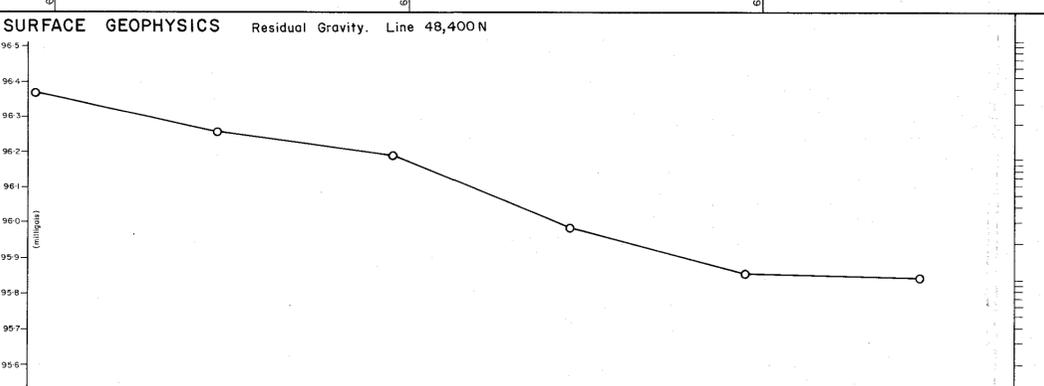


Lithology	Mineralin	Depth (m)	GEOCHEMISTRY		GEOPHYSICS	
Lime mudstone interbedded with lime wackestone.		0				
		50				
Sideritic lime mudstone.		65.3				
Lime mudstone & wackestone.		74.8				
Oxidised lime mudstone.		90.9				
		109.4				
Clay		150				
Clay interbedded with sandstone.		159.8				
		177.6				
		200				
		250				
		300				
		350				
		400				
		450				
		500				

SUMMARY OF COMPLETED HOLE			SPECIFICATIONS OF PROPOSED HOLE		
CO-ORDINATES	NORTHING	EASTING	R.L.	CO-ORDINATES	NORTHING
LOCAL GRID	48399	60975	154m	LOCAL GRID	
A.M.G.	5,349,895.0	364,750.0	154m	A.M.G.	
AZIMUTH: 110°	DIP: -60°	TOTAL DEPTH: 177.6m	AZIMUTH:	DIP:	DESIGNED DEPTH:
COMMENCEMENT DATE: 20-1-89	COMPLETION DATE: 31-1-89	ESTIMATED COMMENCEMENT:			

INTERNAL SURVEY INFORMATION (Magnetic)						ANTICIPATED GEOLOGY			
DEPTH	AZIMUTH	DIP	DEPTH	AZIMUTH	DIP	DEPTH	LITHOLOGY	DEPTH	NATURE OF TARGET AND ANTICIPATED DEPTH
57m	114°	63°							
109m	114.5°	64.5°							
170m	112.5m	64°							

DRILLED GEOLOGY (SUMMARISED)					
DEPTH	LITHOLOGY	DEPTH	MINERALISATION AND SIGNIFICANT ASSAYS		
0-5m	Soil and Pug.				
5-14.3m	Nodular Lime Mudstone.				
14.3-16.3m	Lime Mudstone with birdseyes and Algal mats.				
16.3-34.4m	Lime Mudstone and Wackestone.				
34.4-57.1m	Oxidised Lime Mudstone.				
57.1-65.3m	Lime Mudstone and Wackestone.				
65.3-74.8m	Sideritic Oxidised Lime Mudstone.				
74.8-90.9m	Lime Mudstone and Wackestone.				
90.9-109.4m	Oxidised Decomposed Lime Mudstone.				
109.4-121.7m	Grey Clay with Pyrite Grains.				
121.7-128.7m	Orange Clay.				
128.7-146.2m	Orange Clay with White and Pink Bands.				
146.2-159.8m	Orange Clay.				
159.8-177.6m	Clay Interbedded with Sandstone.				



LOGGED BY: K.J.V. DATE: Jan. 1989

DESIGNED BY: DATE:

AIM OF HOLE: To intersect the mineralised horizon found in ZG1013, 105m. along strike, grid north.

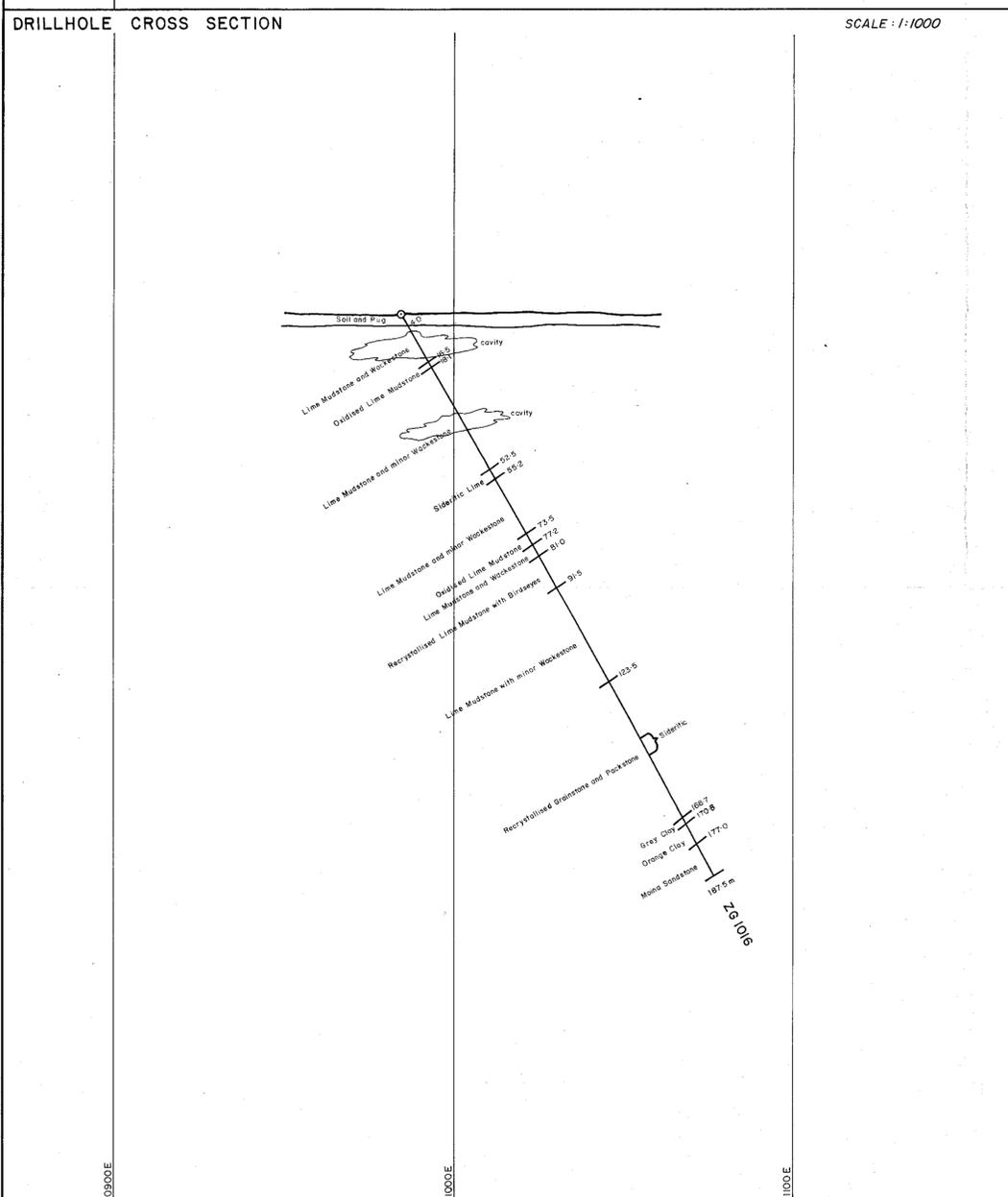
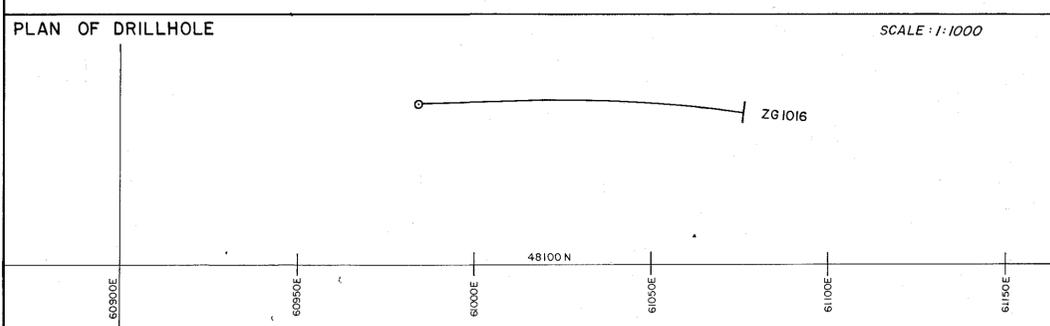
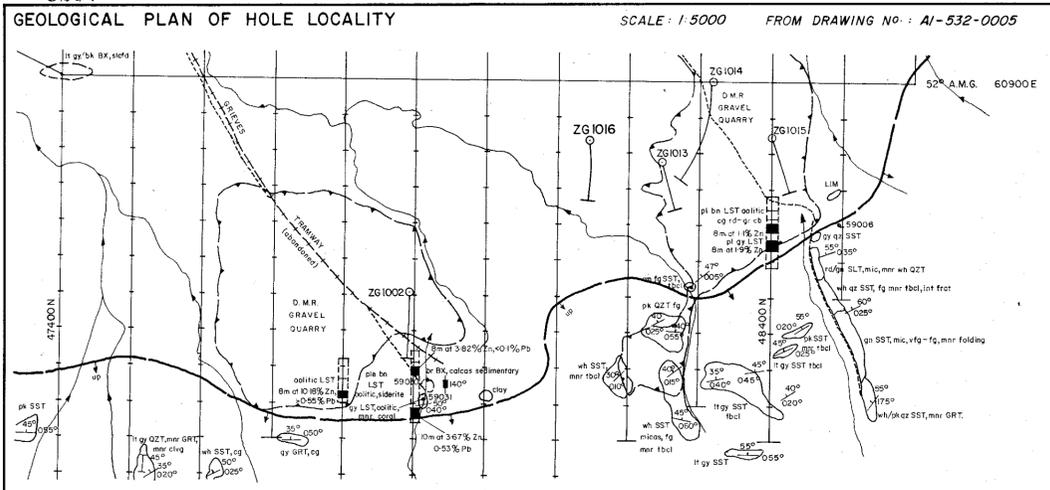
NOTES:

SAMPLE DATA				
SAMPLED INTERVAL	SAMPLE NUMBERS	SAMPLE TYPE	ELEMENTS DETERMINED	LAB. METHOD
99.5-102.8m	70882	Core	Cu, Pb, Zn, Mn, Fe.	103
102.8-105.7m	70883	Core		
105.7-109.6m	70884	Core		

ELECTROLYTIC ZINC CO. OF 'A'ASIA LTD.		
PROJECT: ZEEHAN	E.L. 4/78	TAS.
SPECIFICATIONS AND SUMMARY OF RESULTS		
EXPLORATION DIAMOND DRILL HOLE No. ZG 1015		

NOTES:

SCALE: As shown	Survey: K.J.V.	Revised:
Reference:	Date: 15-3-89	REF. No.
Drawn: N.W.D.S.	Checked:	AI-532-0162

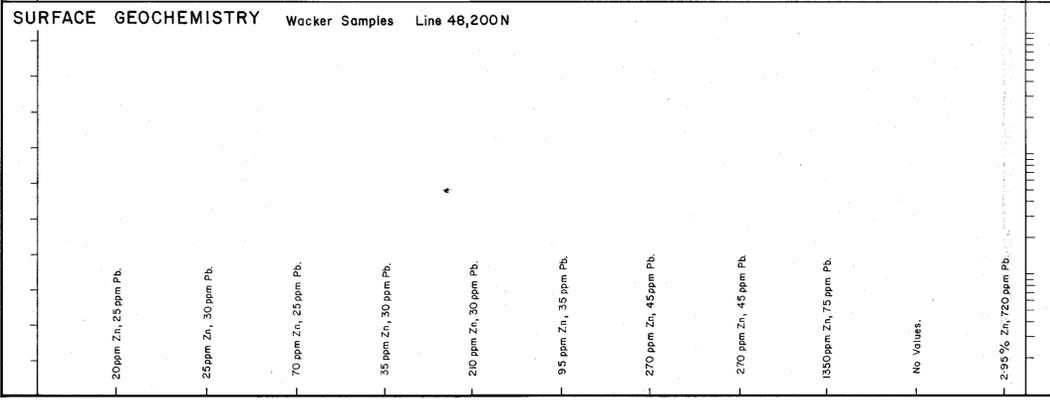
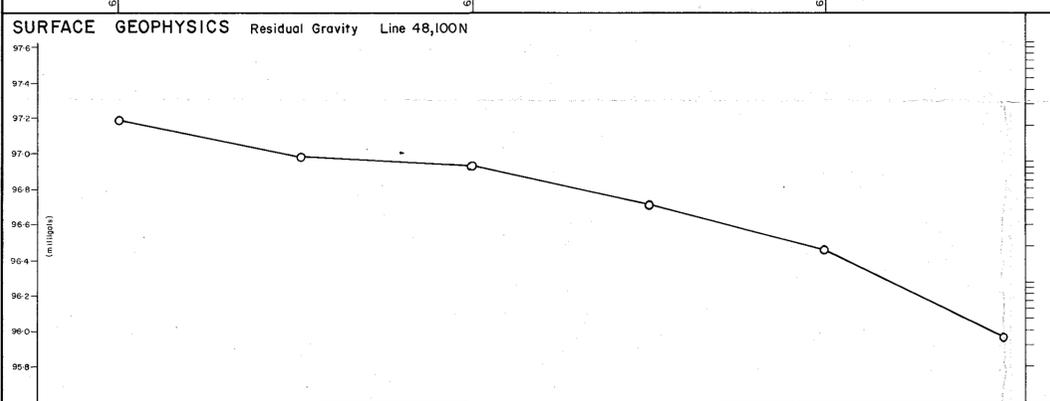


Lithology	Mineraln	Depth (m)	GEOCHEMISTRY		GEOPHYSICS	
			Pb	Zn	Resistivity	Magnetic Susceptibility
		0				
Interbedded limestone & wackestone with a sideritic zone.		50				
		100				
Recrystallised grains and packstone with a sideritic zone.		123.5				
		150				
Clay.		168.7				
Moine Sandstone.		177.0				
E.O.H.		187.5				
		200				
		250				
		300				
		350				
		400				

SUMMARY OF COMPLETED HOLE				SPECIFICATIONS OF PROPOSED HOLE			
CO-ORDINATES	NORTHING	EASTING	R. L.	CO-ORDINATES	NORTHING	EASTING	R. L.
LOCAL GRID A.M.G.	48145	60985		LOCAL GRID A.M.G.			
AZIMUTH: 130°	DIP: -60°	TOTAL DEPTH: 187.5m		AZIMUTH:	DIP:	DESIGNED DEPTH:	
COMMENCEMENT DATE: 2-2-89		COMPLETION DATE: 10-2-89		ESTIMATED COMMENCEMENT:			

INTERNAL SURVEY INFORMATION (Magnetic)						ANTICIPATED GEOLOGY			
DEPTH	AZIMUTH	DIP	DEPTH	AZIMUTH	DIP	DEPTH	LITHOLOGY	DEPTH	NATURE OF TARGET AND ANTICIPATED DEPTH
45m.	129.5°	-59°							
85.3m.	130°	-60°							
145m.	135°	-61°							
187m.	136°	-61.5°							

DRILLED GEOLOGY (SUMMARISED)					
DEPTH	LITHOLOGY	DEPTH	MINERALISATION AND SIGNIFICANT ASSAYS		
0-4.0m	No Recovery.				
4.0-16.5m	Lime Mudstone and Wackestone.				
16.5-18.1m	Oxidised Lime Mudstone.				
18.1-52.5m	Lime Mudstone and Wackestone.				
52.5-55.2m	Sideritic Recrystallised Limestone.				
55.2-73.5m	Lime Mudstone and minor Wackestone.				
73.5-77.2m	Oxidised Lime Mudstone.				
77.2-81.0m	Lime Mudstone.				
81.0-91.5m	Recrystallised Lime Mudstone with Bireyes.				
91.5-123.5m	Lime Mudstone and minor Wackestone.				
123.5-168.7m	Recrystallised Grains and Packstone with a Sideritic Zone.				
168.7-170.8m	Grey Clay with Pyrite Bands.				
170.8-177.0m	Orange Clay with Sandy Interbeds.				
177.0-187.5m	Moine Sandstone.				



DESIGNED BY: \_\_\_\_\_ DATE: \_\_\_\_\_

AIM OF HOLE: To intersect the mineralised horizon found in ZG1013, 155m along strike, grid south.

NOTES: \_\_\_\_\_

5287  
**89-2981**

SAMPLE DATA					ELECTROLYTIC ZINC CO. OF ASIA LTD.	
SAMPLED INTERVAL	SAMPLE NUMBERS	SAMPLE TYPE	ELEMENTS DETERMINED	LAB. METHOD	PROJECT: ZEEHAN E.L.4/78	TAS.
			Cu, Pb, Zn, Mn, Fe.	103		

LOGGED BY: K.J.V. DATE: Feb, 1989

NOTES: \_\_\_\_\_

SCALE: As shown Survey: K.J.V. Revised: \_\_\_\_\_

Reference: \_\_\_\_\_ Date: 17-3-89 REF. No. \_\_\_\_\_

Drawn: N.W.D.S. Checked: \_\_\_\_\_ AI-532-0164