Annual Report

EL24887

Tennant Creek Region

Reporting Period
8 August 2008 to 7 August 2009

August 2009

Report No: R2009-010
1:250,000 Sheets: Bonney Well SF53-02; Frew River SF53-03
1:100,000 Sheets: Ooradidgie 5857; Epenarra 5957
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Projection: MGA
Zone: 53
Author: Richard Coles
Tenement Holders: Castile Resources Pty Ltd
Department of Regional Development, Primary Industries,
Distribution: Fisheries & Resources; and Castile Resources Pty Ltd / Westgold Resources Limited
SUMMARY

This report covers exploration completed on EL24887 for the period 8 August 2008 to 7 August 2009.

EL24887, located approximately 80km southeast of the town of Tennant Creek, was granted to Castile Resources Pty Ltd (Castile) on 8 August 2006. The area is considered prospective for copper, gold and base metals mineralisation associated with Iron Oxide Copper Gold (IOCG) mineralising systems within the Proterozoic Warramunga Formation. Phosphate deposits in the marginal zones of the Cambrian Georgina Basin are regarded as being a secondary exploration target for the region.

Exploration activities completed during the reporting period include data compilation, target magnetic modelling and reporting.

Previous exploration work has located several discrete magnetic anomalies within the tenement, but none of these has been tested at depth. The anomalies are mostly covered by Cambrian sediments, and previous surface sampling and shallow drilling has only tested the Cambrian, not the magnetic features beneath.

The proposed 2009 programme is planned to include drill testing of priority targets subject to successful heritage clearances with a proposed minimum expenditure of $53,000.
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1. INTRODUCTION

EL24887, located approximately 80km southeast of the town of Tennant Creek, was granted to Castile Resources Pty Ltd (Castile) on 8 August 2006. The area is considered prospective for copper, gold and base metals mineralisation associated with Iron Oxide Copper Gold (IOCG) mineralising systems within the Proterozoic Warramunga Formation. The margin of the Cambrian Georgina Basin underlies the tenement, and this is known to be rich in phosphate-bearing rocks in many areas.

Castile has a large tenement holding in the Tennant Creek region. Exploration effort by Castile in the Tennant Creek region for the 2008/9 period concentrated on the Rover field, where a deep drilling program was successful in confirming high-grade Cu-Au mineralisation beneath deep Palaeozoic cover. Work on EL24887 for the year included data compilation, target magnetic modelling and interpretation with particular emphasis on Cu-Au Tennant Creek style mineralisation. Interpretation on the phosphate potential has provided an added focus for future exploration activities.

Historical exploration has been carried out over the region sporadically over the past 40 years. Much of the work has been restricted to airborne and ground geophysical interpretation, and very little drilling has been used to test the geology and anomalies at depth. The prospective rock sequence for Tennant Creek style mineralisation is largely covered by moderate thicknesses (up to 70m) of Cambrian sediments, which has deterred previous exploration workers. The cover sequence does not appear to have had any sampling undertaken for the phosphate potential.

2. LOCATION

EL24887 is located approximately 80km southeast of the Tennant Creek township. The sealed Stuart Highway and the Alice Springs to Darwin railway line pass through Tennant Creek, and are 50 kms to the west of the tenement.

Access to the project is via the Stuart Highway 84 kms south of Tennant Creek, then east along access roads to Kurrundi and Epenarra stations. Access through the area is via occasional station tracks, but much of the area has no vehicular access at present.

3. TENURE

EL24887 consists of 193 graticular blocks, and totals about 603 square kilometres. (Figure 1) It was granted on 8 August 2006.

The tenement title is held 100% by Castile Resources Pty Ltd, a wholly owned subsidiary of Westgold Resources Limited.

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EL24887 lies partly within the Kurundi, and partly within the Epenarra pastoral leases. It lies outside Aboriginal Freehold lands, but ground disturbing exploration activities will require aboriginal heritage survey to be completed prior to commencement.
Figure 1 – Tenement Location Plan
4. GEOLOGY

4.1 Regional Geology

The tenement covers part of the poorly exposed southern margin of the Proterozoic Tennant Creek Block of the central Tennant Creek Inlier in the Northern Territory. The regional geological setting of the tenements is interpreted from rare outcrop, limited drill testing, geophysical surveys and extrapolation from the relatively well-exposed portions of the block to the north west.

The Tennant Creek Region contains three different geological provinces, the Warramunga Province, and the unconformably overlying Palaeo- to Mesoproterozoic Davenport Province to the south and Tomkinson Creek Province to the north. To the east and west the Palaeozoic Georgina and Wiso basins overlie Proterozoic rocks of the Tennant Creek Region. The Proterozoic Alieron Province of the Arunta Region occurs to the south of the area, the contact between it and the Tennant Creek Region being obscured by Palaeozoic basinal cover sequences.

Known outcrop of the 1860-1850Ma Warramunga Province is approximately centred on the township of Tennant Creek, and contains the Palaeoproterozoic Warramunga Formation. This is a weakly metamorphosed turbiditic succession of partly tuffaceous sandstones and siltstones which includes argillaceous banded ironstones locally referred to as ‘haematite shale’.

Rocks of the Warramunga Formation show open to closed folding about approximately east-west-oriented, open, upright axes, and there is a well developed axial-planar slaty cleavage. This 1850-1845Ma deformation, the Tennant Event (Barramundi Orogeny), is contemporaneous with predominantly felsic magmatism of the Tennant Creek Supersuite. Two overprinting cleavages and associated kink bands are also present, which are attributed to the superimposition of the ~1700Ma Davenport Event deformation. Volcano-sedimentary rocks of the Warramunga Province are intruded by granite and porphyry of the Tennant Creek Supersuite, (~1850Ma) the Treasure Suite (~1810Ma) and the Devils Suite. (~1710Ma). The Tennant Creek Supersuite includes the Tennant Creek, Cabbage Gum, Channingum, and Hill of Leeders granites, and the Mumbilla Granodiorite. In the Warramunga Province, the Treasure Suite includes felsic and mafic volcanic rocks, porphyry, granophyre, monzodiorite, diorite and dolerite, but granite is not represented in outcrop. The Devils Suite is represented by the Warrego Granite and Gosse River East Syenite. Lamprophyre is penecontemporaneous with the Devils Suite.

The Woodenjerrie beds outcrop in the south of the province and are correlated with the Warramunga Formation. However, the Woodenjerrie beds apparently lack the massive ironstone bodies that are associated with the Warramunga Formation.

The Junalki Formation is also approximately correlated with both the Warramunga Formation and Woodenjerrie beds, but includes a greater proportion of intercalated volcanic rocks than the latter unit. Volcanic rocks have not been recognised in the Warramunga Formation.

Volcano-sedimentary rocks of the Ooradidgee Group (~1850-1820Ma) unconformably overlie the Warramunga Formation and its correlates, extending to the south into the adjacent Davenport Province.

The Tomkinson Creek Province (1800-1400Ma) unconformably overlies the Palaeoproterozoic Warramunga Province to the north. Three successions outcrop in the province, the Tomkinson Creek, Namerinni and Renner groups. These are all predominantly sedimentary successions and contain sandstone, siltstone and shale. The Tomkinson Creek Group also includes a mafic volcanic unit. The oldest succession in the province, the Tomkinson Creek Group, is mildly deformed but unmetamorphosed and is correlated with the
Hatches Creek Group of the Davenport Province. The successively unconformable Namerinni and Renner groups are correlated with the McArthur and Roper groups respectively.

The Davenport Province (1800-1700Ma) unconformably overlies the Warramunga Province to the south. It contains the Hatches Creek Group, which is composed predominantly of sandstone, siltstone and shale, with felsic volcanic beds in the lower part of the sequence, and a mafic volcanic unit in the middle parts. The ~1710Ma felsic Devil’s Suite intrudes the sequence. The ~1700Ma Davenport Event has produced widespread concentric and disharmonic folding in the Davenport Province succession.

Palaeozoic rocks of the Georgina and Wiso basins unconformably overlie the Proterozoic sequence of the Tennant Creek Region to the east and west respectively. These are largely covered by a thin veneer of unconsolidated Cainozoic cover.

The Warramunga Formation hosts major IOCG deposits of Au-Cu-Bi, temporally associated with the Tennant Creek Supersuite granites intruded into the Warramunga Province. Deposits of this type represent the most important mineral production, and remain the most important exploration target, for the region. Occurrences of W-Sn, U, Ni, Cu, Pb, Zn are known from the Davenport Province. The Tomkinson Creek Province hosts manganese deposits at Bootu Creek.
4.2 Local Geology

EL24887 lies on the southwestern margin of the Georgina Basin, and is largely covered by Cainozoic sediments. Sporadic outcrops of Cambrian clastic and carbonate-rich sediments occur across the tenement. Minor outcrops of the Woodenjerrie Beds and the Junalkie Formation (both Warramunga Formation equivalents) and granites of the Tennant Creek Supersuite are mapped in the west and northwest of the tenement. Magnetics indicate that granite of the Tennant Creek Supersuite underlies the Cambrian to the north of the western part of EL24887, and also underlie the central part of the eastern part of the tenement. This is flanked by rocks of probable Warramunga Group. Much of the tenement is probably underlain by the Warramunga Group or its equivalents, but this only crops out in the northern and western parts of EL24887.

The Ooradidgee Group and the Hatches Creek Group form the Murchison and Clough Ranges, to the south and southwest of the tenement.

4.3 Exploration History

The two 250,000 sheets on which the project lies, the Bonney Well sheet and the Frew River sheet, were mapped by the BMR in the 1960’s and were remapped by NTGS in 1987. Neither of the two 100,000 map sheets has been geologically mapped.

The Bonney Well high-resolution aeromagnetic and radiometric survey, which covers both 1:250,000 sheets, was flown by AGS in 1999.
The Tennant Creek Region gravity survey, at station spacings of between 200 and 12,000m, was completed in 2001, and covered parts of the Bonney Well 1:250,000 map sheet. It covers the western half of EL24887.

Exploration in the EL24887 area has been carried out continuously between 1971 and 2005, but has mainly involved remote-sensing and geophysical surveys, and very little drilling has occurred. The drilling that has been completed generally did not penetrate the Cambrian cover sequence, and the area cannot be said to have been tested at depth.

A number of prior tenements which all or partly overlie the EL24887 area have been explored previously. Several of these were subjected only to superficial data interpretation, and are not included on the map shown in Figure 3.

**Figure 4: Historical Tenement Locations.**

AOM held AP2297 in 1971, and re-pegged the ground as AP3391 in 1972, in joint venture with Geopeko. They completed airborne magnetics and radiometrics with ground follow-up, locating several anomalies in the northern part of the tenement. One zone of magnetic anomalies occurs in the NW corner of EL24887, but mapping indicated that this was due to magnetic BIF in the sequence, and not worth follow-up. They concluded that the magnetic

**AP2297&3391**
character of the area was not similar to the Tennant Creek area, and dropped the tenement.

**EL2884**

BHP, in joint venture with Key Resources Pty Ltd explored this tenement, which covered the western half of EL24887, for diamonds, base metals and uranium in 1982. They completed minor wide-spaced bulk stream sediment sampling. No significant results were obtained.

**EL4940, 4941**

These two tenements were held by Mineral Horizons NL in 1987 and 1988. They carried out minor surface sampling and trenching for gold and tungsten along the margin of the Davenport Range, immediately to the south and west of EL24887 with disappointing results. The tenements contained the Munadgee Uranium prospect previously investigated by CRA.

**EL5024**

Geopeko held this ground from 1987 to 1990, and carried out airborne magnetic/ radiometric surveys at 250m spacing which located 15 anomalies, only one of which was in EL24887. This anomaly (Epenarra IV Anomaly 1) was not followed up. The other anomalies were followed up on the ground, and drilling was carried out on two of them. All work was NW of EL24887. Drilling intersected magnetic granites and metamorphosed sediments with disseminated magnetite. No anomalous base metals were encountered. They concluded that the rocks did not belong to the Warramunga Group.

**EL8240**

This covered the central south part of EL24887, and was explored by Posgold/ Adelaide Resources from 1995 to 1997. They used the BMR magnetics to locate magnetic features, and drilled orientation RAB holes to test the depth of Cambrian cover, and to test magnetic anomalies. Three of the holes hit weathered porphyritic mafic granite. The other 6 holes intersected between 44 and 71m of Cambrian rocks overlying Proterozoic granites. The Cambrian had slightly elevated Pb Zn and Cu in places. The JV concluded that the area is partly underlain by Warramunga Group sediments, but that the thickness of cover was prohibitive, and there was a general lack of prospective discrete magnetic anomalies.

**EL8246, EL8388, EL8461 and EL8816**

From 1993 to 1997 North Star Resources in joint venture with Nexus Minerals NL explored a group of four tenements, EL8246, EL8388, EL8461 and EL8816, which overlay a large portion of EL24887. Initially using Peko’s magnetic data, they identified 33 targets based on magnetics and structural intersections. Some of these were checked with ground magnetics, soil sampling, and limited vacuum and RAB drilling on 2 targets (T8 and T10) within EL24887. Weakly anomalous base metal assays were returned from chert and shale horizons within the Cambrian at T8, which is within EL24887. In December 1996 North Star flew airborne magnetics at 150m line-spacing and defined 13 additional targets. These were followed-up with soil sampling, BLEG sampling for gold (976 samples at 20 x 100m spacing over 13 anomalies), ground magnetics, and RAB drilling of one anomaly (T11 - on EL8461 and probably just within EL24887) with no significant results.

It is doubtful that the follow-up work by North Star/ Nexus was at all effective, as much of their BLEG sampling and the vacuum and RAB drilling only tested the Cambrian.

**EL8272**

This tenement was pegged by Keith Yates in 1994, and later transferred to Adelaide Resources, who explored in 1995 and 1996 in JV with Posgold. Exploration work included semi-regional magnetic and gravity interpretation, regolith sampling (all on the Cambrian sediments), and drilling wide-spaced regional RAB holes into colluvium and aeolian sand overlying the Cambrian.
Drilling was immediately to the east of EL24887. Six of the 15 holes drilled intersected weathered volcanic rocks, thought to be Proterozoic. Weakly anomalous base metal assays were returned from one hole, with up to 577ppm Pb, 163ppm Zn, 193ppm Cu and 62ppm Co. Later interpretation concluded that the anomalies were in the Cambrian Helen Springs basalts, and not in the Warramunga Group or its equivalents.

**EL10177 & 10178**

These two tenements were explored by Image Resources and Meteoric Resources in joint venture from 2003 to 2005. They defined nine anomalies from interpretation of previous aeromagnetic data, but 6 of these were in EL10178, north of EL24887, and 2 were just outside EL24887. They were partly tested with ground magnetics, gravity and soil sampling. Ground magnetics was carried out to define the anomaly within EL10177 (ET4). No further work was completed.

Other tenements, including EL1573, 1574 (Energy Partners Pty Ltd), EL5571 (Australasian Energy & Gold NL), EL6673 (an opal prospector), and EL34258 (Red Metals Ltd) have been held in the area, but no work was carried out.

It is clear that the exploration activities in the general area, and specifically within the area of EL24887, were hindered by the Cambrian cover, which is up to 70m thick, and covers most of the tenement. Previous exploration has been limited to sampling within the Cambrian sediments, with the exception of a few deeper holes to the northwest which located magnetite-bearing granite and metasediments.

Magnetic surveys have located several discrete anomalies which are similar to those known from the Tennant Creek field, and these offer immediate targets for ground confirmation and drill testing. The depth of cover is not a problem for modern RC drill equipment, and is not prohibitive in the light of the high-grade targets being sought.

5. **WORK COMPLETED DURING THE REPORTING PERIOD**

Exploration activities completed during the reporting period were restricted to data compilation, magnetic modelling, assessment of phosphate potential, interpretation and reporting. Westgold’s main exploration effort for the year was concentrated on the Rover Field to the west.

6. **ENVIRONMENTAL / REHABILITATION REPORT**

No environmental rehabilitation has occurred during the reporting period as no exploration work of a ground-disturbing nature was carried out.

7. **CONCLUSION AND RECOMMENDATIONS**

Previous exploration efforts in the EL24887 area have been hindered by the presence of Recent and Cambrian sediment cover which masked the prospective Proterozoic sequence beneath.

Surface investigations of outcropping magnetic rocks in the western end of the tenement have located magnetic Proterozoic metasediments and granites.
Apart from this, none of the surface sampling and shallow RAB and vacuum drilling has penetrated the cover sequences, and the cause of the numerous magnetic anomalies over the majority of the tenement is not known.

The phosphate potential of the tenement area has not been tested by prior exploration and remains a valid exploration target.

The tenement is due for partial relinquishment, and it is proposed to relinquish 62 graticular blocks, retaining 131. The following program and budget are based on the tenement being 131 blocks in area.

Work planned for the coming year will include ranking of the airborne magnetic anomalies and locating them on the ground with subsequent drilling to test for Tennant Creek style mineralisation. Additional shallow drilling targeting phosphate potential is currently under assessment. All ground disturbing activities will require aboriginal heritage surveys prior to commencement.

The minimum estimated cost of the 2009 programme will be approximately $53,000

- Staffing  
- Vehicles  
- Drilling - Aircore  
- Drilling - RC  
- Assays

Total proposed programme (minimum) $53,000

8. REFERENCES


Appendix 1

BIBLIOGRAPHIC DATA SHEET

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