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| Date of Report: | 19 August 2013 |

**COMBINED REPORT:**

**YEAR 1 ANNUAL & FINAL**

31/05/2012 to 19/06/2013

LUCY CREEK SOUTH

(EL 29146)
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Any information included in the report that has been originated or sourced from historical open file reports or other sources is listed in the “Exploration Studies - Historic” section within the document.

The Minister has authority to publish the copyrighted information accordingly.
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Summary

Section 94 of the Mineral Titles Act requires the submission of reports prepared by the titleholder for each Exploration Licence about the authorised activities conducted under the title and other matters relating to the title. The following report is a combined Year 1 Annual and Final Report for Exploration Licence (EL) 29146, known to NRE as the ‘Lucy Creek South Prospect’, prepared by Natural Resources Exploration (‘NRE’).

NRE’s exploration rationale and objectives for its Lucy Creek South Prospect considered the evaluation of potential base metals and phosphate mineralisation. Investigations were intended to locate any outcropping of mineralisation and any indicators of any sub-surface mineralisation within the tenement. NRE carried out a detailed geological assessment EL29146. NRE’s exploration activities included extensive office-based studies including desktop reviews of all previous exploration across EL29146 and its surrounding tenures. Research included review and compilation of the data in the Northern Territory Geological Services’ (‘NTGS’) open file reports, air photo imagery and examination of the latest geological maps.

Based on the exploration activities conducted on EL29146, NRE made application to the Department to completely surrender the entire title for EL29146 under section 103 of the Mineral Titles Act. EL29146 was surrendered on 19 June 2013.

This combined Annual and Final Report for EL29146 offers a summary of the activities carried out over all of the title area up to the time when the title ceased to be in force, including any results produced by those activities.

NRE believes that there is no rehabilitation required in relation to EL29146 as no field based activities have been undertaken within the tenure nor have any works involving land disturbance been carried out during the term of the licence.
1. Introduction

EL 29146 was granted to NRE on 31 May 2012, consisting of a total of 32 sub-blocks. EL29146 is located in the east of the Northern Territory, approximately 250 kilometres northeast of Alice Springs.

NRE’s exploration rationale and objectives for its Lucy Creek South Prospect considered the evaluation of potential base metal and phosphate mineralisation.

Based on the exploration activities conducted on EL29146, NRE made application to the Department to completely surrender the entire title for EL29146 under section 103 of the Mineral Titles Act. EL29146 was surrendered on 19 June 2013. During the entire term of its licence period, NRE was the sole titleholder and operator of EL29146.

NRE carried out a detailed geological assessment of EL29146 including considerable research and extensive office-based studies up until the title ceased to be in force over all of the title area. Research included review and compilation of the data in the Northern Territory Geological Services’ (‘NTGS’) open file reports, air photo imagery and examination of the latest geological maps.
2. Tenure

NRE’s exploration licence (EL) 29146, is more commonly known by NRE as its ‘Lucy Creek South Prospect’. The Lucy Creek South Prospect was granted to NRE on 31 May 2012 consisting of 32 sub-blocks.

*Table 1* lists the pertinent tenement details.

**Table 1. Tenement Details**

<table>
<thead>
<tr>
<th>Project Name</th>
<th>Tenement Name</th>
<th>Title No. (EL)</th>
<th>Sub-blocks</th>
<th>Sq. Km</th>
<th>Status</th>
<th>Grant Date</th>
<th>Surrender Date</th>
</tr>
</thead>
<tbody>
<tr>
<td>Southern Georgina</td>
<td>Lucy Creek South</td>
<td>29146</td>
<td>32</td>
<td>101</td>
<td>Surrendered</td>
<td>31 May 12</td>
<td>19 June 2013</td>
</tr>
</tbody>
</table>

Native Title

There are currently no Native Title Claims over the Lucy Creek South Prospect area.

Recorded Sites

There is one recorded sacred site located within EL29146.

Pastoral Leases

NRE’s Lucy Creek South Prospect overlies two (2) Pastoral Leases, namely ‘Lucy Creek’ NT Portion 686 PPL 1007 and ‘Jervois’ NT Portion 366 PPL 962.

*Figure 1* shows these leases in relation to the Lucy Creek South Prospect area.
Figure 1. Cadastral Map

2.1 Location and Access

Location & Access

The Lucy Creek South Prospect is located in the east of the Northern Territory approximately 250 kilometres to the north east of Alice Springs. Access to the tenure is via the Plenty Highway, followed by unsealed station tracks.

*Figure 2* represents the location and access of EL29146.
2.2 Topography and Drainage

The topography found in the tenement area appears to be gently undulating. The eastern side of the tenure is approximately 350 metres above sea level and the elevation appears to get steeper to the west with an elevation of 409 metres found just to the north of the western edge of the tenement. There are numerous creeks which cross the tenement but the most predominant of these is called the Arthur Creek which runs from north east to south west. The drainage appears to be towards the eastern side of the tenement.

*Figure 3* shows the topography and drainage within EL29146.
3. Geology

3.1 Regional Geology

The Lucy Creek South Prospect is located in the Southern Georgina Basin. The Georgina Basin is a large intracratonic sedimentary basin in central and northern Australia, lying mostly within the Northern Territory and partly within Queensland. It is named after the Georgina River which drains part of the basin. Deposition of locally up to ca. 4 kilometres of marine and non-marine sedimentary rocks took place from the Neoproterozoic to the late Paleozoic.

Along with other nearby sedimentary basins of similar age such as the Amadeus Basin and Officer basin, the Georgina Basin is to believe to have once been part of the hypothetical Centralian Superbasin, that was fragmented during episodes of tectonic activity. The Georgina Basin overlies the Aileron Province, Tennant Region, Murphy Inlier, McArthur and
South Nicholson Basins and Lawn Hill Platform. It is interpreted to be contiguous at depth with Wiso and Daly Basins and Conformably overlies the Kalkarindji Province.

The Georgina Basin is a broad, northwest-southwest trending intracratonic depression which underlies an area of some 325,000 square kilometres of the Northern Territory and Queensland. Approximately 60 percent of the basin area lies within the Northern Territory.

The Georgina Basin has a maximum sediment thickness in the south (Toko and Dulcie Synclines) including the area covered by NRE’s Lucy Creek South tenement, and east (Bruke River Belt), with a much thinner succession in the central and northern parts of the basin (Barkly and Undilla Sub-basins).

The Georgina Basin contains Cambrian and Ordovician, predominantly marine carbonate and clastic sediments, Devonian continental sediments and, in places, Neoproterozoic clastics. After an initial period of rift filling, sediments were deposited in a series of subtidal to supratidal environments over part of an extensive epicontinental shelf. The Palaeozoic sequence progressively thickens in a south-southeasterly direction, rarely exceeding 400 metres in the northern half of the basin, and reaching about 5000 metres in the southeast of the basin. The sedimentary sequence has been neither metamorphosed nor intruded by igneous rocks.

In the latest Cambrian, the Delamerian Orogeny caused a change to predominantly marine siliciclastic deposition in the southwest, with carbonate deposition continuing in the southeast. This pattern persisted until deposition ceased during the Middle Ordovician. In the Early to Late Devonian, the Arunta Block was uplifted during a phase of the Alice Springs Orogeny and fluvial siliciclastics deposited along the southern margin of the basin. Despite extensive potential source rocks in the early Middle Cambrian of the southern part of the basin, numerous oil shows and an uneconomic gas flow in Ethabuka 1, little exploration has been undertaken.

The basin has been deformed by minor to moderate folding and faulting, especially in the south and east, with moderate to severe folding and faulting and extensive overthrusting.
along the southern and southwestern margin. Most of the structural deformation occurred during the Late Devonian to Early Carboniferous Alice Springs Orogeny. The northern part of the Georgina Basin sequence is gently undulating with no pronounced folding recognised other than supratenuous (drap) folding.

The regional geology is shown in *Figure 4*.

**Figure 4.** Regional Geology Map

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### 2.2 Permit Geology

The permit geology of EL29146 across the Huckitta 1:250,000 geological sheets is outlined below.

**Unconsolidated Sediments**

This unit is Quaternary in age and is comprised of: soil, silty or sandy, alluvial and aeolian.
**Arrinthrunga Formation**

This unit is late Cambrian in age and is composed of: dolostone and limestone, micrite to grainstone, oolitic, stromatolitic, intraclastic: minor silt or quartz-arenite interbeds: prominently evenly bedded, thin to thick-bedded, grey, pink and yellow.

**Eurowie Sandstone Member**

This unit is late Cambrian in age and is comprised of: quartz arenite; rare siltstone; thin-bedded, red-brown: halite pseudomorphs and abundant ripple marks present.

**Arthur Creek Formation**

This unit is middle Cambrian in age and is composed of: calcareous siltstone, fossiliferous, poorly exposed, limestone interbeds and quartz-arenaceous limestone at top.

The permit geology is illustrated in **Figure 5** below.

**Figure 5. Permit Geology Map**
3. NRE’s Exploration Activities during the Reporting Period

NRE’s exploration program for the first term of EL29146 consisted of an extensive review of the tenement in order to delineate potential phosphate and base metal surface targets within the area. NRE has been unable to identify any subsurface mineralisation within EL29146 in respect of phosphate and base metals. NRE believes that no further exploration is warranted within EL29146 at this time.

During the reporting period, NRE made application to the Department to completely surrender the entire title for EL29146 under section 103 of the Mineral Titles Act. EL29146 was surrendered on 19 June 2013.

3.1 Previous Exploration Studies & Assessment

NRE has conducted an extensive review of historic exploration over EL29146. There has been relatively minor historic exploration across the tenement EL29146 in the past. A review of all previous exploration within the project area has been completed including:

- Review of previous exploration data from NTGS open file company reports; and
- Review of aeromagnetics, of radiometrics and gravity survey provided by NTGS; and
- Review of satellite imagery, of ASTER imagery, Google Earth Imagery.

The historical exploration conducted in the areas surrounding EL29146 is outlined below:

CRA Exploration

CRA Exploration held the tenement EL7596 between the period 1992-1993. They completed 3 RC drill holes with no significant results obtained (see CR1993-0677). They collected 42 rock chip samples with assays up to 2% Cu and 11.4% P and conducted 6 RC drill holes totalling 530 m on tenement EL8116 with no significant values obtained (see CR1994-0588). They also collected 28 drainage samples and 2 loam samples on tenement EL5803 with no significant values obtained (see CR1990-0059).
Saracen Minerals

Saracen Minerals held the tenement EL5149 during the period 1987-1988. Saracen Minerals conducted 14 rotary percussion drilling holes totalling a depth of 632 metres. However, none of the samples returned significant results (see CR1988-0104).

Previous exploration has been summarised in Table 2 and location of historic tenements is shown in Figure 6.

<table>
<thead>
<tr>
<th>Tenement</th>
<th>Period</th>
<th>Company Reports</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>EL 128</td>
<td>1972-1973</td>
<td>CR1974-0103</td>
<td>Petrocarb Exploration</td>
</tr>
</tbody>
</table>
4. **Reports lodged during the reporting period**

NRE believes that no other reports were required to be lodged during this reporting period.
5. Conclusions

Natural Resources Exploration’s (‘NRE’) exploration activities have been focused on delineating surface targets within EL29146. NRE has conducted extensive reviews in relation to EL29146 and assessment of aeromagnetic, gravity and radiometric data indicates there is no strong anomalism indicative of potential sub-surface mineralisation within the tenure.

NRE believes that this tenure holds low mineral prospectivity and no further exploration is warranted at this time. NRE made application to the Department to completely surrender the entire title for EL29146 under section 103 of the Mineral Titles Act. EL29146 was surrendered on 19 June 2013.

NRE believes that there is no rehabilitation required in relation to EL29146 as no field based activities have been undertaken within the tenure nor have any works involving land disturbance been carried out during the term of the licence.
Bibliography


