Annual and Final Report on EL 28511 from 23 September 2011 to 22 September 2012

Northern Territory

(Uranium and Gold Exploration Project)

Tenement Holder: Legend International Investments Pty Ltd

Distribution:
- DoR Darwin, NT
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SUMMARY

EL 8511 is located in the northern part of Northern Territory about 110 km east of Darwin, which is the main administrative centre of the Northern Territory. Legend International is exploring the project area for gold, uranium and base metals mineralisation. EL 8511 was applied for on 13 December 2010 and was granted on 23 September 2011 for a period of 6 years. It has 29 blocks (89.46 km²). After a careful technical review of the project area, company decided to surrender the EL on 22 September 2012.

The project area is exclusively underlain by the Wildman Siltstone which is a member of the Mount Partridge Group. The Wildman Siltstone is interpreted to be up to 1500 m thick. In the Mount Bundy Region, the Wildman Siltstone consists of laminated and banded shale, carbonaceous and often pyritic siltstone inter-bedded with undifferentiated volcanics up to 100 m interbeds. Minor dolomitic sediments may also be present. The sediments near the granite intrusion are generally hornfelsed. The Wildman Siltstone is interpreted to be prospective for large tonnage, low-grade gold deposits and small tonnage, high-grade deposits. The Wildman Siltstone hosts Tom’s Gully gold deposit along with a number of uranium, base metals and iron ore mineralisation.

During 2011-12 reporting period, Legend International conducted an appraisal of data collected, such as geological, geophysical and geochemical data. In addition, a number of field visits were also undertaken to assess the mineral potential of the project area. A technical review of the project area did not reveal any significant potential of EL 28511 and as a result of that Legend International decided to surrender the tenement on 22 September 2012.
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1.0 INTRODUCTION

EL 8511 is located in the northern part of Northern Territory about 110 km east of Darwin, which is the main administrative centre of the Northern Territory. Legend International is exploring the project area for gold, uranium and base metals mineralisation. This report covers the exploration activities undertaken during the term of the licence ending on 22 September 2012.

2.0 TENEMENT STATUS

EL was applied for on 13 December 2010 and was granted on 23 September 2011 for a period of 6 years and will expire on 22 September 2017. It has 29 blocks (89.46 km$^2$). After taking a careful review of the project area, company decided to surrender the EL on 22 September 2012.

3.0 LOCATION AND ACCESS

EL 28511 is situated in the northern part of the Pine Creek Orogen (PCO) and is located approximately 110 km east of Darwin (Figure 1). It is located in the northern part of Darwin (1:250 000) and Point Stuart (1:100 000) sheets. Eastern part of the tenement is mainly covered by the floodplains of the Mary River. Access to the project area is available by Arnhem Highway then by four wheels drive station tracks (Figure 1). The EL is mainly covered by Cretaceous duricrust, and partly by alluvial and sand sheets. Underlying cadastre is covered by Mary River Park administrated by the Northern Territory Government.

The project area experiences a monsoonal climate with a wet season from October to April with most rain falling between October to March. The mean annual rainfall is 1600 mm. The highest recorded annual rain fall is 2644 mm whereas as the lowest recorded is 1025 mm.

Temperatures are highest in November to December with a mean temperature during 34°C and the mean minimum is 27°C. July is generally the coolest month with mean maximum 31°C and the mean minimum is 19°C.
Figure 1: Tenement Location Map
4.0 GEOLOGICAL SETTING

The project area is located within central part of the PCO. Regional geology of the PCO is outlined in many publications, notably Ahmad et al. (1994), Needham and Stuart-Smith (1984), and Needham et al. (1988). The PCO is a folded sequence of Palaeoproterozoic pelitic, psammitic, carbonate, and volcanic sediments with interlayered cherty tuffaceous units, unconformably overlying Neoarchaean (ca 2670 – 2500 Ma) granitic and gneissic basement. The sequence experienced regional metamorphism and deformation of varying grades in various parts of the PCO in a period ca 1867 – 1850. Mafic sills of the Zamu Dolerite (~1.87Ga) intruded the lower sequence of the package. Syn- to post tectonic granites were emplaced at 1830 – 1800 Ma, causing wide spread contact/thermal aureole metamorphism, which contains most of the gold, uranium and base metals mineralisation in the Orogen (Bajwah, 1994). Less deformed Mesoproterozoic sedimentary and volcanic sequences unconformably overlie the Palaeoproterozoic rocks and is overlain by Cambrian-Ordovician lavas, sediments and Cretaceous strata. Cainozoic sediments, laterite and recent alluvium may obscure parts of the Orogen lithologies.

The project area is exclusively underlain by the Wildman Siltstone (Figure 2) which is a member of the Mount Partridge Group. The Wildman Siltstone is interpreted to be up to 1500 m thick. In the Mount Bundy Region, the Wildman Siltstone consists of laminated and banded shale, carbonaceous and often pyritic siltstone inter-bedded with undifferentiated volcanics up to 100 m interbeds. Minor dolomitic sediments may also be present. The sediments near the granite intrusion are generally hornfelsed. The Wildman Siltstone is interpreted to be prospective for large tonnage, low-grade gold deposits and small tonnage, high-grade deposits. The Wildman Siltstone hosts Tom’s Gully gold deposit along with a number of uranium, base metals and iron ore prospects as shown in Figure 2.

The Wildman Siltstone is unconformably overlain by rocks of the South Alligator Group which are exposed in the western and southern part of Figure 2. The rocks of the South Alligator Group are considered to be prospective for either large tonnage, low grade gold deposits (such as that at the nearby Rustler’s Roost gold mine) or small tonnage, high grade deposits.
Figure 2: Geological Setting of the Project Area
All of the early Palaeoproterozoic sediments and volcanics in the Mount Bundy area were folded during a major deformation event dated around 1800 million years. The fold axes trend north-northeast, and generally plunging gently to the south.

Towards south the meta-sedimentary sequences are intruded by the Palaeoproterozoic Mount Goyder Syenite and Mount Bundy Granite (Figure 2), which forms a co-genetic complex, and crops out over an area 80 km$^2$ area approximately. This intrusion is believed to have been the heat and fluid source for the mineralisation, which occurs throughout the Mt Bundy area. Their mineralogy and geochemistry suggests they are both differentiated from a common magma that intruded into the gently south plunging folded belt of sediments.

5.0 PREVIOUS EXPLORATION ACTIVITY

In the past, the Project area and surrounding region has been explored moderately. Earliest geological record shows that region was mapped by BMR (now Geoscience Australia). The earliest record of exploration covers regional mapping of the project area along with geophysical survey by Walpole et al. (1968). Geological map of the project area was prepared by Pietsch and Stuart-Smith (1987).

Systematic exploration of the project and surrounding region commenced in 1973 mainly for uranium, gold and iron ore mineralisation. Geopeko explored the area covered by EL 28511 for uranium and base metal mineralisation, and conducted geological mapping, aerial magnetic and radiometric survey and prospect evaluation (Pelderhof, 1973). However, no anomalous areas for mineralisation were found and tenement was surrendered.

Under expired ELs 763 and 764, CRA Exploration Limited explored part of the project area and surroundings for uranium and base metals mineralisation. It included radiometric survey, geological mapping and ground-truthing. No anomalies of any significance were found and these tenements were ultimately relinquished.

EL 28511 was also explored under expired EL 2489 for uranium and involved Helium detection survey along with reconnaissance field survey (Davies, 1981). No radiometric anomalies were discovered.
Western Mining Corporation conducted extensive exploration program under expired EL 4720 which covered part of the project area (Lindeman, 1988). This exploration programme included geophysical survey, geochemical sampling and assaying and geological mapping. Some anomalies of base metals were identified which was drill-tested. Overall results of this exploration were unfruitful and tenement was surrendered.

6.0 EXPLORATION ACTIVITY YEAR ENDING 22 SEPTEMBER 2012

During 2011-12 reporting period, Legend International conducted an appraisal of data collected, such as geological, geophysical and geochemical data. In addition, a number of field visits were also undertaken to assess the mineral potential of the project area. Exploration index map of EL 28511 is shown in Figure 3.

The project area is located in the northern part of the PCO which is known for its potential for uranium, gold and base metal potential. Much of the EL is covered by alluvium and Cretaceous duricrust which hampers access to bed rock geology (Wildman Siltstone). Digital data bases were checked for previous geochemical and drilling data. Unfortunately no geochemical and drilling data was found within the project area. However, towards south a number of soil samples with limited assays were found which discovered Dora Creek base metal prospect (Figures 2 and 3). A number of gold and uranium prospects/deposits are located towards south and amongst these Toms Gully and Rustlers Roost and Quest 29 have produced significant quantities of gold in the past, and still hold potential for further gold mineralisation. Toms Gully gold deposits is located within fold and faulted rocks of the Wildman Siltstone and Mt Bundy Granite is believed to be responsible for this mineralisation like many other gold deposits in the PCO (Bajwah, 1994). Toms Gully gold deposit is characterised by a distinct magnetic anomaly.

TMI image of the project area is shown in Figure 4. Generally, image appears to be flat with some subtle geophysical highs spread within the project area. However, if we look closely, these magnetic highs correspond to probable bedding trends of the bed rock geology, which are masked by Cretaceous duricrust and quaternary alluvia/sandy cover.
Figure 3: Exploration Index Map of the Project area
These bedding trends appear to be faulted and folded into anticlinal structures. Another important feature is identification of vein/dyke in the eastern part of the project area. Towards south, a strong magnetic anomaly belongs to the emplacement of the Mt Bundy Granite which is related to gold mineralisation at Toms Gully and other deposits shown in Figure 2.

7.0 CONCLUSIONS AND RECOMMENDATIONS

A technical review of the project area did not reveal any significant potential of EL 28511 and as a result of that Legend International decided to surrender the tenement on 22 September 2012.
Figure 4: TMI image of the project area
8.0 REFERENCES


