PARTIAL RELINQUISHMENT REPORT EL24533

Vaughan Springs

NGALIA REGIONAL PROJECT

6 February, 2006 to 8 January, 2016

EL24533_2016_P.pdf

1:250K Map Sheet: Mount Doreen SF52-12
1:100K Map Sheet: Vaughan 5053

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SUMMARY

Exploration Licence EL24533 (Vaughan Springs) is part of the 100% owned Energy Metals Ltd (EME) Ngalia Regional Project situated approximately 360km northwest of Alice Springs and 20km southwest of the Bigryi uranium project (Kerr & Liu, 2015).

EL24533 was granted on 6 February 2006. A partial reduction (reducing the EL by 37 blocks or 54% of the original area) was approved on 8 January 2016. This report covers exploration activities that occurred on the surrendered area during Energy Metals period of tenure.

The tenement covers areas of granitic basement in the north and west of the tenement. Large areas of Vaughan Springs Quartzite (basal Naglia Basin) crop out along the prominent Treuer Range in the central part of the tenement, and the south and east mainly comprises Mt Eclipse Sandstone under sand cover of variable thickness.

Exploration activities on the relinquished blocks were limited by a large Aboriginal site of heritage significance within which ground disturbing works including drilling were either not permitted or restricted. The heritage area covers all of the Treuer Range and much of the surrounding sand plain.

Exploration work over Energy Metals’ period of tenure included ground reconnaissance surveys, a heritage survey, an aerial geophysical radiometric and magnetic survey with interpretation (2007), a ground radiometric survey (2008), and a project review (2015). The ground radiometric survey was designed to test for radiometric anomalies along the inferred northeast extension of the Waite Creek thrust fault system in basement terrain. However, radiometric anomalies were found to be associated with a dominance of Th relative to U, with low assessed potential for the presence of a uranium mineralised system. Following further assessment in 2015, the northwest and some southeast parts of the tenement were considered to be non-prospective for uranium and were relinquished.
INTRODUCTION

The Ngalia Regional project comprises ten 100% owned exploration licences located in the Ngalia Basin, between 180 and 350 km northwest of Alice Springs in the Northern Territory (Figures 1 & 2). Seven of these tenements are contiguous and surround the Bigrlyi uranium deposit (ELR 46-55) as well as a number of other uranium deposits and occurrences including the Malawiri prospect (EME 52%, ELR41) and part of the Walbiri deposit (EME 42%, ELR45).

EL24533 (initially 68 graticular blocks located southwest of the Bigrlyi resource area) was granted on 6 February 2006 for a term of six years and was subsequently renewed for two periods of two years. An application for surrender of 37 blocks was approved by the DME on 8 January 2016. This report covers the partial relinquishment.

Figure 1. Location of the Bigrlyi/Ngalia Regional Projects (NT).
Figure 2. Tenements of the Bigrlyi/Ngalia Regional Projects (NT) as at 31 Dec 2015.

Geology and Physiography

Most of the tenement area is covered by an aeolian sand plain, alluvial flats and outcrop of Vaughan Springs Quartzite and basement granite.

The most prominent geomorphological feature within the tenement is the Treuer Range which comprises a prominent range of hills composed largely of Vaughan Springs Quartzite including subordinate shale and quartz sandstone of the Treuer Member. The main outcrop between Mt Davenport and Vaughan Springs is part of a doubly plunging synclinal structure that is fault bound on its northwest and southeast margins. The Treuer Range is surrounded by sand plain and is drained by a number of creeks which in the southeast are associated with runoff areas that have formed alluvial outflow plains. There are minor areas of granitic basement outcrop in the north and west (Southwark Granite Suite) and in the southeast there is minor outcrop of Mt Eclipse Sandstone with most of this unit buried under sand cover. The Mt Eclipse Sandstone is the primary target for uranium mineralisation in the Ngalia Basin.

The relinquished areas (Figure 3) consist dominantly of sand plain, alluvial flats, granitic basement and the Vaughan Springs Quartzite hill country (Figure 5).
Figure 3. Surrendered areas (37 blocks – area shown in red) in relation to topographic features and the retained area (in green).

WORK COMPLETED From 6th February 2006 to 8th January 2016

Geophysical Survey

An airborne geophysical survey, providing radiometric, magnetic and topographic data, was conducted over Energy Metals’ Ngalia Regional tenements in September 2007 by GPX Airborne (Saul, 2008). A total of 14,932 line kilometres was flown. The data were processed by Southern Geoscience Consultants (SGC), who meshed the new data with previous company survey data. SGC were subsequently contracted to interpret the imagery in terms of structural and radiometric features. Figure 4 shows the SGC interpretation of processed magnetic imagery and Figure 5 shows that interpretation overlain on geological outcrop.

Radiometric imagery is shown in Figures 6 and 7. Features of note include the strong combined U+Th+K response of the Southwark Granite terrain to the north and west; the weak response of the Vaughan Springs quartzite; the association of drainage-related regolith features with potassium (likely illite-rich clays) and minor thorium-related anomalies west of the Treuer Range which are probably associated with ferruginous debris shedding from the range (see Figures 5, 6 & 7). No uranium-specific anomalies of any significance were identified.
Figure 4. Colour-shaded TMI-RTP magnetic imagery with tilt derivative filter (TDR) applied. Structural interpretation provided by SGC including thrust faults (direction of overthrust indicated), major and minor faults (black lines), fold axes (yellow), fracture zones (S-pattern lines) and bedding or lineament trend directions (dot-dash lines). Tenement boundaries shown as in Figure 3.

Figure 5. Outcropping geological units from Mt Doreen 250K map-sheet shown in relation to SGC structural interpretation (see Figure 4). Red = Southwark Granite; pink = Vaughan Springs Quartzite; brown = Treuer Member; Purple = Dijagamara Formation; Grey = Mt Eclipse sandstone; Orange colours = Cenozoic deposits; Blue stripe area = drainage-related radiometric feature. Tenement boundaries shown as in Figure 3.
Figure 6. Total-count radiometric response map with overlaid structural interpretation. Note the strong response (pink colours) of the granite terrain to the west and north; weak response of the Vaughan Springs Quartzite (blue) and regolith features in red/orange colours.

Figure 7. Ternary RGB radiometric map with overlaid structural interpretation. R(red) = potassium; G(green) = thorium; B(blue) = uranium. Note the strong U+Th+K response of the Southwark Granite terrain to the north and west; weak response of the Vaughan Springs Quartzite (dark); association of drainage-related regolith features with potassium (red-brown colours) and minor thorium-related anomalies west of the Treuer Range which are probably associated with ferruginous debris shedding from the range.
Figure 8. Surrendered areas (37 blocks – area shown in red) in relation to Aboriginal Heritage Areas (in blue) and the retained area (in green).

Heritage Clearances

CLC heritage notifications were lodged for drilling activities in the first year of the tenement. The clearance program involved the Traditional Owners who identified a significant number of cultural sites mainly located within the Treuer Range area; a large sensitive zone was outlined as shown in Figure 8. In some areas of this zone ground disturbing activities are not permitted. The site covers most of the Treuer Range and surrounds and has significantly impacted exploration activities, including drilling programs, planned on the tenement.

Ground Radiometric Survey

Exploration work by EME on the surrendered ground primarily targeted surficial radiometric anomalies, however, no uranium anomalies of significance were identified. In 2008, a ground radiometric survey was designed to test for radiometric anomalies along the inferred northeast extension of the Waite Creek thrust fault system bordering basement granitic terrain in the north of the tenement (Burn, 2009). The prospect, called the “Thrust Prospect”, partly overlapped the adjacent licence EL24453. Results of the survey are shown as a gridded image in Figure 9. Although a number of radiometric anomalies were identified, these were found to be associated with a dominance of Th relative to U, mainly within the granitic terrain, which down-graded the potential of the area for hosting a uranium mineralised system.
Project Review

During 2015, the project was reviewed to identify areas of low uranium prospectivity with a view to surrender non-prospective ground before the next anniversary date. The following ground was recommended for relinquishment:

- Northern and western areas of granite basement.
- Treuer Range and associated areas of Vaughan Springs Quartzite outcrop.
- Southeast sand plain areas outside the likely corridor of prospective Mt Eclipse Sandstone.

An application to surrender the ground shown in Figure 3 was made in December 2015 and approved by the DME on 8th January 2016.

Digital Data

All digital data covering EME’s exploration activities on the relinquished ground has previously been reported to the NT DME.

CONCLUSIONS

Due to assessed low prospectivity for uranium mineralisation, the northwest and southeast parts of the tenement were recommended for partial surrender with 31 blocks to be retained (see Figure 3); the partial surrender application was approved on 8th January 2016.
REFERENCES

