ANNUAL REPORT

ON EL 28186

Central Australia

FOR THE PERIOD

2 FEBRUARY 2011 TO 01 FEBRUARY 2012

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Element 92 Pty Ltd (Thundelarra Exploration Ltd)
SUMMARY

EL 28186 was granted to Element 92 Pty Limited on 2 February 2011, and will expire on 1 February 2017. It has 257 blocks covering 818 km² approximately. The tenement is located about 330 km NW of Alice Springs and 1200 km SW of Darwin. Element 92 Pty Ltd/Thundelarra Pty Ltd are exploration the region for uranium and other commodities, and this is the first annual report on the project area.

The project area is located north of the Ngalia Basin, comprising rocks of the Arunta Inlier. Geology of the project area is dominated by the Palaeoproterozoic Lander Rock beds/formation, Carrington Granitic Suite, Wabudali Granite and Southwark Granitic suite, exposed in the northern part of the Mt Doreen (1250 000) sheet. The Palaeoproterozoic Lander Rock beds/formation is mainly interbedded pelitic and psammitic metasedimentary rocks characterised by turbiditic sedimentation. They were metamorphosed (greenschist facies to granulite facies) and deformed during a number of tectonic events spanning from the Yuendumu Event to Alice Spring Orogeny. Locally, layers of basalt and dolerite sills are also present. The rocks have been intruded by granites and cut by aplitic, pegmatite and quartz veins. Much of the area is covered by loose Tertiary channel sand sheet, mudstone, gravel, calcrete and silcrete.

During the year under review, a desktop study of the project area was undertaken. This exercised involved obtaining of previous geological, geochemical and geophysical data from the Northern Territory Geological Survey. Geological, geophysical and geochemical data were captured into GIS system and geophysical data were re-processed and interpreted. In the regional interpretation of EL 28681 three geophysical datasets were considered. These are regional radiometric (U, Th, K and U²/Th), regional magnetics (TMI, 1VD) and regional gravity (TDR). Processing, interpretation and modelling of geological and geophysical data revealed Tertiary palaeovalley-type uranium mineral potential in the project area.

In the next reporting period, further historical data interpretation and modelling will continue to assess the mineral potential of the project area. Selected areas of EL 28186 will be geologically mapped in detail, along with soil/rock chip sampling program within the project area. Samples taken will be assayed for uranium, gold and base metals mineralisation. In addition, ground geophysical survey of the project area will also be undertaken. If encouraging results received, then drilling campaign will be conducted in the next reporting period.
TABLE OF CONTENTS

SMMARY 2
1.0 Introduction 4
2.0 Tenement Status 4
3.0 Location and Access 4
4.0 Geological Setting 6
6.0 Previous Exploration Activity 9
7.0 Exploration Activity year Ending 01 February 2012 11
8.0 Proposed Exploration Activity 21
9.0 References 21

LIST OF TABLES

Table 1: Summary of open-file reports for historic exploration activities completed within the EL28186.

LIST OF FIGURES

Figure 1: Location of EL 28186
Figure 2: Geological Setting of the Project Area
Figure 3: EL28186 with Uranium channel image in background, major geology as .........
Figure 4. EL28186 with thorium channel image in background, major geology as ..........
Figure 5: EL28186 with Potassium channel image in background, major geology as.....
Figure 7: EL28186 with First Vertical Derivative (1VD) magnetics image in background.....
Figure 8: EL28186 with Tilt Derivative (TDR) gravity image in background, major ...........
Figure 9: EL28186 with TDR gravity image draped on 1VD magnetics in background........
1.0 INTRODUCTION

Exploration Licences (EL) 28186 is located about 1200 km SW of Darwin, Northern Territory (Figure 1) where Element 92 Pty Ltd (wholly owned subsidiary of Thundelarra Exploration Ltd) is exploring the area for uranium and other commodities. It is the first annual report on the project area.

2.0 LOCATION AND ACCESS

EL 28186 is located about 350 km NW of Alice Springs and 1200 km SW of Darwin (Figure 1) within northern part of the Mt Doreen (1:250 000) Sheet. The tenement can be approached by Stuart Highway, which turns into Tanami Road at about 110 km north of Alice Springs. Tanami Road is partly sealed and then on formed gravel tracks either via Newhaven or Yuendumu-Nyirrpi roads. Vehicle access within the tenements is possible by station tracks, which may be impassable during wet season.

3.0 TENEMENT DETAILS

The tenement was granted to Element 92 Pty Limited on 2 February 2011, and will expire on 1 February 2017. It was granted for a period of 6 years and has 257 blocks (818 km²) approximately. Majority of the tenement is located within northern part of Mt Doreen (1:250 000) and Vaughan (1:100 000) sheets. Only a small north-eastern part is located inside Mt Theo (1:250 000) and Yaloogarrie (1:100 000) sheets.

Underlying cadastre belongs is covered by NTP 1947 which is held by Braitling Nominees Pty Ltd, Mt Doreen Station, via Alice Springs.

The area has an arid, tropical climate with long, hot summers and short, mild winter. During summer (e.g November, December, January) daytime temperatures could exceed 40°C.

Average rainfall is less than 200 mm per year with the majority falling in summer (October to April). However, in the last few years, the region is experiencing above average rain fall from November to March, which is making difficult to travel on dirt road.
4.0 GEOLOGICAL SETTING

The Project area is located in the northern part of the Arunta Inlier. It contains an east-west trending Proterozoic rocks, and towards south is overlain by a thick succession of Neoproterozoic to shallow marine and fluvio-glacial clastic, carbonate and evaporitic rocks of Devonian and Carboniferous fluvial to continental sandstone, siltstone & shale. Seismic data indicate that the basin is asymmetric and attains a maximum thickness of approximately 4.5 km. Towards north, rocks of the Arunta Inlier are predominant which form E-W trending ridges dominated by the deformed and metamorphosed (Yuendumu Event at about 1880 Ma) rocks of the Lander beds, intruded by granites of the Carrington Granite suite and Wabudali Granite, which were emplaced between 1779 - 1567 Ma. Post-tectonic igneous rocks were emplaced approximately at 1635 Ma which includes mafic to intermediate Andrew Young Igneous Complex. A further episode of plutonium is recorded at about 1567 Ma when extensive megacrystic granites of Southwark Granite Suite with high K, U and Th were emplaced (Young et al. 1995).

A number of tectonic events produced widespread folding and faulting, with deformation being focussed on the northern margin of the Basin. During these events, Proterozoic rocks were metamorphosed from greenschist facies to granulite facies. Mesoproterozoic post-tectonic plutonic rocks of the Southwark Granitic Suite and older high grade metamorphic rocks (together representing the Arunta Inlier), form the basement to the Ngalia Basin. The granitic rocks are known to be anomalously rich in uranium, and are likely to be the ultimate source of the widespread uranium mineralisation in the Basin.

Geology of the project area is dominated by the presence of the Lander Rock beds/formation and granites (Figure 2), exposed in the project area. The Palaeoproterozoic Lander Rock beds/formation is predominantly interbedded pelitic and psammitic metasedimentary rocks characterised by turbiditic sedimentation (Young, et al 1995). Locally, layers of basalt and dolerite sills are also present. The rocks have been intruded by granites and cut by aplitic, pegmatite and quartz veins. Young et al. (1995) subdivided divided Lander Rock beds/formation into six mappable units based on metamorphic criteria. These are 1) greenschist facies with typical minerals muscovite and chlorite in pelitic rocks, 2) lower amphibolite facies containing biotite, andalusite, and muscovite, 3) upper amphibolite facies (cordierite, andalusite, K-feldspar, biotite and lesser muscovite), 4) transitional granulite facies containing sillimanite, cordierite, garnet and biotite in pelitic rocks; two pyroxenes in mafic rocks, 5) granulite facies retrogressed to amphibolite or greenschist facies, and 6) amphibolite facies retrogressed to greenschist facies.
Figure 2: Geological Setting of the Project area
Within EL 28186, lithological units of the Lander Rock beds/formation essentially belong to greenschist facies or retrograde granulite/amphibolite facies assemblages with variable mineral assemblages such as muscovite-chlorite-quartz schist, quartzite, biotite-muscovite-andalusite-quartz schist, cordierite-andalusite-K-feldspar-biotite granofels, minor migmatites along with cordierite-garnet-sillimanite biotite gneiss and quartzite. Minor mafic gneiss may also be present.

In the project area, at least 3 granite bodies have been mapped and that are the Carrington Granite Suite, Wabudali Granite and Southwark Granitic Suite (Figure 2). South-eastern part of the tenement underlies the Palaeoproterozoic Carrington Granitic Suite, which is weakly to strongly foliated. It ranges in composition from biotite tonalite to muscovite-biotite granite. Figure 2 shows division of the granite body into 4 types which are essentially variation of biotite granodiorite, biotite tonalite, muscovite biotite granite varieties. Some outcrops of undefined granitic rocks have also been included in the Carrington Granitic Suite. It has been dated 1779 ± 9 Ma (Young et al.1995) and intrudes Lander Rock beds/formation. It contains abundant retrograde metamorphic xenoliths and have caused retrograde metamorphism in the surrounding rocks.

The Wabudali Granite is only exposed in the northern part of the project area where it appears pale, medium to coarse-grained biotite-muscovite granite and intrudes the Lander Rock beds/formation. The granite body contains tabular white feldspar megacrysts (K-feldspar and plagioclase). The unit has been divided into two types in the project area. These megacrysts often shows alignment with magmatic/flow foliation. The granite body generally does not show an effect of deformation, but it is cut by strongly foliated mylonitic zones. Based on stratigraphic and tectonic record, Young et al (1995) estimated that Wabudali Granite has an age of approximately 1567 Ma.

Towards north of the project area (Mt Theo 1:250 000 sheet; FA 715685), the Wabudali Granite hosts tungsten and copper mineralisation at Wilson’s Find, Here, wolframite, malachite and chrysocolla occur in southeast-trending greisen.

The Southwark Granitic Suite is mainly located in south-eastern part of the project area (Figure 2). It is mainly biotite-muscovite granite characterised by the presence of abundant feldspar megacrysts. During Alice Springs Orogeny (Palaeozoic) the granite was cut across by shear zones, otherwise it is undeformed. It is divided into 2 types within the project area. First type is pale pink to white tabular megacrysts of alkali feldspar set in fine to medium-grained matrix. The second type contains equant quartz and sodic feldspar smaller
megacrysts set in find to coarse-grained matrix of quartz, feldspar, biotite and muscovite. Chlorite is a secondary mineral along with rare dark blue-green amphibole.

Much of the project area is covered by loose Tertiary channel sand sheet, mudstone, gravel calcrete and silcrete.

6.0 PREVIOUS EXPLORATION ACTIVITY

In the reporting period, the majority of work undertaken in EL 28186 consisted of historical research through open file exploration reports, and interpretation of regional magnetic, radiometric and gravity datasets. Element 92 Pty Ltd commenced historic research and open-file report for an area of approximately 4000 km² which encompasses ELs 28186, 28625, 28697 and ELA 28971. This work included -

- Identification of historic Exploration Licences within the ELs
- Procurement of open-file data from NTGS
- Digital capture of data
- Analysis of historic work and assessment of prospectivity

A total of 8 historic tenements were identified that intersected EL 28186. Table 1 shows a summary of these tenements, the relevant company reports and other pertinent details. Most exploration occurred in the southern portion of current EL28186 and focused on gold and copper mineralisation associated with Proterozoic Lander Rock beds/formation or Southwark Granitic Suite. Most explorers relied on geochemical sampling (lag and rock chips) and shallow drilling to identify anomalism in the regolith and saprolite. Although no significant mineralisation was discovered, the vast majority of the exploration effort was very shallow and there was no drill testing of deeper structures seen in regional geophysical data.

The most relevant historic work within this current tenement was done by Swiss Aluminium Company from 1976 to 1977. They explored for uranium in calcrete developed and although no economic mineralisation was found, it was demonstrated that

i. Significant uranium sources exist within granite with pitchblende being identified in one granite samples
ii. Uranium is mobile and has been concentrated in calcrete adjacent to the source (up to 800 ppm)

There has been no exploration within EL28186 for channel-hosted mineralisation of the type sought by Element 92 Pty Ltd. This, and the results from Swiss Aluminium Company’s work, provides confidence in the prospectivity of the EL, if significant thickness of Tertiary sediments can be identified.
# Table 1: Summary of open-file reports for historic exploration activities completed within the EL28186.

<table>
<thead>
<tr>
<th>Tenement No</th>
<th>GRANTED</th>
<th>CEASED</th>
<th>AREA km²</th>
<th>OPERATOR</th>
<th>COMMODITY</th>
<th>MAJOR WORKS</th>
<th>MAJOR RESULTS</th>
<th>COMPANY REPORTS</th>
</tr>
</thead>
</table>
| EL 1209     | 8/6/1976 | 7/6/1977 | 1,270    | Swiss Aluminium Mining Australia PL | Uranium in calcrete | • Percussion drilling (116 holes for 1511m)  
• Shallow seismic survey  
• Petrological analysis | pitchblende in source granites  
Anomalies of up to 800ppm U₃O₈ in calcrete | CR1977-0072 |
| EL 7830 & EL 8435 | 2/12/1992  
22/5/1996 | 331  
1,592    | Yuendumu Mining Company NL  
Poseidon Gold Limited | Gold in Lander Rocks Beds | • Airborne magnetic & radiometrics  
• Soil sampling (1927 samples)  
• Lag (282) and rockchip (15) sampling  
• Vacuum drilling (584 holes)  
• Aircore drilling (25 holes for 140m) | Minor gold anomaly associated with elevated arsenic | CR1993-0275,  
CR1994-0074,  
CR1995-0246,  
CR1996-0012,  
CR1996-0177,  
CR1996-0625  
CR1995-0586,  
CR1996-0012,  
CR1996-0625 |
| EL 9691 & EL 9692 | 22/12/1996  
8/12/1997 | 1,591  
1,552    | BHP Minerals P/L | copper and gold in Southwark Granite | • Open-file review  
• Rockchip sampling (reconnaissance)  
• Lag sampling (2 orientation lines) | No anomaly | CR1998-0297 |
| EL 10064    | 30/10/2001 | 29/9/2006 | 1,374    | Tanami Gold NL | Tanami-style gold and Tennant Creek-style copper-gold | • Vacuum drilling (23 holes for 267m)  
• RAB drilling (45 holes for 1538m) | Minor gold and copper anomaly in regolith | CR2002-0346,  
CR2003-0497,  
CR2004-0101,  
CR2004-0704,  
CR2005-0501,  
CR2006-0559 |
7.0 EXPLORATION ACTIVITY YEAR ENDING 01 FEBRUARY 2012

During the year under review, a desktop study of the project area was undertaken. This exercised involved obtaining of previous geological, geochemical and geophysical data from Northern Territory Geological Survey. Geological and geochemical data were captured into GIS system whereas geophysical data were re-processed and interpreted. In addition, a number of field visits were conducted for ground-truthing.

Analysis of Regional Geophysics

Three geophysical datasets (and their variants) have been considered in the preliminary interpretation of EL28186. These are –

- Regional radiometrics (U, Th, K, U2/Th)
- Regional magnetics (TMI, 1VD)
- Regional gravity (TDR)

Radiometrics

The radiometrics images for the western Arunta area include NTGS and privately acquired data. Uranium, Thorium and Potassium data are shown in Figures 3, 4 and 5 respectively.

Significant observations from the radiometric images include:

- Uranium image indicates that outcropping/subcropping uraniferous granites of the Southwark Suite occur immediately south of the EL.
- Within the EL itself, the uranium response is uniformly elevated (in a regional sense), but indicates few interpretable features.
- As compared to the Ngalia Basin to the south of the granites, where modern dispersion mechanisms appear predominantly aeolian or as sheetwash, dispersion into EL28186 appears controlled by established fluvial systems. This is best seen on the Potassium image where dispersion of K mirrors modern drainage patterns. Thorium is also being actively dispersed in the modern drainages.
Figure 3: EL28186 with Uranium channel image in background, major geology as coloured polygons and modern drainage as blue lines. The areas of highest response coincide with the red polygons which represent rocks of Southwark Granite (from NTGS mapping). The brown polygons represent Lander Rock Formation.
Figure 4: EL28186 with thorium channel image in background, major geology as coloured polygons and modern drainage as blue lines. The areas of highest response coincide with the red polygons which represent rocks of Southwark Granite (from NTGS mapping). The brown polygons represent Lander Rock beds. Note the dispersion patterns of thorium into modern drainages.
Figure 5: EL28186 with Potassium channel image in background, major geology as coloured polygons and modern drainage as blue lines. The red polygons represent uraniferous rocks of Southwark Granite while the brown polygons represent Lander Rock Formation. Note the dispersion patterns of potassium into modern drainages.
Magnetetics

EL28186 is covered by airborne magnetic data collected by NTGS and by minerals explorers. Total Magnetic Intensity (TMI) image is shown in Figure 6, while First Vertical Derivative (1VD) data is shown in Figure 7. The TMI image indicates generally elevated responses across much of the area, with significant differences in magnetic texture across the EL. Both images indicate significant structural complexity occurring within a 15 to 20 km wide zone running ENE through the southern part of the EL. Some horizons are sub-parallel and continuous and are obviously due to bedding in the Proterozoic basement. Cross-cutting linear features are likely faults, some of which are indicated on NTGS geology maps. In several areas the magnetic texture changes to indicate larger, more magnetically homogeneous bodies. These are likely the granitic units. Around several of these features, there are haloes of apparent demagnetisation where magnetite has been destroyed by heat and fluids.

Over the Ngalia Basin to the south, magnetic responses are very uniform and indistinct in the regional data and there is little texture evident except where lower basinal rocks approach surface at the basin margins. The generally subdued response is probably due to masking of bedrock responses by iron-rich Tertiary sediments. Importantly, similar responses are seen in the north-western and north-eastern corners of EL28186 which might indicate that these areas contain similar sediment packages seen to the south.

Gravity

EL28186 is also covered by semi-regional gravity data collected by NTGS as part of the West Arunta Project. In other Element 92 tenements to the south, drilling has indicated that narrow, linear to arcuate gravity lows generally correlate with deep incision of basement rocks by Tertiary-age palaeovalleys. With this model in mind, the gravity data within EL28186 were interpreted to extract possible locations of palaeovalleys which should be prospective for channel uranium deposits. Considering the very low density contrasts, plus the very shallow depth of interest (in gravity terms), the tilt derivative (TDR) of gravity was used. However, it should be noted that data were collected on a grid pattern with 4 km centres and this wide spacing means that resolution is very low in terms of identifying Tertiary palaeovalleys.
Figure 6: EL28186 with Total Magnetic Intensity (TMI) image in background, major geology as coloured polygons and modern drainage as blue lines. The red polygons represent uraniferous granites, while the brown polygons represent Lander Rock Formation. Note the presence of significant texture in a band running ENE across the EL, and the areas of more uniform responses along the northern boundary.
Figure 7: EL28186 with First Vertical Derivative (1VD) magnetics image in background, major geology as coloured polygons and modern drainage as blue lines. The red polygons represent uraniumiferous granites, while the brown polygons represent Lander Rock Formation. Note the presence of significant texture in a band running ENE across the EL, and the areas of hazy responses along the northern boundary.
Figure 8 shows the gravity TDR data for EL28186. Two large gravity highs are seen in the southwest and east of the EL. In these locations, Palaeoproterozoic Lander Rock beds/formation is recorded on NTGS regional geology data, comprising greenschist to granulite facies pelitic schists, phyllite and psammite.

Several gravity lows can be seen at varying orientations across the EL. In the central part of the EL, the low appears to coincide with outcropping rocks of Mesoproterozoic Southwark Suite, which comprises megacrystic biotite granite. However, the relatively low resolution of the gravity data (gravity stations actually straddle the mapped outcrop) means that interpretation confidence is decreased. It could be expected that the granite would have a lower density than the metamorphic rocks they have intruded, however Lander Rock beds/formation is mapped at the western end of a significant low running east-west along the northeast boundary of the EL.

**Interpretation**

Targets have been defined within EL28186 based on identification of coincident geophysical responses that indicate prospective terrain in the Ngalia Basin. These geophysical responses are -

1. Proximity to uraniferous granite source rocks
2. Linear to arcuate gravity lows
3. Laterally-extensive areas of subdued magnetic responses

Based on these criteria, two areas have been outlined that conform to all criteria of the conceptual model form high priority targets for on-ground works in 2012. Areas A and B are located on the northern boundary at the northwest and northeast corners respectively, as shown in Figure 09. Both features extend well beyond the tenement boundary into neighbouring Element 92 tenements. It is known from NTGS data that basins mature to the north and these two areas would thus lie on the southern edges, closest to the source rocks.

It is certainly not impossible that there has been isolated deposition of significant thicknesses of sediments elsewhere in the tenement which might host uranium mineralisation, however most historic drilling in the southern part of the tenement encountered metamorphic or granitic basement at very shallow depths. Further data processing, interpretation and modelling are required to reach conclusions with more confidence level.

Other activities included report writing, tenement administration and future planning. All these activities costed a total of $25100.00 during the reporting year.
Figure 8: EL28186 with Tilt Derivative (TDR) gravity image in background, major geology as coloured polygons and modern drainage as blue lines. The red polygons represent uraniferous granites, while the brown polygons represent Lander Rock beds. Gravity highs and lows are shown by dashed lines.
Figure 9: EL28186 with TDR gravity image draped on 1VD magnetics in background, major geology as coloured polygons and modern drainage as blue lines. The red polygons represent uraniumiferous granites, while the brown polygons represent Lander Rock Formation. The red-hatched polygons indicate 2 areas (labelled A and B) of interpreted enhanced prospectivity for channel-hosted uranium mineralisation.
8.0 PROPOSED EXPLORATION ACTIVITY

Review of geological and geophysical data has shown significant mineral potential especially for uranium mineralisation. In the next reporting period, further historical data interpretation and modelling will continue to assess the mineral potential of the project area. Selected areas of EL 28186 will be geologically mapped in detail, along with soil/rock chip sampling program within the project area. Samples taken will be assayed for uranium, gold and base metals mineralisation. In addition, ground geophysical survey of the project area will also be undertaken. If encouraging results received, then drilling campaign will be conducted in the next reporting period. A minimum budget of $30000.00 has been proposed for the next reporting period.

9.0 REFERENCES


