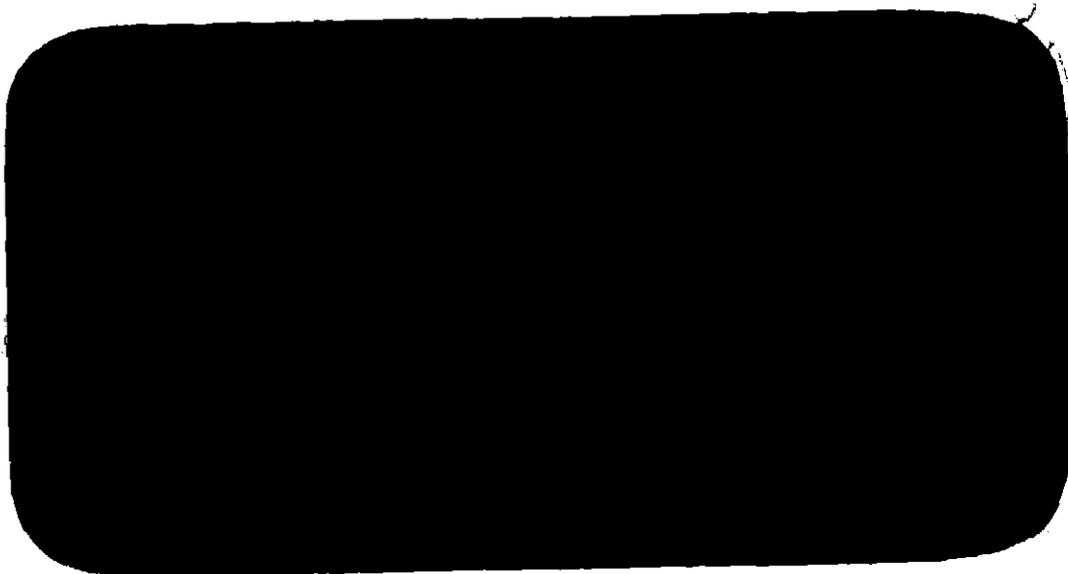


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80-1467.
Restricted vol I/2

57

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PROJECT NAME: AUSTRALIAN ANGLO AMERICAN LIMITED

TITLE: INTERIM REPORT ON PROGRESS TO 30TH JUNE 1980

MINERAL LEASE 62M/75

GODKIN TASMANIA

VOLUME 1

AREA NAME/S, STATE 1: 250,000 SHEET NO/S & COORDINATES: Queenstown K55/5

COMMODITY/IES: Sn, Cu, Pb, Zn, Sb

TEXT PAGES NO: 8

PLAN NOS:

TABLE NOS: See list of plans

APPENDICES: 4

AUTHOR/S: D. B. Orr, D.S. Thynne

DATE: 30th June 1980

MINISTERIAL

AUSTRALIAN ANGLO AMERICAN LIMITED

Incorporated in the State of Victoria

LIST OF PLANS

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TAS-8-25	Zinc Anomalies
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✓ TAS-8-12	Profiles 5000N
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TAS-8-15	Profiles 5300N
TAS-8-16	Profiles 5400N
✓ TAS-8-17	Profiles 5500N
✓ TAS-8-18	Profiles 5600N
TAS-8-19	Profiles 5700N
✓ TAS-8-20	Profiles 5800N
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✓ TAS-8-22	Profiles 6000N
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APPENDIX III Petrology

APPENDIX IV Assay Results Rock Samples

N.B. Lines 5900N and 6000N were not affected by malfunctioning time switch. Line 5800N has not been recalibrated.

INTERIM REPORT ON PROGRESS TO 30TH JUNE 1980MINERAL LEASE 62M/75GODKIN TASMANIA1. INTRODUCTION

Coincident geological, geochemical and geophysical features within the 0.5 km² of mineral lease 62M/75 provide targets for diamond drilling.

2. LOCATION

Mineral Lease 62M/75 is located 12 km NE of Zeehan at 143° 28'E, 41° 50'S.

3. ACCESS

Access is by either the NE Dundas Tramway or by the Comstaff Ring River Road in EL 5/63 part 6. Four wheel drive vehicles are essential and a winch is advisable. The NE Dundas Tramway leaves the Murchison Highway at Melba Flats approximately 7km south of Renison Bell and 5km north of the Zeehan turnoff.

4. TENURE

M.L. 62M/75 is held in the name of Minops Pty. Ltd. and is subject to a farm-in agreement with Australian Anglo American Prospecting Limited.

5. GEOLOGY5.1 Regional

According to the published 1" to 1 mile Zeehan Sheet M.L. 62M/75 is located in the intensely faulted Dundas Group on the western flank of a southerly plunging syncline. To the south of the lease Proterozoic rocks have been arched to produce a north plunging anticline. The dominant fault directions are NNE-SSW and NW-SE, the latter is the trend for the Bassett-Federal fault at Renison Bell Tin Mine. Mapping of the grid however indicates that the rocks are lithologically similar to the Crimson Creek rocks on Grid GAP in Renison East.

5.2 Grid Geology

The sediments are differentially hornfelsed. On the basis of lithological correlation with sediments in Comstaff's Renison East area the rocks in the Godkin area are considered to belong mainly to the Crimson Creek Formation except in the southeast where the rocks may be of Dundas age.

The Crimson Creek formation in the gridded area consists of interbedded, grey, fine grained sandstones, medium grained sandstones and siltstones. Both graded and layered beds occur. Medium grained sandstone bands are usually less than 3mm wide. Groups of beds with individual layers between 0.5mm and 10mm wide occur intermittently in wider more massive fine grained sandstone/siltstone beds.

The Crimson Creek formation sediments are hornfelsed to grey competent rocks in the northwest and southeast part of the grid. Between these two areas the beds though lithologically similar are softer and weather to a yellowish clayey loam. The contact of the hornfelsed section in the northwest has been traced northwards onto Comstaff Grid GAP.

Metasomatic mineral assemblage includes actinolite-tremolite-mica-sphene-pyrrhotite and arsenopyrite. Arsenopyrite is disseminated throughout the hornfelsed section. Pyrrhotite, though it occurs as disseminated grains, is usually concentrated as impregnations in the medium grained sandstone bands.

Mapped as an interbedded horizon in the Crimson Creek formation is tuffaceous quartzite or tuffaceous rhyolite. On the eastern end of Minops Costean E and on line 5600N, quartz veining or lensing is associated with this horizon.

In the southeast section of the grid, north-northeast trending horizons of quartzites, cherts, black carbonaceous pyritic shales and lithic tuffaceous dacites have been mapped as part of the Dundas Group.

A northeast trending feldspar-quartz porphyry dyke intersects the boundary between the Crimson Creek formation and Dundas Group. Outcrop of the dyke, except on line 5000N, is poor and was not observed on line 5100N. Costeans, to test a quartz stockwork in quartzites on the eastern margin of the dyke, occur on the tie line.

Light green, medium grained gabbros are in fault contact with the Crimson Creek formation on the access track from the NE Dundas Tramway. The gabbros have a brecciated margin and contain limonitic and quartz vein horizons which strike to the northwest and dip to the northeast. The gabbros possibly extend northward as they are similar to those in the 1000N costean in Grid GAP. Dips on the access track are to the east, in the central grid area to the west and in Great Northern Creek and eastern section of the grid to the east again. Dips are steep at the Frazer Mine workings on line 5200N, the adits being located close to the anticlinal axis. Inferred anticlinal and synclinal axes are shown on TAS-8-37. In the southern part of Grid GAP and the Godkin area anticlinal axes plunge southward while synclinal axes plunge northwards. The exception may be the synclinal axis extending south from the Minops Costeans.

The Crimson Creek sediments are cleaved at a high angle to bedding. No in situ measurements of cleavage were made.

TAS-8-35 is a percentage contour diagram of poles of joint planes and is based on 52 readings. At the Frazer Mine the lode follows a fault plane with strike 318° to 322° M, dip 74° to 86° E. In Minops Costean E prominent joints strike 340° to 350° M and dip 34° to 59° E. Though pole positions are scattered, subordinate joint patterns are grouped around northwest joints with southwest dips and north-northeast joints with southeast dips. Horizons of the Dundas Group and the dyke trend north-easterly.

Two of the five adit levels of the Frazer Mine are shown on TAS-8-34 with a summary from McIntosh Reid, 1925. The lode in No. 1 Adit is 32cm wide and consists of arsenopyrite with subordinate quartz, chalcopyrite, covellite and marcasite.

Small costeans occur along the margins of a dyke in the S.E. section of the Godkin Grid.

Alluvial tin workings occur in Tin Creek, which extends across line 6000N at 5145W, and in a creek draining from the grid on the tie line at 5743N 5000E. These last workings to the east of the grid are known as Dunn's and Archers Alluvial workings.

White quartz in streams draining from the grid into Great Northern Creek is common north of 5400N.

5.3 Mineralisation

L. Newnham (Renison Bell Tinfield pp 581-583 A.I.M.M. Monograph 5, Vol. 1) describes the Bassett-Federal structure to be mineralised to varying degrees over a strike length of 2000m and on dip for 800m. Average width is 5 to 15m and sulphides typically comprise 40-50% of the rock and consist of pyrrhotite, pyrite, arsenopyrite and chalcopyrite with trace amounts of stannite, galena, sphalerite and bismuthinite. The sulphides at the Fraser Mine are similar, though marcasite is sometimes more important than pyrrhotite. The adit located on line 5200N is considered to be part of the old Frazer workings.

5.4 Geophysics

A pulse E.M. survey was completed using a coil separation of 80m with readings every 40m. The time switch was malfunctioning but by replotting the data as curves and calculating the correct readings it has been possible to produce acceptable results. The attached letters and profiles, appendix 1, explain the method used in the reconstruction. The attached report by G.O. Dickson and Associates comments on the acceptability of the technique, Appendix II.

5.5 Geochemistry

Soil samples were collected every 20m at the base of the B soil horizon (\pm 50cm.) Samples were dried and sieved to -80# and analysed for Cu, Pb, Zn, Ag, Mo, Sb, As, W and Sn.

An inhouse VSTAT computer programme was used to separate the results into classes and the results plotted on cumulative frequency graphs to produce populations. An examination of the data suggested that there is correlation between certain elements and an R-mode factor analyses of the results was completed. An oblique rotation of the factor matrix was done to produce factor scores which have been plotted and are shown on Plans TAS-8-32 and TAS-8-33.

A summary of the geochemical data is given in the following table:-

<u>Element</u>	<u>High</u>	<u>Low</u>	<u>Mean</u>	<u>S.D.</u>	<u>pop 1</u>	<u>pop 2</u>	<u>pop 3</u>	<u>pop 4</u>
Cu	410	4	55	45	33	33-79	80-119	119
Pb	260	3	28	27	24	24-44	45-94	94
Zn	410	4	43	33	27.5	27.5-64	65-99	99
Sn	1100	3	106	182	40	40-99	100-209	209
W	7.5	CO.5	1.4	1.3	2.2	2.2-44	4.4	
As	5600	2	95	366	100	100-274	275-499	499
Mo	14	CO.5	3	2	29	2.9-6.4	6.4-108	10.8
Sb	10	CO.1	1.0	1.7	10	10-29	30-52	52
Ag	1.5		0.23	0.19	0.35	0.35-0.75	0.75	

Results are shown on the attached plans and profiles
Rock sample results are given in Appendix IV.

Cu, Pb, Zn, As and Ag were determined by AAS after a perchloric acid attack.

Mo and W were determined by AAS after a mixed acid attack.

Sb was determined by AAS after volatilisation with ammoniumiodide.

Sn was determined by XRF from a pressed powder.

6. DISCUSSION OF RESULTS

Reports on previous work are listed at the end of this report. Where possible information centre document numbers are given for easy retrieval.

An examination of the summary map TAS-8-38 and the interpreted geology TAS-8-37 indicates that the geochemistry and IP are cross cutting the strata and have a NW trend similar to the Bassett-Federal Fault at Renison Bell Tin Mine.

This cross cutting effect of the geochemistry and IP indicates that the mineralisation occurred after folding and there may, therefore, be problems in correlating rocks between boreholes.

The direction of the grid lines is at 45° to the trend of the anomalies and at least two additional lines will require cutting to provide topographic details for the proposed drilling programme.

Mapping of the two adits of the Frazer Mine indicates that the lode is apparently displaced about 15m west at the southern part of the lower adit. The EM conductor is to the west of the geochemistry on line 5200N but to the east on 5300N.

7. RECOMMENDATIONS

7.1 The core from Minops boreholes should be sampled to test for anomalous tin values which may help to explain the tin anomaly.

7.2 Drilling

Geology and geochemistry indicate northwesterly structures subparallel to the Bassett-Federal Fault. Since grid lines were cut on magnetic east west bearings it will be necessary to cut and survey lines through potential drilling targets.

Two potential drilling targets occur at:

7.2.1 5200N 5245W

This is the Frazer Mine. The target has a strike direction of 320°M and dips steeply ($+80^{\circ}$) to the NE. The target occurs on the western slope of the Great Northern Creek. A line should be cut and surveyed for 100m on either side of the adit entrance on a bearing of 040°M . If possible a drill pad should be prepared which is sited for a borehole inclined at -45° on a bearing of 220°M to intersect the lode 100m below surface. If access to this position is not possible the drilling may have to be done from the footwall side of the lode.

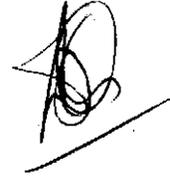
7.2.2 5700N 5300W and 5800N 5200W

A line should be cut from line 5600N to line 5900N on a bearing of 040°M to pass through 5700N 5300W.

The rocks strike NS and dip to the west but the anomalies are cross cutting with a southeasterly trend. Nothing is known about the dip although Scintrex consider the IP anomaly to be dipping steeply to the east. Two boreholes should be sited to intersect 75m below 5800N 5200W and 5700N 5300W respectively. Since there was no

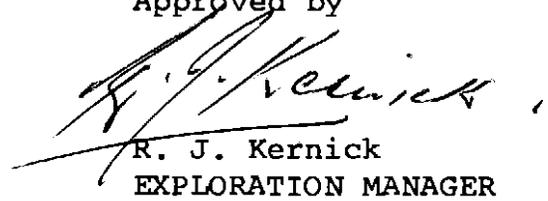
7.

obvious mineralisation in either of the two Minops boreholes the proposed boreholes should be drilled on a bearing of 220°M.



D. B. Orr
D. S. Thynne

Approved by



R. J. Kernick
EXPLORATION MANAGER

30th June 1980

LITERATURE AVAILABLE

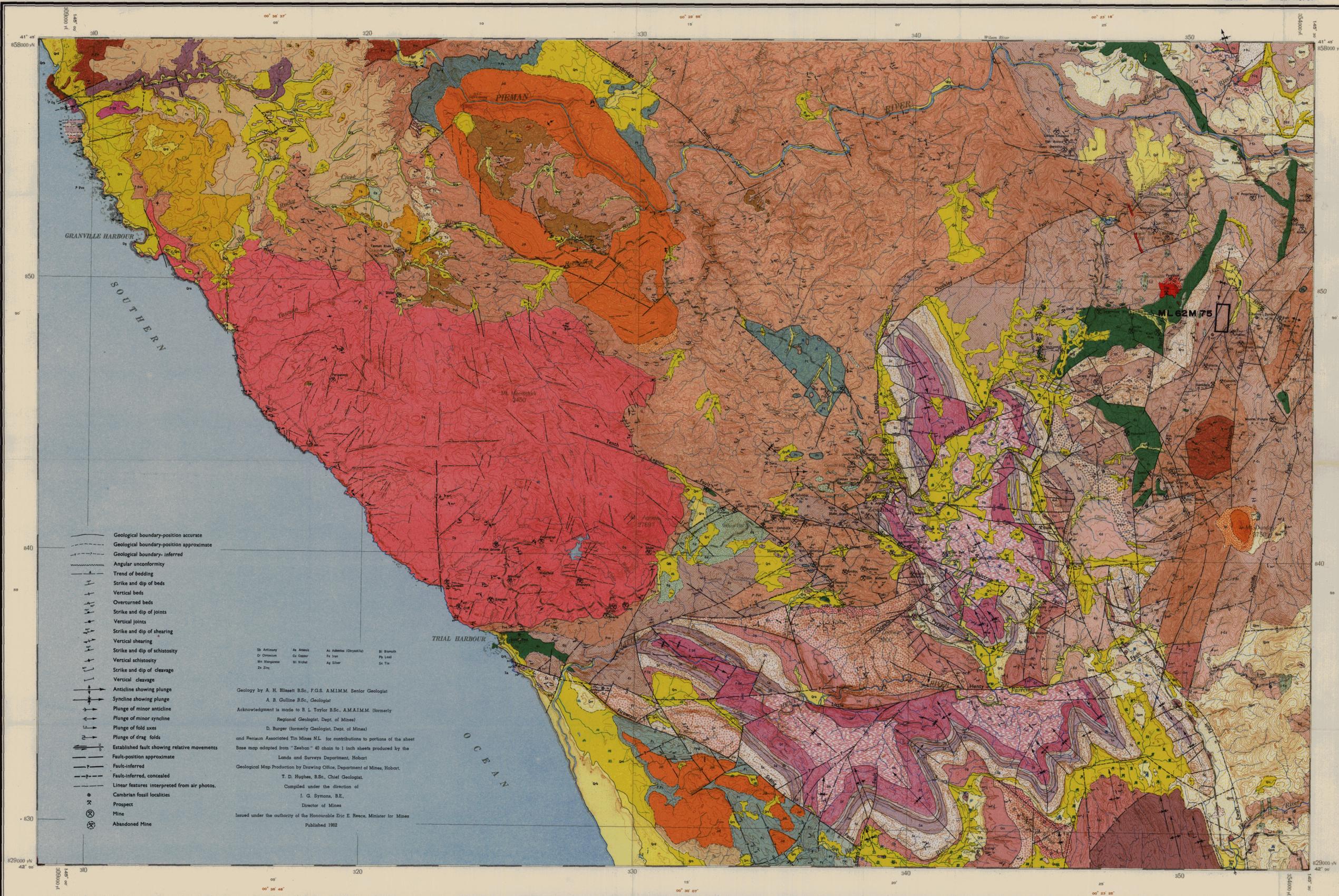
I.C. Doc. No.

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REFERENCE

- QUATERNARY**
- Alluvium
 - Beach deposits
 - Sand dunes and blown sand
 - Gravels
 - Conglomerate talus
 - Dolerite talus
 - Quartz porphyry talus
 - Raised beaches
 - Older alluvium marsh deposits, downwash etc.
 - Fluvioglacial and lacustrine deposits
 - Moraine
- PLEISTOCENE**
- TERTIARY**
- Conglomerate and grit
 - Gravels
 - Limestone
 - Sand, silt and clay
- PERMIAN**
- Cygnets Coal Measures
 - Ferntree Group
 - "Woodbridge" Group
 - Zeehan Glacial Formation
- DEVONIAN**
- Bell Shale
 - Florence Quartzite
- SILURIAN-ELDON GROUP**
- Austral Creek Siltstone
 - Keel Quartzite
 - Amber Slate
 - Crotty Quartzite
 - Unassigned
- POLEZOZOIC**
- ORDOVICIAN-JURASSIC GROUP**
- Gordon Limestone
 - Moina Sandstone
 - Mt. Zeehan Conglomerate
- CAMBRIAN**
- DUNDAS GROUP**
- Misery Conglomerate
 - Climie Formation
 - Fernflow Formation
 - Comet Formation
 - Fernfields Formation
 - Brewery Junction Formation
 - Razorback Conglomerate
 - Hodge Slate
 - Red Lead Conglomerate
 - Dundas Group Unassigned
 - Crimson Creek Formation
 - Cambrian Unassigned
- PROTEROZOIC**
- Onah Quartzite and Slate
 - Concert Schist
 - Whyte Schist
- IGNEOUS ROCKS**
- TERTIARY**
- Basalt
- JURASSIC**
- Dolerite
- DEVONIAN**
- Granite
 - Quartz porphyry
 - Gabbro, norite and dolerite
 - Serpentine and pyroxenite



- Geological boundary-position accurate
- Geological boundary-position approximate
- Geological boundary-inferred
- Angular unconformity
- Trend of bedding
- Strike and dip of beds
- Vertical beds
- Overturned beds
- Strike and dip of joints
- Vertical joints
- Strike and dip of shearing
- Vertical shearing
- Strike and dip of schistosity
- Vertical schistosity
- Strike and dip of cleavage
- Vertical cleavage
- Anticline showing plunge
- Syncline showing plunge
- Plunge of minor anticline
- Plunge of minor syncline
- Plunge of fold axes
- Plunge of drag folds
- Established fault showing relative movements
- Fault-position approximate
- Fault-inferred
- Fault-inferred, concealed
- Linear features interpreted from air photos.
- Cambrian fossil localities
- Prospect
- Mine
- Abandoned Mine

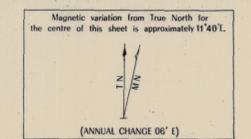
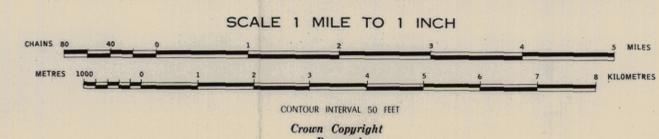
Geology by A. H. Blissett B.Sc., F.G.S. AM.I.M.M. Senior Geologist
A. B. Gulline B.Sc., Geologist
Acknowledgment is made to B. L. Taylor B.Sc. AM.I.M.M. (formerly Regional Geologist, Dept. of Mines)
D. Burger (formerly Geologist, Dept. of Mines) and Peniston Associated Tin Mines N.L. for contributions to portions of the sheet
Base map adapted from "Zeehan" 40 chain to 1 inch sheets produced by the Lands and Surveys Department, Hobart
Geological Map Production by Drawing Office, Department of Mines, Hobart.
T. D. Hughes, B.Sc., Chief Geologist.
Compiled under the direction of
I. G. Symons, B.E., Director of Mines
Issued under the authority of the Honourable Eric E. Beece, Minister for Mines
Published 1962

CONTINUAL 2nd and 3rd Order Triangulation based on Leuchmans Astronomical Station Lat. 41°38' 51.389" S. Long. 147° 17' 49.725" E.
DETAIL: Aerial Photography 1956
PROJECTION: Transverse Mercator
LEVEL DATUM: Mean Sea Level Hobart
NOMENCLATURE: Approved by the Nomenclature Board of Tasmania.
GRID CONVERGENCE: Based on Longitude 146° 00' E. To obtain True Bearing use correction as shown in Brown along top and bottom borders of sheet.

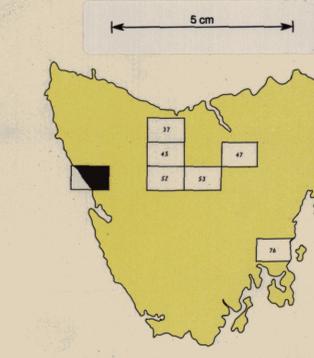
Trig. Stations
14th Order
State Permanent Mark
House Hut
Post Office School Hotel
Hospital Garage Church
Windpump Cranes Water Tower
Mines Lighthouse Waterhole
Electric Transmission Line
Telephone Line

INDEX TO ADJOINING SHEETS

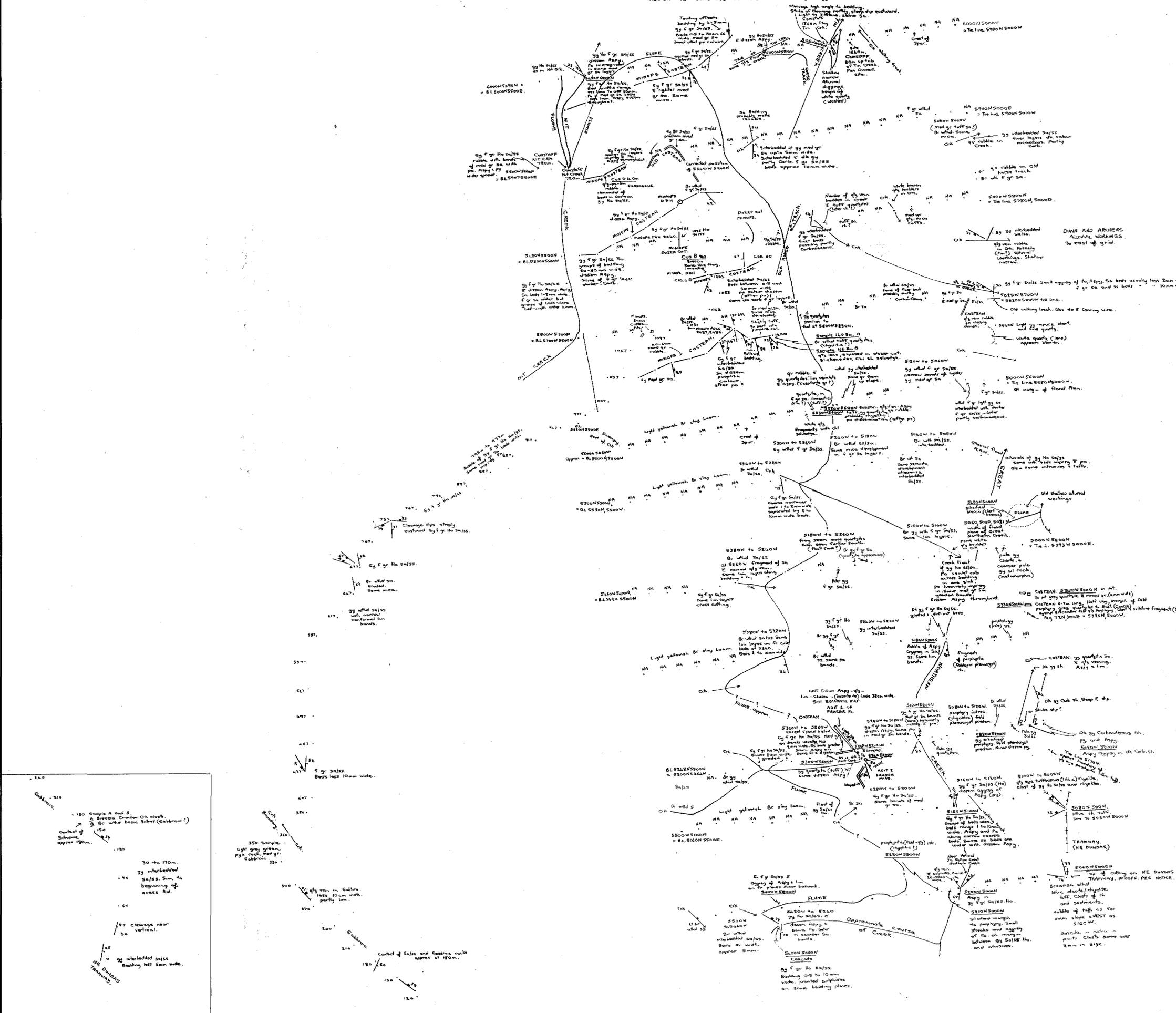
PIEMAN RIVER	CORINNA	MACKINTOSH
	ZEEHAN	MURCHISON
	STRATHAN	LYELL



- Swamp or Marsh
- Quarry
- Great Pit
- Cut
- Contours
- Depression Contours
- 1st Class Sealed
- 2nd Class Metal or Gravel
- 3rd Class
- 4th Class Unsealed
- Vehicular Track
- Foot or Pack Track
- Gate
- Cattle-grid Bridge
- Railway

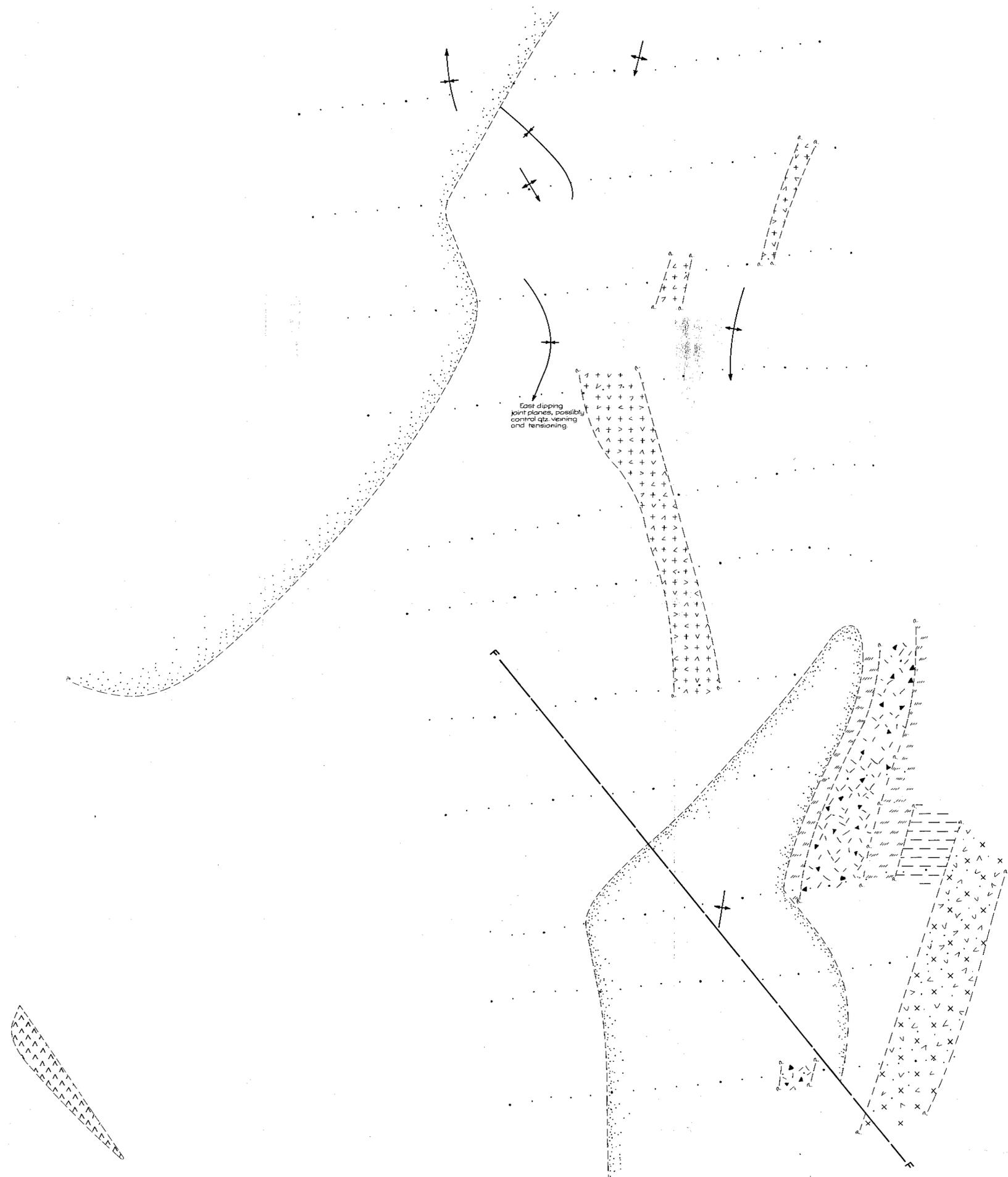


REFLEX TO COMSTAFFS TIN AND MIT CREEK SWAVES



AUSTRALIAN ANGLO AMERICAN LIMITED

CODKIN PROJECT		80-1467
ML G2M/75 - TASMANIA		
CODKIN GRID		
GEOLOGY - FACT		
COMPILED	DST	
DRAWN	DATE	6/80
AMENDED		
SCALE	1:2,000	
PLAN No.	TAS-8-36	

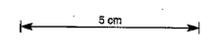
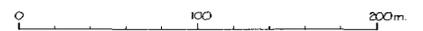


East dipping joint planes, possibly control qtz veining and tensioning



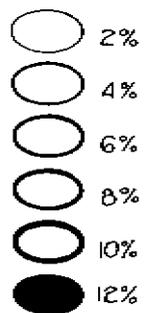
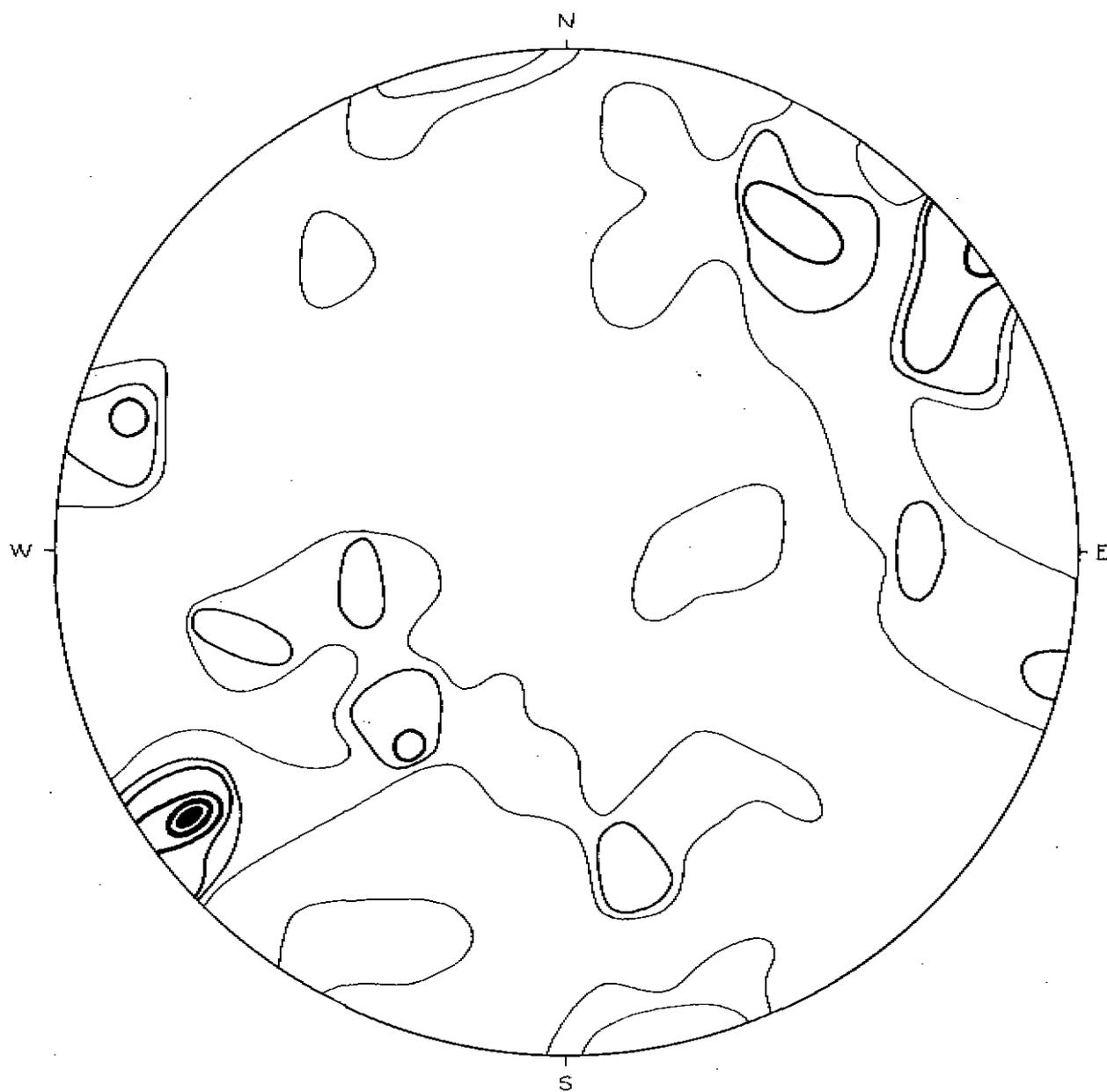
- Fault
- Plunging anticlinal axis
- Plunging synclinal axis
- Geological boundary

- Grey feldspar-quartz porphyry dyke
- Gabbros and associated breccias
- Blue cherts, quartzites, Quartzites medium grained
- Dark grey Carbonaceous shales
- Lithic rhyolites (dacites?) Chert Hornfelsed sandstones lithic fragments
- Grey hornfelsed graded and layered sandstones and siltstones Disseminated arsenopyrite and pyrorite
- Brown, grey weathered less competent sandstones, siltstones
- Interbedded, tuffaceous quartzites and rhyolites



57 014

AUSTRALIAN ANGLIO AMERICAN LIMITED	
GODKIN PROJECT 80-467 ML 62M/75 - TASMANIA	
GODKIN GRID GEOLOGY - INTERPRETATION	
COMPILED DST	DRAWN HD
DATE G/80	AMENDED
SCALE 1:2,000	PLAN No. TAS-8-37



N.B. - 12% is pole of plane of the
Frazer Mine Lode.
Reflects concentration
of field readings.

57 015

AUSTRALIAN ANGLO AMERICAN LIMITED			
80-467	GODKIN PROJECT ML 62M75-TASMANIA GODKIN GRID		
PERCENTAGE CONTOUR DIAGRAM JOINT MEASUREMENTS			
COMPILED DST	DRAWN 6/80 HD	SCALE N.T.S.	TAS-6-35

FRASER CREEK MINE

REFERENCE McIntosh Reid. THE DUNDAS MINERAL FIELD 438 No 36, 1925.

The Lode was originally worked for its tin content. It was found that the ore bodies consisted largely of Arsenopyrite, and that the average tin content was small. Edwards Metallurgical Company of Ballarat produced mainly Arsenopyrite from the mine.

The ore body is of the pyrrhotite-cassiterite type containing arsenopyrite, chalcopyrite and quartz. Either arsenopyrite or quartz is the dominant mineral in sections of the Lode. Pyrite is nowhere prominent. Arsenopyrite crystals can occur enclosed in quartz. The lode trends 317° and dips north easterly at angles of 70° to 95°. The grey interbedded sandstones, siltstones strike 20° E. and are nearly vertical.

There are 5 adits etc, 2 of which are shown here. The lode has been proved for 500' (152m) and maintains a width of 2' (61cm). Observed here (32cm).

No 1 adit, Lode 6" to 18" (15 to 45cm) wide. Length 120' (36.6m) - shown here. at the entrance quartz is the chief component, Arsenopyrite dominates further north. Chalcopyrite and marcasite are present. Bulk sample gave:

Gold Nil, Silver 2 oz 12 dwt, 6 grs per ton.
Arsenic 20.02%, Copper 0.85%
Tin Nil.

No 2 adit is 40' lower (12.19m) and south of No 1. Cross cut bears 295°, intersects the lode at 100' (30.5m) where drifts lead north and south (shown here).

The northern drift continues for 200' (61m) a shoot of ore 134' (40.8m) has been stoped. The drift to the south is 100' (30.5m) and exposes 75' (23m) of ore the greater part of which is stoped. at 70' (21.3m) a winze was sunk to 20' (6.1m) chalcopyrite is subordinate to other sulphides and marcasite partly replaces Arsenopyrite, pyrrhotite.

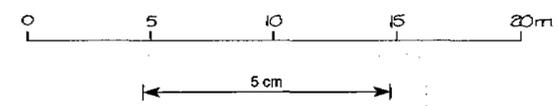
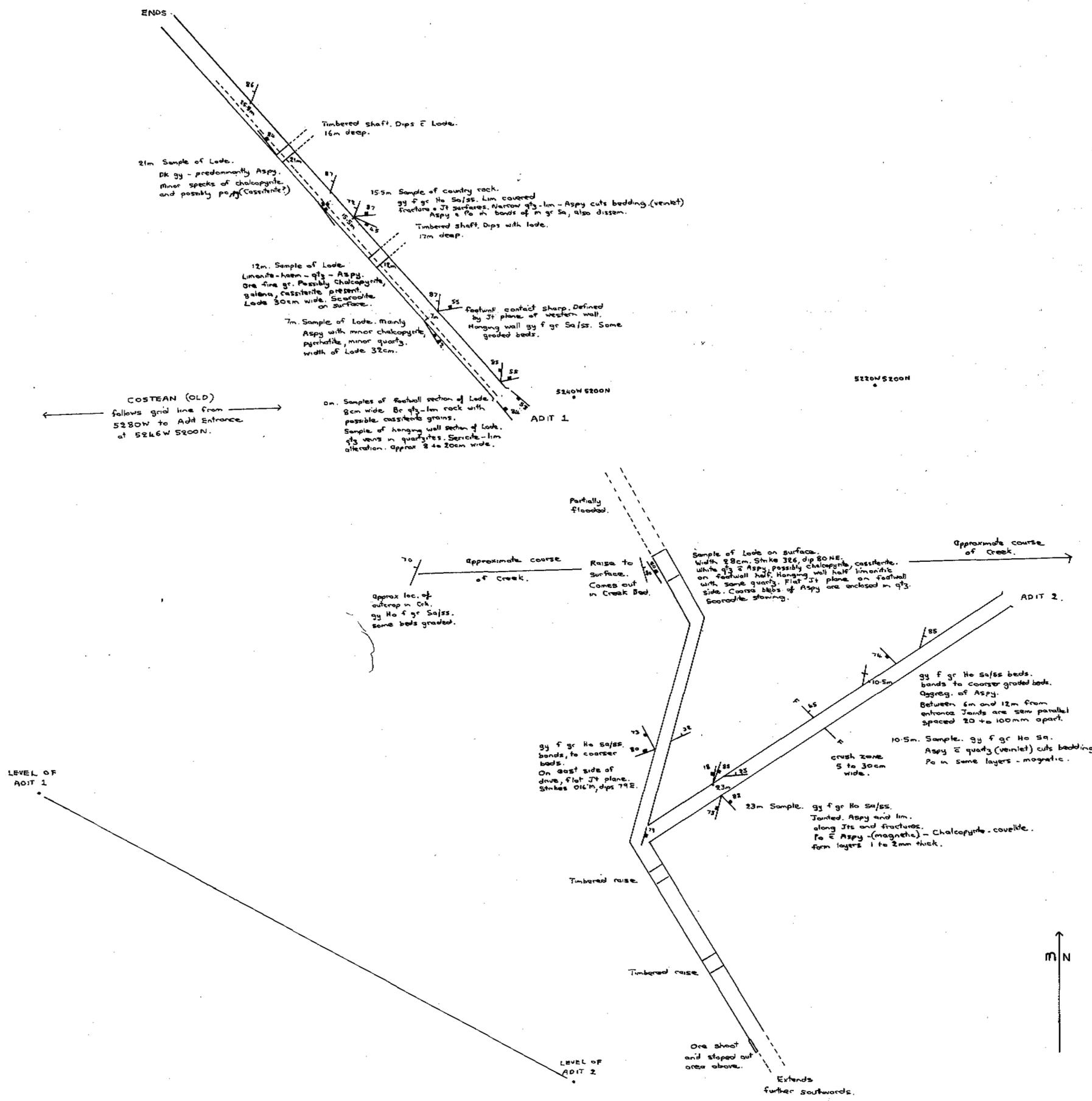
No 3 adit is 30' (9.1m) lower and a cross cut bears 300° for 70' (21.3m), drifts expose it 15' (4.7m) south and 1m north. of the intersection. The ore consists of arsenopyrite, marcasite, chalcopyrite, and quartz. an analysis gave:

Gold Nil, Silver 4 oz 16 dwt 16 grs
Arsenic 7.23%, Copper 4.08%
Tin 0.30%.

No 4 and No 5 adit lie to the south of the 3 adits above. No 4 a bulk sample contained:

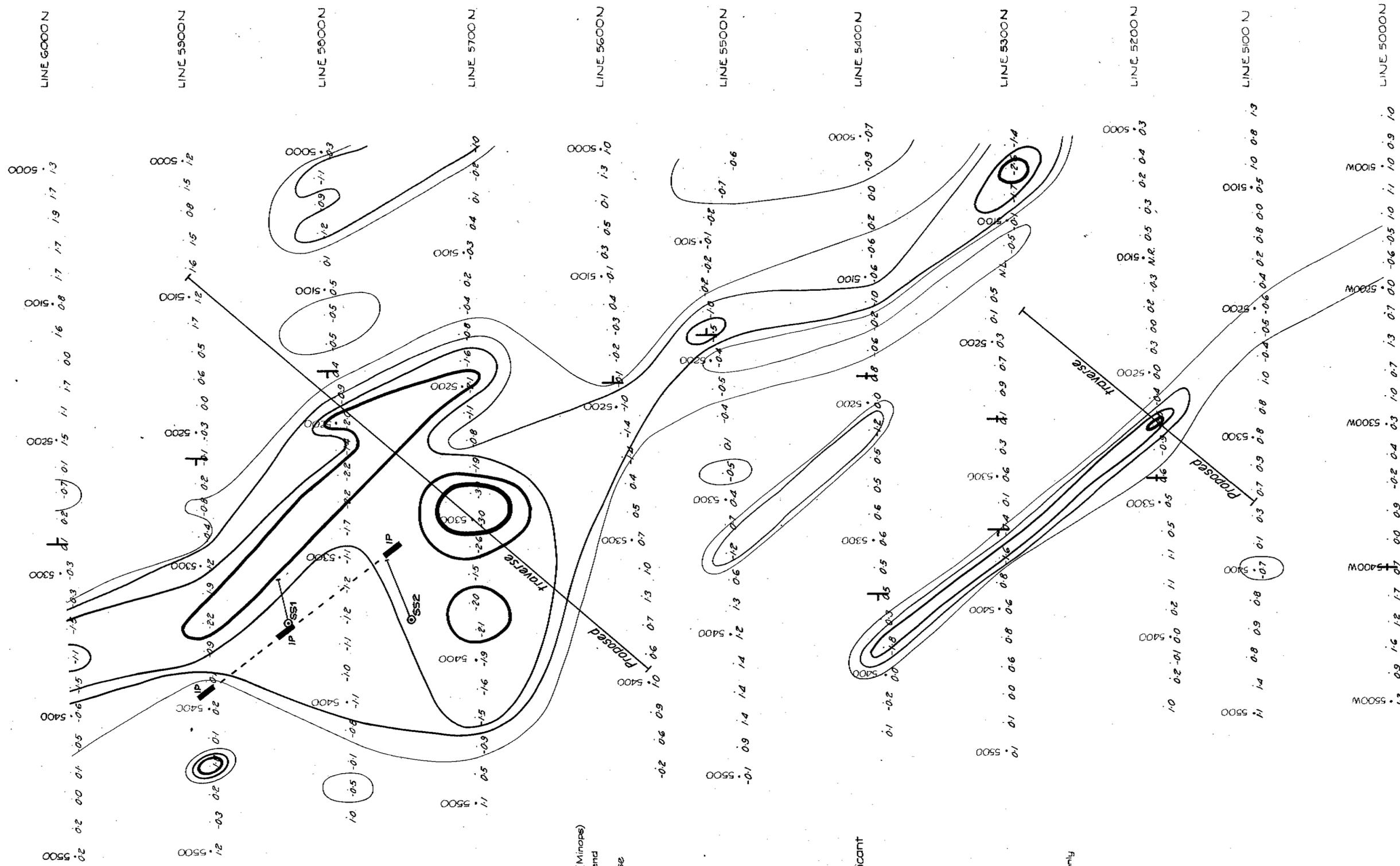
Arsenic 16.8%
Copper 0.09%
Tin Trace.

In addition to the above adits shaft adits have been driven on a gossan vein, one from rail level of the tramway, one below it. The ore is poor in tin, silver and gold.



AUSTRALIAN ANGLo AMERICAN LTD			
PROJECT	CODKIN PROJECT		
AREA	ML 62M/75 - TASMANIA		
DATA	ADIT 1 AND PART ADIT 2 OF FRASER CREEK MINE		
COMPILED	DST	SCALE	1:200
DRAWN	DST 6/80	REF No	TAS-8-34
AMENDED	80-1467		

57 016



IP anomaly (Minare)
 Possible IP trend
 FEM response

Factor 2 Sni-As
 Negative scores significant

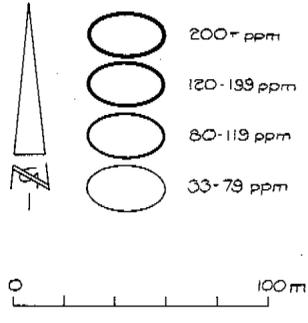
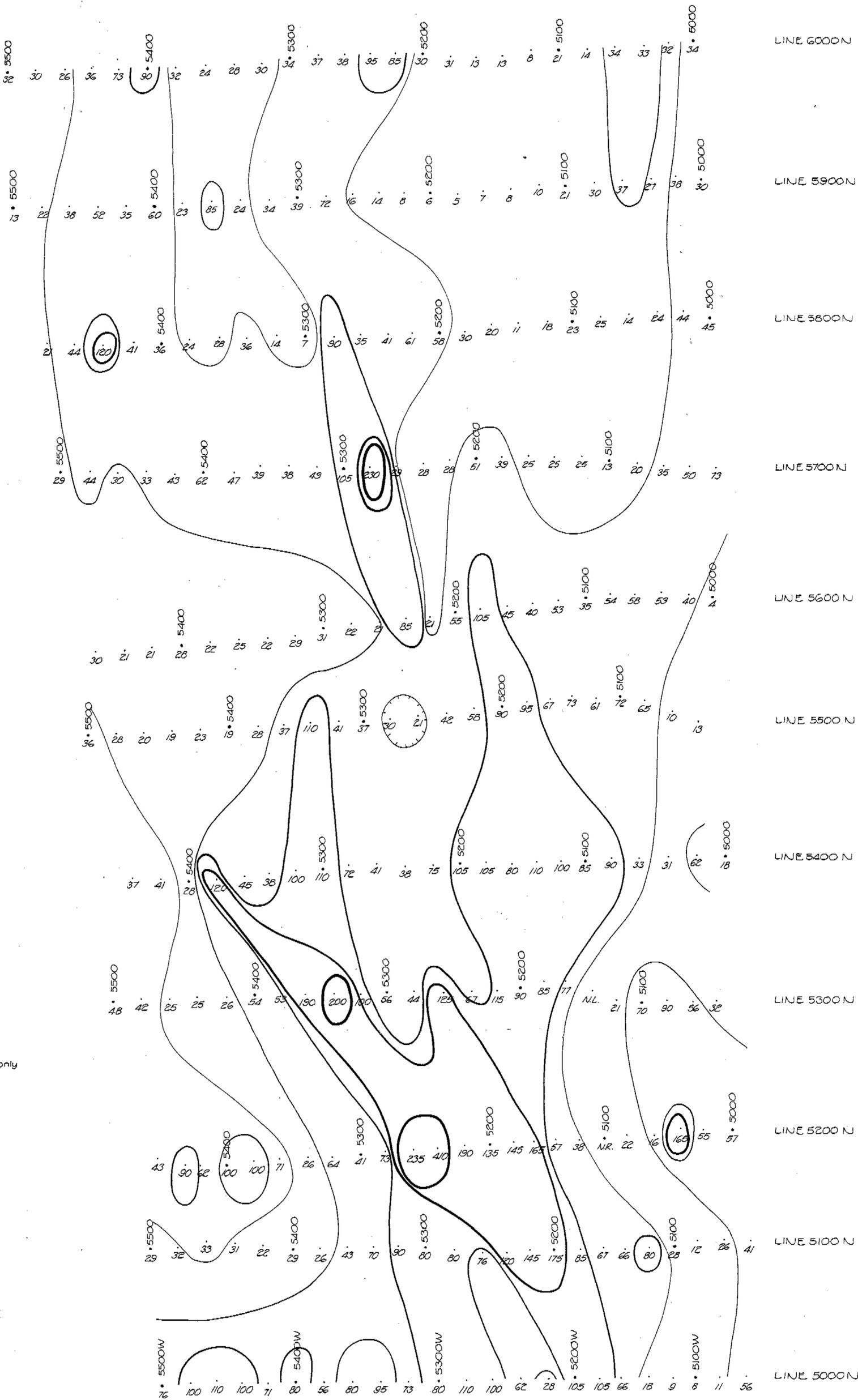
<math>< -30</math>
 -20 -29
 -19 -15
 -14 -10
 -0.5 -0.9

N.L. Not located
 N.R. No result

N.B. - Position of Line 5900N approx only

57 017
6750

AUSTRALIAN ANGLO AMERICAN LTD			
PROJECT	GODKIN PROSPECT		
AREA	ML 62M/75 - TASMANIA		
DATA	GODKIN GRID SUMMARY MAP		
COMPILED	DBO	SCALE	1:2,000
DRAWN	HD 7/80	REF No	TAS-8-38
AMENDED	80-1467		

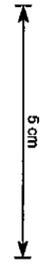


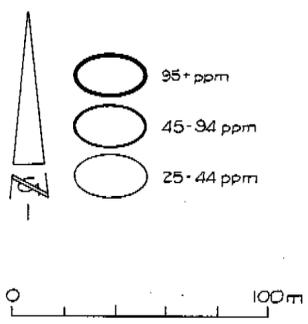
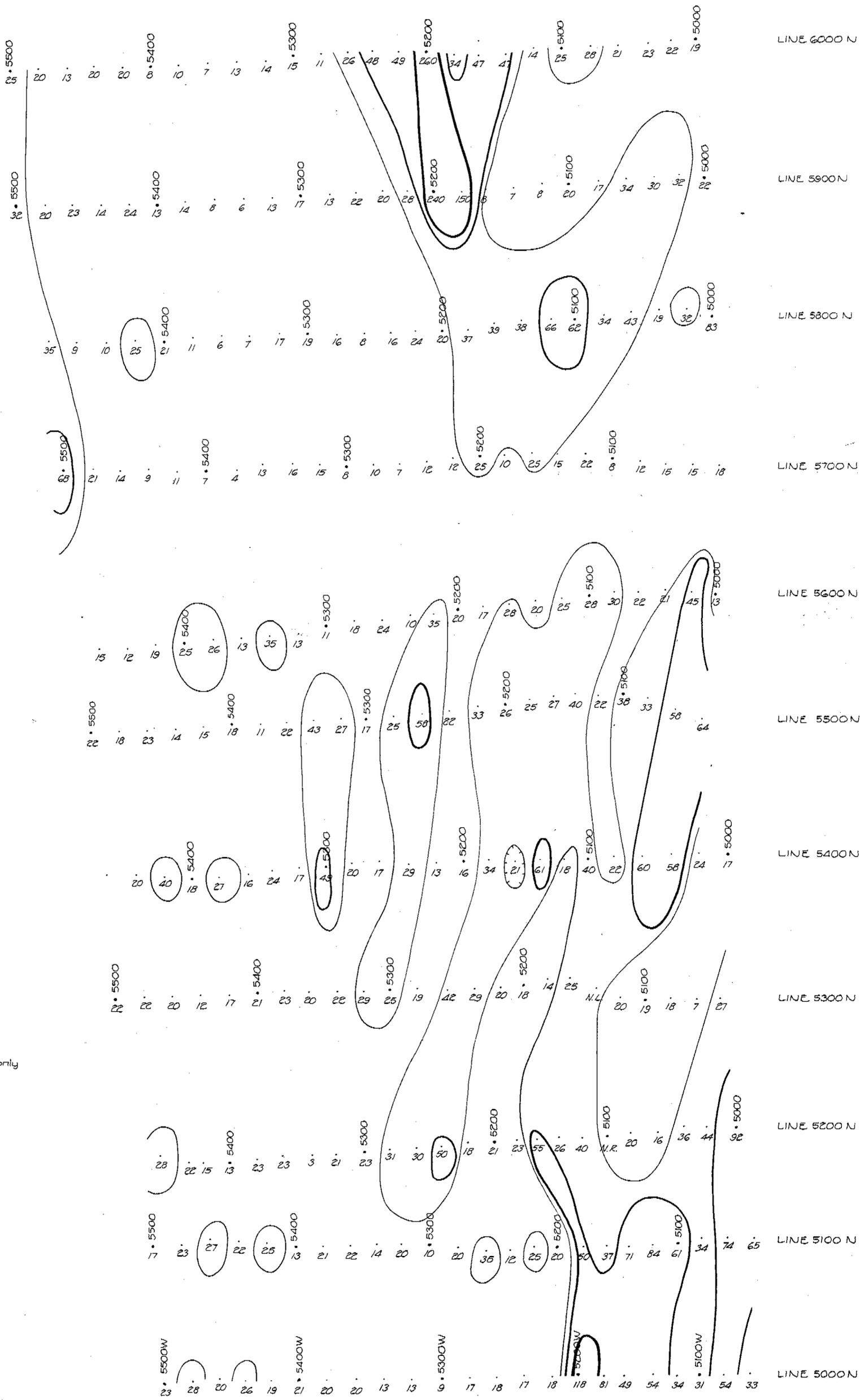
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 NR No result

NB - Position of Line 5900N approx only

6751
 57 018

AUSTRIAN ANGIO AMERICAN LTD	
PROJECT	GODKIN PROSPECT
AREA	ML 62M/75 - TASMANIA
DATA	GODKIN GRID CU ANOMALIES
COMPILED	DBO
DRAWN	HD 4/80
AMENDED	SO 1/4/67
SCALE	1:2000
REF No	TAS-8-23





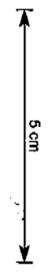
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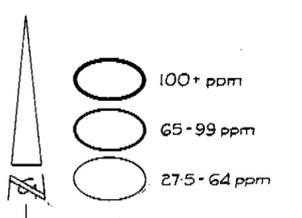
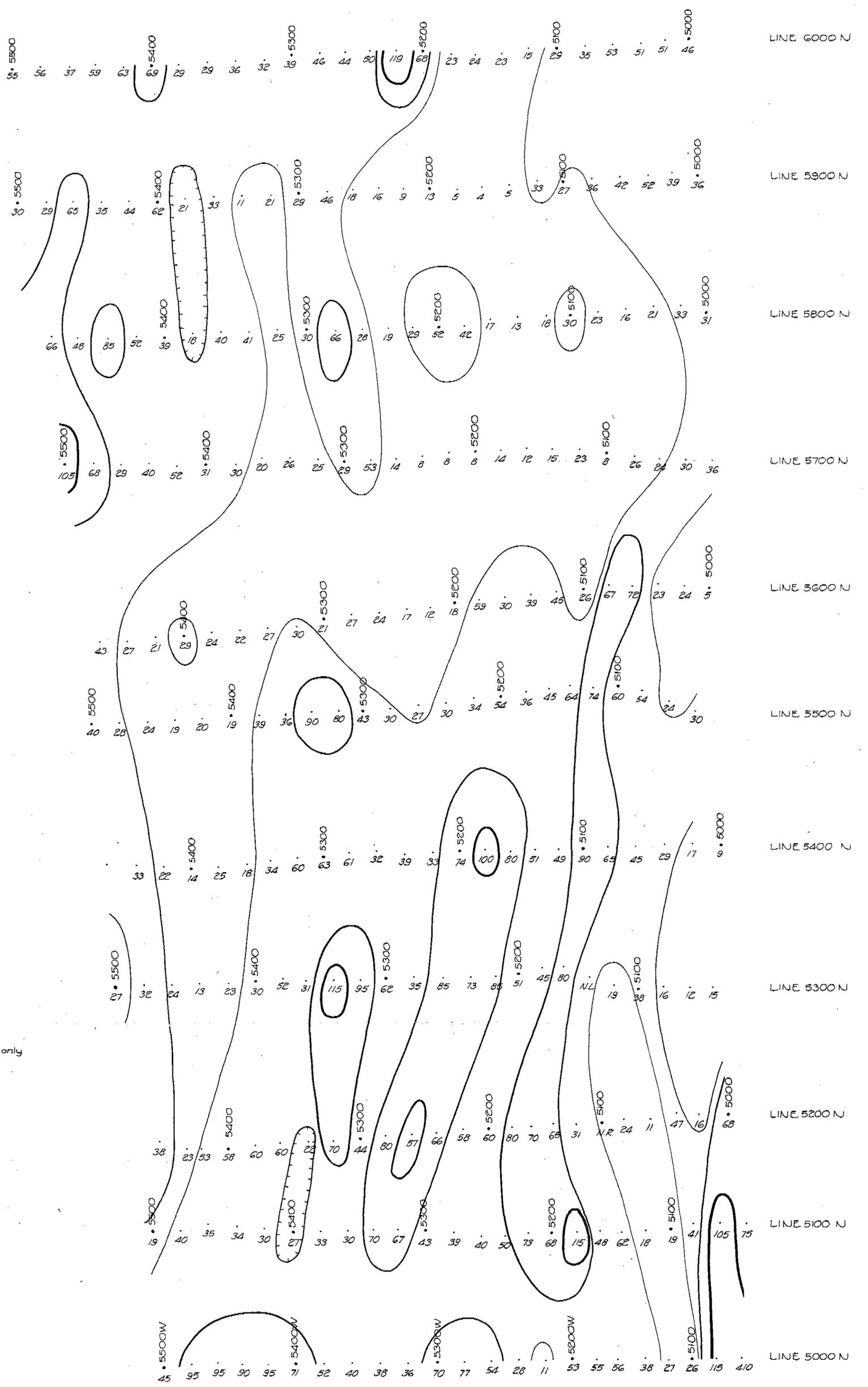
NB - Position of Line 5900N approx only

6752

57 019

AUSTRALIAN ANGLIO AMERICAN LTD	
PROJECT	GODKIN PROSPECT
AREA	ML 62M/75 - TASMANIA
DATA	GODKIN GRID Pb ANOMALIES
COMPILED	DBD
DRAWN	HD 4/80
AMENDED	20-11-87
SCALE	1:2000
REF No	TAS-8-24



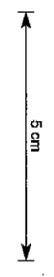


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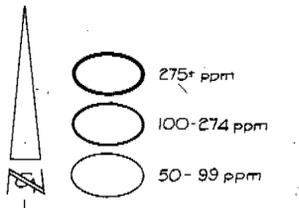
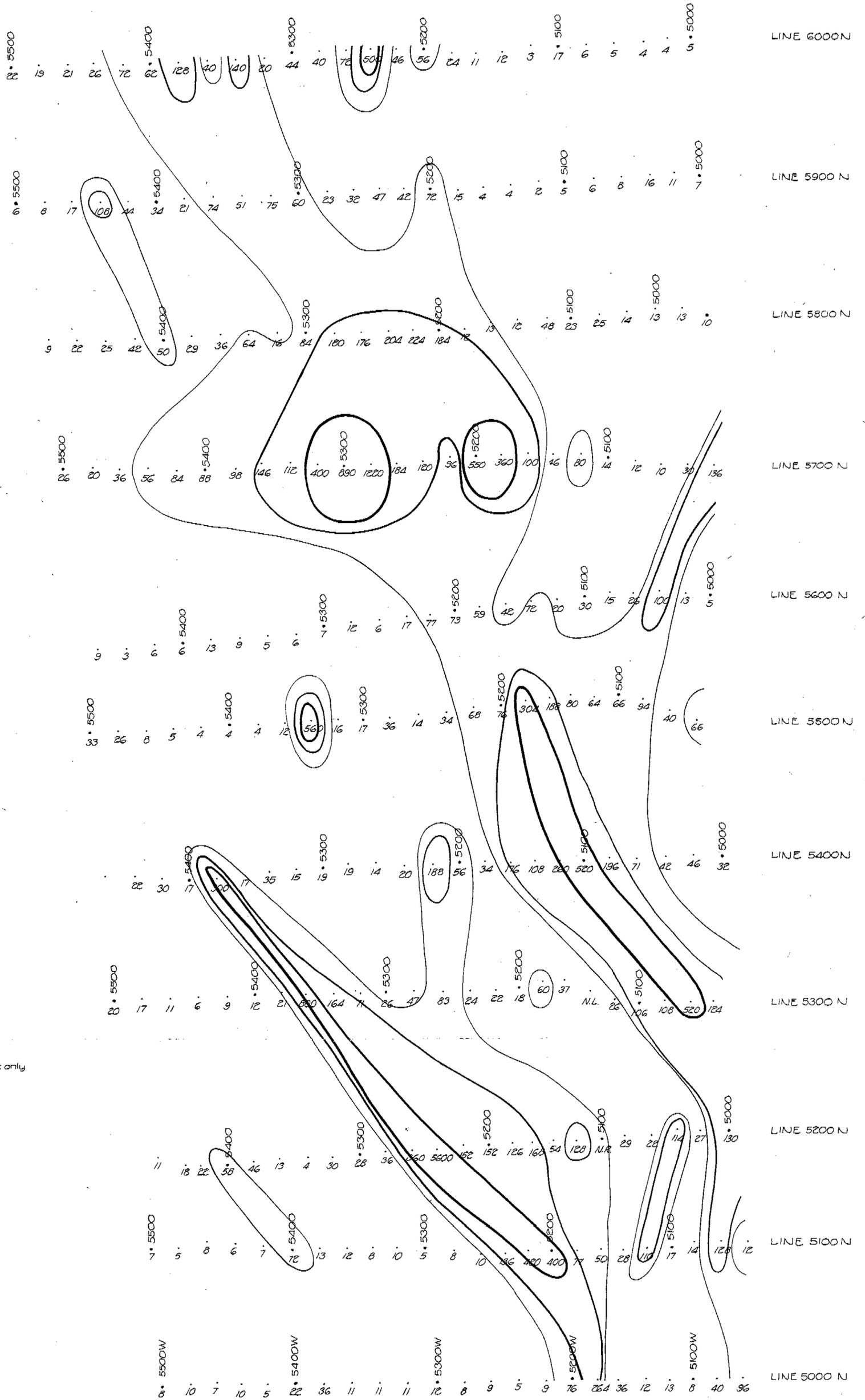
NB - Position of Line 5900N approx only

6753

57 020



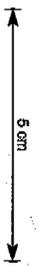
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PROJECT	GODKIN PROSPECT
AREA	ML G&M/75-TASMANIA
DATA	GODKIN GRID Zn ANOMALIES
COMPILED	DBO
DRAWN	HD 4/80
AMENDED	20-1467
SCALE	1:2,000
REF No	TAS-8-25



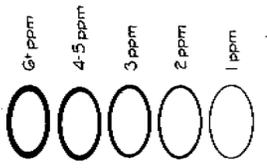
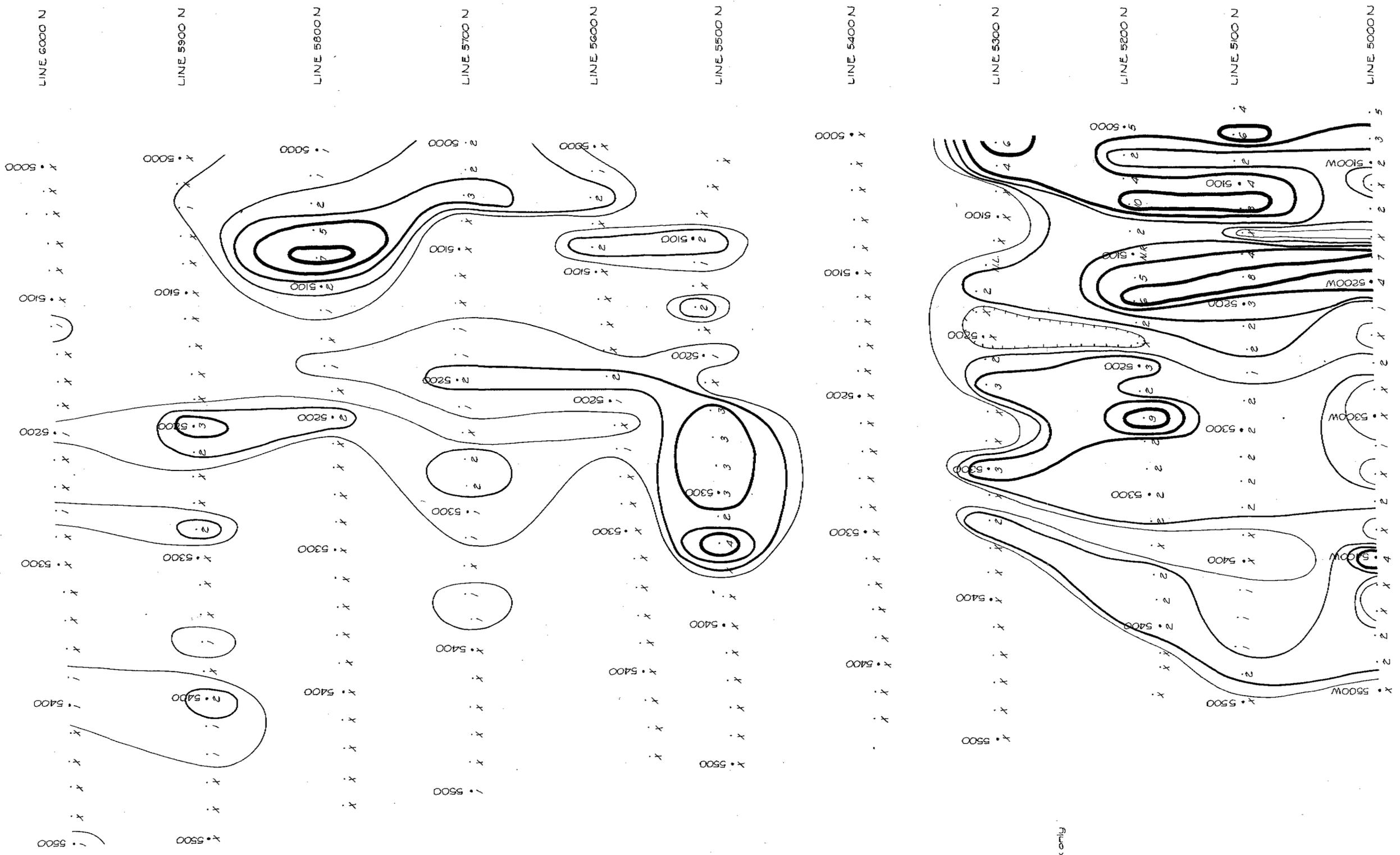
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NB - Position of Line 5900N approx only

57 021
6754

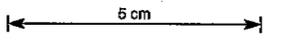


AUSTRIAN ANGIO AMERICAN LTD	
PROJECT	CODKIN PROSPECT
AREA	MLGEM/75-TASMANIA
DATA	GODKIN GRID As ANOMALIES
COMPILED	DBO
DRAWN	HD 4/80
AMENDED	80-11467
SCALE	1:2,000
REF No	TAS-8-27



NL Not located
 NR No result
 X Below detection limit

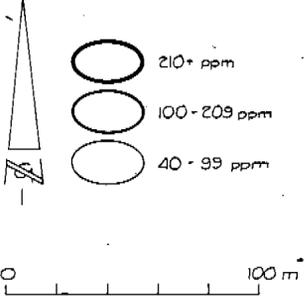
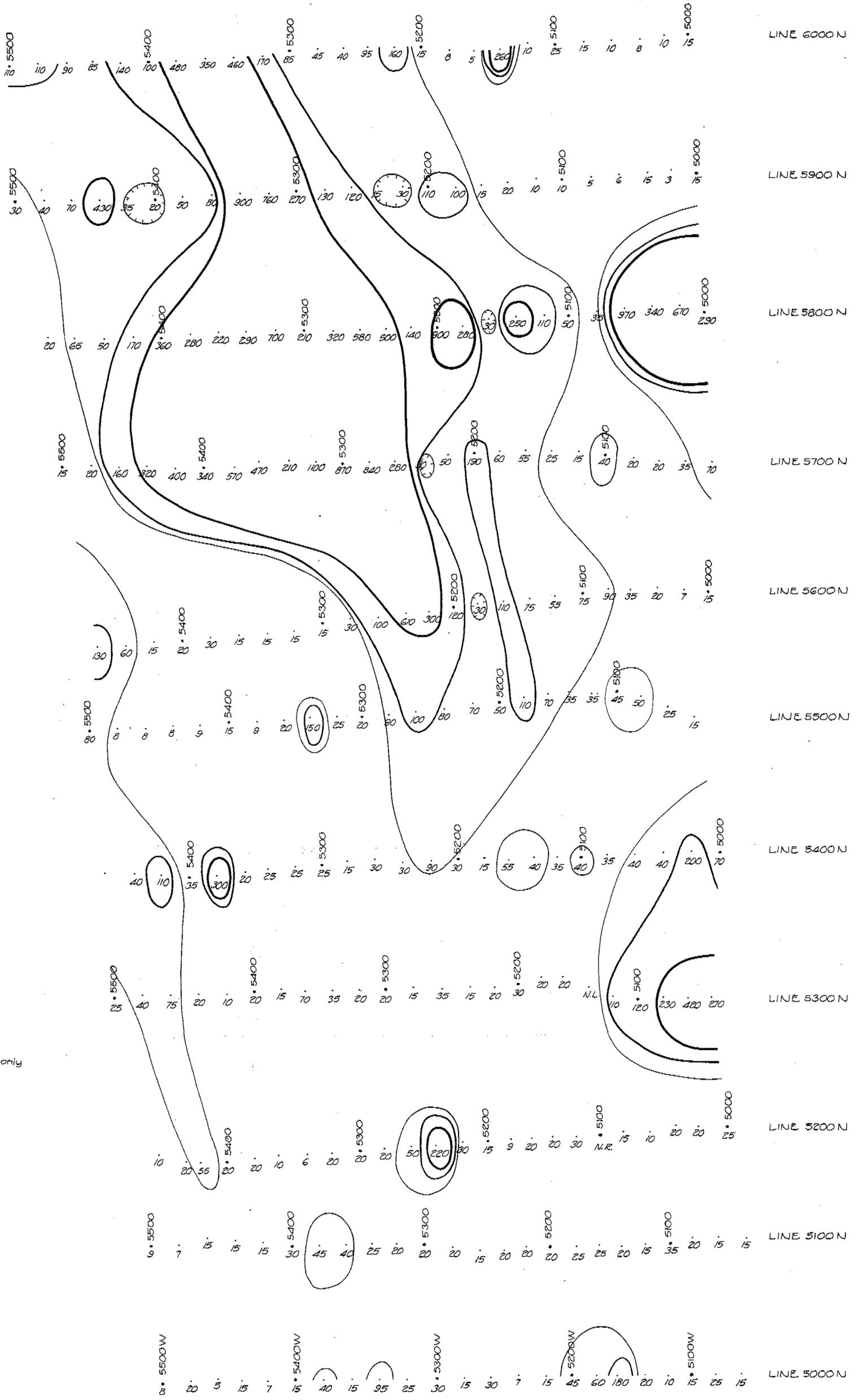
NS - Position of Line 5900N approximately



57 022

6755

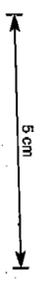
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PROJECT	GODKIN PROSPECT		
AREA	ML 62M/75 - TASMANIA		
DATA	GODKIN GRID SB ANOMALIES		
COMPILED	DBO	SCALE	1:2,000
DRAWN	HD 4/80	REF No	TAS-8-28
AMENDED	80-1467		



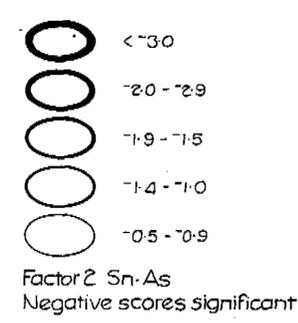
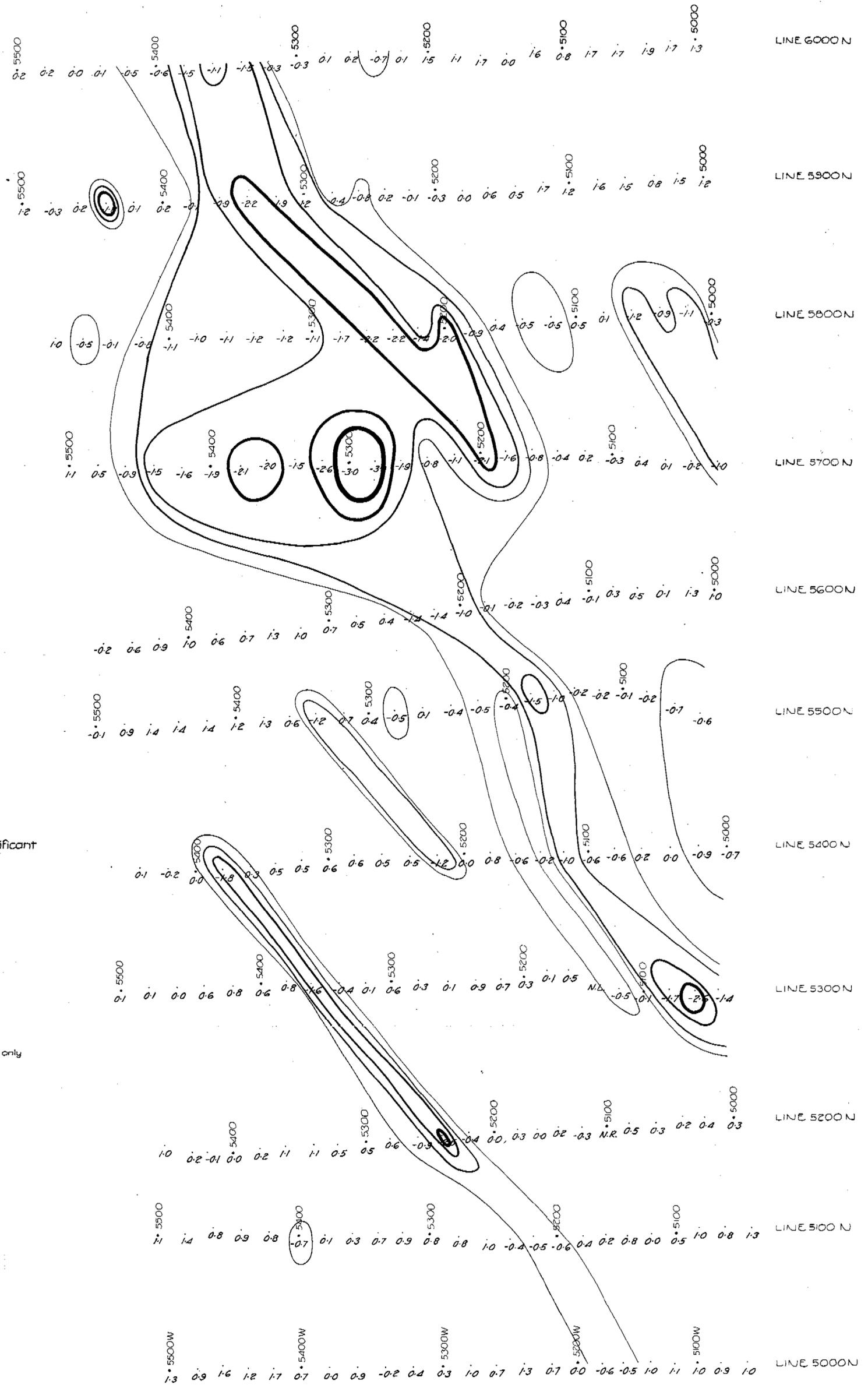
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 NR No result
 NB - Position of line 5900N approx only

57 023

6756



PROJECT		AUSTRIAN ANGLIO AMERICAN LTD	
AREA		CODRIN PROSPECT	
DATA		ML GEM/75 - TASMANIA	
COMPILED		CODRIN GRID	
DRAWN		SH ANOMALIES	
AMENDED		DBO	
REF No		HD 4/80	
SCALE		1:2,000	
TAS-8-29		80-1461	

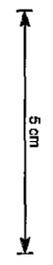


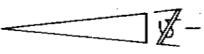
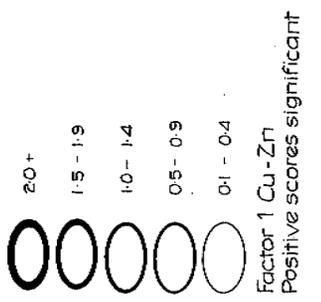
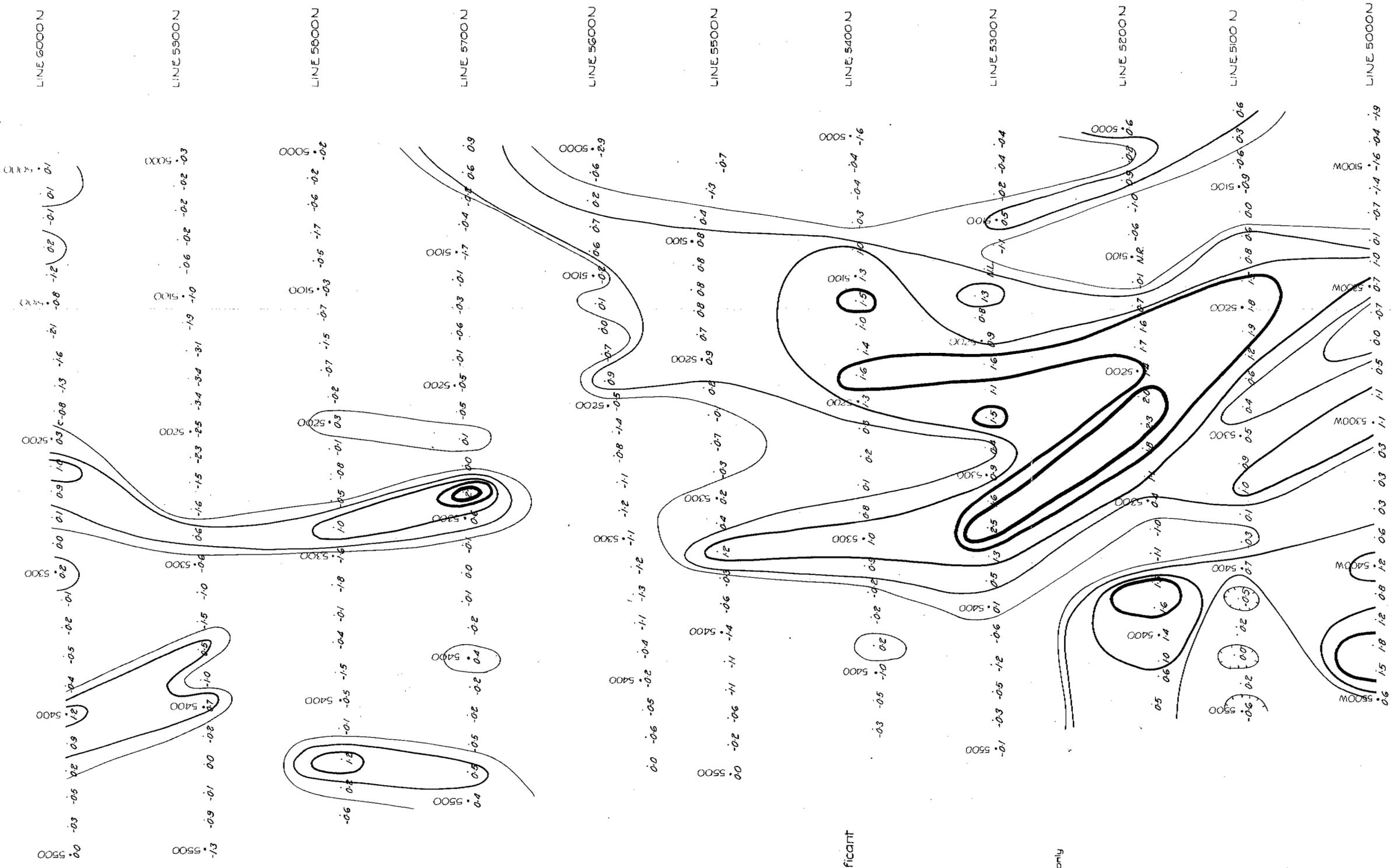
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N.R. No result

N.B. - Position of Line 5900N approx. only

6758
57 025

PROJECT		AUSTRIAN ANGIO AMERICAN LTD	
PROJECT		GODKIN PROSPECT	
AREA		ML 62M/75 - TASMANIA	
DATA		GODKIN GRID	
DATA		FACTOR 2 SCORE ANOMALIES	
COMPILED	DBO	SCALE	1:2000
DRAWN	HD 5/80	REF No	TAS-8-33
AMENDED	80-11-87		



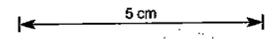


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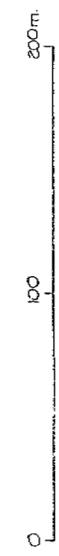
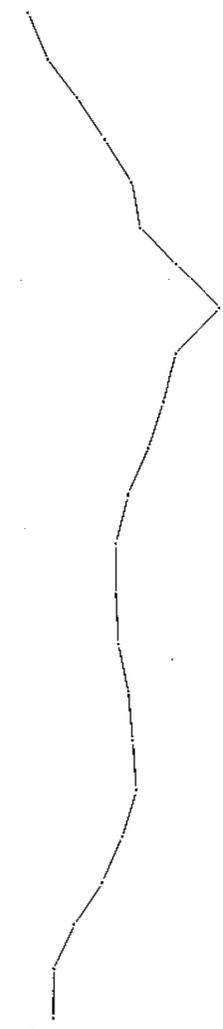
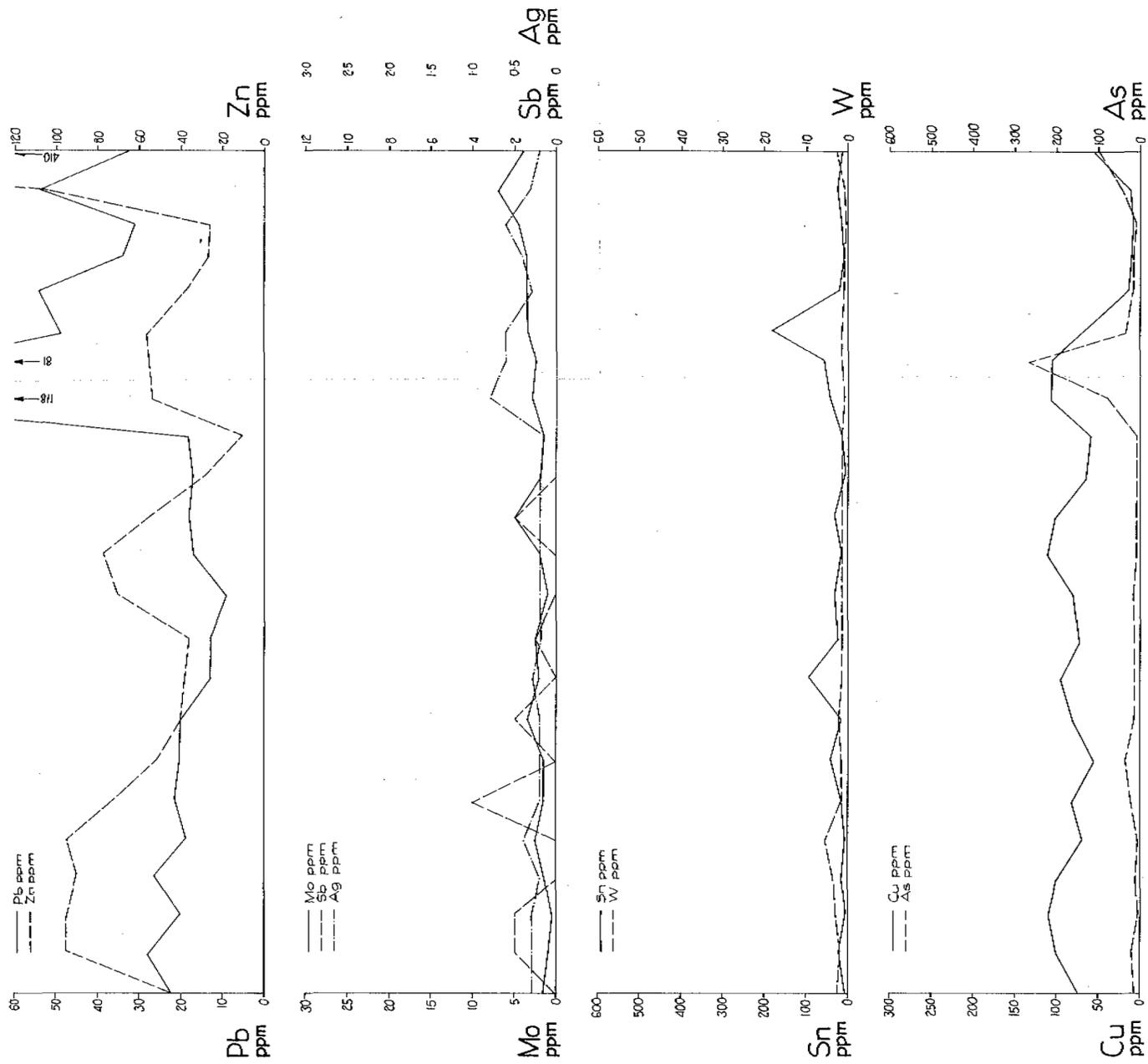
N.B. - Position of Line 5900N, approx. only

57 024

6757



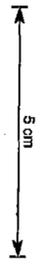
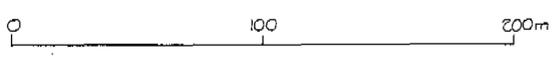
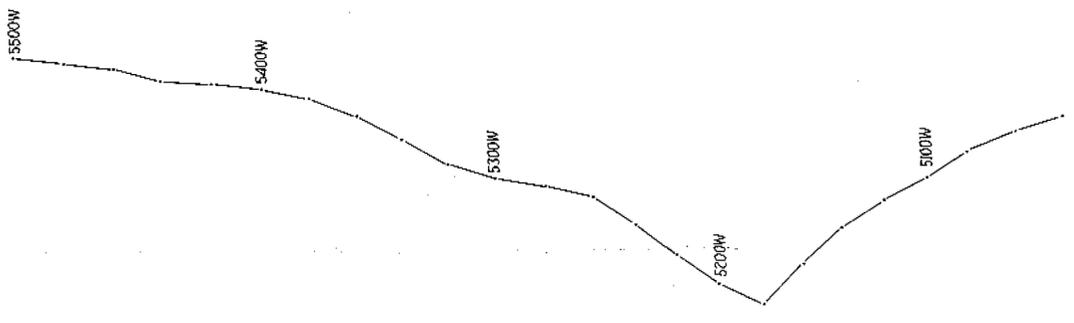
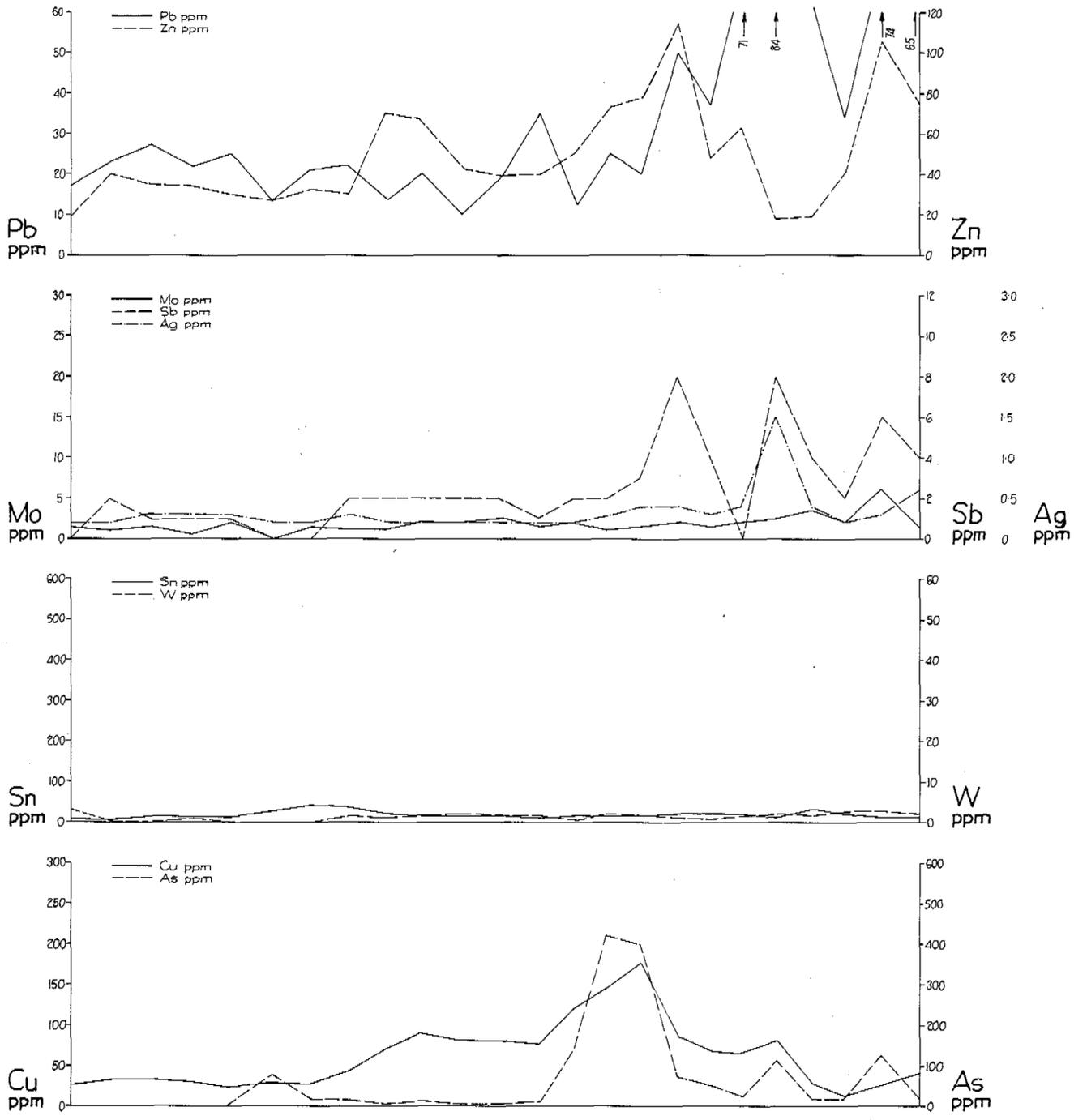
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PROJECT	CODKIN PROSPECT		
AREA	ML 62M/75 - TASMANIA		
DATA	CODKIN GRID FACTOR 1 SCORE ANOMALIES		
COMPILED	D80	SCALE	1:2,000
DRAWN	HD 5/80	REF No	TAS-8-32
AMENDED	80-1467		



5 cm

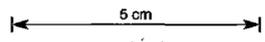
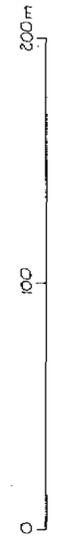
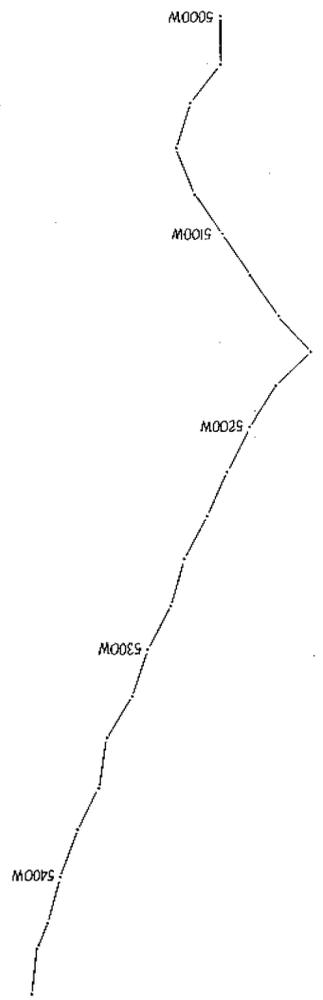
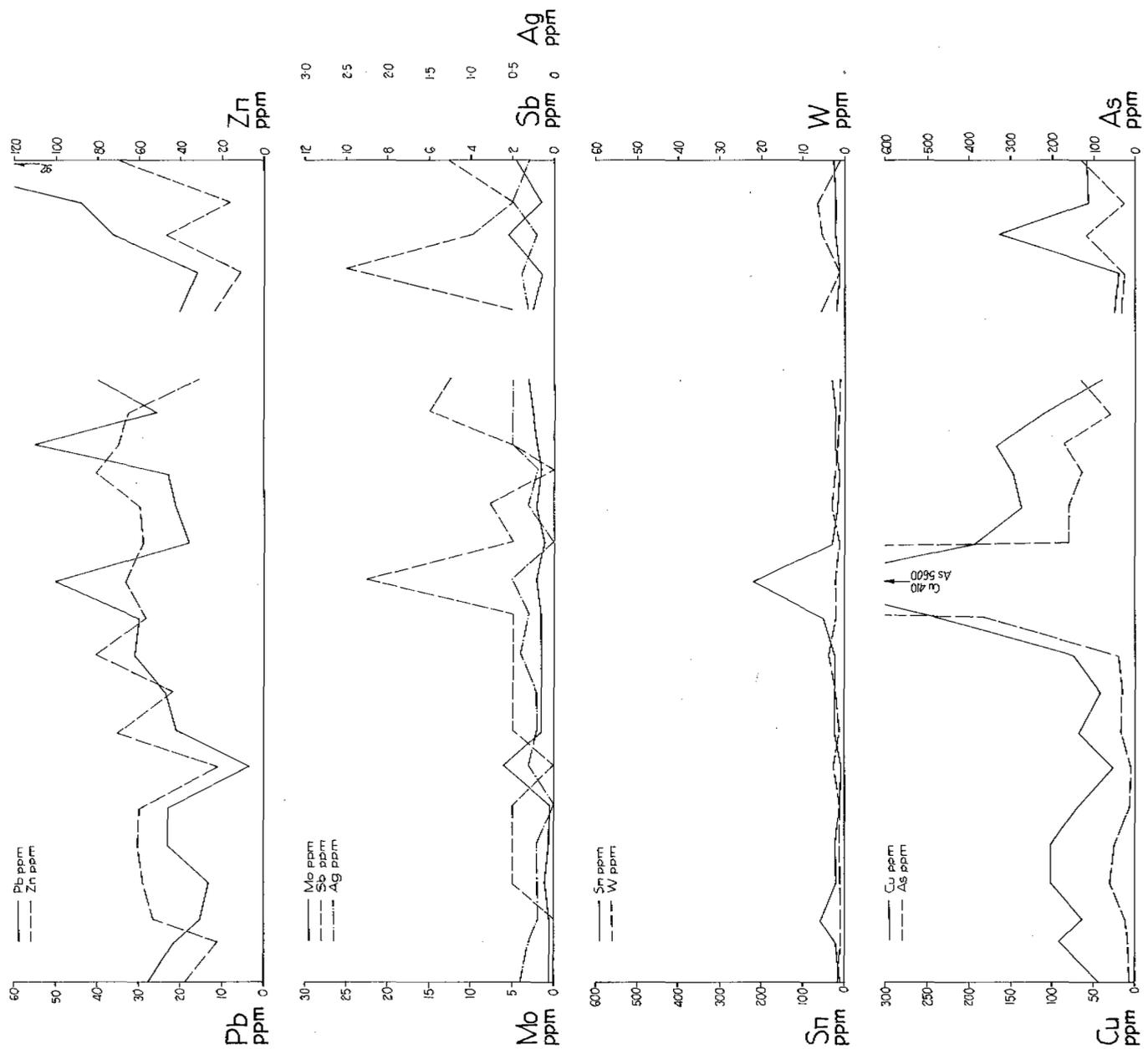
57 026
6759

AUSTRALIAN ANGLO AMERICAN LTD			
PROJECT	GODKIN PROJECT		
AREA	ML 62M/75 - TASMANIA		
DATA	PROFILES - LINE 5000N		
COMPILED	DBO	SCALE	1:2,000
DRAWN	HD 5/80	REF No	TAS-8-12
AMENDED	80-1467		



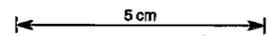
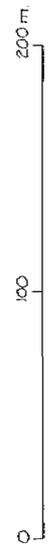
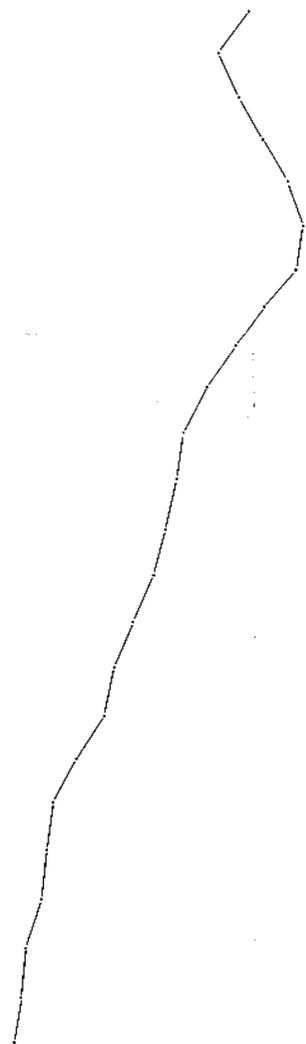
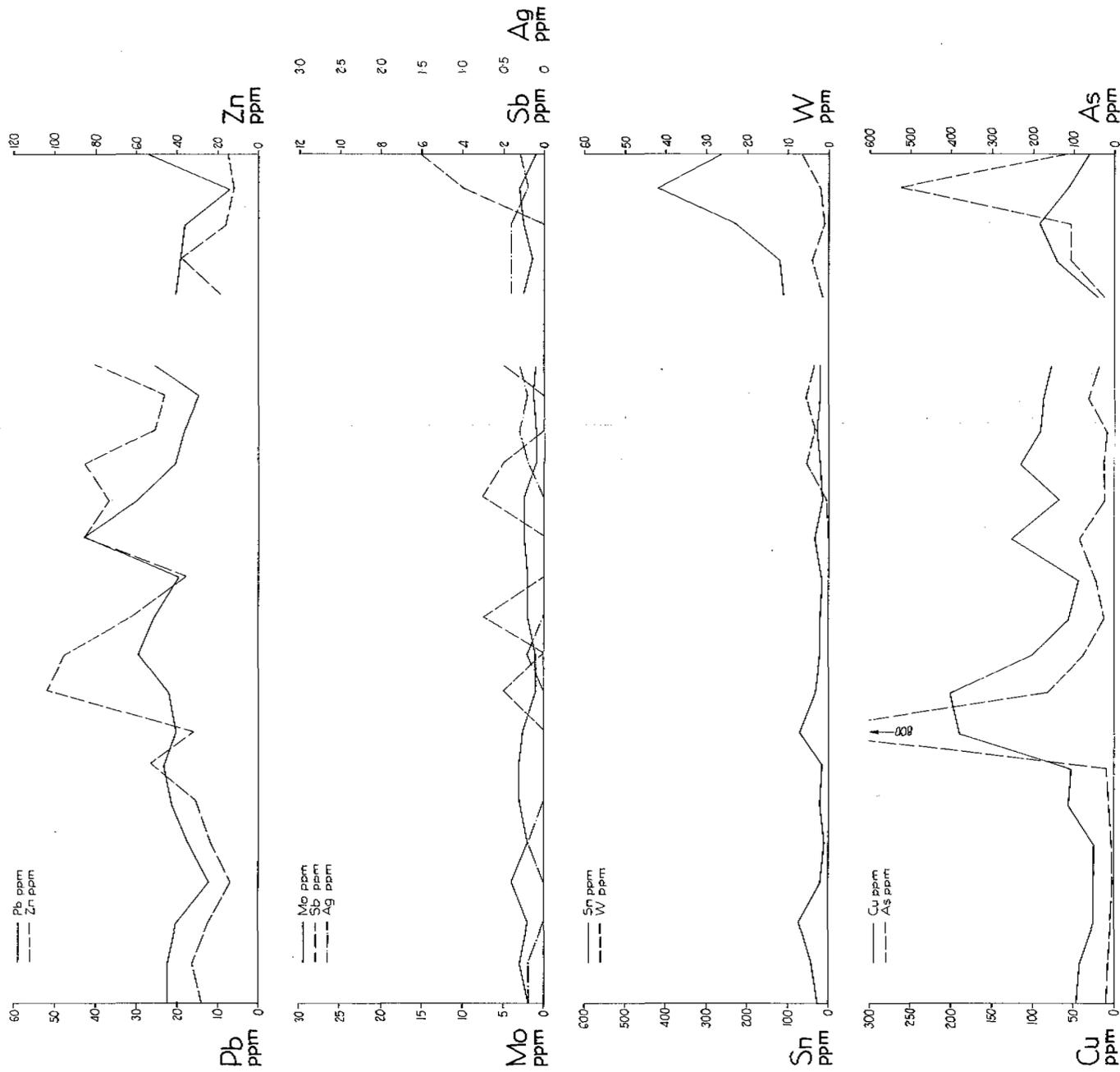
57 027
6760

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PROJECT	GODKIN PROJECT		
AREA	ML G2M/75 - TASMANIA		
DATA	PROFILES - LINE 5100N		
COMPILED	DBO	SCALE	1:2,000
DRAWN	HD 5/80	REF No	TAS-8-13
AMENDED	80-1467		



57 028
6761

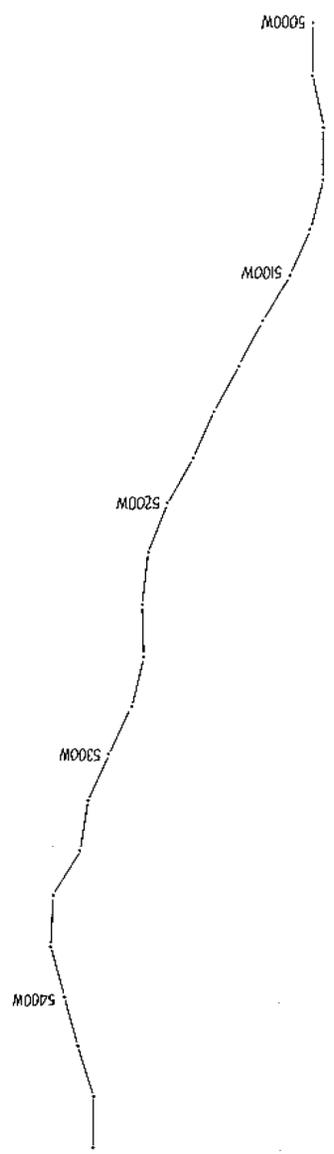
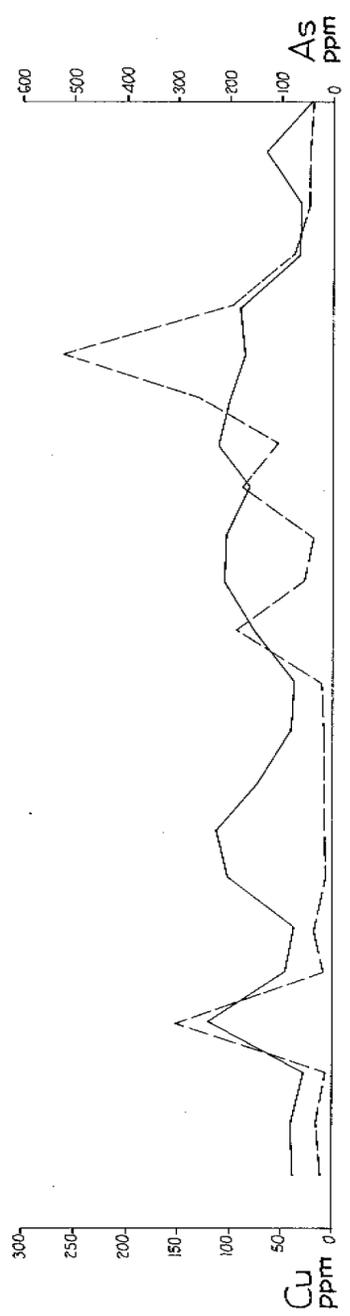
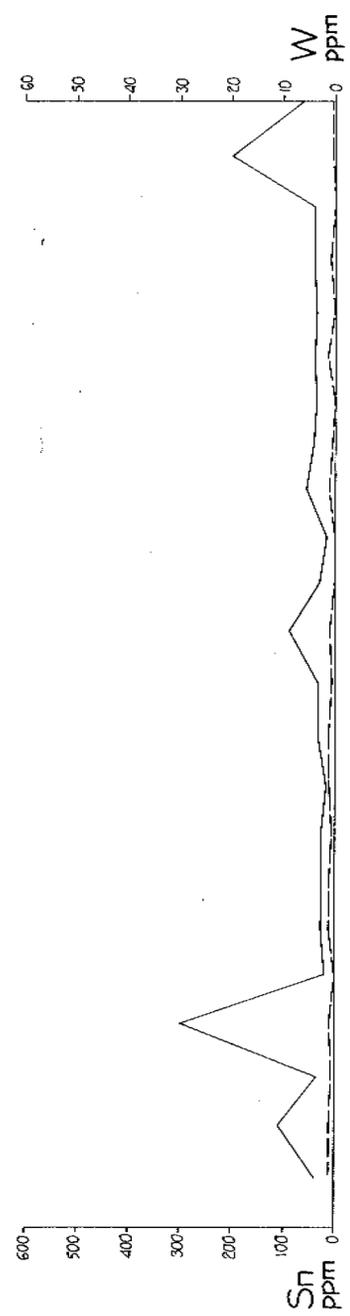
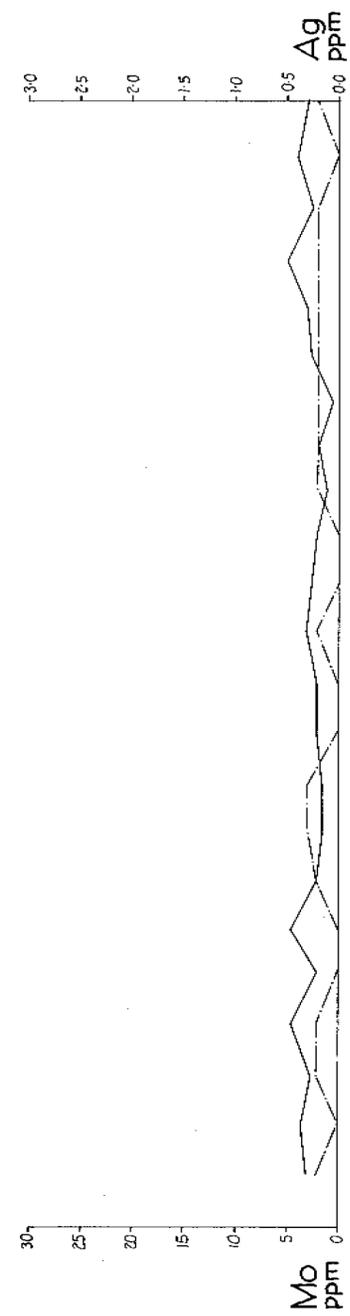
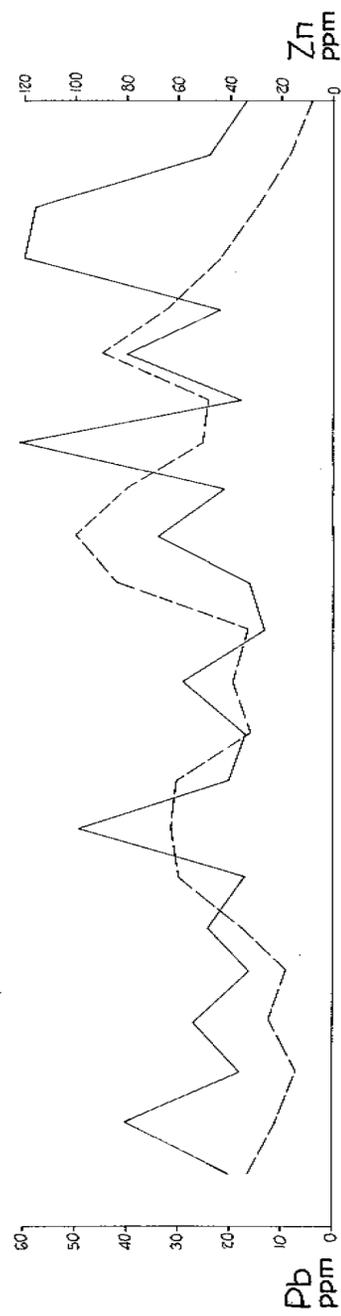
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PROJECT	CODKIN PROJECT		
AREA	ML G2M/75 - TASMANIA		
DATA	PROFILES - LINE 5200N		
COMPILED	DBO	SCALE	1:2000
DRAWN	HD 5/80	REF No	TAS-8-14
AMENDED	80-1467		



57 029

6762

AUSTRALIAN ANGLO AMERICAN LTD			
PROJECT	GODKIN PROJECT		
AREA	ML G2M/75-TASMANIA		
DATA	PROFILES - LINE 5300N		
COMPILED	DBO	SCALE	1:2000
DRAWN	HD 5/80	REF No	TAS-8-15
AMENDED	80-1467		

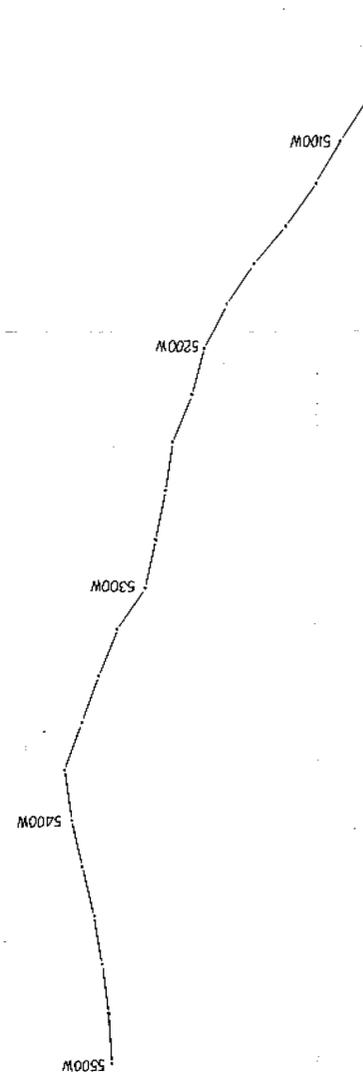
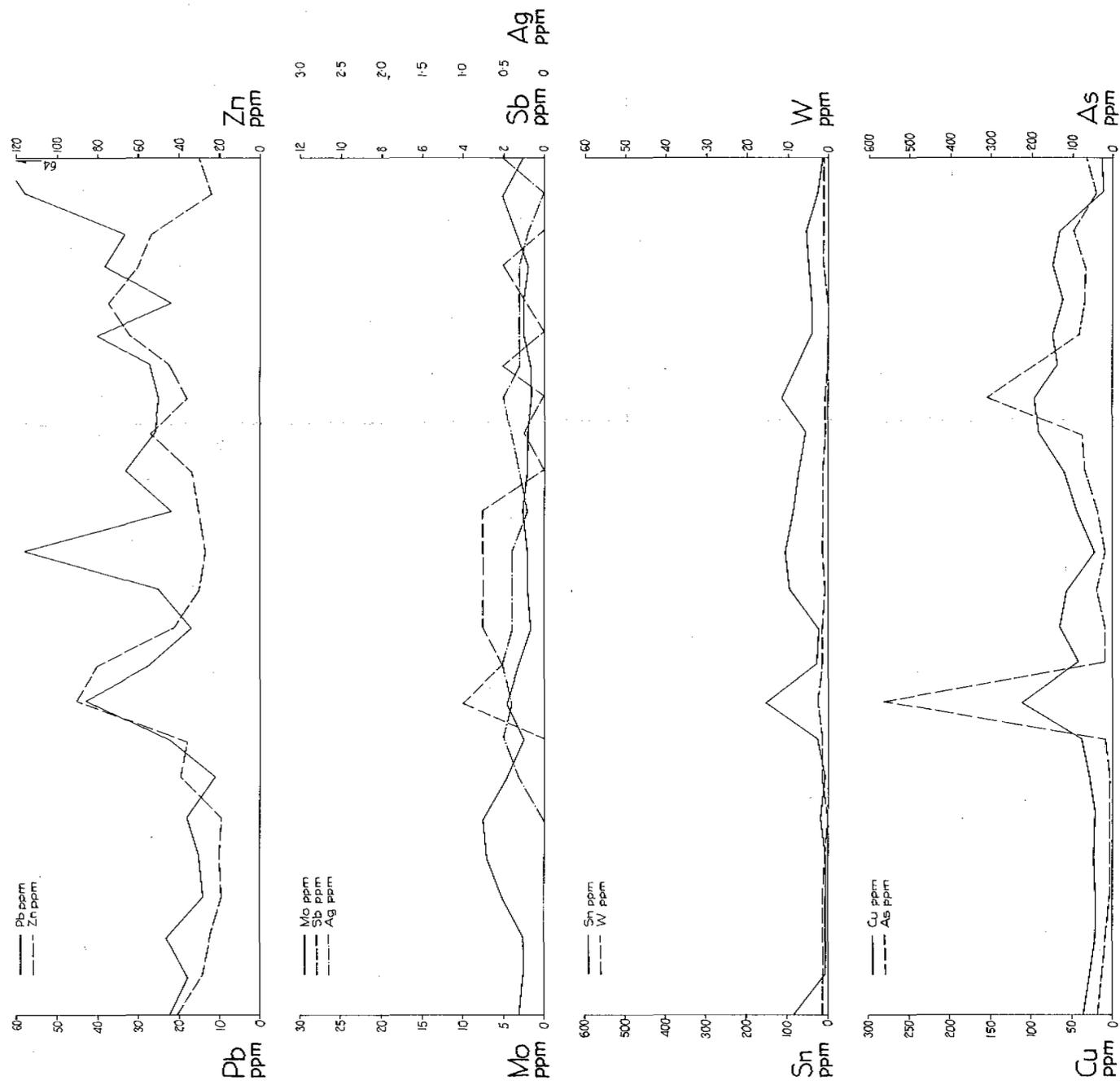


5 cm

0 100 200 m

57 030
6763

AUSTRALIAN ANGLO AMERICAN LTD			
PROJECT	GODKIN PROJECT		
AREA	MLG2M/75-TASMANIA		
DATA	PROFILES - LINE 5400N		
COMPILED	DBO	SCALE	1:2,000
DRAWN	HD 5/80	REF No	TAS-8-16
AMENDED	80-1461		



5 cm

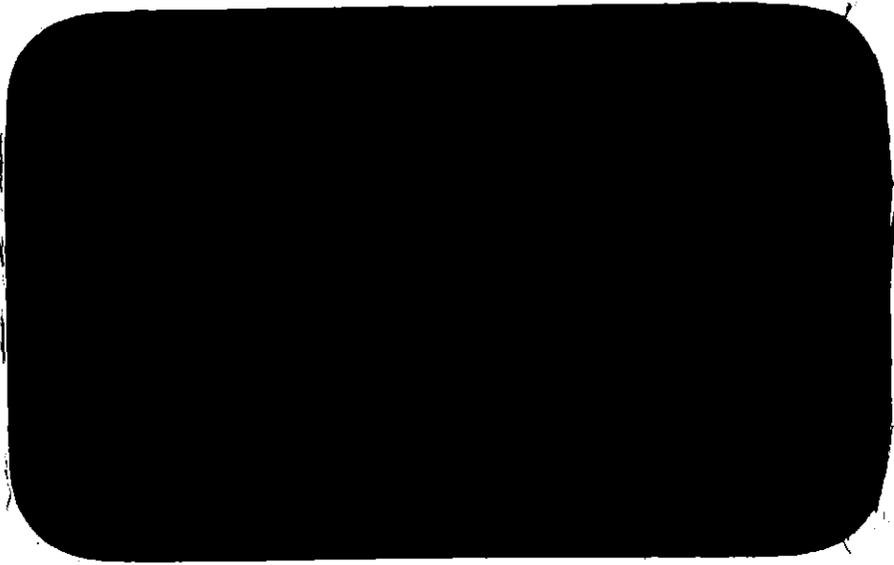
200m
100
0

57 031

6764

AUSTRALIAN ANGLO AMERICAN LTD			
PROJECT	CODKIN PROJECT		
AREA	MLG2M/75 - TASMANIA		
DATA	PROFILES - LINE 5500N		
COMPILED	D80	SCALE	1:2,000
DRAWN	HD 5180	REF No	TAS-8-17
AMENDED	80-12-67		

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PROJECT NAME: AUSTRALIAN ANGLO AMERICAN LIMITED

TITLE: INTERIM REPORT ON PROGRESS TO 30TH JUNE 1980

MINERAL LEASE 62M/75

GODKIN TASMANIA

VOLUME 2

AREA NAME/S, STATE 1: 250,000 SHEET NO/S & COORDINATES: Queenstown K55/5

COMMODITY/IES: Sn, Cu, Pb, Zn, Sb

TEXT PAGES NO: 8

PLAN NOS:

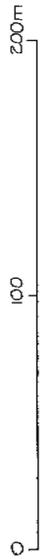
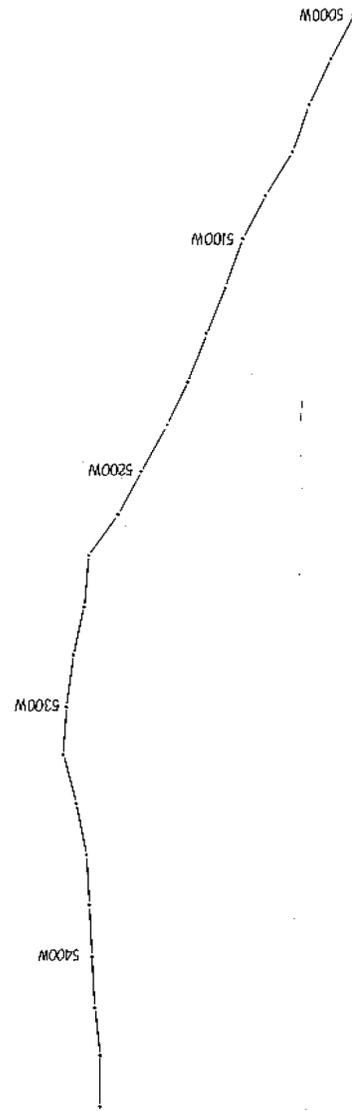
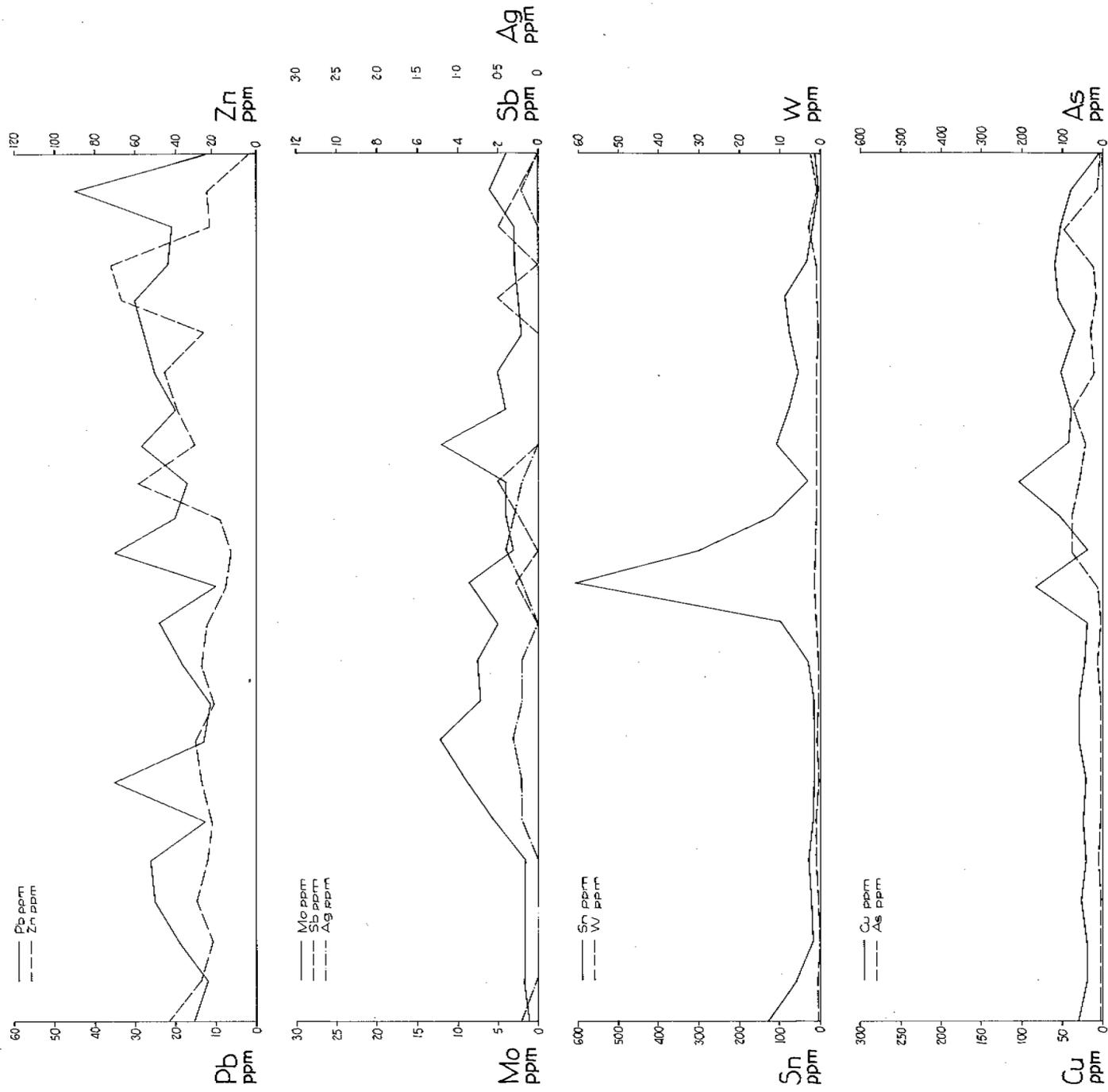
TABLE NOS: See list of plans

APPENDICES: 4

AUTHOR/S: D. B. Orr, D.S. Thynne

DATE: 30th June 1980

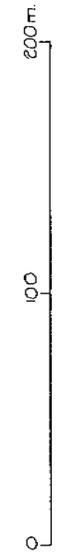
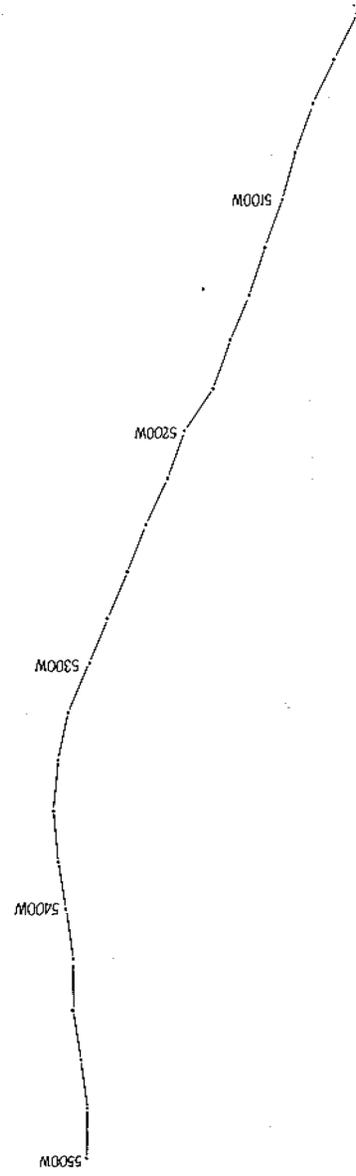
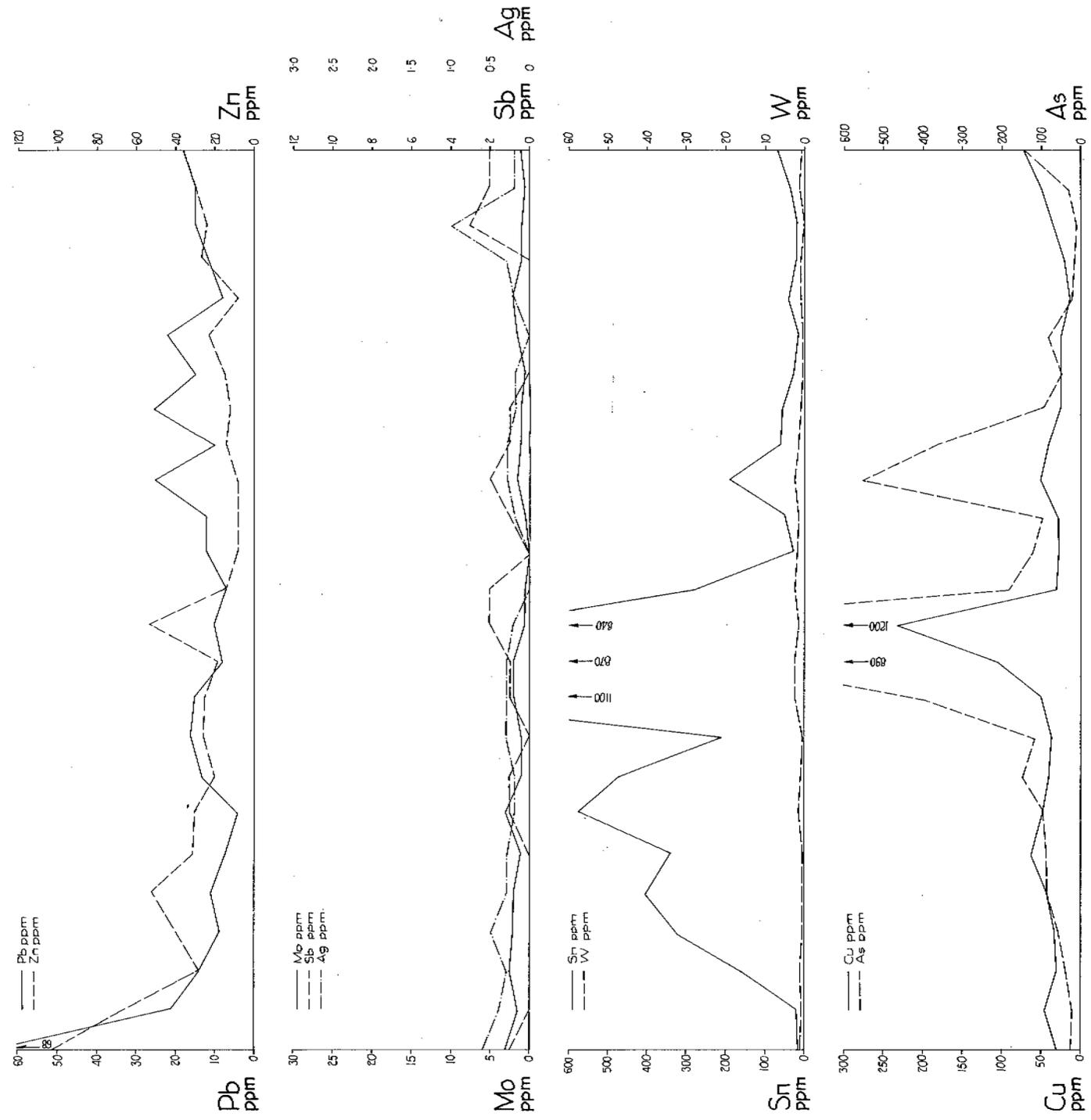
AUSTRALIAN ANGLO AMERICAN LIMITED



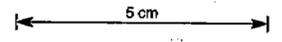
5 cm

57 033

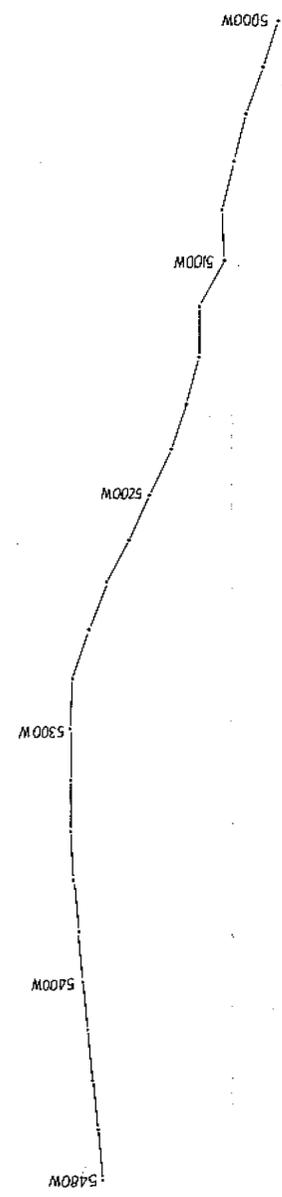
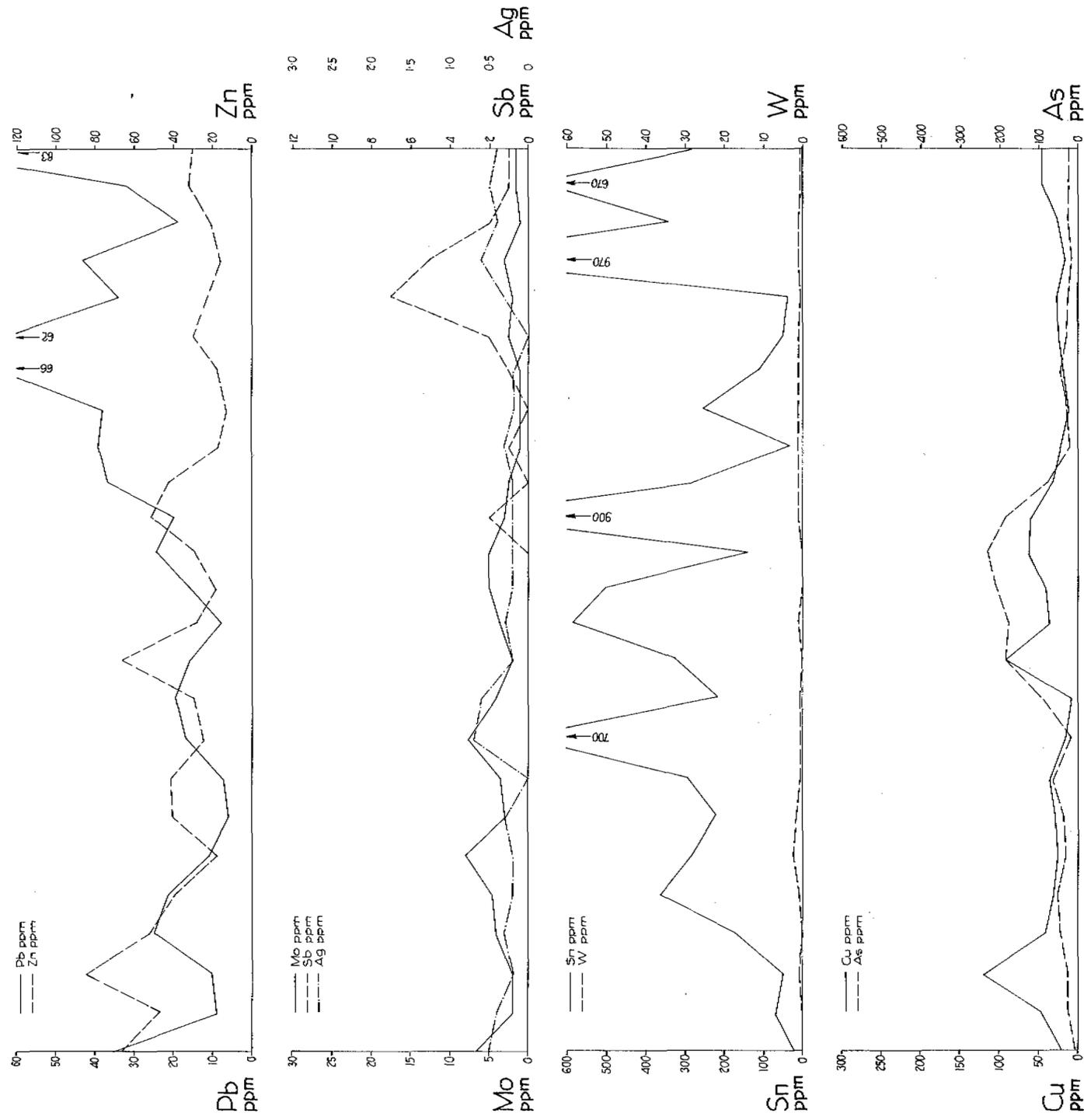
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PROJECT	CODKIN PROJECT		
AREA	ML 62M/75-TASMANIA		
DATA	PROFILES - LINE 5600N		
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DRAWN	HD 5/80	REF No	TAS-8-18
AMENDED	80-1467		



57 034

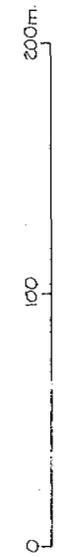


AUSTRALIAN ANGLO AMERICAN LTD			
PROJECT	CODKIN PROJECT		
AREA	MLG2M/75-TASMANIA		
DATA	PROFILES - LINE 5700N		
COMPILED	DBO	SCALE	1:2,000
DRAWN	HD 5/80	REF No	TAS-8-19
AMENDED	20-1467		

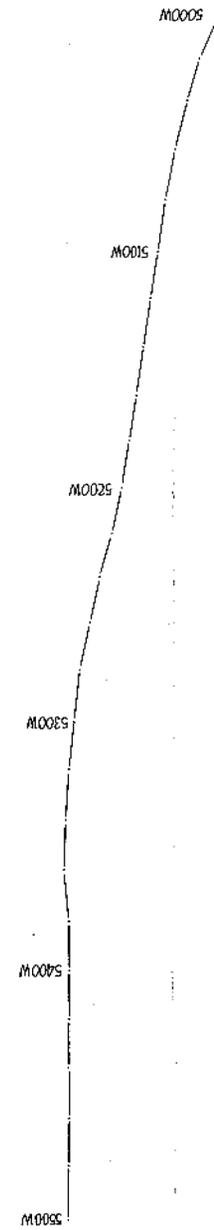
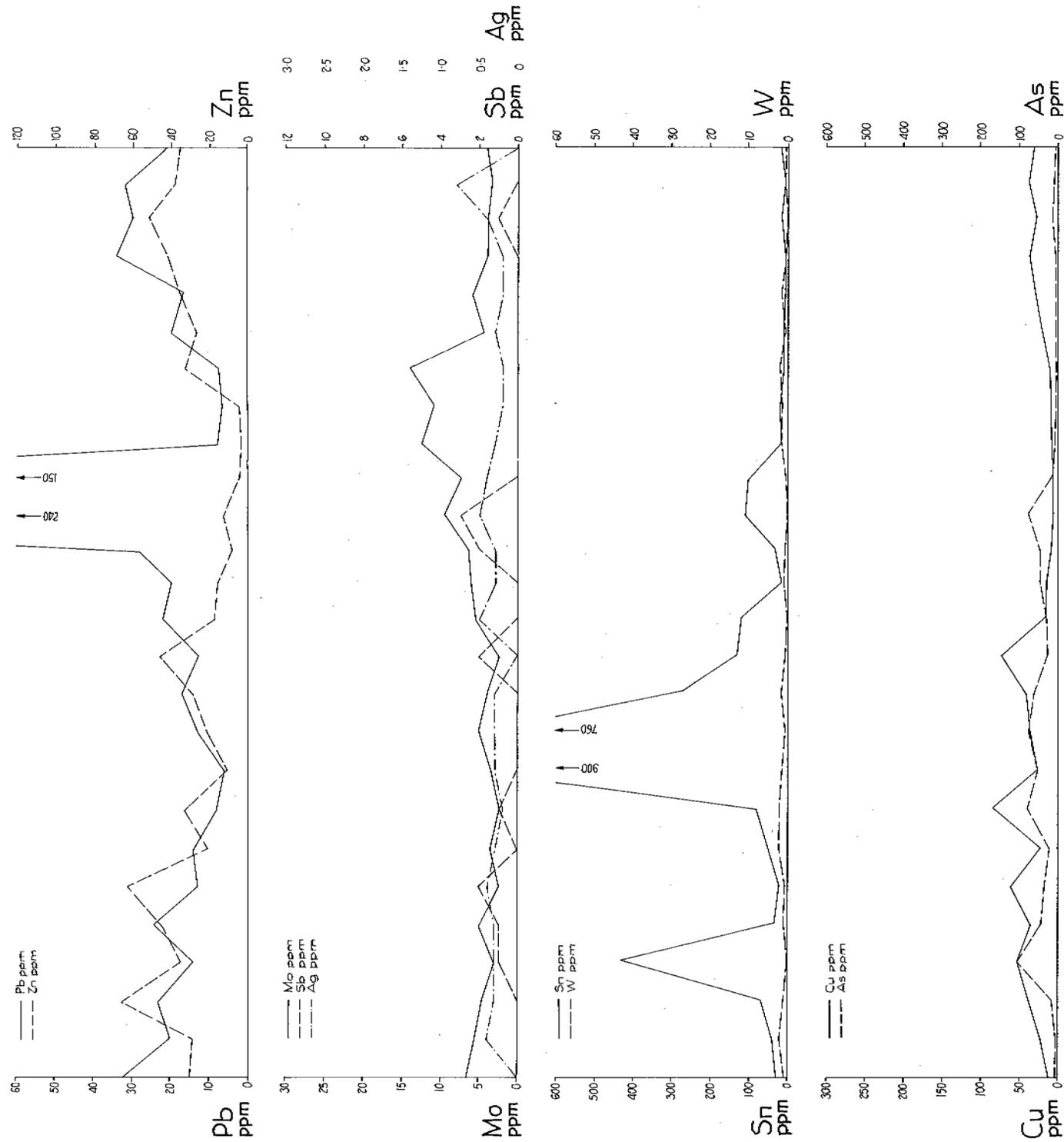


5 cm

57 035



AUSTRALIAN ANGLO AMERICAN LTD			
PROJECT	CODKIN PROJECT		
AREA	ML 62M/75 - TASMANIA		
DATA	PROFILES - LINE 5800N		
COMPILED	DBO	SCALE	1:2000
DRAWN	HD 5/80	REF No	TAS-8-20
AMENDED	80-11167		

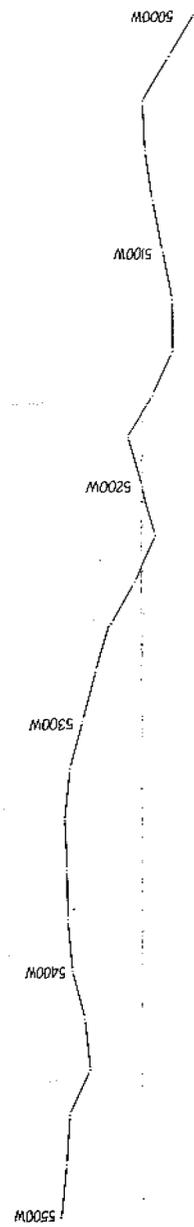
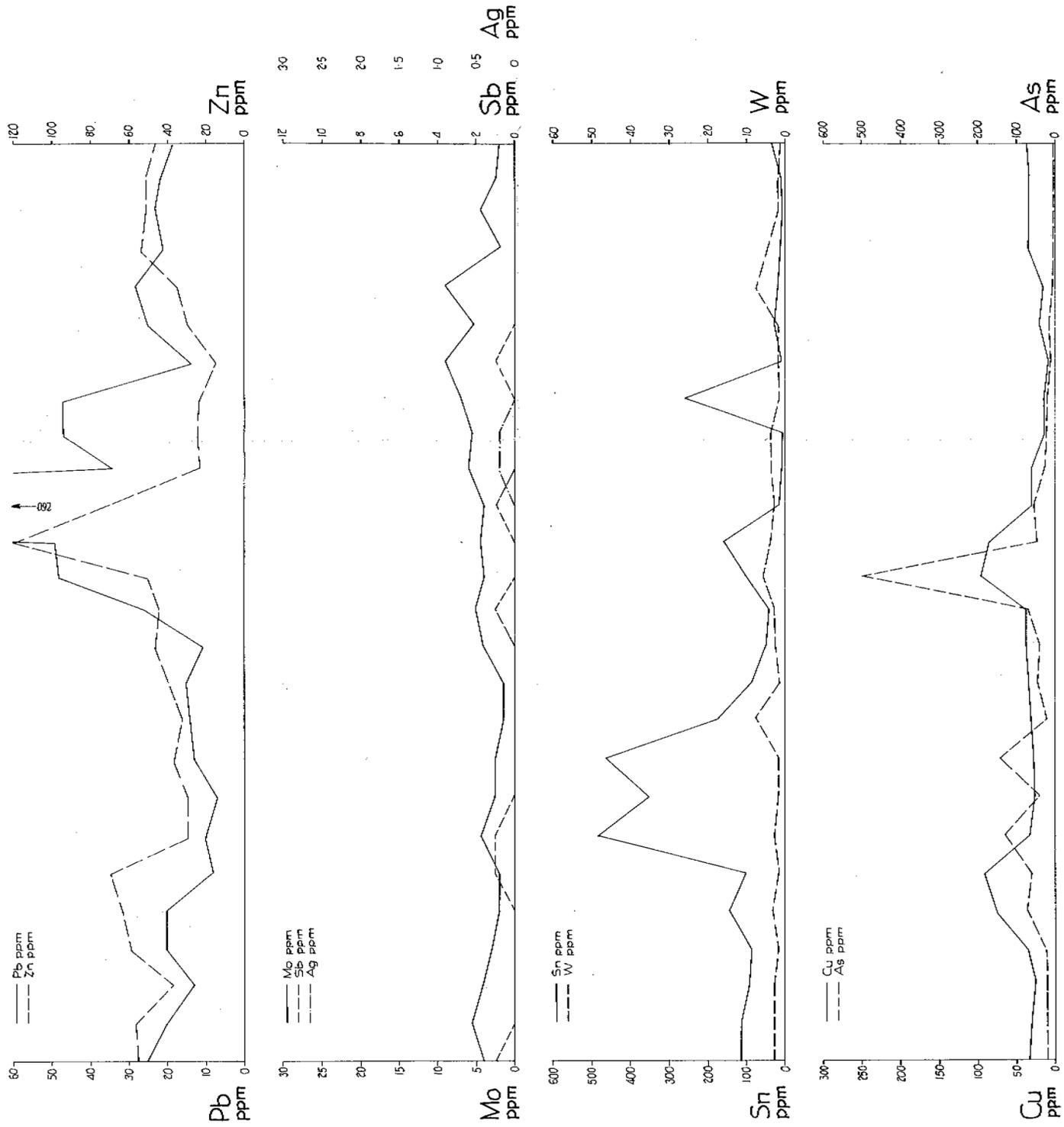


5 cm

0 100 200 m

57 036

AUSTRALIAN ANGLO AMERICAN LTD			
PROJECT	CODKIN PROJECT		
AREA	MLG2M/75-TASMANIA		
DATA	PROFILES - LINE 5900N		
COMPILED	DBO	SCALE	1:2000
DRAWN	HD 5/80	REF No	TAS-8-21
AMENDED	80-1467		



5 cm

57 037

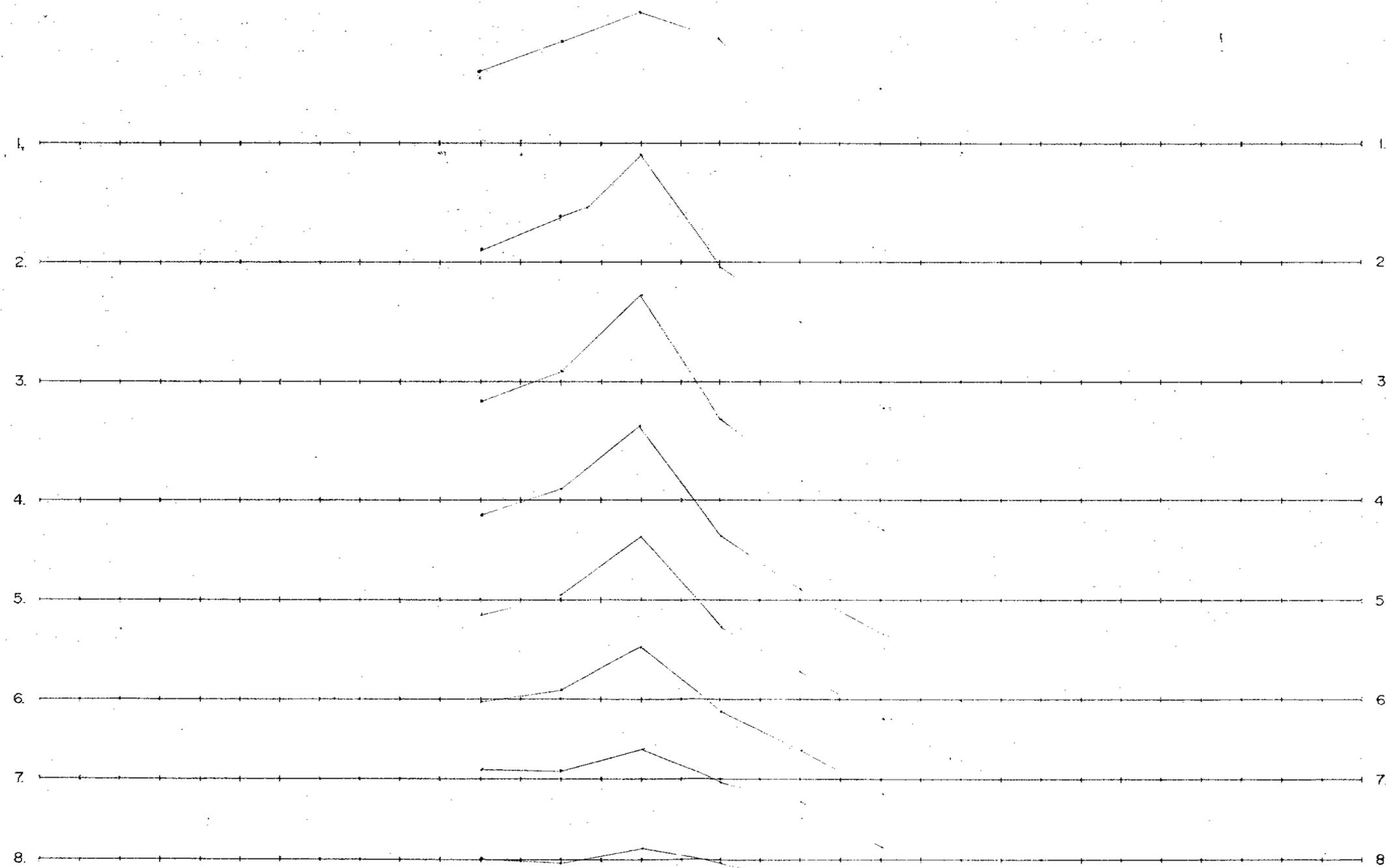
AUSTRALIAN ANGLO AMERICAN LTD			
PROJECT	GODKIN PROJECT		
AREA	MLG2M/75-TASMANIA		
DATA	PROFILES-LINE 6000N		
COMPILED	DBO	SCALE	1:2,000
DRAWN	HD 5/80	REF No	TAS-8-22
AMENDED	SP-1467		

APPENDIX I

GEOTERREX P.E.M. DATA

022

5500 5400E 5420E 5380E 5360E 5340E 5320E



57 039

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN GRID

TASMANIA

FOR

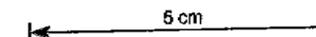
AUSTRALIAN ANGLO
AMERICAN

Line No. 5000N

N.B. due to gridding error the
smallest easting ties to the east

SURVEY SPECIFICATIONS

Transmitter-receiver separation 80 metres
 Station spacing 40 metres
 Receiver orientation Vertical Coil
 Transmitter orientation Horizontal loop
 Horizontal scale 1:2000
 Surveyed by M. Winter



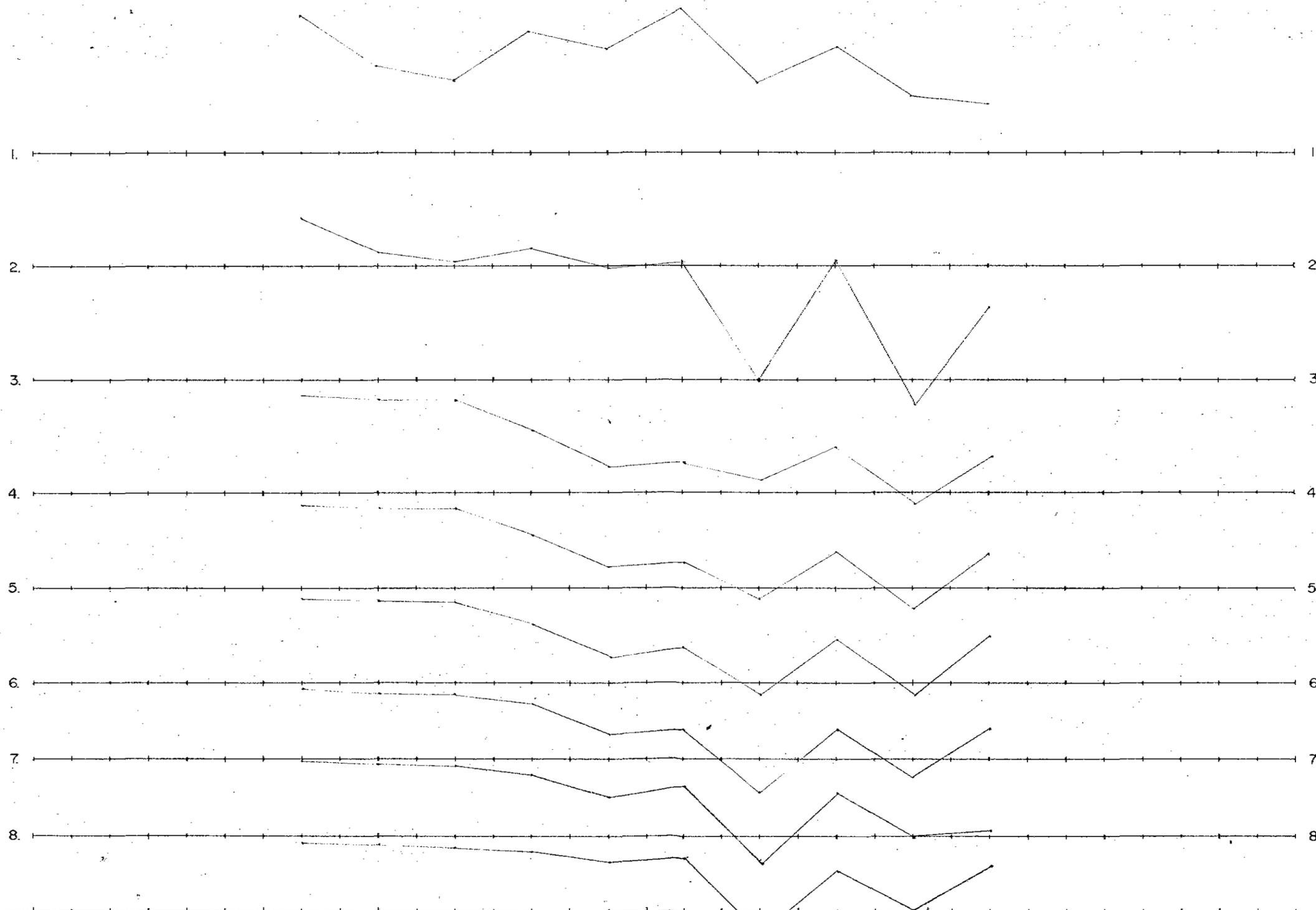
geotrex
 Pty Ltd
 SYDNEY

SURVEYED IN JAN 1980

Job No 85-1184

023

5460E 5420E 5380E 5340E 5300E 5260E 5220E 5180E 5140E 5100E



57 040

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN GRID

TASMANIA

FOR

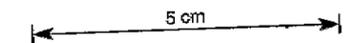
AUSTRALIAN ANGLIC
AMERICAN

Line No. 5100N

N.B. Due to gridding error
smallest easting lies to the east

SURVEY SPECIFICATIONS

Transmitter-receiver separation 80 metres
 Station spacing 40 metres
 Receiver orientation Vertical Coil
 Transmitter orientation Horizontal loop
 Horizontal scale 1:2000
 Surveyed by S. Smykowski



geotrex
 Pty. Ltd.
 SYDNEY

SURVEYED IN JAN 1980

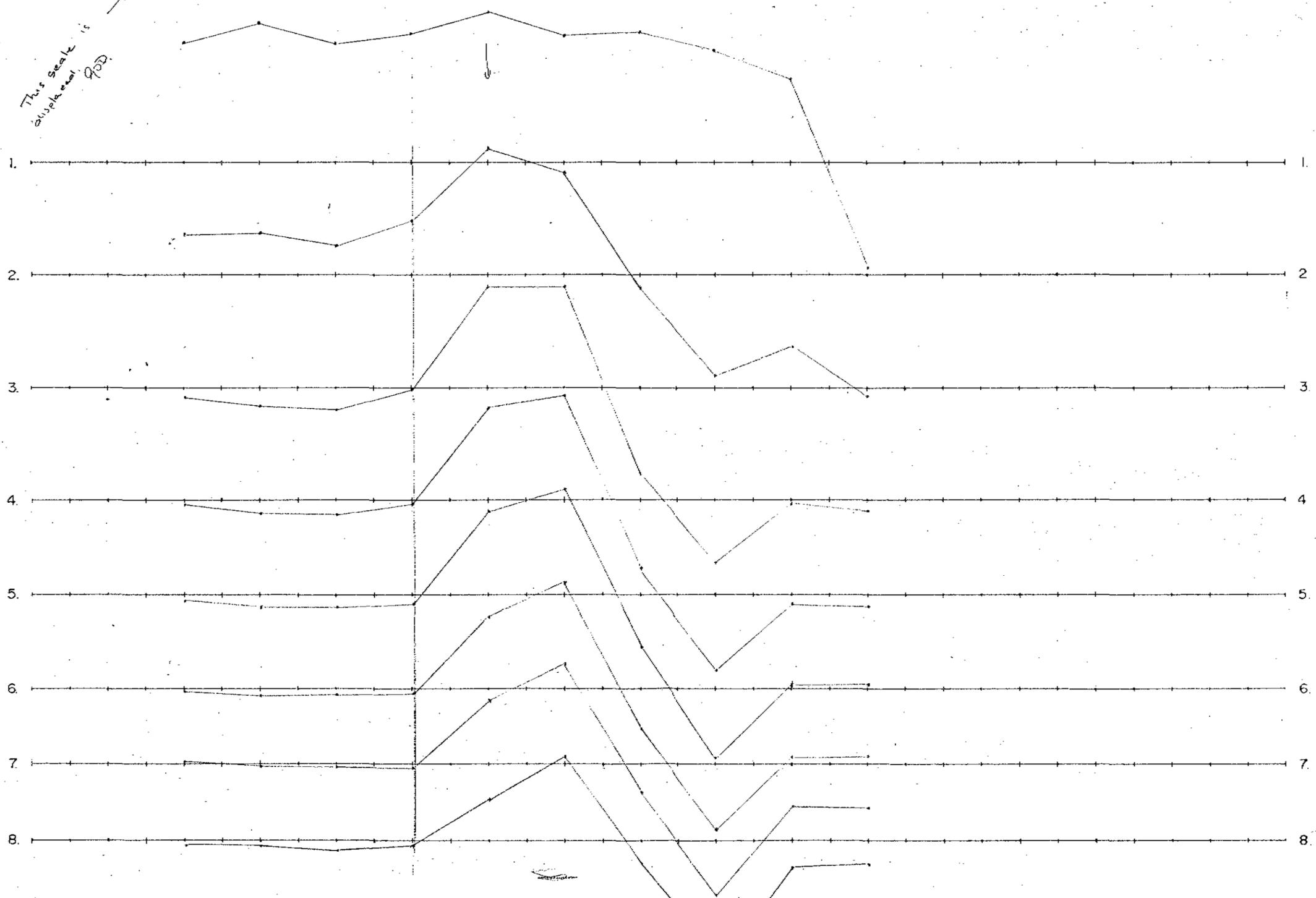
Job No 85-1184

024

5470E 5380E 5340E 5200E 5260E 5220E 5180E 5140E 5100E 5060E

5300 5180 5160 5140 5120 5200 5100 ← correct.

This scale is
displacement 900.



57 041

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN PROSPECT

TASMANIA

FOR

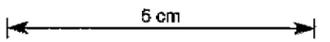
AUSTRALIAN ANGLO AMERICAN

Line No. 5200 N

N.B. Due to gridding error
smallest easting lies to the east

SURVEY SPECIFICATIONS

Transmitter-receiver separation 80 metres
 Station spacing 40 metres
 Receiver orientation Vertical coil
 Transmitter orientation Horizontal loop
 Horizontal scale 1:2000
 Surveyed by S. Smykowski



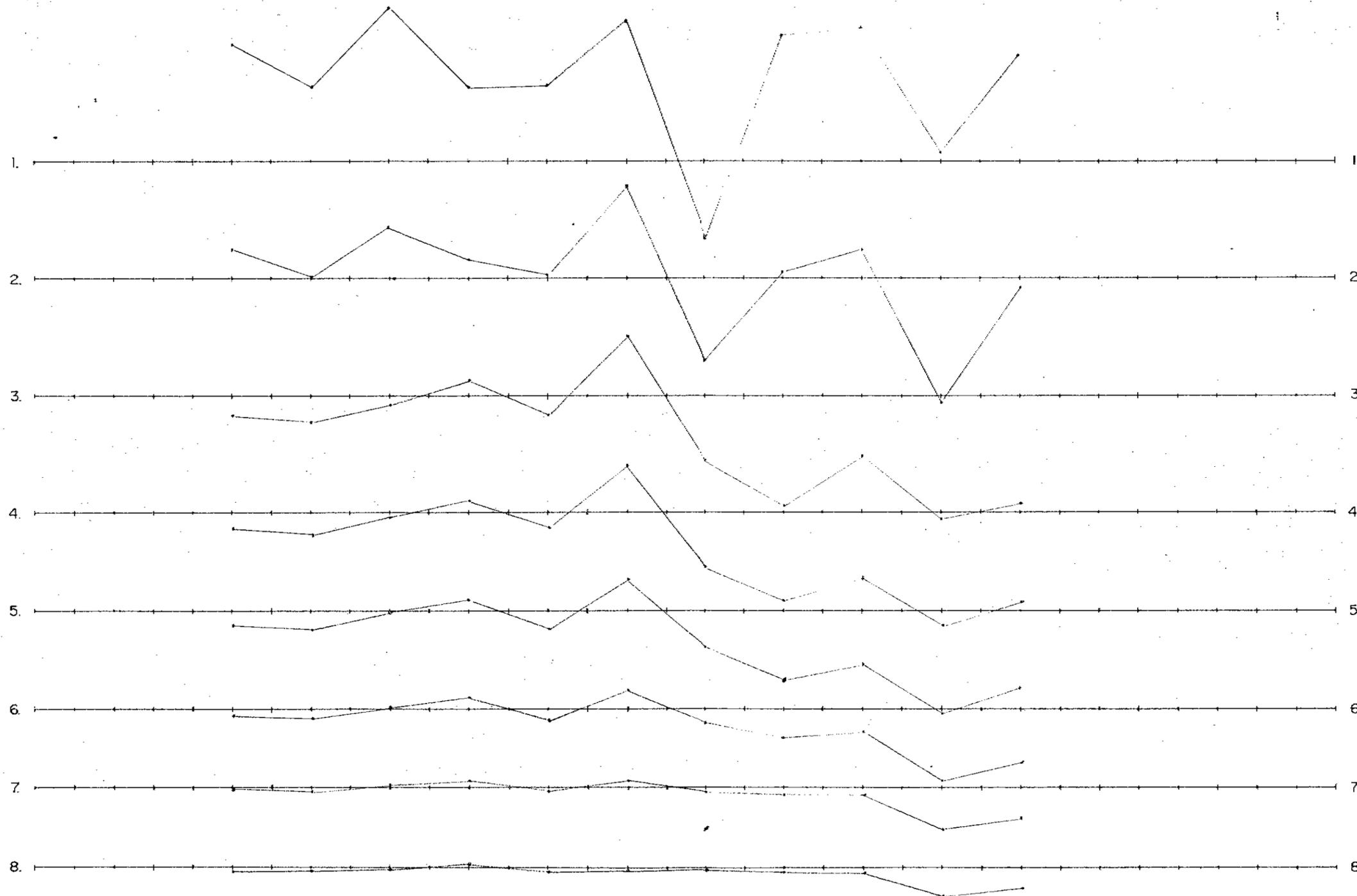
geotrex
Pty Ltd
SYDNEY

SURVEYED IN JAN 1950

Job No 85-1124

025

5460E 5420E 5380E 5340E 5300E 5260E 5220E 5180E 5140E 5100E 5060E



57 042

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN GRID
TASMANIA

FOR

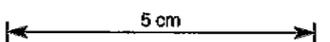
AUSTRALIAN ANGLO
AMERICAN

Line No. 5300 N

N.B. Due to gridding error the
smallest easting lies to the east

SURVEY SPECIFICATIONS

Transmitter-receiver separation 80 metres
 Station spacing 40 metres
 Receiver orientation Vertical Coil
 Transmitter orientation Horizontal loop
 Horizontal scale 1:2000
 Surveyed by J. Sumpton

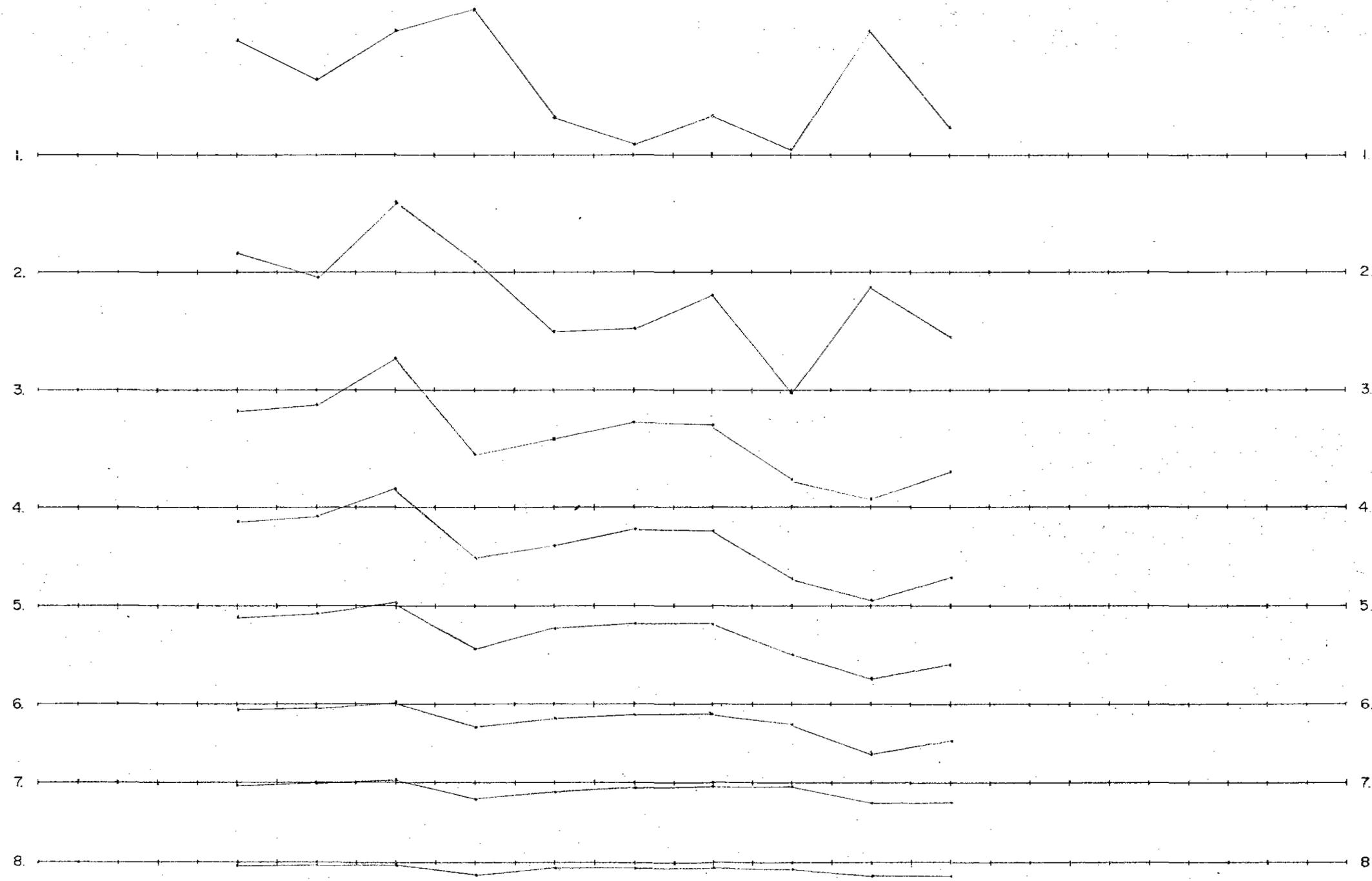


SURVEYED IN JAN 1980

Job No 85 - 1184

026

S32DE S33DE S34DE S38DE S46DE S72DE S180E S140E S100E S06DE



57 043

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN PROSPECT
TASMANIA

FOR

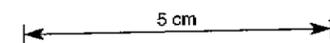
AUSTRALIAN ANGLO
AMERICAN

Line No. 5400 N

N.B. Due to gridbing error the
smallest easting lies to the east

SURVEY SPECIFICATIONS

Transmitter-receiver separation 80 metres
 Station spacing 40 metres
 Receiver orientation Vertical coil
 Transmitter orientation Horizontal loop
 Horizontal scale 1:2000
 Surveyed by S. Smykowski



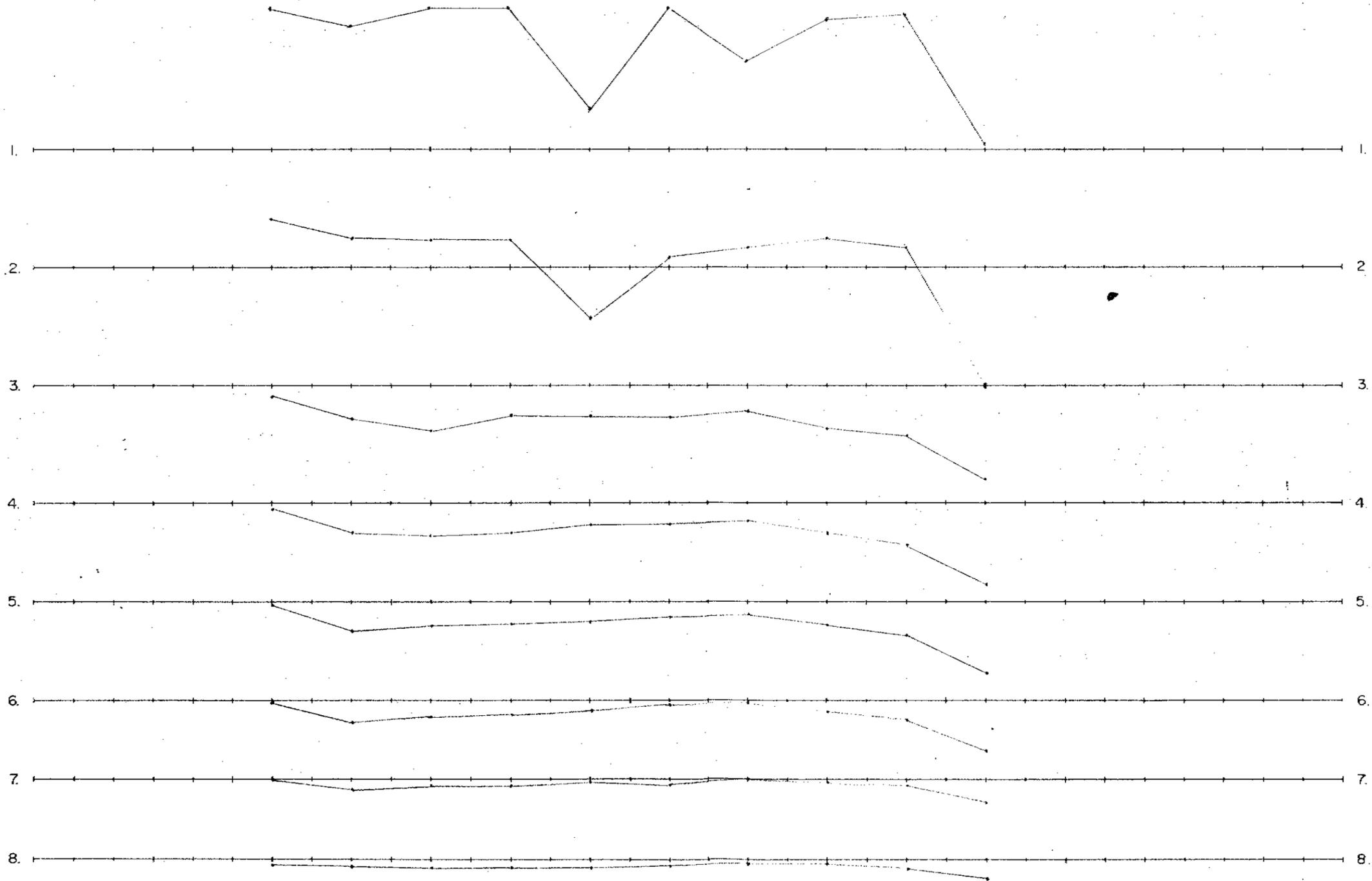
geotrex
pty ltd
SYDNEY

SURVEYED IN JAN 1980

Job No 85-1184

027

5400E 5420E 5380E 5340E 5300E 5260E 5220E 5180E 5140E 5100E



57 044

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN GRID
TASMANIA

FOR

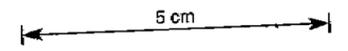
AUSTRALIAN ANGLO
AMERICAN

Line No. 5500 N

N.B. Due to gridling error the
smallest easting lies to the east

SURVEY SPECIFICATIONS

Transmitter-receiver separation 80 metres
 Station spacing 40 metres
 Receiver orientation Vertical coil
 Transmitter orientation Horizontal loop
 Horizontal scale 1:2000
 Surveyed by J. Sumpton

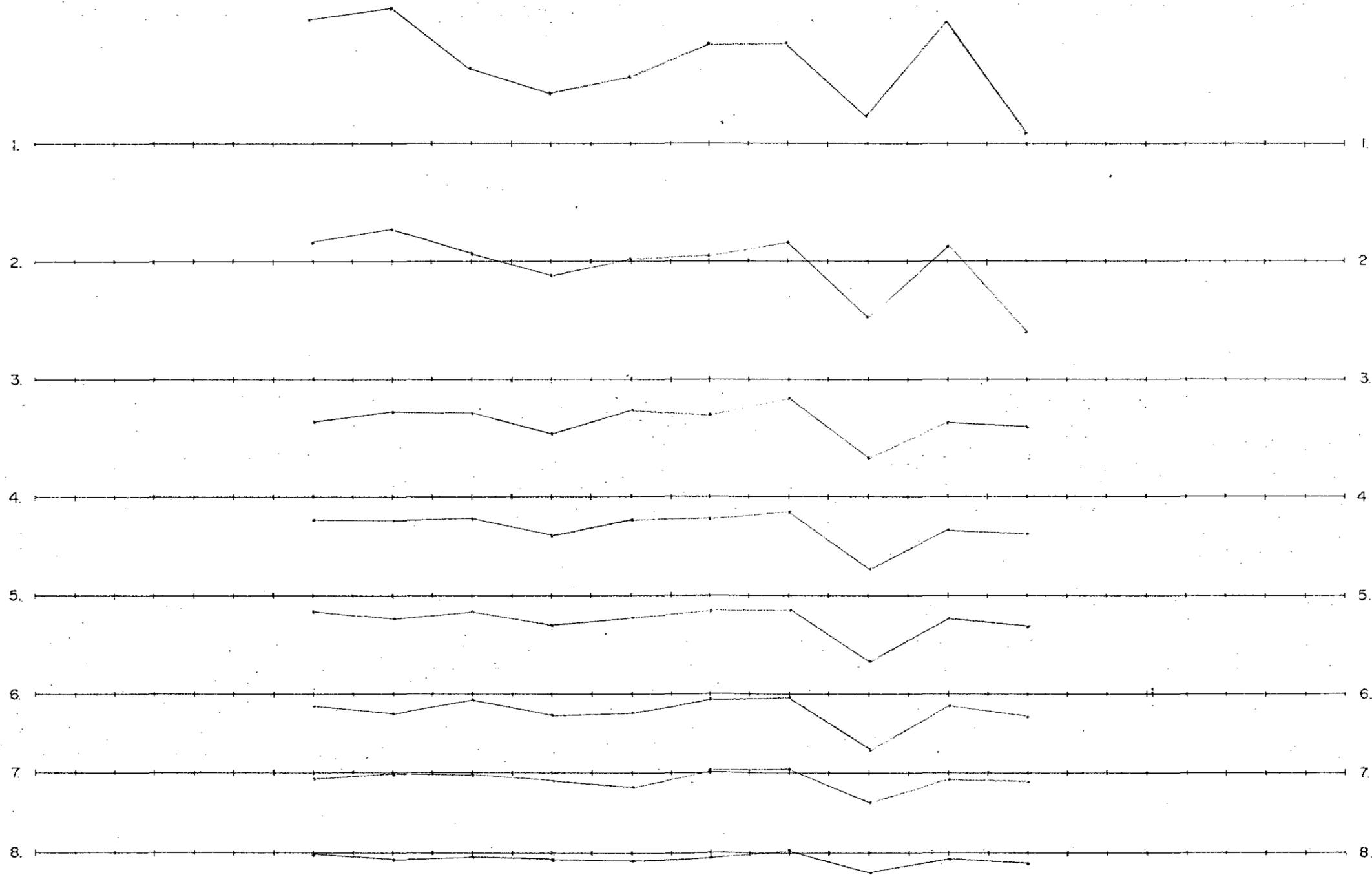


SURVEYED IN JAN 1980

Job No 85-1184

028

5490E 5380E 5340E 5300E 5260E 5220E 5180E 5140E 5100E 5060E



57 045

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN PROSPECT

TASMANIA

FOR

AUSTRALIAN ANGLO

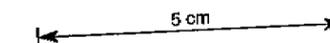
AMERICAN

Line No. 5600N

N.B. Due to a gridding error the smallest easting lies to the east

SURVEY SPECIFICATIONS

Transmitter-receiver separation 20 metres
 Station spacing 40 metres
 Receiver orientation Vertical Coil
 Transmitter orientation Horizontal loop
 Horizontal scale 1:2000
 Surveyed by J. Sumpton



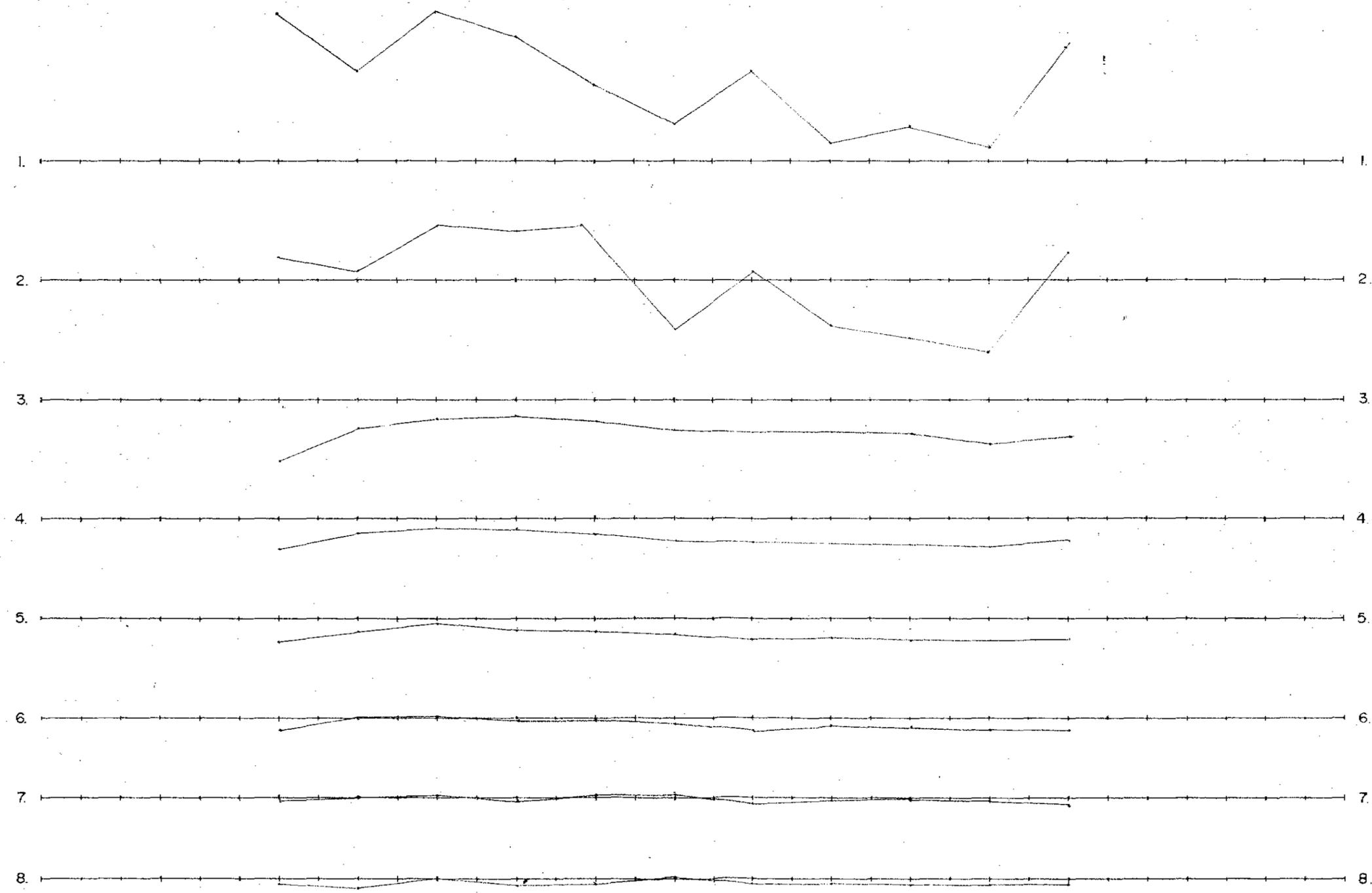
geotrex
 Pty. Ltd.
 SYDNEY

SURVEYED IN JAN 1980

Job No 85-1124

029

5460E 5420E 5380E 5340E 5300E 5260E 5220E 5180E 5140E 5100E 5060E



57 046

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN GRID
TASMANIA

FOR

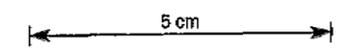
AUSTRALIAN ANGLo
AMERICAN

Line No. 5700N

N.B. Due to a gridding error the
smallest easting lies to the east

SURVEY SPECIFICATIONS

Transmitter-receiver separation 80 metres
 Station spacing 40 metres
 Receiver orientation Vertical Coil
 Transmitter orientation Horizontal loop
 Horizontal scale 1:2000
 Surveyed by M. Winter



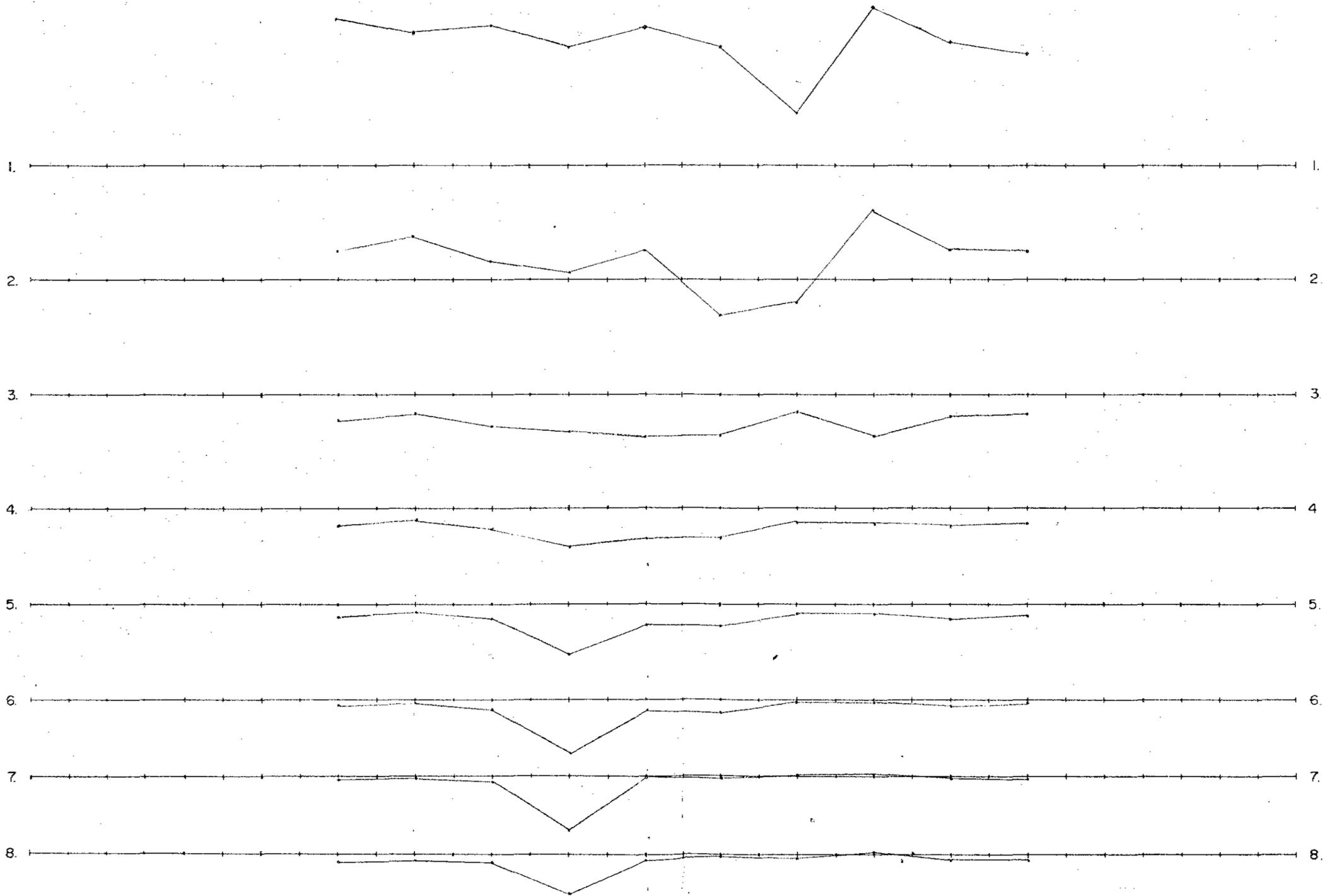
geotrex
 Pty. Ltd.
 SYDNEY

SURVEYED IN JAN 1980

Job No 85-1184

030

5420E 5380E 5340E 5300E 5260E 5220E 5180E 5140E 5100E 5060E



57 047

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN GRID

TASMANIA

FOR

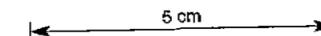
AUSTRALIAN ANGLO AMERICAN

Line No. 5800 N

NB. Due to gridding error the smallest easting lies to the east

SURVEY SPECIFICATIONS

Transmitter-receiver separation 80 metres
 Station spacing 40 metres
 Receiver orientation Vertical Coil
 Transmitter orientation Horizontal loop
 Horizontal scale 1:2000
 Surveyed by J. Sumpton



geotrex Pty. Ltd. SYDNEY

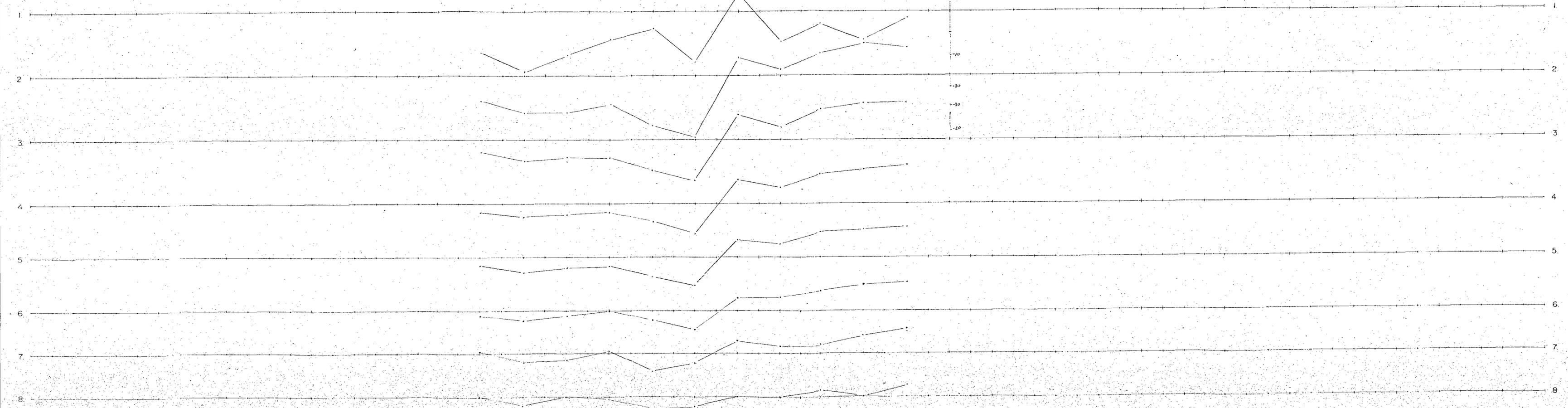
SURVEYED IN JAN 1980

Job No 85-1184

031

5150 5210 5270 5330 5390 5450 5510 5570 5630 5690

10 20 30 40 50



57 048
PULSE ELECTROMAGNETIC SURVEY

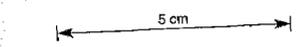
AT
ZEEHAN

FOR
PLGIO - AMERICAN

Line No. *5900N*

SURVEY SPECIFICATIONS

- Transmitter-receiver separation 100 metres
- Station spacing 40 metres
- Wire loop orientation VERT
- Receiver orientation HORIZ
- Plotting scale 1:2000
- Plotting P.A.P.



PULSE ELECTROMAGNETIC SURVEY

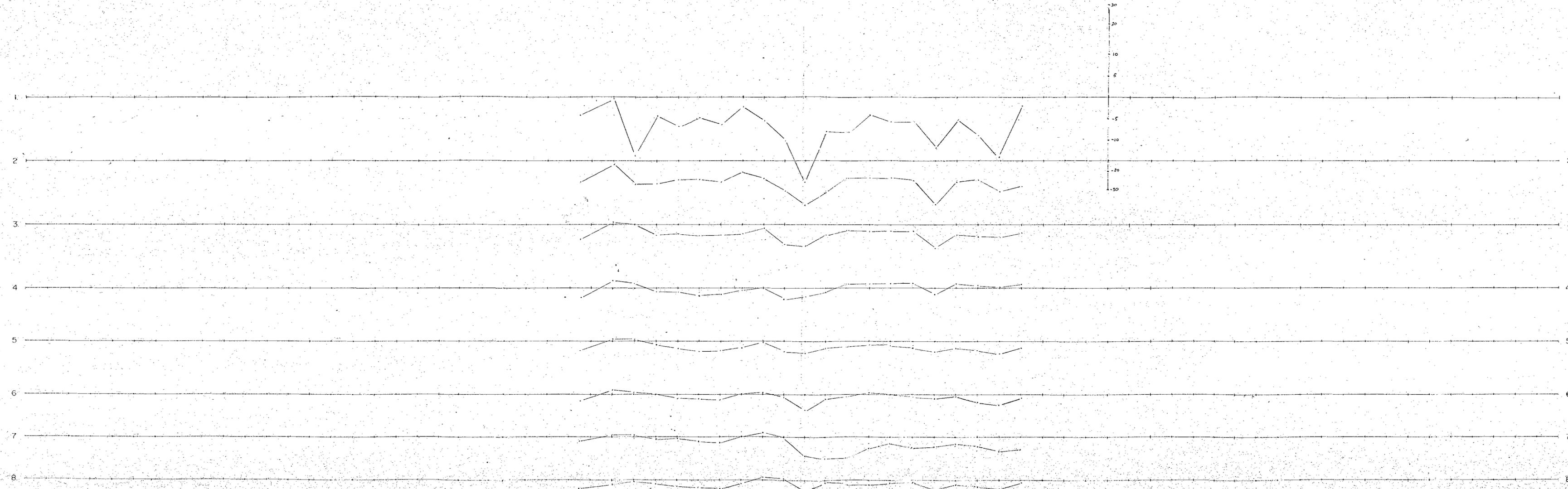
AT

ZEEHAN

FOR

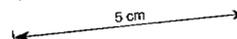
ANGLO - AMERICAN

Line No. 6000N



EQUIPMENT SPECIFICATIONS

Transmitter-receiver separation 80 metres
 Station spacing 20 metres
 Receiver orientation Vert.
 Transmitter orientation Horz.
 Recording scale 1:2000
 Surveyed by P.A.D.



AUSTRALIAN ANGLO AMERICAN LIMITEDMEMORANDUM

To: DBO

From: DBT

Subject: GODKIN PEM

Date: 11th February 1980

Observations

Line 5000N

A highly conductive source is located at 4600E. The dip is steep and possibly to the west. The depth of burial is less than 25m. ^{5400W}

Line 5100N

There is a missing data at 4780E. There are no conductors on this line. ^{5220W}

Line 5200N

There is a conductor with vertical dip at 4720E. The depth of burial is 25 metres. ^{5180W}

Line 5300N

Two responses occur on this line. One is at 4740E and is due to a vertically dipping body. It is not quite as conductive as the anomalies on 5200N and 5000W. Depth of burial is 25m. ^{5260W}

The second response is located at 4660E. It dips steeply to the west. The source is very conductive. Depth of burial is 25m. ^{5340W}

Line 5400N

The main conductor is at 4660E. It dips steeply to the west. Depth of burial is 25m. The source has good conductivity. ⁵³⁴⁰

A second response is located at 4820E. It is broad and of low amplitude so may be an "off the end" effect. It may also be due to a deeply buried source. The dip is steep and to the east. ^{5180W}

034

2.

Line 5500N

Wil

There is a response at 4820E which appears only on the later channels. This is unusual behaviour but since the anomaly occurs at several stations it cannot be due to noise. It lines up with the eastern anomalies on the previous two lines. The dip is steep and to the east.

Line 5600N

too small

There is a response which is located at 4820E, which is similar in character to that on 5500N.

Line 5700N

too small

This response, which is located at 4620E, is similar to that on 5500N.

Line 5800N

etch

There are weak indications of a west dipping source at 4840E. The response increases with time delay.

Line 5900N

There is a west dipping anomaly at station 5210 West (old grid numbering). Estimated depth is 80 m. The anomaly is not well defined.

Line 6000N

There is a weak response at 4720E. It is steeply dipping and appears to dip east.

Conductors

A. line 5000N, 4600E

Since there is no response on line 5100N, the conductor at 4600E on line 5000 appears to be separate from conductor B even though it is in line with it. Conductor A should be delineated by additional lines to the South of the present grid.

...3.

3.

B. line ⁵²⁸⁰5200N, 4720E; ⁵²⁶⁰5300N, 4740E, ⁵³⁴⁰4660E; ⁵³⁴⁰5400N, 4660E, ⁵¹⁸⁰4820E;
5500N, 4820E

These responses form an arcuate conductor. Consideration should be given to investigating both flanks between 5200E^N and 5300E^N. A hole drilled from the West at an angle of 60° to intersect at 30m depth should adequately identify the source of the conductor.

C. line ⁸5600N, 4840E; 5900N, 5910 West; 6000N, 4720E

This conductor should be investigated by a hole drilled from the West at an inclination of 60°. The target depth is 80m. A site between 5800N and 5900N is recommended.



DBT

DBT:pmck

13 WHITING STREET,
ARTARMON, N.S.W. 2064
AUSTRALIA



TELEPHONE: (02) 438 3866
TELEX: AA 25505

17th March, 1980

Mr. D. Orr,
Australian Anglo American Ltd.,
581 Little Collins Street,
MELBOURNE. VIC. 3000

Dear Mr. Orr,

Please find enclosed P.E.M. data plots for our recent survey at the Godkin Prospect in Tasmania.

A technical fault in the P.E.M. receiver was responsible for the previously unacceptable data. Whilst being overhauled two wires were wrongly connected to the Zero Time Set control and this caused the machine to be set up on the wrong side of the Primary Pulse when adjusted correctly by the operator. The result was a shift backwards in time of the eight channels of the receiver. The difference can be seen in Figure 1.

To correct this data we plotted the secondary field decay and then shifting our reference origin to the cut off of the primary pulse we read the indicated values for where the channels should have read. Owing to the time shift of only about 100 micro seconds the last channel, which has a 2,800 micro second window, is negligibly altered, and this allows us to plot the full eight channels.

We hope the data is now to your satisfaction and please do not hesitate to contact us with regards to this matter.

Yours sincerely,

Philip Woods

PHILIP WOODS.
Geophysicist.

Encl.

G.O. DICKSON & ASSOCIATES PTY. LTD.

18 ELMIE STREET,
HAWTHORN. 3122
Telephone: 818 1782

March 27, 1980.

Attention: David Orr,
Australian Anglo American Ltd.,
581 Lt. Collins Street,
MELBOURNE .. 3000.

INDEXED

RE-EVALUATION OF
CRONE PEM SURVEY
GODKIN GRID

1.0 Introduction:

On Monday, 24th March G.O. Dickson & Associates were asked to comment on the CRONE PEM data, collected on the GODKIN GRID near Zeehan, after data reconstruction following instrument malfunction. The survey was carried out by GEOTERREX PTY. LTD.

2.0 Discussion:

Firstly, the problem described by GEOTERREX is indeed possible. If the ZERO TIME setting is displaced, by whatever means, the early channels will be sampling the TX pulse cut-off.

The means of reconstructing the data was not described by GEOTERREX, but I suggest that it is virtually impossible to do with any reliability. It is, nevertheless, fair comment that the later channels, say 3 or 4 and beyond, will be little effected. Although this is hardly a satisfactory survey, at least the late channels can be used.

We have therefore re-examined the data to see if the re-construction has materially altered the late channel response and, hence, Devin Trussel's observations on the nature of the conductors.

Several points are worthy of comment:

- (i) Either the data has been plotted at a different vertical scale or the re-construction has indeed altered the amplitude of the response of some of the late channels. It is not clear to me which is the case.

The effect of this is that some of DBT's stronger

Australian Anglo American Ltd.

March 27, 1980.

conductors could be down-graded. Again, I cannot tell from the data available.

- (ii) Some of the anomalies with late channel response only, all but disappear. Notably, conductor C looks to be very weak.
- (iii) Only the conductors OW 5000N @ 5300W and 5200N @ 5280W look to be reasonably strong, and of these two, 5200N @ 5280W is the stronger.
- (iv) Data gaps appearing in the original data set do not exist in the reconstructed set.

3.0 Recommendations and Comments:

Our comments are confined to the PEM data and the alternatives, as we see them, open to Anglo as managers of the joint venture. The ultimate decision on what action should be taken clearly rests with Anglo as managers.

- (i) As managers, Anglo should be in a position to sensibly comment on the quality of the data. Geoterrex should be required to show how the data was reconstructed and comment on the reliability of the early channels. Inclusion of "missing data" and the reason for lower late channel amplitudes clearly require explanation. Scales used for plotting should be shown and the original data should be requested.

We feel that the above should be done whatever action Anglo finally decides on.

- (ii) If PEM is to be used, without further support, for a drill program, we would like to see lines 5000N to 5300N repeated. Although it is an Anglo decision, we feel the data collection should be at Geoterrex expense but, as the late channels are probably unaffected, costs could go to the joint venture.

The problem is that drill holes are expensive and the data should be verified if it is not going to be supported.

- (iii) Alternatively, as the conductors are shallow, we would expect them to have a strong geochemical signature before considering them to be valid

Australian Anglo American Ltd.

March 27, 1980.

drill targets. If this alternative is a valid approach, re-surveying may not be required depending on the outcome of (i) above.

Yours sincerely,

G.O. DICKSON

for

G.O. Dickson & Assoc.

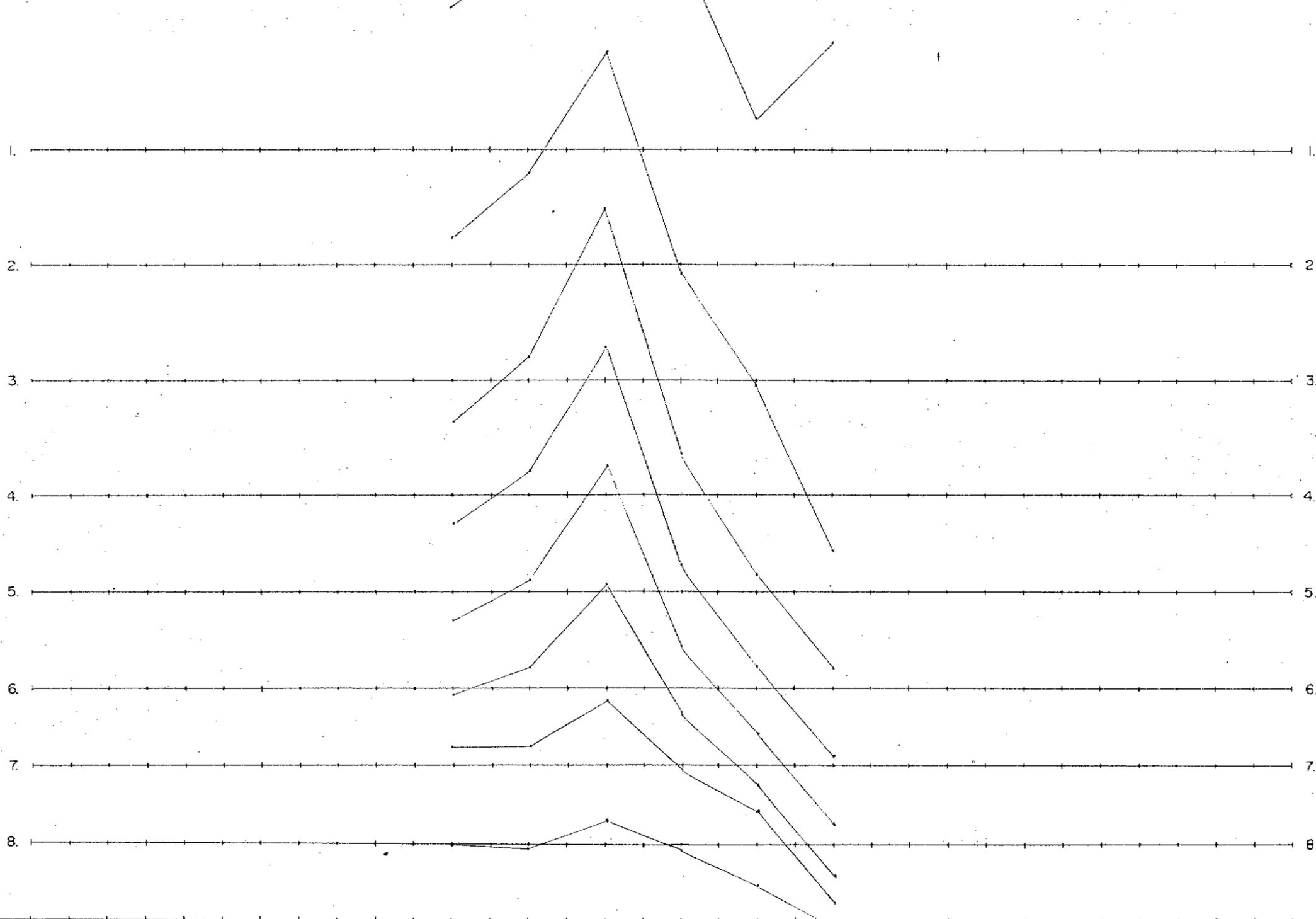
NOTE: Following discussions with Geoterrex, we understand that the decay curve for each station was established with the zero time error, and then new amplitudes were then selected at the correct delay times. Clearly then, the late channel amplitudes are lower than the first survey indicated. Hence, the quality of some of the conductors is lowered.

APPENDIX II

REPORT BY G.O. DIXON

041

S460E S420E S380E S340E S300E S260E



57 058

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN PROSPECT

TASMANIA

FOR

AUSTRALIAN ANGLO AMERICAN

Line No. 5000 N

CORRECTED DATA

SURVEY SPECIFICATIONS

Transmitter-receiver separation 80 metres
 Station spacing 40 metres
 Receiver orientation Vertical Coil
 Transmitter orientation Horizontal loop
 Horizontal scale 1:2000
 Surveyed by M. Winter

5 cm



geotrex
pty. ltd.
SYDNEY

SURVEYED IN JAN 1980

Job No 85-1184

042

5460E 5470 5380 5340 5300 5260 5220 5180 5140 5100E

57 059

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN PROSPECT

TASMANIA

FOR

AUSTRALIAN ANGLO AMERICAN

Line No. 5100N

CORRECTED DATA

SURVEY SPECIFICATIONS

Frequency (Hz) 80
Station spacing 40
Coil type Vertical coil
Coil dimensions Horizontal loop
Current (A) 12000
Surveyed by S. Smykowski

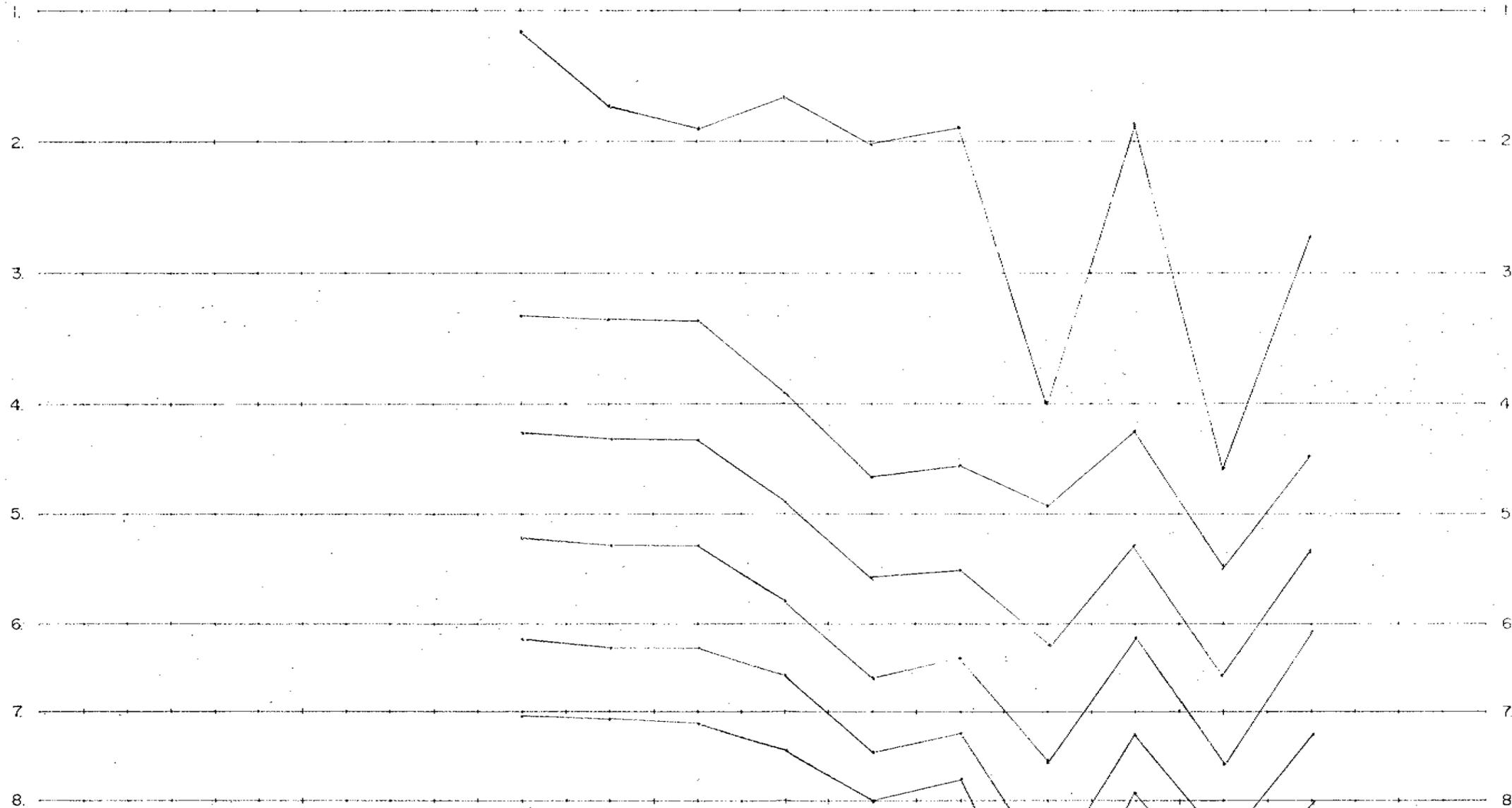
5 cm



geotrex
pty. ltd
SYDNEY

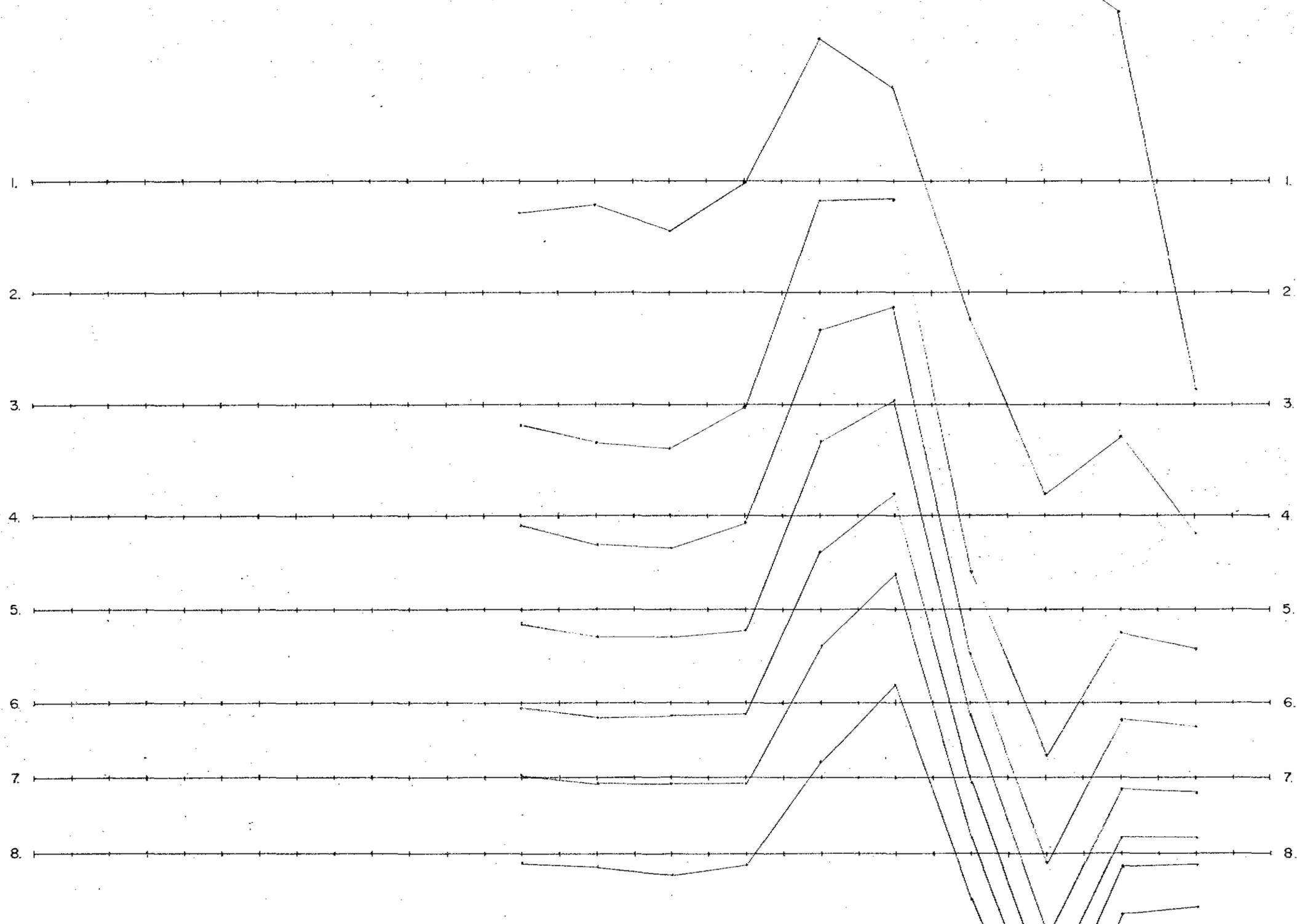
SURVEYED JAN 1980

Geotrex 80-1184



043

5420E 5380 5340 5300 5260 5220 5180 5140 5100 5060E



57 060

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN PROSPECT

TASMANIA

FOR

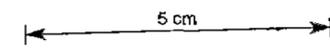
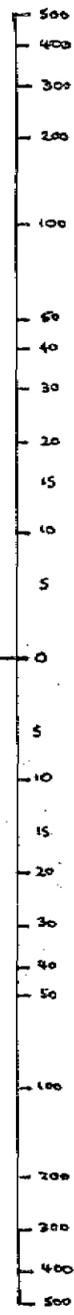
AUSTRALIAN ANGLO AMERICAN

Line No. 5200 N

CORRECTED DATA

SURVEY SPECIFICATIONS

Transmitter-receiver separation 80 metres
 Station spacing 40 metres
 Receiver orientation Vertical Coil
 Transmitter orientation Horizontal loop
 Horizontal scale 1:2000
 Surveyed by S. Smykowski



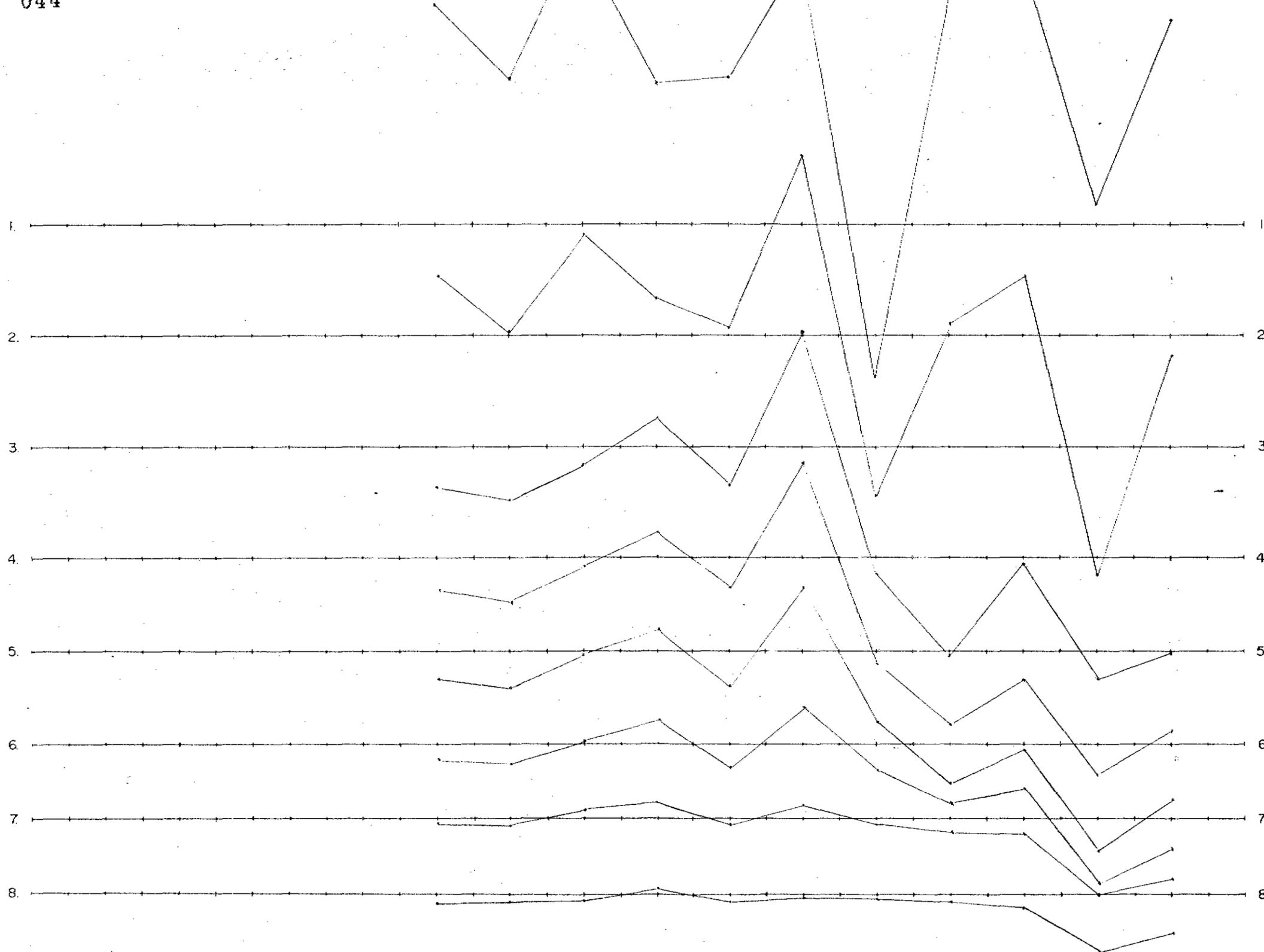
geotrex
 Pty. Ltd.
 SYDNEY

SURVEYED IN JAN 1980

Job No 85-1184

044

5460E 5400 5380 5340 5300 5260 5220 5160 5140 5100 5060E



87 061

PULSE ELECTROMAGNETIC SURVEY

AT

GODKIN PROSPECT

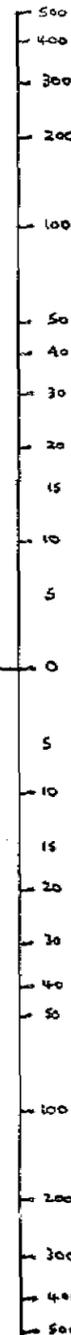
TASMANIA

FOR

AUSTRALIAN ANGLO AMERICAN

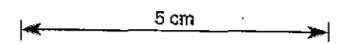
Line No. 5300N

CORRECTED DATA



SURVEY SPECIFICATIONS

Transmitter-receiver separation metres
 Station spacing metres
 Receiver orientation
 Transmitter orientation
 Horizontal scale
 Surveyed by



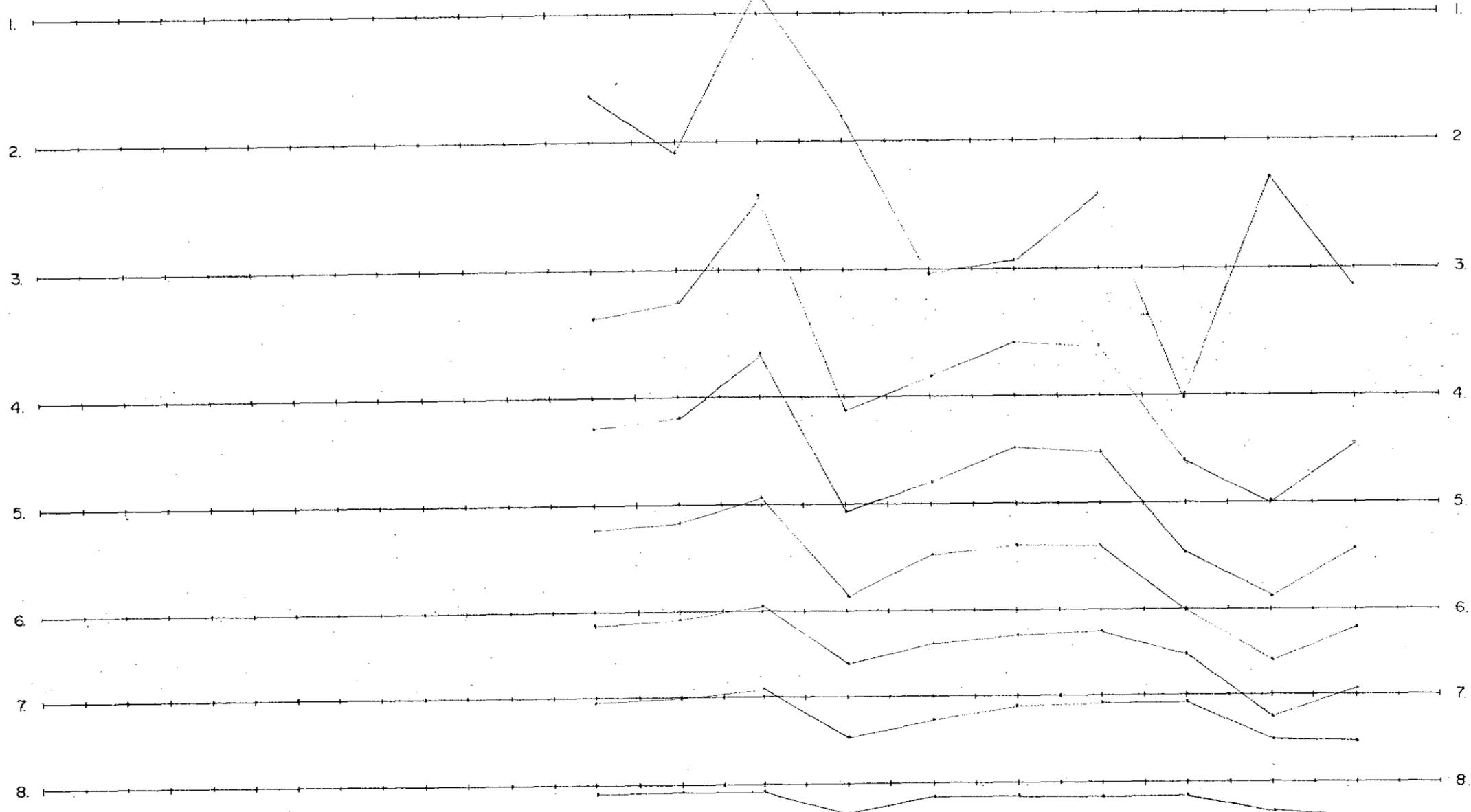
geotrex
 Pty Ltd
 SYDNEY

SURVEYED IN

Job No 85-

045

5420E 5380 5340 5300 5260 5220 5180 5140 5100 5060E



57 062

PULSE ELECTROMAGNETIC SURVEY

AT

GOODWIN PASS

TASMANIA

FOR

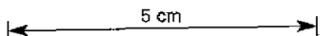
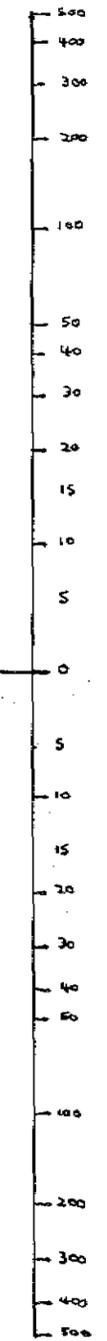
AUSTRAAL ANGLIO AMERICANI

Line No. 5400 N

CORRECTED DATA

SURVEY SPECIFICATIONS

Transmitter-receiver separation metres
 Station spacing metres
 Receiver orientation
 Transmitter orientation
 Horizontal scale
 Surveyed by



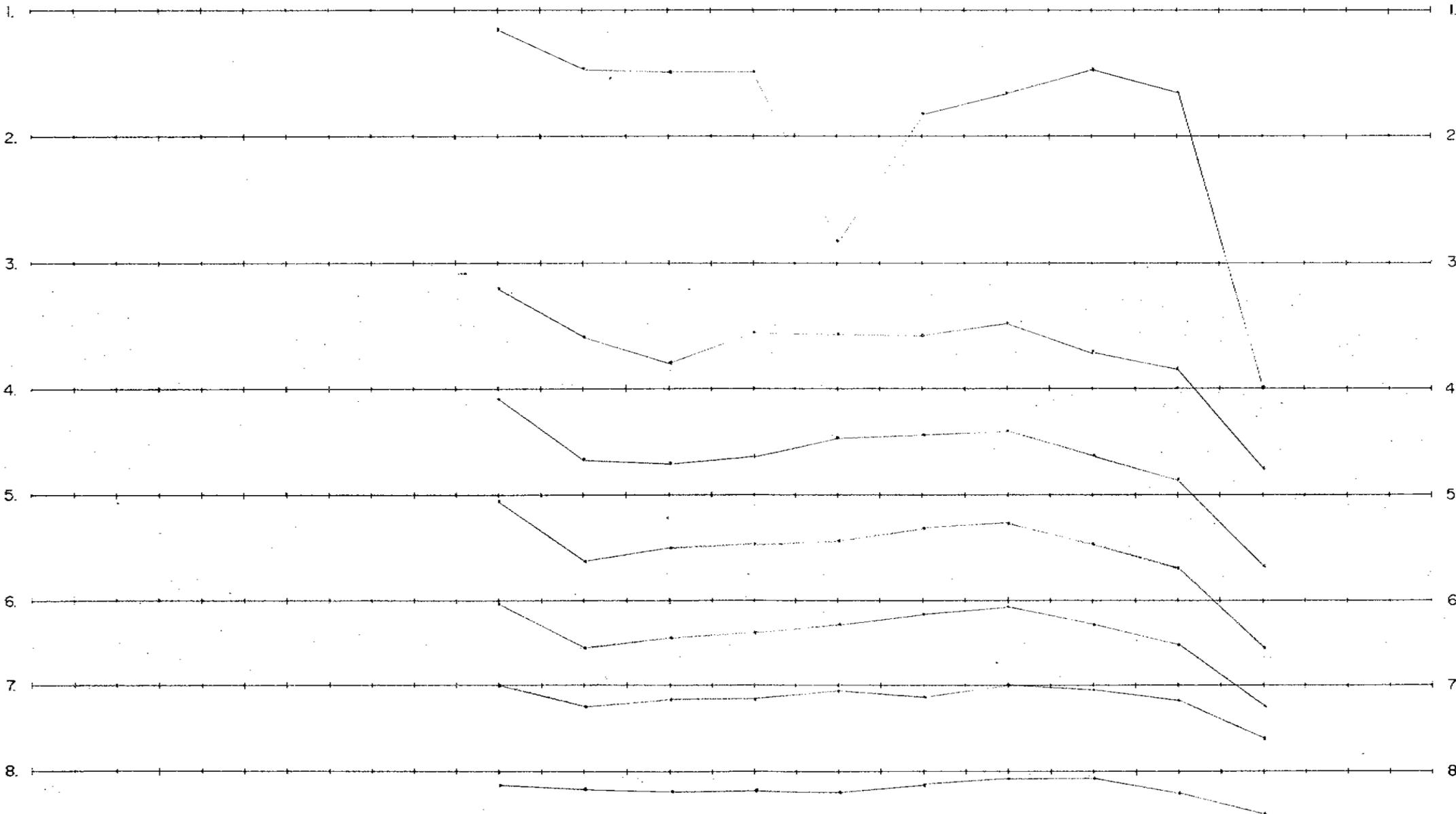
geoterrex
 Pty. Ltd
 SYDNEY

SURVEYED N

Job No 85 -

046

5460E 5420E 5380 5340 5300 5260 5220 5180 5140 5100 5060E



57 063

PULSE ELECTROMAGNETIC SURVEY

AT

GOODKIN PROSPECT

TASMANIA

FOR

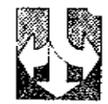
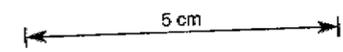
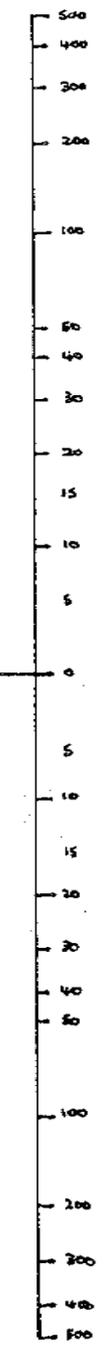
AUSTRALIAN ANGLo AMERICAN

Line No. 5500N

CORRECTED DATA

SURVEY SPECIFICATIONS

- Transmitter-receiver separation metres
- Station spacing metres
- Receiver orientation
- Transmitter orientation
- Horizontal scale
- Surveyed by



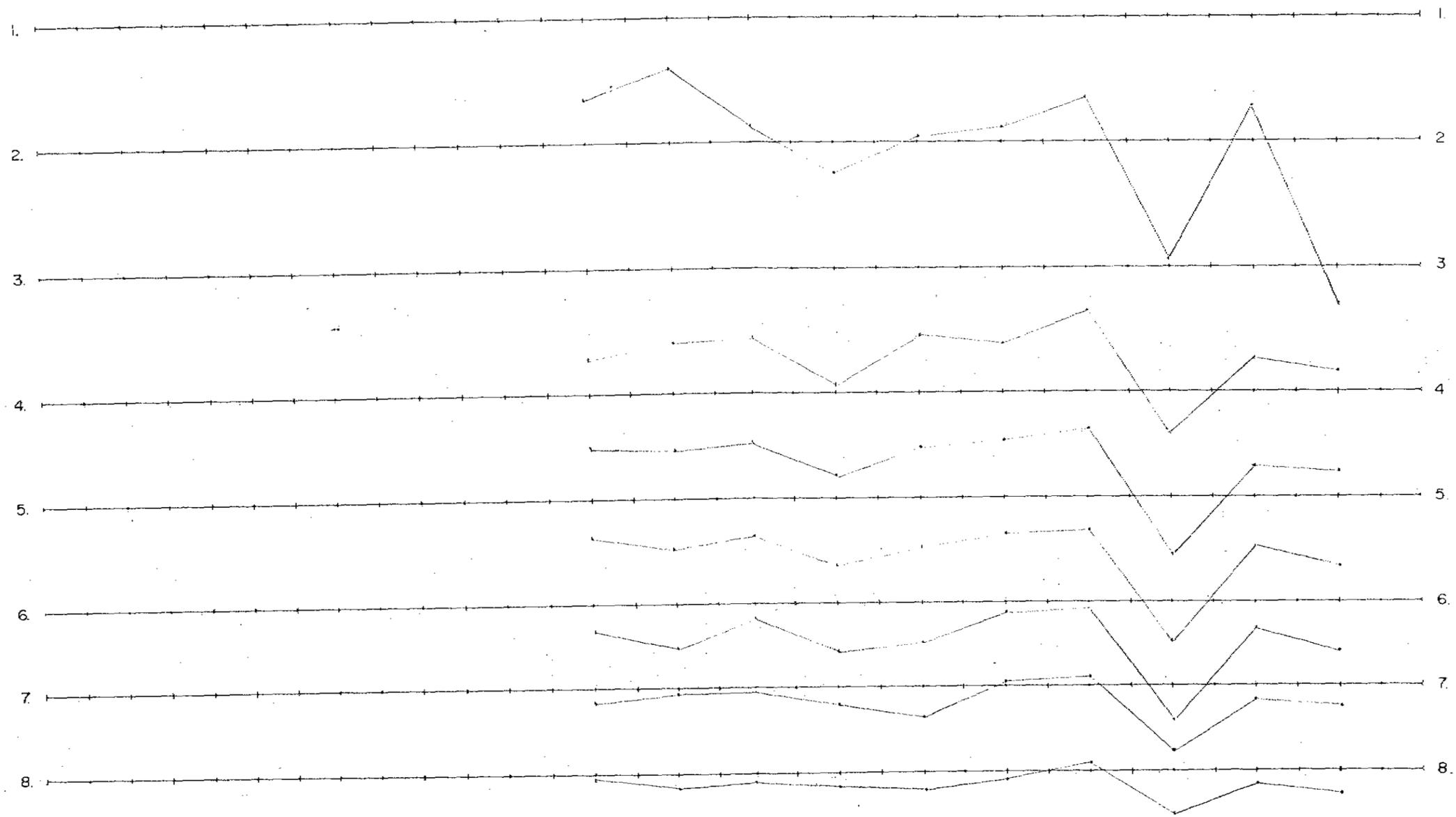
geotrex
pty ltd
SYDNEY

SURVEYED IN

Job No 85 -

047

5920E 5280 5240 5200 5160 5120 5100 5060E



57 064

PULSE ELECTROMAGNETIC SURVEY

AT

GOVERNMENT PROJECT

TASMANIA

FOR

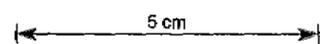
AUSTRALIAN ANGLIO AMERICAN

Line No. 5600N

CORRECTED DATA

SURVEY SPECIFICATIONS

Transmitter-receiver separation metres
 Station spacing metres
 Receiver orientation
 Transmitter orientation
 Horizontal scale
 Surveyed by



geoterrex
 Pty Ltd.
 SYDNEY

SURVEYED N

Job No 85 -

PULSE ELECTROMAGNETIC SURVEY

AT

GOODWIN PROSPECT
TASMANIA

FOR

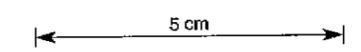
AUSTRALIAN ANGLo AMERICAN

Line No. 5700N

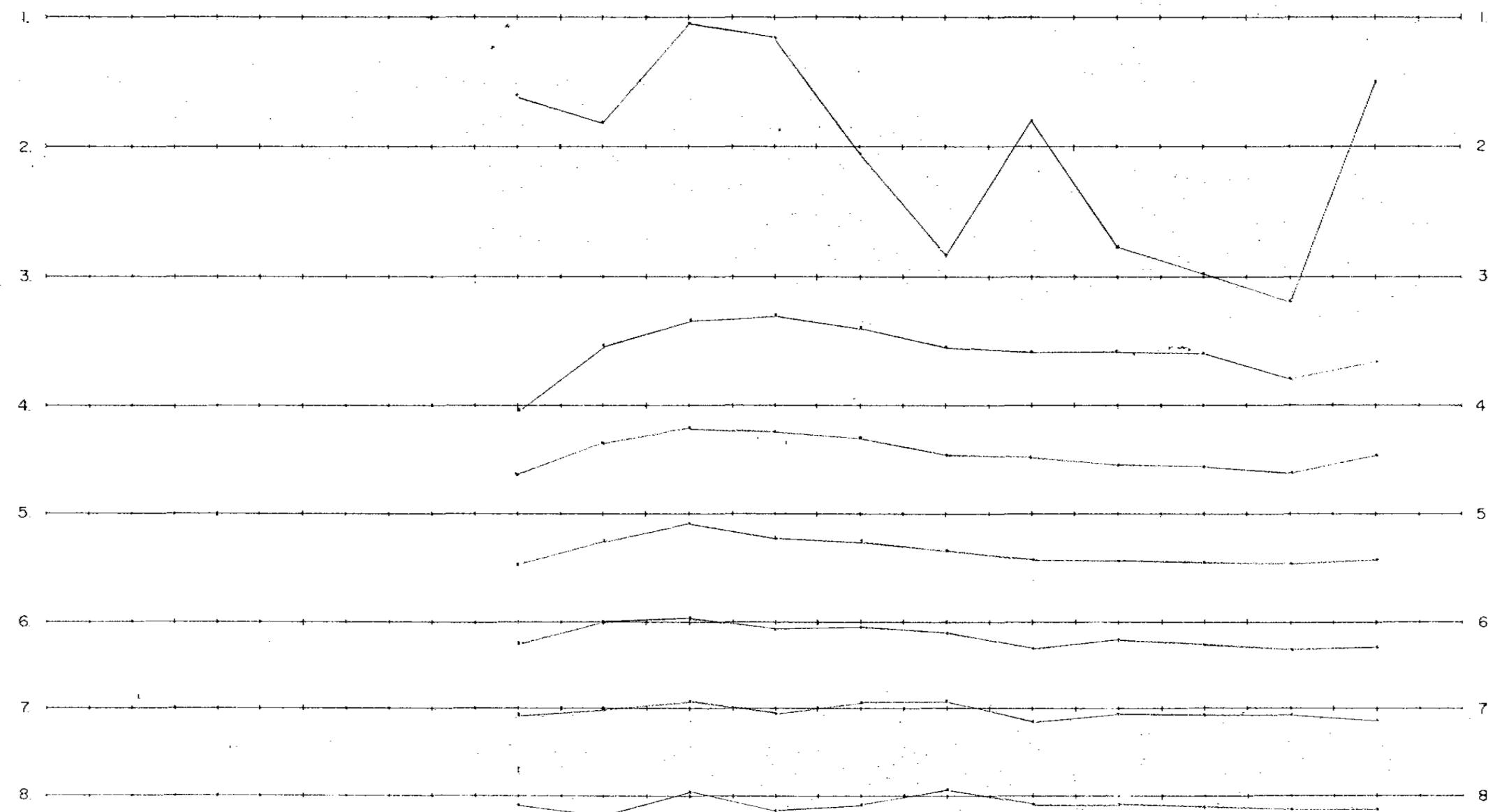
CORRECTED DATA.

SURVEY SPECIFICATIONS

Transmitter-receiver separation metres
 Station spacing metres
 Receiver orientation
 Transmitter orientation
 Horizontal side
 Surveyed by



geotrex
PTY LTD



EXAMPLE OF DATA RECONSTRUCTION.

	1	2	3	4	5	6	7	8
FIELD DATA	500	3.8	-44	-33	-25	-14	-20	-52
					✓	-14	-64	-4.8
RECONSTRUCTED DATA	N/A	-14	-40	-30	-22	-13	-6.5	-4.5

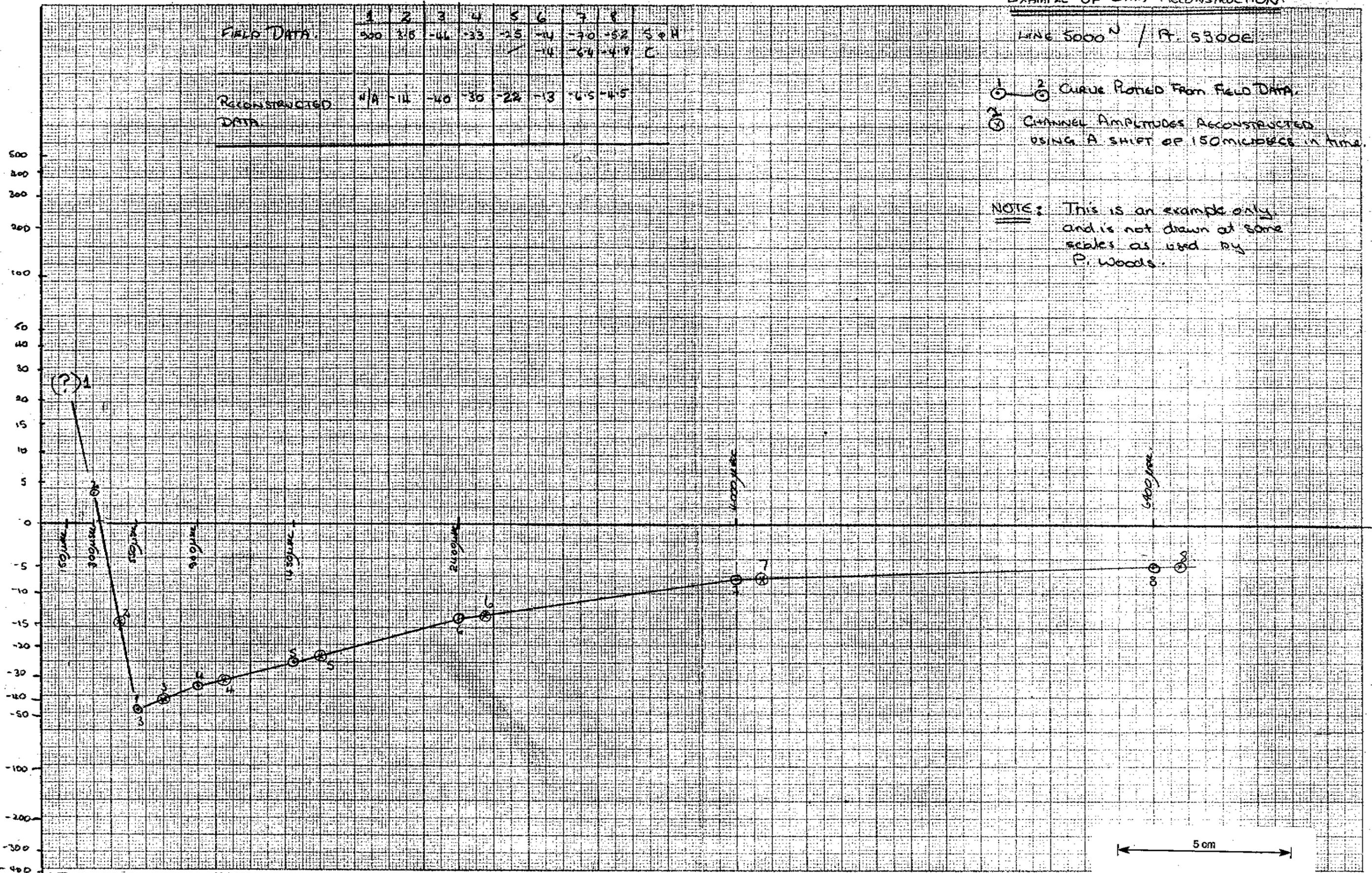
LINE 5000 N / R. 5300E

- ① CURVE PLOTTED FROM FIELD DATA
- ② CHANNEL AMPLITUDES RECONSTRUCTED USING A SHIFT OF 150 MICROSECS IN TIME

NOTE: This is an example only and is not drawn at some scales as used by P. Woods.

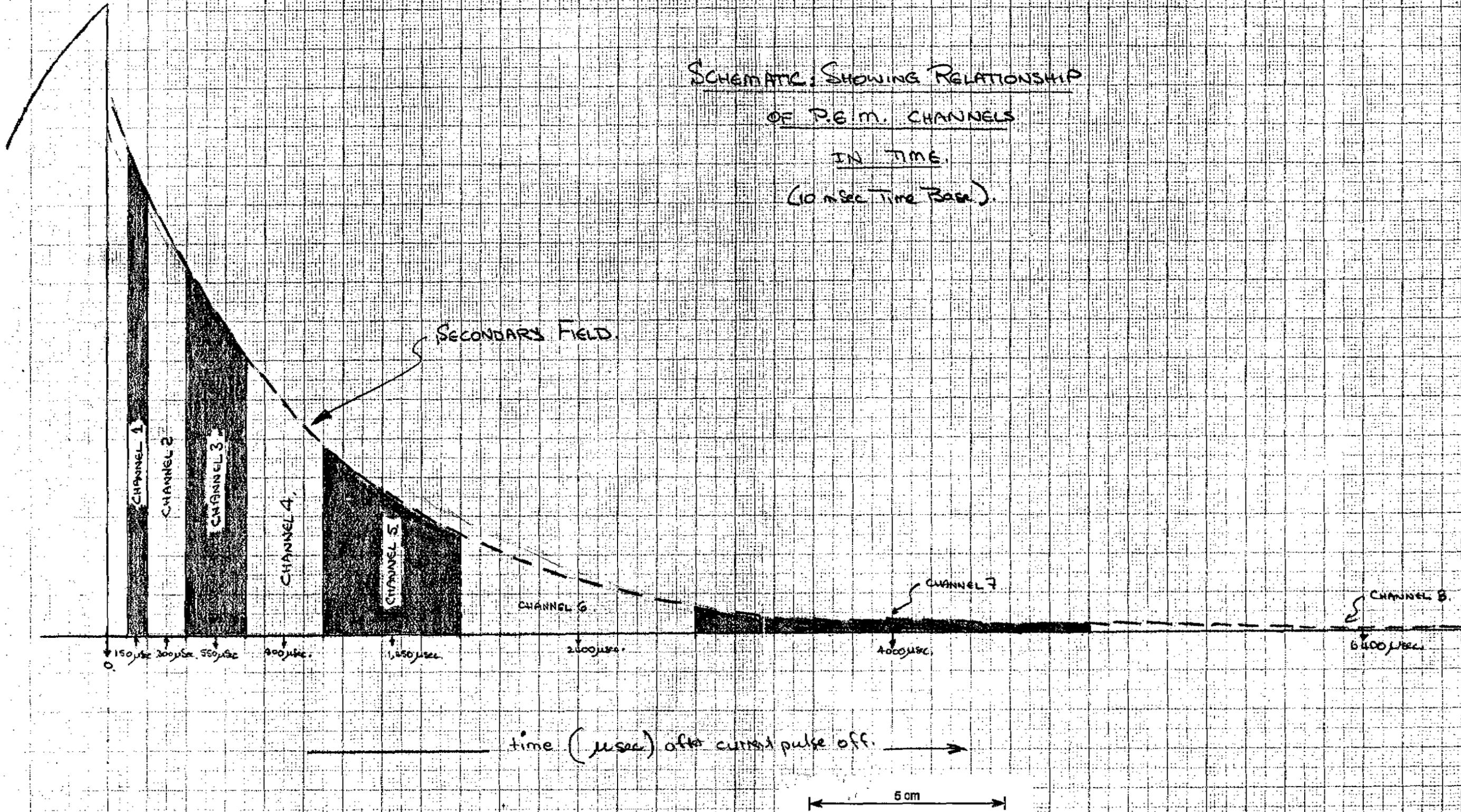
CHANNEL AMPLITUDE (ppk)

U43



5 cm

SCHEMATIC SHOWING RELATIONSHIP
OF P.E.M. CHANNELS
IN TIME.
 (10 nsec Time Base)



13 WHITING STREET,
ARTARMON, N.S.W. 2064
AUSTRALIA



TELEPHONE: (02) 438 3866
TELEX: AA 25505

27th May, 1980.

Divisional Geologist,
Australian Anglo American Limited,
581 Little Collins Street,
MELBOURNE. VIC. 3000

Re: Godkin PEM Survey, Tasmania

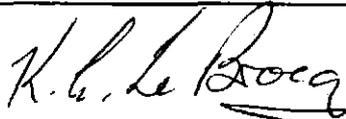
Dear Dave,

Enclosed is a discussion of what I feel the reliability of the P.E.M. results are plus a copy of the original field plots, original data sheets and revised profiles.

As may be seen by comparing the original and the revised profiles the 'apparent' decrease in response on the later channels in the revised profiles was due to a change of scale when plotting.

I hope that the attached information is sufficient to resolve the problems existing with this data, however should you require further clarification on any point please do not hesitate to call me.

Yours faithfully,
GEOTERREX PTY. LIMITED.



K.E. LE BROCCQ.
Geophysicist.

Encl.

PEM Results - Godkin, Tasmania

By inspection of the original field data sheets it is obvious that the first channel is occurring during the primary pulse. However, channel 2 responses are such that they occur after the primary pulse has ended. This would imply a maximum shift of perhaps 200 microsec backwards in time (a shift further backwards in time would of necessity mean that channel 2 would also exceed the primary pulse in amplitude).

By plotting the channel values at window centres and comparing a number of plots it was decided (by P. Woods) that the actual shift 'backwards' in time was of the order of 150 microsec. He then applied this 'shift' to the original data and replotted the sections.

This above approach is very crude and is not totally valid for the reconstruction of the data. As may be seen from overlying the original and reconstructed sections a shift of 100 microsec or greater does not alter the response on the later channels (3,4,5,6,7 & 8) appreciably. Even if the time shift was of the order of 200 microsec or greater it is apparent that only a small change in amplitude would occur in the later channels, particularly channels 4,5,6,7 & 8. Although the later channels are largely unaffected by this time shift it appears on most of the reconstructed profiles that the response of both channels 1 and 2 is affected; perhaps by amplifier saturation in the case of channel 2; channel 1 is however, totally invalid as at least part of the response of this channel is primary signal and not secondary response (i.e. the curve from which the data was reconstructed is not valid in the very early time region). On this basis the amplitudes of channels 1, 2 and possibly channel 3 may not be regarded as absolutely reliable. However, the responses on channels 4,5,6,7 & 8 may be regarded as reliable.

G.O. DICKSON & ASSOCIATES PTY. LTD.

18 ELMIE STREET,
HAWTHORN. 3122
Telephone: 818 1782

June 9, 1980.

Dr. Ian Wilding,
Australian Anglo American Ltd.,
581 Lt. Collins Street,
MELBOURNE .. 3000.

RE: EVALUATION OF THE
CRONE PEM SURVEY, GODKIN GRID
FOLLOWING RECONSTRUCTION

1.0 Introduction:

A previous report on this data was submitted on March 27th. This report follows reconstruction of the data by Geoterrex.

I have examined three data sets at this stage: that originally submitted to and commented on by D. Trussel, a set submitted with the Geoterrex report, and the reconstructed data set.

2.0 Discussion:

The reconstruction carried out by Geoterrex requires the data be interpolated between sample points, the interpolation time being dictated by the "zero time" error. The error involved becomes progressively longer for the earlier channels, particularly as the time shift is only approximately known, and at least channel one requires extrapolation.

I regard the reconstructed data from channel 3 (inclusive) to channel 8 as reliable and recommend that it be accepted and used.

In this regard the strongest anomaly lies at 5280W on 5200N. The source is shallow and probably dips to the east. ✓

Australian Anglo American Ltd.

June 9, 1980.

The anomaly is worthy of a drill test.

The anomaly on 5000N at 5400W appears weaker than on the original data (see DST report and comments G.O. Dickson, March 27th), and I would not recommend it be drilled without additional surveying to the south. The anomaly may indeed be an "off-end" anomaly. ✓

In my opinion, there are no other anomalies of significance in this data.



G.O. DICKSON

G.O. DICKSON & ASSOCIATES.

AUSTRALIAN ANGLO AMERICAN LIMITEDMEMORANDUM

To: D.B.O.

From: D.B.T.

Subject: GODKIN PEM

Date: 8th July 1980

I have reviewed the Godkin PEM results and the discussions contained in Dickson's letters of 27th March and 9th June and that in Geterrex letters of 17th March and 27th May. I am satisfied the data is reliable in channels 4 through 8. There is no need to resurvey any of the January 1980 data.

The anomaly at 5280W on 5200N as pointed out by Geof Dickson (9th June) is the most obvious response. The response on 5000N at 5400W must be delineated by lines to the south.

The response at 5340W on 5300N is still worthy of consideration. Some supporting geological or geochemical evidence would be necessary before drilling ^{could} be contemplated. The other responses discussed in my memo of 11th February are too weak to be considered further.



D. B. Trussell

DBT:CS

APPENDIX III

PETROLOGY

Central Mineralogical Services



39 Beatts Road
Newport, SA 5007
Telephone 425511

Mr. D.B. Orr
Divisional Geologist
Australian Anglo American Ltd.
581, Little Collins Street
MELBOURNE / VIC. 3000

14th July, 1980

REPORT CMS 80/6/41

YOUR REFERENCE:	Sample Submission Form No. 5242
DATE RECEIVED:	26th June, 1980
SAMPLE NOS.:	Access Track 350 m, Adit 7 m, Minops Costean 166.8 m, 5080N/5000W, 5200N/5300W; 5600N/5230W
SUBMITTED BY:	D.S. Thynne
WORK REQUESTED:	Petrology

H.W. Fander

H.W. Fander, M. Sc.

REPORT CMS 80/6/41Godkin Lease Samples

Six samples were received for sectioning and petrological description; thin-sections were prepared of all rocks, and a polished section of the Mine Adit (7 m) was also prepared and is described below; the rocks are briefly described in the accompanying table.

Mine Adit 7 m (P.S. 32451)

The sulphides are chalcopyrite, pyrite and arsenopyrite, with minor amounts of the secondary sulphides chalcocite and covellite. The pyrite is all "secondary", as granular masses completely replacing pyrrhotite, but preserving pyrrhotite textures. Arsenopyrite forms individual euhedral crystals, and chalcopyrite occurs as irregular masses up to 1-2 mm in size, marginally altered to secondary copper sulphides. No cassiterite was detected.

Summary

The only rock which was correlatable with Crimson Creek formation (as known to the author) was 5200N/5300W, a lithic greywacke not unlike the andesitic tuffaceous greywackes in the Renison Bell area. The gabbro is presumably petrogenetically related to the mafic/ultramafic complexes of Cambrian age. The other sediments are unfamiliar.

The style of mineralisation is consistent with other assemblages associated with cassiterite in the district, though no tin minerals were actually detected; perhaps this is a sampling problem, not necessarily an absence of cassiterite.

H.W. Fander, M. Sc.

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
Access Track 350 m (T.S. 32450)	Metasomatised Gabbro. 50-60 % labradorite, but largely and selectively replaced by hydro-muscovite aggregates; 40-50 % fresh augite, completely unaffected.	Coarse gabbroic fabric, with intersertal textures.	Pseudomorphs of Mg-chlorite after ?hornblende and/or biotite.	Alteration pattern is unusual, as normally pyroxene is more susceptible. Basic intrusive, unmetamorphosed.
Adit 7 m	Quartz-Tourmaline-Sulphide rock. Typical vein-type quartz, patches of matted ultrafine fibrous tourmaline, irregular patches of sulphides (see separate description).	Vein fabric, no relict sedimentary features recognisable.	Ultrafine secondary alteration products from oxidation of sulphides.	No cassiterite recognised in thin-section despite careful search, but mineral assemblage is favourable.
Minops Costean 166.8 m	Feldspathic Sandstone. Framework of subrounded to rounded grains of quartz, closely packed, with scattered argillised feldspar grains. Iron-stained throughout.	Faintly bedded, well-sorted/sized; average grainsize = 0.3 mm.	A few grains of chert, quartzite, muscovite. Quartz cement.	Featureless, sandy sediment; unmetamorphosed, but weakly stressed with limonite-filled fractures.
5080N/5000W	Lithic Sandstone. Bulk of framework consists of rounded grains of mudstone/shale/fine siltstone, with rounded quartz, highly altered ?mafic/ultramafic grains.	Moderately sorted, 0.1 to 1.0 mm grainsizes (mostly 0.5-1 mm). Bedded, indurated.	Dark, highly ferruginous grains; detrital, leucoxenised magnetite/ilmenite.	Could be classified as a lithic greywacke. ?Mafic/ultramafic grains possibly from local sources, but severely altered.
5200N/5300W	Lithic Greywacke. Small subangular/subrounded fragments of quartz, chert, altered igneous and sedimentary rocks, sericitised feldspars, chlorite aggregates, mica flakes; argillic matrix.	Average grainsize 0.1 to 0.2 mm, well-bedded, well-sorted, laminated/banded.	Heavy-mineral bands. Weakly phlogopitised, with sulphide patches.	Typical Crimson Creek (Red Rock) formation, with weak pervasive metasomatism and shearing.
5600N/5230W (T.S. 32455)	Metasomatised Sandstone. Mainly subrounded quartz grains, with lithic and feldspathic grains replaced by fine tourmaline, phlogopite, sericite.	Faintly bedded, well-sized/sorted, average grainsize 0.3 - 0.5 mm. Minor fracturing.	A few clastic muscovite flakes, chert. Iron-staining throughout.	Lithology quite similar to Minops Costean 166.8 m, but selective replacement of grains by metasomatic minerals.

060

177

NB

Assay results of rock samples
have not been received.
These will be sent later

APPENDIX IV

ASSAY RESULTS OF ROCK SAMPLES

G O D K I N

		Cu	Pb	Zn	Ag	As	Au	Sb	Sn	Mo	W
5200N 5240W Lode at surface in Creek	<u>FRASER MINE. (SHAFT). LODE AT SURFACE.</u> 28cm wide. Network of quartz well develop on footwall half. Encloses stubbs of Aspy (Embedded in qtz). Aspy & Chalco between qtz.	4950	136	49	3.0	2.2%	0.117	75	370	8	X
5200N 5245W Lode 00m Adit on Coord.	<u>FRASER MINE ADIT I ENTRANCE. LODE.</u> Footwall section of Lode 8cm wide. Br qtz-lim rock. Weathered remains after Aspy. Possibly some cassiterite & copper minerals.	2850	78	24	18.5	1.1%	0.183	150	1.4%	5	X
5200N 5245W Hanging wall of Lode at 00m.	<u>FRASER MINE ADIT I ENTRANCE. MARGIN.</u> Grey bedded quartzite. Hornfelsed. Haematite-Lim along fractures. White qtz veins. Some Aspy and sericite alteration.	540	59	17	4.3	2160	0.008	X	260	X	X
5200N 5245W Lode 7m	<u>FRASER MINE ADIT I. 7m FROM ENTRANCE. LODE.</u> REFER TO PETROLOGY. Massive sulphide except for minor qtz. Mainly Aspy and chalcopryrite and copper oxides.	4.35%	143	200	10.5	5.6%	0.250	90	1150	9	X
5200N 5245W Lode 12m	<u>FRASER MINE ADIT I. 12m FROM ENTRANCE LODE.</u> Fine gr sulphides mainly Aspy with possibly copper oxides and minor cassiterite. Sn qtz-lim-haematite. Network. Some boxwork.	2.25%	37	170	31.0	6.4%	0.267	40	1.7%	5	X
5200N 5245W Hanging wall margin 15.5m	<u>FRASER MINE ADIT I. 15.5m FROM ENTRANCE. MARGIN.</u> Grey fine gr hornfelsed sa/ss. Narrow qtz-lim veinlets with Aspy. Some lim-haematite on fractures. Also Aspy dissem.	375	17	200	1.3	1120	0.008	30	380	X	X
5200N 5245W Lode 21m	<u>FRASER MINE ADIT I 21m FROM ENTRANCE. LODE.</u> Predoin partly oxidised Dark grey-massive fine gr ore. Aspy-Chalcopryrite-also (Po, Py, marcassite copper oxide).	5.75%	104	685	15.3	11.5%	0.258	110	1.2%	8	X
5200N 5200W Lower adit 10.25m	<u>FRASER MINE ADIT 2. 10.25m ON CROSS CUT.</u> Grey fine gr Hornfelsed Sa bedded dissem po in some layers. Magnetic. Minor Aspy and Py dissem. Minor qv.	39	X	68	0.1	64	0.008	X	15	X	X
5200N 5200W Lower Adit 23m	<u>FRASER MINE ADIT 2. 23m ON CROSS CUT.</u> Grey fine gr. Hornfelsed sa/ss Jointed. Heavily Lim stained. Po, Aspy, Chalcopryrite & other Cu min) in layer 1 to 2mm thick. Aspy also dissem with po (Covellite?)	205	X	158	X	60	0.008	X	110	X	X
MINOPS COSTEAN B 40m	<u>RUBBLE IN COSTEAN.</u> Quartz-limonite-py-Aspy. Boxwork develop. Possible sheared material. Surrounding rocks are gy Hornfelsed banded Sa/ss.	1560	230	195	4.8	7600	0.017	65	1.2%	6	50
MINOPS COSTEAN E 166m	<u>QUARTZ VEIN EXPOSED IN END OF COSTEAN. (LENS?).</u> Chlorite/mylonitic margins & inclusions. White quartz. In costean associated with tuffaceous horizon.	26	6	9	0.4	116	0.008	9	400	3	X
MINOPS COSTEAN D 20m	<u>BRECCIA. 20M EAST OF DDH COLLAR.</u> Angular Clast in lim/haem semi gossan. matrix. Aspy. Minor quartz veinlets. Breccia in gy hornfelsed Sa/ss.	655	81	115	5.1	3800	0.008	20	1150	X	X
MINOPS COSTEAN E 120m	<u>GREY WEATHERED SA AND F GR SA/SS BEDS.</u> Some a purplish colour.										
5000N 5060W	<u>ON NE DUNDAS TRAMWAY.</u> Rhyolitic lithic tuff. clasts of pale chert No.55. 2mm in places. Matrix chlorite alteration. Some small qtz phenocryst. Small mica flakes.	39	5	240	X	6.0	0.008	X	X	X	X
5267N 5000W Tie Line	<u>FROM CENTRE OF OLD SMALL COSTEAN.</u> Gy quartzite. Quartz veining semi parallel conformal in quartzites. Minor Aspy and lim staining.	165	10	61	0.5	124	0.008	8	160	4	X
5330N 5000W Tie Line	<u>COSTEAN (OLD) ON TIE LINE.</u> Qtz-feldspar porphyry-tuffaceous/brecciated chert and siltstone fragments. Dyke-mainly rhyolitic. Sample near margin with quartzites.	110	4	34	0.4	184	0.008	6	480	X	X
5340N 5000W Tie Line	<u>COSTEAN (OLD) ON TIE LINE.</u> Gy quartzite. Quartz veining. (4mm wide). Lim stain Line T2N 300E of CGFA near site. (Near margin of dyke?)	65	8	18	0.1	76	0.008	9	390	X	X

G O D K I N

		Cu	Pb	Zn	Ag	As	Au	Ab	Sn	Mo	W
5000N 5200W	<u>SITE IN GREAT NORTHERN CREEK.</u> Grey Hornfelsed sa/sa. Near margin of dyke and also of quartz vein trending NNW towards Frazer Mine workings.	27	11	70	X	13	0.008	X	15	X	X
5000N 5400W	<u>NEAR FLUME.</u> Gy Hornfelsed sa/sa beds. Sa pred. Dissem py/Aspy & thin layers of lim on fracture planes.	54	4	69	0.1	22	0.008	X	10	X	X
5100N 5180W	<u>ON EDGE OF GREAT NORTHERN CREEK.</u> Gy fine gr Hornfelsed interbedded sa/ss. Beds 1 to 10mm wide. Aspy and Po. (Magnetic) along or impreg in narrow sa beds.	62	12	73	X	64	0.008	X	X	8	X
5200N 5160W	<u>ON EDGE OF GREAT NORTHERN CREEK.</u> Gy fine gr Hornfelsed bedded sa/ss. Some of Sa bands (some up to 2-3mm wide) are heavily impreg with po.	270	26	108	0.5	320	0.008	X	70	X	X
5600N 5220W	<u>QUARTZ VEIN/LENS.</u> Blebs of Aspy and (Cassiterite?) Haematite and Limonite staining.	1355	440	37	2.2	1.5%	0.257	290	4800	7	X
5600N 5230W	<u>QUARTZITE.</u> In fine gr Sa. Some lim staining along fractures. Small flakes of mica. Mapped as rhyolitic horizon.	175	35	21	0.7	380	0.008	10	70	X	X
5800N 5220W	Gy interbedded Sa/ss. Some lim staining. Darker finer layers probably Carbonaceous. Med gr Sa beds 1-2mm wide.	74	15	38	0.1	180	0.008	5	40	X	X
6000N 5430W	<u>IN NIT CREEK.</u> Grey bedded Hornfelsed sa/ss. Po impreg in layers 1mm wide, graded at base of fine grained beds.	66	X	127	0.2	70	0.008	X	X	X	X