NT Minerals Pty Ltd

Alice Springs Project
(EL 29096 & 29097)

Annual and Final Report
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1.0 ABSTRACT

The Alice Springs Project was comprised of Exploration Licenses (EL) 29096 and 29097 which have been surrendered effective 2\textsuperscript{nd} January 2014. The project was located 30 km southwest of Alice Springs and covered an area of 532 km\textsuperscript{2} of the Amadeus Basin.

From the grant date to surrender no field activities were conducted over EL 29096 or 29097.

The Proterozoic Amadeus Basin is dominated by sedimentary sequences which historically have been the target of petroleum and gas exploration as well as uranium exploration. NT Minerals Pty Ltd selected the project area with uranium as the primary focus and base/precious metals as a secondary focus.

NT Minerals has conducted an extensive review of the historical data available over the area and discouraging findings led to the decision to drop the ground. The assessment conducted found that the level of uncertainty and risk in conducting the exploration program required was too high. NT Minerals Pty Ltd has instead chosen to focus on its other more prospective projects.
2.0 OVERVIEW

2.1 LOCATION

The Alice Springs Project (EL 29096 and 29097) was located approximately 30 km southwest of Alice Springs in the Northern Territory (Figure 1).

![Location Map - EL 29096 & 290897]

Figure 1 - Alice Springs Project Location Map

2.2 TENEMENT DETAILS

The Alice Springs Project comprised of two titles (EL 29096 and 29097) and covered a combined area of 532 km². Both titles were granted in August 2012 for a period of 6 years and have now been surrendered.

Table 1 - Tenement Details

<table>
<thead>
<tr>
<th>EL NUMBER</th>
<th>EL29096</th>
<th>EL29097</th>
</tr>
</thead>
<tbody>
<tr>
<td>Date Granted</td>
<td>6/8/12</td>
<td>6/8/12</td>
</tr>
<tr>
<td>Years</td>
<td>6 years</td>
<td>6 years</td>
</tr>
<tr>
<td>Sub-Blocks</td>
<td>86</td>
<td>99</td>
</tr>
<tr>
<td>Size Km²</td>
<td>240</td>
<td>293</td>
</tr>
</tbody>
</table>
2.3 ACCESS
Access can be gained to the Alice Springs project via Larapinta Drive (north of EL 29096) and the Stuart Highway (runs the length of EL 29097 along the northwest boundary). Some dirt tracks are visible from satellite images throughout EL 29096 and EL 29097 appears flat and 4WD accessible.

2.4 PHYSIOGRAPHY
The Alice Springs Project is generally flat over the southern tenement area (EL29097) with low to moderate relief over the northern tenement area (EL29096) and situated immediately south of the West MacDonnell Ranges.

Figure 2 Physiographical Features of Alice Springs Project
3.0 GEOLOGICAL SETTING

3.1 REGIONAL GEOLOGY

The Amadeus Basin is a large east-west trending intra-cratonic basin located in the South West of the Northern Territory. The basin is late Proterozoic to Carboniferous in age and consisting of dominantly marine and continental sediments which were derived from the surrounding early to mid-Proterozoic granites and metamorphics of the Arunta Block to the north and the Musgrave Block to the south. The sedimentary sequence is over 10,000 m thick and consists of the following:

- Late Proterozoic
  - Basal shelf sediments, lagoonal and continental fluvi-glacial deposits.
- Cambrian
  - Continental to shallow marine sediments including carbonates and evaporates.
- Late Cambrian to Ordovician
  - Marine sediments
- Devonian to Carboniferous
  - Continental sediments

During the Devonian to Carboniferous (Alice Springs Orogeny) extensive broad folding and thrusting occurred along the northern margin of the basin. During the Proterozoic (Peterman Orogeny) broad regional folding has occurred over the southern margin.

The Alice Springs Orogen (ASO) is a major intracontinental event that affected the central Australian region during the Devonian to Carboniferous. Prior to the ASO the Amadeus, Georgina, Wiso and Ngalia sedimentary basins were contiguous. During the ASO, deep crustal rocks were exhumed approximately 40km to be juxtaposed against upper crustal (Proterozoic) basalts and sediments of the Amadeus Basin, to expose the Arunta Province and thus isolating each of the above sedimentary basins. (CR20100482)
Figure 3 - Map of the Structures of the Amadeus Basin. Red box depicts location of Alice Springs Project (Shaw, R.D. The tectonic development of the Amadeus Basin, Central Australia, BMR Bulletin 236, 1991)

Figure 4 - Schematic cross section of the Amadeus Basin. Red box depicts location of Alice Springs Project (Shaw, R.D. The tectonic development of the Amadeus Basin, Central Australia, BMR Bulletin 236, 1991)
Figure 5 - Simplified Stratigraphic Column of the Amadeus Basin. Adapted after Wells and others, 1970 and Kennard and others, 1986 (Shaw, R.D. The tectonic development of the Amadeus Basin, Central Australia, BMR Bulletin 236, 1991)
3.2 LOCAL GEOLOGY

The project is located within the Proterozoic Amadeus sedimentary basin. The Waterhouse anticline, which lies between EL29096 and 29097, extends for approximately 50 km east-west and is bordered to the north and south by east-west trending thrust faults. Throughout the length of the Missionary plain (within EL29096) the Undandita occupies most area at surface, with the conglomerate occupying only a thin strip along the ranges to the north. The main lithological variation in the Undandita is in colour. The bulk of the sandstone is mottled with a reddish purple colouring due to the presence of haematitic grain coatings. Within the Undandita a band or tongue of greenish-grey, non-haematitic sandstone, exists and represents a zone of reduced sediments within a generally oxidised sequence.

Figure 6 - Regional geology of Alice Springs Project

3.3 HISTORIC EXPLORATION

Initial exploration within the current project area targeted roll front style uranium during the mid-1970’s (Uranerz Australia) and the work completed identified the Undandita Member of the Brewer sequence as a more favourable horizon. Within the project area the Undandita does occur and has received extensive vacuum drill testing with limited elevated uranium results returned. Redox fronts within the Undandita Member are thought to play an important role in the controls of the uranium mineralisation and thought to be related to oxidising groundwater. Regional groundwater sampling (Uranerz Australia) showed a high uranium background to the region.
Several RC and diamond drill holes were completed by AGIP Nucleare Australia as follow-up to uranium targets generated through vacuum drilling. No significant results were intersected from the drilling.

The only base metal exploration within the region has occurred within the Waterhouse Range anticline (particularly the Goyder formation) which lies outside of the current project, between the two ELs.

A review of the gold prospectivity was completed by Gutnick Resources (2004) over the north west of the project targeting Witwatersrand style gold mineralisation. Although almost no field work was completed within the Alice Springs project area.

A review of the open file NTGS digital stream sediment data base highlights that the northern of the two EL’s within the project has never been stream sediment sampled, despite being dominated by residual regolith. Refer to Figure 8 showing the location of the open file stream sediment data coverage.

The southern of the two EL’s within the project is dominated by an alluvial filled recent basin (mostly <15 m depth?) which is approximately centred on the Orange Creek Syncline. Historical drilling over
this area has only been completed on a regional spaced density of 5 km by 1 km and appears to have intersected basement with holes drilled to a maximum of 15 m. It is likely that the basement rocks beneath the alluvial should be dominated by the Undandita Member. While the results from the regional drilling were wide spaced there could be an argument that this drilling is too wide spaced to access the regional uranium potential.

Figure 8 - Stream sediment coverage from NTGS digital data base on regional geology (left) and aerial image (right).
Figure 9 - Alice Springs Project Regolith

**Magellan Petroleum**

**AP1604**

CR19660017: Petroleum exploration.

**Le Nickel Exploration**
AP2852
CR19720030: Sampling gossans targeting base metals in the Waterhouse range which lies outside of the current project.

EL230
CR19730006: Targeting copper mineralisation outside of the current project area. Drill 4 holes with no mineralisation intersected.

Uranerz Australia

EL845
CR19740109: Targeting uranium mineralisation. Completed airborne radiometric anomalies (outside current project area) which were ground followed up. Radiometric anomalies related to secondary uranium mineralisation associated with a colour change in the sandstone. Drilling confirmed the mineralisation at depth which is thought to be related to oxidising ground waters in the sandstone.

CR19750110: Follow-up of airborne radiometric survey with extensive vacuum drilling (data on NTGS drill database). Vast majority of the vacuum drilling is outside the current project area.

CR19760072: Addition drilling follow-up of the uranium identified above which lies outside the current project area.

CR19770047: Drilling completed outside of the project area targeting uranium in the sandstone identified above.

CR19770079: Drilling completed outside of current project area. Uranium anomalous stratigraphy could extend into current NT minerals application area EL29089 (north western portion).

CR19780120: Drilling completed outside of current project and mostly on the Angela Uranium resource area. Regional water sampling completed which showed a high uranium background.

EL979
CR19750117: Targeting uranium. Completed extensive vacuum drilling on a density of 1 km x 25 m although the hole locations may not all appear to be in the NTGS drill database. Good geological note included in Section of the report.

CR19760083: Drilling outside of project area.

CR19770048: Drilling outside of project area.

CR19770087: Scout RC/diamond drilling (average hole depth 70 m) was completed on a density of approximately 1-2 km x 1-2 km.

None of the holes above lie within the current project area.

CR19780128: Work concentrated on previous anomalous areas outside the current project area.
EL1175

CR19780077: Targeting sandstone type uranium deposit with regional vacuum drilling (bedrock sampling). Completed airborne radiometric survey with no significant anomalies detected. Programme targeted the Undandita sandstone member. Vacuum drilling completed on north south lines spaced 5 km apart with holes spaced 1 km apart along the lines. This programme completely covers the EL29097 and no anomalous uranium results were returned.

EL1346

CR19780079: Regional vacuum drilling completed mostly south of the current project area.

**AGIP Nucleare Australia**

EL1415

CR19780036: Target uranium. Six drill holes completed but all holes lie outside of the current project area.

CR19790037: Wide spaced vacuum drilling targeting the Brewer conglomerate with limited anomalism.

CR19800001: Completed additional drill holes which are in the NTGS drilling database. No anomalism.

EL1677

CR19790033: Targeting uranium. Vacuum drilling completed is included in the NTGS drill hole database. Two percussion holes were also completed and only intersected weak radioactivity.

CR19790191: Two diamond drill holes (AOD1 and AOD2) and 4 percussion holes were completed. Weak radioactivity anomalism was intersected in both holes.

**Uranerz Australia**

EL2452

CR19810197: RAB drilling outside of current project targeting uranium.

EL2165

CR19820022: No work within current project.

**CRA Exploration**

EL9333

CR19970410: Targeting strata bound Cu mineralisation within the Waterhouse Range and specifically the Goyder Formation.

No work within the current project area.
Gutnick Resources

EL10261

CR20040166: Targeting Witwatersrand style gold mineralisation. Very little field work completed.

Cauldron Energy

EL24870

CR20090340: Targeting sedimentary hosted uranium. All work completed outside of current project area.

CR20110687: See figure below. No additional work completed.

Deep Yellow

EL24547

CR20090789: Targeting uranium on prospects outside of the current project area.

Ivanplats Uranium

EL9857

CR20100482: Targeting sandstone hosted uranium similar to the adjacent Angela and Pamela uranium projects. Completed airborne magnetics and radiometrics.

No work completed within current project area.
Detailed airborne magnetics completed (TMI image).

![Detailed airborne magnetics completed (TMI image).](image)

Detailed airborne radiometric image.

**URANEX**

**EL27758**

CR20110595: Targeting sedimentary redox style uranium mineralisation. No field work completed.

### 4.0 OPERATIONS REPORT

No field work has been completed on the Alice Springs Project. Work associated with this tenement has been focused on a review of previous exploration in order to plan the forward exploration programme.

### 5.0 CONCLUSION AND RECOMMENDATIONS

Previous exploration over the Alice Springs project area has focussed on targeting sandstone hosted style uranium mineralisation hosted by the Undandita Member of the Brewer sequence. Extensive vacuum drilling targeting the Undandita unit has been completed with limited anomalous uranium results returned.

Over the southern portion of the project (southern EL29097) extensive shallow alluvial cover masks the Undandita basement rocks. Regional vacuum drilling (5 km x 1 km) completed in the late 1970’s did not intersect anomalous uranium although this density is considered too wide to fully test the region.

The discouraging findings of extensive review of historical data over the area led NT Minerals to the decision to drop the ground. The assessment found that the level of uncertainty and risk in
conducting the exploration program required was too high. NT Minerals Pty Ltd has instead chosen to focus on its other more prospective projects.

6.0 REFERENCES


Huston, D. 2011, An assessment of the uranium and geothermal prospectivity of east central South Australia, Geoscience Australia, 2012/51


Lindsay, J.F., 1999, Heavitree Quartzite, a Neoproterozoic (ca 800-760Ma), high-energy, tidally influenced, ramp association, Amadeus Basin, central Australia, Australian Journal of Earth Sciences 46 127-139
