ANNUAL REPORT
Gum Creek Project
EL27634

NORTHERN TERRITORY

FOR THE PERIOD
09 April 2010 to 08 April 2011

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DATE: May 2011
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PROJECT NAME: Gum Creek Project
TENEMENT NO: EL27634
TENEMENT OWNER: Royal Resources Limited
TENEMENT OPERATOR: Royal Resources Limited
REPORT TYPE: Annual
REPORT TITLE: Annual Report Gum Creek Project, EL27634 Northern Territory for the period 09 April 2010 to 8 April 2011
REPORT PERIOD: 09 April 2010 to 8 April 2011
AUTHOR: Ian Faris
DATE OF SUBMISSION: May 2011
DATUM: GDA94_Zone 52
1:250,000 SHEET AREA: Mount Doreen (SF52-12)
1:100,000 SHEET AREA: Doreen (5153)
GEOLOGICAL PROVINCE: Ngalia Basin
COMMODITY: Uranium, Vanadium, Copper, Lead, Zinc, Gold
ABSTRACT

LOCATION: The Gum Creek Project is located approximately 320 kilometres west-northwest of Alice Springs in the centre of the Ngalia Basin, Northern Territory. The project is defined by a single Exploration Licence, EL27634, which covers an area of ~16km² (5 sub-blocks) and is located on the Mount Doreen (SF52-12) 1:250,000 sheets and the Doreen (5153) 1:100,000 sheet.

GEOLOGY: The Yatjalu Project is situated in the centre of the Ngalia Basin, a basin containing sediments up to 6000m thick ranging in age from Neoproterozoic to Palaeozoic and preserved in an elongate structure. The project area is covered by thin Quaternary sands and clays with minor outcrop of the Carboniferous Mount Eclipse Sandstone on the northern margin. The Mt Eclipse Sandstone is also evident as residual bedding traces through the Quaternary cover throughout the Licence area. The Davis Anticline passes through project area.

WORK DONE: During the reporting period, Royal Resources Limited undertook a historical report review, obtaining copies of all the historical reports and commencing assembling into a database. Regional gravity and magnetic surveys were subset and reprocessed for the project area and field programmes were developed. Field activities are postponed until a heritage survey clearance has been finalised.

CONCLUSIONS: With limited outcrop exploration will be geophysical and drilling based. Quaternary sands, subcrop and outcrop of the Mt Eclipse Sandstone cover the area and Tertiary channels are suspected to exist below the cover sequence. From reprocessing of the published gravity and airborne magnetic data, a magnetic gravity high is apparent trending through the centre of the Licence area probably related to a basement high associated with the Davis Anticline. It is not clear at present whether this represents a post-Mt Eclipse structure or a pre-Mt Eclipse topographic high.

No uranium mineralisation is evident from previous work but an old track etch survey shows elevated counts in the southwest portion of the Licence near a synclinal axis.
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1. **INTRODUCTION AND TENURE**

This report details exploration completed on the Gum Creek Project for the period 09 April 2010 to 08 April 2011. The project area consists of one granted Exploration Licence EL27634 situated approximately 320 kilometres west-northwest of Alice Springs in the centre of the Ngalia Basin (Figure 1). The tenement covers 5 blocks (~16 km²) and is 100% owned by Royal Resources Limited (“Royal”). Tenement details are listed below in Table 1.

The exploration focus is uranium mineralisation hosted by either the Mt Eclipse Sandstone (sandstone type) or by Tertiary channels buried beneath the Quaternary sands (palaeochannels). During the year, past and current geological reports, both Government and Company open file reports were acquired, available public geophysical data sets were acquired and reprocessed over the project area and the historical data is being input into a GIS database for the region. Before fieldwork can commence heritage clearances were required. Clearances were requested in August 2010 and were undertaken in late March 2011. The results of the survey are not available as yet and consequently no fieldwork could be undertaken.

All coordinates in this report are in MGA94 Zone 52.

**Table 1: Yatjalu Project tenement details**

<table>
<thead>
<tr>
<th>Tenement</th>
<th>EL27634</th>
</tr>
</thead>
<tbody>
<tr>
<td>Location</td>
<td>Ngalia</td>
</tr>
<tr>
<td>Ownership</td>
<td>100% Royal Resources Limited</td>
</tr>
<tr>
<td>Grant date</td>
<td>9 April 2010</td>
</tr>
<tr>
<td>Expiry date</td>
<td>8 April 2016</td>
</tr>
<tr>
<td>Area</td>
<td>5 Blocks (~16 km²)</td>
</tr>
<tr>
<td>Expenditure commitment</td>
<td>$12,750</td>
</tr>
</tbody>
</table>

2. **LOCATION AND ACCESS**

EL27634 is located 320 kilometres west-northwest of Alice Springs in the Northern Territory, (Figure 1) on the Mt Doreen (SF52-12) 1:250,000 mapsheet and the Doreen (5153) 1:100,000 mapsheet, although the 1:100,000 sheet has not been compiled or published. The tenement is bounded by latitudes 22°15′-22°17′S and longitudes 131°06′-131°09′E.

Access to the area is by the sealed Stuart Highway for approximately 20 kilometres northwest of Alice Springs, then by travelling 295 kilometres northwest along the Tanami Highway via Yuendumu before driving along the access road to Vaughan Springs homestead for roughly 50 kms then 5kms northwards along the Davis Gap road. Station tracks and old access tracks are used within the project area.

3. **REGIONAL GEOLOGY**

The Gum Creek project is within the Ngalia Basin. The Basin contains sediments up to 6000m thick ranging in age from Neoproterozoic to Palaeozoic and preserved in an elongate structure that is remnant of a much more extensive, polyphase intracratonic basin.

The NeoProterozoic Vaughan Springs Quartzite is the oldest unit in the Ngalia Basin, mostly forming ridges along the northern and southern margins. It unconformably overlies the Arunta Inlier basement and is overlain conformably by carbonate units of the Albinia Formation, which in turn is conformably overlain by the Naburula Formation, the Mount Stuart Formation and Rinkabeena Shale and unconformably overlain by glacial deposits of the Mount Doreen Formation. The Yuendumu Sandstone, Walbiri Dolomite, Bloodwood Formation, Djagamara Formation and Kerridy Sandstone were deposited within the Ngalia Basin through to Ordovician times. Unconformably overlying all earlier units is the Carboniferous Mount Eclipse Sandstone. It crops out widely throughout the Basin and has a thickness in excess of 3000 metres. The Mt Eclipse Sandstone
hosts the majority of the sandstone type uranium mineralisation. It is a medium to coarse-grained feldspathic sandstone, commonly with carbonate cement. Conglomerate, arkose, dolomitic sandstone and shale units are present as lenses. The rocks are dominantly red or yellow-brown (oxidised facies) with restricted zones of light to dark grey (reduced facies).

The Arunta Block, located on the north and west of the Ngalia Basin contains the Southwark Granite, an undivided megacrystic biotite and muscovite-biotite granite with minor microgranite and leucogranite, pegmatite and aplite dykes, (Young et al., 1995). The Southwark Granite is considered a source for the uranium in the project area.

Seismic data indicates that the basin is an asymmetrical synclinal structure, which preserves a much thicker succession on the northern margin marked by northerly dipping thrusts and high angle reverse faults. The current basin configuration results predominantly from affects of the 300-400Ma Alice Springs Orogeny. This involved exhumation of the basement, which became the provenance for the Mt Eclipse Sandstone (Edgoose, 2006).

4. LOCAL GEOLOGY AND MINERALISATION

EL27634 is in the central Ngalia Basin, (Figure 2). The Licence area is essentially flat and covered by Quaternary sands with low remanent ridges of the Mt Eclipse Sandstone. About 5 km north, the Vaughan Springs Quartzite forms prominent scarp ridges. There are no known uranium prospects or drillholes within the Licence area beside the shot holes for the seismic surveys related to petroleum exploration.

EL27633 is approximately 6 km southeast of the Bigrlyi uranium deposit, which was discovered within the Mount Eclipse Sandstone by Central Pacific Minerals NL (CPM) in 1971 following up surface radiometric anomalies. Most of the uranium mineralisation encountered to date within the Ngalia Basin is in the basal Mt Eclipse Sandstone. Central Pacific Mines NL sub-divided the basal 500m of the Mt Eclipse Sandstone into eight units, namely Units A to H (Pope, 1978). Unit C contains most of the known mineralisation. More recently, exploration companies (Thundelarra) has identified significant uranium mineralisation within Tertiary channels incised into the Mt Eclipse or related to buried topography.

The uranium is thought to be sourced from the Southwark Granite, transported in oxidising solutions and precipitated in reduced sandstones containing carbonaceous material and pyrite such as the Mount Eclipse Sandstone, although more recent work (CSIRO, pers. comm.) suggests most of the ‘carbonaceous matter’ are vanadium minerals. Uranium minerals include carnotite in the oxidised zone and uraninite±montroseite in the fresh rock below the water table. Diagnostic alteration in the Bigrlyi deposit includes hematitisation, chloritisation and kaolinisation.

Three exploration models exist at present, namely uranium associated with structures and associated with redox fronts within, although not restricted to the Mt Eclipse Sandstone, and within Tertiary channels overlying the Mt Eclipse Sandstone. Three is also some potential for uranium mineralisation associated with surficial calcrite deposits.
Figure 1: Gum Creek Project Location
Figure 2: Gum Creek Project Regional Geology (after Mt Doreen 1:250,000 Sheet, 2006)
5. **WORK DONE**

5.1 **Site Clearance**

A search of the Sacred Sites Register by the AAPA identified no Registered or Recorded Sites within EL27634. A works program and heritage survey request was sent to the CLC in August 2010 and updated in February 2011. A survey was undertaken in April 2011 but no results are available.

5.2 **GIS Data Review**

A compilation of all geophysical and geological data commenced to identify all historical activity on the tenement. The most significant activity was two seismic lines (Magellan Lines A & E) and the associated shot holes and gravity surveys results along these lines. No geological information has been located for the shot holes.

A tracketch survey was undertaken on the southern half of EL27634 north of the access road to Vaughan Springs.

No significant historic uranium anomalism or prospects were identified within EL 27633.

5.3 **Geophysical Studies**

During the reporting period, Hawke Geophysics Pty Ltd was contracted to reprocess the existing regional geophysical surveys over the tenement area. The existing gravity, magnetics and radiometric datasets were subset and reprocessed to aid interpretation of the existing geological maps.

6. **RESULTS**

6.1 **Data Review**

The most significant activity was the two seismic lines and the associated shot holes and gravity surveys results along these lines. Unlike other lines, no basic lithological data has been located in historical reports. The interpretation of Line A is shown in Figure 3.

Plotting of the local geology and historical results is shown on Figure 4.

6.2 **Geophysical Studies**

Reprocessing of the regional gravity (Figure 5) and magnetic (Figure 6) data and further examination of the outcrop patterns on available imagery shows that the Davis Anticline passes through the northern edge of the Licence area with an unnamed syncline passing through the southern edge. The Davis Anticline is from seismic interpretations but is supported by the gravity imagery.

7. **CONCLUSIONS AND RECOMMENDATIONS**

The Licence area is considered to be completely underlain by Mt Eclipse Sandstone over an irregular basement, which is possibly overlain by incised Tertiary channels, controlled by the incompletely buried topography. Younger Quaternary units cover most of the Licence area with only low ridges of Mt Eclipse exposed on the northern edge and as remanent bedding evident on GoogleEarth imagery.

Future exploration will need be geophysical based supported by drilling to locate any Tertiary channels and uranium mineralisation.

Tertiary channels will be targeted by gravity or airborne EM surveys initially and identified targets will initially be drill tested to ascertain their prospectivity.
Figure 3: Interpretation of Seismic Line A
Figure 4: Historical Activities
Figure 5: Historical Activities over gravity (1VD)
Figure 6: Historical Activities over magnetics (TMI 1VD)
8. REFERENCES


