REWARD MINERALS LTD

FINAL TECHNICAL REPORT

EL 24312

Northern Territory

Final Annual Report for the year ending

29TH DECEMBER 2009

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KEY WORDS

RODINGA
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MAGELLAN PETROLEUM
BLUEBUSH FORMATION
AMADEUS FORMATION
GILLEN MEMBER
DIAPIR
ISOPACH
RADIOMETRICS
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REWARD MINERALS LTD
EL 24312
NORTHERN TERRITORY
Final Annual Report for the
Year Ending 29th December 2009

SUMMARY

AIM
To explore and evaluate the potential for potash mineralisation.

OBJECT of REPORT
To document exploration activities and results achieved on Exploration Licence 24312 and to report these to the Department of Industry and Resources, Northern Territory.

LOCATION
EL 24312 is located 120 kilometres south east of Alice Springs on the Rodinga 1: 250 000 map sheet (SG53-2).

TENURE
EL 24312 was granted to Tyson Resources Pty Ltd on 25th January 2005 for a period of six years. It is bounded by Longitudes 134°30’ and 135° and Latitudes 24°05’ and 24°25’. The tenement was purchased by Reward Minerals Ltd in November 2005.

The tenement was surrendered on 29 December 2009.
PRECIS

During this reporting year, a review of all previous work and investigations was completed with a view to selecting targets for potash exploration, based largely on petroleum data.

RECOMMENDATIONS

Drilling of one deep RC hole to intersect the top of the Cambrian.
1. INTRODUCTION

Exploration Licence 24312 is located in the southeastern sector of the Amadeus Basin in the Northern Territory (Figure 1). The Amadeus Basin covers approximately 150,000km$^2$ and is located in the southwestern part of the Northern Territory extending into Western Australia. It is comprised of a Neoproterozoic to mid-Palaeozoic succession of shallow marine sediments and attains a thickness of up to 14,000m.

The purpose of this report is to detail exploration conducted on EL 24312 during the year ended 24th January 2009.

2. LOCATION and ACCESS

EL 24312 is located 120 kilometres south east of Alice Springs on the Rodinga 1:250 000 map sheet (SG53-2). (See Figure 1).

Access is via a graded gravel road to Allambi Station. Historical exploration and mine tracks, as well as station tracks provide local access throughout the tenement which is located over a portion of the Rodinga Pastoral Lease.
3. **TENURE**

EL 24312 was granted to Tyson Resources Pty Ltd on 24th January 2005 for a period of six years. It comprises 306 blocks encompassing a total area of 954 sq km. The tenement was sold to Reward Minerals Ltd in November 2005.

The tenement was surrendered on 29 December 2009.
4. GEOLOGICAL SETTING

EL 24312 lies on the Rodinga 1: 250 000 map sheet (SG53-2), for which geological notes are available.

The Amadeus Basin contains two sequences prospective for potash mineralisation; the Neoproterozoic Bitter Springs Formation and the Early Cambrian Chandler Formation. Both of these formations occur within the basin at exploitable depths.

![Map showing location of petroleum wells](image)

4. PREVIOUS EXPLORATION

In 1982, Magellan Petroleum carried out a seismic survey on an area called Camel Flat, part of which is covered by the tenement. A total of six seismic lines (MCF 1, 7, 8, 9, and 10) were shot, the positions of which are shown in Figure 4. The area has been geologically mapped as the Camel Flat Nappe. From the seismic interpretation a series of isopach maps were produced displaying the following:

- Depth to bottom of the Chandler Formation
- Depth to the bottom of the Proterozoic
- Combined Chandler-Arumbera Isopach

These interpretations were combined to produce a map indicating areas where the Chandler Formation was at its lowest, providing a target zone for end stage bittens to collect, including potash.
5. DISCUSSION AND RECOMMENDATIONS

The Chandler Formation is the primary target for potash mineralisation. In the eastern part of the Amadeus Basin, the Chandler Formation contains thick sequences of evaporitic rocks. Halite beds range in thickness from less than 50m to over 1,000m and average 470m thick in the Rodinga area. These thickness variations are accentuated in areas of structural thickening due to salt tectonics. Within the Rodinga project area the Mt Charlotte No1 well intersected a 225m thick section of Chandler Formation halite from 710 metres depth to the bottom of the hole and the Bluebush No1 well intersected 690m of halite from 786 metres depth (Fig 2). These intersections occurred between depths of 700 and 1,500m, within the depth range of economic exploitation. The Chandler salt has high bromine levels that suggest precipitation from late stage brines which is a positive indicator for the presence of potash salts.

The main Chandler Formation target interpreted from seismic surveys in the Rodinga Project is a basinal depression target at Camel Flats, just north of Bluebush No1 (see Fig 2). Other targets are areas of thickening of the Formation in diapirs and basinal depressions adjacent to salt diapirs and salt walls derived from the underlying Bitter Springs Formation. Potential exists for large flat-lying Canadian-type potash deposits as well as diapir related European-style potash deposits.
Further analysis will be carried out using existing and new geophysical, geochemical and geological data to better define potash mineralisation targets within the Chandler Formation.

Within the Bitter Springs Formation, the evaporitic Gillen Member is the target horizon for potash mineralisation. It was deposited in the Neoproterozoic and comprises interbedded carbonates, sulphates and halite beds typical of a marine evaporitic sequence. It is widely distributed throughout the Amadeus Basin covering an area significantly greater than the Chandler Salt. The thickness of the Gillen member averages 800m but varies from 100m to more than 2,000m with the thickening of the beds mainly due to salt tectonism. Halite units are common within the Gillen Member but have been poorly tested by drilling, with a number of holes terminating in halite units at considerable depths.

In the Rodinga project area, two drill holes ended in the Gillen Member, Mt Charlotte No1 after intersecting 556m and Bluebush No1 after intersecting 85m of this formation. Halite beds up to 60m thick were intersected in the Gillen Member in the Mt Charlotte hole.

Bromine levels in the Gillen Member vary from 130-190ppm indicating precipitation of salts occurred from late stage brines. Potential exists for both large, flat-lying, Canadian style as well as diapir related potash mineralisation within the Bitter Springs Formation. Further work is required to establish the best target areas for potash mineralisation.
Bore hole location and analytical data was purchased from the Conservation and Natural Resources Group to cover the whole of the Rodinga 1:250,000 sheet. Figure 5 displays the location of the wells and significant potassium values:

Figure 5
Showing geology, and shot hole and bore hole locations

The value around the bore hole (shaded blue) is potassium (in ppm). Only two boreholes were analysed for K and these are very low (<100ppm).

Figure 6
Seismic Profiles MCF-7
A suitable potash target is shown in Figure 6 to the north of the area delineated by the purple arrow. This area is associated with diapiric activity, with the salt flowing into the “expanded” Chandler beds along with possible potassium rich sediments. A detailed plan showing the shot hole location is shown in Figure 7 with the purple arrow showing the shothole point.

Figure 7
Shothole Location with Geology showing Proposed Borehole Location
Radiometric data was purchased in 2006 and reprocessed, producing a RGB image of various elements (K, Th and U) as shown in Figure 9.

Figure 9
Radiometric Image

The colours of the image represent red for potassium, green for Thorium and Blue for Uranium.
6. WORK COMPLETED

The main target could be tested by drilling a deep hole to approximately 2100 metres to intersect the base of the Arumbera Formation, on the diapiric structure, possibly angled south so as to enable logging of discernable bedding.

However, an initial 300 metre vertical hole will be drilled to test for elevated potassium values within the diapir.

During the previous years several site visits were made to determine the tracks that would be used by the drilling crew. The local landowner raised concerns about the damage that could be caused by the movement of heavy trucks and several initiatives including heavy watering the track to provide a firm base have been considered. One was marked out in preparation for drilling. A location map showing an area within which the hole has been sited is shown in Figure 9. A revisit was made to confirm the state of the drilling site and liaise with the landowner.

A possible rig suitable for drilling one hole did not become available and it was decided to surrender the tenement.

![Figure 8 Proposed Drillhole Location](image)
REFERENCES