EL 29046

Partial Relinquish Report

By

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Target Commodities: Cu

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MAP REFERENCE

NT 1:250 000 Hale River, SG53-3
NT 1:250 000 Illogwa Creek, SF 53-15
NT 1:100 000 Todd, 5949; Limbla 5950
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Abstract

Exploration Licence EL29046 was granted to GRIGM Resources Pty Ltd by NT Department of Mines and Energy on 3 July 2012 for a period of six years. Total of 61 blocks had been surrendered in the previous years (47 in 2014, and 14 in 2015 respectively). In accordance with the MINERAL TITLES ACT (2016), NT Department of Mines and Energy, another 13 blocks have been surrendered in August 2016. This report summarises the exploration work carried out in the recently relinquished 13 blocks.

EL29046 license area locates in the northeast part of Amadeus Basin in the southern part of Northern Territory. The basin overlies basement of the Musgrave Province to the south and the Warumpi and Aileron provinces (Arunta Region) to the north. It is overlain by the Permian-Triassic Pedirka and Mesozoic Eromanga basins in the southeast, and by the younger Palaeozoic Canning Basin to the west. Sedimentation began in the Neoproterozoic in the Amadeus Basin and continued until the Late Devonian/Early Carboniferous.

Work completed in the relinquished blocks include:

1. Analyse the existing aero-geophysical images of the area.
2. Preliminary field reconnaissance.
3. Ground check the aero magnetic anomalies.
4. Ground check soil and stream sediment geochemical anomalies.

There are no copper occurrences, and no copper-bearing dolomitic siltstone/shale outcrops identified in the relinquished area.

The positive aeromagnetic anomaly appears in the northeast part of the relinquished area are likely to be related to Love Creek Basic Volcanics which distributed along a northwest extending structure.

The existing results of soil geochemistry and stream sediments geochemistry survey carried out in the area by previous explorers did not show any significant copper anomaly in the relinquished area.
Introduction

Exploration Licence EL29046 was granted to GRIGM Resources Pty Ltd by NT Department of Mines and Energy on 3 July 2012 for a period of six years. Total of 61 blocks were surrendered in the previous years (47 in 2014 and 14 in 2015, respectively). In accordance with the MINERAL TITLES ACT (2016), NT Department of Mines and Energy, another 13 blocks have been surrendered in August 2016. This report summarises the exploration work carried out in the recently relinquished 13 blocks.

Tenure details

EL29046 is consist of 33 units (after 2015 block reduction, Table 1), and located about 130km southeast of township of Alice Springs, accessing by Ross Highway, Ringwood Road and local 4WD tracks (Figure 1).

Table 1 EL29046 units

| SG53 37 | U, Z |
| SG53 109 | E |
| SG53 110 | A, B, C, D |

Figure 1 EL29046 location diagram
In accordance with the MINERAL TITLES ACT (2016), NT Department of Mines and Energy, a further 13 blocks of license land were surrendered in August 2016, as shown in Figure 1 and listed in Table 2.

Table 2 Relinquished units

<table>
<thead>
<tr>
<th>SG5337</th>
<th>U</th>
</tr>
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<tbody>
<tr>
<td>SG5338</td>
<td>H,J,K,N,Q</td>
</tr>
<tr>
<td>SG5339</td>
<td>F,G,H,N,S</td>
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<tr>
<td>SG53110</td>
<td>D,E</td>
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Geological Setting

EL29046 license area locates in the northeast part of Amadeus Basin (Figure 2). Amadeus Basin extends approximately 800 km east-west and a maximum of about 300 km north-south. The basin overlies basement of the Musgrave Province to the south and the Warumpi and Aileron provinces (Arunta Region) to the north. It is overlain by the Permian-Triassic Pedirka and Mesozoic Eromanga basins in the southeast, and by the younger Palaeozoic Canning Basin to the west. Early-middle Palaeozoic parts of the succession were probably continuous with sedimentary successions of the subsurface Warburton Basin to the southeast, which extends into South Australia and southwestern Queensland (C J Edgoose 2013). Sedimentation began in the Neoproterozoic in the Amadeus Basin and continued until the Late Devonian/Early Carboniferous.

The Amadeus Basin has had a complex tectonic evolution that has been influenced both by halotectonics and by large-scale intracratonic tectonics. Two major tectonic events have been recorded, Petermann Orogeny (580-530 Ma) and Alice Springs Orogeny (450-300 Ma). The Petermann Orogeny was a crustal-scale, bivergent intracratonic event localized in the Musgrave Province, which also affected overlying Neoproterozoic stratigraphic successions of the Amadeus and Officer basins (Scrimgeour and Close 1999, Close et al 2004, Edgoose et al 2004). The Alice Springs Orogeny was a long-lived, multiphased, bivergent intracratonic event that resulted in large-scale uplift and exhumation of the Arunta Region and substantial deformation in the northern Amadeus Basin. Some of its earlier phases are recognized as discrete events largely related to unconformities within the basin succession. Its later phases resulted in basin inversion and the cessation of
Palaeozoic deposition within the basin (Edgoose 2013).

As shown in Figure 3, the license area mainly outcrop Proterozoic Bitter Springs Formation, Areyonga Formation, Aralka Formation low grade metamorphic rocks, including sandstone, siltstone, shale, tillitic conglomerate, limestone and dolomite.

![Figure 3 Generalised outcrop geology of northeastern Amadeus Basin (Edgoose C J 2013)](image)

Structure in the license area is dominated by a multi-phase syncline with fold-axis extending near east-west. Both the north and south limbs of the syncline are outcropping as prominent ridges.

**Mineral resources**

The Amadeus Basin has had comparatively little exploration for mineral commodities. Historical and more recent mineral production in the basin is confined to gold production from the Arltunga and Winnecke goldfields, and minor surficial copper workings from a few locations. Mineral and industrial commodities present in the sedimentary rocks of the basin include uranium, base metals (Cu, Zn, Pb), manganese, iron ore, phosphate, barite, gypsum and dimension stone (C J Edgoose, 2013).

In EL29046 license area, traces of copper minerals were discovered in 1954 by M Collins. It was examined by Jones (1954). In 1965/1966, NTGS put down two diamond holes to examine copper occurrences below the weathered zone. Although core recovery rate is very low, the assay results did show copper concentration reaches 1200ppm at about 376-378 feet. The licensed area has been considered to be prospective for copper as the existing records show that the copper mineralization in the area is of stratiform type. It was reported that secondary copper minerals occurred in green dolomitic siltstone and could be traced about 8 miles along strike.
Exploration has been focused on stratiform copper mineralization identified within green/grey dolomitic siltstone/shale near bottom of Areyonga formation.

**Work completed in the relinquished blocks**

Work completed in the relinquished blocks include:

1. Analyse the existing aero-geophysical images of the area.
2. Preliminary field reconnaissance.
3. Ground check the aero magnetic anomalies.
4. Ground check soil and stream sediment geochemical anomalies.

**Results**

Detailed literature review reveals that two copper mineral occurrences have been reported in and around EL29046 license area, namely Ringwood Copper Prospect and Waldo Padlar Copper prospect, both hosted by dolomitic siltstone/shale near bottom of Neoproterozoic Areyonga Formation. No copper occurrence was recorded in the relinquished area.

![Simplified geological map of EL29046 license area](image)

**Figure 4 Simplified geological map of EL29046 license area**

Field reconnaissance

As shown in Figure 4, 80% of the relinquished area is covered by Quaternary alluvion. Field inspection was carried out across the relinquished areas in 2016, high attention has been paid to areas I and II in Figure 4, as on the 1:250,000 Geological Map, strips of Areyonga Formation have been marked in these two areas. At Ringwood Copper Prospect, greenish dolomitic siltstone/shale located near the bottom of Areyonga Formation host stratiform copper mineralization. However, no outcrops of copper-bearing greenish siltstone/shale have been identified in the relinquished areas.

Ground check the aeromagnetic anomalies

Aeromagnetic image of the area covering EL29046 is displayed in Figure 5. A northwest extending positive magnetic anomaly appears in the northern section of the relinquished blocks. Ground check in this area did not locate any significant magnetic bodies. Positive magnetic anomalies could possibly be related to Love Creek Basic Volcanics (Figure 4 and Figure 5).
Ground check soil and stream sediment geochemical anomalies

Soil and stream sediments geochemistry survey results extracted from NTGS website STRIK are displayed in Figure 6. GRIGM Resources Pty Ltd carried out ground check throughout EL29046 license area in 2013-2014. As shown in Figure 6, there are no obvious anomalies in the relinquished areas. On the ground, these areas are mostly covered by Quaternary alluvium.

Conclusion and recommendations

1. There are no copper occurrences, and no copper-bearing dolomitic siltstone and/or shale outcrops in the relinquished area.
2. The positive aeromagnetic anomaly appears in the northeast part of the relinquished area are likely to be related to Love Creek Basic Volcanics which distributed along a northeast extending structure.
3. The existing soil geochemistry and stream sediments geochemistry survey results did not show any significant copper anomaly in the relinquished area.

Following works have been recommended for the next stage exploration:

1. Small scale mapping should be carried out to clarify the straitigraphy.
2. Small scale ground geophysical survey to target sub-surface structures and sulphide-bearing geological units;

References


