FINAL REPORT ON EL 24929
NGALIA BASIN
NORTHERN TERRITORY

Report No: BG/2013/09-3

Date: September 2013 (revised 14 February 2014)

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BIBLIOGRAPHIC DATA SHEET

PROJECT NAME: Bigrlyi South Uranium Project

REPORT TITLE: Final Report on EL24929 Ngalia Basin, Northern Territory

REPORT TYPE: Final

TARGET COMMODITY: Uranium

HOLDERS: Strike Resources Limited (75%) and Hume Mining NL (25%)

OPERATOR: Alara Resources Limited

TENEMENT: EL 24929

REPORT PERIOD: 21 August 2006 to 10 July 2013

1:250,000 SHEET AREA: MT DOREEN (SF5212)

1:100,000 SHEET AREAS: DOREEN (5313) & VAUGHAN (5053)

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DATE OF SUBMISSION: September 2013
EL 24929 is located about 300 km NW of Alice Springs and is a part of Bigryi South Uranium Project which also comprises EL 24879 and EL 24929. The Licence has 26 blocks.

EL 24929 is situated within the Ngalia Basin, a Neoproterozoic to Palaeozoic intracratonic basin approximately 300km long and 70km wide within the Northern Arunta Province of the Arunta Inlier, in central-south of the Northern Territory. Uranium mineralisation has been detected in the uppermost unit of the Basin – the Mt Eclipse Sandstone.

In September 2007, Alara conducted airborne radiometric and magnetic survey. Subsequent field traverses to check on anomalies did not generate any drill targets.

In May 2009, Alara entered into a Joint Venture agreement with Thundelarra Limited to manage exploration on EL 24929. Thundelarra carried out data compilation, AEM survey and airborne gravity survey (November 2010) and interpretation. Significant amount of historical data was retrieved and compiled for assessment. Historic work of relevance had been identified to-date includes track etch surveys by CPM and percussion drilling by AGIP. Processing and interpretation of geophysical data did not identify any significant targets for further exploration. Thundelarra withdrew from the joint venture in June 2013.

Based on the assessment of previous work undertaken on the tenement and exploration prospectivity, Alara decided to surrender EL 24929 in July 2013.
# TABLE OF CONTENTS

1. INTRODUCTION AND TENURE .......................... 6
2. GEOLOGICAL AND STRUCTURAL SETTING ............. 8
3. MINERALISATION AND EXPLORATION MODEL ........... 10
4. HISTORICAL WORK .................................. 10
5. EXPLORATION PROGRAM DURING THE TERM OF LICENCE 10
6. CONCLUSIONS ..................................... 11
7. REFERENCES ....................................... 13

# LIST OF FIGURES

- Figure 1: Location of the project area
- Figure 2: Exploration index map of EL 24929
1. INTRODUCTION AND TENURE

Exploration License (EL) 24929 covering 26 blocks (~57 km$^2$) was granted on 21 August 2006 for 6 years, expiring on 20 August 2012. After partial surrender the tenement was extended for another year till 20 August 2014. Alara conducted exploration till April 2009 and then entered into a farm-in Joint Venture agreement with Thundelarra Limited in May 2009. Thundelarra undertook exploration thereafter but terminated the joint venture in June 2013.

Based on the exploration carried out and assessment of the prospect, Alara decided to surrender this tenement in July 2013.

EL 24929 is located approximately 300km northwest of Alice Springs (Figure 1) on the Mt Doreen pastoral lease, immediately east of the Vaughan Springs homestead.

2.0. GEOLOGICAL AND STRUCTURAL SETTING

The Ngalia Basin is a Neoproterozoic to Palaeozoic intracratonic basin approximately 300km long and 70km wide within the Northern Arunta Province of the Arunta Inlier, in central-south of the Northern Territory. The Ngalia Basin is an asymmetric syncline with a steep tectonised northern boundary and a shallow northerly dipping unconformity forming the southern basin boundary. The northern boundary is defined to the east by low angle thrust faults over the Arunta Inlier and to the west by high-angle reverse faults that have thrust the basement rocks several kilometers over the sediments.
Figure 1: Location of the project area
The region has been tectonically active since before 1880Ma with several tectonic events and phases of granitic intrusions up to 1000Ma. Granites and metamorphic rocks have provided the source material for subsequent sedimentation. The younger post-tectonic granites, particularly the Southwark Granite Suite dated at 1567Ma are believed to be the origin of the uranium for the known uranium mineralisation in the region. Wholerock chemical analysis of 18 samples from these late granites are recorded as having uranium contents varying from 1.5-22.5ppm, thorium ranged from 3-175ppm and vanadium typically from 3-57ppm. In contrast, 8 samples from the older granites ranged in uranium content from 1.5-10ppm and vanadium from 20-90ppm. In general the geochemistry of these late granites is consistent with other high-heat production group (i.e. radiogenic) granites of the Arunta Inlier.

The Neoproterozoic to Carboniferous sedimentary sequences of the Ngalia Basin range in age from 850 - 350Ma. The Basin rests unconformably over the Arunta Inlier. The sediments of the Neoproterozoic are 2-3km in thickness and composed of dominantly fluvial to shallow marine quartz sandstones, shales, mudstones, conglomerates, dolomites and tillites. The transition from the Neoproterozoic to the Cambrian occurs within the 700m thick Yuendumu Formation of sandstone and arkosic sandstone formed in shallow marine conditions. Three further sequences of shallow marine to fluvial sediments, each unconformable upon the underlying sediments, were deposited during the Cambrian, Ordovician and Devonian periods.

The youngest and thickest Palaeozoic sedimentary sequence is the thick Devonian to Carboniferous Mount Eclipse Sandstone, up to 2.4km thick, which is deposited unconformably on all underlying Ngalia Basin units. In the region around the Bigrlyi uranium deposits the Mount Eclipse Sandstone overlies the Neoproterozoic age Vaughan Springs Quartzite, the oldest unit in the Ngalia Basin overlying the rocks of the Arunta Inlier. Uplift and erosion of the Arunta Inlier rocks to the north of the Ngalia Basin between 350 - 370Ma initiated the deposition of the Mount Eclipse Sandstone.
This deposition was terminated at the peak of the Alice Springs Orogeny, possibly about 300-320Ma. At this time the Yuendumu, Waite Creek, Patty Hill, Napperby and Hann Range thrust faults were active, thrusting the Arunta Inlier rocks southward over the Ngalia Basin rocks. This overthrusting is associated with the asymmetric folding of the Mount Eclipse Sandstone sequence with east to west axes and steep north-facing limbs. The Mount Eclipse Sandstone consists of arkoses, conglomeratic sandstones, greywacke and minor conglomerates deposited in piedmont to subaerial-fluvial environments. The sequence contains a significant carbonaceous component with common plant fossils.

Uranium mineralisation of the Ngalia Basin is hosted in piedmont-style sedimentary channels, composed of carbonaceous arkoses located towards the base of the Mount Eclipse Sandstone. The primary source of the uranium is inferred to be the younger granites of the Arunta Inlier. Since the end of the Alice Springs Orogen, the Ngalia Basin has been part of the stable Australian Craton with terrestrial sedimentation of sands, silts, Aeolian sand, calcrete, silcrete, lateritic ironstones and playa lake sediments; however sedimentation appears restricted to the Tertiary. These unconsolidated sediments obscure parts of the prospective Mount Eclipse Sandstone within the Alara tenement block.

2.1 STRUCTURE

Shallow, south-dipping, small scattered outcrops of Mt Eclipse Sandstone cover approximately 5-10% of the Bigrlyi South Project area. The remainder is covered by a thin cover of Recent to Quaternary sands, silts, calcrete, silcrete, lateritic ironstones and playa lake sediments.

A curvilinear low angle thrust, known as the Yuendumu Thrust, has been interpreted to intersect the easternmost portion of EL24929 (Figure 1). The Yuendumu Thrust has a total length of 100km and joins up with another major northeast thrust fault on the western margin of the Basin.
3.0 MINERALISATION AND EXPLORATION MODEL

The shallow cover of Recent to Quaternary sediments obscures much of the geology and also inhibits any radiometric response from the area. The asymmetric folding and the extensive thrust faulting, plus faulting within the Bigrlyi deposit suggests that carbonaceous horizons within the Mount Eclipse Sandstone, considered favorable for hosting the uranium mineralisation, may have repetitions within the tenements. In addition, faults would have provided excellent channel ways for the movement of uranium bearing oxidising fluids.

4.0 HISTORICAL WORK

A number of historic exploration licenses coincide with the present area of EL 24929. Most of the work on these historic licenses did not involve exploration within EL 24929. The eastern most portion of the EL is approximately 300 m south of drilling conducted by AGP at the Camel Flat North prospect, which is centered some 3.65 km to the northeast of the Licence boundary.

5.0 EXPLORATION PROGRAM DURING THE TERM OF LICENCE

During the term of the Licence, Alara conducted a review of the historical exploration data and a number of field visits were undertaken for ground-truthing. Exploration Index map of EL 24929 is shown in Figure 2.

In November 2007, Alara commissioned GPX Survey to conduct an airborne radiometric and magnetic survey. This data was provided in a DVD to the Department of Mines and Energy (Zuvela, 2008). Subsequent to geophysical interpretation, field visits were carried out to ground truth anomalies. However, no drill targets were defined.

In May 2009, Alara entered into a Joint venture agreement with Thundelarra Limited.
After taking control of EL 24929, Thundelarra carried out data compilation and conducted an appraisal of exploration data gathered so far. During review, potential for sandstone-hosted uranium deposits was identified. Thundelarra commenced a dedicated exploration program which included a study of Uranium Mineral System in the Ngalia Basin, led by CSIRO (Schmidt et al., 2011), high resolution AEM survey and precision helicopter-assisted gravity survey. GDF formatted geophysical data of these surveys were lodged with Dept of Mines and Energy (Bajwah and Maloney, 2011; Bajwah and Mill, 2012).

Processing and interpretation of geophysical data identified palaeochannel systems within the Ngalia Basin and drilling within other Licences e.g EL 25334 intersected significant uranium mineralisation. However, palaeochannels identified within EL 24929 were not prospective enough for further exploration program such as drilling.

6.0 CONCLUSIONS

Appraisal of previous exploration data along with processing and interpretation of high resolution data did not identify any exploration targets within the project area. Accordingly, EL 24929 was surrendered in July 2013.
Figure 2: Exploration index map of EL 24929

7.0 REFERENCES


Zuvela, J. (Alara Resources Limited), 2008, Combined Annual Report for EL 24928, 24929 and 23879 for the period August 2007 to August 2008 lodged with NT Dept of Resources

Zuvela, J. (Alara Resources Limited), 2007, Combined Annual Report for EL 24928, 24929 and 23879 for the period to August 2007 lodged with NT Dept of Resources