EXPLORATION LICENCE 24471

EXPLORER PROJECT – TENNANT CREEK

FOR THE PERIOD 16/8/11 to 15/8/12

YEAR 7

by

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BSc (Hons), mAUSIMM

GDA94 - Zone 53

Target Commodities: Gold and Copper

1:250000 Tennant Creek, Bonney Well

1:100000 Kelly, Tennant Creek, Chaluba, Bonney

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SUMMARY
The Explorer Project is located approximately 40 kilometres south of Tennant Creek in the central part of the Northern Territory.

EL 24471 was granted to Tennant Creek Gold Pty Ltd (TNG) for six years on 16/8/2005. TNG entered into a joint venture agreement with Western Desert Resources Ltd (WDR) over this and a number of other tenements in the area on 27/2/2008. WDR has earned an 80% interest in the project by undertaking exploration on the included tenements.

The EL is considered to be prospective for gold and copper mineralisation associated with ironstones similar to that found in the Tennant Creek goldfield.

The area is located on the western margin of the Tennant Creek Inlier. The central part of the Inlier is comprised of the Tennant Creek Province of Palaeoproterozoic age. The Warramunga Formation hosts the gold-copper-bismuth mineralisation of the Tennant Creek goldfield and is the principal target horizon for mineralisation on EL24471.

Western Desert Resources took over management of the project in 2008 and has reduced the size of the tenement from 1354km² to 307km² through standard partial reductions. Exploration has included gravity surveying, surface geochemical sampling and diamond drilling.

The campaign of work during the current period has included processing and interpretation of the geophysical data (ground gravity and airborne EM) from the previous year, as well as magnetic modelling using historical data. This work, in conjunction with compilation of historical data, has highlighted the BIF Hill prospect as an exciting prospect. A four hole, 1542.9m diamond drilling program commenced at BIF Hill in July 2012 and was about 80% completed during the reporting period. Assays received from the top part of the first hole were disappointing.
INTRODUCTION

BACKGROUND
The Exploration Licence was granted in 2005 for six years. It is located south of Tennant Creek in an area of poor outcrop. The tenement forms part of the Rover joint venture between TNG Ltd and Western Desert Resources Ltd (WDR) in which WDR is the operator.

LOCATION AND ACCESS
The Explorer Project is located approximately 40 kilometres south of Tennant Creek in the central part of the Northern Territory (Figure 1). The EL covers an area of 307 square kilometres (98 subblocks).

Access to, and within, the area is by the sealed Stuart Highway south from Tennant Creek, and then by unsealed station tracks leading west from the Stuart Highway. The Alice Springs to Darwin Railway also crosses the area.

CLIMATE
The area has an arid, tropical climate with long, hot summers and short, mild winters. Rainfall can occur throughout the year but the majority of falls occur in summer with the annual rainfall being about 400mm.

TOPOGRAPHY AND VEGETATION
There are two main landforms in the region: dissected uplands (remnant Ashburton Surface) and the surrounding plains (Tennant Creek Surface). The tenement is mainly flat with some residual mesas formed by outcrops of Flynn Group and Wiso Basin.

The area supports mallee, acacia and snappy gum trees with spinifex being the dominant grass species.

TENURE

MINING/MINERAL RIGHTS
EL 24471 was granted to Tennant Creek Gold Pty Ltd (TNG) for six years on 16/8/2005. TNG entered into a joint venture agreement with Western Desert Resources Ltd (WDR) over this and a number of other tenements in the area on 27/2/2008. WDR has earned 80% interest in the project by undertaking exploration on the included tenements.

The EL was reduced at the end of year 5 and renewed at the end of year 6 for a further two years. The lease area is shown in Figure 1.

LAND TENURE
The tenement is located within the boundaries of Perpetual Pastoral Lease 1142 – Tennant Creek Station. A compensation agreement was signed for activities in 2012.
NATIVE TITLE
There are no known native title claims over the exploration licence. An exploration agreement is in place with the Central Land Council (CLC).

ABORIGINAL SACRED SITES
The reduction of the tenement in August 2008 included the areas that contained three registered sacred sites. There are now no known sacred sites within the current boundary of EL 24471. A CLC clearance certificate (No. 2012-050) was obtained prior to ground disturbing works during the current reporting period which restricted works to within 50m of the nominated tracks.

GEOLOGY
REGIONAL GEOLOGY
The area is located on the western margin of the Tennant Creek Inlier (Donnellan et al 1999). The central part of the Inlier is comprised of the Tennant Creek Province of Palaeoproterozoic age. This
consists of a flysch sequence, the Warramunga Formation, which has been intruded by granitoids. The sedimentary sequence is overlain by extrusive volcanic rocks and associated sediments of the Flynn Subgroup.

The Warramunga Formation hosts the gold-copper-bismuth mineralisation of the Tennant Creek goldfield. The mineralisation is associated with ironstone.

The Middle Cambrian Wiso Basin covers the basement rocks west of the Tennant Creek Inlier. This is a sedimentary sequence consisting of the Montejinni Limestone and the Hooker Creek Formation (sandstone and siltstone).

**Figure 2: Local Geology (NTGS 250K geological sheets)**

**LOCAL GEOLOGY**
Due to a thick cover of younger sediments over most of the tenement area, the local geology is interpreted from rare outcrop, limited drill testing and geophysical surveys (airborne magnetic).
The hackly texture in the magnetic image in the central and southern portions of the EL is probably related to the felsic volcanic and volcanogenic sedimentary rocks of the Flynn Subgroup. More subdued magnetic rocks in the central part of the tenement and also in the northern block may be underlain by Warramunga Formation. Rocks of the Cambrian Wiso Basin cover the western part of the EL and are approximately 30-50m thick at the western boundary.

PREVIOUS EXPLORATION

MINING HISTORY
No mining has been carried within the area covered by the tenement.

EXPLORATION BY PREVIOUS COMPANIES

Geopeko (1966-67)
- Aeromagnetic survey.
Nobelex (1972-76)
- Aeromagnetic survey.
- Ground magnetic follow up.
- Two diamond holes and one percussion hole at the prospect known as “BIF Hill”. ADL426 intersected 9.1m @ 0.31g/t near surface.

Geopeko (1975-79)
- Aeromagnetic survey.
- Ground magnetic follow up of Explorers 190, 191 and 192.
- K/Ar dating of the granite body close to the Stuart Highway and Explorer 42 at 1510 million years.

Occidental Minerals/AOM (1980-81)
- Aeromagnetic survey.
- Follow up of 16 airborne magnetic anomalies with ground magnetic and gravity surveys.
- One diamond hole drilled on anomaly T3, hole T3-2 was drilled to 285m and intersected volcanic rocks of the Flynn Subgroup.

Geopeko/Shell (1981-84)
- Aeromagnetic survey flown over areas not previously covered.
- 21 airborne targets followed up with ground magnetic surveys.
- 5 targets tested by RAB drilling with no significant results.
- Two experimental lines of input EM over Explorer 42.
- Review of Explorer 42 data.
- Second diamond hole drilled at Explorer 42 with no anomalous gold or base metal values.

Roebuck Resources (1993-95)
- Literature review.
- LAG and rock chip sampling – no significant results.

Normandy Gold (Newmont Gold)/Acacia Resources-Anglogold (1996-2004)
- Low level detailed airborne magnetic survey flown.
- Regional gravity survey completed.
- Regolith mapping undertaken.
- Regional RAB drilling to determine depth of cover and bedrock lithology undertaken.
- RC and diamond drilling on a number of magnetic targets – no significant results.

Giants Reef Mining/Emmerson Resources (2001-06)
- Reinterpretation of airborne magnetic and a gravity survey.
- 1 diamond hole and 7 RC holes completed – minor Au/As zone in the diamond hole (2m at 0.5g/t Au and 1.2% As from 380m.

Tennant Creek Gold (NT) Pty Ltd (2005-07)
- Gravity and ground magnetic surveys were carried out over a number of airborne magnetic targets defined from reinterpretation of previous surveys.
- RC drilling was carried out on two anomalies with no significant results.
PREVIOUS EXPLORATION BY WESTERN DESERT RESOURCES

Western Desert Resources took over management of the project in 2008. A literature review was completed to determine what previous exploration had been completed within the EL. It was determined that the previous drilling which had been done on anomaly Explorer 42 had not completely tested the target. A deep diamond hole was proposed to complete the investigation of the magnetic anomaly (Roberts, 2008).

Hole E3DD05 was drilled in mid 2008 to a depth of 446.5m. The hole intersected a sequence of interbedded siltstones and banded iron formation (BIF) probably from the Warramunga Formation. The BIF units contained significant amounts of magnetite which explained the magnetic anomaly. The more magnetic sections of BIF were sampled and assayed for gold with no significant results. There was little evidence of any chloritic alteration or copper mineralisation in the core.

A detailed gravity survey was completed over the northwest corner of the EL in 2009 at “GW302” prospect. The aim of this work was to define in greater detail a gravity anomaly which had been
tested by a deep diamond hole (BBRD002) by Giants Reef Mining in 2001 (Walters, 2006). Interpretation of the data (Asis International) led to the recommendation of two drill holes.

In 2010, a review of the previous exploration activities conducted in the area was carried out following the recognition of phosphatic sediments in the Middle Cambrian Montejinni Limestone in an adjoining tenement. It was found that Giants Reef Mining had drilled a number of holes in the northern portion of the EL and had found anomalous phosphate values. A reconnaissance program of rock chip sampling ensued in July 2010. The aim of this work was to determine if phosphatic sediments of the Wiso Basin cropped out in the EL and to sample them. Twelve samples were taken (Figure 5) and assayed for a multi element suite by ICP-MS, with no significant results.

In 2011, exploration activities were largely based on geophysical data acquisition. Three prospects were chosen for detailed gravity coverage, based on the regional magnetic response. A total of 1845 gravity stations were measured at the BIF Hill (or GW502), T6 and Explorer 302 prospects with a station spacing of between 120-150m. A heliTEM electromagnetic/magnetic survey was flown for a total of 377 line km over a broader area encompassing WDR’s adjacent leases. Of this survey, approximately 137 line km were flown over EL24471. The purpose of the survey was to determine the existence and locations of bedrock conductors and for a better understanding of the subsurface geology within the survey areas. Both geophysical surveys had yet to be interpreted by the end of the reporting period.

EXPLORATION CARRIED OUT IN CURRENT REPORTING PERIOD

GEOPHYSICS

Gravity modelling
The 1845 station gravity survey completed last year underwent final data processing. The logistics report, data and ensuing interpretations are all provided in the digital accompaniment to this report. Interpretation of the data revealed that surveyed area “C”, corresponding to the historical BIF Hill or GW502 prospect geology as a highly prospective target. In particular, the gravity data showed that the densest rocks (presumably representing the thickest accumulation of ironstone and sulphides) had been missed by historical drill holes in the 1970-80’s. Despite this, the historical drilling provided further encouragement, with intersections including 15.2m@ 1g/t Au (DDH428) and 9.1m@ 0.31g/t Au. Four drill holes were recommended on the basis of this and the magnetic data (Figure 5).
EM modelling

Reprocessing and interpretation of the EM data was carried out by Montana GIS. This work focussed on neighbouring EL25581, where the bulk of the EM data was collected. However, some priority 2 conductors were identified on EL24471 from widely spaced lines (Figure 6). No follow-up of these conductors has been carried out. Data was provided in last years report and further discussion is provided in the accompanying consultant report.
Figure 6: Regional RTP magnetic image showing prospect areas, gravity stations (small dots), EM flight lines (white) and "Priority 2" conductive bodies (blue circles)

Magnetic Modelling
Magnetic data was also modelled over the BIF Hill prospect. Initial modelling undertaken by Asis International using ModelVision software suggested that the magnetic source could be a NE-SW
elongate pipe plunging south with depth extent of 350-500m (Figure 7). Data used was the 1997 aeromagnetic data collected by Normandy (“Billiat survey”) collected at nominal 75m line spacing and 40m height.

Subsequent modelling in real time, incorporating magnetic susceptibility data from drilling, as well as using a new CSIRO developed method to account for magnetic remanence, suggested a tightly folded ironstone unit with thickening and upgrading controlled by an E-W structure (Figure 8). This modelling influenced the depth and final design of the drill holes.

Figure 7: RTP magnetic image showing original modelled pipe body outline (black) and proposed drillhole locations
Figure 8: Cross section 392920E showing revised magnetic model incorporating remenance and drill hole data

Further details on these models are provided in the consultant reports which accompany this report.

MAPPING

Field checking of the outcrop at BIF Hill was carried out. Historical mapping was rectified and incorporated with the geophysical datasets as drilling was carried out in order to improve the local geology understanding. The result of this work has not been formally documented, but is summarised in Figure 9. No samples were taken.
DRILLING
Four diamond drill holes were initially sited (and clearances obtained) based primarily on interpretation of the gravity data, as plotted in Figure 5. Two of these holes were scissor holes into the main dense body, which is clearly outcropping banded iron formation. The other two holes were planned on the same N-S section, but on a more subtle gravity signature to the north. As drilling proceeded, the fourth of these planned holes was repositioned to intersect the best of the modelled magnetic targets, based on the latter model which accounts for magnetic remanence. Drilling was in progress at the end of the reporting period with the fourth hole at a depth of 159m. The locations are provided in Table 1 below.

Table 1: Drilling Summary

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Drilling typically consisted of a short 6m PQ collar cased off with PVC, then HQ3 within the weathered zone, and NQ3 within the fresh zone. Water returns were generally good below about 100m depth.
The lithology, survey and initial assay data accompany this report. Drilling intersected the Warramunga Formation, with mixed siltstone, sandstone, mudstone sequence interbedded with banded iron formation and jasperite within the central prospect area (12BH001, 12BH002 and 12BH004). The depth of weathering is typically 130m, with magnetite becoming dominant over hematite at approximately this depth. Hole 12BH003 intersected a sequence of predominantly greywackes and mudstones. A purply coloured hematitic mudstone at approximately 360m depth in this hole may be the source of the smaller gravity response in this instance. In all core, there is evidence of tight folding and there are abundant quartz-carbonate-chlorite veins present in numerous sets. Analysis of the structural data is ongoing and is not digitised. Sulfides are common in the fresh rock, primarily within veins as pyrite and less commonly as chalcopyrite or bornite.

The first part of hole 12BH001 was cut and sampled as high priority, however it failed to return any significant values, with a maximum of 0.01ppm Au. There has been no multi-element sampling undertaken at this date.

**PROPOSALS FOR FUTURE WORK**

Proposed work programme for Year 8

The proposed work programme for Year 8 of tenure will initially revolve around completion of drilling, compilation and analysis of geological data, downhole wireline logging, assaying of selected core, structural analysis and petrological study at BIF Hill. If results warrant it, further drilling will be designed to immediately follow up potential ore intersections.

Away from BIF Hill, the geology will be re-examined in light of the gravity and EM data, with drill testing considered on merit.

**REFERENCES**


