Open File Envelope No. 3778

EL 580

HEARTBREAK BORE

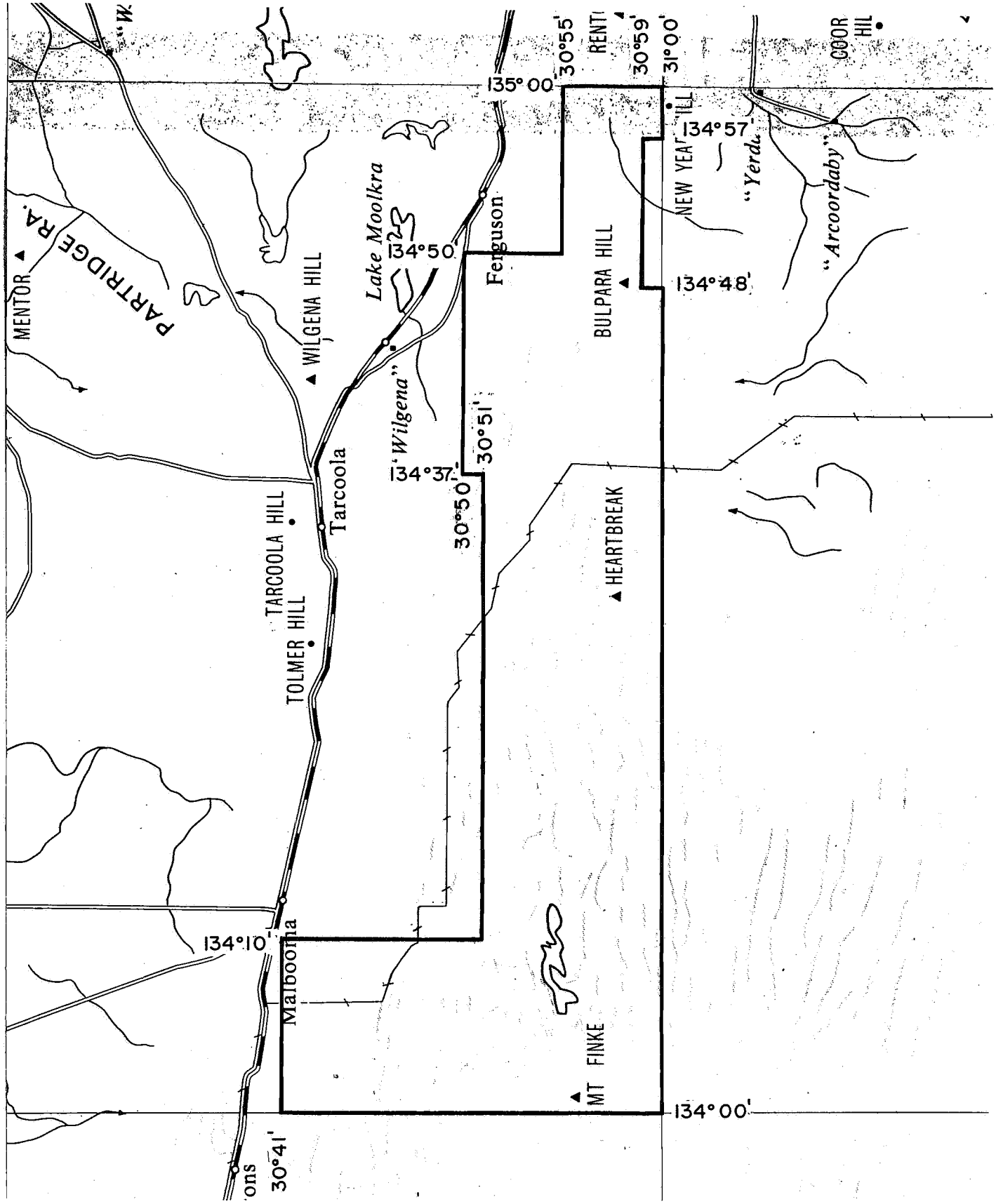
PROGRESS AND FINAL REPORTS TO LICENCE EXPIRY/SURRENDER FOR THE PERIOD 16/1/1980 TO 15/1/1982

Submitted by
Afmeco Pty Ltd
1982

Enquiries: Customer Services Branch
Minerals and Energy Resources
7th Floor
101 Grenfell Street, Adelaide 5000

Telephone: (08) 8463 3000
Facsimile: (08) 8204 1880

Government of South Australia
Primary Industries and Resources SA



SCALE 1:500,000

KILOMETRES 10 0 10 20 30 40 50 KILOMETRES

EXPIRED

APPLICANT: AFMECO PTY.LTD.

DM: 494/79

AREA: 1778 square kilometres

1:250000 PLANS: TARCOOLA

LOCALITY: TARCOOLA

DATE GRANTED: 16·1·80

DATE EXPIRED: 15·1·81 82

EL No: 580

3778

CONTENTS ENVELOPE 3778

TENEMENT: Exploration Licence No. 580

TENEMENT HOLDER: Afmeco Pty. Ltd.,

REPORT:

NO PLANS

REPORT:

CONTENTS ENVELOPE 3778

AFMECO PTY. LTD.

11-13 Lucknow Place, West Perth, Western Australia
P.O. Box 526, West Perth, Western Australia, 6005
Telephone: (09) 321 9618, 321 9681
Telex: AFMECO 92077 Perth

0003

PA/aw 80-1365

20th May, 1980

Director-General,
Department of Mines and Energy,
P.O. Box 151,
EASTWOOD SA 5063

Dear Sir,

EXPLORATION LICENCE 580 - HEARTBREAK BORE
QUARTERLY REPORT 16.1.80 to 15.4.80

During the quarter Afmeco Pty Ltd started work on EL 580 under the terms of a Heads of Agreement with Aberfoyle Exploration Pty Ltd.

About 250 metres of air-core drilling was completed to depths of up to 90 metres in Tertiary fluviatile and lake sediments which were delineated from earlier aerial photographic study.

The holes were radiometrically and neutron logged within the drill stem.

After penetrating lake clays the holes reached basement or unconsolidated sands with carbonaceous matter. One hole intersected lignitic coal.

At the end of the quarter drilling was still in progress. Drill cuttings and water samples are being collected for analysis.

Expenditure for the quarter was $2,019.96 as per the attached schedule, but most of the drilling costs are not yet accounted for.

Yours faithfully,
AFMECO PTY LTD

J.-P. POGGI,
Managing Director.

Enc. 1

STATEMENT OF EXPENSES RELATING TO EXPLORATION
PROGRAMME ON E.L. 580, Quarter 16.1.80 to 15.4.80

PERSONNEL (FIELD WORK, EVALUATION, OFFICE WORK)	1,546.24
MATERIAL (DIRECT)	9.67
TRAVEL, ACCOMMODATION (DIRECT)	159.82
CONTRACTS, SUPPLIES	7.62
DRAFTING SERVICE, PREPARATION OF REPORTS & MISCELLANEOUS	200.42
MANAGEMENT/OVERHEADS	96.19
	$2,019.96

AFMECO PTY. LTD.
11-13 Lucknow Place, West Perth, Western Australia
P.O. Box 526, West Perth, Western Australia, 6005
Telephone: (09) 321 9618, 321 9681
Telex: AFMECO 92077 Perth

PA/aw 80-2221

0005

30th July, 1980

Director-General,
Department of Mines and Energy,
P.O. Box 151,
EASTWOOD SA 5063

Dear Sir,

EXPLORATION LICENCE 580 - HEARTBREAK BORE
QUARTERLY REPORT 16.4.80 to 15.7.80

Drilling of the Tertiary sediments was concluded early in the quarter. Drill cuttings have been logged and samples sent for analysis and petrological examination.

Results are being evaluated and a report is being prepared. //

Expenditure for the quarter was $22,743.30 as per the attached statement.

Yours faithfully,
AFMECO PTY LTD

J.-P. POGGI,
Managing Director.

Enc. 1

c.c. Aberfoyle

STATEMENT OF EXPENSES RELATING TO EXPLORATION PROGRAMME on E.L. 580, 16.4.80 to 15.7.80

0006

PERSONNEL (FIELD WORK, EVALUATION, OFFICE WORK)	5,140.02
MATERIAL (DIRECT)	928.13
TRAVEL, ACCOMMODATION (DIRECT)	2,455.55
CONTRACTS, SUPPLIES	11,607.50
DRAFTING SERVICE, PREPARATION OF REPORTS & MISCELLANEOUS	1,529.09
MANAGEMENT/OVERHEADS	1,083.01
	$22,743.30

AFMECO PTY. LTD.

11-13 Lucknow Place, West Perth, Western Australia
P.O. Box 526, West Perth, Western Australia, 6005
Telephone: (09) 321 9618, 321 9681
Telex: AFMECO 92077 Perth

PA/aw 80-3295

0007

31st October, 1980

Director-General,
Department of Mines and Energy,
P.O. Box 151,
EASTWOOD SA 5063

Dear Sir,

EXPLORATION LICENCE 580 - HEARTBREAK BORE
QUARTERLY REPORT 16.7.80 to 15.10.80

There was no field work during the quarter.

Expenditure for the quarter was $2,937.09 as per the attached statement.

Yours faithfully,
AFMECO PTY LTD

J.-P. POGGI,
Managing Director.

Enc. 1

c.c. Aberfoyle

STATEMENT OF EXPENSES RELATING TO EXPLORATION PROGRAMME Quarter 16.7.80 to 15.10.80

PERSONNEL (FIELD WORK, EVALUATION, OFFICE WORK)	969.97
MATERIAL (DIRECT)	470.65
TRAVEL, ACCOMMODATION (DIRECT)	236.01
CONTRACTS, SUPPLIES	875.65
DRAFTING SERVICE, PREPARATION OF REPORTS & MISCELLANEOUS	244.95
MANAGEMENT/OVERHEADS	139.86
	$2,937.09

AFMECO PTY. LTD.

11-13 Lucknow Place, West Perth, Western Australia
P.O. Box 526, West Perth, Western Australia, 6005
Telephone: (09) 321 9618, 321 9681
Telex: AFMECO 92077 Perth

TL/tnb 81-3116

0009

28th April, 1981

The Director General
Department of Mines & Energy
P.O. Box 151
EASTWOOD, S.A. 5063

Dear Sir,

Exploration Licence 580
Progress Report 16.10.80 to 15.4.81

No field work has been done during this period.

Interpretation of SAMDE airborne data is currently being studied in preparation for a ground magnetic survey which we envisage to take place in the next few months. We do not plan at this stage to use declared equipment but propose to use existing roads and tracks. Should it be necessary to use any heavy earthmoving equipment, we will advise at least four weeks prior to mobilisation to obtain your approval.

We indicated in our letter of 24th November we would be conducting a scout drilling programme during the first few weeks in December. This in fact did not take place.

Expenditure for this period is shown as per the attached schedule.

Yours faithfully,
AFMECO PTY. LTD.

J.-P. POGGI
Managing Director

encl. schedule

c.c. Aberfoyle

0010

STATEMENT OF EXPENSES RELATING TO EXPLORATION PROGRAMME on E.L. 580, Six Monthly Report 16.10.80 to 15.4.81

PERSONNEL (FIELD WORK, EVALUATION, OFFICE WORK)	895.28
MATERIAL (DIRECT)	8.52
TRAVEL, ACCOMMODATION (DIRECT)	356.80
CONTRACTS, SUPPLIES	
DRAFTING SERVICE, PREPARATION OF REPORTS & MISCELLANEOUS	414.69
MANAGEMENT/OVERHEADS	83.76
	1759.05

AFMECO PTY. LTD.
11-13 Lucknow Place, West Perth, Western Australia
P.O. Box 526, West Perth, Western Australia, 6005
Telephone: (09) 321 9618, 321 9681
Telex: AFMECO 92077 Perth

0011

TL/bp 81-4867

29th September 1981

The Director General
Department of Mines & Energy
P.O. Box 151
Eastwood S.A. 5063

Dear Sir,

Exploration Licence 580
Progress Report 16.4.81 to 15.7.81

During this period a regional survey was carried out by our Joint Venture partner, Aberfoyle Exploration Pty Ltd.

A traverse from north to south was pegged for ground gravity and magnetometer survey due to take place in the current quarter.

Expenditure for this period is shown as per the attached schedule.

Yours faithfully,
AFMECO PTY LTD

J.-P. POGGI
Managing Director

encl. 1

0012

STATEMENT OF EXPENSES RELATING TO EXPLORATION

PROGRAMME E.L. 580 QUARTER 16.4.81 TO 15.7.81

PERSONNEL (Field work, evaluation, office work)	54.01
MATERIAL (Direct)	0.25
TRAVEL, ACCOMMODATION (Direct)	53.97
CONTRACTS, SUPPLIES	81.81
DRAFTING SERVICES PREPARATION OF REPORTS & MISCELLANEOUS	9.73
MANAGEMENT/OVERHEADS	9.99
	$ 209.76

Expenditure reported by Aberfoyle Exploration Pty Ltd :

$1 133.08

AFMECO PTY. LTD.
11-13 Lucknow Place, West Perth, Western Australia
P.O. Box 526, West Perth, Western Australia, 6005
Telephone: (09) 321 9618, 321 9681
Telex: AFMECO 92077 Perth

MQ:pz 81-5507 December 7, 1981

0013

The Director General
Department of Mines and Energy
PO Box 151
EASTWOOD SA 5063

Dear Sir,

Mining Act 1971-1978
Exploration Licenses Nos. 580, 694 and 859
EL580, 3rd Quarter, Year 2 Period 16.7.81 to 15.10.81
EL694, 1st Quarter, Year 2 Period 11.8.81 to 10.11.81
EL859, 1st Quarter, Year 1 Period 20.7.81 to 19.10.81

These exploration licences are subject to a Heads of Agreement venture between Afmeco Pty Ltd and Aberfoyle Exploration Pty Ltd, approved by the Minister August 8, 1979. During the periods covered by the various quarters an integrated exploration programme was carried out over the areas encompassed by the EL's. Details are as follows:

(i) Geophysical Review and Results

A review of all the magnetometer and gravity survey data gathered in the preceding quarters was completed. Four magnetic anomalies were selected for drilling. A programme was also formulated to test:

(a) a hypothetical unconformity between the Tarcoola Beds and the Hutchison Group,

(b) gravity anomalies exposed by the surveys.

(ii) Drilling

The Wallis Drilling Company was contracted to carry out aircore, diamond and hammer drilling on the selected sites.

../2/

0014

Drilling commenced in early September 1981 and was completed on October 20, 1981.

Eight holes were drilled for a total aggregate depth of 542.65 metres.

(iii) Drilling Results

The four restricted magnetic anomalies drilled proved to be of little interest. Two anomalies correspond to magnetic granites, the others are due to basic intrusives.

North-west of the Wilgena Hill locality two holes were drilled to study a hypothetical Tarcoola Beds/Hutchison Group unconformity. One hole intersected a thick section of the Tarcoola Beds consisting of an interbedded quartzite/shale which was underlain by a conglomerate resting on top of basic volcanics. The second hole, further south, encountered a banded iron formation interlayered between two volcanic units, the volcanics may correspond to the Gawler Range Volcanics.

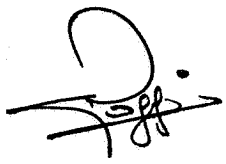
Ten kilometres due south of Tarcoola, the remaining two holes were drilled into separate gravity highs. One hole intersected 10 metres of low metamorphics before terminating in basic rocks of the Mulgathing Complex. The second hole was terminated at a shallow depth with indeterminate results.

(iv) Conclusions

All this time the partners are assessing the results of this drilling programme and the implications they hold in respect to the economic potential of the area.

Please find enclosed for your information and retention, statements of expenditure for each exploration license covered by this report.

Yours faithfully,
AFMECO PTY LTD



J.-P. Poggi
Managing Director

Enc.

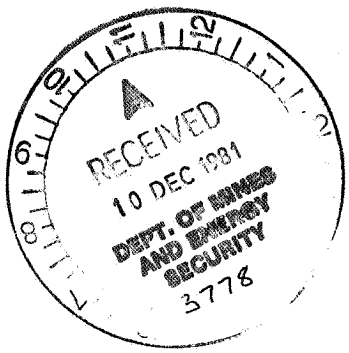
0015

STATEMENT OF EXPENSES RELATING TO EXPLORATION PROGRAMME
EL580 QUARTER 16.7.81 to 15.10.81

Personnel (Field Work, Evaluation, Office Work)	45.36
Management/Overheads	2.27
	$47.63

Commitment: $50,000.00

Permit Year Ends: 15.1.82



AFMECO PTY. LTD.

11-13 Lucknow Place, West Perth, Western Australia
P.O. Box 526, West Perth, Western Australia, 6005
Telephone: (09) 321 9618, 321 9681
Telex: AFMECO 92077 Perth

MQ/ds 82-0499

0016

25th February, 1982

The Director General,
Department of Mines and Energy,
P.O. Box 151,
EASTWOOD S.A. 5063

Dear Sir,

Mining Act 1971 to 1978
Exploration Licence No. 580
4th Quarter Report, Year 2,
Period 16.10.81 to 15.1.82

Exploration Licence No. 580 is subject to a Heads of Agreement venture between AFMECO Pty Ltd and Aberfoyle Exploration Pty Ltd, approved by the Minister on August 8th, 1979.

During the period covered by this report no field work was conducted within the area of the tenement. The quarter was devoted to the compilation and collation of data collected during previous quarters.

Please find attached a statement of expenditure for the period covered by this report.

Yours faithfully,
AFMECO PTY LTD

J.-P. POGGI,
Managing Director

Encl.:

STATEMENT OF EXPENSES RELATING TO EXPLORATION PROGRAMME
E.L. 580 QUARTER 16.10.81 to 15.1.82

0017

	$
PERSONNEL (FIELD WORK, EVALUATION, OFFICE WORK)	120.08
MATERIAL (DIRECT)	0.12
TRAVEL, ACCOMMODATION (DIRECT)	5.29
CONTRACTS, SUPPLIES	-
DRAFTING SERVICES, PREP. OF REPORTS & MISCELLANEOUS	3.51
MANAGEMENT/OVERHEADS	6.45
	$ 135.45

0018

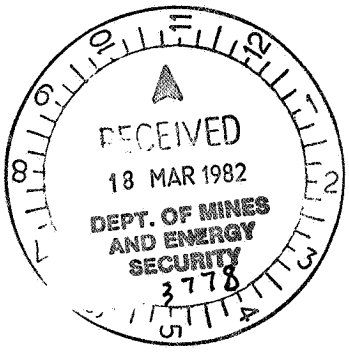
AFMECO PTY. LTD.

REPORT No WY82.1

TARCOOLA PROJECT

FINAL REPORT ON EL.580

by D. BENKO



Whyalla

February, 1982

CONTENTS

0019

FIGURE

APPENDIX

PLATES

SUMMARY

0020

The joint venture of Aberfoyle Exploration Pty., Ltd., and AFMECO Pty., Ltd., carried out an exploration program over E.L. 580 to -

- determine uranium potential in Tertiary sediment.
- determine uranium and base metal potential of the basement.

The exploration work included radiometric and magnetic surveys, a seismic survey, ground magnetics and gravity surveys and drilling.

The results obtained were disappointing and consequently relinquishment of the area was recommended.

1. INTRODUCTION 0021

E.L. 580 was granted to Aberfoyle Exploration Pty., Ltd., and AFMECO Pty., Ltd., on the 16.1.80.

1.1 AIM

The area was applied for as an extension of the main working area (E.L. 407 and 439) where uranium mineralisation was encountered in tertiary sediments.

A secondary aim was to study the basement and its potential for uranium or base metal mineralisation.

1.2 LOCATION AND ACCESS

The area lies within the Tarcoola 1:250,000 sheet area a few km. S of the Tarcoola settlement. In addition to the railway and telephone, food and fuel can be obtained at the settlement but no other support facilities are available. Tarcoola is 500 km. by road from Whyalla via Highway 1 and then the railway road from Kingoonya. Access from Tarcoola to the E.L. is very poor along station tracks and the dog fence. Vehicle movement within the area is very limited even for the light ones, due to the many E - W trending sand dunes.

1.3 PREVIOUS WORK

The TARCOOLA 1:250,000 sheet has been mapped by the SADME and the preliminary map and notes are available (Daly 1975).

Cross cutting gold bearing quartz veins near the Tarcoola townsite have been spasmodically worked since 1893. Several companies have explored the area for base metals, gold, tin and iron ore. All projects were terminated without success. In 1974 Nissho-Iwai (Aust.) Pty., Ltd., unsuccessfully drilled for U in a tertiary channel near Mulgathing, 76 km. from Tarcoola (Nissho-Iwai, 1974). Lignite was, however, encountered in the channel.

In the Tarcoola area and over the whole Gawler Craton tertiary channel sediments have been investigated for their uranium and coal potential by numerous exploration companies and government departments. No significant uranium has been found but lignite is common throughout the region, including near Malbooma, where it was discovered initially in an early water bore and later by the SADME (Hillward 1964; Ward, 1940).

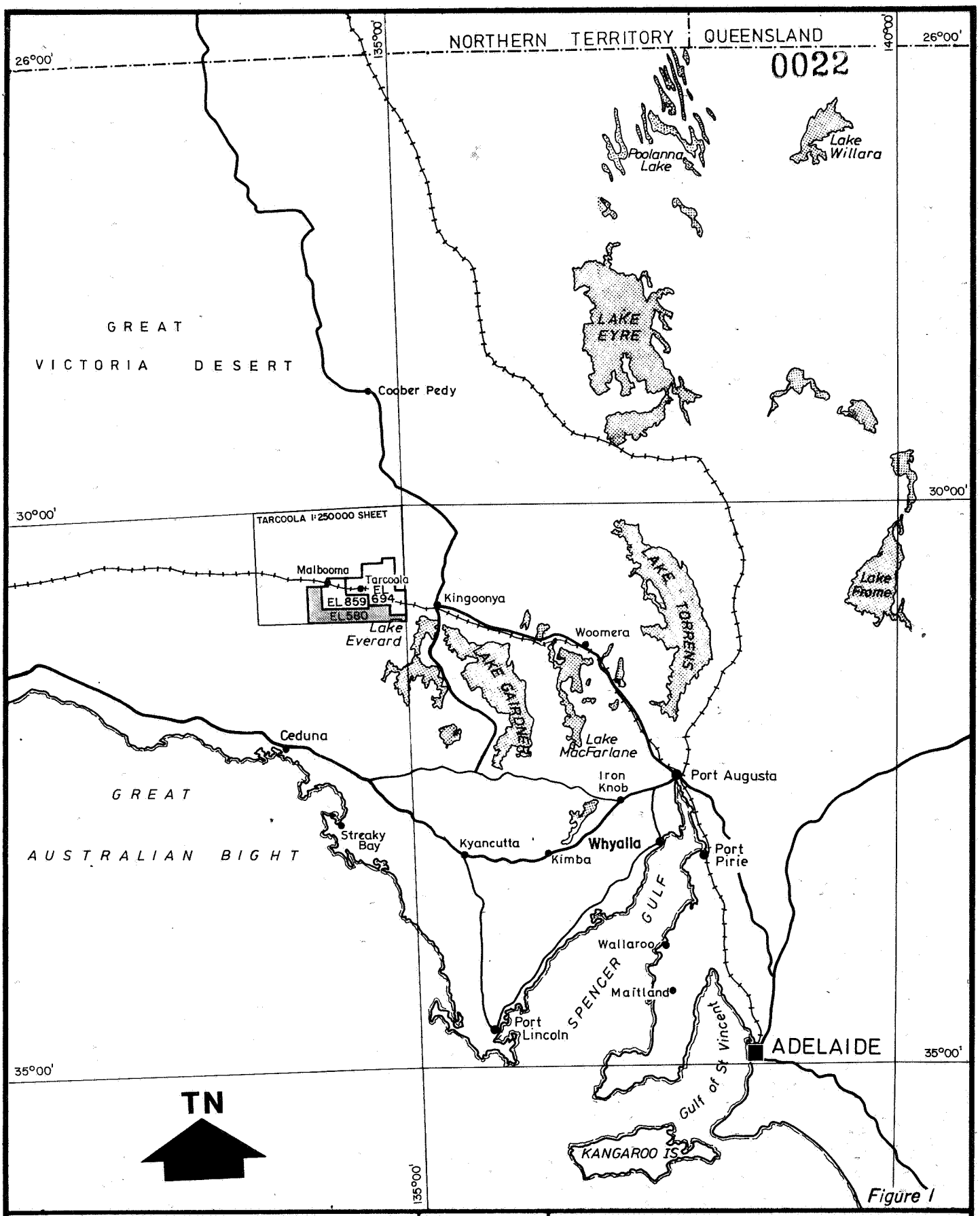


Figure 1

DRAWN	R.P.S.
DATE	March, 1979
GEOLOGY	
APPROVED	
DWG. NO	AFMAP 2048
REV NO	1.

AFMECO PTY. LTD.

SCALE 1:5 000 000 — 0 50 100 150 200 250 Kms

TARCOOLA PROJECT
E.L. 580

LOCATION AND TENURE MAP

To accompany Report No. WY. 82. 1.

1.4 TARGET AND GEOLOGICAL SETTING

The TARCOOLA 1:250,000 map sheet area lies within the northern part of the Gawler Craton, an area of crystalline basement stabilised in the Precambrian (ca. 1500 Ma) and now partly covered by sediments of permian to recent age. Recent sand dunes mantle at least half of the sheet area.

The oldest rocks are the metasediments of the Mulgathing Complex, which were metamorphosed to granulite facies between 2500-2300 Ma. The complex consists of quartzo-feldspathic gneisses, quartzites, banded iron formation, and basic sills and flows. The rocks have undergone retrograde metamorphism, probably during the Kimban Orogeny (1800-1600 Ma), and have been intruded by syntectonic granites.

The Tarcoola Beds, a thick middle proterozoic sequence of quartzites, feldspathic sandstones, siltstones, and tuffs overlies the Mulgathing Complex and is in part contemporaneous with the acid Gawler Range Volcanics. The final phase of igneous activity, at about 1480 Ma, resulted in the intrusion of granitic stocks into all the older rocks.

The rocks of the Mulgathing Complex and the Gawler Range Volcanics are potential U source rocks but information as to specific U source is scarce. However, a pink leucogranite in the Partridge Range, in the NE of E.L. 407, contains anomalous U with up to 26 ppm and radioactivity of 3-10 times background.

The known phanerozoic sedimentation consists of an unnamed permian carbonaceous mudstone (sub-surface only) followed by the Cretaceous Cadnaowie Formation and the Bulldog Shale which outcrop in the east of the Tarcoola sheet area. Quaternary superficial deposits overlie lignite and fluvial carbonaceous sands and clays of Tertiary age. These sediments are considered to be the continental equivalent of the marine mid-Eocene Pidinga Formation in the Eucla Basin. With the underlying basement rocks as the primary U sources, the Tertiary channel sediments are the target host rocks for redox front type sedimentary uranium accumulations.

In the E.L. area the outcropping is very scarce and mostly the Hiltaba type granite. Some Mulgathing Complex rock and the Tarcoola Beds crop out too.

2. WORK COMPLETED

0024

- Airborne magnetic and radiometric surveys by Austirex over approximately 140 km^2 in the eastern side of the area.
- Seismic refraction survey by L. Starky and Associates.
- Drilling of seven holes of 251 m. total by Wallis Drilling Co., Pty., Ltd.
- Ground magnetic and Gravity survey.

3. RESULTS

0025

3.1 AIRBORNE SURVEY

a) Equipment

1. Survey aircraft; Government Aircraft Factories NOMAD, Model 22B, Registration number VH-FZP.
2. Airborne Proton Magnetometer: Varian Model 49-595N Sensor and Aldetec magnetometer.
3. Ground station Proton Magnetometer: Geometrics 826A magnetometer with a sensitivity of 1.0nT.
4. Airborne Gamma-ray Spectrometer: Geometrics Model GR-800 with multichannels of 256 and 128 channels for main and upwards crystal arrays. Energy windows set for potassium at 1.37 to 1.57 Mev, uranium at 1.66 to 1.86 Mev, thorium at 2.40 to 2.80 Mev, Total Count at 0.4-3.0 Mev, and cosmic background 3.0 to 6.0 Mev.
5. Crystal Detectors: Geometrics Model 3072/512R with sodium iodide (thallium-activated) crystals with the main detector containing 50.34 litres and the upwards-looking detector containing 8.39 litres. All crystals are optically coupled to matched photo-multiplier tubes.
6. Radar Altimeter: Collins ALT.50 altimeter, measuring vertical distances from surface to aircraft with range 0 to 610 metres and accuracy $\pm$2%.
7. Doppler Navigation System. Sperry-Decca type 72 with TANS Computer 94420. Navigation in latitude-longitude, grid, or range and bearing.
8. Aerial Tracking Camera: Vinten Mk3 scientific 16 mm frame camera with wide-angle lens.
9. Digital Data Acquisition System: Sonotek Model IGSS, which is a soft-ware-controlled mini computer with 4K core memory and 2 Digi-Data 9 track tape decks.
10. Analogue Recorder: Geometrics Model GAR-6 with 6 channels of data provision.

b) Survey Specifications

- Altitude 100 m.
- Direction of lines N - S
- Spacing 400 m.

c) Data Analyses

Total Count: stacked profile 1:100,000 (Pl 2)

Total count stacked profile delineates essentially granitic outcrop from a big area to a very small area (100 m^2).

The Gawler Volcanics and salt lakes give high counts but can be differentiated from granite by reference to other channels.

Uranium: contours and stacked profiles (Pl 3 and 4)

For contours, the same result as for Total Count but the Gawler Volcanics have a lower count than granite and salt lake anomalies. This method could be used for mapping outcropping granite.

Stacked profiles appear very useful for checking uranium anomalies but contours are more useful for mapping.

Thorium: stacked profile (Pl 5)

Thorium stacked profiles give only granitic contours. The Gawler Volcanics and salt lake anomalies do not appear. Comparison with Total Count permits the differentiation of Gawler Volcanics and salt lakes from granitic outcrop.

Potassium: stacked profile (Pl 6)

Potassium stacked profile gives response in granite, Gawler Volcanics, salt lakes, Tarcoola Beds, and Lower Proterozoic. These last two units have lower counts than the magmatic rocks but without other methods it is impossible to differentiate each one from another. In this case only the Total Magnetic Field (TMF) is able to make the difference between the formations.

U/K Ratio: contours and stacked profile (Pl 7 and Pl 8)

In both, strong responses occur over salt lakes (uranium high and very low potassium content).

Response over Tarcoola Beds permits the mapping of this sedimentary sequence.

Contours look better than stacked profiles but it is interesting to see that stacked profile gives only salt lakes and calcrete features.

Th/K Ration: stacked profile (Pl 9)

Stacked profiles of Th/K Ratio are not useful in the Tarcoola area and give only a small peak over proterozoic B.I.F.

U/Th Ratio: stacked profile (Pl 10)

Only salt lakes and calcretes appear. Other small anomalies are very difficult to correlate to anything.

Magnetic Field: contours and stacked profile (Pl 11 and 12)

Magnetic contours give a very good signature for geology. It is possible to discriminate granite from volcanics, Tarcoola Beds from Lower Proterozoic. Magnetic contours also give a structural frame.

The geological interpretative map in Pl 14 and 15 is essentially derived from the magnetic contour map interpretation. It is really the only tool useful in a non-outcropping area.

3.2 SEISMIC SURVEY

A seismic refraction survey was carried out to define the depth to the basement and consequently the paleodrainage system.

The major part of the survey was actually over the neighboring E.L., only part of a line crossing to E.L. 580 (Pl 16).

3.3 DRILLING

The drilling was carried out to define Tertiary sediments and associated uranium mineralisation. Most of the holes went to the basement to get geological information.

DRILLING SUMMARY

HOLE NO.	COORDINATES	DATE	TOTAL DEPTH	REMARKS
TLM 10	4815E 5875N	28.3-28.3.80	23	basement 17-23 m quartz-feldspar granite
TLM11	4778E 5565N	29.3-29.3.80	22.2	granite, ryolite. hole stopped due to inflow of slurry
TLM 17	4841E 5878N	2.4.80 2.4.80	62.5	basement 33-62.5 silicified porphyritic trachyte
THW 17	4191E 5929N	8.4.80 9.4.80	38.5	Coal 19-34.5 m basement 34.5-38.5 stressed granite
THW 18	4162E 5885N	9.4.80 9.4.80	41.8	17-41.8 basement sheared biotite-garnet gneiss
THW 22	4140E 5962N	13.4.80 13.4.80	7.5	alluvium overlying impenetratable silcrete
THW 23	4136E 5970N	13.4.80 13.4.80	55.5	drilling stopped due to high torque caused by running sands.

The holes were logged by γ and neutron probe, the complete log is attached to this report (App. 1).

All analytical results are included (App. 2) these are coal analyses from TLM 17, Petrology from TLM 11 and 17 and THW 17, 18, rock analyses from TLM 10, 11 and 17 and THW 18, full silica from TLM 10, 11 and 17, THW 17 and 18, semi-quantitative spectro-

graphic analyses from TLM 10, 11 and 17, THW 17 and 18.

3.4 GROUND GRAVITY AND MAGNETIC SURVEY

A gravity and level survey was carried out by Geoex Pty., Ltd., (July '81) over 20 km.

3.4 (1) EQUIPMENT

1. Worden Gravimeter Serial No. W708.
2. Wilde T16 Theodolite
3. AGA Geodimeter (E.D.M.) Model 14A
4. Zeiss N1025 Optical Level

3.4 (2) SURVEY DETAILS

A line of 22 km. along the dog fence trending approximately N-S. Gravity readings were taken every 100 m. using standard looping procedures with a maximum duration of 1½ hours (Pl 17)

The northern 5 km. of the above line was surveyed by Magnetometer (Geometrics G 186 P.P) at 25 m. stations (Pl 17).

As a result of the survey it was concluded that the alluvium is directly lying over the Mulgathing basement complex.

0029

APPENDIX No. 1

BORE HOLE LOGS

LOCATION	
State:	S.A.
Area:	TARCOOLA
Project:	
Prospect:	
Lat ° ' "	Long ° ' "

GAMMA RAY

	Initial run	2		4
Logged depth (Rt) m	21·9		22·2	
Range (Full scale)	200		500	
Time constant (Sec.)	5 sec		3 sec	
Paper speed cm/hr	1		1	
Logging speed m/min	6		6	
Bkgnd count (cps)	6			
Probe No.	600			
Size (dia.) (mm)	35		35	
Type NaI	½ x ½		Neutron/Gamma	
Standard (cps)	597			
Dead time	6		6	
Amp. Gain	520		500	
Ratemeter No.				
Bore hole medium				
Mud density				
Digital readout m	·2			
Time base (sec)	1			
Upper Disc.				
Lower Disc.				

HOLE NUMBER	TLM-10
Collar elev.	
Depth drilled:	23 m.
CASING DATA	HOLE DATA
Wall size	Dia. N from 0 to TD
Dia. (inside)	Dia. from to
Cased from to	Dia. from to
Cased hole	Non-cased hole ✓
Sampled interval	Type
1 METRE	R.C.

INTERPRETATION DATA

Probe No.	Standard (cps)	K factor
600	597	1.34 x 10⁻³

REMARKS

CLIENT:	AFMECO DATE: 28/3/80
Claim:	
Owned by	
Operated by	
Unit Operator	RICHFIELDT/MCAMBLON
Unit No.	AL-6 Office: ADELAIDE

ELECTRIC

	1	2	3	4
Logged depth				
Resist. scale				
S.P. scale				
Paper speed				
Logging speed				
Probe size				
Type				
Bias				

CALIPER

Logged depth				
Scale				
Paper Speed				
Logging Speed				
Arm Length				
Max. Def.				

AFMECO PTY. LTD. HOLE No. TLM-10

PROJECT 123 1:250000 MAP SHEET SH53-10

SCALE: 1:200

DATE BEGUN: 28/3/80

DATE TERMINATED: 28/3/80

TERMINATED BY: G.R.S.

Reasons for termination: Basement

Collar Coords: AMG/GRID: 4815 E, 5875 N, Total Depth: 23 m, Collar R.L: m,

GEOLOGIST G.R.S.

CONTRACTOR Wallis

DRILL

DRILLING TECHNIQUES Air core

Standing water m, Sample No.

Water cut at m, m, m,

HOLE CONDITIONS WHILE LOGGING

Water ☐ Mud ☐

Additives used

Open hole ☐ In pipe ✓

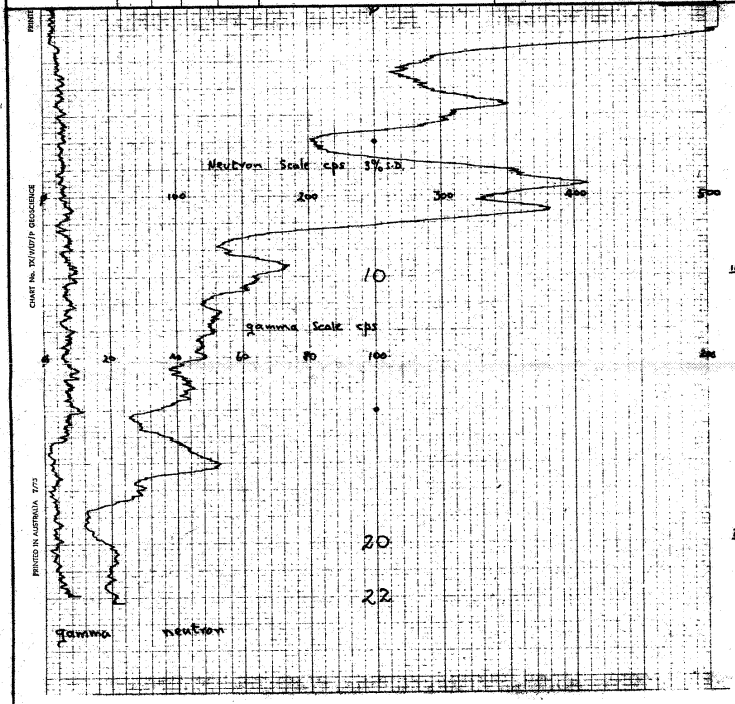
CASING

Size	From	To

LITHOLOGY

Coarse gr. sst. Medium gr. sst. Fine gr. sst. Siltstone Shale Coal Gravel carb. matter Weathered Fresh basement Silcrete Gypsum Surficial deposits

OXIDATION REDUCTION: OXIDISED | REDUCED | MIXED



Depth	Lithology	Redox	Description
			surficial deposits - ferricrete, fg-granule sand, weak Fe cement,
			mottled green-brown clay + sand, mg-granule poorly sorted, clear + smoky SA-SR qtz.
10			gravel + minor red + green clay, granules + pebbles (≤ 20 mm), clear, red stained SA-SR qtz.
			brown (minor green) clay + sand f-cg (coarser downwards) clear, smoky + red stained SA-SR qtz.
			weathered granite, similar to TLM 11.
20			

LOCATION		HOLE NUMBER: TLM - 11	CLIENT AFMECO DATE 29/3/80
State: S.A.		Collar elev.	Claim:
Area: TARCOOLA		Depth drilled	Owned by
Project:		CASING DATA / HOLE DATA	Operated by
Prospect:		Wall size / Dia. N from 0 to T.D	Unit Operator: BLICHFELDT/NICHOLSON
Lat ° ' "	Long ° ' "	Dia. (inside) / Dia. from to	Unit No. AL-6, Office ADELAIDE
GAMMA RAY		Cased from to / Dia. from to	ELECTRIC
	INITIAL RUN 2 Neutron 4	Cored hole / Non-cored hole ✓	1 2 3 4
Logged depth (ft.) mm.	21·2 21·5	Sampled interval / Type	Logged depth
Range (Full scale)	200 500	1 METRE R.C.	Reust. scale
Time constant (Sec.)	5% 3%	INTERPRETATION DATA	S.P. scale
Paper speed cm/min	1 1	Probe No. / Standard (cps) / K factor	Paper speed
Logging speed m/min.	6 6	600 573 1·34 x 10⁻³	Logging speed
Bkgnd. count (cps)	4		Probe size
Probe No.	600		Type
Size (dia.) (mm)	35 35	REMARKS	Bias
Type NAI	½ x ½ Neutron/Neutron		CALIPER
Standard (cps)	573		Logged depth
Dead time	6 6		Scale
Amp. Gain	520 500		Paper Speed
Ratemeter No.			Logging speed
Bore hole medium			Arm Length
Mud density			Max Def
Digital readout m	·2		
Time base (sec)	1		
Upper Disc.			
Lower Disc.			

AFMECO PTY. LTD. HOLE No. TLM - 11

PROJECT 123 1:250000 MAP SHEET SH 53 - 10

SCALE: 1:200

DATE BEGUN: 29/3/80 Collar Coords: 4775 E, Total Depth: 22·2 m,

AMG/GRID: 5560 N, Collar R.L.: m,

DATE TERMINATED: 29/3/80

TERMINATED BY G.R.S.

Reasons for termination: Basement

GEOLOGIST : G.R.S.

CONTRACTOR : Wallis

DRILL :

DRILLING TECHNIQUES : Air core

Standing water m,

Water cut at m, m, m,

HOLE CONDITIONS WHILE LOGGING

Water ☐ Mud ☐

Additives used

Sample No.

Open hole ☐ In pipe ☑

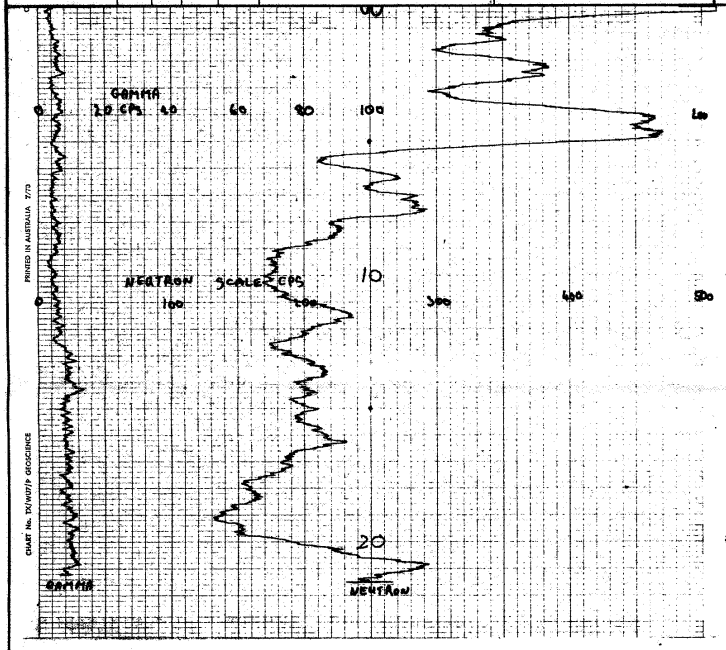
CASING

Size	From	To

LITHOLOGY

Coarse gr. sst. / Medium gr. sst. / Fine gr. sst. / Siltstone / Shale / Coal / Gravel / carb. matter / Weathered/Fresh basement / Silcrete / Gypsum / Surficial deposits

OXIDATION REDUCTION: OXIDISED | REDUCED | MIXED



Depth	Lithology	Redox	Description
	~	I	Surficial deposits – ferricrete + fg- granule sand, weak Fe cement
	b		weathered granite
10	b		
	b		
	b		
	b		
20	b		
	B		"Granite"

LOCATION		HOLE NUMBER: TLM-17	CLIENT: AFMECO DATE: 2/4/80
State: S.A.		Collar elev.	Claim:
Area: TARCOOLA		Depth drilled: 62 m.	Owned by:
Project:		CASING DATA	HOLE DATA	Operated by:
Prospect:		Wall size	Dia. N from 0 to TD	Unit Operator: NICHOLSON
Lat ° " Long ° "		Dia (inside)	Dia. from to	Unit No. AL-6 Office: ADELAIDE
GAMMA RAY		Cased from to	Dia. from to	ELECTRIC
	INITIAL RUN 2 Neutron 4	Cored hole	Non-cored hole ✓	1 2 3 4
Logged depth (RE) M	50 50	Sampled interval	Type	Logged depth
Range (Full scale)	200 500	1 METRE	R.C.	Resist. scale
Time constant (Sec.)	5.2 3¼	INTERPRETATION DATA		S.P. scale
Paper speed cm/hr	1 1	Probe No.	Standard (cps)	K factor	Paper speed
Logging speed m/min	6 6	600	561	1.34 × 10⁻³	Logging speed
Bkgnd count (cps)	5				Probe size
Probe No.	600 GAM/1	REMARKS			Type
Size (dia.) (mm)	35				Bias
Type NAS	½ × ½ Am Be	Probe stuck in hole at 54 m.			CALIPER
Standard (cps)	561				Logged depth
Dead time	6 6				Scale
Amp. Gain	520 500				Paper Speed
Ratemeter No					Logging speed
Bore hole medium					Arm Length
Mud density					Max. Def.
Digital readout M	.2				
Time base (sec)	1				
Upper Disc					
Lower Disc					

AFMECO PTY. LTD. HOLE No: TLM-17

PROJECT 123 1:250000 MAP SHEET SH 53-10

SCALE: 1:200

DATE BEGUN: 2/4/80

DATE TERMINATED: 2/4/80

TERMINATED BY: G.R.S.

Reasons for termination: Basement

Collar Coords: 4841 E, Total Depth: 62·5 m,
AMG/GRID: 5878 N, Collar R.L: m,

GEOLOGIST : G.R.S.
CONTRACTOR : Wall's
DRILL :
DRILLING TECHNIQUES : Air core

Standing water m,
Water cut at m,
m,
m,

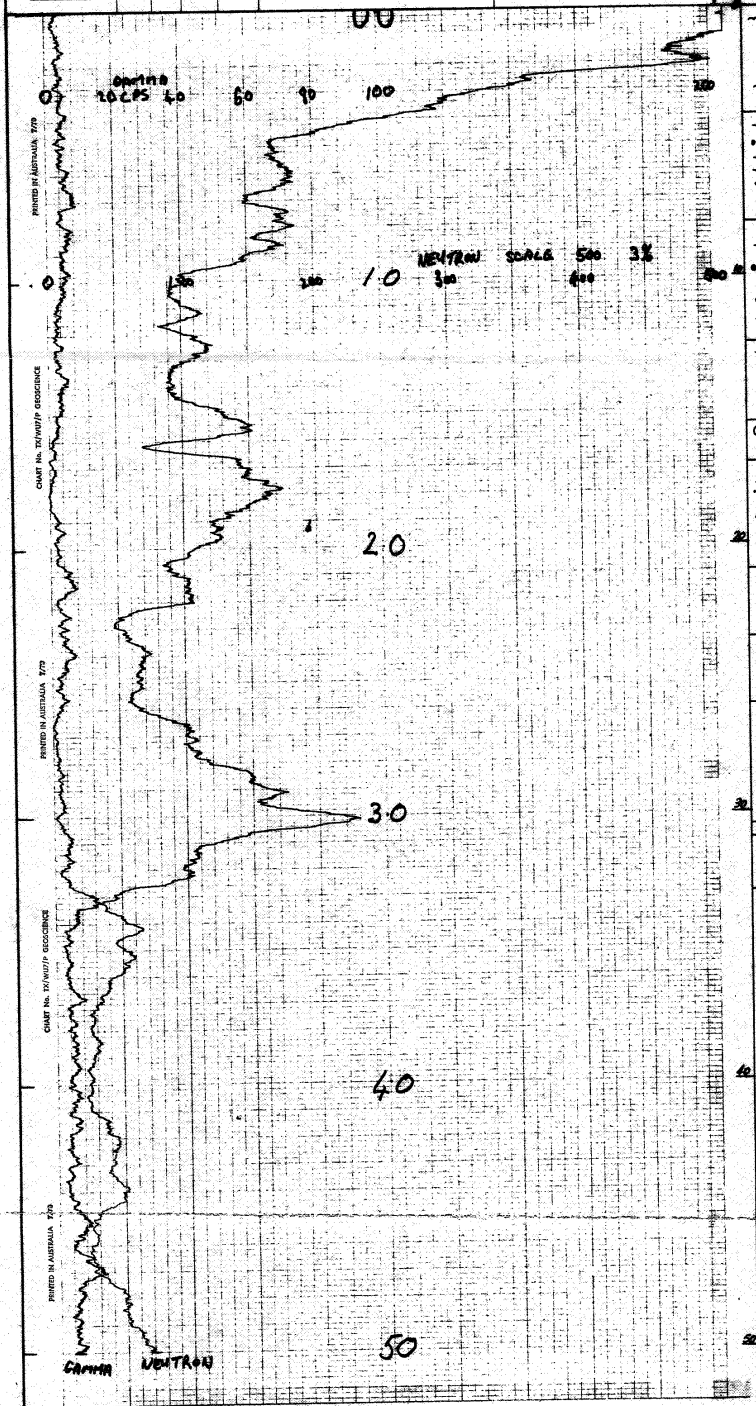
HOLE CONDITIONS WHILE LOGGING
Water ☐ Mud ☐
Additives used
Open hole ☐ In pipe ✓

CASING

Size	From	To

LITHOLOGY
Coarse gr. sst. | Siltstone | Gravel | Silcrete
Medium gr. sst. | Shale | Carb. matter | Gypsum
Fine gr. sst. | Coal | Weathered/fresh basement | Surficial deposits

OXIDATION REDUCTION: OXIDISED | REDUCED | MIXED

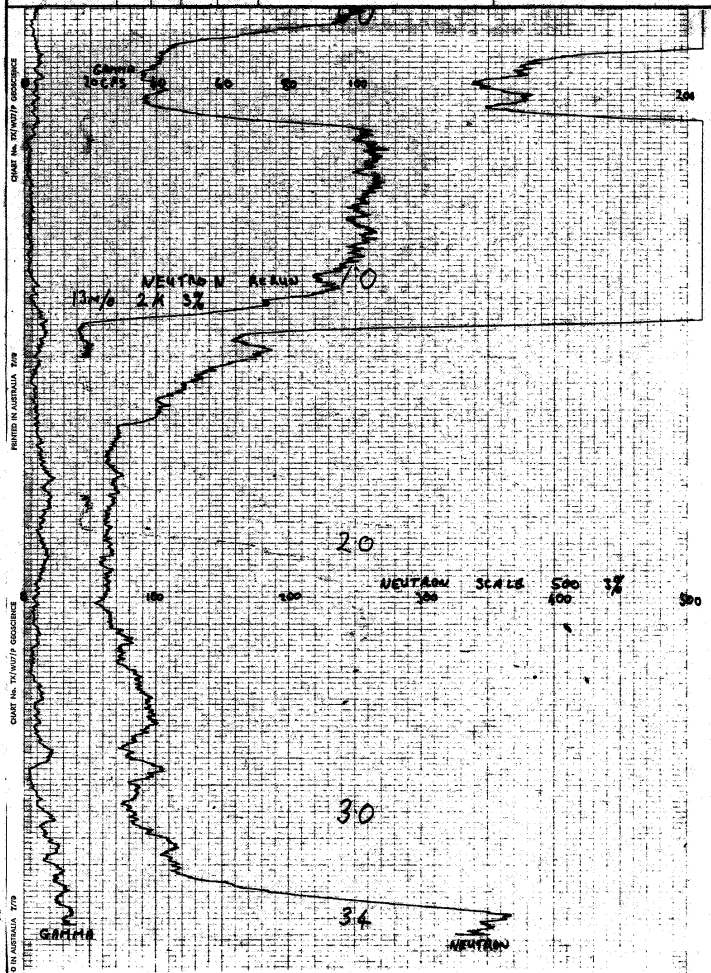


Depth	Lithology	Redox	Description
			surficial deposits - calcareous + Fe cemented sand + red brown clay, fg-granule SA-SR qtz.
			red brown clay + sand, f-vcg, clear SA-SR qtz.
			lt. green clay + sand, as above
			sand + brown clay, f-cg, mod-poorly sorted clear SA qtz.
			lt. green clay, indurated at top
			brown clay
			gravel, vcg-granule, mod. sorted, clear, milky + rose qtz. SR-SA.
			sand + minor lt. green clay fg, well sorted clear qtz.
			greenish clay + sand, fg-granule, poorly sorted clear SA qtz.
			mottled lt. green > brown + yellow indurated clay
			sand + mottled brown-greenish clay, f-mg, mod. sorted clear SA qtz.
			microconglomerate, mg-pebbles, clear SR-SA qtz. in mod. hard white clay matrix
			sand, f-mg, well sorted clean, clear SA-SR qtz. ff. white clay
	b		decomposed basement - lt. greenish - lt. yellowish clay + minor clear qtz.
	b		
	b		
	b		
	b		- white + green clay + minor clear A qtz.
	b		
	b		
	b		
	b		
	B		Fresh basement - "silicified porphyritic trachyte and a few fragments of vertically foliated green mica rock.
	B		
	B		
	B		
	B		

LOCATION	HOLE NUMBER: THW17	CLIENT: AFMECO DATE: 9/4/80	AFMECO PTY. LTD. HOLE No. THW 17
State: S.A.	Collar elev.	Claim:	PROJECT 123 1:250000 MAP SHEET SH 53-10
Area: TARCOOLA	Depth drilled: 38.5	Owned by:	SCALE: 1:200
Project:	CASING DATA / HOLE DATA	Operated by:	
Prospect:	Well size / Dia. (inside) from 0 to T.D.	Unit Operator: NICHOLSON	
Lat ° ' " Long ° ' "	Cased from to / Dia. from to	Unit No. AL-6 Office: ADELAIDE	DATE BEGUN: 8/4/80 Collar Coords: 4191 E, Total Depth: 38.5 m,
GAMMA RAY	Cored hole / Non-cored hole ✓	ELECTRIC	AMG/GRID: 5929 N, Collar R.L: m,
INITIAL RUN / 2 / RESAMPLE Neutron / RESAMPLE Neutron	Sampled interval: 1 METRE / Type: R.C.	1 2 3 4	DATE TERMINATED: 9/4/80
Logged depth (m) m 34.2 / 34.6 / 13	INTERPRETATION DATA	Logged depth	TERMINATED BY: G.R.S.
Range (Full scale) 200 / 500 / 2K	Probe No. / Standard / (cps) / K factor: 600 / 576 / 1.34×10^{-5}	Resist. scale	GEOLOGIST: G.R.S.
Time constant (Sec.) 5% / 3% / 3%		S.P. scale	CONTRACTOR: Wallis
Paper speed 1 / 1 / 1		Paper speed	DRILL:
Logging speed 6 / 6 / 2		Logging speed	DRILLING TECHNIQUES: Air Core
Bkgnd. count (cps) 5		Probe size	HOLE CONDITIONS WHILE LOGGING
Probe No. 600 / GPN-1 / GPN-1		Type	Water ☐ Mud ☐
Size (dia.) (mm) 35		Bias	Additives used
Type NAI 4"x4" / Am Be	REMARKS	CALIPER	Standing water: Sample No. m,
Standard (cps) 576		Logged depth	Water cut at: m, m, m,
Dead time 6 / 6 / 6		Scale	Open hole ☐ In pipe ✓
Amp. Gain 520 / 500 / 500		Paper Speed	CASING: Size / From / To
Ratemeter No.		Logging speed	
Bore hole medium		Arm Length	
Mud density		Max. Def.	
Digital readout m .2 / 1			
Time base (sec) 1			
Upper Disc.			
Lower Disc.			

LITHOLOGY: Coarse gr. sst. / Medium gr. sst. / Fine gr. sst. / Siltstone / Shale / Coal / Gravel / Carb. matter / Weathered/fract. basement / Silcrete / Gypsum / Surficial deposits

OXIDATION REDUCTION: OXIDISED | REDUCED | MIXED



Depth	Lithology	Redox	Description
			surface alluvium - red stained f-mg qtz, SR-SA + minor red clay
			orange fg sand, fg, well sorted, clear + limonitic stained SR - SA qtz.
			lt. yellow sand, as above
10			Lt. brownish sand
			Lt. brownish sand, poorly sorted, f-cg, clear + brown stained SA - SR qtz.
			Lt. brownish grey clay, tr. white mica flakes
			Lt. brownish clay + minor fg. qtz.
			dk. brownish - greyish clay + minor fg. qtz. sand
			dk. brownish - greyish clay + tr. white mica flakes + vfg black grains of carb. matter.
20			very dk. brown - black coal
			mod. hard, coming up as chips
			v. little return, mainly water with carbonaceous matter in suspension
			chips of v. dk. brown - black coal
30			black fg sand, well sorted clear qtz. ab. fg. dissem. carb. matter + tr. frags black coal.
			Dk. brownish black coal with ab. white mica on some (? bedding) surfaces.
	b b		fragments of weathered basement - bluish - clear A qtz + whitish clay.
	B B		"stressed granite"
40			

LOCATION	
State:	S.A.
Area:	TARCOOLA
Project:	
Prospect:	
Lat ° ' "	Long ° ' "

HOLE NUMBER:	THW18
Collar elev.	
Depth drilled:	41.8
CASING DATA	HOLE DATA
Wall size	Dia. N from 0 to TD
Dia. (inside)	Dia. from to
Cased from to	Dia. from to
Cored hole	Non-cored hole ✓
Sampled interval	Type
1 METRE	R.C.

CLIENT:	AFMECO DATE: 9/4/80
Claim:	
Owned by:	
Operated by:	
Unit Operator:	NICHOLSON
Unit No.	AL-6 Office: ADELAIDE

ELECTRIC

	1	2	3	4
Logged depth				
Resist. scale				
S.P. scale				
Paper speed				
Logging speed				
Probe size				
Type				
Bias				

CALIPER

Logged depth				
Scale				
Paper Speed				
Logging speed				
Arm Length				
Max. Def.				

INTERPRETATION DATA

Probe No.	Standard (cps)	K factor
600	576	1.34×10^{-5}

REMARKS

GAMMA RAY	INITIAL RUN	2	NEUTRON	REPEAT
Logged depth (N)	M 40.2		40.6	16
Range (Full scale)	200		500	2K
Time constant (Sec.)	5%		3%	3%
Paper speed	1		1	1
Logging speed	6		6	2
Bkgnd count (cps)	5			
Probe No.	600		GPN-1	
Size (dia.) (mm)	35			
Type	NAI ½×½		AmBe	
Standard (cps)	576			
Dead time	6		6	6
Amp. Gain	520		500	500
Ratemeter No.				
Bore hole medium				
Mud density				
Digital readout M	-2			
Time base (sec)	1			
Upper Disc.				
Lower Disc.				

APMECO PTY. LTD. HOLE No. THW 18

PROJECT 123 1:250,000 - MAP SHEET SH 53 - 10

SCALE: 1:200

DATE BEGUN: 9/4/80 Collar Coords: 4162 E, Total Depth: 41.8 m,

DATE TERMINATED: 9/4/80 AMG/GRID: 5885 N, Collar R.L.: m,

TERMINATED BY: G.R.S.

Reasons for termination: Basement

GEOLOGIST : G.R.S.

CONTRACTOR : Wallis

DRILL :

DRILLING TECHNIQUES : Air core

Standing water : Sample No. m,

Water cut at : m, m, m,

HOLE CONDITIONS WHILE LOGGING

Water ☐ Mud ☐

Additives used

Open hole ☐ In pipe ☑

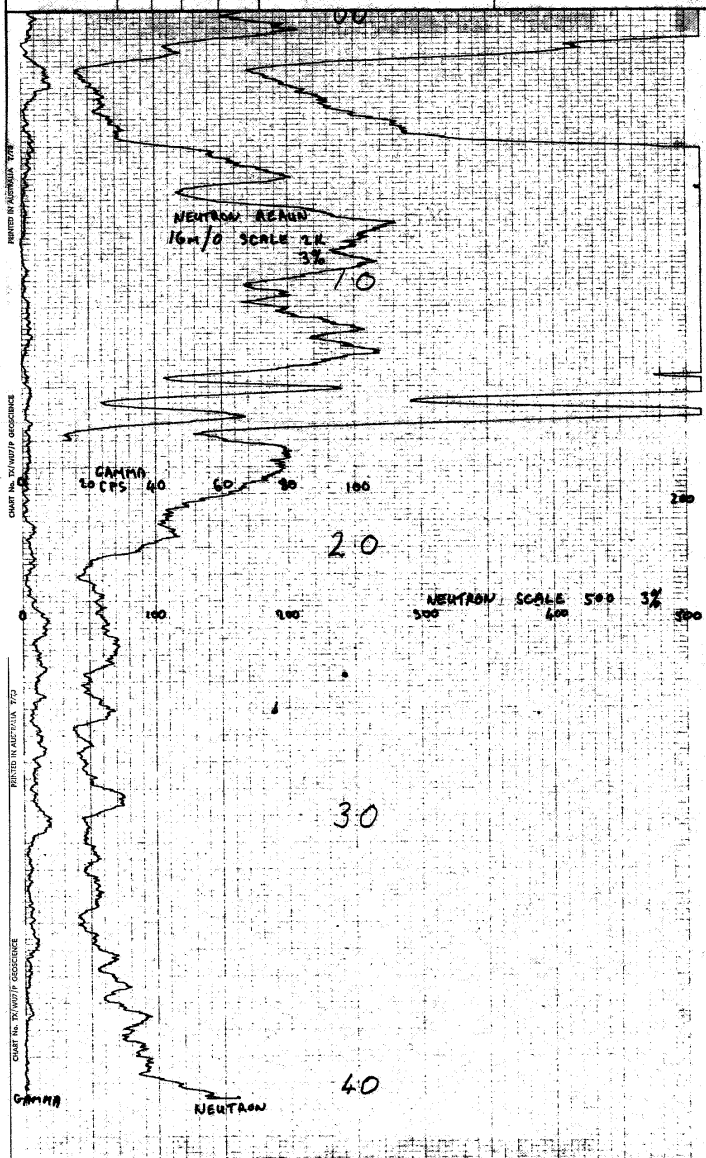
CASING

Size	From	To

LITHOLOGY

Coarse gr. sst. | Medium gr. sst. | Fine gr. sst. | Siltstone | Shale | Coal | gravel | Carb. matter | Weathered/fract. basement | silcrete | gypsum | surficial deposits

OXIDATION REDUCTION : OXIDISED | REDUCED | MIXED



Depth	Lithology	Redox	Description
	m		dune sand, fg, well sorted (tr. coarser grains) red stained qtz.
			clay - various lt. brown-red shades
			whitish - minor red clay + minor fg sand clear qtz.
			whitish clay
			sand, fg well sorted, tr. lt. brownish-whitish clay.
10			whitish clay
			sand + whitish clay, f-mg, mod-well sorted clear SA - SR qtz.
			brown clay
			sand, f-cg, poorly sorted, clean, SR-SA qtz.
			brown clay
			sand, fg, well sorted, clean, clear, SA-SR qtz.
			whitish - brownish clay
	b		clear cg A qtz + whitish clay
20	b		yellow + green micaceous clay + cg clear A qtz.
	b		
	b		green clay rock
	b		
30	B		frags. of green clay / green mica rock plus white clay + qtz rock.
	B		
	B		
	B		"Sheared biotite - garnet gniess" - vertically foliated.
	B		
40	B		

PRINTED IN AUSTRALIA 7/79

CHART No. TK/W/P/P GEOSCIENCE

LOCATION
Strip:
Area:
Project:
Prospect:
Lat ° ' Long ° '

GAMMA RAY

	INITIAL RUN	2	3	4
Logged depth (ft.)				
Range (Full scale)				
Time constant (Sec.)				
Paper speed				
Logging speed				
Stripped count (cps)				
Probe No.				
Size (dia.) (mm)				
Type				
Standard (cps)				
Depth Ticks				
Amp. Gain				
Hydrostatic No.				
Bore hole medium				
Mud density				
Station number				
Time base (sec)				
Upper Disc.				
Lower Disc.				

HOLE NUMBER:
Collar elev.
Depth drilled:
CASING DATA / HOLE DATA
Well size — Dia. from to
Dia. (inside) — Dia. from to
Cased from to — Dia. from to
Cored hole / Non-cored hole
Sampled interval / Type

INTERPRETATION DATA

Probe No.	Standard	(cps)	K factor

REMARKS

No Geoscience log taken

CLIENT: DATE: / /
Claim:
Owned by:
Operated by:
Unit Operator:
Unit No. Office:

ELECTRIC

	1	2	3	4
Logged depth				
Resist. scale				
S.P. scale				
Paper speed				
Logging speed				
Probe size				
Type				
Bias				

CALIPER

Logged depth				
Scale				
Paper Speed				
Logging speed				
Arm Length				
Max. Def.				

APMISCO PTY LTD. HOLE No. THW 22

PROJECT 123 1:250000 MAP SHEET SH53-10

SCALE: 1:200

DATE BEGUN: 13/4/80
DATE TERMINATED: 13/4/80
TERMINATED BY: G.R.S.
Reasons for termination: Silcrete

Collar Coords: 4140 E, Total Depth: 7.5 m,
AMG/GRID: 5962 N, Collar R.L: m,

GEOLOGIST : G.R.S.
CONTRACTOR : Wallis
DRILL :
DRILLING TECHNIQUES : Air Core
Standing water : m, Sample No.
Water cut at : m, m, m,

CASING

Size	From	To

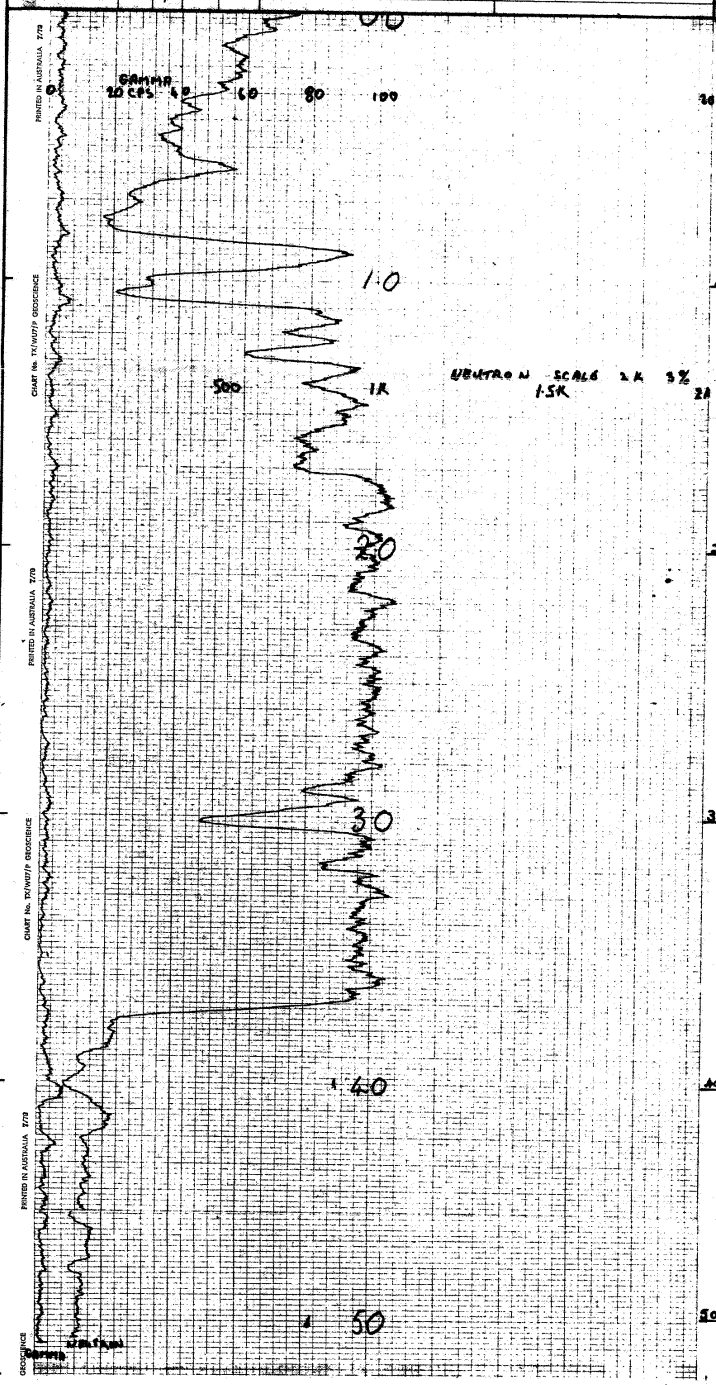
HOLE CONDITIONS WHILE LOGGING
Water ☐ Mud ☐
Additives used
Open hole ☐ In pipe ☐

LITHOLOGY
Coarse gr. sst. / Medium gr. sst. / Fine gr. sst.
Siltstone / Shale / Coal
Gravel / Carb. matter / weathered/fresh basement
Silcrete / Gypsum / Surficial deposits

OXIDATION REDUCTION: OXIDISED | REDUCED | MIXED

Depth	Lithology	Redox	Description
			Surficial deposits — ferricrete - weakly cemented f-mg sand + red clay.
7.5			7.5m Extremely hard silcrete.
10			

LOCATION		HOLE NUMBER: THW-23	CLIENT	DATE 13/4/80
State: S.A.		Collar elev.	Claim:	
Area: TARCOOLA		Depth drilled: 55·5 m	Owned by	
Project:		CASING DATA	HOLE DATA	Operated by
Prospect:		Wall size	Dia. N from 0 to T.D	Unit Operator: NICHOLSON
Lat ° ' " Long ° ' "		Dia. (inside)	Dia. from to	Unit No. AL-6 Office: ADELAIDE
	GAMMA RAY	Cased from to	Dia. from to	ELECTRIC
	INITIAL RUN 1	Cored hole	Non-cored hole ✓	1 2 3 4
Logged depth (TM) M	50·8	Sampled interval	Type	Logged depth
Range (Full scale)	200	1 METRE	R.C.	Resist. scale
Time constant (Sec.)	5%	INTERPRETATION DATA		S.P. scale
Paper speed	1	Probe No.	Standard (cps)	K factor Paper speed
Logging speed	6	600	565	1·34x10⁻⁵ Logging speed
Bkgnd count (cps)	5	REMARKS		Probe size
Probe No.	600			Type
Size (dia.) (mm)	35			Bias
Type	NAI			CALIPER
Standard (cps)	565			Logged depth
Dead time	6			Scale
Amp. Gain	520			Paper Speed
Ratemeter No.				Logging speed
Bore hole medium				Arm Length
Mud density				Max. Def.
Digital readout M	·2			
Time base (sec)	1			
Upper Disc.				
Lower Disc.				



AFMECO PTY. LTD. HOLE No. THW 23

PROJECT 123 1:250000 MAP SHEET SH53-10

SCALE: 1:200

DATE BEGUN: 13/4/80 Collar Coords: 4136 E, Total Depth: 55·5 m,

DATE TERMINATED: 13/4/80 AMG/GRID: 5970 N, Collar R.L: m,

TERMINATED BY: G.R.S. GEOLOGIST: G.R.S.

Reasons for termination: Running Sand CONTRACTOR: Wallis

DRILL:

DRILLING TECHNIQUES: Air Core

CASING: Size | From | To

Standing water: m, Sample No.

Water cut at: m, m, m,

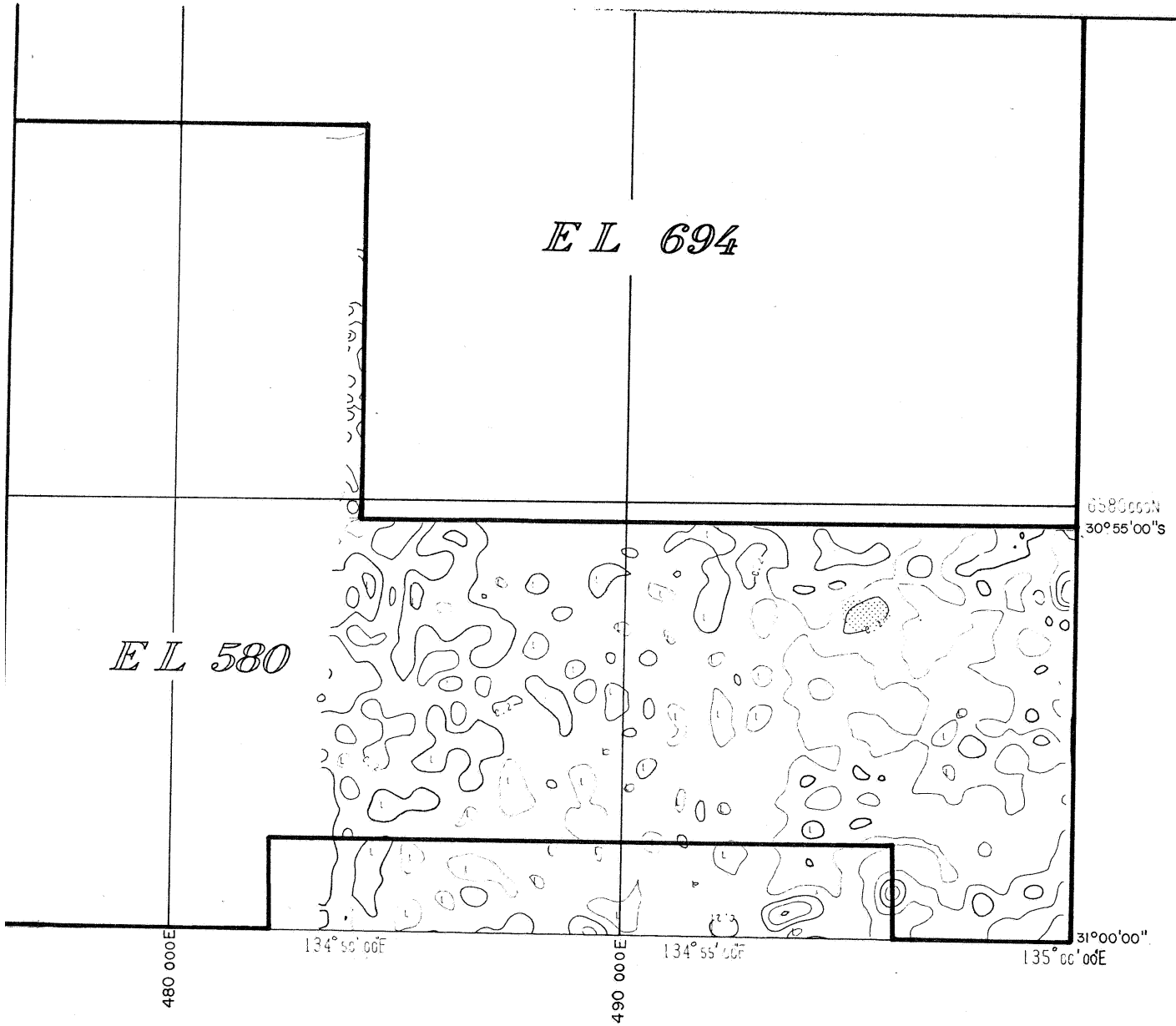
HOLE CONDITIONS WHILE LOGGING: Water ☐ Mud ☐ Additives used

Open hole ☐ In pipe ☑

LITHOLOGY: Coarse gr. sst. | Medium gr. sst. | Fine gr. sst. | Siltstone | Shale | Coal | Gravel | Carb. matter | Weathered/mod. basement | Silcrete | Gypsum | Surficial deposits

OXIDATION REDUCTION: OXIDISED | REDUCED | MIXED

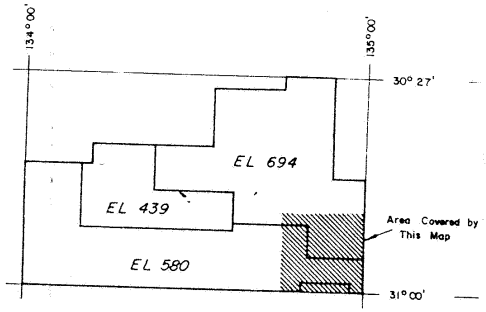
Depth	Lithology	Redox	Description
			few cms of red surface alluvium then white silcrete, fg clear qtz sand in white clay matrix, mod. hard.
			whitish-lt. yellow clay
			Sand + ppl- red brown clay, fg well sorted, yellow stained qtz.
			Indurated pplish clay
10			fg-granule sand, clear + red stained SR-SA qtz
			ppligh-brownish-whitish clay
			gravel, vcg-granules, clear + red stained SR-SA qtz minor lt. brownish clay
			Sand + red brown clay. Dom. fg, minor coarser grains up to vcg.
			sand, dom. m-vcg, minor fg + granule size grains clean, clear SA-SR qtz.
			Sand + minor red brown clay. Dom. fg, minor coarser grains up to granules
20			bi-modal sand, fg + cg-granules, tr. clay staining grains clear; red, brown or yellow stained SR-SA qtz.
30			Clean sand, dom. fg well sorted, minor coarser grains + frags of lt. brown clay
			bi-modal sand, as above
40			black mg-granule sand + frags black-dk brown clay clear SR-SA qtz, stained by fg dissem. carb. matter.
			black gravel, dom. granules + pebbles (≤ 8mm) + fg dissem. carb. matter, A-SA qtz.
50			black-grey sand, mg-granule, mod sorted + fg dissem. carb. matter; clay + woody fragments.



REFERENCE

Calcrete

Tarcoola Beds



To Accompany Report N° WY 82.1 *PLATE 7*

N

REVISION	DATE

DRAWN Austirex

DATE March, 1982

COMPILED Austirex

DWG. NO. SH53-10.GPR. 4263

APPROVED

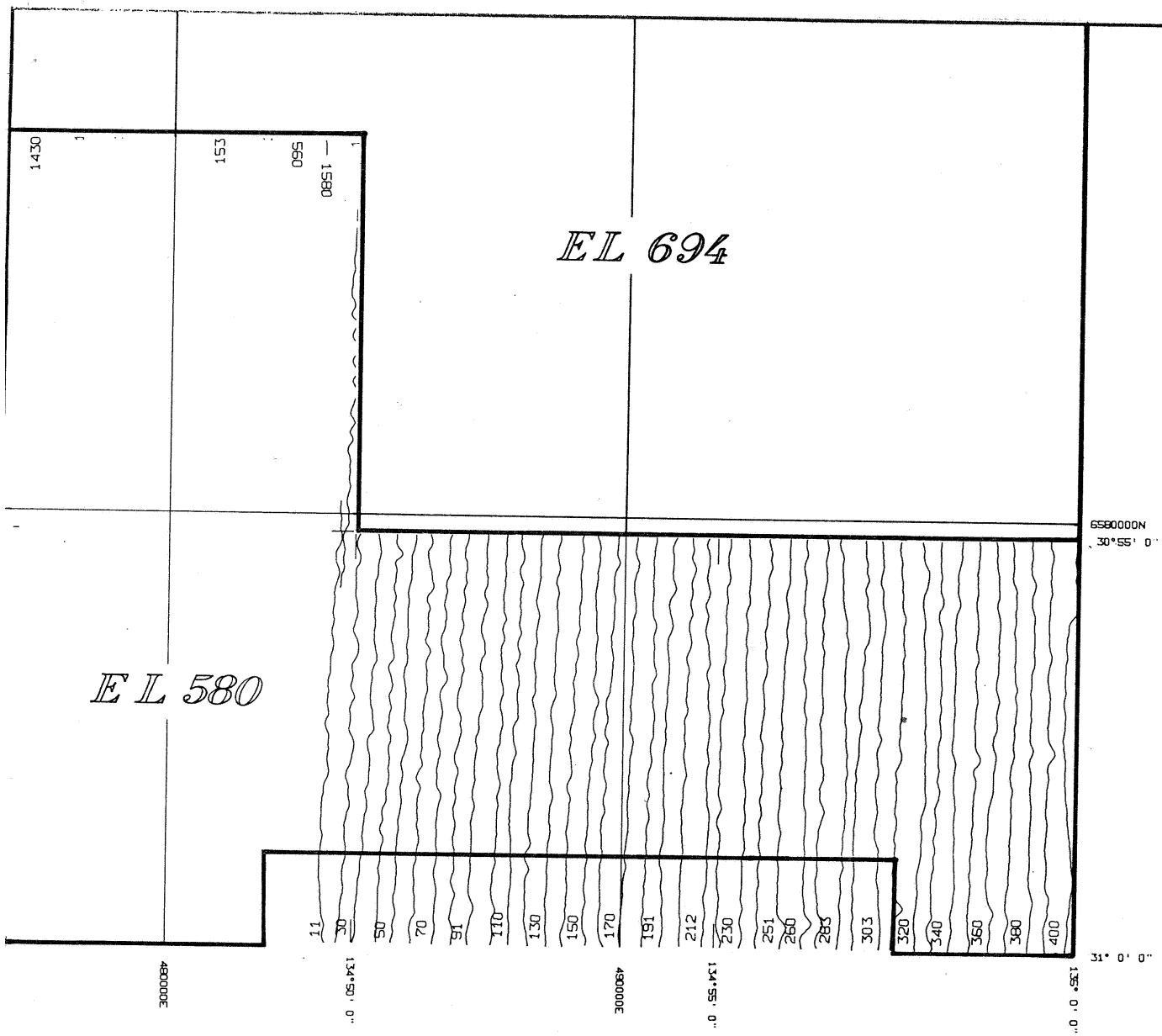
AFMECO PTY. LTD.

SCALE 1:100 000 2 0 2 4 km

TARCOOLA PROJECT
EL 580

U/K RATIO CONTOURS

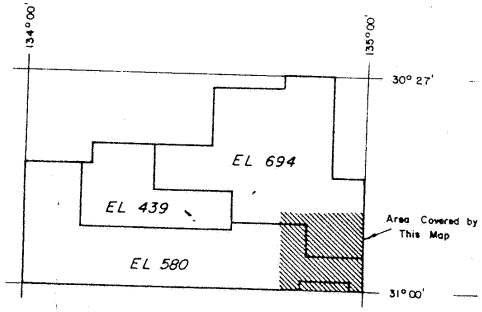
NOTE: Compiled from AFMECO TARCOOLA sheet SH53-10.GPR.2240



0073

REFERENCE

Profile Line (Base : 0 counts
Scale : 2 c/cm)



73

To Accompany Report N° WY 82.1

PLATE 8

N

REVISION	DATE

DRAWN Austirex
DATE March, 1982
COMPILED Austirex
DWG. NO. SH53-10.GPR. 4262
APPROVED

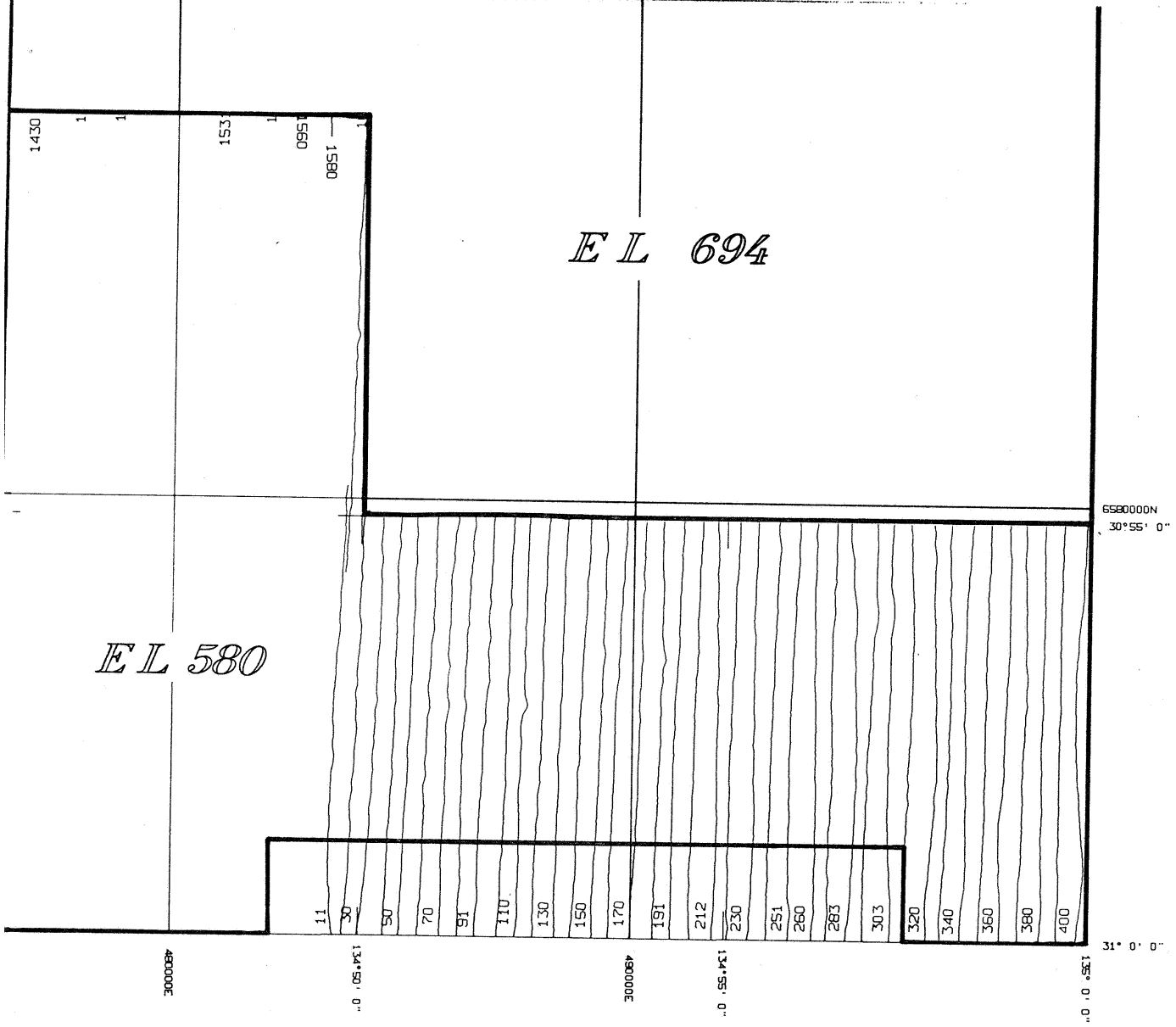
AFMECO PTY. LTD.

SCALE 1:100 000 — 2 0 2 4 Km

TARCOOLA PROJECT
EL 580

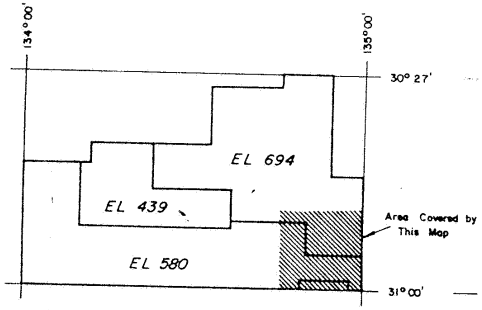
U/K RATIO STACKED PROFILES

NOTE: Compiled from AFMECO TARCOOLA sheet SH53-10. GPR. 2236



REFERENCE

Profile Line (Base: 0 counts
Scale: 8 c/cm)



74

To Accompany Report N° WY 82.1 PLATE 9

NOTE: Compiled from AFMECO TARCOOLA sheet SH53-10. GPR. 2233

REVISION	DATE

DRAWN Austirex
DATE March, 1982
COMPILED Austirex
DWG. NO. SH53-10.GPR. 4261
APPROVED

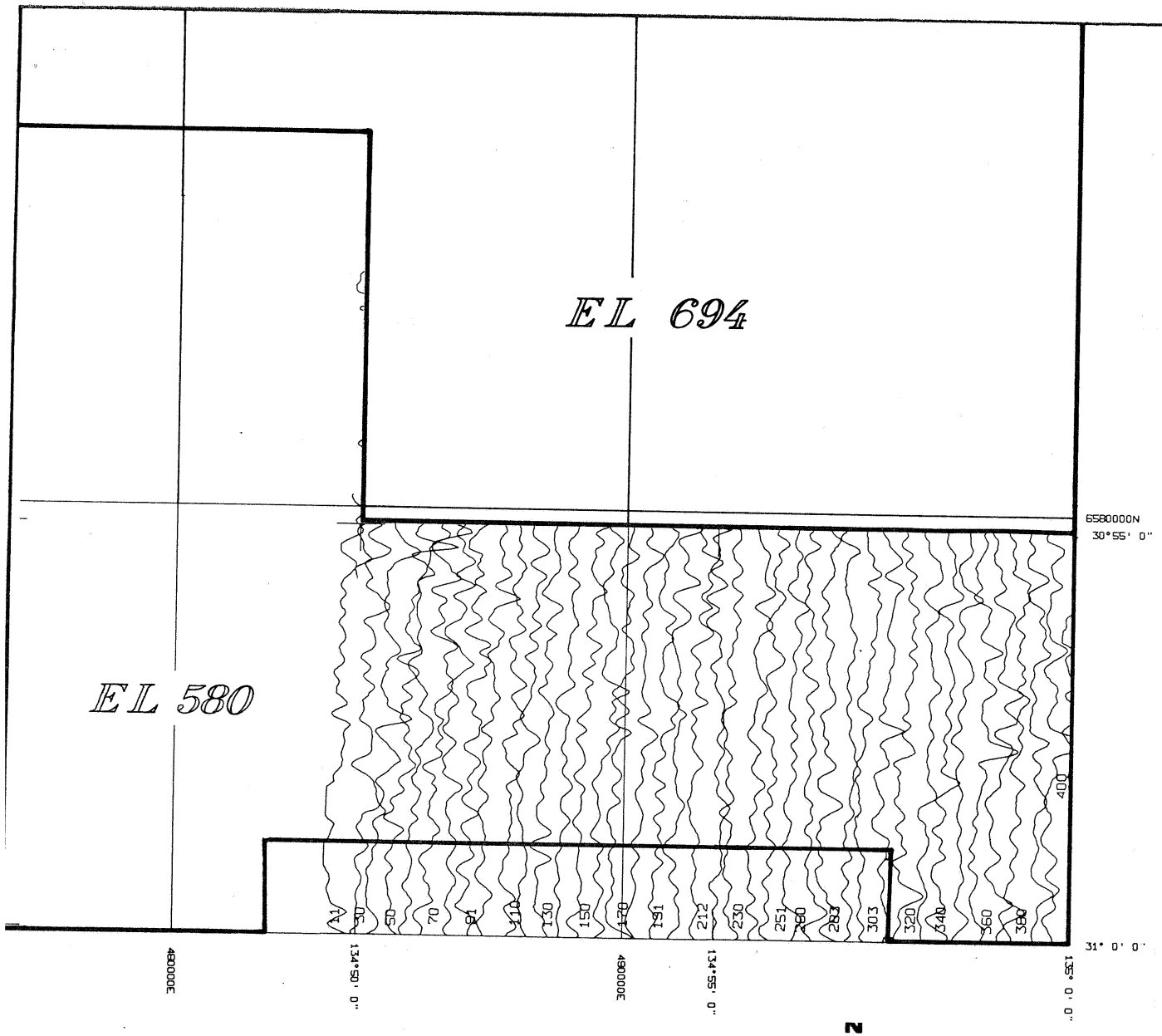
AFMECO PTY. LTD.

SCALE 1:100 000 2 0 2 4 km

TARCOOLA PROJECT
EL 580

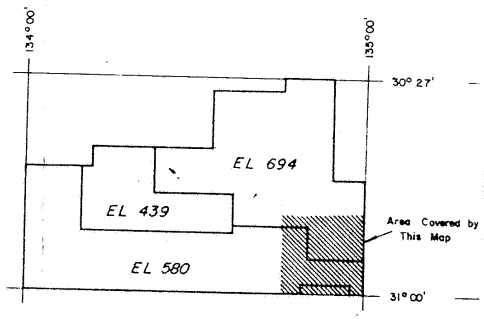
TH/K RATIO
STACKED PROFILES

0075



REFERENCE

Profile Line (Base: 0 counts
Scale: 1c/cm)



75

N

To Accompany Report Nº WY 82.1 PLATE 10

REVISION	DATE

DRAWN Austirex
DATE March, 1982
COMPILED Austirex
DWG. Nº SH53-10.GPR.4260
APPROVED

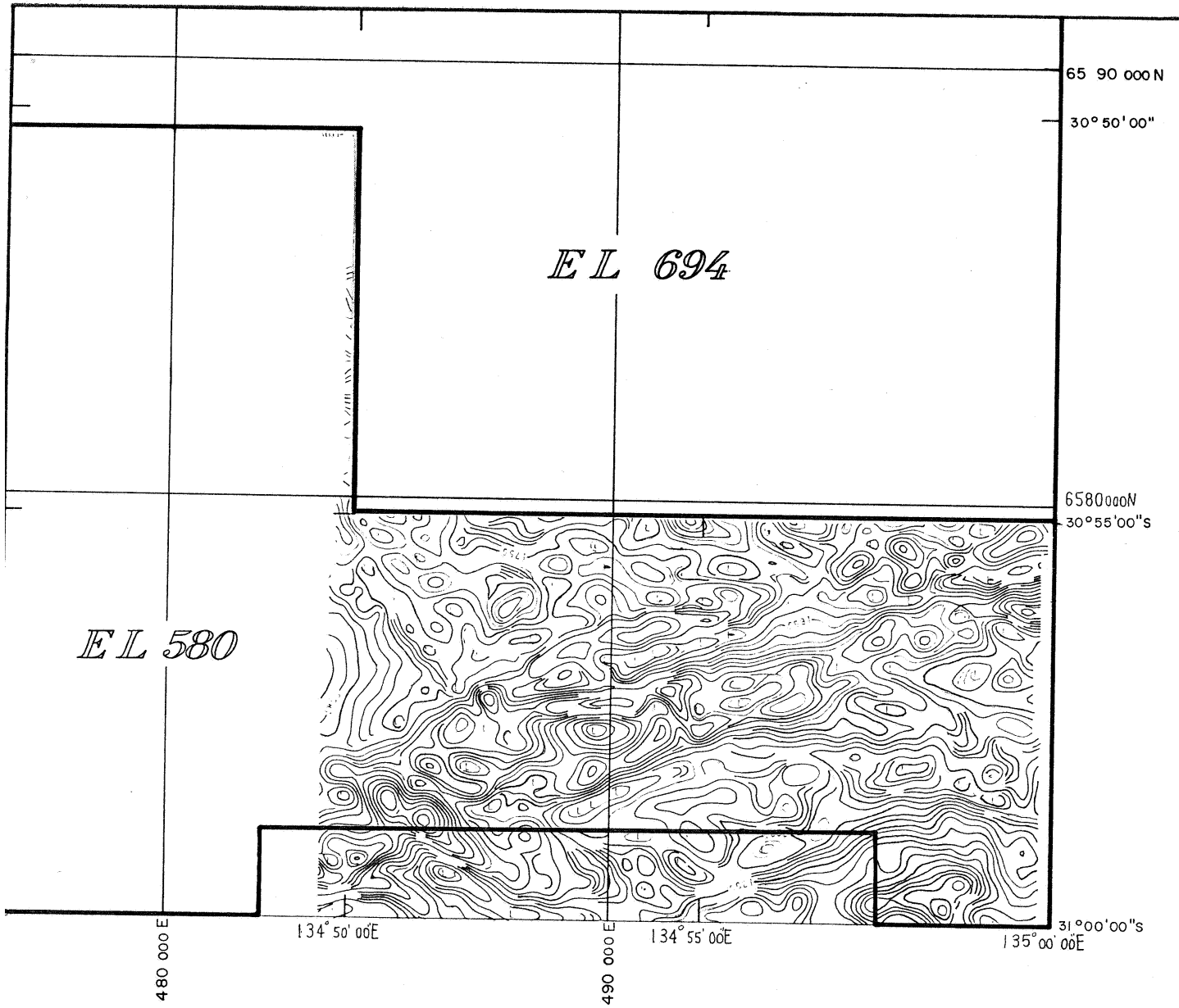
AFMECO PTY. LTD.

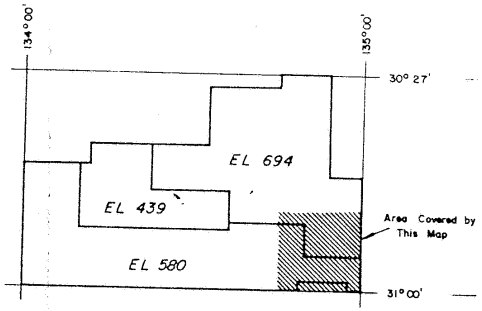
SCALE 1:100 000 2 0 2 4 km

TARCOOLA PROJECT
EL 580

U/TH RATIO
STACKED PROFILES

NOTE: Compiled from AFMECO TARCOOLA sheet SH53-10.GPR.2231





NOTE: Compiled from AFMECO TARCOOLA sheet SH53-10.GPM.2238

N

To Accompany Report N° WY 82.1 PLATE II

REVISION	DATE	
		DRAWN Austirex
		DATE March, 1982
		COMPILED Austirex
DWG. NO. SH53-10.GPM.4259		APPROVED

AFMECO PTY. LTD.

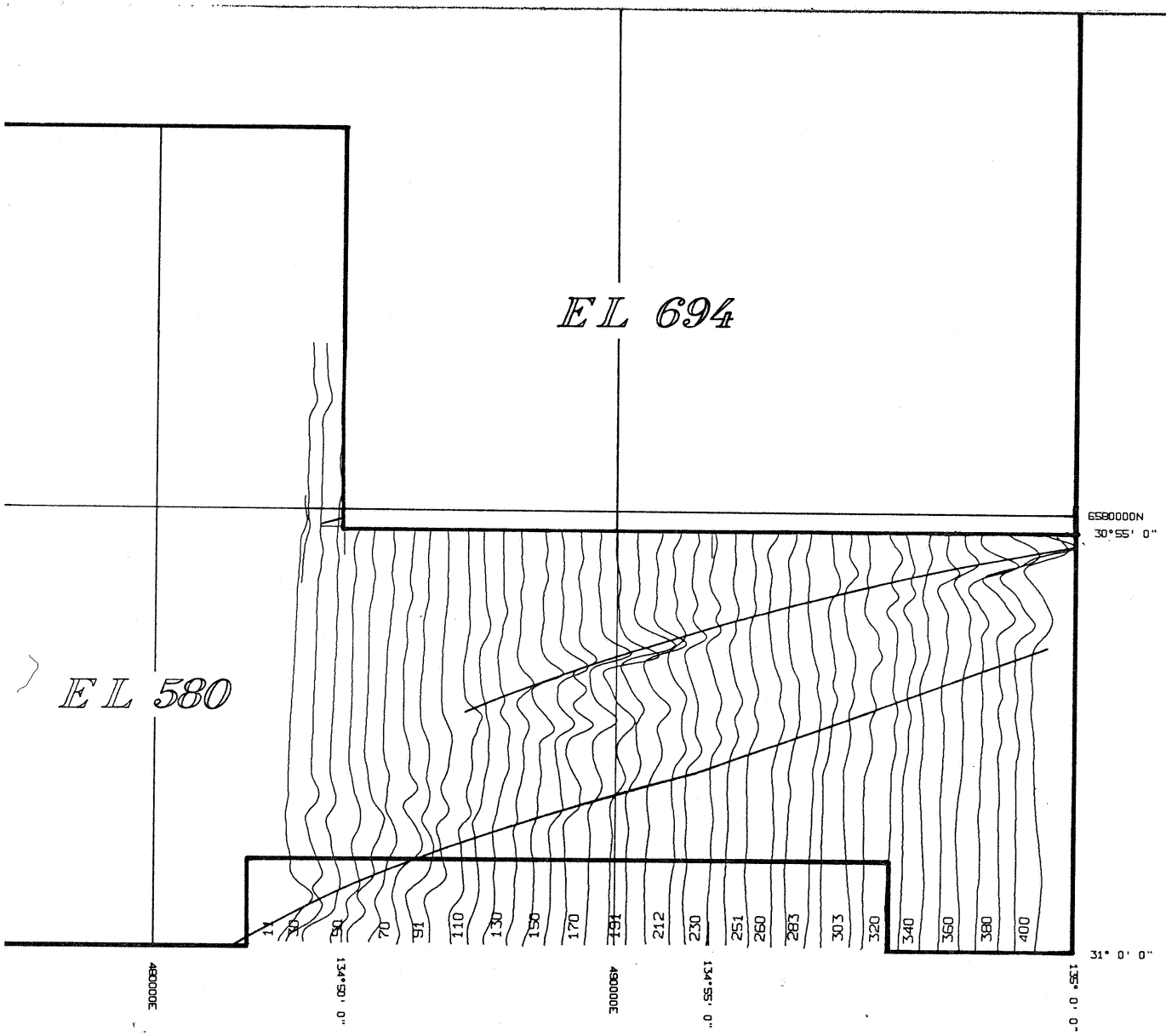
SCALE 1:100 000 2 0 2 4 km

TARCOOLA PROJECT

EL 580

TOTAL MAGNETIC FIELD

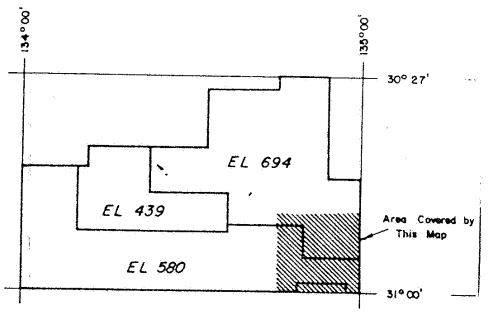
0077



REFERENCE

Profile Line (Base: 59 000 nT
Scale: 2000 nT/cm)

Fault, inferred



L2

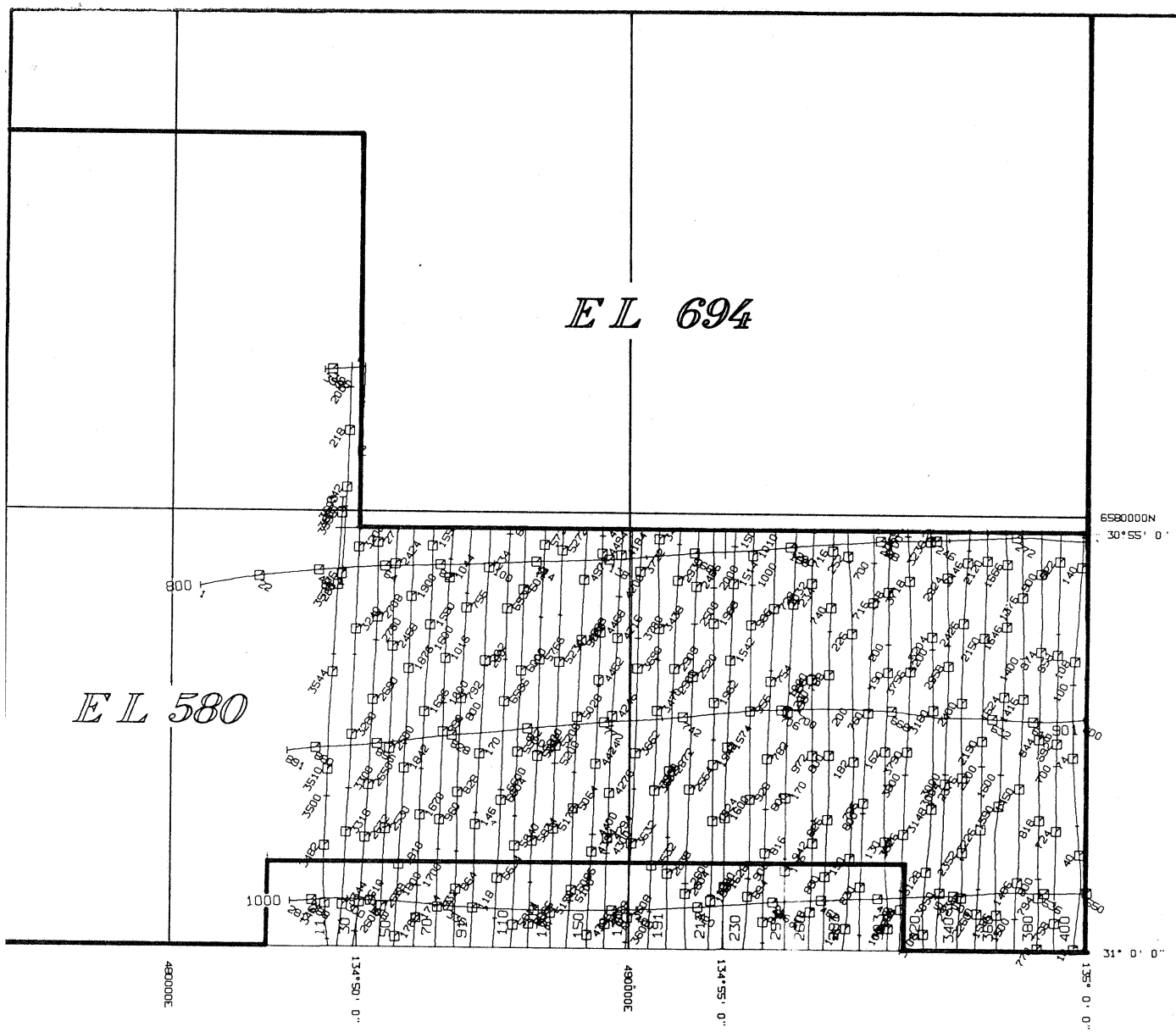
N

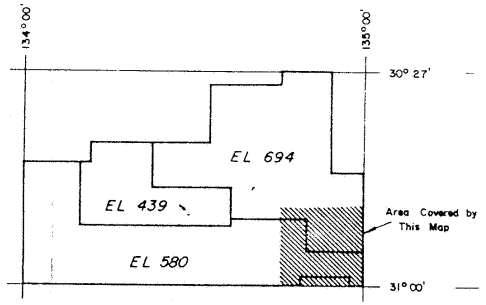
NOTE: Compiled from AUSTIREX TARCOOLA sheet SH53-10.GPM.2237.

To Accompany Report Nº WY 82.1

PLATE 12

REVISION	DATE		AFMECO PTY. LTD.
			SCALE 1:100 000 — 2 0 2 4 km
		DRAWN Austirex	TARCOOLA PROJECT
		DATE Feb, 1982	EL 580
		COMPILED Austirex	TOTAL MAGNETIC INTENSITY STACKED PROFILES
		DWG. Nº SH53-10.123.4256	APPROVED





NOTE: Compiled from AUSTIREX TARCOOLA sheet SH53-10.GPR.2229

To Accompany Report N° WY 82.1

PLATE 13

REVISION	DATE	
		DRAWN Austirex
		DATE Feb, 1982
		COMPILED Austirex
DWG. NO. SH53-10.123.4255		APPROVED

AFMECO PTY. LTD.

SCALE 1:100 000 — 2 0 2 4 km

TARCOOLA PROJECT

EL 580

FLIGHT LINES

78

EL 694

EL 580

6580 000mN

30° 55' 00"

31° 00' 00"

Well (old)

Kenella Well (old)

Tank (old)

Ruin

HOPEFUL HILL

BULPARA HILL

480 000 mE

49

134° 50'

134° 55'

135° 00' 50"

N

LEGEND

Gawler Range Volcanics

Younger Granite

Tarcoola Beds

Shale

Undifferentiated Lower Proterozoic

Granite Gneiss

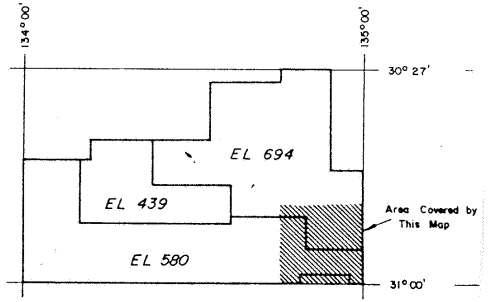
Banded Iron Formation

REFERENCE

Geological Boundary

Geological Boundary, approximate

Fault



NOTE: Compiled from AFMECO TARCOOLA sheet SH53-10.GES.2271

To Accompany Report N° WY 82.1

PLATE 14

REVISION	DATE	

DRAWN Tracey

DATE February 1982

COMPILED Y.G. Bladier

APPROVED

DWG. NO. SH53-10. 123.4253

AFMECO PTY. LTD.

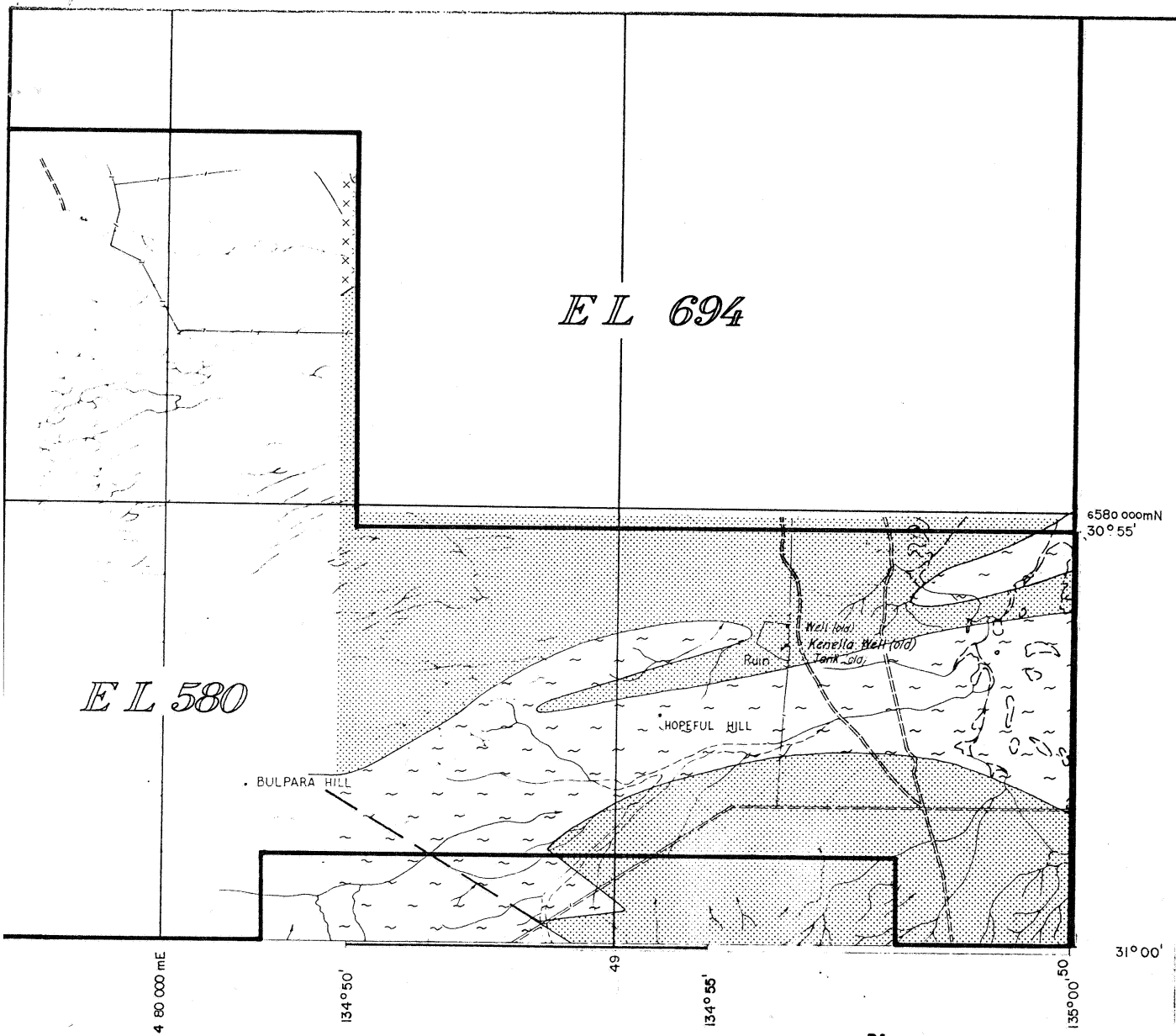
SCALE 1:100 000

2 0 2 4 km

TARCOOLA PROJECT

EXPLORATION LICENCE 580

INTERPRETATIVE GEOLOGICAL MAP



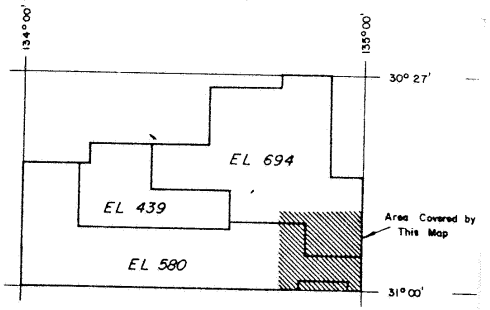
LEGEND

- Gawler Range Volcanics
- Younger Granite
- Tarcoola Beds
- Shale
- Undifferentiated Lower Proterozoic
- Granite Gneiss
- Banded Iron Formation

REFERENCE

- Geological Boundary
- Geological Boundary, approximate
- Fault
- Dolerite Dyke

Interpretation from AUSTIREX MAGNETICS



N

NOTE: Compiled from AFMECO TARCOOLA sheet SH53-10.GES.2269

To Accompany Report N° WY 82.1

PLATE 15

REVISION	DATE	
		DRAWN Tracey
		DATE Feb, 1982
		COMPILED B. Dockery
DWG. N°. SH53-10.123.4252		APPROVED

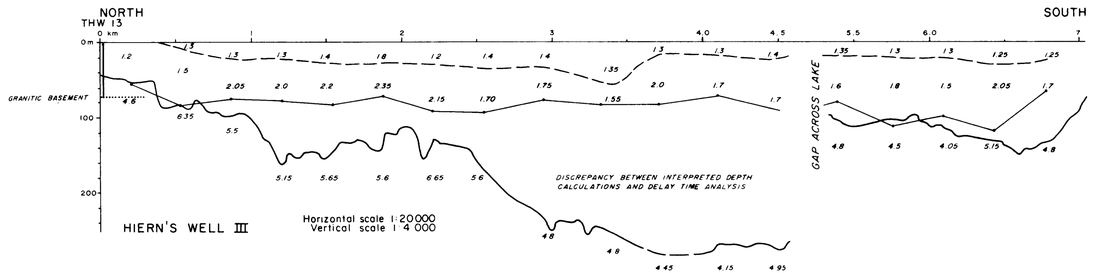
AFMECO PTY. LTD.

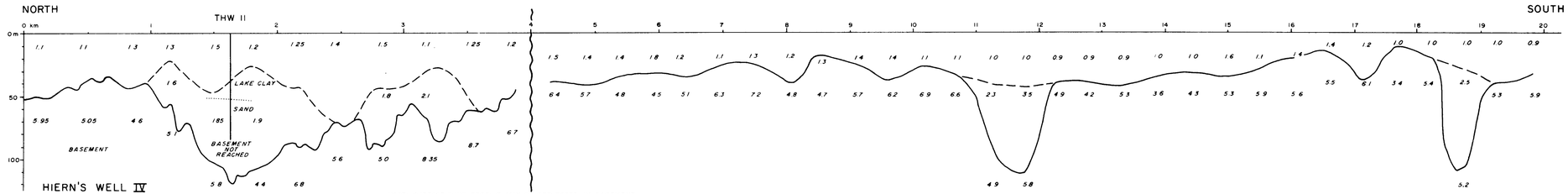
SCALE 1:100 000 — 2 0 2 4 km

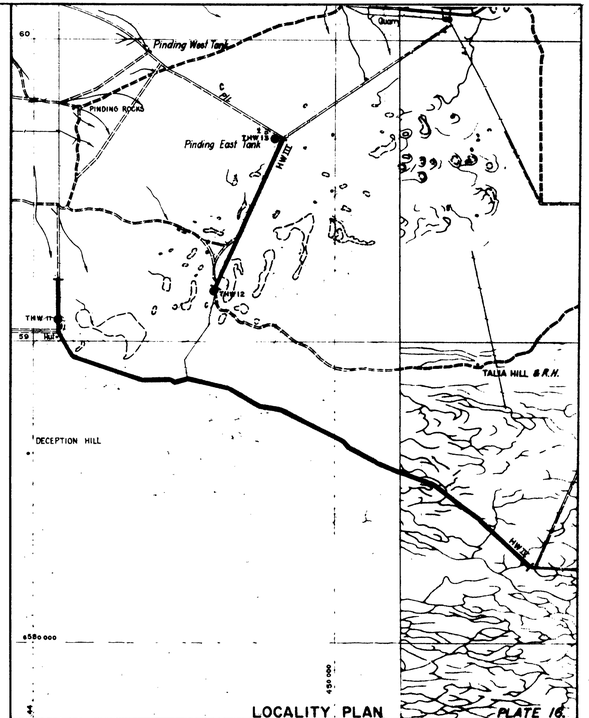
TARCOOLA PROJECT

EXPLORATION LICENCE 580

INTERPRETATIVE GEOLOGICAL MAP







LOCALITY PLAN PLATE 16.

SCALES

(See sections)

5.75 Velocity - km/sec

THW 11 Drill hole & No.

● Afmeco

○ Aberfoyle

REFERENCE

- Basement interpreted from seismic survey
- Possible lake sediments interpreted from seismic survey.
- Interpreted profile
- Basement interpreted from drill hole
- Lake clay deposit interpreted from drill hole

TARCOOLA PROJECT

E.L. 439

To Accompany Report N° WY 82.1

DRAWN	S.W.
DATE	11-2-80
GEOLOGY	Y. BLADIER
APPROVED	
DWG. N°	SH55-10.121, 122, 123. 1801

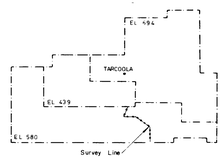
AFMECO PTY. LTD.

SCALE 1:100000 (1 0 1 2 3 4km)

SEISMIC REFRACTION SURVEY
HIERN'S WELL
TRAVERSE HWIII, HWIV

ENV 3778-9

GRAVITY PROFILE



BOUGUER GRAVITY (MILLIGALS)

ELEVATION (M.)

DISTANCE IN METERS

To Accompany Report N° WY 82.1. Plate 17

REVISION	DATE	DRAWN Y.B.	AFMECO PTY. LTD.
		DATE FEB '82	SCALE Horizontal 1:20 000
		GEOLOGY D.B.	TARCOOLA – S. AUST. E.L. 580
		APPROVED	GRAVITY PROFILE
REVISION N°	SIZE	DRAWING N° SH 53-10.121 4271	ENV. 3778-10.

nT

58500

58000

57500

57000

56500

35000N

34000N

33000N

32000N

31000N

30000N

29000N

28000N

27000N

26000N

25000N

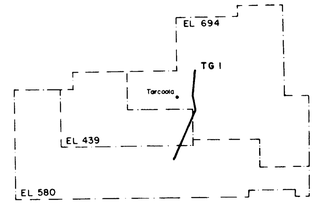
24000N

23000N

22000N

21000N

20000N



Readings taken using GEOMETRICS G816 P.P
Magnetometer, 2m pole, 25m stations

TAR 20B | TAR 20A

To Accompany Report N° WY 82./

PLATE 18

Aberfoyle Exploration Pty Ltd

Geology:	SOUTH AUSTRALIA
Drawn: CRW	ELs 694, 439, 580
Traced: JB	TARCOOLA BEDS PROJECT
Checked:	TOTAL MAGNETIC INTENSITY
Revised by: Date:	REGIONAL TRAVERSE TG 1
	(looking East)
Location code:	
Date: August 1981	
Scale: V 1cm = 50nT, H 1:20000	
Plate No TAR 20A	

SH53-10.121.4269

ENV. 3778-11