SOUTH AUSTRALIA

DEPARTMENT OF MINES AND ENERGY

OPEN FILE ENVELOPE NO. 3961

EL 636 AND EL 879, MOUNT FINKE

PROGRESS AND FINAL REPORTS FOR THE PERIOD 26/8/80 TO 14/6/83

Submitted by

Amoco Minerals Australia Company

1983

ENVELOPE 3961

TENEMENT: EL 636 & EL 879, Mount Finke.

TENEMENT HOLDER: Amoco Minerals Australia Company

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AMOCO MINERALS AUSTRALIA COMPANY

EXPLORATION LICENCE 636

MT. FINKE, SOUTH AUSTRALIA

REPORT FOR FIRST QUARTER ENDING AUGUST 26 1980

1. INTRODUCTION

Exploration Licence 636 covers 377 square kilometers immediately west of Mt. Finke which is 32 kilometers south-south-west of "Malbooma" on the Trans Australian Railway. The relevant 1:250,000 scale sheet is Tarcoola (SH 53-10).

The only known outcrop is sandstone, of the Middle Proterozoic Tarcoola Beds, in the Mt. Finke area near the eastern border of the Exploration Licence. Heavily vegetated sand dunes pose access problems to many parts of the tenement.

Amoco acquired the Licence in order to investigate the base and precious metal potential of Precambrian rocks outcropping near Mt. Finke and inferred beneath recent cover in the rest of the Exploration Licence.

2. WORK TO DATE

2.1 Acquisition of Lands Department 1:89,000 scale black and white aerial photography and all relevant published geological and geophysical plans.

2.2 A geophysical interpretation using published regional aeromagnetic data.

2.3 Geological examination of the outcropping rocks in the Mt. Finke area and analysis for copper, gold, bismuth, tin, tantalum, nickel, lead, zinc, iron, manganese, chromium, cobalt, molybdenum, uranium and barium of fine rock chip samples of heavy mineral (current) bedded sandstone on the north-eastern corner of the outcrop area. (The unit sampled actually outcrops to the east of the Exploration Licence but presumably extends beneath cover into it.) There were no highly anomalous results.

3. APPROXIMATE EXPENDITURE FOR QUARTER

3.1	Salaries (research, field inspection)	$950.00
3.2	Field costs (vehicle costs, fuel, cookery)	550.00
3.3	Assays	73.00
3.4	Aeromagnetic Interpretation	150.00
3.5	Annual Rental in Advance	282.00
3.6	Maps and Aerial Photos	30.00
3.7	Administration/Overheads	200.00
	Total	$2,235.00

GRAHAM C. MILLER
Project Geologist

Adelaide
November 24, 1980

AMOCO MINERALS AUSTRALIA COMPANY

EXPLORATION LICENCE 636

MT. FINKE, SOUTH AUSTRALIA

REPORT FOR SECOND QUARTER ENDING NOVEMBER 26 1980

No work was carried out during the quarter and the cumulative exploration expenditure for the first two quarters remains at $2235.

A low level aeromagnetic survey is planned for part of the Exploration Licence in the third quarter.

GRAHAM MILLER
Project Geologist - South Australia

12th February, 1981.

AMOCO MINERALS AUSTRALIA COMPANY

EXPLORATION LICENCE 636

Mt. FINKE, SOUTH AUSTRALIA

REPORT FOR THIRD QUARTER, ENDING FEBRUARY 26th, 1981

1. Work during the quarter comprised a 530 line kilometer low level aeromagnetic survey carried out by AERODATA (1980) PTY LTD of Perth.

   The survey was designed to detail and accurately locate a number of B.M.R. aeromagnetic anomalies in an area in which ground movement is extremely difficult. Processed data has not yet been received.

2. Approximate expenditure during quarter:

2.1 Salaries (planning and monitering of aeromagnetic survey).	$ 300
2.2 Aeromagnetic survey.	5250
2.3 Photomosaics and base plans.	150
2.4 Overhead/Administration.	570
Total	$ 6270

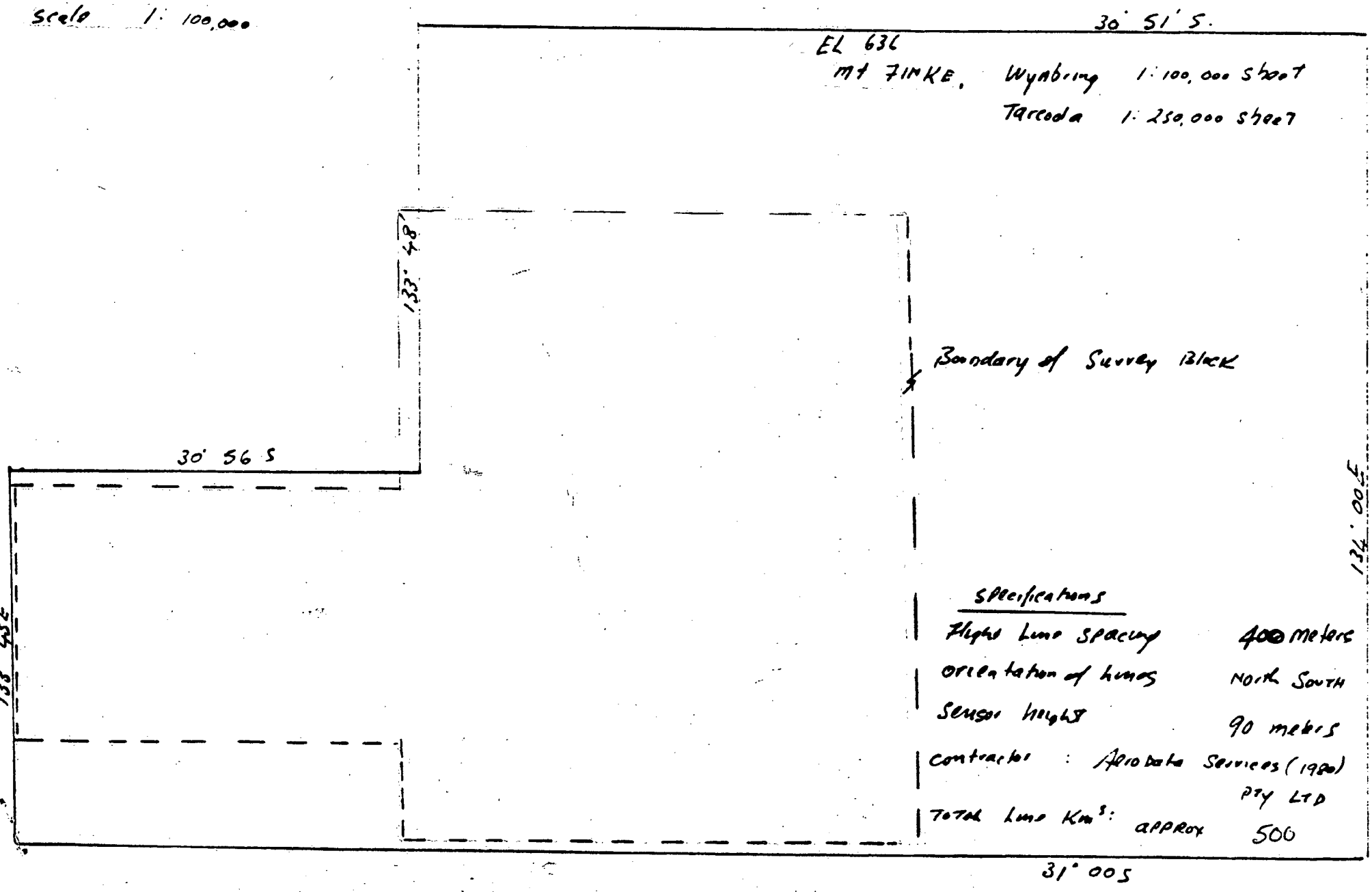
3. Cumulative expenditure on Exploration Licence 636 is now $8505.00.

4. Future work will comprise ground geophysical follow-up of interesting aeromagnetic anomalies.

G.C. Miller
Project Geologist - South Australia

ATTACHMENT: Plan showing location of aeromagnetic survey block.

Diagram of Proposed Aeromagnetic Survey Block



AMOCO MINERALS AUSTRALIA COMPANY

EXPLORATION LICENCE 636

MT. FINKE, SOUTH AUSTRALIA

FINAL QUARTERLY REPORT, FOR PERIOD ENDING MAY 26th, 1981.

Appendices

Plans		Scale
W2317	Location plan.	1:250,000
W2316	Geology.	1:100,000
W2312	Regional aeromagnetic data.	1:100,000
W2313	Regional gravity data.	1:100,000
W2314	Total field magnetic contour map.	1:50,000
W2315	Flight line plan.	1:50,000
W2347	Stacked aeromagnetic profiles	1:50,000

KEY WORDS

Mt. Finke

E.L. 636

Tarcoola 1:250,00 sheet

Middle Proterozoic

Lower Proterozoic

Archean

Tarcoola Beds

Aeromagnetic

Gravity

Drill

Copper

Gold

INTRODUCTION.

Exploration Licence 636 covered 377 square kilometers near Mt.Finke, 65 kilometers south west of Tarcoola on the Tarcoola 1:250,000 sheet. Amoco acquired the Licence in order to investigate the base and precious metal potential of Precambrian rocks inferred beneath aeolian sand cover.

For a number of logistical reasons the planned first year exploration programme for this Licence was not completed. As a renewal application was submitted too late to be accepted, the tenement lapsed on May 26th, 1981 and the ground was immediately re-applied for (DM 367/81). The new tenement will be effective for six months initially.

No field work was carried out in the three months to May 26th, 1981; this report summarizes work on the Licence for the twelve months from May 27th, 1980.

EXPLORATION HISTORY.

There has been no recorded previous company exploration of the area although the Mt. Finke outcrop area has obviously been inspected. There is the normal regional geological, aeromagnetic and gravity survey coverage.

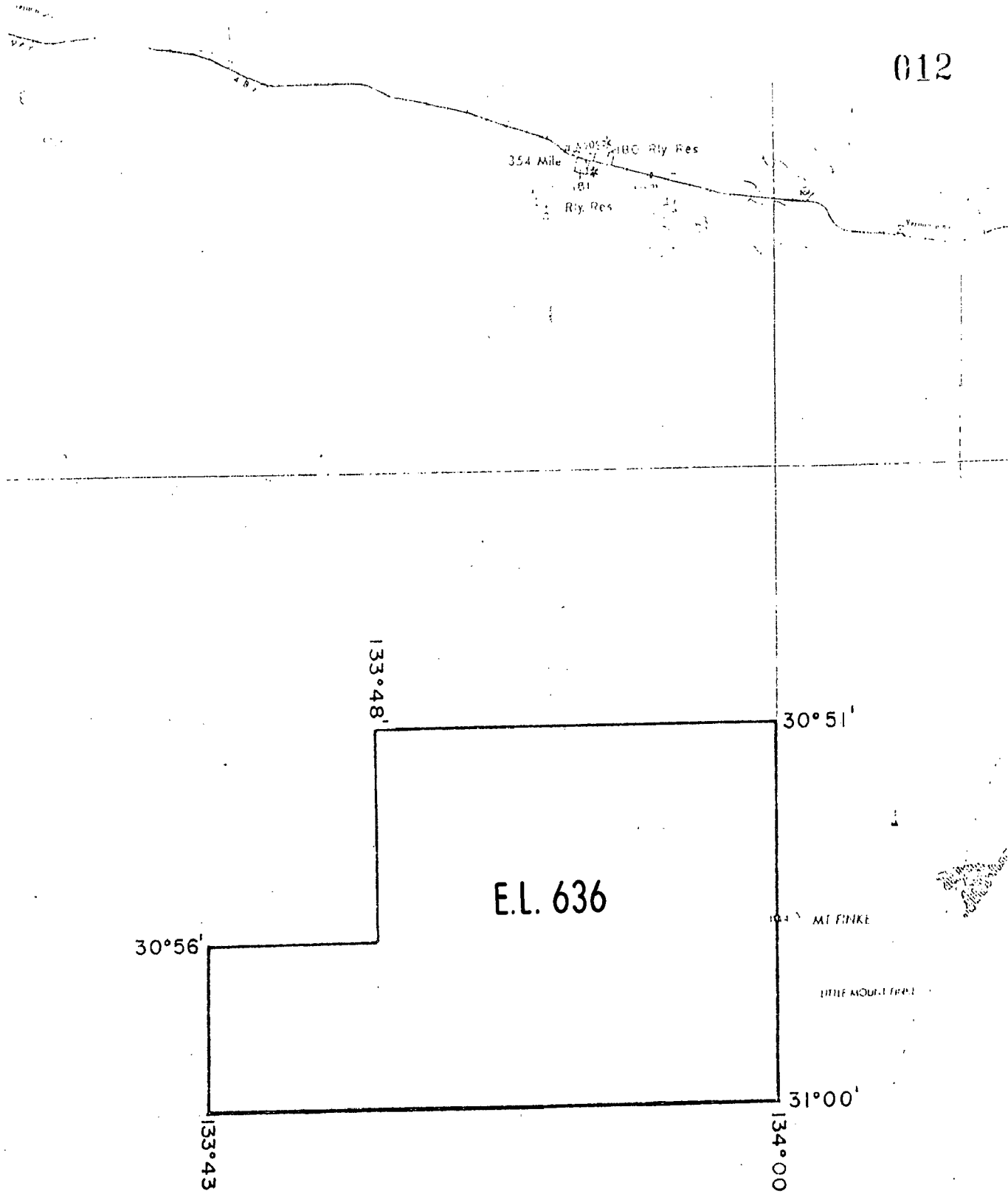
AMOCO'S EXPLORATION.

Amoco's exploration programme comprised on investigation of outcropping rocks around the Mt. Finke Trig Station with some geochemical-X.R.F. work, an interpretation of the regional aeromagnetic data and a 570 line kilometer low level aeromagnetic survey over part of the Exploration Licence.

GEOLOGY.

Exploration Licence 636 lies near the centre of the Gawler Craton and probably covers Archean, Lower Proterozoic and Middle Proterozoic rocks - mostly obscured by aeolian sand. The only known outcrop is sandstone of the Middle Proterozoic Tarcoola Beds in the Mt. Finke area on the eastern boundary of the Licence.

The outcropping Tarcoola Beds within the Licence strike at about 90^{o} and dip at about 65^{o} to the south. At the eastern end of the outcrop the strike swings markedly southwards - through 180^{o} in the southern - most outcrop area. This, combined with a photo-lineament along the south eastern edge of the outcrop area, suggests the possibility of Tarcoola Beds in this area having formed part of an original south west plunging syncline, with the southern arm now faulted out.



SCALE 1:250,000

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

APPLICANT: AMOCO MINERALS AUSTRALIA COMPANY

DM: 367 / 81 AREA: 377 square kilometres

1:250000 PLANS: TARCOOLA

LOCALITY: MT. FINKE AREA - Approx. 65 km S.W. of Tarcoola

DATE GRANTED: DATE EXPIRED: EL No: 636 W2317

The exposed thickness of Tarcoola Beds at Mt. Finke is about 1500 meters. The lower 700 meters contain heavy mineral (hematite) bands marking out current beds, plus coarse felspathic and conglomeratic sections. The upper part of the sequence is generally clean sandstone.

GEOCHEMISTRY.

Rock chip samples of heavy mineral banded sandstone were taken from five locations (stratigraphically lower to upper) in the exposed basal part of the Tarcoola Beds, on the north eastern edge of the Mt. Finke outcrop area. The samples were analysed for copper, lead, zinc, bismuth, cobalt, nickel, cadmium, iron, manganese, chromium, silver, molybdenum, gold (all by A.A.S.) barium, uranium, tin and tantalite (X.R.F.). The results were not remarkable; there were low order barium (to 3150 PPM) and tin (to 14 PPM) anomalies.

GEOPHYSICS.

Aeromagnetics.

Published data (Wynbring 5636 1:100,000 plan) shows a linear 400 gamma complex trending south westerly to westerly through the centre of the Exploration Licence, a 250 gamma circular complex in the central northern part and a small discrete 400 gamma anomaly near the southern boundary. A. Dodds of Geoex Pty. Ltd., suggested the pattern to represent metasediment/volcanic zones surrounded by granitic rocks. A recent SADME geophysical interpretation plan (80-504) suggests the circular complex in the north of the Licence to be part of a 1000 square kilometer granitic body.

Because of extremely difficult logistics on the ground, in order to further examine the magnetically active areas a 570 line kilometer low level aeromagnetic survey was carried out. The contoured data, and survey specifications, are shown on plan 2314; plan 2315 is a flight line diagram and plan 2347 shows stacked profiles. Because of a communications error on the part of the contractors, the survey was flown with east-west flight lines. They subsequently re-flew part of the block with north-south lines.

No interpretive or ground follow up on the aeromagnetic data had been carried out by the expiry date of the Licence. The large circular anomaly at 98500E, 101200N (arbitrary co-ordinates) is an obvious initial follow-up target.

Gravity.

Published gravity data (plan W2313) shows a regional bouguer gravity low off the north western corner of the Licence and a bouguer gravity high in the south eastern corner. The significance of both is currently unclear. Bouguer gravity contour lines through the centre of the E.L. generally parallel the aeromagnetic trends.

EXPENDITURE.

No expenditure was incurred during the fourth quarter. Expenditure for the year May 26th, 1981. was:

Salaries	$ 1250
Field costs	550
Aeromagnetic survey	5900
Geochemical - X.R.F. analyses	73
Annual rental	282
A. Dodds aeromagnetic interpretation	150
Maps and photos	180
Aministration/overheads	838
Total	$ 9223

FUTURE WORK.

Work on the new Licence will comprise a complete interpretation of the aeromagnetic data, ground magnetic and gravity follow-up and drilling as warranted.

G.C. Miller
Senior Geologist - South Australia

August 28th, 1981.

APPENDIX I

INTERPRETATION OF

REGIONAL AIRBORNE MAGNETIC SURVEYS

OVER

1. OOLDEA AREA
2. MURLOOCOPPIE - COOBER PEDY AREA
3. GILES AREA
4. TARCOOLA - KINGOONYA AREA
5. CHILDARA AREA

FOR

AMOCO MINERALS AUSTRALIA COMPANY

PRELIMINARY REPORT

11th February, 1980.

PART 4

TARCOOLA - KINGOONYA AREA

Map Sheets Tarcoola and Kingoonya 1:250,000 (Parts)

GEOLOGY:

Outcrop is sparse in the part of the area west of 134° 30'E, but much more extensive to the east of this line. Precambrian rocks present in outcrop include Archaean gneisses, basic rocks and banded iron formation and later Proterozoic granites, Tarcoola sediments and Gawler Range volcanics. Major structural features are absent in the area of interest.

SURVEY SPECIFICATIONS:

The area is covered by surveys flown at 150 metres elevation and 1.6 kilometre nominal line separation, oriented east-west. Contoured maps are available at 1:63,360 or 1:100,000 contoured at 50 or 100 nT intervals.

Low level (90 metre), high density (400 metre line spacing) surveys are also available over the south-east part of the Tarcoola map sheet. One survey, flown for Getty and now on open file, was processed by SADME and produced as 1:50,000 scale contour maps. The other, flown for SADME, is still being produced but preliminary contour maps at 1:50,000 scale are available. These surveys give useful additional information that warrants detailed analysis.

INTERPRETATION:

The geological mapping shows magnetic basement rocks at surface in places, and the general magnetic picture is that such

rocks are close to surface throughout, there being no evidence of deeper seated magnetic sources.

The general strike of the magnetics is east-north-east, which is unfortunately quite close to the flight line direction. Major features are still quite clear, however, although continuity of anomalies is sometimes in doubt. A more important limitation in parts of the area - specifically east of 135°E, is the wide contour interval of 100 nT which eliminates all fine detail from the data and shows only strong anomalies, which are few. Since analog charts for this area are not available, magnetic data are very sparse and flying of detailed surveys might be considered, even though the available magnetics do not look particularly active or complex.

A zone of strong magnetics extends through the centre of this area, identified on Plate 1 as Zone 1. At the west end, west of 134°30'E, the zone is decidedly linear and coincides in places with banded ironstone outcrops, which would be a suitable source of this anomaly. To the east the zone becomes wider and more fragmented, and is probably a separate rock type, although some of the discrete anomalies still coincide with banded ironstone outcrop. Archaean gneisses and basic rocks are interpreted for this area, although extensive areas of Tarcoola sediments, presumably thin cover rocks, are observed in outcrop. Zone 1 generally coincides with areas of high Bouguer gravity anomaly.

Zone 2 is in an area of no outcrop and is primarily intersting because of its circular shape and relative simplicity. A basic intrusive is interpreted here, at a depth of less than 200 metres.

Zone 3 is a multiple anomaly of quite high relief and could class with Zone 1 or 2, while Zone 4 again resembles Zone 1

and is interpreted as an area of shallow Archaean rocks.

The remainder of the area, identified as Zone 5, is generally magnetically unresponsive, with scattered isolated magnetic highs. There being no indication of deeper magnetic rocks, these areas are interpreted as granitic, a rock type that is identified in scattered outcrops throughout the area.

Zone 6, which is not obvious on the regional magnetic data, shows clearly on the Getty detail survey and is interpreted as a basic dyke, having the same strike as numerous like features to the east of this area. The appearance of this feature in the detail survey of a relatively inactive area indicates how much can be missed in the regional surveys and that detail surveys, even in relatively flat areas magnetically, can yield additional information.

The two detail surveys can assist in analysing this area geologically if a full interpretation is authorised. Data are sparse over the areas to the west of $134^{o}20'E$ when compared to anomaly complexity, and detailed surveys would be helpful. Apart from that portion assigned to Zone 1, the magnetics over the Kingoonya portion are relatively simple. However, the contour interval of 100 nT may oversimplify the magnetics, concealing useful information, and reflying could be advantageous.

APPENDIX II

COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM 800328

Results in ppm

SAMPLE	Bi	Cd	Co	Cu	Ni	Pb	Zn	Fe%	Mn	Cr
MJ24-1	-4	-1	8	14	18	22	12	17.5	290	130
2	-4	-1	4	8	12	8	8	5.90	150	34
3	-4	-1	4	14	20	14	10	21.5	115	195
4	4	-1	4	8	16	20	8	22.5	90	210
MJ24-5	-4	-1	-4	8	14	14	6	8.50	100	60

Method of Analysis: Cu, Pb, Zn, Bi, Co, Ni, Cd AAS 1
Fe, Mn, Cr AAS 2/2A

Cost $73-50

COMLABS Pty Ltd
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM 800328

Results in ppm

SAMPLE	Ag	Mo	Au	Ba	U	Ta	Sn
MJ24-1	-1	-4	-0.05	3150	12	-10	-4
2	-1	6	-0.05	1400	4	-10	-4
3	-1	-4	-0.05	730	4	15	14
4	-1	-4	-0.05	800	10	-10	-4
MJ24-5	-1	-4	-0.05	370	8	15	8

Method of Analysis:

Ag, Mo,	AAS 3
Au	AAS 5
Ba, U, Sn, Ta,	XRF1

EL 636

30°51'S

30°56'S

31°00'S

133°43'E

133°48'E

134°00'E

q

Geochem Samples
MF1 - MF5

Mt Finke

Po

75°

55°

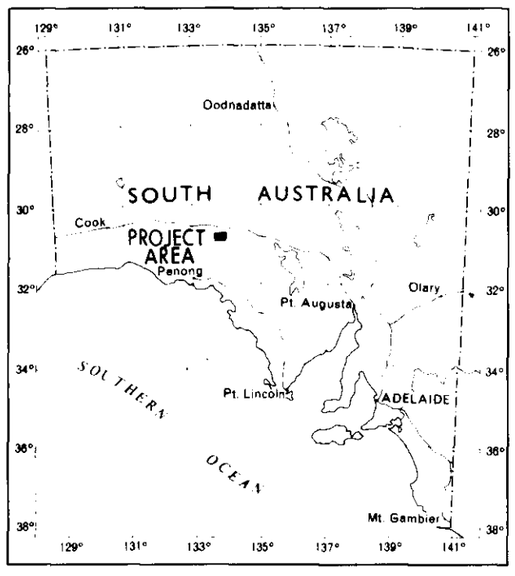
Arbitrary Co-ordinate
100,000E, 100,000N.

Boundary of Aeromagnetic Survey Block

REFERENCE

q	Aeolian Sand (Dune Systems)
Po	Tarcoola Beds, Middle Proterozoic Sandstones, heavy mineral banding in current beds in exposed lower half.
– – –	Outcrop boundary
75°	Dip and strike
———	Fault
———→	Photo-lineament

LOCALITY



N

1000m 0 1 2 3 4 5km

KILOMETRES

AMOCO

Amoco Minerals Australia Company

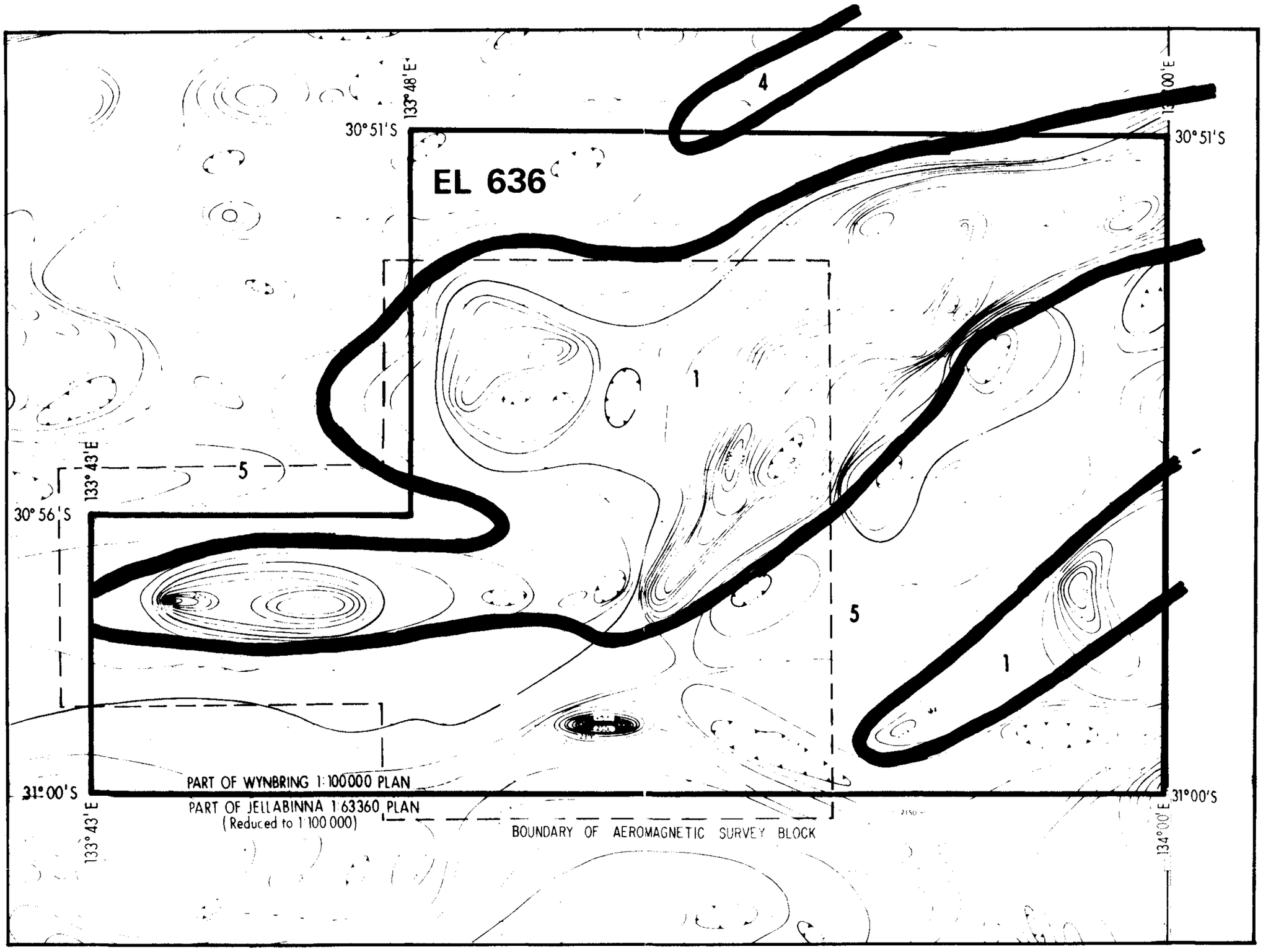
Project	TARCOOLA			**Nº**	A-80-88
Project Partner					
EL 636 Mt FINKE Geology					
Map Ref. ANG	SH 53-10	**Latitude**	30°56'S	**Longitude**	133°56'E
Surveyed	G.C.M.	**Date**	10·8·81	**Scale**	1:100 000
Drawn	B.J.Z.	**Date**	13·8·81	**Drawing Nº**	W2316

Report

3961-1

Enclosure

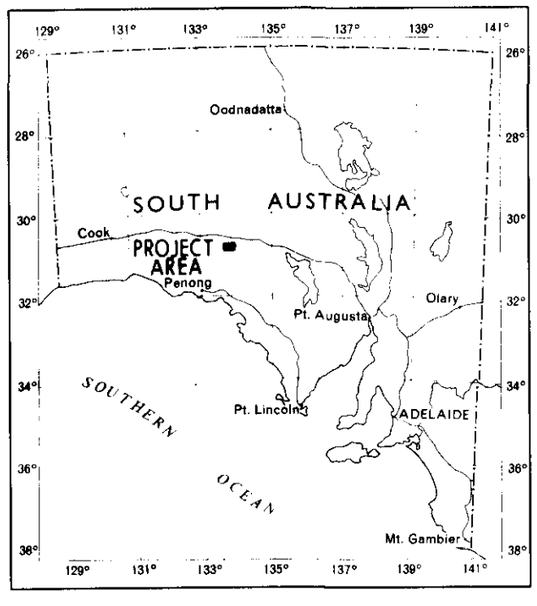
PAPER TRIM

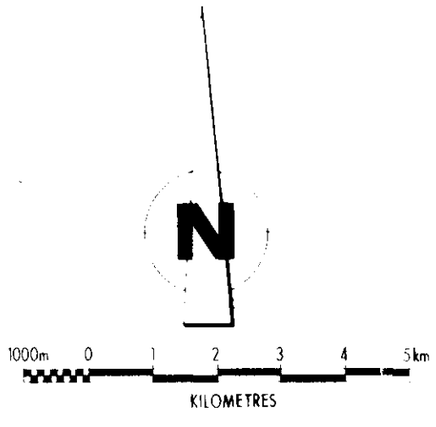


A DODDS INTERPRETED PROVINCES

1. LINEAR ZONE OF STRONG MAGNETICS; ARCHEAN GNEISSES AND BASIC ROCKS?
2. BASIC INTRUSIVE (OFF PLAN)
3. SIMILAR TO 1 OR 2 (OFF PLAN)
4. SHALLOW ARCHEAN ROCKS
5. GRANITIC BASEMENT

LOCALITY





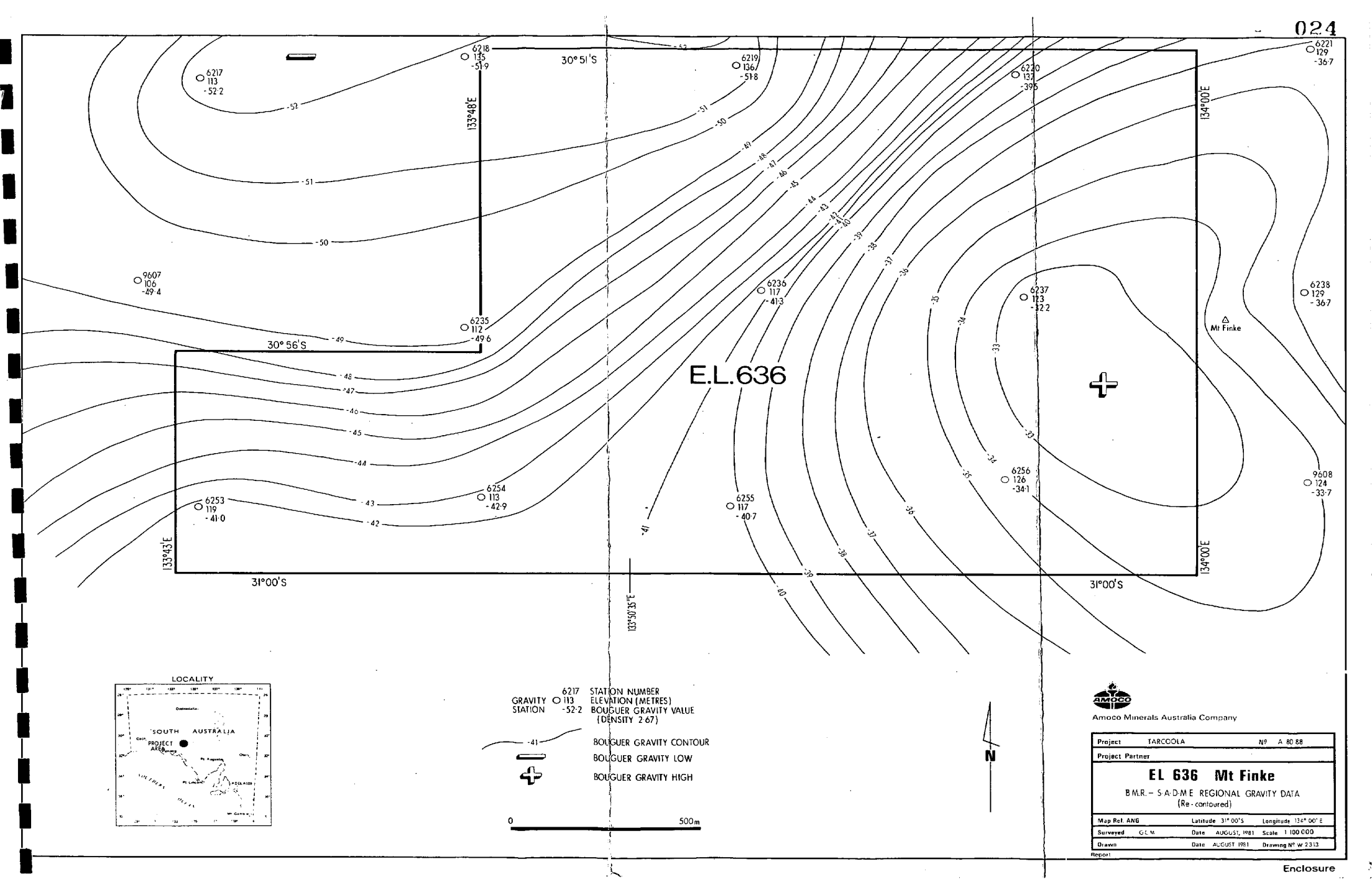
Amoco Minerals Australia Company

Project	TARCOOLA			**Nº**	A-80-88
Project Partner					
E.L. 636 MT FINKE Regional Aeromagnetic Data (Published)					
Map Ref. ANG	SH 53-10	**Latitude**	30° 56' S	**Longitude**	133° 56' E
Surveyed	G.C.M.	**Date**	10-8-81	**Scale**	1:100 000
Drawn	B.J.Z	**Date**	13-8-81	**Drawing Nº**	W 2312

Report

3961-2

Enclosure



Amoco Minerals Australia Company

Project	TARCOOLA		Nº A 80 88
Project Partner			
EL 636 Mt Finke			
B.M.R. – S·A·D·M·E REGIONAL GRAVITY DATA (Re-contoured)			
Map Ref. ANG		Latitude 31° 00'S	Longitude 134° 00' E
Surveyed	G.C.M.	Date AUGUST, 1981	Scale 1 100 000
Drawn		Date AUGUST 1981	Drawing Nº W 2313
Report			

Enclosure

LOCALITY

133°48' E

30° 55' S

30°56'S

133°43'E

31°00'S

Boundary of E.L. 636

BASE OF SURVEY BOUNDARY

NORTH SIDE OF SURVEY BOUNDARY

Amoco Minerals Australia Company

Project TARCOOLA	N° A 80 88
Project Partner	
E.L 636 Mt FINKE	
Total Field Magnetic Contour Map	
Map Ref AMG	Latitude 30° 55' S Longitude 133° 50' E
Surveyed GEM	Date JULY 1981 Scale 1:50 000
Drawn PJM	Date AUGUST 1981 Drawing N° W 2314

Report

>60 000 nano Teslas

59 000 - 60000 nano Teslas

58 000 - 59 000 nano Teslas

<58 000 nano Teslas

CONTOUR INDEX

500nT

100nT

50nT

10nT

SURVEY SPECIFICATIONS

MAGNETOMETER Sensitivity 0.005 High Performance Magnetometer
Cycling rate 1 second
Resolution 0.05 nano Teslas

FLYING HEIGHT (terrain height) 80 metres

AIRSPEED 90 knots

RECOVERY 600 m approx.

FLIGHT DIRECTION As indicated

LINE SPACING 400 m

AMOCO MINERALS AUSTRALIA COMPANY
AIRBORNE MAGNETOMETER SURVEY

TOTAL FIELD MAGNETIC CONTOUR MAP
MOUNT FINKE
SOUTH AUSTRALIA

PHOTOSCALE 1: 20000
CONTOUR INTERVAL Contour Value

SURVEYED AND COMPILED BY
AERODATA SERVICES (1980) PTY LTD

3961-3

Confidential Env 3961

133° 48'E

30° 56'S

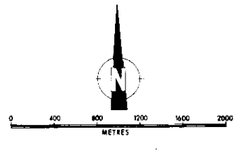
133° 43'E

Boundary of EL636

31° 00'S

Location

Reference : Survey by Aerodata Services (1980) Pty Ltd. February - April, 1981



Amoco Minerals Australia Company

Project TARCOOLA		N° A - 80 - 88
Project Partner		
E.L. 636 Mt FINKE		
Flight Line Diagram		
Mag Ref. ANG SH 53-10	Latitude 30° 56'S	Longitude 133° 56'E
Surveyed G.C.M.	Date AUGUST '81	Scale 1:50000
Drawn P.J.M.	Date AUGUST '81	Drawing N° W 2315

Report

3961-4

1·000 metres. north

133° 48' E

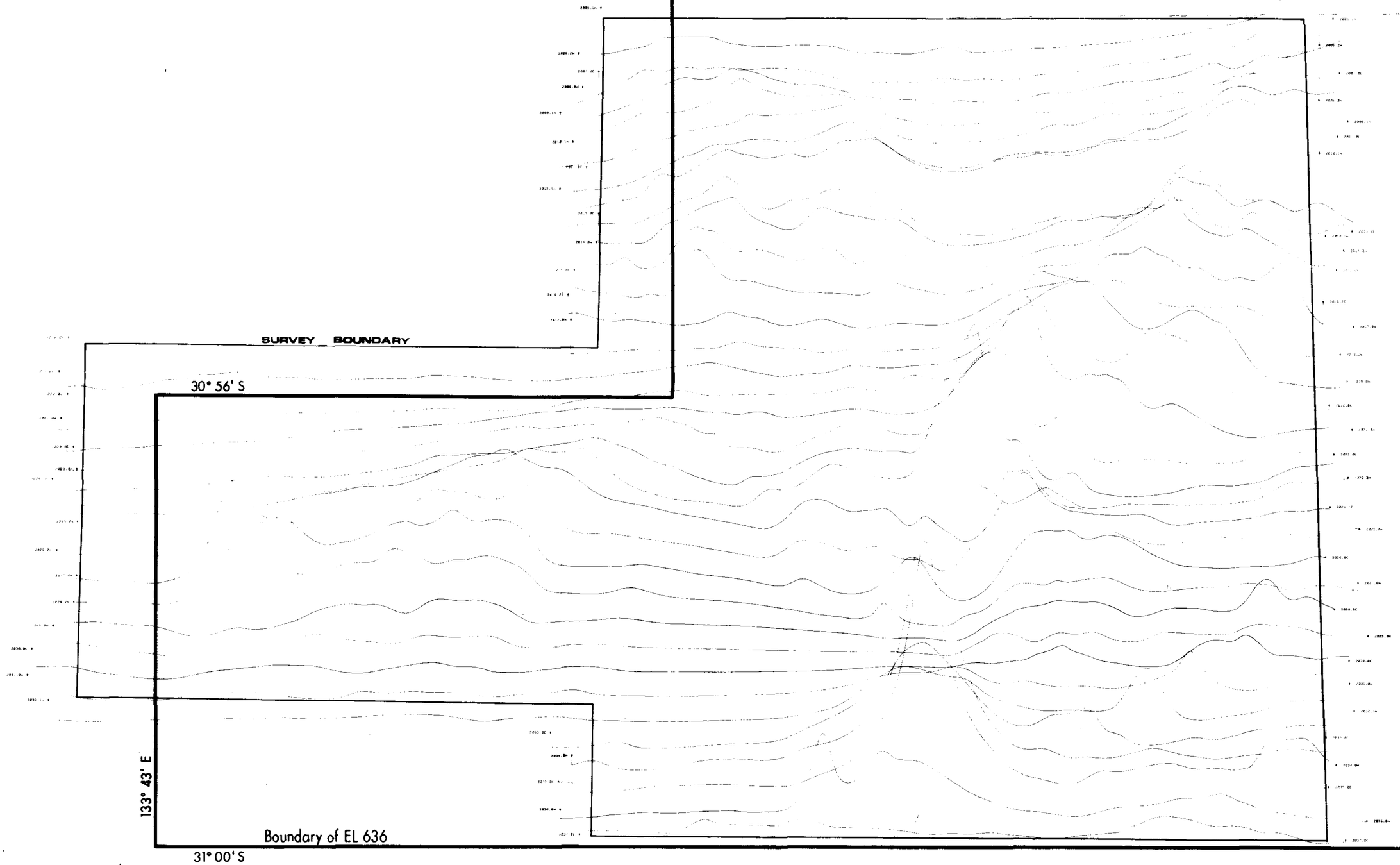
SURVEY BOUNDARY

30° 56' S

133° 43' E

Boundary of EL 636

31° 00' S



Refrence : Surveyed by Aerodata Services (1980) Pty Ltd
in February 1981.
Magnetic Base 58200 nanoteslas (Kingoonya)
Vertical Scale 100nt/cm
(Profiles are for initial East-West oriented survey)

N

0 1000 2000 3000 4000
METRES

Amoco Minerals Australia Company.

Project	TARCOOLA	nº A-80-88
Project Partner		
E.L 636 Mt PURKLE		
Stacked Aeromagnetic Profiles		
(East - West Flight Lines)		
ANG Nº SH 53-10	Lat 30°56'S	Long 133°56' E
Surveyed G.C.M.	Date Aug 1981	Scale 1: 50000
Drawn	Date Aug 1981	Drawing Nº W7382

200 metres east

0·000 metres north job number 454 mosaic number 1 photoscale 1:25000 magnetic base 58200 vertical magnetic scale in nano tesla/cm 100

3961-5

AMOCO MINERALS AUSTRALIA COMPANY

EXPLORATION LICENCE 879

MT. FINKE, SOUTH AUSTRALIA

REPORT FOR FIRST QUARTER, ENDING DECEMBER 14th, 1981.

INTRODUCTION.

Exploration Licence 879 covers 377 square kilometers immediately west of Mt.Finke, 32 kilometers SSW of Malbooma on the Trans Australian Railway The Licence replaced E.L. 636, covering the same area, and details of the geology/geography and Amoco's work on this Licence can be found in quarter reports submitted to the Mines Department.

EXPLORATION.

Work carried out on E.L. 879 in the period to December 14th, 1981 comprise detailed amd reconnaissance gravity surveying and ground magnetometer surveying. The detailed work was carried out over circular aeromagnetic anomaly M.F.I. shown on Plan W2319 attached to the fourth quarterly report for E.L. 636. Reconnaissance gravity work (approximately 120 stations) was carried out by Wongela Geophysical Pty. Ltd., while the optical levelling and detailed gravity surveying (205 stations) was carried out by contract geophysicist P. Mewkill. Amoco staff carried out gridding and magnetometer work.

The ground work showed aeromagnetic anomaly M.F.I. to be almost perfectly circular with an amplitude of 4700 gammas. There is a NNE-SSW one to two milligal gravity "ridge" trending through the anomaly area and an isolated anomaly of similar amplitude located 500 meters NW of the magnetic anomaly centre. Magnetic and gravity plans are attached; other plans and sections will accompany the second quarterly report.

EXPENDITURE.

Approximate expenditure for the period was:

Salaries	3850
Cookery	935
Drafting Materials	200
Field Supplies	490
Transport	90
C/f... $	5565

EXPENDITURE.

	B/f..	5565
Vehicle Costs (including rent)		2060
Fuel (vehicle and helicopter)		1095
Depreciation on Geophysical Gear		200
Rental of Surveying Gear		150
Freight		200
Field Office Rental and Communications		100
Computer Costs		100
Contract Geophysics.		
(Wongela Geophysical Pty. Ltd).		1342
(P. Mewkill)		1368
Helicopter Charter (Lloyd Helicopters)		3198
Annual Rental in advance		282
Overheads/Administration		1566
Total		$ 17226

FUTURE WORK.

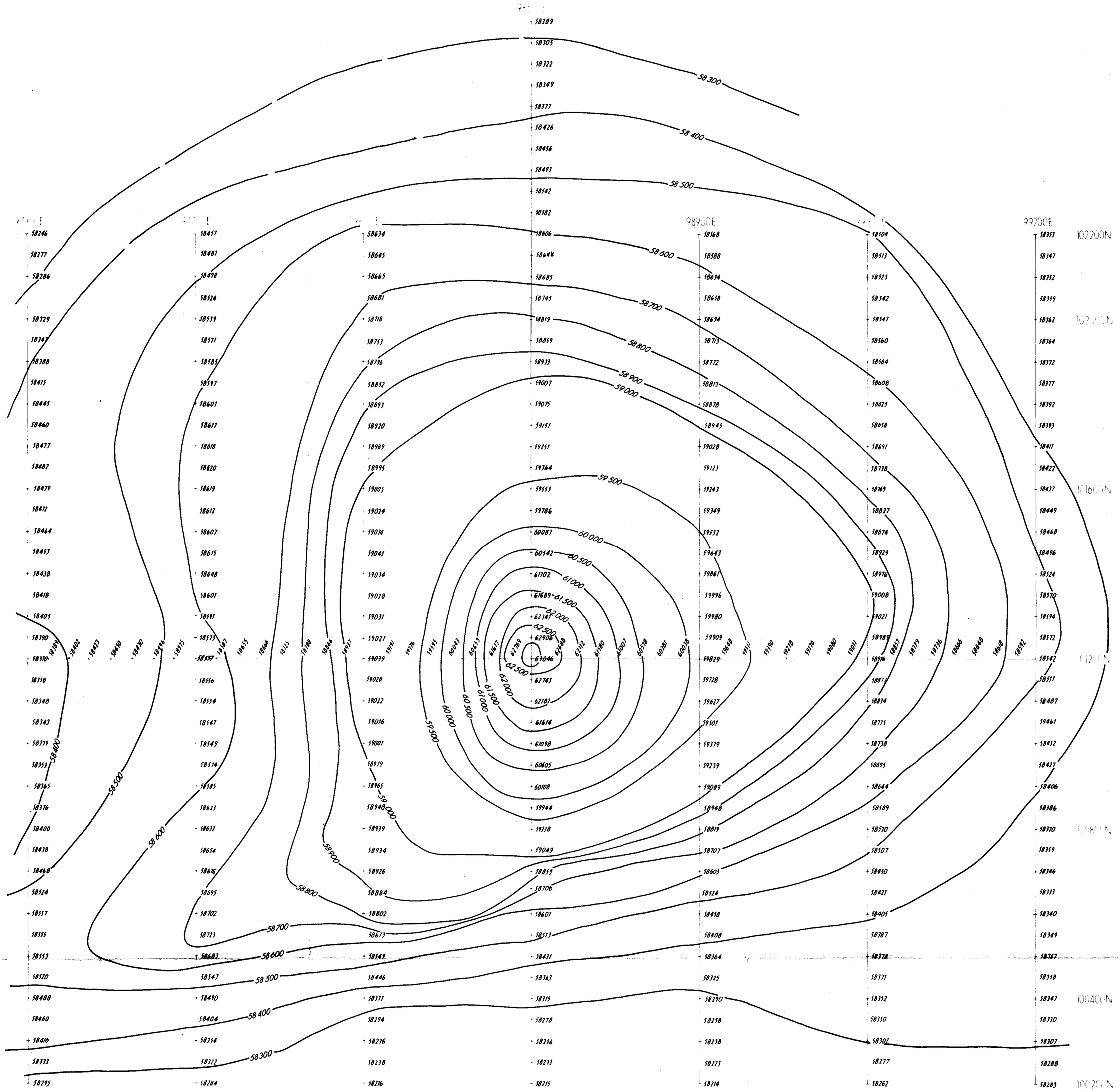
Future work will involve completion of drafting and interpretation of all geophysical data collected and probable percussion drilling.

Graham Miller
Senior Geologist

February 25th, 1982.

Attachments.

Plan No.	Title	Scale
W 2424	Ground Magnetic Contours	1:5000
W 2423	Bouguer Gravity Contours	1:5000



NOTES

SURVEYED BY: AMOCO, OCTOBER 1981

INSTRUMENT: GEOMETRICS G 816
PROTON PRECESSION

CO-ORDS 101 200 N ; 30°59'20" S
98 500 E ; 133°50'35" E

CONTOURS (gammas)

- > 62 000
- 61 000 - 62 000
- 60 000 - 61 000
- 59 000 - 60 000
- 58 000 - 59 000

METRES

Amoco Minerals Australia Company

Project TARCOOLA			Nº A 80 88
Project Partner			
EL 879 Mt FINKE ANOMALY MF 1 GROUND MAGNETIC CONTOURS			
Map Ref ANG	Latitude 31°00'S		Longitude 134° 00'E
Surveyed GCM	Date OCT, 1981		Scale 1 5000
Drawn	Date DEC, 1981		Drawing Nº W2424

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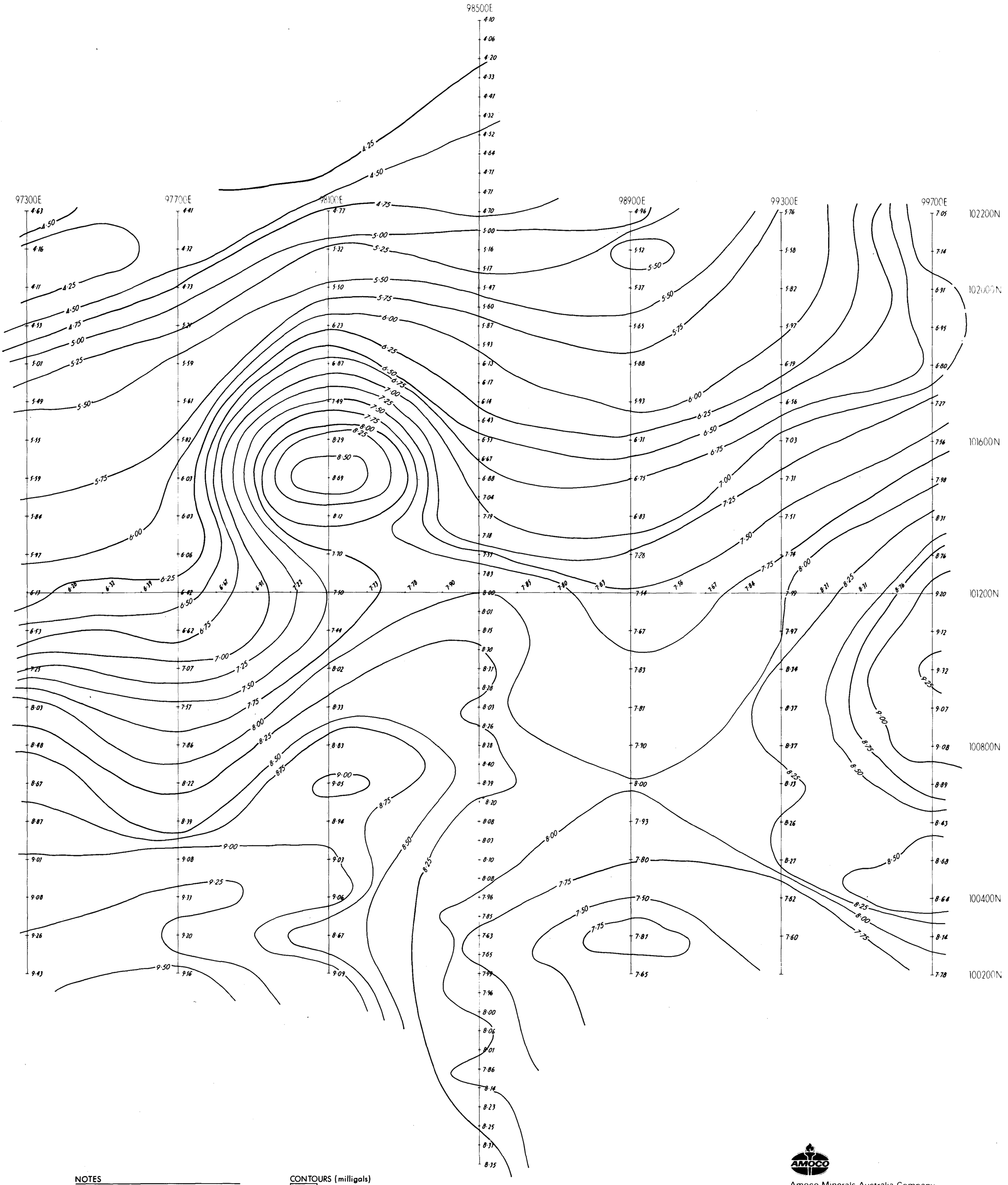
Enclosure

97300E
97700E
98100E
98500E
98900E
99300E
99700E
102200N
102000N
101600N
101200N
100800N
100400N
100200N



NOTES

SURVEYED BY: P.MEWKILL, OCTOBER 1981
INSTRUMENT: LACOSTE and ROMBERG
LEVELLING: OPTICAL
GRAVITY BASE LEVEL: ARBITRARY
DENSITY: 2·67gm/cc

CO-ORDS 101 200N ; 30° 59' 20" S
98 500E ; 133° 50' 35" E

CONTOURS (milligals)

- >9
- 8·5 - 9
- 8 - 8·5
- 7·5 - 8
- 7 - 7·5
- >7

0 100 200 300 400
METRES

Amoco Minerals Australia Company

Project TARCOOLA			Nº A·80·88
Project Partner			
EL 879 Mt FINKE ANOMALY MF 1 BOUGUER GRAVITY CONTOURS			
Map Ref. ANG	Latitude 31°00'S		Longitude 134° 00' E
Surveyed GCM	Date OCT., 1981		Scale 1: 5000
Drawn	Date. DEC., 1981		Drawing Nº W 2423

Report

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Report Dec 1981.

Enclosure

027

AMOCO MINERALS AUSTRALIA COMPANY

EXPLORATION LICENCE 879

MT.FINKE, SOUTH AUSTRALIA

REPORT FOR SECOND QUARTER, ENDING MARCH 14th, 1982.

No exploration work was carried out during the quarter and expenditure on the Licence stood at $17,226 at the end of the quarter.

Graham Miller
Senior Geologist

June 8th, 1982.

AMOCO MINERALS AUSTRALIA COMPANY

EXPLORATION LICENCE 879

MT. FINKE, SOUTH AUSTRALIA

REPORT FOR THIRD AND FOURTH QUARTERS

ENDING SEPTEMBER 14TH, 1982.

KEY WORDS

TARCOOLA 1:250,000 SH 53-10

MT. FINKE

GOLD

BASE METALS

GAWLER CRATON

ARCHEAN

LOWER PROTEROZOIC

ANOMALY

AEROMAGNETIC

MAGNETIC

GRAVITY

ROTARY PERCUSSION DRILLING

INTRUSIVE

BASIC

ULTRABASIC

GLENLOTH GRANITE

GRANITOID

BANDED IRON FORMATION

TABLE OF CONTENTS

W 3-193

No.	Title	Scale
W 2493	Drill Section : Line 98500E	1:10,000
W 2605	Geophysical Profiles : Line 97020E	1: 5,000
W 2600	Magnetic Data Modelling : MF4	1: 3,125
W 2601	Magnetic Data Modelling : MF3	1: 5,555
W 2604	Geophysical Data : MF3	1: 5,000

INTRODUCTION

Exploration Licence 879 was scheduled to expire on September 14, 1982, but has been extended until March 14, 1983. Prior to the period under review, Amoco's work on the licence, and its pre-curser, EL 636, comprised a geological inspection, an airborne magnetic survey and ground magnetic and gravity surveys. The initial exploration target was gold and base metal mineralization in Archean to Middle Proterozoic rocks of the Gawler Craton. The basement rocks in the area dealt with in the report are completely obscured by quaternary sand.

EXPLORATION

In sequence, during the period under review the 1981 aeromagnetic data was re-contoured, an interpretation carried out on the re-contoured data plus the 1981 ground geophysical data, two rotary percussion holes were drilled, additional ground magnetic data collected, a second geophysical interpretation was completed and further gravity data collected.

Aeromagnetic Data Re-contouring.

This was carried out by BHP minerals with a view to a possible diamonds oriented joint venture; results are shown on plan 2603. The new contouring highlighted the presence of anomalies MF3 and 4. BHP decided against a joint venture.

Initial Geophysical Interpretation.

Contract Geophysicist C.G. Anderson completed an interpretation of all available data in April 1982. His report is included as Appendix 1, while plans 2588 and 2589 show modelling results and interpreted major geological features. Anderson indicated the

source for the MF1 2 milligal gravity anomaly (on the N.W. flank of the circular 4700 gamma MF1 magnetic anomaly) to be consistent with a 300 meter diameter by 480 meter high cylindrical body of rock, coming to within 50 meters of surface, with a density contrast of 0.6 gms/cc with its surrounds (see Plan 2588).

The MF1 magnetic anomaly was modelled (plan 2588) as an inverted carrot shaped block with a top diameter (150 meters below surface) of 300 meters and a bottom diameter (5500 meters below surface) of 1000 meters; magnetic susceptibility was 0.048 c.g.s. units. The sources for magnetic anomaly MF1, and for MF3 and 4 were suggested to be basic intrusives.

After an examination of a number of aeromagnetic features in the general area of MF1, Anderson suggested a general depth to basement of the order of 50 meters or less. Apart from basic intrusives, Anderson suggested the presence of banded iron formations and Glenloth granite near the area of interest.

Rotary Percussion Drilling.

A short rotary percussion drilling program, using, because of difficult sand dune conditions, a relatively light and mobile Transdrill Pty. Ltd. Investigator MK.4 rig, was completed in May 1982. Hole MFRP1, drilled to test the MF1 gravity anomaly, cut 85 meters of Precambrian deformed and metamorphosed granitoid - containing quartz, feldspar, biotite, magnetic, epidote chlorite and actinolite - beneath 41 meters of sand and calcrete. Hole MFRP2, designed to identify the source of the MF1 magnetic anomaly, had to be abandoned at 75 meters because of repeated caving in carbonaceous mud/coal strata of presumed Tertiary Age. Drilling data is included as Appendix 2 and shown on Plans 2491 and 2493; geochemical data is included as Appendix 3 and Petrological data as Appendix 4. Geochemical analysis showed out some low order copper (to 390 PPM), lead (750 PPM) and zinc (135 PPM).

Following these two holes, it was thought likely that the gravity anomaly was an expression of a topographic high for basement rocks in Tertiary Times and probably indicated the only part of the general area of interest where basement could be reached with the limited capacity rig available. Accordingly no further holes were attempted. (Plan W2602, showing residual gravity contours, can perhaps be considered as a pseudo-topographic plan of the crystalline Precambian surface.)

Second Geophysical Interpretation.

After the drilling and concurrent collection of ground magnetic data over aeromagnetic anomalies MF3 and 4 (BHP re-contouring), Anderson carried out a second interpretation (Appendix 5). He supported the Palaeo-topographic relief theory for the gravity anomaly but showed puzzlement about the apparent differential weathering. Modelling of ground magnetic data from anomalies MF3 and 4, suggested basic to ultrabasic sources (Plans 2602, 2606).

A magnetic susceptibility of 0.01 c.g.s. equivalent to about 3 percent magnetite was used for modelling the MF3 anomaly, but a high susceptibility of 0.14 c.g.s. was necessary for MF4. (MF1, immediately adjacent to MF4 was modelled with 0.048 c.g.s.). Anderson has suggested remnant magnetism may be contributing to MF4; if this is not the case a magnetite content of plus 25 percent is indicated.

MF3 and 4 gravity data.

While mobilized to this general area for other work, contract geophysicist P. Mewkill, collected gravity data over magnetic anomalies MF3 and 4, using an Amoco-owned Lacoste and Romberg meter. Results are shown on plans 2423, 2492, 2605 and 2604.

While no modelling has been completed, it appears the results for MF3 are consistent with a basic to ultrabasic body extending to considerable depth. Results for MF4 show as little correllation with magnetic data as was the case for immediately adjacent MF1.

DISCUSSION

On the evidence of hole MFRP1, the area is not prospective for Middle Proterozoic Olympic Dam style mineralization. It may still however have potential for volcanogenic/hydrothermal gold and/or base metal mineralization associated with Archean or Lower proterozoic complexes.

Magnetic anomaly MF3 appears to have magnetic/gravity characteristics normal for a basic intrusive but the MF1-4 complex appears more interesting. If the idea of remnant magnetism is wrong, and the MF4 anomaly reflects a very high iron (magnetite or pyrrhotite) part of an intrusive complex or volcanic-sedimentary sequence, then some associated base or previous metal mineralization may be expected.

The significance of the low order base metal values, particularly lead, in basement cuttings from hole MFRP1, is uncertain.

EXPENDITURE

Approximate expenditure for the period was:

	$
Salaries	7,150
Cookery	975
Travel	675
Drafting materials	330
Field supplies	390
Vehicle costs	2,275
Fuel	690
Dozing (E.G. Kruse)	5,095
Drilling (Transdrill)	7,915
Drilling water	35
Aeromagnetic re-contouring (BHP)	400
Geochemical analyses (Comlabs Pty. Ltd.)	595
Petrology (Pontiflex & Assoc.)	160
Geophysical Interpretations (C.G. Anderson)	610
Gravity Surveying (P.Mewkill)	1,725
Hire of survey gear	130
Administration/overheads	2,900
	$32,050

Cumulative expenditure on this licence is now $49,276.

FUTURE WORK

In the near future a complete re-assessment of the area will be undertaken in order to determine the nature and extent of any more work.

G.L. Kary
Geologist

G.C. Miller
Senior Geologist

APPENDIX 1.

GEOPHYSICAL INTERPRETATION - ANOMALY MF1.

BY

C.G. ANDERSON

MEMO TO: G. MILLER

RE: MT. FINKE MAGNETIC ANOMALY MF-1

Results from a portion of the detailed aeromagnetic survey and ground gravity and magnetic data from the Mount Finke area have been examined, principally to determine the depth of cover in the vicinity of the MF-1 magnetic anomaly. Major features of the (airborne) magnetic data plus some interpreted depths in the general vicinity of MF-1, are shown in the attached plan (A) at 1:20,000 scale. The indicated depths were determined from analog charts for the aeromagnetic survey and are probably only accurate to ± 30%.

More detailed interpretation of the MF-1 ground magnetic and gravity data was carried out using "3-D" gravity and magnetic computer modelling. The resulting interpretation for source bodies in each case (i.e. gravity and magnetics) are shown in Plan B.

The following comments are relevant to determination of overburden thickness in the area of the gravity anomaly "MF-G".

1. Magnetic anomalies within the region of MF-1 are generally due to material within 100 metres of the surface. Several small anomalies on the flanks of MF-1 are considered to be "near surface" (less than 50 metres) although quantitive values have not been derived because of analog chart scales. A depth of 170 metres was interpreted for the central profile across MF-1 itself, but "fly-back" on the analog charts makes interpretation of larger amplitude anomalies more difficult.

2. The quantitative "3-D" model for the MF-1 anomaly (Plan B - Profile 10200N) shows a reasonable agreement between observed and theoretical curves for a "plug-like" body with susceptibility of 0.048 cgs units. A north-south profile across the model (not plotted) shows some discrepancy in the form of the anomaly but the important criteria in this instance are considered to be the depth to the top of the model (150 metres) and the susceptibility. These values indicate that the magnetic material is compatible with an ultra-basic intrusive source, at a depth slightly greater than surrounding basement sources.

3. The gravity model (Plan B - Profile 98100E) indicates a reasonable agreement between curves for a 'block' of material as outlined, between 50 and 500 metres depth with a density contrast of 0.6 gms/cc. This is considered to be a maximum likely density contrast for an intra-basement source and it is unlikely that the gravity source is deeper than 50 metres. Fill-in gravity stations (25 metre interval) would be necessary to refine the interpreted depth value.

CONCLUSIONS

Gravity modelling indicates that the source for the observed anomaly in the north-western portion of the Mount Finke grid is within 50 metres of the surface. This is consistent with observed, low amplitude magnetic anomalies flanking the MF-1 aeromagnetic anomaly, which are also considered to be within 50 metres of the ground surface. The interpreted depth for the MF-1 anomaly (150-170 metres) is greater than surrounding values, but this may be due to inaccuracies in estimation or possibly weathering of the magnetic material.

Two additional magnetic anomalies (MF-4, MF-3 Plan A) are also indicative of plug-like intrusions and may warrant further investigation.

G.C. Mills
for.

C.G. Anderson

April 21, 1982

APPENDIX 2.

DRILL LOGS : HOLES MFRP1 and MFRP2.

Amoco Minerals Australia Company

DRILLHOLE Nº MFRP 1 **Page** 1 **of** 1

drill log metric

PROJECT A80-88 **Nº**	**ELEVATION**	**COMMENCED** 12/05/82	**BORE HOLE SURVEY**
PROSPECT Mt.Finke	**DIP COLLAR** Vertical	**COMPLETED** 13/05/82	
CO-ORDINATES 101550 **N** 98100 **E**	**CORE SIZE** Percussion	**TOTAL LENGTH** 126m	
BEARING **G** **M** **T**	**LOGGED BY** Greg Kary		

BORE HOLE SURVEY								
Depth	Dip	Bearing	Depth	Dip	Bearing	Depth	Dip	Bearing

METERAGE From	METERAGE To	DESCRIPTION
0	1	Red,non-consolidated quartz rich sand
1	6	As above,with minor silcrete horizons
6	41	Light red sand,with minor clay and mica fragments
41	126	Metamorphosed granitoid.Quartz,felds-par,biotite,zircon,epidote,chlorite, and actinolite visible in thin section Magnetite evident in hand specimen

MINERALIZATION	SAMPLE Nº	METERAGE From	METERAGE To	METERAGE Length
Magnetic Susceptibility (x 10^{-5} S.I.; 1-2kg samples)				
From	To	Reading		
0	6	20		
6	12	6		
12	18	7		
18	24	7		
24	30	5		
30	32	80		
32	36	15		
36	40	22		
40	46	400		
46	52	500		
52	60	550		
60	66	440		
66	70	590		
70	78	360		
78	84	530		
84	90	610		
90	96	560		
96	102	410		
102	108	530		
108	114	475		
114	120	490		
120	126	460		

ASSAYS

Refer to attatched data sheets for petrological descriptions and geochemical-X.R.F. analyses :Mineralogical report 3732 and Comlabs job 820920 respectively

Amoco Minerals Australia Company

DRILLHOLE Nº MFRP 2 **Page** 1 **of** 1 **drill log** metric

PROJECT A80-88 Nº	**ELEVATION**	**COMMENCED** 14/05/82	**BORE HOLE SURVEY**
PROSPECT Mt. Finke	**DIP COLLAR** Vertical	**COMPLETED** 16/05/82	
CO-ORDINATES 101050 **N** 98500 **E**	**CORE SIZE** Percussion	**TOTAL LENGTH** 75m	
BEARING G M T	**LOGGED BY** Greg Kary		

Depth	Dip	Bearing	Depth	Dip	Bearing	Depth	Dip	Bearing

METERAGE From	To	DESCRIPTION
0	2	Red non-consolidated quartz rich sand
2	6	As above,with minor silcrete horizons
6	10	Silcrete,with minor calcrete horizons
10	20	Red quartz rich sand,with minor silcrete horizons
20	28	Limonitic sand,with minor calcrete horizons and mica fragments
28	42	Very fine cream coloured sand
42	46	Dark brown clay
46	75	Slurry of interlayered dark brown coal and brown clay fragments in a brown mud.H_2S smell noticed while drilling.
		Hole terminated due to poor sample return and mud flowing in hole between 50 and 75m

MINERALIZATION

Magnetic Susceptibility ($x10^{-5}$ S.I. 1-2kg.samples)

From	To	Reading
0	2	36
2	4	23
4	6	22
6	12	6
12	18	4
18	40	1
40	42	6
42	44	11
44	46	0
46	48	5
48	50	11
50	75	0

SAMPLE Nº	METERAGE From	To	Length

ASSAYS

Refer to attached data sheets for petrological descriptions and geochemical-X.R.F. analyses ,Mineralogical report 3732 and Comlabs job 820921 respectively

APPENDIX 3.

GEOCHEMICAL ANALYSES

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM820920 O/N : 17215 MERP 1

Results in ppm

SAMPLE	As	Ba	Bi	Mo	Sn	Ta	U
40 - 42	<2	690	<4	<4	6	<10	<4
50 - 52	<2	800	4	<4	6	<10	<4
60 - 62	3	690	12	<4	<4	<10	<4
70 - 72	<2	980	<4	<4	<4	<10	<4
80 - 82	2	970	10	<4	4	<10	<4
90 - 92	<2	750	<4	<4	<4	<10	<4
100-102	<2	680	<4	<4	6	<10	<4
110-112	2	710	<4	<4	4	<10	<4
120-122	<2	710	<4	<4	<4	<10	<4

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM820920 O/N : 17215

Results in ppm

SAMPLE	W	Hg	%Fe	Mn	Cr	Ag	Au
40 - 42	<10	<0.05	2.10	165	12	<1	<0.05
50 - 52	<10	<0.05	2.00	320	12	<1	<0.05
60 - 62	<10	<0.05	1.65	230	16	<1	<0.05
70 - 72	<10	<0.05	2.25	450	12	<1	<0.05
80 - 82	10	<0.05	2.65	510	16	<1	<0.05
90 - 92	<10	<0.05	1.95	320	16	<1	<0.05
100-102	<10	<0.05	1.95	320	28	<1	<0.05
110-112	<10	<0.05	1.75	310	12	<1	<0.05
120-122	<10	<0.05	1.90	300	16	<1	<0.05

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM820920 O/N : 17215

Results in ppm

SAMPLE	Cu	Pb	Zn	Bi	Co
0To 6	10	8	12	<4	<4
6To 12	4	4	6	<4	<4
12To 18	4	8	6	<4	<4
18To 24	4	8	8	<4	<4
24To 26	6	16	6	<4	<4
26To 28	10	20	10	<4	<4
28To 30	22	20	12	<4	<4
30To 32	24	60	16	<4	<4
32To 34	18	170	12	<4	<4
34To 36	18	210	16	<4	<4
36To 38	16	145	14	<4	<4
38To 40	18	65	12	<4	<4
40To 42	18	200	30	<4	<4
42To 44	22	290	44	<4	4
44To 46	16	115	44	<4	4
46To 48	55	310	48	<4	6
48To 50	18	170	50	<4	4
50To 52	22	750	135	<4	4
52To 54	22	270	70	<4	4
54To 56	20	400	65	<4	<4
56To 58	14	410	70	<4	4
58To 60	14	570	70	<4	4
60To 62	10	185	50	<4	4
62To 64	16	310	75	<4	6
64To 66	16	280	120	<4	6

.../ 4

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM820920 O/N : 17215

Results in ppm

SAMPLE	Cu	Pb	Zn	Bi	Co
66To 68	16	220	95	<4	6
68To 70	18	120	55	<4	6
70To 72	390	240	95	<4	6
72To 74	250	250	95	<4	8
74To 76	85	220	90	<4	8
76To 78	60	250	90	<4	10
78To 80	110	470	100	<4	8
80To 82	70	85	80	<4	6
82To 84	32	115	70	<4	8
84To 86	26	430	85	<4	6
86To 88	24	180	85	<4	8
88To 90	16	90	50	<4	6
90To 92	32	125	65	<4	6
92To 94	26	80	50	<4	4
94To 96	18	135	60	<4	6
96To 98	36	250	60	<4	6
98To100	24	170	60	<4	4
100To102	18	310	55	<4	4
102To104	20	220	55	<4	4
104To106	18	170	50	<4	4
106To108	18	115	50	<4	4
108To110	20	300	55	<4	4
110To112	18	44	42	<4	4
112To114	20	40	42	<4	4
114To116	18	40	36	<4	4

.../ 5

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM820920 O/N : 17215

Results in ppm

SAMPLE	Cu	Pb	Zn	Bi	Co
116To118	24	135	60	<4	4
118To120	26	160	55	<4	4
120To122	24	240	85	<4	4
122To124	24	230	55	<4	4
124To126	20	450	60	<4	4

Method of Analysis	:	As Ba Bi Mo Sn Ta U W	: XRF1
		Cu Pb Zn Bi Co	: AAS1
		Fe Mn Cr	: AAS2/2A
		Ag	: AAS3
		Au	: AAS5A
		Hg	: AAS7

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM820921 O/N : 17216 MFRP 2

Results in ppm

SAMPLE	Cu	Pb	Zn	Bi	Co	Ag	Au
0 TO 6	14	65	12	<4	<4	<1	<0.05
6 TO 10	8	70	10	<4	<4	<1	<0.05
10 TO 14	4	75	8	<4	6	<1	<0.05
14 TO 20	12	100	10	<4	<4	<1	<0.05
20 TO 26	10	270	8	<4	<4	<1	<0.05
26 TO 32	8	34	6	<4	<4	<1	<0.05
32 TO 38	4	30	4	<4	<4	<1	<0.05
38 TO 44	4	130	6	<4	<4	<1	<0.05
44 TO 50	8	170	12	<4	<4	<1	<0.05
50 TO 70	10	140	10	<4	<4	<1	<0.05

Method of Analysis : Cu Pb Zn Bi Co : AAS1
Ag : AAS3
Au : AAS5

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM820921 O/N : 17216

Results in ppm

SAMPLE	%Fe	Mn	Cr	As	Ba	Mo	Sn
0 TO 6	8.5	28	65	22	270	<4	4
6 TO 10	1.45	12	12	5	90	<4	4
10 TO 14	0.70	12	8	3	120	<4	10
14 TO 20	0.65	12	8	2	190	<4	8
20 TO 26	0.90	14	28	2	55	<4	4
26 TO 32	0.60	12	20	6	130	<4	4
32 TO 38	0.30	16	<4	<2	75	<4	8
38 TO 44	0.20	18	20	<2	75	<4	4
44 TO 50	0.20	10	8	<2	155	<4	<4
50 TO 70	0.15	10	32	4	130	<4	4

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

ANALYTICAL REPORT

JOB COM820921 O/N : 17216

Results in ppm

SAMPLE	Ta	Th	U	W	Zr
0 TO 6	<10	14	4	<10	145
6 TO 10	<10	<4	<4	<10	320
10 TO 14	<10	14	<4	10	400
14 TO 20	<10	8	<4	<10	270
20 TO 26	<10	6	<4	<10	155
26 TO 32	<10	10	<4	<10	400
32 TO 38	10	6	<4	<10	480
38 TO 44	<10	<4	<4	<10	350
44 TO 50	<10	14	8	<10	390
50 TO 70	<10	6	4	<10	360

Method of Analysis :		
	As Ba Mo Sn Ta Th U W Zr	: XRF1
	Cu Pb Zn Bi Co	: AAS1
	Ag	: AAS3
	Au	: AAS5A
	Fe Mn Cr	: AAS2/2A

APPENDIX 4.

PETROLOGICAL REPORT

Pontifex & Associates Pty. Ltd.

TEL. 332 6744
A.H. 31 3816

26 KENSINGTON ROAD, ROSE PARK
SOUTH AUSTRALIA

P.O. BOX 91, NORWOOD
SOUTH AUSTRALIA 5067

MINERALOGICAL REPORT NO. 3732

10th June, 1982

TO: Mr. G. Miller,
Amoco Minerals Australia Co.,
P.O. Box 47,
NORWOOD, S.A. 5067

YOUR REFERENCE: Order No. W17213

MATERIAL: Percussion chip samples

IDENTIFICATION: MFRP1, 42-44
96-98
120-122

MFRP2, 50-70

WORK REQUESTED: Thin section
and description

SAMPLES & SECTIONS: Returned to you
with this report

PONTIFEX & ASSOCIATES PTY. LTD.

MFRP1, 42-44 m : chips of metamorphosed granitoid containing quartz, felspar, biotite, zircon, epidote, chlorite and actinolite; minor "soil" (quartz-clay-limonite) chips; and rounded single quartz grains

Most of the chips in this sample contain mineral assemblages appropriate to a deformed and metamorphosed granitoid, with various proportions of quartz, sericitised plagioclase and fresh microcline as the dominant minerals.

The minor minerals (biotite, chlorite, epidote, actinolite) appear to be largely of metamorphic origin, and are locally crenulated. There is one chip of fine grained epidote; accessory metamict-altered allanite occurs in one chip. Several chips of fine angular quartz, cemented by clay-limonite, or possibly turbid carbonaceous mud, appear to represent contamination from a weathered (? soil) profile. Minor, rounded to well-rounded, single coarse quartz grains also appear to be contamination from an up-hole sediment.

MFRP1, 96-98 m
MFRP1, 120-122 m : mainly chips of metamorphosed granitoid (as in 42-44 m) also minor chips of unmetamorphosed clastic sediment in 96-98 m and numerous single quartz grains presumably from an unmetamorphosed sediment in 120-122 m

Most of the chips in both of these thin sections represent essentially the same rock types, and both are similar to the material from 42-44 m. Most consist variably of quartz, plagioclase (in part sericitised), alkali felspar, and minor amounts of biotite, chlorite epidote and actinolite.

Some of the chips have a definite gneissic texture and some are veined by epidote.

Apart from these metagranitoid chips, there are :-

in 96-98 m : minor chips of fine angular quartz sand cemented by clay-limonite ?or turbid, carbonaceous mud, equivalent to the "soil" material noted in 42-44 m. Single rounded quartz grains are rare. Three chips of virtually unmetamorphosed sediment, apart from the "soil" material consist of fine quartz grains, some rounded, and some angular, also minor detrital micas, vaguely bedded within an indefinite clay matrix.

in 120-122 m : numerous, single, rounded to subrounded, single crystal quartz grains, and fine quartz silt, presumably derived from unmetamorphosed sediment;
also trace grains of allanite - presumably derived from the metagranitoid.

MFRP2, 50-70 m : cuttings of brown coal;
carbonaceous-muddy siltstone to
fine sandstone;
chips of claystone and fine quartz grains

The abundant dark-brown to black chips in this sample which make up about 30% of the section examined, are fragments of brown-coal, characterised by fibrous, cellulose fabric visible in transmitted light.

The paler-brown fragments (30%) consist of massive loose-packed aggregate of angular silt to fine angular quartz grains, within a cement/matrix of turbid, brown, carbonaceous mud ± possible limonite (which is difficult to distinguish from the ultrafine, dispersed, carbonaceous material.

The remaining approximate 30% of this sample consists of small clay fragments (balled-up during drilling) and fine to medium sand size quartz grains, presumably derived from an unconsolidated sediment.

APPENDIX 5.

GEOPHYSICAL INTERPRETATION MF3 AND MF4 and

RE-ASSESSMENT : MF1.

MEMO TO: G. MILLER

Re: MT. FINKE AREA MAGNETIC ANOMALIES -
"MF4" and "MF3"

Results from ground magnetic surveys in these two areas have been quantitatively evaluated to determine depth-to-source and the possible nature of source rocks in each case. The magnetic interpretation is based on a vertical sided "3-D prism" model, which provides better control on interpreted susceptibility and depth values than previous "2D" models, but the fit between observed and theoretical profiles is reduced by the vertical constraint on interpreted geometry. A brief comment on drilling results from the Mount Finke gravity feature is also included.

Anomaly MF3:

This feature was originally selected from the airborne magnetic data as a possible basic 'plug' body located on a major north-westerly trending fault. The ground magnetics (Amoco Plan W2598) indicate an elongation of the anomaly in a northeasterly direction, parallel to the regional strike (refer to aeromagnetic contours). The anomaly amplitude is approximately 1000nT for the ground data, compared with 400-500 nT airborne. In a qualitative sense, this attenuation of amplitude suggests firstly, that, the source has considerable depth-extent and secondly the depth to the top of the source is unlikely to be less than the aerial survey flying height. An interpreted source parameters for the central N-S ground line across the anomaly are shown on plan 2601. The apparent strike of the source rocks, at a reasonably high angle to both grid line directions, makes the interpretation somewhat less reliable than usual, particularly the interpreted depth value (120 metres). The interpreted susceptibility value (0.01 cgs units) is equivalent to a source rock containing approximately 3% magnetite and is comparable with a basic intrusive/extrusive (?) rock. The strike length to width ratio appears to be around 3, (i.e. maximum strike length of approximately 350 metres) which, when considered with the inferred depth-extent of the magnetic source suggests that a basic intrusive plug is a likely source.

MF4.

Interpretation of the ground magnetic data (Plan 2600) in this area is complicated by the influence of the MF1 anomaly. The magnitude of the anomaly on Line 97020E, is approximately 2000 T - the magnitude of the airborne anomaly is difficult to determine because of the regional gradient due to MF1.

The interpreted depth value (130 meters - Plan 2606) is comparable to the value interpreted for the MF1 anomaly, but the susceptibility value (0.14 cgs) is considerably higher. The magnitude of the latter value suggests that remnant magnetisation may be contributing to the anomaly, again indicating a basic to ultra-basic intrusive plug as the likely source.

Mount Finke Gravity Anomaly

The interpreted depth to source rocks for the MF4 anomaly (130 metres), supports the interpreted value for the MF1 anomaly and may be relevant to drilling results from drillholes MFRP1 and MFRP2. The nature of 'basement' rocks intersected in MFRP1, is the problematic for explanation of the observed gravity anomaly in terms of intra-basement density variations. The gravity feature was quantitatively attributed to a block of material between 50 and 500 metres depth, with a density contrast with surrounding material of 0.6 gms/cc. The latter figure was considered as a maximum value likely to be encountered in metamorphic basement lithologies. The intersection of granitoid rocks in MFRP1 (from 40 to 126 metres) suggests that the gravity anomaly is due to 'topographic' relief of basement lithologies. Density contrasts of up to 1.5 gms/cc (e.g. 'granitoid basement' s.g. of 2.7 with overlying sand/clay etc. s.g. of 1.2) may arise in this instance, with subsequent reduction in the required thickness of the gravity source block (i.e. the original estimate of 450 metres may be reduced by a factor of 2½ (1.5/0.6), giving a thickness of sedimentary cover comparable with the interpreted depths to magnetic material at MF1 and MF4.) Why the material intersected by MFRP1 should be more resistant to erosion than surrounding basement areas is not clear.

Conclusions

The magnetic features MF3 and MF4 are compatible with basic to ultra-basic intrusive sources at 120 to 130 metres depth. Interpretation in the latter area is complicated by regional gradients and possibly remnant magnetisation, making it a more difficult drilling target. Drilling results for MFRP1 and MFRP2, plus interpreted magnetic basement depths at MF1 and MF4, indicate that the Mount Finke gravity anomaly is due to a basement high. This could be tested by deepening MFRP2 to intersect magnetic basement at 150 to 170 metres.

G.C. Mullan for

C.G. Anderson
Contract Geophysicist

20.9.82

MF2

MF

MF4

EL 879

AMOCO 100 000 N
31°00' S

AMOCO 100 000 N
31° 00' S

AMOCO 96 850 E
135° 50' 35" E

BHP GRID SYSTEM

SCALE 1:20 000 Approx
0 400 800 1200 1600 2000 METRES

SCALE 1:20000 (Approx)
0 400 800 1200 1600 2000 metres

Amoco grid reference arbitary

DETAILS OF SURVEY
FLOWN BY : AERODATA
DATE : FEB. / APRIL 1981
1:250,000 SHEET : TARCOOLA SH 53-10
AMG ZONE : 53

LINE SPACING : 400m
SURVEY HEIGHT : 90m
MAGNETOMETER : G 803

DETAILS OF PROCESSING
PROCESSED BY BHP EXPLORATION : CAMBERWELL
MESH : (100,100)
SCAN : 900
CONTOUR INTERVAL : 2.5 nT

DETAILS OF SURVEY
FLOWN BY : AERODATA
DATE : FEB. / APRIL 1981
1:250,000 SHEET : TARCOOLA SH 53-10
AMG ZONE : 53

LINE SPACING : 400m
SURVEY HEIGHT : 90m
MAGNETOMETER : G 803

DETAILS OF PROCESSING
PROCESSED BY BHP EXPLORATION : CAMBERWELL
MESH : (100,100)
SCAN : 900
CONTOUR INTERVAL : 2.5 nT

N

N

SHEET RELATIONSHIP

Amoco Minerals Australia Company 3961-8

Project
Project Partner

EL 879 MT FINKE, S. A.

TOTAL MAGNETIC INTENSITY CONTOURS
RECONTOURED BY BHP MINERALS

Revised	A.N.G. Sheet	Project No.	
	Latitude	Longitude	
	Geologist GCM	Date	29-9-82
	Drawn by I.LEY	Date	29-9-82
	Scale 1:20,000	Plan No.	W 2603

0 400 800 1200 1600 metres

Confidential Envelope

133°48'

30°56'

EL 879

5020 5030 5040

210 230 250 270 290 310 330 350 370

MF3 150

MF4 100 85

MF G 65

MF I 170

10

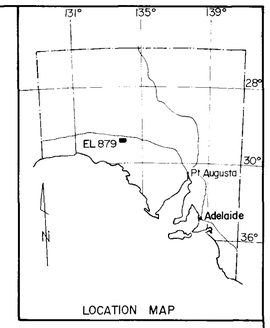
n.s. n.s. n.s. n.s.

100

240

590 600 620 641 660 691 710 730 750 770 790 810 820 840 860

31°00'



LOCATION MAP

LEGEND

- Basic intrusive (Interpreted)
- Magnetic meta-sediment (BIF)
- Granite (Glenloth equivalent)
- Linear magnetic feature - fault
- 85 Position and interpreted depth (metres b.g.l.) for magnetic graident
- n.s. Minor magnetic anomaly (n.s- near surface)
- Gravity anomaly
- EL Boundary
- 280 Flight lines

Scale 1:20,000 approx.

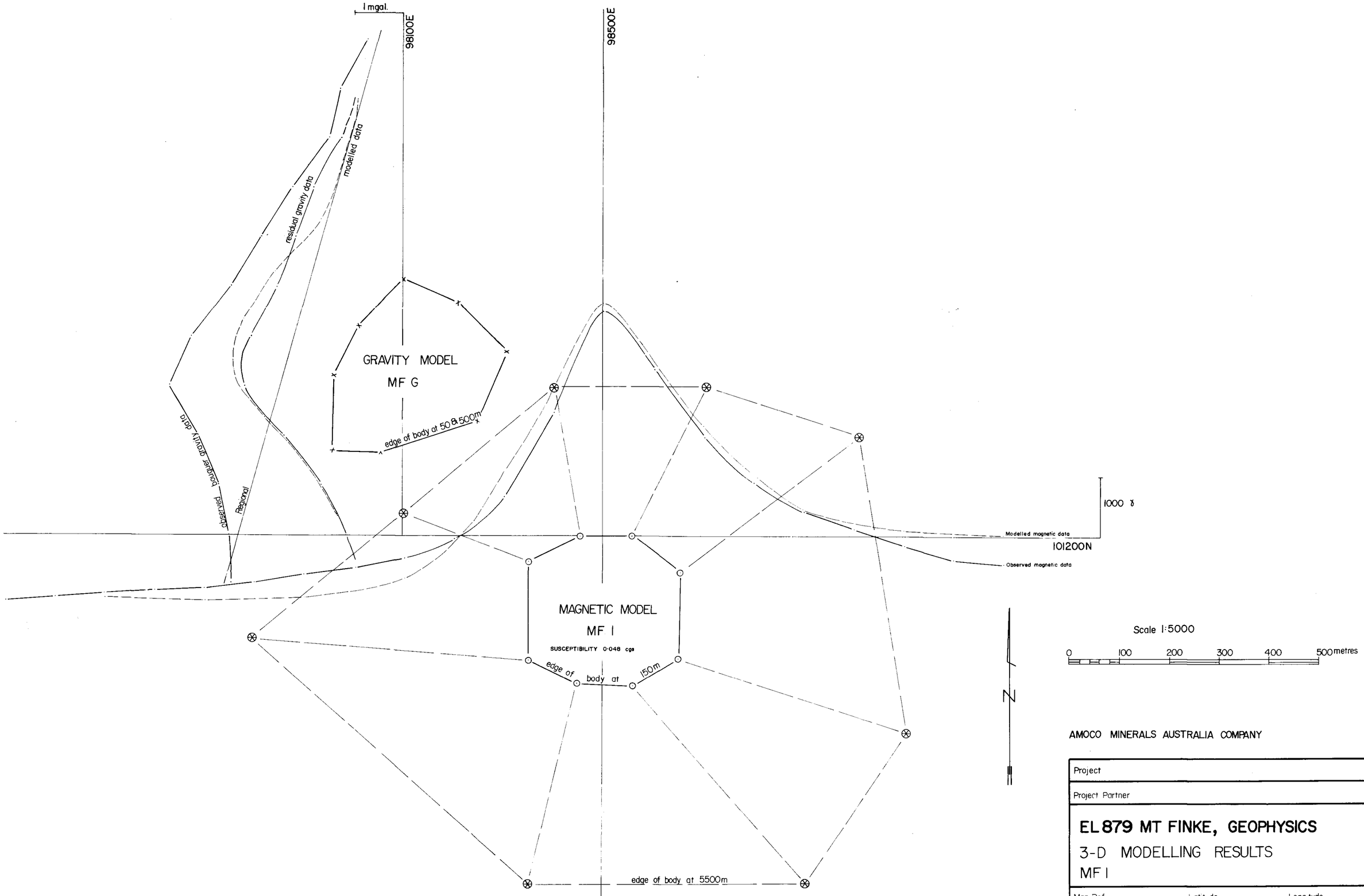
0 500 1000 1500 2000 metres

AMOCO MINERALS AUSTRALIA COMPANY

PROJECT:		
PROJECT PARTNER:		
MT. FINKE AEROMAGNETICS EL 879 MAJOR FEATURES IN VICINITY OF MF I		
Map Ref.	Latitude	Longitude
Surveyed	Date	Scale 1:20,000
Drawn CAnderson/ILey	Date 27-4-82	Drawing No. W2589
Report		

3961-9

Enclosure



AMOCO MINERALS AUSTRALIA COMPANY

Project		
Project Partner		
EL 879 MT FINKE, GEOPHYSICS 3-D MODELLING RESULTS MF I		
Map Ref.	Latitude	Longitude
Surveyed	Date	Scale 1:5000
Drawn C Anderson/ILey	Date 28-4-82	Drawing No. W2588
Report		

3961 - 10

Enclosure

98500E

97300E

97700E

98100E

98900E

99300E

99700E

102200N

102000N

101600N

101200N

100800N

100400N

100200N

58300

58400

58500

58600

58700

58800

58900

59000

59500

60000

60500

61000

61500

62000

62500

MF1

MF RP 1

MF RP 2

97020E

MF 4

100400N

E.L. BOUNDARY

NOTES

SURVEYED BY: LINE 97300E & LINES TO EAST, OCT. 1981
TO THE WEST OF THIS LINE, MAY 1982

INSTRUMENT: GEOMETRICS G 816
PROTON PRECESSION

CO-ORDS 101 200 N ; 30°59'20" S
98 500 E ; 133°50'35" E

CONTOURS (gammas)

- > 62 000
- 61 000 - 62 000
- 60 000 - 61 000
- 59 000 - 60 000
- 58 000 - 59 000

0 400

METRES

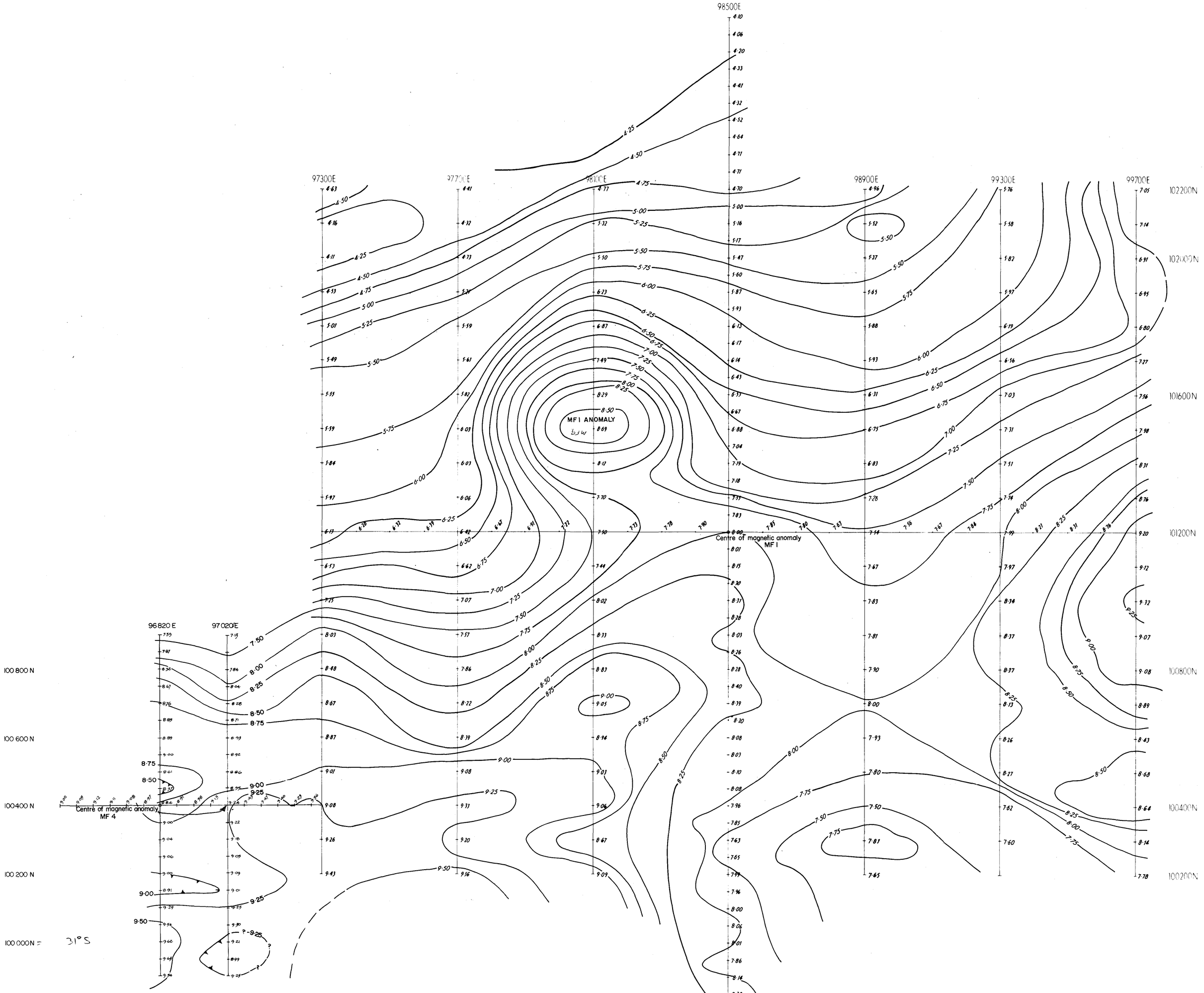
N

AMOCO

Project	TARCOOLA	N°	A-80-88
Project Partner			
EL 879 Mt FINKE ANOMALY MF 1 - MF 4 GROUND MAGNETIC CONTOURS			
Map Ref ANG	Latitude 31°00'S	Longitude 134°00' E	
Surveyed GCM	Date OCT, 1981	Scale 1: 5000	
Drawn	Date JUL, 1982	Drawing N° W2424	
Report			

3961-11

Enclosure



NOTES

SURVEYED BY: P.MEWKILL, OCTOBER 1981
INSTRUMENT: LACOSTE and ROMBERG
LEVELLING: OPTICAL
GRAVITY BASE LEVEL: ARBITRARY (BMR Level +5lm.g)
DENSITY: 2·67gm/cc

CO-ORDS 101 200N ; 30°59'20"S
98 500E ; 133°50'35"E

CONTOURS (milligals)

- >9
- 8·5 - 9
- 8 - 8·5
- 7·5 - 8
- 7 - 7·5
- >7

Amoco Minerals Australia Company

Project	TARCOOLA	Nº	A 80 88
Project Partner			
EL 879 Mt FINKE ANOMALY MF 1 - MF 4 BOUGUER GRAVITY CONTOURS			
Map Ref. ANG	Latitude 31°00'S	Longitude	134° 00'E
Surveyed GCM	Date OCT., 1981	Scale	1:5000
Drawn	Date. DEC., 1981	Drawing Nº	W 2423

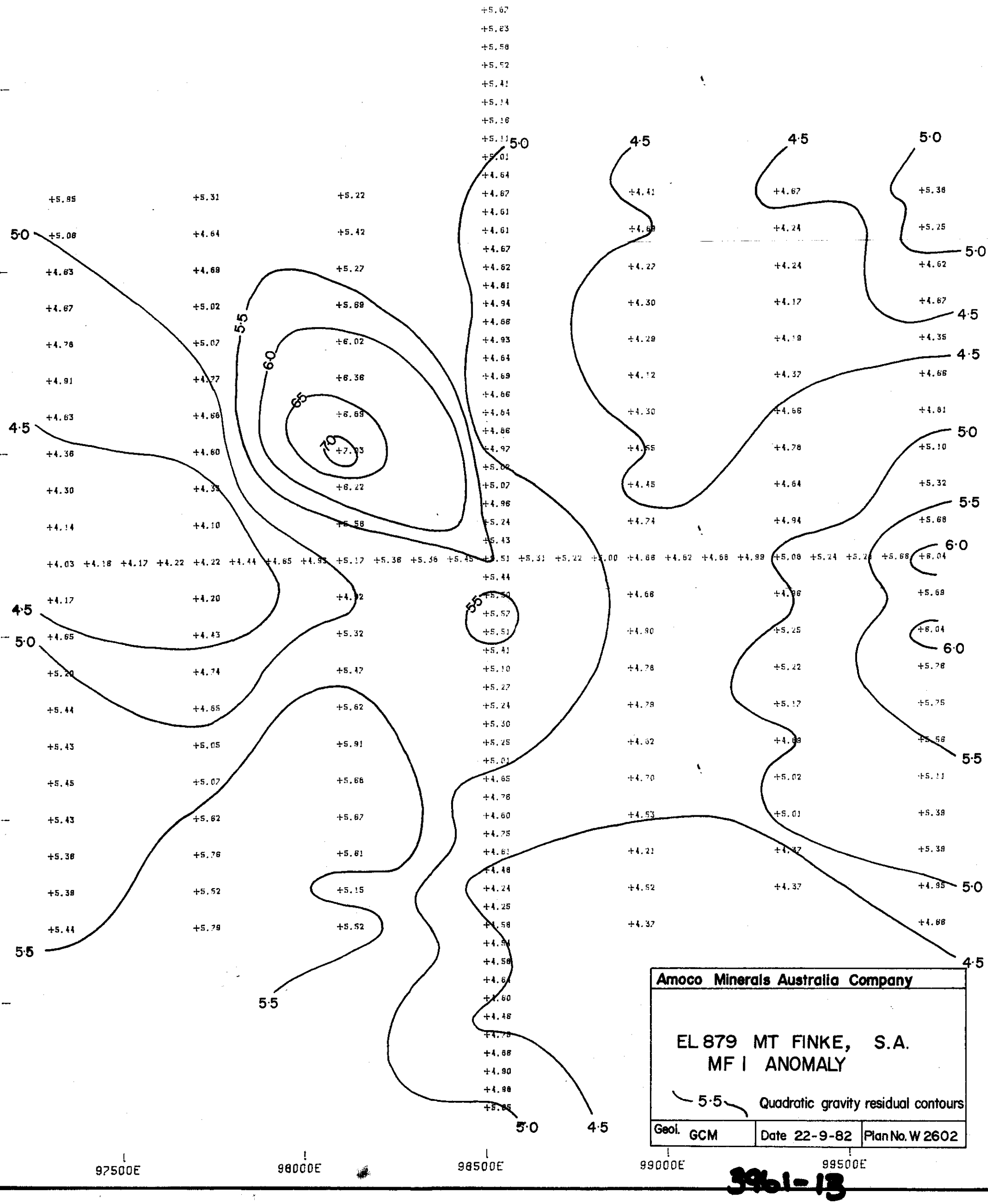
Report

Enclosure

97500E 98000E 98500E 99000E 99500E

102500N 102000N 101500N 101000N 100500N 100000N

MT FINKE GRAVITY RESIDUALS 1:10000



Amoco Minerals Australia Company

EL 879 MT FINKE, S.A.
MF I ANOMALY

5·5 Quadratic gravity residual contours

Geol. GCM	Date 22-9-82	Plan No. W 2602

97500E 98000E 98500E 99000E 99500E

3961-13

102 700 N

102 200 N

101 700 N

101 200 N

100 700N

100 200 N

99 700N

97 300E 118·042 126·242 127·954 120·639 118·183 117·378 118·302 119·357 118·384 121·201 122·288

97 700 E 116·803 125·593 122·485 120·385 120·090 124·526 120·810 119·049 124·146 124·757 123 017 124 752 126 207 123·483 120·777 119·960 122·651 124·371 123·566 118·196 118·750 124·204 123·205

98 100E 122·419 119·705 125·555 122 185 123·010 124·403 121·335 120·783 125 195 124·163 122 253 121 770 121·701 129·500 122·992 124·924 119·824 118·608 122·170 120·470 122·838 134·351 127·427

98 500 E 122·309 124·837 120·633 118·636 118·467 122·428 121·239 119·839 120·799 121·575 125·413 120·757 119·181 121·178 119·310 120·110 118·202 121·506 119·897 119·589 124·124 121·293 123·169 123·813 121·679 120·991 122·034 126·897 123·575 121·303 121·000 122 182 121 891 122·570 122·450 122·123 119·803 120·125 123·399 127·442 124·486 124·338 122·301 120·926 121·832 124·581 128·499 125·537 124·913 126·559 129·310 134·131 134·588 129·747 131·589 132·999 132·396 133·720 138·884 133·324 132·459 135·333 135·421 135·011

98 900 E 128·972 117·679 126·368 121 446 120·290 127·461 125 169 123·961 125·971 122·764 120 888 121 296 120 865 122·515 122·039 123·420 125·483 124·637 124·725 126·364 130·070 136·006 130·977 136 462

99 300 E 121·025 126·599 124·503 123·897 121·671 121·902 120·152 121·589 122·004 121·893 125 149 125 625 123 040 121·751 128·422 120·736 121·553 123·417 132·243 131·583 133·145 147·110 145·331 145·265

99 700 E 121·140 121·490 124·621 119·909 123·757 118·226 122·567 120·871 123·898 125·448 122·947 125·559 124·528 130·009 129·629 133·792 143·358 140·530 148·019 148·764

96 820 E 120·72 119 40 118·89 120·37 124·71 123·16 120·70 122·06 124·23 129·49 119·77 118 98 119·63 122·24 126·73 121·21 120·37 120 67 122·55 126·47

97 020 E 122 15 120 06 120 30 123·02 125 45 121 41 121 03 122·05 125 04 123·15 116·80 117·45 121·89 122· 44 126 16 122·09 129 63 125 01 131·03 127 63

100 400 N 123·84 125·47 126 62 124·92 123·78 123·18 123·11 120·50 119·09 117·71 117 32 117·35 117·48 117·93 118·053 120·119 127·467

400m

AMOCO

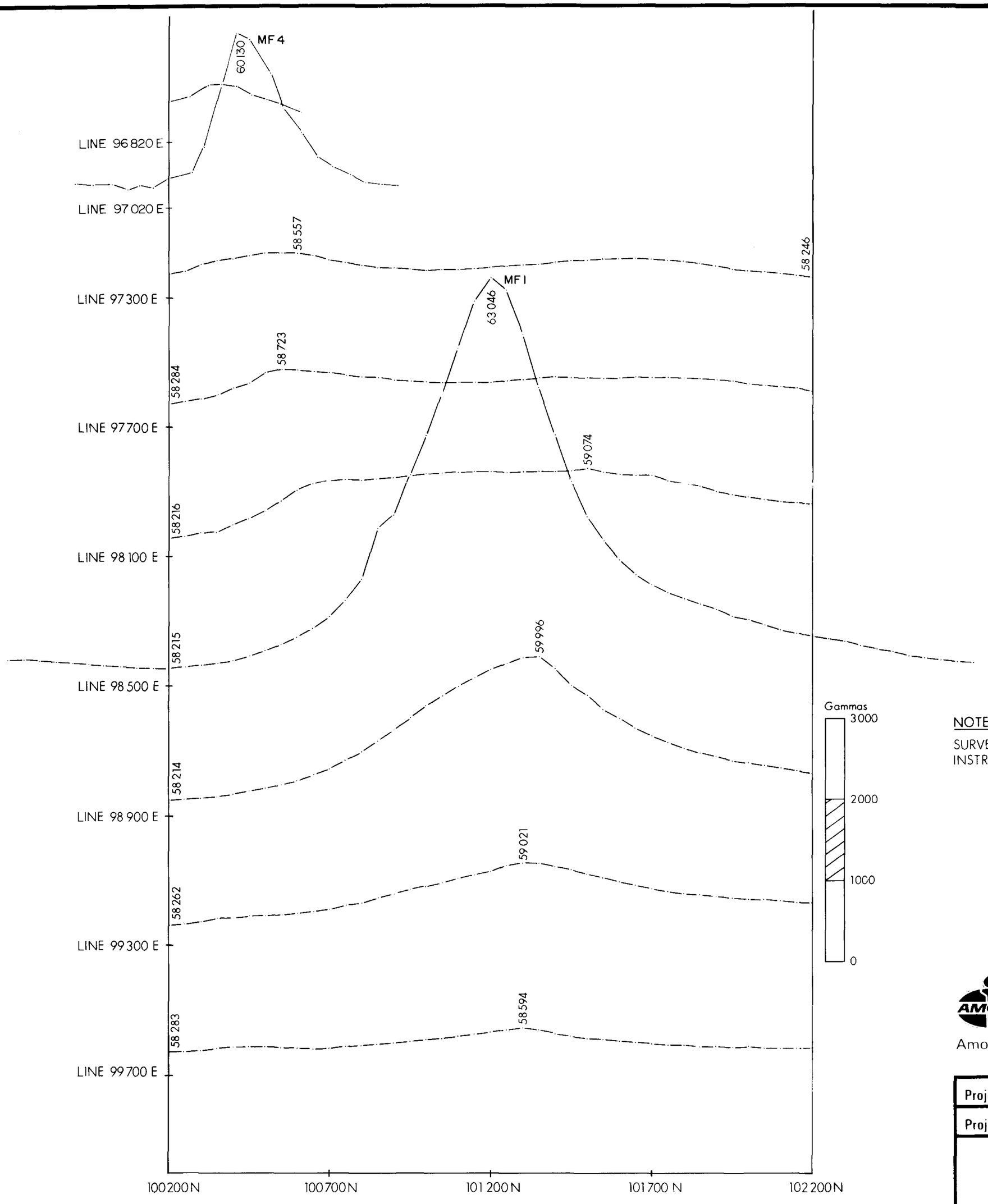
Amoco Minerals Australia Company

Project	TARCOOLA		Nº A·80·88
Project Partner			
EL 879 Mt FINKE Anomaly MF1 - MF4 REDUCED LEVEL VALUES			
Map Ref. ANG		Latitude 31° 00'S	Longitude 134° 00'E
Surveyed		Date	Scale 1:5000
Drawn	PSD	Date MARCH, 1982	Drawing Nº W 2494

Report

3961-14

Enclosure



Section facing west

NOTES

SURVEYED BY: AMOCO, OCTOBER 1981 AND MAY 1982 (97020E & 96820E
INSTRUMENT: GEOMETRICS G 816
PROTON PRECESSION

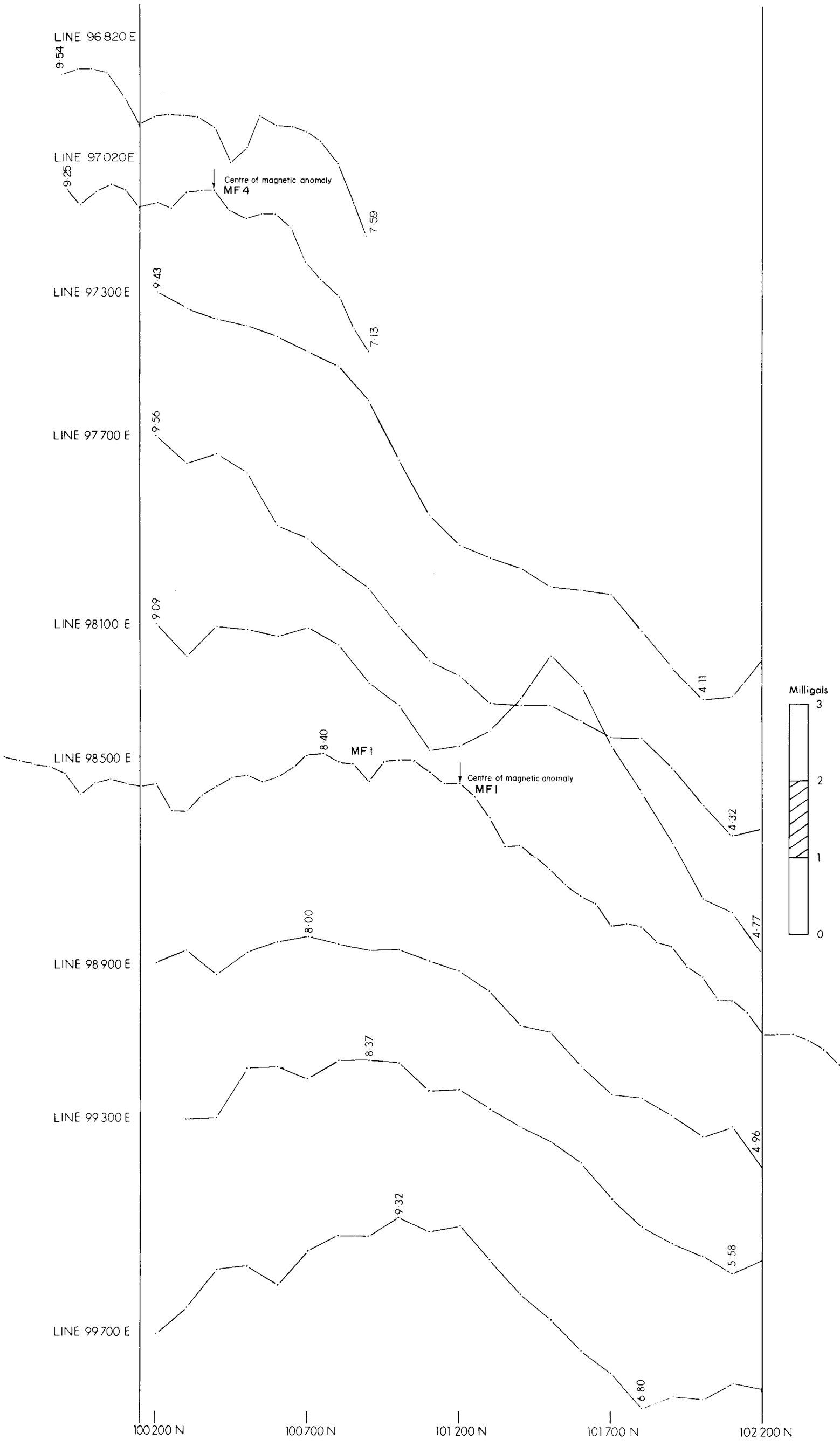
Amoco Minerals Australia Company

Project TARCOOLA			Nº A·80·88
Project Partner			
Mt FINKE EL 879 MF 1 - MF 4 STACKED MAGNETIC PROFILES			
Map Ref. ANG SH 53-10		Latitude 30°59' S	Longitude 133°50' E
Surveyed		Date	Scale 1:10 000
Drawn PSD		Date MARCH, 1982	Drawing Nº W2490

Report

3961- 15

Enclosure



Section facing west

NOTES

SURVEYED BY: P. MEWKILL, OCTOBER 1981 AND AUGUST 1982 (96820E 97020E)
INSTRUMENT: LACOSTE and ROMBERG

GRAVITY BASE LEVEL: ARBITRARY **(BMR Level +51m.g.)**
DENSITY: 2·67gm/cc

LEVELLING: OPTICAL; REFERENCE IS AHD VIA BAROMETRIC TIE FROM 101 200N, 98 500E TO TARCOOLA ISOGAL STATION 6491.

AMOCO

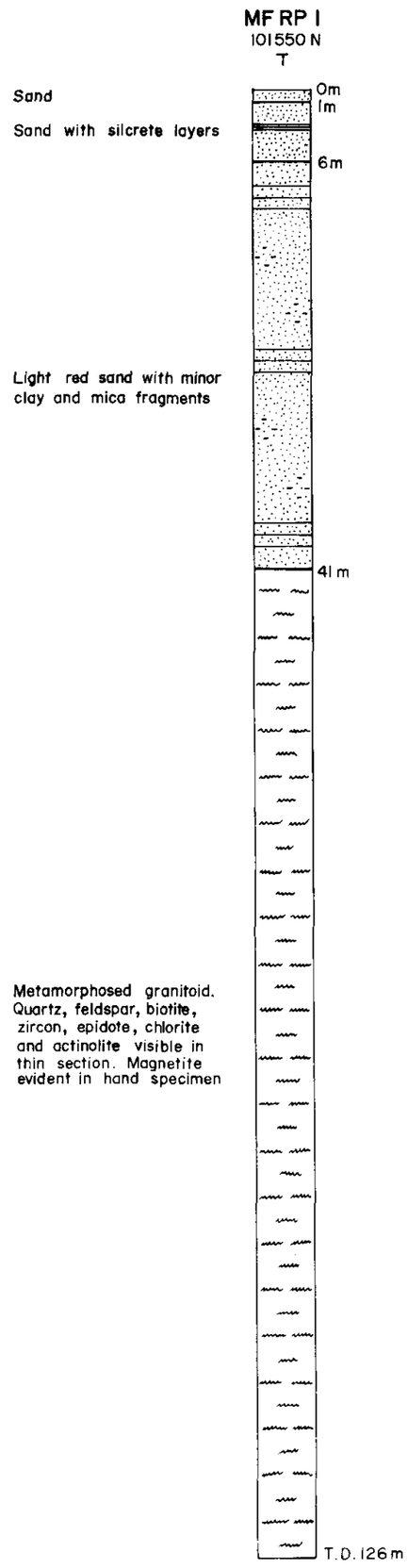
Amoco Minerals Australia Company

Project	TARCOOLA		Nº A·80·88
Project Partner			
Mt FINKE **EL 879 MF1 - MF4** **STACKED BOUGUER GRAVITY PROFILES**			
Map Ref. ANG	SH 53-10	Latitude 30° 59'S	Longitude 133° 50'E
Surveyed		Date	Scale 1:10000
Drawn		Date MARCH, 1982	Drawing Nº W 2492

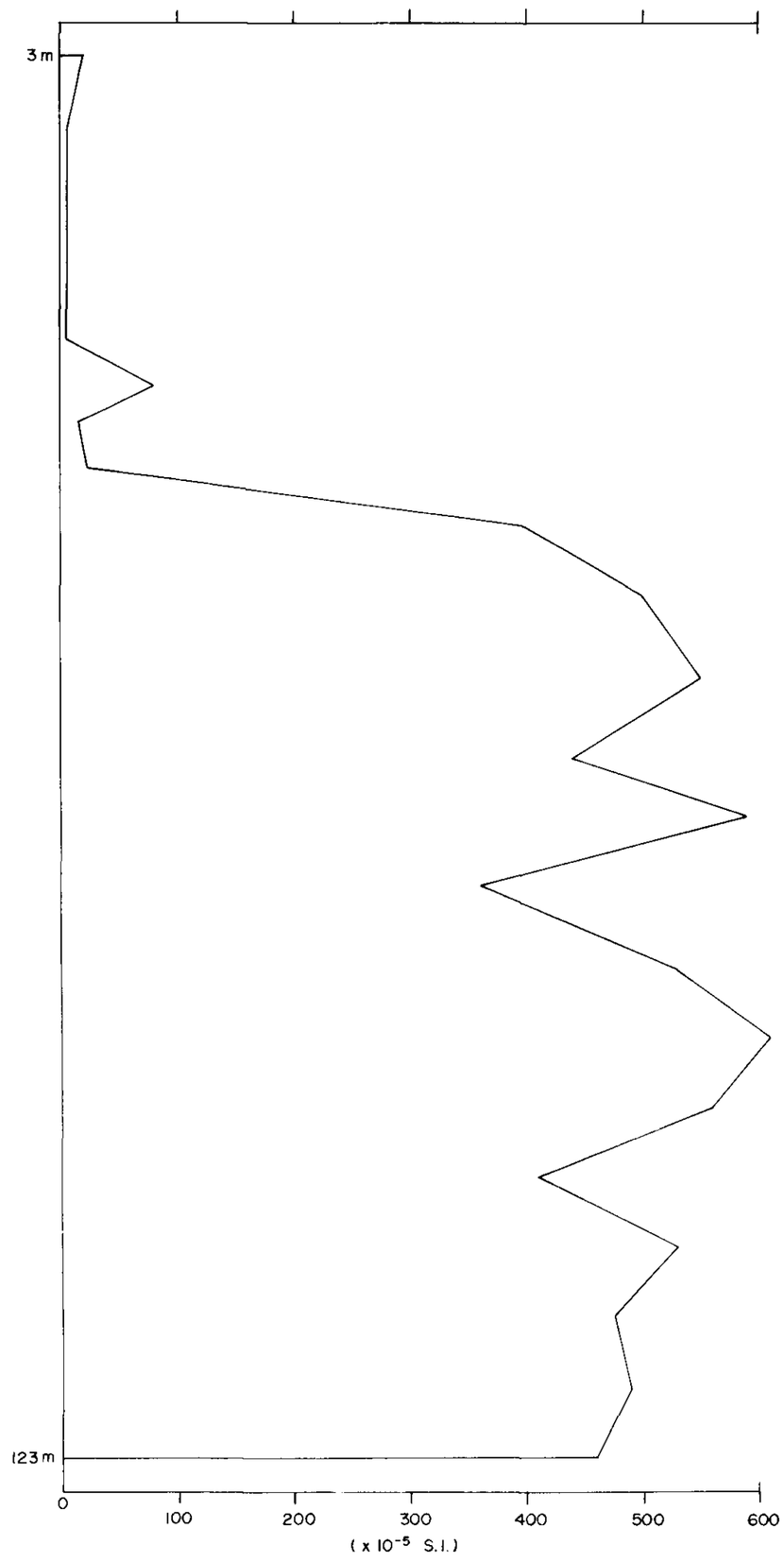
Report

5961-16

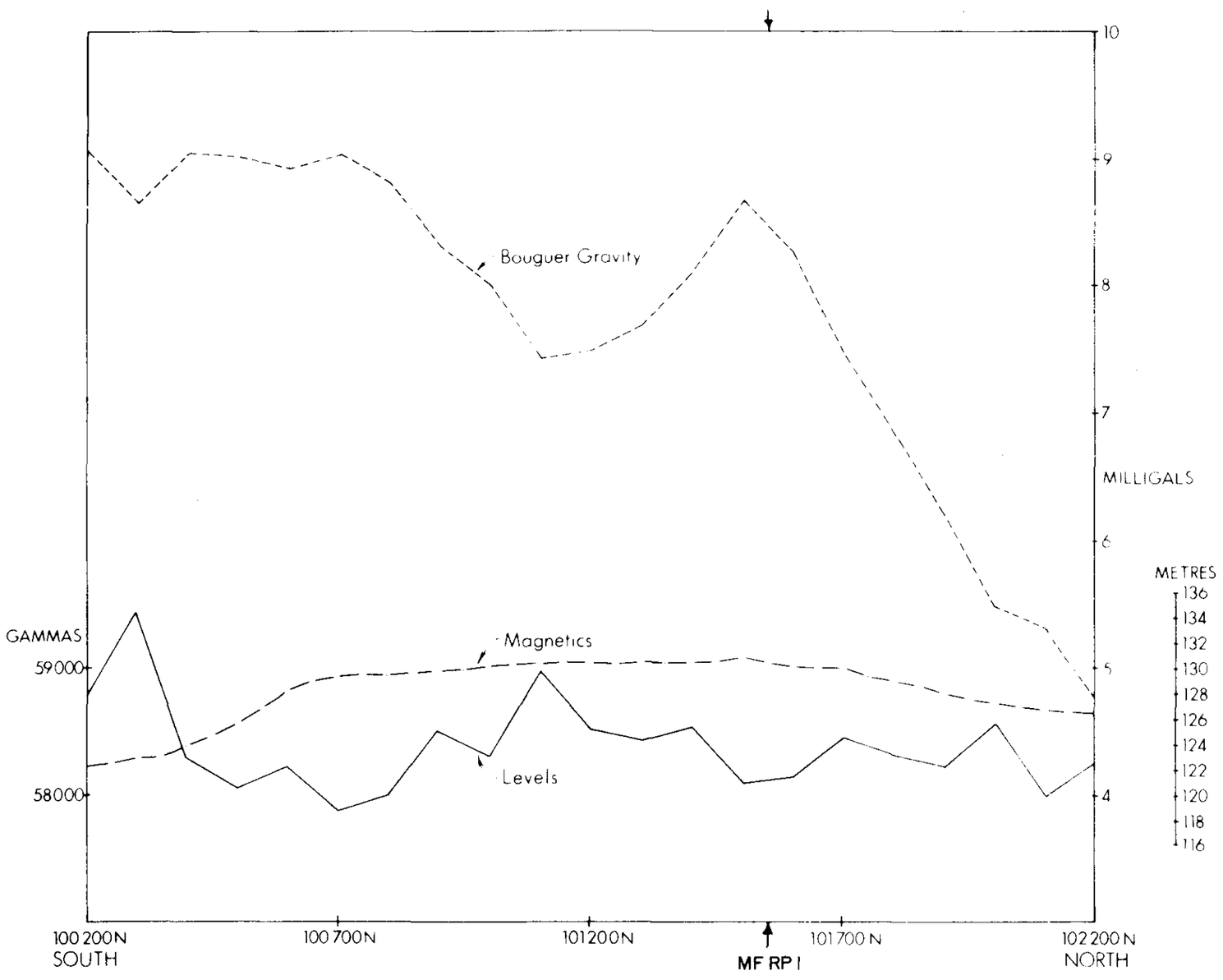
Enclosure



GEOLOGICAL LOG



MAGNETIC SUSCEPTIBILITY



NOTES

GRAVITY

SURVEYED BY: P. MEWKILL, OCTOBER 1981
INSTRUMENT: LACOSTE and ROMBERGE

GROUND MAGNETICS

SURVEYED BY: AMOCO, OCTOBER 1981
INSTRUMENT: GEOMETRICS G 816
PROTON PRECESSION

GRAVITY BASE LEVEL: ARBITRARY (BMR Level +51m.g.)
DENSITY: 2·67 gm/cc

LEVELLING: OPTICAL, REFERENCE IS AHD
VIA BAROMETRIC TIE FROM 101 200 N,
98 500 E TO TARCOOLA ISOGAL
STATION 6491

Amoco Minerals Australia Company

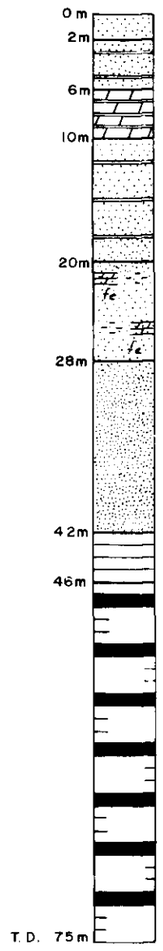
Project	TARCOOLA	**Nº**	A·80·88
Project Partner			
Mt FINKE EL 879 **Magnetic Anomaly MF1, Line 98100 E** Rotary percussion drill log, **Magnetics, Bouguer Gravity and Levels**			
Map Ref. ANG	SH 53-10	**Latitude**	30° 59' S
Longitude	133° 50' E		
Surveyed	GCM	**Date**	
Scale	1:10000		
Drawn	PSD / Iley	**Date**	MARCH, 1982
Drawing Nº	W2491		

Report

3961-17

Enclosure

MFRP 2
101,050 N
T



Red quartz rich sand

Red sand with silcrete layers

Silcrete and calcrete

Red sand with minor silcrete layers

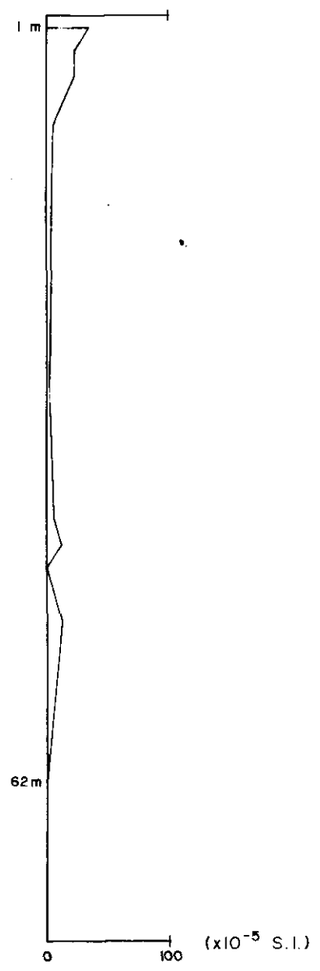
Limonitic sand with minor calcrete and mica fragments

Very fine cream coloured sand

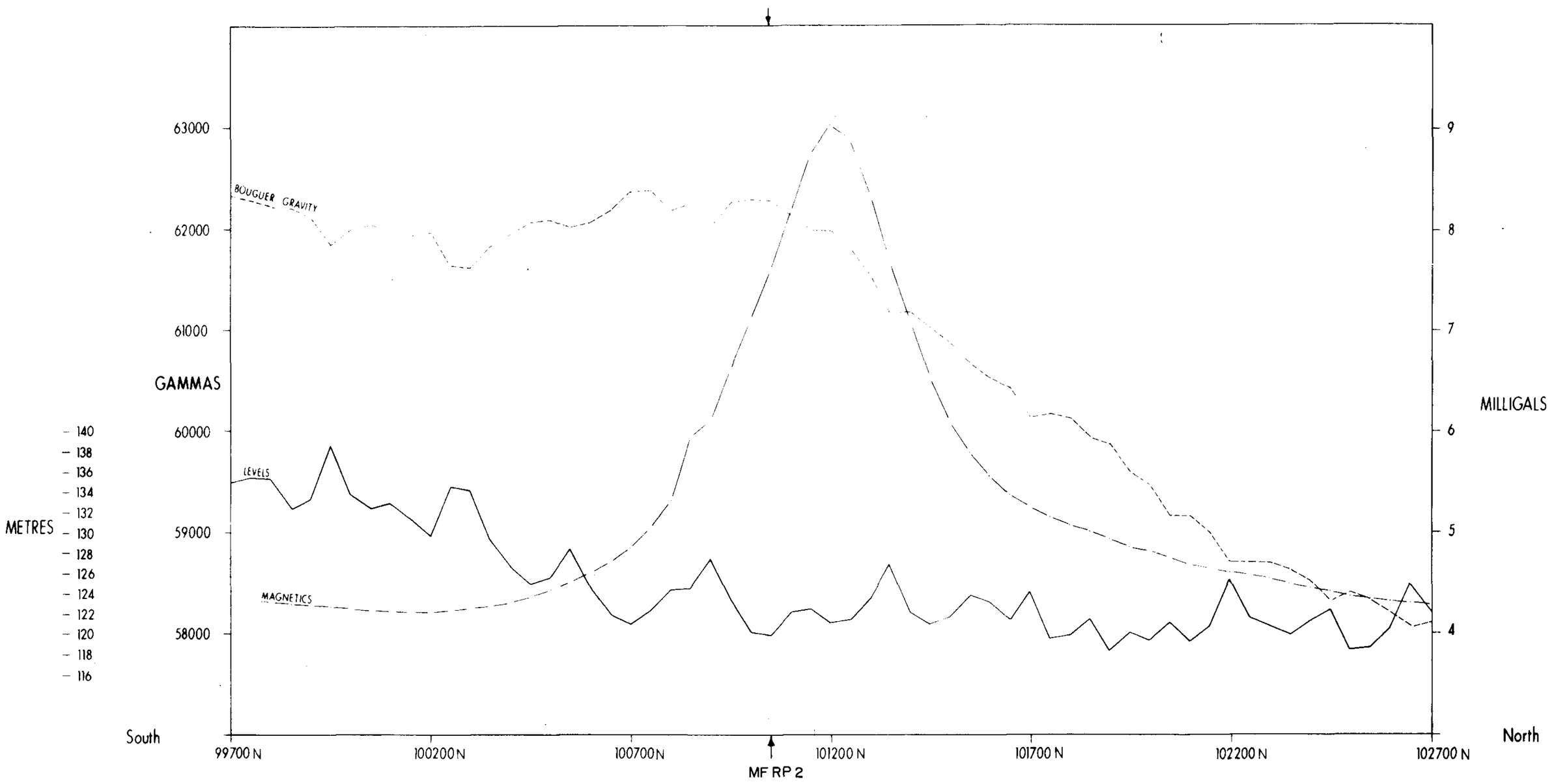
Dark brown clay

Slurry of interlayered dark brown coal and brown clay fragments in a brown mud. H_2S smell noticed while drilling

GEOLOGICAL LOG



MAGNETIC SUSCEPTIBILITY



MF RP 2

NOTES

GRAVITY
SURVEYED BY: P. MEWKILL, OCTOBER 1981
INSTRUMENT: LACOSTE and ROMBERG

GROUND MAGNETICS
SURVEYED BY: AMOCO, OCTOBER 1981
INSTRUMENT: GEOMETRICS G816
PROTON PRECESSION

GRAVITY BASE LEVEL: ARBITRARY (BMR Level +51mg)
DENSITY: 2·67gm/cc

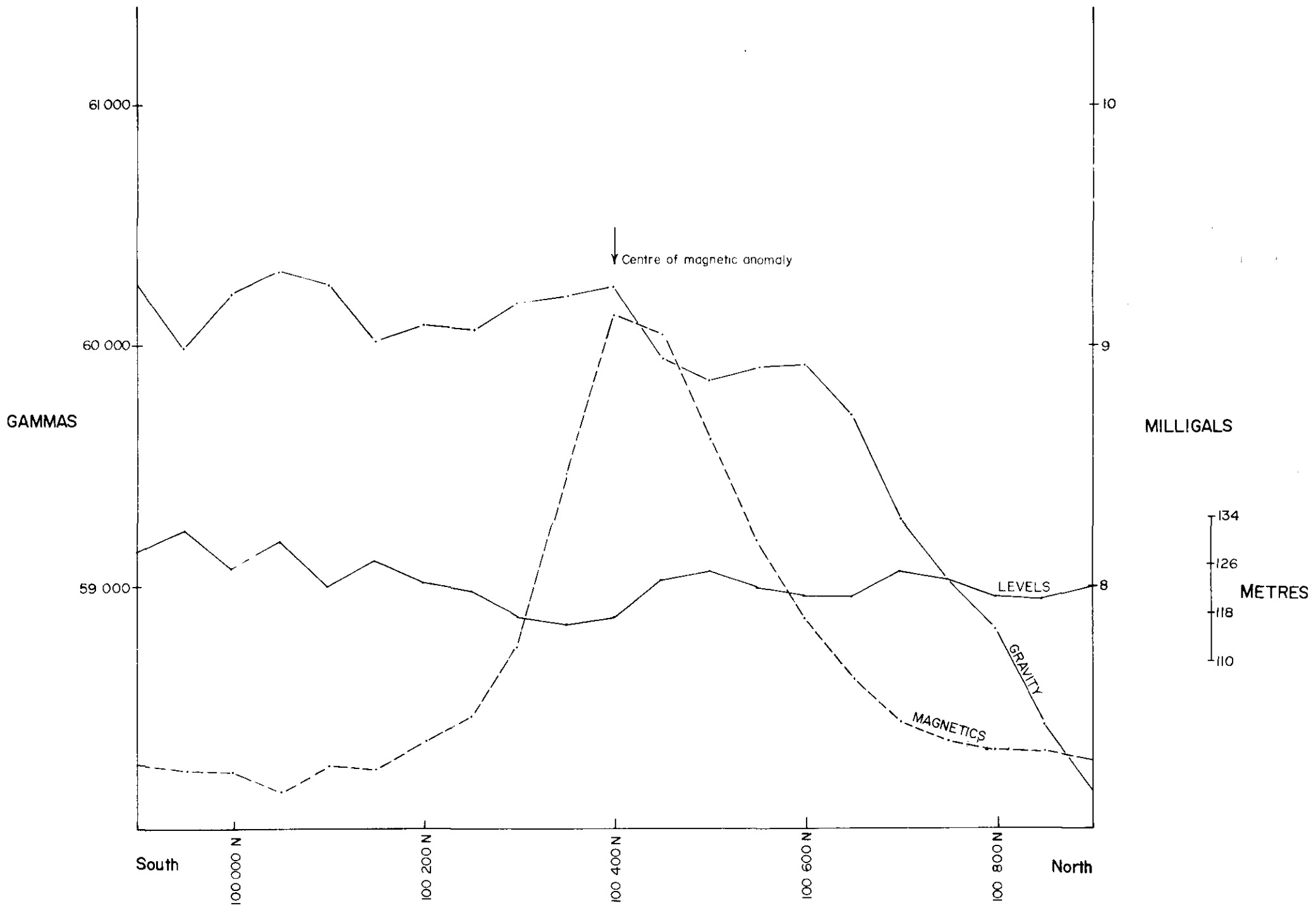
LEVELLING: OPTICAL; REFERENCE IS AHD
VIA BAROMETRIC TIE FROM
101 200 N, 98 500 E TO
TARCOOLA ISOGAL STATION 6491

Amoco Minerals Australia Company

Project	TARCOOLA	Nº A·80·88
Project Partner		
Mt FINKE EL 879 Magnetic Anomaly MF 1, Line 98500E Rotary percussion drill log,· Magnetics, Bouguer Gravity and Levels		
Map Ref. AMG SH 53-10	Latitude 30°59'S	Longitude 133°30'E
Surveyed GCM	Date	Scale 1:5000
Drawn I ley	Date MARCH, 1982	Drawing No. [illegible]
Report		

3961-18

Enclosure



TRAVERSE 97020 E

Amoco Minerals Australia Company

NOTES

GRAVITY
Surveyed by: P. Mewkill, August 1982
Instrument: Lacoste and Romberge

GROUND MAGNETICS
Surveyed by: Amoco, May 1982
Instrument: Geometrics G816 Proton Precession

Gravity Base Level: Arbitary (BMR Level + 51 m.g)
Density: 2·67 gm/cc

Levelling: Optical, Reference is AHD via
Barometric tie from 101 200 N, 98500 E (Anomaly MF1)
To Tarcoola isogal station 6491

Project

Project Partner

EL 879 MT FINKE, S.A. MF4

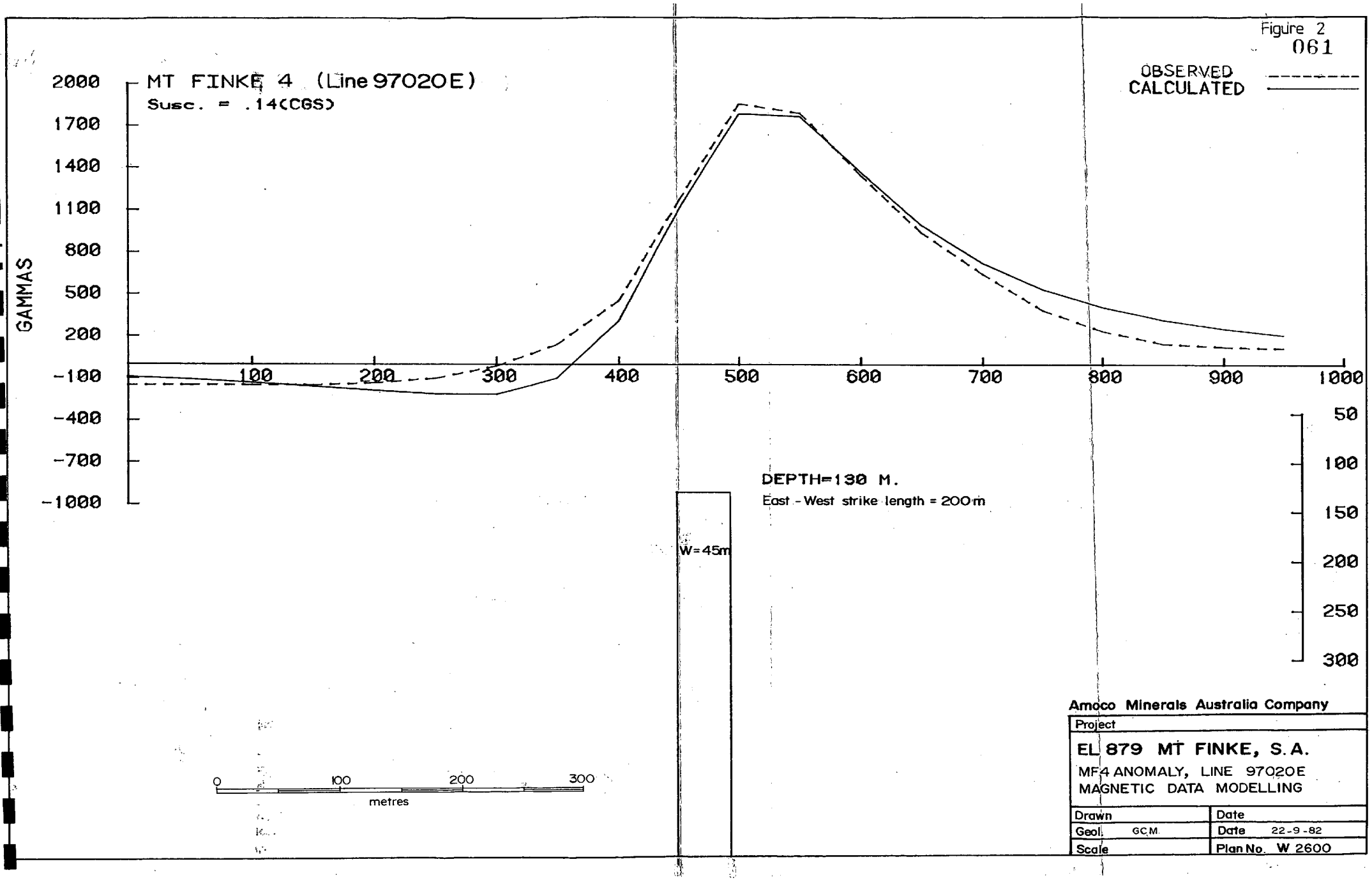
GEOPHYSICAL PROFILES, LINE 97020 E

Revised	A.N.G. Sheet		Project Nº	
	Latitude		Longitude	
	Geologist	GCM	Date	28-9-82
	Drawn By	I. LEY	Date	28-9-82
	Scale	1:5000	Plan Nº	W 2605

0 100 200 300 400
metres

3961-19

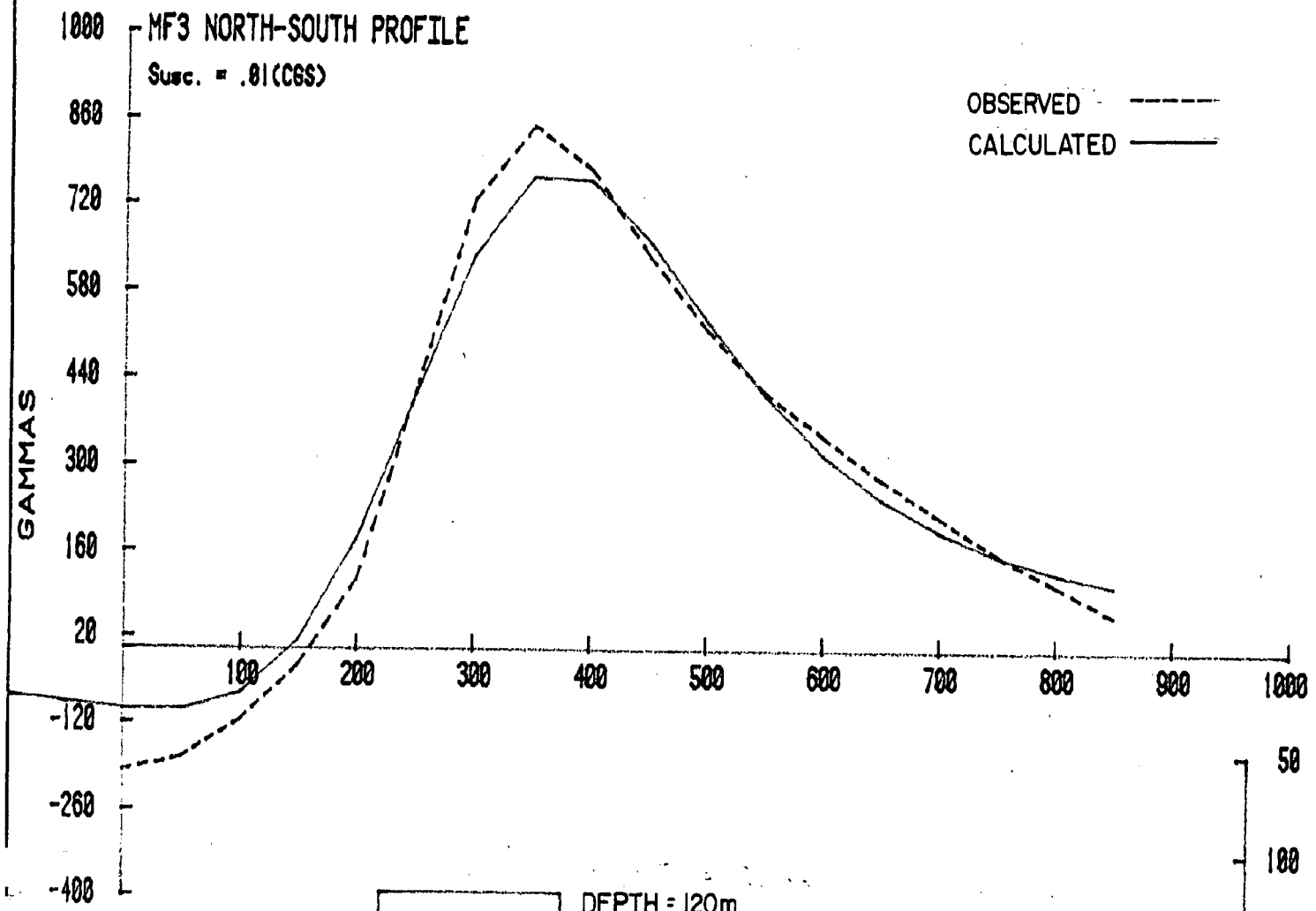
Figure 2
061

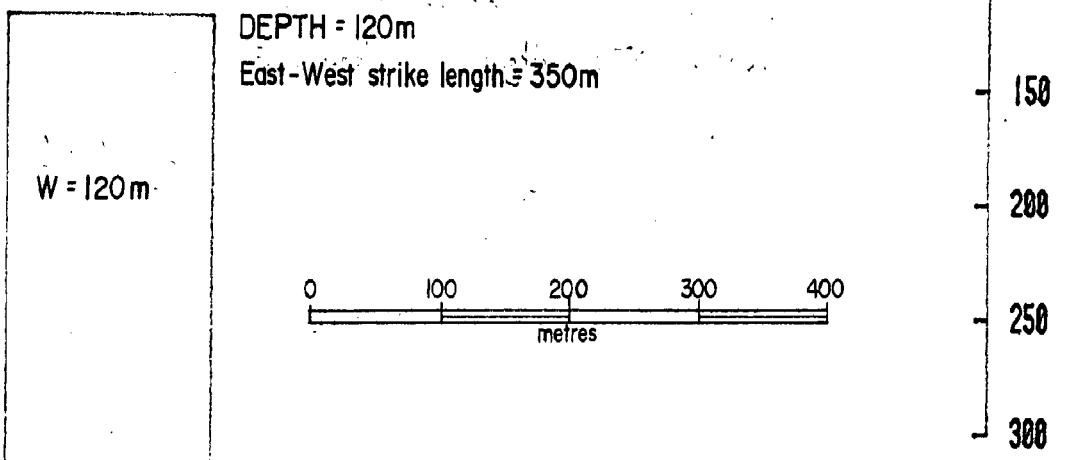


Amoco Minerals Australia Company

Project	
EL 879 MT FINKE, S.A. MF4 ANOMALY, LINE 97020E MAGNETIC DATA MODELLING	
Drawn	Date
Geol. G.C.M.	Date 22-9-82
Scale	Plan No. W 2600

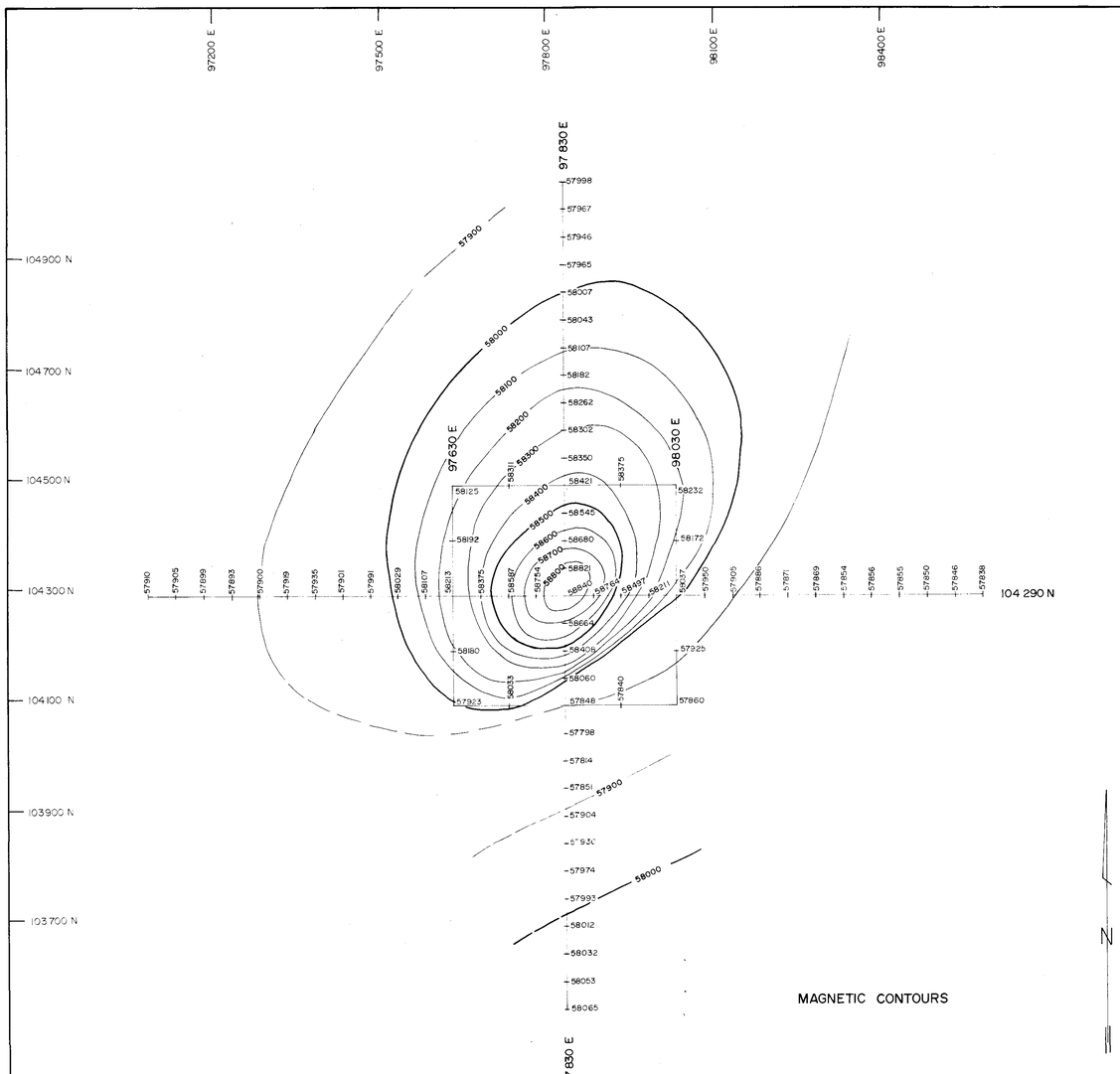
062 Figure 1



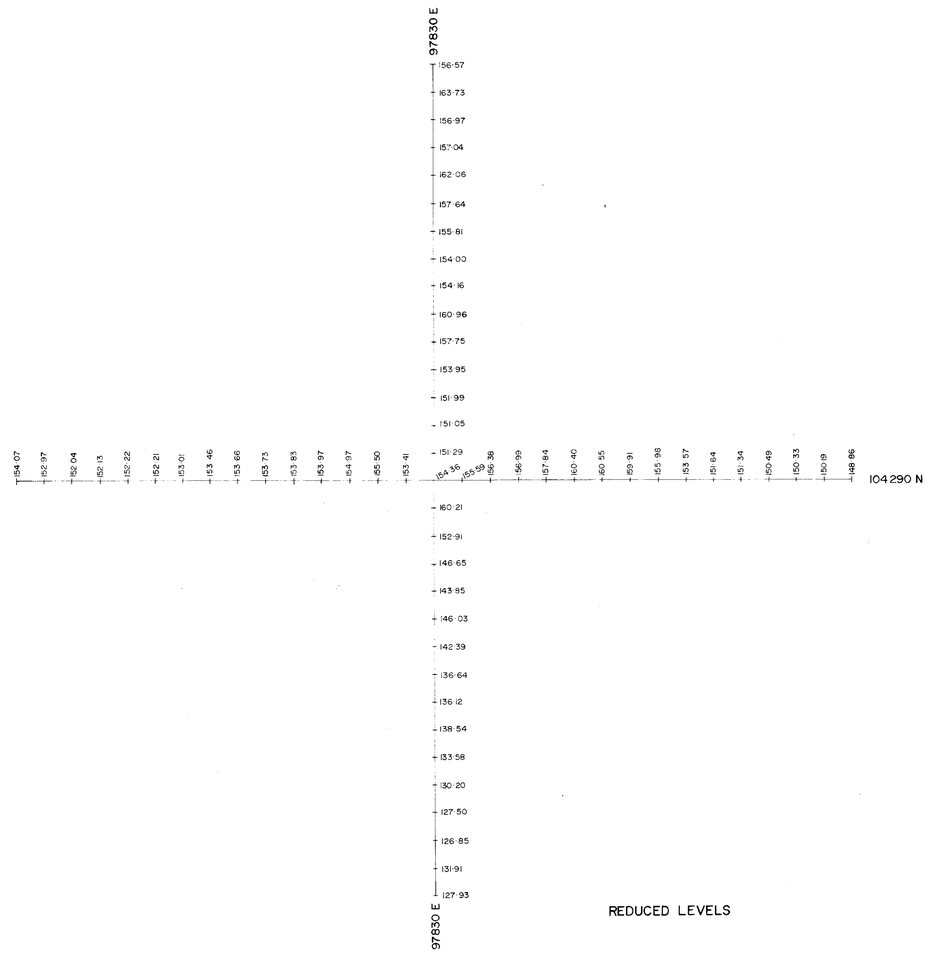


Amoco Minerals Australia Company

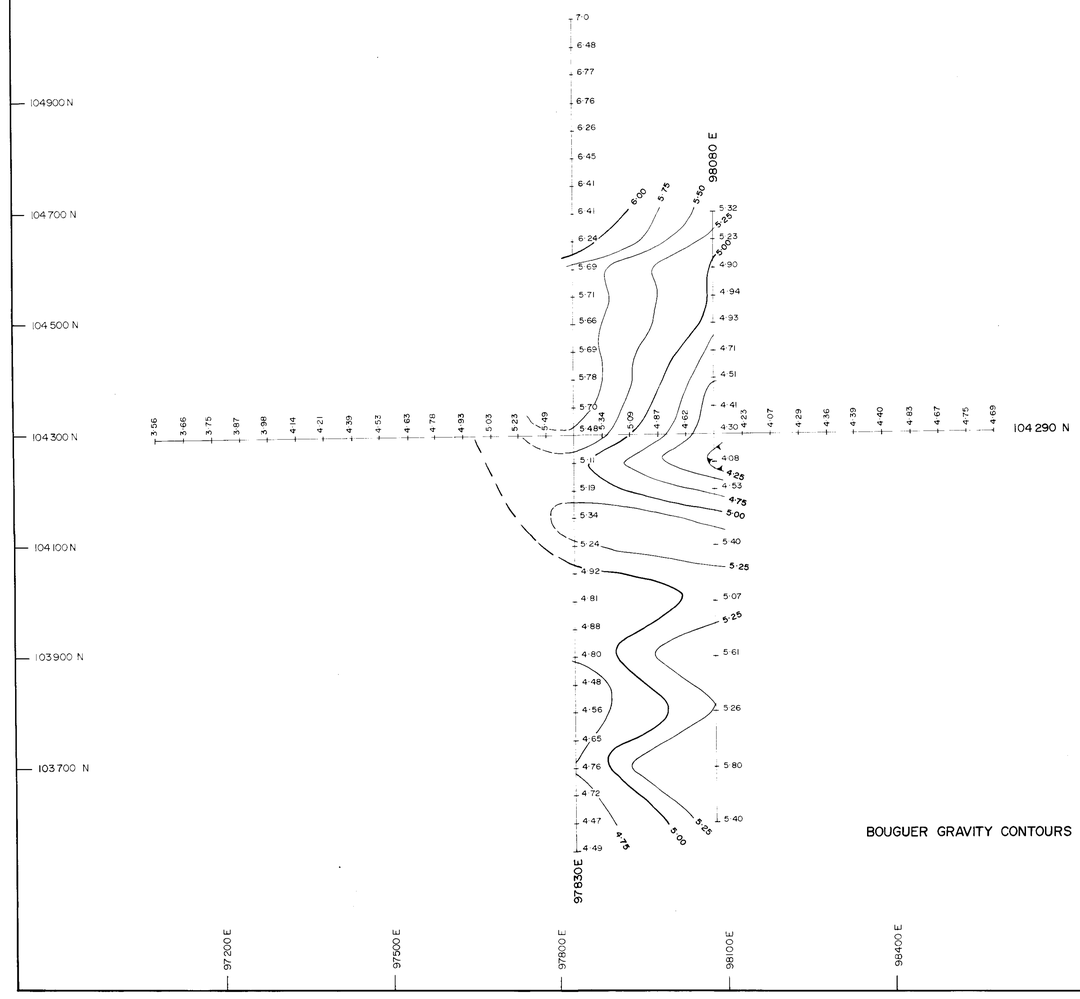
Project	
EL 879 MT FINKE, S.A. MF 3 ANOMALY, LINE 104290 N MAGNETIC DATA MODELLING	
Geol. GCM	Date 22-9-82
Scale	Plan No. W 2601



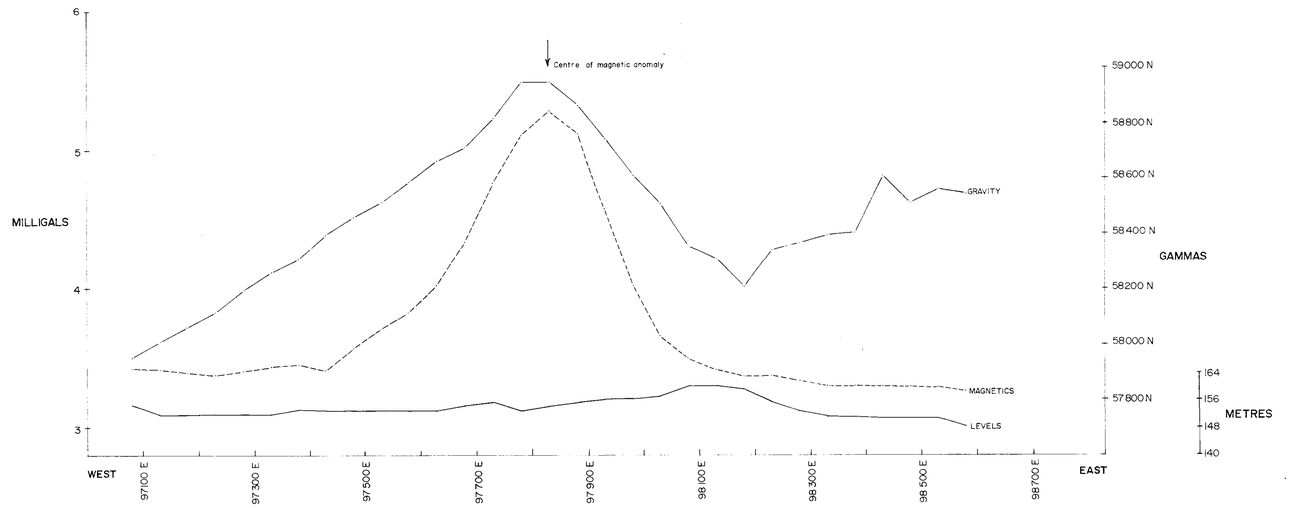
MAGNETIC CONTOURS



REDUCED LEVELS



BOUGUER GRAVITY CONTOURS



TRAVERSE 104 290 N

NOTES

GRAVITY

Surveyed by: P. Mewkill, August 1982
Instrument: Lacoste and Romberge

GROUND MAGNETICS

Surveyed by: Amoco, August 1982
Instrument: Geometrics G816 Proton Precession

Gravity Base Level: Arbitrary (BMR Level +51 m.g.)
Density: 2·67 gm/cc

Levelling: Optical, Reference is AHD via
Barometric tie from 101200N, 98500E (Anomaly MF 1)
To Tarcoola isogal station 6491

Project:

Project Partner

EL 879 MOUNT FINKE, S.A. MF 3

GEOPHYSICAL DATA

Revised	A.N.G. Sheet	Project No.	
	Latitude	Longitude	
	Geologist GCM	Date	27-9-82
	Drawn by I.LEY	Date	27-9-82
	Scale 1:5000	Plan No.	W 2604

0 100 200 300 400 metres

3961-20

063

AMOCO MINERALS AUSTRALIA COMPANY

EXPLORATION LICENCE 879, MT. FINKE

FIFTH QUARTERLY REPORT, FOR PERIOD ENDING DECEMBER 13 1982

INTRODUCTION.

Exploration Licence is one of a number of Amoco Tenements in the Tarcoola Area. We are searching for base and precious metal mineralization in Precambrian rocks of the Gawler Craton. The Licence was scheduled to expire on March 14th, 1983 but application for a six month extension has been made.

Work carried out to date includes an airborne magnetometer survey, ground magnetometer and gravity surveys and the drilling of two rotary percussion holes. No significant mineralization has been located but a circular magnetic anomaly is yet to be tested.

EXPLORATION.

The only work carried out in the period was re-analysis and petrological examination of rotary percussion cuttings from 1982 holes MFRP I which were lead-anomalous. The re-analysis (Appendix 1) showed the original lead geochemistry to be valid but thin section work by I.Pontifex failed to supply a probable cause (Appendix 2).

EXPENDITURE.

Salaries	180
Assays	93
Petrology	85
Annual rental in advance	564
Overheads.administration	90
Total	$1012

Cumulative expenditure on this Licence is now $50,288.

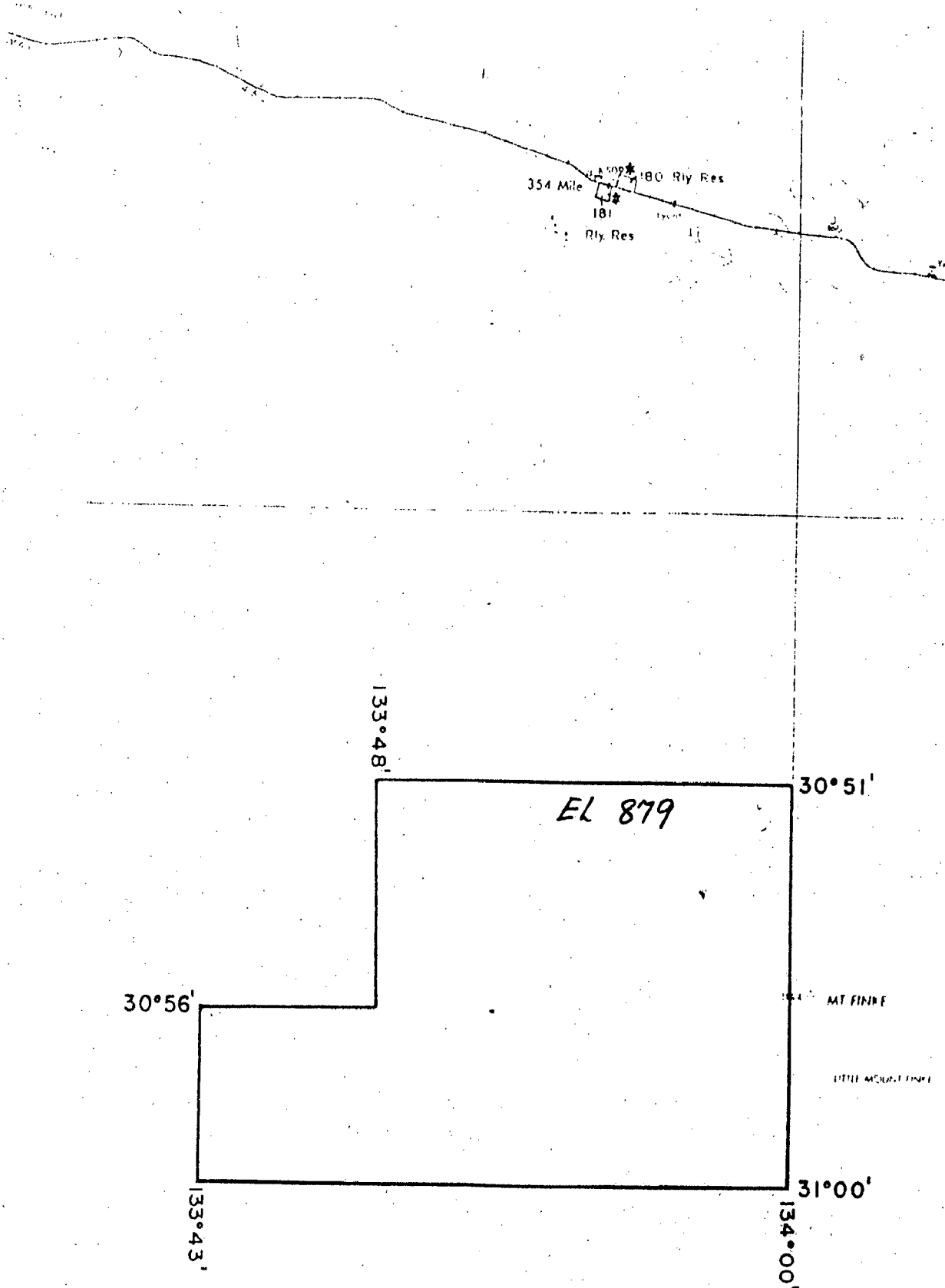
FUTURE WORK.

Probable drilling of circular magnetic anomaly MFI.

G.C. Miller
Senior Geologist

Attachments:
1. Geochemical Analyses
2. Petrological Report

SCHEDULE A



SCALE 1:250,000

KILOMETRES 5 0 5 10 15 20 25 KILOMETRES

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES

Attachment 1

ANALYTICAL REPORT

JOB COM822004 O/N : W 17664

Results in ppm

SAMPLE	Pb	Pb	Zn	%Fe	Ba	W
M7RPI 44 to 46	135	115	48	1.90	710	<10
M7RPI 46 to 48	290	310	65	2.00	710	<10
M7RPI 48 to 50	160	170	60	2.00	800	<10
M7RPI 50 to 52	910	750	150	2.00	790	<10
M7RPI 52 to 54	260	270	85	1.80	720	10
M7RPI 54 to 56	390	390	75	1.95	770	<10
M7RPI 56 to 58	470	410	90	1.75	740	<10
M7RPI 58 to 60	530	570	85	1.90	770	<10
M7RPI 60 to 62	190	185	60	1.65	680	10

Method of Analysis : Pb Zn : AAS1
Fe : AAS2/2A
Da W : XRF1

ORIGINAL Pb.

92.2<

TEL. 332 6744
A.H. 31 3816

26 KENSINGTON ROAD, ROSE PARK
SOUTH AUSTRALIA

P.O. BOX 91, NORWOOD
SOUTH AUSTRALIA 5067

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Attachment 2.

MINERALOGICAL REPORT NO. 3942

14th January, 1983

TO: Mr. G. Miller,
Amoco Minerals Aust. Co.,
P.O. Box 47,
NORWOOD, S.A. 5067

YOUR REFERENCE: Order No. 17713

MATERIAL: Very fine percussion cuttings

IDENTIFICAITON: MFRP1 : 50 - 52 m
MFRP1 : 70 - 72 m

WORK REQUESTED: Examination in thin section

SAMPLES & SECTIONS: Returned to you with this report

PONTIFEX & ASSOCIATES PTY. LTD.

Mt Finke

MFRP1 : 50-52 m : adamellitic granitoid or possible gneiss; moderate clay/sericite, saussuritic and uralitic alteration, with rare-trace pyrite : minor quartz sandstone (contamination ?)

Reported geochem (ppm) : Pb 900, Zn 180

This sample consists of cuttings ranging in size from fragments of single crystals 0.1 mm to composite rock chips 3 mm maximum dimension.

The composite chips, which give most indication of the likely rock type(s), are :-

(1) mostly felspar, with K-spar dominant over plagioclase, composite with generally minor quartz ± minor fine chlorite and/or actinolite and rare epidote

(2) minor fragments composed of a compact aggregate of fine epidote, ± minor chlorite, and/or actinolite, quartz and plagioclase

(3) minor fragments of porous sandstone (up-hole contamination?)

Single crystal fragments consist mainly of these same components i.e. K-spar, quartz, plagioclase, minor chlorite ± actinolite and epidote. Many of the single crystal grains are well rounded, and appear to have derived from a mature sandstone (up-hole contamination?).

The felspars are clouded by clay-sericite alteration, and some plagioclase is also saussuritised. Most of the chlorite ± actinolite, i.e. uralite, appears to replace primary biotite and/or hornblende (manifest as associated minute leucoxenitic grains).

..../

MFRP1 - 50-52m continued :

Accessory rutile and opaque oxides are present; trace extremely fine pyrite accompanies some alteration assemblages.

The collective evidence indicates an original adamellitic granitoid (?or gneiss) with moderate clay/sericite, saussuritic and uralitic alteration, probably with some concentrated veins or patches of these components.

There is no mineralogical explanation for the anomalous Pb and Zn.

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AMOCO MINERALS AUSTRALIA COMPANY

Exploration Licence 879, Mt. Finke.

Reports for second and third quarters (year two), ending 14th June, 1983.

During the period under review no new work was carried out pending the finalization of the joint-venture document for the CRA Exploration farm-in. Expenditure remains at $50,288.00

Graham Miller
Senior Geologist
AMOCO MINERALS AUSTRALIA COMPANY