GROUP PARTIAL RELINQUISHMENT REPORT
3/5/11 to 2/5/13
AMADEUS PROJECT
GR 291 - 13

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Summary

Section 94 of the Mineral Titles Act requires the submission of a Relinquishment Report prepared by the titleholder for each exploration licence. Natural Resources Exploration three exploration licences (EL’s) 28303, 28304 and 28305 have been approved for Group Technical Reporting GR291-13. The following report is a Group Partial Relinquishment Report and relates to all three (3) exploration licences and offers a summary of the activities undertaken on the relinquished areas of those permits, including any results produced by those activities. Natural Resources Exploration (‘NRE’) is the sole titleholder and operator of (EL’s) 28303, 28304 and 28305. NRE was granted the Amadeus Project tenements on 03 May 2011, each for a term of six (6) years.

NRE attempted to delineate prospective areas for gold, uranium or potassium mineralisation and define the next phase of exploration over the relinquished areas. To do this NRE carried out a detailed office based geological assessment of its Amadeus Project. Based on the assessment of the activities conducted within the Amadeus Project itself, NRE has now made application to the Department to relinquish some areas of the tenement with the remainder of the tenure requiring follow-up work.

NRE’s exploration rationale and objectives for its Amadeus Project considered the evaluation of potential gold, uranium and potassium 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 of the relinquished area of the Amadeus Project including considerable research and extensive office-based studies. 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.

NRE believes that there is no rehabilitation required in relation to the relinquished area of the Amadeus Project 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 each of the licences.
1. Introduction

Natural Resources Exploration (‘NRE’) was granted the (EL’s) 28303, 28304 and 28305 known to NRE as Mulga Park, Curtin Springs and Lyndavale respectively on 3 May 2011, consisting of a total of 1,173 sub-blocks. The tenements are located in the south of the Northern Territory, approximately 300 kilometres south west of Alice Springs, adjacent to the border with South Australia. Mulga Park, Curtin Springs and Lyndavale have been approved for Group Technical Reporting and are known to NRE as the ‘Amadeus Project’. During the entire term of its licence period, NRE was the sole titleholder and operator of the Amadeus Project tenements.

The Amadeus Project contains Neoproterozoic-age (1200-820 Ma) gneiss, schist and granite of the Musgrave Province. The remainder contain sedimentary rocks of the Amadeus Basin that range in age from Neoproterozoic (<820 Ma) to Devonian (approximately 400 Ma). Sand dunes cover a large proportion of the Amadeus Project. NRE has considered the evaluation of potential gold, uranium and potassium mineralisation.

NRE’s exploration rationale and objectives for the Amadeus Project considered the evaluation of gold, uranium and potassium mineralisation. NRE carried out a detailed geological assessment of Amadeus Project including considerable research and extensive office-based studies. 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 in the Amadeus Project, NRE has nominated areas for relinquishment, with the remainder of the tenures still requiring follow up work.
2. Tenement

NRE’s exploration licences (EL’s) 28303 ‘Mulga Park’, 28304 ‘Curtin Springs’ and 28305 ‘Lyndavale’, are more commonly known by NRE as its ‘Amadeus Project’. Each exploration licence of the Amadeus Project was granted to NRE on 3 May 2011, each for a term of 6 years. NRE has recently nominated to relinquish 616 sub-blocks with the remainder of the permit comprising of 557 sub-blocks.

Figure 1 below identifies both the retained permit area and the relinquished permit area and their corresponding blocks and sub-blocks.

![Figure 1. Relinquished Area & Permit Area Map](image)

The relinquished sub-blocks subject to this report are as listed in Table 1 below.

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**Table 1**

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### Relinquishment Area Sub-block Identification

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<th>Block Identification</th>
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<td>V</td>
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<td>1721</td>
<td>N, O, S, T, U, X, Y, Z</td>
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</table>
2.1  Cadastral

NRE’s Amadeus Project overlies the following three (3) Pastoral Leases, namely ‘Mulga Park’ NT Portion 325, Perpetual Pastoral Lease 1079, ‘Curtin Springs’ NT Portion 326 Perpetual Pastoral Lease 1092 and ‘Lyndavale’ NT Portion 3350 Perpetual Pastoral Lease 1088. Figure 2 shows this lease in relation to the relinquished sections of the Amadeus Project area.

Figure 2.  Cadastral Map of Relinquished Area

2.2  Location and Access

The Amadeus group of ELs (EL28303 Mulga Park, EL28304 Curtin Springs, EL28305 Lyndavale) are located approximately 300 kilometres to the south west of Alice Springs,
adjacent to the border with South Australia. The Amadeus Project sits within the northern Musgrave Province, a province that hosts minor base metal and gold occurrences. Access to the project area is via the Stuart Highway, followed by the Lasseter Highway and then via Amadeus road and station tracks. The location and access to the project area is identified in Figure 3.

Figure 3. Location and Access Map

2.3 Topography and Drainage

The topography over the area of the Amadeus Project is mainly a series of aeolian sand plains and dunes. The Kelly hills and Mt Robert are found in the west of EL28303. Mt Frazier is located in the southern central area of EL28303. These hills and Mountains have small unnamed creeks and streams that run off them.
Situated in the south east and running south west is Jones (Ulaipanya) Creek. Situated in the south west and running north east is Nulcharra (Karukuranya) Creek of EL28303. On the eastern boundary of the EL28304 tenure is Mount Connor, however, there is no significant drainage within this tenure. EL28305 consists of several small (<1km²) Playa lakes. There are also several small nameless creek and streams near the western boundary of the tenure. Figure 4 shows the topography and drainage of Amadeus Project.

Figure 4. Topography and Drainage Map

3. Geology

3.1 Regional Geology

There are two major geological provinces recognised in the area:

1. A Mesoproterozoic basement complex in the south that represents the northern margin of the Musgrave Block; and
2. Carboniferous to Neoproterozoic sediments of the Amadeus Basin that are exposed mainly in the north.

Musgrave Block:

The Musgrave Block is a Mesoproterozoic age sedimentary basin. It is composed of felsic and mafic gneiss, granite, charnockite, minor metasedimentary gneiss, localised rift sediments and bimodal volcanics. Mineralisation is not known to occur within the same type of rocks elsewhere in the Musgrave Block, although exploration efforts have generally ignored the granites.

Studies of granites in the Musgrave Province by Geoscience Australia indicate some prospectivity for gold and copper deposits. This is based on geochemical similarities with granites associated with gold mineralisation in Pine Creek and gold + copper mineralisation in Tennant Creek. This style of gold mineralisation rarely occurs within the granites themselves, but is hosted by surrounding metasedimentary rocks.

Amadeus Basin: The Amadeus Basin is a Carboniferous to Neoproterozoic intracratonic sedimentary basin that was initiated as part of the Central Australian Superbasin and was substantially effected by intraplate tectonics. It is composed of dolostone, limestone, shale, sandstone, siltstone, quartzite, evaporite, diamictite and conglomerate.

The Amadeus Basin is considered prospective for calcrete type uranium, diamonds, epithermal (Au,U and base metals) oil and phosphate.

In the Amadeus Project area the central area is Mount Conner, this consists of the Winnall and Inindia sandstone beds along with Cambrian and Ordovician sedimentary rocks and small outcrops of the Bitter Springs Formation (equivalent to the Pinyinna beds). To the east of Mount Conner are several outcrops of Inindia sandstone beds. In the north and north eastern parts of the area are several large outcrops of Quaternary calcrete. Uranium deposits may occur within Amadeus Basin sedimentary rocks within the area.
3.2 Permit Geology

The permit / local geology within the Amadeus Project consists of units identified in the 1:250K surface geological sheets (Northern Territory Geological Survey).

**Unconsolidated Sediments**

This unit is Quaternary in age and is comprised of skeletal residual soil, sand, clay, minor pebbly material, Aeolian sand plains and sand dune deposits, red sand, mud and gravel; sheet wash deposits found in inter-dune depressions and on gentle slopes flanking hills. In some areas it is also composed of alluvium; sand, gravel and mud deposits in stream channels and flood-out plains or talus and scree; unconsolidated pebble to boulder sized phenoclasts within a sandy, clayey matrix. In the north (EL28305) it can contain playa lakes;
mud silt, halite, gypsum and other evaporite minerals, calcrete; vadose and phreatic. Finally, it can also comprise talus and colluvium; coarse sand and gravel deposits found at the flanks of major hills. This unit is the predominant unit covering the Amadeus Project and outcropping rock units are rare.

**Allanah Gneiss (Musgrave Block)**
This unit is Mesoproterozoic in age and is composed of orthopyroxene and clinopyroxene bearing granite gneiss, minor pelitic gneiss; commonly contains mylonite and pseudotachylite near thrust zones.

**Opparinna Metamorphics (Musgrave Block)**
This unit is Mesoproterozoic in age and is composed of biotite bearing granitic gneiss with secondary muscovite, grey, medium-grained; commonly migmatitic with veins of partial melt cutting early gneissic fabric.

**Basement Quartzite (Musgrave Block)**
This unit is Mesoproterozoic and is comprised of strongly deformed medium-grained biotite-hornblende granite and granitic gneiss.

**Undivided Granite and Gneiss (Musgrave Block)**
This unit is Mesoproterozoic in age and is composed of massive to sheared quartzite, contains muscovite, garnet and biotite in places; probably mainly vein quartz associated with granite magmatism.

**Kultpitjate Granite Complex**
This unit is Mesoproterozoic in age and is composed of fine to coarse grained weakly to strongly porphyritic biotite granite, underformed to highly sheared, common secondary muscovite; mylonitic equivalents include gneissic granite to muscovite-biotite schist. Minor biotite-hornblende granite. It is also composed of medium to coarse grained muscovite-biotite granite, weakly to strongly porphyrite, strongly foliated, medium grained porphyrite biotite-hornblende granite, strongly foliated.
Michell Nob Granite
This unit is Mesoproterozoic in age and is composed of coarse grained porphyritic biotite-hornblende granite, strongly foliated.

Nulchara Charnockite
This unit is Mesoproterozoic in age and is composed of medium to coarse grained charnockite, dark grey to green, K-feldspar megacrysts and lesser clinopyroxene and hornblende; forms flat-lying sheets.

Dean Quartzite
This unit is Neoproterozoic and is composed of medium to coarse grained, thick bedded massive white quartzite and quartz sandstone; minor conglomerate and fine grained sheared quartzite.

Inindia Beds
This unit is Neoproterozoic in age and is comprised of planar and trough crossed-bedded, medium to coarse grained, grey-brown sandstone, dark brown siltstone, chert and jasper.

Winnall Beds (Pwi2)
This unit is Neoproterozoic in age and is composed grey medium to coarse-grained sandstone, occasional pebble layers, minor pebble conglomerate and siltstone forms resistant mesa capping on Mt Conner.

The permit geology of the Amadeus Project is shown below in Figure 6 and the simplified stratigraphy of the Amadeus Project is show in Table 2.
Figure 6.  Permit Geology Map
4. **NRE’s Exploration Activities carried out on the Relinquished Area**

NRE’s exploration activities during the term of the permit and in particular, of the relinquished area, consisted of extensive office-based activities. An initial regional assessment of the areas within (EL’s) 28303, 28304 and 28305 for gold, uranium and potassium was conducted during the initial term.
4.1 Exploration Studies

NRE has conducted an extensive review of historic exploration over its Amadeus Project. 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.

Historic

Very little previous exploration has been undertaken in the area. This is due to both the poor outcrop and the absence of mineral occurrences known either in the Musgrave Province or the southern part of the Amadeus Basin.

The exploration that has been completed within the Amadeus Project and its surrounding tenements has primarily been for kimberlite or intrusive related mineralization, nickel sulfide and sedimentary U deposits by 21 companies (several joint ventures) from 1984 to present with Aeromagnetic being a common tool used to define exploration targets which were generally followed up with some combination of surface sampling or drilling. In the case of salts the lakes were sampled and followed up with some combination of drilling, production trials and feasibility studies.

Mithril was entirely focussed on exploration for nickel sulphide mineralisation in mafic rocks of the Musgrave Province. They appear to have adequately tested for this style of mineralisation with regional scale magnetic lag sampling over the most prospective areas. However, their sample analysis did not routinely test for Au and they did not sample areas where outcropping or subcropping felsic intrusives and gneisses occur.

Mithril focused on a major structure visible on magnetics that trends east-southeast through the northern part of Amadeus Project. The technique samples only magnetic grains in surface sediments and cannot be considered an adequate test for other styles of mineralisation, such as those related to granites.
EL10092 covers almost the entirety of Amadeus Project. EL10092 was explored by Mithril Resources for nickel sulfide deposits between 2003 and 2006. The exploration was reconnaissance field trips and a magnetic lag sampling program targeting magnetic anomalies which found a low level Ni/Cu/Co anomaly and a low level Ni/Co anomaly. The anomalies were on average Ni 66ppm, Cu 90ppm and Co 58ppm. These were followed up with more sampling and resampling for Pt, Pd and Au however the anomalies were determined to be the result of sub cropping lithologies as opposed to buried Ni, Cu sulfide mineralization.

In the wider area there has been exploration for salts / evaporates, diamonds, intrusion related deposits, nickel sulphides and uranium. Only Uranerz and Mithril Resources completed a significant amount of ground sampling work within the tenement and its surrounding tenements.

Previous exploration has been summarised in Table 3 and location of historic tenements is shown in Figure 7.

**Table 3. Historic Tenements and Previous Companies’ Exploration Reports**

<table>
<thead>
<tr>
<th>TENEMENT</th>
<th>PERIOD</th>
<th>COMPANY REPORTS</th>
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<td>EL 22611</td>
<td>2001-2002</td>
<td>CR2002-0205</td>
<td>BHP Bilton Minerals Pty Ltd</td>
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<tr>
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<td>1987-1990</td>
<td>CR1990-0276</td>
<td>Collfred Pty Ltd</td>
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<td>EL 5335</td>
<td>1987-1990</td>
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<td>Roebuck Resources N.L</td>
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</table>
After seeking the department’s permission, NRE engaged Terra Search Pty. Ltd. to attend the Northern Territory’s Alice Springs Core Facility to analyse a number of cuttings available from historically drilled water bores within the tenure. Terra Search Geologists undertook analysis of the water bore cuttings using a hand-held XRF device and re-logged water bores.

Figure 7. Historical Tenements over the Relinquished Area

4.2 Water Bore Cuttings Analysis

After seeking the department’s permission, NRE engaged Terra Search Pty. Ltd. to attend the Northern Territory’s Alice Springs Core Facility to analyse a number of cuttings available from historically drilled water bores within the tenure. Terra Search Geologists undertook analysis of the water bore cuttings using a hand-held XRF device and re-logged water bores.
NRE lodged an Exploration Report with the Northern Territory Department of Resources’ Geoscience Division on 7 June, 2011. This report was required in respect of the XRF and ALS Assaying of Water Bore Chips at the Darwin Core Facility. The Exploration Report was titled ‘XRF & ALS Assaying of Water Bore Chips – Core Facility: Darwin’.

5. Reports lodged during the Reporting Period

NRE lodged an Exploration Report with the Northern Territory Department of Resources’ Geoscience Division on 7 June, 2011. This report was required in respect of the XRF and ALS Assaying of Water Bore Chips at the Darwin Core Facility. The Exploration Report was titled ‘XRF & ALS Assaying of Water Bore Chips – Core Facility: Darwin’.

NRE lodged its Year 1 Annual Technical Report for Mulga Park with the Northern Territory Department of Resources on 22 June 2012, the report of which covered the tenure number EL28303.

NRE lodged its Year 1 Annual Technical Report for Curtin Springs with the Northern Territory Department of Resources on 2 July 2012, the report of which covered the tenure number EL28304.

NRE lodged its Year 1 Annual Technical Report for Lyndavale with the Northern Territory Department of Resources on 2 July 2012, the report of which covered the tenure number EL28305.

NRE also lodged its Year 2 Group Annual Technical Report with the Northern Territory Department of Mines and Energy on 4 June 2013, the report of which covered a number of tenures forming NRE’s ‘Amadeus Project GR291/13’.

6. Conclusions

Natural Resources Exploration’s exploration activities during the first and second term of (EL’s) 28303, 28304 and 28305 have been focused on delineating surface targets within the relinquished area with the aim of identifying any gold, uranium and potassium.

NRE has conducted office-based studies on (EL’s) 28303, 28304 and 28305 during the term of this tenure. NRE carried out a detailed geological assessment of the relinquished area
which included considerable research. NRE has conducted a full review of all previous exploration within the project area including review of previous exploration data from NTGS open file company reports, review of aeromagnetics, of radiometrics and gravity survey provided by NTGS and review of satellite imagery, ASTER imagery and Google Earth Imagery.

After its extensive review of all previous exploration data and its newly acquired data in relation to this ground, NRE has concluded that the potential for mineralisation within the nominated relinquished area is much lower than the remaining tenement area with the remainder of the tenure requiring follow-up work.
7. Bibliography


