Open File Envelope No. 3828

EL 605, EL 1003, EL 1023 AND EL 1028

CULTANA, URO BLUFF AND TREGOLANA

PROGRESS AND FINAL REPORTS FOR THE PERIOD 13/3/80 TO 18/10/84

Submitted by

BHP Minerals Ltd
1984

Enquiries: Customer Services
Ground Floor
101 Grenfell Street, Adelaide 5000

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

PRIMARY INDUSTRIES AND RESOURCES SA

CONTENTS ENVELOPE 3828

Transparenceis In Cylinder 3828/1

TENEMENT: E.L. 605 - Port Augusta.

TENEMENT HOLDER: Dampier Mining Co. Ltd.,

ENVELOPE NO. 3828

CONTENTS - TRANSPARENCY CYLINDER NO. 3828/1

TITLE	SCALE	PLAN NO.
EL 605 URO BLUFF S.A. : —		
- location of Geophysical Surveys & Drill Holes	1 : 50 000	A3 - 27.
- Seismic Reflection Record (A) - DDH SAU19	11.2m. / cm.	—
- " " " (B) - " "	"	—
- Ground Magnetic Profiles	1:25 000	A1 - 63
- Geophysical Downhole logs - UB 1	—	A2 - 46
- " " " - UB 2	—	A2 - 57
- " " " - UB 3	—	A2 - 47
- " " " - UB 4	—	A2 - 48
- " " " - UB 5	—	A2 - 82
- " " " - UB 6	—	A2 - 58
- " " " - UB 7	—	A2 - 59
- " " " - UB 8	—	A2 - 60.
" " " - UB 9	—	A1 - 64.
- Total Magnetic Intensity Contour Compilation Sheet	1 : 50 000	A2 - 83
- Total Magnetic Intensity Contour Compilation	1 : 25 000	A0 - 2
- Stacked Aeromagnetic Profiles	1 : 25 000	G - 11
- Photomosaic with recovered lines. (Airborne survey by Geometrics, April, 1980)		

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2D

URO BLUFF AIRBORNE SURVEY
FOR BHP BY GEOMETRICS
EL 605, ENV 3828
CONTENTS RECEIVED

Stored in cylinder

One photomosaic with recovered lines
~~One 1:50,000 contour plot (paper)~~
~~One 1:25,000 contour plot (paper)~~
~~One 1:25,000 stacked profiles (paper)~~

Stored in envelope

Two diurnal charts flts 1 & 2
One envelope magnetic charts
One envelope radiometric and magnetic charts
Two rolls tracking film (both labelled flt 2,
but 1 is probably flt 1)

Env 3828
Box 1.
held by Geophysics at Glenside Annex

Stored by Geophysics.

D.N. Love
15/9/83

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EXPLORATION LICENCE 605

URO BLUFF, SOUTH AUSTRALIA

REPORT FOR THE QUARTER ENDED 13TH JUNE, 1980

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FIGURES

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EXPLORATION LICENCE 605

URO BLUFF, SOUTH AUSTRALIA

Report for the Quarter Ended 13th June, 1980

1. GENERAL

Exploration Licence 605 of 1631 square kilometres was granted to Dampier Mining Company Limited on 13th March, 1980, for twelve months. The main objective is to follow up the sedimentary base metal mineralisation known to occur at the base of the Tapley Hill Formation from previous work by Australian Selection. A re-interpretation of the geology aided by geophysics is being used to guide a drilling program.

2. FIELD WORK

2.1 Geology

Approximately 30 core holes drilled by Australian Selection were re-logged and then photographed. Further interpretative cross-sections were prepared.

2.2 Geophysics

A mini sosie seismic reflection survey was completed over 750 metres of traverse on line 638000mN from 735000mE to 735750mE. A report summarizing the work is presented in Appendix 1. The interpretation given should be considered as preliminary only until confirmed by drilling.

Ground magnetics were read at 25 metre spacing on traverses totalling 85 kilometres. Instruments used were the Scintrex MP2 and the Austral PPM1 magnetometers. Drift control was by either repeat readings or a base station magnetometer. The results are tabulated in Appendix 2 and also illustrated as profiles on Figure 2. The traverse locations are shown on Figure 1 at 1:50,000 scale.

Detailed aeromagnetics were flown over a 15 x 15 km area defined approximately by the following co-ordinates at the corners (6372000mN 746000mE) (6384500mN 739500mE) (6384000mN 724000mE) (6372000mN 731000mE). The line spacing was 400 metres and the flying height 80 metres. The survey was flown by Geometrics. Results are not yet available.

2.3 Drilling

The following drill holes were completed during the quarter.

Hole No.	Field Traverse Location	AMG Co-ordinates		Rotary (m)	Core (m)	Total (m)
UB1	76N 36800E	6376000N	736200E	70	91.2	161.2
UB2	77N 36475E	6377000N	736475E	78	82.3	160.3
UB3	74N 36700E	6374000N	736700E	74.5	113.5	188.0
UB4	73N 36700E	6373000N	736700E	88	72.85	160.85
UB5	70N 39500E	6370000N	739500E	36		36
UB6	70N 41225E	6370000N	741225E	48		48
UB7	69N 42650E	6369200N	742250E	108		108
UB8	68N 42350E	6367900N	742250E	66		66
UB9	68N 43350E	6367900N	743200E	72	178	250
UB10	77N 36550E	6377000N	736550E	66		66
		Total for Quarter				1244.35

The hole locations are shown on Figure 1. To date the only reasonable mineralisation found is one metre of chalcocite-bearing shale in hole UB3 from 146.31 to 147.31 metres. No assays are yet available and the core logs are not yet complete. The other holes are disappointing, and our exploration model will need revision.

3. EXPENDITURE

Expenditure debited to E.L. 605 to 31st May, 1980, was :

Wages and Salaries	$ 8,970
Messing and Accommodation	994
Fares and Mobilisation	2,116
Drilling	11,358
Transport	1,909
Surveying/Aerial Photographs	862
Geophysics	3,627
Sample Analysis	109
Occupancy/Location Expenses	234
Tenement Fees, Licences etc.	20
Capital Items	74
Other Items	399
	$30,672

This report is submitted to the Department of Mines and Energy as required by Condition 4 of Exploration Licence 605.

APPENDIX 1

MINI SOSIE SEISMIC REFLECTION SURVEY

MYALL CREEK, SOUTH AUSTRALIA

MINI-SOSIE SEISMIC REFLECTION SURVEY

MYALL CREEK, SOUTH AUSTRALIA

1980

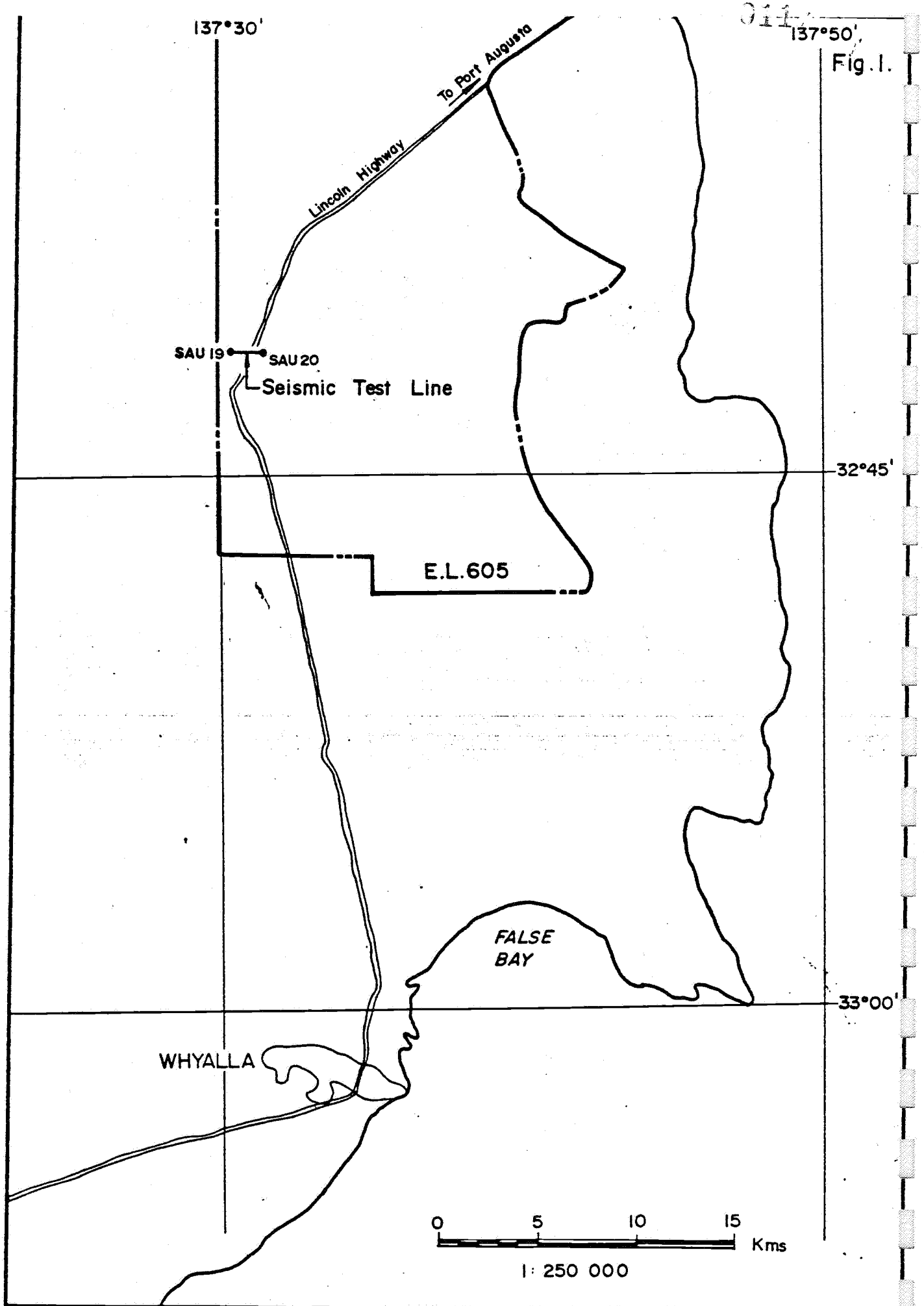
SUMMARY

A trial Mini-Sosie survey was conducted at Myall Creek near Whyalla in South Australia over gently dipping Proterozoic sediments and volcanics. A total of 0.75 kilometres of 6 fold profiling at 5 metre trace spacing was completed in 1½ days. The unconformity at the base of the Proterozoic Tapley Hill formation was clearly mapped and a potential structural low in it detected. Reflections were also obtained from Volcanics below the unconformity.

Further work in the area would be warranted.

CONTENTS

Fig. 1.



Centre: Brisbane	THE BROKEN HILL PROPRIETARY CO. LTD. E.L.605 URO BLUFF SEISMIC LINE LOCATION	Project No:
Date: 9.5.80		Drawing No: A4- 252

1. INTRODUCTION

The Velocity Data Pty. Ltd. Mini-Sosie crew carried out three and a half days work on the Myall Creek area from January 16 to January 19, 1980. During this period a total of 0.75 kilometres of 6 fold reflection profiling was completed on one line between two boreholes using conventional Mini-Sosie summing. A further 0.38km was completed over the same line using the sign bit summing recording technique. The location of the line is shown in Figure 1.

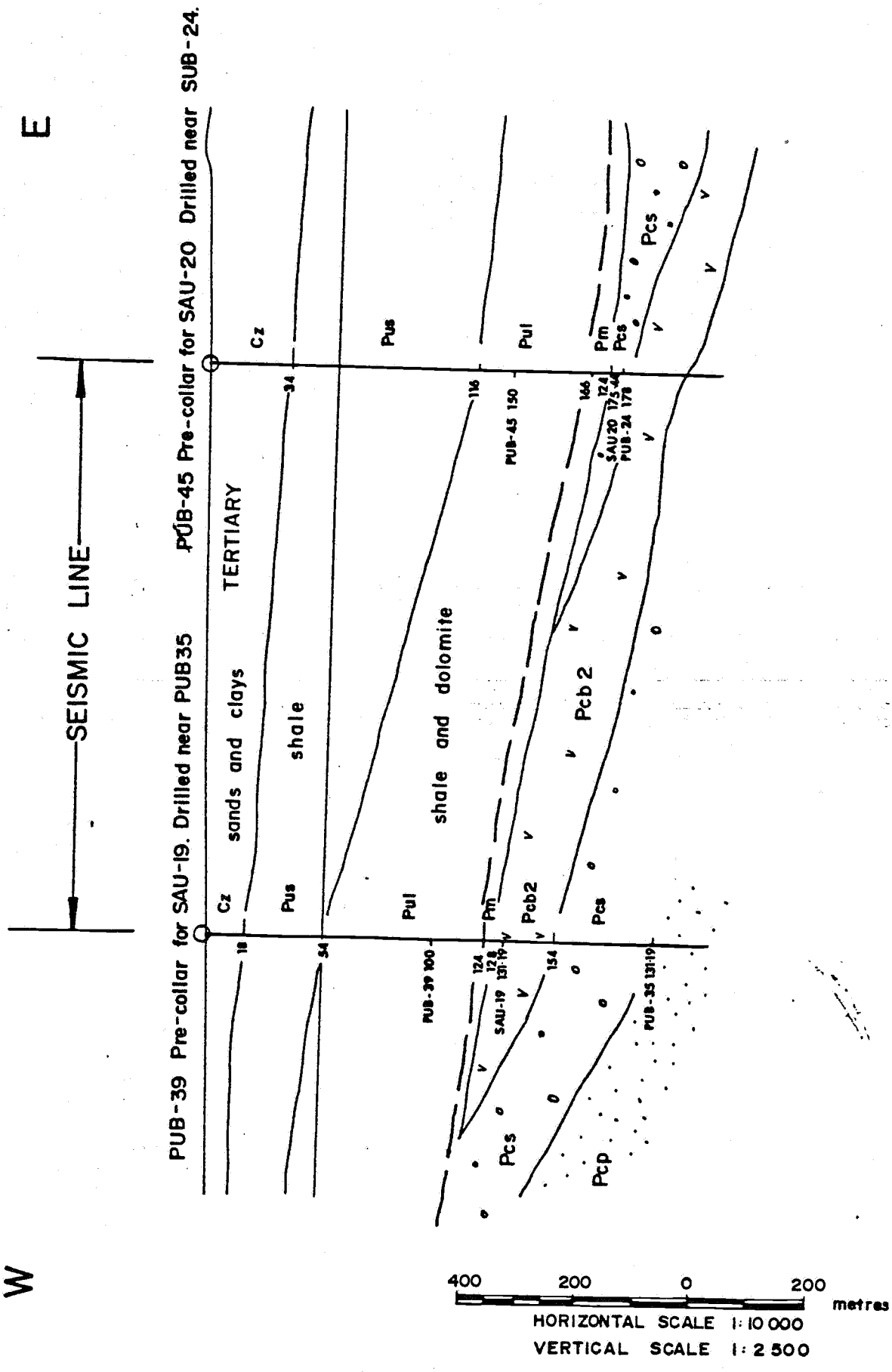
The area has a reasonable amount of drill control and the geology is known to consist of 20 - 30 metres of Tertiary sands and clays overlying 100 - 150 metres of Proterozoic Tapley Hill formation comprised of 30 - 60 metres of shale overlying shale and dolomite. The base of the Tapley Hill formation rests unconformably on volcanics of the Burra Group. A cross-section is shown in Figure 2. The object of the survey was to test whether the unconformity and any topographic relief on it could be mapped with the Mini-Sosie reflection technique.

2. FIELD TECHNIQUE

2.1 General

The Mini-Sosie seismic reflection method uses a surface compactor as its energy source. This is rammed up and down at random intervals and the sequence of rams (pops or wacks) is monitored in the recording truck. Incoming signal from the geophones is vertically stacked by cross-correlating it with the ramming sequence. In this way the level of the signal at each shot-point is built up by summing 1000 to 2000 'wacks' with the rammer. The number of wacks necessary is dependent on the ratio of coherent signal to random seismic noise on the records.

Fig. 2.



Centre: Brisbane	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No:
Date: May 80	MYALL CREEK MINI-SOSIE SEISMIC REFLECTION LINE and GEOLOGY CROSS SECTION	Drawing No: A4-253

The Mini-Sosie recorder is capable of recording 24 geophone stations per shot point. Twelve geophones are used per trace spread out along the line at variable intervals. The Velocity Data crew has two rammers which work in tandem. These migrate along a segment of the line, centred about each shot-point, until the required number of pops at each shot-point is reached.

The recording instruments have a selection of low cut (30, 60, 120 Hz) and high cut (60, 120, 240 Hz) filters to aid in the attenuation of noise by frequency discrimination (ground roll with low frequency filters, wind noise with high frequency filters).

Sign bit summing is a stacking technique recently developed and aimed at quickly improving the signal to noise ratio when it is less than 1. It has only been recently included on the Mini-Sosie system. An outline of the theory behind the technique is set out in Appendix 1. It comes from Lindseth (1980).

Survey design in the field is governed by the field conditions as far as they can be assessed on location. The number of 'pops' required will depend on the efficiency of energy coupling of each pop and the ambient noise conditions. The less efficient each 'pop' and the noiser the conditions, the more 'pops' will be required at each shot-point. The number of pops at each shot-point is therefore a trade-off between what is ideally required for adequate signal to noise ratios and the time required to record each record. The more pops the less progress.

Field layout is determined by the depth of investigation and the level of coherent noise, observed in the field which must be attenuated. The shallower the depth of investigation the shorter the spread lengths need to be. The spread of geophones at each station laterally assists in the attenuation of ground roll as does increasing the length of the ramming segment. This is at the expense of resolution to some extent. Noise may also be controlled by the selection of recording

filters. Unfortunately often it is not until after data processing that it becomes clear whether or not the correct field parameters were chosen.

2.2 Myall Creek Recording Parameters

Following initial experimental work, field parameters chosen for the Myall Creek survey were as follows :

Spread

Twelve traces either side of the centre point with the inner traces offset 20 metres from a 20 metre ramming segment (Figure 3). Because of the shallow depth of the target horizon it was necessary to use as short a spread as possible thus 5 metre trace intervals were chosen.

12 traces	Offset	Ramming	Offset	12 traces
55 m	20 m	20 m	20 m	55 m

Figure 3

Recording Filters

60 Hz, 12 lb/octave low cut, 250 Hz alias filter.

Number of Pops

1500 per record.

Coverage

600% common depth point cover.

2.3 Data Quality

The reflectors were at shallow depths and it was difficult to observe the reflections on the field monitors because of their interference with first arrival refractions and ground roll. Signal to random noise was excellent and enabled the coherent noise (refractions and ground roll) to be successfully removed in data processing by velocity filtering. The quality of the final section is excellent with reflections having dominant frequencies of 90 - 100 Hz.

2.4 Data Reduction

All stations were corrected for elevation to a datum. Static shifts related to variations in weathering thickness and velocity were ignored.

3. DATA PROCESSING

Both the conventional summing section and the sign bit summing sections were processed with the same parameters. These were :

- pre-filter 45-50-300-350 Hz
- velocity filter to operate on first arrivals
- sort and application of elevation statics
- deconvolution before stack with a 50 millisecond spike.
- filter 35-45-180-200 Hz
- application of normal moveout corrections
- 2 passes of surface consistent residual statics
- 1 pass of CDP aligned residual statics
- 6 fold stack
- coherency filter to enhance coherent events
- deconvolution after stack with a 30 millisecond spike
- filter 35-45-180-200 Hz

4. INTERPRETATION

4.1 Seismic Section

The interpreted final sections are enclosed as Plates 1 and 2. Data quality is excellent with the most prominant event, indicated in mauve, on the unconformity at the base of the Tapley Hill formation. This dips from 0.06 secs at station 151 to 0.08 milliseconds at station 1. Reflections within the Tapley Hill formation on-lap onto the unconformity and are marked in blue. This effect is clearly seen at SP 65-60. The Tapley Hill reflections are not flat lying and there is a suggestion that they dip gently to the west.

Reflections beneath the unconformity are semi-continuous and generally dip gently to the east. Between SP 100 and 90 the reflection marked in green, in particular, swings up monoclinally to form a local high in the unconformity. West of this high there is a 7 millisecond low between SP 100 and 140. Reflections above conform with this low suggesting it existed at the time of deposition of the Tapley Hill formation.

Faults are tentatively interpreted in the volcanics beneath the unconformity at SP 140 and SP 120.

The event marked in light green at approximately 0.2 - 0.3 seconds is possibly from the base of the Tertiary.

4.2 Velocities

The velocities on the top of the seismic section are only stacking velocities used to correct for normal moveout on the reflections. Because of the significant thickness of low velocity (1700 metres per second) Tertiary material above the Proterozoic rocks the stacking velocities are much lower than the true velocities in the Proterozoic sediments. These are more likely to be of the order of 5000 metres per second.

For example, if the light green event represents the base of the Tertiary, then the thickness of the Tapley Hill formation in time at bore SAU 20 is 0.05 seconds. The thickness in metres at this bore is 132 metres. This results in a formation interval velocity of 5200 metres/second. A similar figure can be calculated at bore SAU 19. Thus the stacking velocities are not representative of the true average formation velocities.

At a velocity of 5000 metres/second the depth of the 7 millisecond low in the unconformity is approximately 20 metres.

4.3 Comparison Between Normal Section and Sign Bit Section

By comparison between the two sections, it can be seen that they are very similar and both have the same reflections. Any difference in geological interpretation would be subtle. However the conventional section does have slightly more character and reflections are more prominant particularly below the unconformity. Slightly different processing parameters on the sign bit section would possibly remove this difference.

As both sets of data were recorded on fine, calm days, it is likely that background noise was fairly low. Sign bit summing probably has no advantage over conventional summing under these conditions.

5. CONCLUSIONS

The Mini-Sosie technique worked well in the Myall Creek area. The unconformity at the base of the Tapley Hill formation was clearly mapped over the length of the line surveyed. A topographic low was detected in the unconformity and the method clearly is capable of locating these features. Unfortunately because of the shallow depth to the unconformity it is necessary to use short trace spacings thereby limiting the amount of production possible in any one day to between 0.5 and 1 kilometre.

However, with careful planning, further seismic profiling could be a useful adjunct to any future exploration programme.

It is recommended that the interpreted low in the unconformity be tested by drilling.

6. REFERENCE

Lindseth, R.O. (1980) Digital Processing of Geophysical Data - A Review.

Course Notes - The Earth Resources Foundation, The University of Sydney, February 1980.

APPENDIX 1

Notes on Stacking and Sign Bit Summing

STACKING

Of all the advances in the reflection seismic technique, surely none is more important nor has had greater impact than the invention of common-depth-point coverage, or simply, stacking.

In concept, the procedure is very simple. The distance between seismic source and receiver is varied symetrically to survey the same subsurface point several times. The observations, corrected for geometrical distortion, are then summed to obtain the average.

The reason for its outstanding success is that it provides the only known method for separating noise from signals of the same frequency. With one exception, all other seismic processes either eliminate both signal and the noise, or merely modify the amplitude without changing the proportion. The exception is multichannel filtering, which is also able to separate signal from noise of the same frequency, but it is effective only in areas of relatively homogeneous dip and is of little value in areas of complex structure.

Under proper conditions, stacking will remove several types of noise, but it is most effective against random noise. Any signal, be it useful information or noise, can be analyzed by the Fourier transform into its component frequency elements. The contribution of each frequency can be expressed in terms of a vector having a length equal to the amplitude, directed to the angle of phase. Random white noise has a uniform amplitude for all frequencies, but the phase is totally random. Seismic traces represent the sum of signal and noise. Each frequency component is the vector sum of a random noise component and a signal component. For a twelve-fold stack if all corrections have been properly applied, all twelve signal components of each frequency can be considered vectors having the same amplitude and phase. The twelve noise vectors will also all have the same amplitude, perhaps greater than the signal vectors, but the phase distribution will be random. (Fig 4.1).

Random Noise Vectors

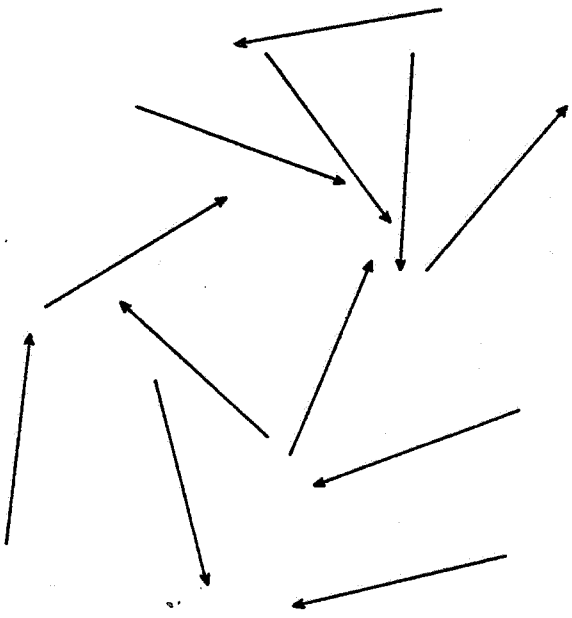


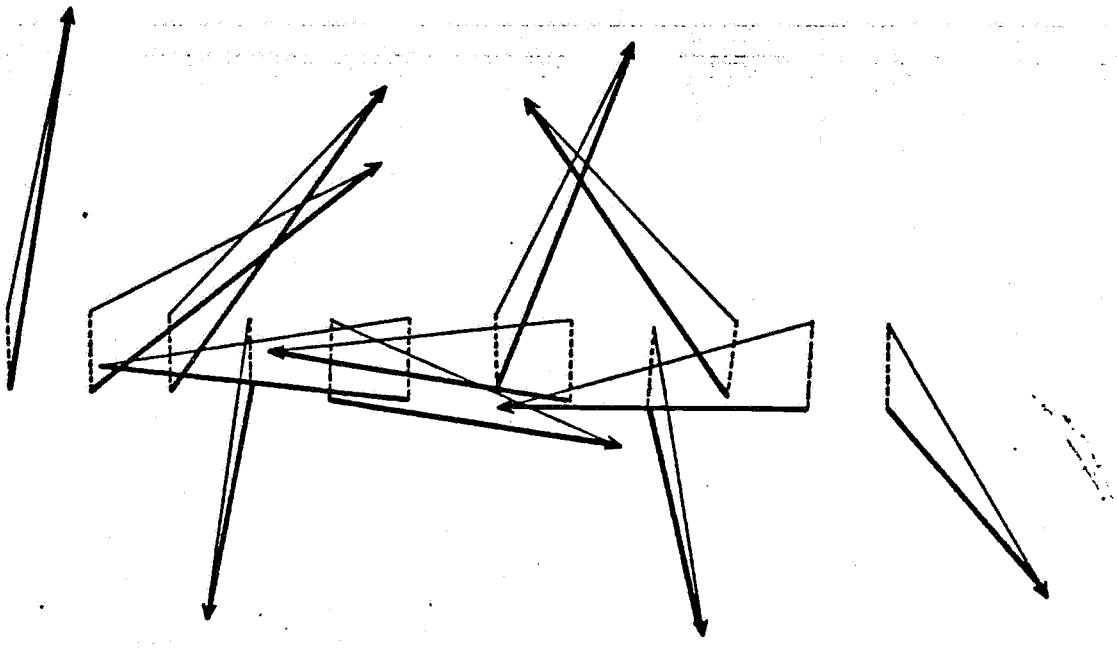
FIGURE 4.1

If the ratio of signal-to-noise is 1:4 the signal vectors would sum with the noise as in Fig 4.2 to yield the results indicated by the heavy line.

In the stacking process, the resultant vector of each trace is summed in turn by vector addition to produce the total resultant. In the addition, random noise components tend to sum to zero, while the signal components sum in phase to produce a resultant nearly twelve times the individual signal amplitude component and direct approximately to the signal phase angle. (Fig 4.3).

The method uses the power of statistics to produce relatively noise free output. Naturally, if the noise has coherent components these too will sum in phase and be present in the output.

The assurance that the normal moveout corrections and static corrections have been applied in an optimum manner is essential, otherwise the signal components will sum out of phase. Seismic field supervisors have long recognized the damage that one poorly planted geophone can do to the total array response. In the same manner, experienced data processors recognize the disproportionate damage a single bad trace can cause to a stack, and use their experience to mute or discard poor traces in the gather group.



Signal + Noise

1:4

FIGURE 4.2

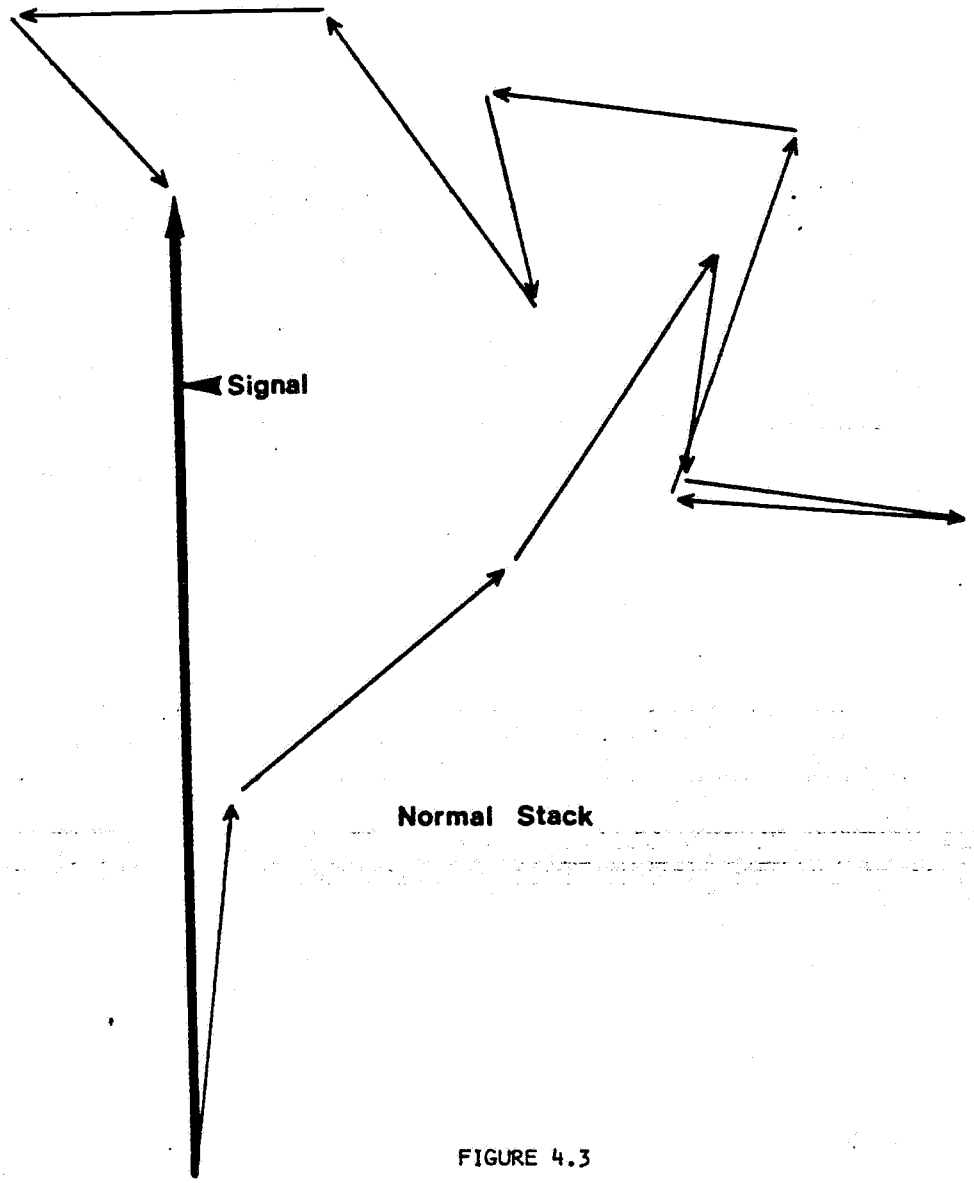


FIGURE 4.3

This effect can also be demonstrated by vector summation. Assume one trace of the twelve has a moderate noise burst, say 2.5 times the normal noise amplitude. This seems like a small addition to the total noise present on the twelve traces, an increase of about 12% (Fig 4.4). Now compare the result of the stack which includes the noise burst to the previous stack with random noise. (Fig 4.5). The phase angle of the signal is distorted substantially and the amplitude is reduced to about 60% of the level obtained when the noise was purely random. This also suggests the reason why the number of stacking elements must be increased by a large number to gain a noticeable improvement in quality of the output.

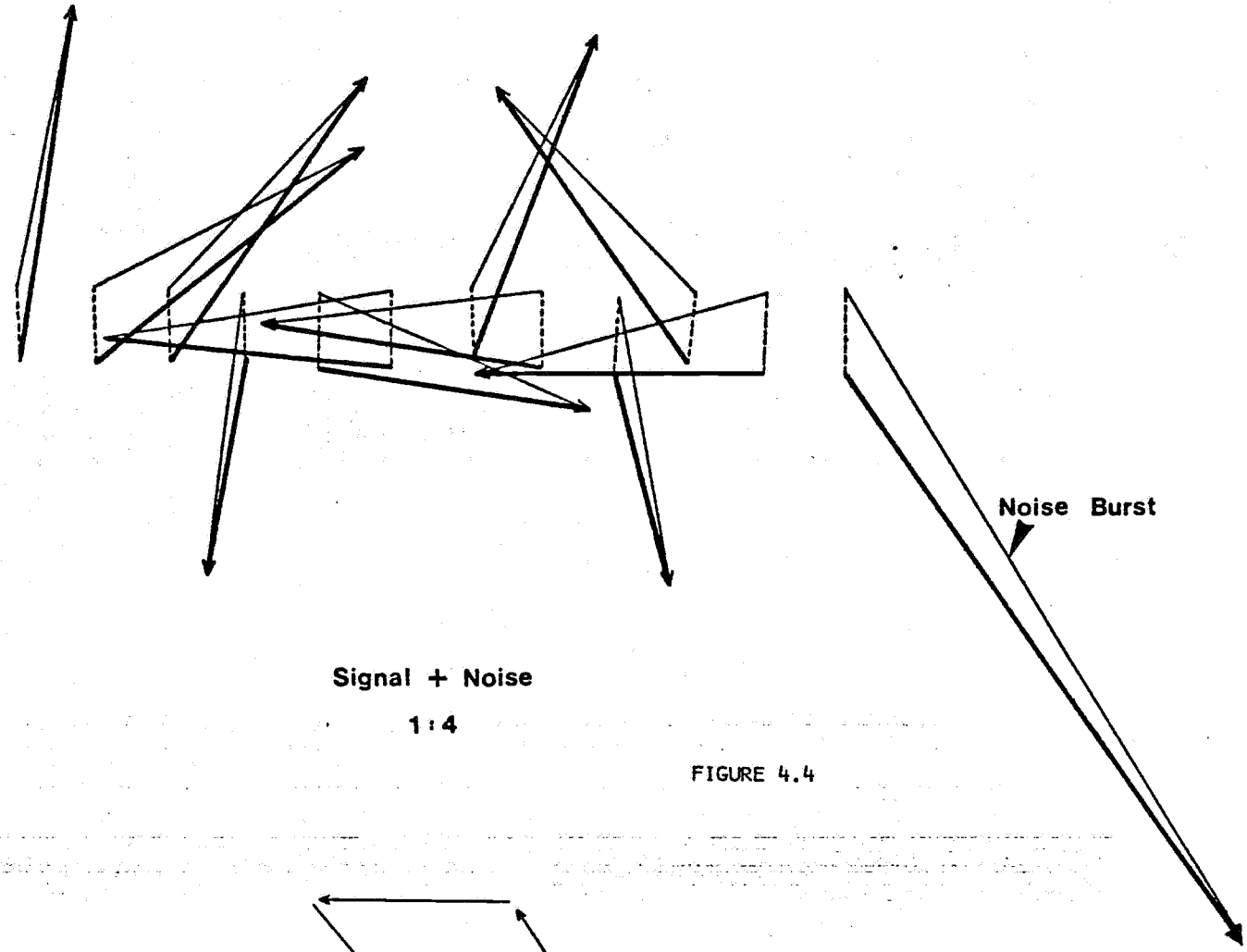


FIGURE 4.4

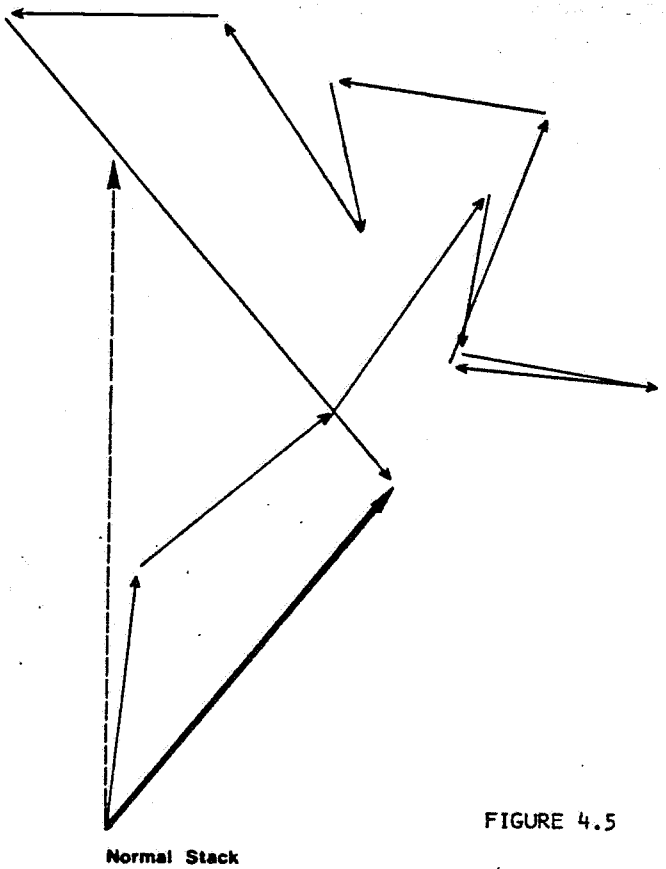


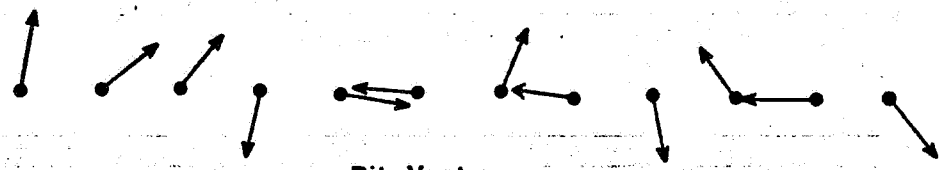
FIGURE 4.5

Sign Bit Recording

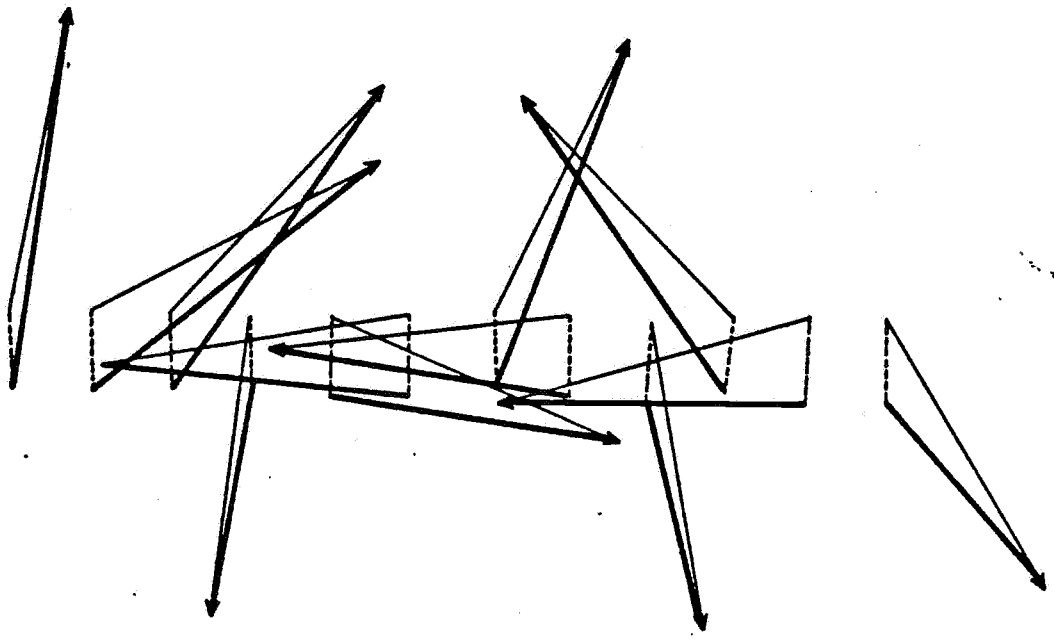
Over the years stacking has increased from 3 fold to the current 24 and 48 fold. Probably still greater coverage would be used if it were possible to readily increase the number of recording channels, which in turn is limited by the data rate to be recorded. One solution which is used is to simply record the sign bit only. Reducing in the number of bits per sample from the current 16 or 32 to a single bit allows the number of data channels to increase from 48 to 768 or 1536.

A proposal to record only a single bit, which has a maximum dynamic range of 6db, seems totally incompatible with the enormous industry effort made to achieve wide dynamic range. Nevertheless, modelling confirms the proposal to be totally feasible. In addition to the mechanical and instrumental advantages important improvements in signal quality can be obtained provided the basic assumptions used for the model are met in the field. The model used to demonstrate stacking summed the resultant vectors from the sum of signal and noise.

The phase of a given frequency component determines the position on the time axis of all the zero crossings of a given frequency. Clipping the amplitude vector to the



Bit Vectors



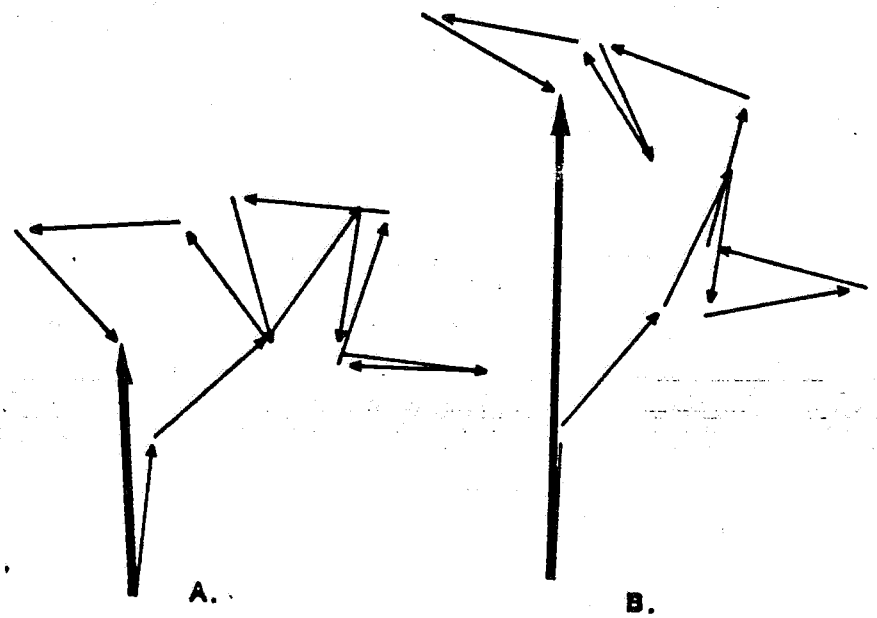
Signal + Noise

1:4

FIGURE 4.6

sign bit preserves the zero crossing and hence preserves the phase. The clipping removes any amplitude variation of the components, leaving all vectors with the same unit amplitude. The bit-vectors corresponding to the stacking example of Fig 4.2 are now included in Fig 4.6. The phase of each bit vector remains the same as its full amplitude counterpart, therefore both the single bit and the full amplitude vectors carry the same proportion of amplitude and phase components. Hence, when the bit vectors are stacked, as in Fig 4.7, the resultant is a vector having the proper direction of the signal component.

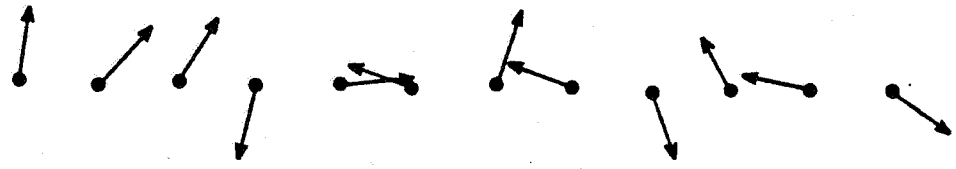
In the single bit process, the relative amplitude contribution of signal and noise



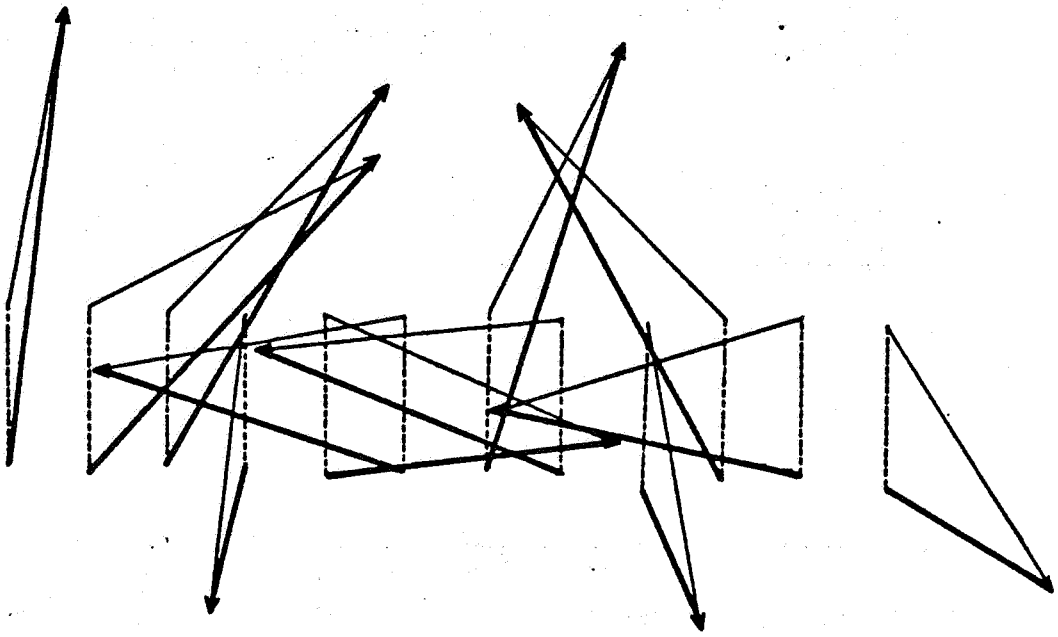
Bit Stack

FIGURE 4.7

to each component is effectively converted to a phase angle. Fig 4.8 illustrates another component of the same model. This time the amplitude of the signal is twice the previous example, but by definition the amplitude of the noise remains the same. In this case, the resultant of the vector sum of signal and noise is weighted slightly more heavily by the signal, with the result that the bit vectors, although substantially similar to the preceding example, are directed to a slightly different angle. Summation of these vectors, in Fig 4.7b, produces a resultant which is almost twice the previous amplitude, very nearly maintaining the correct amplitude relationships in the output. Effectively, under the conditions of the model, the amplitude component is converted to phase.



Bit Vectors



Signal + Noise

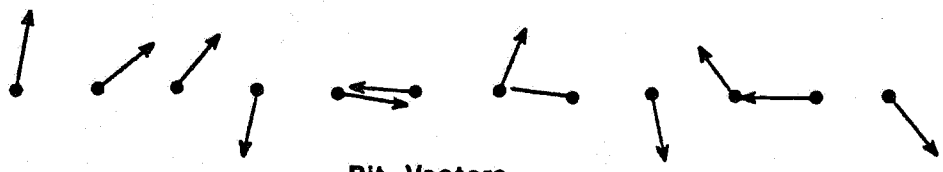
1:2

FIGURE 4.8

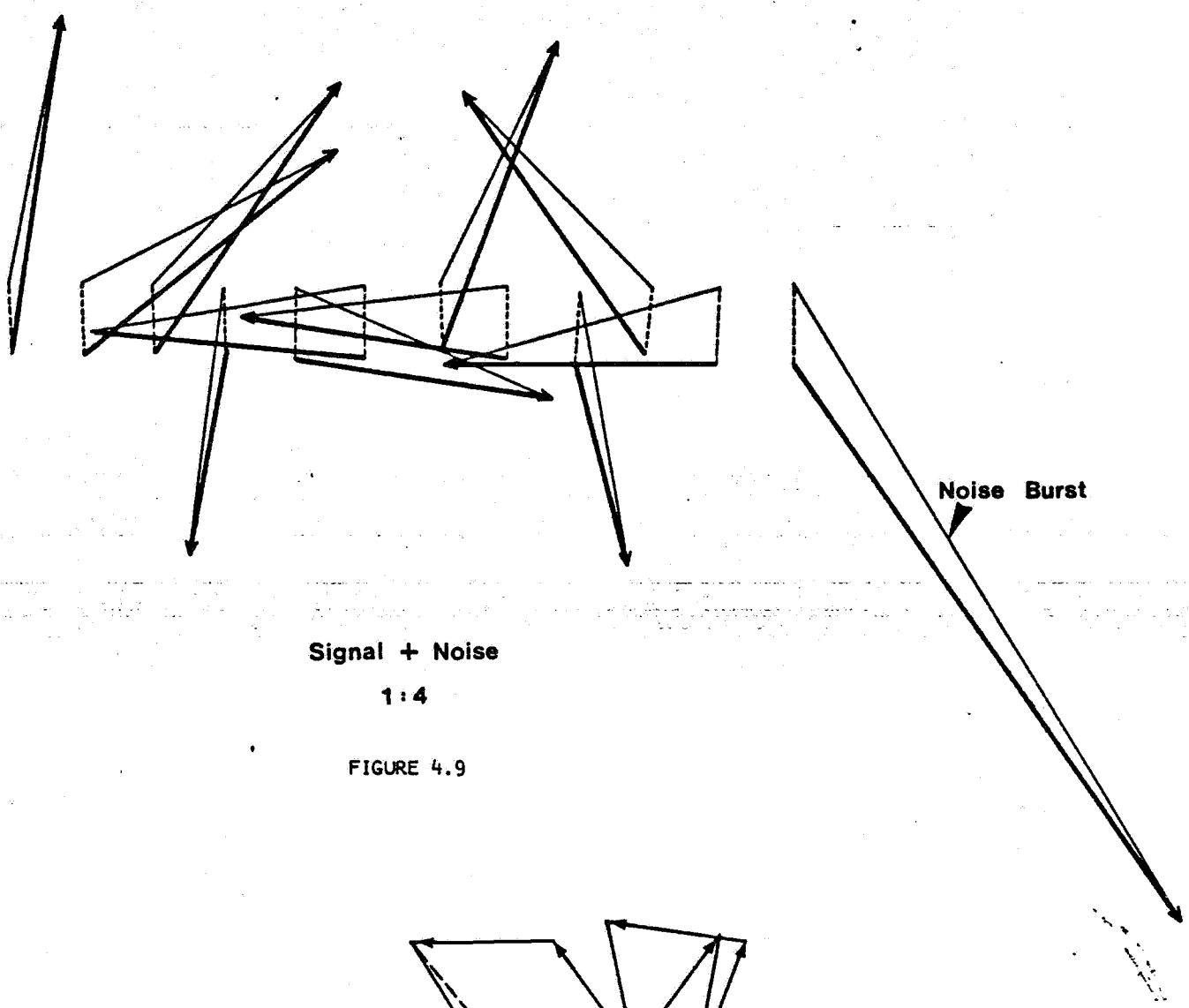
Now return to the example of the noise burst, resulting in the bit vectors of Fig 4.9. The result of stack of these is very nearly the same as before, with only a small deflection of phase and slightly diminished amplitude. (Fig 4.10)

The system is well adapted to the Vibroseis signal source. Fig 4.11 illustrates a computer model of the process. A number of Vibroseis sweeps of varying amplitudes are combined to produce a noise free signal. Random noise, including some large bursts, is generated, scaled to substantially greater amplitude than the signal, and the two are summed. The model of the single bit trace preserves the zero crossings only. The process was repeated, each time with random noise, to simulate the several traces of a trace gather group.

The results compare the conventional and the single bit recordings to the noise free signal for increasing numbers of composites. Notice that with only four composites,



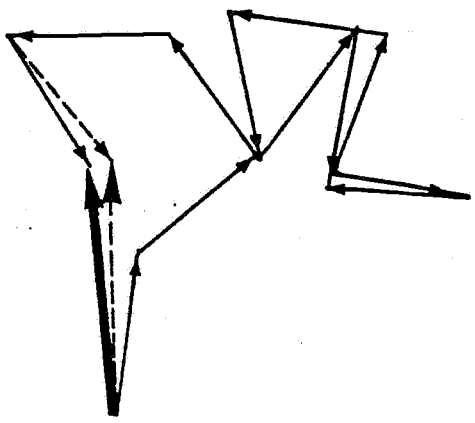
Bit Vectors



Signal + Noise

1:4

FIGURE 4.9



Bit Stack

FIGURE 4.10

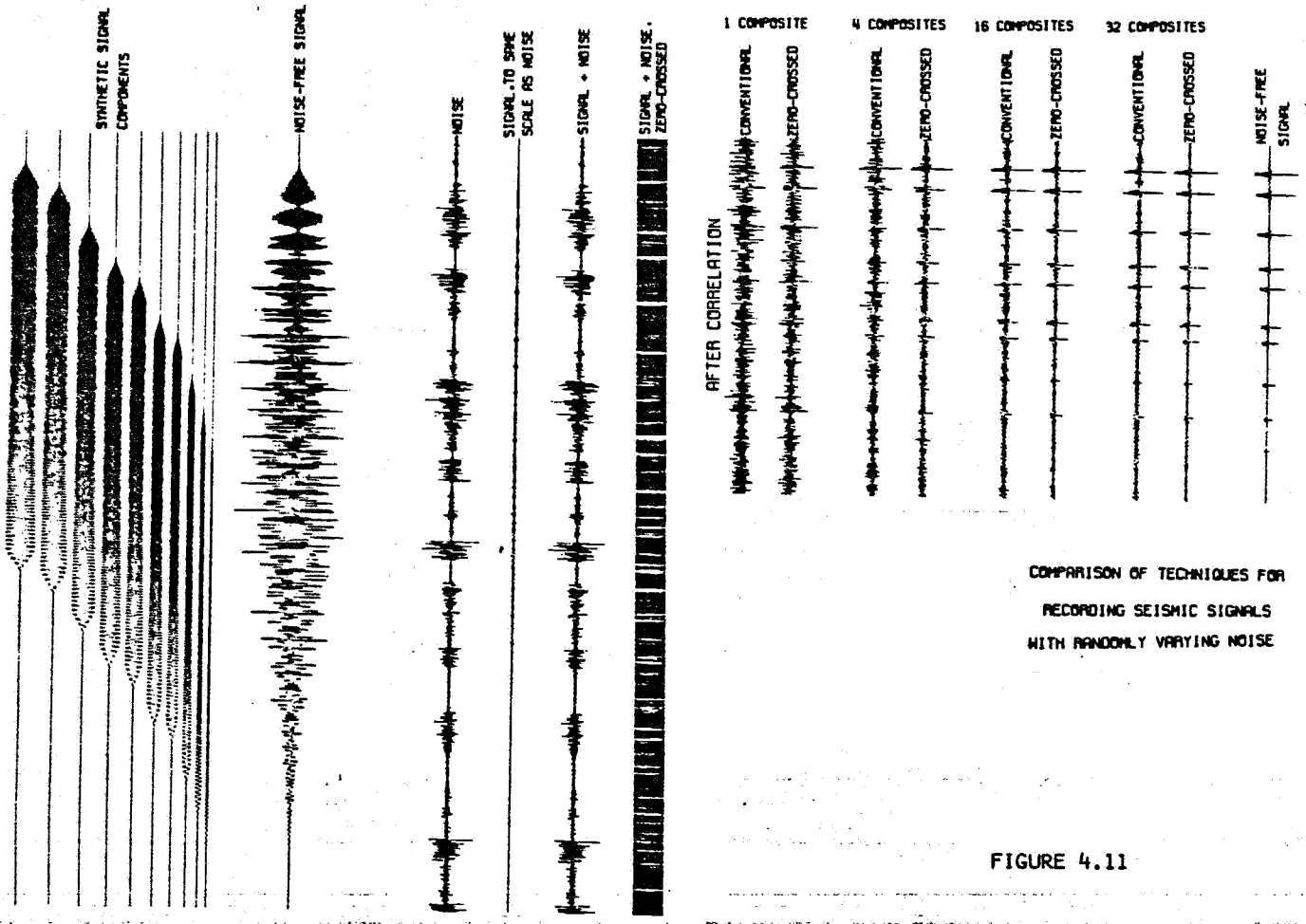


FIGURE 4.11

the one bit recordings have a superior signal-to-noise ratio. The difference is maintained through all comparisons up to 32 composites and clearly, the relative amplitudes have been preserved reasonably well.

With the obvious superiority of these results, it may be wondered why the method is not used universally. One of the reasons is the nature of the noise, which in practice may not necessarily be random. Also, if there is no noise the system will fail to maintain proper amplitude relationships. It is once again a matter of a trade-off of improvement in one area for possible deterioration in others. For this system to work, random white noise must be present, but, if necessary it can be generated and deliberately added to the field signal in a noise free area.

It will be interesting to observe future developments of the one-bit system. The ability to increase channel capacity makes other potential improvements possible. One of these is to record very close trace spacings, in effect recording each geophone position rather than each group position. This greatly increases the potential for application of multichannel filters, perhaps the next most powerful tool after stacking for removing noise of the same frequency as the signal. It also may provide the solution to obtaining the large number of channels required for three-dimensional work, which has the potential for greatly improved reliability of information in complex structural areas.

APPENDIX 2

GROUND MAGNETIC RAW DATA TABULATION

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement
Line 71000N
Orientation of traverse 82°
Date 27/3/82

Instrument PPM1
Accuracy 1
Drift control
Operator D. /JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS
35000				1515
25				
50				
75				
100				
25				
50				
75				
200				
25				
50				
75				
300				
25				
50				
75				
400				
25				
50				
75				
500				
25				
50				
75				
600				
25				
50				
75				
700				
25				
50				
75				
800				
25				
50				
75				
900				
25				
50				
75				
36000	455			1830
25	459			
50	458			
75	460			
100	454			
25	465			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36175	874			
200	862			
25	863			
50	859			
75	860			
25	[illegible]			
50	[illegible]			
75	[illegible]			
400	863			
25	867			
50	[illegible]			
75	[illegible]			
500	[illegible]			
25	877			
50	870			
75	875			
600	[illegible]			
25	[illegible]			
50	895			
75	905			
700	[illegible]			
25	[illegible]			
50	[illegible]			
75	884			
800	[illegible]			
25	[illegible]			
50	881			
75	[illegible]			Same
900	[illegible]			Main Road
25	[illegible]			[illegible]
50	[illegible]			
75	[illegible]			1745
37000	[illegible]			1515 [illegible]
25	58864			P Read in C
50	864			→ 58848
75	854			AT 1515
100	856			→ [illegible]
25	864			[illegible]
50	858			→ 58847
75	866			AT 1835
200	862			
25	859			
50	862			
75	865			
300	856			

GROUND MAGNETIC TRAVERSE

Area T
Tenement
Line 7/000 N
Orientation of traverse 82°
Date 27 : 3 : 80

Instrument PPM 1
Accuracy 1 X
Drift control
Operator D H

37350 58861
37375 890

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
37400	58866				38575	58948			
25	873				600	953			
50	874				25	962			
75	865				50	951			
500	58861				75	963			
25	875				700	966			
50	879				25	950			
75	885				50	966			
600	890				75	947			
25	879				800	928			FENCE
50	884				25	969			
75	899				50	962			
700	894				75	959			
25	895				900	960			
50	900				25	957			
75	913				50	961			
800	901				75	938			
25	906	906			39000	961			
50	903				25	965			
75	904				50	963			
900	911				75	972			
25	907				100	969			
50	922				25	966			
75	909				50	965			
38000	926				75	969			
25	917				200	963			
50	877				25	965			
75	922				50	979			
100	929				75	968			
25	922				300	963			
50	922				25	966			
75	922				50	974			
200	923				75	968			
25	936				400	975			
50	923				25	896			+ Fence
75	923				50	966			
300	929				75	968			
25	932				500	968			
50	937				25	974			
75	947				50	977			
400	949				75	979			
25	948				600	980			
50	962				25	959			
75	946				50	987			
500	947				75	979			
25	940				700	991			
50	944				39775	956			

GROUND MAGNETIC TRAVERSE

Area .....
Tenement .....
Line 71000 N
Orientation of traverse ..... S20°
Date 27/3/80

Instrument PPM 1
Accuracy 1/8
Drift control .....
Operator DH

COORDINATES	READING	COR'N	COR'D READING	REMARKS
39775	58987			
800	989			
25	989			
50	987			
75	997			
900	59004			
25	59004			
50	58987			
75	980			
40,000 ~~200~~	983			
25	990			
50	59033			
75	58986			
100 ~~300~~	997			
25	981			
50	990			
75	994			
200 ~~700~~	992			
25	993			
50	986			
75	992			
300 ~~500~~	994			
25	991			
50	993			
75	993			
400 ~~500~~	994			
25	995			
50	59019			
75	58991			
500 ~~700~~	58994			
25	991			
50	59001			
75	58998			
600 ~~800~~	58985			
25	996			
50	58990			
75	999			
700 ~~900~~	998			
25	59005			
50	58997			
75	59017			
800 ~~1000~~	59007			
25	59012			
50	59016			
75	59007			
900 ~~100~~	59021			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
40150	59032			
75	59024			
41000	59023			
25	036			
50	039			
75	037			
1800	046			
25	044			
50	038			
75	049			
2000	053			
25	054			
50	052			
75	051			
3500	060			
25	056			
50	063			
75	068			
4000	063			
25	068			
50	062			
75	065			
5000	59062			
25	054			
50	052			
75	047			
6000	045			
25	045			
50	052			
75	053			
7000	073			
25	045			
50	043			
75	046			
8000	031			
25	029			
50	030			
75	031			
100	020			
25	021			
50	014			
75	010			
200	59004			1725
25				
50				
75				

Area .....
Tenement .....
Line ..... 11.000 N .....
Orientation of traverse ..... E to E .....
Date ..... 19/4/88 .....

Instrument ..... MPZ-37 .....
Accuracy ..... Gamma .....
Drift control ..... Base Station MPZ-37 .....
Operator ..... Gordon .....

COORDINATES	READING	COR'N	COR'D READING	REMARKS
39100	58908	58708	0	14 45
	902	901	-1	
	902	901		
	904	903		
38900	907	906		
	915	914		
	911	910		
	914	913		
300	888	887		FENCE
	920	919		
	910	909		
	909	908	-2	
700	908	906		
	921	919		1455
	915	913		
	903	901		
1000	908	905	-3	
	902	899		
	901	898		
	901	898		
500	903	900		
	902	899		
	895	892		
	902	898	-4	
—	894	890		
	886	882		
	896	892		
	885	881		
500	890	886		
	884	880		
	889	885		
	882	878	-4	
200	881	877		
	874	870		1505
	877	873		
	875	871		
1000	874	870		
	878	874		
	877	873		
	870	866		
	873	869		
	867	863	-4	
	867	863		
	861	857		
1700	863	859		
	865	861		

COORDINATES	READING	COR'N	COR'D READING	REMARKS
	860	856		
900	863	859		
	861	857		
	853	849	-4	
	864	860		
700	857	853		
	849	845		
	855	851		
	851	847		
600	846	842	-5	1515
	843	838		
	843	838		
	838	833		
500	820	814	-6	
	832	826		
	839	833		
	822	815		
	830	823		
	833	826		
	835	828		
	804	797	-7	
300	817	810		
	827	820		
	827	820		
	820	813		
200	820	813		
	821	814		-1525
	820	813		
	816	809		
100	816	809		
	824	817		
	819	813		
	816	808	-8	
370	59525	59425	15730	RAILWAY LINE
	59521	813		
	[illegible]	804		
	[illegible]	763		
38200	511	835		
	[illegible]	757		
	[illegible]	844		
	[illegible]	851		
200	[illegible]	850		
	[illegible]	855		
	542	860		
	541	858		
700	[illegible]	862	+18	

GROUND MAGNETIC TRAVERSE

Area .....
Tenement .....
Line 71,000 N IV
Orientation of traverse N 90 E
Date 19/4/80

Instrument MP-2
Accuracy 1 gamma
Drift control .....
Operator BO 355

COORDINATES	READING	COR'N	COR'D READING	REMARKS
	845	863		
	861	887	+24	
600	858	868		
	851	867		1G3
	862	881		
	851	870		
500	845	875		
	865	885	-7	
	865	885		
	863	883		
400	861	888		
	869	889		
	865	885		
	873	892		
300	872	892	+10	
	875	885		
	875	895		
	876	896		
2	903	903		
	852	873		
	886	907		
	892	903		
15	911	911	+21	
	885	909		
	907	918		
	905	916		
36000	911	918		
	914	915		
	914	914		
	910	912		
35900	914	916		
	892	914		
	887	909	+22	
	912	914		
800	887	909		
	875	897		
	877	900	+23	
	897	890		
700	857	890		
	876	879		
	882	885		
	880	883		
600	875	879	+23	
	862	885		
	851	875		
-	877	901	+24	

COORDINATES	READING	COR'N	COR'D READING	REMARKS
	853	877	+24	
	846	870		
	850	875	+25	
	843	868		
400	841	864		
	834	860		
	847	864	+26	
	845	865		
300	852	861		
	847	862		
	841	858		
	842	850		
200	872	701	-17	
	847	854		
	841	878		
	853	862		
100	847	857		
	841	853		
	843	850		
	847	842		
35	821	848	+27	
	842	852		
		849		
		855		
34900		850		
		848		
		857		
		848		
800		851		
		857		
		851		
		851		
700		859	+27	
		864		
		853		
		860		
600		860		
		856		
		856		
		863	+28	
500		867		
		872		
		867		
		871		
		870		
		878	+29	

Area .....
Tenement .....
Line ..... 71.00 N .....
Orientation of traverse .....
Date .....

Instrument .....
Accuracy .....
Drift control .....
Operator .....

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
-	547	276							
300	854	283							
-	578	287							
-	851	882							
-	552	881							
200	552	821							
-	549	887							
-	561	272							
-	570	885							
100	562	281							
-	554	283							
-	555	285							
-	551	281							
3	552	882							

Area TREGALANA
Tenement WIRE BLUFF
Line 70 N
Orientation of traverse 82° mag
Date 18/4/75

Instrument
Accuracy
Drift control
Operator J. Mann

COORDINATES	READING	COR'N	COR'D READING	REMARKS
34000E				
"				
"				
"				
100				
"				
"				
"				
200				
"				
"				
"				
300				
"				
"				
"				
400				
"				
"				
"				
500				
"				
"				
"				
600				
"				
"				
"				
700				
"				
"				
"				
800				
"				
"				
"				
900				
"				
"				
35000	861	4	845	1643
"	863	"	847	
"	860	"	844	
"	860	"	844	
100	861	"	845	
"	861	"	845	
"	862	"	846	

COORDINATES	READING	COR'N	COR'D READING	REMARKS
35175	58662	5	846	
35200	861		845	
"	862		846	
"	861		845	
"	860		844	
300	861		845	
"	859		843	
"	863		847	
"	867	16	851	
400	863	16	847	
"	864		848	
"	864		848	
"	862		846	
500	867		851	
"	861		845	
"	864		848	
"	859		843	
600	865		849	
"	859		843	
"	862		846	
"	861		845	
700	860		845	
"	861		846	
"	860		845	
"	859		844	1630
800	866		851	S mS at 1637
"	870		855	
"	863		848	
"	865	15	850	
900	864		849	
"	875		860	
"	871		856	
"	869		854	
36000	872		857	track
"	867		852	
"	868		853	
"	870		855	
100	875		860	
"	876		861	
"	877		862	
"	877		862	
200	890		875	track
"	861		856	fence
"	884		869	track
"	889		874	
"	874		859	
"	858		843	

Area: TIKELACNNA
Tenement: UKO BLUFF
Line: 70 N
Orientation of traverse: 80°
Date: 18/4/80

Instrument: Scintrex
Accuracy: 1 8
Drift control: Base
Operator: [illegible]

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36350	58890	+14	876	1620 (+14)
—	903	+14	889	
400	889	+14	875	
—	944	+14	930	
—	890	+14	876	
—	905	+14		
500	902	+14		Tank 50m N
—	898	+14		
—	892	+14		
—	892	+14		
600	888	+14		
—	886	+14		
—	887	+14		
—	889	+14		
700	887	+14		
—	887	+14		
—	882	+14		
	883	+14		
800	879	+14		
—	881	+14		
—	879	+14		
—	878	+14		
900	877	+14		
—	876	+14		
—	873	+14		
—	873	+13		
37000	872	+13		91608 (+13)
—	871	+13		
—	867	+13		
—	866	+13		
100	850	+13		Fence
—	852	+12	840	Road
—	716	+12	704	Pipeline
—	58773	+12	761	Fence
200	34561	+12	549	R/W
—	58312	+12	300	Fence R/W
* —	58751/798			2n Rd. 1605/1600 (+12)
—	58840			Base (0)
300	58847			
—	852			
—	852	0		
—	854			
400	860			
—	858			
—	857			
—	855			
500	58844			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
37525	58856			
—	855			
—	855			
600	856			
—	857			
—	855	0		
—	854			
700	859			
—	854			
—	857			
—	857			
800	858			
—	858			1115
—	859			
	858			
900	861			
—	860			
—	861			
—	[illegible]			
38000	860	+12		
—	855			
—	860			
—	861			
100	862			
—	862			
—	863			
—	863			
200	862			1125
—	862			
—	861			
—	854			
300	862			
—	867			
—	867			
—	867			
400	870	+14		
—	867			
—	870			
—	870			
500	870			
—	872			
—	876			
—	872			
600	874			
—	874			1135
—	855			Call (See Note)

Area TRECALANA
Tenement UKO BLUFF
Line 70N
Orientation of traverse
Date 18/4/80

Instrument MP-2
Accuracy 1.8
Drift control Base
Operator MR

COORDINATES	READING	COR'N	COR'D READING	REMARKS
38700E	58870			
–	58888	+6		
–	885			
–	888			
800	896			
–	884			
–	897			
–	89[illegible]			
900	89[illegible]			
–	8[illegible]			
–	[illegible]			
–	[illegible]	+8		
39000	[illegible]		[illegible]	
–	893		[illegible]	
–	843		[illegible]	
–	892		900	
100	893		[illegible]	1155
–	891		[illegible]	(−8)
–	888		[illegible]	
–	893	+9	[illegible]	
200	887		896	
–	887		896	12:05
–	887		[illegible]	(−9)
–	889		[illegible]	
300	882		[illegible]	
–	879		[illegible]	
–	882		[illegible]	
–	883		[illegible]	
400	886		[illegible]	
–	892		9[illegible]	
–	896		9[illegible]	
–	895		[illegible]	
500	888		906	
–	893		901	
–	895		904	
–	895		903	
600	897		905	
–	[illegible]		912	
–	58916	+8	924	
–	904		912	
700	915		[illegible]	
–	912		920	
–	905		[illegible]	
–	910		[illegible]	
800	910		915	
–	917		925	
–	917		[illegible]	

COORDINATES	READING	COR'N	COR'D READING	REMARKS
39875E	58912		[illegible]	
39900	919		[illegible]	
–	917		925	
–	920		[illegible]	
~~[illegible]~~	914		[illegible]	
40000	921		[illegible]	
–	919		[illegible]	Fence
–	915		[illegible]	
–	920		[illegible]	
100	911		[illegible]	
–	875		[illegible]	
–	919		[illegible]	
–	915		[illegible]	
200	915		[illegible]	
–	911		[illegible]	
–	922		[illegible]	
–	917	+8	[illegible]	
300	911		[illegible]	
–	912		[illegible]	
–	920		[illegible]	
–	915		[illegible]	
400	915		[illegible]	
–	922		[illegible]	
–	916		[illegible]	
–	912		[illegible]	
500	934		[illegible]	
–	917		[illegible]	
–	914		922	
–	915		[illegible]	
600	915		[illegible]	
–	917		[illegible]	
–	921		[illegible]	
–	917		[illegible]	
700	925		[illegible]	
–	926		[illegible]	
–	923		[illegible]	
–	920		[illegible]	
800	914		[illegible]	
–	914		[illegible]	
–	910		[illegible]	
–	907		915	
900	909		917	
–	912		914	
–	912		920	
–	912		920	
41,000	912		920	
–	907		[illegible]	

Area: TRSCALAND

Tenement: LIKO RUFF

Line: 70N

Orientation of traverse: 82°

Date: 15/4/80

Instrument: MP-2

Accuracy: 1.8

Drift control: Back Mag

Operator: WG

COORDINATES	READING	COR'N	COR'D READING	REMARKS
41050	58909			
—	903			
100	909			
—	901			
—	905			
—	908			
200	909			
—	918	+8		
—	915			
—	919			
300	923			
—	922			
—	923			
—	926			
400	929			
—	931			
—	940			
—	946			
500	949			
—	947			
—	945			1345 (-8) / track.
—	952			
600	954			
—	958			
—	950			
—	950			
700	956	+4		
—	947			
—	953			
—	953			
800	945			
—	947			
—	946			New Picture / 1425 (-4)
—	950			
900	954			
—	957			
—	953	+3		
—	962			
42000	966			
—	959			
—	956			
—	969			
100	969			
—	972	+2		
—	970			
—	977			
200	972			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
42225	58987			
—	989			
—	994			
300	994	+1		
—	995			
—	59000			
—	003			
400	002			
—	007			
—	005			
—	005			
500	006			
—	59010			
—	59017	0		
—	59005			
600	59017			
—	59010			
—	59006			
—	59007			
700	005			
—	001			
—	59000			
—	004	−1		
800	005			
—	58998			
—	999			
—	59			
900	59004			
—	005			
—	004			
—	003			
43000	004			
—	004	−2		
—	004			
—	004			1500
100	004			
—	005			
—	003			
—	002			
200	007			
—	007			
—	009	−3		
—	011			
300	013			
—	016			
—	59195			
—	59198			

Area ..... TREGARRA .....
Tenement ..... URO BLUFF .....
Line ..... 7oN .....
Orientation of traverse ..... 12° .....
Date ..... 14/4/80 .....

Instrument ..... MP2 .....
Accuracy ..... 1 .....
Drift control ..... Base Mag .....
Operator ..... MGR .....

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COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
43400E	59017								
—	021								
—	025	—							
—	023	—							
580	019	-4							
—	58969								
—	59044								
—	023	—							
600	017								
—	58990	—							
—	59026								
—	59011								
700	026								
—	032								
—	032	—							
—	029								
500	035	-5							
—	026								
—	59000								
—	023								
500	034								
—	030	—							
—	036								
—	034			1520 (+S)					
44000	59000			Trench on N.P. Track.					

Area .....
Tenement .....
Line 72200 N .....
Orientation of traverse True E 82°
Date 19/4/80

Instrument MP2 44
Accuracy 1 Gamma
Drift control Base Station Mag
Operator Bob

COORDINATES	READING	COR'N	COR'D READING	REMARKS
39000	58911		0	1145
	938			
	934			
	938			
100	944		0	F
	945	946	+1	
	940	941		
	939	940	+2	
200	941	943		F 1125
	947	949		
	952	954		
	946	949	+3	
300	952	955		F SB
	965	968		
	939	942		
	957	960		
400	949	952		F SB
	945	948		
	950	953		
	58962	965		
500	958	962	+4	
	952	956		1135
	958	963	+5	
	963	968		
5000	59005	59011	+6	F Fence
	58962	58968		L Tree
	968	974		1142
	962	968		
700	962	969	+7	L Dead Tree
	961	968		
	969	977	+8	
	970	978		
800	962	971		F Tree
	903	971		1155
	969	977		
	958	976		
900	945	973	+8	
	961	969		FSB
	959	968	+9	
	959	968		
4000	947	956		
	954	963		1205
	956	965		F DEAD TREE
	953	962		1155
100	953	963	+10	
	955	965		
	952	962		

COORDINATES	READING	COR'N	COR'D READING	REMARKS
	955	966	+11	
200	916	927		12·15
	951	962		
	959	970		
	952	964	+12	
300	959	971		
	959	971		
	956	968		
	955	967		12·25
400	958	970		
	959	971		F Dead Tree
	958	970		
	956	968		
500	960	972		
	964	976		
	958	971	+13	
	949	962		
600	961	974		
	958	971		
	953	966		1235
	961	974		
700	959	972		
	953	966		
	966	979		
	951	964		
800	956	970	+14	
	958	972		
	947	961		
	940	954		1245
900	953	967		
	936	950		
	926	940		
	957	971		
5000	950	964		1249

Area.....
Tenement.....
Line 72000 N.....
Orientation of traverse True E.....
Date.....17/4/80.....

Instrument.....MP2-44.....
Accuracy .....1 Gamma.....
Drift control Base Station Mag
Operator.....G. Ranson.....

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36750	58802	0	802	1433 EXCAVATION
-	818	0	818	
800	817	0	817	
"	818	0	818	
"	818	0	818	
"	818	0	818	
900	824	0	824	
"	819	0	819	
"	825	0	825	
"	824	-1	223	
37000	829	-1	828	1438
"	825	-1	824	
"	834	-2	832	
"	829	-2	827	
100	830	-3	827	
"	833	-3	830	
"	833	-3	830	
"	837	-3	834	
200	843	-3	840	
"	834	-4	830	
"	844	-4	840	
"	849	-4	845	
300	857	-5	852	
"	857	-6	851	
"	859	-5	854	
"	858	-6	852	
400	870	-6	864	
"	870	-6	864	
"	863	-6	857	
"	869	-6	863	
500	881	-6	875	1505
"	870	-6	864	
"	885	-6	879	
"	875	-6	879	
600	874	-6	868	
"	874	-6	868	
"	881	-6	875	
"	888	-6	882	
700	883	-7	876	
"	876	-7	869	
"	886	-7	879	
"	885	-7	878	
800	887	-7	880	
"	889	-8	881	
"	888	-8	880	
"	886	-8	878	
900	880	-8	872	

COORDINATES	READING	COR'N	COR'D READING	REMARKS
	893	-9	884	
	886	-9	877	
	889	-10	879	
38000	891	-10	881	1526
"	896	-10	886	
"	895	-10	885	
"	903	-10	893	
100	902	-10	892	
"	905	-10	895	
"	899	-10	889	
"	901	-10	891	
200	902	-10	892	
"	900	-11	889	
"	902	-11	891	
"	917	-11	906	
300	913	-11	902	
"	912	-11	901	
"	918	-11	907	
"	923	-11	912	
400	922	-11	911	
"	918	-12	906	
"	921	-12	909	
"	921	-12	909	
500	942	-12	930	1538
"	923	-12	911	
"	922	-13	909	
"	921	-13	908	
600	921	-13	908	
"	918	-13	905	
"	920	-13	907	
"	911	-13	898	
700	912	-13	899	
"	920	-13	907	
"	913	-13	900	
"	927	-14	903	
800	933	-14	919	
"	925	-14	911	
"	916	-14	902	
"	919	-14	905	
900	922	-14	908	
"	927	-14	913	
"	936	-14	922	
"	930	-14	916	
39000	929	-14	905	1549

Area.....
Tenement.....
Line ..72000 N.....
Orientation of traverse...22°.....
Date....17/4/80.....

Instrument...mp2 44
Accuracy ...1gamma...
Drift control..Base Station Mag
Operator....R. WATSON...

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36 750	58799	-2	58 797	1137
"	59023	-1	59 021	Railway line
700	58807	-1	58 805	
"	800	-1	799	Fence
"	836	-1	835	pipeline lines
"	817	-1	816	
600	800	-1	799	
"	812	-1	811	
"	811	-1	810	
"	809	-1	808	
36 500	813	-1	812	1146
"	813	-1	812	
"	809	-1	808	
"	811	-1	810	Flag E
400	813	-1	812	
"	813	-1	812	
"	813	-1	812	
"	812	-1	811	
300	812	-1	811	E
"	815	-1	814	
"	810	-1	809	
"	817	-1	816	
200	813	-1	812	E 1156
"	816	-1	815	E
"	816	-1	815	
"	813	-1	813	E
100	816	0	816	
"	816	0	816	E
"	817	0	817	
"	813	0	813	E
36000	58811	0	811	1205
"	819	0	819	
"	819	0	819	
"	817	0	817	
900	816	0	816	
"	819	0	819	
"	817	0	817	
"	811	0	811	E
800	812	0	812	
"	855	+1	856	
"	821	1	822	
"	826	1	827	
700	830	1	831	E
"	833	1	834	E
"	816	1	817	E
"	855	+2	857	
600	823	2	825	

COORDINATES	READING	COR'N	COR'D READING	REMARKS
"	837	+2	839	
"	838	+2	840	
"	813	+2	815	
35 500	821	+2	823	1220
"	833	+2	835	E
"	827	+2	829	
"	825	+2	827	
400	828	+2	830	E
"	827	+3	830	
"	828	+3	831	
"	829	+3	832	E
300	824	+3	827	E
"	834	+3	837	
"	826	+3	829	
"	830	+3	833	
200	824	+3	827	E
"	826	+3	829	
"	818	+3	821	
"	823	+3	826	E Dam
100	816	+3	819	
"	816	+3	819	
"	809	+3	812	
"	818	+4	814	E
35 000	815	+4	819	E 1225
"	815	+4	819	
"	811	+4	815	
"	835	+4	839	
900	817	+4	821	
"	815	+4	819	E
"	816	+5	821	E
"	811	+5	816	
800	823	+5	828	
"	815	+5	820	Track
"	807	+5	812	
"	813	+5	818	
700	813	+5	118	E 515
"	817	+5	822	
"	803	+5	808	
"	801	+5	806	
600	816	+5	821	E Dam
"	809	+5	814	
"	805	+5	809	
"	800	+5	805	E
34 500	799	+6	805	1244
"	58811	+5	816	
"	58700	+6	758	754 PL

SOC STATION 7

Area .....
Tenement .....
Line 72N
Orientation of traverse 82°
Date 12/4/80

Instrument MP2, 44
Accuracy 1 GAMMA
Drift control .....
Operator R. WATSON

045

COORDINATES	READING	COR'N	COR'D READING	REMARKS
34 400	58794	+6	58 805	E
'	806	+6	815	
'	807	+6	813	
'	811	+6	817	
300	808	+6	814	F
'	801	+6	807	F
'	799	+6	805	
'	804	+6	810	
200	806	+6	812	F
'	789	+6	795	
'	791	+6	797	
'	793	+6	799	
100	787	+6	795	F
'	796	+6	802	
'	798	+6	804	
'	788	+7	795	
34900	58781	+6	58 787	13:05
				314 Position

COORDINATES	READING	COR'N	COR'D READING	REMARKS

Area .....
Tenement .....
Line 73 N
Orientation of traverse S2° T.E.
Date 18/4/80

Instrument MP2 44
Accuracy GAMMA
Drift control .....
Operator R WATSON

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36500	59017		0	INS
"	58817			
"	58797			Fence Flag
"	59250		0	
400	790		-1	
"	788			Road
"	789		-1	Fence
"	788		-1	
300	786	784	-2	
"	786	784		
"	779	777		
"	784	782		
200	776	774		
"	768	766		
"	774	772		
"	767	765		
100	766	764		
"	764	762		
"	753	751		
"	760	758		
36000	766	764	-2	
"	766	763	-1	
"	756	753		
"	752	749		
35900	757	754		
"	755	752	-1	
"	746	742	-1	
"	750	746		
800	747	743		
"	740	736		
"	755	751		
"	754	750		
700	747	743		
"	743	739	-4	
"	753	748	-5	
"	744	739		
600	747	742		
"	739	734		
"	746	741		
"	734	729		
500	741	736		
"	741	736		
"	750	746		
"	742	736	-6	
400	745	739		
"	747	743		

COORDINATES	READING	COR'N	COR'D READING	REMARKS
"	58759	753	-2	
300	767	761		
"	805	798		
"	771	765	-6	
"	770	763	-7	
200	761	754		
"	768	761		
"	777	770		
"	779	771		
100	787	780		
"	788	781		
"	787	780		
"	786	779		
35000	787	779	-8	
"	795	787		
"	793	785		
"	793	785		
34900	797	789		
"	723	715		
"	819	811		
"	58818	810		
800	824	816		
"	824	816	-8	
"	823	815		
"	834	826		
700	830	822	-8	
"	836	827	-9	
"	844	835		
"	851	842		
600	851	842		
"	854	845		
"	857	848		
"	867	858		
500	861	952		
"	880	871		
"	871	862		
"	867	858		
400	879	870		
"	877	868		
"	888	879		
"	888	879		
300	882	873		
"	883	874		
"	886	877		
"	886	877		
200	888	879		

Area .....
Tenement .....
Line ..... 73N .....
Orientation of traverse ..... 82° T.E .....
Date ..... 13/4/80 .....

Instrument ..... MP2 44 .....
Accuracy ..... 1 GAMMA .....
Drift control .....
Operator ..... R. WATSON .....

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
~~34150~~	~~8795~~		-9 ↑						
	899								
34100	898			+ THP					
"	895								
"	884								
"	875								
34000	877		↓	1325					

Area 23
Tenement .....
Line ...73...N.....
Orientation of traverse...82°TE...
Date...18./...4./...82.....

Instrument...MP2...44.....
Accuracy .....1GAMMA.....
Drift control.....
Operator...R WATSON...

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36500	59569	-6		1456 RAILWAY LINE
'	58794		795	FENCE
'	792		796	
'	813		807	
600	816		810	
'	814		808	
'	823		817	
'	828		822	
700	836	-6	830	
'	840	-5	835	
'	845	-5	840	
'	858	-5	853	
500	869	-4	865	14 15
'	874	-4	870	
'	876	-4	872	
'	880	-4	876	
900	889	-4	885	
'	894	-4	890	
'	896	-3	893	
'	891	-3	888	
37000	897	-3	894	1425
'	899	-3	896	
'	901	-3	898	
'	900	-2	898	
100	911	-2	909	
'	913	-2	911	
'	917	-2	915	
'	922	-2	920	
200	921	-2	919	
'	9201	-1	928	
'	927	-1		
'	930	-1		
500	873	-1		
'	942	-1		
'	931	-1		
'	932	0		
400	933	-1		14 40
'	936	0		
'	951	+1		
'	944	+1		
500	936	+1		
'	934	+1		
'	951	+1		
'	941	+1		
600	952	+1		
'	946	+2		1450
'	9[illegible]	+1		

COORDINATES	READING	COR'N	COR'D READING	REMARKS
'	940	+2		
200	948	+2	950	
'	939	+2	941	
'	941	+2	943	
'	941	+3	944	
200	935	+3	938	
'	937	+3	940	
'	933	+3	936	
'	942	+3	945	
900	935	+3	938	
'	925	+3	928	
'	929	+3	932	
'	925	+3	928	
38000	921	+3	924	1500
'	930	+4	934	
'	921	+3	924	
'	931	+4	935	
100	925	+4	929	
'	926	+4	930	
'	923	+4	927	
'	914	+4	918	
200	912	+4	916	
'	916	+4	920	
'	920	+4	924	
'	920	+4	924	
300	917	+4	921	
'	923	+4	927	
'	914	+4	918	
'	922	+4	926	1510
2400	930	+4	934	
'	920	+5	925	
'	915	+5	920	
'	917	+5	922	
500	914	+5	919	
'	924	+5	929	
'	925	+6	931	
'	933	+6	939	
600	922	+6	928	
'	930	+6	936	1520
'	937	+6	943	
'	932	+6	938	
700	930	+7	937	
'	940	+7	947	
'	948	+7	955	
'	937	+7	944	
900	942	+8	950	

GROUND MAGNETIC TRAVERSE

Area .....
Tenement .....
Line 73 N
Orientation of traverse 52° TE
Date 15/4/80

Instrument MP2 44
Accuracy 1 GAMMA
Drift control .....
Operator BROWN

48A

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
1	935	+8	943	CREEK					
1	950	+9	959						
900	962	+10	972	1540					
1	963	+10	973						
1	950	+10	960						
1	945	+10	955						
39000	963	+11	974						
1	963	+11	974						
1	959	+11	970						
1	957	+11	968						
100	953	+11	964						
1	948	+11	959						
1	950	+11	961						
1	949	+11	960						
200	950	+11	961						
1	948	+12	960	1550					
1	954	+12	966						
1	950	+13	963						
00	963	13	976	1600					
1	973	+13	986						
1	938	+13	951						
1	59146	+13	59159						
100	944	+13	957						
1	955	+13	968						
1	960	+14	974						
1	961	+14	975						
500	940	+14	954	1610					
1	976	+14	990						
1	942	+14	956						
1	968	+14	982						
600	958	+14	972						
1	974	+14	988						
1	971	+15	986						
1	964	+15	979						
700	917	+15	932	917					
1	999	+15	59014						
1	967	+15	58982						
1	979	+15	984						
800	962	+15	977						
1	940	+15	955						
1	975	+15	990						
1	968	+15	983	1620					
900	963	+15	978						
1	965	+15	980						
1	964	+15	979						
1	957	+15	972						

GROUND MAGNETIC TRAVERSE

Area TREGALANNA
Tenement
Line 73000N
Orientation of traverse 820
Date 27/3/80

Instrument PDMI
Accuracy 1.8
Drift control
Operator DH/JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS
35000	58841			1050
25	838			
50	831			
75	813			
100	833			
25	814			
50	808			
75	802			
200	800			
25	798			
50	792			
75	790			
300	793			
25	797			
50	792			
75	780			
400	778			
25	779			
50	783			
75	770			
500	769			
25	769			
50	768			
75	769			
600	772			
25	771			
50	791			
75	779			
700	765			
25	764			
50	769			
75	770			
800	770			
25	762			
50	768			
75	770			
900	770			
25	776			
50	780			
75	783			
36000	58754			
25	787			
50	785			
75	773			
100	780			
25	783			
50	789			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36175	783			
200	794			
25	793			
50	795			
75	802			
300	802			
25	806			
50	790			
75	806			
400	58804	1015		Base Station At 1010
25	285			Reading 58787
50	811			Repeat at 1110 → 785
75	752			Power, Pipeline
500	819			
25	51146			Rail Line
50	58814			Fence
75	831			
600	830			Base Station B
25	838	1145		Reading → 58821
50	840			at 1145
75	835			Reading → 58823
700	850			at 1345
25	857			
50	870			
75	875			
800	885			
25	890			
50	896			
75	902			
900	910			
25	910			
50	915			
75	914			
37000	917			
25	917			
50	920			
75	926			
100	925			
25	934			
50	934			
75	931			
200	939			
25	945			
50	946			
75	950			
300	891			
25	942			

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement
Line 7300 ON
Orientation of traverse 82°
Date 27/3/80

Instrument PPMI
Accuracy 1.8
Drift control 350
Operator SM

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
37350	946				38525	58948			
75	952				50	938			
400	952				75	936			
25	943				600	935			
50	954				25	941			
75	969				50	935			
500	952				75	919			
25	955				700	942			
50	951				25	934			
75	945				50	934			
600	949				75	934			
25	927				800	935			
50	951				25	942			
75	954				50	947			
700	956				75	928			
25	950				900	950			
50	955				25	944			
75	951				50	964			
800	963				75	949			Creek
25	950				39000	59001			1245
50	971				25	965			
75	962				50	956			
900	959				75	957			
25	958				100	927			
50	956				25	950			
75	947				50	962			
39000	941				75	969			
25	945				200	948			
50	935				25	949			
75	950				50	965			1300
100	937				75	974			
25	931				300	974			
50	939				25	955			
75	933				50	982			
200	929				75	955			
25	928				400	964			
50	927				25	967			
75	930				50	967			
300	929				75	961			Fence
25	931				500	970			
50	927				25	976			
75	935				50	969			
400	926				75	970			
25	926				600	978			
50	931				25	979			
75	934				50	971			
500	936				396 75	976			

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement
Line 73 000 N
Orientation of traverse 820
Date 27/3/80

Instrument PPM 1
Accuracy 1 γ
Drift control
Operator JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
39700	58971								
25	979								
50	965								
75	971								
800	979								
25	983								
50	972								
75	976								
900	976								
25	980								
50	980								
75	978								
40000	58984			1315					

Area .....
Tenement .....
Line 74 N
Orientation of traverse 92°
Date 1/5/80

Instrument MP2 516
Accuracy 1 GAMMA
Drift control BASE STATION MAG N06
Operator S TUNSTILL

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COORDINATES	READING	COR'N	COR'D READING	REMARKS
36250	58828	-10		1423
2625	840			
275	839			
287 5	838			
300	852			
1	850			
1	850			
1	855			
200	864			
1	861			
1	814			
1	865			
300	865			1430
1	867			
1	871			
1	873			
300	876			
1	878			
1	879			
1	886			
300	894			
1	905			
1	908			14:37
1	908			
300	922			
1	922			
1	934			
1	927			
300	935			
1	944			
1	934			
1	929			
37000	917			14·44
1	915	-9		
1	916			
1	914			
100	906			
1	911			
1	909			
1	908			
200	936			
1	913			
1	918			14 48
1	912			
300	907			
1	905			
1	903			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
1	898			
200	898			
1	904			
1	903			
1	897			
520	900			14 53
1	900			
1	904			
1	898			
100	901			CREEK
	904			
	907			
1	914	-9		
100	921			
	924			
1	926			1457
1	905			
100	926			
1	914			
1	916			
1	918			
100	913			
1	916			
	912			
1	911			
37000	895			1501

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement
Line 74000 N
Orientation of traverse 82°
Date 25/1/80

Instrument PPM 1
Accuracy 1.8
Drift control
Operator JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS
35250	55856			0920 Power lines
25	56153			
200	57646			
75	58770			
50	791			
25	794			
100	793			
75	792			
50	797			
25	793			
35000	792			
75	792			
50	790			
25	791			
900	597			
75	57913			
50	56655			
25	54418			Power lines
800	331			
75	55728			
50	58114			
25	741			
800	804			
75	801			
50	795			
25	797			
600	799			
75	796			
50	789			
25	778			
500	773			
75	794			
50	776			
25	782			
400	784			
75	816			
50	787			
25	794			
300	778			
75	784			
50	779			
25	791			
200	790			
75	791			
50	795			
25	774			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
75	58791			
50	790			
25	797			
34000	794			1010
75	786			
50	788			
25	792			
900	798			
75	793			
50	795			
25	796			
800	797			
75	794			
50	795			
25	790			
700	801			
75	796			
50	797			
25	798			
600	799			
75	806			
50	798			
25	802			
500	790			1020
75	786			
50	809			
25	805			
400	813			
75	796			
50	794			
25	797			
300	798			
75	793			
50	795			
25	799			
200	798			
75	801			
50	810			
25	805			
100	817			
75	801			
50	804			
25	799			
33000	58813			
75	795			
50	798			

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement SEVEN
Line 74000 N
Orientation of traverse 82°
Date 24/1/80

Instrument PPM 1
Accuracy 1 γ
Drift control
Operator JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
35250	53804			1520					
75	50516			Power line					
3000	54258								
25	819								
50	58234								
75	745								
4000	813								
25	811								
50	826								
75	810								
5000	809			1526					
25	809								
50	811								
75	828								
6000	816								
25	823								
50	832								
75	836								
7000	826								
25	832								
50	839			1532					
75	834								
8000	835								
25	837								
50	836								
75	826								
9000	836								
25	841								
50	830								
75	838								
10000	842			1537					
25	860								
50	854								
75	854								
11000	833								
25	648								
50	766			Water pipe 10m E					
75	834								
12000	845								
25	59102			Railway 5m W					
66250	58859			1542					

GROUND MAGNETIC TRAVERSE

Area TREGARANA
Tenement
Line 74000 N
Orientation of traverse 82°
Date 25/1/80

Instrument PPM 1
Accuracy 1.6
Drift control
Operator BW

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COORDINATES	READING	COR'N	COR'D READING	REMARKS
36250E	58848			
75	58848			
300	848			
25	862			
50	863			
75	851			
400	856			
25	863			
50	841			
75	879			
500	865			
25	875			
50	879			
75	877			
600	887			
25	882			
50	893			
75	915			
700	901			
25	914			
50	913			
75	910			
800	921			
25	938			
50	929			
75	946			
900	962			
25	949			
50	939			
75	919			
37000	929			Bo Drill Hole 50mS
25	920			
50	922			
75	917			
100	914			
25	916			
50	921			
75	914			
200	912			
25	933			
50	930			
75	922			
300	915			
25	915			
50	915			
75	911			
400	58911			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
37425	58912			
50	913			
75	909			
500	901			
25	911			
50	898			
75	908			
600	912			
25	923			
50	915			
75	926			
700	935			
25	932			
50	938			
75	913			
800	939			
25	923			
50	919			
75	932			
900	923			
25	925			
50	932			
75	925			
38000	58900			

GROUND MAGNETIC TRAVERSE

Area TRECHLANN
Tenement
Line 74000N
Orientation of traverse 82°
Date 25/1/80

Instrument PPM 1
Accuracy 1%
Drift control
Operator JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
32900	58796								
75	791								
50	769								
25	776								
800	809								
75	790								
50	58788								
25	791								
700	792								
75	788								
50	795								
25	792								
600	785								
75	790								
50	791								
25	769								
500	791								
75	778								
50	790								
25	789								
400	795								
75	797								
50	778								
25	793								
300	778								
75	789								
50	793								
25	779								
200	786								
75	787			Drill Line 50mN					
50	769								
25	772								
100	780								
75	788								
50	768								
25	785								
32000	771			1110					

Area .....
Tenement .....
Line 75000 N
Orientation of traverse ... True E ....
Date ... 16/4/80 .....

Instrument ... MP2-3 .....
Accuracy ... 1 gamma .....
Drift control .....
Operator ... Bob W .....

200m 33.5° Base 9 58893 11.50 C.S.T.
898 1327

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36000	58877	-1		1205 ~~1757~~
	638	/		Railway line
	861	/		Fence
	744	/		Pipeline
35900	830	-1		OH Phone lines
	842	/		
	878	/		Road
	888	/		Fence
800	841	/		
	829	/		
	838	/		
	8845	/		
700	57551			Overhead
	57533	/		power line
	58823	✓		Excavation
	853	/ -1		
600	850	✓ -2		
	823	✓		
	857	✓		
	840	✓		
500	836	✓		1222
	58829	✓		
	830	✓		
	829	✓		
400	833	✓		
	830	✓		
	823	✓		
	825	✓ -2		
300	826	✓		
	826	✓		
	8823	✓		
	57485	✓		Overhead
200	57464	✓		power lines
	58815	✓		
	829	✓		
	822	✓		
100	827	✓		Flat
	827	✓		
	824	✓		
	823	✓		
35000	58521	✓		1240
	820	✓		
	821	✓ -2		
	821	✓ -3		
34900	822	✓		
	819	✓		E

COORDINATES	READING	COR'N	COR'D READING	REMARKS
	58817			
900	821			E
	819	✓		
	8214	✓		
	821	✓		
700	823	✓		W
	823	✓		
	820	✓		
	826	✓ -3		
600	827	✓		F
	827	✓		
	830	✓		
	836	✓		
500	849	✓		1254
	839	✓		
	83½	✓		
	8½	✓		
400	550	✓		I
	857	✓		
	856	✓		
	842	✓		
300	845	✓		
	849	✓ -3		
	8½	-4		
	846	✓		
200	842	-		
	84	✓		
	545	✓		
	834	✓		
	837	✓		E
	843	✓		
	837	✓		
	837	✓		
34400	838	✓		1305
		-4		

BASE 9 58900 1419 58906 AT 1544

Area .....
Tenement .....
Line 75000 N
Orientation of traverse True E
Date 16/4/80

Instrument m.p2.44
Accuracy 1.6 mms
Drift control .....
Operator G.B.

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36000	5886	-8	58878	1428 RAILWAY LINE 18m S
	868		860	FENCE
	850		842	
	890		882	
100	890		882	
	880		872	
	882		874	
	885		877	
200	891		883	
	901		893	
	897		889	
	899	-8	891	
300	911	-9	902	
	911		902	
	912		903	
	920		911	
400	913		904	
	917		908	
	910		901	
	909		900	
500	916		907	14 44
	922	-9	913	
	911		902	
	916		907	TRACK
600	919		910	
	912		903	
	914		905	
	922		913	
700	912		903	
	916		907	
	914		905	
	915		906	
800	911	-9	902	
	907	-10	58897	
	911		901	
	912		902	
900	902		892	
	912		902	
	911		901	
	907		897	
37000	905		895	1456
	916		906	
	907		907	
	915		905	
100	919	-10	909	
	913		903	

COORDINATES	READING	COR'N	COR'D READING	REMARKS
	915	-10	905	
200	909		899	
	912		902	
	913		903	
	923		913	
300	912		902	
	917		907	
	916		906	
	923		913	
400	915		905	
	915		905	
	913		903	
	908		906	
500	907		907	1508
	917		907	
	914		914	
	919		909	
600	919		909	
	921		911	
	921		911	
	924		914	
700	928	-4	918	
	928	-10	918	
	932	-11	921	
	938		927	
800	943		932	
	946	-11	935	
	945		935	
	954		943	
900	963		952	TREES
	960		949	
	957	-12	945	
	954	-12	942	
38000	954	-12	942	15 20

GROUND MAGNETIC TRAVERSE

Area: TREGONNA
Tenement: URQ BLUFF
Line: 76000N
Orientation of traverse: 82°
Date: 17/4/80

Instrument: MP2
Accuracy: 1Y
Drift control: Base Station Mag Base -7
Operator: JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS
37000	58922	-2	920	1110
—	922		920	
—	922		920	
—	923		921	
100	917		915	
—	917		915	
—	914		912	
—	913		911	
200	908		906	
—	908		906	
—	909		907	
—	902		900	
300	907		905	
—	903		901	
—	890		888	
—	899		897	
400	899		897	
—	892		890	
—	898		896	
—	892		896	
500	58900		898	
—	895		893	
—	901		899	
—	901		899	
600	890		889	
—	896		894	
—	890		888	
—	907		905	
700	883		881	track / fence
—	887		885	↑
—	58902/58884			1055 / 1120
—	No R		—	power line
800	No R		—	
—	58902		900	
—	903		901	
—	900		898	
900	900		898	
—	896		894	
—	899		897	
—	896		894	
36000	58899		897	
—	894		892	
—	899		897	fallen fence
—	898		896	
100	902		900	
—	898		888	stream sed

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36175	58881	-1	880	stream sed
200	878		877	creek
—	NR		—	power line
—	NR		—	
—	58869		868	
300	874		73	
—	878		77	track
—	869		68	
—	865		64	
400	872		71	
—	865		64	
—	852		51	
—	833		32	Cosine
500	874		73	fence
—	963		962	R/W
—	885		84	
—	745		744	fence / pipeline
600	830		39	
—	861		60	telegraph
—	852		51	main Road
—	866		65	
700	854		53	
—	852		51	
—	865		64	
—	843		42	
800	855		54	
—	849		48	
—	847		46	
—	849		48	
900	846		45	
—	849		48	
—	849		48	
—	850		49	
35000	58852		51	1145

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement
Line 76000 E
Orientation of traverse 82°
Date 25/1/80

Instrument ppm 1
Accuracy 10
Drift control
Operator BW

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
32500	58771								
75	782								
50	759								
25	751								
400	760								
75	763								
50	746								
25	745								
300	747								
75	748								
50	745								
25	740								
200	745								
75	739								
50	738								
25	743								
100	736								
75	740								
50	740								
25	737								
32000	58722								

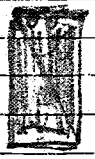
GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement
Line 76000E
Orientation of traverse 82°
Date 25/11/80

Instrument PPM1
Accuracy 1δ
Drift control
Operator BW

061

COORDINATES	READING	COR'N	COR'D READING	REMARKS
34750	58891			
25	890			
700	900			
75	891			
50	894			
25	892			
600	892			
75	891			
50	898			
25	892			
500	893			
75	891			
50	889			
25	893			
400	887			
75	892			
50	892			
25	894			
300	893			
15	893			
50	893			
25	894			
200	891			
75	891			
50	886			
25	883			
100	893			
75	855			
50	876			
25	894			
34000	882			
75	884			
50	891			
25	891			
900	886			
75	872			
50	891			
25	875			
600	880			
75	878			
50	882			
25	891			
700	888			
75	892			
50	885			FENCE
25	880			
600	58871			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
33575	58891			
50	877			
25	900			
				
				
800	874			
75	863			
50	872			
25	869			
400	849			
75	859			
50	851			
25	847			
200	849			
75	851			
50	850			
25	843			
400	844			
75	843			
50	822			
25	847			
100	833			
75	837			
50	816			
25	832			
33000	816			
75	812			
50	795			
25	817			
900	807			
75	808			
50	794			
25	800			
600	792			
75	793			
50	798			
25	794			
700	789			
75	792			
50	805			
25	784			
600	768			
75	787			
50	794			
25	58778			

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement SIX
Line 76000 N
Orientation of traverse 820
Date 24/1/80

Instrument PPM1
Accuracy 1.0
Drift control
Operator JM & BW

COORDINATES	READING	COR'N	COR'D READING	REMARKS
38000	58977			
75	998			
50	58916			
25	59013			
900	58994			
75	58987			
50	59014			
25	56990			
800	016			
75	59010			
50	58963			
25	59012			
700	58967			
75	995			
50	58995			
25	58913			
600	59008			
75	58992			
50	59022			
25	016			
500	59035			
75	028			
50	012			
25	025			
400	59058			
75	59067			
50	58974			
25	59045			
300	018			
75	59000			
50	038			
25	021			
200	59033			
75	58959			
50	59037			
25	046			
100	031			
75	017			
50	025			
25	016			
37000	018			
75	016			
50	002			
25	001			
900	003			
75	59015			
50	5[illegible]14			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
25	58993			
800	58999			
75	59002			
50	006			
25	59007			
700	58997			
75	999			Bore Hole → 20 m
50	995			
25	995			
600	989			
75	977			
50	976			
25	971			
500	970			
75	970			
50	966			
25	912			
400	964			
75	911			
50	959			
25	956			
300	968			
75	953			
50	949			
25	946			
200	948			
75	948			
50	941			
25	942			
100	949			
75	940			
50	58943			
25	58925			
36000	58946			
75	58931			
50	58931			
25	58949			
900	58960			
75	58940			
50	58933			
25	58927			
800	58926			
75	58921	57902		
50	51683			
25	54153			Power line
700	52831			
75	57167			

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement SIX
Line 76000 N
Orientation of traverse 82°
Date 24/1/80

Instrument PPM 1
Accuracy 1 γ
Drift control
Operator 3m & 13w

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
35050	58516								
25	445								
600	962								
75	961								
50	966								
25	964								
500	964								
75	958								
50	959			fence					
25	956								
400	966								
75	953								
50	881			creek wash					
25	944								
300	52663			creek					
75	463								
50	53658			Power line					
25	51957								
200	514								
75	58942								
50	930								
25	935								
100	929								
75	934								
50	923								
25	922								
35000	58984								
75	944								
50	945								
25	894								
900	480			water pipe					
75	910								
50	920								
25	920			Road 2m E					
800	902								
75	913								
750	923								

GROUND MAGNETIC TRAVERSE

Area ..... Tk .....
Tenement .....
Line ..... 77.200 N .....
Orientation of traverse .....
Date ..... 1/5/80 .....

Instrument ..... MP2 516 .....
Accuracy ..... 1 GAMMA .....
Drift control ..... BASE STATION 6
Operator ..... G. Brown .....

COORDINATES	READING	COR'N	COR'D READING	REMARKS
8600SE	88897	0		11 38
"	893			
"	906			
"	909			
"	911			
50	904			
"	909			
"	911			
"	909			
"	912			
100	912			11 41
"	909			
"	903			
"	979			
"	917			"
150	57098			POWER TRACK LINE
"	" 312			POWER LINE
"	58918			
"	917			
"	911			
200	916			11 46
"	915			
"	907			
"	913			
"	916			
250	915			
"	917			
"	915			
"	912			
"	917			
300	916			11 49
"	919			
"	923			
"	926			
"	928			
350	927			
"	933			
"	936			
"	942			
"	941			
400	946			11 51
"	952			
"	956			
"	959			
"	964			
450	969			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
"	971			
"	975			
"	977			
"	977			
500	985			1156
"	985			
"	993			
"	998			
"	994			
550	984			
"	985		0	
"	974			
"	946			POWER LINE
"	884			" "
600	857			11 59 "
"	939			
"	959			
"	970			
"	9604			
650	972			
"	957			
"	952			
"	948			
"	954			
700	966			1202
"	952		-1	
"	952			
"	947			
"	955			
750	952			
"	949			
"	945			
"	941			
"	941			
800	938			1205
"	938			
"	937			
"	939			
"	935			
850	934			
"	935			
"	935			
"	932			
"	932			
900	931			1208
"	934			

GROUND MAGNETIC TRAVERSE

Area .....
Tenement .....
Line 7.7200 N
Orientation of traverse .....
Date 1/5/80

Instrument MP2 516
Accuracy 1 GAMMA
Drift control BASE STATION 6
Operator G. BROWNIAN

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
1	931								
1	931	-1							
1	927								
950	929		927						
1	927		925						
1	926		924						
1	926	-2	924						
1	923		921						
37000	929		927	12 · 11					

GROUND MAGNETIC TRAVERSE

Area.....
Tenement.....
Line .....76800 N.....
Orientation of traverse.....
Date.....4/5/80.....

Instrument....MP.2.....516.. ...
Accuracy .....1 GAMMA.....
Drift control...BASE...STATION.MAG No 6.
Operator.....S..TUNSTILL.....

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36000E	5907			13:33
"	904			
"	907			
"	901			
"	904			
50	907			
"	921			
"	906			
"	913			
"	900			
100	905			13:30
"	905			
"	907			
"	903			
"	902			
150	904			
"	908			
"	905			
"	900	-1		
"	903			
200	905			13:27
"	907			
"	906			
"	910			
"	915			
250	907			
"	912			
"	911			
"	907			
"	909			
300	917			13:24
"	916			
"	897			
"	904			
"	908			
350	907			
"	904			
"	917			
"	913			
"	912			
400	916			13:20
"	911			
"	906			Power line back
"	913			" "
"	909			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
"	5892 3	-		
"	930			
"	930	-1		
"	934			
500	940			13:15
"	945			
"	951			
"	956			
"	958			
550	960			
"	953			
"	957			
"	963			
"	974			
600	974			13:13
"	981			
"	983			
"	977	0		
"	927			
650	986			
"	987			
"	986			
"	986			
"	987			
700	990			13:10
"	990			
"	984			
"	985			
"	980			
750	975			
"	970			
"	968			
"	968			
"	965			
800	958			13:07
"	958			
"	955			
"	952			
"	950			
850	949			
"	948			
"	946			
"	945			
"	944			
900	944			13:04

GROUND MAGNETIC TRAVERSE

Area .....
Tenement ..... Z .....
Line ..... 76 800 N .....
Orientation of traverse .....
Date ..... 1/5/80 .....

Instrument .....
Accuracy ..... 1 GAMMA .....
Drift control ..... BASE STATION .....
Operator ..... S. TUNSTALL .....

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COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
"	941	↑							
"	941								
"	942								
950	942								
"	943								
"	941								
"	938								
"	937								
37000	58940	0		13:00					

Area TREGALANA
Tenement URO BLUFF
Line 77000 N
Orientation of traverse 82°
Date 15/4/80

Instrument MP2
Accuracy ~~+/-~~
Drift control Repeat Readings
Operator JM/MR

COORDINATES	READING	COR'N	COR'D READING	REMARKS
34000E	58785	766		1720.
25	58787	768		
50	58789	770	-19	
75	58791	772		
100	58795	776		
—	58793	774		
—	58791	773		
—	58792	794		
200	58798	780		1715.
—	58802	784		
—	58805	787		
—	58808	790	-18	
300	58810	792		
—	58814	796		
—	58817	799		
—	58816	798		
400	58824	804		Track
—	58827	810		
—	58823	816		
—	58827	820		
500	58836	827		
—	58843	826	-17	
—	58846	829		
—	58852	835		
600	58849	832		
—	58849	832		
—	58858	841		
—	58854	838		
700	58863	847		
—	58859	843		
—	58864	848		
—	58867	851	-16	
800	58870	854		
—	58870	854		
—	58873	857		
—	58863	847		1700
900	58849	803		Pipe line
—	58902	887		
—	58889	874		
—	58887	882	+5	
35000	58890	875		
—	58916	901		
—	58894	879		
—	58908	893		
100	58912	897		
—	58916	901		1650
—	58909	894	-15	Rd. In 35150 - 35175

COORDINATES	READING	COR'N	COR'D READING	REMARKS
35175	58877	863		
35200	58873	859		Fence
—	58830	916		
—	58942	928	-14	
—	58934	920		
300	58928	914		
—	58936	922		
—	58935	921		
—	58930	916		
400	58920	906	-14	
—	58925	912		
—	58921	908		
—	58914	901		
500	58906	893		
—	58907	894		
—	58917	904	-13	
—	58909	896		
600	58924	911		
—	58907	894		
—	58914	901		
—	58913	900		
700	58914	901		
—	58912	899		
—	58905	893		
—	58826	814		
800	58911	899		
—	58904	892		
—	58900	888		
—	58913	900	-12	
900	58898	886		
—	58914	902		
—	58907	895		
—	58910	898		
36000	58851	839		1628
—	58527	515		Power line.
—	58906	895		
—	58931	920		
100	58916	905		
—	58928	917		
—	58912	901	-11	
—	58918	907		
200	58920	909		
—	58921	910		
—	58920	909		
—	58919	908		
300	58932	921	-10	
—	58937	927		ck-
—	58937	927		

Area TREGALANA
Tenement URO BLUFF
Line 77000 N
Orientation of traverse 82°
Date 15/4/80

Instrument MP2
Accuracy 1%
Drift control Repeat Reading
Operator MR / JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36375	58945	58935		
400	58949	939		
—	58951	941		
—	58966	956		
—	58967	957	-10	
500	No Reading	—		Power line
—	No Reading	—		Power line.
—	59009	58899		
—	59020	59030		
600	59022	5912	-10	
(Base 8)	59016	59022	0	1510/1615
—	59009			
—	59002			
700	58996			
—	58984			
—	58977		0	
—	58965		-1	
600	58960			
—	58954			
—	58950			
—	58943			
900	58937			
—	58936		-1	
—	58928	58926	-2	
—	58929	927		
37000	58920	918		
—	58939	937		Minor Reading Error
—	58925	923		
—	58927	924		
100	58928	926	-2	
—	58928	925	-3	
—	58930	927		
—	58924	921		
200	58936	933		
—	58926	923		
—	58926	923		
—	58927	924	-3	
300	58926	922	-4	
—	58924	920		
—	915	911		
—	925	921		
400	924	920		
—	921	917		
—	926	922		
—	925	921	-4	
500	925	920	-5	
—	911	906		

COORDINATES	READING	COR'N	COR'D READING	REMARKS
37550	58928	923		1533
—	910	905		
600	915	910		Readings checked ✓
—	58995	993	-5	Reading wild
—	58780	774		Reading wild
—	58882	876		Reading wild
700	58925	919		1543
—	58915	909	-6	
—	58716	710		
—	58892	886		
800	58898	892		
—	58929	58923		
—	59031	59025		
—	58907	58901		
900	58915	908	-7	
—	58901	893		
—	58716	709		
—	58900	893		
38000	58901	893	-8	1551
Base 8	59016			(1507) at 36625E
Base 8	59026			1610
Base 8	59038			1750

Area TREGALANA
Tenement URO BLUFF
Line 78000 N
Orientation of traverse 082°
Date 16/4/80

Instrument MP2
Accuracy 1.8
Drift control Repeat Readings
Operator MR/JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS
34750	58933	+12	58945	1140 Road
75	935		947	
800	928		940	
25	936		948	
50	934		946	
75	59362		394	Pipeline
900	58935		947	
—	945		957	
—	940		952	
—	950		962	
35000	58945	+12	957	1145
—	946		968	
—	958		970	
—	957		969	
100	954		966	
—	950		962	Road
—	930		943	Telephone
—	956		968	
200	950		962	
—	950		962	Creek
—	947		959	"
—	944		952	"
300	944		956	
—	940		952	
—	945		960	track
—	945		957	
400	939		951	
—	940		962	
—	943		955	
—	932		944	
500	~~937~~		946	
—	942		954	
—	935		947	Fence
—	59217		59229	R/W
600	58942		58954	Fence
—	929		941	Existence
—	947		959	
—	935		947	tracks
700	930		942	
—	941		953	
—	942		954	
—	942		954	
800	942		954	
—	944		956	—
—	952		964	
—	948		960	
900	946	+12	958	

COORDINATES	READING	COR'N	COR'D READING	REMARKS
35925	58946	+12	58958	
—	940	+11	951	1213
—	945		956	
36000	58946		957	1223
—	947		958	
—	954		955	
—	943	+11	954	
100	944	+10	950	track
—	943		953	
—	934		944	PM B22 hole
—	934		944	~~PM B~~
200	936		946	
—	934		944	
—	933		943	
—	933		943	
300	929		939	track
—	925		935	
—	930		940	
—	928		938	
400	930		940	
—	927		937	
—	928		938	
—	927	+10	937	
500	58930	+10	940	1233
—	927		937	
—	924		934	
—	926		936	
600	924		934	
—	927		937	
—	924		934	
—	919		929	
700	5462		57472	Pipeline/track
—	58919		929	
—	930	+10	940	
—	924		934	
800	918		928	
—	898		908	
—	910		920	
—	920		930	
900	920		930	
—	918		928	
—	930		940	1243
—	913		923	
37000	58926		936	
—	906		916	
—	906	+10	916	
100	936		946	

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement URO BLUFF
Line 78000N
Orientation of traverse 082°
Date 16/4/80

Instrument MP2
Accuracy 1γ
Drift control Repeat Readings
Operator MR/JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS
37100	58897	+10	907	
—	910		920	
—	920		930	
—	57500		57510	Base line North
200	57500		57510	
—	58699		58 909	
—	890		900	PUB19
—	895		905	
300	891		901	1250
—	907		917	
—	917		927	
—	909	+10	919	
400	890		900	
—	949		959	
—	875		885	
—	962	+10	975	
500	58914	+9	923	
—	885		994	
—	900		909	
—	888		997	
600	889		998	
—	910	+9	919	1255
—	890		899	
—	965		974	
700	945		954	
—	887		996	
—	59135		59 144	
—	58844		58 949	
800	59041	+9	59 050	
—	026		59035	
—	58932		58 941	
—	857		866	
900	963		972	
—	796		805	
—	858		867	
—	885		894	
58000	909	+9	918	
Base 10	58938			(1130) Near 34750E
Base 10	58939			1140
Base 10	58944			1400

COORDINATES	READING	COR'N	COR'D READING	REMARKS
38000	58909		58 918	
—	883		892	
—	897		906	
—	922		931	
100	832		841	
—	796		805	
—	814		823	
—	59096		59 105	
200	58905	+9	58 917	1305
—	851		860	
—	860		869	
—	835		824	
300	967		976	
—	59300		59 307	
—	58910		58 919	
—	840		850	
400	902		911	
—	922		831	
—	771		780	
—	826		835	
500	58752	+9	861	1311

Area TREGALANA
Tenement FIVE
Line 78000 N
Orientation of traverse 82°
Date 20-1-80

Drift - 48/h

Instrument PPM 1
Accuracy 18
Drift control
Operator J.M

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COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
34650	58819			1328 Fence					
25	898								
500	942								
75	926								
50	943								
25	942								
600	898			1332					
75	929								
50	926								
25	940								
400	942								
75	922								
50	922			Fence					
25	917								
300	924								
75	919								
34250	58921			1338					

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement FIVE
Line 78000 N
Orientation of traverse 82°
Date 22/1/80

Drift Rate
-7 γ/hr

Instrument PPM 1
Accuracy 1 γ
Drift control Repeat Readings
Operator D B

COORDINATES	READING	COR'N	COR'D READING	REMARKS
34250E	58940			1630
25	935			
200	928			
75	931			
50	910			
25	905			
100	904			
75	903			
50	898			
25	900			
34000	901			
75	894			
50	890			
25	893			
900	870			
75	880			
50	880			
25	874			
800	875			
75	878			
50	873			
25	869			
700	866			
75	873			
50	884			
25	870			
600	863			
75	872			
50	868			
25	867			
500	58860			
75	856			
50	862			
25	863			
400	865			
75	852			
50	852			
25	848			
300	849			
75	851			
50	849			
25	839			
200	820			
75	827			
50	825			
25	831			
100	826			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
33025	58820			
50	820			
25	836			
33000	58829			
75	820			
50	840			
25	800			
900	833			
75	826			
50	826			
25	833			
800	834			
75	829			
50	838			
25	852			
700	867			
75	817			
50	818			
25	822			
600	822			
75	824			
50	836			
25	825			
500	58820			
75	826			
50	845			
25	847			
400	829			
75	833			
50	830			
25	838			
300	858			
75	826			
50	838			
25	844			
200	842			
75	847			
50	847			
25	834			
100	826			
75	850			
50	847			
32025	58856			

GROUND MAGNETIC TRAVERSE

Area TREGOLANA
Tenement FIVE
Line 78000 N
Orientation of traverse 82°
Date 22-1-80

Drift
Rate
-7 γ/hr

Instrument P.P.M.1 074
Accuracy 1γ
Drift control Repeat Readings
Operator D.B.

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
32000	58845			719					

GROUND MAGNETIC TRAVERSE

Area TREGALANA — Drift Rate +14 γ/hr
Tenement FOUR
Line 29.000
Orientation of traverse 82°
Date 22-1-80

Instrument P.P.M.1
Accuracy 1 γ
Drift control Repeat Readings
Operator JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS
34150	58944			1446
25	941			
100	918			
75	944			
50	966			
25	912			1449
34000	938			
75	908			
50	914			
25	900			
900	928			
75	921			
50	923			
25	953			
800	930			
75	922			
50	58875			1455
25	912			
700	914			
75	930			
50	913			
25	906			
600	901			
75	947			Road
50	898			
25	910			
500	884			1459 1500
75	899			
50	909			
25	901			
400	900			
75	918			
50	903			
25	924			
300	913			
75	903			
50	900			1504
25	903			
200	917			
75	900			
50	875			
25	895			
100	901			
75	876			
50	902			
25	881			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
75	58879			
50	870			
25	872			
900	881			
75	873			
50	874			
25	876			
800	863			
75	891			
50	875			1516
25	875			
700	865			
75	872			
50	871			
25	859			
600	865			
75	877			
50	863			
25	890			
500	865			1523
75	838			Creek
50	859			
25	875			
400	851			
75	867			
50	871			
25	851			
300	863			
75	871			
50	58857			1533
25	845			
200	838			
75	850			
50	847			
25	835			
100	830			
75	835			
50	836			
25	829			
32000	829			1538
				Crosses 32250E 50N

GROUND MAGNETIC TRAVERSE

Area ...TREGALANA...
Tenement ...FAUR... Drift -48/hr
Line ...79.000 N...
Orientation of traverse ...82°...
Date ...20-1-80...

Instrument ...PPM 1...
Accuracy ...1.8...
Drift control ...Repeat Readings...
Operator ...J.M...

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COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
35250	58958			12.05					
25	967								
200	976								
75	965								
50	971								
25	981								
100	976								
75	975								
50	978								
25	982								
35 000	997			12.10					
75	995								
50	59 000								
25	58985								
34 900	998								
75	59005								
50	58999								
25	59001								
800	007								
75	58 999								
50	58981			12.14					
25	996								
700	992								
75	980								
50	984								
25	977								
600	980								
75	963								
50	963								
25	965								
500	955			12.18					
75	946								
50	939			Creek					
25	953								
400	970								
75	961								
50	950								
25	942								
300	938								
75	949								
34 250	949	922		12.22 / 1.11					
25	940								
200	961								
75	938			Fence 5m					
34 150	932			1.13					
25									

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement FOUR
Line 79000 E
Orientation of traverse 82°
Date 24/1/80

Instrument PPM
Accuracy 1.0
Drift control Repeat Reading
Operator SM

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
35650	58955			fence					
25	359			Railway line					
600	974								
75	979			fence 10m E					
50	973								
25	983								
500	58980								
75	982								
50	990								
25	995								
400	980								
75	981								
50	973								
25	931								
300	979								
75	999								
35250	985								

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement FOUR
Line 79000 E
Orientation of traverse S20°
Date 24/1/80

Instrument PPM 1
Accuracy 1 γ
Drift control Repeat Reading
Operator SM

COORDINATES	READING	COR'N	COR'D READING	REMARKS
38000	58911			~~0750~~ 1020
75	907			
50	898			
25	919			
900	900			
75	904			
50	881			
25	927			
800	893			
75	889			
50	896			
25	929			
700	888			
75	892			
50	896			
25	617			
600	859			
75	891			
50	584			
25	58940			
500	59103			
75	59169			
50	59112			
25	58814			
400	58820			
75	53665			
50	55939			0950/1038
25	55515			Power Line
300	58841			
75	58836			
50	58818			
25	58898			
200	58905			
75	58920			
50	58113			
25	58826			
100	58903			
75	58963			
50	58912			
25	58822			
37000	58926			
75	58555			
50	51329			
POWER LINE 25	54392			Power Line
900	54110			
75	58691			
50	59023			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36825	58946			
800	58988			
75	58946			
50	58936			
25	58946			
700	58980			
75	59020			
50	58850			
25	58917			
600	58933			
75	58953			
50	58949			
25	58950			
500	58951			
75	58955			
50	58955			
25	59056			
400	58957			
75	58953			
50	959			
25	953			
300	951			
75	974			
50	947			
25	952			
200	951			
75	947			
50	946			
25	998			
100	979			
75	971			
50	965			
25	957			
36000	954			
75	961			
50	962			
25	961			
900	957			
75	960			
50	960			
25	964			
800	961			1023
75	966			
50	974			
25	977			
700	992			
75	946			

Area TREGALANA
Tenement URO BLUFF
Line 60000 N
Orientation of traverse 62°
Date 17/4/80

Instrument MP2
Accuracy 1%
Drift control Base Mag Base
Operator JM

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
35000	58903	+6		PUB 35 (1305)	36175				
—	902				200				
—	906				—				
—	900				—				
100	850				—				
—	856				300				
—	907				—				
—	890				—				
200	909				—				
—	908				400				
—	903				—				
—	902				—				
300	900				—				
—	899				500				
—	896				—				
—	897				—				
400	894				—				
—	889				600				
—	894				—				
—	890				—				
500	889				—				
—	869				700				
—	865				—				
—	868				—				
600	866				—				
—	856				800				
—	851				—				
—	891				—				
700	883				—				
—	879				900				
—	58866	+5		1240/1250 Fence	—				
—	866			↓ Drill hole	—				
—	799				—				
800	870				37000				
—	871			Road					
—	290			Pipe line					
—	844			Fence					
900	846								
—	799			RW					
—	834								
—	851			Fence					
36000	850	968	1350	1265 Fence Drill hole					
—	782	856							
—	936			Pipe line					
—	861			Fence					
100	854								
—									
—									

Area .....
Tenement .....
Line 80 N
Orientation of traverse 82°
Date 30 / 4 / 80

Instrument MP2 516
Accuracy 1 GAMMA
Drift control BASE STATION MAG 6
Operator K. WATSON

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
35000	58914	0		STARTED AT 1000 ON SEISMIC LINE	"	868		871	
"	59660			DRILL HOLE	200	871		874	
"	58916			~~S.L.P 900~~	"	866		869	
"	911				"	865	+3	868	1247
100	930			S.L.P 900	"	862		866	
"	866				300	867		870	
"	849				"	869		872	
"	910	+1	911		"	853		856	1213
300	901		902	S.L.P 800	"	867		870	
"	910		911		400	857	+2	859	
"	917		918		"	851		853	
"	910		911	12.10	"	847		851	
800	904		905	S.L.P 700	"	848		850	
"	913		914		500	848		850	
"	905		906		"	851		853	
"	905		906		"	840		842	
400	900		901	S.L.P 600	"	844		846	
"	893		894		600	841		843	
"	898		899	12.20	"	845		847	1325
"	902	+2	904		"	849		892	
500	900		902	S.L.P 500	"	841		843	
"	894		896		700	850		853	
"	894		896		"	849		842	
"	894		896		"	830		832	
500	893		895	S.L.P 400	"	833		835	
"	897		899		800	855		857	
"	810		812			841		843	
"	887		889		"	861		863	
700	885		887	S.L.P 300		826		828	
"	887		889		900	840		842	
"	877		879	12.30	"	822		824	
"	879		881		"	832		834	
500	878		880	12.34 12.47	"	824		826	
"	876	+3	879		37000	822		824	1234
"	874		877		"	817		819	
"	833		836		"	783		785	
300	858		861		"	852		854	
"	715	+4	719	RAILWAY	100	764		768	
"	830		834		"	838		840	
"	870		874		"	845		847	
38000	872	+3	875	300 12.[illegible]	"	827		829	
"	866		869		700	812		814	
"	872		875		"	769		771	
"	864		867		"	718		720	1347
100	855		858	13.00	"	790		792	
"	862		865		500	797		799	
"	866		869		"	740		750	

Area ....
Tenement ....
Line ...85 N.........................
Orientation of traverse ....
Date ...30/4/80..................

Instrument ...MP2 516.......
Accuracy ...1 GAMMA.......
Drift control ...BASE STATION MAG NO6
Operator ...R. NAISON...

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
'	831		58 833		'	58893	-13	880	
'	804	+2	806		'	901		788	
400	715		717	[illegible]	'	778		765	
'	58836		838		600	837		824	
'	817	+1	818		'	848		835	
'	895		896		'	852		839	
500	828		829		'	850		837	
'	850		851		700	861	-14	847	
'	833		834		'	877		863	
'	824		825		'	856		~~842~~	15:[illegible]
600	838		839		'	847		833	
'	847		848		800	841		827	
'	844		845		'	848		834	
'	860		861		'	848		834	
700	796		797		'	858		844	
'	58840		58 841		900	852		838	
'	59262		59 263	13 50	'	853		839	
'	58821		58 821		'	840		826	
800	887	0	889		'	867		853	
'	751		751		36000	850		836	15:38 [illegible]
'	879	882	879	1451	'	839		825	[illegible]
'	57 854		57 844	Powerline area	'	841	-15	826	
900	58947	-10	58 937		'	845		830	
'	59070		59 060		100	847		832	
'	58749		58 739		'	845		830	
'	808		798		'	846		831	
35000	789	-11	778	14:59	'	846		831	
'	814		802		200	841		826	
'	811		799		'	846		831	[illegible]
'	920		908		'	843		828	15:40
100	890	-12	878		'	842		827	
'	59392		59 380	drill sites	300	845		830	
'	59038		59 026	25-50m South	'	842		827	
'	58847		58 835		'	848	-16	832	
200	803	-13	790		'	845		829	
'	823		810		400	844		828	
'	841		828	[illegible]	'	841		825	
'	893		880	15:11	'	847		831	
300	878		865		'	847		831	
'	848		835		500	849		833	15:5[illegible]
'	846		833		'	843		827	
'	982		969		'	845	+17	862	
400	840		827		'	841		858	
'	856		843		600	857		874	
'	805		792		'	843		860	
'	827		814		'	847		864	
500	911		898	15:17	'	845		862	[illegible]

GROUND MAGNETIC TRAVERSE

Area .....
Tenement .....
Line 80 N
Orientation of traverse 82°
Date 30/4/80

Instrument MP2 516
Accuracy 1 Gamma
Drift control BASE STATION MAG NOO.
Operator R. WATSON

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
39700	58840	+17	857	CREEK BANK					
1	851		868	UNDULATING COUNTRY					
1	836		853	16·02					
1	847		864						
800	833		850	SLOPE INCREASING RANGES					
1	838		855						
1	841	+18	859						
1	841		859						
900	843		861						
1	848	+19	867						
1	844		863						
1	853		872						
41000	841		860	GULLY 16·13					

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement
Line 80000 N
Orientation of traverse 82°
Date 20-1-80

Instrument PPM 1
Accuracy 1.0
Drift control
Operator

COORDINATES	READING	COR'N	COR'D READING	REMARKS
35750	58995			Water pipeline
75	58993			Fence
800	58986			
25	58993			
50	57221			
75	58914			Railway tracks
900	974			
25	955			
50	946			
75	925			
36 000	58960			1702
25	954			
50	962			
75	971			
100	973			
25	980			
50	914			
75	960			
200	955			
25	946			
50	58952			1657
75	909			
300	942			
25	968			
50	946			
75	935			
400	944			
25	924			
50	978			
75	953			
500	58935			1652
25	950			
50	936			
75	948			
600	948			
25	946			
50	901			
75	942			
700	949			
25	950			
50	58947			1647
75	943			
800	940			
25	915			
50	932			
75	936			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36 925	58927			
50	940			
75	927			
37 000	58935			1642
25	903			
50	903			
75	911			
100	921			
25	913			
50	920			
75	915			
200	58917			
25	58916			
50	58930			1637
75	54225			POWER LINE
300	55343			POWER LINE
25	52997			POWER LINE
50	58642			
75	878			
400	910			
25	912			
50	908			
75	897			
500	58891			1632
25	58888			
50	58889			
75	59000			
600	919			
25	868			
50	918			
75	58921			
700	58926			
25	54673			POWER LINE
50	55104			POWER LINE
75	52998			1625 POWER LINE
800	54292			POWER LINE
25	903			
50	58942			
75	59022			
900	910			
25	914			
50	922			
75	881			
38000	58925			1619

GROUND MAGNETIC TRAVERSE

Area ..... TREGALANA .....
Tenement ..... THREE .....
Line ..... 80000 N .....
Orientation of traverse ..... 82° .....
Date ..... 22-1-80 .....

Drift Rate +15γ/hr

Instrument ..... PPM 1 .....
Accuracy ..... 1γ .....
Drift control ..... Repeat Readings .....
Operator ..... D.B .....

COORDINATES	READING	COR'N	COR'D READING	REMARKS
34500	5898			~~1055~~ 1155
25	990			
50	988			
25	991			Fence
400	994			
75	981			
50	969			
25	979			Creekbed
300	983			
75	976			
50	984			1200
25	973			
200	971			
75	970			
50	976			
25	974			
100	968			
75	960			
50	957			
25	949			
34000	948			1208
25	936			
50	936			
25	932			
900	927			
75	915			
50	914			
25	902			
400	896			
75	920			
50	897			1216
25	893			
700	897			
75	892			
50	888			
25	894			
600	894			
75	877			
50	880			
25	868			
500	879			1223
75	871			
50	882			
25	885			
400	875			Creekbed
75	871			
50	864			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
25	873			
300	890			
75	891			
50	878			1230
25	890			
200	885			
75	882			
50	882			
25	875			
100	872			
75	871			
50	879			
25	878			
33000	870			1237
75	873			
50	866			
25	876			
900	876			
75	869			
50	873			
25	868			
800	858			
75	863			
50	864			1245
25	852			
700	855			
75	848			
50	849			
25	859			
600	859			
75	859			
50	853			
25	855			
500	848			1253
75	849			
50	848			
25	843			
400	835			
75	831			
50	829			
25	816			
300	812			
75	816			
50	812			
25	817			
200	817			1300
75	812			

GROUND MAGNETIC TRAVERSE

085

Area TRIGACANA
Tenement THREE
Line 8.000 N
Orientation of traverse S.7°
Date 22-1-80

Drift Rate +15γ/hr

Instrument P.P.M.1
Accuracy 1γ
Drift control Repeat Readings
Operator D.B.

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
33150	56810								
25	~~808~~								
100	794								
25	797			Fence 15m W					
50	788								
25	793								
32000	58789			1306					

GROUND MAGNETIC TRAVERSE

Area TREGALANA — Drift Rate -5 γ/hr — Instrument PPM 1 — 786

Tenement TWO — Accuracy 1 γ

Line 81.000 N — Drift control Repeat Readings.

Orientation of traverse 82° — Operator D.B

Date 21-1-80

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
33300	58687			Fence 2mE					
75	789								
50	787			1406					
25	795								
200	786								
75	786								
50	785								
25	781								
100	776								
75	770								
50	768								
25	759								
32000	763			1413					

GROUND MAGNETIC TRAVERSE

Area ..... TREGALANA .....
Tenement ..... TWO .....
Line ..... 81000N .....
Orientation of traverse ..... 82° .....
Date ..... 21-1-80 .....

Drift Rate
-5γ/hr

Instrument ..... P.P.M. 1 .....
Accuracy ..... 1γ .....
Drift control ... Repeat Readings.
Operator ..... D.B .....

COORDINATES	READING	COR'N	COR'D READING	REMARKS
J2000 34650	59333			Fence 1305
25	58931			
600	916			
75	955			
50	936			
25	944			
500	924			1307
75	943			
50	945			
25	945			creekbed
400	959			
75	945			
50	949			
25	948			
300	950			
75	949			
50	954			1312
25	951			
200	934			
75	928			
50	932			
25	937			
100	935			
75	923			
50	913			
25	903			
34000	897			1317
75	892			
50	880			
25	875			
900	885			
75	871			
50	870			
25	871			
800	864			
75	869			
50	865			1324
25	864			
700	857			
75	58842			
50	59363			
25	58867			
600	853			
75	862			
50	867			
25	837			
				1329

COORDINATES	READING	COR'N	COR'D READING	REMARKS
475	58850			
50	847			
25	847			
400	849			
75	840			
50	848			
25	944			
300	846			
75	846			
50	837			1344
25	849			
200	847			
75	848			
50	849			
25	842			
100	851			
75	852			
50	839			
25	846			
33 000	847			1349
75	843			
50	842			
25	844			
900	840			1351
75	841			
50	843			
25	830			
800	823			
75	820			
50	818			1355
25	838			
700	825			
75	821			
50	637			
25	820			
600	863			
75	815			
50	820			
25	811			
500	815			1400
75	819			
50	816			
25	817			
400	818			
75	813			
50	794			
	794			

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement TWO
Line 81000 N
Orientation of traverse 82°
Date 20-1-80

Instrument PPM 1
Accuracy 1.8
Drift control Repeat Readings
Operator ~~F M~~

COORDINATES	READING	COR'N	COR'D READING	REMARKS
38000 36000	~~58889~~			1501 FENCE + 5
25	~~882~~			
50	~~838~~			
75				
100				
25				
50				
75				
200				
25	~~882~~			
50	58882			1503
75	894			ROAD
300	382			PIPELINE + 2
25	890			FENCE + 2
50	903			
75	847			TRAIN LINE +10
400	869			FENCE.
25	866			
50	893			
75	898			
500	892			1512
25	878			
50	894			
75	894			
600	892			
25	890			
50	869			
75	893			
700	868			
25	859			
50	877			1520
75	879			~~1521~~
800	871			
25	866			
50	863			
75	868			
900	871			
25	861			
50	864			
75	846			
37000	866			1525
25	872			
50	866			
75	863			
100	59187			
25	58862			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
37175	59009			
200	58918			
25	58914			
50	826			1532
75	865			
300	873			
25	868			
50	861			
75	868			
400	947			
25	855			
50	876			
75	891			
500	888			1538
25	918			
50	889			
75	846			
600	870			
25	893			
50	876			
75	875			
700	713			
25	59092			1545
50	56962			POWER LINE
75	52847			" "
800	55193			" "
25	56597			" " x10.
50	58862			
75	58791			
900	58692			
25	59100			
50	58942			
75	58756			
38000	58844			1551

GROUND MAGNETIC TRAVERSE

Area TREGALANA
Tenement TWO
Line 81600 N
Orientation of traverse 82°
Date 20-1-80

Drift -4 γ/HR.

Instrument PPM2
Accuracy 1 γ
Drift control Repeat Readings
Operator J.M.

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36250E	58887			10.09
225	899			
200	877			Fence 5m.
175	866			
150	900			
125	880			
100	925			
75	901			
50	911			
25	911			
36000	918			10.15
75	912			
50	929			
25	921			
35900	941			
75	935			
50	931			
25	931			
800	934			
75	936			
50	929			10.19
25	935			
700	936			
75	944			
50	940			
25	941			
600	938			
75	940			
50	940			
25	944			
500	940			10.24
75	952			
50	960			
25	969			
400	974			
75	950			
50	952			
25	960			
300	955			
75	951			
50	964			10.28
25	952			
200	944			
75	980			
50	948			
25	934			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
35075	953			
50	925			
25	928			
35000	931			10.33
75	922			
50	936			
25	937			
900	943			
75	941			
50	928			
25	942			
800	930			
75	905			~~10.37~~
50	930			10.37
25	942			
700	948			
75	952			
50	972			Fence · 10.41
25				
600				
75				
50				
25				
500				
75				
50				
25				
400				
75				
50				
25				
300				
75				
50				
25				
200				
75				
50				
25				
100				
75				
50				
25				
34000				

GROUND MAGNETIC TRAVERSE

Area TREGARANA
Tenement ONE
Line 63000 N
Orientation of traverse 82°
Date 18/1/80

Drift -4γ/hr

Instrument PPM2
Accuracy 1 γ
Drift control Repeat Readings
Operator J-M

90

COORDINATES	READING	COR'N	COR'D READING	REMARKS
35000	58809			1448
025	956			
050	822			
075	822			
100	816			
125	819			
150	814			
175	821			
200	842			
25	841			
50	821			1454
75	839			
300	834			
25	829			
50	821			
75	819			
400	821			
25	818			
50	906			
75	950			
500	58983			1459
25	824			
50	823			
75	819			
600	822			
25	813			
50	815			
75	815			
700	822			
25	810			
50	824			1503
75	806			
800	813			
25	811			
50	806			
75	803			
900	811			
25	800			
50	805			
75	802			
36000	58601			1508
25	800			
50	804			
75	799			
100	805			
25	800			

COORDINATES	READING	COR'N	COR'D READING	REMARKS
36175	58811			
200	806			
25	799			
50	800			1513
75	791			
300	801			
25	797			
50	795			
75	795			
400	793			
25	794			
50	783			
75	788			
500	801			1518
25	799			
50	793			
75	796			
600	802			
25	788			
50	801			
75	806			
700	803			
25	785			
50	802			1523
75	802			
800	801			
25	808			
50	809			
75	910			
900	802			
25	810			
50	809			
75	810			
37000	58806			1528
25	820			
50	827			
75	813			
100	821			
25	820			Fence
50	812			
75	804			
200	740			
25	819			Road 2m W
50	764			1533
75	780			
300	800			Railway 3m

GROUND MAGNETIC TRAVERSE

091

Area TREGALANA
Tenement ONE
Line 83000 N
Orientation of traverse 82°
Date 18/1/80

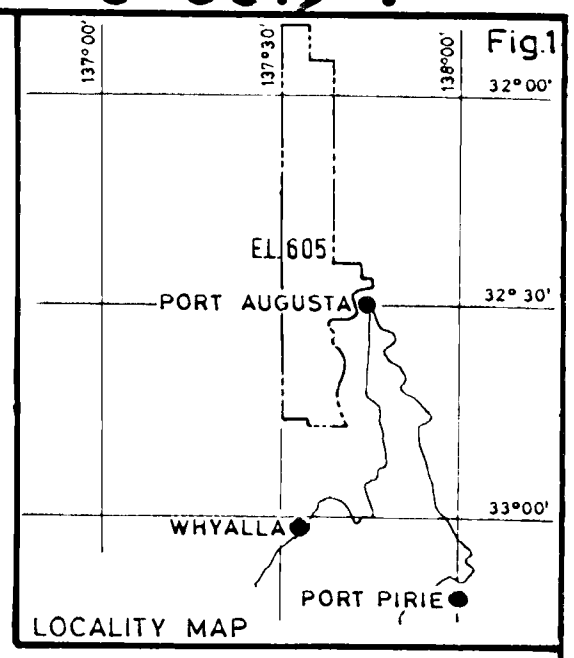
Drift -48/hr

Instrument PPM 2
Accuracy 1 γ
Drift control Repeat Readings
Operator SM

COORDINATES	READING	COR'N	COR'D READING	REMARKS	COORDINATES	READING	COR'N	COR'D READING	REMARKS
37350	58789								
75	804								
400	807								
25	805								
50	810								
75	798								
500	784			1538					
25	788								
50	794								
75	797								
600	794								
25	781								
50	790								
75	792								
700	792								
25	797								
50	795			1542					
75	58797								
800	798								
25	799								
50	800								
75	803								
900	786								
25	803								
50	790								
75	789								
36000	58697			1547					
				Repeat of 35000 E 58829 at 1613					

3828(1)-1

Fig.1



LOCALITY MAP

137°30'
137°35'
32°40'
32°45'

PUB 37
To Pt Augusta
TRAVERSE 83 N.
PUB 36
SAU 28
TRAVERSE 81 N.
SAU 25
SAU 24
SAU 26
SAU 27
TRAVERSE 80N.
SAU 19
SAU 20
SAU 9
TRAVERSE 79N
SAU 14
SAU 13
SAU 23
SAU 21
SAU 18
TRAVERSE 78N.
SAU 8
SAU 12
SAU 10
TRAVERSE 77N.
SAU 22
UB 2
UB 10
TRAVERSE 76N.
PUB 28
PUB 27
UB 1
PUB 26
SAU 11
76N, 35750 E
TRAVERSE 75N.
SAU 7
(OLD) LINCOLN HIGHWAY
TRAVERSE 74N.
PUB 32
SAU 17
UB 3
TRAVERSE 73N.
PUB 52
UB 4
TRAVERSE 72N.
PUB 31
PUB 30
PUB 7
SAU 2
TRAVERSE 71N.
SAU 15
SAU 16
UB 5
UB 6
TRAVERSE 70N.
PTR 1
69N, 44E
UB 7
SAT 1
TRAVERSE 69N.
SAT 2
OLD TRAVERSE 69N.
To Whyalla
TRAVERSE 68N.
UB 8
UB 9

E.L. 605

N

LEGEND

- PUB 31 — Rotary or percussion hole
- UB 4 — Diamond drill hole
- TRAVERSE 70N — Magnetic traverse read at 25m. spacing
- Mini Sosie survey
- Traverse peg coordinates
- E.L. Boundary
- Area covered by low level (80m) aeromagnetic survey 400m line spacing in April 1980
- Road
- Track
- Railway
- Pipeline
- Powerline

NOTE

Prefix UB - B.H.P.
SAU, PUB, SAT, PTR - Australian Selection Pty Ltd.

Scale 1:50,000

0 1 2 3 4 5 Km.

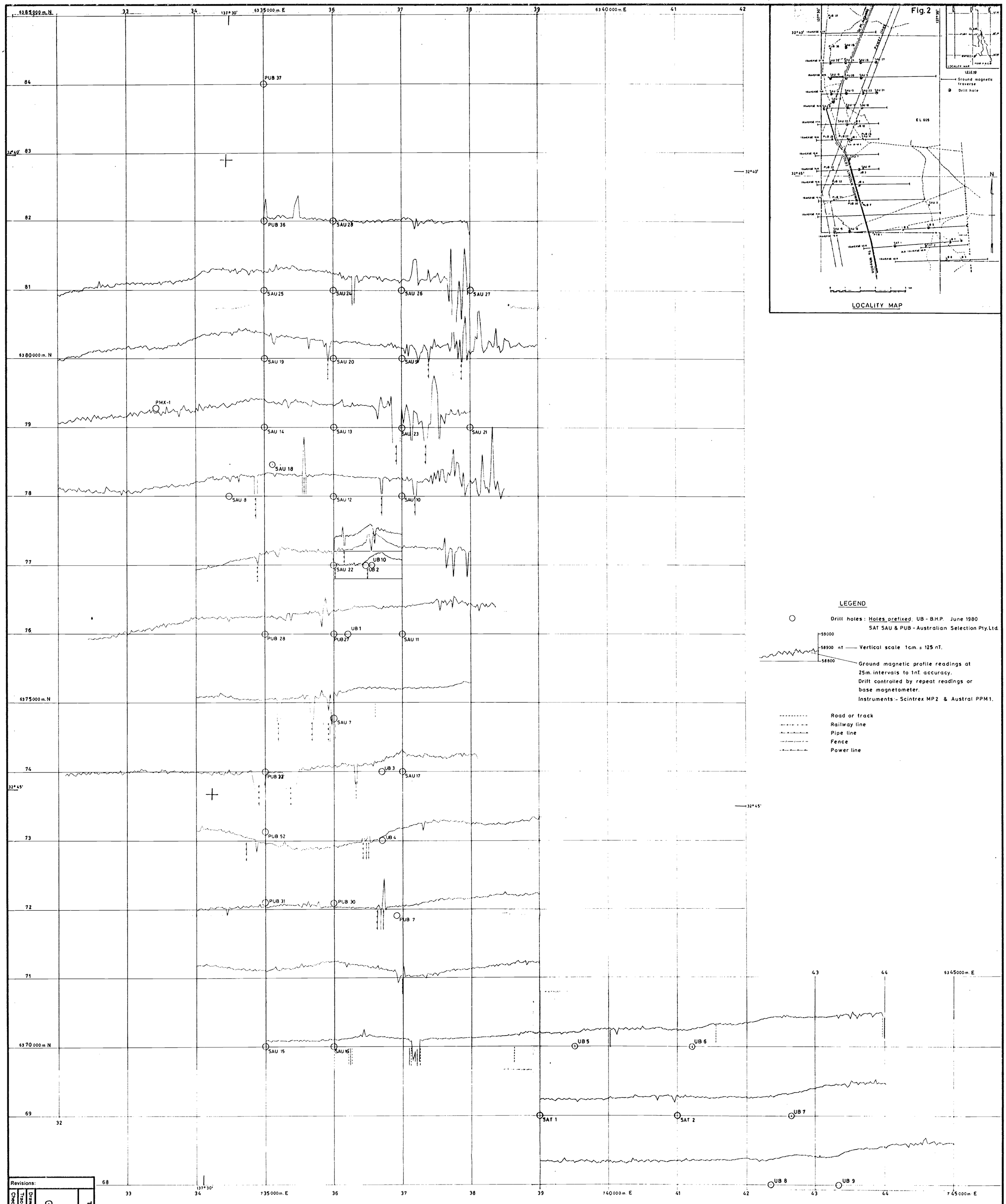
This map traced from LINCOLN GAP Sheet 6432-IV edition 1. & CULTANA Sheet 6432-III edition 1. 1:50,000 Topo maps.

Revisions:	
Drawn: R.F.F.	Prepared by: M.C.R.
Date: 9-7-80	
Project No. 6-B540-4	Centre: Adelaide
Drawing No. A3-27	

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L. 605 URO BLUFF S.A.

LOCATION OF GEOPHYSICAL SURVEYS AND DRILL HOLES



LOCALITY MAP

LEGEND

Drill holes: Holes prefixed. UB - B.H.P. June 1980
SAT SAU & PUB - Australian Selection Pty. Ltd.

59000
58900 nT — Vertical scale 1cm. = 125 nT.
58800

Ground magnetic profile readings at 25m. intervals to 1nT. accuracy.
Drift controlled by repeat readings or base magnetometer.
Instruments:- Scintrex MP2 & Austral PPM1.

- Road or track
- Railway line
- Pipe line
- Fence
- Power line

Revisions:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L. 605 URO BLUFF S.A.

GROUND MAGNETIC PROFILES

Checked:	Traced: R.F.F.	Drawn: M.C.R.	
Project No: 6-B540-6		Date: 14-7-80	Centre: Adelaide
	Drawing No: A1-63		

N

Scale 1:25,000

0 500 1000 1500 2000 2500 METRES

3828(1)-2

3828(1)-3

MYALL CREEK. — 90 — THE B.H.P. CO LTD.

TIME	V RMS
0.080	1650
0.130	2500
0.350	3000

262
131

TIME	V RMS
0.040	1600
0.070	1850
0.130	2550
0.350	2900

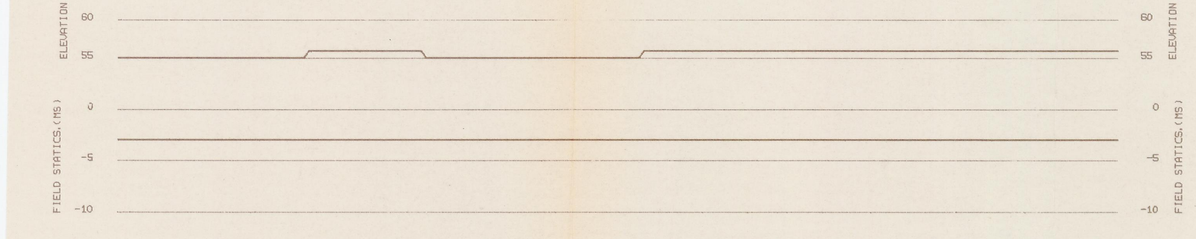
222
111

TIME	V RMS
0.050	1650
0.080	2000
0.170	2600
0.350	3000

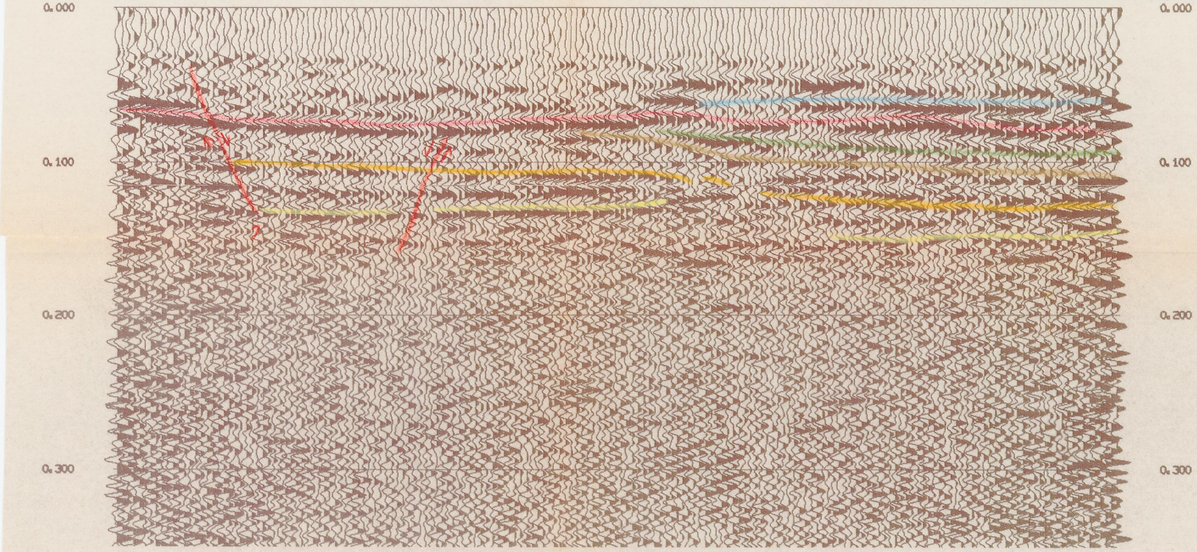
172
86

TIME	V RMS
0.055	1650
0.070	1900
0.080	2000
0.130	2350
0.350	3000

142
71



145 140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60



MYALL CREEK.

BROKEN HILL PROPRIETARY CO LTD.

RECORDED BY — VELOCITY DATA PTY LTD.
PROCESSED BY — SEISMOGRAPH SERVICE LTD.
PROSPECT — MYALL CREEK. -WHYALLA.

GENERAL REMARKS.

SIGN BIT SUMMING METHOD.
VELOCITY FILTER USED.
RESIDUAL STATICS APPLIED.
COHERENCY FILTER APPLIED.
LOCATIONS FICTITIOUS:
GROUND LOCATION 950=STATION 61.
GROUND LOCATION1000=STATION 151.

PROCESSED THROUGH PHOENIX"I"

RECORDING PARAMETERS		RECORDING GEOMETRY	
SOURCE	:MINISOSIE RAMS.	SPREAD	55-20-20-20-55(M)
DATE SHOT	:19TH JANUARY 1980.	PEG INTERVAL	5 METRES.
SAMPLE RATE	:1 MILLISECOND.	RAMMING SEGMENT	20 METRES.
RECORD LGH	:500 MILLISECONDS.	MAXIMUM OFFSET	85 METRES.
GEOPHONES	:SM7. 12/1M IN LINE. 28HZ.	MINIMUM OFFSET	30 METRES.

SEQUENCE.	PROCESSING PARAMETERS.
CONVERT.	FROM MINI SOSI DMX TAPES TO PHOENIX "I" FORMAT.
FILTER & A.G.C.	BANDPASS FILTER 45-55-300-350HZ. & SLIDING WINDOW TRIM 300MS WINDOW)
VELOCITY FILTER.	FK PLANE DESIGNED FILTER TO OPERATE ON FIRST BREAKS.
SORT.	C.D.P. SORT AND APPLICATION OF ELEVATION STATICS.
DECONVOLUTION.	DECONVOLUTION BEFORE STACK. SPIKE DECON. (50MS. OPERATOR.)
FILTER.	BANDPASS FILTER 35-45-180-200HZ.
A.G.C. & N.M.O.	SLIDING WINDOW TRIM.(50MS WINDOW) & APPLICATION OF N.M.O. CORRECTIONS.
RESIDUAL STATICS.	TWO RECURSIONS OF SURFACE CONSISTANT RESIDUAL STATICS.
RESIDUAL STATICS 2.	ONE PASS OF C.D.P. ALIGNED RESIDUAL STATICS.
STACK 600%	SIX FOLD STACK.
COHERENCY FILTER.	MILD COHERENCY FILTER. 11TRACE PILOT. -1MS LEFT DIP. 1MS RIGHT DIP.
DECONVOLUTION.	DECONVOLUTION AFTER STACK.SPIKE DECON. 30MS OPERATOR.
FILTER.	BANDPASS FILTER 35-45-180-200HZ.

DISPLAY DETAILS.

VERTICAL SCALE : FIFTY CM/SEC.
HORIZONTAL SCALE: 5.5 TRACES/CM.
APPROX 11.2 METRES/CM.
POLARITY "SEG"
BLACK VAR +VE VALUES.

SEISMOGRAPH SERVICE LTD.
ADELAIDE MARCH 1980

3828(1)-4

MYALL CREEK. — THE BROKEN HILL PROPRIETARY CO. LTD.

TIME	V RMS
0.080	1650
0.130	2500
0.350	3000

35E
131

TIME	V RMS
0.040	1600
0.070	1850
0.130	2550
0.350	2900

222
111

TIME	V RMS
0.050	1650
0.080	2000
0.130	2600
0.350	3000

172
86

TIME	V RMS
0.055	1650
0.070	1900
0.090	2000
0.130	2350
0.350	3000

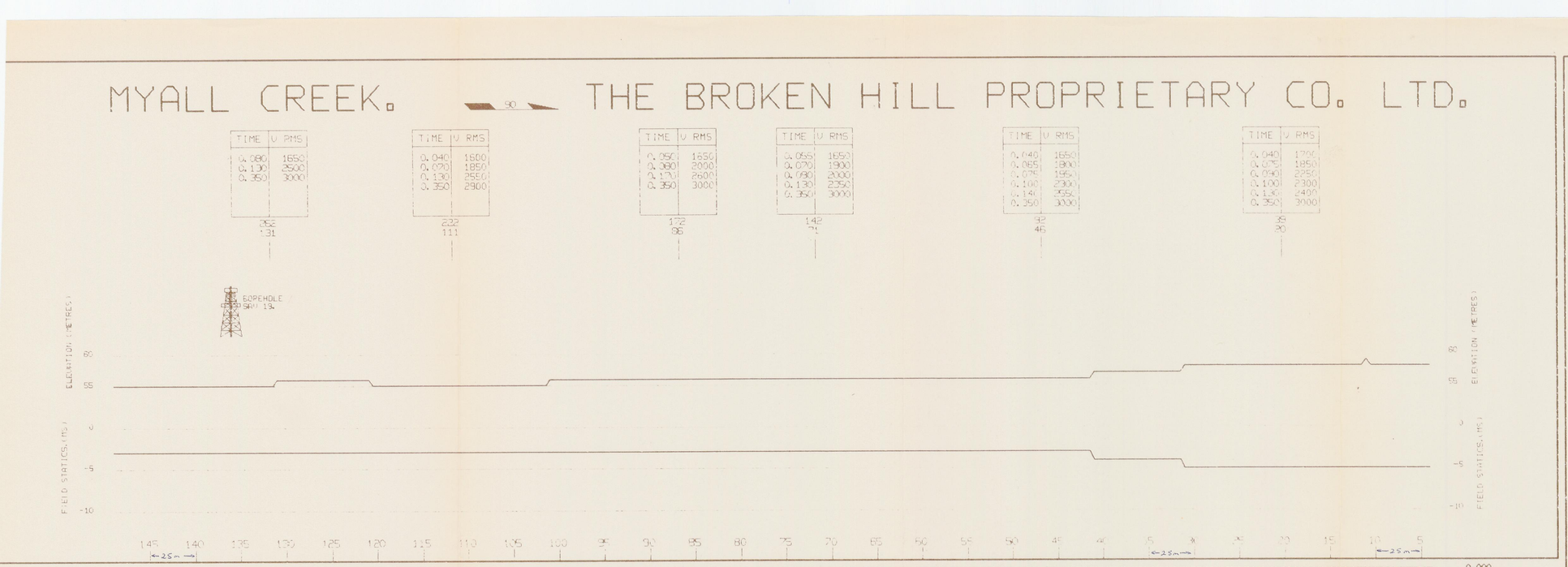
142
71

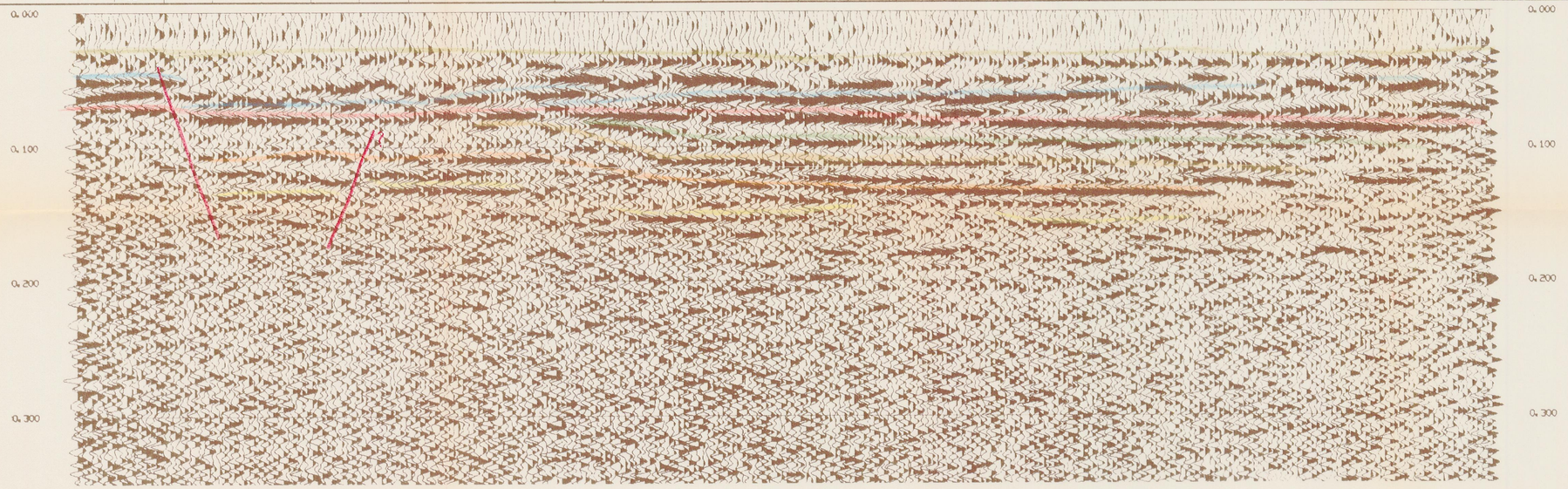
TIME	V RMS
0.040	1650
0.065	1800
0.078	1950
0.100	2300
0.140	2550
0.350	3000

92
46

TIME	V RMS
0.040	1700
0.055	1850
0.090	2250
0.100	2300
0.135	2400
0.350	3000

60
30





MYALL CREEK.

BROKEN HILL PROPRIETARY CO LTD.

RECORDED BY — VELOCITY DATA PTY LTD.
PROCESSED BY — SEISMOGRAPH SERVICE LTD.
PROSPECT — MYALL CREEK. -WHYALLA.

GENERAL REMARKS.

FINAL TIME SECTION.
VELOCITY FILTER USED.
RESIDUAL STATICS APPLIED.
COHERENCY FILTER APPLIED.
LOCATIONS FICTITIOUS:
GROUND LOCATION 250=STATION 1.
GROUND LOCATION 1000=STATION 151.
i.e. 5units on E-W scale = 25m

PROCESSED THROUGH PHOENIX "I"

RECORDING PARAMETERS

SOURCE :MINISOSIE RAMS.
DATE SHOT :17TH&18TH JANUARY 1980
SAMPLE RATE:1 MILLISECOND.
RECORD LGH :500 MILLISECONDS.
GEOPHONES :SM7. 12/1M IN LINE. 28HZ.

RECORDING GEOMETRY

SPREAD 95-20-20-20-55(M)
PEG INTERVAL 5 METRES.
ROLLING SIEGMENT 20 METRES.
MAXIMUM OFFSET 85 METRES.
MINIMUM OFFSET 30 METRES.

SEQUENCE.	PROCESSING PARAMETERS.
CONVERT.	FROM MINI SOSI DMX TAPES TO PHOENIX "I" FORMAT.
FILTER & A.G.C.	BANDPASS FILTER 45-55-300-350HZ. & SLIDING WINDOW TRIM 300MS WINDOW)
VELOCITY FILTER.	FK PLANE DESIGNED FILTER TO OPERATE ON FIRST BREAKS.
SORT.	C.D.P. SORT AND APPLICATION OF ELEVATION STATICS.
DECONVOLUTION.	DECONVOLUTION BEFORE STACK. SPIKE DECON. (50MS. OPERATOR.)
FILTER.	BANDPASS FILTER 35-45-180-200HZ.
A.G.C. & N.M.O.	SLIDING WINDOW TRIM(60MS WINDOW) & APPLICATION OF N.M.O. CORRECTIONS.
RESIDUAL STATICS.	TWO RECURSIONS OF SURFACE CONSISTANT RESIDUAL STATICS.
RESIDUAL STATICS 2.	ONE PASS OF C.D.P. ALIGNED RESIDUAL STATICS.
STACK 600%	SIX FOLD STACK.
COHERENCY FILTER.	MILD COHERENCY FILTER. 11TRACE PILOT. -1MS LEFT DIP. 1MS RIGHT DIP.
DECONVOLUTION.	DECONVOLUTION AFTER STACK. SPIKE DECON. 30MS OPERATOR.
FILTER.	BANDPASS FILTER 35-45-180-200HZ.

DISPLAY DETAILS.

VERTICAL SCALE : FIFTY CM/SEC.
HORIZONTAL SCALE: 5.5 TRACES/CM.
APPROX 11.2 METRES/CM. 5units on horiz. scale = 25m
POLARITY "SEG"
BLACK VAR +VE VALUES.

SEISMOGRAPH SERVICE LTD.
ADELAIDE MARCH 1980

I

092

EXPLORATION LICENCE 605

URO BLUFF, SOUTH AUSTRALIA

REPORT FOR THE QUARTER ENDED 13th SEPTEMBER, 1980

CONTENTS

APPENDICES

FIGURES

EXPLORATION LICENCE 605

URO BLUFF, SOUTH AUSTRALIA

REPORT FOR THE QUARTER ENDED 13th SEPTEMBER, 1980

1. GENERAL

Exploration Licence 605 of 1,631 square kilometres was granted to Dampier Mining Company Limited on 13th March, 1980, for twelve months. The objective is economic sedimentary copper at the base of the Tapley Hill Formation.

2. FIELD INVESTIGATIONS

2.1 Drilling

During the quarter four holes (UB5 to UB8) were completed with a diamond drill totalling 487 metres of core.

Geological drill hole logs of all holes drilled to date (UB1 to UB10), are included in Appendix 1.

Geophysical logs of holes UB1 to 8 are on Figures 2 to 9.

2.2 Core Analysis

Analysis of half cores from holes UB1 to UB4 and UB7 to UB9 are given in Appendix 2. The analyses are by COMLABS of Adelaide (reports 800231 and 800304) for copper, lead, zinc, cobalt by AAS1/1A and silver by AAS3.

Check analysis on quarter cores from approximately each third sample was by GENALYSIS of Perth. These samples were crushed and a standard inserted. Results indicate that the COMLABS' results are conservatively reliable.

3. EXPENDITURE

Expenditure debited to E.L. 605 during June, July and August, 1980 was:

Wages and Salaries	$ 6,478
Messing and Accommodation	1,583
Drilling	44,088
Transport	364
Surveying/Aerial Photographs	11
Geophysics	1,010
Sample Analysis	226
Occupancy/Location Expenses	907
Other Items	49
	$54,716

Total expenditure to 31st August, 1980 is $85,388.

This report is submitted to the Department of Mines and Energy as required by Condition 4 of Exploration Licence 605.

APPENDIX 1

Geological Drill Hole Logs of Holes UB1 to UB10

DETAILED GEOLOGICAL HOLE LOG

096

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L.605 DRILL HOLE UB 1

Location or local co-ordinates Traverse 76N 35800E R.L. Collar (Datum) 48m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6376000N 736200E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew1000	Rotary	Screens/grab	80	1.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Core	161.2	June 1980

GN MN 8° Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	121	0	70
			BQ	70	161.2

Casing 100mm PVC to 14m

Static water level _____ Date _____

Logged by M.Raetz Date 1.5.80

Remarks _____

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
0	2	2	good			Sand, slightly clayey, m.g., sub-rounded.	
2	4					Sandy clay, yellowish.	
4	6					" "	
6	8				CAINOZOIC	Siltstone, pale brown.	
8	10					Grey silty clay, mottled yellow.	
10	12					Grey clay, stone and siltstone.	
12	14					" " mottled reddish	
14	16					Gravels rounded & clayey sand, yellow	
16	18					Grey shale, near fresh.	
18	20					Gravels, rounded, & grey shale.	
20	22					Grey shale, moderately fresh.	
22	24					" "	
24	26					" "	
26	28					" "	
28	30					" "	
32	34					" "	
34	36					" "	
36	38					Grey shale, fresh.	
38	40				TAPLEY HILL FORMATION	"	
40	42					"	
42	44					"	
44	46					"	
46	48					"	
48	50					"	
50	52					"	
52	54					"	
54	56					"	
56	58					"	
58	60					"	
60	62					"	
62	64					"	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

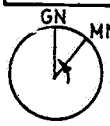
097

THE BROKEN HILL PTY CO LTD. PROJECT JURO BLUFF S.A. E.L. 605 DRILL HOLE UB 1

Location or local co-ordinates Traverse 76N 35800E R.L. Collar (Datum) 48m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6376000N 736200E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							



Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION		Remarks
64	66				Tapley Hill Fm.	Grey Shale		
66	68							
68	70					End of Rotary precollar hole.		

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

398

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB1

Location or local co-ordinates Traverse 76N 35800E R.L. Collar (Datum) 48m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6376000N 736200E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayheww1000	Rotary	Screens/grab	80	1.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Core	161.2	June 1980

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	121	0	70
			BQ	70	161.2

Casing 100mm PVC to 14m

Static water level _____ Date _____

Logged by M. Raetz Date 1.5.80

Remarks Full recovery unless specified.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
70.5	94.4	23.9		100		Grey laminated siltstone with 5% laminated dolomite bands about 3-5mm thick.	
94.4	117.3	22.9				As above with 10% laminated dolomite bands.	
117.3	134.1	16.8				As above with 20-30% laminated dolomite bands.	
134.1	137.0	2.9			Tapley Hill Formation	Grey siltstone as above with only about 10% laminate dolomite. Total sulphides less than ½%. very thin bands along bedding mostly pyrite with some chalcopyrite, generally quite barren.	minor cp
137.0	137.88	0.88			Tapley Hill Formation	Black shale or mudstone, with several cm of quartz sand near the base. Also a slump fold is present. Virtually barren except for some minor pyrite. The basal contact of the shale is sharp but unconformable.	2
137.88	140.4	2.52			Pandurra Formation	Sandstone, brown, coarse grained quartz and grit generally subangular. Fracturing in the sandstone below the unconformity is very apparent the fractures are mostly filled with a black silt and mud some of which resembles pyrobitumen. This is a very black lustrous mineral with a concoidal fracture. The sandstone texture, mainly the subangular grains and hematite matrix as well as the	

SYMBOLS AND ABBREVIATIONS 2 slump fold. Black Shale - Sandy shale. Unconformity

DETAILED GEOLOGICAL HOLE LOG

399

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB1

Location or local co-ordinates T raverse 76N 35800E R.L. Collar (Datum) 48m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6376000N 736200E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.	GEOLOGICAL DESCRIPTION	Remarks
					quartz type particularly the occasional	
					blue quartz present strongly resembles the	
					Pandurra Formation.	
					Total sulphides less than ½% as sporadic	
					specks of pyrite in the matrix.	
140.4	161.2	20.8			End of hole.	
					Brown sandstone and coarse grit similar to	
					above, sometimes a reddish brown colour.	
					The fracturing below the unconformity is	
					no longer present here. Occasional heavy	
					mineral bands and cross-bedding, the general	
					appearance is very typical of a red bed	
					fluvial sequence and certainly belongs to	
					the Pandurra Formation.	
					At 161.1 m beautiful quartz crystals and	
					pyrite have grown along planer open spaces	
					at 45° to the core axis.	

SYMBOLS AND ABBREVIATIONS

Cross bedding.

silt filled cracks below unconformity.

fracture with quartz crystals.

DETAILED GEOLOGICAL HOLE LOG

100

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. EL 605 DRILL HOLE UB 2

Location or local co-ordinates Traverse 77N 36475E R.L. Collar (Datum) 50m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6377000N 736475E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew1000	Rotary	Screens/grab	78	2.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Core	160.3	June 1980

GN MN Magnetic Declination 8°

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	121	0	78
			BQ	78	160.3

Casing 100mm PVC to 78m

Static water level _____ Date _____

Logged by M. Raetz Date 2.5.80

Remarks Drag bit 0-50m, Rock Roller 50-78m.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
0	2	2	good			Sandy soil	
2	4					Sandy clay - yellow	
4	6				CAINOZOIC	Clayey sand - yellow	
6	8					Moderately clayey sand - yellow	
8	10					" "	
10	12					" "	
12	14					" "	
14	16					Siltstone, weathered brown	
16	18					Siltstone, weathered grey brown	
18	20					" " "	
20	22					Siltstone, weathered grey	
22	24					Shale, weathered slightly grey	
24	26					Shale, grey	
26	28					"	
28	30					"	
30	32					"	
32	34					"	
34	36					"	
36	38				TAPLEY HILL FORMATION	"	
38	40					"	
40	42					"	
42	44					"	
44	46					"	
46	48					"	
48	50					"	
50	52					"	
52	54					"	
54	56					"	
56	58					"	
58	60					"	
60	62					"	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L.605 DRILL HOLE UB 2

Location or local co-ordinates Traverse 77N 36475E R.L. Collar (Datum) 50m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6377000N 736475E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION		Remarks
62	64					Shale, grey		
64	66					"		
66	68				TAPLEY HILL FM.	"		
68	70					"		
70	72					"		
72	74					"		
74	76					"		
76	78					End of rotary precollar 78m.		

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB2

Location or local co-ordinates Traverse 77N 36475E R.L. Collar (Datum) 50m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6377000N 736475E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks Full recovery unless stated

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
78.0	112.0	34.0				Grey laminated siltstone with about 10% laminated dolomite bands whitish in colour averaging 5mm thick, ranging 2-20mm thick.	
						Minor pyrite in calcareous bands.	pyrite
112.0	120.0	8.0				As above with 20% laminated dolomite bands.	
120.0	128.4	8.4				As above with 30% laminated dolomite bands.	
138.4	139.86	1.46			TAPLEY HILL FORMATION	Thinly laminated grey black siltstone. Occasionally arenaceous e.g. at 139.6m there is 10cm of black muddy medium grained arenite, with rounded grains suspended in the mud matrix. Generally the siltstone contains up to 5% pyrite mostly in bedding laminations. Chalcopyrite up to 3% usually in thin 1-3mm sub-vertical veinlets cutting bedding. The siltstone makes a sharp contact with underlying volcanics as well as infilling cracks in the volcanics. Vertical siliceous veinlets 5mm wide cut the contact from the lower volcanics up into the siltstone.	pyrite, chalcopyrite Si veins
139.86	140.86	1.0			BEDA VOLCANICS (lower)	Greenish grey medium to fine grained basalt block, with carbonate alteration.	
140.86	144.95	4.09				Dense medium to fine grained volcanics as above but more purplish grey brown in colour.	Flow 1

SYMBOLS AND ABBREVIATIONS

cp Chalcopyrite Veins

si. Siliceous Veins.

DETAILED GEOLOGICAL HOLE LOG

103

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB2

Location or local co-ordinates Traverse 77N 36475E R.L. Collar (Datum) 50m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6377000N 736475E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION		Remarks
144.95	147.0	2.05			BEDA VOLCANICS (lower)	Amygdalar brown basalt with 30% light amygdules.		Flow 2
	?							
147.0	151.7	4.7				Amygdalar greenish brown basalt with 40% large green amygdules. A 2cm wide composite fibrous gypsum ? vein occurs at about 151m.		Flow 3
						End of Log(UB2. 160.3m) ?		

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. EL605 DRILL HOLE UB 3

Location or local co-ordinates Traverse 74N 36700E R.L. Collar (Datum) 45m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6374000N 736700E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew1000	Rotary	Screens/grab	74.5	2.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Core	188.0	June 1980

GN MN 8° Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	121mm	0	74.5
				74.5	188.0

Casing 80mm steel to 74.5

Static water level _____ Date _____

Logged by M. Raetz Date 3.5.80

Remarks Caving sand at 6m. 125mm PVC set to 4.5m broke up.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
0	2	2	good			Sand, friable soil	
2	4				CAINOZOIC	Sand, m.g. slightly clayey	
4	6					Sand, m.g. - c.g., friable	
6	8					Clayey gravel	
8	10					" "	
10	12					Gravelly clay, brown	
12	14					Clay, brown-red, plus silcrete chips	
14	16				TENT HILL FORMATION? (*Auguata shale)	Clay, siltstone? red-brown	
16	18					Grey-brown siltstone, weathered to clay	
18	20					Brown siltstone, shale, sample clayey	
20	22					" "	
22	24					" "	
24	26					" "	
26	28					" "	
28	30					" "	
30	32					Light grey shale "	
32	34					"	
34	36					"	
36	38					"	
38	40					"	
40	42				TAPLEY HILL FORMATION	Darker grey shale	
42	44					"	
44	46					"	
46	48					"	
48	50					"	
50	52					"	
52	54					"	
54	56					Grey shale	
56	58					"	
58	60					"	
60	62					"	

SYMBOLS AND ABBREVIATIONS

* Unofficial name see drawing AS 5694, by M. Mason in envelope 3072.

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB 3

Location or local co-ordinates Traverse 74N 36700E R.L. Collar (Datum) 45m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6374000N 736700E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION		Remarks
62	64					Grey shale		
64	66					"		
66	68					"		
68	70					"		
70	72					"		
72	74.5					"		
						End of rotary precollar hole 74.5m.		

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB3

Location or local co-ordinates Traverse 74N 36700E R.L. Collar (Datum) 45m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6374000N 736700E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	DL	Mayhew 1000	Rotary	Screens	74.5	2.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Core	188.0	June 1980

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90	-	121	0	74.5
			NQ/BQ	74.5	188.0

Casing 80mm steel to 74.5m

Static water level _____ Date _____

Logged by _____ Date _____

Remarks _____

From	To	Interval	Recovery	%Rec.	GEOLOGICAL DESCRIPTION	Remarks
74.5	107.35	32.85			TAPLEY HILL FORMATION Grey laminated siltstone with 10% laminated dolomite bands 1-100mm thick and some fine dark clay shale laminae. Mica flakes are seen on bedding planes. Sedimentary features include scoured base and lenticule bedding, and flat pebble conglomerate of laminated dolomite. These consist of tabular pebbles about 80x4 mm, some pebbles are at right angles to bedding. They occur sparingly between 93 and 96 metres. Total sulphides less than 2% mostly minor pyrite as disseminations and ovoid nodules usually in the laminated dolomite. A 10cm breccia zone with calcite vughs occurs at about 97m.	
107.35	118.6	11.25			Grey siltstone as above with 20% laminated dolomite bands. Slump breccia with calcite filling occurs, this probably happened after early lithification and before much burial from the overlying sediments.	
118.6	134.2	15.6			Grey laminated siltstone with 30% laminated dolomite bands, the siltstone is also becoming distinctly more black and fissile.	
134.2	142.55	8.35			Grey laminated siltstone with 40% laminated dolomite bands.	

SYMBOLS AND ABBREVIATIONS — lenticular bedding — scoured base — flat pebble conglomerate — breccia: slump breccia

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L.605 DRILL HOLE UB3

Location or local co-ordinates Traverse 74N 36700E R.L. Collar (Datum) 45m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6374000N 736700E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.	GEOLOGICAL DESCRIPTION	Remarks
142.55	146.55	4.0			Laminated dolomite up to 70%, with a 3cm zone of very black graphitic shale at 139.85m. Generally barren except for some millimetre thick fractures containing chalcopyrite in the last 10cm and small occasional specks of sphalerite and galena.	sphalerite and galena specks and also chalcopyrite
146.55	147.31	0.76			TAPLEY HILL FORMATION — Black sandy shale consists of black laminated silt layers with several 2-10mm thick quartz rich sand layers. Chalcocite occurs in several ways most commonly in the coarser sand rich layers, but also in between disseminated in the fine laminated black silt. Later fracture veins (possibly hydraulic fracturing) are filled with carbonate and 3mm sized patches of chalcocite. The chalcocite in the veins is bright and metallic whereas in the sand layers it appears to be duller.	chalcocite
147.31	153.2	5.9			BACKY POINT BED (Lower) — Sandstone, white to pink quartz rich medium to coarse grained and subrounded. The matrix is minor consisting of white siliceous silt. The upper few centimetres appear to be reworked and contained more rounded grains and pebbles as well as interstitial copper sulphides of chalcocite and bornite. The pebbles consist of red G.R.V., red quartzite, white quartzite with greenish spots and also some black heavy mineral patches occur.	

SYMBOLS AND ABBREVIATIONS — laminated dolomite. — unconformity. f - fracture vein b - bleached sandstone. sandy

DETAILED GEOLOGICAL HOLE LOG

106

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB3

Location or local co-ordinates Traverse 74N 36700E R.L. Collar (Datum) 45m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 6374000N 736700E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
153.2	163.5	10.3				Sandstone similar to above but becoming more reddish brown. Bedding is parallel. Occasional brown micaceous mud layers 10mm thick occur and occasional coarse grit bands 1-3cm thick. Some mottling is present due to solution bleaching.	
163.5	167.6	4.1				Sandstone as above with up 30cm wide conglomerate clasts of a reddish sandstone like Pandurra Formation.	
167.6	169.05	1.45			BACKY POINT BEDS (Lower) BEDA VOLCANICS (Lower)	Basalt, brown weathered and vesicular with amygdules of calcite and chlorite.	
169.05	172.6	3.55				Pick and brown sandstone and conglomerate.	
172.6	175.25	2.65				Brown soft vesicular basalt.	
175.25	175.6	0.35				Brown quartz sandstone with interstitial patches of a dark sulphide, chalcocite?	chalcocite?
175.6	176.65	1.05				Dark brown to deep red dense basalt.	
176.65	188.0	11.35			PANDURRA FORMATION	Sandstone, pale reddish brown with heavy mineral laminae. Medium to coarse grained with some quartzite pebbles. Grains sub-rounded to subangular with a matrix of iron oxide and white siliceous silt. (SO 80°). Looks and breaks like Pandurra Formation. End of Log.	

SYMBOLS AND ABBREVIATIONS

oooo — coarse grit bands

--- — brown micaceous mud.

— sandstone clast.

═══ heavy mineral laminae.

DETAILED GEOLOGICAL HOLE LOG

103

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. EL 605 DRILL HOLE UB 4

Location or local co-ordinates Traverse 73N 36700E R.L. Collar (Datum) 45m (AHD)

Map Reference Cultana 1:50,000 Sheet Co-ordinates (Grid) 6373000N 736700E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew1000	Rotary	Screens/grab	88	4.5.80
Main Hole	Rockdrill	M. Ashton	Rox	Diamond	Core	160.8	June 1980

GN MN Magnetic Declination 8°

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	120	0	88
			BQ	88	160.8

Casing 100mm PVC to 18m

Static water level _____ Date _____

Logged by M. Raetz Date June 1980

Remarks 0-64m drag bit 64-88 rock roller.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
0	2	2	good			Soil and sand, brown	
2	4					Clayey sand	
4	6					Gravelly clay, mottled grey-brown	
6	8					" " "	
8	10				CAINOZOIC	Clayey fine sand, yellow, 70% rounded	
						quartz gravel	
10	12					Clay grey, gravel 10%	
12	14					" "	
14	16					Clay, khaki.	
16	18					Black-grey shale	
18	20					" "	
20	22					" "	
22	24					" "	
24	26					" "	
26	28					" "	
28	30					" "	
30	32					" "	
32	34					" "	
34	36					" "	
36	38					" "	
38	40				TAPLEY HILL FORMATION	" "	
40	42					" "	
42	44					" "	
44	46					" "	
46	48					" "	
48	50					" "	
50	52					" "	
52	54					" "	
54	56					" "	
56	58					" "	
58	60					" "	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

110

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S,A, EL 605 DRILL HOLE UB 4

Location or local co-ordinates Traverse 73N 36700E R.L. Collar (Datum) 45m (AHD)

Map Reference Cultana 1:50,000 sheet Co-ordinates (Grid) 6373000N 736700E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
60	62	2			TAPLEY HILL FORMATION	Black-grey shale	
62	64					" "	
64	66					" "	
66	68					" "	
68	70					" "	
70	72					" "	
72	74					" "	
74	76					" "	
76	78					" "	
78	80					" "	
80	82					" "	
82	84					" "	
84	86					" "	
86	88					" "	
						End of rotary precollar hole 88m	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB4

Location or local co-ordinates Traverse 73N 36700E R.L. Collar (Datum) 45m (AHD)

Map Reference Cultana 1:50,000 sheet Co-ordinates (Grid) 6373000N 736700E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayheww1000	Rotary	Screens/grab	88	4.5.80
Main Hole	Rockdrill	M. Ashton	Fox	Diamond	Core	160.8	June 1980

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
			120mm	0	88
			BQ	88	160.8

Casing 100mm PVC to 18m

Static water level ____ Date ____

Logged by M. Raetz Date June 1980

Remarks 100% Recovery unless specified.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
88	105	17.0				Grey laminated siltstone with 10% laminated dolomite bands averaging 5mm thick.	
105	112	7.0				As above with 20% dolomite laminae.	
112	119.6	7.6				As above with 30% laminated dolomite bands also a few pyritic quartz sand rich zones.	
119.6	122.2	2.6			Tapley Hill Formation	Fissile black shale with 10% thin dolomite laminae and several sandy zones a few cm thick. Total sulphides about 3% mostly chalcopyrite with some pyrite occurring in bedding and fracture veinlets.	cp
122.2	123.95	1.75			Tapley Hill Formation	80% laminated dolomite with the remainder being a grey green barren shale. The basal contact with the sandstone is knife sharp.	
123.95	124.45	0.50				Coarse grained pebbly sandstone bleached to a white pink brown colour.	b
124.45	133.05	8.6			Backy Point Beds	Chaotic boulder conglomerate with a muddy coarse quartz sand and grit matrix. Boulders range from a few cm to about 1m in size a very large boulder occurs from 128.6 to 129.4 m. Colour is a reddish brown. The boulders are subangular and consist of a coarse quartz sandstone derived from the underlying Pandurra Formation, being a subangular sandstone it is subtley distinguished from	

SYMBOLS AND ABBREVIATIONS b = bleached. cp = chalcopyrite. Dololaminite. Sandstone. Shale. Conglomerate.

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF E.L. 605 DRILL HOLE UB4

Location or local co-ordinates Traverse 73N 36700E R.L. Collar (Datum) 45m (AHD)

Map Reference Cultana 1:50,000 sheet Co-ordinates (Grid) 6373000N 736700E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
						the more rounded matrix sandstone.	
133.05	137.5	4.45				Gritty sandstone with a red brown muddy matrix, very immature.	
137.5	138	0.5				Chilled lava flow brownish red, very soft and iron rich. A very fine grained almost chert like looking rock with severy amygdules This is a very thin remnant of a basaltic flow base which has picked up pieces of quartz sand.	
137.5	139.8	2.3				Broken core of very hematite rich red muddy sandstone.	
139.8	140.9	1.1			Backy Point Beds	Red brown kaotic boulder conglomerate and sandstone as previously.	
140.9	142.2	1.3				Large boulder of Pandurra type sandstone. Recognised as a boulder by near vertical bedding and the basal contact.	
142.2	150.75	8.55				Red brown chaotic boulder conglomerate and coarse gritty sandstone as previously.	
150.75	155.2	4.45			Pandurra Formation	50% pale coarse grain subangular sandstone interbedded with brown mudstone. Bedding is approximately horizontal. The unit is considered to be Pandurra Formation because it looks like it, and because it has been the source for the overlying chaotic	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

118

THE BROKEN HILL PTY CO LTD. PROJECT URO B L UFF S.A. E.L. 605 DRILL HOLE UB4

Location or local co-ordinates Traverse 73N 36700E R.L. Collar (Datum 45m (AHD)

Map Reference Cultana 1:50,000 sheet Co-ordinates (Grid) 6373000N 736700E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
						boulder conglomerate, therefore the top of this unit is an unconformity.	
155.2	160.8	5.6				End of Hole.	
					Pandurra Formation	80% light coloured coarse grained subangular quartz rich sandstone. Much of the quartz is characteristically blue. Occasional grit bands and small pebbles occur these are mostly quartz or chert like and a few reasonably fine grained granite gneiss. Notably there are no pebbles of sandstone present as in the overlying formations.	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. EL 605 DRILL HOLE UB 5

Location or local co-ordinates Traverse 70N 39500E R.L. Collar (Datum) 23m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6370000N 739500E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew1000	Rotary	Screens/grab	36	18.5.80
Main Hole							

GN MN 8° Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-			

Casing 100mm PVC to 18m

Static water level _____ Date _____

Logged by M. Raetz Date 6.5.80

Remarks 0-26m Drag bit, 26-36m rock roller, then too hard.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
0	2	2	good			Soil and sand	
2	4					Brown clay 80%, coarse sand 20%	
4	6					" "	
6	8				CAINOZOIC	Brown and white mottled clays	
8	10					" "	
10	12					" "	
12	14					" "	
14	16					As above plus yellow clay	
16	18					" "	
18	20				TENT HILL FORMATION	Brown shaley siltstone	
20	22					"	
22	24					"	
24	26					"	
26	28					"	
28	30					"	
30	32					"	
32	34					"	
34	36					"	
						End rotary precollar hole 36m	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

115

THE BROKEN HILL PTY CO LTD. PROJECT E.L. 605 URO BLUFF DRILL HOLE UB5

Location or local co-ordinates Traverse 70N 39500E R.L. Collar (Datum) 23 (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6370000N 739500E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew 1000	Rotary	Screens	36	18.5.80
Main Hole	BHP	B.B.	Pioneer 250	Diamond	Core	250	Aug. 198

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90	-	121	0	36
			BQ	36	250

Casing 100mm PVC to 18m also NQ rods

Static water level Date

Logged by Date

Remarks Hole capped. Recovery 100% unless specified.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
36	38.4					Brown sandstone medium to coarse grained wavey bedding with brown mud partings.	
38.4	42.67				TENT HILL FORMATION	Brown wavey laminated mudstone with thin interlaminated sandstone 30%. Sandstone is gritty and lensoid. Typical of deltake sequences. Bedding is disturbed, partly intraclastic, some sand dykes.	
42.67	43.77					Brown sandstone, with some brown shale intraclasts and grit and pebbles.	
43.77	45.0		20cm			Conglomerate with mudstone matrix.	
45.0	46.4		20cm		WHYALLA ST.?	Round pebbles up to 1cm, including Bif granite, sandstone and volcanics. Matrix khaki mud.	
46.4	47.5		0.23m			Pebbles of quartzite and acid volcanics recovered.	
47.5	48.4					Conglomerate, brownish in colour variety of clasts rounded up to 1cm in size.	
48.4	55.4					70% medium grained brown sandstone, 30% brown mudstone.	
55.4	58.0					Conglomerate up to 1cm of rounded clasts set in a brown sandstone muddy matrix.	
58.0	63.68					Mostly brown mudstone some sandstone.	

SYMBOLS AND ABBREVIATIONS ≈ Wavy bedding :=: Sandstone. — Shale intraclasts. °₀ Conglomerate. B Blughy white patches.

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT E.L. 605 URO BLUFF DRILL HOLE UB5

Location or local co-ordinates Traverse 70N 39500E R.L. Collar (Datum) 23 (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6370000N 739500E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
					TENT HILL FORMATION	10% white patches some having vughy quartz centres.	
63.68	64.45	0.77				Brown gritty sandstone. Bedding contacts at 45° to core axis.	
64.45	67.8					Medium grained brown sandstones occasional pebbles.	
67.8	72.0					Brown sandstone with wavey bedding, having up to 30% scattered intraclastic conglomerate. Some of the clasts are dolomitic.	
72.0	73.8					Colour change from brown to grey matrix clasts as above but more of the dolomite clasts. Total clast content about 60%.	
73.8	84.5				Bald Member	50% dolomite intraclasts in bands up 30cm thick, the remainder is grey laminated siltstone.	
84.5	93.3					Grey laminated siltstone with 20% intraclastic dolomite in occasional bands up to 5cm thick. Disseminated pyrite up to 1% total along bedding in silty layers.	
93.3	117.0				TAPLEY HILL FORMATION	Grey laminated siltstone with 20% dolomite laminae up to 5mm thick and 10% intraclastic dolomite flat pebbles. Also quartz rich sandy zones up 30cm thick. Bedding generally horizontal.	

SYMBOLS AND ABBREVIATIONS

• grit ... Sandstone O pebbles. rounded. = laminated Dolomite. O flat pebbles.

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT E.L. 605 URO BLUFF DRILL HOLE UB5

Location or local co-ordinates Traverse 70N 39500E R.L. Collar (Datum) 23 (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6370000N 739500E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
117.0	128.1					Grey laminated siltstone with 20% fine quartz sand in bands up to 30cm thick.	
128.1	129.0					Grey laminated siltstone brecciated. Angular breccia with white carbonate breccia 40% by volume.	
129.0	135.0					Grey laminated siltstone with 30% fine quartz sand in zones up to 30cm thick and one 20cm thick zone of quartz sand and dolomite with intraclastic dolomite pebbles	
135.0	175.0				TAPLEY HILL FORMATION	Grey laminated siltstone with 15% thin laminae (3 to 5 mm) of quartz sand and some dolomite. Occasional zones up to 8cm thick of fine white cross bedded sandstone.	
175.0	213.6				Lincoln Member	Grey laminated siltstone with 30-50% increasing downwards of thin laminated dolomite bands and thinner quartz sand interbands giving the rock the typical ribbon like appearance of the Lincoln Member. Sedimentary structures include mudcracks in the dolomite laminae, flame structures erupting up into the dolomite and sandy zones, cross lamination in the fine sands, scour and fill structures and thin intraclastic breccias. Disseminated pyrite is quite common in the sandy laminae, totalling approximately 1%.	disseminate pyrite up to 1%.

SYMBOLS AND ABBREVIATIONS — Dolomite laminae; flame structures; Mud cracks; scour and fill structure; Tectonic breccia; cross bed.

DETAILED GEOLOGICAL HOLE LOG

118

THE BROKEN HILL PTY CO LTD. PROJECT E.L. 605 URO BLUFF DRILL HOLE UB5

Location or local co-ordinates Traverse 70N 39500E R.L. Collar (Datum) 23 (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6370000N 739500E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
213.6	223.8				TAPLEY HILL FORMATION LINCOLN MEMBER	50% dark grey muddy sandstone with the occasional clasts of siltstone, the remainder grey mudstone with thin lenticular quartz sand bands. The lenticular sandy bedding is disturbed, occasionally depositional slump faulted, intraclastic breccias typical of very shallow water sediments. Occasional thin intraclastic dolomite pebbles. Lower 80cm has disseminated pyrite up to several percent in the thin sandy zone interbedded with dark grey to black siltstones. The basal contact is extremely sharp on altered bleached green basalts.	disseminated Py lenses
223.8	225.2				BEDA VOLCANICS PVC	Greenish slightly altered basalts containing 10% leucoxene after illmenite.	
225.2	230.52					Brownish green basaltic volcanics in at least 3 flows. Amygdules 1mm mostly carbonate and chlorite. The basal contact is well defined with several centimetres of grit and angular conglomerate. It is also more iron rich. This is most probably the base of the upper Beda Volcanics spillite sequence.	
230.52	236.0				BACKY POINT BEDS	Medium to coarse grained whitish sandstone.	
236.0	243.0					Medium to coarse grained sandstone as above, but more brownish in colour. Occasional patches of white mottled bleaching.	

SYMBOLS AND ABBREVIATIONS

≷ slumps. ≻≺ lenticular bedding ○○ intraclasts. —v— unconformity.

DETAILED GEOLOGICAL HOLE LOG

119

THE BROKEN HILL PTY CO LTD. PROJECT E.L. 605 URO BLUFF DRILL HOLE UB5

Location or local co-ordinates Traverse 70N 39500E R.L. Collar (Datum) 23 (AHD

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6370000N 739500E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION		Remarks
243.0	247.9				BACKY POINT BEDS	Conglomerate and gritty sandstone. 30% clasts of sandstone up to 3cm in size, matrix sand similar to above.	"	
247.9	250.0					END OF HOLE.		
					BEDA VOLCANICS PcVz	Amygdalar deep brown slightly purplish basalts. Amydales up to 8mm mostly carbonate with minor chlorite. Horizontal fractures of carbonate 4mm thick. These lavas are typical of the lower Beda Volcanics.	v	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. EL 605 DRILL HOLE UB 6

Location or local co-ordinates Traverse 70N 41225E R.L. Collar (Datum) 32m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6370000N 741225E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew1000	Rotary	Screens/grab	48	7.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Core	155	June 1980

GN MN Magnetic Declination 8°

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	121m	0	48
			BQ	48	155

Casing 80mm Steel to 48m

Static water level _____ Date _____

Logged by M. Raetz Date 7.5.80

Remarks Reasonable sand, shallow, caving in.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
0	2					Soil and sand	
2	4					Brown sand	Sand may
4	6					White sand m-c.g. very little clay	be useful
6	8					White sand m-c.g. "	check quality
8	10				CAINOZOIC	White clay	
10	12					"	
12	14					"	
14	16					Brown clay	
16	18					"	
18	20					Brown shaley siltstone	
20	22					"	
22	24					"	
24	26					"	
26	28					"	
28	30					"	
30	32					"	
32	34					"	
34	36					"	
36	38					"	
38	40					"	
40	42					"	
42	44					"	
44	46					"	
46	48				TENT HILL FORMATION * Cattle Grid Sandstone	End rotary precollar 48m.	

SYMBOLS AND ABBREVIATIONS

* Unofficial name on drawing AS5694 by M Mason in ENV 3072.

DETAILED GEOLOGICAL HOLE LOG

121

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB6

Location or local co-ordinates Traverse 70N 41255E R.L. Collar (Datum) 32m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6370000N 741225E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew 1000	Rotary	Screens/grab	48	7.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Core	155	June 1980

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	121m	0	48
			BQ	48	155

Casing 80mm steel to 48m

Static water level _____ Date _____

Logged by M. Raetz Date 7.5.80

Remarks 21 metres of NQ rods with shoe bit, stuck inside 80mm steel below about 35 metres. Full recovery unless specified.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
48.0	51.9	3.9				Brown sandstone, with muddy matrix. Mostly fine to medium grained coarse sand with some angular coarse grains and small pebbles. Pebbles are dark grey, green and pink sandstone not properly identified.	
51.9	53.85	1.95	0.4m	20%	TENT HILL FORMATION Cattle Grid Sandstone	Medium to coarse grained brown sandstone and presumably friable sand as core lost. There is very little matrix and the grains are rounded to subrounded. Some very noticeable orangey-pink pebble and grit clasts look like Gawler Range Volcanics.	Caving Sand
53.85	54.6	0.75				Brown coarse grained sandstone similar to above.	
54.6	56.2	1.6				Brown fine grained sandstone.	
56.2	65.15	8.95				Mostly brown siltstone with some finer sandstone portions. About 10% of peculiar white mottling, typically several mm in size with mostly round shapes but some are angular, even triangular. These distinctly white patches are now made up of quartz a few of them are vughy showing crystalline quartz. The origin of these is uncertain and a sample at 58.7 has been taken for petrology. Suspected origin is some kind of evaporite mineral.	Pet Sample 58.7m check mottling.
65.15	65.45	0.30				Brown coarse grained sand and grit zones.	

SYMBOLS AND ABBREVIATIONS

C - Distinct white mottling now quartz, possibly originally an evaporite mineral.

DETAILED GEOLOGICAL HOLE LOG

122

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB 6

Location or local co-ordinates Traverse 70N 41255E R.L. Collar (Datum) 32m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6370000N 741255E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks ad to ream NQ rods as casing, past caving sands 52m to 55m.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
65.45	65.95	0.5				Brown siltstone and fine sandstone as previously.	
65.95	66.45	0.5			TENT HILL FORMATION * Cattle Grid Sandstone	Grit and conglomerate as previously, looks like some core loss here.	
66.45	68.3	1.85				Brown siltstone and fine sandstone as above. With very occasional thin grey bands. Generally horizontally bedded.	
68.3	69.35	1.05				Brown and slightly grey sandstone, medium grained to coarse grained with a few flat pebble conglomerates in the lower section.	
69.35	71.75	2.4			TENT HILL FORMATION * Bald Limestone	Flat pebble conglomerate with grey greenish matrix. About 60% flat dolomite clasts, remainder being pink and deep red sandstone and pink Gawler Range volcanic clasts. Most of the clasts are derived from shallow water carbonates deposited nearby.	
71.75	92.0	20.25				Grey siltstone with up to 30% flat dolomitic pebble conglomerate in bands up to 20cm thick. The flat pebble conglomerates are very typically flat clasts usually several mm thick generally subhorizontally oriented	
92.0	155.0	63.0				Grey siltstone with 5% thin laminated dolomite bands and a few isolated zones of flat pebble dolomitic conglomerate. The last flat pebble conglomerate zone	

SYMBOLS AND ABBREVIATIONS ⥬ - flat pebble conglomerate

* Unofficial name by M. Mason on drawing A55694 in ENV 3072.

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF, S.A. E.L. 605 DRILL HOLE UB 6

Location or local co-ordinates Traverse 70N 41255E R.L. Collar (Datum) 32m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6370000N 741225E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.	GEOLOGICAL DESCRIPTION	Remarks
					noted is at 120m. A 30cm wide fracture collapse breccia zone is at 134.5m. This looks typically like hydro-fracturing with a vughy carbonate and minor pyrite matrix.	
					End of Log UB6. 155m.	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

124

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. EL 605 DRILL HOLE UB 7

Location or local co-ordinates Traverse 69N 42650E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6369200N 742350E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew1000	Rotary	Screens/grab	70	18.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Hammer/core	108/174.45	July 1980

GN MN Magnetic Declination 8°

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	12¼m	0	108
			BQ	108	174.45

Casing 125mm PVC to 30m

Static water level _____ Date _____

Logged by M. Raetz Date 21.5.80

Remarks _____

From	To	Interval	Recovery	% Rec.		GEOLOGICAL DESCRIPTION	Remarks
0	2	2	bad			Soil, brown	
2	4		good			Sandy clay, brown	
4	6					Sandy clay, light brown mottled reddish	
6	8					"	
8	10					"	
10	12				CAINOZOIC	Clay, white mottled red-brown	
12	14					"	
14	16					"	
16	18					Clay, white mottled yellow	
18	20					Clay and siltstone, yellow-brown	
20	22					Clay and siltstone, brown	
22	24					Clay, brown and yellow	
24	26				TENT HILL FM.	Siltstone, chocolate brown	
26	28					"	
28	30					"	
30	32					"	
32	34				*Augusta Shale	Shale, brown and grey	
34	36					Grey shale	
36	38					"	
38	40					"	
40	42					"	
42	44					"	
44	46					"	
46	48					"	
48	50					"	
50	52					"	
52	54					"	
54	56					"	
56	58					"	
58	60					"	
60	62				TAPLEY HILL FORMATION	"	

SYMBOLS AND ABBREVIATIONS

* Unofficial name on drawing A35694 by M. McLean in Env. 3072.

DETAILED GEOLOGICAL HOLE LOG

125

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB 7

Location or local co-ordinates Traverse 69N 42650E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6369200N 742350E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	% Rec.		GEOLOGICAL DESCRIPTION	Remarks
62	64					Grey shale	
64	66				TAPLEY HILL FM.	"	
66	68					"	
68	70					End rotary precollar 70m.	
66	72					Grey Shale Rockdrill Hammer	
72	78					" Drilled to 108 metres	
78	84					"	
84	90					"	
90	96					"	
96	102					"	
102	108					"	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. EL. 605 DRILL HOLE UB7

Location or local co-ordinates Traverse 69N 42650E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6369200N 742350E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew 1000	Rotary	Screens/grab	70	18.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Hammer/core	108/174.45	July 1980

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	121m	0	108
			BQ	108	174.45

Casing 125mm PVC to 30m

Static water level ____ Date ____

Logged by M. Raetz Date 21.5.80

Remarks Recovery 100% unless specified.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
108	123.6	15.6				Grey laminated shale with about 5% in laminated dolomite bands.	
123.6	129.6	6.0				As above with 10% laminated dolomite bands.	
129.6	135.6	6.0				As above with 20% laminated dolomite bands.	
135.6	138.3	2.7				As above with 30% laminate dolomite bands. One small slump fold at 137.9 m.	
138.3	141.25	2.9	0.9	30%		As above.	
141.25	141.85	0.6				As above.	
141.85	142.8	0.95		80%		70% laminated dolomite in zones up to 40cm thick, the remainder grey shale. Total sulphides less than ½% is fine pyrite disseminations in dolomite.	
142.8	142.9	0.1			TAPLEY HILL FORMATION	Black mudstone with 50% angular intraclasts of shale and dolomite suspended in the matrix.	
142.9	143.45	0.55				Grey black shale with about 20% sandy bands up to 10cm thick. Total sulphides about 2% mostly as disseminated pyrite and chalcopyrite more common in the sandy portion.	Py, cp
143.45	144	0.55				Dense medium grained greenish basalt. The top is an unconformity with the	

SYMBOLS AND ABBREVIATIONS

△ Shale and dolomite intraclasts.

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB7

Location or local co-ordinates Traverse 69N 42650E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6369200N 742350E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION		Remarks
						overlying shale marked by 2cm of grit.	V	Flow 1
							V	
144.05	155.7	11.65				Basalt flow fine grained purplish brown in	V	
						several pulses. Flow tops are indistinct	V	
						and only marked by several cm of green	V	
						amygdules. Carbonate veining with some	V	
						hematite 10%.	V	
						Characterised by fine grained and dense	V	
						even texture.	V	Flow 2
							V V	
155.7	171.1	15.4				Basalt flow in 7 pulses medium grained	V V	
					VOLCANICS	purplish brown. Pulses fairly distinct with	V V	
						about 30-50cm amygdalar flow tops with	V V	
						green and white amygdules.	V V	Flow 3 in
							V V	7 pulses
							V	
171.1	174.25	3.15			BEDA	Basalt flow red brown in 3 pulses. Large	V V	
						amygdules mostly white. Red brown fine	V V	
						grained base chilled and brecciated.	V V	
							V	
174.25	174.45	0.20				End of Hole.		
						Brown conglomeratic sandstone.		

SYMBOLS AND ABBREVIATIONS

V V — Flow Top.
V V

DETAILED GEOLOGICAL HOLE LOG

128

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. EL 605 DRILL HOLE UB 8

Location or local co-ordinates Traverse 68N 42350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6367000N 742250E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew1000	Rotary	Screens/grab	66	17.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Core	166	June 198

Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	121mm	0	66
			BQ	66	166

Casing 80mm steel to 66m

Static water level _____ Date _____

Logged by M. Raetz Date 21.5.80

Remarks _____

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
0	2	2	good	good		Sand, brown, friable, some mud	
2	4					"	
4	6					Sandy clay, brown	
6	8					"	
8	10					Muddy sand, light brown	
10	12					"	
12	14					Sandy clay, brown reddish	
14	16					"	
16	18				CAINOZOIC	Sand, m.g., friable, light brown	
18	20		bad			Sandy clay, poor sample	
20	22		bad			" "	
22	24		bad			Clay, white and yellow	
24	26		good			Clay, white mottled pink + chert pebble	
26	28					Clay, white and grey	
28	30					Grey clay shale, partly weathered	
30	32					Grey clay shale	
32	34					"	
34	36					"	
36	38					"	
38	40					"	
40	42				TAPLEY HILL FORMATION	"	
42	44					"	
44	46					"	
46	48					"	
48	50					"	
50	52					"	
52	54					"	
54	56					"	
56	58					"	
58	60					"	
60	62					"	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB 8

Location or local co-ordinates Traverse 68N 42350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6367000N 742250E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.	GEOLOGICAL DESCRIPTION	Remarks
62	64				Grey shale	
64	66				End rotary precollar 66m.	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. EL 605 DRILL HOLE UB8

Location or local co-ordinates Traverse 68N 42350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6367000N 742250E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew 1000	Rotary	Screens/grab	66	17.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Core	166	June 1980

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	121mm	0	66
			BQ	66	166

Casing 80mm steel to 66m

Static water level _____ Date _____

Logged by M. Raetz Date 21.5.80

Remarks Casing reamed off, cannot be deepened.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
66.5	118	51.50				Grey laminated siltstone with about 10% thin (2-5mm) whitish dololaminite. These may be of sub aerial or algal origin. They commonly contain relic mud cracks with specks of pale brown sphalerite. The dololaminite bands consist mostly of dolomite probably originally a limestone mud with some siltsize clastic material. An internal wavey lamination is generally present. Several whitish coloured coarse silt and fine sand bands occur, up to several cm thick. These are more obviously of clastic origin having lenticular lamination. Other sedimentary features include botryoidal basal contacts to the clastic beds which may be scours or load casts, flat pebble conglomerates of the dololaminite layers, and soft sediment slumps. Also small scale faults in associated breccias of probably early litification age occur.	
					TAPLEY HILL FORMATION		
118	147.75	29.75		100%		Grey siltstone as above with 20% dololaminite. Small specks of sphalerite and galena are commonly found usually in the dololaminite layers, where cut by small calcite veinlets. The 5cm thick chalcopyrite rich breccia zone occurs at 140.3m. These breccias are typical of the early litification type of breccia, which form due to sediment disturbance soon after deposition.	Zns Pbs cp
147.75	149.85	2.10		80%		Generally massive dolomites of various types	

SYMBOLS AND ABBREVIATIONS Zns = sphalerite Pbs = galena cp chalcopyrite

Breccia.

Dololaminite

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB8

Location or local co-ordinates Traverse 68N 42350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6367000N 742250E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.	GEOLOGICAL DESCRIPTION	Remarks
					including calcarenites, flat pebble conglomerate breccia and some pillow like peletal types. Disseminated chalcopyrite up to about 1% occurs.	cp
					The lower 5cm of this measured section is distinguished as a grey-black pyritic arenaceous mudstone. Well laminated with some coarse sand bands, containing an estimated 10% pyrite. The lower contact with the underlying unit is sharp.	py
149.85	151.25	1.40		100%	Conglomerate (clasts average 3mm maximum 8mm). Clast composition is mostly GRV, white and bluish quartz, with minor bif hematite rich rock.	Reworked basal conglomerate
					The upper 10cm of this measured interval differ by containing several large (1-3cm) clasts of green mafic now pyritised volcanic, and a large clast of white pink quartzite possibly Pandurra Formation. Pyrite is common in this interval usually rimming quartz grains. There is a conspicuous absence of grey mud matrix apparent further down in the conglomerate suggesting that this upper interval may have been reworked prior to deposition of the overlying dolomite and shale sequence and subsequently pyritised. In the remainder of the conglomerate sequence there is usually 20-30% matrix of fine grained siliceous silt and mud.	

TAPLEY HILL FORMATION

MOONLIGHT CONGLOMERATE

BACKY POINT BEDS (upper unit)

SYMBOLS AND ABBREVIATIONS py = pyrite

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB8

Location or local co-ordinates Traverse 68N 42350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6367000N 742250E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION		Remarks
151.25	152.25	1.0	0.6	60 %		Brown red fine grained basic volcanics.		
152.25	156.4	4.15				Volcanics as above, with very few amygdules.		F1
						At 152.3m patches of chalcopyrite occur in thin calcite veinlets cutting the volcanics.		cp
156.4	166	9.6			BEDA VOLCANICS	Amygdalar brown volcanics. About 30% amygdules above 164m mostly filled with a white mineral and to a lesser extent a dark olive green mineral. The white mineral is relatively hard but on scratching exhibits a minor fiz with weak hydrochloric acid, the green mineral is quite soft.		PET sample 161.45m I.D amydgule
						End of hole at 166m, abandoned due to drilling problems.		F2

SYMBOLS AND ABBREVIATIONS F1 etc. = individual basaltic flows

DETAILED GEOLOGICAL HOLE LOG

133

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. EL 605 DRILL HOLE UB 9

Location or local co-ordinates Traverse 68N 43350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6367900N 743200E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew1000	Rotary	Screens/grab	72m	16.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Core	250m	June 1980

GN MN Magnetic Declination 8

Depth	Deci'n	Brg (Mag)	Hole dia.	From	To
00	90°	-	121mm	0	72m
			BQ	72m	250m

Casing 80mm Steel to 72m

Static water level _____ Date _____

Logged by M. Raetz Date 21.5.80

Remarks 0-72m drag bit.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
0	2	2	good			Sandy mud, brown	
2	4					"	
4	6					"	
6	8					Muddy sand, brown	
8	10					Sandy clay, red-brown	
10	12					Clay, red-brown	
12	14					Sandy clay, mottled grey-red-brown	
14	16					Sand, white minor clay	
16	18					Sand, white, m.g.qtz., some clay	
18	20				CAINOZOIC	" "	
20	22					Clay, pink, silty	
22	24					"	
24	26					"	
26	28					Clay, khaki	
28	30					Clay, khaki and brown	
30	32					"	
32	34					"	
34	36					"	
36	38					Clay, brown	
38	40				TENT HILL FM. (*Augusta Shale)	Brown clay, shale	
40	42					Brown shale siltstone	
42	44					"	
44	46					"	
46	48					"	
48	50					"	
50	52				TAPLEY HILL FORMATION	Grey shale	
52	54					"	
54	56					"	
56	58					"	
58	60					"	
60	62					"	

SYMBOLS AND ABBREVIATIONS

* unofficial name, by Mason on drawing AS5694, in open file envelope 3072.

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB9

Location or local co-ordinates Traverse 68N 43350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6367900N 743200E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.L.	Mayhew 1000	Rotary	Screens/grab	72m	16.5.80
Main Hole	Rockdrill	MA/PF	Fox	Diamond	Core	250m	June 1980

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°		121mm	0	72m
			BQ	72m	250m

Casing 80mm steel to 72m

Static water level _____ Date _____

Logged by M. Raetz Date 21.5.80

Remarks Samll piece of diamond bit and matrix in hole.
100% recovery unless specified.

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
72	98.7	26.7				Grey laminated siltstone with 5% laminated dolomite bands, averaging 2-5mm thick. Several vughy zones filled with crystaline calcite and occasional fracture veinlets filled with calcite.	
98.7	124.0	25.3				Similar to above but with 10% laminated dolomitic bands. Notable shallow water features are; very distinct 1-2mm anhydrite psuedo morphs at 103.1m and 2 rosettes of possible trona at 109.75m. Also occasionally laminated dolomite bands show mud cracks filled with calcite. Evaporite rosettes at 109.75 contain disseminated pyrite.	anhydrite trona?
124.0	137.0	13.0				Laminated grey siltstone and dolomite bands as above but with 20% dolomite bands.	
137.0	145.9	8.9				As above but with 30% laminated dolomite bands.	
145.9	154.6	8.7				As above but with 40% laminated dolomite bands. Total sulphides less than ½ of 1% as small patches of pyrite several specks of sphalerite and galena.	Specks of Zns, py, Pbs
154.6	160.25	5.65				100% laminated dolomite bands and grey laminated siltstone. Specks of pyrite and galena.	

TAPLEY HILL FORMATION

SYMBOLS AND ABBREVIATIONS — mudcracks; laminated dolomite

DETAILED GEOLOGICAL HOLE LOG

135

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB9

Location or local co-ordinates Traverse 68N 43350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 636790N 743200E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
						A soft sediment slump fold can be seen at 160m	Specks of Zns, py, Pbs
160.25	161.45	1.20				Grey black shale in bands from several mm thick up to 15cm thick. Angular shaped holes appear in the peletal porous texture of the laminated dolomite after acid leaching, e.g. 160.5 m. These may be after anhydrite? or simply angular spaces between the dolomite rhombs.	anhydrite?
161.45	162.3	0.85			TAPLEY HILL FORMATION	Black laminated shale 70%, laminated dolomite 20%, sandy shale 10%. Total sulphides <5%, mostly framboidal pyrite dessiminated along bedding. The basal shale contact with the underlying conglomerate is sharp but not an unconformity.	py
162.3	164.15	1.85			MOONLIGHT CONGLOMERATE	Conglomerate sandstone, dark grey immature with angular clasts. The following clasts are present; white coarse quartzitic sandstone with subrounded subangular grains, greenish quartzite or chert, red brown coarse well rounded sandstone with interstitial pyrite, green medium grained basalt, and small orange	

SYMBOLS AND ABBREVIATIONS 2 - slump fold - angular sandstone clast - basalt clast

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB9

Location or local co-ordinates Traverse 68N 43350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6367900N 743200E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
					MOONLIGHT CONGLOMERATE	red chert chips. The matrix is a grey black muddy silt sometimes with framboidal pyrite. The basal contact of the sedimentary conglomerate unit is an irregular unconformity of grey black pyritic silty mud. The grey black mud at the base and throughout the matrix is virtually identical to that in the overlying black shale and therefore the 2 units are considered a conformable succession. The basal conglomerate unit conforms with the Moonlight Formation as originally used in the early Australian Selection reports on the Myall Creek drilling.	framboidal Py
164.15	165	0.85				Green basalt collapsed breccia. Spaces between the angular basalt fragments is filled with carbonate and grey silt. This is a collapsed breccia marking the unconformity.	
165	166.9	1.9			BEDA VOLCANICS	Basalt flow, grey green, in 8 pulses Flow tops well defined about 10cm. Amygdules are pink and green.	Flow 1 in 8 pulses
166.9	184	17.1			BEDA VOLCANICS	Basalt flow, purple green in 16 pulses. Most amygdules green.	Flow 2 in 16 pulses
184	193	9.0			BEDA VOLCANICS	Basalt, purplish in 4 flows with thin flow tops. Amygdules mostly green.	Flow 3 in 4 pulses

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

167

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB9

Location or local co-ordinates Traverse 68N 43350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6367900N 743200E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
193	200.05	7.05			BEDA VOLCANICS	Basalt flow, purple brown fine grained dense with small green amygdules. Distinguished by fine grain size.	Flow 4 in 4 pulses
200.05	202	7.95				Basalt flow top, purplish brown 60% green and white large vesicles.	Flow top 5
202	205.3	3.3				Flow top 6, purplish grey brown with 30% large green vesicles.	Flow top 6
205.3	220.65	15.35				Basalt flow, purple grey brown mottled green, dense and uniform with a few carbonate veins.	Flow 6
220.65	221.45	0.80				Amygdalar basalt flow brown with 30% green and white vesicles. Flow is partly brecciated and resembles a flow top.	Flow 7
221.45	224.05	2.60			BACKY POINT BEDS (Lower unit)	Red bed conglomerate and sandstone. 60% sandstone, 35% conglomerate and 5% green and brown mudstone bands. The sandstone is partially cross-bedded shows scour bases and contains heavy mineral laminae conglomerate pebbles are often scattered throughtout the sandstone. The conglomerate clasts are; predominately pink granite, orange red fragments that may be Gawler Range volcanics and white quartz.	cf CU1 285.55-294.55
224.05	226.55	2.50				Brown mudstone 70% and brown sandstone 30%. The brown mudstone contains green zones.	

SYMBOLS AND ABBREVIATIONS — large vesicular flow top; ⊳ - flow top breccia; ④ - granite clasts

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. E.L. 605 DRILL HOLE UB9

Location or local co-ordinates Traverse 68N 43350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6367900N 743200E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
226.55	229.5	2.95				Basalt flow, amygdalar dark brown to purple in 2 pulses separated by thin band of brown sand (1cm thick). Vesicles 40% mostly large white.	Flow top 8
229.5	232.4	2.90				Medium grained sandstone, light brown well sorted.	cf CU1
232.4	233.5	1.10			BEDA VOLCANICS (lower unit)	Basalt flow, thin brown flows separated by thin (1-2cm) brown sand intervals. 40% amygdules mostly white some green.	294.55-298.55 Flow top 9 in 2 pulses
233.5	234.4	0.90				Basalt flow, chocolate brown.	Flow 9
234.4	236	1.60				Basalt flow top chocolate brown, 30% amygdules mostly pink some have white centres.	Flow top 10
236	238.4	2.40				Basalt flow, chocolate brown, 10% amy ules mostly pink.	Flow 10
238.4	241.2	2.80				Basalt flow, grey brown green with minor carbonate veining fairly dense and uniform.	Flow 11
241.2	243.05	1.85				Basalt flow top, pink brown 40% medium size pink amygdules.	Flow top 12
243.05	247.1	4.05				Basalt flow, purplish brown dense fine grain uniform with several carbonate veins having hematite rich margins. Distinguished	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A EL 605 DRILL HOLE UB9

Location or local co-ordinates Traverse 68N 43350E R.L. Collar (Datum) 35m (AHD)

Map Reference Cultana 1:50,000 Co-ordinates (Grid) 6367900N 743200E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
						by fine grain size and uniform texture.	Flow 12
					BEDA VOLCANICS (lower unit)		
247.1	248.5	1.40				Basalt flow top, reddish and purplish brown in part greenish with 60% large amygdules mostly white carbonate. Lower metre is distinctly brecciated.	Flow top 13
248.5	250	1.50			BACKY POINT BEDS (lower unit)	30cm brown sandstone overlying 70cm pale hard conglomerate. Conglomerate clasts are; pink and white fractured quartz mostly pink and white fracture quartz, a few iron rich sandstone fragments and a few chlorite rich possibly basaltic fragments. Most importantly some subangular clasts of an earlier brown sandstone occur, these together with good rounding of matrix coarse sand infer this is definitely not Pandurra Formation. End of Hole.	

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. DRILL HOLE UB 10

Location or local co-ordinates Traverse 77N 36550E R.L. Collar (Datum) 50m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 637900N 736550E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	Whiteland	D.Lachlan	Mayhew1000	Rotary	Screens/grab	66m	19.5.80
Main Hole							

GN MN Magnetic Declination 8°

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
00	90°	-			

Casing 125mm PVC to 6m

Static water level _____ Date _____

Logged by M. Raetz Date 22.5.80

Remarks To test local magnetic high for CDA ?

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
0	2	2	good			Sand size gypsum 80%	
2	4					Silts, with gypsum, white	
4	6				CAINOZOIC	Silt, yellow and white	
6	8					Silt, yellow	
8	10					"	
10	12					"	
12	14					"	
14	16					Grey shale, weathered brown in part	
16	18					Grey shale, weathered mottled, brown & green	
18	20					"	
20	22					"	
22	24					"	
24	26					"	
26	28					Grey shale, fresher	
28	30					"	
30	32					"	
32	34					"	
34	36					"	
36	38					"	
38	40					"	
40	42					"	
42	44					"	
44	46					"	
46	48				TAPLEY HILL FORMATION	"	
48	50					"	
50	52					"	
52	54					"	
54	56					"	
56	58					"	
58	60					"	
60	62					"	

SYMBOLS AND ABBREVIATIONS

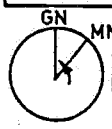
DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF S.A. EL 605 DRILL HOLE UB 10

Location or local co-ordinates Traverse 77N 36550E R.L. Collar (Datum) 50m (AHD)

Map Reference Lincoln Gap 1:50,000 Co-ordinates (Grid) 637900N 736550E (AMG)

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							



Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing

Static water level Date

Logged by Date

Remarks

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION		Remarks
62	64					Grey shale, fresher		
64	66					"		

SYMBOLS AND ABBREVIATIONS

APPENDIX 2

Core Analyses from Holes UB1 to UB4 and UB7 to UB9

ANALYSIS RESULTS

EXPLORATION LICENCE: 605 URO BLUFF, SOUTH AUSTRALIA

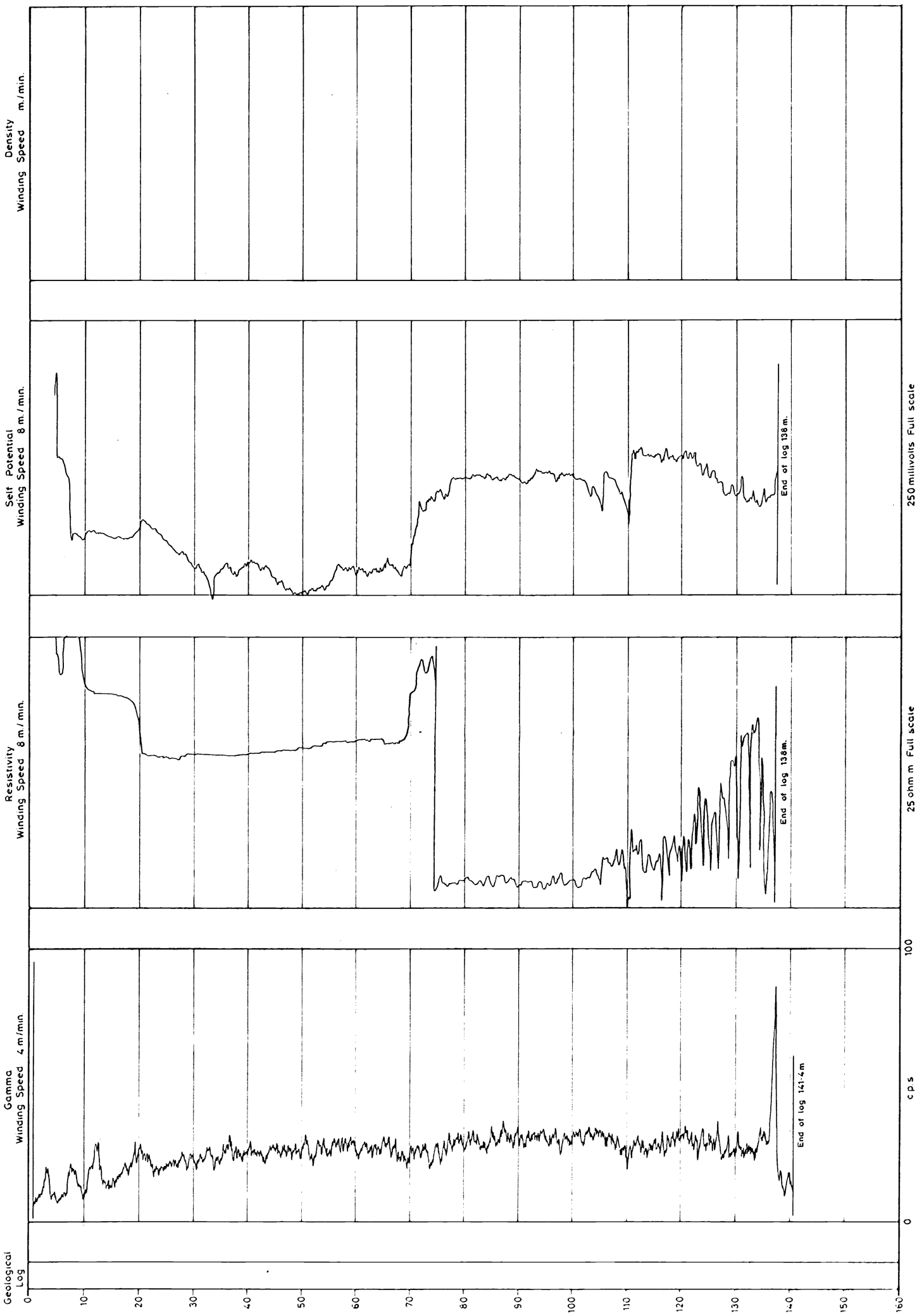
HOLE NO.	Co-ords A.M.G.	Assayed Intersection					Assays (ppm)				
		From (m)	To (m)	Rock Type	Sample No.	Int. (m)	Cu	Ag	Co	Pb	Zn
UB1	6376000N 736200E	134.8	137.0	Shale and Dolomite	ADL 5682	2.20	0.42%	3	16	60	46
		137.0	137.88*	Shale	5683	0.88	1.5%	13	185	600	1050
		137.88	138.88	Sandstone	5684	1.00	44	<1	430	14	14
UB2	6377000N 736475E	137.4	138.4	Dolomite	5677	1.00	930	1	20	60	20
		138.4	139.4	Shale and Dolomite	5678	1.00	1550	5	70	140	32
		139.4	139.86	Shale with pyrite	5679	0.46	640	3	40	140	24
		139.86	140.86*	Volcanic	5680	1.00	140	<1	36	12	30
		140.86	141.86	Volcanic	5681	1.00	85	<1	36	220	75
UB3	6374000N 736700E	140.55	141.55	Dolomite and shale	5660	1.00	40	2	16	630	44
		141.55	142.55	" "	5661	1.00	65	5	16	220	260
		142.55	143.55	" "	5662	1.00	170	4	20	140	110
		143.55	144.55	" "	5663	1.00	1350	3	16	135	90
		144.55	145.05	" "	5664	0.50	0.49%	5	44	85	48
		145.05	145.55	Shale with chalcopyrite	5665	0.50	0.47%	12	120	125	280
		145.55	146.05	Dolomite	5666	0.50	0.66%	12	65	65	340
		146.05	146.55	Shale and dolomite	5667	0.50	0.92%	9	90	70	680
		146.55	147.31*	Shale with calcocite	5668	0.76	2.35%	34	970	240	1700
		147.31	148.31	Sandstone	5669	1.00	1050	1	310	16	95
		148.31	149.31	Sandstone	5670	1.00	250	<1	330	8	26
UB4	6373000N 736700E	117.95	119.6	Shale & 30% dolomite	5704	1.65	1900	2	40	60	20
		119.6	120.25	" " "	5705	0.65	1.05%	7	80	100	20
		120.25	121.85	" " "	5706	1.60	1.35%	4	65	60	8
		121.85	122.80	Sahle & dolomite with chalcopyrite	5685	0.95	2.00%	7	190	70	8
		122.80	123.95*	Dolomite	5686	1.15	1.10%	7	1200	90	160
		123.95	124.45	Sandstone	5687	0.50	42	1	<4	<4	2
UB5	6370000N 739500E			Waiting on Assays							
UB6	6370000N 741225E			Abandoned							
UB7	6392000N 742350E	138.30	141.25	(30% Rec.) shale & 30% dolomite	5698	2.85	34	<1	12	55	200
		141.25	141.85	Shale & 30% dolomite	5699	0.60	30	<1	12	48	60
		141.85	142.80	Dolomite & 70% shale	5700	0.95	24	<1	8	42	42
		142.80	143.45*	Sandy shale with pyrite & chalcopyrite	5701	0.65	140	<1	36	60	130
		143.45	144.00	Volcanics	5702	0.55	70	<1	32	14	370
		144.00	145.50	Volcanics	5703	1.5	210	<1	40	12	1.5
UB8	6367900N 742250E	147.15	147.75	Dolomite with 1%	5693	0.6	2450	5	115	48	32
		147.75	148.75	diss. chalcopyrite	5694	1.0	4650	1	32	30	28
		148.75	149.85*	"	5695	1.1	6000	<1	36	26	12
		149.85	151.25	Conglomerate	5696	1.4	2900	<1	40	18	26
		151.25	152.95	"	5697	1.7	760	<1	16	30	28
UB9	6367900N 743200E	160.65	161.45	Shale and dolomite	5671	0.8	135	1	16	300	34
		161.45	161.85	"	5672	0.4	450	1	28	120	34
		161.85	162.30*	Black sandy shale	5673	0.45	290	2	40	90	28
		162.30	164.15	Conglomerate	5674	1.85	300	<1	8	12	20
		164.15	165.0	Brecciated volcanic	5675	0.85	430	<1	36	22	36
		165.00	166.00	Volcanics	5676	1.0	380	<1	40	8	60

NOTES:

* Base of Tapley Hill Formation

Analysis by COMLABS, Adelaide, Report No. 800231, Cu Pb Zn Co by method AAS/1A and Ag by method AAS3.

Fig. 2



DRILL HOLE:	UB 1
LOCATION:	6376000N, 736200E AMG
DRILL TYPE:	Mud
CASING TYPE:	P.V.C. 14 m.
INCLINATION:	90°
DEPTH DRILLED:	
DEPTH LOGGED:	Varies
LOGGING UNIT:	S.L.E. T450 E
DATE:	June 1980

Fig No
To accompany
Dated

Revisions:

THE BROKEN HILL PROPRIETARY CO. LTD
EXPLORATION DEPARTMENT

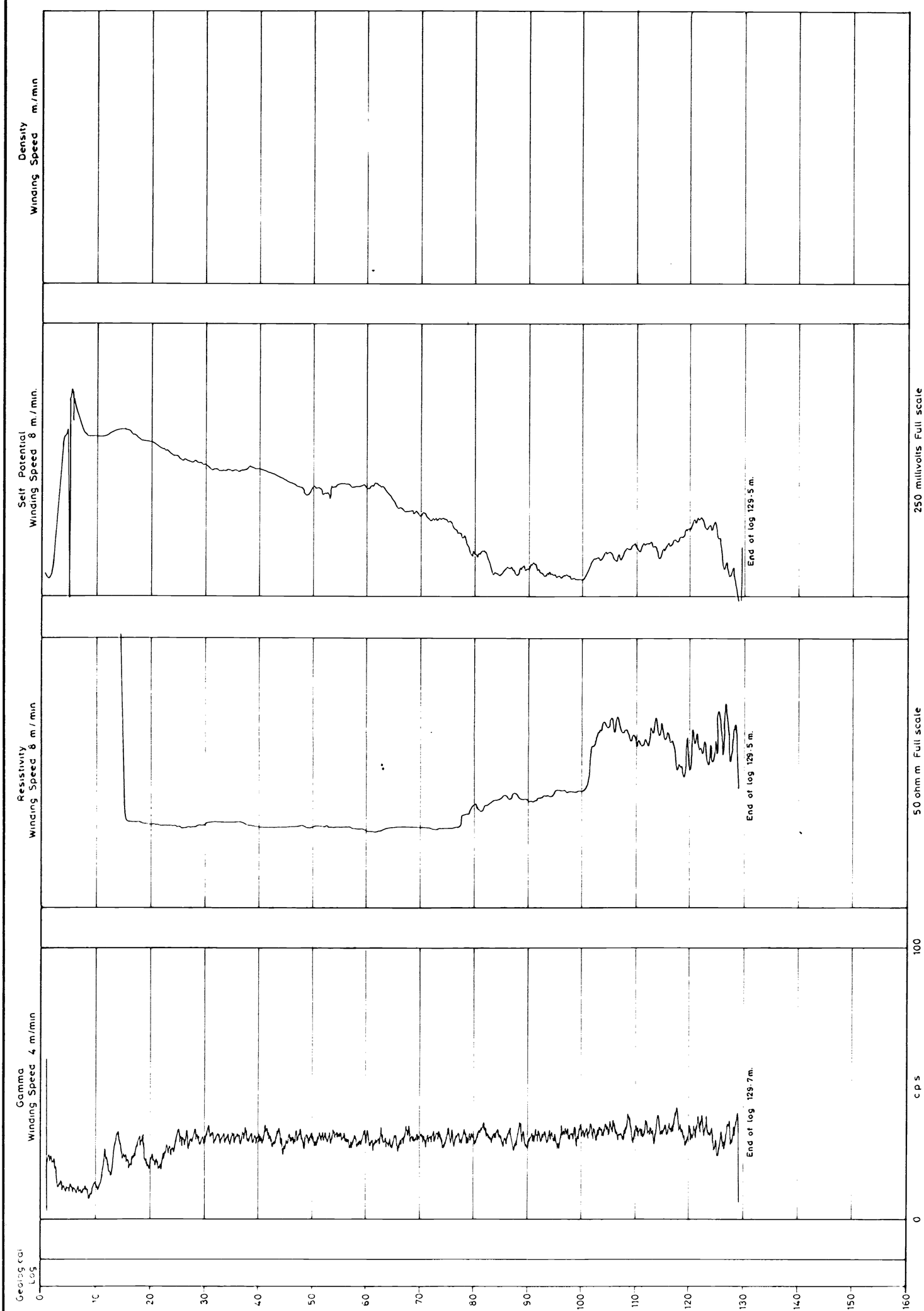
E.L. 605 URO BLUFF S.A.

GEOPHYSICAL DOWN HOLE LOGS
UB 1

Drawn: O.G.P.	Date 25-6-80	Centre: Adelaide	
Traced: R.F.F.	Project No.:	Drawing No.	
Checked:	6-B540-1	A2-46	

3828(1)-5

Fig. 3



DRILL HOLE	UB 2
LOCATION	6377000 N, 736475 E AMG
DRILL TYPE	Mud
CASING TYPE:	78m. P.V.C.
INCLINATION:	90°
DEPTH DRILLED:	160 m.
DEPTH LOGGED:	Varies
LOGGING UNIT:	S.I.E. T450 E
DATE:	June 1980

Fig No.
To accompany
Dated

THE BROKEN HILL PROPRIETARY CO LTD
EXPLORATION DEPARTMENT

E.L. 605 URO BLUFF S.A.

GEOPHYSICAL DOWN HOLE LOGS
UB 2

Drawn D G P.	Date: 10-7-80	Centre Adelaide
Traced R.F.F.	Project No	Drawing No
Checked	6-B540-5	A2-57

Revisions:

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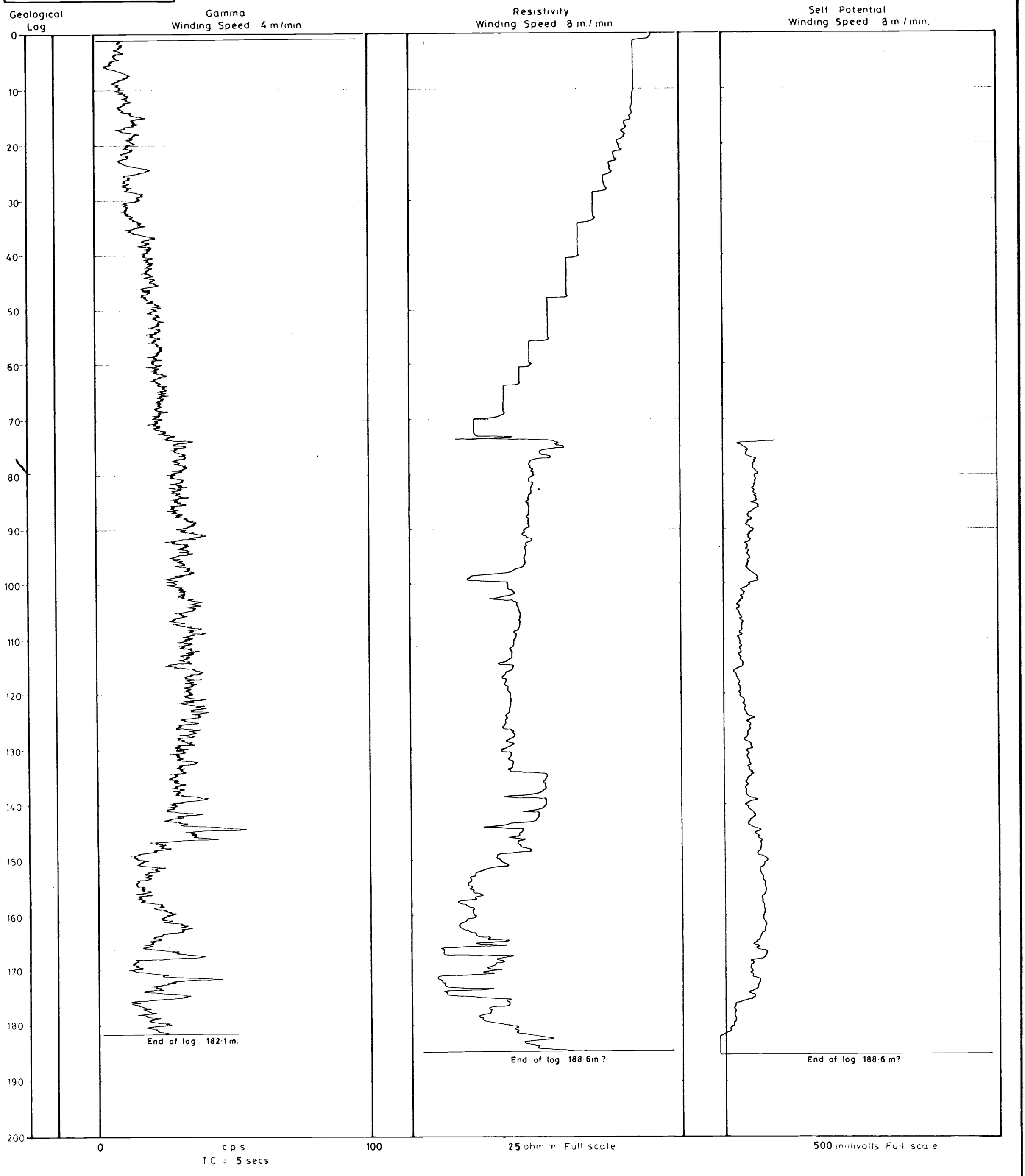
DRILL HOLE	UB 3
LOCATION :	6374000N, 736700E AMG
DRILL TYPE:	Mud
CASING TYPE:	Steel 74·5m.
INCLINATION :	90°
DEPTH DRILLED :	
DEPTH LOGGED :	Varies
LOGGING UNIT :	S.I.E. T450 E
DATE :	May 1980



THE BROKEN HILL PROPRIETARY CO LTD
EXPLORATION DEPARTMENT

E.L. 605 URO BLUFF S.A.

GEOPHYSICAL DOWN HOLE LOGS
UB 3

Revisions	Drawn D.G.P.	Date 27-6-80	Centre Adelaide
	Traced R.F.F.	Project No 6-B540-2	Drawing No A2-47
	Checked		

3828(1)-7

DRILL HOLE:	UB 4
LOCATION:	6373000N 736700E AMG
DRILL TYPE:	Mud
CASING TYPE:	P.V.C. 18m.
INCLINATION:	90°
DEPTH DRILLED:	160·8m.
DEPTH LOGGED:	Varies
LOGGING UNIT:	S.I.E. T450E
DATE:	May 1980

Geological Log

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160

Gamma
Winding Speed 4 m/min

End of log 156.3 m.

0 — c.p.s. — 100
T.C. = 5 secs.

Resistivity
Winding Speed 10 m./min.

End of log 156.3 m.

25 ohm.m. Full scale

Self Potential
Winding Speed 8 m./min.

End of log 135.0 m.

250 millivolts Full scale

Density
Winding Speed m./min.

T.C.= secs.
Source 50 m. Curies Cs 137

Fig. No
To accompany
Dated

Revisions:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L. 605 URO BLUFF S.A.

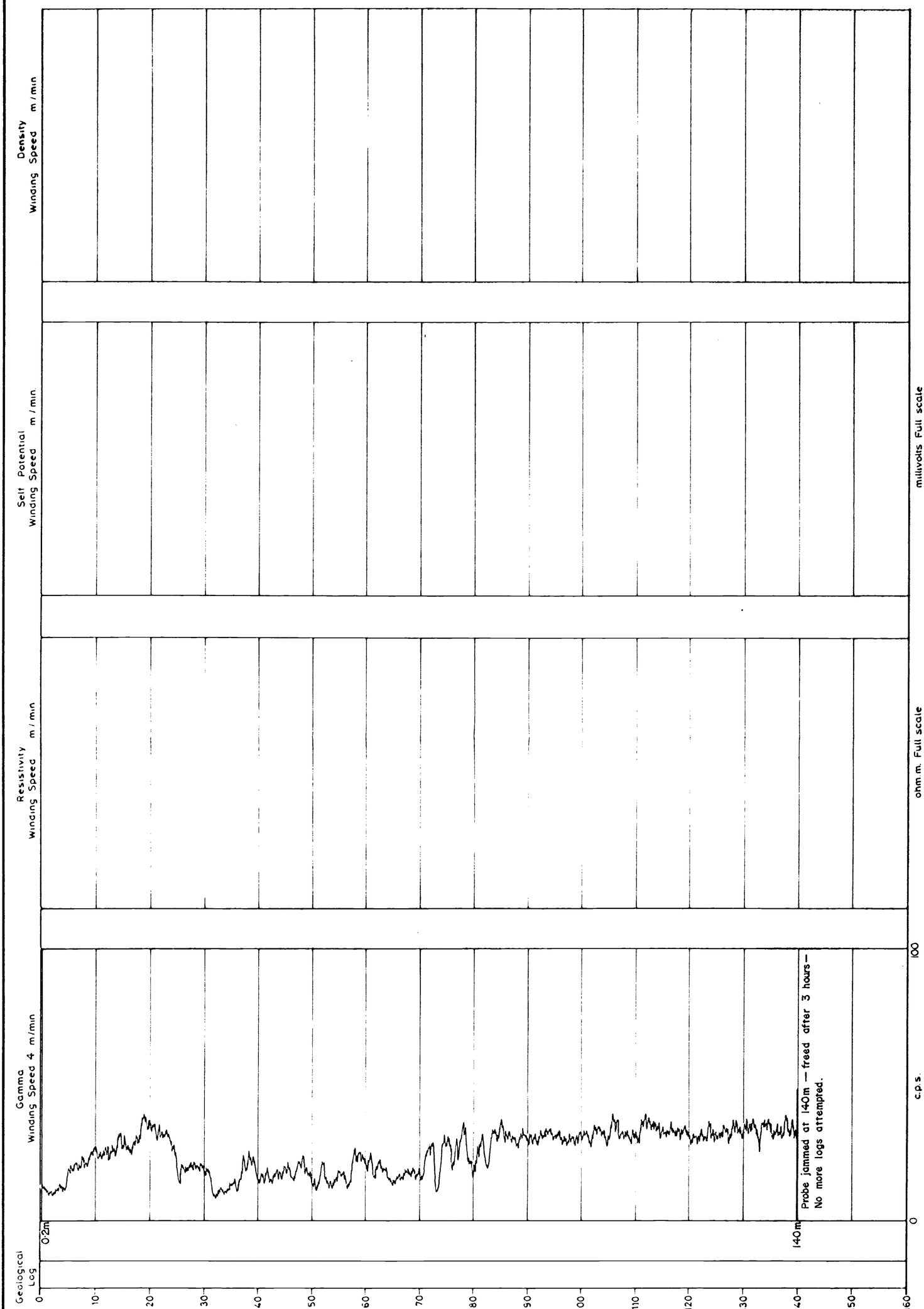
GEOPHYSICAL DOWN HOLE LOGS
UB 4

Drawn: D.G.P.	Date: 27-6-80	Centre:	Adelaide
Traced: R.F.F.			
Checked:	Project No.: 6-B540-3	Drawing No.:	A2-48

3828(I)-8

Fig. 5

Fig. 6



DRILL HOLE UB 5

LOCATION 6374 000 N
7 39 500 E

DRILL TYPE FOXMOBILE DIAMOND RIG

CASING TYPE

INCLINATION VERTICAL

DEPTH DRILLED.

DEPTH LOGGED 140m

LOGGING UNIT: SIE 450E

DATE. 9-9-80

Fig. No.
To accompany
Dated

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L.605 URO BLUFF, S.A.

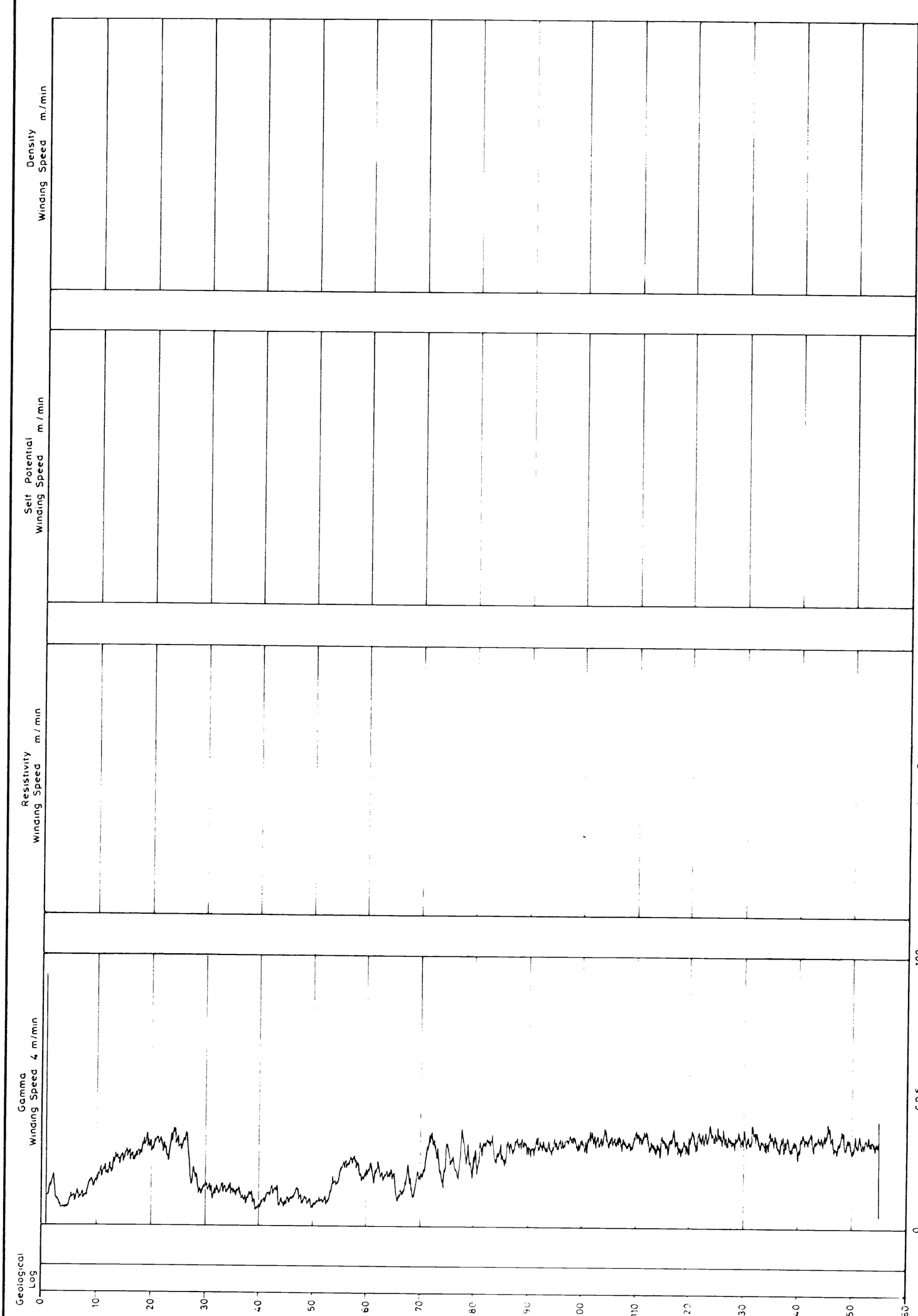
GEOPHYSICAL DOWN HOLE LOGS
UB 5

Drawn: D.G.P.	Date: 23-9-80	Centre: Adelaide
Traced: A.R.V.	Project No.:	Drawing No.:
Checked:	6-B540-14	A2-82

Revisions:

3828(1)-9

Fig. 7



DRILL HOLE	UB 6
LOCATION	6370000N, 741225 E. AMG
DRILL TYPE	Mud
CASING TYPE	Steel 48m.
INCLINATION	90°
DEPTH DRILLED	160m.
DEPTH LOGGED	155·7 m.
LOGGING UNIT	S.I.E. T450 E
DATE	June 1980

Fig. No.
To accompany
Dated

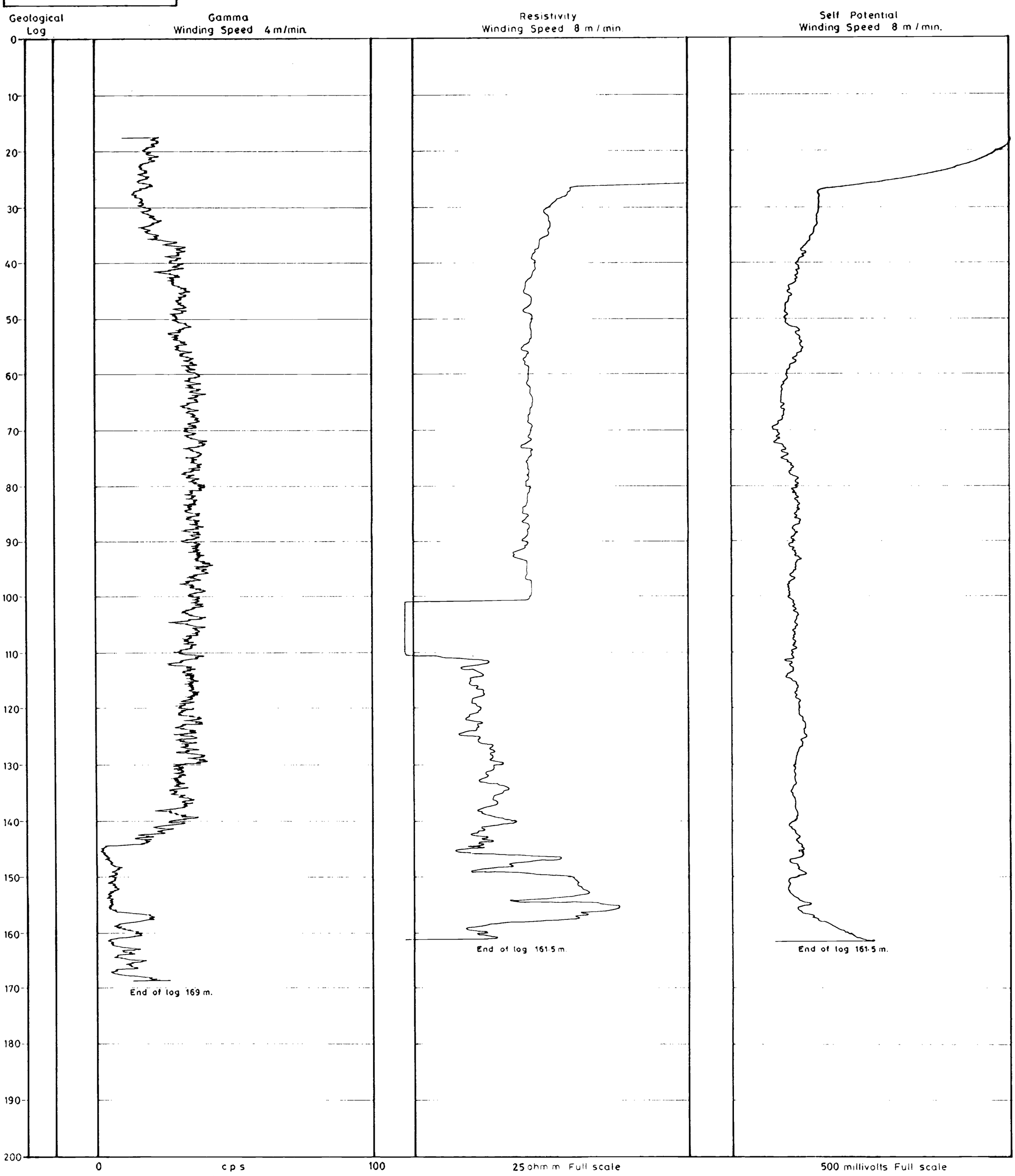
THE BROKEN HILL PROPRIETARY CO LTD
EXPLORATION DEPARTMENT

E.L. 605 URO BLUFF S.A.
GEOPHYSICAL DOWN HOLE LOGS
UB 6

Revisions	Drawn D G P	Date 15-7-80	Centre Adelaide
	Traced R.F.F.	Project No 6-B540-7	Drawing No A2-58
	Checked		

3828(1)-10

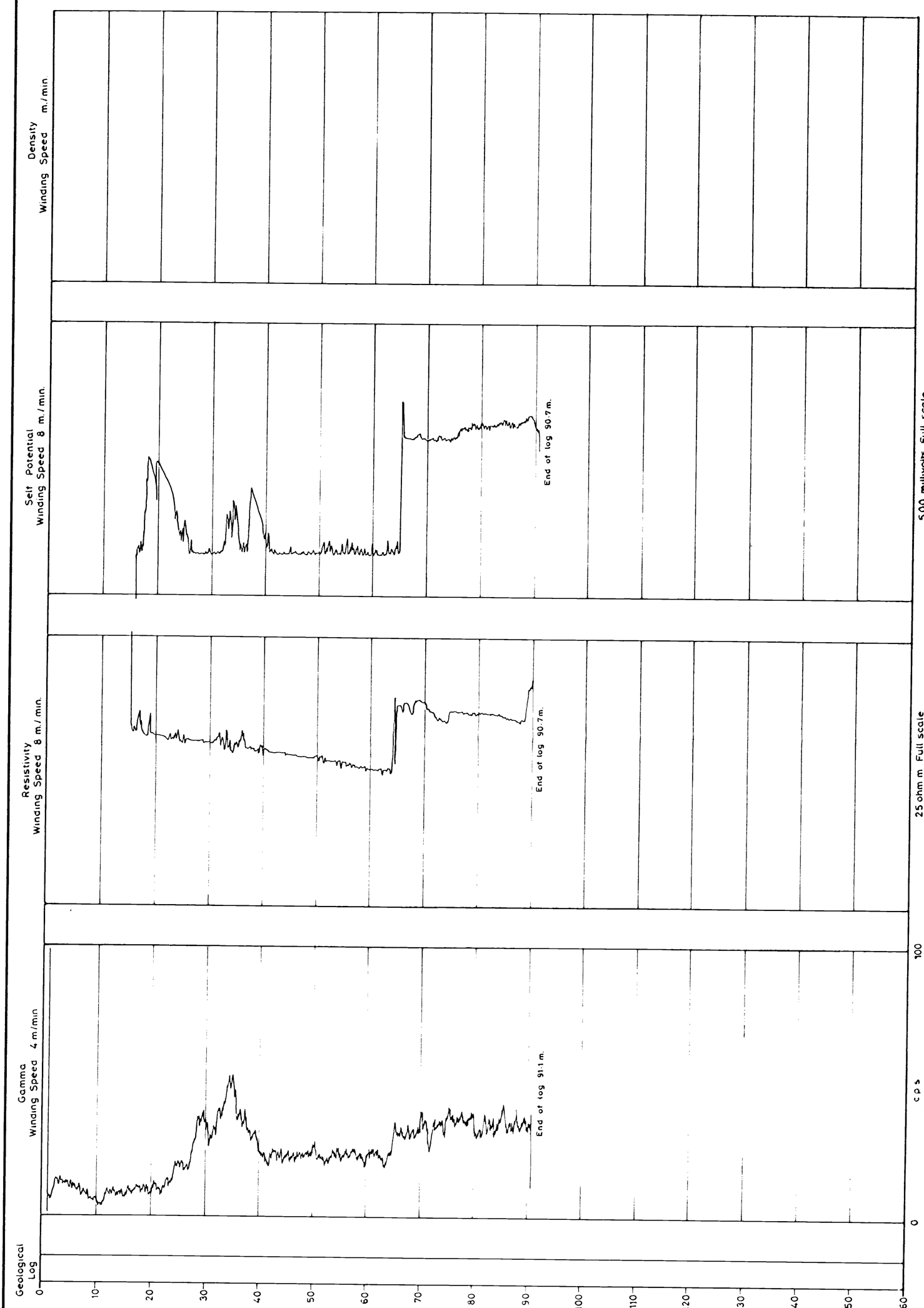
DRILL HOLE:	UB 7
LOCATION : 6369200N, 742350E	
DRILL TYPE:	Mud
CASING TYPE:	P.V.C. 30m.
INCLINATION :	90°
DEPTH DRILLED:	174·5m.
DEPTH LOGGED :	Varies
LOGGING UNIT:	S.I.E. T450 E.
DATE :	June 1980



Revisions	THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT		
	E.L. 605 URO BLUFF S.A. GEOPHYSICAL DOWN HOLE LOGS UB 7		
	Drawn O.G.P.	Date 15-7-80	Centre Adelaide
	Traced R.F.F.	Project NO 6-B540-8	Drawing NO A2-59
	Checked:		

3828(1)-11

Fig. 9



DRILL HOLE	UB 8
LOCATION	6367900N, 742250E. AMG
DRILL TYPE	Mud
CASING TYPE	Steel 66 m.
INCLINATION	90°
DEPTH DRILLED	160 m.
DEPTH LOGGED	Varies
LOGGING UNIT	S.I.E. T450 E
DATE	June 1980

Fig. No.
To accompany
Dated

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L. 605 URO BLUFF S.A.

GEOPHYSICAL DOWN HOLE LOGS
UB 8

Revisions:	Drawn: D G P	Date: 16-7-80	Centre: Adelaide
	Traced: R.F.F.	Project No	Drawing No.:
	Checked	6-B540-9	A2- 60

3828(1)-12.

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EXPLORATION LICENCE 605
URO BLUFF, SOUTH AUSTRALIA
REPORT FOR THE QUARTER ENDED 13TH DECEMBER, 1980

1. General

Exploration Licence 605 of 1631 square kilometres, was granted to Dampier Mining Company Limited on 13th March, 1980, for twelve months. The objective is to test the base of the Tapley Hill Formation for economic sedimentary copper.

2. Field Investigations

During the quarter, core from drill hole UB4 was ground, and samples sent for geochemical analysis for copper, lead, zinc, silver and cobalt. Results have not yet been received.

Assessment of previous work was completed, and the next phase of drilling was planned. This should commence in January, 1981.

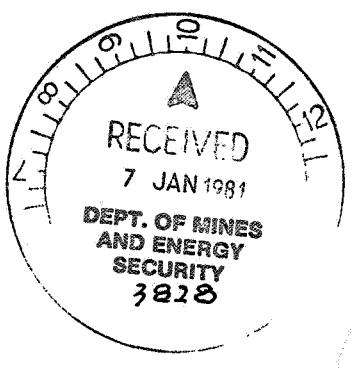
3. Expenditure

Expenditure debited to E.L. 605 during September, October and November, 1980, was:

Wages and Salaries	$ 3,932
Messing and Accommodation	$ 375
Fares and Mobilisation	$ 349
Drilling	$ 8,352
Transport	$ 453
Surveying/Aerial Photographs	$ 241
Geophysics	$ 414
Plant Services	$ 97
Samples Analysis	$ 863
Occupancy/Location Expenses	$ 299
	$ 15,375

Total expenditure to 30th November, 1980 is $100,763

This report is submitted to the Department of Mines and Energy as required by Condition 4 of Exploration Licence 605.



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EXPLORATION LICENCE 605

URO BLUFF, SOUTH AUSTRALIA

REPORT FOR THE QUARTER ENDED

13TH MARCH, 1980 1

CONTENTS

APPENDICES

FIGURES

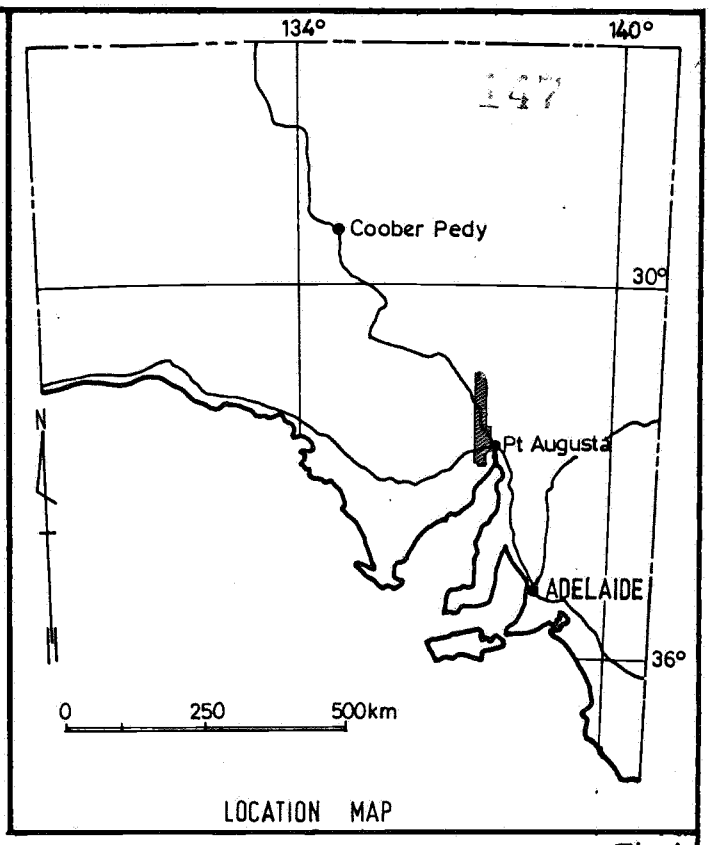
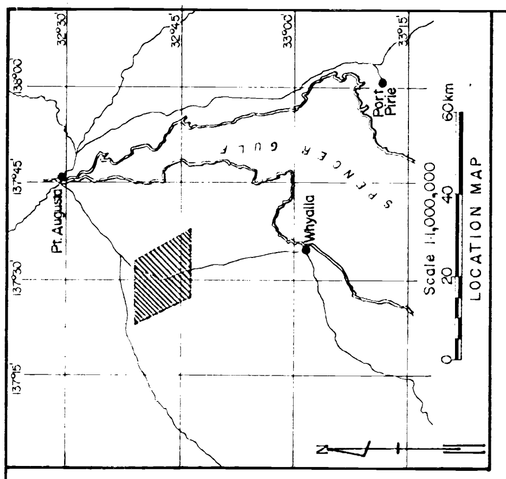


Fig. 1

Centre: ADELAIDE	THE BROKEN HILL PROPRIETARY CO. LTD. E.L. 605 URO BLUFF S.A. LOCATION OF STREAM SAMPLE SITES	Project No: 6-B 540-37
Date: 25-3-81		Drawing No: A4-104



Note AMG co-ordinates approx only
Location based on uncontrolled photomosaics

KILOMETRES
0 2 4 6 8 10
Scale 1:50,000

8052 22

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT	
E.L.605 URO BLUFF S.A. TOTAL MAGNETIC INTENSITY CONTOUR COMPILATION SHEET	
Drawn: D.G.P.	Date: 25-9-80 — Centre: Adelaide
Traced: A.R.V.	Project No: 6-B540-18 — Drawing No: A2-83
Checked:	
Revisions:	

3828(1)-13

DRILL HOLE:	UB 9
LOCATION:	6367900N, 743200E.
DRILL TYPE:	Mud
CASING TYPE:	Steel 72 m.
INCLINATION:	90°
DEPTH DRILLED:	250 m.
DEPTH LOGGED:	Varies
LOGGING UNIT:	S.I.E. T450 E
DATE:	June 1980

Geological Log

Gamma Winding Speed 4 m/min.

Resistivity Winding Speed 8 m./min.

Self Potential Winding Speed 8 m./min.

Density Winding Speed m./min.

0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150 160 170 180 190 200 210 220 230 240 250 260 270 280 290 300 310 320 330 340 350 360 370

Cz

Pw

Put

Put

Pum

Pcv

Pcb

Pcv

Pcb

Pcv

Pcb

End of log 247.3 m.

End of log 245 m.

End of log 245 m.

0 cp.s. 100
T.C. = 5 secs.

25 ohm.m. Full scale

250 millivolts Full scale

T.C.= secs.
Source 50 m. Curies Cs 137

GEOLOGY

Cz	Cainozoic
Pw	Tent Hill Formation
Put	Tapley Hill Formation
Pum	Moonlight Conglomerate
Pcv	Beda Volcanics
Pcb	Backy Point Beds

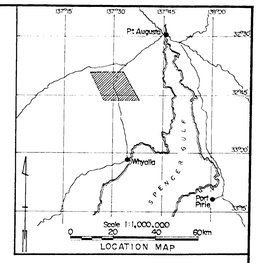
Revisions:

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L. 605 URO BLUFF S.A.

GEOPHYSICAL DOWN HOLE LOGS
UB 9

Drawn: D. G. P.	Date: 16 - 7 - 80	Centre Adelaide	
Traced: R.F.F.	Project NO: 6-B540-10	Drawing NO: A1-64	
Checked:			



725000mE
730000mE
735000mE
740000mE
745000mE
6380000mN
6375000mN

SURVEY CONDUCTED BY GEOMETRICS
DATE APRIL 1980
LINE SPACING 400 METRES
SURVEY HEIGHT 80 METRES M.T.C.
MAGNETOMETER USED GEOMETRICS G803
SAMPLING INTERVAL .8 SEC, APPROX. 55 METRES

SURVEY PROCESSED BY B.H.P. EXPLORATION
CONTOUR INTERVAL 2nT
INTERPOLATED CONTOUR GRID 100 x 100 METRES
IGRF REMOVED

N

0 1 2 3 4 5 KILOMETRES
SCALE 1:25,000

Note Topographic and AMG information position located approximately only. Location is based mainly on uncontrolled photomosaics.

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L.605 URO BLUFF S.A.

TOTAL MAGNETIC INTENSITY
CONTOUR COMPILATION

Revisions			
Drawn: D.G.P.	Date 26-9-80	Centre: Adelaide	
Traced: A.R.V.		Project No:	Drawing No:
Checked: O.T.C.		6-B540-19	A0-2

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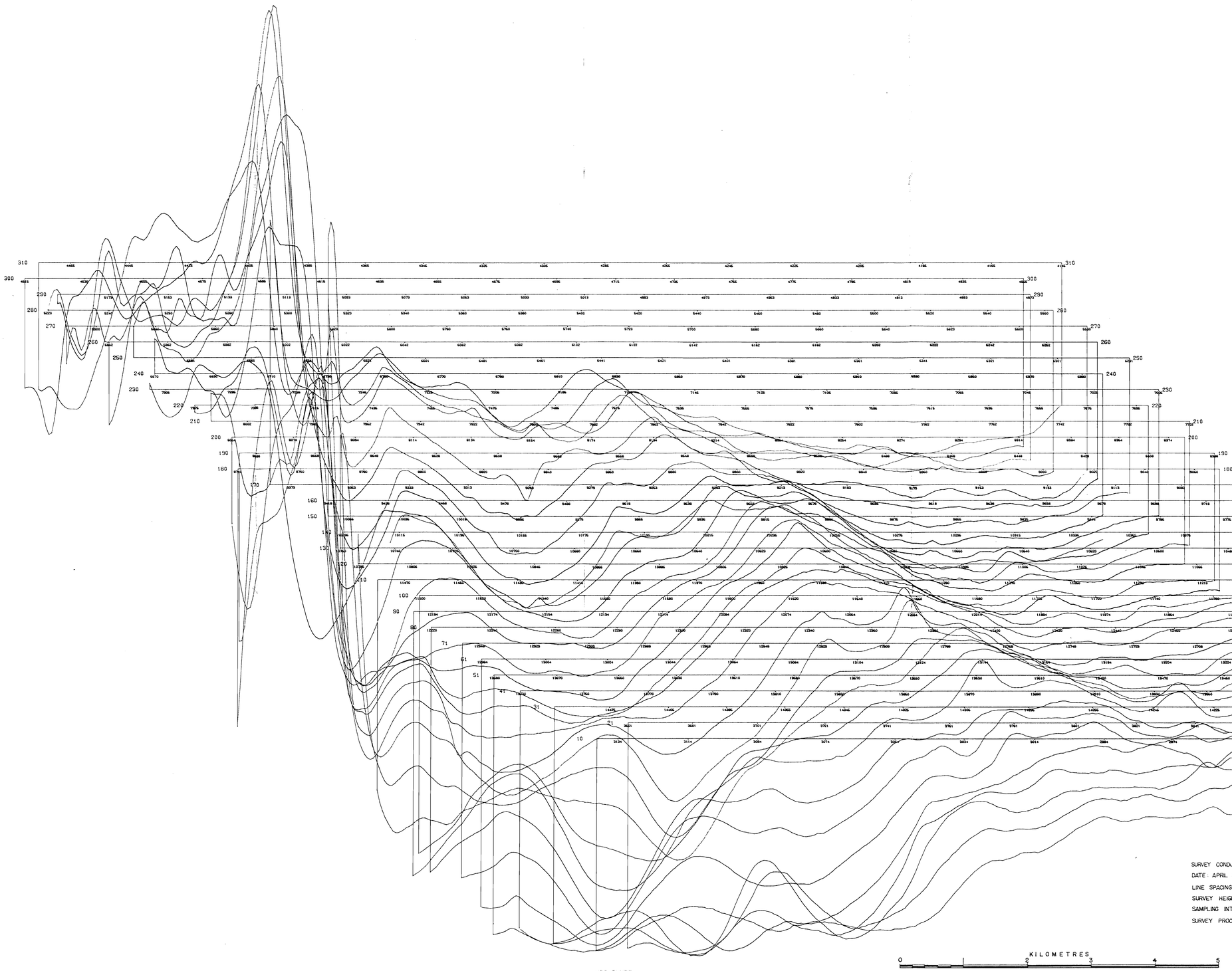
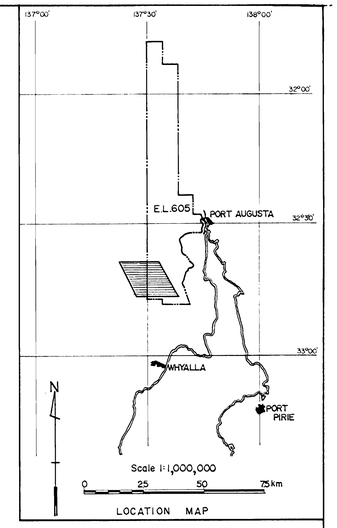




LOCATION MAP

SURVEY CONDUCTED BY : GEOMETRICS
DATE : APRIL 1980
LINE SPACING : 400 metres (N.B. not to scale here)
SURVEY HEIGHT : 80 metres
SAMPLING INTERVAL : 0.8 seconds ≡ 55 metres approx.
SURVEY PROCESSED BY : B.H.P. EXPLORATION

URO BLUFF
SCALE 1:25000
BASE VALUE -200 GAMMAS. SCALE 20 GAMMAS/CM
NO CUTOFFS USED

KILOMETRES 0 1 2 3 4 5

This survey to be used with PORT AUGUSTA
1:250 000 Topo map Sheet SI 53-4 Series R502

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

EL 605 URO BLUFF S.A.

STACKED AEROMAGNETIC PROFILES

Drawn: D.G.P.	Date: 3-9-80	Centre: Adelaide	
Traced: A.R.V.	Project No.	Drawing No.	
Checked:	6-B540-11	G - 11	

Revisions

3828(1)-16

1. GENERAL

Exploration Licence 605 of 1,631 square kilometres, was granted to Dampier Mining Company Limited on 13th March, 1980 for twelve months. (Figure 1.) The objective is to test the base of the Tapley Hill Formation for economic sedimentary copper.

2. FIELD INVESTIGATIONS

2.1 Stream Sediment and Geochemical Sampling

A programme of heavy mineral stream sediment sampling was carried out using a helicopter for access to suitable sites. At each site, a 20 kilogram sediment sample was taken together with a geochemical sample. The sites are marked on Figure 1. The total number of samples from E.L. 605 is 28.

3. RESULTS OF INVESTIGATIONS

3.1 Drilling Results

Geochemical analyses of samples from UB5, drilled previously, have been received and are in Appendix 1.

3.2 Geochemical Results

The geochemical stream sample results are tabulated in Appendix 2. The bulk sample results are not yet available.

4. EXPENDITURE

Expenditure debited to E.L. 605 during December, 1980 and January and February, 1981 was:

Wages and Salaries	$ 6,325
Messing and Accommodation	$ 488
Fares and Mobilisation	$ 834
Drilling	$ 2,060
Transport	$ 1,006
Surveying/Aerial Photographs	$ 212
Sample Analysis	$ 1,039
Geophysics/Geochemistry	$ 71
Occupancy/Location Expenses	$ 4,300
Capital Items	$ 716
Mobilisation of Equipment	$ 19
Vehicles	$ 4,339
Plant Services	$ 720
Consultants	$ 34
Tenement Fees, Licences etc	$ 1,225
	$23,388

Total expenditure to 28th February, 1981, is $124,151

This report is submitted to the Department of Mines and Energy as required by Condition 4 of Exploration Licence 605.

APPENDIX 1

Geochemical Analyses of UB5

Geochemical Analyses for UB5

(i) Analysis done by Comlabs, Job No.: COM 800341

Depth	Sample No.	Cu	Pb	Zn	Co	Ag
219.2-222.2	ADL 5741	33	44	150	14	<1
222.2-223.8 *	2	17	24	16	10	<1
223.8-225.2	3	11	4	18	14	<1
225.2-227.0	4	50	14	65	30	<1
230.52-232.02	5	115	32	16	8	<1
244.7-246.2	6	14	36	12	6	<1
248.5-250.0	7	16	22	14	10	<1

Method of Analysis: Cu, Pb, Zn, Co AAS1
Ag AAS3

(ii) Check Analyses for Cu, Pb, Zn, Co, Ag were done by Genalysis Laboratory Services Perth, on Samples ADL 5742A
ADL 5744A

Results:

Sample No.	Cu	Pb	Zn	Co	Ag
ADL 5742A	51	45	62	28	<1
ADL 5744A	66	5	84	42	<1

Genalysis Report No. 58/80405

* Base of Taylor Hill Fm.

APPENDIX 2

Geochemical Analyses of Stream Sediment

Geochemical Analyses of Stream Sediment

Analyses by Comlabs, Report No. COM 800492

Sample No.	Cu	Pb	Zn	Ni	Co	Cr	Ag	Sn	W	U	Nb
CA0557	20	24	40	14	10	10	1	6	10	4	4
8	20	24	42	20	8	30	1	8	10	4	10
9	36	30	95	40	16	40	1	10	10	4	8
560	30	32	80	34	16	48	1	4	10	4	14
1	30	24	75	26	14	32	1	6	10	4	16
2	26	22	60	22	8	14	1	16	15	4	12
565	20	12	40	16	6	14	1	4	10	4	12
6	18	8	44	16	8	26	1	4	10	4	22
7	16	22	38	16	6	20	1	4	10	4	14
8	38	28	100	38	18	40	1	6	10	4	18
9	22	16	55	22	8	28	1	4	10	4	14
570	18	12	50	18	8	16	1	4	10	4	18
1	24	12	55	24	8	28	1	6	10	4	20
573	26	20	55	30	14	26	1	12	10	4	16
4	30	24	90	40	18	42	1	6	10	4	22
5	20	10	46	18	8	12	1	6	10	4	12
6	26	20	60	30	16	28	1	4	10	4	14
7	30	18	75	30	14	28	1	4	10	4	26
8	28	16	75	32	14	32	1	4	10	4	20
9	28	20	75	30	16	34	1	6	10	4	14
580	22	14	55	26	14	20	1	4	15	4	14

I

153

EXPLORATION LICENCE 605

URO BLUFF, SOUTH AUSTRALIA

REPORT FOR THE QUARTER ENDED 13th JUNE, 1981

1. GENERAL

Exploration Licence 605 of 1,631 square kilometres was granted to Dampier Mining Company Limited on 13th March, 1980 for twelve months (Figure 1). On 13th March, 1981, the EL was renewed for a further twelve months over the same area. The primary objective is to test the base of the Tapley Hill Formation for economic sedimentary copper. A secondary objective is to test the diamond potential of the area.

2. INVESTIGATIONS

Aeromagnetic data in the Port Augusta region was reinterpreted with the aim of searching for possible kimberlites within the exploration licence.

3. EXPENDITURE

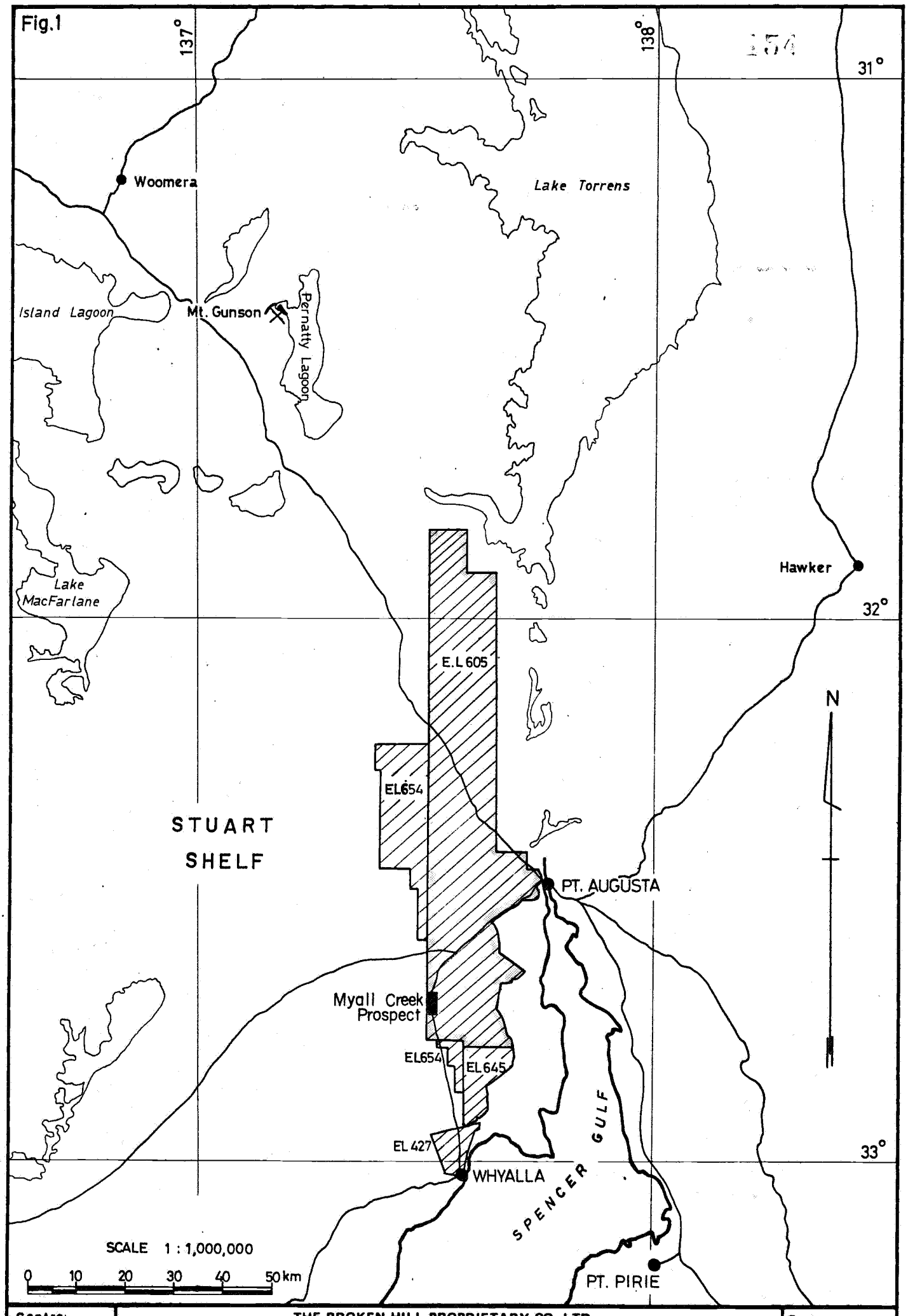
Expenditure debited to EL 605 during the four months March to June, 1981, was:

Wages and Salaries	$ 8,620
Messing and Accommodation	1,590
Fares and Mobilisation	542
Drilling	2,292
Transport	1,543
Surveying/Aerial Photographs	656
Geophysics/Geochemistry	87
Occupancy/Location Expenses	142
Radio Communications	64
Sample Analysis	893
Other Items	51
	$16,480

Total expenditure to 30th June, 1981, is $140,631.

This report is submitted to the Department of Mines & Energy as required by Condition 4 of Exploration Licence 605.

Fig.1



Centre: ADELAIDE	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No: 6-B540-30
Date: 26-11-80	E.L. 605, 654, 645, 427 STUART SHELF S.A. LOCATION MAP	Drawing No: A4-94

ENVELOPE NO. 3828

CONTENTS - TRANSPARENCY CYLINDER NO. 3828/

TITLE - EL 1003, 1023, 1028, CULTANA AREA S.A. AEROMAGNETIC SURVEY - MAY 1983 flown by AERODATA McPHAR.		SCALE	PLAN NO.
- Total Magnetic Intensity Contours (8 plans)	1	1:25000	A1-699
	2	"	-700
	3	"	-701
	4	"	-702
	5	"	-703
	6	"	-704
	7	"	-705
	8	"	-706
- Flight path plans (14 plans) (Sheets 1-9 plus 5 peripheral sheets)		1:25000	Not available.
- Residual stacked magnetic profiles (4 plans).		1:50000	A-824
		"	-825
		"	-826
		"	-827

Env. 3828
~~3917~~

The Broken Hill Proprietary Co. Ltd.

MINERALS EXPLORATION DEPARTMENT
125-129 Rundle Street, Kent Town, S.A. 5067

Telephone: (08) 42 9961
Facsimile: (08) 42 9622

Postal Address: P.O. Box 860,
Norwood, S.A. 5067

Your Ref:
Our Ref:

24th September, 1985

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

Attention Warwick Newton:

Dear Sir,

We have been requested to send you the geophysical data for:

EL1003, 1023, 1028 Uro Bluff / Cultana
~~EL1010, 1202, 1133 Peake and Denisons~~
~~EL1224 Harcus Hill~~

The relevant computer data tapes will be forwarded to you as soon as they are available. Plans submitted are as follow:

Total Magnetic Intensity Contours and Flight Paths

~~EL1010, 1202, 1133 Peake and Denisons (19 plans)~~
~~EL1224 Harcus Hill (18 plans)~~

Total Magnetic Intensity Contours

EL1003, 1023, 1028 Cultana (8 plans) ✓
~~E.L. 1234 1163 1102 Round Hill (8 plans)~~
Flight Path

EL1003, 1023, 1028 Cultana (14 plans) ✓
~~E.L. 1234 1102 1163 Round Hill (11 plans)~~
Residual Stacked Magnetic Profiles

~~EL1224 Harcus Hill (9 plans)~~
EL1003, 1023, 1028 Cultana (4 plans) ✓
~~EL1010, 1202, 1133 Peake and Denisons (22 plans)~~
~~E.L. 1234, 1163, 1102 Round Hill (11 plans)~~

Received by: A.W. Newton .....

(Signed)

EL 605/1003

Item 2 Results of the bulk samples in question are:

Sample no.	Indicator Minerals	Comments
CJA 002	1 pyrope	Confirmed by probe
CJA 003	15 picroilmenite	" "
CJA 004	Nil	

CJA 005	Nil	
CJA 006	Nil	
CJA 023	2 picroilmenites	Confirmed by probe
CJA 024	Nil	

EXPLORATION LICENCE 1003, URO BLUFF

EXPLORATION LICENCE 1023, CULTANA

EXPLORATION LICENCE 1028, TREGALANA - SUGARLOAF HILL

SOUTH AUSTRALIA

REPORT FOR THE THREE MONTHS ENDED 30th JULY, 1983

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TABLES

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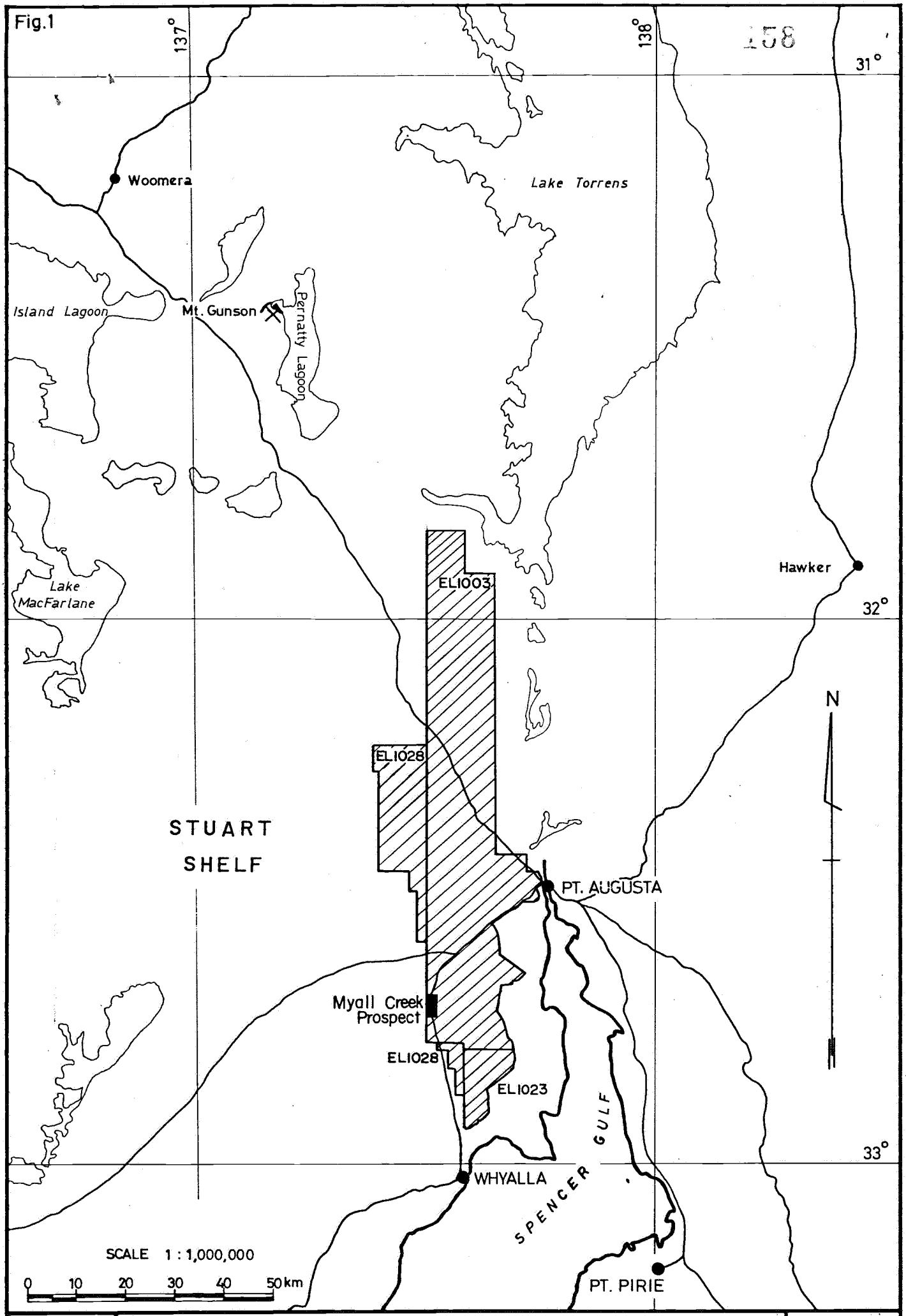
FIGURES



Centre: ADELAIDE	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No: 6-B540-30
Date: 26-11-80	EL'S1003, 1023, 1028 STUART SHELF, SA LOCATION MAP	Drawing No: A4-94

DRILL HOLE	UB17
LOCATION	6385150mN 745595mE
DRILL TYPE	Diamond
CASING TYPE	HQ Steel to 90m
INCLINATION	Vertical
DEPTH DRILLED	510·26m
DEPTH LOGGED	504 m
LOGGING UNIT	SIE T450E
DATE	14-5-83

Geological Log

Gamma Winding Speed 4 m/min.

Resistivity Winding Speed 20 m/min.

Self Potential Winding Speed 20 m/min.

Magnetic Susceptibility

0·75m

0·55m

0·55m

Cz

Ew

Ew

Eut

Eut

Eum

Ecv

504m

504m

504m

TD 510·26

0 c.p.s. T.C. = 5 secs. 100

500 ohm m Full Scale

250 millivolts Full Scale

GEOLOGY

- Cz — Cainozoic
- Ew — Tent Hill Formation
- Eut — Topley Hill Formation
- Eum — Moonlight Conglomerate
- Ecv — Bedo Volcanics

Revisions	
Drawn	M.M./L.H.
Traced	A.R.V.
Checked	
Date	28-6-83
Project No.	6-854-61
Drawing No.	GS-61
Centre	Adelaide

THE BROKEN HILL PROPRIETARY CO. LTD. EXPLORATION DEPARTMENT

E.L.1003 URO BLUFF, S.A.

GEOPHYSICAL DOWN HOLE LOGS

UB 17

3823(11)-1

FIG. 2.

fig 2.

fig3

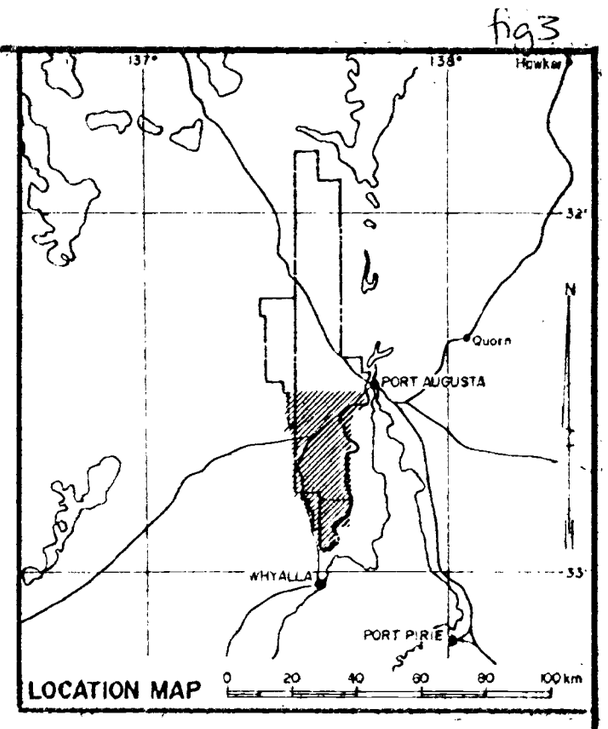


FIG. 3

137° 30'
137° 40'
32° 30'
32° 40'
32° 50'
EL1028
E.L.1003
E.L.1023
E.L.1028

DETAILS OF SURVEY

Flown by : AERODATA McPHAR
Date : MAY 1983
1:250,000 sheet : PORT AUGUSTA SI 53-4
Projection : TRANSVERSE MERCATOR
A.M.G. zone : 53

Line spacing : 300m
Survey height : 80m
Magnetometer : GEOMETRICS G813

Compton scattering ratio : ALPHA 0·37
BETA 0·45
GAMMA 0·86

DETAILS OF PROCESSING

Processed by : B.H.P. EXPLORATION, CAMBERWELL

Diurnal correction : BASE VALUE IS 56784nT	3rd June 1983
I.G.R.F. REMOVED	3rd June 1983
ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE)	3rd June 1983
5000nT ADDED TO DATA	3rd June 1983
DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRD	3rd June '83

TIE LINES WERE NOT CONTOURED
CONTOUR INTERVAL 2 0nT
Gridding parameters : MESH SIZE 100m x 100m
SCAN DISTANCE 700m
NO EXTRAPOLATION USED

N

Scale 1:100,000
0 2 4 6 8 km

3828(11)-2

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L.1003, 1023, 1028 WHYALLA, S.A.
TOTAL MAGNETIC INTENSITY CONTOURS

Drawn: D G P.	Date: 12-7-83	Centre: Adelaide
Traced: S C S.	Project NO: 6-852, 53, 54-63	Drawing NO: A2-397
Checked:		

Revisions:

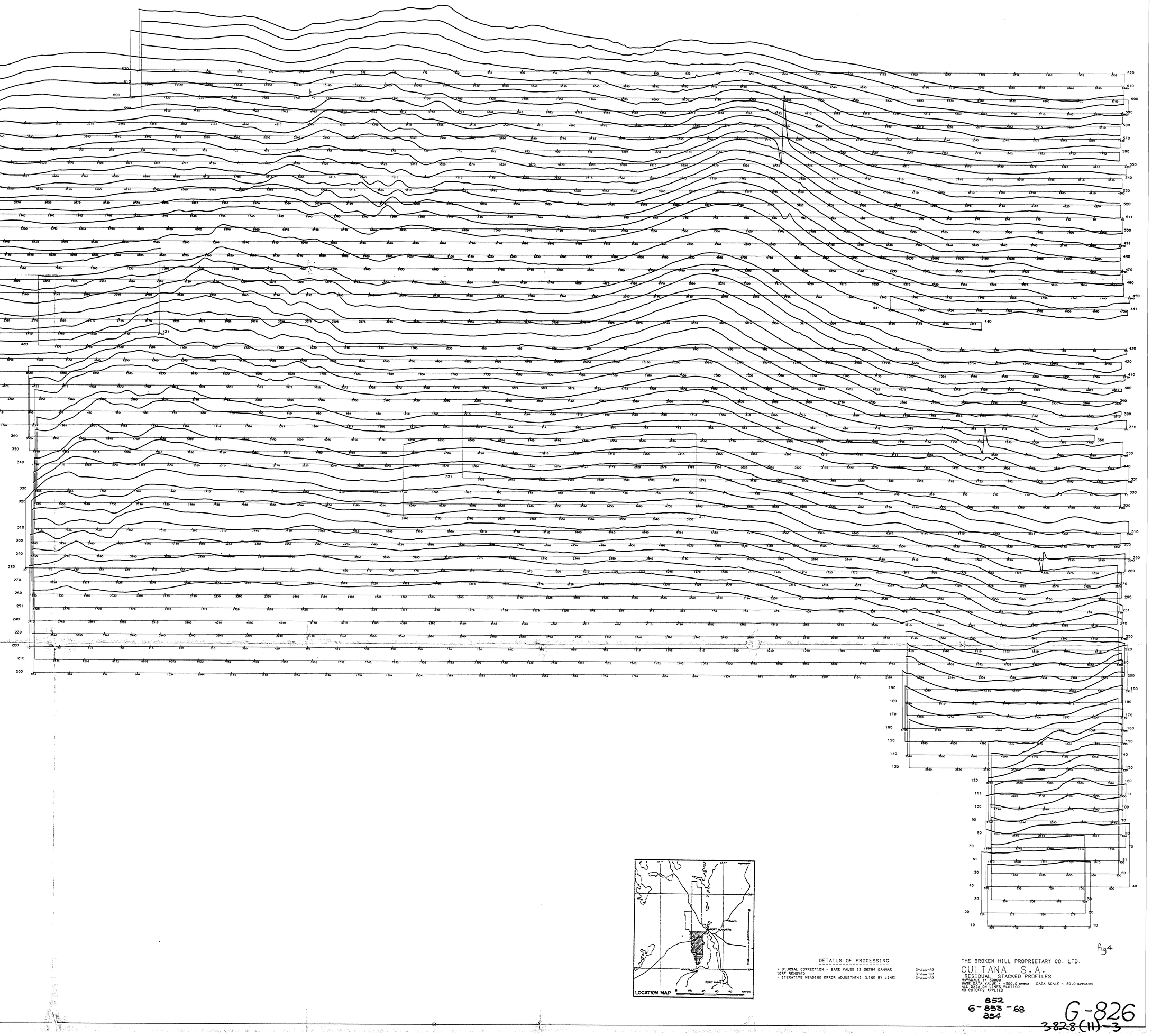


fig 4

DETAILS OF PROCESSING

* DIURNAL CORRECTION - BASE VALUE IS 56784 GAMMAS	3-Jan-83
1050 REMOVED	3-Jan-83
* ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE)	3-Jan-83

THE BROKEN HILL PROPRIETARY CO. LTD.

CULTANA S.A.

RESIDUAL STACKED PROFILES

MAPSCALE 50000 ; 1

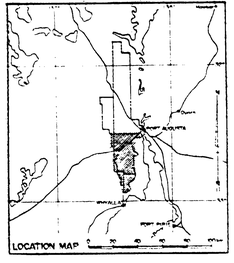
BASE DATA VALUE = 500.0 GAMMAS DATA SCALE = 50.0 GAMMAS/cm

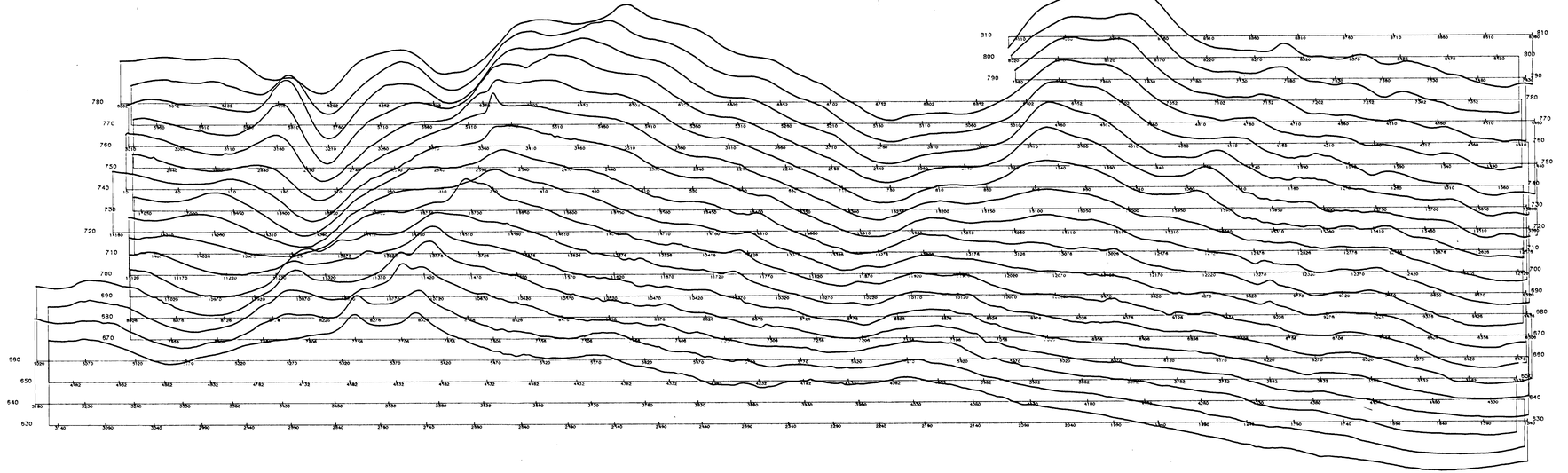
ALL DATA ON LINES PLOTTED

NO CUTOFFS APPLIED

852
6-853-68
854

G-826
3828(11)-3





DETAILS OF PROCESSING

+ DIURNAL CORRECTION - BASE VALUE IS 56784 GAMMAS	3-Jun-83
10RF REMOVED	3-Jun-83
+ ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE)	3-Jun-83

THE BROKEN HILL PROPRIETARY CO. LTD.

CULTANA S.A.

RESIDUAL - STACKED PROFILES

MAPSCALE 1: 50000
BASE DATA VALUE =500.0 GAMMAS DATA SCALE 1 50.0 GAMMA/CM
ALL DATA ON LINES PLOTTED
NO CUTOFF'S APPLIED

fig 5

B52
6 - B53 - 69
B54

G-827
3828(11)-4

EXPLORATION LICENCE 1003, URO BLUFF
EXPLORATION LICENCE 1023, CULTANA
EXPLORATION LICENCE 1028, TREGALANA - SUGARLOAF HILL
SOUTH AUSTRALIA
REPORT FOR THE THREE MONTHS ENDED 30th JULY, 1983

1. GENERAL

Exploration Licence 1003 (formerly 605) of 1163 square kilometres, Exploration Licence 1023 (formerly 645) of 100 square kilometres and Exploration Licence 1028 (formerly 654) of 311 square kilometres were granted on 19th April, 4th August, and 23rd August, 1982, respectively, each for one year. These licence areas lie north of Whyalla (Figure 1).

The exploration objective is to test the base of the Sturtian Tapley Hill Formation for economic sedimentary copper. A subsidiary interest is the diamond potential of the area.

2. FIELD INVESTIGATIONS

2.1 Drilling

During the three months to 30th July, one diamond drillhole, UBl7, was completed. The hole was sited 5 metres west of UBl6, and reached a total depth of 510.26 metres.

A stratigraphic summary is as follows:

Cainozoic	0	- 8
Tent Hill Formation	8	- 252.88
Tapley Hill Formation	252.88	- 477.92
Moonlight Conglomerate	477.92	- 480.23
Beda Volcanics	480.23	- 510.26

A geological log is in Appendix 1.

cont./..

The aim of the drillhole was:

(1) to intersect the unconformity at the base of the Tapley Hill Formation which drillhole UBl6 had failed to do,

(2) to intersect grades better than UBl6 which had 21.29 metres @ 0.51% copper, as we approached the unconformity.

2.2 Geochemical Results

The section 428-485 metres was sampled in one metre half core intervals. These were analysed for copper, lead, zinc and cobalt by Comlabs Pty Ltd Adelaide. The results (Table 1) show that the copper is generally ~50ppm, reaching only 260ppm at the base of the Tapley Hill Formation. These results contrast with the copper values from the interval 446-457.29 metres in UBl6 which averaged 21.29 metres @ 0.51%. (The UBl6 and UBl7 cores have been resampled and reanalysed with repeatable results). Table 2 shows the contrast between the same interval in both UBl6 and UBl7.

2.3 Geophysical Downhole Logging

Gamma, resistivity and self potential downhole logs are on Figure 2.

2.4 Petrology

Petrology was done on six samples from UBl6 and two from UBl7. The petrological report is in Appendix 2.

In summary, the lithologies are broadly similar, but the major differences are:

cont./..

(1) UB16 is brecciated much more than UB17,

(2) calcite infilling occurs in these brecciated sections in UB16 along with possible copper mineralisation, whereas UB17 is not mineralised nor has it calcite veining through it.

2.5 Aeromagnetics

Aeromagnetics over the area south of 32°30' was flown by Aerodata McPhar in May, 1983. Specifications for the survey were:

Line Spacing	:	300 metres with lines in north-south direction
Survey Height	:	80 metres
Magnetometer	:	Geometrics G813

Figure 3 shows the Total Magnetic Intensity Contours (at 1:100,000), and the residual stacked profiles are on Figures 4 and 5.

The transparencies of the 1:25,000 total magnetic intensity contours are being sent to the SADME under separate cover.

Interpretations of the aeromagnetics are still in the initial stage.

3. EXPENDITURE

Expenditure debited to E.L's 1003, 1023 and 1028 during May and June, 1983, was as follows. Expenditure for July has not yet been consolidated.

cont./..

	E.L. 1003	E.L. 1023	E.L. 1028
Wages and Salaries	$ 4,923	$ 3,757	$2,170
Fares and Mobilisation	278	16	3
Messing and Accommodation	562	-	25
Drilling	7,155	-	-
Transport	265	83	35
Sample Analysis	749	147	147
Geophysics	15,258	2,783	928
Surveying and Aerial Photographs	6	1	-
Occupancy and Location Expenses	185	-	-
Administration and Overheads	1,509	339	188
Other Items	812	-	444
	$31,702	$ 7,126	$ 3,940
Revised total to 30th June, 1983	$376,799 ✓	$219,810 221,828	$141,097 144,818

This report is submitted to the Department of Mines and Energy as required by Condition 4 of Exploration Licences 1003, 1023 and 1028.

WORK RESPONSIBILITY

E.L.	GRANTED	EXPIRES
605, 1003 Uro Bluff	13 March 1980	19 April 1984
645, 1023 Cultana	17 June 1980	4 August 1984
654, 1028 Tregalana	30 June 1980	23 August 1984

Johan Smit was group leader Sedimentary Base Metals during the initial stages of the work at Whyalla.
Peter Haslett took over as group leader from mid 1980 till the present, August, 1983.

M. Raetz was project geologist March 1980 - February 1981, during which time his responsibilities were

- Re-evaluation and interpretation of Australian Selection drillhole data
- Supervise drilling of CU1-CU4A, TR1-TR2, UB1-UB10
- Geological logging of CU1-CU4A, TR1-TR2, UB1-UB10
- Supervise geochemical sampling of the above drillholes
- Ground magnetics over Cultana and the southern part of Uro Bluff
- Ground magnetics over the Sugarloaf Hill Block of E.L. 1028
- Interpretation of the first stage of drilling, which are recorded in CR 2786.

L. Haas has been project geologist January 1981 - August 1983. Responsibilities have been

- Supervise drilling of CU5-CU13, TR3-TR6, UB11-UB17
- Geological logging of CU5-CU13, TR3-TR6, UB11-UB17
- Geochemical sampling of CU5-CU13, TR3-TR6, UB11-UB17
- Continued assessment and interpretation of all the data to June 1983. These results can be found annual reports CR3573 and another completed in June 1983.

Cont./..

D. Price has provided geophysical input to the exploration areas from March 1980 - August 1983. Particular responsibilities have been

- Supervision and interpretation of ground magnetics
- Supervision and interpretation of resistivity survey between CU3 and CU5
- Supervision and interpretation of gravity survey over Cultana
- Supervise and interpret the aeromagnetic surveys
  (i) Trial survey over Myall Creek
  (ii) Uro Bluff, north of $32^{o}30'$
  (iii) Cultana, south of $32^{o}30'$
- Supervise maxiprobe survey
- Supervise geophysical downhole logs for all drillholes.

P. Harman has been responsible for

- MiniSosie Seismic Reflection Survey at Myall Creet between SAU19-SAU20
- MiniSosie Seismic Reflection Survey on Cultana, through CU1 and CU9.

K. Forward has been responsible for

- Depth to magnetic basement determinations
- Interpretation of the aeromagnetics.

TABLE 1

DRILLHOLE	DEPTH INTERVAL (metres)	Cu	Pb	Zn	Co	Ag	Au
		(ppm)					
UB 17	428 - 429	40	95	185	18		
	429 - 430	34	90	200	18		
	430 - 431	28	180	230	18		
	431 - 432	34	175	300	14		
	432 - 433	34	135	60	18		
	433 - 434	30	90	48	18		
	434 - 435	32	140	50	12		
	435 - 436	42	170	50	16		
	436 - 437	32	170	46	16		
	437 - 438	32	230	40	18		
	438 - 439	38	120	48	18		
	439 - 440	36	135	60	16		
	440 - 441	40	140	60	16		
	441 - 442	32	230	50	18		
	442 - 443	42	120	100	16		
	443 - 444	30	110	195	16		
	444 - 445	28	65	150	16		
	445 - 446	30	90	210	16		
	446 - 447	26	90	140	14		
	447 - 448	30	36	185	18		
	448 - 449	46	85	160	18		
	449 - 450	36	135	165	16		
	450 - 451	34	165	60	14		
	451 - 452	36	220	120	16		
	452 - 453	34	170	65	14		
	453 - 454	42	200	80	18		
	454 - 455	34	220	210	16		
	455 - 456	28	160	190	14		
	456 - 457	36	140	130	14		
	457 - 458	36	140	160	14		
	458 - 459	32	160	130	18		
	459 - 460	34	95	230	20		
	460 - 461	32	65	210	20		
	461 - 462	32	65	185	18		
	462 - 463	34	70	260	18		
	463 - 464	36	75	180	18		
	464 - 465	34	75	230	20		
	465 - 466	36	70	280	20		
	466 - 467	38	85	500	22		
	467 - 468	34	75	520	20		
	468 - 469	22	20	32	16		
	469 - 470	30	38	150	18		
	470 - 471	34	22	110	18		
	471 - 472	24	12	150	16		
	472 - 473	20	48	120	14		
	473 - 474	22	60	90	16		
	474 - 475	26	65	44	16		
	475 - 476	30	60	50	16		
	476 - 477	32	42	48	20		
	477 - 478	32	60	44	18		
	478 - 479	28	50	38	18		
	479 - 480*	100	38	38	24		
	480 - 481	260	6	50	34		
	481 - 482	220	<4	85	46		
	482 - 483	200	<4	120	38		
	483 - 484	65	<4	160	48		
	484 - 485	42	<4	150	48		

Refer to Comlabs Report No 831075
Cu, Pb, Zn, Co analysed by AAS1

* Base of Tapley Hill Fm.

TABLE 2

COMPARATIVE GEOCHEMICAL RESULTS UB16 and UB 17

	CU ppm		PB ppm		ZN ppm		CO ppm	
	UB16	UB17	UB16	UB17	UB16	UB17	UB16	UB17
435 -436	1600	42	36	170	170	50	8	16
436 -437	3100	32	42	170	12	46	12	16
437 -438	3400	32	32	230	12	40	10	18
438 -439	2100	38	34	120	20	48	18	18
439 -440	2800	36	26	135	12	60	12	16
440 -441	4400	40	14	140	16	60	6	16
441 -442	2400	32	22	230	10	50	10	18
442 -443	2800	42	18	120	12	100	8	16
443 -444	3500	30	32	110	18	195	16	16
444 -445	3200	28	34	65	20	150	20	16
445 -446	2400	30	38	90	20	210	26	16
446 -447	2700	26	50	90	20	140	26	14
447 -448	2400	30	40	36	20	185	20	18
448 -449	3100	46	44	85	12	160	18	18
449 -450	3800	36	80	135	16	165	16	16
450 -451	4500	34	120	165	24	60	8	14
451 -452	7500	36	32	220	12	120	8	16
452 -453	8900	34	24	170	30	65	6	14
453 -454	8200	42	18	200	12	80	4	18
454 -455	7400	34	24	220	16	210	6	16
455 -456.48	5800	28	24	160	44	190	8	14
456.48-457.29	8900	36	20	140	50	130	6	14

UB16 Comlabs Report no. 830684. ADL 22643 - ADL 22664 (435-457)

UB17 Comlabs Report no. 831075. ADL 22677 - ADL 22698 (435-457)

APPENDIX 1

Geological Log UB17

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF DRILL HOLE UB 17

Location or local co-ordinates 4km WSW Lincoln Park H.S. R.L. Collar (Datum) 120m

Map Reference Lincoln Gap 1:50,000 Topo Co-ordinates (Grid) 6385150mN, 745595mE

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar	BHP	Dallas	L'year 38	rock roll			May 83
Main Hole	"	"	"	diamond			May 83

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To
	Vertical		5.7/8"	0	87.40
	"		NQ	87.4	510.26

Casing 100mm PVC to 60m

18m HQ stuck 72-90m

Static water level ____ Date ____

Logged by L. Haas Date May 83.

Remarks 100% Recovery unless otherwise stated.

From	To	Interval	Recovery	%Rec.	GEOLOGICAL DESCRIPTION	Remarks
0	2	2			CAINOZOIC — Red-br, sl. calc, v.clayey sand	
2	8	6			a.a. with qtzite grits (possibly weathered Tent Hill Fm).	
8	10	2			Or-br. sl.clayey f-m.g. sand	
10	28	18			Or. sl.clayey m.g. qtz sand (qtz is ang-subrounded, poorly sorted. From 20-28m sand very friable, no clay.	
28	52	24			Pale or. f.g. qtz sand (qtz-angular even grained).	
52	56	4			TENT HILL FORMATION — a.a., some grey clay	
56	60	4			50% sands a.a., 50% grey siltstone, v.clayey dk. purple, noncalc silt, Minor sand.	
60	62	2				
62	64	2			br-purple nonoalc silt	
64	66	2			40% br.silt, 60% white sand.	
66	87.40	21.4			br. non calc silt, sl. sandy.	
					END OF ROTARY	

SYMBOLS AND ABBREVIATIONS: clayey sand; grits; sands; silt

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF DRILL HOLE UB 17

Location or local co-ordinates _____ R.L. Collar (Datum) _____

Map Reference _____ Co-ordinates (Grid) _____

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing _____

Static water level _____ Date _____

Logged by _____ Date _____

Remarks _____

From	To	Interval	Recovery	%Rec.	GEOLOGICAL DESCRIPTION	Remarks
					(1) Br. lam. silt	
					(2) Gn. lam. silt	
					(3) Micaceous f.g sst with sedim features - x beds, ripples, slumps.	
87.40	95.0	76			(1):(2):(3) 70:15:15, all noncalc. Finely laminated, interbeds to 1cm. B to CA 90°. Gradations br.silt → gn silt → gn mic. sst. Sst slumps into silt frequent.	
95.0	104	9.0			TENT HILL FORMATION (1): (2):(3) 85:10:5 Brown silt increasing at expense of sst. Yellow clay mineral in sst i.b's at 96.24.	
104	128	24.0			(1):(2):(3) 65:10:25 Finely lamin. interbeds thinner, mm scale All noncalc. Minor sst i.b's to 10cm, sst becoming pale br-wh. Usual sed. feat in sst.	
128	130	2.0			(1):(2):(3) 55:10:35	
130	150	20.0			Gn.silt << 10%. (1):(3) 60:40, but sl. variable. Silt-sand grade into each other, Sand laminae tend to be wavy-not flat lam. Erosion features-laminae cutoffs in sand & silt.	
150	170	20.0			(1):(3) 50:50 Gn.silt rare B to CA 88-90°. Bedding is wavy, rippled, slumped, scoured, esp. in sst. Only thicker sst i.b's (to	slumps scours

SYMBOLS AND B to CA bedding to core axis

DETAILED GEOLOGICAL HOLE LOG

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THE BROKEN HILL PTY CO LTD. PROJECT HRO BLUFF DRILL HOLE UB 17

Location or local co-ordinates _____ R.L. Collar (Datum) _____

Map Reference _____ Co-ordinates (Grid) _____

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing _____

Static water level _____ Date _____

Logged by _____ Date _____

Remarks _____

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
150	-170	20.0	(Cont)			5cm) show flat bedding the rem. is xbedded. From 157m some sst i.b's sl.calc.	
170	-178	8.0				(1):(3) 60:40. Rest a.a.	
178	-179.72	1.72				Pk-wh massive dolomite. Thin xcutting calcite veins. Vughy tow.base - to 1cm in size, filled rexst calcite . Few siltstone pods (gr-gn) in basal 20cm.	
179.72	-190.84	11.12			TENT HILL FORMATION	Massive br. f.g. sst - poor bedding, mottled, minor grits of GRV. Sst-sl.calc. B to CA. 85-90°.	
190.84	-192.21	137				Wh. f.g. polymodal sst. (GRV, qtz predom). Grit size GRV, qtz randomly throughout, in places occur as 1cm thick bands, which tend to be more calc.	
192.21	-195.40	3.19				Br.gritty, mottled, polymodal f.g. sst. Minor grit beds to 1cm a.a. Bedding-poor massive. Noncalc. Minor contorted, wavy, wispy silt i.b's.	mottled sst
195.40	-209.04	13.64				a.a., becoming white mottled in part. sl. calc. Tow base - wh. f.g. polymodal sst. Bedding poor convoluted, often high angle B to CA 50-90° very variable - seemingly soft sed. deformation.	

SYMBOLS AND Eldamite

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF DRILL HOLE UB 17

Location or local co-ordinates _____ R.L. Collar (Datum) _____

Map Reference _____ Co-ordinates (Grid) _____

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing _____

Static water level _____ Date _____

Logged by _____ Date _____

Remarks _____

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
209.04	209.18	0.14				Pebble bed in br. sst. matrix. Pebbles to 1cm of GRV, BIF, chert, pk qtzite.	
209.18	211.53	2.35				a.a. (mottled sst.) Mottling prob. ox-red. effect, because it app. to xcut bedding	
211.53	218	6.47				Br.silty, gritty, f.g. sst. Poorly bedded. Minor calc. patches & ribbons. Silty beds tend to be whispy, Pebble bed 217.20-217.40.	
218.	236.75	18.75			TENT HILL FORMATION	Mixed horizon. 80% wh-br f.g. calc. sst. 10% br. siltstone 10% gritty i.b's.(Mainly GRV) Bedding-convoluted, wispy, lenticular, thin 2cm Laminae-mm scale. Most bedding rel.flat, some up to 30°. Bedding app. to be result of turbulence-scours, erosional cut offs, silty flakes-rip up features. Grit beds average 1cm, grits rounded. Unit becomes more calc tow. base.	
236.75	242.23	5.48				95% pk-wh sst. wh varies from a f.g. polymodal sst. to a c.g. polymodal grit. The composition is predom GRV, qtz, gneiss. B to CA 90°. Grits: Sst 50:50. Grits tend to be calc, are poorly sorted, angular to subrounded. 5% gn-gr silt -	
242.23	243.30	1.07				Pale gr-gn colloform stromatolitic dolomite. Stroms 1-2cm in diam. 5% gr. silt i.b's - gritty rel. flat lying.	

SYMBOLS AND ABBREVIATIONS ≈≈ colloform stromatolites

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF DRILL HOLE UB 17

Location or local co-ordinates _____ R.L. Collar (Datum) _____

Map Reference _____ Co-ordinates (Grid) _____

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing _____

Static water level _____ Date _____

Logged by _____ Date _____

Remarks _____

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
243.30	252.33	9.03			TENT HILL FORM'N	Gr. f.g. calc.sst-finely lamin, B to CA 90°. In parts-sst. shows xbedding. Rare gr.silt i.b's. Calcite blebs thro sst.	
252.33	252.88	0.55			TENT HILL FORM'N	Gr. Stromatolitic carbonate. Diam Stroms to 5cm. Vughy in part - to 1.5cm.	
252.88	254.59	1.71				90% pale grey calc.f.g. sst. 5% gr. silt-stone. 5% intraformn'l carbonate conglom i.b's to 5cm. Bedding rel.flat. Laminae-sev.mm scale. Silts tend to have scours and eroded tops.	
254.59	254.69	0.10				Single, stromatolite-10cm high, hence intraform'nl conglom-rare.	
254.69	273.28	18.58			TAPLEY HILL FORMATION	a.a. occasional br.silt i.b to 1cm. Sst. -still v.calc. in part vughy, finely lamin, intraformn'l conglom - rare.	
273.27	273.37	0.10			TAPLEY HILL FORMATION	Single stromatolite interbed.	
273.37	284	6.63			TAPLEY HILL FORMATION	Gr.calc. f.g. lam. sst. a.a. B to CA.90° Bedding is sl.more massive. Sst - v.pale grey.	
284.	295	11.0				a.a. exc. noncalc. gr.silt to 10% and intrafm'nl conglom to 10% and up to 20cm wide. Sst-v.calc, slumping and soft sedim features occur. Calcite-pyrite xcutting veins occur but rare. Sands generally	

SYMBOLS AND ABBREVIATIONS

calc.sst.

Intraformational carbonate conql.

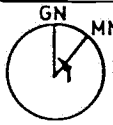
DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF DRILL HOLE UB 17

Location or local co-ordinates _____ R.L. Collar (Datum) _____

Map Reference _____ Co-ordinates (Grid) _____

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							



Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing _____

Static water level _____ Date _____

Logged by _____ Date _____

Remarks _____

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION		Remarks
284	-295	(Cont)				becoming f.g. silty.		
295.	-300	5.0				Sst-silt gradation less clear.		
						60% pale grey calc sst.		
						30% dk.grey silt, less calc.		
						10% intrafm'nl carbonate conglom.		
						Broad 10cm bands developed, still finely		
						laminated, bedding most flat. Erosion		
						features-scours on the silt, which filled		
						in by sst. 15% shows erosion. Xbeds occur		
						in sst. Calcite xcutting veins at 300m		
						< 1cm wide. Pyritic lenses are increasing.		
300	-330	30.0			TAPLEY HILL FORMATION	Banding 50:50. Lt.grey:dark grey, with dk		
						grey material increasing. Streaky in		
						appearance. Minor microfaulting and calcite		
						veining. Sst:silt still 60:40 though		
						dependant on carbonate content which is		
						very high in sst. B to CA 90°. From		
						317m, bedding more monotonous (fewer		
						scours, etc).		
330	-338	8.0				Dark:light bands 75:25. Remainder a.a.		
						Sst-v.calc, to 10cm wide, very pale.		
338	-355	17.0				75% dark grey calc.silt, 25% pale gr.calc		
						silt-sand, Finely lamin. Pale i.b's to		
						2cm. Pyritic lenses & dissem thro silt.		
						From 345m, fine wavy algal laminae develop-		
						ing in the calc. dk grey silt.		

SYMBOLS AND — calc silt

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF DRILL HOLE UB 17

Location or local co-ordinates _____ R.L. Collar (Datum) _____

Map Reference _____ Co-ordinates (Grid) _____

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing _____

Static water level _____ Date _____

Logged by _____ Date _____

Remarks _____

From	To	Interval	Recovery	%Rec.	GEOLOGICAL DESCRIPTION	Remarks
355	-398	43			Pale gr.calc silt-sand 15% only. Rem a.a. Bedding not as well lamin. Occasional calcite vein/vugh with py between 369-377m.	
398	-408.50	10.50			Pale gr. calc bands to 10% up to 1cm wide with xbedding & scours. Silt - finely algal lamin. frequently < mm calc, f.g. dissem. py throughout. Mid grey in colour. Near vertical calcite veins to 5mm. Pyrite framboidal) rich layers 1mm wide in silt and calcareous bands. B to CA 90°.	fine algal laminae
408.50	-418	9.50			TAPLEY HILL FORMATION — Pale gr. calc i.b's to 30%. Rest a.a. Still v.calc with fine bl.algal laminae, Calc grey silt grades into pale gr calc rich beds (calcarenite?) Silts often scoured. Thin slumped i.b's to 6cm. Thin (mm) calcite-pyrite veins with calcite crystal growth orthogonal to vein edge. From 412m - rare bl.algal flakes in calc beds. Algal laminae pinched against calcite veins. Cpy-rare - assoc with radial calcite clusters in silt. Minor sphalerite assoc. with calc (arenite) beds.	
418.	-430	12.0			Calcareous i.b's 10-20%. Rest a.a.	
430	-432.50	2.50			Calc i.b's now more massive carbonates, rather than calcarenite beds. Bedding is more massive-streaky in part, though most still finely laminated.	

SYMBOLS AND ABBREVIATIONS carbonates

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF DRILL HOLE UB 17

Location or local co-ordinates _____ R.L. Collar (Datum) _____

Map Reference _____ Co-ordinates (Grid) _____

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing _____

Static water level _____ Date _____

Logged by _____ Date _____

Remarks _____

From	To	Interval	Recovery	%Rec.	GEOLOGICAL DESCRIPTION	Remarks
432.50	441	8.50			90% gr.v. calc silt with fine algal laminae 10% carbonates monotonous. Py abundant- framboidal and f.g. dissem.	
441	-449.55	8.55			To 20% carbonate i.b's to 2cm, most 1cm, with rhythmic algal laminae, often with pinch and swell structures, scoured and xbedded. Minor honey sphal. 80% silts grey-fine bl.algal laminae (mm scale) dissem. pyrite abundant. Silts much less calc now. Algal flakes in the more massive silts. Hairline calcite fractures th'out. B to CA 90°.	
449.55	-468.79	19.24			Carbonates to 40% with rhythmic algal 1cm. - fewer slumps and scours. Calcite veins /layers through it. Rest a.a. Kinked interval 459.14-459.37 B to CA 40° Above and below kink B to CA 90°. At 460.79, steely grey interbed (2mm) with assoc. sphal. Py is gen very abundant but v.f.g. - possibly to several %.	Py abundant
468.79	-477.74	8.95			50% carbonates a.a. some brecciated i.b's to 10cm. 50% gr silts a.a. - becoming more calc again. Microfaulting and slumps occur 20cm. Calcite veining & pyrite extensive vertical, thin hairline gashes. Pyrite also f.g. dissem in silt and carbonate. Bedding to CA still 90° in general though it is more wavy from 474 m. Carbonate up to 70% toward 477m.	

TAPLEY HILL FORMATION

SYMBOLS AND ABBREVIATIONS

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF DRILL HOLE UB 17

Location or local co-ordinates _____ R.L. Collar (Datum) _____

Map Reference _____ Co-ordinates (Grid) _____

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing _____

Static water level _____ Date _____

Logged by _____ Date _____

Remarks _____

From	To	Interval	Recovery	%Rec.	GEOLOGICAL DESCRIPTION	Remarks
477.74	477.92	0.18			Bl. silt with wavy laminae - partly brecciated with interstitial white calcite.	
477.92	479.53	1.61			TAPLEY HILL FORMATION 95% massive gr.v. calc f.g. sst (calcarenite). 5% pebbles (q'tzite, volc.). Bedding v. poorly defined-possibly up to 40° in part. Py occurs as framboids and also rims pebbles. Calcite as veins and interstitial Some carbonate i.b's to 1cm occur flat lying. At the base is a thin wavy bl. pyritic silt (~5cm).	
479.53	480.23	0.70			Black calcarenite matrix a.a. hosting to 40% angular volcanic clasts wh are extensively carbonated. Clasts to 4cm, most 1-2cm, angular. Minor q'tzite pebbles.	
480.23	488.23	8.00			BEDA VOLCANICS Volcanic regolith? Large volcanic breccia (app.to be fitted) with dark interstitial calcarenite. Volcanics-pale mg.grey, non vesicular, extensively carbonated, chloritised. Crosscutting calcite veins with minor pyrite. Anatase after ilmenite (pale br-pk mineral with prominent cleavage pattern). From 481.24, volc. sl. haematised-distinctly less pyrite. These volc-m.g. grey, massive. Basal 20cm brecciated with interstitial calcite.	
488.23	494.93	6.70			Br-red resicular, f-m.g. volcancis. Haematised, carbonated. Vesicles to 25% at flow	

SYMBOLS AND ABBREVIATIONS ▲▲ breccia V V volcanics V° resicular V° volcanics

DETAILED GEOLOGICAL HOLE LOG

THE BROKEN HILL PTY CO LTD. PROJECT URO BLUFF DRILL HOLE UR 17

Location or local co-ordinates _____ R.L. Collar (Datum) _____

Map Reference _____ Co-ordinates (Grid) _____

	Contractor	Driller	Machine	Method	Sampling Tools	Depth	Date
Pre Collar							
Main Hole							

GN MN Magnetic Declination

Depth	Decl'n	Brg (Mag)	Hole dia.	From	To

Casing _____

Static water level _____ Date _____

Logged by _____ Date _____

Remarks _____

From	To	Interval	Recovery	%Rec.		GEOLOGICAL DESCRIPTION	Remarks
488.23	494.93	(Cont)				top., filled calcite >> chlorite.	
494.93	496.77	1.84				a.a. extensive hairline calcite veining. Volc app. speckled by calcite-most is f.g. interstitial, replacing a mineral?	
496.77	498.22	1.45				Brecciated volc. a.a. extensively haematised for 50 cm.	hm.
498.22	500.65	2.43				Hm. breccia a.a. for 65cm. Silicified haem.vein near vertical between 501.7-502.12.	hm.
500.65	504.85	4.70			BEDA VOLCANICS	Volc-gn-red. f.g. Calcite filled vesicles and xcutting veins to 10%. Haematitic veins a.a.. Volc-gen less carbonated, str. chloritised, haematised. Some hm. bxa. Flows difficult to distinguish.	
504.85	507.16	2.31				Volcanic breccia, extremely haematised, with calcite interstitial.	
507.16	510.26	3.1				Red-gn. m.g. volc. Chloritized sections give the volc a pale green spotty appearance. Vesicles to 10% filled calcite, pk albite, chlorite. Vesicles-irreg., to 1cm size mt. and haematite occurs throughout.	
						EOH	

SYMBOLS AND ABBREVIATIONS

APPENDIX 2

Petrological Report on Select Samples from UB16 and UB17

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT
Petrology Section

Melbourne Research Laboratories
245-273 Wellington Road
Clayton, Victoria 3168
P.O. Box 264, Clayton
Telephone 560-7066

Memo to: MISS LILI HAAS, ADELAIDE EXPLORATION OFFICE, S.A.

Date 21st June, 1983.
Our Ref: DJG:DK
Your Ref:
File: M666
Date:

Subject: E6/29/3-Q: Petrography and Mineralogy of diamond drill core samples EL 1003, Uro Bluff, South Australia.

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Introduction:

The petrography and mineralogy of eight (8) diamond drill core samples (MRL 14870-14877) is presented in Table 1.

Each sample was examined in polished thin section. Subsequent to this reflected and transmitted light examination, each section was stained using alizarin red "S" solution to show the distribution of stained calcite and unstained dolomite.

The diamond drill core was also representatively sampled, where each sample was examined by X-ray diffraction to determine bulk sample mineralogy.

Summary and Conclusions:

1. The lithologies of the UBl6 and UBl7 samples are broadly similar, though the UBl7 samples are markedly more dolomitic. The UBl6 samples also show a greater degree of fracturing and brecciation (net vein or hydraulic fracturing), significantly more chalcopyrite and a greater preponderance of calcite-chalcopyrite epigenetic veinlets compared with UBl7.

   The low copper values encountered in UBl7 can therefore be explained by the lack of chalcopyrite mineralisation in these samples.

2. Copper mineralisation in the sparry calcite and barite cemented micaceous calcareous medium siltstone breccia (UBl6, 452.0m) occurs in three distinct phases:

   (i) stratiform pyrite-chalcopyrite confined to bedding planes. Abundant pyrite and pyrite-chalcopyrite framboids of syngenetic origin are also present;

   (ii) epigenetic veinlets of chalcopyrite + calcite + minor pyrite in the siltstone which fail to cross the siltstone fragment/sparry calcite matrix boundary;

   (iii) occasional coarser grained patches of remobilized chalcopyrite + bornite which occur in the sparry calcite matrix. At least two and possibly three phases of mineralisation are therefore present.

.../2

As a general rule pyrite > chalcopyrite in the bedding plane sulphide mineralisation whereas chalcopyrite > pyrite in the mineralised veinlets.

3. There is some textural evidence that the epigenetic chalcopyrite + calcite veining occurred during early diagenesis when the sediments were still wet and relatively soft (UB16, 446.77m).

4. Calcite is closely associated with the chalcopyrite mineralisation in UB16 and there is some textural evidence in the unmineralised and more dolomitic samples in UB17, that original dololutite layers have been partly replaced by calcite.

5. Whilst the pyrite-chalcopyrite mineralisation confined to the sedimentary beds in UB16 strongly resembles primary syngenetic mineralisation, the lack of lateral continuity suggests that syngenetic stratiform mineralisation is not present.

There is no definite evidence for replacement of pyrite by chalcopyrite but it is conceivable that brecciation and fracturing have provided "open-ground" for movement of copper bearing fluids, where chalcopyrite has been introduced within the sedimentary layers; this chalcopyrite often surrounds pre-existing pyrite euhedra where these composite grains are elongated along the bedding.

Recommendation:

Whilst continuous syngenetic stratiform copper mineralisation is not apparent, UB16 could conceivably be on the edge of a larger mineralised fracture zone or fault structure which may be worth further investigation by drilling.

D.J. Gilbert,
Senior Petrologist.

cc: Dr. C. Palethorpe, Camberwell;
Dr. A. Goode, Camberwell;
Mrs. L. Liggins, Library, Camberwell;
Dr. P. Haslett, Adelaide.

TABLE 1: Petrography and mineralogy of diamond drill core samples from EL1003, Uro Bluff, South Australia.

DRILL HOLE NO. INTERVAL (m) MRL No.	MINERALOGY (based on optics, XRD in approximate decreasing order)	TEXTURAL FEATURES	ROCK IDENTIFICATION AND COMMENTS
UB16 444.2 14870	Quartz Calcite Plagioclase Opaques: pyrite chalcopyrite rutile/leucoxene graphite Muscovite (Chlorite *(Potash feldspar (Dolomite *trace according to XRD.	Laminated texture with elongated patches of pyrite-chalcopyrite parallel to the bedding. These patches comprise euhedral pyrite crystals surrounded by interstitial chalcopyrite, ranging in grain size from <3.5 to 245µm. Discrete pyrite and chalcopyrite are also evident in the bedding planes. Abundant scattered pyrite framboids (7-14µm) of primary sedimentary origin are also present. Remobilised epigenetic chalcopyrite (minor euhedral pyrite)-calcite veinlets occur mainly in the calcilutite horizon.	Laminated micaceous calcareous and slightly dolomitic very fine sandstone/micaceous calcareous and slightly dolomitic medium siltstone/ silty fine calcilutite. Graded bedding evident. Pyrite > chalcopyrite in the bedding but chalcopyrite > pyrite in the later cross-cutting remobilized veinlet material.
UB16 446.77 14871	Quartz Calcite Potash feldspar (microcline) Opaques: pyrite chalcopyrite leucoxene/rutile graphite	Laminated with scattered elongated patches of chalcopyrite/pyrite (3.5 to 140µm) aligned along the bedding. Pyrite framboids (3.5-17.5µm) are scattered throughout the siltstone. Pyrite > chalcopyrite in the siltstone bedding matrix whilst chalcopyrite > pyrite in the cross-cutting calcite veinlets.	Laminated micaceous and calcareous coarse siltstone/ micaceous calcareous medium siltstone. Graded bedding evident. The chalcopyrite and pyrite along the bedding are most probably syngenetic whilst

TABLE 1: Petrography and mineralogy of diamond drill core samples from EL1003, Uro Bluff, South Australia. (cont'd.)

DRILL HOLE NO. INTERVAL (m) MRL No.	MINERALOGY (based on optics, XRD in approximate decreasing order)	TEXTURAL FEATURES	ROCK IDENTIFICATION AND COMMENTS
14871 (cont'd.)	Muscovite Plagioclase) trace, Chlorite) XRD.	At least two periods of calcite veinlets are present - an earlier unmineralised event followed by a later mineralising event. The calcite vein with marginal chalcopyrite appears to have been disrupted by the bedding and has also produced peculiar downward deflection of the bedding immediately adjacent to it. The most logical explanation for this texture would be early diagenetic effects when the sediments were still wet and somewhat plastic. Disruption of the lower part of the calcite veinlet would cause lack of support which would in turn cause the upper part of the veinlet to drag the soft sediment downwards, producing the deflection observed. An alternative explanation would be migration of calcite and sulphides into a fracture causing collapse of the bed concerned.	some later remobilising event has caused deposition of chalcopyrite in the veinlets.

TABLE 1: Petrography and mineralogy of diamond drill core samples from EL1003, Uro Bluff, South Australia. (cont'd.)

DRILL HOLE NO. INTERVAL (m) MRL No.	MINERALOGY (based on optics, XRD in approximate decreasing order)	TEXTURAL FEATURES	ROCK IDENTIFICATION AND COMMENTS
UB16 452.0 14872	Calcite Calcareous micaceous medium siltstone fragments. Barite Quartz (cherty silica) Opaques: chalcopyrite pyrite rutile bornite galena (rare confirmed by SEM) graphite	Net vein or brittle fracturing evident with large angular fragments of dark (bituminous?) micaceous calcareous siltstone embedded in a matrix of coarse sparry calcite together with scattered euhedral barite crystals. Cherty silica of secondary origin partly replaces some barite crystals and also replaces calcite along the boundary with breccia fragments. Prismatic chert pseudomorphs after barite crystals also occur in some of the siltstone fragments. Abundant fluid inclusions occur within both the barite and sparry calcite crystals. The dark siltstone fragments contain abundant scattered grains of chalcopyrite and occasional euhedral pyrite/chalcopyrite (<3.5 - 175µm) along the bedding planes together with some composite pyrite-chalcopyrite framboidal structures (up to 24.5µm). These sulphides appear to be of syngenetic origin. Chalcopyrite also occurs in epigenetic veinlets with calcite within the siltstone fragments, pre-dating the formation of sparry calcite and barite. Occasional coarser grained patches of chalcopyrite and bornite (up to 700µm) occur in the sparry calcite, representing the latest phase of mineralisation.	Sparry calcite and barite cemented micaceous calcareous medium siltstone breccia. Three phases of mineralisation are evident: (i) syngenetic pyrite, chalcopyrite with framboids. (ii) epigenetic veinlets of chalcopyrite + calcite in siltstone. (iii) later brecciation with formation of coarse sparry calcite, barite together with occasional coarser patches of chalcopyrite and bornite.

TABLE 1: Petrography and mineralogy of diamond drill core samples from EL1003, Uro Bluff, South Australia. (cont'd.)

DRILL HOLE NO. INTERVAL (m) MRL No.	MINERALOGY (based on optics, XRD in approximate decreasing order)	TEXTURAL FEATURES	ROCK IDENTIFICATION AND COMMENTS
UB16 452.14 14873	Calcite Quartz Opaques: chalcopyrite pyrite rutile/leucoxene graphite Muscovite (Plagioclase *(Potash feldspar (Dolomite? * trace according to XRD.	Laminated with abundant grains and patches of chalcopyrite surrounding euhedral pyrite which are scattered along the bedding planes. The grain size of this syngenetic sulphide ranges from <3.5 to 700µm. Framboids of pyrite (3.5 to 17.5µm) are also scattered throughout together with occasional graphite flakes and fragments of graphitic material. Most of the chalcopyrite and pyrite mineralisation is definitely stratabound but occasional crosscutting remobilized epigenetic veinlets and bedding plane veinlets of chalcopyrite + calcite are also present. Most of the coarser chalcopyrite/pyrite patches occur in the calcilutite horizon, where some has been remobilized into crosscutting epigenetic veinlets.	Laminated micaceous calcareous sulphidic medium siltstone intercalated with silty sulphidic fine calcilutite. Dominant strata form mineralisation of probable syngenetic origin. Some later crosscutting and bedding plane veinlets of calcite + chalcopyrite represent later remobilization effects.
UB16 454.21 14874	Quartz Calcite Opaques: chalcopyrite pyrite rutile/leucoxene graphite	Laminated and very fractured with abundant displaced portions of bedding. Some more intense net-vein fracturing is evident with cavities infilled by sparry calcite, chert pseudomorphs after barite and interstitial chalcopyrite (up to 700µm). Occasional pyrite euhedra are also embedded in the sparry calcite, some of which are surrounded by interstitial chalcopyrite.	Fractured laminated dark calcareous and micaceous medium siltstone/calcareous and micaceous fine siltstone. Syngenetic mineralisation evident in the siltstone.

TABLE 1: Petrography and mineralogy of diamond drill core samples from EL1003, Uro Bluff, South Australia. (cont'd.)

DRILL HOLE NO. INTERVAL (m) MRL No.	MINERALOGY (based on optics, XRD in approximate decreasing order)	TEXTURAL FEATURES	ROCK IDENTIFICATION AND COMMENTS
14874 (cont'd.)	Muscovite (Plagioclase *(Potash feldspar (Dolomite? * trace according to XRD.	The dark carbonaceous sulphidic siltstone contains abundant scattered patches of chalcopyrite (<3.5 - 35µm), together with abundant chalcopyrite and pyrite-chalcopyrite framboids (3.5-17.5µm). At least two periods of veinlets, some comprising calcite + chalcopyrite + pyrite + quartz, are also evident. Both graphite flakes and subangular graphitic fragments occur in the siltstone.	Later remobilized cavity filling mineralisation is evident in the more intensely fractured zones.
UB16 456.5 14875	Calcite Quartz <u>Opaques</u>: chalcopyrite pyrite rutile/leucoxene graphite (both flakes and fragments of aggregate graphitic material.) Muscovite (Chlorite? *(Plagioclase? (Potash feldspar? * trace according to XRD.	Net-vein fractured laminated siltstone infilled with granular calcite. Elongated patches of discrete chalcopyrite, chalcopyrite + euhedral pyrite and rarer pyrite occur along the bedding in the siltstone. These sulphides range in grain size from 3.5 to 210µm. Scattered pyrite and pyrite + chalcopyrite framboids (3.5 - 17.5µm) also occur along the bedding in the siltstone. Coarse irregular patches of chalcopyrite + euhedral pyrite (up to 700µm) occur in the calcilutite horizon. Epigenetic remobilized chalcopyrite + quartz veinlets cut across the bedding but pre-date the brecciation and later sparry calcite event. That is, mineralisation in the later sparry calcite is absent.	Brecciated and calcite-infilled laminated micaceous calcareous and carbonaceous medium siltstone intercalated with silty sulphidic fine calcilutite. Earlier syngenetic mineralisation is followed by some later remobilized veinlet mineralisation, both of which pre-date the brecciation event.

TABLE 1: Petrography and mineralogy of diamond drill core samples from EL1003, Uro Bluff, South Australia. (cont'd.)

DRILL HOLE NO. INTERVAL (m) MRL No.	MINERALOGY (based on optics, XRD in approximate decreasing order)	TEXTURAL FEATURES	ROCK IDENTIFICATION AND COMMENTS
UB17 442.4 14876	Quartz Dolomite Calcite Muscovite Opaques: pyrite leucoxenized fragments rutile graphite (rare flakes). (Plagioclase *(Chlorite (Potash feldspar? * trace according to XRD.	Laminated. Minor brecciation and vein filling with sparry calcite (unmineralised). Also some bedding plane and crosscutting unmineralised calcite veinlets. Abundant scattered pyrite subhedra and euhedra (<3.5 - 35µm) along the bedding planes together with abundant pyrite framboids (3.5 - 17.5µm). Epigenetic remobilised sulphide veinlets and chalcopyrite mineralisation absent.	Laminated and graded dolomitic and micaceous very fine sandstone/dolomitic and micaceous medium siltstone. Lack of fracturing, epigenetic veinlets and syngenetic chalcopyrite compared with UB16. This sample is also more dolomitic c/f UB16.

TABLE 1: Petrography and mineralogy of diamond drill core samples from EL1003, Uro Bluff, South Australia. (cont'd.)

DRILL HOLE NO. INTERVAL (m) MRL No.	MINERALOGY (based on optics, XRD in approximate decreasing order)	TEXTURAL FEATURES	ROCK IDENTIFICATION AND COMMENTS
UB17 452.67 14877	Quartz Dolomite Calcite Muscovite Opaques: pyrite leucoxenized fragments rutile graphite (Plagioclase *(Chlorite (Potash feldspar * trace according to XRD.	Laminated. The calcitized dololutite shows scour and fill structures, where fragments of dololutite occur in the overlying siltstone. The calcitized dololutite layers comprise a mixture of dolomite, euhedral dolomite together with later calcite which appears to post-date the dolomite. Abundant pyrite subhedra and euhedra (<3.5 - 280µm) are confined to the bedding together with abundant scattered pyrite framboids (3.5 - 17.5µm). Chalcopyrite is absent.	Laminated dolomitic calcareous and micaceous medium siltstone intercalated with silty fine calcitized dololutite. The calcitized dololutite in this sample is texturally very similar to the silty "calcilutite" in MRL 14873, 14875 except that chalcopyrite is absent. Chalcopyrite in the UB17 samples is conspicuous by its absence. The lithologies are similar in UB16 and UB17 except that UB17 is noticeably more dolomitic and far less fractured and brecciated compared with UB16.

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EXPLORATION LICENCE 1003, URO BLUFF

EXPLORATION LICENCE 1023, CULTANA

EXPLORATION LICENCE 1028, TREGALANA - SUGARLOAF HILL

SOUTH AUSTRALIA

REPORT FOR THE THREE MONTHS ENDED 30TH OCTOBER 1983

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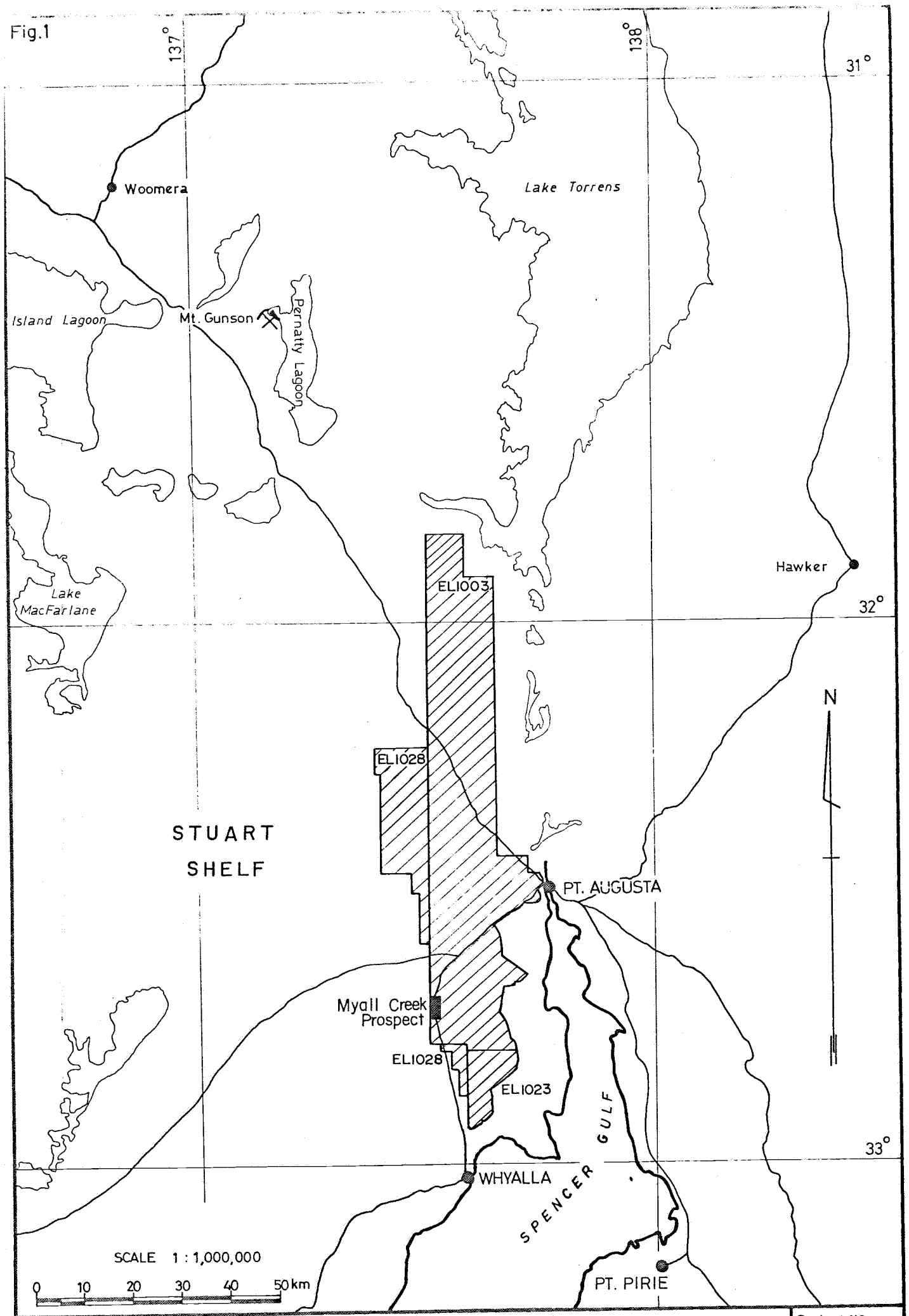
Fig.1



Centre: ADELAIDE	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No: 6-B540-30
Date: 26-11-80	EL'S1003, 1023, 1028 STUART SHELF, SA LOCATION MAP	Drawing No: A4-94

EXPLORATION LICENCE 1003, URO BLUFF
EXPLORATION LICENCE 1023, CULTANA
EXPLORATION LICENCE 1028, TREGALANA - SUGARLOAF HILL
SOUTH AUSTRALIA
REPORT FOR THE THREE MONTHS ENDED 30TH OCTOBER 1983

1. GENERAL

Exploration Licence 1003 (formerly 605) of 1163 square kilo-metres, Exploration Licence 1023 (formerly 645) of 100 square kilometres and Exploration Licence 1028 (formerly 654) of 311 square kilometres were granted on 19th April, 4th August, and 23rd August, 1982, respectively, each for one year. These licence areas lie north of Whyalla (Figure 1).

The exploration objective is to test the base of the Sturtian Tapley Hill Formation for economic sedimentary copper. A subsidiary interest is the diamond potential of the area.

2. FIELD INVESTIGATIONS

2.1 Aeromagnetics

The aeromagnetics flown over that area south of 32^{o} 30', was assessed for kimberlitic potential. Twenty-four anomalies were selected for ground magnetic follow-up, which is in progress at present.

No additional work has been done on these exploration areas.

3. EXPENDITURE

Expenditure debited to Exploration Licences 1003 Uro Bluff; 1023 Cultana and 1028 Tregalana during the quarter ended 30th October 1983, was:

	E.L. 1003	E.L. 1023	E.L. 1028
Wages & Salaries	249	197	927
Field Support	50		330
Services	1,348	1,008	4,590
Administration & Overheads	164	120	584
	$1,811	$1,325	$6,431

Total expenditure to 30th October, 1983 is:

E.L. 1003 - $ 378,610

E.L. 1023 - $ 221,135

E.L. 1028 - $ 147,528

This report was submitted to the Department of Mines and Energy as required by Condition 4 of Exploration Licences 1003, 1023 and 1028.

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[CR 4156]

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EXPLORATION LICENCE 1003, URO BLUFF

EXPLORATION LICENCE 1023, CULTANA

EXPLORATION LICENCE 1028, TREGALANA - SUGARLOAF HILL

SOUTH AUSTRALIA

REPORT FOR THE THREE MONTHS ENDED 31ST JANUARY, 1984

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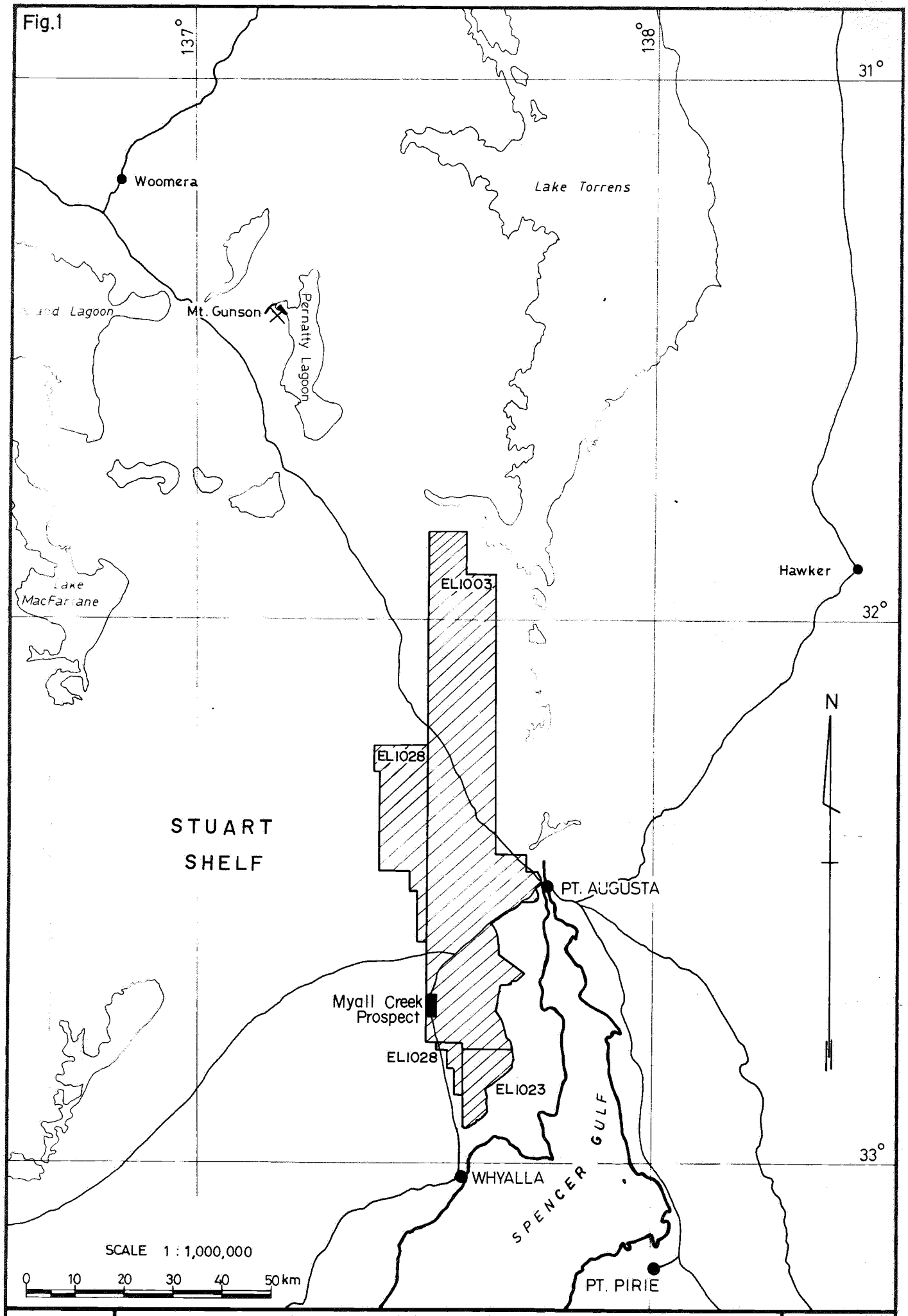
FIGURES



Centre: ADELAIDE	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No: 6-B540-30
Date: 26-11-80	EL'S1003, 1023, 1028 STUART SHELF, SA LOCATION MAP	Drawing No: A4-94

EXPLORATION LICENCE 1003, URO BLUFF
EXPLORATION LICENCE 1023, CULTANA
EXPLORATION LICENCE 1028, TREGALANA - SUGARLOAF HILL
SOUTH AUSTRALIA

REPORT FOR THE THREE MONTHS ENDED 31ST JANUARY, 1984

1. GENERAL

Exploration Licence 1003 (formerly 605) of 1,163 square kilometres, Exploration Licence 1023 (formerly 645) of 100 square kilometres and Exploration Licence 1028 (formerly 654) of 311 square kilometres were granted on 19th April, 4th August and 23rd August, 1982 respectively, each for one year which has been renewed for a second year in each case. These licence areas lie north of Whyalla as shown in Figure 1.

The exploration objective is to test the base of the Sturtian Tapley Hill Formation for economic sedimentary copper. A subsidiary interest is the diamond potential of the area.

2. FIELD INVESTIGATIONS

2.1 Ground Magnetics

A total of 23 aeromagnetic anomalies were selected as being potential kimberlitic bodies. Field investigations eliminated four, C12, C18, C22, and C24, as being caused by cultural features such as power lines, radio transmitters and railway bridges.

The remaining 19 anomalies were located by ground magnetic grids. Their locations are shown on Figure 2.

From the interpretation of the ground magnetic data, six anomalies were selected for drill testing, C3, C6,

contd./..

C7, C10, C11 and C14. Anomaly C25 is also a good target, but has very difficult access problems, therefore it is planned to loam sample this anomaly.

The drill testing of these anomalies is planned for late January, early February, 1984.

3. EXPENDITURE

Expenditure debited to E.L. 1003, 1023 and 1028 during the quarter ended 31st January, 1984, was:-

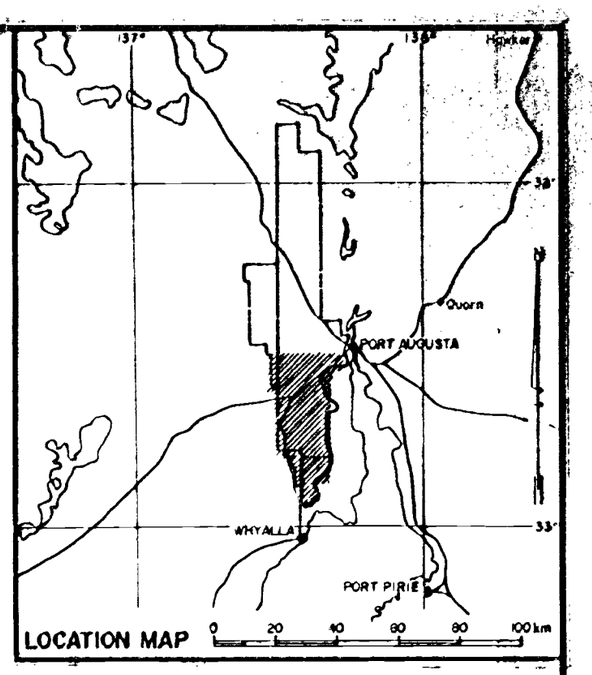
	EL 1003	EL 1023	EL 1028
Wages and Salaries	2,823	435	1,436
Field Support	1,976	54	1,484
Services	3,912	53	1,206
Administration and Overheads	435	27	206
	$9,146	$ 569	$4,332

Total expenditure to 31st January, 1984 is:-

E.L. 1003	$387,756
E.L. 1023	$221,704
E.L. 1028	$151,860

This report was submitted to the Department of Mines and Energy as required by Condition 4 of Exploration Licences 1003, 1023 and 1028.

FIG. 2



137° 30'

137° 40'

32° 30'

32° 40'

32° 50'

EL1028

EL1003

EL1023

E.L.1028

C1 C2 C3 C4 C5 C6 C7 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C20 C21 C22 C23 C24 C25

DETAILS OF SURVEY

Flown by : AERODATA McPHAR
Date : MAY 1983
1:250,000 sheet : PORT AUGUSTA SI 53-4
Projection : TRANSVERSE MERCATOR
A.M.G. zone : 53

Line spacing : 300m
Survey height : 80m
Magnetometer : GEOMETRICS G813

Compton scattering ratio : ALPHA 0·37
BETA 0·45
GAMMA 0·86

DETAILS OF PROCESSING

Processed by : B.H.P. EXPLORATION, CAMBERWELL

Diurnal correction : BASE VALUE IS 56784nT	3rd June 1983
I.G.R.F. REMOVED	3rd June 1983
ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE)	3rd June 1983
5000nT ADDED TO DATA	3rd June 1983
DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRD	3rd June '83

TIE LINES WERE NOT CONTOURED
CONTOUR INTERVAL 2·0nT
Gridding parameters : MESH SIZE 100m x 100m
SCAN DISTANCE 700m
NO EXTRAPOLATION USED

C25 Selected aeromagnetic anomaly

N

Scale 1:100,000

0 2 4 6 8 km

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L.1003, 1023, 1028 CULTANA, S.A.

LOCATION OF AEROMAGNETIC ANOMALIES

Revisions:

Drawn: R.J. Taylor	Date: 10-4-84	Centre: Adelaide
Traced: A.R. Veale	Project No: 6-852, 53, 54-63	Drawing No: A2-397A
Checked:		

3828(11)-5

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[CR 4191]

EXPLORATION LICENCE 1003, URO BLUFF

EXPLORATION LICENCE 1023, CULTANA

EXPLORATION LICENCE 1028, TREGALANA - SUGARLOAF HILL

SOUTH AUSTRALIA

REPORT FOR THE THREE MONTHS ENDED 30TH APRIL, 1984

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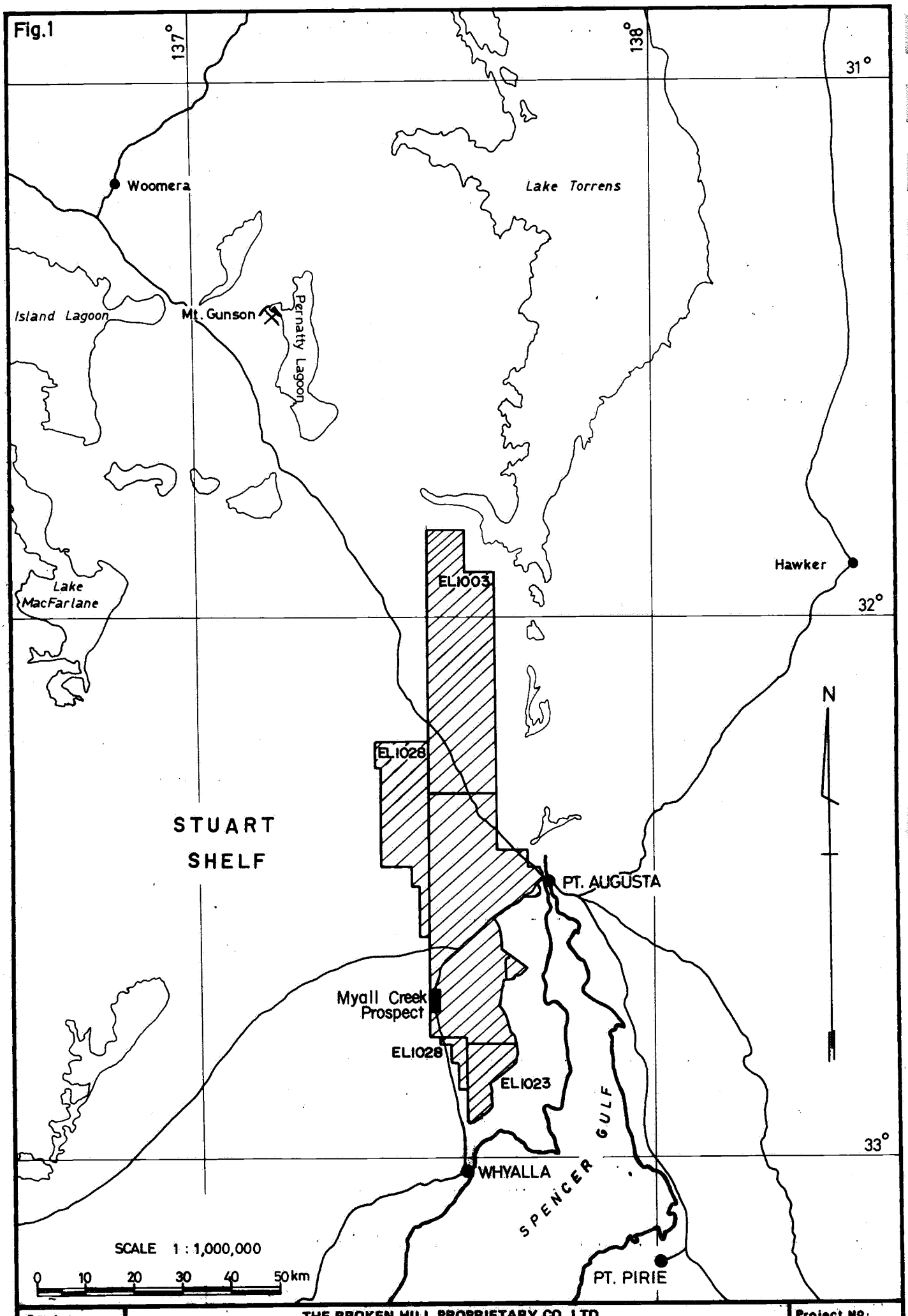
FIGURES



Centre: ADELAIDE	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No: 6-B540-30
Date: 26-11-80	EL'S1003, 1023, 1028 STUART SHELF, SA LOCATION MAP	Drawing No: A4-94

EXPLORATION LICENCE 1003, URO BLUFF
EXPLORATION LICENCE 1023, CULTANA
EXPLORATION LICENCE 1028, TREGALANA - SUGARLOAF HILL
SOUTH AUSTRALIA

REPORT FOR THE THREE MONTHS ENDED 30TH APRIL, 1984

1. GENERAL

Exploration Licence 1003 (formerly 605) of 1,163 square kilometres was granted on 19th April, 1982, renewed on 19th April, 1983 and reduced in area on 19th April, 1983 as shown in Figure 2.

Exploration Licence 1023 (formerly 645) of 100 square kilometres and Exploration Licence 1028 (formerly 654) of 311 square kilometres were granted on 4th August and 23rd August, 1982 respectively. These licences lie north of Whyalla as shown in Figure 1.

The exploration objective is to assess the kimberlite potential of the area. Earlier exploration was predominantly directed towards testing the base of the Sturtian Tapley Hill Formation for economic sedimentary copper.

2. FIELD INVESTIGATIONS

2.1 Drilling

Six anomalies were selected from aerial and ground magnetics to be drill tested to ascertain their kimberlitic potential. These were anomalies C3, C6, C7, C10, C11 and C14. Anomaly C11 was not drilled due to access problems and its low priority rating.

Listed below is a summary of the drilling results and the stratigraphy of each drill hole. The drill co-ordinates are based on a local grid over each anomaly. No evidence

contd./..

of kimberlite was found in any of the drill holes. Figure 3 shows the location of these anomalies, the holes drilled and loam samples collected.

Anomaly C3

The estimated depth of the anomaly was 20-30m. No source of the anomaly was found and no evidence of kimberlite from downhole geochemistry.

PUB 28	5200E/5100N
0-12m	Clays
PUB 29	5200E/5075N
0-50m	Clays, broken chert, weathered shale.

Three surface loam samples have been collected; RT1600-02 at coordinates 5200E/5100N, 5200E/5075N and 5200E/5050N respectively, to test for the presence of kimberlitic indicators. These results are still awaited.

Anomaly C6

Estimated depth of the anomaly 100m. No clear explanation of the anomaly was found and downhole geochemistry gave no indication of a kimberlite. Bedrock sediments were located. The holes were stopped at 20m in hard sediments.

PUB 30	4900E/4900N
0-20m	Maghemite and magnetic sandstones to 6m then siltstone and sandstone.
PUB 31	4900E/4950N
0-20m	Clays silcrete ferricrete to 8m then siltstone and shale.

Anomaly C7

The estimated depth of the anomaly was 120 metres. No magnetic source was located and downhole geochemistry did not indicate any kimberlite potential. Bedrock sediments were intersected.

contd./..

PUB 32	5400E/5750N
0-24m	Gritty clay over shales; siltstone and sandstone below 14m.
PUB 33	5400E/5700N
0-20m	Clays over shales; siltstones and sandstone below 12m.

Anomaly C10

The estimated depth to the magnetic source is between 10 and 20 metres. Magnetic sandstone and maghemite was found in the first few metres.

PUB 34	4900E/4980N
0-6m	Clay, calcrete, maghemite and magnetic sandstone.
PUB 35	4900E/5015N
0-4m	Clay, calcrete, maghemite and magnetic sandstone.

Three loam samples, RT1594-96 have been collected at co-ordinates 4900E/4980N, 4900E/5000N and 4900E/5015N respectively to check for the presence of kimberlitic indicators. No results have yet been received.

Anomaly C14

The estimated depth of the anomaly between 10 and 20 metres. Magnetic grains were found in the first few metres.

PUB 36	5100E/4500N
0-8m	Maghemite and magnetic sandstone.
PUB 37	5100E/4370N
0-7m	Maghemite and magnetic sandstone.

Three loam samples RT1591-93 were collected at co-ordinates 5100E/4500N, 5100E/4520N and 5100E/4370N respectively, to test for kimberlitic indicator minerals. No results are so far available.

contd./..

Anomaly C25

This anomaly is high on a ridge and has been tested by three loam samples, RT1597-99 at co-ordinates 4800E/5000N, 4900E/5000N and 5000E/4950N.

3. RESULTS OF FIELD INVESTIGATIONS

3.1 Geochemical analyses of drill chips

Table 1 gives the analysis results for samples collected from the bottom of each hole. None of the analysis results are of interest as potential kimberlites. The analyses were undertaken by Comlabs Pty. Ltd. of Adelaide Report Number COM 840512.

4. EXPENDITURE

Expenditure debited to Exploration Licences 1003, 1023 and 1028 during the quarter ended 30th April, 1984 was:

	EL 1003	EL 1023	EL 1028
Wages and Salaries	3,651	1,061	176
Field Support	2,111	306	309
Drilling	3,629	-	1,815
Vehicles	411	27	27
Geochemistry	227	-	-
Geophysics	153	14	14
Tenement fees	1,547	-	-
Sundries	4	-	34
Services	-	1,680	-
Administration and Overheads	1,173	308	237
	$12,906	$ 3,396	$ 2,612

Total expenditure to 30th April, 1984 is:

EL 1003 - $400,662
EL 1023 - $225,100
EL 1028 - $154,472

This report was submitted to the Department of Mines and Energy as required by Condition 4 of Exploration Licences 1003, 1023 and 1028.

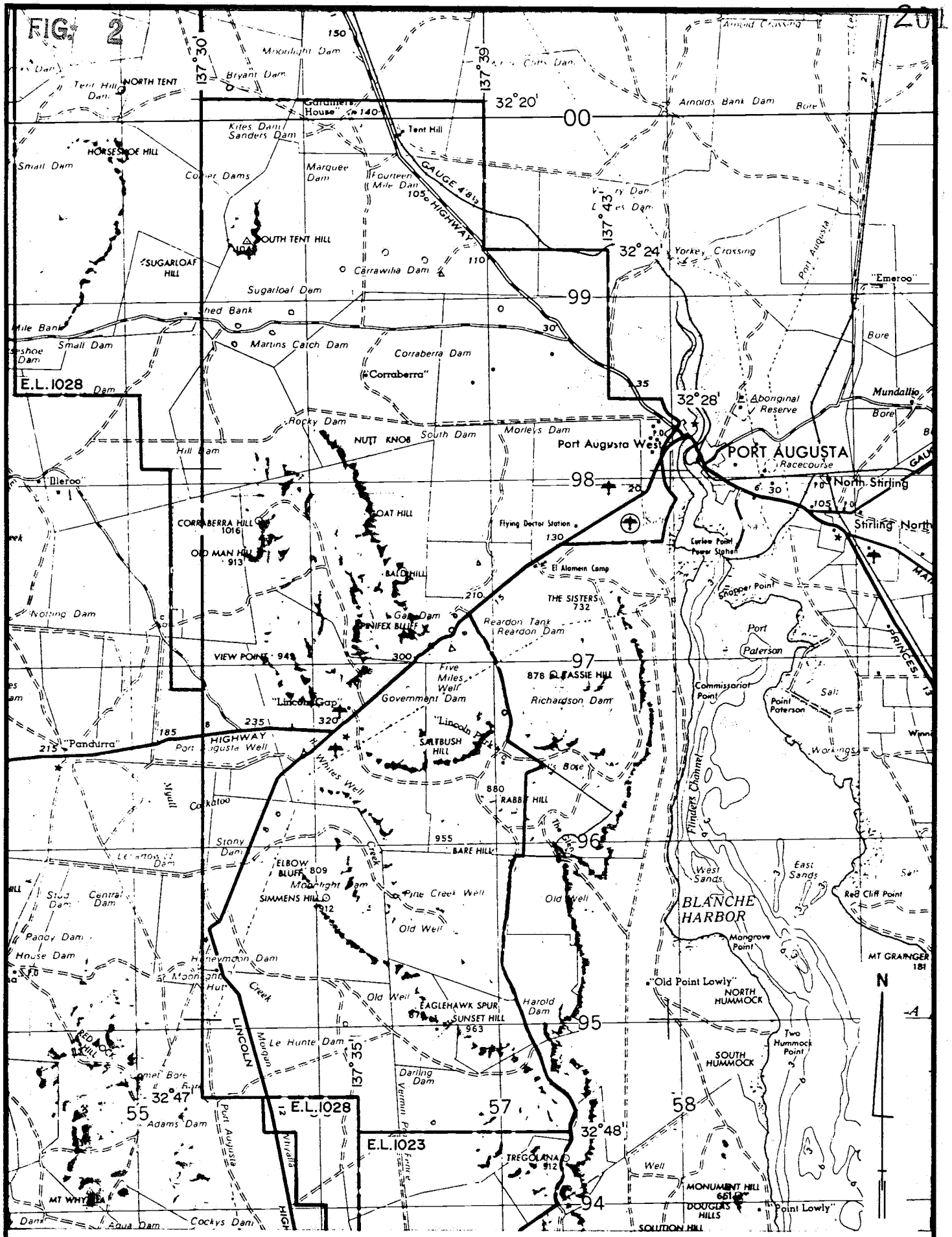
TABLE 1

Anomaly Number	Hole Number	Sample Number	Depth (metres)		Ni	Co	Cr	Nb
			From	To				
C3	PUB 28	7668	10	12	8	4	8	22
	PUB 29	7694	48	50	30	14	12	18
C6	PUB 30	7703	18	20	24	6	10	12
	PUB 31	7713	18	20	22	8	10	14
C7	PUB 32	7724	22	24	22	6	8	12
	PUB 33	7734	18	29	34	12	8	14
C10	PUB 34	7737	4	6	8	4	34	12
	PUB 35	7739	2	4	14	6	10	12
C14	PUB 36	7742	6	8	8	4	16	14
	PUB 37	7747	6	7	8	4	14	12

All results are in ppm.

Method of analysis Ni Co : AAS1
Cr : AAS2
Nb : XRF1

FIG. 2



Centre: ADELAIDE	THE BROKEN HILL PROPRIETARY CO. LTD.	Project Nº: 6-E45-43
Date: 22-2-84	E.L.1003 URO BLUFF, S.A.	Drawing Nº: A4-345
	REDUCED AREA OF EXPLORATION LICENCE	

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[C.R. 4293]

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EXPLORATION LICENCE 1003

URO BLUFF, SOUTH AUSTRALIA

REPORT FOR THE QUARTER ENDED 18TH JULY, 1984

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FIGURES

Fig.1

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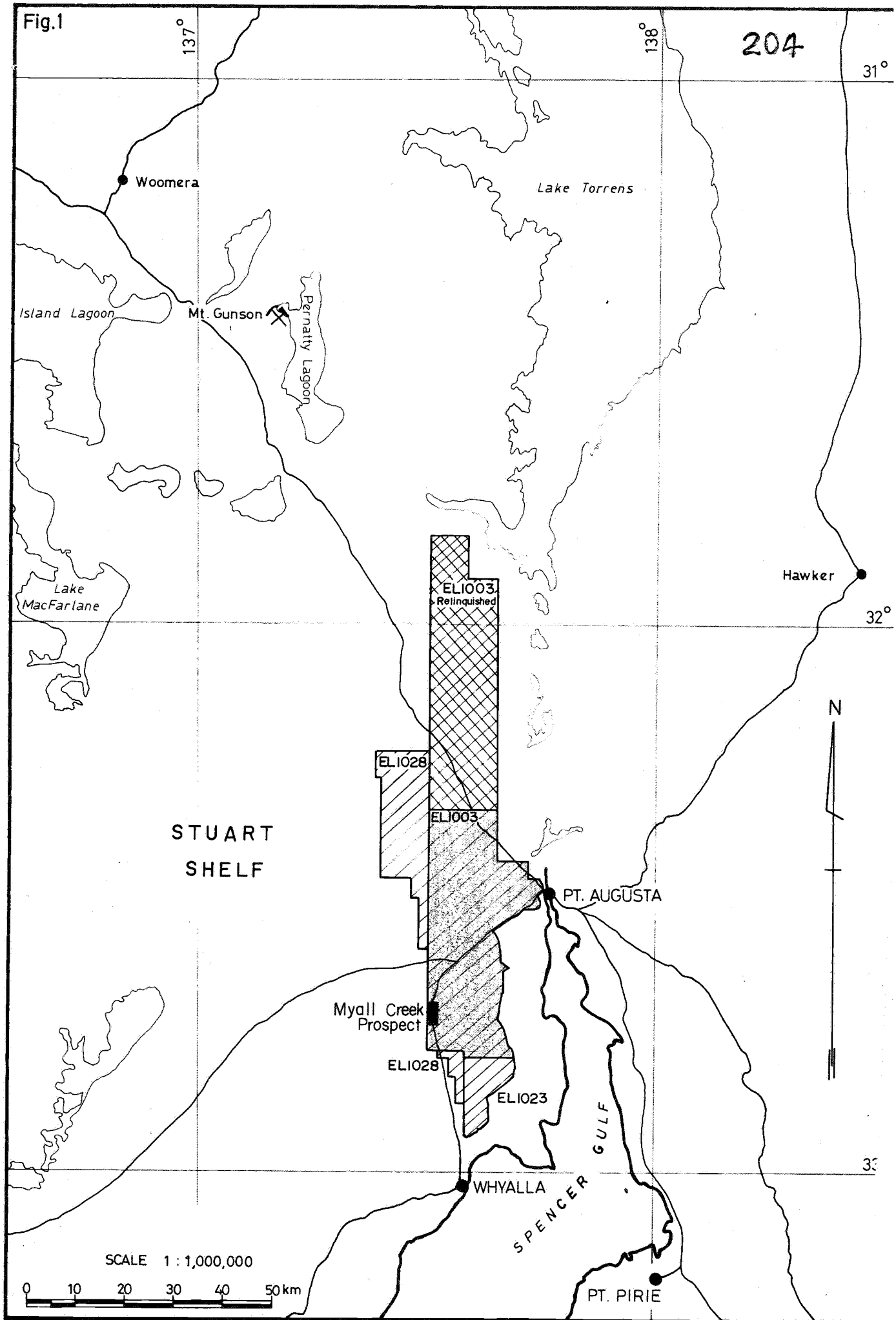


Centre: ADELAIDE	THE BROKEN HILL PROPRIETARY CO. LTD.	Project No: 6-B540-
Date: 26-11-80	EL'S1003, 1023, 1028 STUART SHELF, SA LOCATION MAP	Drawing No A4- 94

EXPLORATION LICENCE 1003

URO BLUFF, SOUTH AUSTRALIA

REPORT FOR THE QUARTER ENDED 18TH JULY, 1984

1. GENERAL

Exploration Licence 1003 (formerly 605) of 1,163 square kilometres was granted to BHP Minerals Limited on 19th April, 1982, renewed on 19th April, 1983 and reduced in area on 19th April, 1984 as shown in Figure 1.

The exploration objective is to assess the Kimberlite potential of the area. Earlier exploration was predominantly directed towards testing the base of the Sturtian Tapley Hill Formation for economic sedimentary copper. A total of 27 stream sediment samples were collected at the end of May.

2. FIELD INVESTIGATIONS

2.1 Stream Sampling

A bulk sample CJA023 comprising 20 tonnes has been found to contain 2 Kimberlitic indicators. A programme of follow-up sampling has been carried out to define any train of kimberlitic indicators within the area upstream of CJA023. These 27 samples are numbered RT1603-RT1629 and each comprised 20 kg. of -4mm stream sediment collected from the best trap-site at that particular location. The sample sites are shown in Figure 2.

3. RESULTS OF FIELD INVESTIGATIONS

3.1 Loam Sampling

Loam samples were collected in the previous quarter at three magnetic anomaly locations, namely:-

..contd./..

Anomaly	Loam Sample No.
C10	RT 1594 - 1596
C14	RT 1591 - 1593
C25	RT 1597 - 1599

All these samples are negative and no more work is warranted on the magnetic anomalies.

3.2 Stream Sampling

These results are still awaited.

4. EXPENDITURE

Expenditure debited to Exploration Licence 1003 during the quarter ended July 31st, 1984 was:

Wages & Salaries	1,998
Field Support	343
Vehicles	1,449
Geochemistry	371
Services	2,009
Sundries	107
Administration & Overheads	314
	$6,591

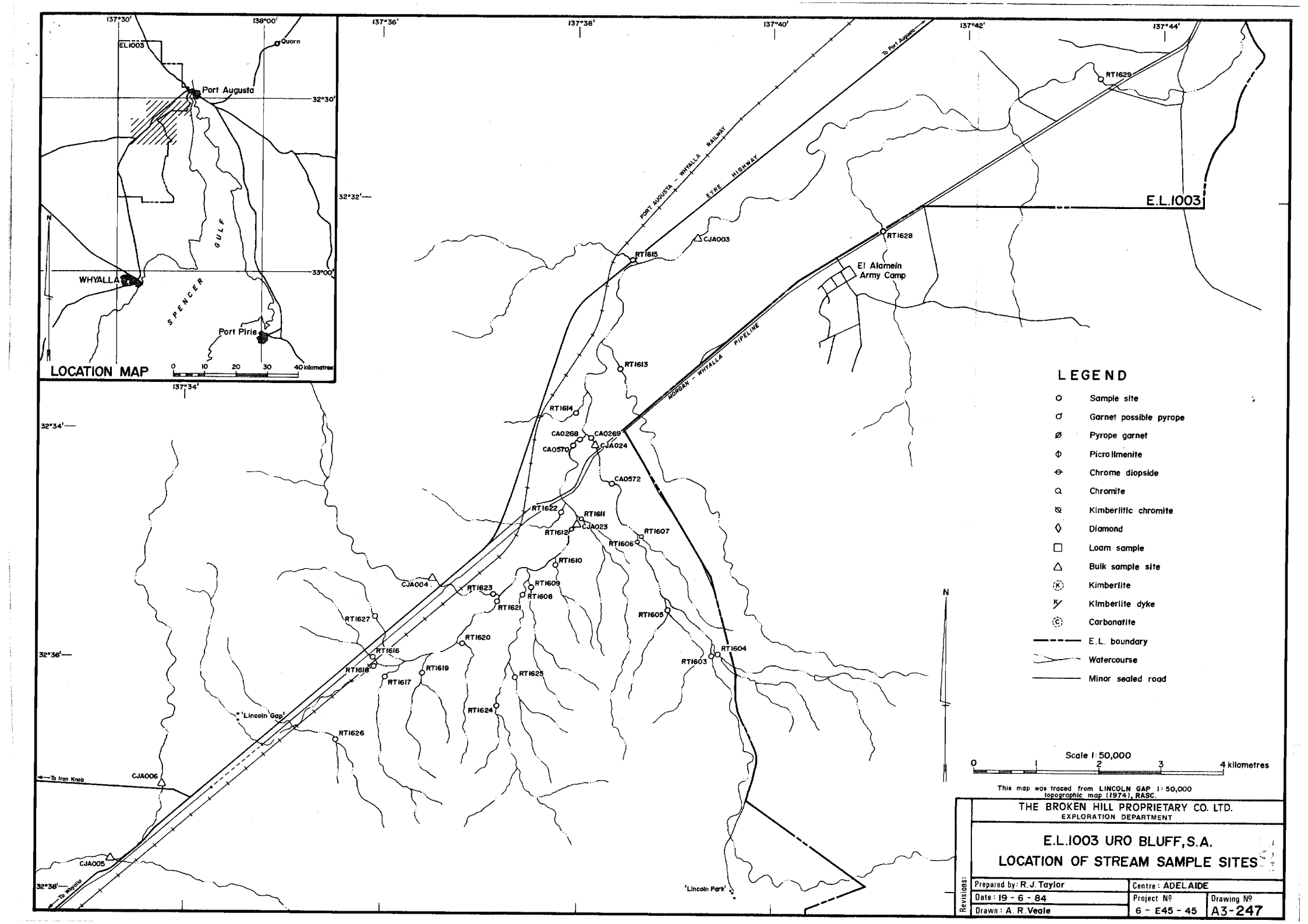
Total Expenditure on Exploration Licence 1003 to July 31st, 1984 is: $407,253.

This report was submitted to the Department of Mines and Energy as required by Condition 4 of E.L. 1003.

WORK SUPERVISION

Geology - R. J. Taylor

Laboratory - E. Smyth


LOCATION MAP
EL1003
Quorn
Port Augusta
WHYALLA
Port Pirie
GULF
SPENCER
0 10 20 30 40 kilometres
137°30'
138°00'
32°30'
32°32'
33°00'
137°34'
137°36'
137°38'
137°40'
137°42'
137°44'
32°34'
32°36'
32°38'
To Port Augusta
PORT AUGUSTA – WHYALLA RAILWAY
EYRE HIGHWAY
MORGAN – WHYALLA PIPELINE
E.L.1003
RT1629
RT1628
RT1615
CJA003
El Alamein Army Camp
RT1613
RT1614
CA0268
CA0269
CJA024
CA0570
CA0572
RT1622
RT1611
CJA023
RT1612
RT1607
RT1606
RT1610
CJA004
RT1623
RT1609
RT1608
RT1621
RT1605
RT1627
RT1620
RT1616
RT1618
RT1619
RT1617
RT1625
RT1604
RT1603
'Lincoln Gap'
RT1624
RT1626
To Iron Knob
CJA006
CJA005
To Whyalla
'Lincoln Park'
N
LEGEND
Sample site
Garnet possible pyrope
Pyrope garnet
Picroilmenite
Chrome diopside
Chromite
Kimberlitic chromite
Diamond
Loam sample
Bulk sample site
Kimberlite
Kimberlite dyke
Carbonatite
E.L. boundary
Watercourse
Minor sealed road
Scale 1:50,000
0 2 3 4 kilometres
This map was traced from LINCOLN GAP 1:50,000 topographic map (1974), RASC.
THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT
E.L.1003 URO BLUFF, S.A.
LOCATION OF STREAM SAMPLE SITES
Revisions:
Prepared by: R.J. Taylor
Centre: ADELAIDE
Date: 19 - 6 - 84
Project No 6 - E45 - 45
Drawn: A. R. Veale
Drawing No A3-247

1208

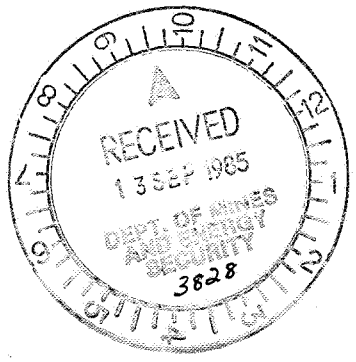
(CR 4689)

EXPLORATION LICENCE 1003

URO BLUFF - SOUTH AUSTRALIA

FINAL REPORT - DECEMBER - 1984

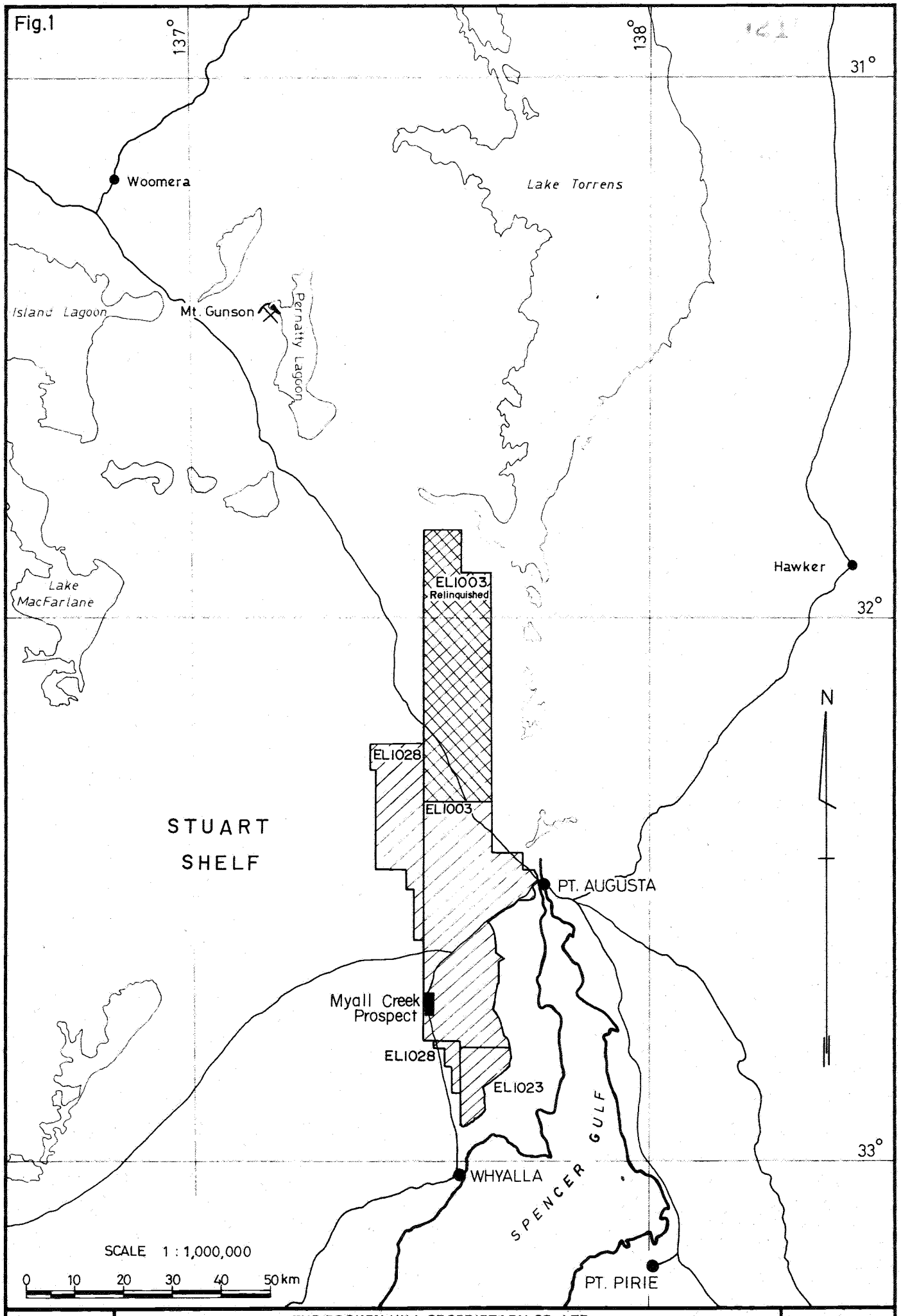
(Including the Report for the Quarter to 18th October, 1984.)



by: R.J. Taylor.
Adelaide.

CONTENTS

FIGURES



Centre: ADELAIDE	THE BROKEN HILL PROPRIETARY CO. LTD.	Project Nº: 6-B540-30
Date: 26-11-80	EL'S1003, 1023, 1028 STUART SHELF, SA LOCATION MAP	Drawing Nº: A4-94

EXPLORATION LICENCE 1003

URO BLUFF - SOUTH AUSTRALIA

FINAL REPORT - DECEMBER - 1984

(Including the Report for the Quarter to 18th October, 1984.

1. GENERAL.

Exploration Licence 1003 was originally taken out to assess the potential for economic sedimentary copper mineralization in the base of the Sturtian Tapley Hill Formation. It has comprised one of three adjacent E.L.'s in the area which have been explored together. The other two areas were E.L. 1023 and E.L. 1028,

The exploration objective recently has been to test the kimberlitic potential of the area. Exploration included the testing of five magnetic anomalies, the collection of twenty-seven stream samples and nine loam samples. The results of this work has not been sufficiently encouraging to warrant any further exploration for kimberlites and the area was surrendered in December 1984.

2. TITLE.

Exploration Licence 1003 (formerly 605) of 1,163 square kilometres was granted to BHP Minerals Ltd., on 19th April, 1982, renewed on 19th April, 1983 and reduced in area on 19th April, 1984 as shown in Figure 1. The licence was surrendered in a letter dated 5th December 1984.

3. FIELD INVESTIGATIONS.

Since the quarterly report dated 18th July, 1984 no further field work was carried out.

3.1 *Aeormagnetic Survey.*

An aeromagnetic survey was flown over the licence area in May, 1983

together with the adjacent E.L.'s 1023 and 1028. The aim of the survey was to locate potential kimberlitic intrusions.

The specifications of the survey were:-

Contractor	:	Aerodata McPhar.
Line Spacing	:	300 metres
Survey Height	:	80 metres
Magnetometer	:	Geometrics G 813
Flight Direction	:	N-S

The results were processed by BHP and are shown at 1:100,000 in Figure 2. The data was also contoured at 2.5 nT and 1:25,000 scale maps produced Figures 3 to 9. Geophysical interpretation of the data selected five anomalies as being possibly kimberlitic in origin.

3.2 *Ground Magnetic Survey.*

These five anomalies, C6, C7, C10, C14 and C25 were located by ground magnetic grids. Anomalies C6, C7, C10 and C14 were drill tested and C25 was tested by loam sampling.

3.3 *Drill Testing and Loam Sampling.*

Listed below is a summary of the drilling results and the stratigraphy of each hole. The drill co-ordinates are based on a local grid over each anomaly. No evidence was found of kimberlite in any of the drill holes or the loam samples collected. Figure 2 shows the location of these anomalies and lists the holes drilled and the loam samples collected.

Anomaly C6

Estimated depth of the anomaly 100m. No clear explanation of the anomaly was found and downhole geochemistry gave no indication of a kimberlite. Bedrock sediments were located. The holes were stopped at 20 m in hard sediments.

PUB 30	4900E/4900N
0-20 m	Maghemite and magnetic sandstones to 6 m then siltstone and sandstone.

PUB 31 4900E/4950N
0-20 m Clays silcrete ferricrete to 8 m then siltstone and shale.

Anomaly C7.

The estimated depth of the anomaly was 120 metres. No magnetic source was located and downhole geochemistry did not indicate any kimberlite potential. Bedrock sediments were intersected.

PUB 32 5400E/5750N
0-24 m Gritty clay over shales; siltstone and sandstone below 14 m.

PUB 33 5400E/5700N
0-20 m Clays over shales; siltstones and sandstone below 12 m.

Anomaly C10.

The estimated depth to the magnetic source is between 10 and 20 metres. Magnetic sandstone and maghemite was found in the first few metres.

PUB 34 4900E/4980N
0-6 m Clay, calcrete, maghemite and magnetic sandstone.

PUB 35 4900E/5015N
0-4 m Clay, calcrete, maghemite and magnetic sandstone.

Three loam samples, RT1594-96 were collected at co-ordinates 4900E/4980N, 4900E/5000N and 4900E/5015N. No kimberlitic indicators were found in these samples.

Anomaly C14.

The estimated depth of the anomaly was between 10 and 20 metres. Magnetic grains were found in the first few metres.

PUB 36 5100E/4500N

0-8 m Maghemite and magnetic sandstone.

PUB 37 5100E/4370N

0-7 m Maghemite and magnetic sandstone.

Three loam samples RT1591-93 were collected at co-ordinates 5100E/4500N, 5100E/4520N and 5100E/4370N respectively, to test for kimberlitic indicator minerals and none were found.

Anomaly C25.

This anomaly is high on a ridge and has been tested by three loam samples, RT1597-99 at co-ordinates 4800E/5000N, 4900E/5000N and 5000E/4950N. No kimberlitic indicators were found.

Table 1, below, gives the analysis results for samples collected from the bottom of each hole. None of the values indicate the presence of any kimberlitic rocks. The analyses were undertaken by Comlabs Pty. Ltd. of Adelaide, Report Number COM 840512.

TABLE 1

Anomaly Number	Hole Number	Sample Number	Depth (metres)		Ni	Co	Cr	Nb
			From	To				
C6	PUB 30	7703	18	20	24	6	10	12
	PUB 31	7713	18	20	22	8	10	14
C7	PUB 32	7724	22	24	22	6	8	12
	PUB 33	7734	18	29	34	12	8	14
C10	PUB 34	7737	4	6	8	4	34	12
	PUB 35	7739	2	4	14	6	10	12
C14	PUB 36	7742	6	8	8	4	16	14
	PUB 37	7747	6	7	8	4	14	12

All results are in ppm.

Method of analysis Ni Co : AAS1
Cr : AAS2
Nb : XRF1

3.4 *Stream Sampling.*

A bulk sample CJA 023 comprising 20 tonnes had been found to contain 2 kimberlitic indicator minerals, both picro-ilmenite. A programme of follow-up sampling has been carried out to define any train of kimberlitic indicators within the area upstream of CJA 023. These 27 samples are numbered RT 1603 to RT 1629 and each comprised 20 kg of -4mm sediment collected from the best trapsite at that particular location. The sample sites are shown in Figure 10. Laboratory examination of these samples yielded one grain of kimberlitic ilmenite in RT 1625 and one grain of borderline kimberlitic ilmenite in RT 1617 and RT 1620. These samples are located in short length active streams draining the steep slopes of Question Mark Hill.

Samples RT 1628 and RT 1629 also contained kimberlitic indicators but they lie downstream of the known kimberlitic sill discovered by Stockdale Prospecting Ltd. in the 1970's. This kimberlite outcrops 6 kms to the north east within the El Alamein Army Reserve. RT 1628 contained 19 kimberlitic indicators (14 pyrope garnets, 3 picro-ilmenites and 2 chrome diopsides, whereas RT 1629 much further downstream contained only 2 pyrope garnets, and indicates the type of indicator mineral train to be expected from an outcropping kimberlite in this terrain.

4. CONCLUSION.

1. The indicator mineral trains in samples RT 1625, RT 1617 and RT 1620 do not compare favourably with that from the known kimberlite represented by sample RT 1628.

2. In bulk sample CJA 023, which comprised 20 tonnes of river gravel, no diamonds were found and only 2 indicator minerals were recovered.

3. A well used vehicle access track for the power lines crosses the headwaters of the creeks draining Question Mark Hill and continues north east into the kimberlite drainage, and therefore is a possible source of contamination.

In view of these three factors it is considered that there is a low probability of a diamondiferous source within the area and consequently no further work is warranted. Therefore, the licence was surrendered on the 5th December, 1984.

The exploration work prior to 1984 involving the search for economic copper mineralization has been reported in earlier quarterly reports.

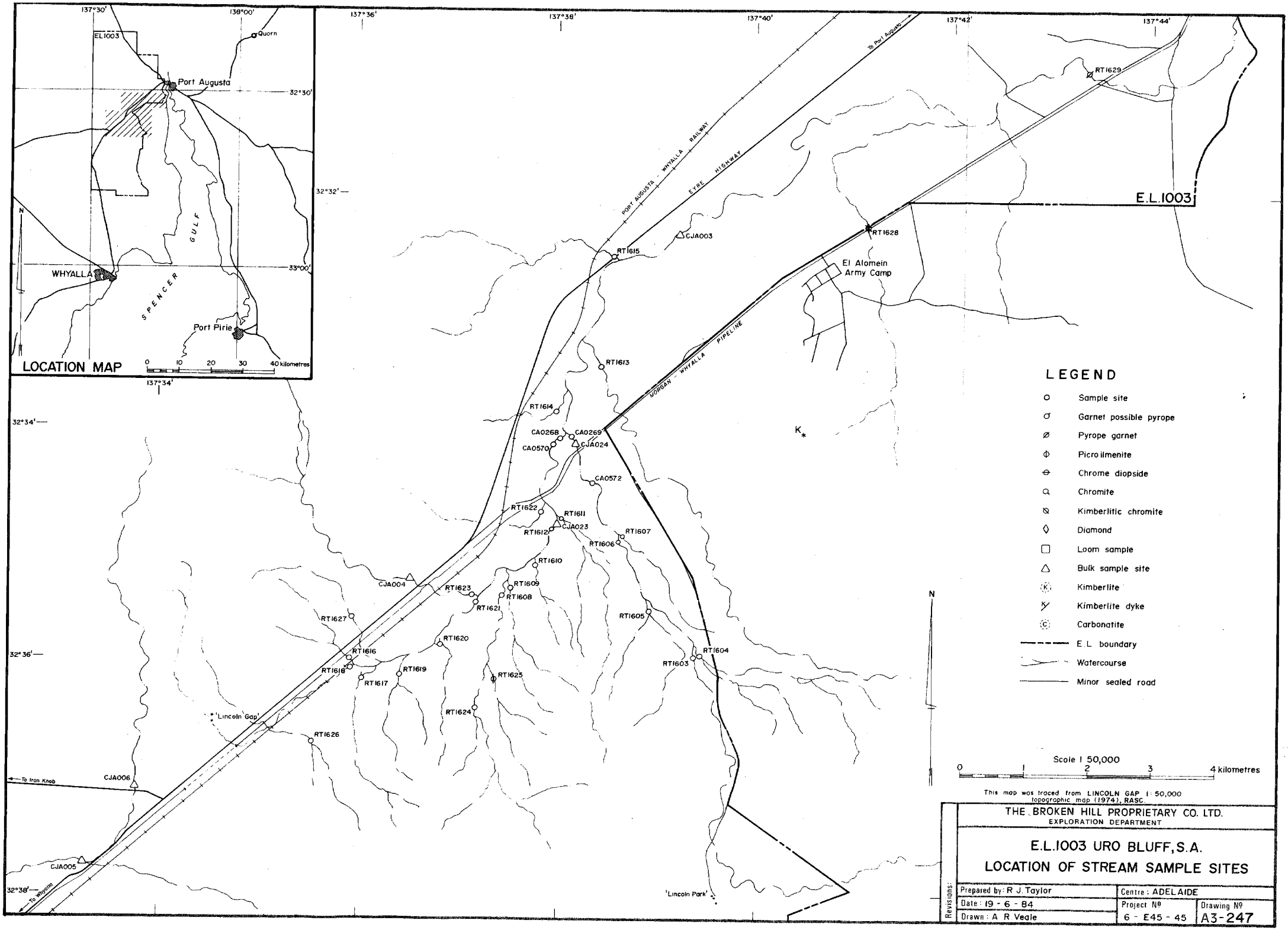
5. EXPENDITURE.

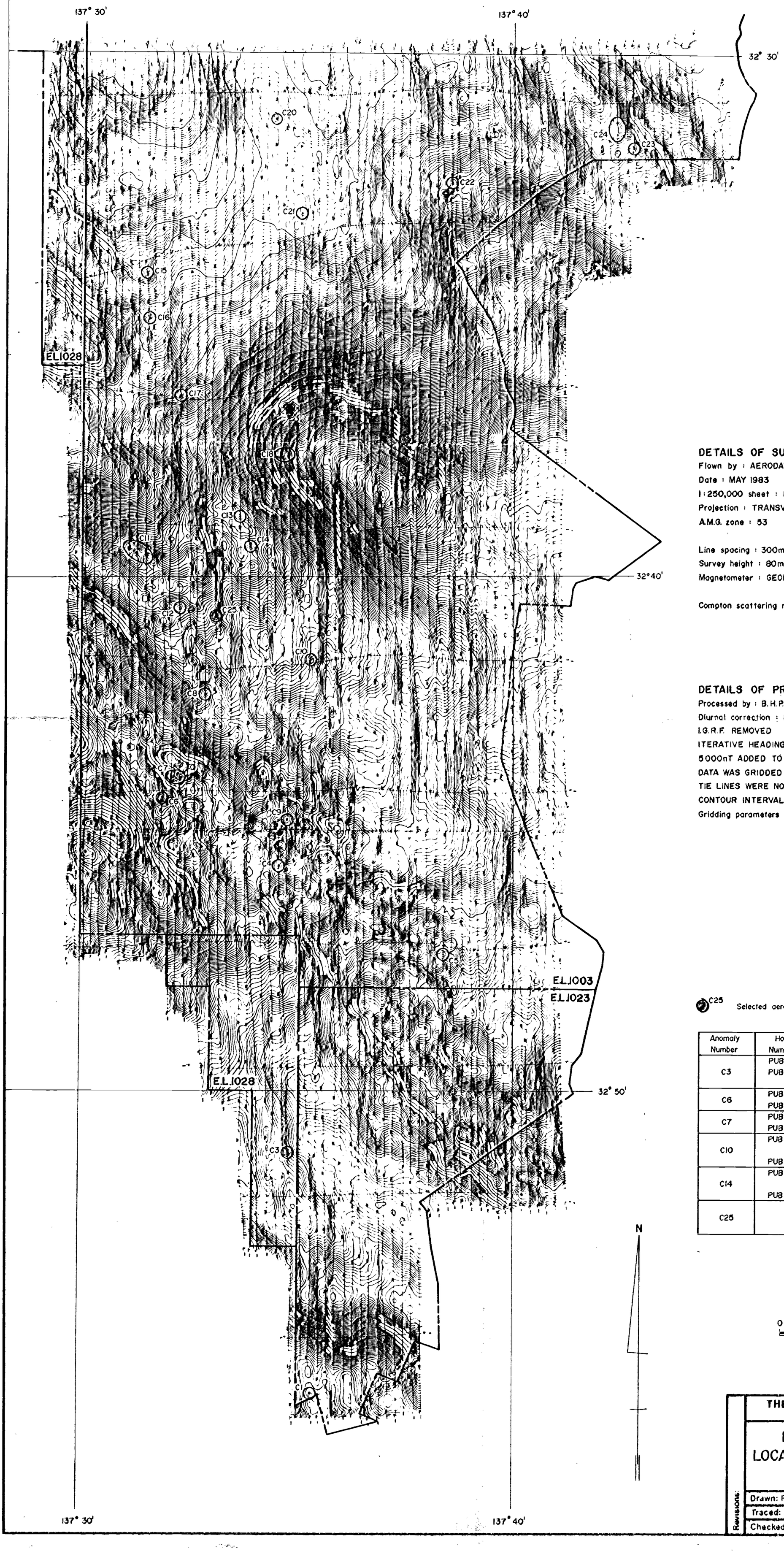
Expenditure debited to Exploration Licence 1003 during the period 1st August to 5th December 1984 was:-

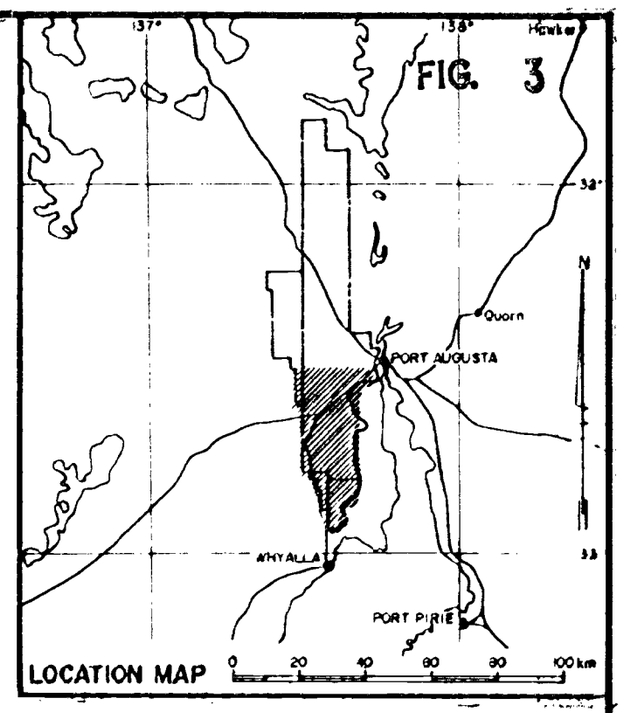
	$
Wages and Salaries	1447
Field Support	100
Vehicles	112
Geochemistry	122
Laboratory costs	2688
Administration & Overheads	223
Total	$4692

The Total Expenditure on E.L. 1003 to the 31st December, 1984 is $411,945.

This report was submitted to the Department of Mines and Energy as required by Condition 4 of E.L. 1003.


LOCATION MAP
EL1003
Quorn
Port Augusta
WHYALLA
GULF
SPENCER
Port Pirie
0 10 20 30 40 kilometres
137°30'
138°00'
137°34'
137°36'
137°38'
137°40'
137°42'
137°44'
32°30'
32°32'
32°34'
32°36'
32°38'
33°00'
N
PORT AUGUSTA - WHYALLA RAILWAY
EYRE HIGHWAY
To Port Augusta
BORGAN - WHYALLA PIPELINE
E.L.1003
El Alomein Army Camp
RT1628
RT1629
RT1615
CJA003
RT1613
RT1614
CA0268
CA0269
CJA024
CA0570
CA0572
RT1622
RT1611
CJA023
RT1612
RT1607
RT1606
RT1610
RT1609
RT1608
RT1623
RT1621
CJA004
RT1627
RT1620
RT1605
RT1616
RT1604
RT1618
RT1619
RT1617
RT1625
RT1603
RT1624
'Lincoln Gap'
RT1626
CJA006
CJA005
To Iron Knob
To Whyalla
'Lincoln Park'
LEGEND
Sample site
Garnet possible pyrope
Pyrope garnet
Picro ilmenite
Chrome diopside
Chromite
Kimberlitic chromite
Diamond
Loom sample
Bulk sample site
Kimberlite
Kimberlite dyke
Carbonatite
E.L. boundary
Watercourse
Minor sealed road
Scale 1 50,000
0 1 2 3 4 kilometres
This map was traced from LINCOLN GAP 1:50,000 topographic map (1974), RASC.
THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT
E.L.1003 URO BLUFF, S.A.
LOCATION OF STREAM SAMPLE SITES
Prepared by: R J. Taylor
Centre: ADELAIDE
Date: 19 - 6 - 84
Project No 6 - E45 - 45
Drawing No A3-247
Drawn: A R Veale
Revisions:





DETAILS OF SURVEY

Flown by : AERODATA McPHAR
Date : MAY 1983
1:250,000 sheet : PORT AUGUSTA SI 53-4
Projection : TRANSVERSE MERCATOR
A.M.G. zone : 53

Line spacing : 300m
Survey height : 80m
Magnetometer : GEOMETRICS G813

Compton scattering ratio : ALPHA 0·37
BETA 0·45
GAMMA 0·86

DETAILS OF PROCESSING

Processed by : B.H.P. EXPLORATION, CAMBERWELL
Diurnal correction : BASE VALUE IS 56784nT 3rd June 1983
I.G.R.F. REMOVED 3rd June 1983
ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE) 3rd June 1983
5000nT ADDED TO DATA 3rd June 1983
DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRD 3rd June '83
TIE LINES WERE NOT CONTOURED
CONTOUR INTERVAL 2·0nT
Gridding parameters : MESH SIZE 100m x 100m
SCAN DISTANCE 700m
NO EXTRAPOLATION USED

C25 Selected aeromagnetic anomaly

Anomaly Number	Hole Number	Loam Sample
C3	PUB 28 PUB 29	RT1600 RT1601 RT1602
C6	PUB 30 PUB 31	
C7	PUB 32 PUB 33	
C10	PUB 34 PUB 35	RT1594 RT1595 RT1596
C14	PUB 36 PUB 37	RT1591 RT1592 RT1593
C25		RT1597 RT1598 RT1599

Scale 1:100,000

0 2 4 6 8 km

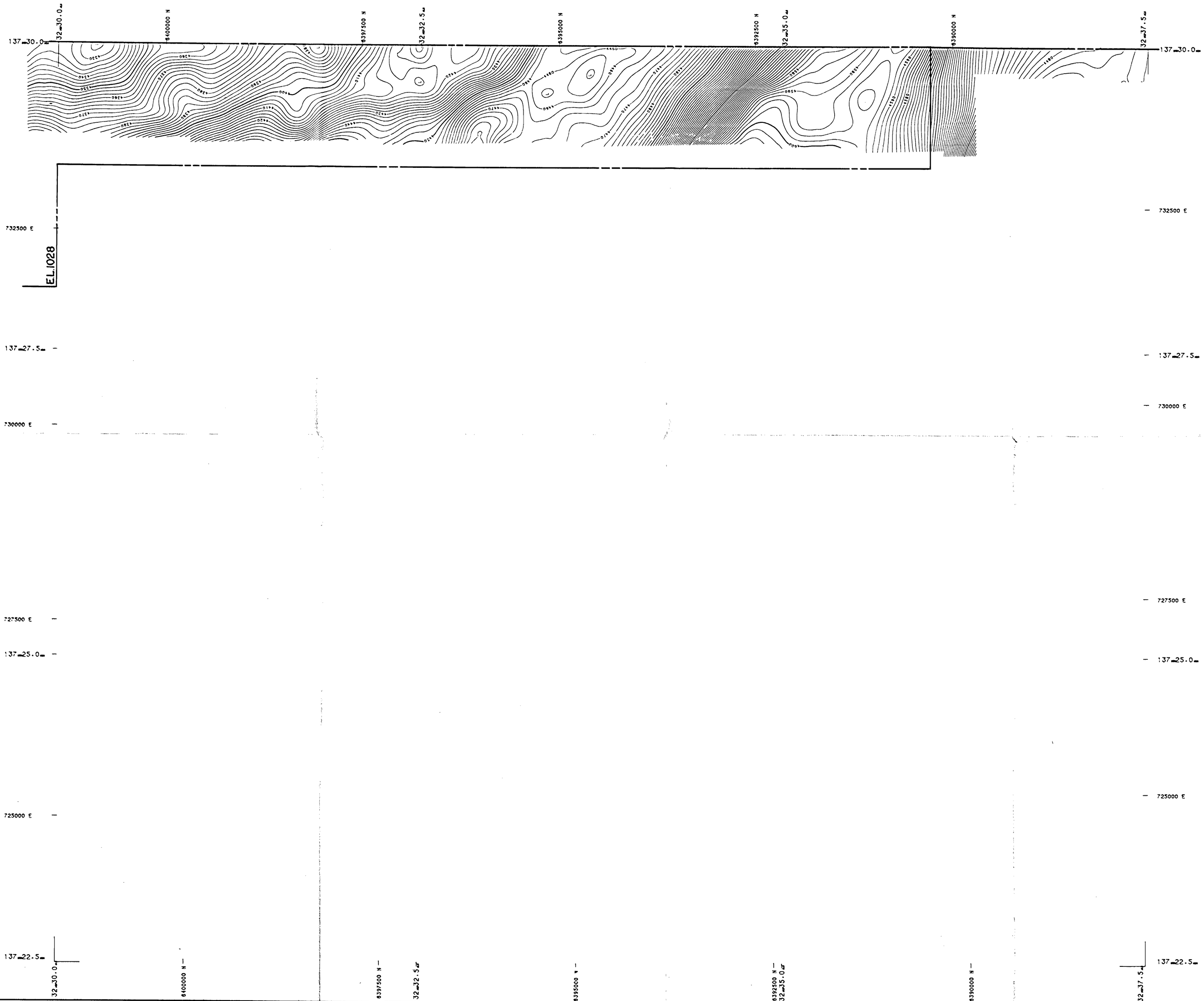
3828(11)-6

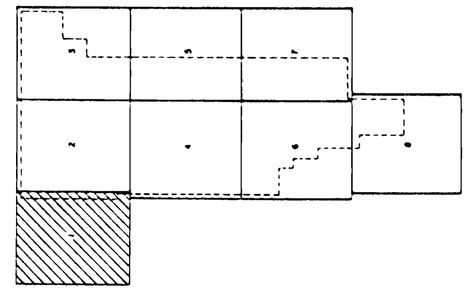
THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L.1003,1023,1028 CULTANA, S.A.
LOCATION OF LOAM SAMPLES, ANOMALIES AND DRILLHOLES

Drawn: R. J. Taylor	Date: 3-5-84	Centre: Adelaide
Traced: A.R Veale	Project No: 6-852, 53, 54-63	Drawing No: A2-397A
Checked:		

Revisions:





SCALE 1:25000
0 500 1000 1500 2000 2500 METRES

DETAILS OF PROCESSING

PROCESSED BY BHP EXPLORATION - CAMBERWELL

- DIURNAL CORRECTION - BASE VALUE IS 58784 GAMMAS — 3-Jun-83
- 10SF REMOVED — 3-Jun-83
- ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE) — 3-Jun-83
- FLIGHT / TIE LINE CROSSOVER ADJUSTMENT — *
- GRADIENT CUTOFF * 0.2 . MAXIMUM MOVE DISTANCE * ** METRES — *
- 2ND ORDER LEVEL - LINEARLY SMOOTHING OUT MISCLOSURES — *
- 5000 el ADDED TO DATA — 22-Nov-83
- DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM SPCONL — 22-Nov-83
- TIE LINES WERE NOT CONTOURED
- CONTOUR INTERVAL 2.5 nT
- GRIDDING PARAMETERS:
  - MESH SIZE 70m * 70m
  - SCAN DISTANCE (1500,900)
  - CORRELATION USED) MINIMUM ANGULAR APPLITUDE 50nT
  - FILTER LENGTH 2000m FILTER SPACING 400m
  - CORRELATION DISTANCE 600m
- PIECEWISE SPLINE(ECONTOUR USED
- SMOOTHING USED> POLYNOMIAL SMOOTHING
  - SMOOTHING RADIUS 140 *

DETAILS OF SURVEY

FLOWN BY * AERODATA McPHAR
DATE * MAY 1983
1:250,000 SHEET * PORT AUGUSTA SI53-4
TENEMENT * -
PROJECTION IS TRANSVERSE MERCATOR. AMG ZONE * 53

LINE SPACING * 300m
SURVEY HEIGHT * 80m
MAGNETOMETER * GEOMETRICS 0813

COMPTON SCATTERING RATIO ALPHA * 0.37
COMPTON SCATTERING RATIO BETA * 0.45
COMPTON SCATTERING RATIO GAMMA * 0.86

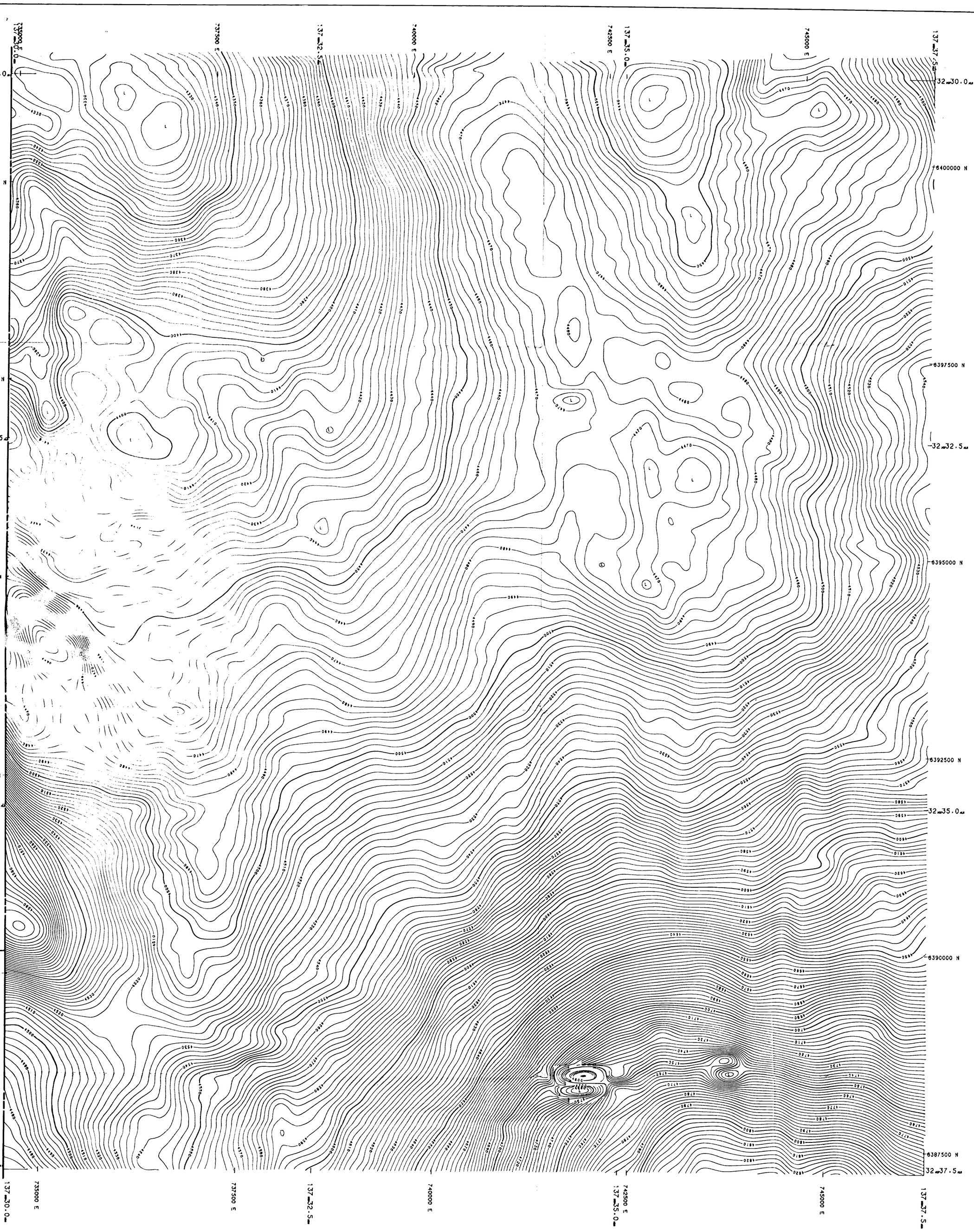
Z

THE BROKEN HILL PROPRIETARY CO.LTD.
EXPLORATION DEPT.

E.L.1003,1023,1028 CULTANA AREA,S.A.
TOTAL MAGNETIC INTENSITY CONTOURS
1

DRAWN*	DATE* 2 - 7 - 84	CENTRE*ADELAIDE
TRACED*	PROJECT NO* 6 - 852,53,54 - 76	DRAWING NO* A1 - 699
CHECKED*		

3828(10)-7



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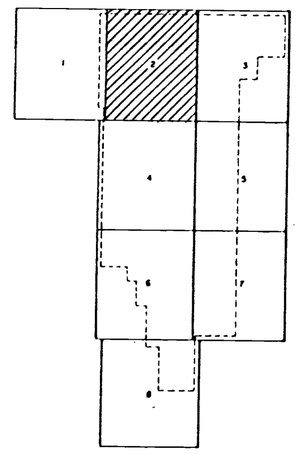


DETAILS OF SURVEY

FLOWN BY : AERODATA MePHAR
DATE : MAY 1983
1:250,000 SHEET : PORT AUGUSTA SI53-4
TENEMENT : -
PROJECTION IS TRANSVERSE MERCATOR. AMG ZONE : 53

LINE SPACING : 300m
SURVEY HEIGHT : 80m
MAGNETOMETER : GEOMETRICS G813

COMPTON SCATTERING RATIO ALPHA : 0.37
COMPTON SCATTERING RATIO BETA : 0.45
COMPTON SCATTERING RATIO GAMMA : 0.86

DETAILS OF PROCESSING

PROCESSED BY BHP EXPLORATION : CAMBERWELL

- DIURNAL CORRECTION - BASE VALUE IS 58784 GAMMAS 3-Jun-83
- IGRF REMOVED 3-Jun-83
- ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE) 3-Jun-83
- FLIGHT / TIE LINE CROSSOVER ADJUSTMENT
  GRADIENT CUTOFF = 0.2 . MAXIMUM MOVE DISTANCE = ** METRES
- 2ND ORDER LEVEL - LINEARLY SMOOTHING OUT MISCLOSURES

5000 nT ADDED TO DATA 22-Nov-83
DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRL 22-Nov-83
TIE LINES WERE NOT CONTOURED
CONTOUR INTERVAL 2.5 nT
GRIDDING PARAMETERS:
MESH SIZE 70m x 70m
SCAN DISTANCE (1500m,900m)
CORRELATION USED: MINIMUM ANOMALY AMPLITUDE 50nT
FILTER WAVE LENGTH 2000m
CORRELATION DISTANCE 400m
PIECEWISE SPLINE TECHNIQUE USED
SMOOTHING USED: POLYNOMIAL SMOOTHING
SMOOTHING RADIUS 140 m

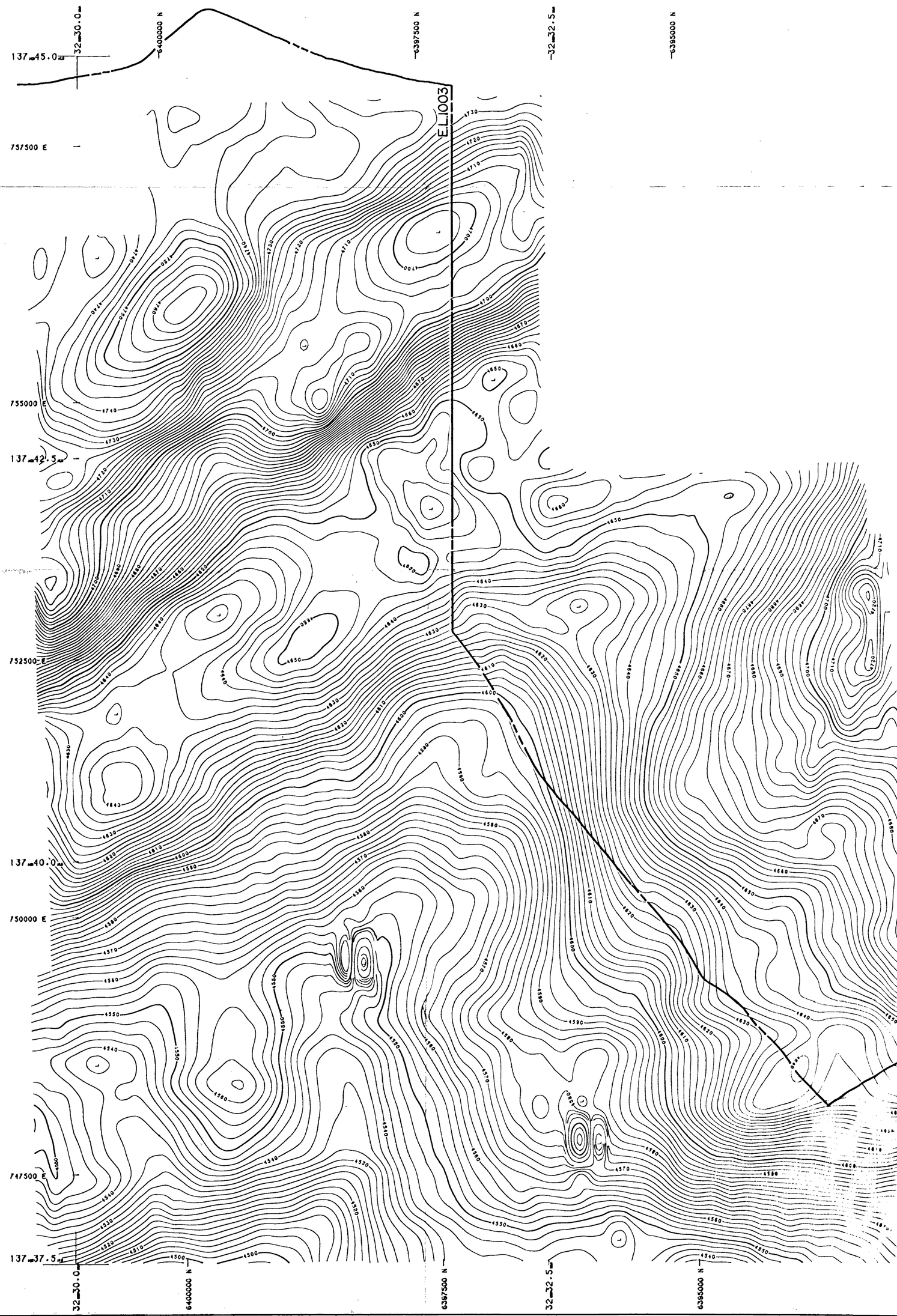
THE BROKEN HILL PROPRIETARY CO.LTD.
EXPLORATION DEPT

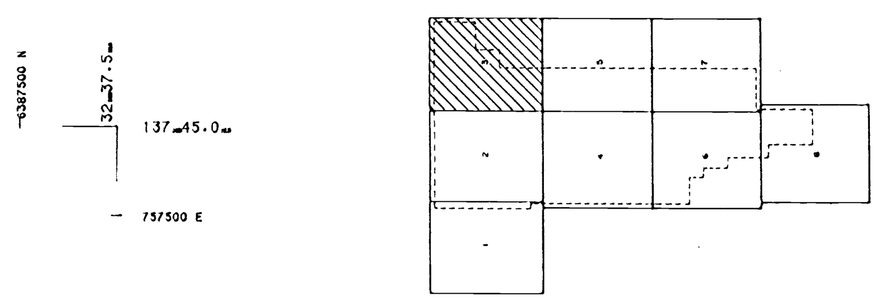
E.L 1003,1023,1028 CULTANA AREA,S.A.

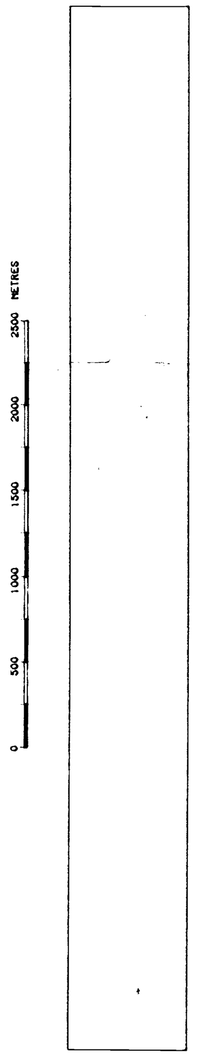
TOTAL MAGNETIC INTENSITY CONTOURS
2

DRAWN:
TRACED:
CHECKED:
DATE: 2 - 7 - 84
PROJECT NO: 6 - 852,53,54 - 77
CENTRE: ADELAIDE
DRAWING NO: A1 - 700

3323(W)-8







DETAILS OF PROCESSING

PROCESSED BY BHP EXPLORATION + CAMBERWELL

- DIURNAL CORRECTION - BASE VALUE IS 56784 GAMMAS 3-Jun-83
- IGRF REMOVED 3-Jun-83
- ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE) 3-Jun-83
- FLIGHT / TIE LINE CROSSOVER ADJUSTMENT "
  - GRADIENT CUTOFF = 0.2 . MAXIMUM MOVE DISTANCE = ** METRES "
  - 2ND ORDER TREND + LINEARLY SMOOTHING OUT MISCLOSURES "
  - 5000 m ADDED TO DATA + LINEARLY SMOOTHING OUT MISCLOSURES 22-Nov-83
- DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRL 22-Nov-83
- TIE LINES WERE NOT CONTOURED
- CONTOUR INTERVAL 2.5 nT
- GRIDDING PARAMETERS:
  - MESH SIZE 70m
  - CELL SIZE / SEARCH RADIUS 500m, 900m
  - CORRELATION USED- MINIMUM ANOMALY AMPLITUDE 50nT
    - FILTER WAVE LENGTH 2000m
    - CORRELATION DISTANCE 400m
  - TECHNIQUE USED
  - POLYNOMIAL SMOOTHING
  - SMOOTHING RADIUS 140 m

DETAILS OF SURVEY

FLOWN BY : AERODATA McPHAR
DATE : MAY 1983
1:250,000 SHEET : PORT AUGUSTA SI53-4
TENEMENT : -
PROJECTION IS TRANSVERSE MERCATOR. ANG ZONE : 53

LINE SPACING : 300m
SURVEY HEIGHT : 80m
MAGNETOMETER : GEOMETRICS G813

COMPTON SCATTERING RATIO ALPHA : 0.37
COMPTON SCATTERING RATIO BETA : 0.45
COMPTON SCATTERING RATIO GAMMA : 0.86

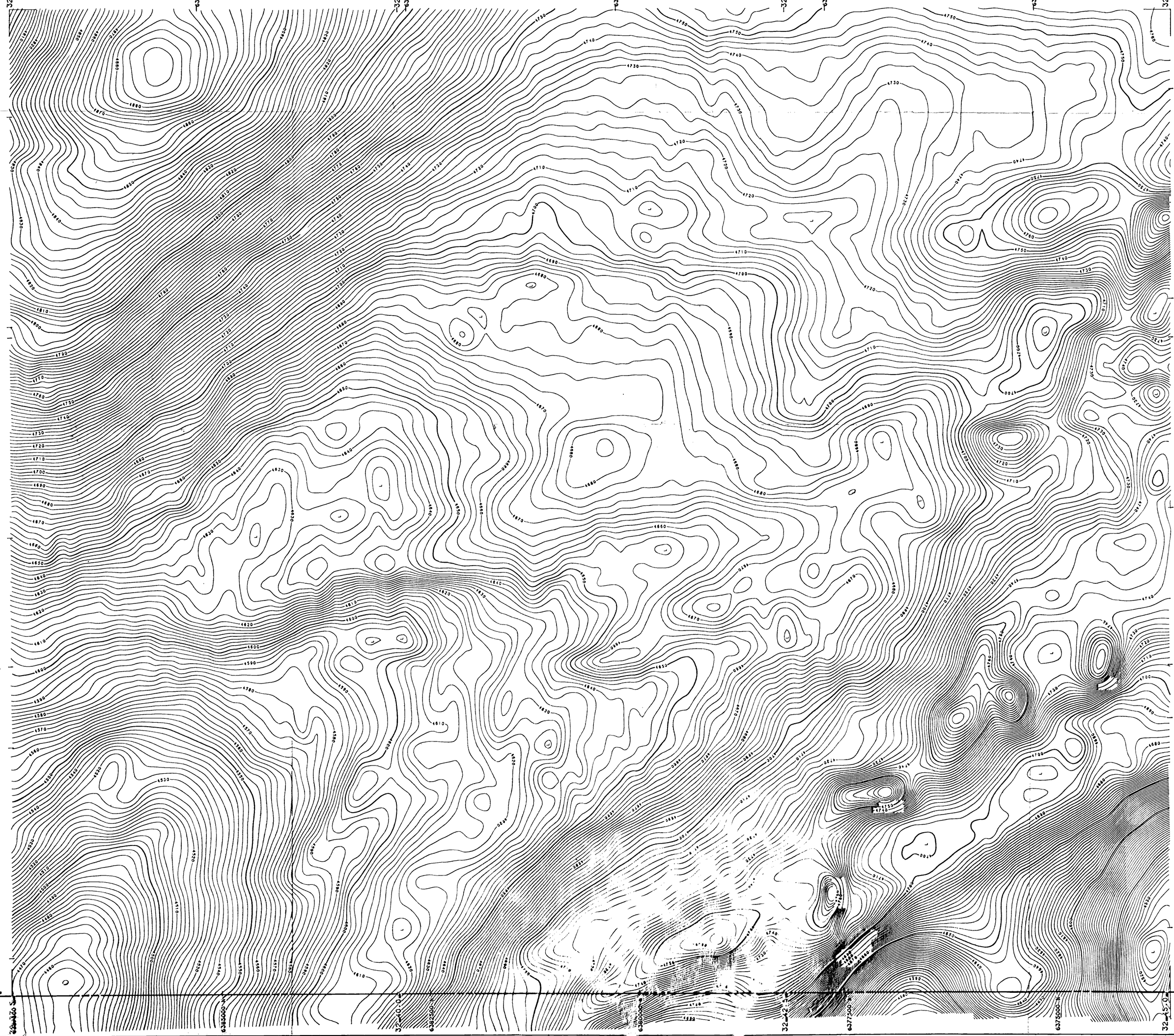
Z

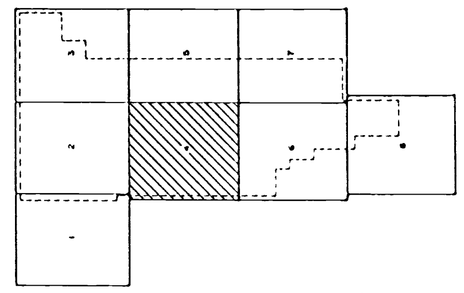
THE BROKEN HILL PROPRIETARY CO.LTD.
EXPLORATION DEPT

E L 1003,1023,1028 CULTANA AREA,S A
TOTAL MAGNETIC INTENSITY CONTOURS
3

DRAWN:	DATE: 2 - 7 - 84	CENTRE: ADELAIDE
TRACED:	PROJECT NO:	DRAWING NO:
CHECKED:	6 - 852,53,54 - 78	A1 - 701

3828(11)-9





SCALE 1:125000
0 500 1000 1500 2000 2500 METRES

DETAILS OF PROCESSING

PROCESSED BY BHP EXPLORATION + CAMBERWELL
- DIURNAL CORRECTION - BASE VALUE IS 56784 GAMMAS 3-Jun-83
- IGRF REMOVED 3-Jun-83
- ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE) 3-Jun-83
- FLIGHT / TIE LINE CROSSOVER ADJUSTMENT "
- GRADIENT CUTOFF = 0.2 . MAXIMUM MOVE DISTANCE = ** METRES "
- 2ND ORDER LEVEL - LINEARLY SMOOTHING OUT MISCLOSURES 22-Nov-83
- DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCONTL 22-Nov-83
- TIE LINES WERE NOT CONTOURED
- CONTOUR INTERVAL 2.5 m
- GRIDDING PARAMETERS:
  - MESH SIZE 70m x 70m
  - SCAN DISTANCE (SEMI-MAJOR) 50m
  - CORRELATION USED: MAXIMUM ANOMALY AMPLITUDE 50m
    FILTER WAVE LENGTH 2000m
    CORRELATION DISTANCE 400m
  - PIECEWISE SPLINE TECHNIQUE USED
  - SMOOTHING USED: POLYNOMIAL SMOOTHING
    SMOOTHING RADIUS = 40 m

DETAILS OF SURVEY

FLOWN BY : AERODATA McPHAR
DATE : MAY 1983
1:250,000 SHEET : PORT AUGUSTA SI53-4
TENEMENT : "
PROJECTION IS TRANSVERSE MERCATOR. AMG ZONE : 53

LINE SPACING : 300m
SURVEY HEIGHT : 80m
MAGNETOMETER : GEOMETRICS G813

COMPTON SCATTERING RATIO ALPHA : 0.37
COMPTON SCATTERING RATIO BETA : 0.45
COMPTON SCATTERING RATIO GAMMA : 0.86

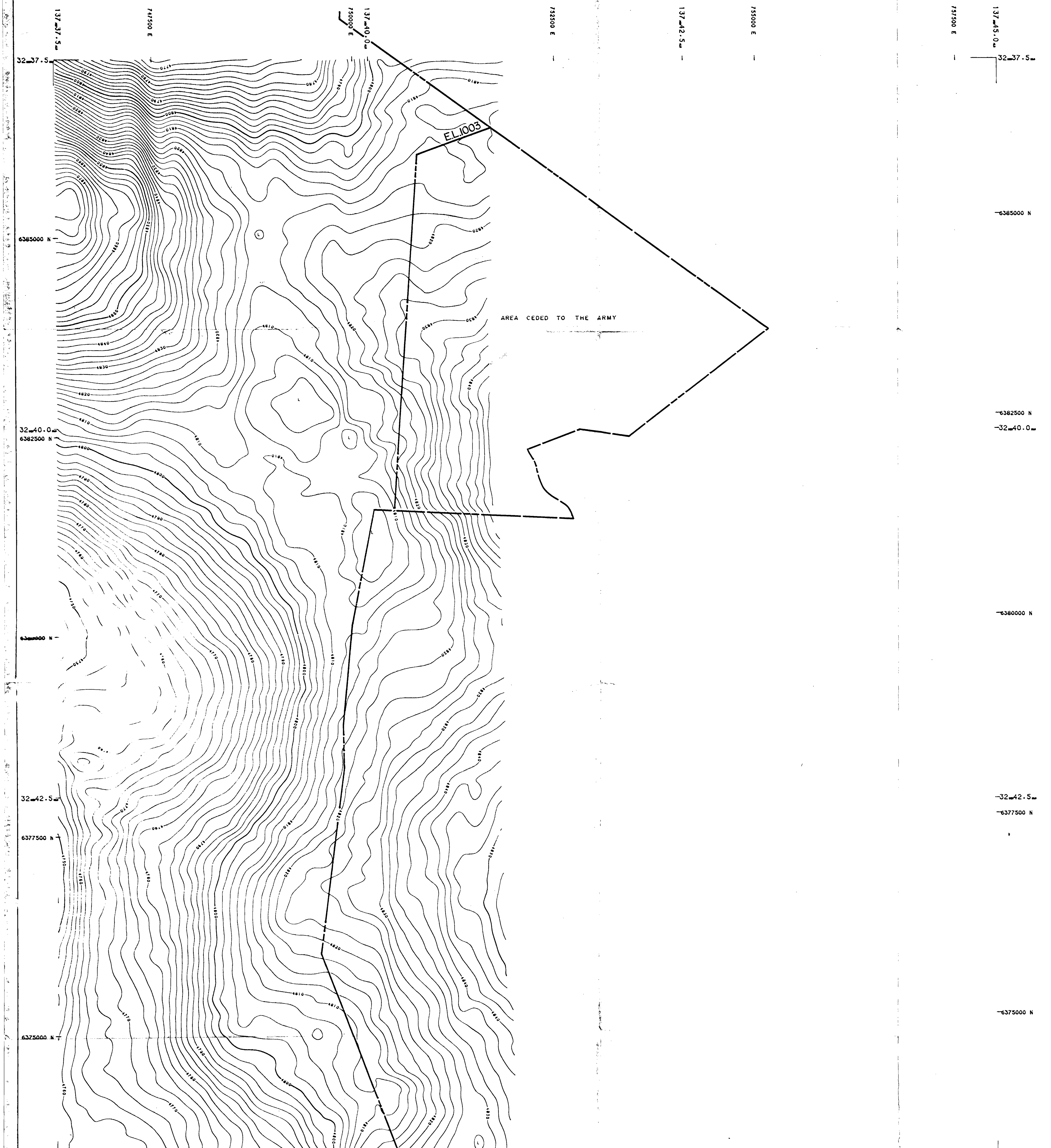
Z

THE BROKEN HILL PROPRIETARY CO.LTD.
EXPLORATION DEPT

E.L.1003,1023,1028 CULTANA AREA,S.A.
TOTAL MAGNETIC INTENSITY CONTOURS
4

DRAWN:	DATE: 5 - 7 - 84	CENTRE: ADELAIDE
TRACED:	PROJECT NO:	DRAWING NO:
CHECKED:	6 - 852,53,54 - 79	A1 - 702

3828(11)-10



DETAILS OF SURVEY

FLOWN BY : AERODATA McPHAR
DATE : MAY 1983
1:250,000 SHEET : PORT AUGUSTA SI53-4
TENEMENT : -
PROJECTION IS TRANSVERSE MERCATOR. AMG ZONE : 53

LINE SPACING : 300m
SURVEY HEIGHT : 80m
MAGNETOMETER : GEOMETRICS G813

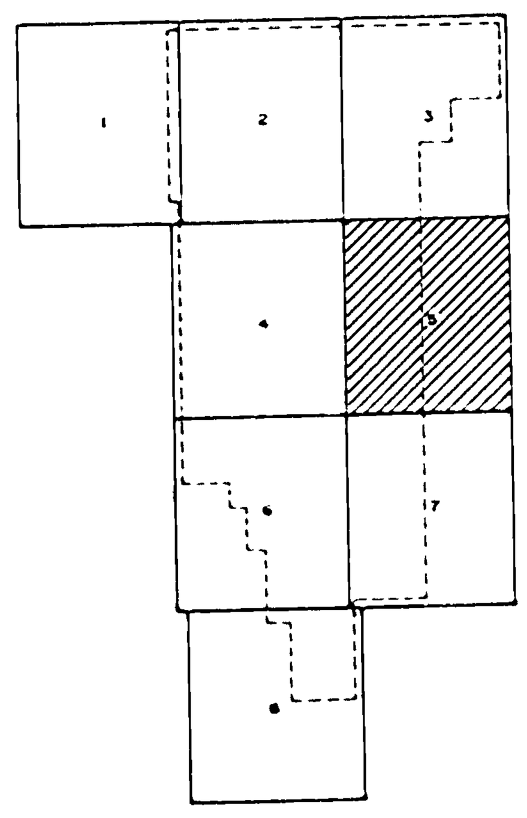
COMPTON SCATTERING RATIO ALPHA : 0.37
COMPTON SCATTERING RATIO BETA : 0.45
COMPTON SCATTERING RATIO GAMMA : 0.86

DETAILS OF PROCESSING

PROCESSED BY BHP EXPLORATION : CAMBERWELL

: DIURNAL CORRECTION - BASE VALUE IS 56784 GAMMAS	3-Jun-83
IGRF REMOVED	3-Jun-83
: ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE)	3-Jun-83
: FLIGHT / TIE LINE CROSSOVER ADJUSTMENT	■
GRADIENT CUTOFF = 0.2 . MAXIMUM MOVE DISTANCE = ** METRES	
: 2ND ORDER LEVEL - LINEARLY SMOOTHING OUT MISCLOSURES	■
5000 nT ADDED TO DATA	22-Nov-83
DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRL	22-Nov-83

TIE LINES WERE NOT CONTOURED
CONTOUR INTERVAL 2.5 nT
GRIDDING PARAMETERS:
MESH SIZE 70m x 70m
SCAN DISTANCE (1500m.900m)
CORRELATION USED: MINIMUM ANOMALY AMPLITUDE 50nT
FILTER WAVE LENGTH 2000m
CORRELATION DISTANCE 400m
PIECEWISE SPLINE TECHNIQUE USED
SMOOTHING USED: POLYNOMIAL SMOOTHING
SMOOTHING RADIUS 140 m

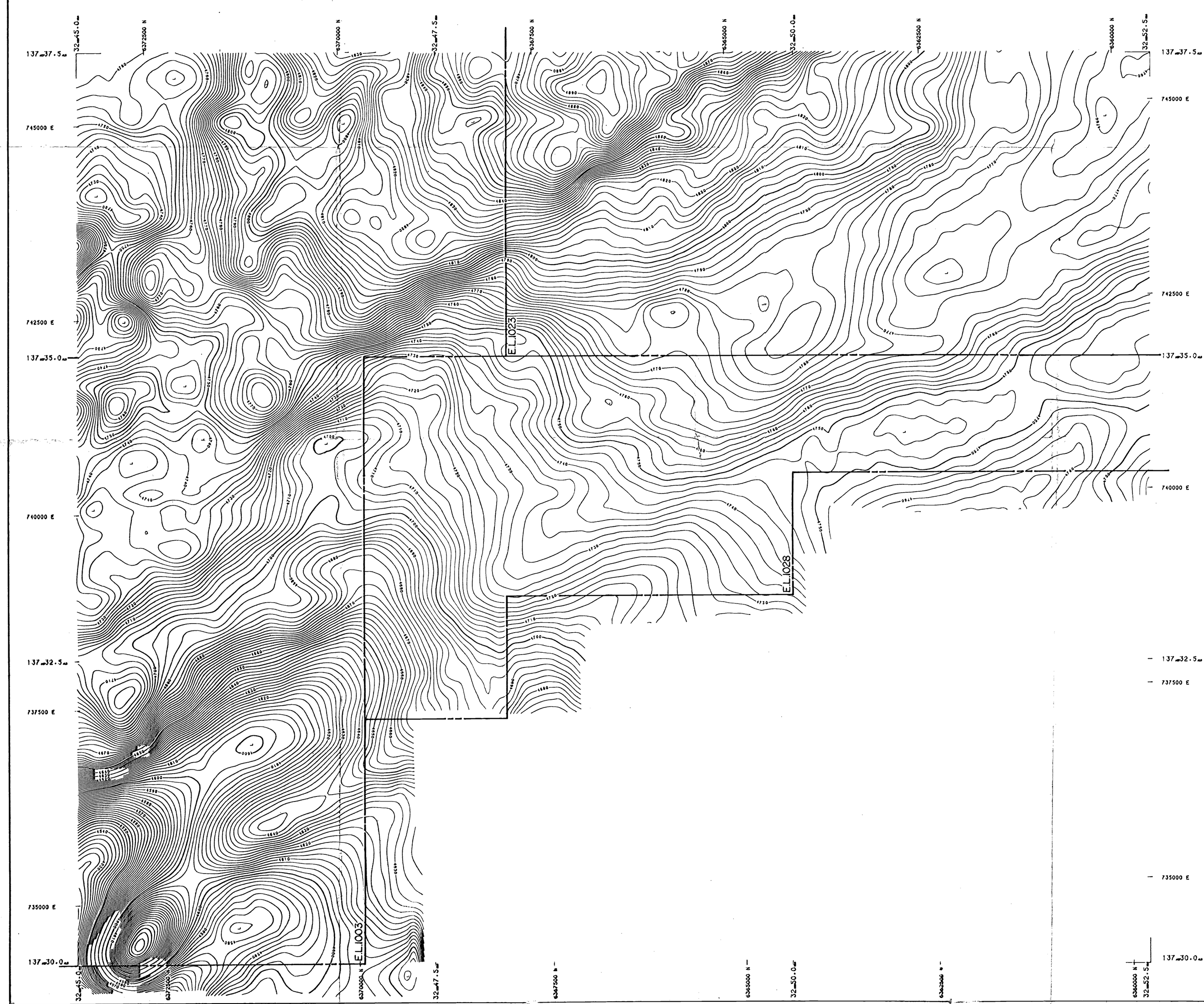


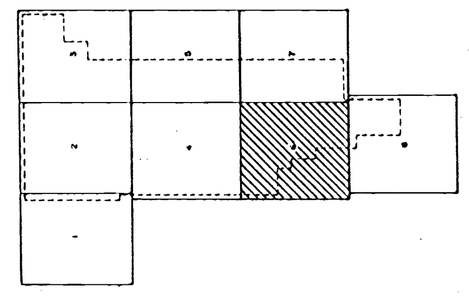
THE BROKEN HILL PROPRIETARY CO.LTD.
EXPLORATION DEPT

E.L.1003,1023,1028 CULTANA AREA,S.A.
TOTAL MAGNETIC INTENSITY CONTOURS
5

DRAWN:	DATE: 5 - 7 - 84	CENTRE: ADELAIDE
TRACED:	PROJECT NO:	DRAWING NO:
CHECKED:	6 - 852,53,54 - 80	A1 - 703

3828(11)-11





DETAILS OF PROCESSING

PROCESSED BY BHP EXPLORATION + CAMBERWELL

- + DIURNAL CORRECTION - BASE VALUE IS 56784 GAMMAS — 3-Jun-83
- + IGRF REMOVED — 3-Jun-83
- + ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE) — 3-Jun-83
- + FLIGHT LINE LEVELLING ADJUSTMENTS DISCOVERED + ** METRES
- + GRADIENT CUTOFF = 0.2 - MAXIMUM MOVE DISTANCE = ** METRES
- + 2ND ORDER LEVEL - LINEARLY SMOOTHING OUT MISCLOSURES +
- 5000 +T ADDED TO DATA — 22-Nov-83
- DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRL — 22-Nov-83
- THE LINES WERE NOT CONTOURED
- CONTOUR INTERVAL 2.5 +T
- GRIDDING PARAMETERS:
- MESH SIZE 70m + 70m
- SCAN DISTANCE (1500m-900m) 50+T
- CORRELATION USED> MINIMUM ANOMALY AMPLITUDE 50+T
- FILTER WAVE LENGTH 2000m
- CORRELATION DISTANCE 400m
- PISCEWISE SPLINE FOR LINE EDGE USED
- SMOOTHING USED> POLYNOMIAL SMOOTHING
- SMOOTHING RADIUS 140 +

DETAILS OF SURVEY

FLOWN BY + AERODATA McPHAR
DATE + MAY 1983
1:250,000 SHEET + PORT AUGUSTA SI53-4
TENEMENT + -
PROJECTION IS TRANSVERSE MERCATOR. AMG ZONE + 53

LINE SPACING + 300m
SURVEY HEIGHT + 80m
MAGNETOMETER + GEOMETRICS G813

COMPTON SCATTERING RATIO ALPHA + 0.37
COMPTON SCATTERING RATIO BETA + 0.45
COMPTON SCATTERING RATIO GAMMA + 0.86

Z

THE BROKEN HILL PROPRIETARY CO.LTD.
EXPLORATION DEPT

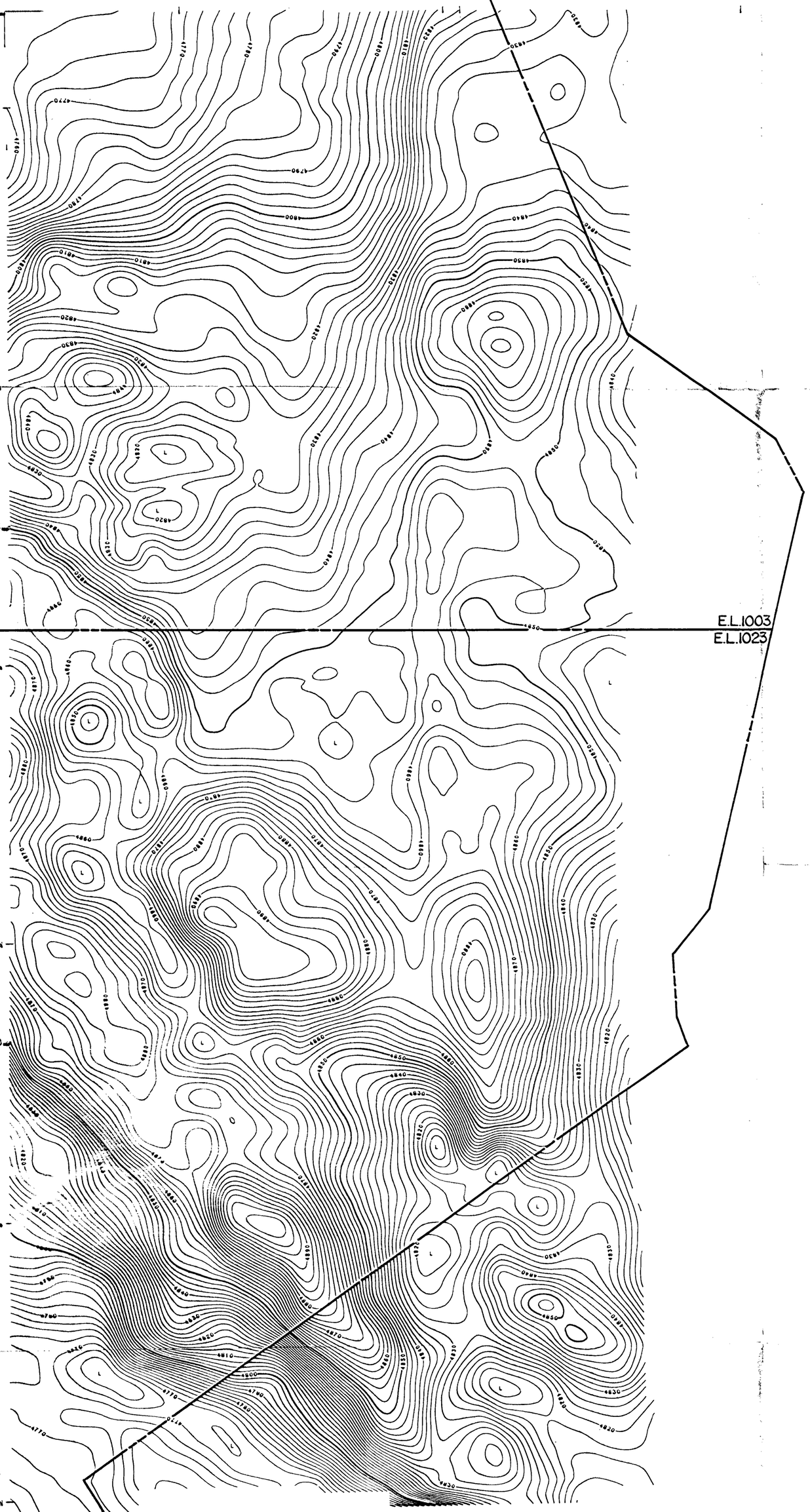
E.L.1003,1023,1028 CULTANA AREA,S.A.
TOTAL MAGNETIC INTENSITY CONTOURS
6

DRAWN+	DATE+3 - 7 - 84	CENTRE+ADELAIDE
TRACED+	PROJECT NO+	DRAWING NO+
CHECKED+	6 - 852,53,54 - 81	A1 - 704

3828(11)-12

137°37.5'E | 747500 E | 137°40.0'E | 750000 E | 752500 E | 137°42.5'E | 755000 E | 137°45.0'E | 757500 E

32°45.0'S — 6372500 N — E.L.1003 / E.L.1023 — 6367500 N — 6365000 N — 32°50.0'S — 6362500 N — 6360000 N — 32°52.5'S



SCALE 1:25000

0 500 1000 1500 2000 2500 METRES

N

DETAILS OF SURVEY

FLOWN BY : AERODATA McPHAR
DATE : MAY 1983
1:250,000 SHEET : PORT AUGUSTA SI53-4
TENEMENT : -
PROJECTION IS TRANSVERSE MERCATOR. AMG ZONE : 53

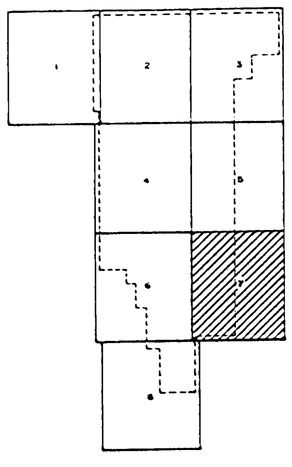
LINE SPACING : 300m
SURVEY HEIGHT : 80m
MAGNETOMETER : GEOMETRICS G813

COMPTON SCATTERING RATIO ALPHA : 0.37
COMPTON SCATTERING RATIO BETA : 0.45
COMPTON SCATTERING RATIO GAMMA : 0.86

DETAILS OF PROCESSING

PROCESSED BY BHP EXPLORATION : CAMBERWELL

: DIURNAL CORRECTION - BASE VALUE IS 56784 GAMMAS 3-Jun-83
IGRF REMOVED 3-Jun-83
: ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE) 3-Jun-83
: FLIGHT / TIE LINE CROSSOVER ADJUSTMENT "
GRADIENT CUTOFF = 0.2 . MAXIMUM MOVE DISTANCE = ** METRES
: 2ND ORDER LEVEL - LINEARLY SMOOTHING OUT MISCLOSURES "
5000 nT ADDED TO DATA 22-Nov-83
DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRL 22-Nov-83
TIE LINES WERE NOT CONTOURED
CONTOUR INTERVAL 2.5 nT
GRIDDING PARAMETERS:
MESH SIZE 70m x 70m
SCAN DISTANCE (1500m,900m)
CORRELATION USED: MINIMUM ANOMALY AMPLITUDE 50nT
FILTER WAVE LENGTH 2000m
CORRELATION DISTANCE 400m
PIECEWISE SPLINE TECHNIQUE USED
SMOOTHING USED: POLYNOMIAL SMOOTHING
SMOOTHING RADIUS 140 m



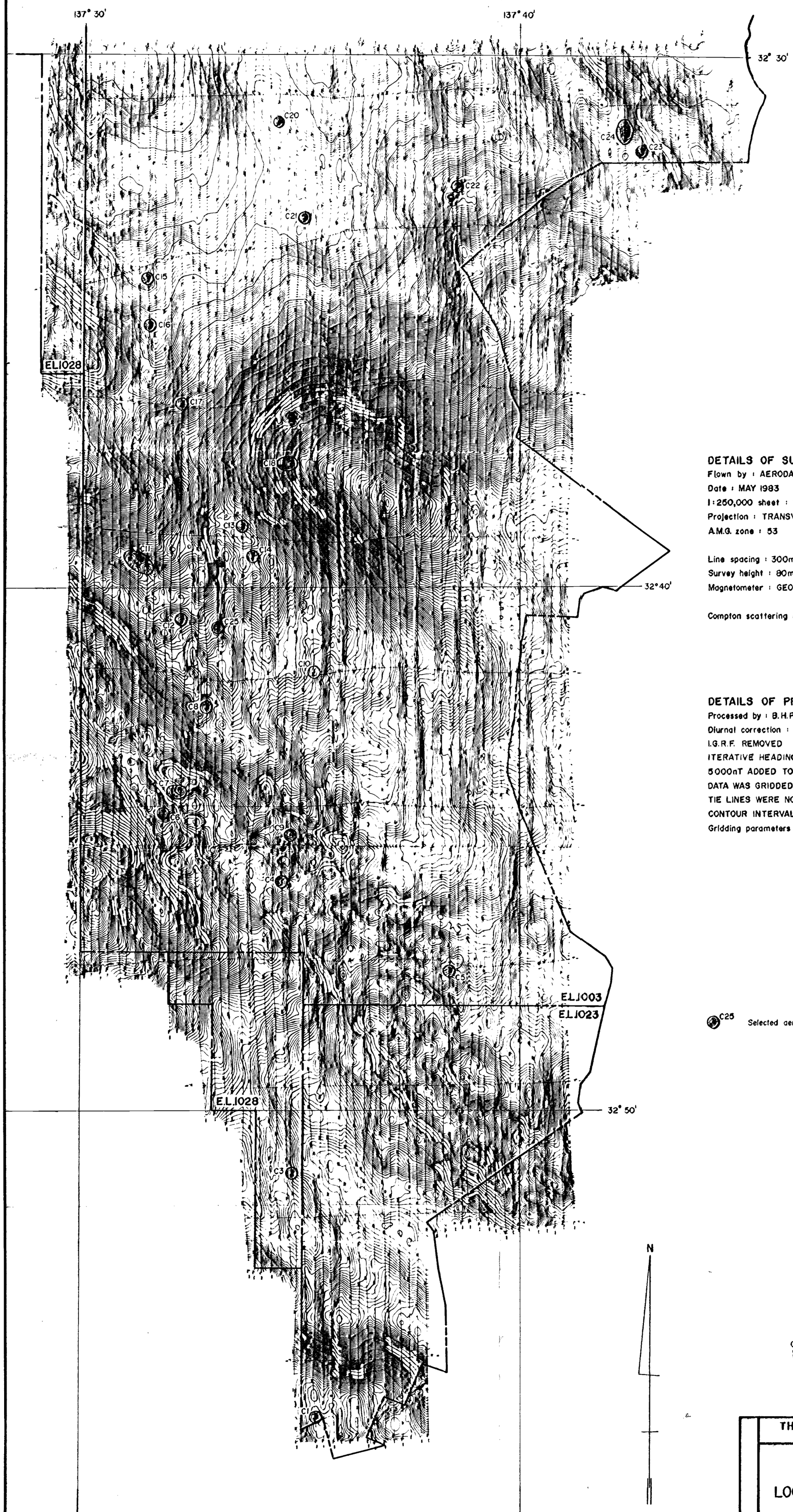
THE BROKEN HILL PROPRIETARY CO.LTD.
EXPLORATION DEPT

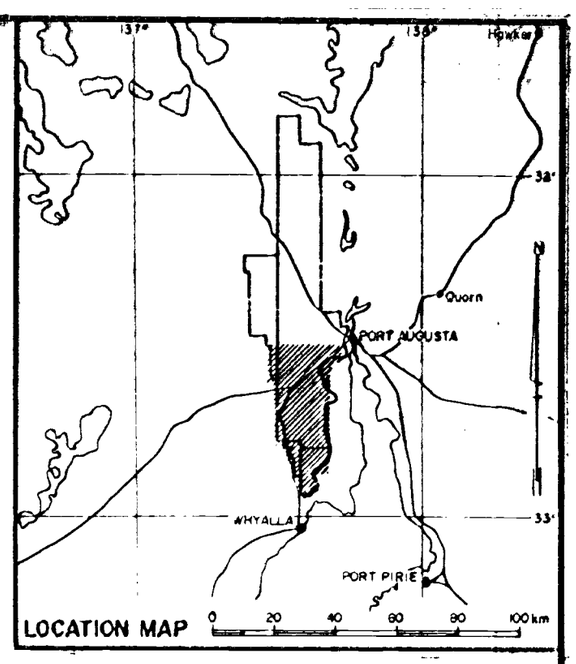
E.L.1003,1023,1028 CULTANA AREA,S.A.
TOTAL MAGNETIC INTENSITY CONTOURS
7

DRAWN:	DATE: 3 - 7 - 84	CENTRE: ADELAIDE
TRACED:	PROJECT NO: 6 - 852,53,54 - 82	DRAWING NO: A1 - 705
CHECKED:		

3828(11)-13

FIG. 2





DETAILS OF SURVEY

Flown by : AERODATA McPHAR
Date : MAY 1983
1:250,000 sheet : PORT AUGUSTA SI 53-4
Projection : TRANSVERSE MERCATOR
A.M.G. zone : 53

Line spacing : 300m
Survey height : 80m
Magnetometer : GEOMETRICS G813

Compton scattering ratio : ALPHA 0·37
BETA 0·45
GAMMA 0·86

DETAILS OF PROCESSING

Processed by : B.H.P. EXPLORATION, CAMBERWELL

Diurnal correction : BASE VALUE IS 56784nT	3rd June 1983
I.G.R.F. REMOVED	3rd June 1983
ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE)	3rd June 1983
5000nT ADDED TO DATA	3rd June 1983
DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRD	3rd June '83

TIE LINES WERE NOT CONTOURED
CONTOUR INTERVAL 2·0nT
Gridding parameters : MESH SIZE 100m x 100m
SCAN DISTANCE 700m
NO EXTRAPOLATION USED

C25 Selected aeromagnetic anomaly

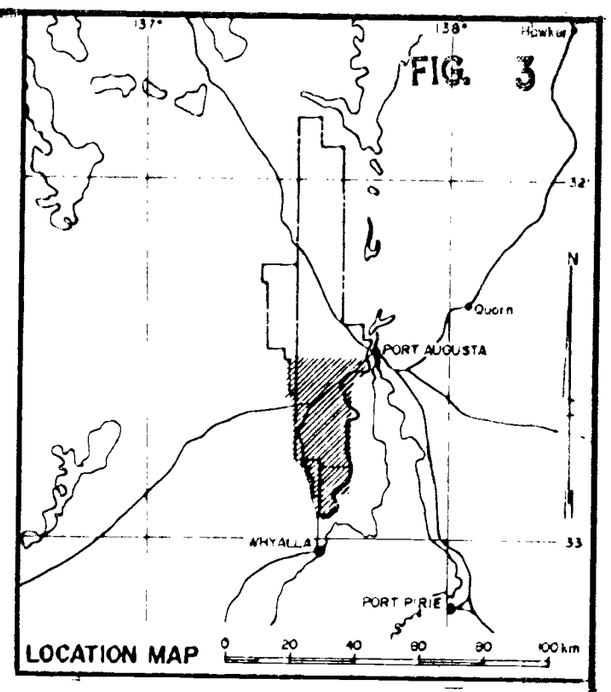
Scale 1:100,000
0 2 4 6 8 km

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L.1003, 1023, 1028 CULTANA, S.A.
LOCATION OF AEROMAGNETIC ANOMALIES

Drawn: R.J. Taylor	Date: 10-4-84	Centre: Adelaide
Traced: A.R. Veale	Project No: 6-852, 53, 54-63	Drawing No: A2-397A
Checked:		

Revisions:



137° 30'

137° 40'

32° 30'

32° 40'

32° 50'

ELI028

ELI003

ELI023

ELI028

C1 C2 C3 C4 C5 C6 C8 C9 C10 C11 C12 C13 C14 C15 C16 C17 C18 C20 C21 C22 C23 C24 C25

DETAILS OF SURVEY

Flown by : AERODATA McPHAR
Date : MAY 1983
1:250,000 sheet : PORT AUGUSTA SI 53-4
Projection : TRANSVERSE MERCATOR
A.M.G. zone : 53

Line spacing : 300m
Survey height : 80m
Magnetometer : GEOMETRICS G813

Compton scattering ratio : ALPHA 0·37
BETA 0·45
GAMMA 0·86

DETAILS OF PROCESSING

Processed by : B.H.P. EXPLORATION, CAMBERWELL

Diurnal correction : BASE VALUE IS 56784nT	3rd June 1983
I.G.R.F. REMOVED	3rd June 1983
ITERATIVE HEADING ERROR ADJUSTMENT (LINE BY LINE)	3rd June 1983
5000nT ADDED TO DATA	3rd June 1983
DATA WAS GRIDDED AND CONTOURED USING GRID PROGRAM GPCGRD	3rd June '83

TIE LINES WERE NOT CONTOURED
CONTOUR INTERVAL 2·0nT
Gridding parameters : MESH SIZE 100m x 100m
SCAN DISTANCE 700m
NO EXTRAPOLATION USED

C25 Selected aeromagnetic anomaly

Anomaly Number	Hole Number	Loam Sample
C3	PUB 28	RT1600
	PUB 29	RT1601
		RT1602
C6	PUB 30	
	PUB 31	
C7	PUB 32	
	PUB 33	
C10	PUB 34	RT1594
		RT1595
	PUB 35	RT1596
C14	PUB 36	RT1591
		RT1592
	PUB 37	RT1593
C25		RT1597
		RT1598
		RT1599

N

Scale 1:100,000
0 2 4 6 8 km

THE BROKEN HILL PROPRIETARY CO. LTD.
EXPLORATION DEPARTMENT

E.L.1003,1023,1028 CULTANA, S.A.
LOCATION OF LOAM SAMPLES, ANOMALIES AND DRILLHOLES

Drawn: R.J Taylor	Date: 3-5-84	Centre: Adelaide
Traced: A.R Veale	Project NO 6-852, 53, 54-63	Drawing NO: A2-397A
Checked:		

Revisions