ANNUAL EXPLORATION REPORT ON EL 23178

AuQuest Project Area

YEAR ENDING 7 MARCH 2010

Pine Creek SD5208 1:250,000
Noonamah 5172 1:100,000

Distribution:-

1. DOR Darwin NT
2. Crocodile Gold Australia Humpty Doo NT
3. Brocks Creek NT

CGA Report Number: – DA/TG/10-10

Zia U. Bajwah
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SUMMARY

EL 23178 is located some 70 kilometers south-east of Darwin. It was granted on 8th March 2005 to Renison Consolidate Mines. The tenement consists of 59 graticular blocks (184.6km²). On 25 July 2007, by virtue of an agreement, GBS Gold Australia Pty Ltd acquired all mining and exploration assets, located in the Toms Gully Region. GBS Gold Australia went into voluntary administration on 15 September 2008, and all assets including EL 23178 were placed under care and maintenance. In June 2009, Crocodile Gold Australia announced to purchase all assets held by GBS Gold Australia. After meeting all regulatory and statutory requirements, these assets including EL 23178 were transferred to Crocodile Gold Australia.

The south western portion of EL 23178 contains the oldest sediments of the Mount Partridge Group that is unconformably overlain by the South Alligator Group, which covers small portions in the northern and southern parts of the tenement area. Much of the project area is comprised of Burrell Creek Formation, which conformably overlies the South Alligator Group.

During most of the reporting period, EL 23178 remained under care and maintenance because previous owner, GBS Gold Australia went into voluntary administration. During the reporting period, a technical review, tenement ranking and evaluation was undertaken in order to prepare assets for sale.

Crocodile Gold Australia regards the tenement highly and intends to explore the project area with a dedicated exploration program. Most of the tenement is under moderate to thick recent alluvial cover, which hampers access to bed rock geology. It is recommended that a campaign of Air Core/RC drilling campaign should be undertaken to test the anomalous areas. Soil and rock chip sampling program should target the areas which have been subjected to crustal disturbances. If encouraging results received, then a campaign of deep drilling should be undertaken to test the full potential of EL 23178.
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1.0 INTRODUCTION

EL 23178 is located approximately 70 km SE of Darwin, Northern Territory some 10 kilometers south of the Arnhem Highway. The tenement lies 20km north-west of Rustlers Roost and some 20 kilometers west of Toms Gully Mine Site, and is bounded by the Adelaide River on its western margin. This report covers the status of the tenement during the year ended 7th March 2010.

2.0 TENEMENT DETAILS

The Licence was granted on 8th March 2005 to Renison Consolidate Mines for a period of 6 years and will expire on 7th March 2011. Exploration Licence 23178 comprises 59 blocks totaling 184.6 sq km. Underlying cadastre is dominantly Perpetual Pastoral Lease No. 815, Mary River West owned by Equest Pty Ltd (ACN 009 632 642).

On 25 July 2007, by virtue of an agreement, GBS Gold Australia Pty Ltd acquired all mining and exploration assets, located in the Toms Gully Region. However, GBS Gold Australia went into voluntary administration on 15 September 2008, and all assets including EL 23178 were placed under care and maintenance. In June 2009, Crocodile Gold Australia announced to purchase all Northern Territory assets held by GBS Gold Australia (liquidated). After meeting all regulatory and statutory requirements, these assets including EL 23178 were transferred to Crocodile Gold Australia who commenced mining and exploration activities in the region immediately.

3.0 LOCATION AND ACCESS

EL 23178 is approximately 70 km south east of Darwin, and some 10 kilometres south of the Arnhem Highway (Figure 1).

Access to the tenements is available from the Marrakai Track which links off the
Figure 2: EL 23178, Tenement Location
Arnhem Highway to the tenement, then via station roads on Adelaide River Station. However these tracks become impassable after heavy rain and therefore no access is possible throughout the wet season.

4.0 GEOLOGICAL SETTING

Regional geology is outlined in many publications, notably Ahmad et. al., (1994), and Needham and Needham and Stuart-Smith (1984), and Needham et. al., (1988). The tenement is within the Pine Creek Orogen, a folded sequence of Palaeoproterozoic pelitic and psammitic sediments, with interlayered cherty tuff units. Mafic sills of the Zamu Dolerite (Pdz ~1.87Ga) intruded lower formations of the South Alligator Group (Psk, Psg, Pso).

The south-western portion of EL23178 contains the oldest sediments of the Mount Partridge Group that is unconformably overlain by the South Alligator Group, which covers small parts of the tenement mainly towards north and south. Much of the project area is comprised of Burrell Creek Formation (Figure 2), which conformably overlies the South Alligator Group. Tertiary and Quaternary Soils and Gravel’s unconformably overlie all the lower lying portions of the tenement areas, generally referred to as “Black Soils Regions”. All of the Neoproterozoic sediments and volcanics in the Mount Bundey area were folded in a major deformation event dated around 1800 million years. The fold axes trend north-northeast, and generally plunging gently to the south with crosscutting magnetic features. A brief description of these rocks is given below.

4.1 The Mount Partridge Group

Wildman Siltstone

The Mount Partridge Group is represented by the Wildman Siltstone, which is interpreted to be up to 1500m thick. In the Mount Bundey Region the Wildman Siltstone consists of laminated and banded shale, carbonaceous and often pyritic siltstone interbedded with undifferentiated volcanics up to 100m, minor dolomitic sediments may also be present. The sediments near the granite intrusion are often hornfelsed. The Wildman Siltstone is interpreted to be prospective for large tonnage,
low-grade gold deposits and small tonnage, high-grade deposits. Wildman Siltstone hosts the Tom’s Gully gold deposit.

4.2 The South Alligator Group

The Koolpin Formation, Gerowie Tuff and the Mount Bonnie Formation represent the South Alligator Group. 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.

**Koolpin Formation**

The Koolpin Formation comprises ferruginous siltstone and shale, which is commonly carbonaceous and pyritic. Chert bands and nodular horizons are common and lenses of ironstone occur occasionally, as haematitic breccias throughout the sequence into undisturbed quartz-veined siltstone and shale. Minor components of dolomite can also occur. The Koolpin Formation is one of the most prospective units in the Mount Bundey Region for hosting gold mineralisation (West Koolpin, Taipan, BHS and North Koolpin Open Pits at Quest 29 are all within Koolpin sediments)

**Gerowie Tuff**

The Gerowie Tuff conformably overlies the Koolpin and has similar characteristics of siltstones and shales but is not as iron rich. Within the Mount Bundey Region it is dominated by graded beds of siliceous tuffaceous mudstones grading to greywacke and arenite, diagenetically altered, up to 600m thick, and generally poorly mineralised. The highly siliceous component of the tuffs and arenites make them resistant to erosion, and they tend to form areas of high relief.

**Mount Bonnie Formation**

The Mount Bonnie Formation conformable overlies the Gerowie Tuff and is dominated by a shallow marine sequence of interbedded and graded siltstone, chert and greywacke with occasional BIF’s. The unit can be up to 600m thick and is generally iron rich and may be siliceous in places. The Mount Bonnie Formation hosts the Rustler’s Roost deposit.
4.3 Finniss River Group

4.3.1 Burrell Creek Formation

Conformably overlying the Mount Bonnie Formation is the Burrell Creek Formation interpreted as a flysch sequence of fine to coarse marine sediments and appears to be part of continuous sedimentation process. Due to the lack of marker horizons and poor exposure the width of the unit is unknown but is thought to be >1000m. This Formation is considered prospective for large low-grade gold deposits as typified by the Batman deposit of Mount Todd. The potential also exists for small high-grade deposits similar to Possum and Happy Valley with John Shields GIGIAC Theory (Gold in Greywacke in Anticlinal Crests). Also high-grade deposits such as Bandicoot, Marrakai and the Ringwood line which all lie on a major deep-seated magnetic trend.

4.4 Intrusives

Zamu Dolerite

The Zamu Dolerite occurs as small bodies that are poorly exposed, as a result of its weathering, some rubble boulders may be present at surface. It consists of altered quartz dolerite and gabbro and is generally narrow and broadly conformable to bedding as thin sills. The Zamu Dolerite is the only known suite of mafic intrusives that were emplaced prior to regional metamorphism and deformation. The Zamu Dolerite appears to have a controlling influence on the mineralisation at Quest 29 within the Koolpin sediments but this is not fully understood at this stage. Mineralisation is also hosted within this unit at Quest 29 and also at Chinese Howley.

Mount Bundey Granite & Mount Goyder Syenite

The sedimentary sequences and the Zamu Dolerite are intruded by the Palaeoproterozoic Mount Goyder Syenite and Mount Bundey Granite which form a cogenetic complex which crops out over about an 80km area. Their mineralogy and geochemistry suggests they are both differentiated from a common magma, which intruded into the gently south plunging folded belt of sediments.
A thermal metamorphic overprint associated with the southern margin of the Mount Bundey Granite has resulted in the development of both cordierite and andalusite hornfels. Further to the south of the Mount Bundey and Mount Goyder intrusive is possibly a second deep-seated pluton as indicated by a roughly circular magnetic feature.

4.5 Deformation & Metamorphism

Regional deformation with north-northeast folding plunging gently south occurred around 1800 My, based on a rubidium-strontium analysis, causing metamorphism to greenschist, and sometimes higher to amphibolite facies. This event also resulted in the intrusion of thin sills of Zamu Dolerite, and the post – tectonic emplacement of the Mount Bundey Granite and Mount Goyder Syenite is a comparable cogenetic pluton
dated at 1790 + 110 My in the region. Structural deformation of the meta-sediments is complex.

The major folding episode resulted in tight folds whose axes plunge southwest. However within these major folds the more incompetent beds, i.e. carbonaceous shales, have been deformed into localised complex structures. The granitic emplacement has also influenced the fold structures as can be seen on the regional geological map. Metamorphism to greenschist facies through dynamic compression associated with intense folding is common. The granitic emplacement and the associated structural deformation and generation of hydrothermal fluids are thought to have been responsible for most of the gold enrichment throughout the Pine Creek Geosyncline. e.g. Cosmo Howley, Rustlers Roost, Toms Gully, Moline, Mt Todd and Quest.

5.0 PREVIOUS EXPLORATION ACTIVITY

Work within EL23178 for the 2006-2007 period by Renison Consolidated Ltd included a literature review of previous land holders, and compilation of data and entry into the regional GIS database, interpretation of remote-sensing imagery over the project area, and reconnaissance traverses throughout the tenement, including rock chipping of promising lithologies.

Low rubble strewn hills and ridges dominate the topography and numerous gullies, channels and creeks amenable to stream sediment/ BLEG soil sampling drain the area. Bedrock exposure is limited throughout the tenement, where more resistant lithologies do occur, prominent outcrops are present, mainly consisting of meta-quartzite, ferruginised sandstones, and bands of cherty, silicified cream – weathered Gerowie Tuff.

A remnant ferruginous lateritic duricrust with cemented lithic fragments is also present on hills along the western boundary of the tenement.

Processed regional magnetic imagery indicates a linear, north-west trending structure (magnetic low) transecting tenement, and is interpreted to be an ancient basement structure which may have interacted with the overlying folded geosynclinal
succession to provide channels/pathways for mineralizing fluids. Several rock chips were taken with several mineralised trends identified corresponding with the intersection of the magnetic trend with anticlinal features as anticipated. Brahman Hill being the most anomalous prospect.

Rock Chipping and mapping completed during the year has located several interesting areas at the intersection of anticlinal folds with the Noonamah-Corroboree magnetic trend, including Brahman Hill which has returned several highly anomalous rock chips over a 100m strike extent.

Work completed on this tenement has comprised of rock chipping, field mapping literature reviews, data entry to GIS of historical work.

During 2008-09 reporting period, a high resolution geophysical (magnetic and radiometric) cover of EL 23178 was obtained, which helped to undertake an in-depth technical review of the project area. It identified a moderate potential for gold and uranium potential in the area. EL 23178 is characterised by the presence of deep-seated structures that are the result of crustal disturbance in the Northern Australia. Radiometric image of the project area also shows significant anomalies which may be associated with uranium mineralisation.

6.0 EXPLORATION YEAR ENDING 7th MARCH 2010

During most of the year under review, previous tenement owner remained under voluntary administration, therefore no significant ground exploration could take place. The main activity, however, was a technical review, tenement ranking and evaluation in order to prepare assets for sale.

Findings based on the technical review suggest that the tenement is prospective for gold and uranium mineralisation. Geological setting of the area is ideal for medium size gold deposit, where prospective lithologies of the Wildman Siltstone, Koolpin Formation, Mt Bonnie Formation, Gerowie Tuff and Burrell Creek Formation are present (Figure 2). These formations have been folded in north-easterly trending folds.
point towards characteristic features of gold mineralised settings in the Pine Creek Orogen.

Figure 3 shows the TMI image of the project area where EL 23178 is transected by a NW-trending deep-seated structure (almost in middle) which, in turn, has been bisected by later movement. Another important feature is another NW-trending bisected dyke in the northwestern corner of the tenement. These features represent major crustal disturbance during tectonic event in north Australia and could be important mineralised structures. In addition, there are some N-trending weak magnetic ridges which are located in the eastern corner of the project area. These ridges could be important for hosting gold mineralisation because in the central part of the Pine Creek Orogen, gold mineralisation has been observed associated with weak subtle anomalies.

Radiometric image of the project area (Figure 4) shows elevated levels of at least three areas where radiometric anomalies can be observed. As the project area is mainly covered by a thick layer of alluvial material, therefore, it is likely that these anomalies may be just accumulation of uranium in recent sediments. If they represent bed rock signature then these should be thoroughly investigated during ground-truthing. This should be pursued by ground radiometric survey followed by rock chips sampling. If encouraging results received then these should be tested with RC drilling. Geological setting is also fertile for the localisation of small to medium size uranium deposit. EL 23173 is located in the vicinity of world-class Alligator River Uranium Field which contains deposits such as Ranger, Jabiluka and Koongarra. Further north, Archaean Woolner Granite is overlain by Palaeoproterozoic strata with possible unconformity, which is a typical feature of unconformity-related uranium deposits in the Orogen. The Koolpin and Burrell Creek Formations also contain sizeable vein-type uranium mineralisation in the Orogen. This observation points towards the uranium prospectivity of the project area.
Figure 3: TMI Image of the Project Area
During the reporting year exploration activities also included:

- Reconnaissance visit
- Tenement administration
- Report writing

This exploration program costed $10650.00 and details are given in Appendix 1.

7.0 PROPOSED EXPLORATION PROGRAM YEAR ENDING 7th MARCH 2011

Crocodile Gold Australia regards the tenement highly and intends to explore the project area with a dedicated exploration program. Most of the tenement is under moderate to thick recent alluvial cover which hampers access to bedrock geology. It is recommended that a campaign of Air Core/RC drilling campaign should be undertaken to test the anomalous areas. Soil and rock chip sampling program should target the areas which have been subjected to crustal disturbances. If encouraging results received, then a campaign of deeper drilling should be undertaken to test the full potential of EL 23178. A minimum budget of $25000.00 has been proposed for this program.
Figure 4: Radiometric Image of the Project Area
8.0 REFERENCES


NTDME, 1999. Rum Jungle Magnetics Survey

NTDME, 2000. Mary River Magnetics Survey
