

PROJECT A-78-60

DISC 139

PROGRESS REPORT

JULY TO DECEMBER 1982

ZEEHAN

EXPLORATION LICENCE 4/78

TASMANIA

P.A. JONES

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REPORT 347

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no AMG



## SUMMARY AND CONCLUSIONS

Exploration Licence 4/78 was granted to Amoco Minerals Australia Company for a period of six months from June 14, 1978 with further renewals subject to Mines Department approval. Amoco has now earned a 60% equity in the previously negotiated Electrolytic Zinc farm-in area embracing the southern portion of the Austral prospect (includes 60M/77 and 4W/77). The tenement encompasses potential shale carbonated hosted basemetal prospects.

Precambrian basement sediments are overlain by Cambrian sediments and volcanics which are localized within graben structures. These are in turn overlain by Lower Ordovician conglomerate. Transgressive upon these units are Ordovician to Devonian basinal units including sandstones, siltstones, shales, dolomites and limestones.

Grids were extended and infilled in preparation for further soil geochemical surveys designed to close off and define previously delineated anomalies.

Thirteen trenches totalling 687 meters were excavated at the Oceana prospect using hydraulic excavators. The trenches varying in depth from 0.5 to 7.0 meters were mapped in detail at a scale of 1:200 and channel sampled over widths varying from two to five meters. Assays from six of the trenches proved to be strongly anomalous and outlined a continuous mineralized zone 365 meters in length with widths varying from four to 100 meters.

Rockchip sampling of a 3000 gamma magnetic response on the Nubeena prospect returned weakly anomalous results.

Bedrock sampling programs were conducted on the southern grids (including Rose Valley, Baura, Greives and Myrtle prospects) and also on the extended Nubeena grid.

An ongoing program of diamond drill core grinding to quickly scan previously unassayed core continued during the period with the best three meter zone from ZT-81A-8, 9 and 10 assaying 0.48% lead.

Detailed ground magnetic surveys were conducted on the southern grids and also on the Nubeena and Pyramid prospects during the period. The surveys were terminated prematurely due to equipment malfunction.

Geoterrex was contracted to implement a large loop, electromagnetic survey (Geonics EM-37) on the Oceana, Austral and North Austral prospects. The data for this survey are currently being processed.

A program of downhole surveying (including Sirotem, gamma and density) was conducted by Geox on holes drilled on both the

Oceana and Nubeena prospects. The data for this survey are currently being processed.

Amoco has identified nine airborne magnetic zones being of potential interest after examining the recently received West Coast Airborne Magnetics Survey data flown by Geoex for the Department of Mines. Three zones have been ground checked and reconnaissance soil sampled. The remainder will be ground checked in 1983.

Five holes totalling 1564 meters were diamond drilled at the Oceana and Nubeena prospects and a sixth hole is in progress. Encouraging lead-zinc-silver mineralization has been encountered in all holes. Best intercepts were from ZT-82-11 (2.5 meters of 13% lead + 1.3% zinc + 49g/t silver), ZT-82-12 (4.0 meters of 11.6% lead + 0.3% zinc + 80g/t silver) and ZT-82N-1 (2 meters of 23.4% lead + 0.3% zinc + 313g/t silver).

Geochemical surveys, including bedrock, stream sediment and rock chip sampling, will be conducted on the Greives and Myrtle Extended and Pyramid prospects and also over prospective ground (Bell Shale and Amber Slate) not explored to date.

Reconnaissance ground magnetic and soil sampling surveys will be conducted on the six remaining airborne magnetic responses.

An assessment for further drilling on the Oceana prospect will be made on completion of ZT-82-13.

The Myrtle and Pyramid grids will be geologically mapped and current maps will be updated using additional information gained from diamond drilling programs and geophysical surveys.

Costeaning will be carried out where necessary to aid the geological interpretation and to elucidate the extent and type of mineralization observed at or near the surface on all the grids.

#### LOCATION AND ACCESS

Exploration Licence 4/78 (EL 4/78) is located immediately south of the town of Zeehan which has a population of approximately 5,000. (Figure 1). The Emu Bay Railway and a sealed road connect Zeehan with the port of Burnie located 140 kilometers to the north. Access within the tenement is relatively good for western Tasmania, as a number of tracks are located along the dolomites which form topographic lows.

Zeehan is the service town for the Renison Tin Mine and no difficulties would be anticipated with respect to power, water and transport should a mine be developed. The area has an annual rainfall of 250 centimeters.



606011 Figure 1  
**Location**  
 magnetic declination 13.5° 10 km

#### DESCRIPTION OF THE PROPERTY AND OWNERSHIP

Exploration Licence 4/78 of approximately 208 square kilometers in area was granted to Amoco Minerals for the period of six months from June 14, 1978. The tenement was renewed for six months to July 14, 1983 bringing it into line with its granting date.

Amoco has earned a 60% equity in the previously negotiated farm-in with EZI covering Mining Licence 60M/77 and 4W/77. These embrace the southern portion of the Austral prospect and were designed to cover the slag dumps from the old Zeehan smelters. (Enclosure 1)

Mining Lease 34M/81 encompassing the Oceana Mine environs, was conditionally surrendered to allow the title to be transferred into Amoco's current Exploration Licence 4/78.

Four other mining leases are within the tenement. Two leases granted to J.N.R. Enraght-Moony (38M/77 and 39M/77) are designed to embrace slag dumps from the Oonah Tin Mine. Two small leases held by Tasmanian Mineral Developments were forfeited late in 1981 due to non compliance with the Mining Act. These leases, covering the mine environs at the Queensberry deposit, were reissued for a twelve month period, subject to Mines Department approval, to the Malcolm Bendall Mining Syndicate at the Wardens Court.

## HISTORY AND PREVIOUS EXPLORATION

A detailed description of the mining history and exploration carried out within EL 4/78 has been summarized in two previous progress reports:-

'Progress Report for the period June 1979 to June 1980' (Amoco Report 179) and 'Progress Report for the period June 1980 to June 1981' (Amoco Report 249).

## REGIONAL GEOLOGY

The basement complex is comprised of Precambrian schists, quartzites, siltstones, shales, spillitic or keratophyric lavas and pyroclastics which form a stable craton to the northwest of the tenement. The Lower Cambrian units such as the Crimson Creek Formation are predominantly shallow water sediments including argillites, grits, and tuffaceous arenites. Cambrian sedimentation appears confined to fault bounded blocks or graben structures.

The Ordovician to Devonian strata of the Zeehan Basin occur within a series of synclinal structures with northwest axial trends. The quartzose and hematitic Owen Conglomerate at Mt. Zeehan was deposited within a graben structure in the Lower Ordovician period and is transgressively overlain by micaceous siltstones, tubicolular sandstones, grits and minor sandstones and

shales. It is the time equivalent of the Moina Sandstone which was deposited in the Zeehan Basin. The Moina Sandstone is overlain disconformably by the Ordovician Gordon Limestone. The disconformity is marked by a white conglomerate followed by an interbedded sequence of siltstones, dolomites and minor sandstone and limestones. The Gordon Limestone is comprised of interbedded limestones and dolomites with numerous breccia horizons and zones of clastic sedimentation including fossiliferous sandstones, siltstones and shales. Siluro-Devonian sediments within the basin are fossiliferous marine, coarse grained and cross bedded quartzose sandstones, siltstones, minor quartzites and dolomitic to pyritic shales and siltstones.

The western portion of the tenement has been blanketed by Permian glacials, lacustrine sediments and Jurassic dolerite flows.

Extensive Tertiary and Quaternary deposits blanket much of the prospective dolomite and shale units.

The Zeehan area has been intensely disturbed by the Paleozoic Tabberaban orogeny which caused major northwest folding and faulting. East and northwest trending fault systems are considered to have been contemporaneous. North-northeast striking faults are thought to have developed in post Permian times and are not common within the tenement area.

A geologic map of the tenement and surrounding area was included in a previous progress report for the period July 1978 to July 1979. (Amoco Report 151, Enclosure 1)

WORK CONDUCTED BY AMOCO

Gridding, costeaning, downhole geophysical, large loop electromagnetic, ground magnetic, airborne magnetic follow up and geochemical surveys were conducted during the period July 1982 to January 1983. Six diamond holes totalling \* 1564 meters were drilled to test down dip mineralized zones on the Oceana prospect and to test a 3000 gamma magnetic zone delineated on the Nubeena prospect (Prospect locations shown on Enclosure 2).

All computer contouring of geochemical and geophysical surveys was conducted by CEANET of Sydney.

\* Hole ZT-82-13 drilling ahead at 220 meters - December 31, 1982

### Gridding

A total of 4.1 line kilometers of extension and infill gridding was completed on both the Myrtle (2.1 kilometers) and Baura (0.8 and 1.2 kilometer) prospects (Table 1) in preparation for further soil geochemical surveys designed to close off and define previously delineated anomalies.

TABLE 1 - GRIDDING SUMMARY

Myrtle Grid	50700N, 50800N, 50900N from 60200E to 60700E	2.1 km
Baura Grid	47000N and 472000N from 61000E to 61400E	0.8 km
Baura Grid	45250N, 45300N, 45350N from 60700E to 61100E	1.2 km

### Costeaning

Thirteen trenches totalling 687 meters were excavated at the Oceana prospect using both O & K and JCB hydraulic excavators. The trenches, varying in depth from 0.5 to 7.0 meters were mapped in detail at a scale of 1:200 and sampled over widths varying from two to five meters (Table 2 and Appendix 1)

The costeans were designed to trace the sub-outcropping lead-zinc-ironstone horizons south of Costean E on line 3700N. The trenching proved to be extremely difficult and dangerous to map and sample due to thick, unconsolidated fluvio-glacial gravels lying from one to seven plus meters in depth. However assays from six of the trenches (Table 3) were strongly anomalous and outlined a continuous mineralized zone (Enclosure 4) 365 meters in length with widths varying from four to 100 meters but averaging approximately thirty meters (includes both lode horizons). A geochemical tail is observed (assaying >1% lead/zinc) for a further 200 meters south of the mineralized body and lies directly on strike from strongly anomalous results (up to 33.8% lead, 8.5% zinc, 303g/t silver over two meters) obtained at the south Oceana workings (Appendix 1). Further costeaning

assay results for each costean are appended (Appendix 1). 606019

TABLE 2 : OCEANA COSTEAN DATA

NORTHING (LINE)	EASTINGS	NON-SAMPLED ZONES	REASON	TOTAL LENGTH (M)
3650N	1273-1303	1277-1279	Caved	28
	1398-1466	1443-1449	Road	62
3600N*	1378-1451	1434-1438	Road	74
3550N	1350-1414			64
3500N	1350-1447	1372-1377	Caved	
		1390-1408	Head frame	74
3450N	1330-1400	1342-1354	Old open cut	
		1356-1360	Old open cut	
		1364-1376	Old open cut	42
3400N	1300-1395	1446-1463	Road	95
3350N	1365-1401			36
3300N	1350-1423	1356-1375	Caved	54
3200N	1364-1442	1394-1420	Sink hole	52
2850N	1410-1450			40
2795N	1410-1450			40
2750N	1425-1451			26
			TOTAL	687

\* Costean oblique to gridded line - see Enclosure 4

TABLE 3 : OCEANA - SIGNIFICANT COSTEAN RESULTS

Costean	Interval (Meters)	Pb %	Zn %	Ag g/t
3700N #	1317-1337 = 20	1.4	0.1	32.3
	1386-1398 = 12	2.1	0.5	53.3
	1410-1472 = 62	3.9	0.9	31.1
	incl 1467-1472 = 5	16.8	6.4	37.0
3650N	1398-1400 = 2	0.2	1.0	3.0
	1404-1408 = 4	0.9	1.6	10.5
	1412-1442 = 30	3.5	0.4	12.1
	incl 1424-1442 = 18	4.3	0.4	13.7
	1295-1303 = 8	0.1	1.3	1.8
	1448-1466 = 18	2.0	3.5	31.5
incl 1456-1458 = 2	4.7	6.7	54.0	
3600N	1382-1386 = 4	0.9	0.2	7.0
	1396-1420 = 24	6.7	1.3	52.4
	incl 1400-1406 = 6	9.8	0.7	49.0
	and 1410-1420 = 10	8.5	2.2	74.9
	1420-1434 = 14	0.3	1.6	6.4
	1442-1446 = 4	0.5	1.5	5.0
3550N	1364-1376 = 12	2.6	0.2	72.7
	incl 1368-1372 = 4	4.6	0.1	183.0
	1380-1384 = 4	2.1	0.0	1.7
	1390-1392 = 2	4.1	0.3	3.0
	1404-1406 = 2	0.9	0.3	1.0
3500N	1352-1372 = 20	6.4	0.8	37.6
	incl 1358-1370 = 12	9.9	0.9	51.8
	and 1377-1387 = 10	11.8	0.9	172.0
3450N	1360-1364 = 4	1.4	0.5	8.1
	1380-1388 = 8	10.7	0.3	91.5

NB Part of eastern lode zone and all of western lode zone masked and unsampled due to previous old open pit workings and backfilling.

Costean	Interval (Meters)	Pb %	Zn %	Ag g/t
3400N	1370-1372 = 2	4.6	0.2	53.0
	1382-1386 = 4	4.2	0.1	45.0
3350N	Nil			
3300N	1381-1385 = 4	1.3	0.2	3.8
3200N	1366-1368 = 2	1.0	0.2	0.5
	1378-1392 = 14	0.4	1.4	1.6
	1426-1432 = 6	1.0	0.8	9.3
2850N	1438-1440 = 2	33.8	8.5	303.0
2795N	1434-1438 = 4	4.9	0.6	40.0
2750N	1435-1439 = 4	9.0	1.5	139.5

‡ Costean data taken from previous Amoco Progress Report 249.

#### Analytical Techniques

Rockchip and bedrock geochemical samples were dried, crushed and pulverised and despatched to Comlabs Pty Ltd in Adelaide and to Analabs in Tasmania for analysis for copper, lead, zinc, silver and tin. Analysis for basemetals was by AAS after hydrochloric acid digestion and tin by XRF.

Rockchip samples were analysed for an additional twelve elements, tungsten, arsenic, antimony and barium by XRF and gold, nickel, cobalt, bismuth, molybdenum, vanadium, cadmium and manganese by AAS. Drill core and fillet samples were analysed for basemetals plus manganese and in the case of hole ZT-82N-1 and the airborne magnetic anomalies, for nickel, cobalt, chrome, tin, tungsten and gold. Check assays on every twentieth sample were carried out by

Amdel in Adelaide. Costean samples were assayed for copper, lead, zinc, silver and tin with minor sections being analysed for antimony and arsenic.

### Rockchip Geochemistry

Eight composite rock chip samples have been taken from outcropping ironstones, quartzites and other sediments coincident with the 3000 gamma ground magnetic response delineated at the northern extremity of the Nubeena prospect (Locations plotted on Enclosure 5)

Most samples proved to be only weakly anomalous (maximum 0.1% zinc) however two had anomalous gold values of 0.1 ppm (Table 4).

TABLE 4 - NUBEENA ROCKCHIP & DUMP SAMPLING

No. Sample	Co-ordinates	Rock Type	Cu	Pb	Zn	Ag	Sn	Au	Sb	Ni	Co	Bi	Mo	V	Cd	Mn	W	As	Ba
1 79851	2115N:1625E	Ironstone (dump)	8	46	110	<1	4	0.10	<4	60	18	<4	<4	220	<1	460	<10	8	15
2 79852	2102N:1754E	Siltstone - pyritic. D/grey carbonac	20	200	60	<1	4	<0.05	24	26	12	<4	<4	20	<1	32	<10	16	300
3 79853	2105N:1790-1800E	Hematitic tuffaceous sst	360	32	65	<1	<4	<0.05	50	26	8	<4	30	160	<1	46	10	170	220
4 79854	2135N:1555E	Hematitic siltst. (Add + dump)	6	180	100	<1	8	<0.05	16	10	4	<4	<4	20	<1	960	<10	26	200
5 79855	2150N:1625E	Ironstone (composite dump)	4	110	1100	<1	6	0.10	6	380	60	<4	<4	70	<1	2400	<10	165	30
6 79195	2100N:1625E	Ironstone	4	120	230	1	6												
7 79196	2000N:1600E	Tuffaceous siltstone	<2	24	230	<1	<4												
8 79197	2075N:1600E	Quartzite	2	4	26	<1	4												

\* See Enclosure 5 of this report (347) for sample locations

### Bedrock Sampling

Two bombardier mounted Jackro hydraulic auger rigs, bombardier muskeg/Jackro 350 and bombardier J5/Jackro 200 combinations were used successfully to penetrate the thick fluvio glacial gravels blanketing much of the prospective Gordon Limestone sequence. Holes were drilled to an average depth of five meters with top of bedrock samples being obtained at 25 meter intervals along grid lines.

A total of 466 bedrock samples was taken on three prospects including Rose Valley, Baura and Greives with a further 95 samples being hand augered on the Nubeena and Myrtle prospects.

**Myrtle:**

Sampling of extended lines on the Myrtle grid (Enclosure 7) has closed off a 400 by 150 meter anomalous zone containing individual assays with values up to 1.45% lead, 4.1% zinc and 48g/t silver. The prospect may require trenching to ascertain the nature and extent of mineralization and geology.

Nubeena

Hand auger sampling on the northern extension to the Nubeena grid produced erratic weakly anomalous values of up to 210 ppm copper, 600 ppm lead, 240 ppm zinc and 10 ppm tin (Appendix 2). Numerous samples failed to penetrate thick quartzitic talus, however bombadier/ Jackro sampling was impossible due to steep terrain and thick vegetation cover.

**Rose Valley:**

Two 0.8 milligal gravity responses of dimensions 400 by 400 and 200 by 200 meters (Amoco Report 279) were sampled on 200 meter spaced lines from 43800N to 44600N (Enclosures 8 and 9). Nebulous weak to moderate geochemistry was obtained coincident with the gravity responses with values ranging up to 1450 ppm lead and 3800 ppm zinc (background values vary between <1 to 40 ppm lead or zinc). Further reconnaissance sampling was conducted on lines spaced at 600 meter intervals across the prospective horizon south of the gravity responses with weakly anomalous lead (300 ppm) and zinc (500 ppm) assays being returned.

**Baura:**

Reconnaissance sampling was also conducted on lines spaced at 600 meter intervals east of the adjoining Rose Valley prospect at Baura. Two occurrences of strongly anomalous lead-zinc

geochemistry were delineated; the western zone is centered on 60900E from 45200N to 45400N (Enclosures 8 and 9) and has values ranging up to 3.4% lead and 0.47% zinc (background 1 to 40 ppm lead and zinc), the second and eastern zone centered on 61175E on line 47100N ranges up to 1.4% lead and 2.5% zinc. Infill gridding has been conducted over these zones in preparation for more detailed sampling and trenching. The latter possibility is due to the fact that fluvioglacial gravels in this area are on occasions greater than five meters in depth.

#### Grieves:

Further 600 meter spaced reconnaissance sampling was conducted northeast of Baura on the Grieves prospect. Incomplete results obtained to date show weak lead values of up to 760ppm (line 4500N/1100E) and moderate zinc values of up to 2000 ppm and 1300 ppm (line 4500N/1225E and 1825E). Background values from the bedrock geochemistry vary from 10 to 30 ppm for both lead and zinc. No sampling was conducted at the Grieve Mine area due to steep terrain precluding bombadier access. However disseminated galena sphalerite was observed in veinlets within fresh limestone at certain localities. These have yet to be sampled.

#### Diamond Drill Core Filleting

An ongoing program of diamond drill core filleting to quickly scan previously unassayed material from Austral continued during the period with the best individual three meter zones assaying:

ZT-81A-8	Pb 4800 ppm,	Zn 4400 ppm,	Ag 5 ppm,	Ba 1350 ppm
9	Pb 2000 ppm,	Zn 1700 ppm,	Ag 4 ppm,	Ba 320 ppm
10	Pb 2600 ppm,	Zn 2850 ppm,	Ag 3 ppm,	Ba 320 ppm

All core from the 1981 diamond drilling program has now been assayed.



The Muskeg/Jackro 350 auger rig used to penetrate thick gravels blanketing much of the prospective Gordon Limestone sequence.



Ground magnetics surveying at the Pyramid prospect using a Geometrics G856 magnetometer.

### Geophysics

#### Ground Magnetism:

Detailed ground magnetic surveys using two Geometrics G856 magnetometers were implemented on the results of a core testing program at Oceana (Table 4, Report 309) where siderite (ore gangue mineral) was found to be weakly magnetic. Modelling suggested that near surface siderite and limonitic ironstones could be delineated.

Two programs were implemented as problems with the initial survey (computer system malfunction) meant the first program had to be prematurely terminated.

However both the Nubeena and the extended northern portion Nubeena grid (Enclosure 7) and Pyramid grids were completed during the initial survey. A very strong (3000 gamma) anomaly was delineated at 1625E on lines 2000 and 2100N at Nubeena ; the parameters of which have been described in detail. (Appendix 3). Recent diamond drilling of the anomaly yielded (see Table 5 Magnetic Susceptibility of ZT-82N-1 Core) ultramafic and serpentized volcanics overlying probable Precambrian sediments. Two zones of mineralization were encountered in the hole (two meters of 23.4% lead, 0.3% zinc, 313 g/t silver and three meters of 2.6% lead, 0.1% zinc, 69 g/t silver) however these were non magnetic and contained no tin mineralization. A contoured plan for the Pyramid prospect will be included in a later report.

The second survey was undertaken by P. Mewkill (Contract Geophysicist) and centered on the Myrtle prospect. This survey also was terminated before completion due to magnetometer malfunction and only Myrtle, Myrtle Extended and the northern few lines on the Grieves prospect were surveyed. Results of the survey have yet to be checked and contoured but will be reported in the next progress report.

TABLE 5 - ZT-82-N1 MAGNETIC SUSCEPTIBILITY

Depth	Set	Reading	Rock Type	Depth	Set	Reading	Rock Type
10	4.1	0.2		126	6.7	0.0	Weathered Taloy Talc <sup>y</sup> Ultramafic
13	4.2	0.1		131	8.7	0.0	Quartz-siderite breccia
21	6.00	2.1		136	7.6	0.0	
26	7.8	1.3		141	7.6	0.0	Serpentinized ultramafic
31	7.9	0.0		147	7.2	0.0	
36	4.1	0.4		153	5.1	0.1	Serpentinized ultramafic
41	5.8	3.0		158	5.1	0.1	
49	4.8	0.0		163	5.2	0.0	Serpentinized ultramafic
52	6.8	0.5		169	9.3	0.0	
58	0.2	0.3		175	9.3	0.0	Serpentinized ultramafic
70	8.9	0.5	Serpentinized	180	9.0	0.0	
76	5.3	0.2	Ultramafic,	185	9.0	0.0	Interbedded sediments-siltst/ shales and breccias
81	5.7	1.8	sideritic veined	190	8.8	0.0	
86	7.0	0.1	and often brecciated	195	5.4	0.0	Interbedded sediments-siltst/ shales and breccias
91	7.3	0.0		200	8.2	0.0	
96	7.6	0.1		205	8.2	0.1	Interbedded sediments-siltst/ shales and breccias
101	8.0	0.0		210	6.9	0.0	
106	8.6	0.1		215	5.7	0.0	Interbedded sediments-siltst/ shales and breccias
111	9.0	0.1		220	5.7	0.0	
116	0.2	0.1		225	5.2	0.0	Interbedded sediments-siltst/ shales and breccias
121	6.7	0.1		229	5.2	0.0	

Note: Mineralized intercepts 150-152, 171-174 meters.

#### Geonics EM-37:

Geoterrex was contracted to implement a surface, large loop, transient electromagnetic survey (Geonics EM-37) on three prospects including the Oceana, Austral and North Austral. The loop configurations and parameters (Table 6) were designed individually for each prospect endeavoring to cover all prospective zones. Two lines were surveyed approximately 250 meters further west on the North Austral grid cutting the strong ground magnetic response observed on the Nubeena prospect.

The data for this survey are currently being processed and will be included in the next progress report.

**Downhole Geophysics:**

A program of downhole surveying was conducted by Geox on holes ZT-82-10A, 11 on the Oceana prospect and ZT-82-N1 on the Nubeena prospect. A mobile truck mounted system was used enabling Sirotem natural gamma and density surveys to be conducted to depths of 600 meters. The loop configurations and parameters are annotated in Table 7. All holes were cased to bottom with 40 millimeters internal diameter plastic to prevent caving. Hole ZT-82-12 was found to be blocked at 325 meters (approximately 150 meters above base) and was not surveyed.

The data for the survey are currently being processed and will be included in the next progress report.

TABLE 6 : GEONICS EM-37 LOOP PARAMETERS

Prospect	Northing	Easting	Size (m)
OCEANA	3650N	1750E	700 x 325
	3000N	1400E (LE)	
AUSTRAL	1250N	1375E (LE)	700 x 325
	550N	1050E	
NORTH AUSTRAL	2850N	1375E (LE)	700 x 325
	2150N	1050E	

\* (LE) Leading Edge

TABLE 7: GEOEX - OCEANA DOWNHOLE SURVEYS (Sirotem, Gamma, Density)

Hole	Co-ords	Declin.	Loop Co-ords	Size (m)
ZT-82-10A	3415N 1562E	-65	3300N to 3500N from 1425E (LE) to 1625E	200 x 200
ZT-82-11	3602N 1374E	-45	3500N to 3700N from 1175E (LE) to 1375E	200 x 200
ZT-82-12	3605N 1230E	-64	Hole blocked at 325m	N/A
ZT-82-13	3685N 1250E	-60	Uncompleted	N/A
ZT-82N-1	2090N 1717E	-54	2200N to 2000N from 1750E to 1950E	200 x 200

#### Airborne Magnetics:

Results were received from an airborne magnetic survey line spacing - 500 meters) conducted by Geox in conjunction with the Tasmanian Mines Department late in 1982 (Enclosure 10). Several anomalies were identified by Amoco's Geophysicist as being of potential interest. These have been labelled alphabetically from A to I (not in order of merit) and do not include the strong response delineated over the Nubeena prospect, which was recently ground surveyed and drilled.

Mitre Geophysics was contracted to ground check three of the above anomalies (Appendix : Anomalies E, F, I) using a Geometrics G816 magnetometer. The line of reconnaissance soil sampling was conducted over each of the magnetic zones (Appendix 4) and assayed for copper, lead, zinc, silver, tin, gold, tungsten, chromium and nickel.

Coincident with Anomaly E are well defined but weakly anomalous

copper, zinc, lead and tin values over 100 meters warranting further investigation. Anomalies F and I showed little geochemical response apart from Anomaly I which showed very weak zinc, lead, copper anomalism on both the footwall and hanging wall sides of the magnetic response.

Six further anomalies need reconnaissance ground follow up.

#### Regional Bouguer Gravity:

Department of Mines Regional Bouguer gravity contours covering the joint venture area are also included in this report (Enclosure 4). Interpretation of the data is currently in progress.

#### Diamond Drilling

Five holes totalling 1,563.9 meters were drilled at the Oceana and Nubeena prospects and a sixth hole is in progress (current depth as at December 31 1982 - 220 meters). Holes ZT-82-10A, 11, 12 and ZT-82N-1 intersected encouraging lead-zinc-silver mineralization. Drilling details and incomplete assay results from both the Oceana and Nubeena and from previous drilling at Austral are summarized (Tables 8, 9, 10). Drill sections, complete assay results and logs will be included in the next progress report.

TABLE 8 - DRILLING DETAILS

Hole	Co-ordinates		Declin	Az	Depth (m)
ZT-82-10	3415N	1560E	-67.5	GW	190.7
ZT-82-10A	3415N	1562E	-65	GW	574.6
ZT-82-11	3602N	1374E	-45	GE	87.9
ZT-82-12	3605N	1230E	-64	GE	481.6
ZT-82-13*	3685N	1250E	-60	GE	220.0
ZT-82N-1+	2090N	1717E	-54		229.1

+ Drilling 15° South of GW

\* Drilling ahead (planned depth 450m)

TABLE 9 - OCEANA PROSPECT - SUMMARY OF DIAMOND DRILLING

HOLE	CO-ORD	BEARING	DECLIN	DEPTH (m)	COORDINATES AZIMUTH DEFLECTION (at terminal depth)	RESULTS (* including)
ZT-79-2	3700N 1500E	270°G	-60°	235.90	Unknown (acid)	65-218=153m @ 5.10% Pb + 3.50% Zn + 41.7g/t Ag * 65- 96= 31m @ 0.66% Pb + 3.28% Zn + 1.0g/t Ag 96-122= 26m @ 22.26% Pb +11.69% Zn + 203.4g/t Ag *103-118= 15m @ 33.29% Pb +19.22% Zn + 336.7g/t Ag 122-204= 82m @ 0.68% Pb + 1.01% Zn + 3.0g/t Ag *204-218= 14m @ 8.37% Pb + 2.95% Zn + 56.7g/t Ag
ZT-80-3	3200N 1515E	270°G	-60°	399.70	3075N 1335E	237-238= 1m @ 8.25% Pb + 0.39% Zn + 73.6g/t Ag
ZT-80-4	3420N 1490E	270°G	-66°	360.30	3370N 1350E	247-258= 11m @ 12.00% Pb + 4.0% Zn + 89g/t Ag *250-258= 8m @ 15.00% Pb + 5.40% Zn + 113g/t Ag 302-307= 5m @ 22.30% Pb + 1.99% Zn + 323g/t Ag *304-307= 3m @ 36.0% Pb + 3.2% Zn + 530g/t Ag
ZT-80-5	3600N 1590E	270°G	-65°	475.30	3530N 1350E	No visible mineralization
ZT-80-6	3650N 1350E	90°G	-60°	330	3658N 1506E	69- 72= 3m @ 1.52% Pb + 0.28% Zn + 13.3g/t Ag 112-117= 5m @ 1.76% Pb + 1.20% Zn + 6.6g/t Ag 126-134= 8m @ 1.22% Pb + 0.24% Zn + 5.5g/t Ag 212-220= 8m @ 0.45% Pb + 1.39% Zn + 1.0g/t Ag
ZT-80-7	3420N 1250E	037°G	-50°	250	3383N 1420E	167-169= 2m @ 12.0% Pb + 11.0% Zn + 70g/t Ag
ZT-80-8	3700N 1575E	270°G	-55°	228	3722N 1424E	160-167= 7m @ 0.6% Pb + 3.12% Zn + 13.7g/t Ag *165-167= 2m @ 1.7% Pb + 7.7% Zn + 29.0g/t Ag
ZT-80-9	3600N 1400E	006°G	-50°	200.20	3722N 1424E	1- 24= 23m @ 2.82% Pb + 2.12% Zn + 9.9g/t Ag * 4- 9= 5m @ 7.30% Pb + 1.88% Zn + 16.8g/t Ag 120-186= 66m @ 2.45% Pb + 0.82% Zn + 12.5g/t Ag *148-162= 14m @ 3.25% Pb + 0.4% Zn + 8.7g/t Ag 172-186= 14m @ 5.80% Pb + 1.28% Zn + 21.7g/t Ag *182-186= 4m @ 12.95% Pb + 3.09% Zn + 76.0g/t Ag
ZT-82-10	3415N 1560E	270°G	-67.5	190.7	3411N 1595E	120.5-121=0.5m @ 0.08% Pb + 2.64% Zn + 4.0g/t Ag
ZT-82-10A	3415N 1562E	270°	-65	574.6	3369N 1346E	76- 77 = 1.0m @ 0.09% Pb + 5.8% Zn + 1.0g/t Ag 430-434 = 4.0m @ 3.5% Pb + 0.5% Zn + 41.5g/t Ag 445-447 = 2.0m @ 4.2% Pb + 0.3% Zn + 55.0g/t Ag 398.5-399.5 = 1.0m @ 2.2% Pb + 0.3% Zn + 13.0g/t Ag
ZT-82-11	3602N 1374E	090°G	-45	87.9	Unknown	6- 11 = 5.0m @ 3.5% Pb + 2.7% Zn + 24.6g/t Ag 54- 70 =16.0m @ 3.0% Pb + 2.1% Zn + 14.0g/t Ag * 57- 59 = 2.5m @ 13.0% Pb + 1.3% Zn + 49.2g/t Ag 82- 83 = 1.0m @ 2.2% Pb + 2.3% Zn + 20.0g/t Ag
ZT-82-12	3605N 1230E	090°G	-64	481.6	3594N 1444E	373-377 = 4.0m @ 11.6% Pb + 0.3% Zn + 80.3g/t Ag *374-376 = 2.0m @ 18.6% Pb + 0.3% Zn +131.5g/t Ag 380-384 = 4.0m @ 1.4% Pb + 0.5% Zn + 7.0g/t Ag
ZT-82-13	3685N 1250E	090°G	-60	220*	N/A	Not at target
ZT-W2	3600N 1415E	228°M	-45	15 (abandoned)		3- 14 =11.0m @ 10.2% Pb + 3.3% Zn + 21.5g/t Ag *6.0m @ 16.2% Pb + 3.0% Zn + 31.7g/t Ag

TABLE 10 - NUBEENA - SUMMARY OF DIAMOND DRILLING

ZT-82N-1	2090N 1717E	255°G	-54	229.1	Magnetic Interference Azimuth unknown	150-152 = 2.0m @ 23.4% Pb + 0.3% Zn + 313.0g/t Ag 171-174 = 3.0m @ 2.6% Pb + 0.1% Zn + 69.0g/t Ag
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#### EXPLORATION POTENTIAL

The lead zinc silver deposit at Oceana is of the Irish type and has gross features analogous to the Silvermines deposit containing 12 million tonnes of 7.5% zinc, 2.5% lead and one ounce silver. There is excellent potential for locating further mineralized areas within the highly prospective Gordon Limestone succession.

Further diamond drilling is necessary on the Nubeena prospect and trenching and diamond drilling on the North Austral prospect to realize their potential.

#### PROPOSED PROGRAM

Bedrock geochemical surveys using bombardier mounted Jackro 200 and 350 auger rigs will be conducted on 600 meter spaced lines encompassing both the Grieves and Myrtle Extended grids. Infill sampling will be carried out over anomalous zones. Detailed sampling on 100 meter spaced lines will be conducted on the Pyramid prospect due to its proximity to Oceana. Hand auger sampling will be carried out on the remainder of the Nubeena grid.

A stream sediment sampling program will be implemented to assess the potential of the Devonian Bell Shale and Amber Slate Formations. Both panned concentrates and -80 mesh samples will be taken to ensure that coarse tin and/or gold will not be overlooked.

The remaining six airborne magnetic responses will be reconnaissance sampled and be sureyed by magnetometer. Depending on results obtained these may be later gridded and sampled in more detail.

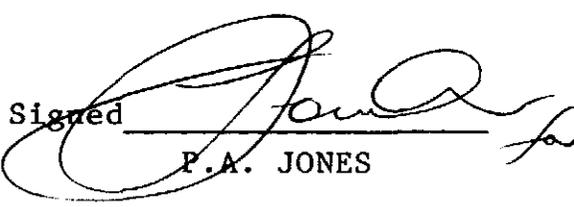
A synthesis of geophysical data, including previous workers plus Amoco, will be undertaken during the period.

Drillhole ZT-82-13 at Oceana is to be completed before an assessment will be made on further drilling both on the Oceana and/or Austral prospects.

The Myrtle and Pyramid grids will be geologically mapped. Additions and reinterpretations to the geology of Austral, Oceana, Nubeena and North Austral prospects will be made incorporating diamond drillhole information from the 1981 and 1982 programs and from the downhole geophysical and magnetometer data.

Costeaning will be carried out where necessary to aid the geological interpretation and elucidate the extent and type of mineralization observed at or near the surface on all the grids.

Signed



P.A. JONES

## AMOCO MINERALS AUSTRALIA COMPANY

EXPENDITURE FOR THE PERIOD JULY 1, 1982 to DECEMBER 31, 1982

EXPLORATION LICENCE NO. 4/78

Salaries and Wages	46,800.66
Supplies	3,703.00
Supplies - maps	30.00
Cookery	5,222.47
Field Office Rent	4,022.21
Field Supplies	13,075.08
Freight	2,449.94
Aircraft Charter	
Travel	9,251.93
Communications	2,238.72
Geophysics	33,430.00
Consultants/Contractors	15,132.50
Drilling	161,383.92
Assays	12,390.81
Legal Fees	703.00
Equipment Rental	5,682.15
Equipment Operation & Maintenance	12,077.82
Property Payments	698.08
Outside Services	2,110.30
	<hr/>
	330,402.59
Overhead	<u>61,332.21</u>
	391,734.80



T.J. CONQUEST

ACCOUNTANT

## BIBLIOGRAPHY

- AMOCO REPORT 249 : P.A. JONES  
Progress Report June 1980 to June 1981  
ZEEHAN PROJECT EL 4/78, TASMANIA
- AMOCO REPORT 279 : P.A. JONES  
Progress Report July 1981 to January 1982  
ZEEHAN PROJECT EL 4/78, TASMANIA
- AMOCO REPORT 309 : P.A. JONES  
Progress Report January to July 1982  
ZEEHAN PROJECT EL 4/78, TASMANIA
- AMOCO REPORT 320 : P.A. JONES  
Progress Report January to July 1982  
EZ/AMOCO JOINT VENTURE - 60M/77 AND 4W/77
- AMOCO REPORT 339 : P.A. JONES  
Progress Report July to December 1982  
PART EL 15/76 DUNDAS TASMANIA

APPENDIX 1

OCEANA COSTEANS

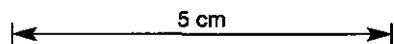
OCEANA PROSPECT  
COSTEAN ASSAYS

NORTHINGS	EASTINGS	LENGTH (M)	LEAD (Pb)	ZINC (Zn)	SILVER (Ag)
3200	1426-1432	6	0.97%	0.75%	9.3g/t
3200	1378-1392	14	0.40%	1.37%	1.6g/t
3300	1381-1385	4	0.19%	1.27%	3.8g/t
3400	1370-1372	2	4.55%	0.22%	53g/t
3400	1380-1386	6	3.13%	0.10%	34g/t
3600	1442-1446	4	0.47%	1.5%	5g/t
3600	1396-1434	38	2.21%	0.77%	17.83g/t
3600	incl 1414-1420	6	12.36%	2.89%	69.83g/t
3600	and 1400-1406	6	10.17%	0.66%	49g/t
3700	1327-1337	10	1.88%	0.07%	38.5g/t
3700	1386-1398	12	2.09%	0.51%	53.3g/t
3700	1412-1442	30	1.85%	0.38%	29.6g/t
3700	incl 1438-1442	4	3.85%	0.53%	32.0g/t
3700	1445-1472	27	6.21%	1.59%	34.07g/t
3700	incl 1462-1472	10	11.38%	3.67%	32.5g/t
3671-3706	1444	35	3.19%	0.44%	29.4g/t
3671-3684	1444 incl	13	5.3%	0.46%	10.2g/t
3707-3705	1444 and	12	2.87%	0.43%	44.8g/t
3550	1390-1392	2	4.1%	0.3%	3g/t
3550	1364-1376	12	2.6%	0.2%	73g/t
3550	incl 1368-1370	2	8.05%	0.3%	289g/t
3500	1358-1372	14	8.7%	0.8%	51g/t
3500	incl 1366-1370	4	21.3%	0.8%	131g/t
3500	1377-1387	10	11.9%	0.9%	176g/t
3500	incl 1379-1383	4	24.7%	1.1%	360g/t
3450	1378-1388	10	8.6%	0.2%	73g/t
3450	incl 1382-1384	2	24.8%	0.2%	241g/t
3650	1448-1466	18	2.0%	3.5%	31.5g/t
	incl 1454-1458	4	3.5%	6.0%	45.4g/t
	and 1448-1450	2	4.9%	2.4%	59g/t
	1412-1442	30	3.5%	0.4%	12.1g/t
	incl 1424-1434	10	5.4%	0.2%	14.8g/t
	1404-1408	4	0.9%	1.6%	10.0g/t
	1295-1303	8	0.1%	1.3%	1.8g/t
3700	1318-1324	6	2.1%	0.10%	59.8g/t
2850	1438-1440	2	33.8%	8.5%	303g/t
2795	1434-1439	4	4.9%	0.6%	40g/t
2750	1435-1439	4	9.0%	1.5%	139.5g/t

Oceana

Costean 2750N/ 1451-1525

Scale 1:250



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Cu	Pb	Zn	Ag	Sn	Sb	As	GEOLOGY	INTERVAL	LITHOLOGY
10	105	260	-0.5*	-	-	-	O V E R B U R D E N Limestone/Mineral- Dolomite / ized zone Limestone/ Dolomite Clay- stone	1451 1449	Interbedded limestone dolomite (0.5m)
10	105	290	0.5	-	-	-		1447	As above (0.5m)
10	180	265	1.0	-	-	-		1445	As above (0.5m)
10	170	390	0.5	-	-	-		1443	As above (1m)
5	475	330	0.5	-	-	-		1441	As above (1.5m)
10	1400	805	2.5	-	-	-		1439	As above (1.5m)
55	14.9%	0.82%	71	-	-	-		1437	Mineralised sideritic veined interbedded limestone/dolomite (3m)
250	3.06%	2.18%	208	-	-	-		1435	As above (3m)
10	215	585	0.5	-	-	-		1433	Weathered sideritic veined interbedded limestone/dolomite (2m)
10	185	385	0.5	-	-	-		1431	As above (2.5m)
15	145	290	-0.5	-	-	-		1429	Sideritic veined interbedded limestone/dolomite (2.5m)
10	75	180	-0.5	-	-	-		1427	Mottled light brown to grey claystone (3m)
15	45	300	-0.5	-	-	-		1425	Grey to black silty clay (2.5m)

SW

\* NOTES : -0.5 donotes less than 0.5

oceana costean 2750 N

606039

Oceana

Costean 2 795N/ 1450 - 1410E

Scale 1:250

5 cm

606040

Cu	Pb	Zn	Ag	Sn	Sb	As	GEOLOGY	INTERVAL	LITHOLOGY
5	455	1650	2.0	-	-	-	OVERBURDEN LIMESTONE / DOLOMITE Mineral zone LIMESTONE / DOLOMITE CLAYSTONE LIMESTONE / DOLOMITE	1450 1448	Calcite veined interbedded limestone/dolomite (depth 1.5m)
5	510	1300	2.0	-	-	-		1446	As above (1.5m)
5	1550	3000	5.5	-	-	-		1444	As above (1m)
5	3100	2450	2.5	-	-	-		1442	As above (2m)
5	535	940	1.5	-	-	-		1440	As above weathered to clay stone (2m)
5	450	645	2.0	-	-	-		1438	Calcite veined interbedded limestone/dolomite (1.5m)
30	5.86%	5450	53	-	-	-		1436	Siderite veined limestone/dolomite with Pb/Zn mineralisation (2m)
50	3.95%	6300	27	-	-	-		1434	As above (2m) Sideritic veining appears vertical
5	310	565	2.5	-	-	-		1432	Calcite veined limestone/dolomite (1m)
5	230	430	2.5	-	-	-		1430	As above (1m)
10	225	470	1.5	-	-	-		1428	As above (1m)
5	65	270	1.0	-	-	-		1426	Calcite veined limestone/dolomite clay stone (3m)
5	125	145	1.5	-	-	-		1424	As above (3m)
5	195	560	1.0	-	-	-		1422	Calcite veined interbedded limestone/dolomite (2.5m)
5	5	50	1.0	-	-	-		1420	As above (0.5m)
5	15	40	2.0	-	-	-		1418	As above (0.5m)
10	15	60	1.0	-	-	-		1416	As above (0.5m)
10	10	60	0.5	-	-	-		1414	As above (0.5m)
10	5	85	0.5	-	-	-		1412	As above (0.5m)
10	125	645	1.0	-	-	-		1410	As above (1m)

SW

oceana costean 2795N

Oceana

Costean 2850N/ 1450 - 1410

Scale 1:250

ne

606041

Cu	Pb	Zn	Ag	Sn	Sb	As	GEOLOGY	INTERVAL	LITHOLOGY
30	2900	4450	3.0	-	-	-	Mineral Limestone/Clay- zone Dolomite stone	1450 1448	Silty black dolomitic clay - some interbedded limestone/dolomite rock chips (2.5m)
40	525	1550	1.0	-	-	-		1446	Calcite veined interbedded limestone/dolomite (3m)
15	500	1700	1.0	-	-	-		1444	As above (2m)
10	585	1300	1.0	-	-	-		1442	As above (2m)
10	800	835	0.5	-	-	-		1440	As above (2m)
455	33.8%	8.46%	303	-	-	-		1438	Siderite veined limestone/dolomite with mineralisation (2m)
10	675	800	1.5	-	-	-		1436	Calcite veined limestone/dolomite (2m)
10	1300	290	1.0	-	-	-		1434	As above (2m)
10	245	310	-0.5*	-	-	-		1432	As above (2m)
15	60	65	-0.5	-	-	-		1430	As above (3m)
10	120	165	-0.5	-	-	-		1428	As above (3m)
10	80	140	-0.5	-	-	-		1426	As above (2m)
10	110	300	-0.5	-	-	-		1424	As above (2m)
5	100	235	-0.5	-	-	-		1422	As above (1.5m)
10	35	70	-0.5	-	-	-		1420	As above (1.5m)
10	25	55	-0.5	-	-	-	1418	As above (2m)	
15	60	165	-0.5	-	-	-	1416	Silty black dolomite (2m)	
10	15	30	-0.5	-	-	-	1414	Interbedded limestone/dolomite (2m)	
5	25	50	-0.5	-	-	-	1412	As above (2m)	
10	20	45	-0.5	-	-	-	1410	As above (2m)	

O V E R B U R D E N

L I M E S T O N E / D O L O M I T E  
S E Q U E N C E

SW

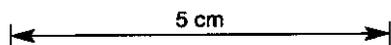
\*NOTE : - donotes less than

oceana costean 2850 N





Scale 1:250



606044

ne

OVERBURDEN

GREY LIMESTONE - CALCITE VEINED

SW

Cu	Pb	Zn	Ag	Sn	Sb	As	GEOLOGY	INTERVAL	LITHOLOGY
65	5300	420	1.5	-	-	-	OVERBURDEN GREY LIMESTONE - CALCITE VEINED	1401 1399	Grey silty clay & grey limestone rock chip (3m)
30	270	280	1.0	-	-	-		1397	Shaly grey limestone (2m)
15	60	165	0.5	-	-	-		1395	Grey limestone (1.5m)
15	55	95	1.0	-	-	-		1393	Grey limestone (2m)
15	1650	1000	3.0	-	-	-		1391	Grey limestone (1m)
10	170	275	1.0	-	-	-		1389	Shaly grey calcite veined limestone (2m)
10	85	255	1.0	-	-	-		1387	Grey limestone with calcite veins & some grey clay (1m)
5	70	325	1.0	-	-	-		1385	Grey limestone with calcite veins (1m)
15	1030	500	5.0	-	-	-		1383	Light to dark grey silty clay & some limestone rock chips (1m)
10	130	600	2.0	-	-	-		1381	Grey limestone with calcite veins (0.5m)
10	1025	3350	5.5	-	-	-		1379	Grey limestone with calcite veins (1.5m)
10	415	1350	4.5	-	-	-		1377	As above (1.5m)
10	380	1250	2.5	-	-	-		1375	As above (1.5m)
10	210	310	1.5	-	-	-		1373	As above (3m)
10	715	1350	0.5	-	-	-		1371	As above (2m)
5	885	1100	0.5	-	-	-		1369	Grey limestone with minor calcite (2m)
5	875	1400	1.0	-	-	-		1367	Grey limestone with calcite veins (2m)
5	660	960	2.0	-	-	-		1365	Grey limestone with minor calcite (2m)



Oceana

Costean 3450N/ 1400E - 1330E

Scale 1:250

5 cm

606046

Cu	Pb	Zn	Ag	Sn	Sb	As	GEOLOGY	INTERVAL	LITHOLOGY
-	350	120	1.0	10	-	3	CLAY-STONE	1400 1398	Creamy light grey clay (4m)
5	335	55	6.5	7	-	-		1396	Grey laminar sandy claystone (4m)
5	1800	50	1.0	6	4	5		1394	Grey laminar fine silty claystone (4m)
5	1950	80	-	8	4	5	FERRUGENOUS CLAY	1392	Laminar ferruginous clay stone (3m)
5	2900	210	2.5	35	17	5		1390	Mottled light grey ferruginous clay (3m)
20	4350	635	3	20	12	8		1388	Ferruginous clay with minor ironstone (3m)
70	4.61%	1650	22	35	95	21		1386	Siderite veined dolomite & ferruginous clay (4m) Visible mineralisation
85	7.99%	3550	59	20	85	5	IRONSTONE	1384	Ironstone, massive and vuggey (4m)
100	24.8%	2400	241	15	175	11		1382	Ironstone with visible lead and cerucite
50	3.25%	1750	26	25	33	3		1380	Hematitic ironstone (3m)
30	2.21%	2450	18	30	12	2		1378	Hematitic ironstone (4m)
10	3600	720	7.5	6	5	6		1376	Mottled fawn to grey clay, ferruginous patches (5.5m)
								1374	
								1372	Old oceana open-cut
								1370	Deep fill. No sampling
								1368	
								1366	
								1364	
30	1.27%	1650	3.5	7	7	11		1362	Black silty dolomite (5.5m) (Possibly fill?)
45	1.46%	7650	12.5	6	3	83		1360	Mottled grey-brown silty clay (5m) (Possibly fill?)
								1358	Oceana open-cut
								1356	
25	1700	1800	1.5	5	13	76		1354	Mottled grey brown silty clay (6m) (Possibly fill?)
								1352	
								1350	
								1348	Oceana open-cut
								1346	
								1344	
								1342	
10	175	130	1.5	-	3	20	CLAYSTONE	1340	Grey silty claystone (4m)
35	560	1750	1.5	5	9	42		1338	Mottled brown-dark grey silty claystone (5m)
25	230	275	-	9	3	9		1336	Bluey-grey silty clay (5m)
40	265	225	1.5	3	3	11		1334	Dark grey-black silty clay (5m)
15	135	100	1.5	5	-	7		1332	Grey-brown silty carbonaceous claystone (4m)
15	100	25	0.5	5	-	4		1330	Mottled tan-dark brown-black silty clay (6m)

NE

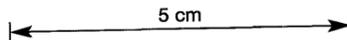
OVERBURDEN

INFILLED OCEANA OPEN CUT

OVERBURDEN

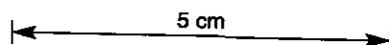
SW

oceana costean 3450 N



Cu	Pb	Zn	Ag	Sn	Sb	As	GEOLOGY	INTERVAL	LITHOLOGY
14	480	65	2	8	22	-2*	FILL MATERIAL CONGLOMERATE GRAVELLS BLACK CLAY HORIZON	1447 1445	Brown-black carbonaceous clay. Sample taken at 6m depth (6m)
14	420	90	4	8	12	-2		1443	Black clay (5m)
12	500	195	3	-4	10	5		1441	As above (5m)
18	1600	3100	4	-4	16	3		1439	As above (5m)
18	940	3300	3	6	10	28		1437	As above (5m)
26	2300	1950	3	12	24	7		1435	Brown siltstone (5m)
16	1700	5800	2	4	55	60		1433	Black clay (5m)
16	260	170	3	6	22	9		1431	As above (5m)
22	310	60	4	10	22	-2		1429	As above (4m)
								Concrete slab	
							FILL MATERIAL GREY-BLACK CLAY HORIZON	1418	
24	360	28	2	4	8	-2		1416	Brown siltstone (4m)
26	520	42	2	4	16	2		1414	Black clay (5m)
6	140	18	1	10	6	-2		1412	Light grey-black clay
								1410	Pipe - no sample
8	270	100	4	8	10	4		1408	Light grey clay ((3m)
							OCEANA HEADFRAME NO SAMPLING	1406	
								1404	
								1402	
								1400	Oceana mine
								1398	Headframe foundations
								1396	No sampling
								1394	
								1392	
								1390	
								1389	
50	2650	410	18	15	24	4	OVERBURDEN MINERALIZED DOLOMITIC CLAYS	1387	Grey silty dolomitic clay (4m)
30	3.41%	1.14%	9	15	20	45		1385	Mottled greeny grey silty clay (5m)
40	4.0%	1.05%	13	15	28	42		1383	Dark grey silty dolomite (5m)
220	19.2%	1.95%	157	30	150	20		1381	Ferruginous clay and dolomite (6m)
920	30.1%	2950	563	70	500	10		1379	Metallic grey dolomite (6m)
825	2.31%	1850	118	70	670	24		1377	Orangey yellow ferruginous clay (6m)
								1376	
								1374	Break in sampling for 5 metres
								1372	
830	1.85%	2650	43	35	48	23		1370	Ferruginous clay (6m)
215	24.9%	1.15%	144	20	40	12	OVERBURDEN MINERALIZED DOLOMITE CLAYS CLAYSTONE	1368	Sideritic veined dolomite & black clay (6m)
225	17.7%	5150	118	10	51	8		1366	Sideritic ferruginous dolomite (5m)
10	1.25%	1200	6	35	7	8		1364	Sideritic ferruginous dolomite (4.5m)
35	1.65%	3100	8.5	9	12	23		1362	Sideritic dolomite, black clays (5m)
40	7.50%	1.49%	12.5	7	9	190		1360	Dark grey silty dolomite clay (4m)
65	6.26	1.69%	22	30	9	200		1358	Silty grey dolomite, slightly carbonaceous (4m)
30	6400	1.10%	9	-	10	78		1356	Greyish brown carbonaceous claystone (4m)
35	6100	7650	7.5	4	16	72		1354	Mottled greeny grey brown silty clay (4m)
25	1.41%	6450	5	5	21	23		1352	Creamy grey silty claystone (4m)
25	3500	8650	7.5	-	10	50		1350	As above (4m)

SW



Cu	Pb	Zn	Ag	Sn	Sb	As	GEOLOGY	INTERVAL	LITHOLOGY
4	100	760	1	6	8	10	CARBONACEOUS CLAYS	1414 1412	Carbonaceous clay - sample taken at (4m)
12	1800	2300	1	4	-4*	14		1410	Carbonaceous clay (3m)
12	3900	2300	1	-4	10	40		1408	Carbonaceous clay (4m)
24	2900	900	1	4	18	-2		1406	As above (5m)
12	9000	2700	1	10	22	50		1404	As above (6m)
								1402	Pipe : no sample
18	1200	14	1	10	10	-2		1400	Carbonaceous clay (3m)
5	105	30	-	4	-	3		1398	Grey clay, siltstone rock fragments (3m)
25	1200	385	-	4	2	8		1396	Browny black carbonaceous clay (5m)
40	3450	55	2.5	15	4	6		1394	Blacky brown carbonaceous clay (6m)
35	2450	45	4.5	6	3	3		1392	Browny black carbonaceous clay (6m)
65	4.1%	2750	3.0	8	28	18		1390	Carbonaceous gritty silty claystone (5.5m)
30	235	25	1.5	7	-	-		1388	Carbonaceous silty claystone (3m)
125	500	15	-	-	3	-		1386	Silty grey claystone (4.5m)
65	880	55	14.5	7	2	4	1384	Mottled grey to brown silty clay (6m)	
170	2.36%	240	3.5	10	10	8	1382	Silty grey siltstone (6m)	
70	1.76%	45	-	9	13	5	1380	Silty grey siltstone (5m)	
55	5850	345	-	-	13	10	1378	As above (5m)	
70	2650	65	1.5	10	7	3	1376	Dark grey carbonaceous claystone (5m)	
25	4.49%	2100	3.5	5	35	9	1374	Grey carbonaceous claystone (6m)	
300	2850	905	63	45	167	11	1372	Mottled ferruginous grey clay (5m)	
230	1.23%	170	77	210	35	8	1370	Ferruginous grey clay (5m)	
815	8.05%	2600	2.89	60	100	11	1368	Silty grey clay (5m)	
25	2900	1000	2.0	6	9	19	1366	Silty brown clay (5m)	
35	1.14%	3900	1.5	8	9	43	1364	Grey carbonaceous silty claystone (5m)	
30	4450	1850	2.5	7	9	24	1362	Fawn and black carbonaceous clay (5m)	
35	7150	2200	2.5	7	19	82	1360	Grey carbonaceous silty claystone (4m)	
20	1300	555	1.0	7	4	98	1358	Dark grey carbonaceous silty claystone (2.5m)	
20	2000	1250	1.0	5	5	24	1356	Silty mottled claystone gritty carbonaceous material (2.5m)	
20	745	1550	1.0	5	4	21	1354	Mottled brown-black silty claystone, carbonaceous (3m)	
15	610	1600	1.0	8	2	16	1352	Gritty carbonaceous mottled brown-black claystone (4m)	
15	355	1550	1.5	7	3	39	1350	As above (3m)	

O V E R B U R D E N

Silt-Clay-  
Stone

ASSORTED CLAYSTONES-SILTY TO CARBONACEOUS

SW

\*Note: - denotes less than

Q <sub>1</sub>	Pb	Zn	Ag	Sn	Sb	As	GEOLOGY	INTERVAL	LITHOLOGY
6	490	200	2	*-4	-2		OVERBURDEN GRAVELS ASSORTED CLAYS	1450 1448	Khaki clay with visible pyrite. Sample depth (4m)
12	230	1500	3	8	4	38		1446	Dk green clay with visible pyrite (5m)
16	2800	1.20%	6	10	18	55		1444	Dk green clay with visible pyrite & mineral ? (4m)
16	6500	1.80%	4	-4	48	125		1442	Grey-green clay with visible pyrite (4m)
14	1250	8500	3	8	40	70		1440	Black clay - minor pyrite (4m)
12	1200	8800	3	-4	18	55		1438	Black clay (5m)
								1434	
22	3000	2.0%	8	16	38	48		1432	Khaki grey clay (6m)
14	2400	6000	6	10	80	44		1430	Black clay (5m)
12	3000	2.0%	4	8	50	55			Black clay (5m)
							1426		
14	3700	3.2%	4	14	95	145	1424	Carbonaceous black clay (5m)	
14	2600	1.20%	4	8	55	55	1422	Black clay (6m)	
22	5700	2.2%	19	-4	70	60	1420	Black -dk green clay (5m)	
55	5.29%	4.74%	35	8	40	63	1418	Black clay with visible mineral (4m)	
230	19.2%	3.09%	161	6	200	14	1416	Massive lead/zinc plus, ironstone and cerusite (4m)	
50	12.6%	8500	13.5	20	28	15	1414	Dk grey clay (4m)	
10	2.77%	1.22%	66	-	3	-	1412	As above (5m)	
25	2.73%	8500	99	9	2	-	1410	Grey clay (5m)	
10	3.98%	1.71%	49	4	3	-	1408	As above (5m)	
25	1.15%	1950	51	-	2	7	1406	Black clay (5m)	
25	8.94%	1.44%	85	40	1	8	1404	Grey-ferruginous clay (4m)	
55	15.2%	4450	31	40	68	36	1402	Silty grey clay (5m)	
40	6.36%	1000	31	30	32	14	1400	Dk brown - black clay (5m)	
25	1.34%	4700	0.5	7	11	16	1398	Dk brown -black clay with visible pyrite (3m)	
20	2.24%	8300	6.5	8	6	35	1396	As above (4m)	
20	3950	4300	4	3	5	36	1394	As above (3m)	
15	510	2350	-	5	3	51	1392	As above (3m)	
15	825	2700	0.5	3	1	58	1390	As above (3m)	
75	3000	3950	7.5	7	10	30	1388	Grey siltstone (4m)	
20	1500	5050	2.5	10	4	53	1386	Grey-brown carbonaceous siltstone (3m)	
25	1500	1.02%	6	10	12	46	1384	Grey siltstone (5m)	
30	1800	8050	8	3	13	28	1382	Grey carbonaceous siltstone (5m)	
20	300	1250	0.5	5	10	37	1380	As above (5m)	
45	2000	9250	5	-	6	37	1378	Gravelly siltstone (5m)	
20	850	3800	2	5	-	18	1376	Dark grey clay (6m)	
15	1900	3350	2	10	-	18	1374	Grey-brown siltstone (6m)	
20	2500	4300	2.5	30	6	29	1372	Grey-brown siltstone	

\*Note: - denotes less than

SW

Cu	Pb	Zn	Ag	Sn	Sb	As	GEOLOGY	INTERVAL	LITHOLOGY
25	325	2.46%	0.5	4	7	84	OVERBURDEN MOTTLED CLAYSTONES	1466 1464	Mottled brown grey silty claystone (3m)
25	3000	3.95%	0.5	5	8	75		1462	Mottled tan-grey silty claystone (3m)
45	1.67%	2.82%	35	-	10	57		1460	Mottled light-dark grey silty claystone (4m)
55	2.52%	1.73%	76	-	16	7		1458	As above (4m)
50	4.67%	6.70%	54	-	-	-		1456	Mottled brown grey silty claystone (4m)
50	2.23%	5.33%	37	-	11	18		1454	As above (3m)
35	5150	1.16%	18	-	5	11		1452	Mottled yellow grey silty clay (3m)
30	1.19%	4.60%	3.5	5	8	32		1450	As above (3m)
40	4.90%	2.42%	59	6	12	7		1448	As above (3m)
								1446	
							1444	Roadway - no sampling	
							1442		
45	3.23%	4650	7.5	-	-	-	OVERBURDEN MOTTLED AND ASSORTED CLAYS	1440	Mottled clay of various colours (tan, br, or, red, gr, bl) (3m)
55	3.48%	6500	9.0	-	-	-		1438	As above (3m)
70	3.78%	5250	25	-	-	-		1436	Grey brown tan clay (3.5m)
50	1.10%	3350	7.5	-	-	-		1434	Tan, dark brown & light grey clay (3m)
225	7.07%	1150	34	-	-	-		1432	Tan, dark brown & light grey clay & dolomite (2.5m)
100	5.74%	3950	16	-	-	-		1430	As above (2m)
50	2.67%	2150	10	-	-	-		1428	Cream, tan, brown clay (2m)
40	5.22%	3750	9	-	-	-		1426	As above (1.5m)
15	6.28%	1050	5	-	-	-		1424	Fawn, light brown, grey clay (1.3m)
15	2.01%	7000	4.5	-	-	-		1422	As above (1.3m)
25	1.58%	230	7.5	-	-	-	1420	Light grey, light brown clay (1.5m)	
35	3.06%	765	13.5	-	-	-	1418	Yellow, maroon & grey clay (2.5m)	
50	2.10%	6250	16.5	-	-	-	1416	Ferruginous brown-grey clay (2m)	
30	2.22%	7350	10.5	-	-	-	1414	Minor ferruginous clay with browns & greys (2m)	
35	2.14%	1550	6.5	-	-	-	1412	Minor ferruginous clay with browns & greys (2.5m)	
60	6700	135	3.0	-	-	-	1410	Cream - light grey with tan - light brown clay (2.5m)	
30	8750	105	2.0	-	-	-	1408	Light brown - grey clay (3m)	
60	1.20%	4950	10	-	-	-	1406	Grey black clay (3m)	
50	5950	2.73%	10.5	-	-	-	1404	Grey black dolomite with minor fine salena	
40	1600	6550	4.5	-	-	-	1402	Dark brown - black claystone (3m)	
25	755	5800	4.0	-	-	-	1400	Brown carbonaceous claystone (3m)	
30	2250	1.0%	3.0	-	-	-	1398	Dark brown carbonaceous claystone (3m)	
							1396-1303	Indurated deep gravels unable to penetrate	

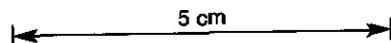
SW

OCEANA

Costean 3650N/ 1303E - 1273E

606051

Scale 1:250



Cu	Pb	Zn	Ag	Sn	Sb	As	GEOLOGY	INTERVAL	LITHOLOGY
25	525	0.93%	1.5	-	-	-	ne O V E R B U R D E N caving DOLOMITIC CLAYS AND ASSORTED CLAYSTONES CLAYSTONE NO SAMPLING	1303 1301	Gritty green-dark grey claystone (5m)
35	925	1.45%	3.0	-	-	-		1299	Light grey silty claystone (4.5m)
30	270	1.27%	0.5	-	-	-		1297	Tan brown dolomitic clay (4.5m)
20	450	1.44%	2.0	-	-	-		1295	Cream & light grey-dark grey dolomitic clay (4.5m)
25	1200	9600	2.5	-	-	-		1293	Cream light grey-dark grey clay (4m)
35	340	555	13.5	-	-	-		1291	Cream tan brown dolomitic clay, slightly sandy (3.5m)
65	1150	2650	13.0	-	-	-		1289	Cream tan brown clay (3m)
40	415	1900	2.5	-	-	-		1287	Mottled cream tan dark brown claystone (3m)
30	575	4150	1.0	-	-	-		1285	Mottled tan-light grey dolomitic silty clay (2m)
30	415	3250	1.0	-	-	-		1283	Silty grey dolomite (2.5m)
35	1700	4400	1.0	-	-	-		1281	Silty grey dolomitic clay (4m)
								1279	Caving Costean
								1277	Break in sampling
45	1900	2950	0.5	-	-	-		1275	Brown ferruginous grey gravelly claystone (4m)
60	4500	5850	1.0	-	-	-		1273	Grey, ferruginous brown sandy claystone (4m)

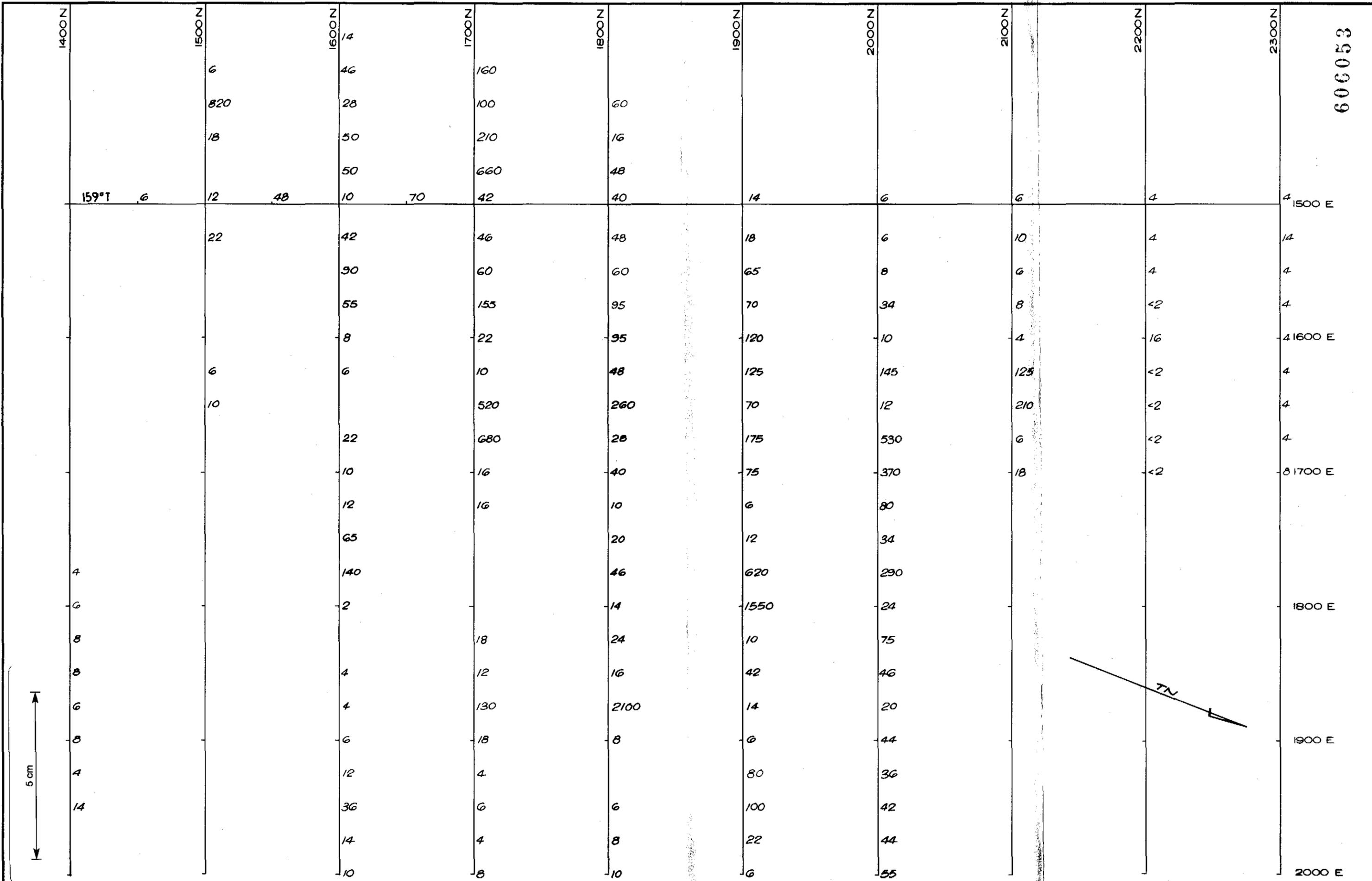
SW

oceana costean 3650 N

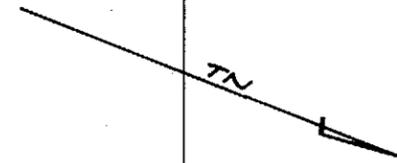
APPENDIX 2

NUBEENA - HAND AUGER GEOCHEMISTRY

606053



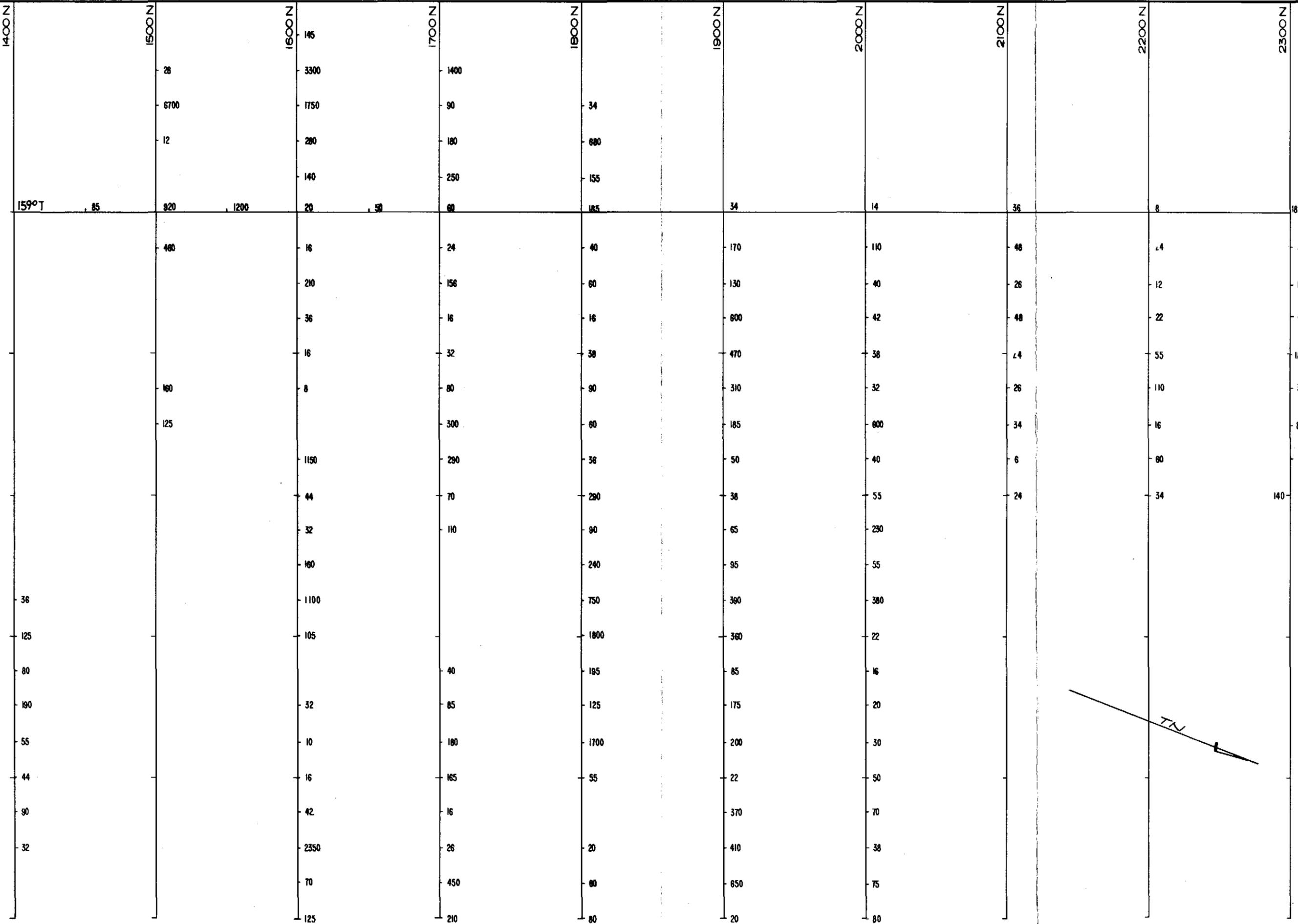
5 cm



1:2500

nubeena — hand auger geochemistry copper

606054



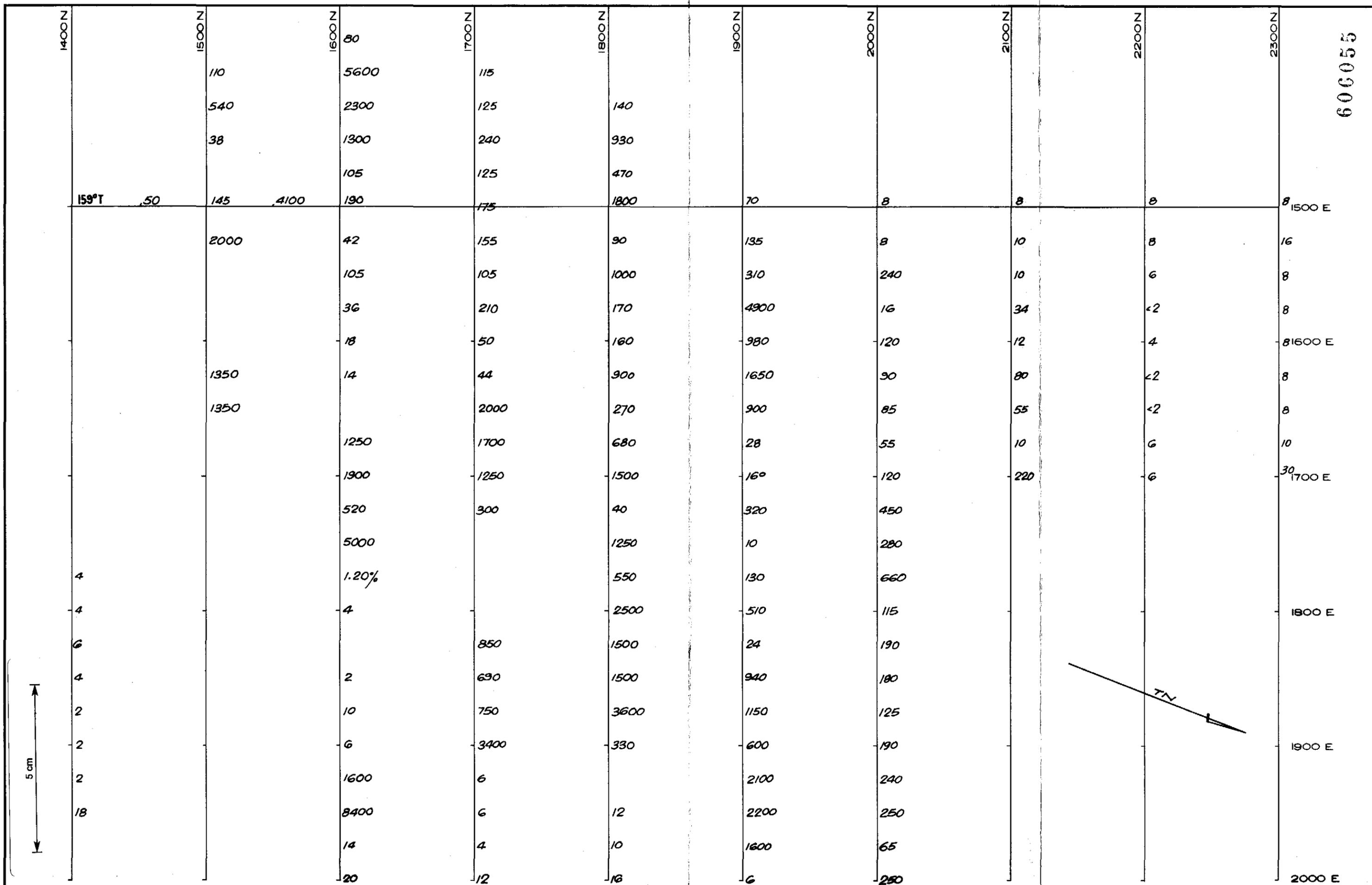
M-197

1:2500

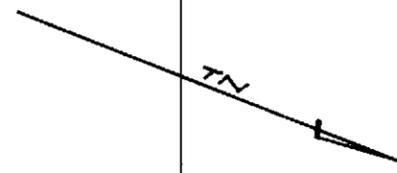
5 cm

nubeena — hand auger geochemistry lead

606055



5 cm



1:2500

nubeena — hand auger geochemistry zinc

APPENDIX 3

NUBEENA - MAGNETICS REPORT

139

Amoco Minerals Australia Company

Office Correspondence

DATE: September 9, 1982  
TO: Phil Jones  
cc Bryce Roxburgh  
FROM: Steve Collins  
SUBJECT: ZEEHAN NUBEENA GRID MAGNETICS

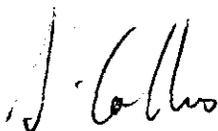
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Recent magnetic surveying on the Nubeena grid has delineated a very strong (3000 gammas) anomaly at 1625E on lines 2000 and 2100N. The anomaly is very limited in extent being only apparent on two lines (2000 and 2100N). Preliminary interpretation of this anomaly suggests a near vertical dip and a depth of 60 meters to the top of the magnetic source. Sharp magnetic spikes superimposed on the main anomaly suggest that part of the source of the anomaly is closer to the surface than the above estimate.

Examination of the government airborne magnetic data shows a well defined small anomaly in the vicinity of the Nubeena grid. It is likely that this anomaly is in fact the same as the one detected on the ground. The geological setting of this anomaly and its proximity to known tin mineralization of the Queen Hill deposit, make this anomaly a definite drill target. I suggest the anomaly location be carefully checked on the ground and subsequently drilled.

Computer modelling of the anomaly suggest that the source of magnetic response may be a zone of up to 100 meters width centered at 1630E on 2050N or possibly two lenses located at 1600E and 1675E. Indicated dip direction is 70° to the east. Interpreted depth to top is dependent on the geological model used but is most likely to be approximately 50 meters with some magnetic material extending up to within 20 meters of the surface.

S. COLLINS



APPENDIX 4

GROUND FOLLOW UP OF AEROMAGNETIC ANOMALIES  
by Mitre Geophysics



# MITRE GEOPHYSICS PTY LTD

MINERAL EXPLORATION AND ENGINEERING CONSULTANTS

BUGGS LANE- ELLIOTT TASMANIA 7325 PHONE 004-36343

GROUND FOLLOW UP  
OF  
AEROMAGNETIC ANOMALIES NEAR ZEEHAN, TAS.  
FOR  
AMOCO MINERALS

Several aeromagnetic anomalies from the 1982 Georex survey of Western Tasmania were identified by S. Collins as being of potential interest. These have been labelled alphabetically from A to G (not in order of merit).

The centres of these anomalies were marked on air photos and traverses were made across three of them: E, F, and I. A flagged tree (on open ground) was used as a reference point for each anomaly, and positioning was effected by either tape and compass or (more efficiently) by 'topolite' and compass.

None of the anomalies were fully defined (and no corrections were made for diurnal variation) but the following amplitudes were recorded:

Anomaly	Value (nt)
E	230
F	750
I	450

J. R. Bishop

Jan. 1983.



# ANOMALY 'E'

## Aeromagnetic Survey:

Amplitude : 45 - 60 nT  
 approx. location of max. value : 368,400 m E  
 5,348,400 m N  
 approx strike : 350° (AMG)

## Ground Follow Up:

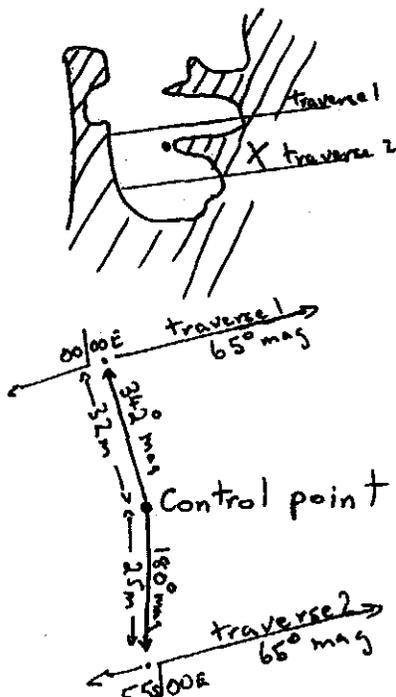
two Traverses bearing 65° mag (53° AMG)

00 (traverse 1) : 75 W to 325 E

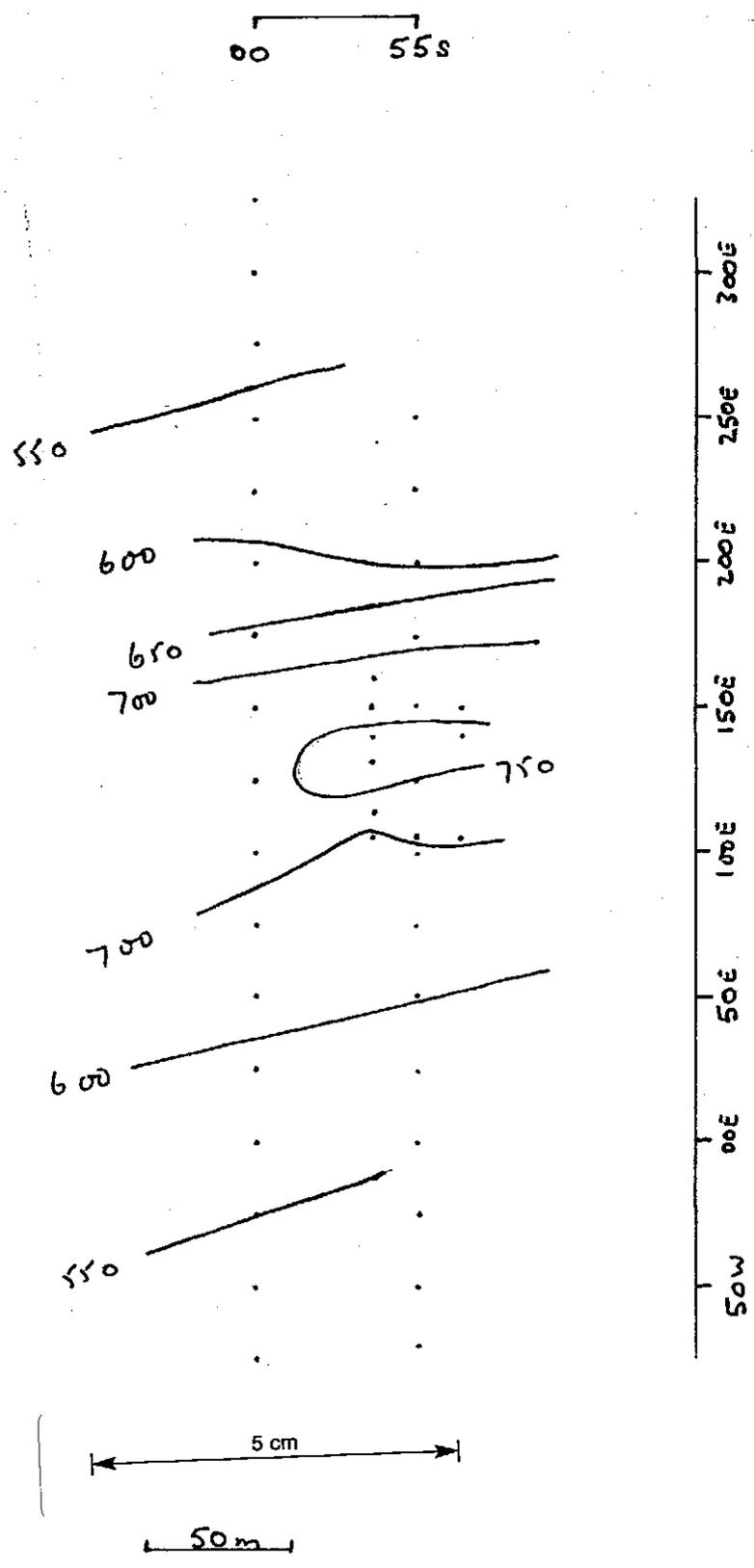
55s (traverse 2) : 70 W to 250 E

Control point for traverses : a flagged (red), young eucalypt on edge of forest.

sketch from air photo (not to scale):



- button grass, heath
- ▨ forest
- control point
- X centre of aeromag anomaly 'E'



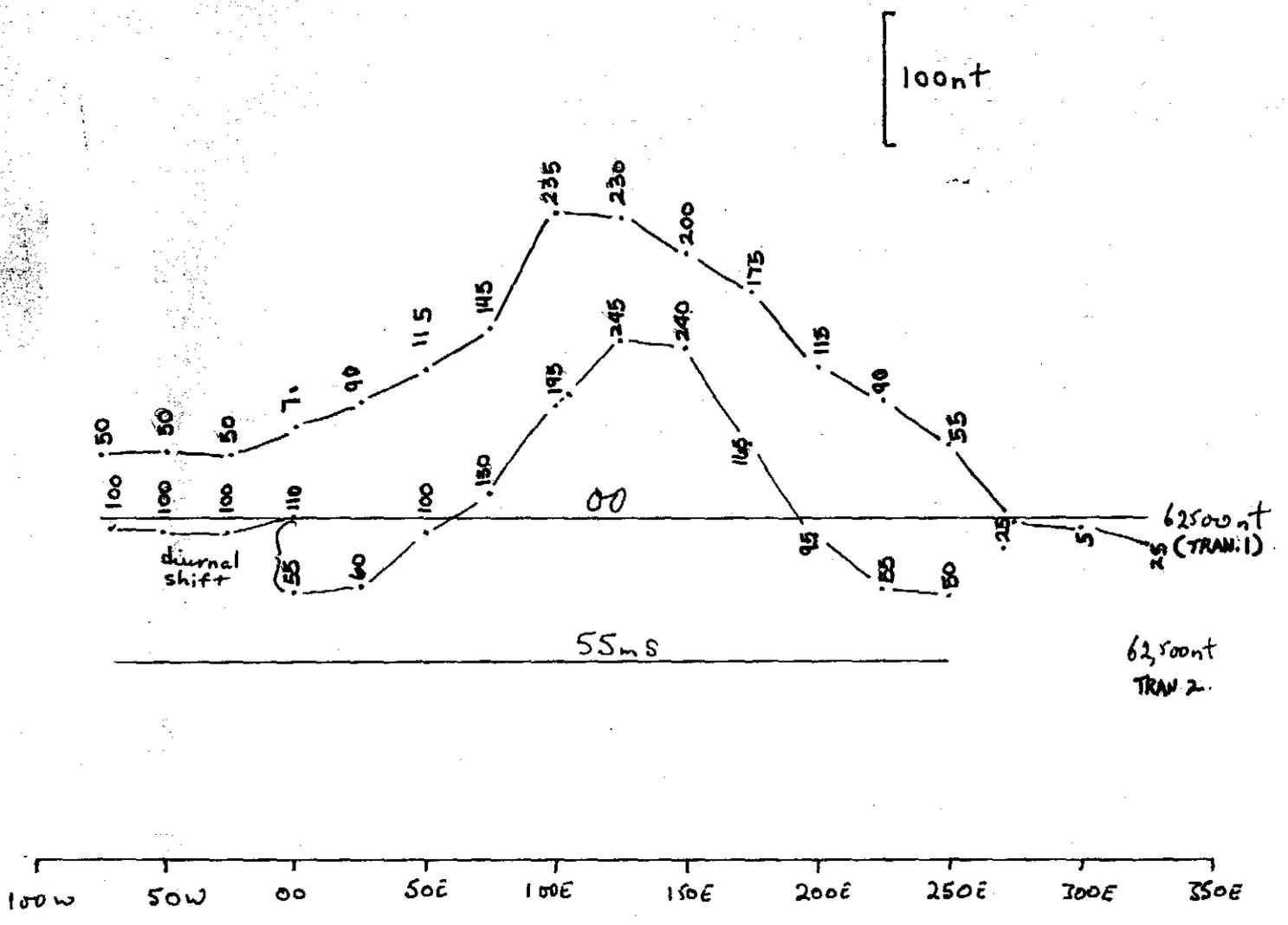
note:

- data point
- add 62,000 nt to all contours.

ANOMALY E  
 plan map  
 contour interval



606062

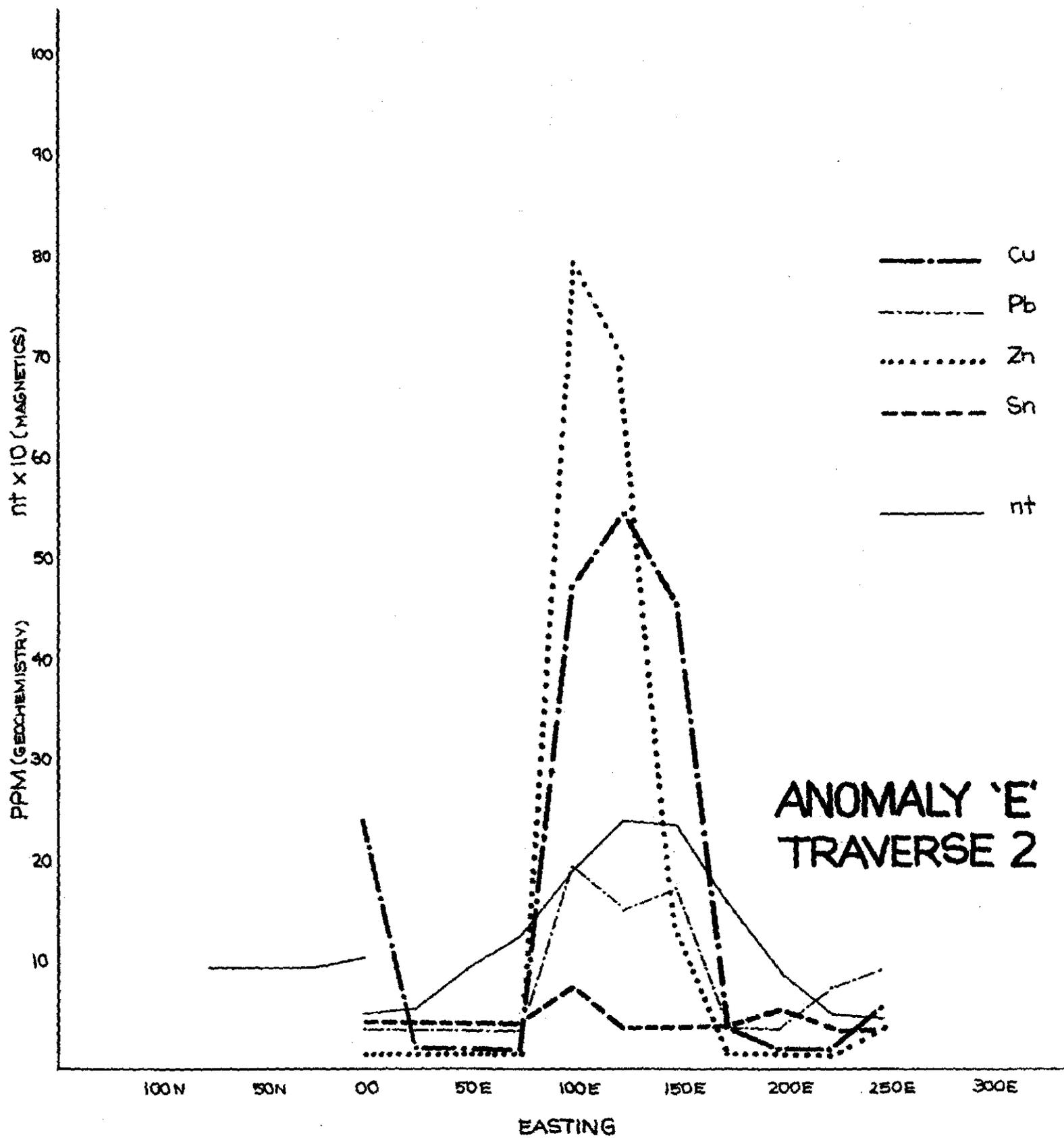


50m

5 cm

ANOMALY E  
Profiles

606063



# ANOMALY 'F'

606064

## Aeromagnetic Survey:

amplitude : 50-70 nt  
approx. location of max. value : 368,000 m E  
5,345,850 m N  
approx strike : 320° (AMG)

## Ground Follow Up :

One traverse bearing 220° (mag)  
plus three sub-traverses.

100 m N : 412.5 W to 175 W

50 m N : 300 W to 162.5 W

Traverse 1 : 00 m N : 400 W to 50 E

50 m S : 350 W to 187.5 W

Control point for traverse : A flagged young eucalypt in 2m high scrub. The tree is in the SW corner of an area of low scrub and button grass, which is to the west of the southern end of a prominent ridge. The ridge strikes approx 340° (True) and is covered by low scrub and button grass.

Sketch from air photo  
(not to scale) :

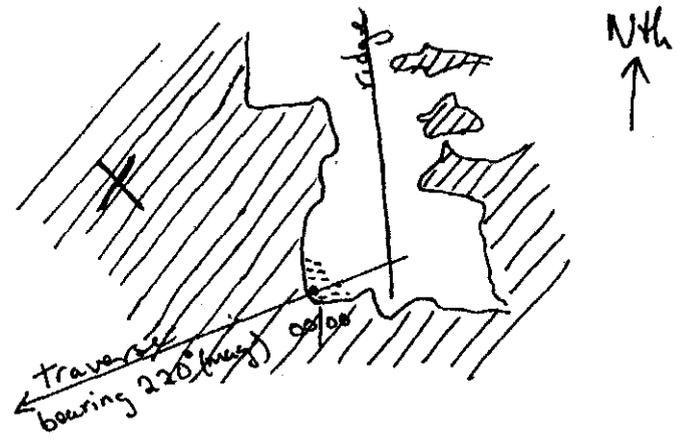
□ button grass, low scrub

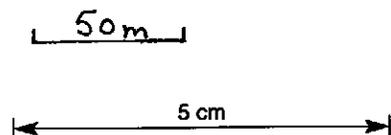
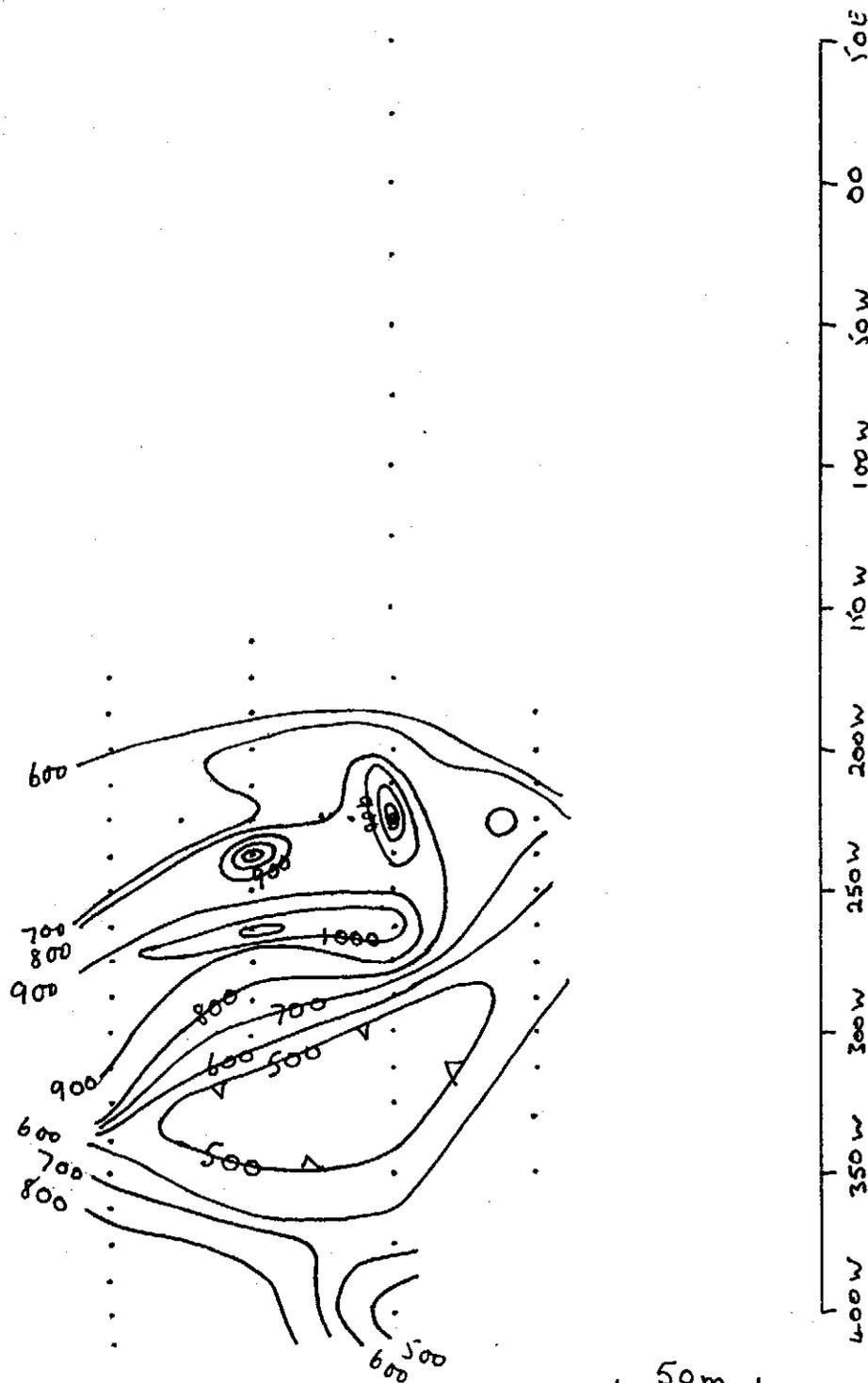
▨ 2m high scrub

▩ Forest

• control point

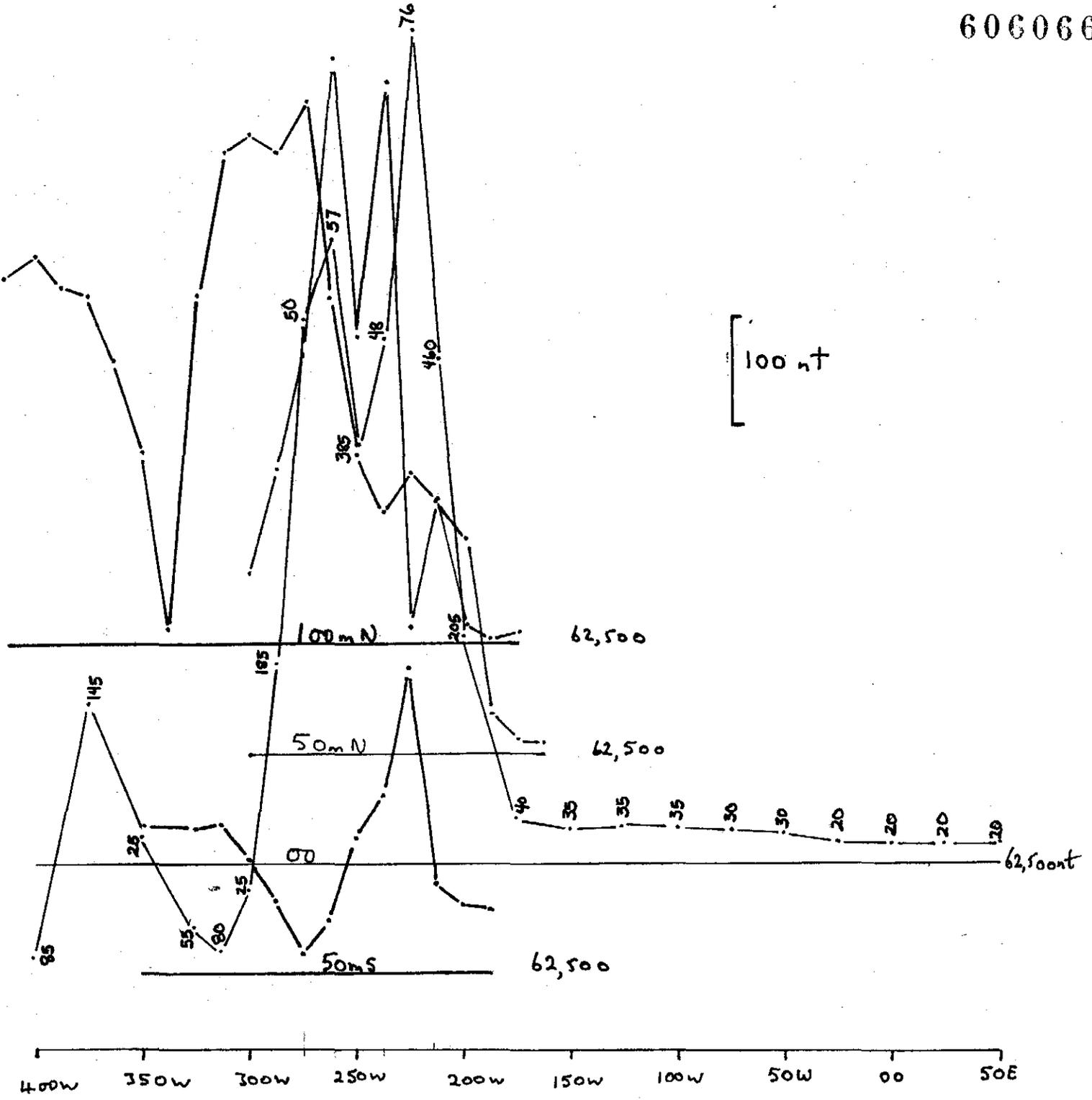
X centre of aeromag anomaly 'F'





note: • data point  
 add 62000nt to all  
 contours.

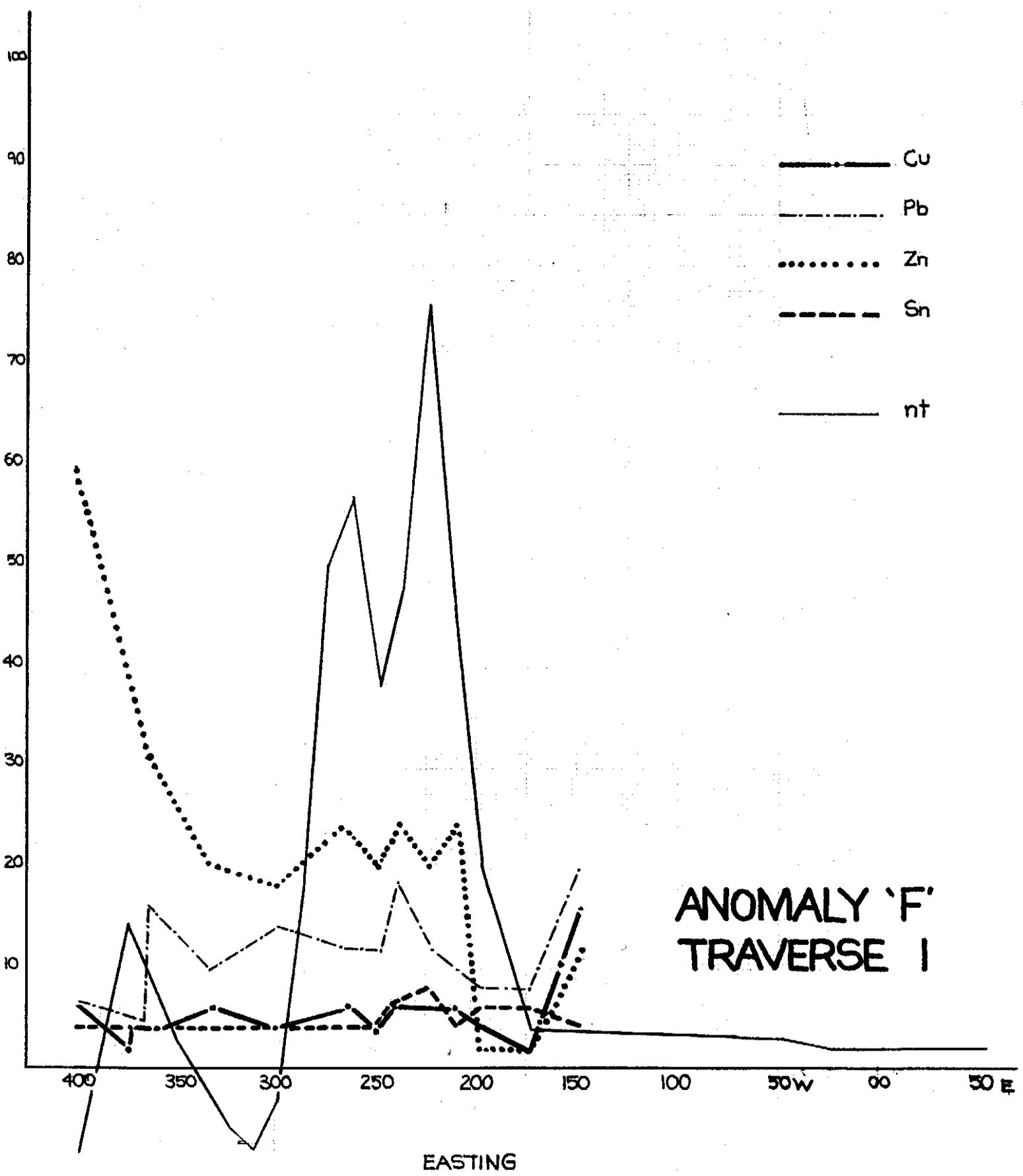
ANOMALY F  
 plan map  
 contour interval



50m

5 cm

ANOMALY F profiles



**ANOMALY 'F'**  
**TRAVERSE I**

EASTING



606068

## ANOMALY 'I'

### Aeromagnetic Survey:

amplitude: 65-80 nT

approx. posn of max. value: 364,050 m E

5,345,500 m N

approx strike :  $270^\circ$  to  $310^\circ$  (AMG)

### Ground Follow Up:

one traverse, bearing  $210^\circ$  (mag).

traverse 1 : 00N : 450W to 50W.

control point for traverse: a flagged young eucalypt at the southern end of Professor Plateau.

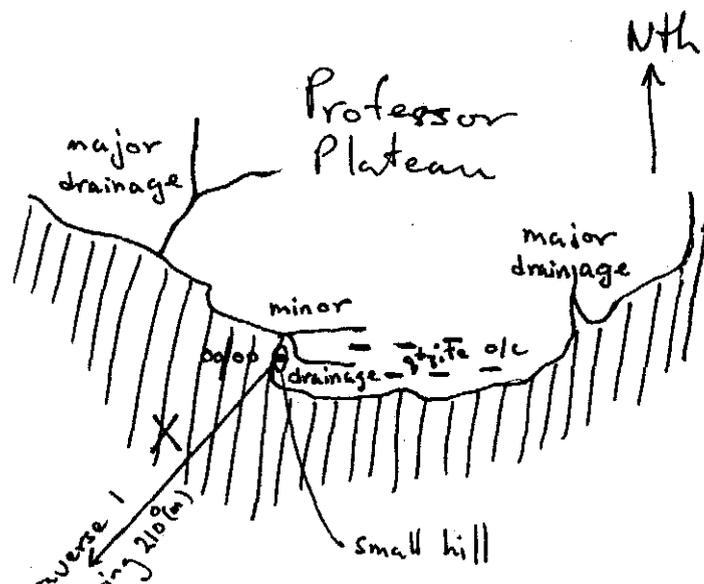
Sketch from air photo  
(not to scale) :

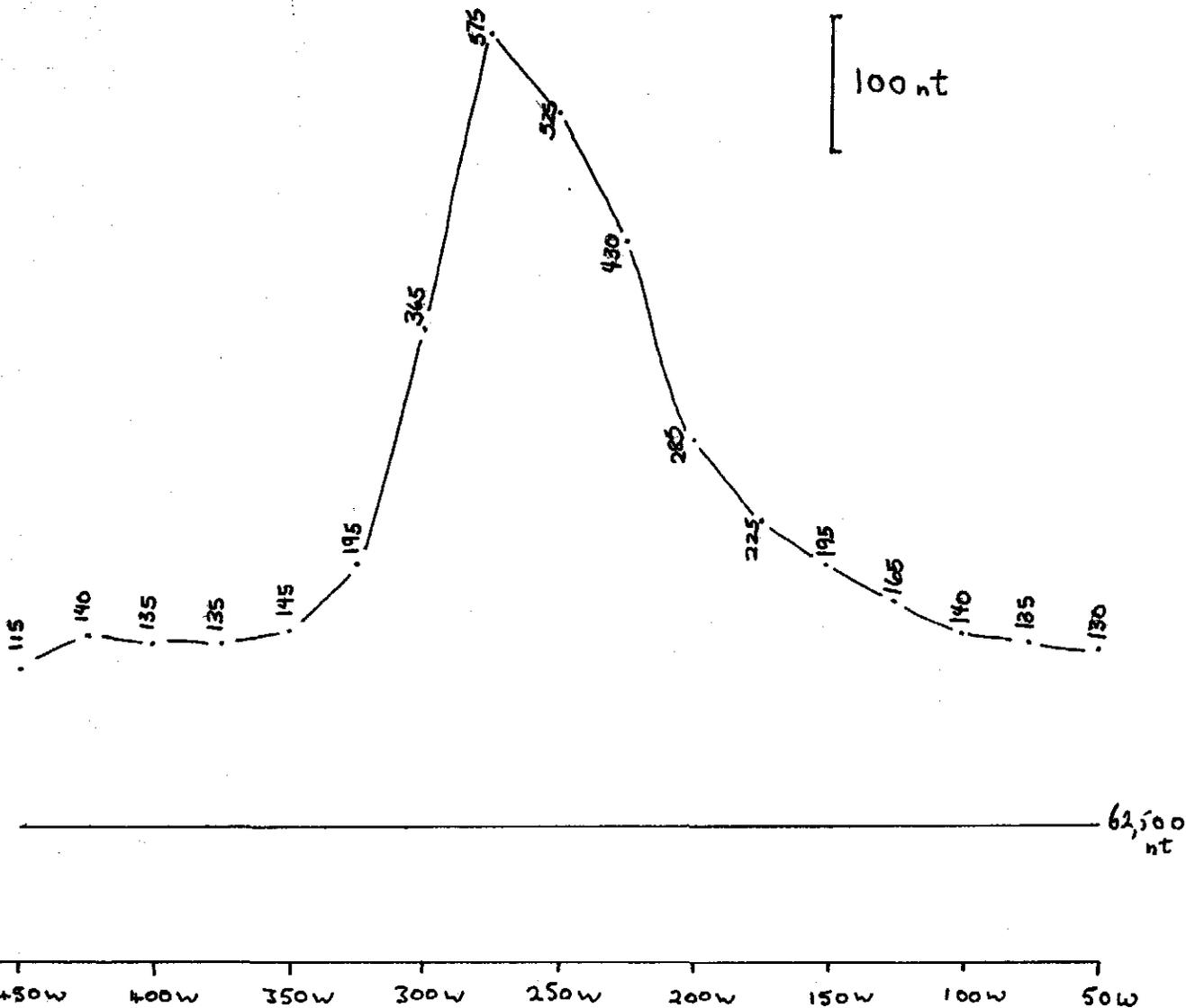
□ Button grass

▨ Forest

• control point

X centre of aeromag.  
anomaly 'I'

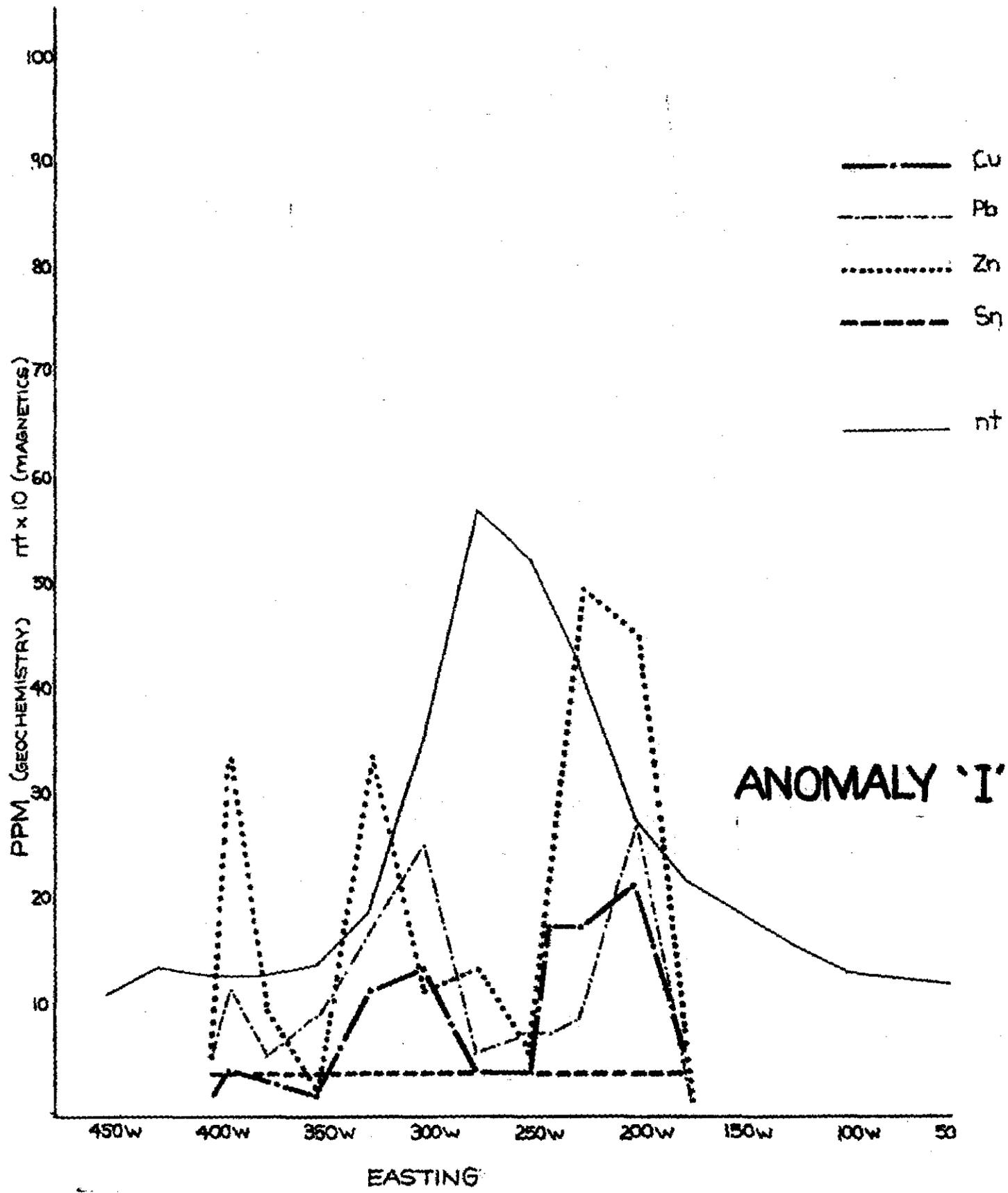


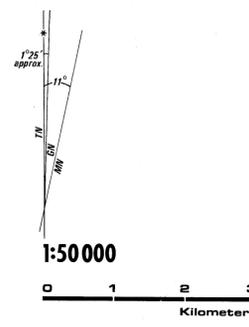
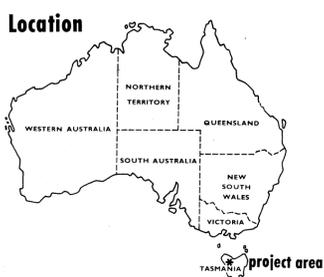
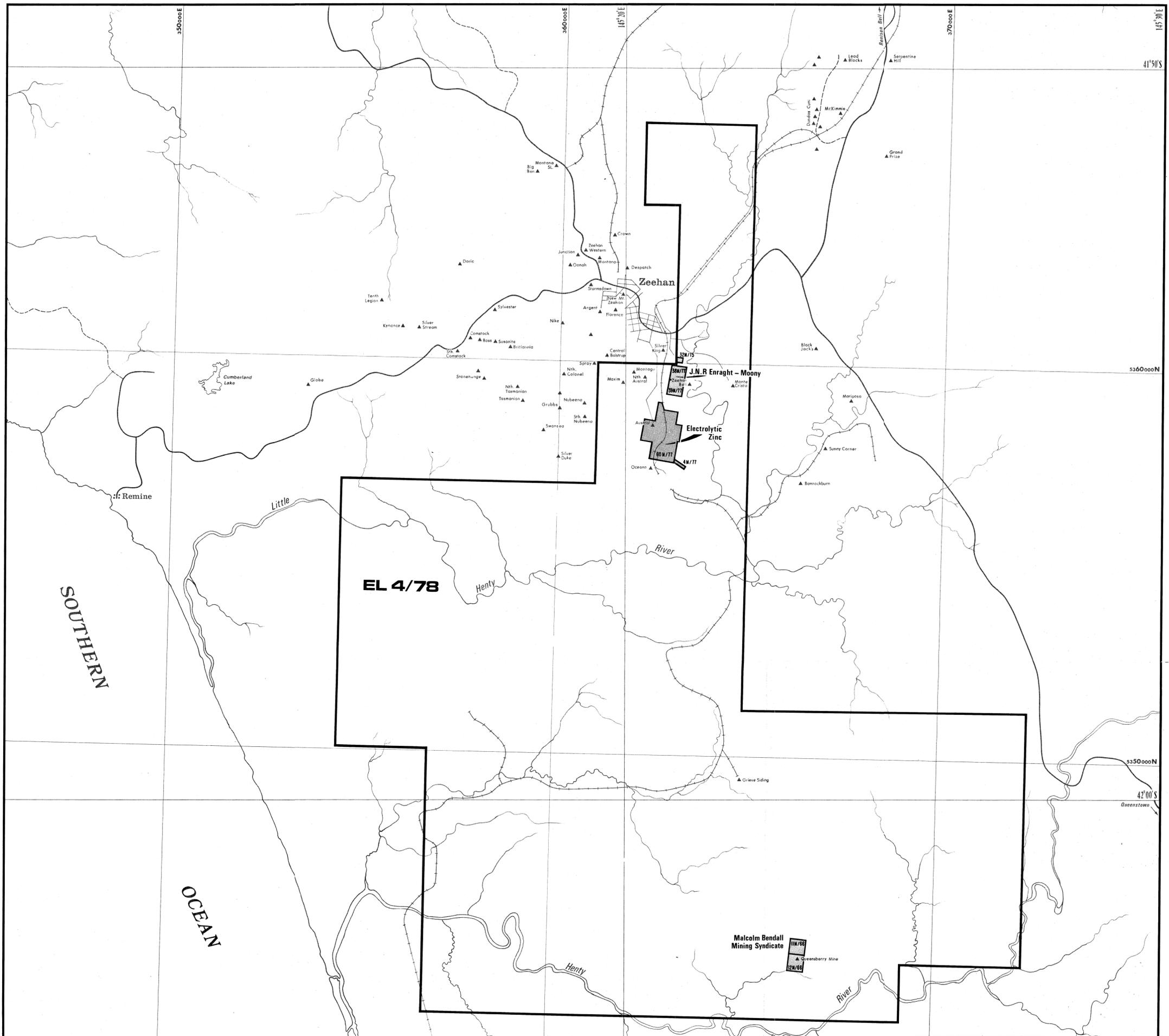


50m

5 cm

Anomaly I  
Profile





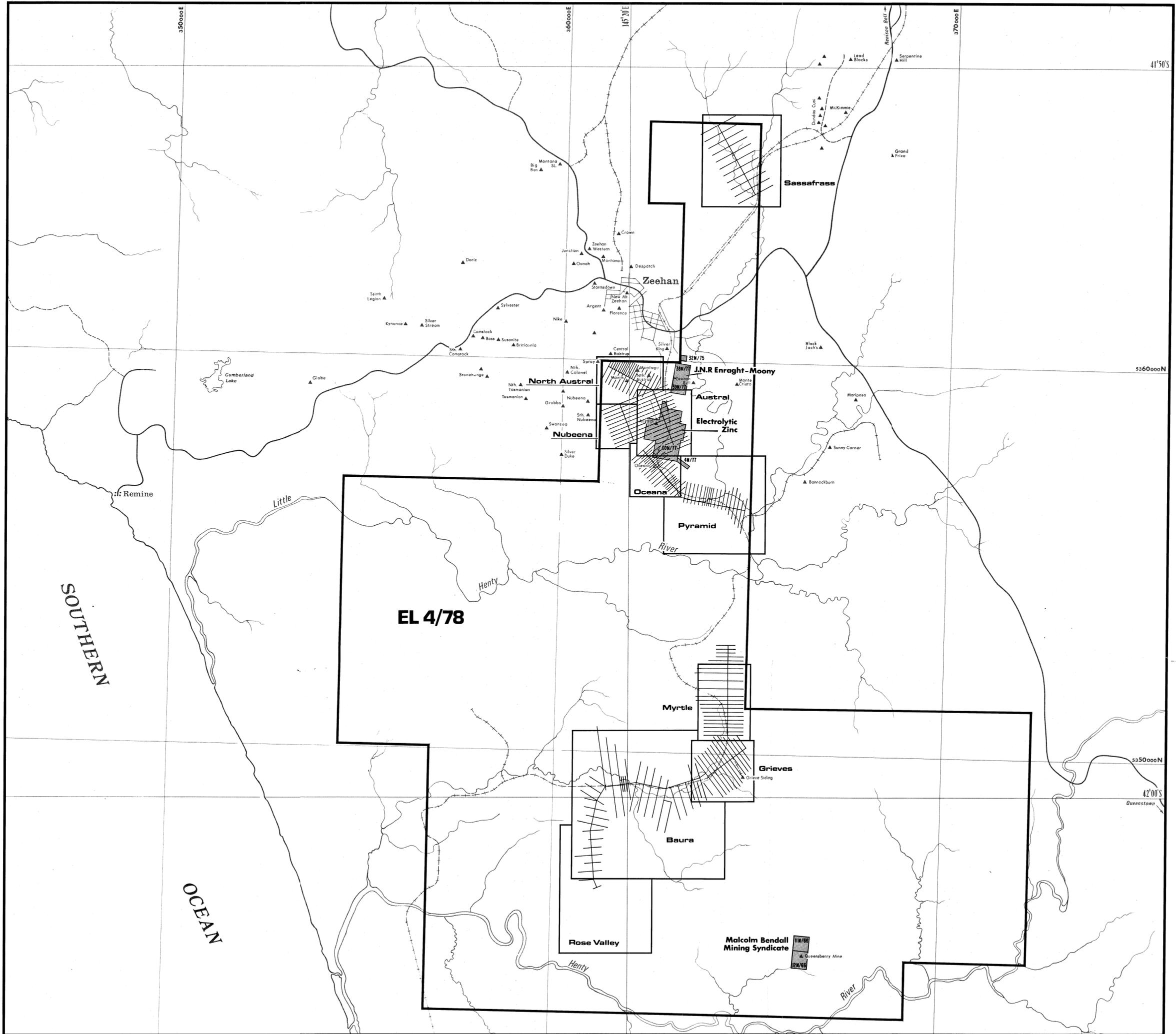
606071  
5 cm



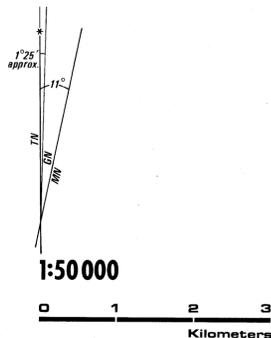
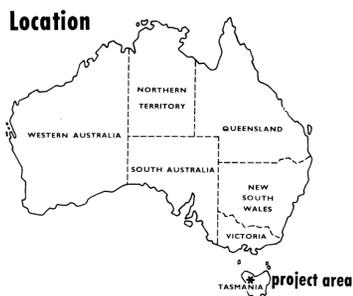
Amoco Minerals Australia Company

Project	ZEEHAN	Nº	A-78-60
Project Partner			
<b>Zeehan EL 4/78</b>			
<b>PRE-EXISTING TENEMENTS</b>			
Map Ref.	ANG K-55-5	Latitude	42° 00' S
		Longitude	145° 20' E
Surveyed		Date	
Scale	1:50000		
Drawn	R. Smyth-King	Date	August 1978
Report	347		
Drawing Nº	M78-939		

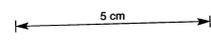
Compiled from enlargement of Zeehan 1:63360 scale and Strahan 1:50000 scale geologic maps. Transverse Mercator Projection



**Location**



Amoco Minerals Australia Company



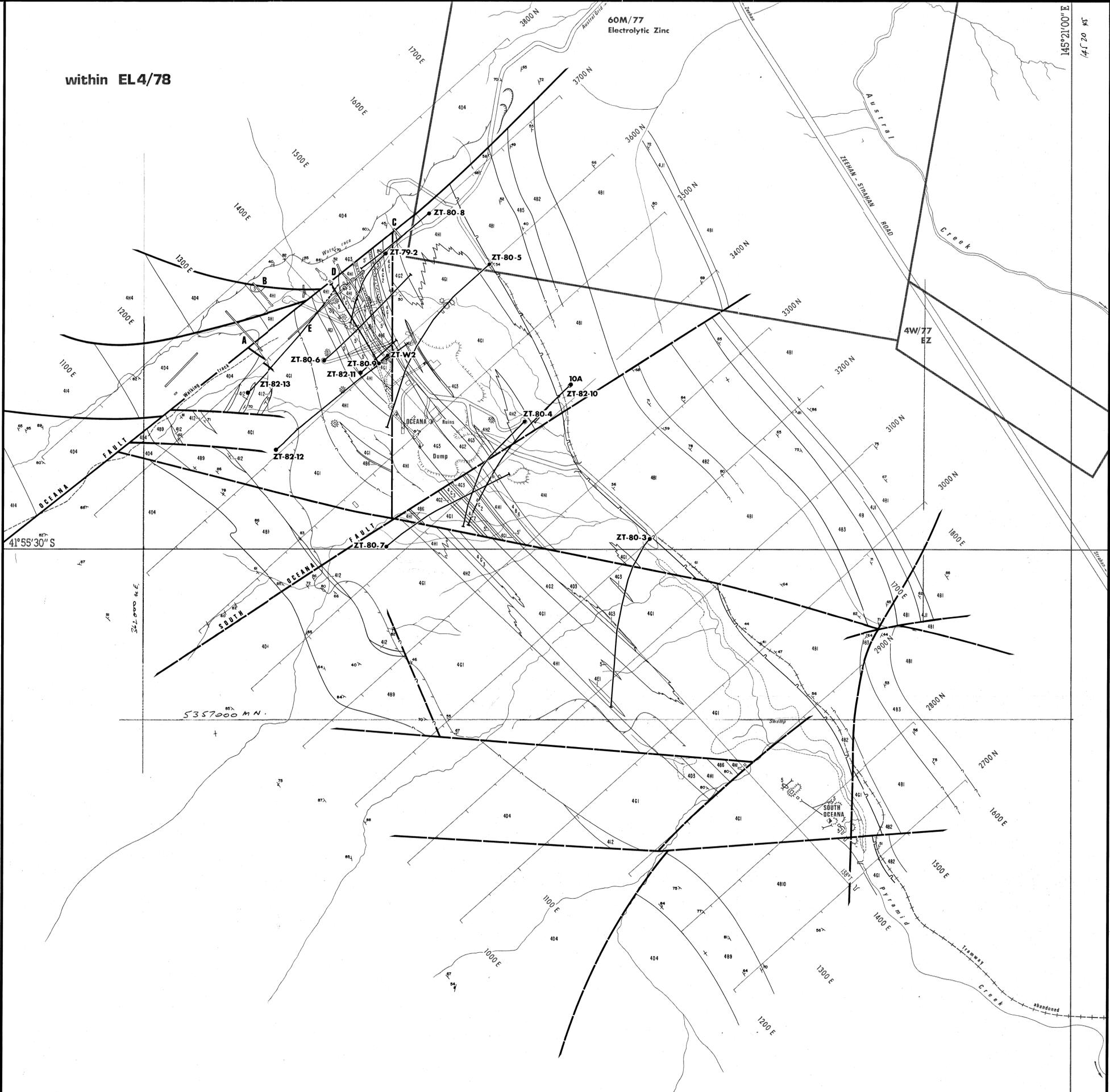
Project	<b>ZEEHAN</b>	<b>Nº A-78-60</b>
Project Partner		
<b>Zeehan EL 4/78</b>		
<b>PROSPECT LOCATION</b>		
Map Ref. ANG	K-55-5	Latitude 42° 00' S Longitude 145° 20' E
Surveyed	Date	Scale 1:50 000
Drawn S.F., R. Smyth-King	Date August 1981	Drawing Nº M80-1476
Report 347		

Compiled from enlargement of Zeehan 1:63 360 scale and Strahan 1:50 000 scale geologic maps. Transverse Mercator Projection

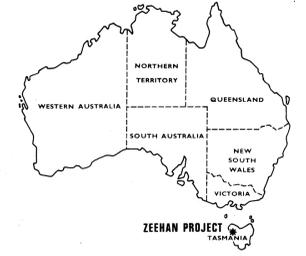
606072

**Legend**

QUATERNARY		
Alluvium etc	GR	
TERTIARY		
Basalt	ZC	2
DEVONIAN		
Florence Quartzite	4A	26
Undifferentiated quartzites, sandstones, siltstones		
SILURIAN		
Amber Slate	4D1	63
Siltstone interbedded with shales		
Crotty Quartzite		
Undiff. sandstones, siltstones and grits	4B1	6
Sandstone, massive	4B2	6
Sandstone, cross bedded	4B3	9
Sandstone, tubicolar	4B4	44
Sandstone, white, friable	4B5	6
Siltstone	4D2	57
Conglomerate	4I1	6
Grits	4J1	6
ORDOVICIAN		
Gordon Limestone		
Sandstone	4B6	63
Sandstone, fossiliferous	4B7	63
Sandstone breccia	4B8	63
Siltstone	4D3	63
Shale	4E1	63
Claystone	4F	63
Limestone	4G1	33
Limestone, fossil breccia	4G2	46
Limestone, slumped	4G3	41
Dolomite, black	4H1	35
Dolomite breccia	4H2	35
Dolomite, silicified	4H3	35
Conglomerate	4I2	66
Ironstone	5	14
Mineralization	51	12
Moina Formation		
Sandstone, tubicolar	4B9	10
Sandstone	4B10	64
Undifferentiated	4D4	64
Siltstone, tubicolar	4D5	64
Dolomite	4H4	64
Conglomerate	4I3	64
Grit	4J2	64
Ironstone	5	14
Mt. Zeehan Conglomerate		
Conglomerate	4I4	58
CAMBRIAN		
Crimson Creek Formation		
Undifferentiated	1E1	20
Tuff, volcano lith-arenite	1E 2	20
Sandstone-tuff	4B 11	20
Shale	4E 2	20
Ironstone	5	14
Siltstone	4D6	20
PRECAMBRIAN		
Oonah Quartzite		
Undifferentiated	4A1	60
Micaceous quartzite	4A2	60
Sandstone, brown	4B12	60
Siltstone	4D7	60



**Location**



**Symbols**

Geologic contact, position accurate	
Geologic contact, position approximate	
Fault, position accurate	
Fault, position approximate	
Fault, inferred	
Unconformity	
Facies change	
Shear zone	
Zone of intense cleavage	
Brecciation	
Overturned bedding	
Measured dip and strike	
Plunging anticline (minor)	
Quartz vein	
Outcropping Pb/Zn mineralization	
Shaft/prospecting pit	
Adit	
Underground workings	
Costean	
Cutting or quarry	
Dump	
Amoco rock chip location	
Amoco costean	
Amoco drillhole	



5 cm

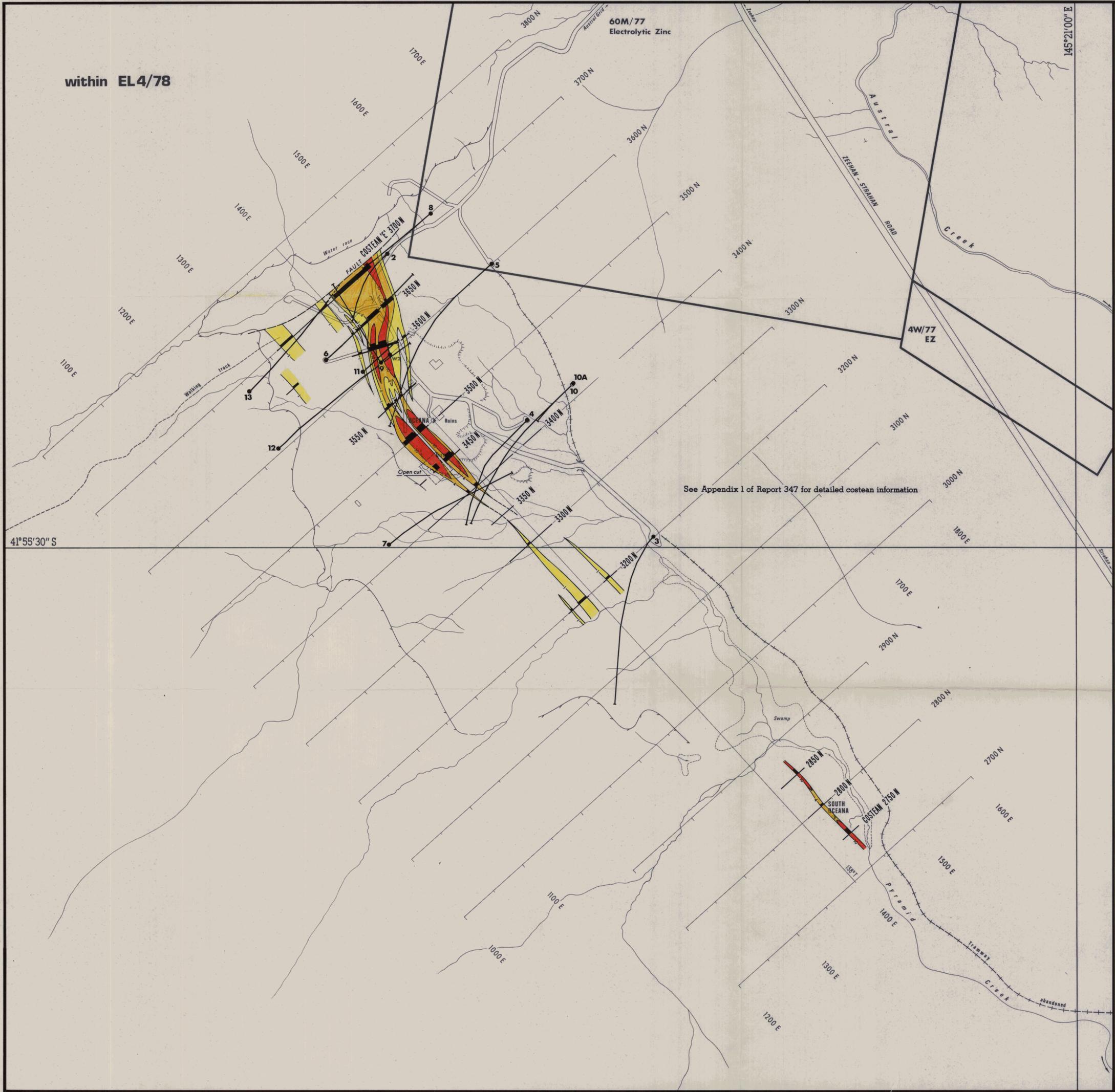


Amoco Minerals Australia Company

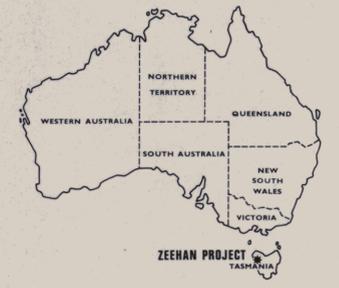
600013

Project	ZEEHAN	Nº A-78-60B
Project Partner	Oceana	
<b>FACTUAL GEOLOGY</b>		
Map Ref. ANG	K-55-5	Latitude 41°55'S Longitude 145°20'E
Surveyed	P. Jones	Date 1981 Scale 1:2500
Drawn	R. SK	Date 1981 Drawing Nº M81-1705
Report 347		

within EL4/78



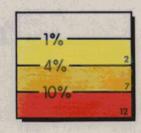
Location



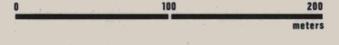
Notes

ZT-80- (etc) prefix omitted from hole numbers

Contour Intervals



1:2500



606074



Amoco Minerals Australia Company

Project	ZEEHAN	Nº	A-78-60B
Project Partner	Oceana		
<b>COSTEAN GEOCHEMISTRY LEAD/ZINC [COMBINED]</b>			
Map Ref.	ANG K-55-5	Latitude	41°55'S Longitude 145°20' E
Surveyed	J. Supree	Date	1982 Scale 1:2500
Drawn	SF, R. SK	Date	January 1983 Drawing Nº M83-1975
Report 347			

**Legend**

QUATERNARY	Alluvium etc	GR	
TERTIARY	Basalt	2C	2
DEVONIAN	Florence Quartzite	4A	28
	Undifferentiated quartzites, sandstones, siltstones		
SILURIAN	Amber Slate	4D1	61
	Siltstone interbedded with shales		
	Crotty Quartzite		
	Undiff. sandstones, siltstones and grits	4B1	6
	Sandstone, massive	4B2	6
	Sandstone, cross bedded	4B3	8
	Sandstone, tubicolar	4B4	41
	Sandstone, white, friable	4B5	6
	Siltstone	4D2	57
	Conglomerate	4I1	6
	Grits	4J1	6
ORDOVICIAN	Gordon Limestone		
	Sandstone	4B6	63
	Sandstone, fossiliferous	4B7	63
	Sandstone breccia	4B8	63
	Siltstone	4D3	63
	Shale	4E1	63
	Claystone	4F	63
	Limestone	4G1	33
	Limestone, fossil breccia	4G2	48
	Limestone, slumped	4G3	41
	Dolomite, black	4H1	35
	Dolomite breccia	4H2	35
	Dolomite, silicified	4H3	35
	Conglomerate	4I2	66
	Ironstone	5	14
	Mineralization	5I	14
	Moina Formation		
	Sandstone, tubicolar	4B9	10
	Sandstone	4B10	64
	Undifferentiated	4D4	64
	Siltstone, tubicolar	4D5	64
	Dolomite	4H4	64
	Conglomerate	4I3	64
	Grit	4J2	64
	Ironstone	5	14
	Mt. Zeehan Conglomerate		
	Undiff. conglomerate, siltstone, sandstone	4I4	58
	Ironstone	5	
CAMBRIAN	Crimson Creek Formation		
	Interbedded shales, siltstones, tuffs, conglomerates	1E 1	20
	Tuff, volcano lith-arenite	1E 2	20
	Sandstone-tuff	4B 11	20
	Shale	4E 2	20
	Ironstone	5	14
	Siltstone	4D6	20
PRECAMBRIAN	Donah Quartzite		
	Undiff. arenite / black shale	4A1	80
	Quartzite (micaceous arenites)	4A2	80
	Sandstone, brown	4B12	80
	Siltstone	4D7	80
	Slate (black shale)	4E 3	87
	Volcanics	1E 3	80
	Ironstone	5	14

**SPL129**  
Mt Lyell

**EL4/78**  
Amoco Minerals



**Location**



**Symbols**

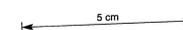
- Geologic contact, position inferred
- Geologic contact, position approximate
- Fault, position accurate
- Fault, position approximate
- Fault, inferred
- Unconformity
- Facies change
- Shear zone
- Zone of intense cleavage
- Brecciation
- Dip and Strike
- Vertical dip and strike
- Vertical foliation
- Quartz vein
- Silicified cemented breccia
- Shaft/prospecting pit
- Adit
- Underground workings
- Costean
- Cutting or quarry
- Dump
- Amoco rock chip location
- Amoco costean
- Amoco drillhole



1:2500



606075



Amoco Minerals Australia Company

Project **ZEEHAN** No **A-78-60B**

Project Partner

**Nubeena**  
**FACTUAL GEOLOGY**

Map Ref. **ANG K-55-S** Latitude **41°55'S** Longitude **145°20'E**

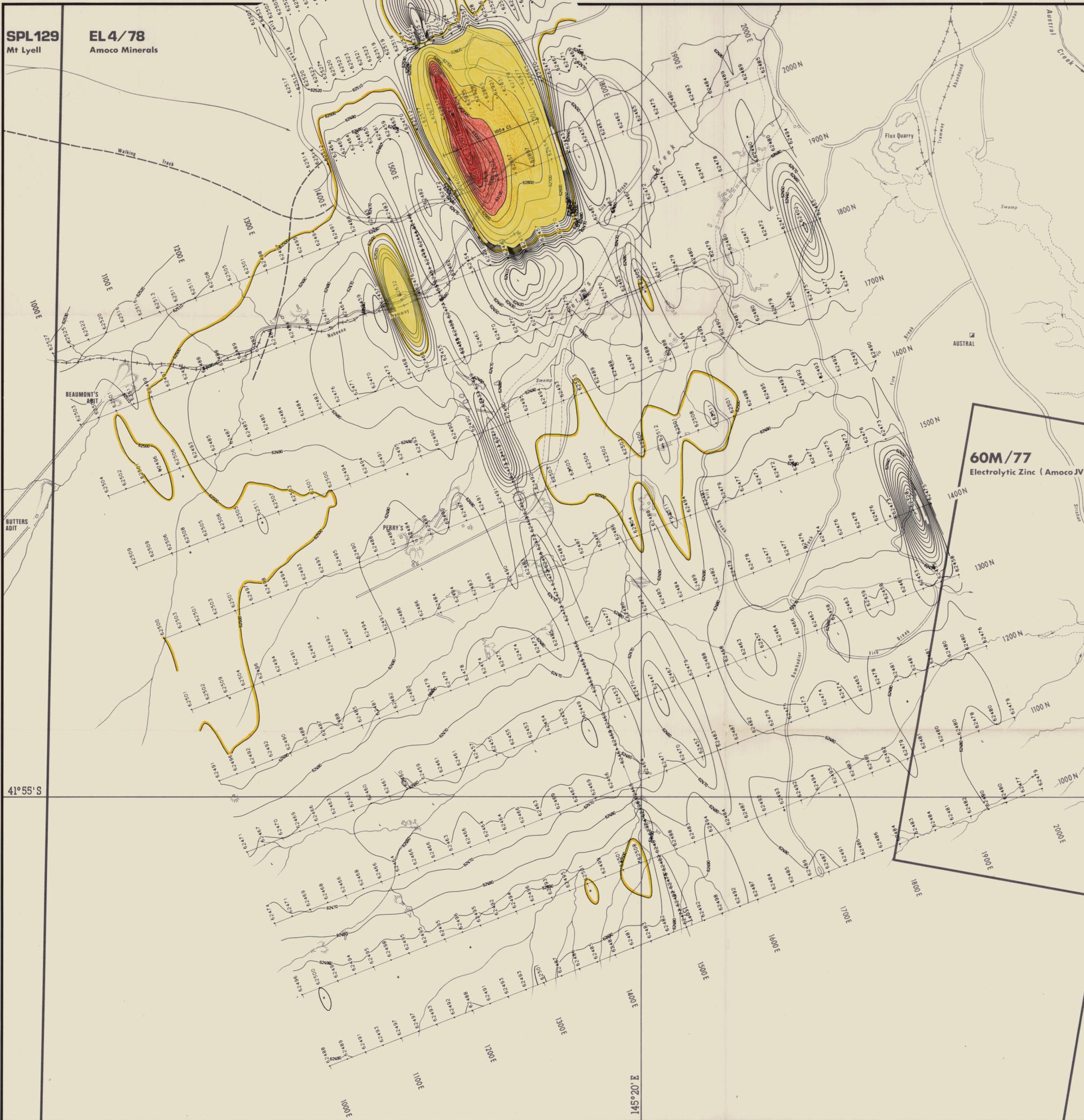
Surveyed **P Jones** Date **1981** Scale **1:2500**

Drawn **Hovick** Date **1982** Drawing **NPM82-1814**

Report 347

SPL129  
Mt Lyell

EL 4/78  
Amoco Minerals



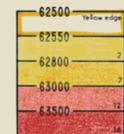
Location



Notes

Computer graphics by CEA, North Sydney

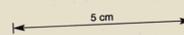
Contour Intervals



Note contour interval change from 10 to 100 gammas



1:2500



41°55'S

145°20'E



Amoco Minerals Australia Company

606076

Project	ZEEHAN	N <sup>o</sup> A-78-608
Project Partner	Nubeena	
<b>GROUND MAGNETICS VALUES, CONTOURS</b>		
Map Ref. ANG	K-55-5	Latitude 41°55'S Longitude 145°20'E
Surveyed	D. Brumby	Date March 1982 Scale 1:2500
Drawn	CEA, Amoco	Date October 1982 Drawing N <sup>o</sup> M83-1971
Report 347		





WITHIN E.L.4/78

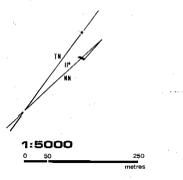
BAURA

MYRTLE

ROSE VALLEY

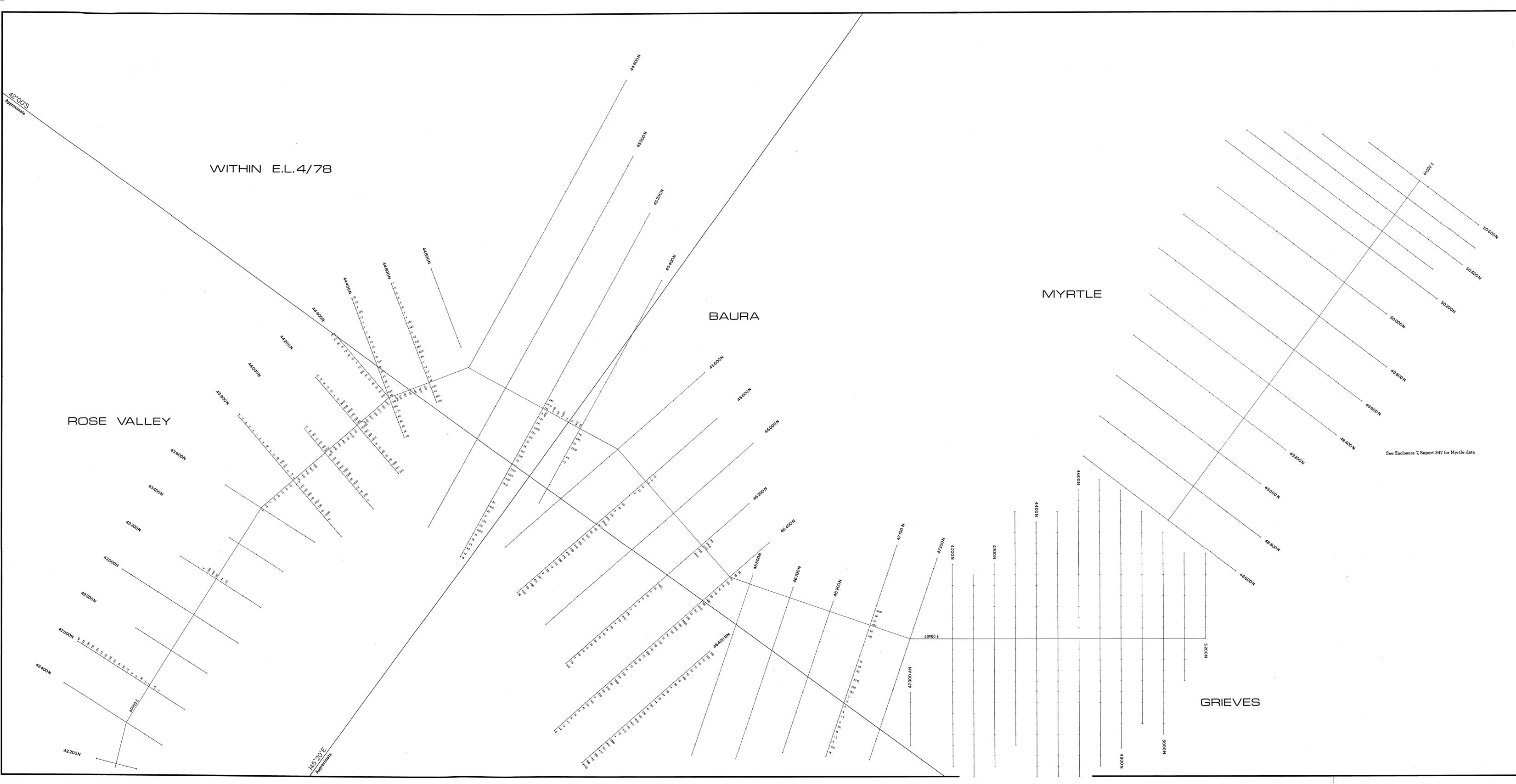
GRIEVES

See Enclosure 7, Report 347 for Myrtle data



606075  
Amoco Minerals Australia Company

Project	ZEEHAN # A-78-608		
Project Partner			
<b>Myrtle to Rose Valley</b>			
<b>BEDROCK GEOCHEMISTRY</b>			
<b>LEAD</b>			
Map Ref. ANG	K-55-S	Latitude	41°55'S
Surveyed	Amoco	Date	1987
Drawn	Geodroling	Date	January 1983
Report 347		Drawing	N/M63-1968



WITHIN E.L.4/78

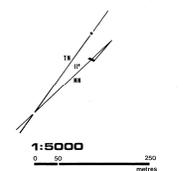
ROSE VALLEY

MYRTLE

BAURA

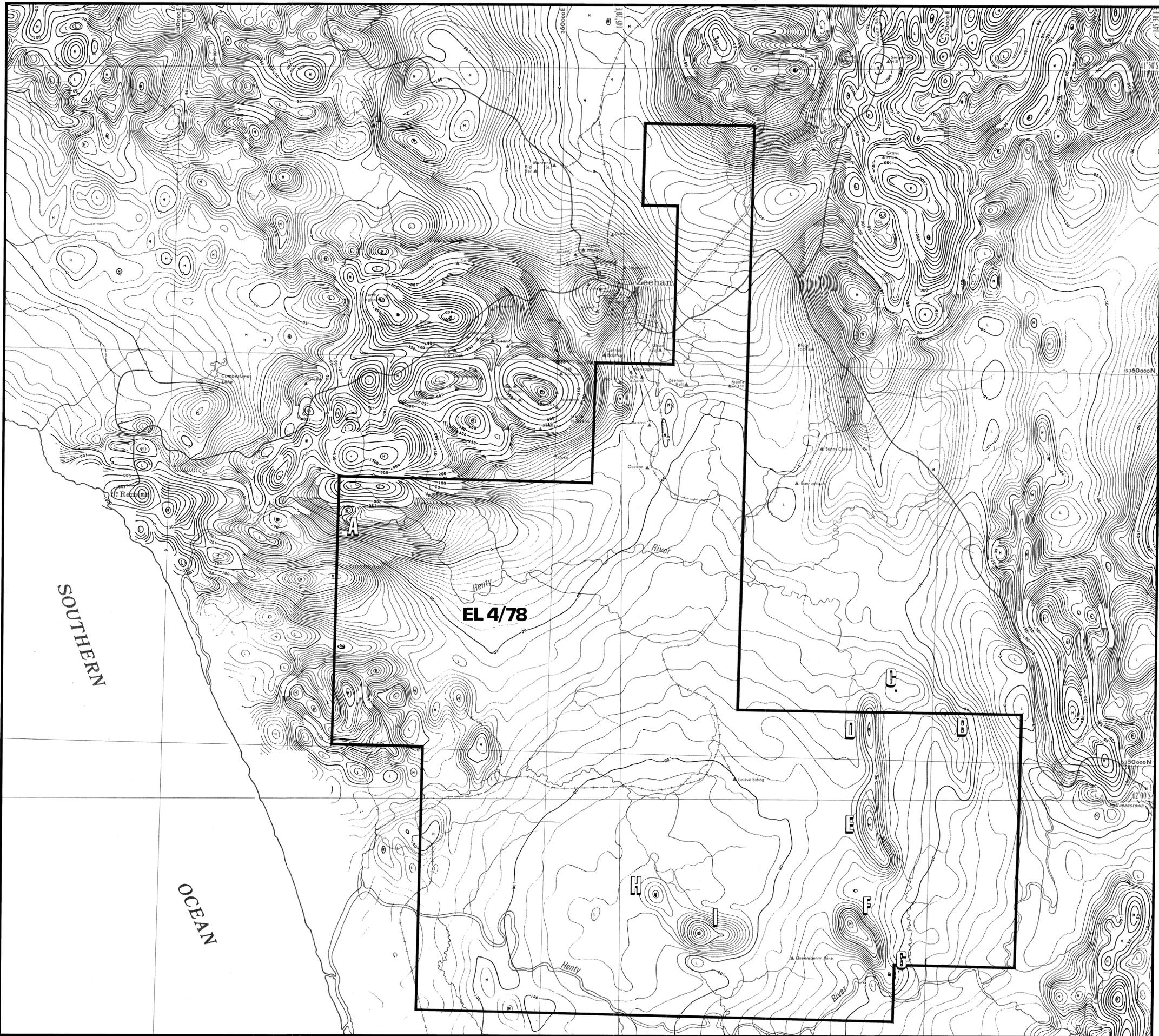
GRIEVES

See Enclosure 7, Report 347 for Myrtle data

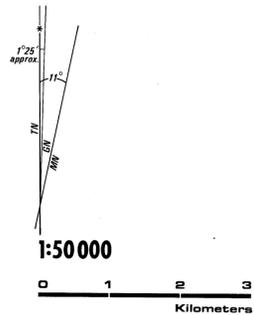


606070  
Amoco Minerals Australia Company

Project	ZEEHAN	Nº A-78-608
Project Partner		
Myrtle to Rose Valley BEDROCK GEOCHEMISTRY ZINC		
Map Ref. ANG	K-25-S	Latitude 41°55'S Longitude 145°20'E
Surveyed	Amoco	Date 1982 Scale 1:5000
Drawn	Geodroing	Date January 1983 Drawing NFM83-769
Report 347		



**Location**



**Notes**

Survey by Geox for the Tasmanian Department of Mines, flown May 1981.  
Contour interval is 5 nTesla

Magnetic anomalies selected by Amoco for follow-up



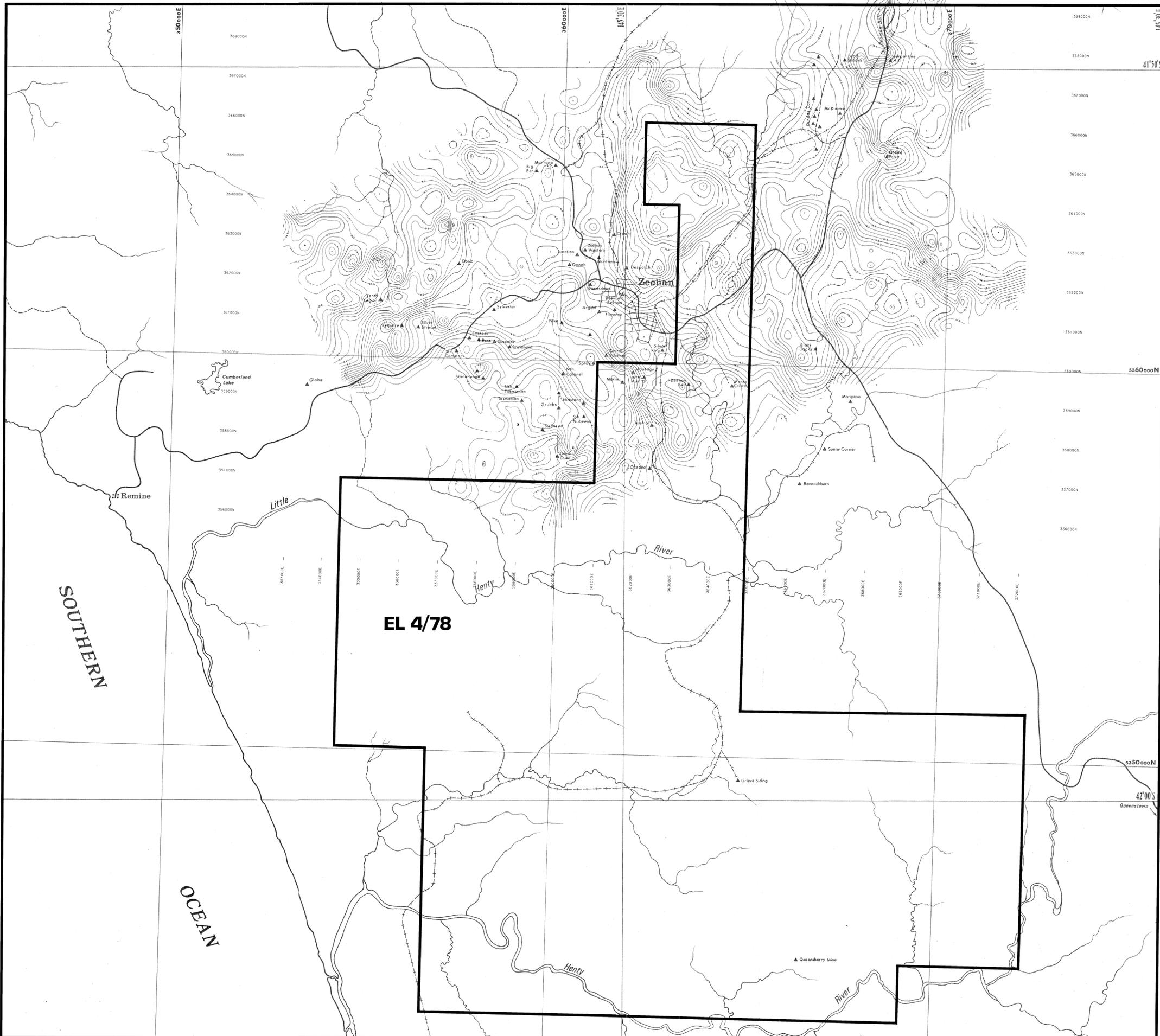
606080



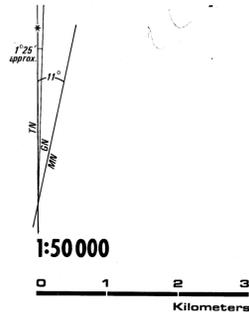
Amoco Minerals Australia Company

Project	<b>ZEEHAN</b>	<b>Nº A-78-60</b>
Project Partner	<b>Zeehan EL 4/78</b>	
<b>RESIDUAL TOTAL MAGNETIC INTENSITY</b>		
Map Ref. ANG	K-55-5	Latitude 42° 00' S Longitude 145° 20' E
Surveyed	Geox	Date May 1981 Scale 1:50000
Drawn	Amoco	Date January 1983 Drawing Nº M83-1972
Report 347		

Compiled from enlargement of Zeehan 1:63360 scale and Strahan 1:50000 scale geologic maps. Transverse Mercator Projection



**Location**



**Notes**

Data from Regional West Coast Gravity Survey conducted by the Tasmanian Department of Mines during 1981. Computer graphics by CEA

Contour interval is 0.5 milligals

606081



Amoco Minerals Australia Company

Project	ZEEHAN	Nº A-78-60
Project Partner		
<b>Zeehan EL 4/78</b>		
<b>REGIONAL BOUGUER GRAVITY</b>		
Map Ref. ANG	K-55-5	Latitude 42° 00' S Longitude 145° 20' E
Surveyed	Tas Mines Dept	Date 1981 Scale 1:50000
Drawn	Amoco	Date January 1983 Drawing Nº M83-1973
Report 347		

Compiled from enlargement of Zeehan 1:63360 scale and Strahan 1:50000 scale geologic maps. Transverse Mercator Projection