EL 24246
NAPPERBY PROJECT
ANNUAL AND FINAL REPORT

11 October 2004 to 10 October 2016

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SUMMARY

The Napperby Project area, comprising Exploration Licence 24246 was located approximately 180 kilometres north-west of Alice Springs.

EL 24246 was granted on 11 October 2004 to Paladin Resources NL for a period of 6 years. The tenement was subsequently transferred to Deep Yellow Ltd (DYL) in 2005. This report covers the twelfth and final year of tenure of EL 24246 consisting of 74 blocks covering a total area of 234 km² and summarises work undertaken during the life of the tenement.

Previously EL24246 was reported together with EL 24606 in the Napperby Combined Report (GR081-09) for the period ending 27 November annually. EL 24606 was allowed to expire at the end of its eighth year of term on 27 December 2013.

In 2007 Toro Energy Limited (Toro) entered into an Earn-In Agreement with DYL to purchase 100% of the project based on an agreed JORC compliant resource to be outlined by Toro by July 2010, or based on a 6,000 tonne U₃O₈ JORC resource if purchased earlier.

During 2007, Toro completed a program of 515 sonic core holes, 123 auger holes and 814 aircore holes followed in 2008 by a further 333 sonic core holes and 784 aircore holes. Assay data from both the 2007 and 2008 drilling programs were used to calculate a JORC Code Mineral Resource estimate of 3,351 tonnes of U₃O₈ (including 670 tonnes U₃O₈ previously outlined by DYL).

The 2009 (and current) JORC Inferred Mineral Resource at Napperby is 9.34 million tonnes at 359 ppm U₃O₈ containing 3,351 tonnes of U₃O₈ (7.39 Mlb). Only 50% of the known mineralised area was redrilled and included in the JORC compliant resource.

After three years of exploration Toro considered the financial terms of the Earn-In Agreement to be unfavourable and ultimately withdrew from the project after a Scoping Study was completed. The Scoping Study included baseline environmental, radiation and heritage studies and groundwater monitoring activities as a pre-cursor to a Pre-Feasibility Study.

With the uranium spot price falling in the aftermath of the Fukushima incident in 2011, and its impact on the company's share price, DYL was obliged to rationalise its expenditure on this and other Australian projects. No on-ground work was conducted with DYL pursuing desktop evaluations of the previously completed geophysical surveys, with the aim of identifying further drill targets and commencing metallurgical investigations on stored drill samples whilst seeking to divest the project by way of outright sale or joint venture. Following a number of unsuccessful attempts to attract a suitable purchaser, DYL decided to allow Exploration Licence 24246 to expire at the end if its twelfth year of term, 10 October 2016.
1. INTRODUCTION

Exploration Licence 24246 was acquired to explore for deep palaeochannel (roll front) and shallow calcrete-hosted styles of uranium mineralisation by Deep Yellow Ltd (DYL).

This report covers exploration conducted on Exploration Licence 24246 from grant of the licence on 11 October 2004 to 10 October 2016. The location of EL24246 is shown in Figure 1.

1.1 Tenure

The Napperby Project comprises Exploration Licence 24246 (Figure 1). Details of the tenement as at the end of the reporting period are shown in Table 1.

<table>
<thead>
<tr>
<th>Tenement No.</th>
<th>Name</th>
<th>Blocks at Grant</th>
<th>Blocks as at 10 Oct 2016</th>
<th>Grant Date</th>
<th>Expiry Date</th>
</tr>
</thead>
</table>

EL 24246 was granted on 11 October 2004 over an area of 245 blocks. At the end of the sixth year of term the tenement was renewed for a further two years expiring 10 October 2012. A partial relinquishment of 76 blocks was undertaken at the end of the eighth year of term, 10 October 2012. A further renewal in respect of the reduced area of 169 blocks was granted until 10 October 2014. The tenement was reduced by further 20 blocks at the end of the ninth year of term.

Renewal was granted over the area of 149 blocks for a further two years expiring 10 October 2016. At the end of the eleventh year of term, DYL lodged a voluntary partial relinquishment in respect of 75 blocks with 74 blocks retained for the final year of term.

1.2 Location and Access

EL 24246 was located 180 km north-west of Alice Springs in the Arunta Province. The 1:250,000 Napperby SF53-09 map sheet covers 95% of EL 24246 with the southern 2 kilometre margin within 1:250,000 Hermannsburg SF53-13 map sheet. The project area is accessed north-west from Alice Springs directly from the Tanami Road towards Tilmouth Roadhouse (Figure 1).
Figure 1: Tenement Location Plan
2. GEOLOGY AND URANIUM MINERALISATION

2.1 Regional Geology

The Napperby Project lies within the Arunta-Ngalia region of the Northern Territory. Basement is comprised of Palaeoproterozoic to Mesoproterozoic metasedimentary and granitic rocks. These are overlain by Neoproterozoic to Devonian Ngalia Basin sediments immediately north of the tenements, and in turn by Tertiary to Recent clastic sequences (Figure 2), derived by erosion of highly radiogenic basement uplifts to the north in the Reynolds Range area.

Shallow covered to partly outcropping granite to granitic gneiss terrane underlies EL 24246. The crystalline basement comprises deep to shallow incised palaeodrainages infilled with from 100m to 10m of Recent clastic material. The Napperby drainage is saline near the confluence with Lake Lewis with hypersaline groundwaters being recorded. Calcrete capping and aeolian sand overlie mineralised alluvial sands and sandy clays of palaeodrainage fill. The mineralised sands and clays are carbonaceous in part and may act as redox fronts.

Figure 2: EL24246 Napperby Project Geology
2.2 Deposit Lithology

A brief description of the lithology of the Napperby deposit is described below based on sonic core and auger drilling in 2007 and 2008 (Toro). A detailed lithological description is outlined in Sullivan and Rawlings 2009.

The Napperby sequence is topped by a ferruginous alluvial horizon which exhibits extremely consistent thickness (averaging 0.5 m) over most of the area investigated. A gradual transition exists between the surficial alluvial layer and underlying calcareous horizon(s), most commonly a weathered orange/pink pedogenic calcrete. The thickness for the combined calcareous units ranges between 1-3 m. Silcrete is common throughout the soil profile; although it is most common in the upper 5 m. Nodular silcrete occurs at every level of the profile and is believed to result from the silica-replacement of evaporite mineral gypsum nodules.

Pale green to fawn silts and fine clayey-sands with minor coarse, angular quartz constitute much of the pallid zone, below the upper water table (3.5 - 4.5 m). Redox boundaries are clearly visible as orange/brown mottling. Further evidence for fluid percolation is the occasional presence of fine, acicular gypsum / salt crystals throughout the unit.

Scour sequences are associated with a particular depositional sequence that tends to occur below the green clayey sand units, however, can also occur within them. A sharp transition with the underlying lithology follows the basal sands. The sudden influx of energy implied by the coarse base may represent flood events.

Hematitic granite/gneiss saprolite underlies much of the deposit area, characterised by distinctive brick-red clay containing very coarse, angular quartz. It is clear that the saprolite has been reworked at some point, as evidenced by the presence of thin beds of green clayey-sands within the unit itself.

2.3 Uranium Mineralisation

The Napperby deposit (also previously referred to as the New Well deposit) lying immediately below and to a lesser extent within a calcrete layer, and in the underlying sandy clays, as coatings, disseminations, pellets and blobs (‘nuggets’) up to 5 cm long. The sand also hosts carnitite as disseminations or concretions. Underlying the sedimentary fill is a lateritised, red, granitic clay-saprolite/palaeosol. This rests on a very irregular palaeotopographic surface on radiogenic granite.
3. PREVIOUS EXPLORATION

1971 - 1974

CRAE identified the New Well (Napperby) deposit in 1971 by auger drilling. EL55 was taken out over the area in 1972 and a further 2002 shallow auger holes were drilled at 300 m x 400 m spacing. In 1973, regional shallow RAB drilling (59 holes) was carried out on 3 x 2 km centres to the west, south and east of the known mineralization but failed to detect any additional mineralization. One drill hole south of Lake Lewis, later within EL 24246, drilled 96 m into red clays within a deep Tertiary palaeochannel. EL55 was surrendered in 1974.

1977 - 1984

Uranerz (UAL) explored the project from 1977 to 1982 holding various tenements up to 1984. The initial Uranerz drilling of the Napperby prospect was carried out over a rectangular grid with 300 x 400 m spacing on an east-west and north-south orientation, respectively. The objectives were to outline the mineralized area and to obtain a preliminary estimate of the global (in situ) resource. In a later phase of drilling, an area of 1300 x 700 m with higher grade mineralization was infill drilled at 100 x 100 m spacing.

A few smaller blocks were also investigated at 20 m centres to provide critical information for the ore resource estimations. It is understood that this information was used to obtain a better understanding of the spatial distribution characteristics of the mineralization for geostatistical studies. The geostatistical evaluation is described as revealing the presence of a large nugget effect and of small scale and large scale structures with anisotropies controlled by the drainage directions. Uranerz drilling was carried out initially using twin-tube aircore drilling with reverse air circulation to avoid contamination problems although a number of drawbacks with this method were noted.

Uranerz reported estimated reserves (prior to introduction of the JORC Code) of between 5700 and 6200 tonnes contained U3O8 of average grade between 360 ppm to 380 ppm U3O8 over several large ‘areas’ within a 14km strike length of the mineralized zone. These resources are based on applying the thickness and grade of mineralized intersections (>200 ppm cut-off) from individual drill holes to a range of influence for the drill hole dependent upon the grid spacing. ‘Ore’ blocks so defined within the larger Area, but not necessarily contiguous with other blocks, were summed to give a global tonnage and grade for the Area. Finally the Area grade tonnage figures were summed to provide a global resource estimate for the mineralized zone. The range of 5700 to 6200 tonnes was obtained using two different mineralized interval compositing methods. Method 1 uses only those intervals above cut-off grade i.e it does not allow the inclusion of waste intervals between above cut-off grade intervals within the same borehole. Method 2 allows the inclusion of below cut-off grade intervals so long as the average grade remains above 200 ppm. Method 2 leads to some dilution of the grade but permits a greater thickness and ultimately a larger figure for contained tonnes U3O8. Method 1 is less likely to be sustainable for mining as it would require selective mining down to ½ m intervals.

Three bulk samples from Napperby were shipped to UEB laboratories in Bonn. The samples, one each of calccrete, clay and sandy material from three pits were mixed to give a ‘standard’ sample grading 700 ppm. The resulting homogenous sample was high in fines with 54% of the sample less than 63 μm. According to text in the report the laboratory tests showed that leaching of this material was as effective as leaching material ground to -250μm. Therefore it may be possible that crushing and possibly grinding may not be necessary prior to leaching. Twenty four (24) leach
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tests were carried out to investigate the influence of pulp density, retention times, carbonate and bicarbonate concentrations, and degree of milling. With optimized conditions more than 90% of the contained uranium can be extracted by carbonate leaching. UAL drilled 4 deep holes to greater depth along the south-west trending extension of the Napperby creek, identifying oxidized sands to a maximum depth of 130 m west of the Napperby mineralized zone in a major Tertiary Channel. The drill hole (PDH5) closest to the assumed centre of the channel reached a depth of 70 m and did not penetrate into basement. CRA drilled a hole 10 km south of PDH5 intersecting mottled (oxidized/reduced?) mud to a depth of 76 metres without reaching basement. Drilling by Scimitar resources in the Napperby Creek area immediately north of EL 24246 confirms that sediments are present within this area to at least 40 m.

4. EXPLORATION COMPLETED

2005 - 2006

During 2005, Deep Yellow Limited carried out an aircore drilling programme over the Napperby prospect, which was expected to provide the basis for a JORC-compliant resource estimation. Insufficient air core sample recovery and generally lower than expected uranium grades resulted in this objective not being met. The average grade returned from 2,013 samples was 89 ppm U3O8, including six samples at >1000 ppm and 10 samples in the range 500 to 1000 ppm U3O8. This compared poorly with the Uranerz data from the same area comprised 978 samples at an average grade of 145 ppm U3O8.

A review of the 2005 results prompted the need for direct visual and assay confirmation of the uranium mineralization in situ. Three sites were selected for trench excavation based on the better 2005 aircore drilling results. Trenches were excavated to between 6 and 7 metres deep.

The trenches were channel sampled down 1 m spaced vertical channels on each wall at nominal 1m sample lengths to evaluate the grade, distribution and controls on the exposed mineralization. Mapping of the trenches confirmed the presence of bright yellow uranium mineralization, which was assumed to be carnotite, as powdery encrustations and ‘painted surfaces’ in vuggy calcrete within a planar calcrete horizon developed both above and below the standing water table (4.3 m) and as disseminations and blebs through sandy clays.

The results of the trench sampling and comparison with the equivalent drill hole position confirmed the presence of higher grade mineralization than indicated by the aircore sampling in one equivalent drill hole location only. However, more general vertical and horizontal sampling of the trenches indicated the presence of some higher grades a short distance away from the drill hole locations and confirmed the erratic ‘nuggetty’ nature of the mineralization. The implication of the trenching results is that small diameter drilling at the 100 x 100 m spacing used by DYL in 2005 was unlikely to have sampled the uranium mineralization adequately and that much closer spaced drilling with much larger samples may be needed to acquire adequately representative samples.

In 2006, DYL mounted a drilling campaign over a smaller, higher grade area. A total of 262 truck mounted large-diameter 60 cm auger holes were drilled into a 1000 x 600 m rectangular block. Most of the holes were drilled on a 50 x 50 m grid with one line of drill holes along the main mineralized part of the palaeochannel drilled at 25 m centres.

DYL appointed FinOre Mining Consultants to carry out a Mineral Resource estimate of the 2006 drilled portion of the Napperby uranium mineralization. FinOre carried out down hole and aerial directional variograms. The downhole variograms produced a reasonable model with a nugget of 42%. The directional variograms were difficult to fit to a reasonable model, consequently the
decision was made to use inverse distance to the power of two for grade estimation. FinOre prepared a resource estimate based on 3D block modelling using 25 x 25 m x 1 m blocks with sub-blocks as appropriate to honour the grade thickness boundaries. The parent block size was based upon the typical drill spacing. Classification of the Mineral Resource was primarily based on the confidence of the geological interpretation, and secondly on the confidence of the estimation. The confidence in the block estimate was directly related to the drill density and quality control aspects of the drill data. The difficulty in obtaining variograms and subsequent use of inverse distance has meant the total resource is considered to be Inferred. The resource inventory has been estimated using all material that falls within the mineralisation outline and has a grade above 200 ppm U₃O₈. Using these criteria there is a resource of 1,920,000 tonnes at a grade of 349 ppm U₃O₈ for 670 tonnes or 1,477,097 lbs of U₃O₈.

2007

In 2007 Toro Energy Limited (Toro) entered into an Earn-In Agreement with DYL to purchase 100% of the project based on an agreed JORC compliant resource to be outlined by Toro by July 2010, or based on 6,000 tonne U₃O₈ JORC resource if purchased earlier.

The exploration activities undertaken by Toro during the 2007 reporting period included:

- drilling of 123 wide diameter auger drillholes
- drilling of 182 sonic core drillholes
- drilling of 23 trial aircore drillholes
- assaying auger spoils and sonic core at ~0.5m intervals
- collection of downhole gamma for all holes
- collection of PFN data for selected drill holes
- trial of the airborne geophysics technique TEMPEST
- detailed combined magnetic and radiometric airborne survey
- trial biogeochemical (geo-botanical) sampling programme
- collection of hydrogeochemical water samples for analysis.

2008

Exploration activities undertaken by Toro during the 2008 reporting period included:

- drilling of 3300m in the Napperby Resource area
- drilling of 784 aircore holes for 9723m in the Napperby resource area
- drilling of 30 deep regional aircore holes for 1287m to the west of the Napperby deposit
- collection of downhole gamma for all holes
- trial hand augering of the upper few metres of the sediment profile
- assaying sonic core and regional aircore spoils using various analytical methods for a wide range of elements
- analysis of selection samples for XRF major elements, total carbon, TOC and LOI
- determination of bulk density and mineral SG from selected samples
- QA-QC of Toro’s assay database
- comparison of gamma-derived assays and chemical assays to determine a disequilibrium factor
- surveying of all drillholes using a DGPS
- preliminary metallurgical testing
- commencement of a scoping study by URS
- microscopy and petrology of selected samples
- collection of hydrogeochemical water samples or analysis.
2009

Work undertaken by Toro during the 2009 reporting period included:

- resource upgrade by SRK Consulting using the 2006, 2007 and 2008 drilling results. The JORC compliant Inferred Resource was increased to 9.34 million tonnes @ 359ppm (0.036%) U₃O₈ for 3,351 tonnes (7.39 million pounds) of contained uranium oxide using a 200ppm U₃O₈ cut off
- continuation of scoping study by URS
- ground gravity survey
- drilling of two exploration RC/DDH holes for approximately 204m
- creation of a seamless Datashed format database for historical and contemporary data
- analysis of water samples

2010

Throughout the three reporting periods after entering into the Earn-In Agreement, Toro undertook multiple drilling programmes, analysis and geophysical surveys to lead up to the establishment of a JORC compliant Inferred Resource of 9.34Mt at 359ppm U₃O₈ for 3,351 t (7.39 Mlbs) using a 200ppm U₃O₈ cut off.

Toro also commissioned URS Australia Pty Ltd (URS) to prepare a desktop Concept Study for the development of the Napperby Uranium Project. The conclusions of this study are outlined in Sullivan and Rawlings 2009.

However, in late 2010 Toro advised its withdrawal from the Earn-In Agreement and the project reverted to DYL.

2011

In 2011, DYL commissioned Fugro Airborne Services to undertake a 316 line kilometre airborne electromagnetic survey across the Napperby Project covering both EL 24246 and EL 24606. The survey was designed to delineate subsurface palaeochannels around the periphery of Lake Lewis with the potential to host both calcrete and roll-front style uranium deposits.

2012

In 2012 period DYL undertook only office related review of the AEM data with respect to identifying further areas to relinquish at the anniversary date.

The AEM survey indicated large areas of EL 24246 with no underlying palaeochannels (i.e. no conductors) and accordingly the tenement was reduced in size on both the 2011 and 2012 anniversary dates.

2013

In 2013 exploration activities were limited to the selection of nine metallurgical samples from drum storage for characterisation of the uranium ore by CSIRO under the supervision of Marenica Energy. The scoping trial was conducted to evaluate the potential for mechanically enhancing the uranium grade prior to extractive treatment.
2014

During 2014 a total of nine 2kg samples from Napperby were sent for specialist ore characterisation testwork under the supervision of Marenica Energy Limited (Marenica). The samples were combined to form three Lithology composites. A full ore characterisation programme was completed on each composite to determine the amenability of the Napperby ore to Marenica’s proprietary U-grade™ technology.

2015

There was no on-ground exploration activity for the 2015 reporting period. Work was limited to the completion of the following outstanding rehabilitation:

- Rehabilitation of 50 bore holes;
- Disposal of standards, core samples, bulk drill samples, pulp samples and bulk drill waste in a disposal pit within the Napperby compound; and
- Disposal of all core trays and sample bags at the Alice Springs Council waste facility.

2016

No exploration work was conducted during the final year of term. Work was limited to rehabilitation reporting to enable the issue of a Closure Certificate in respect of Authorisation 0632-01.

Details of all exploration work and associated data can be found in the annual reports submitted to NT Geological Survey.

5. REHABILITATION

All rehabilitation work on the project are has been completed with the Napperby Pastoral Lessee taking ownership of and responsibility for the remaining compound and shed. All rehabilitation completed was reported in a Closure Rehabilitation Report dated June 2016. A Closure Certificate for Authorisation 0632-01 was issued on 25 July 2016.

6. CONCLUSION AND RECOMMENDATIONS

Following a number of unsuccessful attempts to attract an interested party to purchase or joint venture into the Napperby Project, DYL decided to allow Exploration Licence 24246 to expire at the end if its twelfth year of term, 10 October 2016.
7. BIBLIOGRAPHY


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