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EL 2123

YERADA

ANNUAL AND FINAL REPORTS FOR THE PERIOD 21/11/95 TO 2/11/98

Submitted by

Normandy Exploration Ltd
1999

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PRIMARY INDUSTRIES AND RESOURCES SA

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14 April, 1997

The Director General
Mines and Energy, South Australia
191 Greenhill Road
PARKSIDE SA 5063

Dear Sir,

RE: EL 2123 - YERADA

Please find enclosed two copies of the Annual Report for the above tenement for period ending 21/11/96.

Yours sincerely,

G. W. McConachy

G. W. McConachy
Senior Evaluation Geologist

Encl.

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EL 2123 - YERADA

ANNUAL REPORT

FOR PERIOD ENDING 21/11/96

Author: G. W. McConachy

Date: 1st April, 1997

Authorised:

Distribution:

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Norex - SE Region	□

Report No. 21145

Report No: 21145

Title: Annual Report for EL 2123 (Yerada) for the Period Ending 21 November, 1996.

Author: G. W. McConachy

Date: 1/4/97

Location:

LOCATION MAP

ABSTRACT

This report summarises work completed by Normandy Exploration Limited on the Yerada project, Exploration Licence 2123, during the period 21/11/95 to 21/11/96.

Exploration expenditure during this period totals $ 41,991.

The tenement is located within the Tallaringa Conservation Park.

The Yerada project is contiguous along its eastern boundary with Normandy Exploration's Mabel Creek (EL 2122) tenement.

The tenement covers a series of features which are interpreted from magnetics and gravity to represent a succession of Proterozoic and Archaean rocks. The Proterozoic rocks have the potential for ironstone-skarn associated Cu-Au mineralisation and Archaean rocks with potential for Au mineralisation.

Work completed by Normandy Exploration includes:

* Review of MESA's SAEI aeromagnetic data and the identification of anomalies.

* Site clearances of these areas with representatives from the Antakirinja Mutuntjarra Land Council.

* Compilation of a Declaration of Environmental Factors (DEF) detailing proposed exploration activities, the impact of these activities will have on the environment, and methods of mitigation to protect the environment.

Exploration activities within the tenement await the review of the DEF and subsequent government departmental approvals.

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- Aeromagnetic Interpretation
- Target Selection

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Copy of "Declaration of Environmental Factors for Mineral Exploration in the Tallaringa Conservation Park, South Australia".

1. CONCLUSIONS and RECOMMENDATIONS

Normandy Exploration Limited await approval to explore EL 2123 - Yerada which is located within the Tallaringa Conservation Park.

Upon the granting of the necessary approvals, Normandy will undertake exploration activities which include ground magnetic surveys, drilling and possibly gridded calcrete sampling.

2. INTRODUCTION

2.1 Tenure

EL 2123 - Yerada covers an area of 2,402 km², and was granted to Normandy Exploration Limited on the 21st November, 1995.

2.2 Location and Access

EL 2123 - Yerada is located within the Tallaringa Conservation Park approximately 100 km west of Coober Pedy (Figure 1).

The tenement is located within the following 1:250,000 map sheets:

Giles SH53-1
Murloocoppie SH53-2
Tallaringa SH53-5
Coober Pedy SH53-6

Access along the northern (Anne Beadell Highway) and eastern (Dog Fence track) areas of the licence are good. No access tracks are known elsewhere within the licence area.

3. REGIONAL SETTING and GEOLOGY

The Exploration Licence covers portion of the Late Archaean to Middle Proterozoic (2700 - 1420 Ma) northern Gawler Craton. The geology in this area is considered complex.

The area comprises felsic and mafic gneisses, banded iron formations, metasediments, granites and metavolcanics. The area has undergone intense deformation and metamorphism during the Kimban Orogeny (1850 - 1700 Ma) when granitoids were emplaced and major mylonitic zones developed. Further acid volcanic sheets and granite emplacement (1590 Ma) are thought to be associated with Cu-Au-U mineralisation. This event may be associated with the orogenic collapse of the craton.

Interpretation of the SAEI's aeromagnetic and gravity data for this area indicates that the Archaean-Proterozoic terrain boundary is marked by a series of major faults. In the NW of the craton the NE orientated transpressional Karari Fault forms the western margin to the Archaean. To the north, Lower Proterozoic metasediments of the EW trending "Coober Pedy Ridge" and Mt. Woods area are inferred to be thrust southward over the craton margin.

This thrusted and folded Proterozoic sequence is divided into a strongly magnetic BIF/mafic rift sequence and a relatively non magnetic metasedimentary sag sequence.

Comparisons in the State suggests similarities with the BIF bearing Hutchinson Group and the volcano-sedimentary Moonta-Wallaroo and Peake and Denison Ranges sequences. A similar rift and sag sequence has also been described at Broken Hill.

Relatively undeformed magmatic intrusions are also interpreted within the tenement area. These are spatially associated with a number of ironstone targets. These granitoid rocks are equated with the Hiltaba Suite which are cogenetic with the felsic rocks of the Gawler Range Volcanics and host to the Olympic Dam Cu-Au deposit.

The +150m thick cover sequence contains a fine grained, glacial derived shale sequence and a variable sand cover up to 80m thickness.

4. PREVIOUS EXPLORATION

The exploration for minerals and petroleum is subject to stringent controls over much of the Great Victoria Desert including the Tallaringa Conservation Park. A joint proclamation under Section 43 of the National Park and Wildlife Act allows mining in Tallaringa Conservation Park, following approval by the Minister of Environment and Natural Resources.

Historic exploration activity within this region has included coal, petroleum and mineral searches by companies which include British Petroleum, CRA, Amoco and most recently by BHP. BHP actively explored within the Tallaringa Conservation Park under EL 1806 from 1991 - 1993. During this period both ground magnetic and gravity surveys were completed and a limited number of targets were tested with open hole percussion drilling.

5. EXPLORATION COMPLETED

Normandy Exploration Limited applied for EL 2123 to explore a series of anomalous geological features including structurally complex areas and discrete magnetic targets.

These features are interpreted from MESA's SAEI high resolution aeromagnetic data for this region (Figure 2). Many of the features have magnetic similarities with signatures observed at Olympic Dam as well as deposits such as Ernest Henry, Osborne and Cannington.

Site clearances for these areas have been obtained from the Antakirinja Mutuntjarra Land Council.

A detailed "Declaration of Environmental Factors for mineral exploration in the Tallaringa Conservation Park, South Australia" has been submitted to MESA for distribution to the relevant departments.

6. PROPOSED EXPLORATION

Upon the acceptance of the DEF, the following two programmes will be completed on three anomalies:

1. Detailed ground magnetometer surveys to ground truth the magnetic anomalies.

2. Air core/diamond drill testing of ground truthed anomalies. This programme is estimated to represent up to 9 drill holes totalling 2,000 metres of drilling.

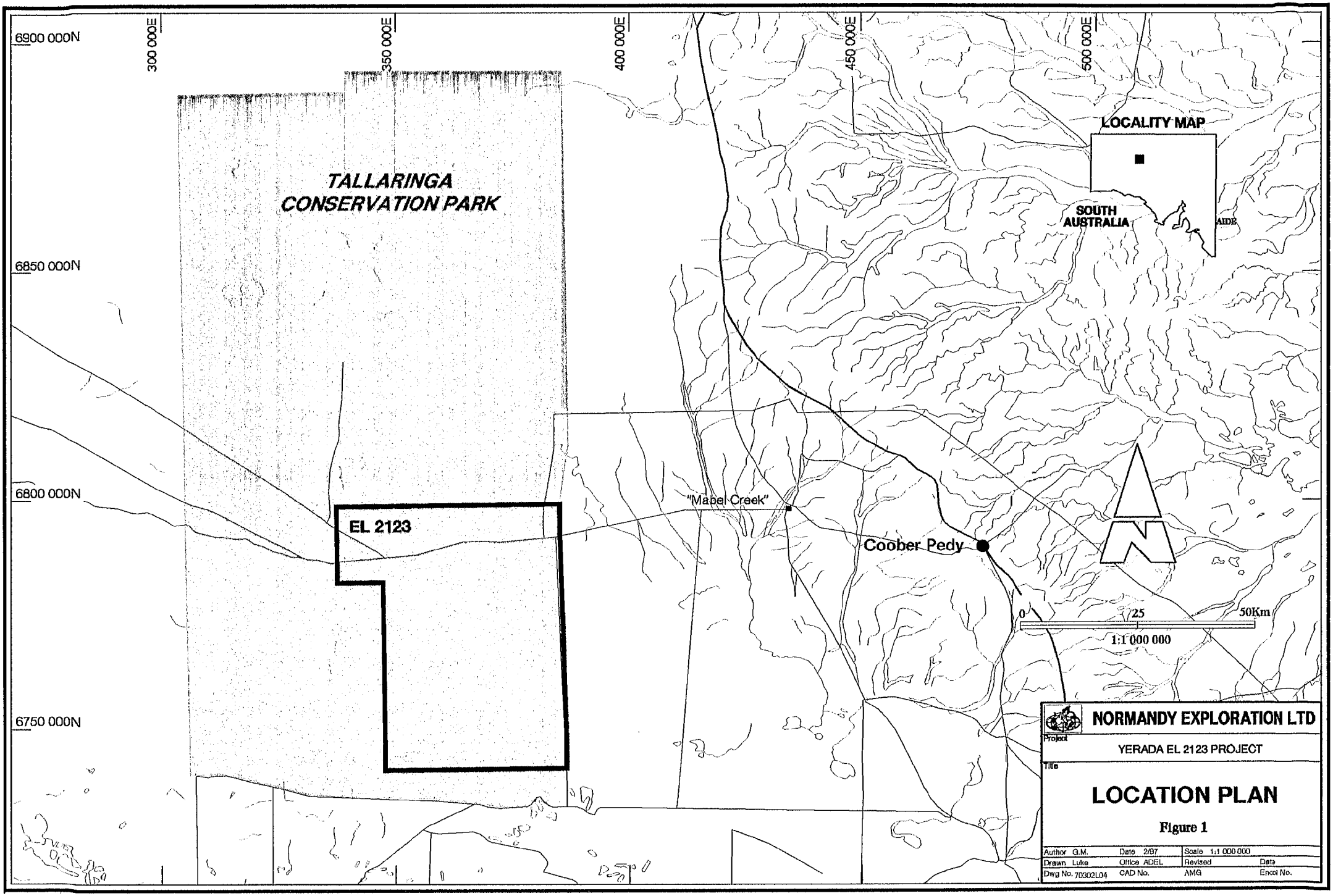
The potential of a calcrete sampling programme in the southern portion of the licence area, south of the Karari Faults, will be evaluated. This area is possibly Archaean in age, and has similarities with the nearby Challenger Au deposit.

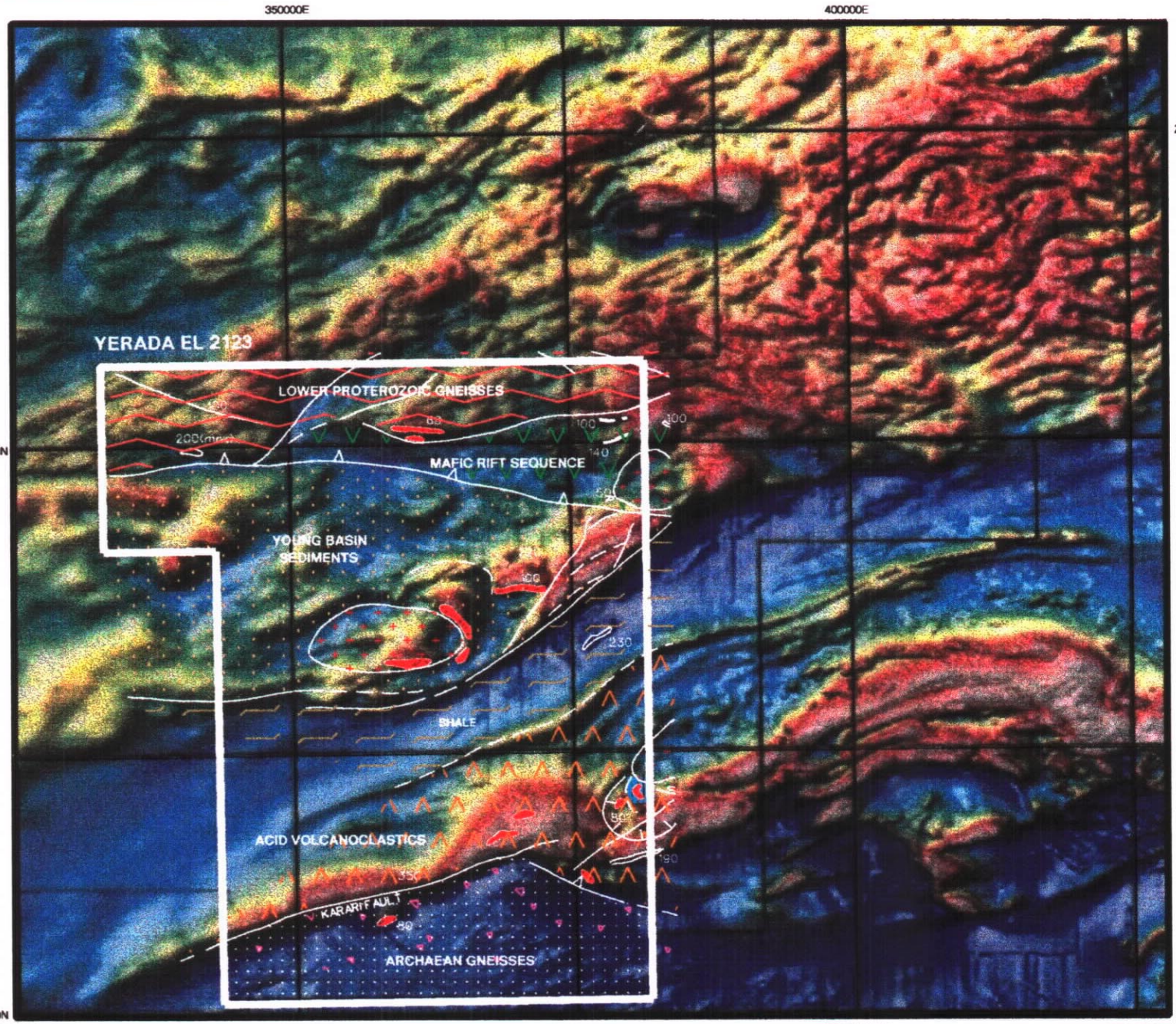
7. EXPENDITURE SUMMARY

Description	Total $
Staff Costs	1,247.34
Stationery/Office Supplies/Printing	63.90
Publications/Maps/Subscriptions	100.00
Travel/Accommodation/Meals	224.60
Field Supplies/Exploration Consumables	44.20
Equipment Maintenance/Repairs	445.98
Equipment Purchases	340.50
Safety	180.95
Vehicle Operating Costs	1,779.48
Tenement Costs - incl. rental and Shire Rates	14,431.00
Traditional Landowner Costs	920.00
Regional Office Costs	7,005.00
Drafting Services & Supplies	358.75
Geophysical	662.00
Computing Services/Supplies/Maint. Agreements	95.58
Salaries & Wages	14,092.00
TOTAL EXPENDITURE	41,991.28

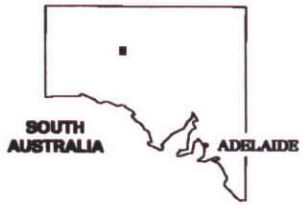
8. BIBLIOGRAPHIC DATA SHEET

Report Number	:	21145
Report Title	:	Annual Report for EL 2123 Yerada for the period ending 21 Nobember, 1996
Author	:	G. W. McConachy
Date	:	1st April, 1997
Commodities	:	Copper, Gold
Tectonic Unit	:	Gawler Craton
1:250,000 Map Sheet	:	Giles SH53-1 Murloocoppie SH53-2 Tallaringa SH53-05 Coober Pedy SH53-06
Keywords	:	Gawler Craton, Proterozoic, Archaean, Gold, Copper, magnetite aeromagnetic anomalies. DEF, DENR.


6900 000N
6850 000N
6800 000N
6750 000N
300 000E
350 000E
400 000E
450 000E
500 000E
TALLARINGA
CONSERVATION PARK
EL 2123
"Mabel Creek"
Coober Pedy
LOCALITY MAP
SOUTH
AUSTRALIA
0
25
50Km
1:1 000 000
NORMANDY EXPLORATION LTD
Project
YERADA EL 2123 PROJECT
Title
LOCATION PLAN
Figure 1
Author G.M.
Date 2/97
Scale 1:1 000 000
Drawn Luke
Office ADEL
Revised
Data
Dwg No. 70302L04
CAD No.
AMG
Encl No.



LOCALITY MAP



GRANITE LEGEND

- NON MAGNETIC GRANITE
- MAGNETIC GRANITE
- 100 — ANOMALY + INTERPRETED DEPTH TO BASEMENT

TARGETS

- MAGNETIC/SKARN Cu-Au
- SHALE HOSTED BASE METAL
- GROUND MAGNETIC TRAVERSES

N

0 5 10 15 20Km

1:600 000

NOTE: Aeromag data is captured in yerad.jpg.

NORMANDY EXPLORATION LTD

Project: YERADA EL 2123

Title: **AEROMAGNETIC INTERPRETATION TARGET SELECTION**

Figure 2

Author CGA	Date 2/97	Scale 1:500 000	
Drawn Luke	Office ADEL	Revised	Date
Dwg No. 70302P01		AMG	Encol No.

APPENDIX

"Declaration of Environmental Factors

for Mineral Exploration in the

Tallaringa Conservation Park, South Australia"

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EL 2123 - YERADA

DECLARATION OF ENVIRONMENTAL FACTORS

FOR MINERAL EXPLORATION

IN THE TALLARINGA CONSERVATION PARK

SOUTH AUSTRALIA

Author: G. McConachy

Date: 17 February, 1997

Authorised by:

Distribution:

Mines & Energy, South Australia	☐
Central Region Office, Adelaide	☒
Exploration Library, Adelaide	☐

Report No. 19832

Report Number: 19832

Report Title: Declaration of Environmental Factors for Mineral Exploration in The Tallaringa Conservation Park, South Australia for EL 2123 -Yerada.

Author: G. W. McConachy

Date: August, 1996

Location Map:

LOCATION MAP

ABSTRACT

Normandy Exploration Limited is the holder of Exploration Licence 2123, and requests approval to undertake exploration within the Tallaringa Conservation Park.

The programme is based on the recognition of anomalous features in data provided from MESA's South Australia Exploration Initiative high resolution aeromagnetic and radiometric survey for this region. These features have some similarities with signatures observed at Western Mining Corporation's Olympic Dam Project and "Cloncurry Style" base and precious metal deposits such as Ernest Henry, Osborne and Cannington.

Normandy Exploration Limited wish to evaluate these targets within the Tallaringa Conservation Park, initially by ground truthing the magnetic signatures and then by specifically drill testing these anomalies. These targets, once precisely ground truthed, represent very small areas 0.5 x 0.5 km within the licence area (2,402 square km). At least one hole and possibly up to three holes will test each target. Approximately 2,000m of drilling may be completed.

Calcrete sampling on 1 x 1 km centres may also be undertaken in the southern portion of the licence area to search for new styles of mineralisation which are currently being discovered within the Gawler Craton.

Normandy will ensure that all relevant personnel are acquainted with the objectives of the Codes of Environmental Practice and that they comply with the legislation and regulations.

It is planned that the environmental impact will be minimised. No environmentally sensitive or culturally sensitive areas have been defined within the areas of exploration interest.

Ground compaction at the drill sites will be the most significant environmental impact. Plans regarding rehabilitation of these sites are presented.

Normandy Group companies work to a strict Corporate Environment Policy, Standards and Goals, and believes that effective environmental control is an integral part of well managed operations.

A joint proclamation under Section 43 of the *National Parks and Wildlife Act* allows mining in Tallaringa Conservation Park, following approval by the Minister of Environment and Natural Resources.

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Appendix: Normandy Group : Corporate Environmental Policy, Standards & Goals

References:

MESA, 1993 : Environmental Management Guidelines for Exploration in the Northern Arid Region of South Australia. Information Services Branch.

MESA, 1996 : Codes of Environmental Practice for Mineral Exploration in South Australia, in press.

Sheppard, M. 1995 : The Great Victorian Desert. Reed, Sydney.

1. INTRODUCTION

Normandy Exploration Limited seek approval to explore EL 2123 - Yerada, which is located within the Tallaringa Conservation Park (Figure 1).

Normandy Exploration Limited is a wholly owned subsidiary of Normandy Mining Limited, which, through subsidiaries, operates/manages mines in SA, Qld., NT, NSW, WA, New Zealand, Europe, Africa and America.

The Normandy Group is the largest gold producer within Australia and the sixth largest in the world. Exploration expenditure for precious and base metals by the Normandy Group totalled approximately $60M for 1995/96.

In South Australia, where Normandy have their head office, exploration is conducted by Normandy Exploration Limited, North Flinders Mines and Commercial Minerals Limited. Commercial Minerals operate a talc mine at Mt. Fitton. Normandy Group exploration areas are shown on Figure 2.

The Normandy Group have a Corporate Environmental Policy which governs all aspects of exploration and mining and ensures that all relevant personnel are acquainted with and comply with all legislation and regulations.

2. EXPLORATION PROPOSAL

Normandy Exploration Limited applied for EL 2123 to explore a series of anomalous geological features including structurally complex areas and discrete magnetic targets. These features are evident in MESA's SAEI high resolution aeromagnetic data for this region as shown in Figure 3.

Many of these features have magnetic similarities with signatures observed at Western Mining Corporation's Olympic Dam Project as well as "Cloncurry Style" base and precious metal deposits such as Ernest Henry, Osborne and Cannington in western Queensland.

Our aim is to explore these anomalous areas within EL 2123 in the hope that a significant mineral occurrence can be identified.

Calcrete sampling within the Gawler Craton has recently identified new styles of gold mineralisation which differ significantly from magnetic related models. Sampling on 1 km x 1 km locations may be warranted in the southern portion of the licence area for these new styles of gold targets.

2.1 Tenure

EL 2123 - Yerada covers an area of 2,402 square kilometres, and was granted to Normandy Exploration Limited on 21 November, 1995.

The contact person responsible for the preparation of the DEF is Geoffrey McConachy (Senior Geologist - Evaluation), who holds a B.Sc (Hons) degree from the University of New England and a Mine Manager's Certificate (NSW) and has 19 years' experience in mining and exploration. He is also currently involved with the heritage and environmental factors along the "Line of Lode" at Broken Hill, NSW.

The Normandy Group of companies, through its "Duty of Care" policy, makes all staff and contractors responsible for environmental and safety management.

Other people who may be technically involved with the project from time to time are:

Bruce Kay	+20 years experience
Graeme McIlveen(Group Manager - Environment)	+20 years
Carl Swensson (Exploration Manager - Australia)	18 years
Alan Downie ((Principal Geologist - SE Australia)	10 years
Shanta Dries (Geologist)	3 years
Mark Twining (Geologist)	5 years
Tom Weis (Chief Geophysicist)	15 years
John Caon (Geophysicist)	4 years
Chris Anderson (Consultant Geophysicist)	20 years

All personnel can be contacted at our exploration office situated at:

103-105 King William Street
KENT TOWN SA 5067
Tel: 08) 8464 2200
Fax: 08) 8464 2299

3. PREVIOUS EXPLORATION ACTIVITY

The exploration for minerals and petroleum is subject to stringent controls over much of the Great Victoria Desert including the Tallaringa Conservation Park. A joint proclamation under Section 43 of the National Park and Wildlife Act allows mining in Tallaringa Conservation Park, following approval by the Minister of Environment and Natural Resources.

Historic exploration activity within this region has included coal, petroleum and mineral searches by companies which include British Petroleum, CRA, Amoco and most recently by BHP. BHP actively explored within the Tallaringa Conservation Park under EL 1806 from 1991-1993. During this period both ground magnetic and gravity surveys were completed and targets were tested with reverse circulation percussion drilling. These programmes are similar to those proposed in this DEF.

4. ENVIRONMENTAL ASPECTS

The Normandy Group believes that effective environmental control is an integral part of well managed operations. Efficient and profitable operations go hand in hand with comprehensive and effective environmental protective programmes.
The Normandy Corporate Environmental Policy is attached in Appendix 1.

This policy, in conjunction with the Government's Code of Environmental Practice, provides environmental management objectives and guidelines aimed at minimising, and where possible, avoiding environmental impacts associated with exploration activities.

Tallaringa Conservation Park is located approximately 100 kilometres due west of Coober Pedy and comprises just less than 1.2 million hectares of land on the eastern edge of the Great Victoria Desert.

Prior to its dedication as a park in 1991, the Tallaringa region incorporated two separate parcels of land, each approximately 600,000 hectares in area. The northern section was unallocated Crown Land. The southern block was held under annual grazing licence by Mabel Creek Station (Monta Rose Pty. Ltd.) from 1 September, 1959 until 31 August, 1989. During 1988-89, the South Australian Pastoral Board decided that a future land-use assessment of both the northern and southern Tallaringa blocks should be conducted. Four separate reports were prepared by the Department of Lands and the Department of Environment and Planning, covering conservation, Aboriginal, pastoralism and mining interests. The reports concluded that the Tallaringa Lands had high conservation and cultural values, but were incapable of sustaining a viable long term pastoral enterprise without incurring substantial environmental impact. The area's potential for oil, gas and base metals was considered moderate to high. The entire Tallaringa region was subsequently declared a Conservation Park, following expiration of the grazing licence over the southern block.

Tallaringa Conservation Park now protects nine major vegetation types not previously conserved within the Parks system in South Australia (Shephard, 1995). It also contains areas of regenerating mulga woodland that have not been subject to grazing pressure. These woodlands provide a valuable benchmark for evaluating grazing impacts on adjacent pastoral leases (such as Mabel Creek, Commonwealth Hill, Mount Willoughby, Granite Downs and Wintinna West). The park also supports a relatively rich fauna for such an arid area. The Bourke's parrot is apparently relatively common in the park, while the highly nomadic Alexandra's parrot was recorded during a survey. The park also has cultural significance. Tallaringa Well is a site of major archaeological and mythological importance.

4.1 Physiography

The physiographic divisions within the tenement are closely allied to the Tertiary and early Quaternary geology of the area.

Along the northeast margin of the licence area silcrete gibber plains cover gently undulating slopes of a southwest facing water shed. These plains gradually become subordinate to the red sandy soils and dunes of the Great Victoria Desert (GVD) (Figure 4). The GVD is formed largely of unconsolidated, but essentially non mobile, sand dunes, overlying a compacted red-clay, sandy soil with rare outcrops of Tertiary Limestones and Cretaceous rocks. Individual dunes may be up to 10-15m high and many kilometres long. The desert dune fields are generally covered by Mulga (Acacia areura and Acacia linophylla) (Figure 5). Although the mulga are the main agents in fixing the dunes, both the interdunal flats (streets) and the dunes themselves host native grasses, bushes and shrubs (Figure 6).

A major factor in the physiography of this area is the presence of the Tallaringa palaeodrainage system, an Eocence to late Pleistocene drainage system. It is now inactive and infilled with unconsolidated dune sand but still retains a topographic and radiometric expression.

4.2 Environmentally Sensitive Locations

Within the Tallaringa Conservation Park no environmentally sensitive locations have been determined within the proposed exploration areas. Site clearances for the three selected areas have been obtained fron the Antakirinja Muntuntjarra Land Council (Figure 7). Advice from the Department of Environment and Natural Resources indicates that Tallaringa Well is of cultural and historic significance - this location is outside our licence area.

4.3 Human Environment

Within the Tallaringa Conservation Park there are a number of minor tracks and water bores. There are two major roads within the licence area - a major east-west oriented road, the Anne Beadell Highway, linking Coober Pedy to Western Australia in the north of EL 2123 and a north-south orientated track along the west side of the Dog Fence on the eastern margin of EL 2123.

Access to the proposed project areas will be via the north-south dog fence track. The nearest settlement to EL 2123 is the Mabel Creek station, located 50 kms. to the east of the park boundary.

5. EXPLORATION PROGRAMME

As previously discussed, a number of anomalous features have been interpreted from the aeromagnetic survey over this region. These features are typical of those associated with copper-gold-zinc-lead-mineralisation in other Proterozoic terrains in Australia and overseas. Exploration for these style of targets is difficult, requiring the integration of geology, chemistry, geophysics and perseverance.

Three areas within the Tallaringa Conservation Park have been selected for this style of exploration evaluation.

To explore these three anomalies, two programmes are proposed - detailed ground magnetometer surveys to define specific targets and follow-up drill evaluation.

The potential of a calcrete sampling programme in the southern portion of the licence area, south of the Karari Fault over interpreted Archaean gneisses, will also be evaluated. The success of the programme will be dependent upon the thickness of sand cover and the frequency of calcrete development.

5.1 Ground Magnetometer Surveys

The aim of these surveys are to define accurate ground locations for the source of the SAEI magnetic anomalies. The surveys will spatially constrain the anomalies and define the drill targets.

The survey will be a GPS controlled programme, therefore there is no requirement for the establishment of grids. The survey is conducted on foot. Personnel for the survey will be one geophysicist and one assistant. One operator, using a GPS, defines a path in a north-south orientation. The second operator, carrying the magnetometer which is linked to another GPS, walks over the ground following this path. Magnetic field readings are made continuously, and they are spacially linked by the GPS measurements negating the need for linear grids.

No ground disturbance will occur during the survey.

Access to the survey area will be from the dog fence track (Figures 8, 10). BHP have previously explored in the region so tracks may be available.

Track access should only be required to the centre of the target areas as data acquisition will be on foot, using the track as a base line. Track clearing for vehicle access , if required, will be done using a chainsaw, trimming scrub off near ground level.

Access tracks will be GPS recorded for MESA and DENR records.

One 4 x 4WD vehicle will be used. This vehicle will carry a knapsack as well as a foam extinguisher. The vehicle will be equipped with CB and HF or UHF radio transceivers, as well as EPIRBS and flare kits. Safety calls to our Adelaide office will be made twice daily.

Field camps will be within the "Mabel Creek" Station.

The programme will have a duration of approximately 5 days, and will be undertaken in late autumn.

NPWS staff will be notified prior to commencement and after the completion of the programme.

5.2 Air Core/Diamond Drilling Programme

The drill testing of targets defined by the ground magnetometer surveys, will be undertaken in an environmentally aware air core/diamond drilling programme.

At least one hole and possibly up to three holes will be used to target each anomaly. The depth to magnetic basement is interpreted to vary between 80 to 250 metres below surface, therefore each hole may vary from 200-300 metres in depth.

The programme will represent approximately 2,000 metres of air core and diamond drilling.

A drill rig similar to Grimwood Davies' 650 Universal as shown on Figure 9 is likely to be used for this programme.

5.2.1 New Access Tracks

All access will be via the existing dog fence track which runs along the eastern boundary of EL 2123 (Figure 10).

Access into the exploration areas will be via the tracks established during the ground truthing magnetometer surveys (Figure 8). These tracks will vary in length from 1.5 km to 25 km.

New tracks into drill sites are planned to minimise vegetation and soil disturbance. Areas of dense vegetation will be avoided. Trimming of scrub will be undertaken with a chainsaw, thereby minimising soil disturbance.

Disburbance and damage to sand dunes will be minimised by running tracks approximately east-west in the "streets" between dunes which will negate the need to gain excessive access across the dune system. In the most southern target, this involves an additional 10 km of new track, but negates the need for extensive dune crossings.

Records will be kept of all tracks for MESA/DENR use and/or audit.

5.2.2 Work Sites

Drill work sites will represent areas of approximately 30 x 30m. Within these areas will be the drill rig and support vehicles (see Figure 9). To make these sites into safe working environments vegetation may be pushed over by vehicles. However, no systematic ground clearance will be undertaken.

There should not be any need to remove trees or shrubs unless their presence is considered to cause an unsafe work environment.

No top soil will be removed from the site areas except where shallow inground water sumps are required for the recycling of water to facilitate diamond drilling. In these instances the top soil will be conserved for use during site rehabilitation.

Drill holes will be capped immediately upon completion of the hole. Best management practice is to completely fill drill holes. However, for deep aircore holes and diamond drill holes this is not often possible, so plugging with a suitable object is the next preferred alternative. If possible the holes will be plugged at least one metre below the surface and backfilled, leaving a mound above the hole to prevent water infiltration.

Drill samples and core will be removed from the drill site. Excessive drill cuttings which are not backfilled into the hole will be scattered thinly around the site to prevent them sitting and forming an impermeable surface layer. An example of this rehabilitation method is shown from "Mabel Creek" where an RC percussion drilling programme was completed in Figure 11.

5.3 Calcrete Sampling

Calcrete sampling has recently become an effective tool in gold exploration within the Gawler Craton. From our current understanding of the geology within EL 2123, the only area which may be ameniable to calcrete sampling is the Archaean gneisses south of the Karari Fault (Figure 3). Calcrete may now be present on the surface or under an undetermined thickness of sand. If the sand cover is over 1m thick, it becomes impracticable to excavate a 2 kg sample by hand. An auger drill rig, mounted on a 4 x 4 vehicle, would be required to collect samples.

If calcrete sampling appears feasable, a programme will be initiated. Samples will be collected initially on a 1 km grid with infill, if anomalous gold results are returned. This initial programme would represent approximately 300 samples (see 1 x 1 km grid in Figure 3).

Access to each sample location will be gained using a 4 x 4WD vehicle. Navigation will be by GPS.

During the calcrete sampling, no track construction will be undertaken, no grids will be established and any markers will be removed at the end of the survey.

6. PLANNED MITIGATION METHODS

6.1 Removal of Topsoil

Physical removal of sand and/or topsoil is not considered necessary for track construction or for drill site preparation unless there is a safety concern because of the unevenness or slope of the site.

However, if soil removal is required and because of its great value in rehabilitation, we propose to stockpile all topsoil for future re-use. Unless accidentally contaminated or polluted, topsoil will never be buried.

Disturbed areas will be covered in brush matting cut from surrounding well-developed vegetation to provide seed and protection from strong winds.

From our experiences on the adjacent Mabel Creek Station, scarifying from 0.1 to 0.2m depth using a set of harrows towed behind a 4 x 4 wheel drive vehicle, restores the surface of disturbed areas to allow revegitation (Figure 12).

6.2 Soil Compaction

Repeated use of a site for drilling will compact soils and discourage vegetation re-establishment. While such damage cannot be avoided, the area of affected land will be minimised.

These compacted areas will be harrowed to break up hard surface or sub-surface layers. The aim is to create a rough ground surface to encourage infiltration of rainfall and the trappings of plant seeds.

No attempt to break up natural hard layers such as calcrete or ironstone will be contemplated unless topsoil has been removed and the natural hard layer is left exposed on the surface. Otherwise, the scarifying of the surface to encourage seed and moisture accumulation will be undertaken.

There is a preference not to use unnecessarily heavy equipment, instead use the harrows as much as possible. A front-end loader or bobcat with suitable teeth on its bucket or a grader with tines is capable of doing most jobs and are available from "Mabel Creek or Coober Pedy, but in the Tallaringa region these are not preferred methods.

6.3 Deterioration of Soil Quality

In the event that an area of sand/soil must be removed and stored, its proper maintenance is essential. Simply storing this material in a large a pile as possible is not a preferred option.

Soil will be placed into piles no more than 2.0 metres high. Two stockpiles will be built with the highest quality topsoil (usually the upper 0.1 to 0.2 metres) stored separately from the underlying sub-soil. This prevents seed and nutrient-rich upper horizons being mixed with lower quality sub-soil.

During rehabilitation, we would re-apply the stored materials so that the upper horizons remain on the surface.

6.4 Soil Erosion

Soil erosion caused by poorly sited tracks or drill pads can result in loss of topsoil, pollution of surface waters by clay and silt, damage to existing structures such as roads and drains, and loss of native vegetation.

We propose to maintain soil stability by retaining as much vegetation cover on susceptible land as possible. Always keeping vegetation clearing to a minimum and avoiding disturbance of topsoil and root stock wherever possible. If heavy machinery must gain access, it will be walked across the landscape, breaking vegetation off at ground level, rather than digging into the ground to create windrows of topsoil and plant roots on each side of the track.

If topsoil must be moved, it is to be stored separately from other materials and replaced on the disturbed area during rehabilitation. Topsoil is rich in seeds, nutrients and soil micro-organisms and its replacement is the single most important action we can take.

Access tracks to exploration sites are to be located so that they avoid steep slopes and erodable soil, hence the locating of tracks sub parallel to dune orientation. Vegetation removal is kept to the barest minimum.

Small eroding gullies will be filled with non-erodable material such as rocks and dead trees to trap water-borne sediment. Mulch such as branches, bark, broken rock or wood chips laid over bare ground will stabilise the sand and provide an environment in which seedlings can become established.

Sensible positioning of facilities such as tracks or drill sites is necessary to minimise water erosion during storms. If diversion drains are needed, they will be constructed with a low slope so that water flows through them at speeds too low to cause erosion. Spoon or curve-shaped drain outlines are preferred to rectangular outlines.

When access is required across a watercourse, we will take special care to protect vegetation growing on banks and within the watercourse. Where possible, crossings will be constructed at right angles to minimise physical damage to each bank.

6.5 Pollution from Spilt Liquids or Solids

6.5.1 Liquids

Petrol, diesel, cleaning compounds, general lubricants, drilling muds and liquid chemicals are able to kill wildlike by direct contact. Polluted soil may prevent vegetation regrowth for many years.

Best management practice is to prevent the spillage from occurring in the first place. We endeavour to maintain equipment properly; drive vehicles in a safe manner to avoid accidents, and safely secure containers on vehicle trays. Common sense is the best guide to safe practice.

Normandy will make suitable arrangements before exploration begins for spare 200 litre drums to be on site or available nearby for the disposal of rubbish and any contaminated material. In the event of contamination, specialist advice would be sought as well as liaising with MESA and DENR.
Waste oil and similar liquids will not be dumped anywhere on site, neither on the ground surface nor into an excavation (including drill holes). All such materials are to be returned for recycling or safe disposal at an approved disposal site. Normandy will supply 200 litre drums for this purpose if required.

Drilling fluids with non-biodegradable chemical additives will be contained within lined sumps or tanks. At the end of each hole, all liquid will be pumped out into suitable containers (for example, 200 litre drums), removed from site and disposed of in an approved manner.

6.5.2 Solids

Drill cuttings and drilling mud are to be broken up and used to fill drill holes. Excessive material will be scattered around the drill site to prevent them setting like concrete and remaining unvegetated for many years. Equipment such as harrows will be used to break up hard-set material.

As soon as possible after each hole is completed, we will break up and spread around the site all remaining drilling solids from cyclones or collar exhaust hoses which accumulate on the ground surface. This will prevent hard setting.

Bales of hay may be used to filter most of the solid particles from muddy water produced during drilling, prior to its discharge into a watercourse. In the event of occurring high rainfall storms, a row of hay bales around the lower edges of drill pads will filter run-off water leaving the working area.

6.5.3 Toilet Wastes

Where human wastes are to be buried on site, toilets are to be placed at least 100 metres from any watercourse. In areas of clay subsoils, disposal of human waste to be at least 3 metres above the highest normal watertable. In sandy areas, disposal must be at least 5 metres above the highest watertable.

Unless portable self-contained toilets are used at exploration sites, Normandy will ensure "long drop" toilets are at least two metres deep and sited to comply with the above protective conditions for ground and surface waters.

6.6 Litter

Animals often eat discarded plastics and then die when this indigestible material blocks their gut. Lizards and snakes are attracted to the liquid inside drink cans, getting their heads trapped and dying of starvation.

Exploration areas will be kept free of litter, with a total site clean-up at the end of the exploration program. Removal of sample bags, with unwanted sample tipped back down the hole, buried or thinly scattered over the ground, is to be completed.

Garbage bins/bags will be available for use at all work sites. All waste will be disposed of in a safe, efficient and environmentally conscious manner.

6.7 Use of Water

Water for this programme will be drawn from bores within Mabel Creek Station to the east of the Tallaringa Conservation Park.

6.8 Physical Damage to Vegetation

Normandy will carefully design and plan access tracks to minimise the amount of vegetation removal or pruning. Tracks will be cleared with chainsaws, cutting bush off at ground level. This may allow coppice regrowth. If possible, only one side of a plant would be trimmed, rather than removing the entire plant. Small shrubs and ground covers will be left intact. We realise that even small bushes less than 2 metres high may be over 50 years old and will only regenerate slowly if severely pruned. The porous root systems of trees like Brachychiton Gregorii (desert kurrajong) are also a valuable source of water which will sustain life in emergency situations.

Drill access tracks will be planned to weave around trees, patches of dense vegetation and other sites or items of high environmental value. In some vegetation types no clearing may be necessary.

Often, vehicle movements through bushland cannot avoid physical damage to vegetion, however, this will be kept as pinor as possible. Grid lines will not have to be cleared as magnetometer work will be GPS controlled and completed on foot.

Vegetation will be rehabilited with pruned branches being spread over a disturbed site which are a source of seed and organic matter, and also provide physical protection against wind and sand blasting. By shading the soil, water loss is reduced. Wherever possible, vegetation cleared or cut during exploration activities will be placed into stockpiles for later respreading over rehabilitated areas. Vegetation will not be burnt or buried.

6.9 Physical Damage to Fauna

The loss of vegetation (even if temporary) may have long term implications for the return or continued presence of those species.

Normandy recognises that trees with nesting hollows are an important part of all ecosystems, since several species of birds and animals may use the same nest hollow consecutively each year for many years. The loss of trees with hollows is a serious and unnecessary impact, taking 100 or more years for a new tree with hollows to regrow. To avoid longer term impacts on fauna, larger trees (especially those with hollows) and areas of dense vegetation from disturbance.

Pets will not be taken into the Tallaringa Conservation Park.

6.10 Increased Accessibility

In some situations, exploration access tracks may encourage tourists to venture off main roads into potentially dangerous or sensitive areas. Normandy will keep tracks developed from existing roads as unobtrusive and well hidden as possible.

At the completion of the exploration programme, tracks will be harrowed and the entrances disguised with leaf litter and the verges restored to prevent public uses.

6.11 Drill Holes and Excavations

Drill Holes

Vertical or steeply inclined drill holes are extremely effective pit traps into which small reptiles, ground-dwelling birds and marsupials fall with no hope of escape. They can also cause serious damage to larger stock, such as cattle.

Normandy will cap all drill holes below the surface immediately upon completion of the hole, using whatever effective methods are available, including specific hole plugs, large rocks, piece of timber, etc.

Best management practice is to completely fill all drill holes, but the time and cost of this is sufficiently high to warrant that on occasions only shallow holes be filled. Plugging with a suitable object is the next preferred alternative. Drill holes will be identified by an engraved small metal plate attached to the collar.

6.12 Fire

Normandy recognise fire is a natural feature of most Australian bushland. Aboriginal modification of natural fire regimes has caused many changes over the past 60,000 years, just as the more recent exclusion of aboriginal fire practices has caused further changes.

However, frequent fires may not allow plants to set viable seed, while unseasonal fires may disadvantage certain plants or animals. Fires that too frequently remove protective vegetation will allow predators such as foxes and dingos to eventually eliminate small marsupial populations.
Normandy's best fire management practices are:

* to **not** use fire as a part of the exploration programme (e.g. for exposing rock outcrops, clearing tracks);

* to keep all mechanical equipment well maintained so that exhaust sparks and other sources of accidental fire are eliminated; and

* to carry suitable fire fighting equipment on all vehicles that may pose even a small risk of starting a fire.

In fire sensitive areas such as the Tallaringa Conservation Park education of all field staff in these management practices is considered essential. The need to **totally** prevent fires in such areas will be emphasised to personnel at all times.

Should a fire start and regardless of whether it was started by exploration activities or not, field staff will make a reasonable but safe effort to extinguish it. However, they are instructed not to put their own lives at risk.

At drill sites, all flammable material will be removed from within four metres of any controlled small cooking fire. All camp fires will be completely extinguished with sand or water immediately after their use for food preparation. No fires will be left unattended. Where appropriate, a firebreak around the outside of a fireplace will be constructed as a precaution against fire escaping from the drill site.

Most fires during exploration are caused by grass and vegetation being trapped beneath vehicles near their exhaust system. Regularly checks of vehicles to prevent a potentially flammable build-up of material are completed. If a design fault exists, have the vehicle's underbody modified as appropriate.

6.13 Campsites

A fly campsite within the park may be established only if the drill hole furthest from the dog fence cannot be completed within the day of commencement. This is to avoid excessive use of tracks.

No additional vegetation clearing would be required. A long term campsite will be established within Mabel Creek Station, possibly at Bellbird Bore.

6.14 Increased Levels of Public Concern

Normandy realise that concern expressed by conservationists, media and the general public about exploration in natural ecosystem areas is often increased by the mere thought of exploration about to take place in such areas.

To overcome these heightened fears, exploration crews will be taking every reasonable precaution to reduce, eliminate and/or manage real or potential impacts. A sense of trust must be developed between explorers and people concerned for our natural environment.

Normandy Exploration recognise that exploration staff are the most visible employees of many mining companies and their actions will be subjected to continual scrutiny by the public.

Management of exploration impacts in this situation is simple: Normandy Exploration and its employees must do, and must be seen to be doing, the right thing.

6.15 Roads and Tracks

One of the most severe impacts of this exploration programme are derived from construction and use of roads and tracks. Access roads can initiate soil erosion and require clearing of native vegetation. Wherever possible, existing access tracks will be used.

Where a new track must be made, its location will form part of the overall planning for the exploration program. Avoid important vegetation patches or other natural features, with tracks deviating around large trees, wet areas and rock outcrops rather than going through them.

In areas west of the dog fence track where access by the public is discouraged, drill access tracks will be partially hidden so that their presence is not advertised.

Where access must be gained across a steep sand dune, the track will be constructed at an inclined angle to the dune, rather than at right angles. This will lower the slope of the track, improve accessibility and reduce the need for cutting deeply into the dune.

7. REHABILITATION

Before exploration activities start -

A plan will be prepared with the objective that all exploration activities will be undertaken in a manner aimed to minimise disturbance of the natural environment.

The requirements of State and Federal legislation shall be incorporated into this plan and we will ensure that all personnel involved in exploration activities will comply.

The planning and management of exploration activities will include the following objectives:

- avoid known sites of scientific, natural and Aboriginal or non-Aboriginal heritage significance;
- minimise wherever possible disturbances to surface soil vegetation, wildlife and drainage;
- avoid pollution of exploration areas;
- rehabilitation of access tracks and drill sites;

- minimise risk to health and safety of personnel and the public;

- ensure that all personnel are acquainted with the objectives of Codes of Environmental Practice for Mineral Exploration in South Australia (MESA, 1993, 1996).

Once exploration activities have ceased -

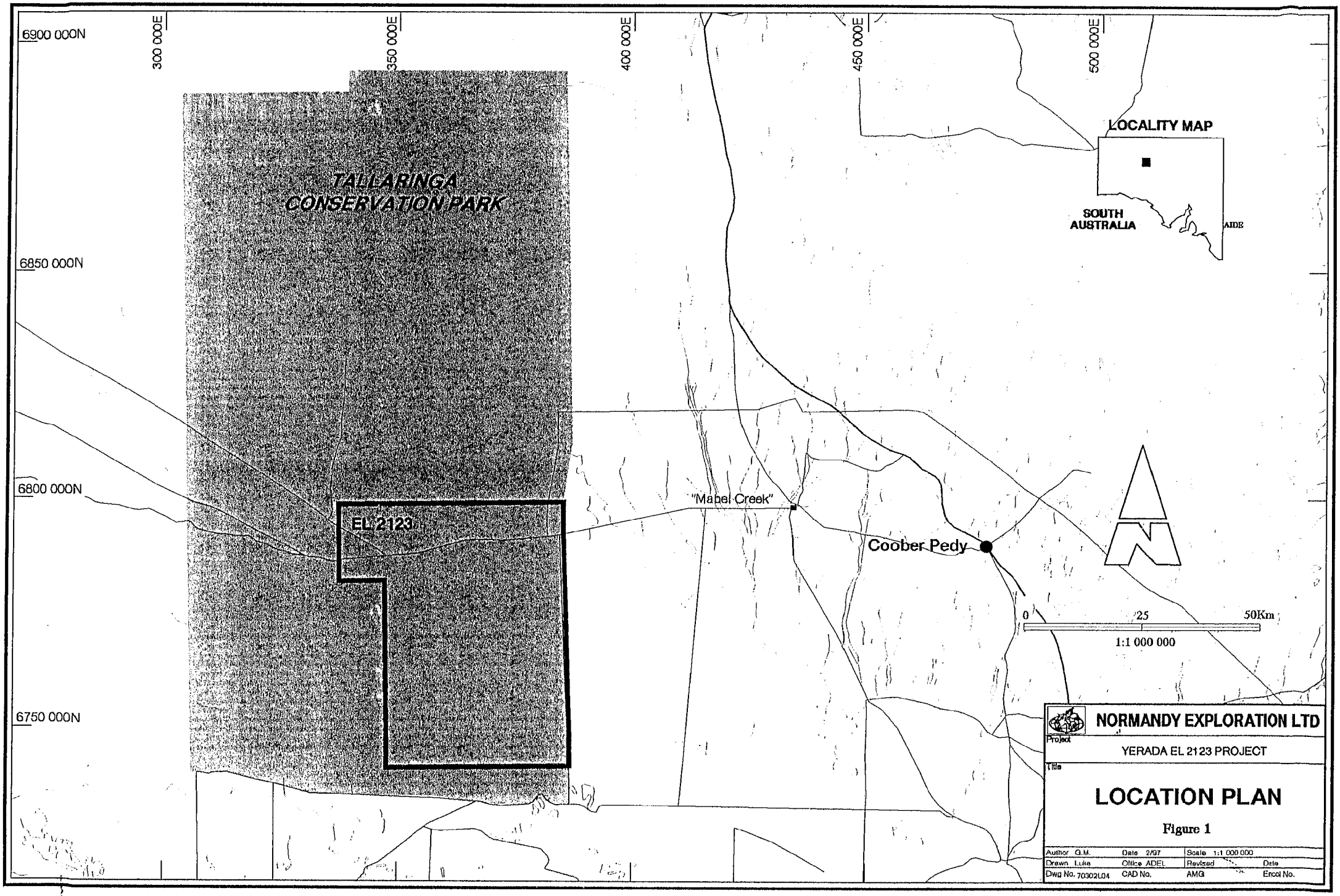
- Remove all potentially impacting refuse and other materials off site, burning and burying only non-toxic or otherwise innocuous items.

- Fill all holes and sumps with previously excavated material, applying topsoil over the surface at the same thickness as existed on-site prior to exploration.

- Scarify with harrows to a depth of 0.1 to 0.2m the surface of compacted ground, leaving behind a rough surface.

- Spread vegetation removed from previously disturbed areas over the rehabilitated site or use carefully harvested branches from undisturbed sites to act as a seed source and to reduce the impact of wind.

- Tracks damaged by use during wet weather will be rehabilited.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TALLARINGA
CONSERVATION PARK
EL 2123
"Mabel Creek"
Coober Pedy
LOCALITY MAP
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NORMANDY EXPLORATION LTD
Project
YERADA EL 2123 PROJECT
Title
LOCATION PLAN
Figure 1
Author G.M.
Date 2/97
Scale 1:1 000 000
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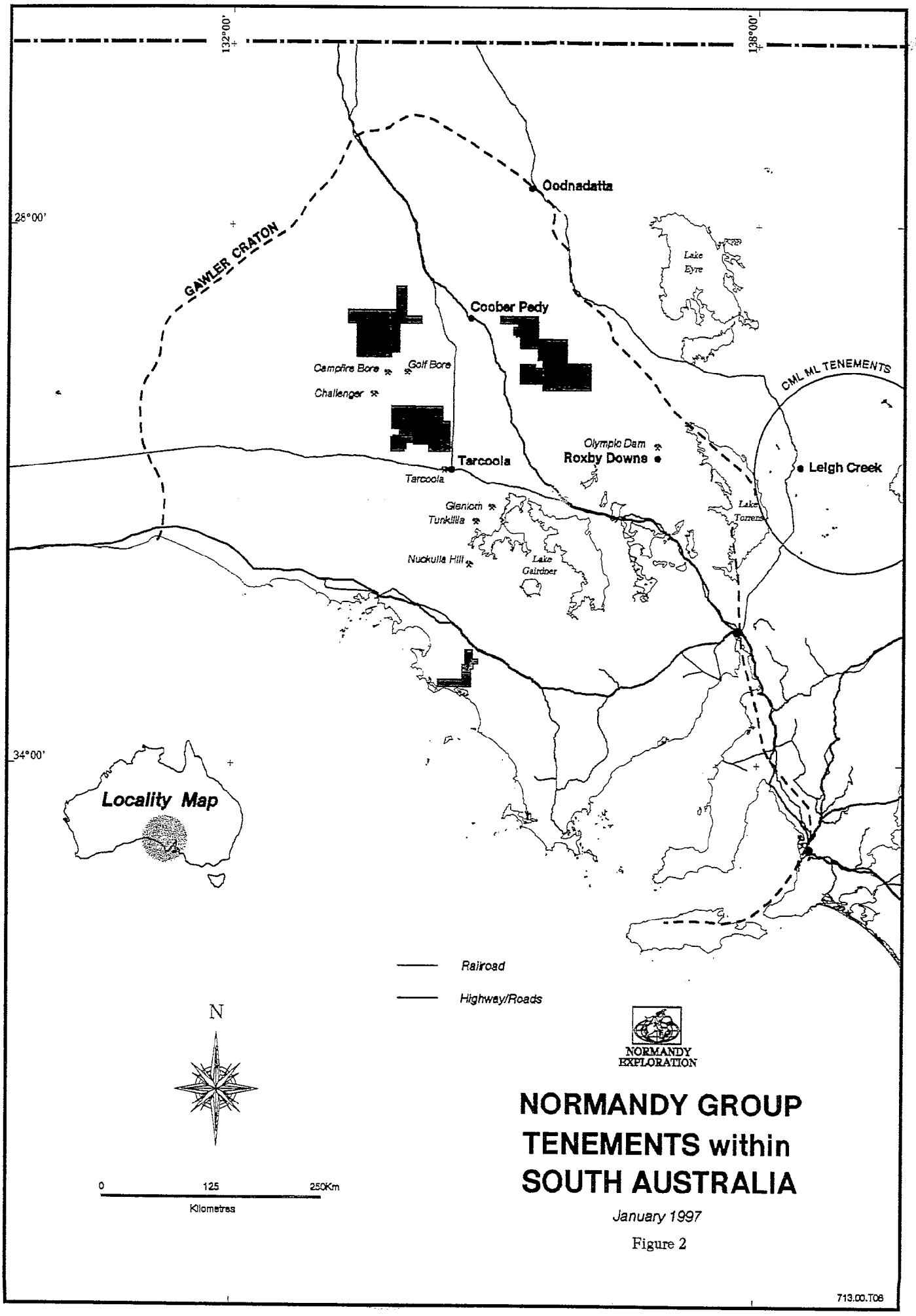
Revised
Date
Dwg No. 70302L04
CAD No.
AMG
Encol No.


132°00'
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GAWLER CRATON
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Coober Pedy
Lake Eyre
CML ML TENEMENTS
Campfire Bore
Golf Bore
Challenger
Olympic Dam
Roxby Downs
Leigh Creek
Tarcoola
Tarcoola
Glenloth
Tunkillia
Nuckulla Hill
Lake Gairdner
Lake Torrens
Locality Map
Railroad
Highway/Roads
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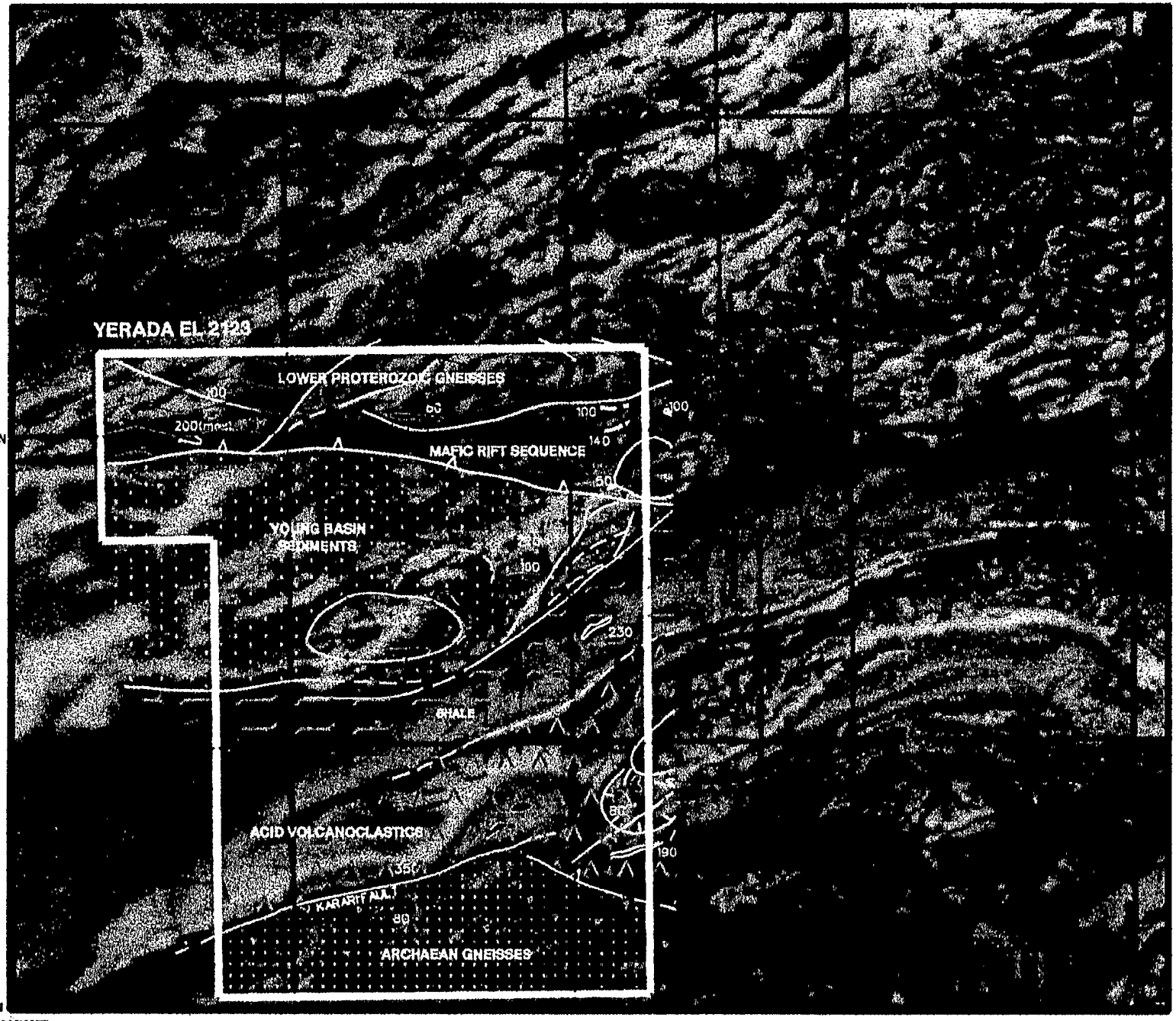
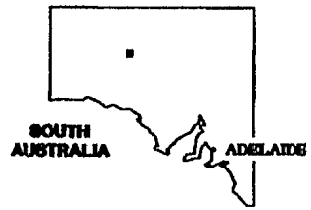
Kilometres
NORMANDY EXPLORATION
NORMANDY GROUP TENEMENTS within SOUTH AUSTRALIA
January 1997
Figure 2
713.00.T08



LOCALITY MAP



26°45'00"S

29°00'00"S

29°15'00"S

GRANITE LEGEND

NON MAGNETIC GRANITE

MAGNETIC GRANITE

100 ANOMALY - INTERPRETED DEPTH TO BASEMENT

TARGETS

MAGNETIC/SKARN Cu-Au

SHALE HOSTED BASE METAL

GROUND MAGNETIC TRAVERSES

0 5 10 15 20km

1:800 000

NOTE: Aeromag data is captured in yerad.jpg.

NORMANDY EXPLORATION LTD

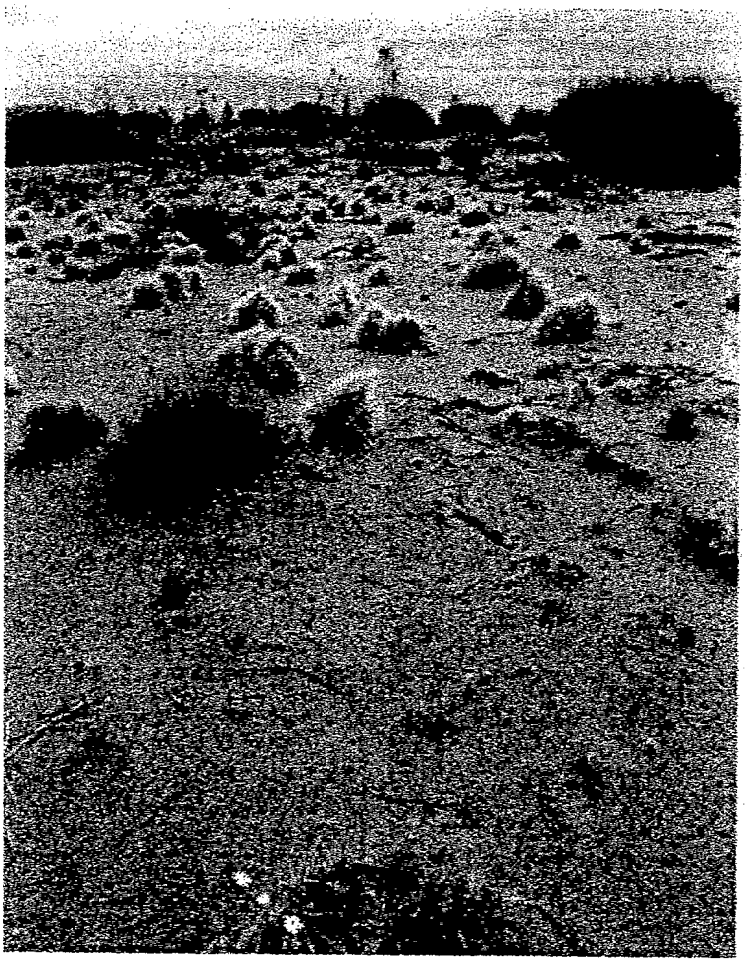
Project: YERADA EL 2123

Title: **AEROMAGNETIC INTERPRETATION TARGET SELECTION**

Figure 3

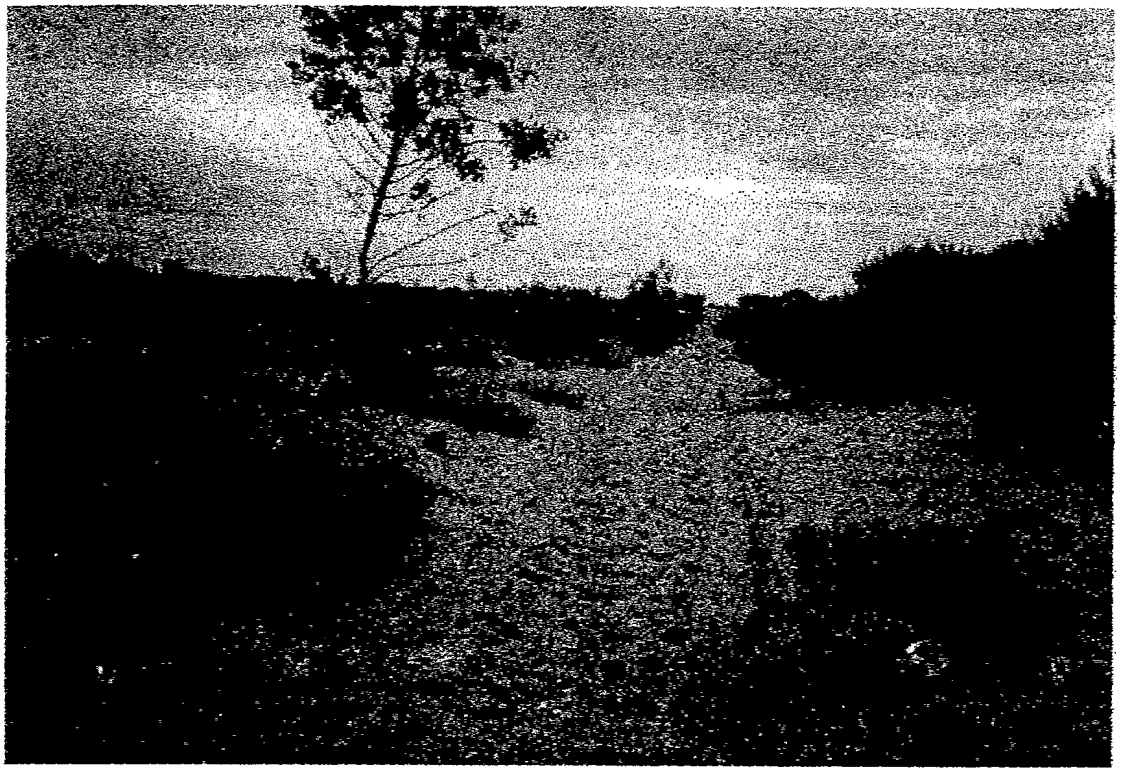
Author CGA	Date 2/97	Scale 1:800 000	
Drawn Lubo	Office ADEL	Reviewed	Dwg
Dwg No. 70302P01		AMG	Encol No.

Silcrete dominated surfaces in an area devoid of dunes

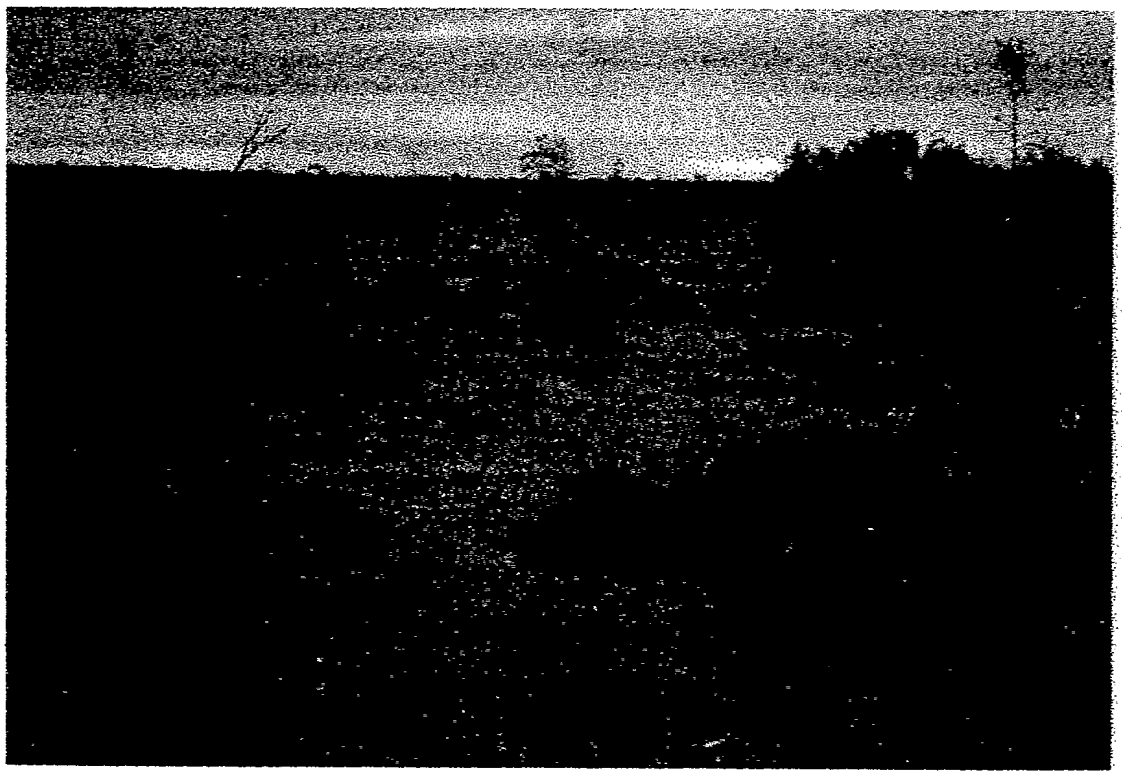


Gently undulating sand dunes typical of the Tallaringa dunefields

Figure 4



Example of vegetation in desert dunefield along dog fence track
- Tallaringa Conservation Park



Small stands of desert Poplars and Mulga - Tallaringa Conservation Park
- camel prints in the sand

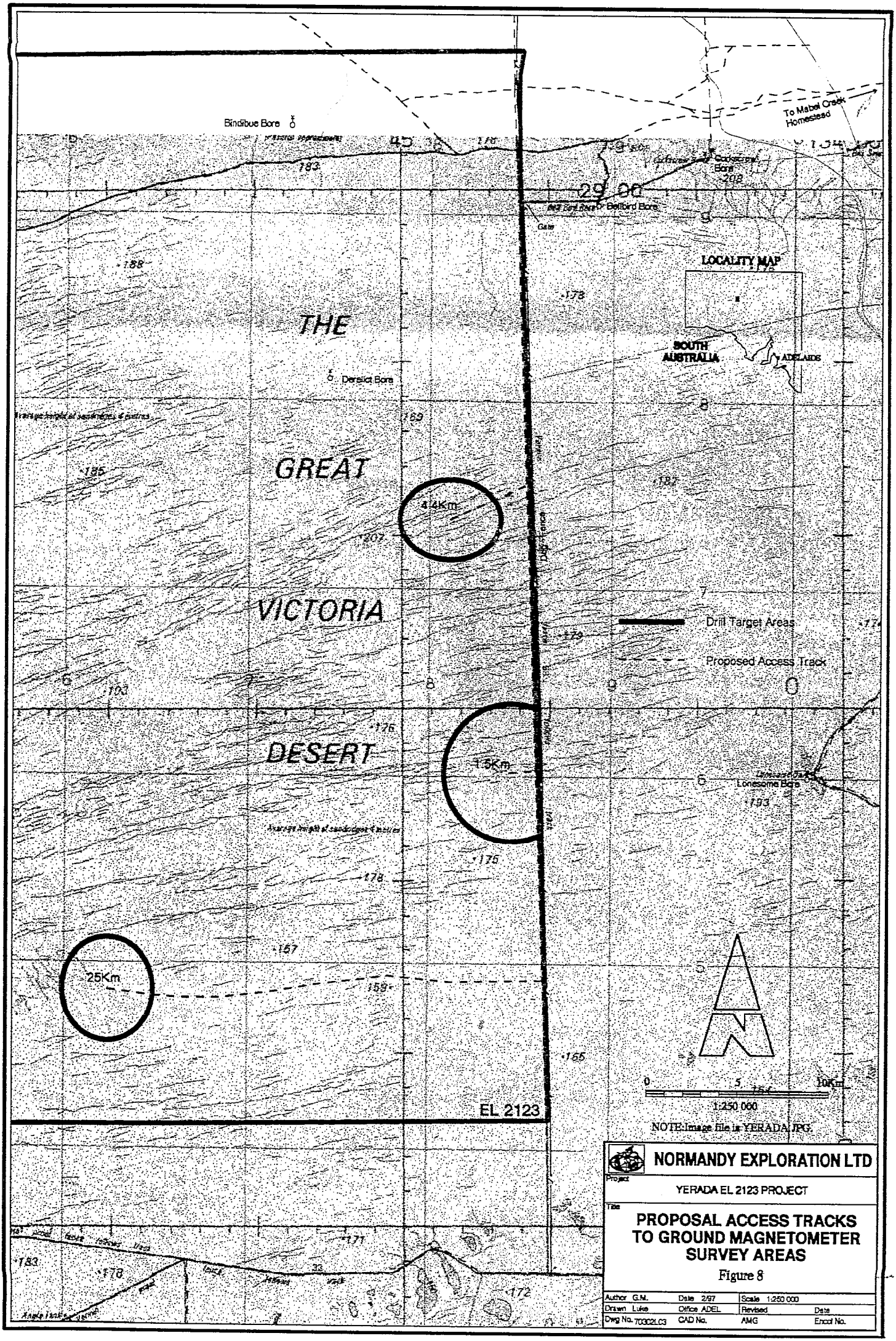
Figure 5

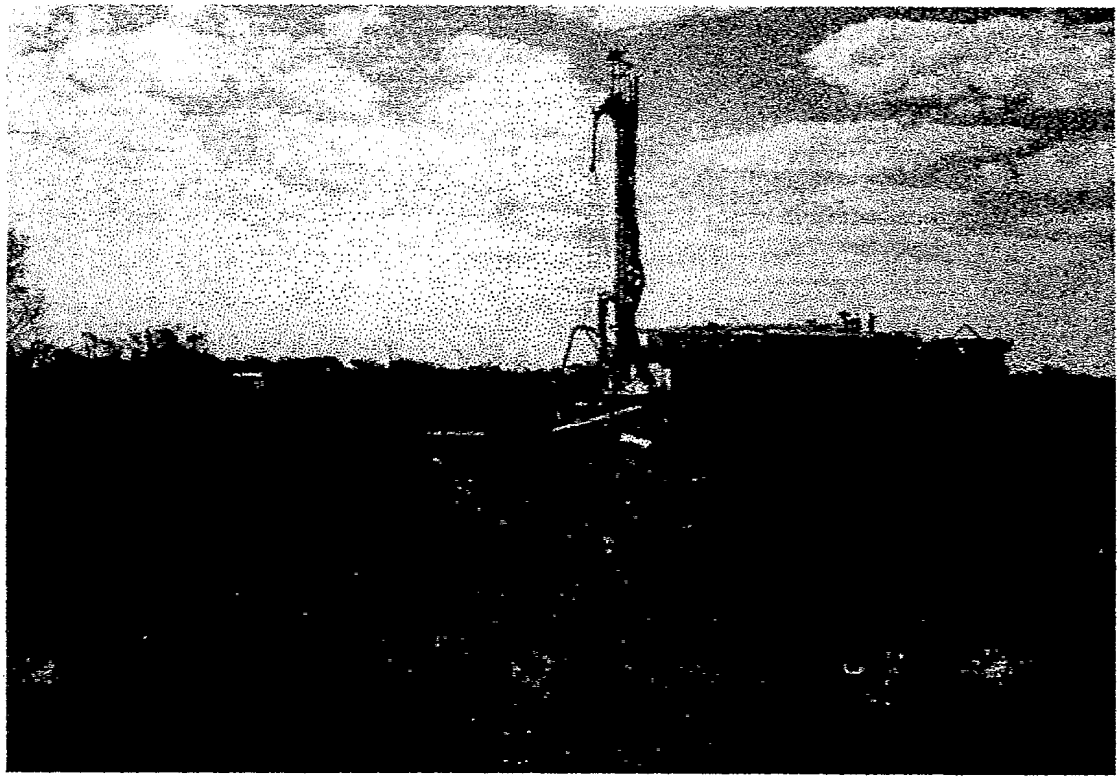
Examples of mulga within Tallaringa Conservation Park

A stand of desert poplar in interdune streets in Tallaringa Conservation Park

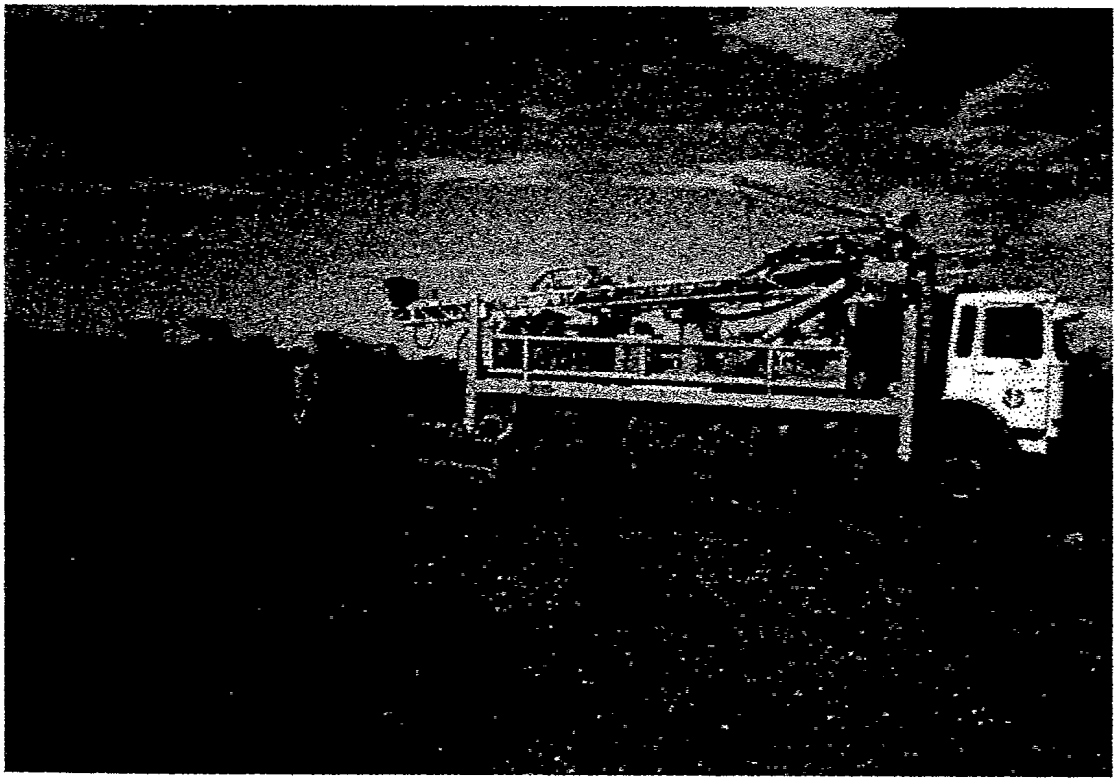
Representatives of Antakirinja - Muntuntjarra Land Council and author during a site clearance programme

Figure 7


Bindibue Bore
To Mabel Creek Homestead
Cockscomb Bore
Bellbird Bore
Gate
LOCALITY MAP
SOUTH AUSTRALIA
ADELAIDE
THE
GREAT
VICTORIA
DESERT
Dersict Bore
4.4Km
1.5Km
25Km
Lonesome Bore
Drill Target Areas
Proposed Access Track
EL 2123
0 5 10Km
1:250 000
NOTE:Image file is YERADA.JPG.
NORMANDY EXPLORATION LTD
Project
YERADA EL 2123 PROJECT
Title
PROPOSAL ACCESS TRACKS TO GROUND MAGNETOMETER SURVEY AREAS
Figure 8
Author G.M. Date 2/97 Scale 1:250 000
Drawn Luke Office ADEL Revised Date
Dwg No. 70002LC3 CAD No. AMG Encol No.

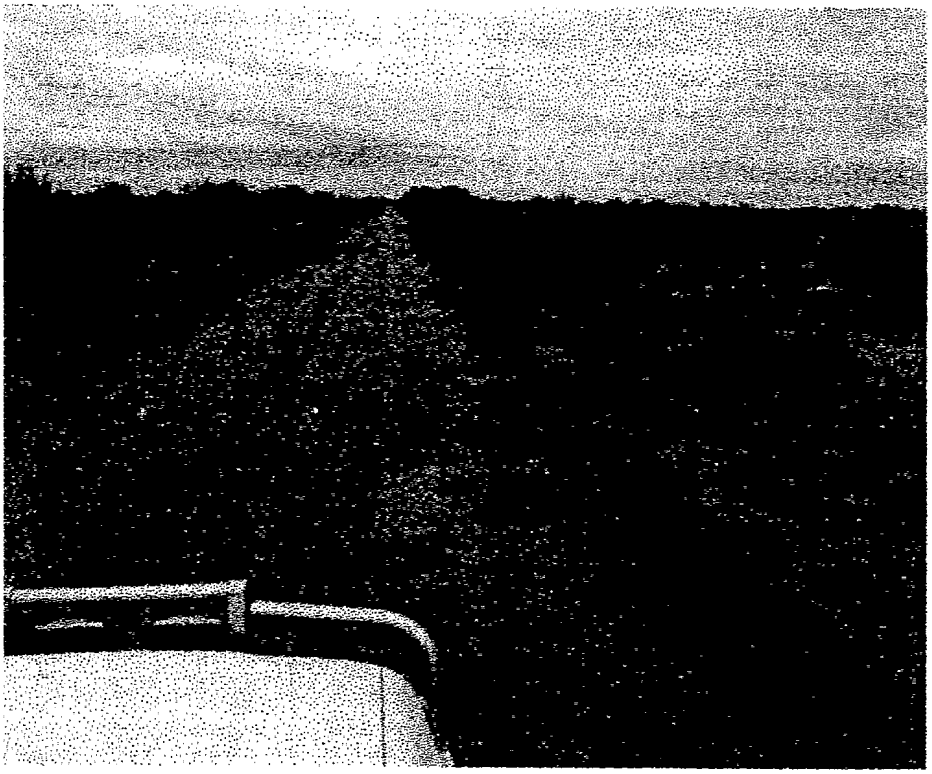


Reverse Circulation Percussion Rig and support vehicles at "Mabel Creek"



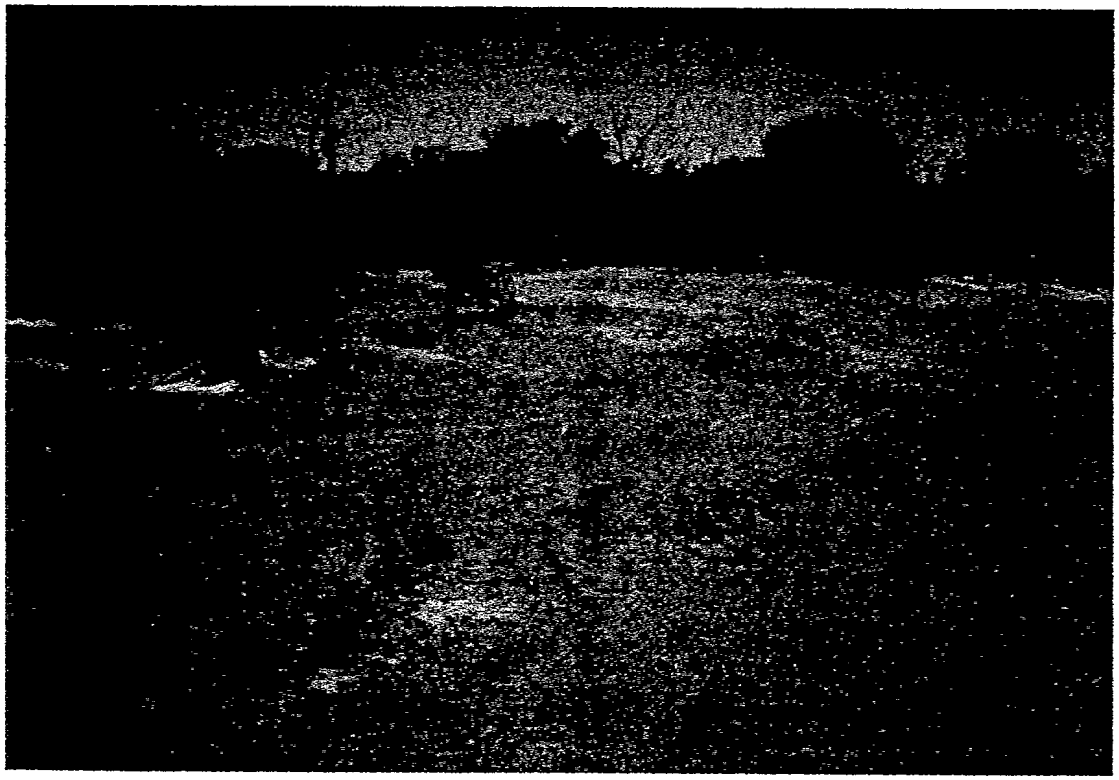
Example of a drill site prior to drilling at "Mabel Creek"

View south along the eastern boundary of the Tallaringa Conservation Park

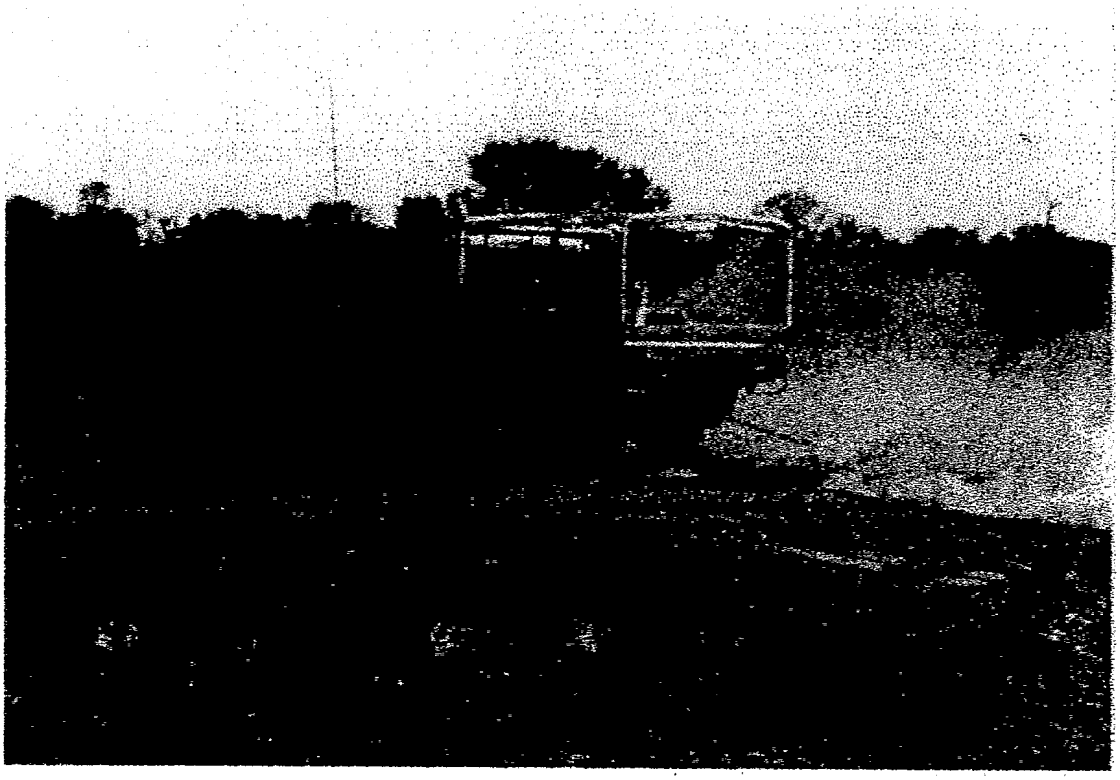


View south along the eastern dog fence - Tallaringa Conservation Park
- showing low sand dunes

RC Percussion drill site "Mabel Creek" prior to rehabilitation



Site after initial rehabilitation using harrows towed behind 4 x 4WD vehicle



Drill site rehabilitation using harrows

APPENDIX

CORPORATE ENVIRONMENTAL POLICY

STANDARDS & GOALS

NORMANDY GROUP

CORPORATE ENVIRONMENTAL POLICY

STANDARDS & GOALS

The Normandy Group ("Normandy") believes that effective environmental control is an integral part of well managed operations. Efficient and profitable operations go hand in hand with comprehensive and effective environmental protection programmes.

A prime objective of the Normandy Group is to be environmentally responsible and to protect the safety and health of employees and those living in areas where each company conducts its operations and activities. Normandy will, as a minimum, comply with the legal and regulatory requirements of the Government bodies in the states or countries in which its activities are conducted and the Group will seek to apply the principles of sustainable development, best practice and continual improvement wherever it operates around the world.

To achieve these objectives each Group company has a commitment to operate in an environmentally responsible manner and is required to:

- Develop, implement and monitor a comprehensive environmental management plan appropriate to its operation, which sets objectives for continual improvement and adoption of best practice.
- Appoint a senior person with responsibility for coordinating all aspects of environmental management.
- Provide adequate training to enable employees to recognise the potential impact of their activities and to monitor the state of the environment throughout the operation.
- Design, operate and decommission all facilities and associated infrastructure to avoid or mitigate adverse environmental impact.
- Ensure that all costs associated with meeting present and future environmental operations and closure rehabilitation obligations are budgeted.
- Respect all human and property rights.

In respect to mining activity it is recognised that as temporary land users, each operation's rehabilitation objectives must be consistent with projected future land use of the area. Accordingly, the ultimate objective is to re-establish the site to a safe and stable condition with all environmental, heritage and conservation values intact.

Robert J Champion de Crespigny
Executive Chairman

MAY 1996

Printed on Recycled Paper

NORMANDY
EXPLORATION LIMITED

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Phone (08) 8464 2200
Fax (08) 8464 2299

ATP:sas

3 February 1998

The Director General
Department of Primary Industries and Natural Resources
GPO Box 2355
ADELAIDE SA 5001

Dear Sir

RE: EL 2123 - YERADA - ANNUAL TECHNICAL REPORT

Due to temporary budgetary constraints and a staff shortage during 1997, no new technical data was acquired for this tenement for the 12 month period ending 21/11/97. As a result, no annual technical report will be lodged for this period.

Fieldwork consisting of drill testing of magnetic targets and calcrete sampling in the south of the licence has been re-scheduled to March this year.

Should you have any queries please contact me at our Kent Town office.

Yours sincerely

Andy Price.

A T Price
Senior Geologist

SOUTH AUSTRALIAN DEPARTMENT OF MINES AND ENERGY

SUMMARY REPORT ON MINERAL EXPLORATION

(Separate form for each Licence)

Exploration Licence No: 2123 (Yerada)

For Six Months Ending: 21 May 1998 **Operator/Manager:** Normandy Exploration Limited

Minerals Sought: Gold, Copper, Zinc Lead, Silver

Prepared by: A.T.Price
Date: Tuesday, 23 June 1998
Phone No: 84642204

SUMMARY OF OPERATIONS:

(E.g. No, type of samples; Line km & type of survey; Man days mapping; No holes, metres, type; Environmental/rehabilitation activities)

- Nine line kms of ground magnetic surveying were completed.
- Modeling of the resultant data was undertaken.
- Five calcrete samples were collected and analysed.

(If field activity undertaken, attach A4 size plan showing general location and type of work done)

EXPENDITURE

Expenditure for period: $9, 171
(Add detailed statement)

Total Expenditure for Licence: $62, 318

YERADA - EL 2123

Expenditure for the period 22 November 1997 to 21 May 1998

Description	Amount
Employee Costs	
Conferences & Mine Visits	400
Eligible staff training	
Time Charges - Salaries & Wages	4,658
Operating Costs	
Stationery/Office Supplies/Printing	103
Couriers/Freight Charges/Postage	
Publications/Maps/Subscriptions	
Travel/Accomodation/Meals	327
Field Supplies/Exploration Consumables	585
Equipment Hire	750
Equipment Maintenance Repairs	
Equipment Purchases (under $500)	617
Radio Communication	
Safety	
Vehicle Operating Costs	1,214
Regional Office Cost	94
Fixed Asset Usage Charge	45
Drafting Services and Supplies	
Other Contractors/Casuals	
Computer Services	
Computer Hardware (<$5000)	
Computer Software (<$2000)	
Computer Consultants	369
Communications (Phone/Fax)	
Tenement Costs	
Tenement Costs - incl. Rental & Shire Rates	9
Laboratory Costs	
Analytical & Assay	
Specialist Services	
Data Purchase/Search Charges	
TOTAL	$9,171

NORMANDY
EXPLORATION LIMITED
ACN 006 306 690

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EL 2123 - YERADA

FINAL REPORT

FOR PERIOD 21/11/95 TO 2/11/98

Author: A T Price

Date: 10 March 1999

Authorised:

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Report No. 23810

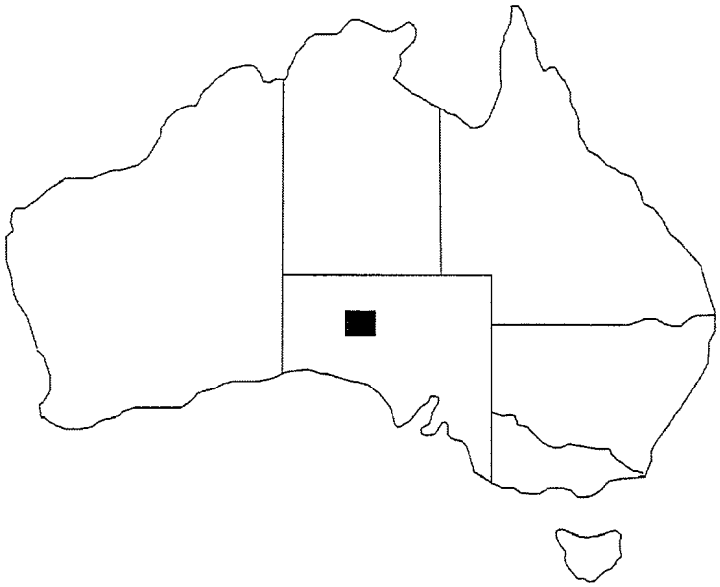
Report No: 23810

Title: Final Report for EL 2123 (Yerada) for the Period 21/11/95 to 2/11/98.

Author: A T Price

Date: 10 March 1999

Location Map:



SUMMARY

This report summarises work completed by Normandy Exploration Limited on the Yerada Licence, EL2123, during the period 21/11/95 to 2/11/98.

Exploration expenditure during this period totaled $78,357.

The tenement is located within the Tallaringa Conservation Park.

The tenement covers a series of features, which are interpreted from magnetics and gravity to represent a succession of Proterozoic, and Archaean rocks. The Proterozoic rocks have the potential for ironstone-skarn associated Cu-Au mineralisation and Archaean rocks with potential for Au mineralisation.

Work completed by Normandy Exploration included:

- Review of MESA's SAEI aeromagnetic data and the identification of anomalies.
- Site clearances of these areas with representatives from the Antakirinja Mutuntjarra Land Council.
- Compilation of a Declaration of Environmental Factors (DEF).
- Ground magnetics over one aeromagnetic anomaly.
- Collection and analysis of five rock/calcrete samples.

Following a review, the licence was relinquished.

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5a		Ground Magnetic Data Line 362000E 1	1:20,000
5b		Ground Magnetic Data Line 362200E 1	1:20,000
5c		Ground Magnetic Data Line 362400E 1	1:20,000
6a		Ground Magnetic Data Line 362000E 2	1:20,000
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1 CONCLUSIONS and RECOMMENDATIONS

Work carried out by Normandy on EL 2123 has included ground magnetic traverses over an isolated magnetic feature and minor trial calcrete sampling all completed in early 1998. Work was undertaken following the approval of a DEF as it lies within the Tallaringa Conservation Park. Three lines of ground magnetics were completed and modelling of the data defined an E-W striking body with a strike length of 700m, at a depth of 100-250m below surface. The target, lying 2kms south of the Karari Fault in interpreted Archaean lithologies, has not been drill tested to date. Depth of cover in EL 2123 is estimated to range from 50m in the southwest to 234m in the centre. The 5 calcrete samples collected did not return anomalous results. Calcrete development appears to be widespread in the south however the excessive depth of cover precludes its use as an effective geochemical tool to test for basement mineralisation.

Based on the recommendations of a review in October 1998 of EL2123 and the adjoining EL2122, no further work was recommended and the licence was relinquished on 2 November 1998.

2 INTRODUCTION

2.1 Tenure

EL 2123, "Yerada", covers an area of 2,402 km^2, and was granted to Normandy Exploration Limited on the 21st November 1995. A one-year renewal was approved in 1997 and the licence was relinquished on 2/11/98.

2.2 Location and Access

EL 2123 is located within the Tallaringa Conservation Park approximately 100 km west of Coober Pedy (Figure 1).

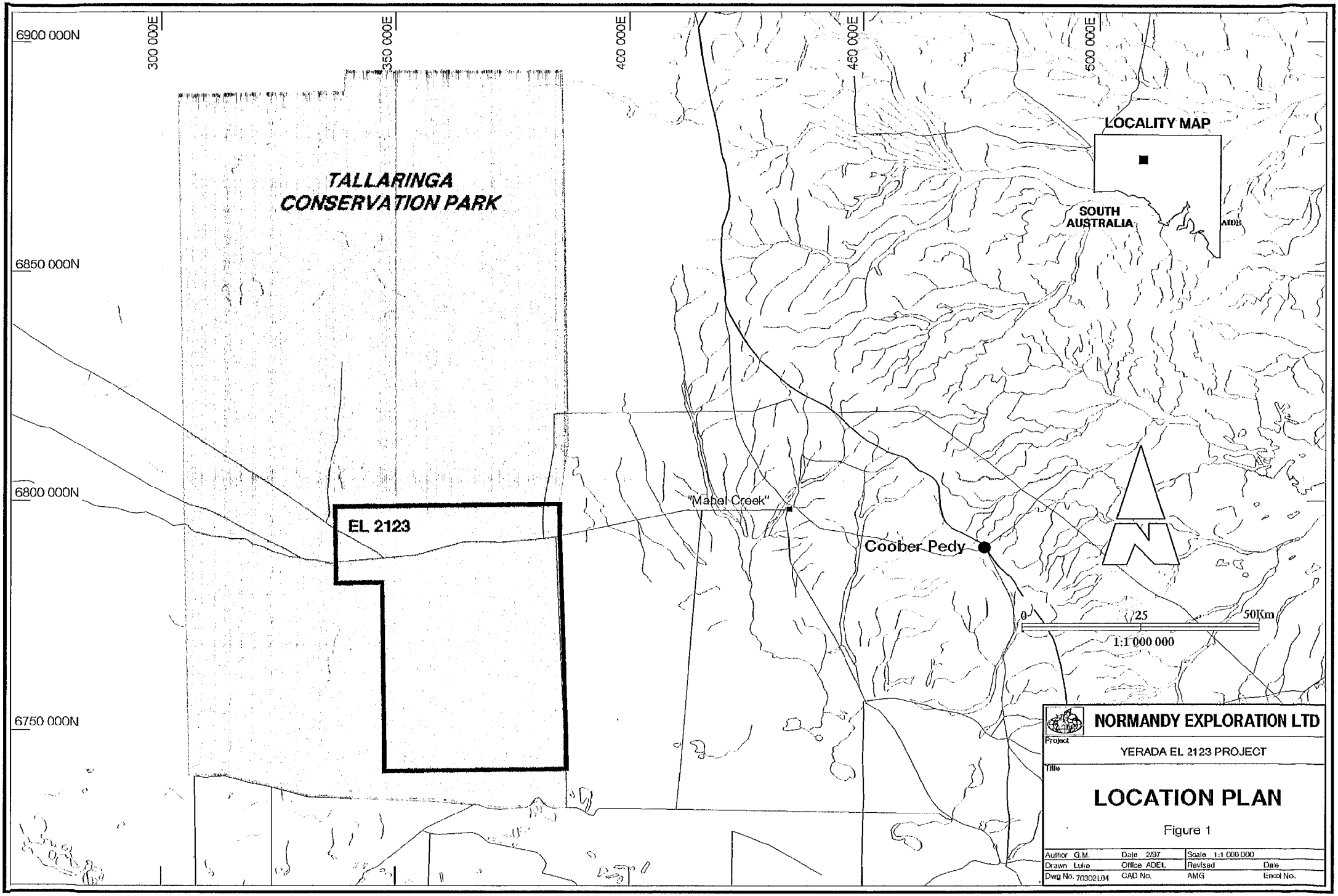
Access along the northern (Anne Beadell Highway) and eastern (Dog Fence track) areas of the licence are good. No access tracks are known elsewhere within the licence area.

3 REGIONAL SETTING and GEOLOGY

The Exploration Licence covers portion of the Late Archaean to Middle Proterozoic (2700 - 1420 Ma) northern Gawler Craton. The geology in this area is considered complex.

The area comprises felsic and mafic gneisses, banded iron formations, metasediments, granites and metavolcanics. The area has undergone intense deformation and metamorphism during the Kimban Orogeny (1850 - 1700 Ma) when granitoids were emplaced and major mylonitic zones developed. Further acid volcanic sheets and granite emplacement (1590 Ma) are thought to be associated with Cu-Au-U mineralisation. This event may be associated with orogenic collapse of the Craton.

Interpretation of the SAEI's aeromagnetic and gravity data for this area indicates that the Archaean-Proterozoic terrain boundary is marked by a series of major faults. In the NW of the Craton the NE orientated transpressional Karari Fault forms the western margin to the Archaean. To the north, Lower Proterozoic metasediments of the EW trending "Coober Pedy Ridge" and Mt. Woods area are inferred to be thrust southward over the Craton margin. This thrusted and folded Proterozoic sequence is divided into a strongly magnetic BIF/mafic rift sequence and a relatively non-magnetic metasedimentary sag sequence.


6900 000N
6850 000N
6800 000N
6750 000N
300 000E
350 000E
400 000E
450 000E
500 000E
TALLARINGA
CONSERVATION PARK
EL 2123
"Mabel Creek"
Coober Pedy
LOCALITY MAP
SOUTH
AUSTRALIA
0
25
50Km
1:1 000 000
NORMANDY EXPLORATION LTD
Project
YERADA EL 2123 PROJECT
Title
LOCATION PLAN
Figure 1
Author G.M.
Date 2/97
Scale 1:1 000 000
Drawn Luke
Office ADEL
Revised
Date
Dwg No. 70302L01
CAD No.
AMG
Encol No.

Comparisons in the State suggests similarities with the BIF bearing Hutchinson Group and the volcano-sedimentary Moonta-Wallaroo and Peake and Denison Ranges sequences. A similar rift and sag sequence has also been described at Broken Hill.

Relatively undeformed magmatic intrusions are also interpreted within the tenement area. These are spatially associated with a number of ironstone targets. These granitoid rocks are equated with the Hiltaba Suite, which are cogenetic with the felsic rocks of the Gawler Range Volcanics and host to the Olympic Dam Cu-Au deposit.

The +150m thick cover sequence contains a fine grained, glacial derived shale sequence and a variable sand cover up to 80m thickness.

4 PREVIOUS EXPLORATION

The exploration for minerals and petroleum is subject to stringent controls over much of the Great Victoria Desert including the Tallaringa Conservation Park. A joint proclamation under Section 43 of the National Park and Wildlife Act allows mining in Tallaringa Conservation Park, following approval by the Minister of Environment and Natural Resources.

Historic exploration activity within this region has included coal, petroleum and mineral searches by companies which include British Petroleum, CRA, Amoco and most recently by BHP. BHP actively explored within the Tallaringa Conservation Park under EL 1806 from 1991 - 1993. During this period both ground magnetic and gravity surveys were completed and targets were tested with reverse circulation percussion drilling.

5 REVIEW OF EXPLORATION COMPLETED BY NORMANDY

Normandy Exploration Limited applied for EL 2123 to explore a series of anomalous geological features including structurally complex areas and discrete magnetic targets.

These features are interpreted from MESA's SAEI high resolution aeromagnetic data for this region (Figure 2). Many of the features have magnetic similarities with signatures observed at Olympic Dam as well as deposits such as Ernest Henry, Osborne and Cannington.

Site clearances for these areas were obtained from the Antakirinja Mututjarra Land Council.

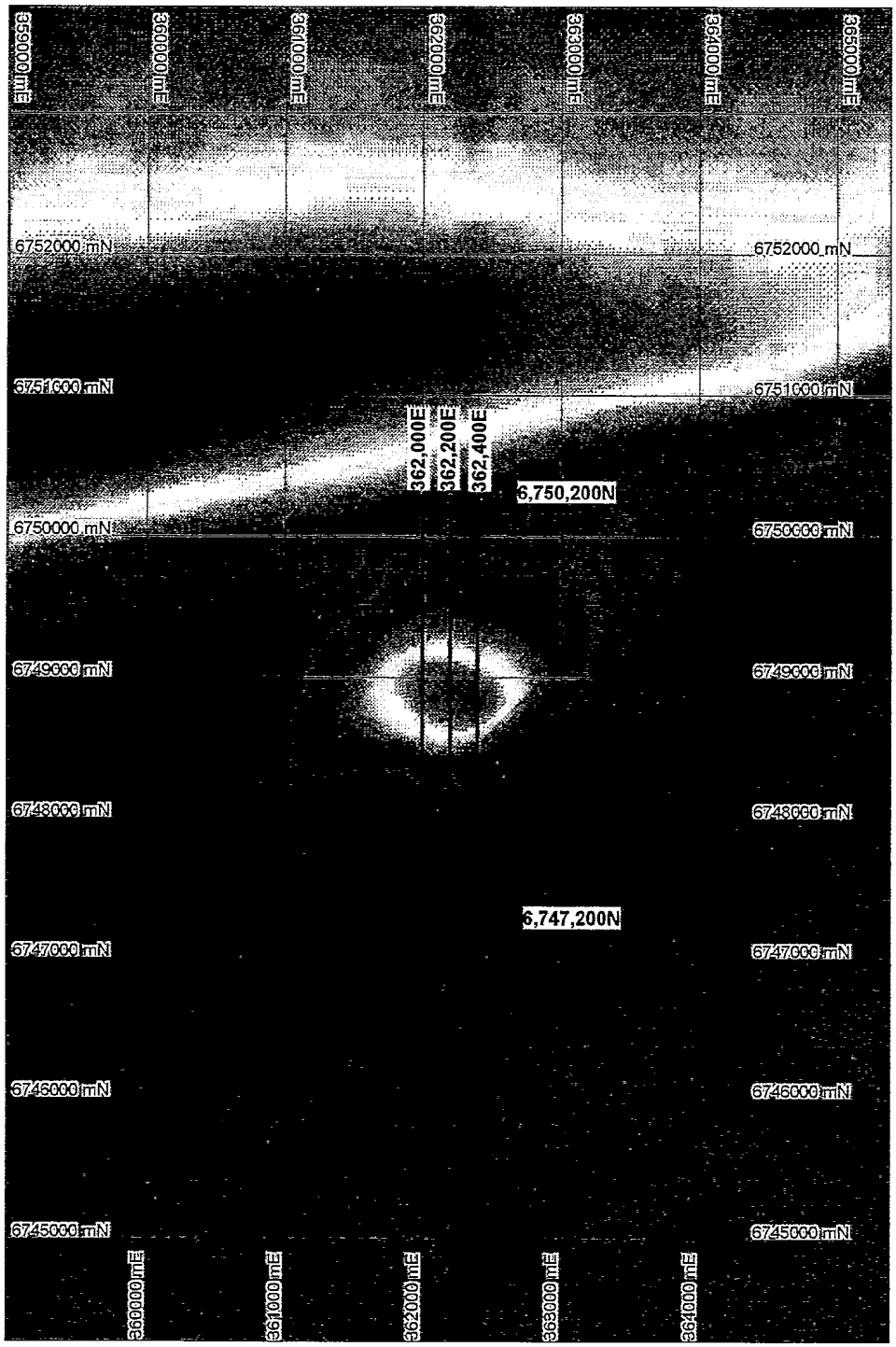
A detailed "Declaration of Environmental Factor for mineral exploration in the Tallaringa Conservation Park, South Australia" has been submitted to MESA for distribution to the relevant departments.

Following approval from the relevant departments, a small program was completed in the south of the licence in May 1998 and is detailed below:

5.1 Ground Magnetics

Three lines, totaling 9 line kilometres, of ground magnetic data were collected over a discrete magnetic anomaly in EL2123 (Figures 2 and 3). The magnetic target was previously modeled at a depth of 80m using the regional SAEI aeromagnetic data (400m-line spacing).

The location of the ground magnetic traverses is shown in Figure 3.
A NOREX rapid sampling magnetometer mounted on a backpack with a 2m mast was used with data collected every 1m along the line.



NORMANDY EXPLORATION LTD		
Project: YERADA - EL 2123		
Title: SAEI AEROMAGNETIC DATA TMI GROUND MAG TRAVERSES MAY 1998		
Author: JLC	Date:27/5/1998	Report No.:
Drawn: JLC	Office: Kent Town	Plan No.:
Proj.: TMAMG63	Scale: 1:50000	Figure No.: 3

A Scintrex MP-3 was used for collecting base station data every 10 seconds.
Data was dumped and diurnal corrected using Geosolutions software in the field.

Navigation along the lines was by hipchain and compass. A RACAL GPS system was used to accurately locate the start and end points of each line.

All hipchain cotton was collected at the end of the survey.

The profiles are shown in figure 4.

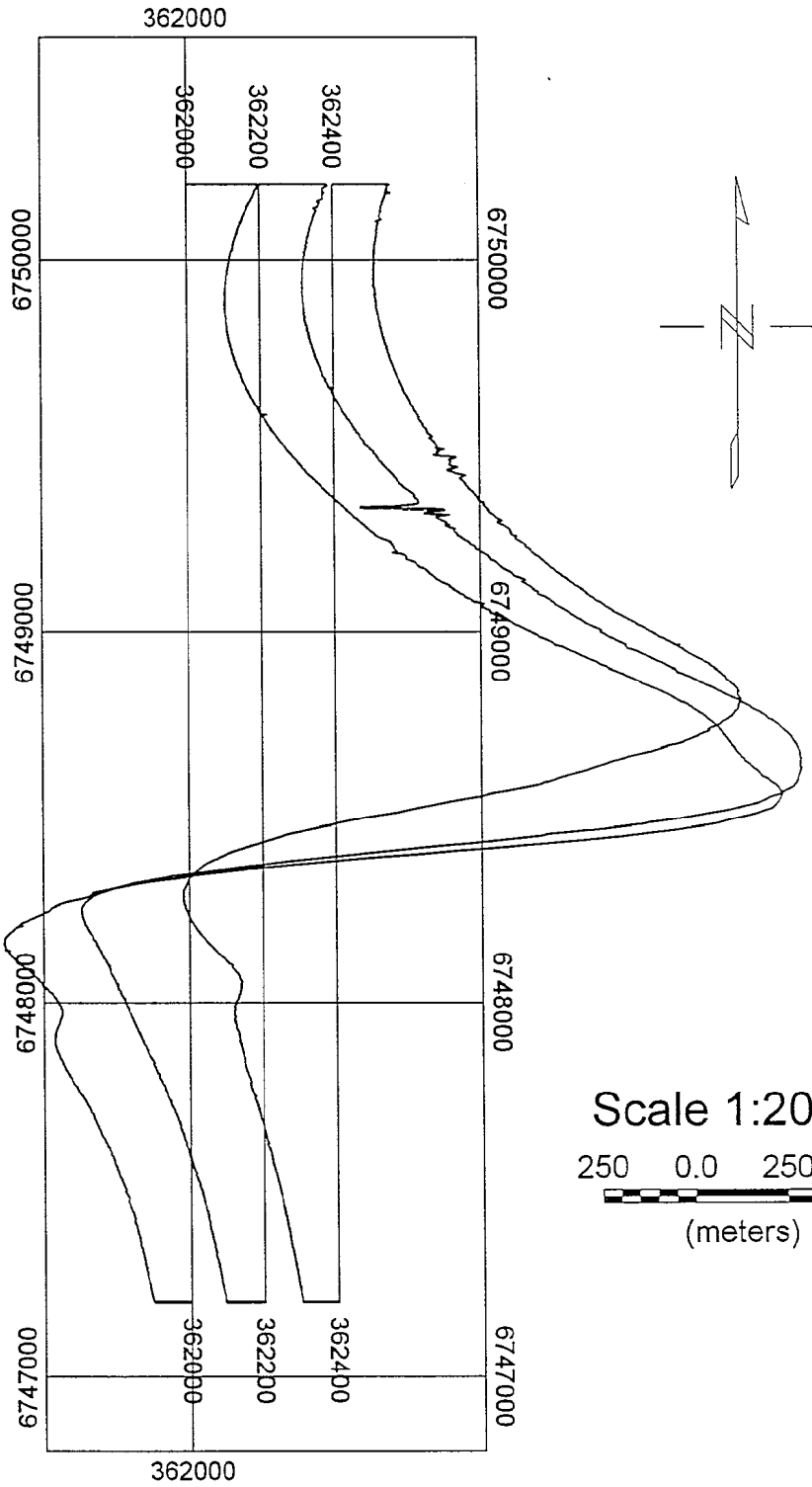
Modeling of the ground magnetic data was carried out using a variety of models as shown in figures 5a-c, 6a-c and 7a-c. All of the models have a strike length of 700m and strike between 084 and 096. Interpreted depth to the target range from a minimum of 100m to the shallowest portion of the body and 250-300m recommended as a targeted drilling depth.

5.2 Rock/Calcrete Sampling

Five calcrete/rock samples were collected during the ground magnetic survey. All samples were analysed by Amdel in Adelaide for the following elements and methods (ppm detection limits in brackets unless specified):
Au(1ppb) - method AA9 (aqua regia digest)
Ag(0.05), As(0.5), Bi(0.1), Cd(0.1), Co(0.2), Cu(0.5),Mo(0.1), Pb(0.5), Sb(0.1), Se(0.5), Te(0.2), U(0.02), Zn(0.5) - method IC2M (ICPMS).
Cr(2), Fe(100), Mn(5), Ni(1), P(5), V(1) - method IC2E (ICPOES)

No results of interest were received.

Sample locations are shown in figure 8 with results included in Appendix 1.



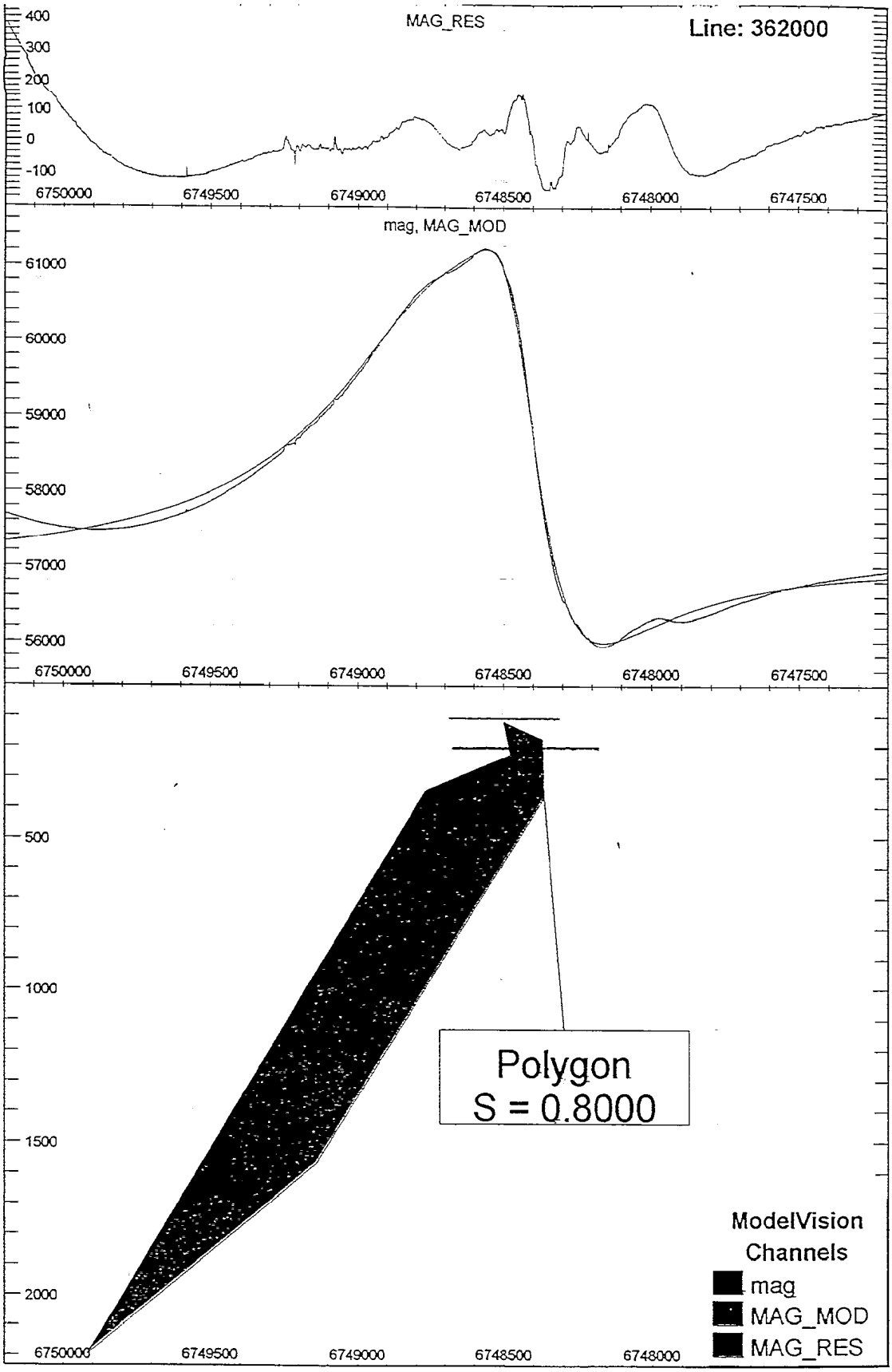
NORMANDY EXPLORATION LTD

YERADA PROJECT - EL 2123

GROUND MAGNETIC DATA
MAY 1998
PROFILES OF TMI - 50nT/mm, Base 57200nT

J.Caon

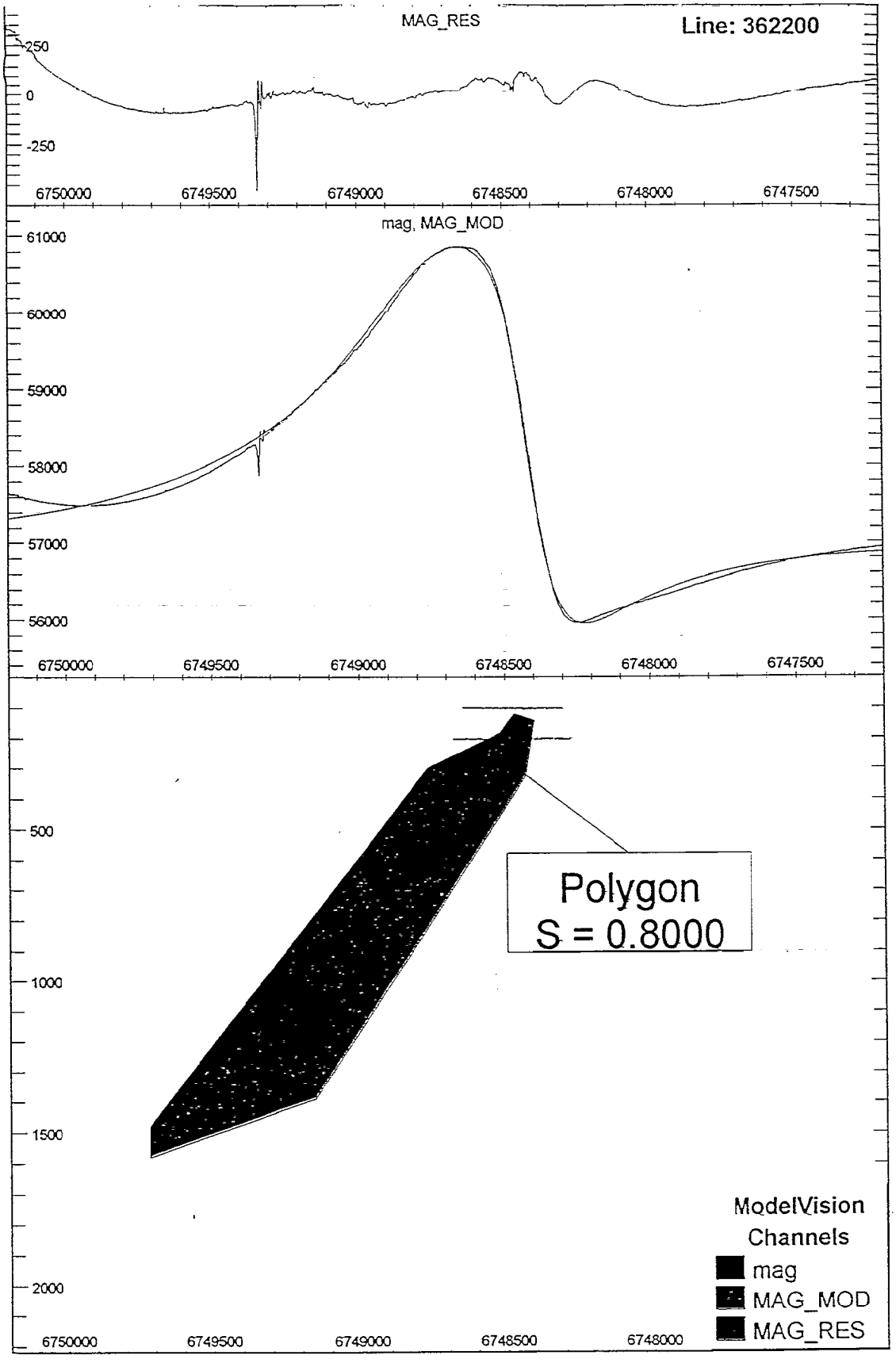
Figure 4



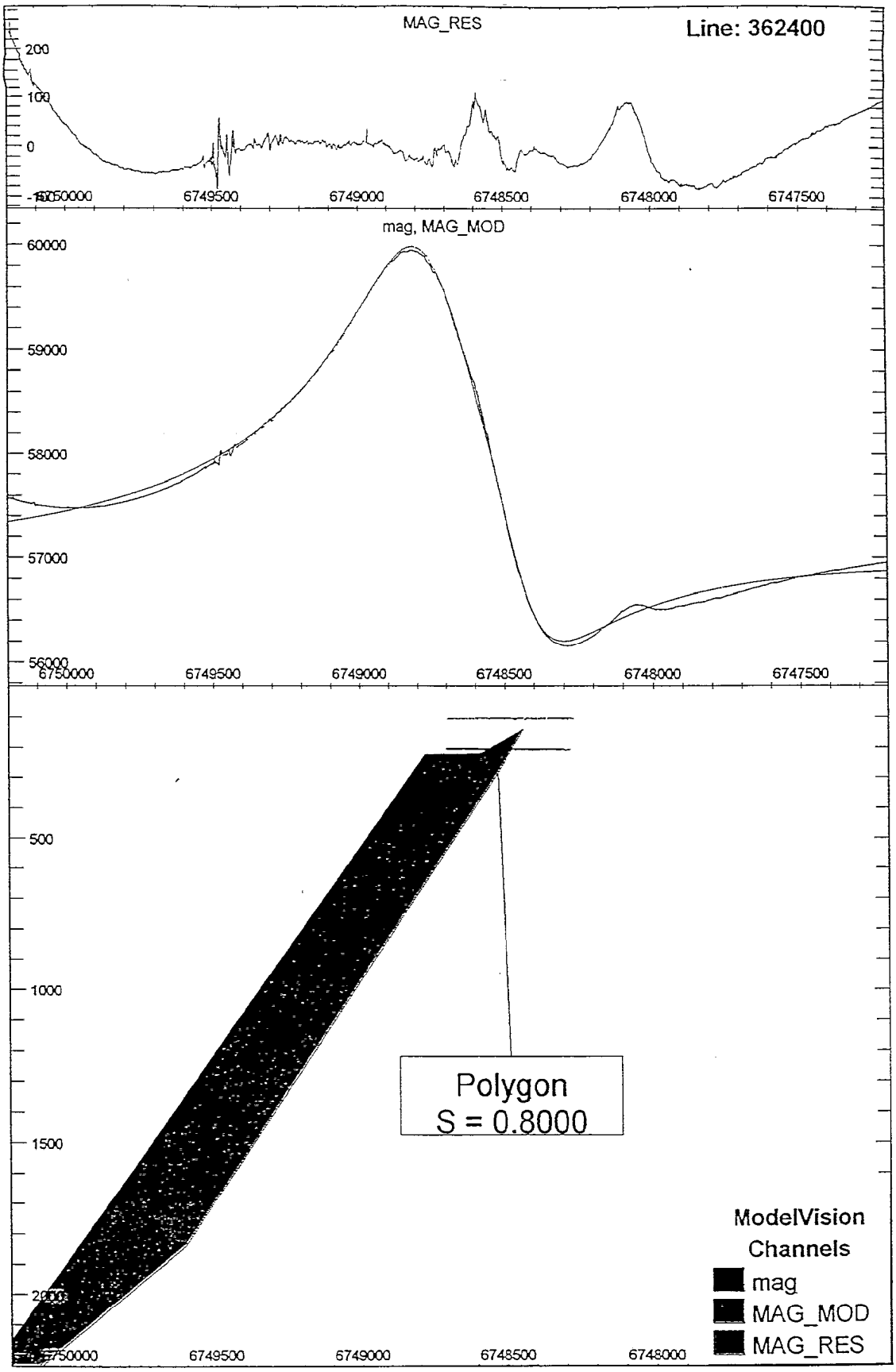
NORMANDY EXPLORATION LTD

MAY 1998 GROUND MAGNETIC DATA
LINE 362000 E
MAGNETIC MODELING
SUSCEPTIBILITY = 0.8 SI
DEMAGNETIZATION ON

Scale: 1:20,000	Date: 26/05/98
By: John Caon	Figure No.: 5a



NORMANDY EXPLORATION LTD	
MAY 1998 GROUND MAGNETIC DATA LINE 362200 E MAGNETIC MODELING SUSCEPTIBILITY = 0.8 SI DEMAGNETIZATION ON	
Scale: 1:20,000	Date: 26/05/98
By: John Caon	Figure No.: 56



NORMANDY EXPLORATION LTD	
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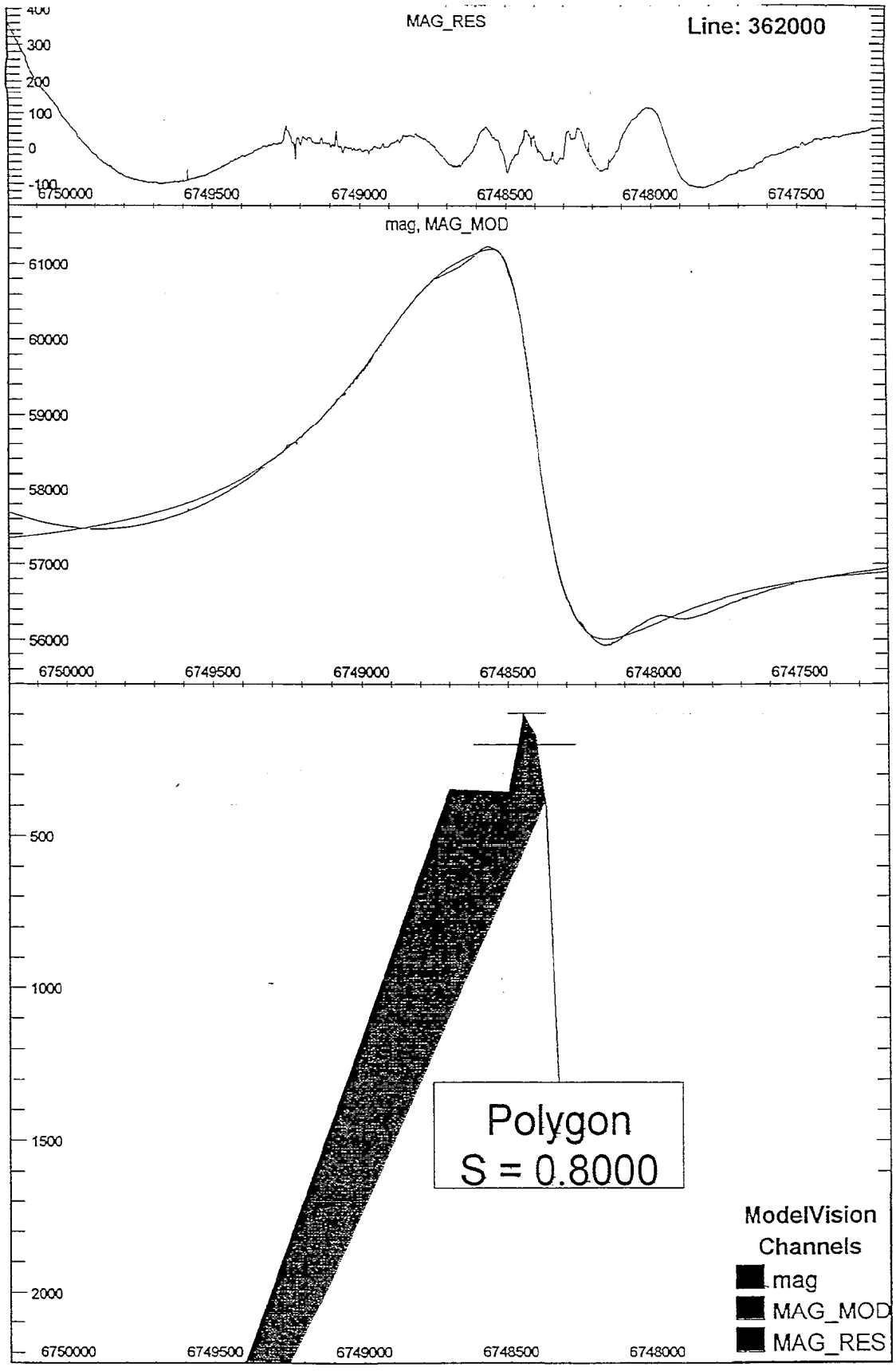
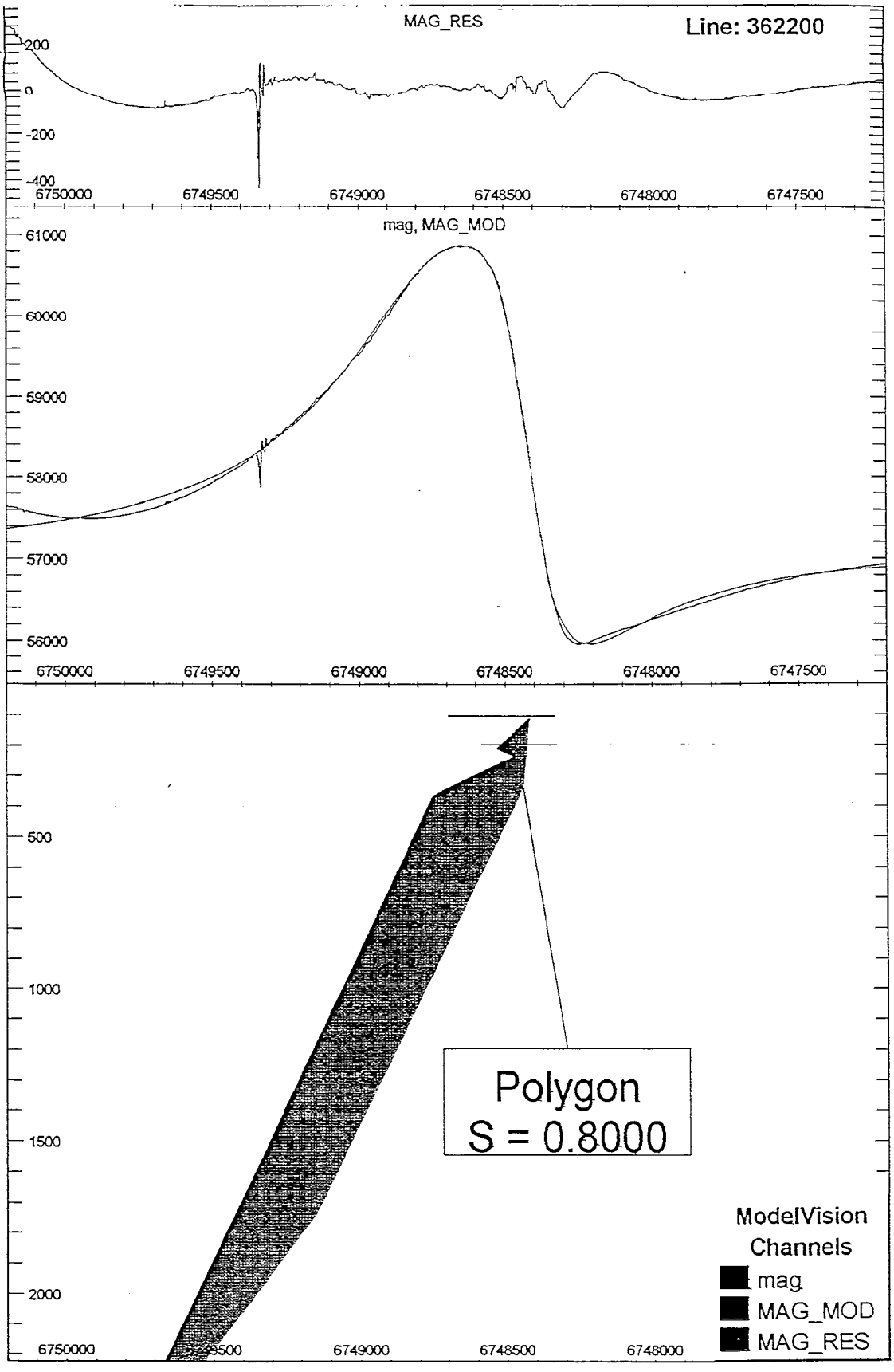
Scale: 1:20,000	Date: 26/05/98
By: John Caon	Figure No.: 5c



NORMANDY EXPLORATION LTD	
MAY 1998 GROUND MAGNETIC DATA LINE 362000 E MAGNETIC MODELING SUSCEPTIBILITY = 0.8 SI DEMAGNETIZATION OFF	
Scale: 1:20,000	Date: 26/05/98
By: John Caon	Figure No.: 6a



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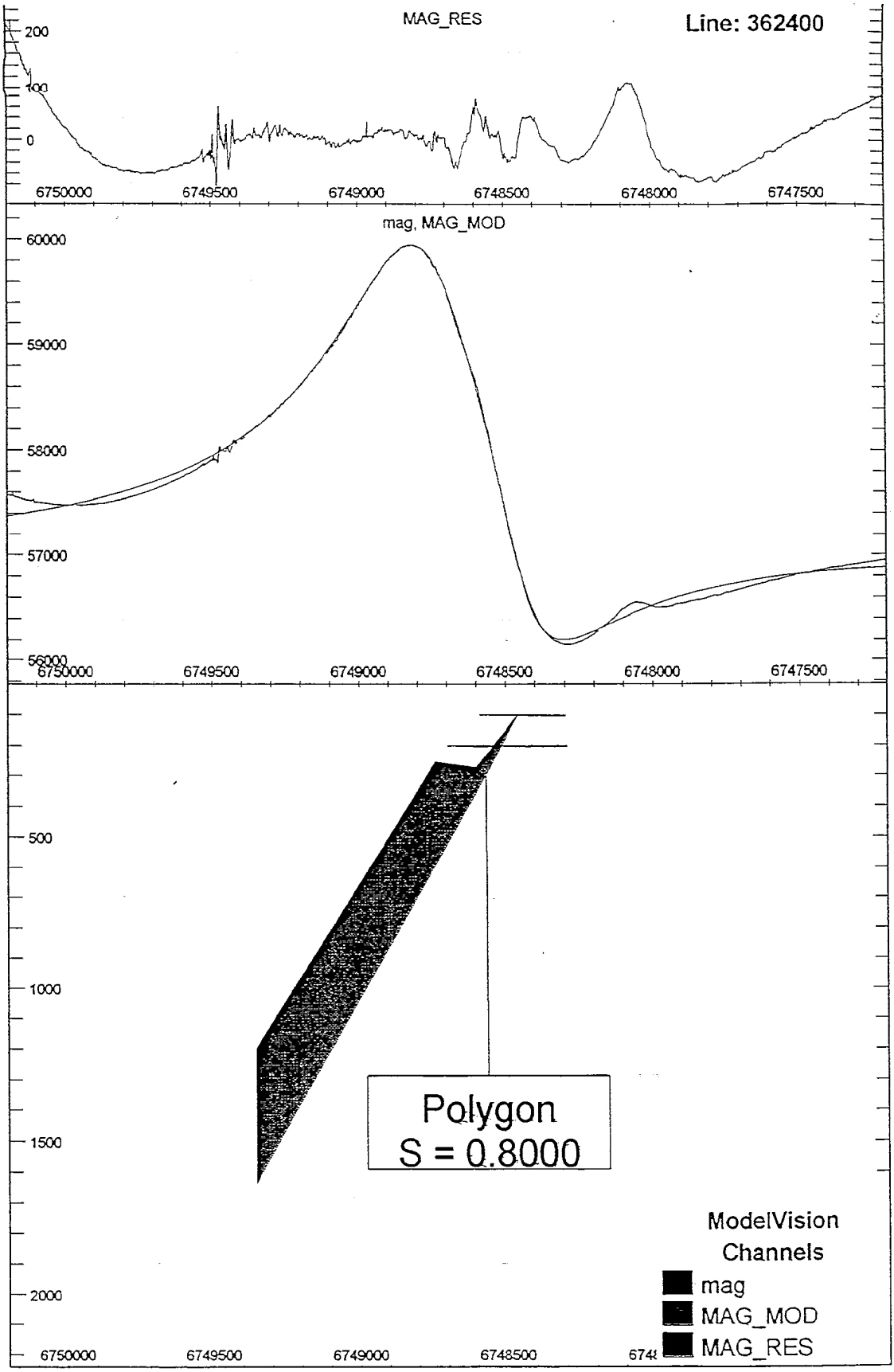
Scale: 1:20,000	Date: 26/05/98
By: John Caon	Figure No.: 6b



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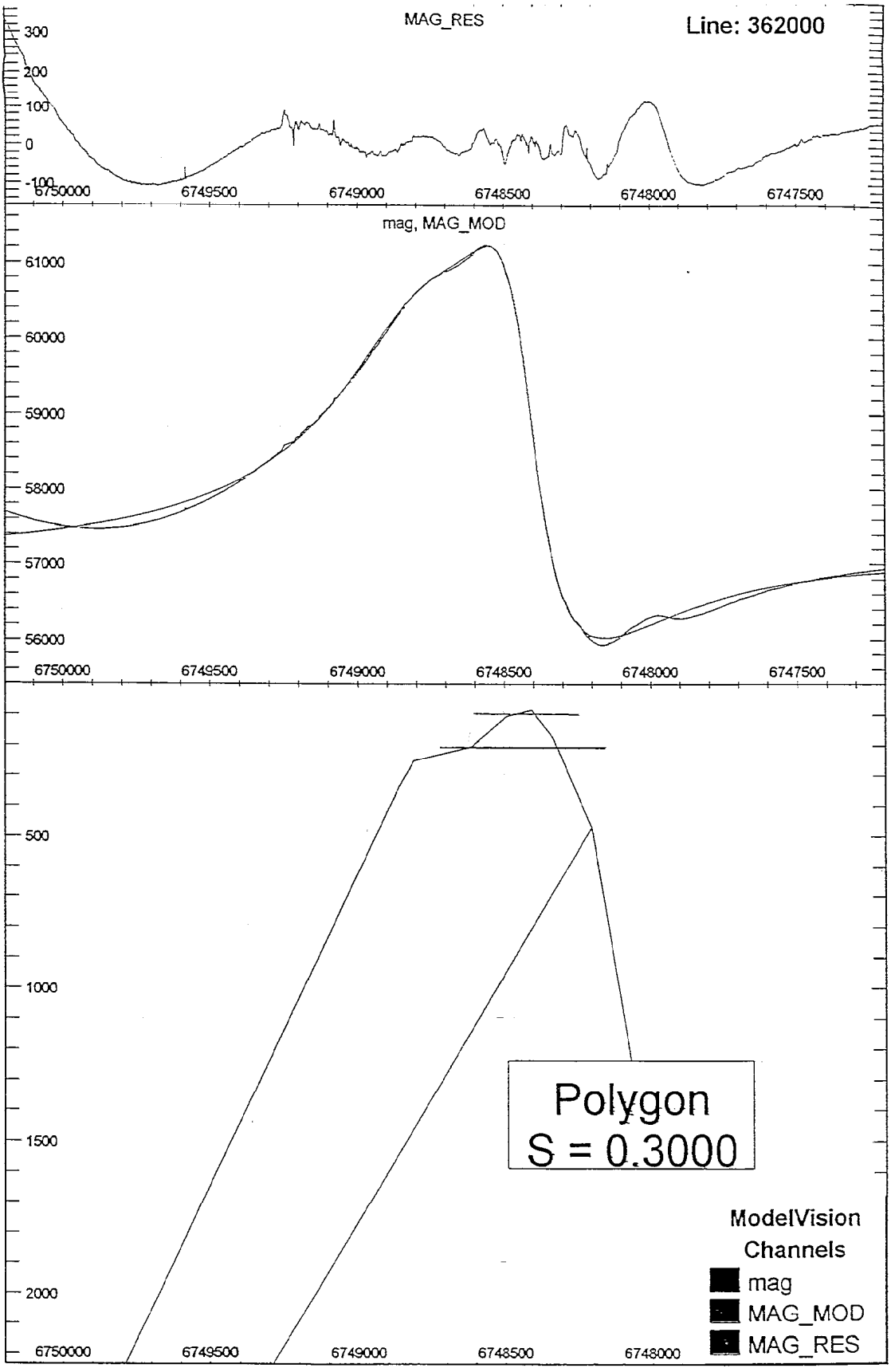
By: John Caon	Figure No.: 6c-5



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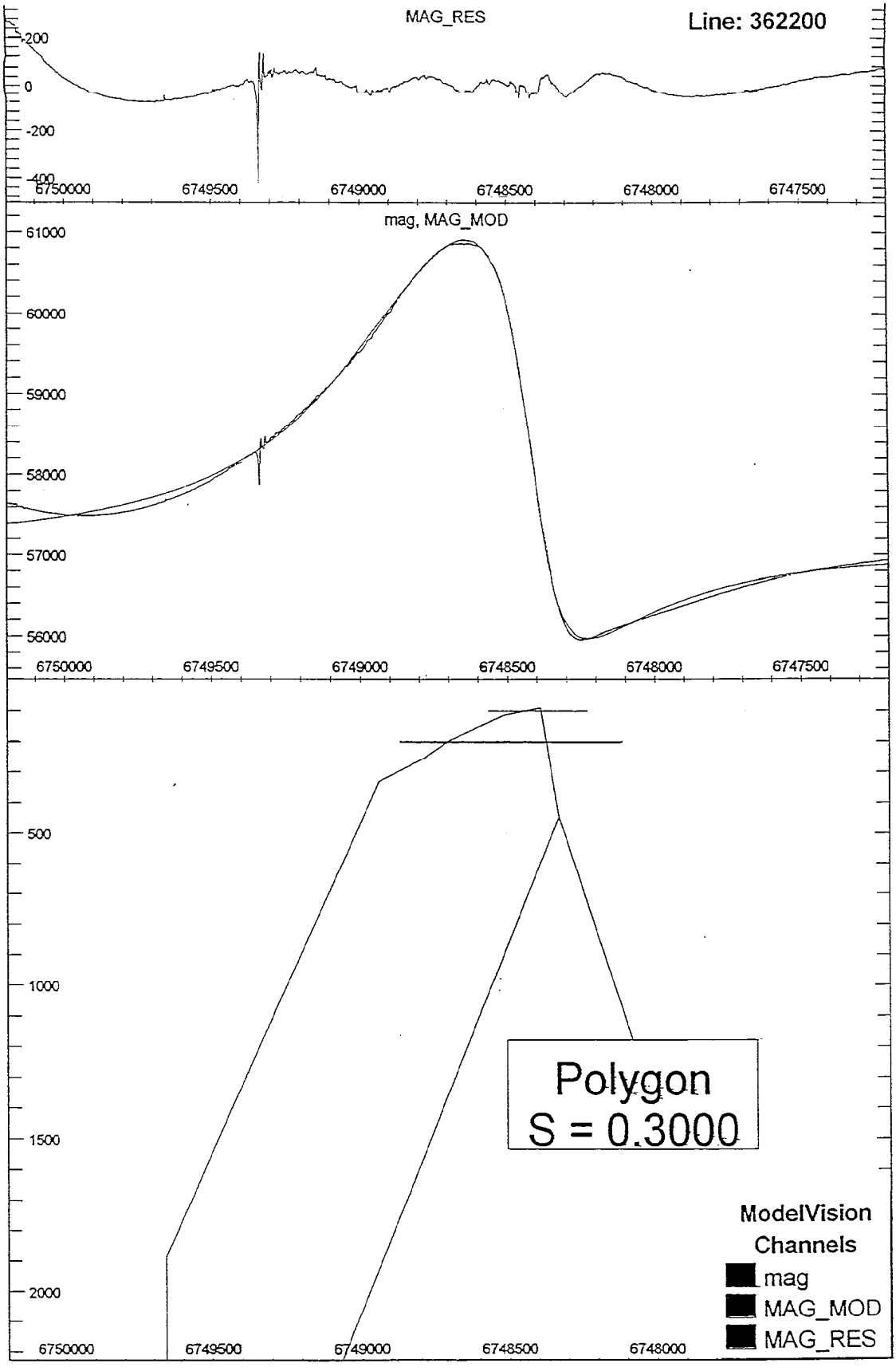
Scale: 1:20,000	Date: 26/05/98
By: John Caon	Figure No.: 7a



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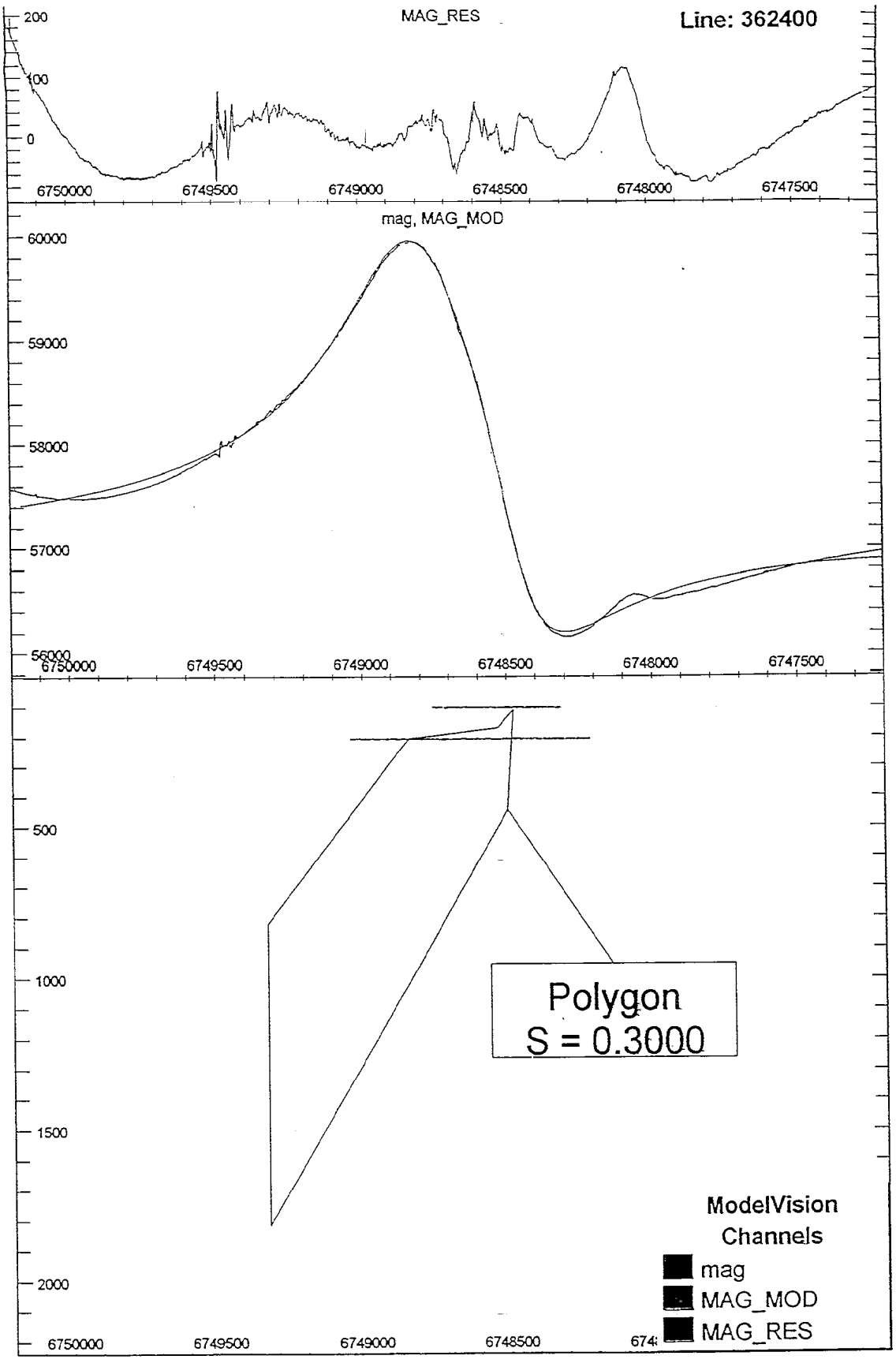
Scale: 1:20,000	Date: 26/05/98
By: John Caon	Figure No.: 76



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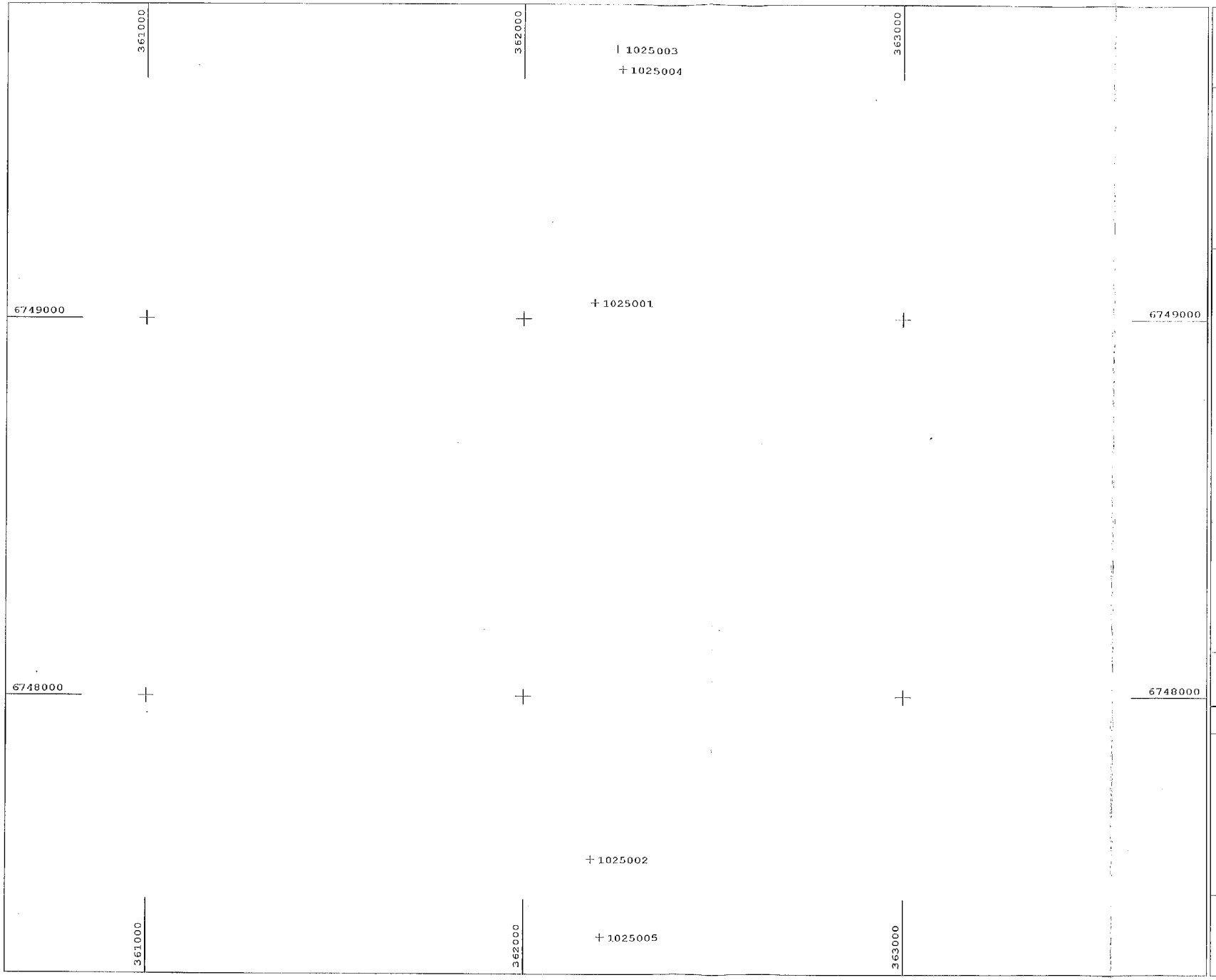
By: John Caon	Figure No.: 7c



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http://www.micromine.com.

Scale	DATE. 10/3/99	SHEET 1 of 1
1:10000	REF No. CALC	FILE CALC

0 500m

Yerada Project - EL2123

Rock/Calcrete Sample Numbers

Figure 8

Normandy Exploration Limited

SE Region

7 EXPENDITURE SUMMARY

Expenditure for the period 21/11/97 to 20/11/98 totaled $14,644.
Total expenditure for the life of the licence totaled $78,357 as detailed below:

Description	Amount	
Employee Costs		
Conferences & Mine Visits	965	
Eligible Staff Training	1,739	
Time Charges - Salaries & Wages	29,260	
		31,964
Operating Costs		
Stationery/Office Supplies/Printing	315	
Couriers/Freight Charges/Postage	108	
Travel/Accommodation/Meals	1,349	
Field Supplies/Exploration Consumables	813	
Equipment Hire/Lease	750	
Equipment Maintenance/Repairs	844	
Equipment Purchases (under $500)	958	
Safety	321	
Vehicle Operating Costs	3,391	
Regional Office Cost	9,102	
Depreciation	3,622	
Drafting Services and Supplies	587	
Computer Hardware (<$500)	272	
Computer Consultants	369	
		22,801
Tenement Costs		
Tenement Costs - incl. Rental & Shire Rates	21,766	
Traditional Landowner Costs	920	
		22,686
Laboratory Costs		
Analytical & Assay	144	
		144
Specialist Services		
Geophysical	762	
		762
TOTAL		**$78,357**

8 BIBLIOGRAPHIC DATA SHEET

Report Number	23810
Report Title	Final Report for EL 2123 Yerada for the period 21/11/95 to 2/11/98.
Author	A T Price
Date	10 March 1999
Commodities	Copper, Gold
Tectonic Unit	Gawler Craton
1:250,000 Map Sheet	Giles SH53-1 Murloocoppie SH53-2
Keywords	Geophysics Ground Magnetic Surveys Rock Chip Samples Exploration Review

APPENDIX 1

Sample	amg_e	amg_n	Au ppb	Au1 ppb	Cr ppm	Fe %	Mn ppm	Ni ppm	P ppm	V ppm	Ag ppm	As ppm	Bi ppm	Cd ppm	Co ppm	Cu ppm	Mo ppm	Pb ppm	Sb ppm	Se ppm	Te ppm	U ppm	Zn ppm	comments
1025001	362185	6749042	5	7	52	1.56	50	5	140	36	0.15	10	0.2	0.2	4.5	10.5	1.9	3	0.2	1.5	-0.2	0.35	4	calcrete
1025002	362175	6747570	2	-	54	2.54	65	5	170	64	0.1	3.5	0.2	-0.1	4	8.5	0.8	7	0.2	1	-0.2	0.37	8	calcrete
1025003	362245	6749715	1	-	200	0.67	110	8	30	11	-0.05	1	-0.1	-0.1	1.9	5.5	3.7	4.5	-0.1	-0.5	-0.2	0.1	9.5	banded calcrete
1025004	362258	6749661	1	-	300	28	55	4	210	1500	0.5	150	0.9	0.2	2.6	12.5	6.5	75	1.8	2.5	2.9	1.35	13	ferricrete
1025005	362200	6747364	-1	-	250	9.47	55	5	95	260	0.2	14	0.5	-0.1	1.1	4.5	4.6	12	1.1	0.5	-0.2	0.4	1	qtz/fel/ferricrete