YEAR 2
ANNUAL GROUP REPORT
03/05/12 to 02/05/13
AMADEUS PROJECT
GR 291 - 13

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Summary

Section 94 of the *Mineral Titles Act* requires the submission of an Annual 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 Annual Group Technical Reporting GR291-13.

This Annual Group Technical Report relates to all three (3) exploration licences and provides a summary of the activities carried out over the permits in the past 12 months, including results produced by those activities. The licences will be referred to as the ‘Amadeus Project’, unless specific attributes of each individual licence are discussed then in such a case the individual tenure name and number will be identified.

To delineate prospective areas for gold, uranium or potassium mineralisation and define the next phase of exploration, NRE has carried out a detailed geological assessment of its Amadeus Project during the second term. The detailed geological assessment of the Amadeus Prospect included a review of all data from previous exploration as documented in open file reports retrieved from the Northern Territory Government, including:

- Surface geological sampling;
- Geochemical anomaly mapping;
- Geological mapping;
- Detailed geophysical survey data;
- Geophysical anomaly mapping;
- Previous historical drilling results;
- Local and regional geological assessments;
- Conclusions derived from exploration programs;

- Geological maps provided by the Queensland Government.
- Aeromagnetics, aero-radiometrics and gravity surveys provided by the Queensland Government; and
- ASTER imagery and Google Earth imagery available in respect to the areas covered by the Amadeus Project area.
NRE also engaged consultants to conduct a geological evaluation of the Amadeus Project in order to better delineate targets within the area. As a result of NRE’s desktop studies, it was determined that given the style of mineralisation expected within this tenement, further field geological reconnaissance, field mapping, soil sampling, drainage sampling and rock chip sampling would assist in delineating future drill targets.

NRE’s activities during the second year of grant have allowed for the delineation of targets for further exploration activities to be conducted during the third term of the Amadeus Project.
1. Introduction

Natural Resources Exploration (‘NRE’) has conducted extensive office-based studies during the second year of the Exploration Licences forming part of its Amadeus Project. The Amadeus Project consists of three (3) tenements (EL) 28303, 28304 and 28305 known to NRE as Mulga Park, Curtin Springs and Lyndavale respectively.

ELs 28303, 28304 and 28305 were granted to NRE on 3 May 2011, consisting of a total of 1173 sub-blocks. The tenements contain 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 tenements.

During the reporting period, NRE’s exploration rationale and objectives for its Amadeus Project considered the evaluation of potential gold, uranium and potassium mineralisation. In order to define the next phase of exploration, extensive office based studies were undertaken. Investigations were intended to locate any outcropping of mineralisation and any indicators of any sub-surface mineralisation within the tenement based on desktop reviews.

NRE is looking forward to undertaking more extensive field activities over its Amadeus Project in the third term.

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. The Amadeus Prospect covers 3581.49 square kilometres of land across the Musgrave Province made up of 1173 sub-blocks.

Table 1 lists the pertinent tenement details.
Table 1. Tenement Details

<table>
<thead>
<tr>
<th>Amadeus</th>
<th>Name</th>
<th>EL</th>
<th>Sub blocks</th>
<th>Sq. Km</th>
<th>Status</th>
<th>Grant Date</th>
<th>Term</th>
<th>Expiry Date</th>
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<td>500</td>
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<td>6</td>
<td>2-May-17</td>
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<td></td>
<td>Curtin Springs</td>
<td>28304</td>
<td>411</td>
<td>1244.83</td>
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<td>3-May-11</td>
<td>6</td>
<td>2-May-17</td>
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<tr>
<td></td>
<td>Lyndavale</td>
<td>28305</td>
<td>262</td>
<td>813.24</td>
<td>Granted</td>
<td>3-May-11</td>
<td>6</td>
<td>2-May-17</td>
</tr>
</tbody>
</table>

Native Title
There are currently no Native Title Claims over the Amadeus Project area.

Recorded Sites
There a number of recorded sacred sites and registered sacred sites within the Amadeus Project area. These are situated in EL28304 and EL28305 on the eastern and western sides respectively.

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 1 shows this lease in relation to the Amadeus Project 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 2.
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 (<1km$^2$) Playa lakes. There are also several small nameless creek and streams near the western boundary of the tenure.

Figure 3 shows the topography and drainage of Amadeus Project.
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.

The Regional Geology is depicted in Figure 4 below.
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 comprised 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 5 and the simplified stratigraphy of the Amadeus Project is show in Table 2.
Figure 5. Permit Geology Map
4. NRE’s Exploration Activities during the Reporting Period

In order to define the next phase of exploration, NRE’s exploration program for the second term of its Amadeus Project consisted of extensive desktop studies and a historic review of previous exploration over the project area. NRE also engaged consultants to conduct a geological evaluation of the Amadeus Project in order to better delineate targets within the area. Our office-based studies have allowed us to delineate prospective areas for gold, uranium and potassium.
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.

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.

Historic

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 6.

Table 3. Historic Tenements and Previous Companies’ Exploration Reports

<table>
<thead>
<tr>
<th>TENEMENT</th>
<th>PERIOD</th>
<th>COMPANY REPORTS</th>
<th>COMPANY</th>
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<tr>
<td>EL 25151</td>
<td>2006-2010</td>
<td>CR2008-0895</td>
<td>Imperial Granite &amp; Minerals Pty Ltd</td>
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<td>EL 22611</td>
<td>2001-2002</td>
<td>CR2002-0205</td>
<td>BHP Billiton Minerals Pty Ltd</td>
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<tr>
<td>EL 6315</td>
<td>1988-1990</td>
<td>CR1990-0039</td>
<td>Collfed Pty Ltd</td>
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<td>EL 5585</td>
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<td>EL 5335</td>
<td>1987-1990</td>
<td>CR1988-0108</td>
<td>Roebuck Resources N.L</td>
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<tr>
<td>EL 4214</td>
<td>1983-1989</td>
<td>CR1984-0142</td>
<td>BHP Minerals</td>
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</tbody>
</table>
4.2 NRE’s Exploration Targets

NRE engaged Mining Associates to conduct a geological evaluation of the Amadeus Project in order to better delineate targets within the area. Some gold occurrences are known in the Musgrave Province in the Petermann Ranges about 250 km northwest of EL28303. Soil sampling from previous historical exploration yielded rock chip results up to 30 ppm Au with elevated Ag, Bi, Cu and Pb.

Gold which is related to shear zones developed during the Arunta or Petermann Orogenies is also a potential target style in the project area. A major shear zone system can be delineated on aeromagnetics trending south-southeast throughout EL28304 and EL28303.
This area represents the main target for a gold sampling program and is shown in Figure 7 below.

Calcrete is known to contain concentrations of uranium minerals within suitable environments. The calcrete targets for the Amadeus Project are identified in Figure 7 below.

**Figure 7. Gold and Uranium Targets Identified by Mining Associates**

Playa lakes have been assessed for potash potential in nearby tenements with encouraging results. Seven playa lakes have been identified on EL28305 and all correlate with potassium anomalies on regional radiometric images. These playa lakes are identified in Figure 8 below.
NRE are currently working through logistical difficulties in covering an area of ground so expansive in such a remote location with difficult ground conditions for travel. However, NRE hopes to have worked through the logistical difficulties associated with such a location and it hopes to conduct anticipated program in the first quarter of the third term.

5. NRE’s Exploration Activities for next 12 month period

The objective for NRE over the next twelve month period will completely depend on the logistics of a field program in such a large remote area with difficult ground conditions for travel. Assuming logistics are overcome, NRE intends on conducting two large soil sampling programs. This will happen simultaneously with a rock chip sampling program, drainage sampling and geological reconnaissance mapping program.

One of these sampling programs will occur over target areas identified in the southern part of the project and the other in the northern portions of the project area. Given the large
area that these tenements cover, the limited outcrop and lack of previous ‘on the ground’ activities conducted by previous explorers. NRE has designed large programs with broad spaced intervals in an attempt to obtain significant new data for the region.

NRE intends to undertake sampling at one kilometre spacing over the southern tenement in the Amadeus Project (EL28303). Regional surface lag sampling for low-level Au and multi-element over main structural zone will be completed over the entire tenement with drainage sampling to be undertaken where possible. This proposed sampling is shown below in Figure 9.

**Figure 9. Proposed Sampling Area Location Map**

![Proposed Sampling Area Location Map](image)

Some geological reconnaissance will be conducted in the northern sections of the Amadeus Projects to test for the possibility of uranium and potassium deposits as shown in Figures 7 and 8 above. This will include soil sampling and rock chip sampling. The soil sampling of the Calcrete Uranium targets (dependant on the ground conditions and interpretations) is expected to recover samples at approximately one kilometre spacing over the target areas.
The potash sampling program will include soil sampling and rock chip sampling whenever deemed necessary in the target areas.

Geological mapping of the Amadeus Project will also be conducted while field activities are being conducted. These maps will then be analysed along with the results from the sampling program to help NRE to delineate further targets.

6. Reports lodged during the reporting period

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

7. Conclusions

Natural Resources Exploration’s exploration activities during the second term of its Amadeus Project have been focused on delineating targets. 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. Investigations were intended to locate any outcropping of mineralisation and any indicators of any sub-surface mineralisation within the tenement based on desktop reviews.

As a result of these activities during the second term, it was determined that given the style of mineralisation expected within this tenement, further field geological reconnaissance, field mapping, soil sampling, drainage sampling and rock chip sampling would assist in delineating future drill targets. However, NRE has encountered logistical issues of covering such a large and remote area with difficult ground conditions and hopes to conduct its field activities within the first quarter of the third term.

NRE is looking forward to commencing its exploration activities in the third term.
8. Bibliography


