EL 29025

COMBINED 2\textsuperscript{nd} ANNUAL & FINAL REPORT

FOR THE PERIOD

1 August 2013 to 19 September 2014

By

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30 September 2014

Target Commodities: Sn, Au

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MAP REFERENCE

NT 1:100 000 Pine Creek, 5270
NT 1:250 000 Pine Creek, SD52-8
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Abstract

EL29025 was granted to Darwin Mining Exploration Pty Ltd by NT Department of Mines and Energy on August 1, 2012 for a period of six years. After two years exploration without significant progress, Darwin Mining Exploration Pty Ltd has decided to surrender all rights and interests in EL29025. This report summarises work carried out on EL29025 during the period August 1, 2013 to September 19, 2014.

EL29025 licence area is located in the central part of Central Domain of the Palaeoproterozoic Pine Creek Orogen. Over 90% of the licence area is within outcrop area of Cullen Supersuite granite plutons. In Pine Creek region, Cullen Supersuite Granite are spatially associated with gold deposits.

Work completed recently include:

1. Ground checks of mineral occurrences within the licenced area;
2. Ground checks of aerial magnetic anomalies.

No primary tin and base metal mineralization have been identified in EL29025. Most of the abandoned old mining diggings have been refilled.

Gossan outcrops have been located in the area near the centers of aerial magnetic anomalies. Gossans distributed along contact zone of Douglas Granite, where sparsely distributed limestone has been identified. Further work is needed to clarify the occurrence of the limestone, and its contact relation with the granite.

Gossan outcrops, as well as the positive aerial magnetic anomalies distributed along contact zone of Douglas Granite might indicate the fluid activity and iron accumulation. Further work is needed to reveal the possible mineralization associated with the fluid activities along the contact zones.

Results from the limited numbers of samples show that copper and base metal concentration in the gossan samples are very low. More samples should be analysed to further evaluate the gossans.

After a careful review, Darwin Mining Exploration Pty Ltd has come to the decision to relinquish EL29025.
**Introduction**

EL29025 was granted to Darwin Mining Exploration Pty Ltd by NT Department of Mines and Energy on August 1, 2012 for a period of six years. After two years exploration without significant progress, Darwin Mining Exploration Pty Ltd has decided to surrender all rights and interests in EL29025. This report summarises work carried out on EL29025 during the period August 1, 2013 to September 19, 2014.

**Tenure details**

EL29025, total of 54 units (Table 1), is located about 10 km west of township of Pine Creek, accessing by Stuart Highway and local 4WD tracks (Figure 1).

![Figure 1 EL29025 location diagram](image)

<table>
<thead>
<tr>
<th>Table 1 EL29025 unit</th>
</tr>
</thead>
<tbody>
<tr>
<td>BLOCK NO</td>
</tr>
<tr>
<td>SD52 1509</td>
</tr>
</tbody>
</table>
Geological Setting

EL29025 is located in the central part of Central Domain of the Palaeoproterozoic Pine Creek Orogen (Figure 2)(Ahmad M and Hollis J A, 2013).

![Generalised Geology of Pine Creek Orogen](image-url)
As shown in Figure 2 and Figure 3, over 90% of the licenced area is within outcrop area of Cullen Supersuite granite plutons. Small area on the northeast corner outcrops Burrell Creek Formation, which are fine to coarse feldspathic greywacke, shale, slate, phyllite and siltstone. On the southwest corner, granite is in contact with rocks of Depot Creek Sandstone.

Cullen Supersuite granites plutons were emplaced into the Central Domain in the period ca 1835-1820 Ma (Wyborn et al 1997). This is believed to synchronous with a major extensional event that led to the deposition of the El Sherana and Edith River groups and probably also the lower Katherine River Group (Ahmad and Hollis, 2013). The granites form an I-type (granodiorite) suite that has undergone significant fractionation. They have large contact aureoles and are spatially associated with gold deposits (Ahmad and Hollis, 2013). On the basis of petrography, geochemistry and associated mineral deposits, Stuart-Smith et al (1993) and Wyborn et al (1997) subdivided the Cullen Supersuite into three groups:
1. Leucogranite-dominated plutons;
2. Granite-dominated plutons;
3. Concentrically zoned transitional granites and leucogranite-dominated plutons.

In EL29025 licence area (Figure 3), a small area in the north-most part outcrops McMinns Bluff Granite. These are coarse- to fine-grained porphyritic granite. Mineral assemblage is characterized by quartz, K-feldspar, biotite, hornblende, magnetite, titanite, apatite, allanite, and zircon (Ahmad and Hollis 2013).

Rocks of Tabletop Granite spread throughout the majority areas of EL29025 (Figure 3). Variety of rock types include coarse-grained porphyritic granite, leucogranite, and fine equigranular granite.

Douglas Leucogranite, one of the youngest members of Cullen Supersuite granites, outcrops in the northwest part of EL29025 licence area. The fine- to medium-grained porphyritic granite is in contact with McMinns Bluff Granite in the north, and in contact with Tabletop Granite in the south (Figure 3).

**Mineralization**

Pine Creek Orogen hosts over a thousand mineral occurrences and is amongst the most prospective geological regions of Australia. It contains about 20% of the world’s low cost uranium resources, has a known resource of about 9 Moz of gold and has produced approximately 3.2 Moz to 2007 since 1870. Considerable resources of nickel-cobalt-lead-copper, lead-zinc-silver, platinum-palladium, tin-tantalum-tungsten, iron, magnesite, phosphate and various other commodities also exist (Ahmad and Hollis, 2013).

EL29025 licenced area has been considered to be perspective for gold, tin and base metal deposits, as the area outcrops Cullen Supersuite granite plutons that are spatially associated with gold deposits. In the licence area, there are several old mineral diggings for gold, tin and base metal (Figure 3, Figure 4).

**Work completed in the first 12 months** (October 8, 2012 to October 7, 2013)

For worked completed in the first 12 months please refer to the first annual report (Jiang Z 2013). It can be summarized as follows:

1. A detailed review of the previous exploration work has been conducted. This has revealed that the title area could be prospective for gold, tin, and base metal deposits related to Cullen Supersite granite plutons;
2. Analysis of the existing aero-geophysical images of the area;
3. Preliminary field reconnaissance trips.
Work completed in the second 12 months

1. Ground checks of mineral occurrences within the licence area;
2. Ground checks of magnetic anomalies.

Figure 4 Generalised geology of EL29025

Results

Ground check mineral occurrences

As shown in Figure 3 and Figure 4, there are several mineral occurrences within the licenced area. Two gold occurrences, 01842 and 00782, are located in the east, one tin occurrence, Stray Creek, and one base metal occurrence, 00786, locate in the southwest.
The old diggings at 01842 have mostly been refilled and no primary ore material is left on site. Outcrops of K-feldspar granite rocks around the area are units of the Tabletop Granite. At 00782, a few diggings along the stream might indicate that alluvial gold had been the target in earlier times.

No primary ore material has been identified around abandoned Stray Creek alluvial tin occurrences and 00786 base metal mineral occurrences, possibly due to refill.

![Figure 5 Aerial magnetic images around EL29025 licence area](image)

**Ground check aerial magnetic anomalies**

Figure 5 shows regional aerial magnetic anomalies around EL29025 licence area. The northeast striking anomalies in the northeast part (outside the licenced area) outline the major regional structures. A stream of mineral deposits distributed along this line. Three prominent positive magnetic anomalies locate in the northwest part of EL29025. Compare the regional magnetic images in Figure 5 with geological setting displayed in Figure 3, it is clear that the three positive magnetic anomalies are distributed along contact zone between Douglas Leucogranite and Tabletop Granite.
Field inspection has been made along lines right across the positive magnetic anomalies. The area is easy to access through Stuart Highway, via abandoned airport run way and arterial tracks.

In the area near anomaly A in Figure 5, over 90% of the ground is covered by light coloured Quaternary alluvial sand, a product of weathered granitic rocks. Granite outcrops are sparsely distributed in the area. Iron oxide-bearing gravels, size from a few millimeters to a few centimeters, accumulated on the sand surface. The in-situ accumulated iron-oxide-bearing gravels indicate fluid activities along contact zone of the granitic rocks. The magnetic high could be related to magnetite developed in the contact zone of Douglas Granite.

The area surrounding magnetic anomaly B in Figure 5 outcrops granite and sparsely distributed limestone. It is hard to clarify the occurrences of the limestone and its contact relation with the nearby granite, largely due to Quaternary and vegetation cover.

Gossan outcrops, as shown in Figure 6, have been located in the area. Samples of gossan outcrops have been analysed by hand-held XRF, results listed in Table 2. It should be noted that XRF analysis results are only semi-quantitative and preliminary. The results have been used here to indicate a rough range of the element concentration in the analysed samples. Laboratory analysis results of two gossan samples are listed in Table 4. Results from these limited numbers of samples show that Cu, Pb and Zn concentration in the gossan samples are very low.

![Figure 6 Gossan outcrops in the area with aerial magnetic high](Location, A: 52L 793612 8477627; B: 52L 793243 8477028, GDA UTM)

<table>
<thead>
<tr>
<th>No</th>
<th>Mode</th>
<th>Mn</th>
<th>Mn +/-</th>
<th>Fe</th>
<th>Fe +/-</th>
<th>Co</th>
<th>Co +/-</th>
<th>Cu</th>
<th>Cu +/-</th>
<th>Zn</th>
<th>Zn +/-</th>
<th>Pb</th>
<th>Pb +/-</th>
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<tr>
<td>#1</td>
<td>Soil</td>
<td>907</td>
<td>41</td>
<td>294822</td>
<td>3059</td>
<td>113</td>
<td>7 &lt;LOD</td>
<td>22 &lt;LOD</td>
<td>10</td>
<td>40</td>
<td>5</td>
<td></td>
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<tr>
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<td>162</td>
<td>46</td>
<td>223068</td>
<td>2412</td>
<td>51</td>
<td>6 &lt;LOD</td>
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<td>10</td>
<td>42</td>
<td>5</td>
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<tr>
<td>#3</td>
<td>Soil</td>
<td>99</td>
<td>17</td>
<td>119137</td>
<td>1045</td>
<td>80</td>
<td>4 &lt;LOD</td>
<td>17 &lt;LOD</td>
<td>8</td>
<td>22</td>
<td>3</td>
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Table 3 Sample locations

<table>
<thead>
<tr>
<th>Sample No.</th>
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<th>GARMIN OREGON550</th>
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<tbody>
<tr>
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<td>#9</td>
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Table 4 Laboratory analysis results of gossan samples

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<th>element</th>
<th>Cu</th>
<th>Pb</th>
<th>Zn</th>
<th>W</th>
<th>Sn</th>
<th>Au</th>
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<tbody>
<tr>
<td>unit</td>
<td>%</td>
<td>%</td>
<td>%</td>
<td>ppm</td>
<td>ppm</td>
<td>ppm</td>
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<tr>
<td>Instrument</td>
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<td>DRS</td>
<td>DRS</td>
<td>PA</td>
<td>DRS</td>
<td>CS</td>
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<tr>
<td>Detection limit</td>
<td>0.001 ppm</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.00%</td>
<td>0.03 ppm</td>
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<tr>
<td>Accuracy</td>
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<td>4.90%</td>
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<td>4.10%</td>
<td>3.20%</td>
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<td>8477028</td>
<td>0.016</td>
<td>0.009</td>
<td>0.0001</td>
<td>2.3</td>
</tr>
</tbody>
</table>

Conclusion and recommendation

1. No primary tin and base metal mineralization have been identified in EL29025. Most of abandoned old mining diggings have been refilled.
2. Gossan outcrops have been located in the area near the centres of the aerial magnetic anomalies. Gossans distributed along contact zone of Douglas Granite, where sparsely distributed limestone has been identified. Further work is needed to clarify the occurrence of the limestone, and its contact relation with the granite.
3. Gossan outcrops, as well as the positive aerial magnetic anomalies are distributed along contact zone of Douglas Granite. This might indicate the fluid activity and iron accumulation. Further work is needed to reveal the possible mineralization associated with the fluid activities along the contact zones.

4. Results from the limited numbers of samples show that copper and base metal concentration in the gossan samples are very low. More samples should be analyzed to further evaluate the gossans.

After a careful review, the managing board of Darwin Mining Exploration Pty Ltd has come to the decision to relinquish EL29025.

References


