Annual and Final Report on
EL 28845
for The Period
28 February 2012 to 04 April 2015
Northern Territory
(Gold and Uranium Project)

Title Holder: Australian Geoscience Pty Ltd

Zia U. Bajwah
June 2015
zbajwah@bigpond.net.au

Distribution: NT Department of Mines and Energy
Australian Geoscience Pty Ltd
Copyright Statement as per Regulation 126 of the Mineral Titles Act

This document and its contents are the copyright of Australian Geoscience Pty Ltd. The document has been written by Zia Bajwah for submission to the Northern Territory Department of Mines and Energy as part of the tenement reporting requirements as per Regulation 78(1) and 86 (1) of the Mineral Titles Act.

Any information included in the report that originates from historical reports or other sources is listed in the "References" section at the end of the document.

I authorise the department to copy and distribute the report and associated data.
SUMMARY

EL 28845 is located in the Mt Ringwood area, part of the Pine Creek Orogen, Northern Territory. This tenement has been explored for gold and uranium mineralisation. It is situated about 120 km SE of Darwin. EL 28845 was granted to Australian Geoscience Pty Ltd on 28 February 2012 and was expected to expire 27 February 2018. However, company decided to surrender the tenement on 4 April 2015.

EL 28845 is located within the Pine Creek Orogen, a tightly folded sequence of Palaeoproterozoic rocks, 10 km to 14 km in thickness, laid down on a rifted granitic Archaean basement during the interval ~2.2-1.87Ga. During the Top End Orogeny (Nimbuwah Event ~1.87-1.85Ga) the sequence was tightly folded and pervasively altered with metamorphic grade averaging greenschist facies to phyllite. The Cullen intrusive event introduced a suite of fractionated calc-alkaline granitic magma into the sequence in the period ~1.85-1.78Ga. In the project area, Burrell Creek Formation is present which mainly comprises grewacke, silts stone, slate and phyllite. The meta-sediments are tightly folded about axes, which swings from near N-S trends in the south, to NW-trending axes in the northwest.

During the period under review, an appraisal of the project area was undertaken in order to assess the mineral potential. It involved retrieval of exploration data from open file reports and interpretation of geological, geochemical and geophysical data. In addition, a field trip was undertaken for ground-truthing. A review of the project area shows that it is located within major gold producing part of the Pine Creek Orogen, where prospective rocks of the Palaeoproterozoic Burrell Creek Formation are present below recent sedimentary cover.

However, appraisal of the geological, geochemical and geophysical data indicates that within EL 28845 lithologies of the Burrell Creek Formation are buried under alluvial cover which could be up to 100 m deep. Under the current economic circumstances what exploration industry is facing, it is difficult to secure funds for drilling. As a result of that company decided to surrender EL 28845 on 4 April 2015.
CONTENTS

SUMMARY 3
1.0 INTRODUCTION 5
2.0 LOCATION AND ACCESS 5
3.0 TENEMENT STATUS AND CLIMATE 5
4.0 GEOLOGICAL SETTING 7
5. PREVIOUS EXPLORATION HISTORY 9
6. EXPLORATION ACTIVITY DURING THE TERM OF LICENCE 9
8. CONCLUSIONS AND RECOMMENDATIONS 12
9. REFERENCES 14

List of Figures
Figure 1: Tenement Location Map of EL 28845
Figure 2: Geological setting of the project area
Figure 3: Exploration Index Map of EL28845
Figure 4: TMI image of the project area
1.0 INTRODUCTION
EL 28845 is located in the central part of the Pine Creek Orogen (PCO) in the Mt Ringwood area. The tenement has been explored for gold and uranium mineralisation and, in this document exploration activities undertaken during the period under review are reported.

2.0 LOCATION AND ACCESS
EL 28845 is situated about 120 km SE of Darwin (Figure 1) and approximately 40 km ENE of Adelaide River. The project area can be approached via Stuart Highway from Darwin to Tortilla Flats and then following the Ringwood Station Road. Vehicle access is limited to the dry season tracks from the Ringwood Station homestead to the tenement. The tenement falls on the Pine Creek 1:250,000 sheet and on the Batchelor (1: 100 000) McKinlay River 1:100,000 sheets (Figure 1). The area underlain by EL 28845 is generally low-lying, open, black soil plains; the central and southwestern parts are moderately elevated, wooded hill ranges.

3.0 TENEMENT STATUS AND CLIMATE
EL 28845 was granted to Australian Geoscience Pty Ltd on 28 February 2012 and was expected to expire on 27 February 2018. It comprises a total of 48 blocks that covers approximately 161 km². Underlying cadaster belongs to B. F. Coulter (PPL 1163), M. A. Rasthsmann (PL 1182), and McKinlay River Cattles Station Pty Ltd (PPL 1184). Due to unattractive potential of the project area, tenement was surrendered on 4 April 2015.

The project area has semi-arid, tropical climate with April to September warm dry season followed by wet season from October to March. The average rain fall is about 1200 mm and most of which falls during wet season. Temperatures are highest in October to November with the mean maximum 35° – 37° C, whereas mean minimum is 22 - 24° C. The coolest months are June and July when the mean maximum is 30° – 32° C, with the mean minimum of 12 - 14° C.
Figure 1: Tenement Location Map of EL 28845
4.0 GEOLOGICAL SETTING

EL 28845 is located within the Pine Creek Orogen (PCO), a tightly folded sequence of Palaeoproterozoic rocks, 10 km to 14 km in thickness, laid down on a rifted granitic Archaean basement during the interval ~2.2-1.87Ga (Ahmad et al. 1993). The sequence is dominated by pelitic and psammitic (continental shelf shallow marine) sediments with minor inter-layered tuff units. Pre-orogenic mafic sills of the Zamu Dolerite intruded the sequence prior to regional metamorphism and deformation.

During the Top End Orogeny (Nimbuwah Event ~1.87-1.85Ga) the sequence was tightly folded and pervasively altered with metamorphic grade averaging greenschist facies to phyllite. The Cullen intrusive event introduced a suite of fractionated calc-alkaline granitic batholiths into the sequence in the period ~1.85-1.78Ga (Bajwah 1994). These high temperature I-type intrusives induced strong contact metamorphic aureoles ranging up to (garnet) amphibolite facies, and created more extensive biotite and andalusite hornfels facies.

Geological setting of the project area is shown in Figure 2 where rocks of the Burrell Creek Formation cover much of the area. Subordinate lithologies of the South Alligator River Group such as the Koolpin Formation, Mount Bonnie Formation and Gerowie Tuff area are also present towards outside the project area. Burrell Creek Formation mainly comprises grewacke, silts stone, slate and phyllite. In places, the Zamu Dolerite dykes intersect the Palaeoproterozoic stratigraphic sequence. The meta-sediments are tightly folded about axes, which swings from near N-S trends in the south, to NW-trending axes in the northwest. Plunges are to the north or northwest, mainly at low angles, although steep plunges are seen in the vicinity of the North Ringwood gold workings. The sheared sediments lie in the NW extension of the Pine Creek Shear Zone (Ahmad et al., 1993). However, much of the Palaeoproterozoic stratigraphic is under the recent sediments and regolith cover which could be over 70 metres deep, and it has been a major impediment to exploration. Gold mineralisation is found in saddle reefs in anticlinal closures (North Ringwood), fissure veins in N-S shear zones (South Ringwood), bedding parallel veins, and stock-works (Pelican prospect). Gold is associated with minor sulphides in quartz veins. A significant gold deposit (Goodall) is located a few kilometer southeast of the project area.
Figure 2: Geological setting of the project area
5.0 PREVIOUS EXPLORATION HISTORY

A brief history of previous exploration in and around the project area is given below. It has been derived from open file company exploration reports and open file NTGS data.

Production of around 2800oz Au came from the North Ringwood, Ringwood and South Ringwood mines between 1894 and 1902. The mines comprised shafts, pits, and small open cuts along a 6km trend.

In 1978, the NTGS drilled 4 diamond holes at North Ringwood, and intersected 2 zones of gold mineralisation, confirming that mineralisation continues to at least 40m below workings. North Ringwood is within an MCN located within EL 23532.

Gold potential of the Ringwood field was evaluated during the 1980’s and 1990’s by several exploration companies, including White Gold Mines, Carpentaria Gold, Delta Gold, Solomon Pacific, Acacia Resources, Billiton, Northern Gold and Dominion. These activities are described Orridge (2004).

Orridge (2005) identified anomalies from this work, and gave an interpretation of areas which have potential for further mineralisation, and this is below: At Pelican, programmes of soil sampling, trenching and drilling (26 holes) disclosed a zone of low-grade gold mineralisation, up to 60m wide, and extending along a SE-NW trend for around 400m. The areas to the NW and SE that may have further mineralisation potential remain untested. These areas are covered by superficial cover. At Old Workings prospect, programmes of mapping, sampling, costeaneing and RC drilling were undertaken. White Gold Mines gave a combined estimate of around 4000oz Au from 3 zones.

6.0 EXPLORATION ACTIVITIES DURING THE TERM OF THE LICENCE

During the period under review, appraisal of geological, geochemical and geophysical data was under taken in order to assess the mineral potential of the project area. It involved retrieval of exploration data from open file reports and interpretation of geological, geochemical and geophysical data. In addition, a field trip was undertaken for ground-truthing. Exploration Index map of EL 28845 is shown in Figure 3.
Figure 3: Exploration Index Map of EL28845
The Palaeoproterozoic Burrell Creek Formation dominates the project area. Under the cover these meta-sediments are tightly folded about axes, which swing from near N-S trends in the south, to NW-trending axes in the northwest. Plunges are to the north or northwest, mainly at low angles, although steep plunges are seen in the vicinity of the North Ringwood gold workings. These structural features can also be seen on TMI image of the project area (Figure 4). The sheared sediments lie in the NW extension of the Pine Creek Shear Zone. However, much of the Palaeoproterozoic stratigraphic is under the recent sediments and regolith cover, which could be over 70 metres deep. This cover has been a major impediment to exploration. In the eastern part of the project area (Figure 2), gold mineralisation is found in saddle reefs in anticlinal closures, fissure veins in N-S shear zones (Ringwood), bedding parallel veins, and stock-works (Pelican prospect). Gold is associated with minor sulphides in quartz veins. A few km southwest of the project area a major gold mine (Goodall) is located within the Burrell Creek Formation (Figure 3). It has produced 1.9 MOZ of gold in 1990’s. Here, gold mineralisation occurs as north-trending zone of quartz vein stock-work within sheared greywacke. The mineralised zone is located along an upright anticline striking 320° and plunging 30-35°. These features are in general similar to those gold deposits found within the PCO.

Major gold deposits such as Toms Gully, Rustler Roost and Quest 29 are located towards north which have produced significant quantities of gold in the last 30 years. EL 28845 is situated within major gold producing part of the PCO, where deformed rocks of the Burrell Creek Formation are present below recent sedimentary cover, which are prospective for gold and uranium mineralisation.

Figures 4 shows TMI image of the project area and surrounding region. It shows major structures running though the tenement area. The central part of the Licence is characterised by the presence of major structural features, though below recent sedimentary cover. Interpretation of this image indicates that rocks of the Burrell Creek Formation are highly deformed into NW-trending tight isoclinal folding which have been off-set by numerous faults. The similarity of this type of folding/ faulting resembles to those rocks which contain gold deposits in the PCO.
Towards south-west, it appears to be the continuation of Pine Creek Shear Zone – a major gold producing structure in the region. In the north-western part of the project area, a deep-seated structure is apparent which is worthy of further investigation. Gravity modeling of the area also indicates the presence of the alternating sequence of contrasting lithologies, and presence of granite pluton which must have induced thermal metamorphism in the adjacent strata - a significant feature for localisation of gold mineralisation in the PCO (Wygralak and Findhammer 1997). It is noteworthy that exposed strata is folded into anticlinal Structure (zones of dilation) and that should have been repeated in the rock formations under recent sedimentary cover. Geochemical sampling program carried over the tenement area shows significant anomalous element concentration of the Palaeoproterozoic basement (Wygralak and Findhammer 1997). Shallow samples taken from the top silty horizon at an average depth of 0.2 m, although depleted in all elements, still show the same anomalies as the lower horizon but of lower magnitude.

A review of historical exploration data and ground-truthing show that significant exploration (geochemical sampling, drilling) has been undertaken around the project area. However, within the tenement area very little on-ground exploration has been conducted so far. Only 2 rock samples have been reported so far which records low level of gold concentrations. However, the project area is covered under deep alluvial cover which makes it un-attractive exploration target. Exploration industry is facing extremely difficult environment in which it is difficult to secure funds to carry out exploratory.

7.0 CONCLUSIONS AND RECOMMENDATIONS

Although geological, geochemical and geophysical data indicated that EL 28845 has prospective lithologies of the Burrell Creek Formation, which have been extensively deformed into anticlinal structures. However, a thick alluvial sedimentary cover overlies the Palaeoproterozoic rocks which makes the tenements un-attractive exploration target. It has not been possible to secure necessary funds to undertake exploratory drilling under the current difficult economic conditions. As a result of that EL 28845 was surrendered outrightly on 4 April 2015.
Figure 4: TMI image of the project area
9. REFERENCES

and Mineral Deposit Data Sheets. 1:250,000 Metallogenic Map Series, Department of
Mines and Energy, Northern Territory Geological Survey

Bajwah, Z.U., 1994. A contribution of geology, petrology and geochemistry to the Cullen
Batholith and related hydrothermal activity responsible for mineralisation, Pine Creek
Geosyncline, Northern Territory. Northern Territory Geological Survey Report 8

Year Ending 12th February 2004 (unpubl); Northern Territory Geological Survey
Company Report CR2004-0114

Year Ending 12th February 2005 (unpubl); Northern Territory Geological Survey

Thundelarra Exploration Limited 2009, Spectacular drill results from the Thunderball Uranium
prospect. Press Release to ASX.