EL 29046

Partial Relinquish Report

3 July 2012 to 2 July 2015

By

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Target Commodities: Cu

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MAP REFERENCE

NT 1:250 000 Hale River, SG53-3
NT 1:100 000 Todd, 5949

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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. 47 blocks of the entitlements were surrendered in 2014, and a further 14 blocks surrendered in July 2015. This report summarises the exploration work carried out in the relinquished 14 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. A detailed review of the previous exploration work.
2. Analyse the existing aero-geophysical images of the area.
3. Preliminary field reconnaissance.
4. Ground check the aero magnetic anomalies.
5. Ground check soil and stream sediment geochemical anomalies.

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

The positive aero magnetic 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.

The existing soil geochemistry and stream sediments geochemistry survey results 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. 47 blocks of the entitlements were surrendered in 2014, and a further 14 blocks surrendered in July 2015. This report summarises the exploration work carried out in the relinquished 14 blocks.

Tenure details

After the 2014 reduction, EL29046 consists of 47 blocks (Table 1), and is located about 130km east of township of Alice Springs, access is by Ross Highway, Ringwood Road and local 4WD tracks.

Table 1 EL29046 Blocks

<table>
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<tr>
<td>SG53 37 U,W,X,Y,Z</td>
</tr>
<tr>
<td>SG53 109 B,C,D,E</td>
</tr>
<tr>
<td>SG53 110 A,B,C,D,E</td>
</tr>
<tr>
<td>SG53 111 A</td>
</tr>
</tbody>
</table>

Figure 1 EL29046 location diagram
In July 2015, a further 14 blocks of license were surrendered as shown in Figure 1 and listed in Table 2.

Table 2 Relinquished Blocks

<table>
<thead>
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<th>Blocks</th>
<th>Letters</th>
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<tbody>
<tr>
<td>SG53 37</td>
<td>W, X, Y</td>
</tr>
<tr>
<td>SG53 38</td>
<td>E</td>
</tr>
<tr>
<td>SG53 39</td>
<td>A, B, C, W, X</td>
</tr>
<tr>
<td>SG53 109</td>
<td>B, C, D</td>
</tr>
<tr>
<td>SG53 110</td>
<td>E</td>
</tr>
<tr>
<td>SG53 111</td>
<td>A</td>
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</tbody>
</table>

**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 over lain 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 (CJ Edgoose 2013). Sedimentation began in the Neoproterozoic in the Amadeus Basin and continued until the Late Devonian/Early Carboniferous.

![Figure 2 Regional Geological Setting of Amadeus Basin (NTGS)](image)

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)

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:

6 A detailed review of the previous exploration work.
7 Analyse the existing aero-geophysical images of the area.
8 Preliminary field reconnaissance.
9 Ground check the aero magnetic anomalies.
10 Ground check soil and stream sediment geochemical anomalies.

Results

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

Field reconnaissance

As shown in Figure 4, no outcrops of copper-bearing dolomitic siltstone and/or shale of Areyonga Formation appear in the relinquished part of land. Field inspection has been carried out and did not locate any copper occurrences and any outcrops of Cu-bearing dolomitic siltstone and/or shale in the relinquished blocks.
Figure 4 Simplified geological map of EL29046 license area

1 Quaternary; 2 Tertiary; 3 Pertnjara Group pebble and boulder conglomerate; 4 Mereenie Sandstone; 5 Pertaoorrta Group Dolomite, limestone, shale; 6 Pertataka Formation Siltstone and shale with lenses of sandstone; 7 Areyonga Formation Tilloid, arkstone, siltstone; 8 Bitter Springs Formation Dolomite, limestone, siltstone; 9 Loves Creek Basic volcanics; 10 Heavitree Quartzite; 11 Arunta Complex, gneiss, schistose gneiss, schist, quartzite; 12 fold hinges; 13 Faults; 14 Mapping and soil geochemistry sampling area. (Map simplified from data downloaded from NTGS website, based on Hale River 1:250,000)

Ground check the aero magnetic anomalies

Aero magnetic 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). The southern and western portions of the relinquished land do not show any magnetic anomalies, and most of these areas are covered by Quaternary.
Figure 5 Aero magnetic image of the area surrounding EL24046

Figure 6 Cu Stream sediment & soil geochemistry anomalies
Ground check soil and stream sediment geochemical anomalies

Soil and stream sediments geochemistry survey results extracted from NTGS website STRIKE 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 aero magnetic 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 ground geophysical survey to target sub-surface structures and sulphide-bearing geological units;

2. RC drilling to test the targets obtained from geological, geochemical and geophysical study if it is necessary.

References


