

| Titleholder:      | Rum Jungle Uranium Ltd  |
|-------------------|---|
| Operator:         | Rum Jungle Uranium Ltd  |
| Tenement Manager: | Ross McColl   |
| Tenement:         | EL 27060  |
| Project Name:     | Amadeus Potash  |
| Report Title:     | First Annual and Final Report for EL 27060<br>Amadeus Basin NT, period ended 20/1/2010. |
| Author:           | Nigel Doyle   |
| Corporate Author: | Rum Jungle Uranium Ltd  |
| Target Commodity: | Potash  |
| Date of Report:   | 26/2/2010   |
| Datum/Zone:       | GDA94/ Zone 53  |
| 250K map sheet:   | Rodinga, Kulgera and Finke  |
| Address:          | PO Box 775, Darwin NT 0801  |
| Phone:            | 8942 0385   |
| Fax:              | 8942 0318   |
| Contact Email:    | ndoyle@rumjungleuranium.com.au  |

# Contents

| SUMMARY              | 3 |
|----------------------|---|
| NTRODUCTION          |   |
| GEOLOGICAL SETTING   | 5 |
| EXPLORATION TARGETS  | 6 |
| PREVIOUS EXPLORATION | 7 |
| EXPLORATION YEAR 1   | 8 |
| CONCLUSION           | 9 |
| REFERENCES           | 9 |

## **SUMMARY**

During the first and only year of tenure, research into the geology of the tenement EL 27060, five surrounding tenements and potash potential of the Amadeus Basin was carried out. No joint venture partner could be found to fund deep drilling and seismic programs, therefore in the best interests of shareholders EL 27060 was relinquished.

No on-ground exploration was carried out during the first year of tenure.

Expenditure for the year was \$3724 on EL 27060.

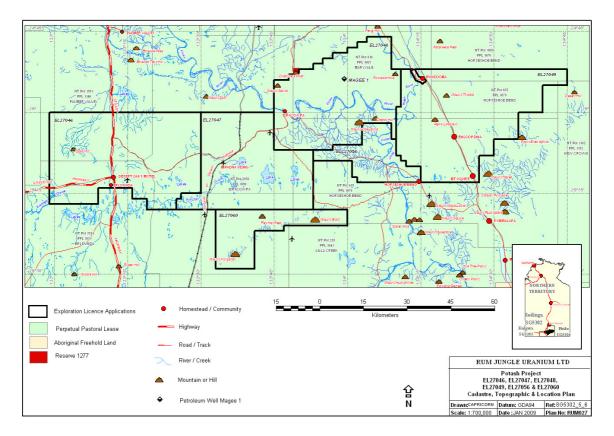
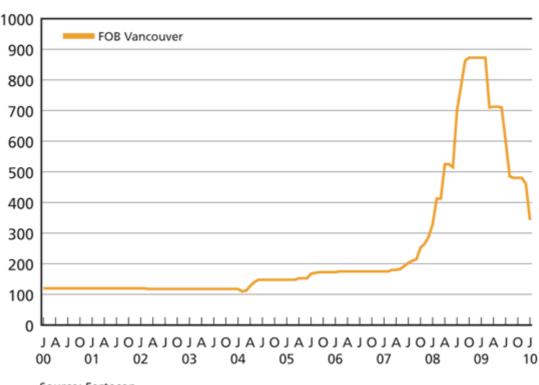


Figure 1. Location Map of Amadeus Basin Potash tenements

## **INTRODUCTION**

The six tenements were granted to Rum Jungle Uranium Limited on August 20, 2009 for a period of six years. The tenements are located south of Alice Springs and generally east of Erldunda in the Amadeus Basin of the Northern Territory. The tenements were applied for due to a huge rise in potash prices in the latter half of 2008 and 2009 when potash rose from around \$180/tonne up to \$880/tonne (Figure 2) due to supply and demand pressure. The global financial crisis and the worldwide reluctance of farmers to pay such prices lead to steep drops in the potash price throughout 2009 and into 2010.

The Amadeus Basin was chosen for potash exploration as its hosts similar geology and thick salt beds like the Williston Basin in Saskatchewan, Canada where the world's largest resources of Potash are mined. Potash (Potassium Chloride) is known to occur near the top of thick salt beds in Canada. Thick salt beds are also known in the Amadeus Basin from seismic sections and historic petroleum wells in the basin.



#### Figure 2. International Spot prices for Potash

Source: Fertecon

KCl (Spot)

\$US/MT STD Grade

## **GEOLOGICAL SETTING**

## **Regional Geology of the Amadeus Basin**

The intracratonic Amadeus depression (which contains the palaeodrainages, Cainozoic sedimentary pile and its modern chain of playas) is a major E-W linear feature on the topographic map of Australia, where its development is closely associated with evaporates from its early history. According to Wells (1980), the basin may have formed from the solution of Proterozoic evaporites formerly cropping out along an anticlinorial axis. Marshall and Dyson (2007) describe it as a salt cored fold and thrust belt.

Proterozoic and Palaeozoic sedimentary rocks of the Amadeus Basin sequence (Wells et al, 1970) protrude as bedrock hills (e.g. Ayers Rock and the Olgas) through the Cainozoic sediments. Sedimentation commenced in the Neoproterozic, with the deposition of sandstones, siltstone and mudstones of the Heavitree Quartzite over heavily metamorphosed basement. Following this the Late Precambrian Bitter Springs Formation made of the Gillen Member (which contains the Gillen Salt) and Loves Creek Member, is comprised of bedded dolomite, limestone, siltstone, conglomerates and evaporites (gypsum and anhydrite). The sequence is disconformably overlain by Palaeozoic shallow-marine sedimentary rocks that underlie the Cainozoic sediments. At Lake Amadeus however it is common for Cainozoic sediments to be overlain on top of the Bitter Springs Formation.

Based on data from Company exploration drill holes and water bore information, Cainozoic sediments comprised of Tertiary deposited ferricrete, silcrete, sandstones and siltstone and Quaternary deposited alluvial-aeolian clay and sand units interbedded with groundwater-deposited calcrete and gypcrete. Due to depositional mechanism such as arid climate, wind and groundwater, the Quaternary units form the main surficial sediments over much of the Amadeus Basin (Edgoose et al. 1993). The maximum thickness of Cainozoic sedimentary pile, recorded near Ayers Rock, is 100 m (Jacobson, 1988). In the Curtain Springs area these carbonate deposits form on weathered sandstones, thought to be of Ordovician age (Arakel et al., 1989)

Generally calcrete and gypcrete develops on the margins of playa lakes and in sand dunes and reflect Quaternary groundwater-level fluctuations. In some cases dissolution and precipitation by groundwater can cause silicification of calcrete deposits which is an important factor in development of economic mineral ores. The playa lake systems are central to valleys of shallow groundwater discharge and playa brines are highly concentrated with respect to sodium, chloride, sulphate, magnesium and potassium ions. Present day precipitation of gypsum is a result of the evaporation concentration of groundwater.

## **EXPLORATION TARGETS**

### **Chandler Formation**

The shallowest salt beds are known to occur in petroleum well Magee 1 at around 750m below surface. May be as shallow as 200m in some salt domes.

#### Gillen Salt Member

The deepest of the salt members and probably the most prospective. RUM researched the halotectonic history of the Amadeus Basin to find where salt diapirism has lifted the Gillen Salt Member to reasonable depths below surface for drill testing. The Gillen Salt Member is a thick evaporitic sequence within the widespread Bitter Springs Formation.

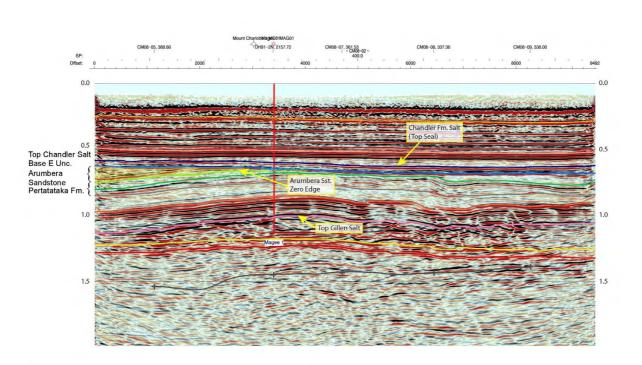


Figure 3. Seismic Section highlighting the Chandler Salt Formation and the Gillen Salt Member

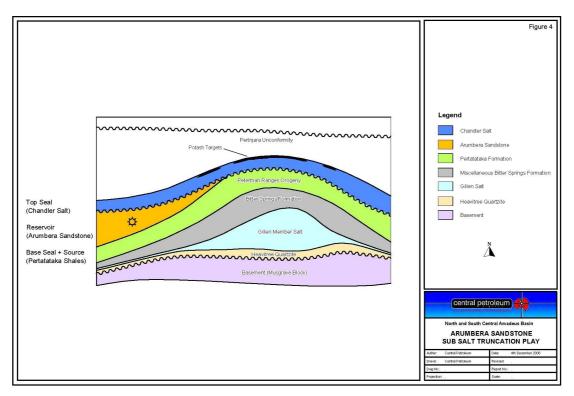


Figure 4. Potential Potash Targets at the top of the Chandler Salt

## **PREVIOUS EXPLORATION**

Exploration in the Amadeus Basin has primarily been for petroleum as well as industrial mineral and brine resources. The Amadeus Basin, more so the southern portion, has had numerous seismic surveys during the late 1980's early 1990's by various companies including Sydney Oil and Partners, Indigo Oil and Sirgo Exploration, Pacific Oil and Gas Pty Ltd, Bureau of Mineral Resources and so forth. The BMR has done shallow stratigraphic bore holes into the Cambrian Goyder Formation. Of six wells that were completed over the Southern Amadeus Basin by petroleum explorers, only one was to test a valid trap or reach a primary reservoir target, Magee-1 (Young Geoconsultants, 2004).

Wallara -1 was drilled into the late Cambrian Goyder Formation by Indigo Oil and Sirgo Exploration Pty Ltd in 1990. The hole was drilled to test reservoirs between the Heavitree Quartzite sealed by the Gillen Member salt and lower shale, however only reached the upper Gillen Member units due to rig limitations at depth. Wallara-1 did penetrate the black shales of the Aralka Formation which contained migrated hydrocarbons and did provide a good well to seismic correlation tie.

The Murphy-Erldunda area lies in the southeastern Amadeus Basin, adjacent to the Stuart Highway. Erldunda-1 was drilled in 1965 to 1665m and aimed to test Cambrian and Proterozoic sediments capped by Cambrian salts within a large northwest-trending anticline. The section turned to be significantly different to prognosis as the structure had been considerably eroded and a potential Cambrian reservoir and capping rocks had been lost. The Murphy-1 well, 50km south of Erldunda-1, was drilled in 1981 to 2882m and targeted Heavitree Quartzite in a northwest-trending anticline, however ending in a thick salt sequence of the Gillen Member. It was predicted that the well needed to drill a further 1300m deeper to reach the reservoir if present.

Two wells in the Magee area were to test a thrust faulted anticline with seismically defined four-way dip closure. The Mt Charlotte-1 well was drilled to 2116m in 1965 to target sediments of the Ordovician Larapinta group, however the sandstone unit was not adequately sealed by the thinner than expected unit. The well finished in the Gillen Member salt and did not test the potential of the sub-salt Proterozoic section. Magee-1 was drilled 1.2km west of Mt Charllote-1 for 2396m in 1992 and was designed to test the Late Proterozoic sediments bellow the Bitter Springs Formation, with the primary target the Heavitree Quartzite. The Heavitree Quartzite was thinner than expected but did achieve a sub-commercial, stabilised flow rate and a low flowing pressure and low permeability reservoir. Magee-1 was the first well to intersect the Heavitree/ Basement contact and validated the Gillen Member – Heavitree Quartzite petroleum system.

Bluebush-1 was drilled in 1983 for 2090m in the northeastern part of the Amadeus Basin. The well bottomed in the Gillen Member salt overlain by a larger intrusion of the Chandler salt. The Chandler salt was expected to provide seal for the Arumbera Sandstone overlying the Gillen Member, as the primary objective reservoir. The Arumbera sandstone was absent in Bluebush-1 and porosity was water filled with no hydro-carbons present (Young Geoconsultants, 2004).

In 1988, to the west of the tenements near Karinga Creek, NT Evaporites together with the Northern Territory Department of Industry and Development began a geological data base to be used to assess the industrial mineral resources in the license areas. The investigation involved field mapping, sediment coring and water sample collection. Since then exploration has identified a variety of industrial minerals and brine resources including industrial clays, zeolites and evaporites. In 1992 Geo-Processors Pty Ltd conducted an assessment of resources and feasibility study of the Karinga Creek area and concluded that the site was suitable for a commercial operation and technically feasible.

#### **EXPLORATION YEAR 1**

During the first year of tenure, research into potential drill targets in the Chandler Formation and the Gillen Salt Member of the Bitter Springs Formation was carried out. Petroleum prospectivity reports and Amadeus Basin geological reports were researched. Managing Director David Muller and Nigel Doyle attended a mining conference in China in 2009 and presented Austrade officials with details of the tenements and proposed targets. Some interest was generated from China but no Joint Venture could be secured. Rum Jungle has secured potash exploration rights to two exploration licences in the Karinga Creek area for salt lake potash exploration. This is a cheaper near surface alternative for potash exploration, rather than drilling 1000 plus metre drill holes and conducting expensive seismic programs, so the company will focus on those tenements.

## CONCLUSION

In the absence of a joint venture partner, the company has chosen to explore for potash in surficial salt lake brines along Karinga Creek in tenements further west between Erldunda and Curtin Springs. This option represents a much cheaper form of exploration than drilling to depths of 1500m on the tenements listed in this report.

Tenement 27060 is to be relinquished.

## REFERENCES

V. Arakel, G. Jacobson, M. Salehi and C. M. Hill, 1989. Silicification of calcrete in palaeodrainage basins of the Australian arid zone. *Australian Journal of Earth Sciences* **36**, 73-89.

Edgoose, C. J., Camacho, A., Wakeln-King, G. A., Simons, B. A., (1993). Kulgera 1:250 000 Geological Map and Explanatory Notes. *Northern Territory Geological Survey*.

T. R. Marshall and I. A. Dyson, 2007. Halotectonics – a key element of Amadeus Basin development and prospectivity. *In* Proceedings of the Central Australian Basins Symposium, Alice Springs, 16-18<sup>th</sup> August 2005. *Northern Territory Geological Survey, Special Publication 2.* 

Young Geoconsultants Pty Ltd, 2004. Amadeus Basin seismic interpretation project. *Northern Territory Geological Survey, Record* 2004-011.