Final Report for the Period
18 December 2007 to 6 April 2010

EXPLORATION LICENCE 26012 UNDOOLYA

ARUNTA PROJECT

Tenement Holders: Arunta Uranium Pty Ltd ACN 127 112 323
(Subsidiary of Callabonna Uranium Ltd)

Submitted by: Callabonna Uranium Ltd

Prepared by M Dawson
4 January 2011
**BIBLIOGRAPHIC DATA**

- **Report Title:** EL 26012 Undoolya Final Report for the Period 18 December 2007 to 6 April 2010
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- **Project:** Arunta Project
- **Holder:** Arunta Uranium Pty Ltd
- **Submitter:** Callabonna Uranium Ltd
- **Author:** M Dawson
- **Date:** 4 January 2011
- **Tenement:** Exploration Licence 26012
- **Tenement Year:** 3
- **Period:** 18 December 2007 – 6 April 2010
- **Map sheet 250K:** Alice Springs SF5314
- **Map sheet 100K:** 5650, 5750, 5751
- **Datum:** GDA94 MGA Zone 53
- **Locality:** Undoolya
- **Local Description:** 7 km North and 14 km East of Alice Springs
- **Minerals Sought:** Uranium
- **Keywords:** Arunta, calcrete-style uranium, exploration
EXECUTIVE SUMMARY

EL 26012 was surrendered in its entirety on 6 April 2010. This is the final report for EL 26012 and will summarise all exploration activities completed during the life of tenure. Work carried out during the entire tenure period involved a reconnaissance site visit and an assessment of previous exploration results. No field activities were completed during the life of tenure and therefore there is no data to be reported.
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INTRODUCTION

EL 26012 ‘Undoolya’ was located near Alice Springs in the Arunta Region and Aileron Basin of the Northern Territory. EL 26012 was held by Arunta Uranium Pty Ltd, a wholly owned subsidiary of Callabonna Uranium Ltd. The tenement once formed part of the Arunta Project which also includes current tenements ELs 26006, 26040, 27181 and ELA 28253. The project is managed by the parent company Callabonna Uranium Ltd. Exploration targets included sandstone-hosted uranium, high grade unconformity-style uranium and calcrete-hosted uranium (similar to the Napperby Deposit with an inferred resource of 7.4 M lbs contained U3O8).

TENURE

Exploration licence 26012 was granted on 18 December 2007 for a period of six years (Table 1). However, Arunta Uranium Pty Ltd did not retain the tenement for the entire 6 year period. EL 26012 was surrendered on 6 April 2010, mid way through the third tenure year.

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<tr>
<th>Tenement</th>
<th>Name</th>
<th>Granted</th>
<th>Expiry</th>
<th>Sub-Blocks</th>
<th>Area Sq Kms</th>
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<td>Undoolya</td>
<td>18-Dec-07</td>
<td>17-Dec-13</td>
<td>126</td>
<td>376.6</td>
</tr>
</tbody>
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Table 1. Tenement Details
NATIVE TITLE

No Native Title Claims overlap EL 26012.

LOCATION & ENVIRONMENT

The Arunta Project is in a region known as ‘Central Australia’, located centrally in the southern part of the Northern Territory within the Arunta Block. The project area is located to the north and northwest of Alice Springs in the MacDonnell Shire local government area. The tenement can be accessed via the Stuart Highways and Tanami Road. Other minor roads and unpaved tracks are also available for travel. The Alice Springs Darwin Railway Line also travels by the project area providing good access to infrastructure. In the arid climate, average rainfall ranges from 8.1mm a month during the dry season to 41.8mm a month during the wet season but rainfall can vary quite significantly from year to year. The mean annual temperatures range from a summer maximum of 36.4° C to a winter minimum of 4.0° C, with a mean diurnal variation of about 13° C. The land is flat to gently undulating desert plains and low rocky foothills at the base of the McDonnell Ranges covered by acacia woodlands and grasslands. A majority of the land is covered by pastoral leases where the primary land use is cattle grazing.

EXPLORATION RATIONALE

EL 26012 was targeted for calcrete-style uranium deposits. Calcrete-hosted uranium deposits are known to develop as near-surface concentrations in sediments within major palaeo-drainage and playa lake systems. They form where uranium-rich granites have weathered in a semi-arid to arid climate. The weathered uranium is transported in drainage systems and redeposited with sediments cemented by secondary minerals including calcrete, calcite, dolomite, and gypsum. The uranium occurs as carnitite which is deposited as a chemical precipitate late in the formation of the calcrete. In the Arunta region uranium-enriched granitoids are a potential source of uranium, although mafic rocks may be required to furnish vanadium. The Napperby deposit (an inferred resource of 7.4 M lbs contained U3O8) demonstrates that suitable ore-forming processes have operated in the region.

EXPENDITURE

During the first year of tenure Callabonna spent $3,750 on EL 26012. During the second year of tenure Callabonna spent $4,696. And during the final year of tenure (4 months in total) Callabonna spent $1,543.
EL 26012 is underlain primarily by Proterozoic gneisses, amphibolite and lesser schist. A variety of gneisses have been mapped (Fig. 2) including augen or porphyroblastic textured and some contain garnet.

A high strain zone occurs to the immediate north of EL 26012 (pale blue in figure 2 marked Prr). The magnetic image in figure 3 defines an ENE-WSW trending fault zone coincident with the mapped high strain zone. This image also suggests a major east-west trending boundary to the south of the tenement that is not reflected in the 250,000 scale mapping.

Potential for calcrete-hosted deposits is greatest in the southern portion of the tenement where Cainozoic sediments onlap the Proterozoic rocks.
CAINOZOIC GEOLOGY

The southern NT forms a "basin and range" province with Proterozoic and Palaeozoic rocks forming prominent ranges separated by broad valleys occupied by at least twenty Cainozoic sedimentary basins (Senior et al., 1995). Average sediment thickness ranges from about 180m to as much as 500m. The Mt Hay tenement covers portions of the Sixteen Mile and Burt Tertiary Basins (Fig. 4).

The stratigraphy of these basins is poorly known due to a lack of outcrop, intense weathering and paucity of drillholes. Drilling in the Sixteen Mile Basin indicated considerable thicknesses of probable Tertiary sediments including carbonaceous shales and clay with thin lignite seams (Hossfeld, 1954; Edworthy, 1967).

The Hale Basin was explored extensively for coal (lignite) and sedimentary uranium during the late 1970’s and early 1980’s. This basin is considered to represent a generalised Tertiary stratigraphy for the southern Northern Territory. Senior et al. (1994) defined a two-fold stratigraphic subdivision that corresponds well with the observed pattern of Cainozoic sedimentation elsewhere in southern Australia. It comprises a restricted, fluvial palaeochannel dominated Palaeogene succession (Hale Formation) overlain by a more widespread, dominantly lacustrine Neogene succession (Waite Formation). An additional stratigraphic unit, the Napperby Formation (Higgins,
2009) has since been recognised as overlying the Waite Formation and represents the development of prograding alluvial fans shed from the ranges flanking the Cainozoic Basins.

PAST EXPLORATION

SUMMARY

The area has long been recognised as prospective for “sedimentary” (aka sandstone-hosted or roll-front or tabular) uranium deposits. The current tenements have previously been explored for uranium by CRA in the early nineteen seventies. CRA’s tactical approach was to use widely spaced carborne scintillometer traverses and uranium/radon/gamma ray investigation of water bores. These tactics failed (unsurprisingly) to identify any anomalous uranium or radioactivity. The wide-spacing of the sampling is not ideal given the relatively small size of the target and likelihood of limited surface response. Furthermore, thin veneer of alluvial cover is likely to mask even a shallowly-buried radioactive source. A CRAE GEOTEM survey covering EL 26006 revealed conductive drainages that have been better defined by the TEMPEST survey flown by the joint venture.

For more information on historic exploration please refer to the 2009 Annual Technical Report (Wilde, 2009) and the 2010 Annual Report (Bergman, 2010).
WORK CARRIED OUT BY CALLABONNA

YEAR 1
Nil field activities were completed in EL 26012 during Year 1.

YEAR 2
During Year 2, the Geologists at Callabonna completed a reconnaissance field trip to the Arunta tenements to view the surface geology. A hand held spectrometer was utilised for quick field assaying of outcrops but no rock chip samples were taken in EL 26012 for further analysis.

YEAR 3
Nil field activities were completed in EL 26012.

REFERENCES


