ANNUAL REPORT EL24807
NGALIA REGIONAL PROJECT
PERIOD ENDING 13 AUGUST, 2010

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SUMMARY

Exploration License EL24807 is part of the Ngalia Regional Project which immediately surrounds the Bigrlyi project (ERL’s 46 to 55 inclusive) located 390 kilometres (by road) northwest of Alice Springs. The Ngalia Regional Project is 100% owned by Energy Metals Limited and the Bigrlyi Project is a Joint Venture between Energy Metals Limited with 53.3% (operator), Valhalla Uranium (a subsidiary of Paladin Resources Ltd) with 41.7% and Southern Cross Exploration NL with 5%.

Uranium mineralisation was discovered at Bigrlyi by a joint venture managed by Central Pacific Minerals (CPM) in 1973. In the period 1974 to 1982 the project was subject to several major drilling campaigns, with some 413 holes (total 37,500m) completed. Subsequent to 1982 CPM completed metallurgical testing and resource calculations, with a global resource of 809,000 tonnes at 3.43 kg/t U₃O₈ for 2,770 tonnes of contained U₃O₈ delineated at Bigrlyi (note that these resources are not JORC 2004 compliant). Field activities conducted in the period 1983 to 2004 were limited to maintenance of the core shed.

Exploration undertaken in the period 14 August 2009 to 13 August 2010 on the Ngalia Regional Projects included:

- Continued compilation of historical data
- Converting some historic data to digital format
- Clearing access to prospects and potential drill sites
- Surface reconnaissance and prospecting
- Re-interpretation of airborne magnetic and radiometric data

Expenditure for the period attributable to EL24807 was approximately $27,450.
INTRODUCTION

The Ngalia Regional project now comprises eleven 100% owned exploration licences (total area 2,840 km²) located in the Ngalia Basin, between 180 and 350 km northwest of Alice Springs in the Northern Territory (Figure 1 & 2). Eight of these tenements are contiguous and enclose the Bigrlyi project as well as containing a number of uranium occurrences including the Malawiri prospect (EME 52%) and the Walbiri prospect (EME 42%). The remaining three tenements cover discrete uranium anomalies located southwest of the Bigrlyi deposits.

Figure 1: Location of the Bigrlyi/Ngalia Regional Projects (NT).
Four exploration licences, including EL24453 enclosing the Bigrlyi project, were granted in the March 2006 quarter, with EL24807 (abutting EL24453) granted in August 2006.

**PREVIOUS EXPLORATION**

**Bigryli and Ngalia Regional Projects**

Exploration on the Ngalia Regional and Bigryli Projects commenced in August 1971 with the granting of Authority to Prospect (A to P) 2677 valid for one year. This A to P was converted to Exploration Licence 605, and renewed annually to October 1977. Exploration on this property was managed by Central Pacific Minerals NL on behalf of various joint venture partners including Magellan Petroleum Australia Ltd, Agip Nucleare Pty Ltd, Urangesellschaft mbH & Co. and the Atomic Energy Commission.

Early exploration on the property involved airborne radiometric surveys in 1972 and 1974, radiometric ground traversing and geological mapping. The Bigryli Prospect was found in 1973 and in 1974 mapping and trenching located uranium mineralisation at a number of the 16 anomalies now comprising the Bigryli Project. These anomalies occur intermittently over a 11.5 km strike length within the Treuer Range and south of prominent strike ridge formed by the Vaughan Spring Quartzite.

In 1974, eight inclined diamond core drill holes totaling 506.6m were completed in the main surface occurrences of mineralisation (holes BPD1 to 8 incl.). In April 1975, eight vertical rotary percussion drillholes were drilled to test the Bigryli Anomaly 15 uranium target; these were holes BPH1 to 8 incl., for 702m, testing below mineralized outcrop and subcrop. The results of the April 1975 drilling programme indicated a steeply dipping
lens of uranium mineralisation extending to a depth of at least 50m and a length of 110m, with 4 of the holes intersecting significant mineralisation.

Later in 1975 a further 127 holes (BPH9 to BPH135), for a total of 11,232.53m, were drilled, testing the prospective horizon at Anomalies 1 to 10 and 12 to 15 inclusive. Some encouraging results were recorded, for example for Anomaly 4 the best result recorded was in hole BPH55 reporting 10,600ppm U$_3$O$_8$ (10.6 kg/tonne) and 8333ppm vanadium, by analysis, from 7m to 13m, which compares with the result of converting the down-hole gamma logging counts, which resulted in a uranium grade of 5645ppm eU$_3$O$_8$ from 2.0m to 11.5m.

In 1976 some 123 holes (BPD136 to BPD258) for 9,901.86m, were drilled at Bigrlyi to follow up the better drilling results of the 1975 programme. The drilling concentrated on testing Anomalies 2, 4, 8 and 15. This programme extended at depth the uraninite mineralisation of Anomaly 4 and Anomaly 15 with the mineralisation of Anomaly 15 shown to pitch westerly over a length of 200 metres and remaining open at depth.

Shallow reconnaissance drill testing of the uranium bearing Unit C horizon easterly under cover from Anomaly 15, was carried out on 10 traverse lines each approximately 250m apart. On four of these lines from 900m to 2,200m east of Anomaly 15, weak [200 to 700 ppm eU$_3$O$_8$] uranium mineralisation was intersected over narrow widths down-hole. Typically only one to two holes were drilled on each of these widely spaced traverses.

In 1977 a further 104 holes were drilled in the Bigrlyi Project, comprised of 31 diamond core holes (3516.26m) and 81 (including precollars) percussion holes (4964.11m). The core holes were drilled to test known mineralisation at Anomalies 2, 3, 4, 6, 7, 8, 14 and 15, whilst the percussion drilling was used to test these anomalies and Anomalies 1, 5 and 16. During this programme all uranium grades were calculated from logging the natural gamma radiation with a few check analyses carried out by AMDEL. This programme extended the known and better grade uranium mineralisation at Bigrlyi and the extent of the mineralisation calculated for Anomalies 2, 4, 8 and 15. The bulk of the mineralisation was contained within Anomaly 15.

In 1977 Exploration Licence 605 expired and an application for EL 2710 (Wanyilpa) over 793 square kilometers was made to cover the Bigrlyi Project and surrounds, by the Central Pacific Minerals managed joint venture, now composed of Agip (Australia) Pty Ltd, Urangesellscraft (Aust) Pty Ltd and Offshore Oil NL. This tenement was granted on 15 July 1981 and field exploration recommenced during 1981 and 1982.

During 1981 and 1982 a programme of drilling was undertaken focused on testing Anomaly 15 and Anomalies 4 and 5. During these two years 43 holes totally 5211.95m were drilled of which 1321.55m was rotary percussion (frequently as precollars) and 3890.4m was diamond core drilling. Drilling was initially small diameter coring which was subsequently upgraded to larger NQ core size (diameter 47.6mm). Core recoveries were reported as being rarely less than 95%.

All completed holes were geophysically logged and uranium grades calculated as eU$_3$O$_8$ values for the mineralized intervals. The testing of Anomaly 15, whilst slightly increasing the extent of the mineralisation, was predominantly directed to increasing the level of certainty of the known mineralisation, by closer spaced drilling.
Previous testing of Anomaly 4, an area lacking good rock outcrop, had indicated that uranium mineralisation occurring in Unit C (at the contact with Unit D) was of secondary importance to previously little-known mineralisation in a narrow white rock band within Unit D. During the 1982 programme, drilling increased the extent of the uranium mineralisation at Anomaly 4 and tested Unit D mineralisation.

The northern margin of the Ngalia Basin and the Arunta Inlier basement to the north have been the focus of substantial regional exploration since the discovery of uranium mineralisation in the region in the early 1970’s. Exploration has been for a wide variety of mineralisation, particularly uranium, in both the Ngalia Basin sediments and the Arunta Inlier granites and metasediments and for diamonds, gold and base metals in the Arunta Inlier.

The following summarises the more significant programmes of exploration for uranium near to or along the northern margin of the Ngalia Basin covered by Energy Metals exploration licence E24453.

In 1979 Afmeco Pty. Ltd. carried out a programme to test the extent of uranium mineralisation in the basal unit of the Mount Eclipse Sandstone at the Dingo’s Rest North and Dingo’s Rest South uranium prospect. Dingo’s Rest is located approximately 20 kilometres southeast of the Bigrlyi uranium deposit and extends over a 3 kilometre north-south striking basal section of the Mount Eclipse Sandstone. Afmeco drilled, 8 percussion (2,504.1m) and 9 diamond core holes (4,153.1m) within an area 3 kilometres by 6 kilometres, westerly and down-dip from Dingo’s Rest. The best result recorded by Afmeco was recorded in hole DIN12 where from 312.8m to 313.4m a mineralised sediment assayed 1,760ppm uranium and 1,130 ppm vanadium.

In 1990 Lachlan Resources Limited carried out a drainage geochemical survey of 313 samples over the basal sector of the Ngalia Basin and immediately underlying Arunta Inlier rocks from the Dingo’s Rest location north and westerly to Waite Creek, a distance of approximately 100 kilometres. Samples were analysed for copper, lead, zinc, arsenic, silver and gold. Four weakly anomalous areas were located.

In 1999 Rio Tinto Exploration reported on the results of a 3 year programme undertaken on a 1,497 square kilometre exploration licence that covered the northern flank of the Ngalia Basin and extended over the Arunta Inlier to the north. The tenement covered the Bigrlyi Project and the Dingo’s Rest Prospect.

Rio Tinto concluded that their Anomaly 44 was the only anomaly containing visible secondary uranium mineralisation, as torbernite, which was concentrated along the contact between granite and a quartz vein, with a semi-continuous anomalous zone over 1 kilometre. Sampling of the sporadic high grade zones returned a maximum of 3.95 kg/tonne uranium. Rio Tinto concluded that the potential for a large, high-grade, continuous zone of mineralisation was very low.

**Regional Geophysics Datasets**

Rio Tinto carried out programmes of airborne radiometrics and magnetics with ground follow-up, soil and rock geochemistry, magnetics and gravity surveys. Rio Tinto drilled 7 RC holes (528m) and 2 diamond core holes, testing potential kimberlite diatremes by RC drilling and magnetic targets by core drilling, without success.
The 4,500 line kilometre radiometric survey identified four zones of anomalism including the Bigrlyi Project Area and the outcropping Mount Eclipse Sandstone of the Patmungala Syncline. A third zone was associated with a younger megacrystic granite 10 kilometres north of the Patmungala Syncline. From initial inspection of the radiometric data the strongest anomalies in the fourth zone were located in an area where the eastern closure of the Patmungala Syncline is in contact with the strongly faulted and quartz veined, uranium enriched, young megacrystic granite, the Yarungayi Granite. Fifteen anomalies were identified and six followed up by ground investigations.

**Database Compilation**

Compilation of a drillhole and assay dataset for the Bigrlyi project was initiated in 1997 as part of the geostatistical study of the Anomaly 15 deposit. This dataset was progressively expanded with drillhole collar and assay data for Anomaly 4/5 compiled during 2002; data from Anomaly 6, 7 & 8 added during 2003 and data from the intervening drilling between Anomaly 8 (in the west) and Anomaly 14 (in the east) entered in 2004.

Drillhole collar locations were recorded in prospect grid coordinates and prospect relative level (a detailed survey will be required to tie the prospect grid to the GDA datum). Drillhole collar attitude, depression and azimuth (grid) were recorded together with the drillhole total depth information. Most drillholes had been surveyed downhole during drilling and the drillhole attitudes were recorded by depth in a survey file.

To date, historic records totalling 301 drillholes, 584 survey records, 725 assays and more than 180 radiometric grades have been compiled.

Energy Metals assumed management of the Bigrlyi project in May 2005 following the purchase of a 53.3% interest in the project. Work completed by Energy Metals in the period May to November 2005 included compilation and digital capture of historical data, establishment of radiation management procedures for future work and rehabilitation of the core shed area at Bigrlyi.

**Compilation of Historical Data**

Energy Metals received the first tranche of exploration data from previous managers CPM (mainly comprising geological plans and the drillhole database referred to above) in May 2005. These data were reviewed, 1:2,000 and 1:500 scale geological plans were scanned and digitised and GDA coordinates for a number of holes were located in the field using a conventional GPS (accuracy 5-10 metres), enabling historical data (local grid base) to be merged with previously acquired regional datasets. Most data captured was pertaining to the Bigrlyi prospect with the regional geophysical datasets compiled for EL24807.

**High Resolution Satellite Imagery**

Quickbird High Resolution satellite imagery was obtained for EL24807. This was to generate exploration maps/targets for step out drilling from the Bigrlyi deposit into 100% Energy Metals tenements. The imagery is also used for regional recon exploration activities.
Heritage Clearances

CLC Heritage notifications were lodged for access disturbance activities in EL24807. The CLC conducted clearances with TO’s and gave permission to undertake activities. These activities were designed outside of designated Aboriginal Sensitive and Restricted zones.

**WORK COMPLETED FROM 14TH AUGUST 2007 TO 13TH AUGUST 2008**

The following work, conducted in 2007 – 2008 was reported and is detailed in the 2007 – 2008 Annual report (Deutschman, 2008)

**Site Works**

Reference is made to the Bigrlyi Project due to its proximity to EL24807. Any exploration of the licence will be based from the Bigrlyi camp.

The camp continued to undergo a significant upgrade during the reporting period, and can now accommodate about 25 persons. Although these costs have not been allocated to EL24807, they represent considerable expenditure.

**Geophysics**

A regional radiometric and magnetic aerial survey covering the whole of Energy Metal Limited’s tenement package was completed during the 2007 – 2008 reporting period and reported as appendix 1 in the 2007 – 2008 Annual Report (Deutschman, 2008).

Southern Geoscience Consultants were commissioned to interpret the results (see Figure 4). This work is incorporated into the existing datasets.
Figure 3: Ngalia Airborne Survey – Radiometrics and Magnetics
WORK COMPLETED FROM 14TH AUGUST 2008 TO 13TH AUGUST 2009
The following work, conducted in 2008 – 2009 was reported and is detailed in the 2008 – 2009 Annual report (Burn, 2009)

Site Works

Construction of access tracks and potential drill sites was undertaken to departmental guidelines, CLC clearance restrictions and to accommodate the pastoralists’ access requests.

Geophysics

The initial acquisition and interpretation of airborne geophysical data for this area has been re-interpreted by inhouse technical personnel.
Figure 5. Total Magnetic Intensity - FVD

**Mapping/Prospecting**

The potential for extensions to the Bigrlyi mineralized horizons beneath transported cover have been initially investigated with ground surveys and foot traverses across the suggested trends of the Bigrlyi mineralisation to the east of the Anomaly 15 mineralisation.

Geophysical interpretation indicates that the prospective horizon is folded to south and extends to the historical Dingoes North mineralisation. Exploration activities in this area are currently limited by Aboriginal exclusion/sensitive zones.

**Heritage**

Further negotiation with the CLC and TO’s are ongoing to enable drill access to some sensitive areas within the licence.

**WORK COMPLETED FROM 14TH AUGUST 2009 TO 13TH AUGUST 2010**

**Site Works**

Exploration activities regarding to the exploration liscense are based from the Bigrlyi Camp facilities of the Bigrlyi Project.

Site reconnaissance, ground truthing and geological prospecloring are conducted late 2009
Access to the license area is restricted in 2010 due to unseasonal heavy rain in the first half of 2010.

**Geophysics**
Reinterpretation of the 2008 airborne geophysical data was undertaken by new geological team in the period. An exploration target area which coincides with the radiometric anomalies has been identified over the Aboriginal Sensitive Area in the tenement.

A series of small outcrops that coincided with the radiometric anomalies in the identified target area belong to the uranium host geological unit — Mt Eclipse Sandstone. The unit is interpreted to be folded to the south of the Bigrlyi mineralization and dipping to the northwest.

![Figure 6. Identified Exploration Target Area over Radiometrics](image)

**Prospecting**
Reconnaissance and prospecting of the license area were undertaken in the period to exam the interpreted extended trends of the Bigrlyi mineralization.

**Heritage**
Negotiations are ongoing with the CLC and TO’s to enable drill access to several radiometric anomalies that present high priority exploration targets. These targets are located in areas that are sensitive areas to the aboriginal community.
WORK PROPOSED FOR 2010/11

Planned work includes:

(i) Negotiate with the CLC and the TO’s for access to the radiometric anomalies that are located within previously identified sensitive areas
(ii) Continue review of historical data and drillhole planning;
(iii) Surface geochemical sampling and prospecting
(iv) First pass aircore or RC drilling in identified exploration target area;

The expenditure for the 2010 / 2011 period is expected to exceed $30,000.

REFERENCES / BIBLIOGRAPHY


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