

# **Open File Envelope**

## **No. 11,734**

**EL 3985 AND EL 3986**

**EURELYANA HILL AND POOTNOURA CREEK**

**ANNUAL REPORTS TO LICENCE EXPIRY/SURRENDER,  
FOR THE PERIOD 19/11/2007 TO 18/11/2012**

Submitted by  
U Energy Pty Ltd  
2013

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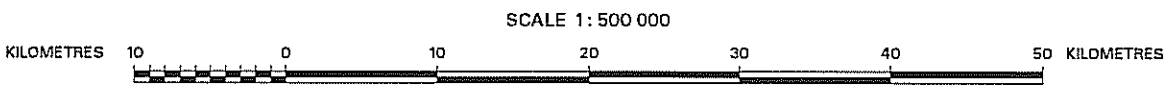
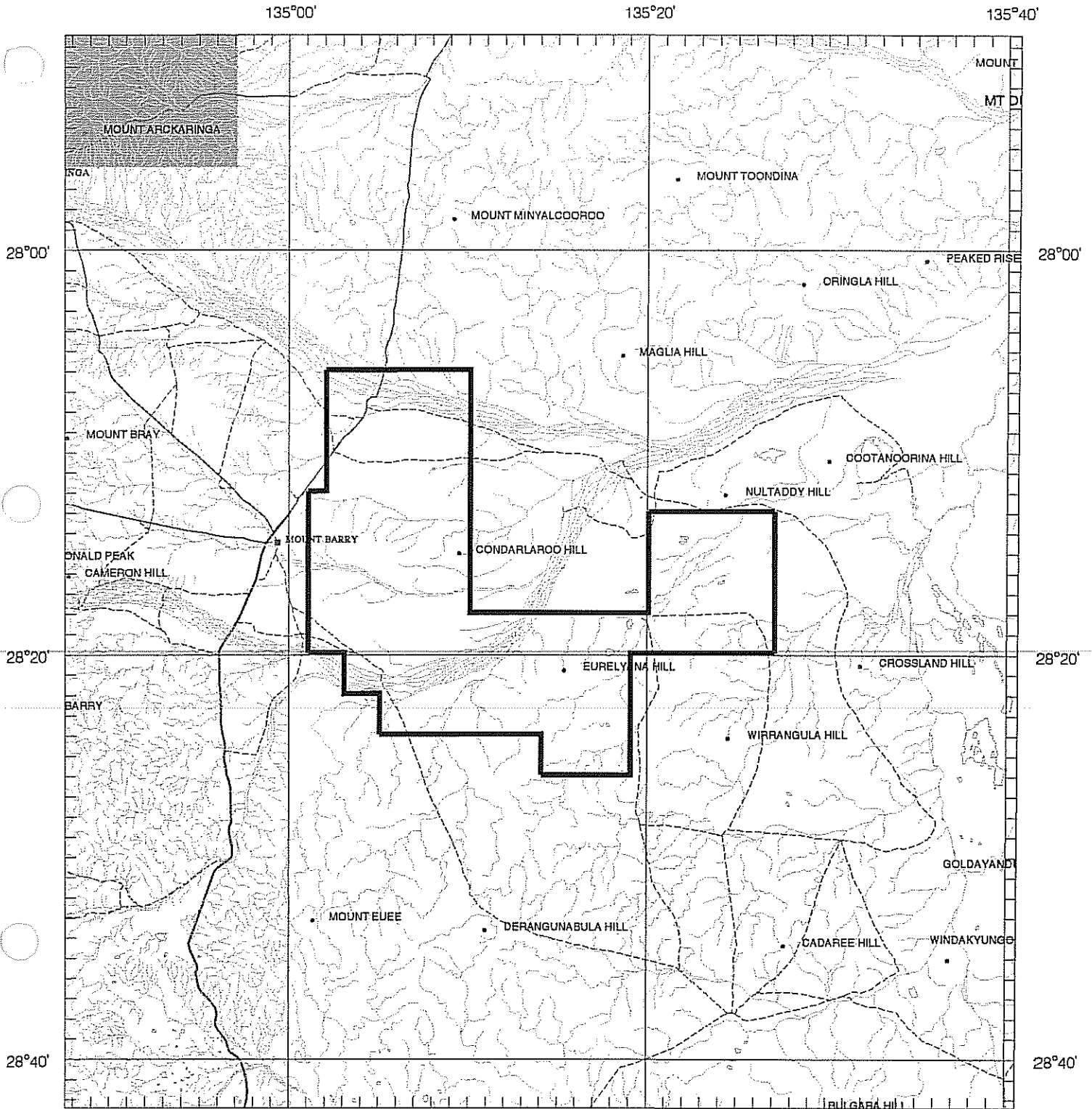
Telephone: (08) 8463 3000  
Facsimile: (08) 8204 1880



**Government of South Australia**

Department for Manufacturing,  
Innovation, Trade, Resources and Energy

# SCHEDULE A



APPLICANT : **U ENERGY PTY LTD**

FILE REF : **342/07**

TYPE : **MINERAL ONLY**

AREA : **782 km<sup>2</sup> (approx.)**

1:250000 MAPSHEETS : **WARRINA**

LOCALITY : **EURELYANA HILL AREA - Approximately 85 km northeast of Coober Pedy**

DATE GRANTED : **19-Nov-2007**

DATE EXPIRED : **18-Nov-2008**

EL NO : **3985**

# SCHEDULE A

134°20'

134°30'

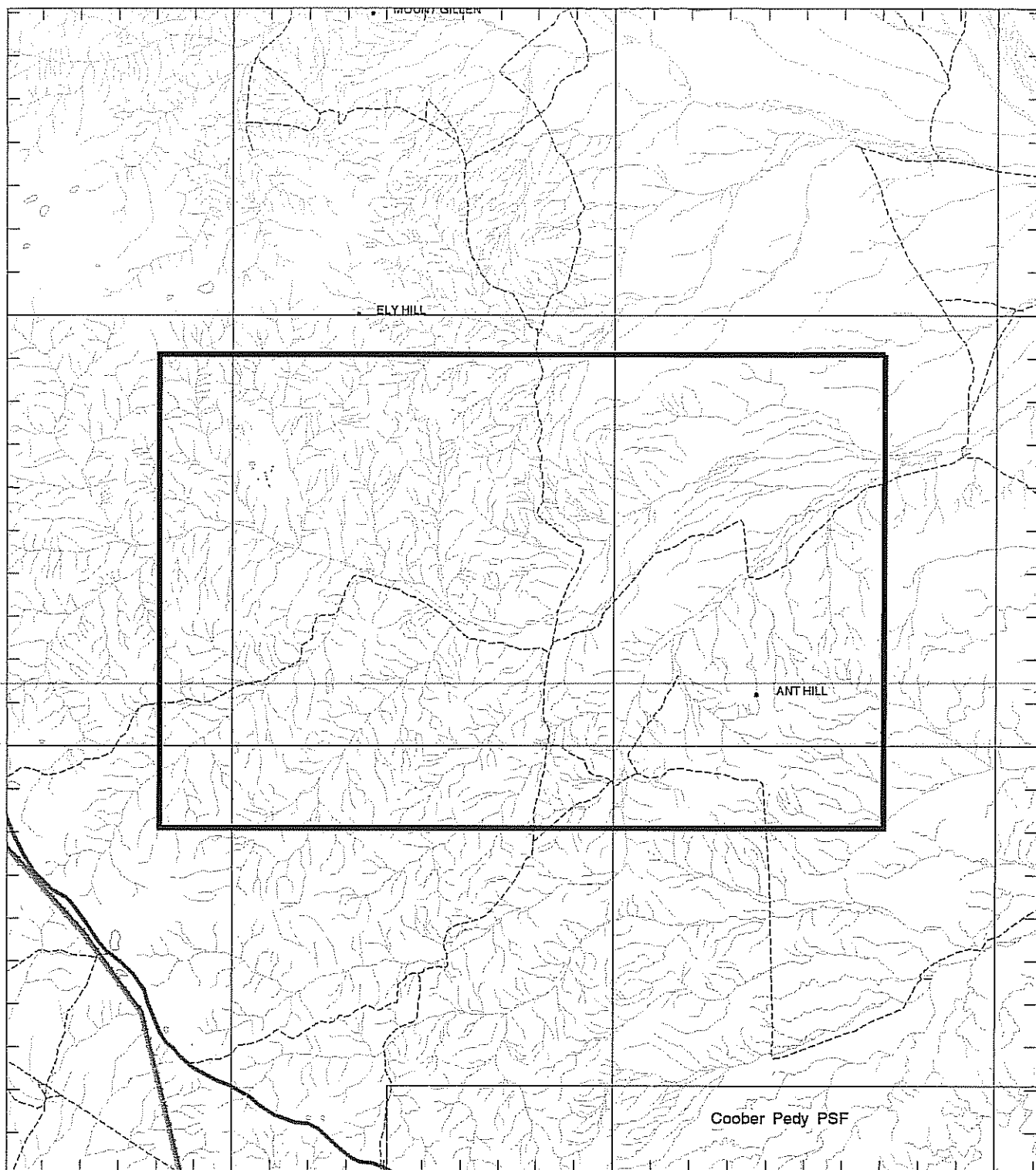
134°40'

28°20'

28°20'

28°30'

28°30'



134°20'

134°30'

134°40'

KILOMETRES



KILOMETRES

SCALE 1:250 000

LICENCE GRANTED IN : DATUM AGD66



APPLICANT : **U ENERGY PTY LTD**

FILE REF : **343/07**

TYPE : **MINERAL ONLY**

AREA : **630 km<sup>2</sup> (approx.)**

1:250000 MAPSHEETS : **MURLOOCOPPIE**

LOCALITY : **POOTNOURA CREEK AREA - Approximately 70 km northwest of Cooper Pedy**

DATE GRANTED : **19-Nov-2007**

DATE EXPIRED : **18-Nov-2008**

EL NO : **3986**

# U ENERGY PTY LTD

Tenement Holder, Operator and Author

January 2009

FIRST ANNUAL REPORT

EXPLORATION LICENCES

EL 3985-6

A COMBINED REPORT FOR THE PERIOD 19/11/2007 TO 19/11/2008

ANT HILL

SOUTH AUSTRALIA

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6. CONCLUSION AND PROPOSED WORK
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1. EL.3985
2. EL.3986
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4. EL3985-6 Gravity

### KEY WORDS

Pootnoura Creek  
 Eurelyana Hill  
 Ant Hill  
 Olympic Dam  
 Gawler Craton  
 Uranium

### SUMMARY OF ACTIVITIES CONDUCTED

EL	Activity	Key Results	Map Scale
3986	<ul style="list-style-type: none"> <li>- Gravity &amp; Mag Interpretation</li> <li>- Literature Research</li> <li>- Paleo Drainage Studies</li> </ul>	<ul style="list-style-type: none"> <li>- Thick overburden</li> <li>- Historic Au, in drainage</li> <li>- Paleo flow counter to recent</li> </ul>	1:500,000
3985	<ul style="list-style-type: none"> <li>- Gravity and mag studies</li> <li>- Literature research</li> <li>- Prospect identification</li> </ul>	<ul style="list-style-type: none"> <li>- Dispersed gravity high, local mag highs</li> <li>- 200 ± sediments on basement – Lincoln Complex</li> <li>- Several mag highs on broad gravity high possible Olympic Dam targets</li> </ul>	1:500,000

## **SUMMARY OF ACTIVITIES AND INTRODUCTION**

This forms the First Annual Combined Report for EL3985-6, Ant Hill Project, detailing the exploration work carried out by U Energy Pty Ltd from November 2007. The Ant Hill Project comprises two EL's taken out by U Energy Pty Ltd in selected section of the Gawler Craton for Regional Copper and Gold exploration, and roll front Uranium Exploration.

Work to date focused on the re-processing and interpretation of geophysical data which has highlighted target areas based on depth to crystalline basement, structural/deformational intensity and intersecting lineaments including dyke – fracture intersections. Targets are discussed below and are unsuitable for tabular presentation.

### **1. Olympic Dam targets**

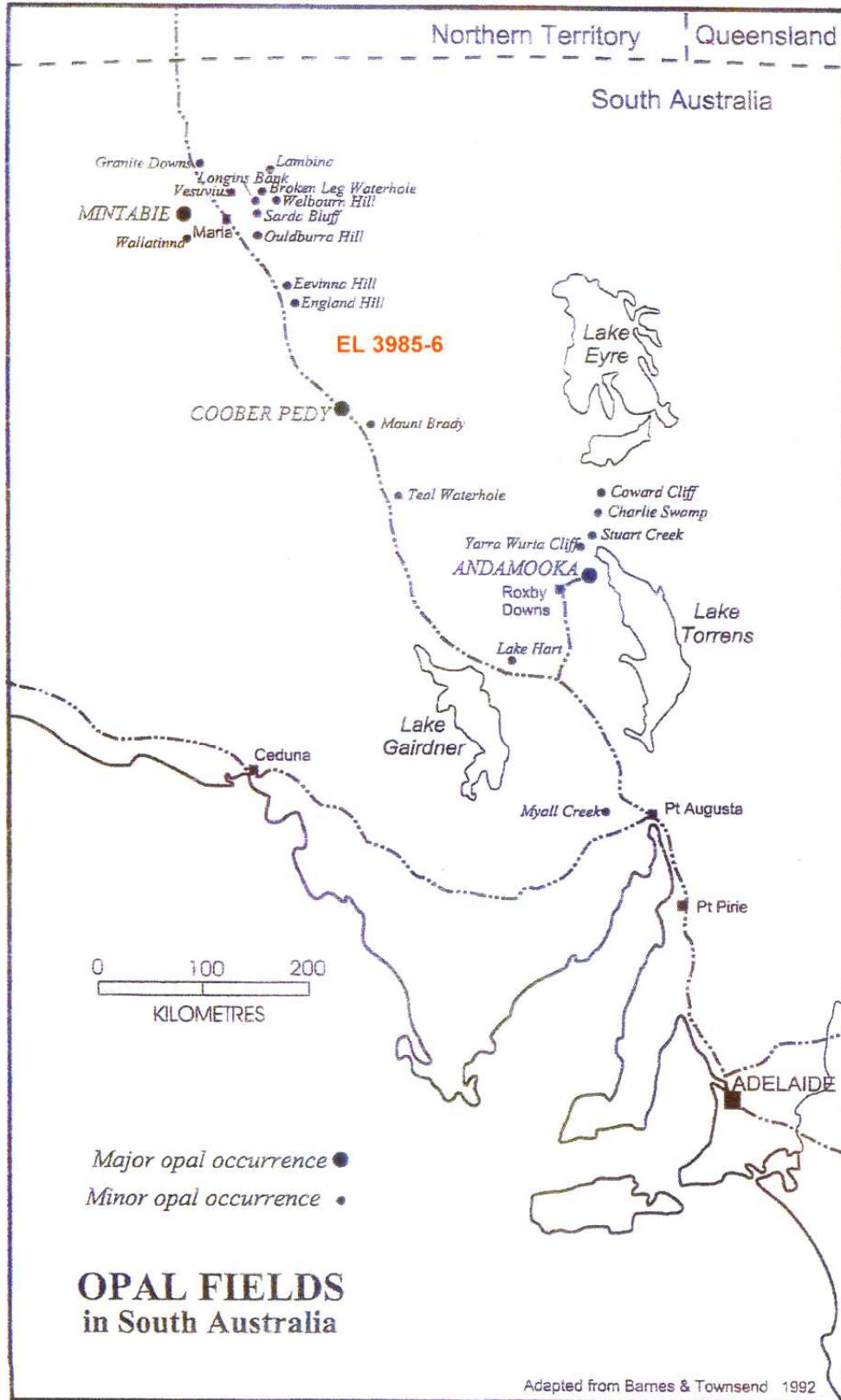
South portion of EL 3985 and possibly northern portion of EL 3986. Structurally controlled Cu-Au mineralization of the Olympic Dam Style. Depth to basement is typically less than 200 metres.

### **2. Uranium Exploration EL 3986**

(O'Callaghan et al, 1980) suggests that the substantial sequences of sandstone and conglomeratic sandstones within the Permian strata are prospective for sedimentary uranium deposits, the underlying adamellites and acid gneisses considered as the potential sources.

The deposition of uranium in roll front/sedimentary deposits requires a reducing environment usually associated with the presence of organic matter, graphite or coal. Coal is prolific in the project area as set out below.

A series of faint magnetic signals displaying a dendritic pattern has been observed. The dendritic patterns exposed on the first, second and maximum vertical gradient images are interpreted to reflect accumulations of magnetic minerals in palaeodrainage channels. The patterns indicate drainage to the west and are interpreted to be part of the Tertiary palaeodrainage system which has contained gold and is an indicator that the uranium bearing palaeodrainage may be coincident with the current tertiary drainage.



EL 3985-6 January 2009

FIGURE 1

Proposed work for the coming reporting period is:

- (i) Reconnaissance, radioactivity and/or calcrete sampling of Target Areas with the aim of identifying areas of anomalous mineralization. Areas of anomalous mineralization will be subject to additional in-fill sampling with the aim of identifying drill targets.
- (ii) Water sampling with the aim of identifying additional uranium targets in the palaeodrainage.

Field work can only commence once agreements with all Aboriginal land claimants are concluded.

## **1. LOCATION AND ACCESS**

Exploration Licences EL3985-6 are adjacent licences located approximately 55 kilometres north east of Coober Pedy (Figure 1). Access to the Ant Hill Project area from Coober Pedy is via the sealed Stuart Highway which traverses the Western flank of both tenements. Access to the remainder of the Project area is via station traction tracks and fence lines. Vegetation throughout the Project area is sparse allowing for abundant access away from existing tracks.

Sheep grazing is the major agricultural activity throughout the Project area.

## **2. TENURE**

Exploration Licence EL3985-6 was offered for a one year term to U Energy Pty Ltd on the 10 October 2007. Tenement boundaries are shown in index maps 1 and 2.

## **3. INTRODUCTION**

This report details the interpretation of airborne magnetic survey data and the identification of areas of exploration interest within a region located 500 km north west of Port Augusta (Figure 1). The exploration area is situated within the Northern Gawler Craton. The Ant Hill Tenement (EL 3985-6) is situated on the east, central and northern portions of the Murloocoppie 1:250 000 map sheet, the Tenements lying between latitudes 28°00' and 28°37' S, and longitudes 134 °10' and 134°40' E. The exploration is bound to the south by the Coober Pedy Precious Stones Field and the west by the Great Victoria Desert. The Tarcoola-Alice Springs Railway and Stuart Highway run north-south along the western edge of the Tenements. The tenement covers an area of 630 km<sup>2</sup>. The nearest town is Coober Pedy approx 50km to the south.

The Tenements contain the Stuart Range, the eastern edge of which is dissected forming mesa's with steep, high scarps. The western side of the Range is transitional into a gibber plain and areas of low relief, covered sparsely with salt bush and mulga.

The portion of the Gawler Craton within the Tenements has only received minor sub-surface exploration, the search for sediment hosted uranium, hydrocarbons and coal has been concentrated in the Carboniferous to Permian sediments of the Arckaringa Basin. Exploration companies have only undertaken preliminary searches for Olympic Dam type Au-Cu-U deposits in the crystalline basement underlying the Arckaringa Basin.

The recent acquisition of high resolution aeromagnetic data has indicated that potentially mineralized basement lithologies and structures extend into the Tenements and may hold gold, base metals and uranium deposits.

Intensely deformed Palaeoproterozoic granite and gabbro of the Lincoln Complex and Mesoproterozoic Hiltaba Suite granite, have been observed in the basement.

#### **Olympic Dam Targets EL 3985**

The south western portion of EL 3985 has a major gravity high coincident with five magnetic peaks which represent an exploration target for structurally controlled Cu-Au-U mineralization of the Olympic Dam Style. Depth to basement is typically less than 300m (CRA bore hole). Mineralisation is associated with the major regional fault between the Adelaide geosynclines and the Gawler Craton.

A Pitt Research Pty Ltd geological and geophysical study has highlighted the potential for Cu-Au mineralization within EL 3985. Seven target areas have been identified based on depth to crystalline basement, structural/deformational intensity and intersecting lineaments (CRA 1982).

#### **Tertiary Palaeodrainage Patterns EL 3986**

A series of faint magnetic signals displaying a dendritic pattern have been observed. The dendritic patterns exposed on the first, second and maximum vertical gradient images are interpreted to reflect accumulations of magnetic minerals in palaeodrainage channels. The patterns indicate drainage to the west and are interpreted to be part of the Tertiary palaeodrainage system which has contained gold and is an indicator that the uranium bearing palaeodrainage is coincident with the current tertiary drainage.

#### 4. PREVIOUS EXPLORATION

Previous exploration over the Ant Hill Project area has been limited and mainly focused on coal. Previous exploration is summarized in the following table:

EL No.	Company	Envelope No.	Comments
15	Exoil NL	21,732,249	Coal Exploration
39	Exoil NL	2249	Coal Exploration
148	BP Minerals	24,532,454	Coal Exploration
184	Australian Selection	2556	Coal Exploration
620	Afmeco	3838	4 holes for 1007m gave no encouragement of U
948	LSD Trading	No documents	
982	Meekatharra Minerals	No documents	
1325	CRA Exploration	6732	Diamond and RC drilling of magnetic targets. Most prospects intersected gneissic basement at less than 200 metres. Best prospect, Bardy, intersected 1m at 0.27% Cu from 167.1m and 0.55m at 0.18% Cu from 188m.
1326	CRA Exploration	8156	
1406	Meekatharra Minerals	No documents	
1681	SA Coal Corp	No documents	
1767	BHP	8647	17 RC drill holes with no anomalous intersections. Most holes ending in granitic gneiss.
1801	BHP	8647	

#### 5. CURRENT EXPLORATION

##### 5.1 Sedimentary Uranium Exploration EL 3986

(O'Callaghan et al, 1980) suggests that the substantial sequences of sandstone and conglomeratic sandstone within the Permian strata may be prospectively for sedimentary uranium deposits, the underlying adamellites and acid gneisses considered as the potential sources.

The deposition of uranium in roll front/sedimentary deposits requires a reducing environment usually associated with the presence of organic matter, graphite or coal. Coal is prolific in the Project area as set out below.

##### Coal and Hydrocarbons

At present two coal fields have been located adjacent to the Tenements (Westfield and Murloocoppie) within the strata of the upper Toondina Formation. Drilling has delineated approx 100 million tonnes of coal in deposits in the Karkaro Low (O'Callaghan et al, 1980). In 1980 Meekatharra Minerals discovered sub-bituminous coal occurrences in the northern Arkaringa Basin. Four deposits were delineated –

Wintinna, East Wintinna, Murloocoppie and Westfield. A measured resource of at least 3,000 million tonnes (Hibburt, 1984) was determined during preliminary feasibility studies in 1980.

The coal deposits identified at Westfield, Murloocoppie and Wintinna lie along the southern edge of the Copper Hill Basement high within the Karkaro – Mt Furner Trough. The coaliferous basins lie along a north-easterly structural trend suggesting the basins development and deposition were structural controlled. It is possible that further coal bearing basins lie along this trend.

Exploration for petroleum has so far been unsuccessful in the sediments of the Arckaringa Basin (Drexel et al, 1995). Townsend 1970, 1976) concluded that the Permian sequences of the Arckaringa Basin have low potential for petroleum because the depth of burial of the Toondina Formation is too shallow for the generation and migration of hydrocarbons.

Hibburt (1984) has suggested that the early Permian Stuart Range Formation and the early Cretaceous Bulldog Shale contain oil shale deposits. No follow up exploration has been reported.

The possibility of further coal discoveries within the Arckaringa Basin still remains, as does the possibility of oil and gas accumulations, oil sand/shale deposits and coal bed methane deposits.

### **Tertiary Palaeodrainage Patterns EL 3986**

A series of faint magnetic signals displaying a dendritic pattern have been observed. The dendritic patterns exposed on the first, second and maximum vertical gradient images are interpreted to reflect accumulations of magnetic minerals in palaeodrainage channels. The patterns indicate drainage to the west and are interpreted to be part of the Tertiary palaeodrainage system which has contained gold and is an indicator that the uranium bearing palaeodrainage is coincident with the current tertiary drainage.

## **Palaeozoic to Cretaceous Basement Cover with the Tenements**

### **Introduction**

Sedimentary sequences of Permian age unconformably cover the crystalline basement within the Tenements. Neoproterozoic and Cambrian sediments are only recognized in the Boorthanna Trough to the east of the Tenements (Allender et al, 1987). The Permian sediments of the Arckaringa Basin extend across the Tenements, the sediments are generally flat-lying and underformed (Bladier et al, 1982). These Carboniferous to Permian sediments of the Arckaringa Basin are concealed under Jurassic to Cretaceous sediments forming the south-western corner of the Eromanga Basin.

### **Arckaringa Basin**

The Arckaringa Basin is an intracratonic Permian basin composed of deep marginal grabens or ½ grabens and a central area of shallow basement. The Basin was established by down faulting on an orthogonal set of northwest and southwest oriented fractures (Finlayson, 1981: O'Callaghan et al, 1980) active in the late Carboniferous – early Permian (Wopfner, 1970: Hibbert, 1984).

The Carboniferous to Permian sediments found in the Arckaringa Basin include Mount Toondina, Stuart Range and Boorthanna Formation. The basal Carboniferous – Permian Boorthanna Formation unconformably overlies Cambrian, Neoproterozoic or crystalline basement. The Boorthanna Formation within the Tenements lies unconformably on granites and granite gneisses comprising the northern extremity of the Gawler Craton (Pitt, 1978: Drexel, et al 1995).

The Permian sediments are typically overlain unconformably by late Jurassic to early Cretaceous sediments of the Eromanga Basin.

The early Permian Boorthanna Formation sediments indicate wide spread glaciations. The glacial sediments were subsequently buried by a marine transgression depositing the Stuart Range Formation. Further eustatic changes are evidenced in the Toondina Formation sediments indicating both marine (lower Toondian Fm) and fresh water environments with the development of local swamps. The Westfield, Murloocoppie and Wintinna Coal deposits are situated in the upper Toondina Formation along the western and northern edges of the Tenements (Drexel et al, 1995).

## **Eromanga Basin**

Unconformably overlying the Permian sequences are sediments of the great Artesian Basin, consisting of the basal, terrestrial Algebuckina Sandstone, the transitional Cadnaowie Formation, the marine Bulldog Shale and Oodnadatta Formation (Pitt, 1978).

## **Stuart Range**

The Tertiary sequence overlying the Eromanga Basin sediments presents a complex history of repeated phases of sedimentation and duricrust formation (Pitt, 1978). Two major palaeodrainage systems of Tertiary age have been recognized in the general area of the Tenements. The Tallaringa palaeodrainage system (west of the Tenements) and the Mirackina palaeochannel (east of the Tenements) (Barnes et al, 1976).

### **5.2 Olympic Dam Targets EL 3985**

The south western portion of EL 3985 has a major gravity high coincident with five magnetic peaks which represent an exploration target for structurally controlled Cu-Au-U mineralization of the Olympic Dam Style. Depth to basement is typically less than 300m (CRA bore hole). Mineralisation is associated with the major regional fault between the Adelaide geosynclines and the Gawler Craton.

A Pitt Research Pty Ltd geological and geophysical study has highlighted the potential for Cu-Au mineralization within EL 3985. Seven target areas have been identified based on depth to crystalline basement, structural/deformational intensity and intersecting lineaments (CRA 1982) but preference is given to the large gravity high to the south with five corresponding magnetic peaks.

## **6. CONCLUSIONS AND PROPOSED WORK**

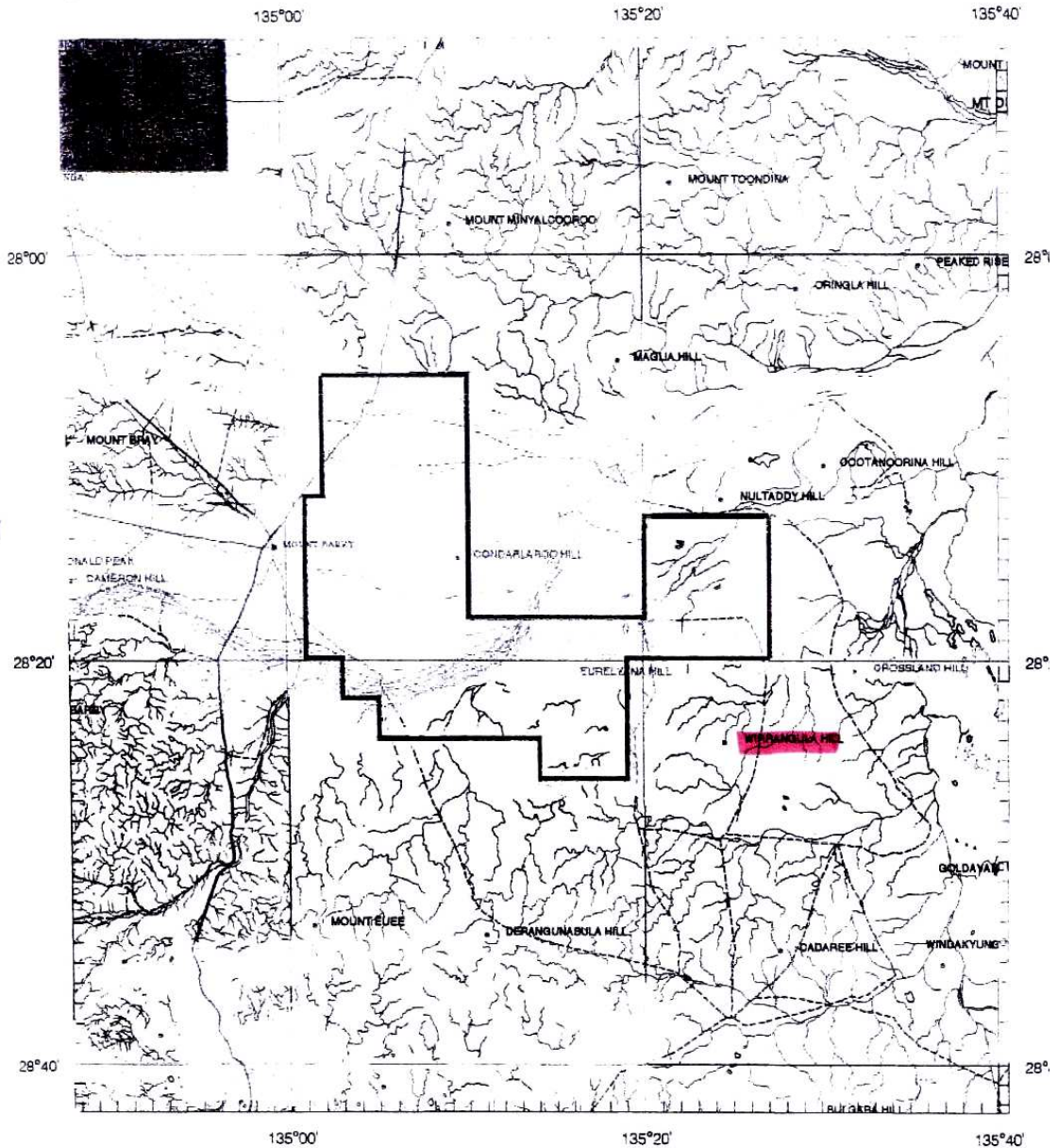
Proposed explorations for later reporting period are:

- (i) Regional geochemical (calcrete?) sampling and surface radioactivity with the aim of identifying anomalous areas of mineralization. These discrete targets will be subjected to detailed sampling with the aim of identifying drill targets.
- (ii) Additional geophysical modeling with the aim of identifying drill targets.
- (iii) Water sampling to test for the presence of uranium in the keel of currently observable drainage which has been shown to reflect palaeodrainage.
- (iv) Ongoing Native Title negotiations re access.

## **7. EXPENDITURE STATEMENT**

The total and cumulative expenditure as set out in the Summary Report on Mineral Exploration EL 3985 - \$103,700.00; EL 3986 - \$91,300.00 which consisted of detailed literature review, Native Title studies, the identification of sites of significance and liaison with title holders. Considerable confusion arose when other explorers (Coal bed methane?) who hold coincident licences were observed on site without title holder's permission, review of available gravity and magnetic, target definition.

# SCHEDULE A



APPLICANT : **U ENERGY PTY LTD**

*EL 3985*

FILE REF : **342/07** TYPE : **MINERAL ONLY**

AREA : 782 km<sup>2</sup> (approx.)

1:250000 MAPSHEETS : **WARRINA**

LOCALITY : **EURELYANA HILL AREA - Approximately 85 km northeast of Coober Pedy**

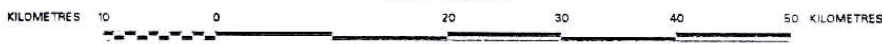
DATE GRANTED

DATE EXPIRED

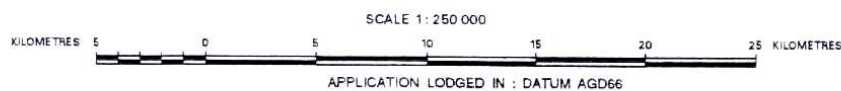
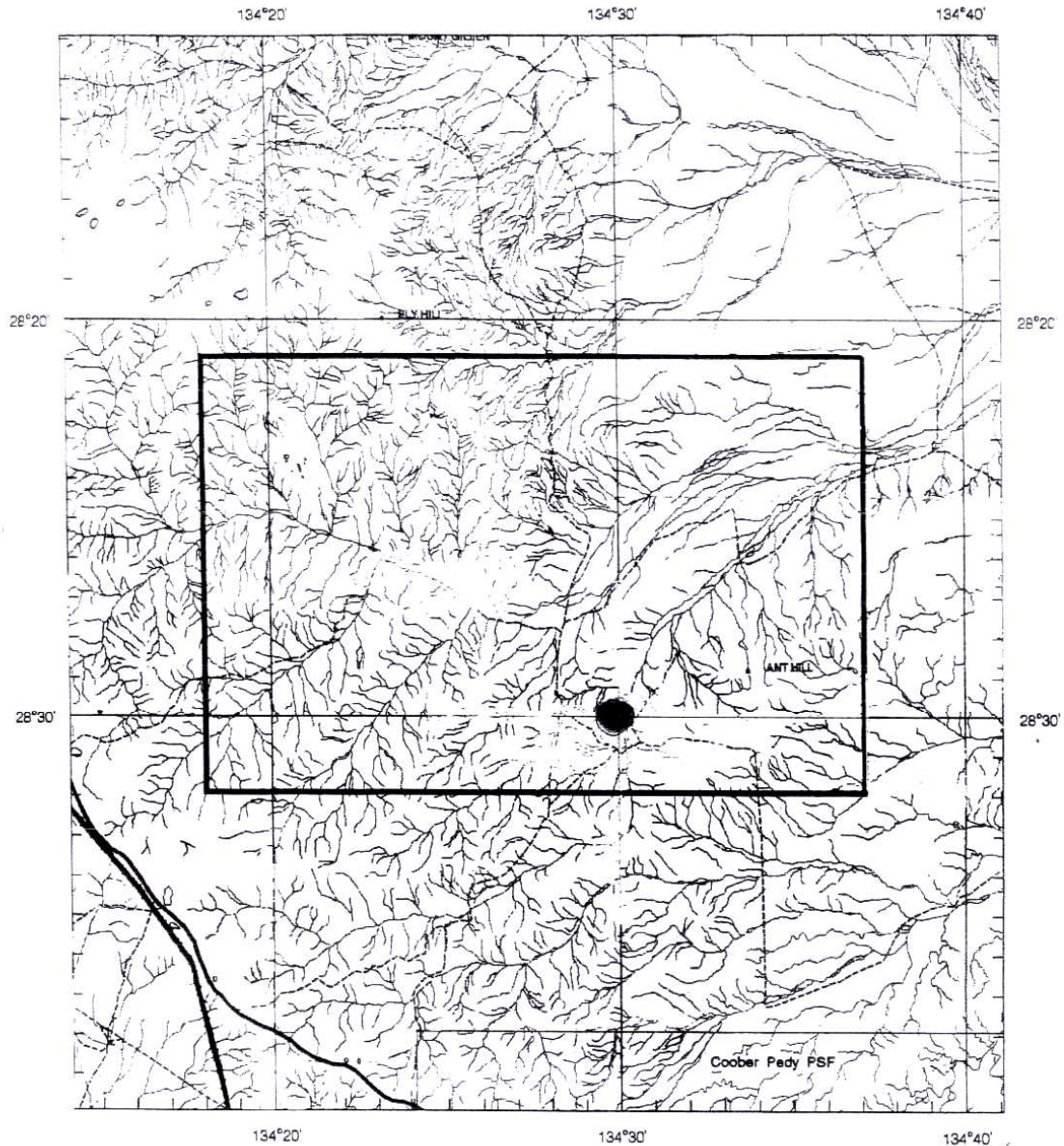
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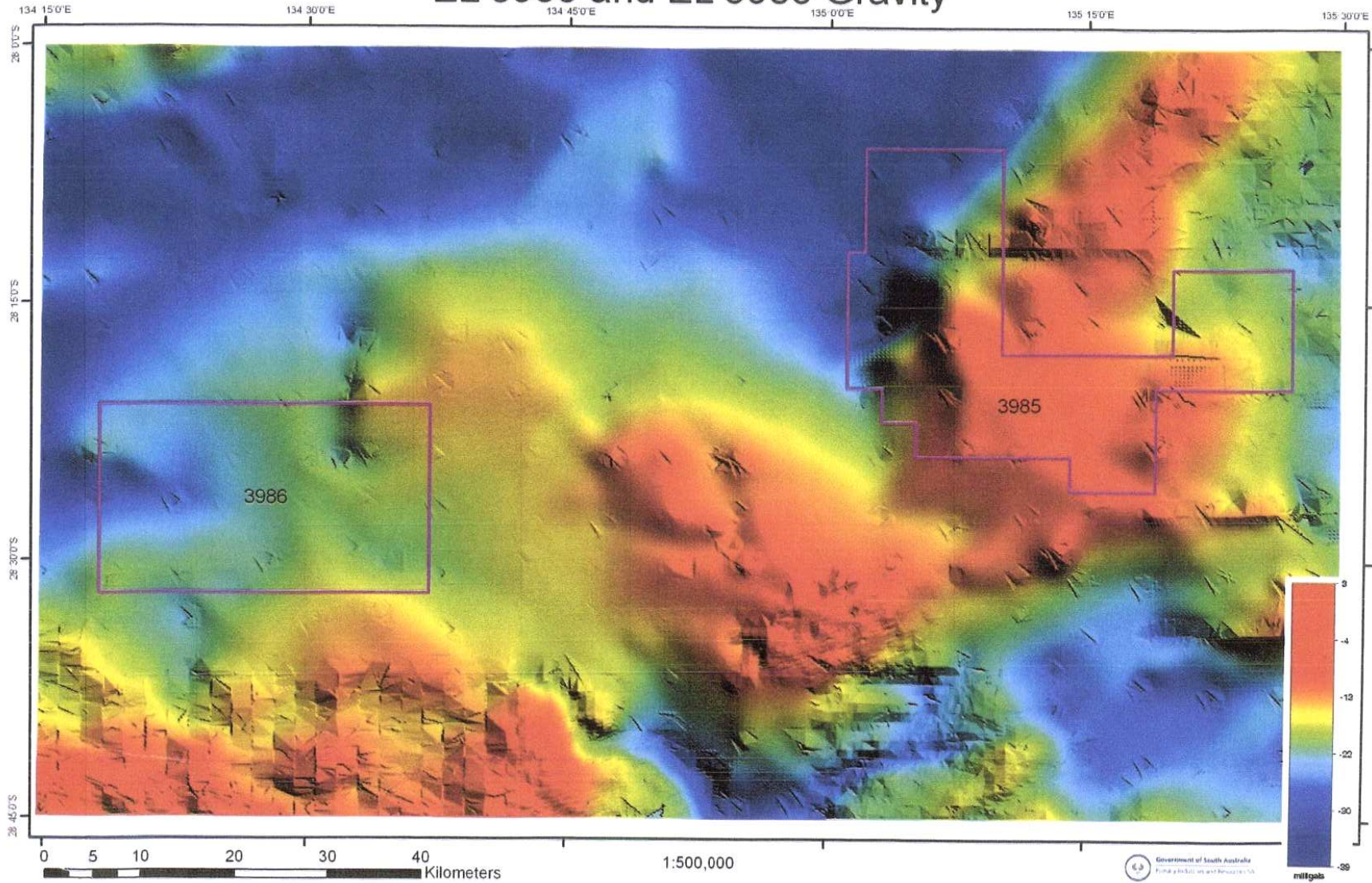


# SCHEDULE A

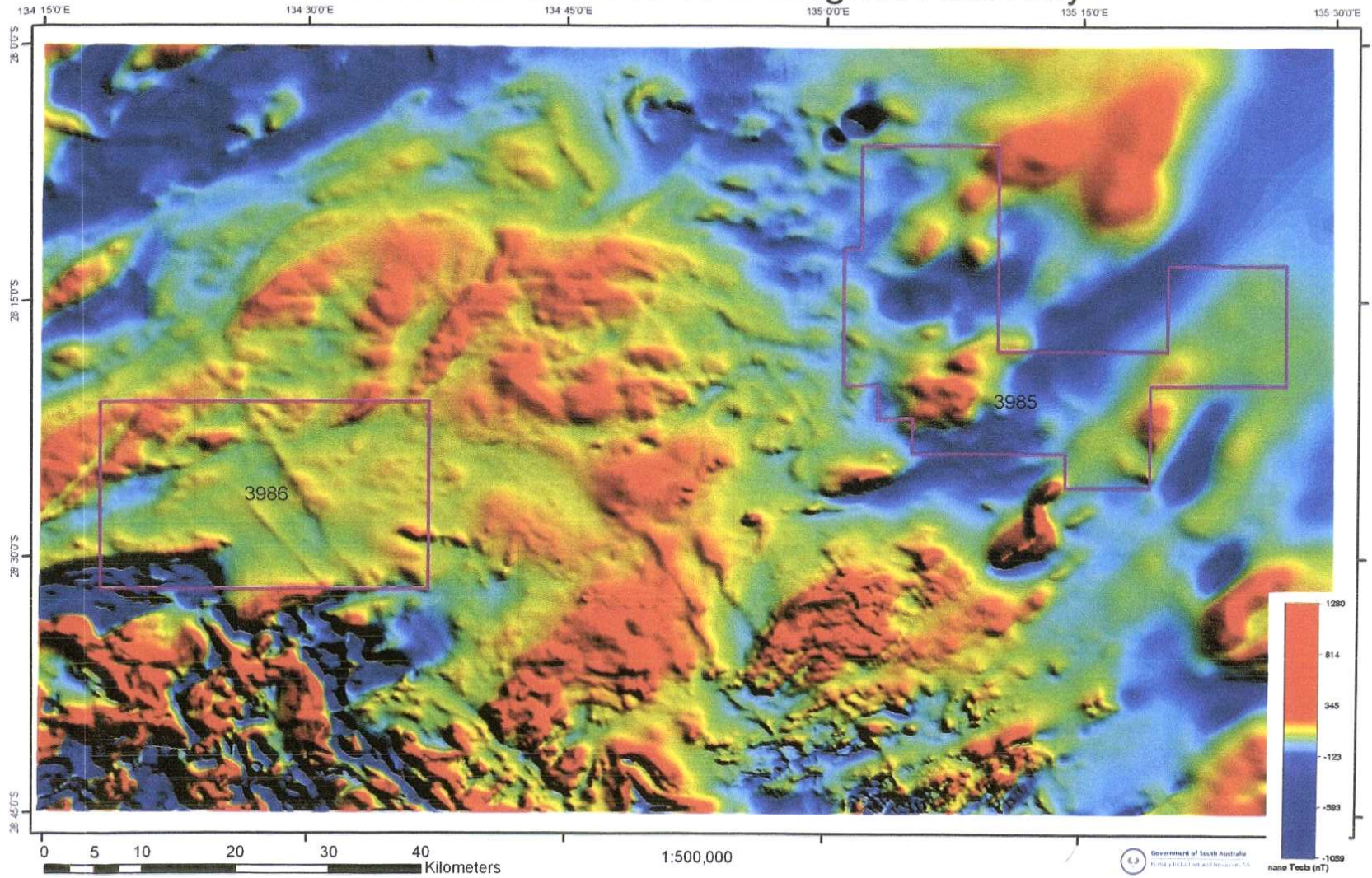


APPLICANT : **U ENERGY PTY LTD**  
FILE REF : **343/07**      TYPE : MINERAL ONLY      AREA : 630 km<sup>2</sup> (approx.)  
1:250000 MAPSHEETS : MURLOCOPIE  
LOCALITY : POOTNOURA CREEK AREA - Approximately 70 km northwest of Cooper Pedy  
DATE GRANTED      DATE EXPIRED      EL No **3986**

# EL 3985 and EL 3986 Gravity



# EL 3985 and EL 3986 Total Magnetic Intensity



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**U ENERGY PTY LTD**

Tenement Holder, Operator and Author

NOVEMBER 2009

SECOND ANNUAL REPORT

EXPLORATION LICENCES

EL 3985-6

A COMBINED REPORT FOR THE PERIOD  
19/11/2008 TO 19/11/2009

**ANT HILL**

**SOUTH AUSTRALIA**

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2. EL 3986
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4. EL 3985-6 Gravity
5. Uranium occurrences on paleodrainage @ Ant Hill
6. Honeymoon uranium paleochannel mine.
7. Ant Hill AGSO radiometric survey uranium.

### KEY WORDS

Pootnoura Creek  
 Eurelyana Hill  
 Ant Hill  
 Olympic Dam  
 Gawler Craton  
 Uranium

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3985	<ul style="list-style-type: none"> <li>- Gravity and mag studies</li> <li>- Literature research</li> <li>- Prospect identification</li> </ul>	<ul style="list-style-type: none"> <li>- Dispersed gravity high, local mag highs</li> <li>- 200 ± sediments on basement – Lincoln Complex</li> <li>- Several mag highs on broad gravity high</li> </ul>	1:500,000

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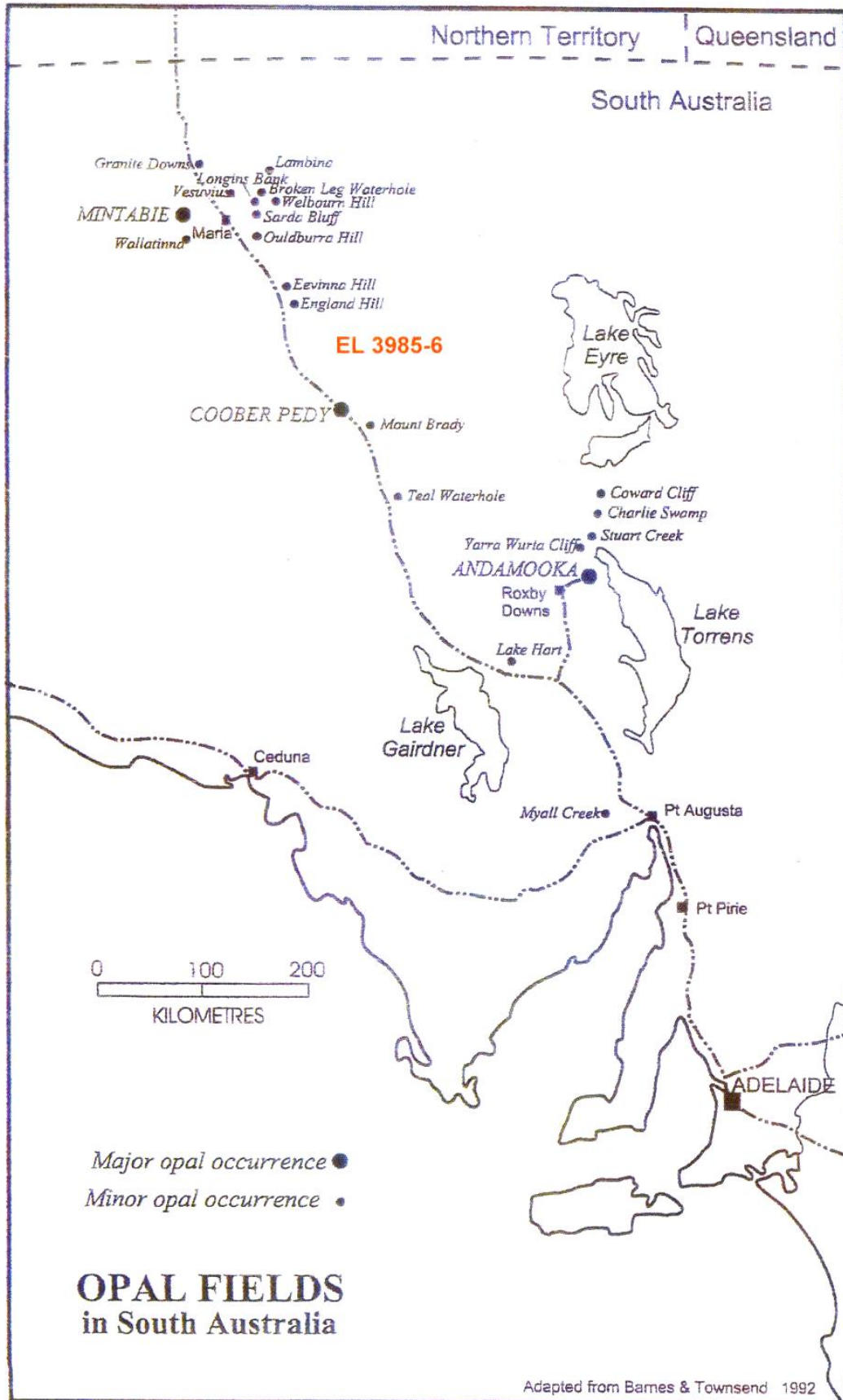
South portion of EL 3985 and possibly northern portion of EL 3986. Structurally controlled Cu-Au mineralization of the Olympic Dam Style. Depth to basement is typically less than 200 metres.

### **2. Uranium Exploration EL 3985-6**

(O'Callaghan et al, 1980) suggests that the substantial sequences of sandstone and conglomeratic sandstones within the Permian strata are prospective for sedimentary uranium deposits, the underlying adamellites and acid gneisses considered as the potential sources. The Mesozic(Cadna-owie formation) paleochannels shown in blue on fig5 could source uranium from the four occurrences in the highlands of the Davenport Ranges whose core is uranium bearing Dalmerian diapirs of Ordovician age.

The deposition of uranium in roll front/sedimentary deposits requires a reducing environment usually associated with the presence of organic matter, graphite or coal. Coal is prolific in the project area as set out below.

A series of faint magnetic signals displaying a dendritic pattern has been observed. The dendritic patterns exposed on the first, second and maximum vertical gradient images are interpreted to reflect accumulations of magnetic minerals in palaeodrainage channels. The patterns indicate drainage to the west and are interpreted to be part of the Mesozoic palaeodrainage system which has contained gold and is an indicator that the uranium bearing palaeodrainage may be coincident with the current drainage.(See fig 5 the blue paleodrainage.)



Proposed work for the coming reporting period is:

- (i) Reconnaissance, radioactivity and/or calcrete sampling of Target Areas with the aim of identifying areas of anomalous mineralization. Areas of anomalous mineralization will be subject to additional in-fill sampling with the aim of identifying drill targets.
- (ii) Water sampling with the aim of identifying additional uranium targets in the palaeodrainage.

Field work can only commence once agreements with all Aboriginal land claimants are concluded.

## **1. LOCATION AND ACCESS**

Exploration Licences EL3985-6 are adjacent licences located approximately 55 kilometres north east of Coober Pedy (Figure 1). Access to the Ant Hill Project area from Coober Pedy is via the sealed Stuart Highway which traverses the Western flank of both tenements. Access to the remainder of the Project area is via station traction tracks and fence lines. Vegetation throughout the Project area is sparse allowing for abundant access away from existing tracks.

Sheep grazing is the major agricultural activity throughout the Project area.

## **2. TENURE**

Exploration Licence EL3985-6 was granted to U Energy Pty Ltd on the 10 October 2007. Tenement boundaries are shown in index maps 1 and 2.

## **3. INTRODUCTION**

This report details the interpretation of airborne magnetic survey data and the identification of areas of exploration interest within a region located 500 km north west of Port Augusta (Figure 1). The exploration area is situated within the Northern Gawler Craton. The Ant Hill Tenements (EL 3985-6) is situated on the east, central and northern portions of the Murloocoppie 1:250 000 map sheet, the Tenements lying between latitudes 28° 00' and 28° 37' S, and longitudes 134° 10' and 134° 40' E. The exploration is bound to the south by the Coober Pedy Precious Stones Field and the west by the Great Victoria Desert and to the East by the uranium bearing Davenport Ranges whose core is Dalmerian diapirs of Ordovician age. The Tarcoola-Alice Springs Railway and Stuart Highway run north-south along the western edge of the Tenements. The tenement covers an area of 630 km<sup>2</sup>. The nearest town is Coober Pedy approx 50km to the south.

The Tenements contain the Stuart Range, the eastern edge of which is dissected forming mesa's with steep, high scarps. The western side of the Range is transitional into a gibber plain and areas of low relief, covered sparsely with salt bush and mulga.

The portion of the Gawler Craton within the Tenements has only received minor sub-surface exploration, the search for sediment hosted uranium, hydrocarbons and coal has been concentrated in the Carboniferous to Permian sediments of the Arckaringa Basin and in particular the Toondina formation. Exploration companies have only undertaken preliminary searches for Olympic Dam type Au-Cu-U deposits in the crystalline basement underlying the Arckaringa Basin.

The recent acquisition of high resolution aeromagnetic data has indicated that potentially mineralized basement lithologies and structures extend into the Tenements and may hold gold, base metals and uranium deposits.

Intensely deformed Palaeoproterozoic granite and gabbro of the Lincoln Complex and Mesoproterozoic Hiltaba Suite granite, have been observed in the basement.

### **Olympic Dam Targets EL 3985**

The south western portion of EL 3985 has a major gravity high coincident with five magnetic peaks which represent an exploration target for structurally controlled Cu-Au-U mineralization of the Olympic Dam Style. Depth to basement is typically less than 300m (CRA bore hole). Mineralisation is associated with the major regional fault between the Adelaide geosynclines and the Gawler Craton.

A Pitt Research Pty Ltd geological and geophysical study has highlighted the potential for Cu-Au mineralization within EL 3985. Seven target areas have been identified based on depth to crystalline basement, structural/deformational intensity and intersecting lineaments (CRA 1982).

### **Mesozoic Palaeodrainage Patterns EL 3985-6**

A series of faint magnetic signals displaying a dendritic pattern have been observed. The dendritic patterns exposed on the first, second and maximum vertical gradient images are interpreted to reflect accumulations of magnetic minerals in palaeodrainage channels. The patterns indicate drainage to the west and are interpreted to be part of the Mesozoic palaeodrainage system which has contained gold and is an indicator that the uranium bearing palaeodrainage is coincident with the current drainage.

#### 4. PREVIOUS EXPLORATION

Previous exploration over the Ant Hill Project area has been limited and mainly focused on coal. Previous exploration is summarized in the following table:

EL No.	Company	Envelope No.	Comments
15	Exoil NL	21,732,249	Coal Exploration
39	Exoil NL	2249	Coal Exploration
148	BP Minerals	24,532,454	Coal Exploration
184	Australian Selection	2556	Coal Exploration
620	Afmeco	3838	4 holes for 1007m gave no encouragement of U
948	LSD Trading	No documents	
982	Meekatharra Minerals	No documents	
1325	CRA Exploration	6732	Diamond and RC drilling of magnetic targets. Most prospects intersected gneissic basement at less than 200 metres. Best prospect, Bardy, intersected 1m at 0.27% Cu from 167.1m and 0.55m at 0.18% Cu from 188m.
1326	CRA Exploration	8156	
1406	Meekatharra Minerals	No documents	
1681	SA Coal Corp	No documents	
1767	BHP	8647	17 RC drill holes with no anomalous intersections. Most holes ending in granitic gneiss.
1801	BHP	8647	

#### 5. CURRENT EXPLORATION

##### 5.1 Sedimentary Uranium Exploration EL 3986

(O'Callaghan et al, 1980) suggests that the substantial sequences of sandstone and conglomeratic sandstone within the Permian strata may be prospectively for sedimentary uranium deposits, the underlying adamellites and acid gneisses considered as the potential sources.

The deposition of uranium in roll front/sedimentary deposits requires a reducing environment usually associated with the presence of organic matter, graphite or coal. Coal is prolific in the Project area as set out below.

##### Coal and Hydrocarbons

At present two coal fields have been located adjacent to the Tenements (Westfield and Murloocoppie) within the strata of the Permian upper Toondina Formation. Drilling has delineated approx 100 million tonnes of coal in deposits in the Karkaro Low (O'Callaghan et al, 1980). In 1980 Meekatharra Minerals discovered sub-

bituminous coal occurrences in the northern Arkaringa Basin. Four deposits were delineated – Wintinna, East Wintinna, Murloocoppie and Westfield. A measured resource of at least 3,000 million tonnes (Hibburt, 1984) was determined during preliminary feasibility studies in 1980.

The coal deposits identified at Westfield, Murloocoppie and Wintinna lie along the southern edge of the Copper Hill Basement high within the Karkaro – Mt Furner Trough. The coaliferous basins lie along a north-easterly structural trend suggesting the basins development and deposition were structural controlled. It is possible that further coal bearing basins lie along this trend.

Exploration for petroleum has so far been unsuccessful in the sediments of the Arkaringa Basin (Drexel et al, 1995). Townsend 1970, 1976) concluded that the Permian sequences of the Arkaringa Basin have low potential for petroleum because the depth of burial of the Toondina Formation is too shallow for the generation and migration of hydrocarbons.

Hibburt (1984) has suggested that the early Permian Stuart Range Formation and the early Cretaceous Bulldog Shale contain oil shale deposits. No follow up exploration has been reported.

The possibility of further coal discoveries within the Arkaringa Basin still remains, as does the possibility of oil and gas accumulations, oil sand/shale deposits and coal bed methane deposits. Coal and oil&gas exploration is conducted in South Australia under a petroleum exploration licence.

#### Palaeodrainage Patterns EL 3985-6

##### Mesozoic Paleochannels

The current drainage in the project area is West to East towards Lake Eyre. The Davenport Dennison Ranges block this flow some 30 km East of EL 3985 causing ponding in the Southern end of the Davenport Ranges (see WARRINA 1:250,000 geological map sheet) and an incised valley breakthrough in the Northern Dennison Ranges roughly coincident with the 4 uranium occurrences shown as red dots on fig5 in EL189/09 and EL3839. These uranium occurrences are as follows

- 1 R1 Rutherford mineralization in Peake Metamorphics UO<sub>2</sub>CO<sub>3</sub> yellow fibrous. (No 18 PIRSA 7026)
- 2 Anomaly E, supergene enriched @ 500ppm U, best drill result 290ppm U<sub>3</sub>O<sub>8</sub> in weathered sheared gneiss. (No 158 PIRSA 8871)
- 3 West Coppertop dolomite diapirs to 550ppm U in outcrop. (No 159 PIRSA 7035)
- 4 Basement contact to 6m depth. 213ppm over 2m and 329ppm V (No 174 PIRSA 8874)

While the relief in both ranges is modest the highest point is the Cretaceous Cadna-owie remnants on Mt Anna on the Davenport range. This implies the uranium bearing ranges (whose core is Dalmatian diapirs of Ordovician age) was further upthrust (after the Tertiary and Cretaceous sedimentation) exposing the uranium bearing rocks to erosion which stripped below the Cadna-owie and allowed uranium rich meteoric (rain) water to charge the Cadna-owie sandstone to the West.

The Cadna-owie paleochannels are shown in blue on fig5 and are ponding to the South of the ranges and flowing Westward to end in delta deposits North and West of EL3986. Major Cadna-owie paleochannels with tortuous bending are present in EL3985-6 and represent uranium roll front targets on the outer radius of these bends, under this current geological model. (see fig5)

The Cadna-owie is the preferred uranium host for Tasman Resources Torrens project, and a further example is provided in fig6 which shows the Honeymoon uranium mine on the outer paleochannel bend where river born reducing plant matter would be deposited. At Honeymoon updip uranium sources are evident to the South West which can bleed into the paleochannels via meteoric waters.

#### Tertiary Paleochannels.

In addition to the Mesozoic paleochannels described above fig5 shows in orange Tertiary, Neogene paleochannels rising in EL3986 and flowing East until it ponds some 50km West of the Davenport ranges. These Neogene paleochannels occur in the MIRACKINA conglomerate and channel infills with silcrete clasts up to boulder size and ferruginised pebbly medium to coarse grained sandstones with plant fragments. These paleochannels are called INVERTED where in outcrop the silicified rock is proud of the weathered surface. If their flow direction is West to East they are considered less prospective as the uranium source is less apparent.

#### Airborn Scintometer Surveys.

The uranium channel of AGSO airborne surveys has been reproduced by PIRSA and is shown in fig7. The EL3985-6 area is one of the largest, and most intense uranium signatures in South Australia and the location of the tenements is hand drawn on the post AWAGS map on fig7. Surface uranium anomalism only measures a few cms into the soil, but clearly there is a major uranium source in the project area whose surface signature encompasses EL 3985-6.

## Palaeozoic to Cretaceous Basement Cover with the Tenements

### **Introduction**

Sedimentary sequences of Permian age unconformably cover the crystalline basement within the Tenements. Neoproterozoic and Cambrian sediments are only recognized in the Boorthanna Trough to the east of the Tenements (Allender et al, 1987). The Permian sediments of the Arckaringa Basin extend across the Tenements, the sediments are generally flat-lying and underformed (Bladier et al, 1982). These Carboniferous to Permian sediments of the Arckaringa Basin are concealed under Jurassic to Cretaceous sediments forming the south-western corner of the Eromanga Basin.

### **Arckaringa Basin**

The Arckaringa Basin is an intracratonic Permian basin composed of deep marginal grabens or  $\frac{1}{2}$  grabens and a central area of shallow basement. The Basin was established by down faulting on an orthogonal set of northwest and southwest oriented fractures (Finlayson, 1981; O'Callaghan et al, 1980) active in the late Carboniferous – early Permian (Wopfner, 1970; Hibburt, 1984).

The Carboniferous to Permian sediments found in the Arckaringa Basin include Mount Toondina, Stuart Range and Boorthanna Formation. The basal Carboniferous – Permian Boorthanna Formation unconformably overlies Cambrian, Neoproterozoic or crystalline basement. The Boorthanna Formation within the Tenements lies unconformably on granites and granite gneisses comprising the northern extremity of the Gawler Craton (Pitt, 1978; Drexel, et al 1995).

The Permian sediments are typically overlain unconformably by late Jurassic to early Cretaceous sediments of the Eromanga Basin.

The early Permian Boorthanna Formation sediments indicate wide spread glaciations. The glacial sediments were subsequently buried by a marine transgression depositing the Stuart Range Formation. Further eustatic changes are evidenced in the Toondina Formation sediments indicating both marine (lower Toondian Fm) and fresh water environments with the development of local swamps. The Westfield, Murloocoppie and Wintinna Coal deposits are situated in the upper Toondina Formation along the western and northern edges of the Tenements (Drexel et al, 1995).

## **Eromanga Basin**

Unconformably overlying the Permian sequences are sediments of the great Artesian Basin, consisting of the basal, terrestrial Algebuckina Sandstone, the transitional Cadnaowie Formation, the marine Bulldog Shale and Oodnadatta Formation (Pitt, 1978).

## **Stuart Range**

The Tertiary sequence overlying the Eromanga Basin sediments presents a complex history of repeated phases of sedimentation and duricrust formation (Pitt, 1978). Two major palaeodrainage systems of Tertiary age have been recognized in the general area of the Tenements. The Tallaringa palaeodrainage system (west of the Tenements) and the Mirackina palaeochannel (east of the Tenements) (Barnes et al, 1976).

### **5.2 Olympic Dam Targets EL 3985**

The south western portion of EL 3985 has a major gravity high coincident with five magnetic peaks which represent an exploration target for structurally controlled Cu-Au-U mineralization of the Olympic Dam Style. Depth to basement is typically less than 300m (CRA bore hole). Mineralisation is associated with the major regional fault between the Adelaide geosynclines and the Gawler Craton.

A Pitt Research Pty Ltd geological and geophysical study has highlighted the potential for Cu-Au mineralization within EL 3985. Seven target areas have been identified based on depth to crystalline basement, structural/deformational intensity and intersecting lineaments (CRA 1982) but preference is given to the large gravity high to the south with five corresponding magnetic peaks.

## **6. CONCLUSIONS AND PROPOSED WORK**

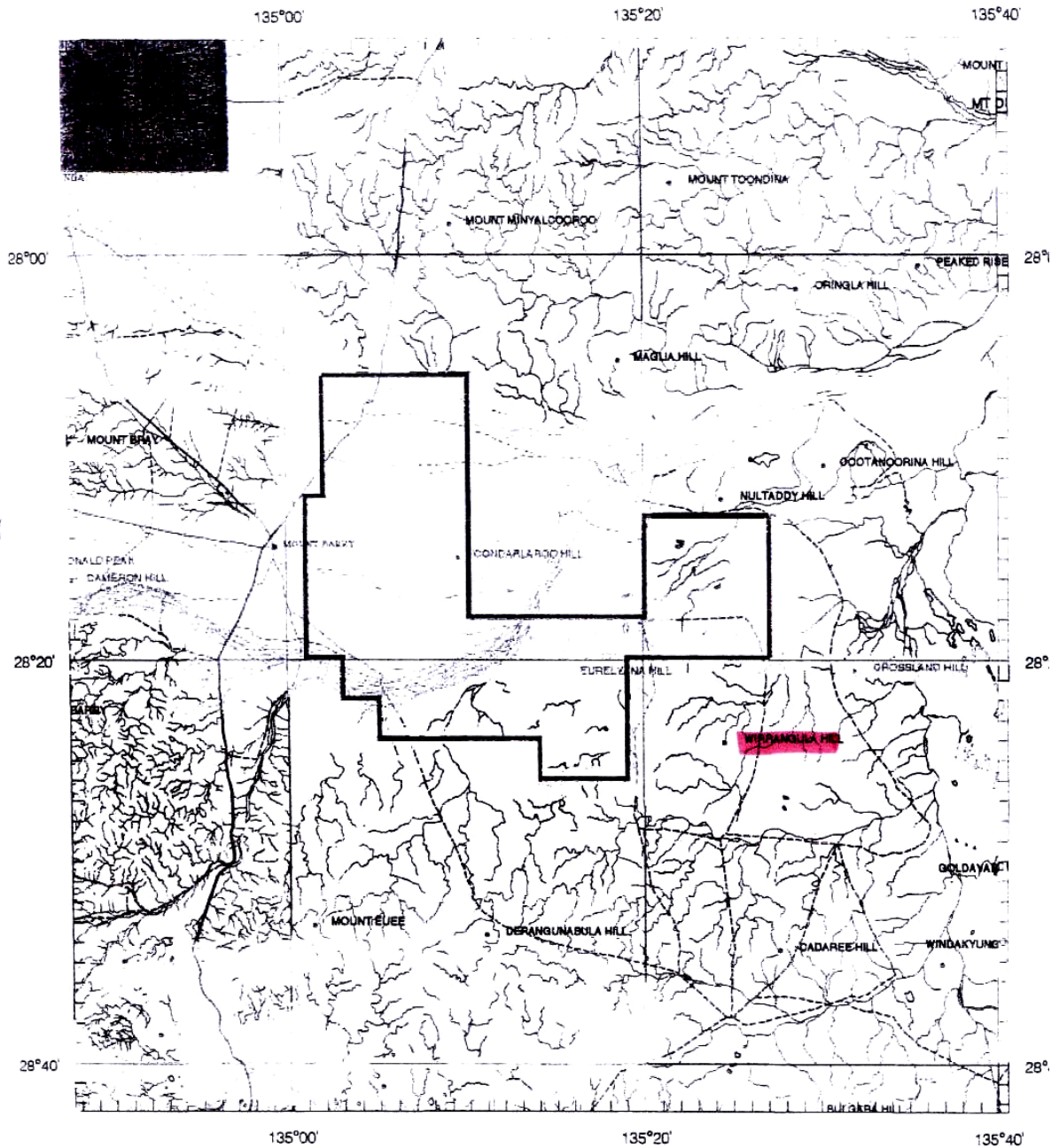
Proposed explorations for later reporting period are:


- (i) Regional geochemical (calcrete?) sampling and surface radioactivity with the aim of identifying anomalous areas of mineralization. These discrete targets will be subjected to detailed sampling with the aim of identifying drill targets.
- (ii) Additional geophysical modeling with the aim of identifying drill targets.
- (iii) Water sampling to test for the presence of uranium in the keel of currently observable drainage which has been shown to reflect palaeodrainage.
- (iv) Ongoing Native Title negotiations re access.

## **7. EXPENDITURE STATEMENT**

The total and cumulative expenditure as set out in the Summary Report on Mineral Exploration which consisted of detailed literature review, Native Title studies, the identification of sites of significance and liaison with title holders., review of available gravity and magnetic, and target definition.

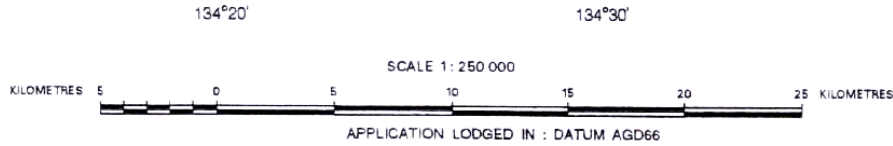
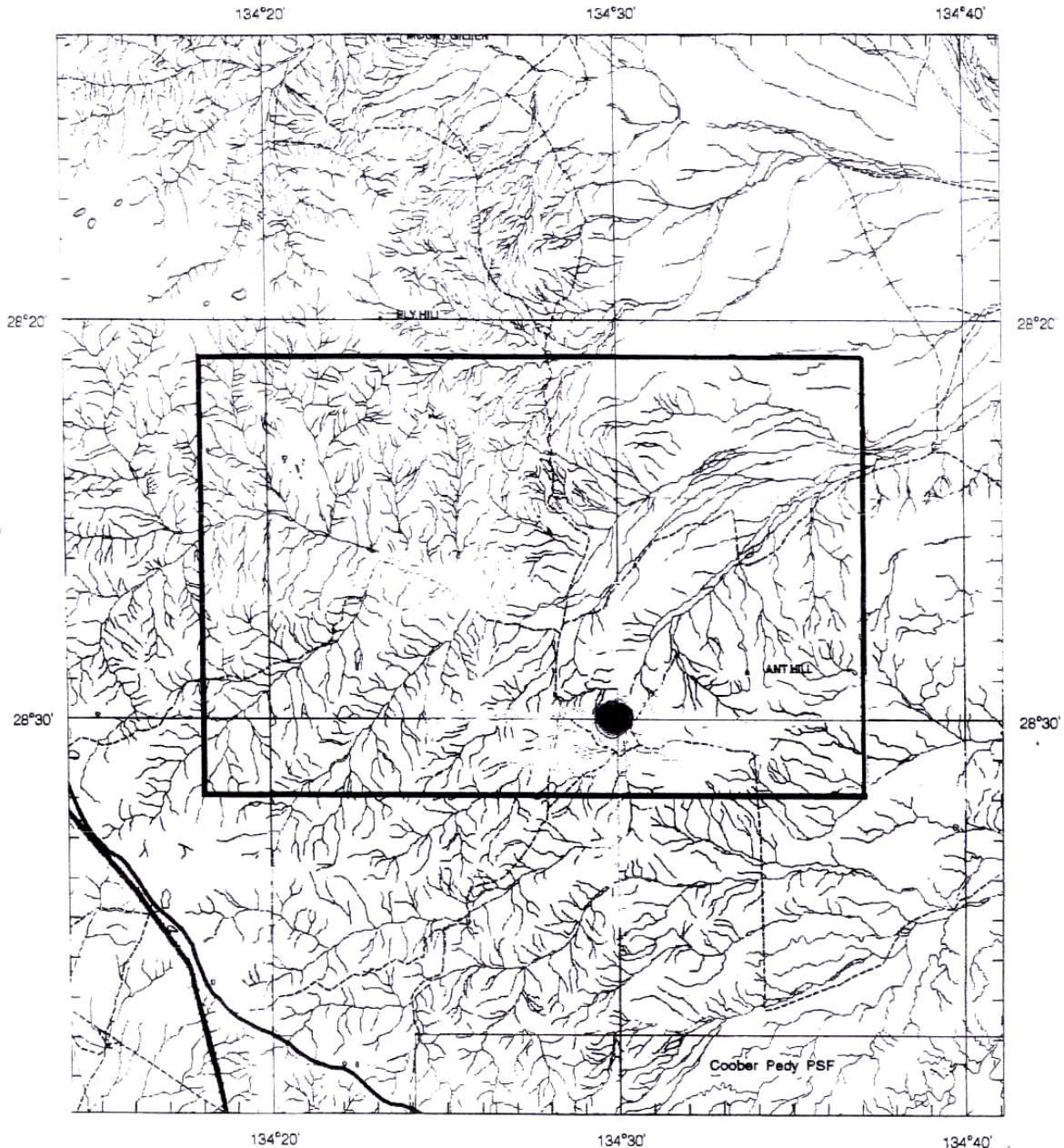
# SCHEDULE A



SCALE 1: 500 000  
 KILOMETRES 10 0 20 30 40 50 KILOMETRES  
 APPLICATION LODGED IN : DATUM AGD66  


APPLICANT : **U ENERGY PTY LTD** *EL 3985*  
 FILE REF : **342/07** TYPE : MINERAL ONLY AREA : 782 km<sup>2</sup> (approx.)  
 1:250000 MAPSHEETS : WARRINA  
 LOCALITY : EURELYANA HILL AREA - Approximately 85 km northeast of Coober Pedy  
 DATE GRANTED DATE EXPIRED EL No **3985**

# SCHEDULE A



APPLICANT : **U ENERGY PTY LTD**

FILE REF : **343/07** TYPE : MINERAL ONLY

AREA : 630 km<sup>2</sup> (approx.)

1:250000 MAPSHEETS : MURLOOCOPPIE

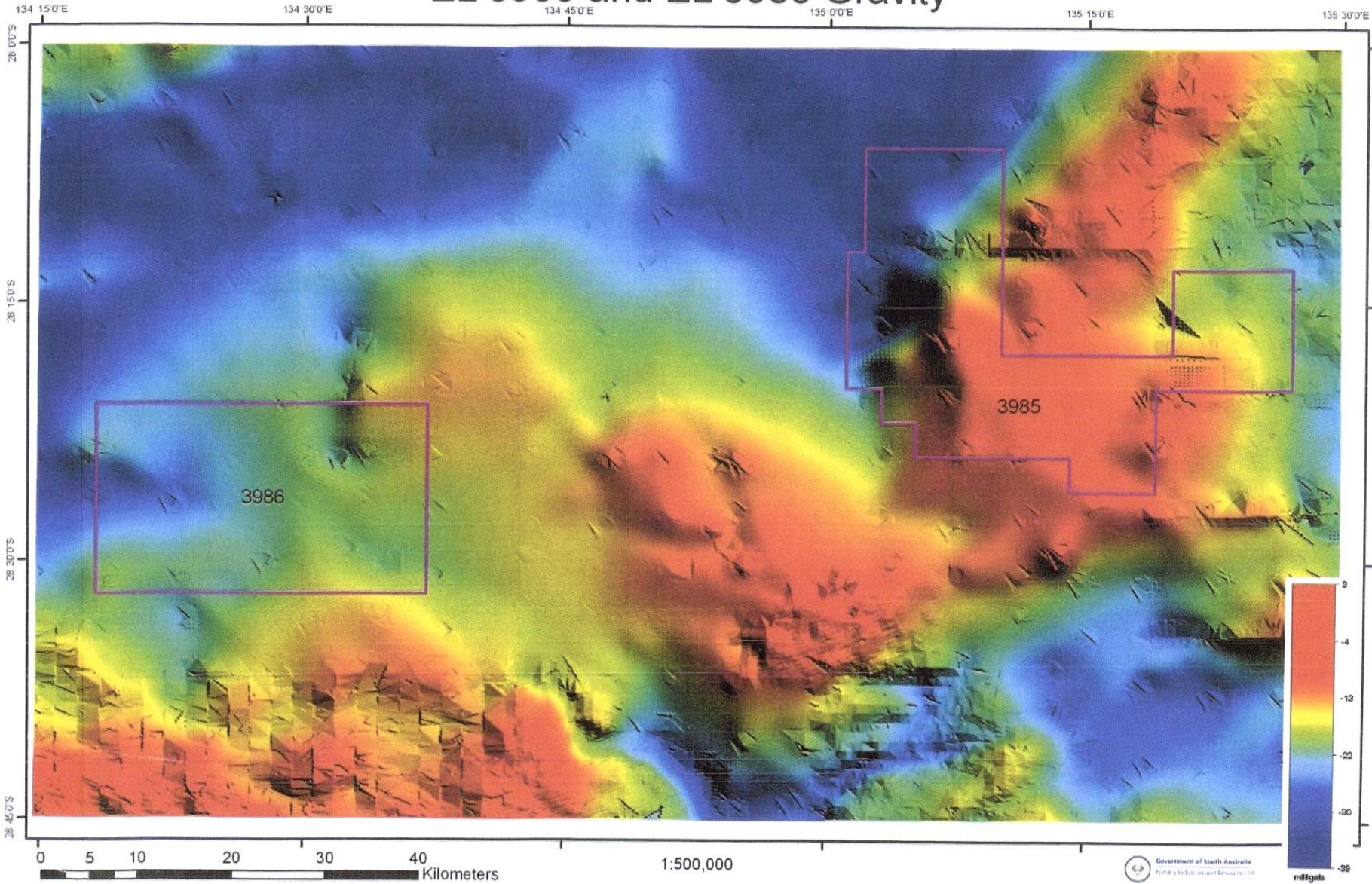
LOCALITY : POOTNOURA CREEK AREA - Approximately 70 km northwest of Coober Pedy

DATE GRANTED

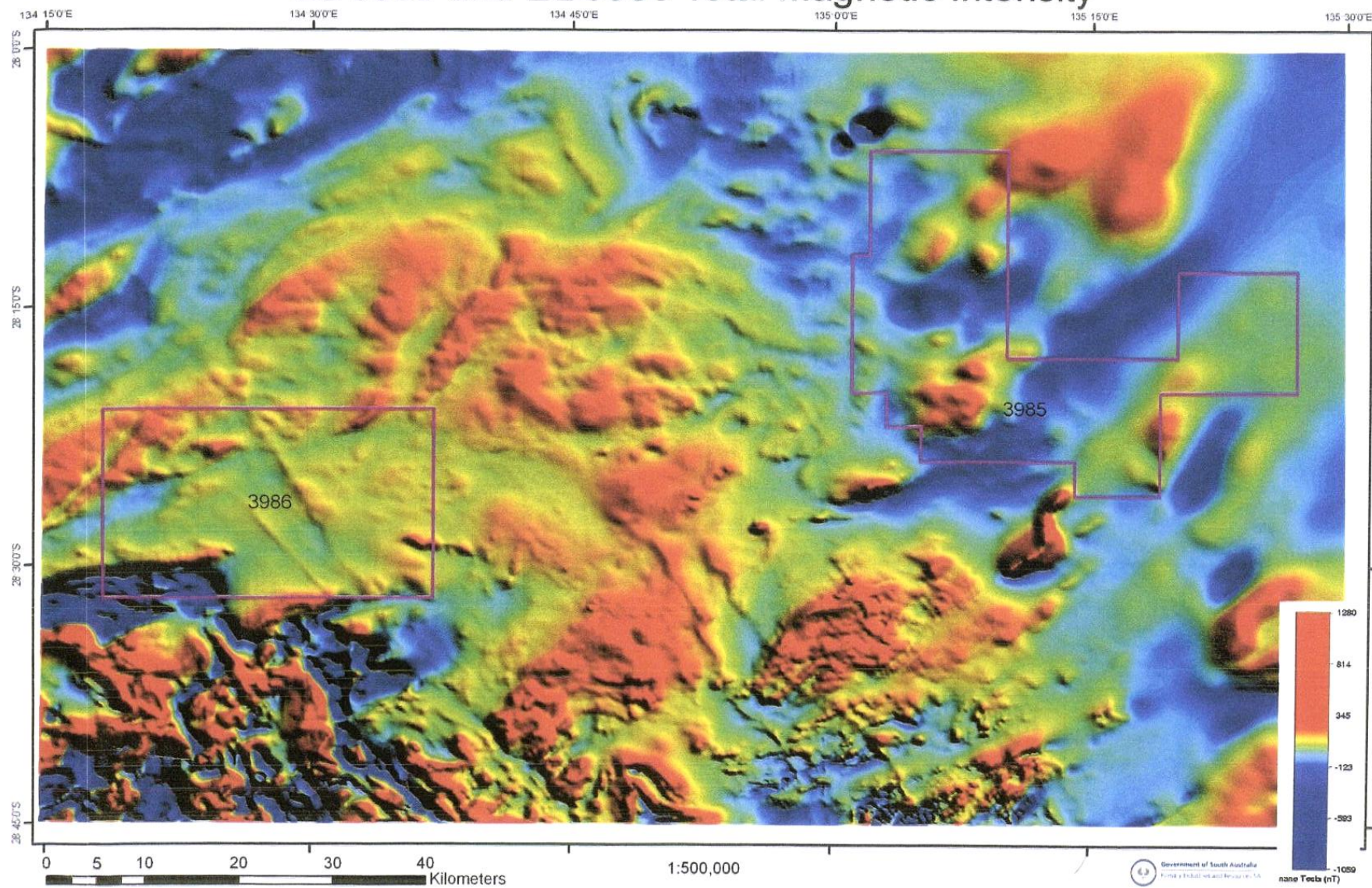
DATE EXPIRED

EL No : **3986**

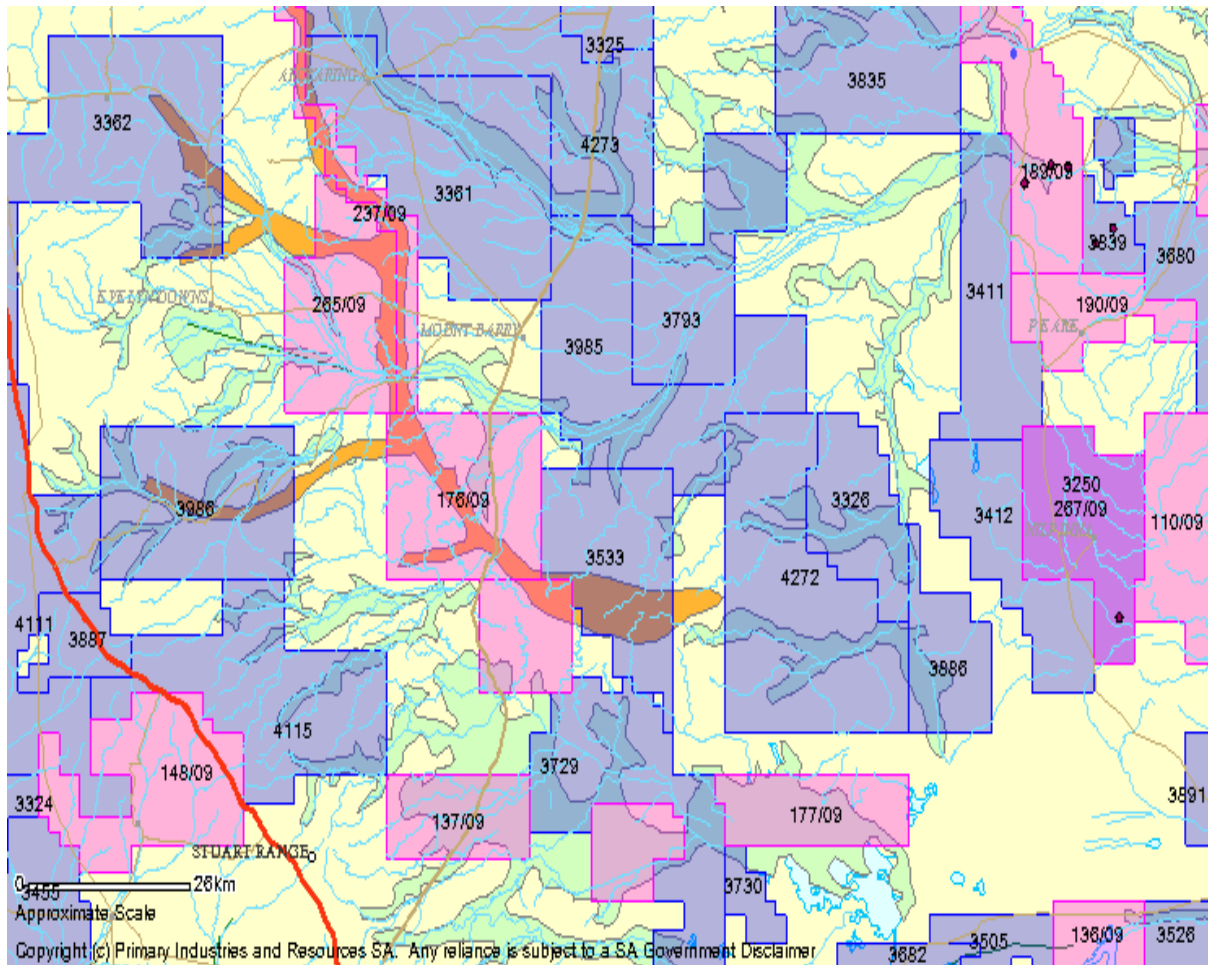
# EL 3985 and EL 3986 Gravity



# EL 3985 and EL 3986 Total Magnetic Intensity



## URANIUM OCCURRENCE ON PALEODRAINAGE @ ANT HILL



### LEGEND

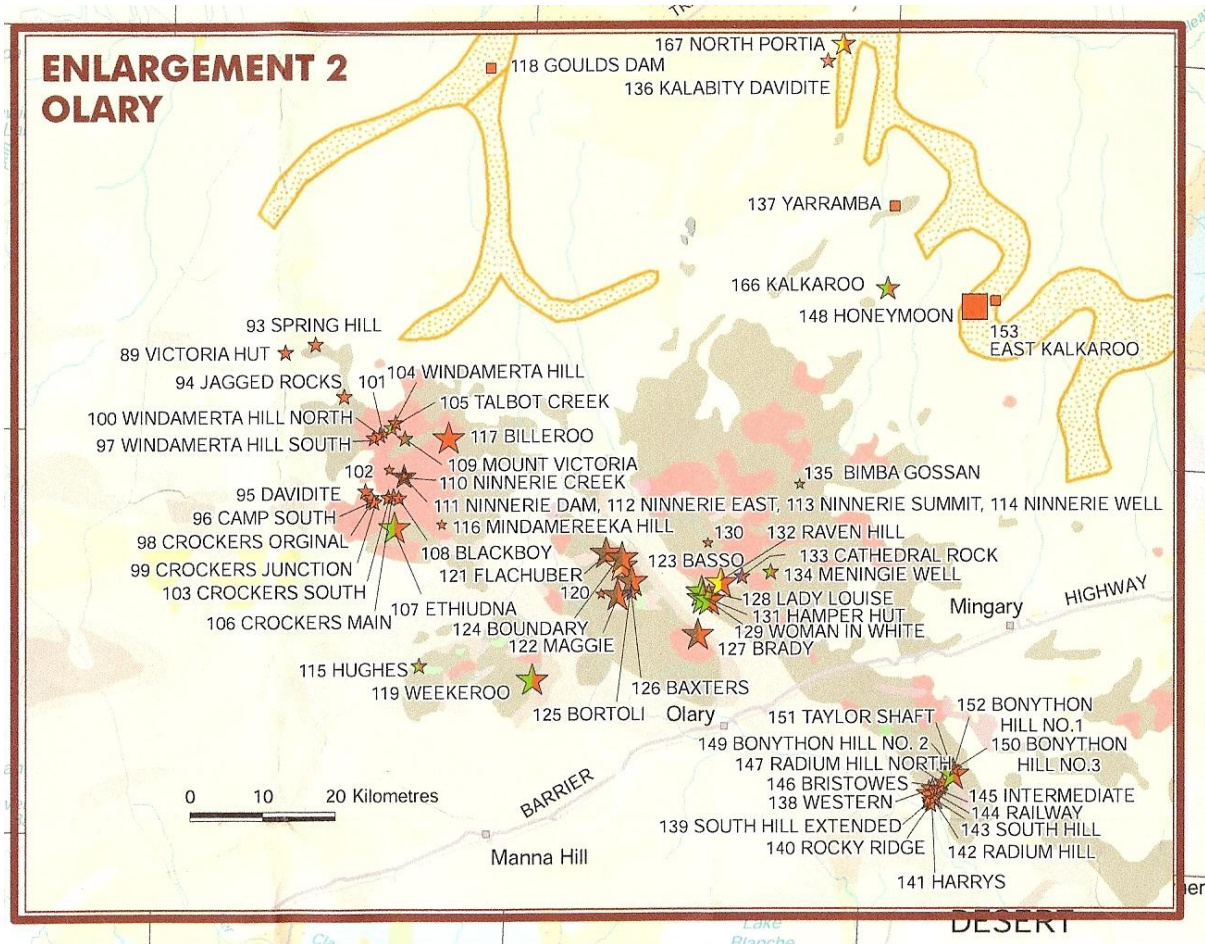
### EL 3985/6

### FIG 5

Paleodrainage Orange Neogene/ tertiary inverted paleochannel sediments.  
 Blue Mesozoic/cretaceous Cadna-owie formation.  
 Uranium occurrences Red dots in north eastern map corner. (see text)

## HONEYMOON URANIUM PALEOCHANNEL MINE ANT HILL FIG 6

Uranium source areas shown as stars, mine as red square and mine location on outside bend of yellow paleochannel.





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**Mckenzie, Todd (DMITRE)**

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**From:** Robbie Cooper [jumbo29@hotmail.com]  
**Sent:** Friday, 18 March 2011 1:56 PM  
**To:** Petruzzella, Nella (PIRSA)  
**Subject:** EL 3985 U Energy  
**Attachments:** EL 3985 2010 (2) .pdf

**EL 3985 3986 Joint Annual Technical Report – 12 month period ending 18/11/10**

**NO WORK**

.....Good Afternoon Nella,

There was no field exploration programmes undertaken during the period, and accordingly nothing of geological significance to report. Therefore we won't be lodging a Geological-Technical report for this period.

Kindly accept this letter email as a "NIL RETURN" for the reporting period.

Yours sincerely,

Robbie Cooper  
Tenement Adviser

Mobile Contact: 0439 707 499

Ms Nella Petruzzella,  
EL Reporting Officer,  
PIRSA - DMITRE,  
GPO Box 1264,  
ADELAIDE SA 5001.

Hi Nella,

GEOLOGICAL REPORTS - EXPLORATION LICENCES **EL3985**, **EL3986** AND **EL4212**

Thank you for your polite reminder, our apologies for the delayed response.

**There was no significant field exploration undertaken on these licences for the 2011 November Year End reporting period.**

Consequently, Strategic Energy will not be submitting Geological-Technical Reports at this time.

However, as an aside, I can confirm that combined exploration programmes-expenditure budgets for these particular licences for the years 2012 and 2013 are currently being formulated and prepared. And the combined total expenditure for the the general Uley Mine Area coming on stream very shortly, together with these licences in the near vicinity, for the forthcoming two years is expected to be quite considerable.

Kindly accept this as formal notification of non-lodgement for the Year Ending November 2011.

Yours sincerely,

Robbie Cooper  
Tenement Advisor

STRATEGIC ENERGY RESOURCES LIMITED

Mobile: 0439 707 499

Post Office Box 1098  
Cooma 2630 NSW

## Mckenzie, Todd (DMITRE)

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**From:** Robbie Cooper [jumbo29@hotmail.com]  
**Sent:** Wednesday, 27 March 2013 12:58 PM  
**To:** Petruzzella, Nella (DMITRE)  
**Cc:** Matt; Mark Muzzin  
**Subject:** EL's 3985 and 3986 - Final ATR's (NO WORK) - period ending 18/11/2012  
**Attachments:** EL 3985 2012 no2.doc; EL 3986 2012 no2.doc

.....Good Afternoon Nella,

As requested in your letter dated 20th March, we attach herewith Finals for Expired EL3985 and EL3986.

As there was no field exploration undertaken on these two Licences during this period, there is nothing of geological significance to report on. Consequently, we are submitting a "Nil Return" for both for the period ending 18th November 2012.

Many thanks for your attention to this matter.

Robbie Cooper  
Tenement Adviser  
U Energy Pty Ltd  
On behalf of  
KINGSTON RESOURCES LIMITED

Mobile: 0439 707 499