EL 10052
Red Bluff

FINAL REPORT

LICENSEE:
GIANTS REEF EXPLORATION PTY LTD
A.B.N.009 200 346
(A wholly owned subsidiary of Emmerson Resources Ltd)

17 August 2001 – 16 August 2011

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NOVEMBER 2011

DISTRIBUTION:
Department of Resources
Central Land Council
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MAP SHEETS:

TENNANT CREEK SE53-14
KELLY 5658
TENNANT CREEK 5758
1:100 000
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1. SUMMARY

This Final Report records exploration work done on EL 10052 between 17 August 2001 and 16 August 2011.

Emmerson's considers the area covered by EL 10052, now covered by SEL 28774 to be highly prospective. During 2010 Emmerson applied the VRMI concept to the area revealing extensive VRMI anomalism. Drilling of this anomalism confirmed the presence of ironstone, although assay results were mixed. Emmerson’s application of HeliTEM and the success of the ‘Proof of Concept’ drilling of HeliTEM anomalies in the Gecko Area has increased the potential for EL 10052. Emmerson will continue with ‘Proof of Concept’ drilling for the remainder of 2011, should success continue then during 2012, Emmerson will look to conduct further HeliTEM surveys of its highest ranked prospective areas, EL 10052 (now SEL 28774) would be one of these, with the aim of identifying areas HeliTEM targets within the VRMI anomalism for drill testing.

Emmerson considers EL 10052 to be highly prospective and is encouraged by early interpretations of the HeliTEM and VRMI data and will continue exploration over the area under the newly granted SEL 28774.

EL 10052 expired on 16 August 2011.

Emmerson considers the area covered by EL 10052 to be highly prospective therefore the area covered by EL 10052 was included in an SEL application, SEL 28774 which was granted to Emmerson on 26 September 2011.
2. INTRODUCTION

EL 10052 RED BLUFF is located between 18 km and 32 km north west of the Tennant Creek Township.

Figure 1 below, shows the location of EL 10052 and surrounding tenure.

This Final Report records exploration work done on EL 10052 between 17 August 2001 and 16 August 2011.

3. LOCATION

EL 10052 RED BLUFF is located between 18 km and 32 km north west of the Tennant Creek Township.

Access from Tennant Creek town is via the sealed Warrego Road. A series of un-sealed minor tracks run west from Warrego Road, approximately 14km’s from the Tennant Creek Township, these tracks provide access to the remainder of the licence. During and immediately after rain the area is generally inaccessible. EL 10052 is located on the Kelly (5658) and Flynn (5759) 1:100 000 scale map sheets.

Figure 1: Location of EL 10052.
4. TENURE

Exploration Licence 10052 Red Bluff covering 27 blocks (83.83km²) was granted to Giants Reef on 17th August 2001 for a period of six years, a renewal was granted for a period of 2 years, expiring on 16 August 2011.

EL 10052 is on NT Portion 408, within Perpetual Pastoral Lease 946, Phillip Creek Station. EL 10052 is subject to an Indigenous Land Use Agreement (ILUA) signed in September 2000 between the Native Title holders of the Tennant Creek region, represented by the CLC, and Giants Reef.

EL 10052 expired on 16 August 2011.

5. GEOLOGY

5.1 Regional Geology

The reader is referred to AusIMM Monograph 14 (Geology of the Mineral Deposits of Australia and Papua New Guinea), Volume 1, pp. 829-861, to gain a good introduction to the regional geology and styles of gold-copper mineralisation of the area.

In 1995 the Northern Territory Geological Survey released a geological map and explanatory notes for the Flynn 1:100,000 sheet, which covers the area of the licenses.

The rocks of the Warramunga Formation host most of the orebodies in the region and underlie most of the Exploration Licenses.

5.2 Local Geology

The majority of the area of the Licence is underlain by turbidite sediments of the Palaeoproterozoic Warramunga Formation (1865-1855 Ma), predominately greywacke and siltstones. This formation is host to virtually all the magnetite-haematite (ironstone–hosted) gold-copper-bismuth mineralisation and ore bodies in the Tennant Creek goldfield.

Exposure of the Proterozoic bedrock is fair to poor.

The northern extension of EL 10052 covers areas of Flynn Sub-group (also Palaeoproterozoic but overlying the Warramunga Formation); including Warrego Volcanics, and most of its northern end contains (relatively) younger sediments of the Tomkinson Creek Group (Flynn Sub-group).

There are a number of abandoned small mines within the boundaries of the Licence including Premier and Curlew.
6. **EXPLORATION**

6.1 **Targets and Concepts**

Exploration for large base metal deposits possibly associated with a regional gravity anomaly, termed the Bluebush Anomaly, centred in the central and eastern parts of the licence and extends east into adjoining Licences, with additional targets including Tennant Creek-type ironstone hosted Au-Cu-Bi ore bodies.

Proterozoic Inliers world-wide, and particularly in Australia, are renowned for their iron-rich mineralisation and world class base metal deposits. For many years prominent geologists and researchers in the industry have pointed out the geological similarities that the broader Proterozoic Tennant Creek Inlier shares with the Gawler Craton, host to the Olympic dam deposit, and to the Eastern Succession of the Mt Isa Inlier that hosts the Ernest Henry and Selwyn deposits. These similarities, though recognised, had not been widely acted upon by the industry.

Exploration was aimed at discovering large deposits of base metals along with substantial gold and/or silver, probably accompanied or hosted by large volumes of iron oxide minerals.

Giants Reef’s target model iron oxide-rich lithologies and are therefore likely to be associated with regional or district-scale gravity anomalies, and potentially coincident with a magnetic anomaly.

The discovery of the haematite-magnetite Chariot deposit in 1998 has shown the potential for variations on the classic magnetite ironstone hosted gold +/- copper deposits, where lower order magnetic anomalies, plus gravity methods can define new targets. Discoveries by Giants Reef of mineralisation such as at Malbec West, Marathon and Billy Boy further support this. Giants Reef considers the potential for the discovery of mineralisation in hematite dominant ironstones in the relinquished group is limited.

6.2 **Exploration Undertaken – 17 August 2001 to 16 August 2011**

**Year 1**

Normandy held an area measuring approximately 9km east-west x 1.5 km north-south in the north-central part of what is now EL 10052, under multiple mineral claims. These claims covered an area of outcropping Warramunga Formation, felsic porphyries and some ironstone, such as the Curlew and Premier gold mines. A second block of claims approximately 2km x 2km was held in the western part of the licence area. Normandy carried out extensive shallow geochemical drilling and deeper drilling on these large areas but without encouraging results and the blocks of claims were eventually relinquished.

Almost all of the EL appears to underlain by the Warramunga Formation, apart from a few square kilometres of the Tennant Creek Granite in the northwest corner. Early
interpretations of the regional magnetic pattern within EL 10052 showed relatively high amplitude magnetic features with generally NW-SE orientations in the eastern, northern and western areas of the EL. The south-central part of the EL is magnetically subdued. This contrast was initially interpreted as reflecting the different strength magnetic facies that are known in the Warramunga Formation. Major regional structures – the Mary Lane Shear and the Navigator Fault – were clearly recognisable in the AGSO 1998 200m line-spaced magnetics images.

Several of the Explorer series of magnetic anomalies identified in the 1970’s by GeoPeko lie within the northern half of the EL. These are (from west to east) Explorers 73, 47, 52, 63, 62, 2, 115 and 13. Most of these were in the area explored by Normandy mentioned above. Outside EL 10052 immediately to the east are the Ivanhoe mine and associated magnetic anomalies, which are on a continuation of the same easterly trend. Another magnetic anomaly of early interest was the Explorer 54 anomaly in the SE corner of the EL.

On the basis of the magnetics data, Giants Reef concluded that the area of most potential for the identifying of new exploration targets was in the area west of the Navigator Fault. Some of this area was explored by Normandy under Mineral Claims C247 to C252 and C316 to C318 (referred to as the Red Bluff Central claims).

Although the previous work by both ADL and Normandy involved a certain amount of drilling, Giants Reef’s assessment is that the magnetic anomalies in this area are not well tested or fully explained.

Year 2

In April 2002 the Red Bluff Central Claims were surrendered. On surrender Mineral Leases C249-C252, C316 & C318 were subsumed by Exploration Licence 10052 Red Bluff.

Year 3

Exploration was non-existent during this year due to Giants commitments elsewhere in the field.

Year 4

A comprehensive review of the vacuum geochemical data and geophysics over the tenement was undertaken during the year and this work resulted in the delineation of a number of highly prospective magnetic anomalies which either coincide with existing Au anomalies or have not received any geochemical testing, details of the locations of these identified anomalies was not located. A reconnaissance survey undertaken over these areas and this work confirmed that all targets are covered by either alluvial plains, quartz-rich dissected colluvial fan deposits, sheet sand or sandy soil on rise overlaying sub-crop and consequently will require testing by deeper regolith/geochemical methods. Follow-up exploration on these targets was curtailed during the year due to Giants Reef’s
commitment in developing the Malbec West, Edna Beryl, Cat’s Whiskers deposits and other higher priority regional targets in the Tennant Creek Mineral Field.

Under the management of Emmerson exploration has been limited due to the initial purchase period and the period required to list the company on the Australian Stock Exchange (ASX), which occurred on 12 December 2007.

During the 2008 field season Emmerson completed two major geophysical surveys:

1. A Detailed Ground Gravity Survey, conducted by Fugro Geophysics. This ground gravity survey was conducted over Emmerson’s Tennant Creek tenure package and included EL 10052. The survey was conducted by three teams, each team consisted of a quad bike and rider equipped with a station meter. The three teams were supported by a Toyota Landcruiser 4WD Ute. The readings were taken on a regional 500m station spacing’s, on lines 500m apart oriented North – South. Readings in areas requiring more detail were taken on 50 station spacing’s on 100m spaced lines oriented North - South. The survey was completed during October 2008. 252 station readings were taken in EL 10052 and consisted of 252 Regional readings.

2. A Detailed Airborne Magnetic, Radiometric and Digital Terrain Survey was conducted by UTS Geophysics and commenced 26 May 2008 and was completed on 22 July 2008. The survey included areas of the WPA and included all EL 10052. The survey was flown with a FU24 – 954 fixed wing survey aircraft on 75m line spacing’s, with 750m tie line spacing’s and a sensor height of 25m for a total Line KM of 38,278, with 5,139km’s (approximately 20.9%) being in the WPA. Magnetic Data was captured using a Scintrex Cesium Vapour CS-2 total field magnetometer, Fluxgate three component vector magnetometer, RMS Aeromagnetic Automatic Digital Compensator (AADC II) and a Diurnal monitoring Magnetometer (Scintrex Envi8mag). Radiometric Data was captured using an Exploranium GR-820 gamma ray spectrometer and Exploranium gamma ray detectors.

The analysis and interpretation conducted by Emmerson of the data generated from the 2008 geophysical surveys identified numerous anomalous zones and many potential targets within EL 10052, refer to the below figures 2 & 3. From the two figures it can be clearly seen that potential exists in many parts of the licence, but closer and more detailed analysis is required.

Due to the volume of identified targets and drilling data identified and Emmerson’s limited resources, due to focus on higher priority targets elsewhere in the WPA, and clear guidelines under Emmerson Joint Venture Agreement with Ivanhoe Australia, validation of identified data was limited to all potential Tier 1 Greenfield targets within EL 10052, namely ERM 049 and ERM130, no historical drilling was identified for ERM 049. This validation work is detailed as follows - available geology was compiled to assist with refining the geophysics models. This information included regional lithological dip and strike, surface geology, structural controls and any ironstones proximal to the target, attempting to assist in constraining the geophysics models.
Figure 2: EL 10052 – Identified Targets vs. Magnetics

Figure 3: EL 10052 – Identified Targets vs. Gravity
Further to the geophysical surveys conducted during 2008 exploration activities conducted over 2009, 2010 and 2011 in EL 10052 were focused on the application of two new geophysical technologies and techniques, VRMI & HeliTEM, explained below.

**HeliTEM**

Heli-TEM is a helicopter mounted system capable of measuring the conductivity of the rocks to significant depth and utilises the world’s most powerful airborne, time-domain electromagnetic system. A breakthrough during late 2010 and early 2011 has been the recognition that drill core from the mineralised portions of Tennant Creeks historic deposits is conductive up to 80 times the background levels. Emmerson has just completed the first phase of ‘proof of concept’ drilling of HeliTEM targets in the Gecko Area within EL 23183 (now SEL 28777). Drilling has been extremely encouraging with interceptions of high grade copper and intersections of mineralisation present in many of the holes drilled, assays results for approximately half of the drill holes are still pending. This early success gives high encouragement for the success of HeliTEM to identify mineralised systems. A second round of HeliTEM surveys will be conducted over Emmerson’s most prospective areas of VRMI anomalism, this ranks the area covered by EL 10052 as a very high candidate.

**VRMI**

Also during the reporting period Emmerson and contract geophysical consultants, Spinifex Geophysics, further developed a processing technology, Vector Residual Magnetic Intensity (VRMI) aimed at existing magnetic data from Emmerson’s Tennant Creek tenure package, figures 4 (pre-VRMI) & 5 (VRMI) represent the success of the VRMI technology. Immediate identification of highly prospective VRMI targets reprioritised Emmerson’s target matrix, the Red Bluff Area became the No. 1 priority area for exploration activities. Drilling during 2010 at Red Bluff confirmed the VRMI technology with significant intercepts of thick ironstones, although assay results were mixed, the successful ironstone intercepts were evidence to support the development and use of VRMI technology.
Figure 4: Conventional Magnetics

Figure 5: VRMI
The Red Bluff Area is divided into nine project areas, refer to figure 6. Of these nine areas 4 fall within EL 10052, Dizzy, Cannonball, Navarro and Monk.

Figure 6: Project Areas for the Red Bluff Camp. Background image is VRMI 1VD and the yellow box is the Red Bluff Camp outline.

Exploration activities were conducted at;

Cannonball

RAB drilling – 70 Holes (RBRB109 – 171 & 321 – 327) totalling 3,322m

Diamond Drilling – 1 Hole (RBDD021) totalling 582.7m (including 420m RC pre-collar)

RC Drilling – 1 RC Hole (RBRC022) totalling 186m (excluding 420m RC pre-collar for RBDD021).

The drilling was designed with the aims as follows;

1. Shallow test a VRMI magnetic peak with coincident gravity anomalies;
2. Gather deeper geological and geochemical information over the area (including an interpreted fold hinge);
3. Test over historic coincident Bi-Cu (and low level Au) VAC anomalism.
The confidence in the historic VAC data is very low, i.e. collars are unvalidated and holes are shallow. This RAB program ensured better geology and geochemical information is collected and will give the confidence to persist with RC drilling this target where warranted.

Figure 7: VRMI 1VD_lin_col_NE image showing project areas (white), faults (black) and fold hinges (blue). Blue triangles indicate proposed RAB program.
Figure 8: GRAVITY1VD_lin_col_NW image showing interpreted magnetic units (purple), faults (black) and fold hinges (blue). Blue triangles indicate proposed RAB program.

Figure 9: VRMI 1VD_lin_col_NE image showing Mag sus Shells, faults (black) and fold hinges (blue). Blue triangles indicate proposed RAB program.
Results from the drilling conducted didn’t encounter any significant economic intercepts but anomalous results and re-interpretation of the geophysical and geological data have provided evidence for further work to be conducted to investigate its potential as a Tier 2 target (<250,000oz Au).

**Navarro**

RAB drilling – 12 Holes (RBRB289 – 300) totalling 556m.

RC Drilling – 2 Holes (RBRC019 & 023) totalling 606m.

Results from the drilling at Navarro didn’t encounter any significant economic intercepts but anomalous results and re-interpretation of the geophysical and geological data have provided evidence for further work to be conducted to investigate its potential as a Tier 2 target (<250,000oz Au).

**Monk**

RAB drilling – 20 Holes (RBRB301 – 320) totalling 972m.

Results from the drilling at Monk didn’t contain any significant economic intercepts but anomalous results and re-interpretation of the geophysical and geological data have provided evidence for further work to be conducted to investigate its potential as a Tier 2 target (<250,000oz Au).

**Dizzy**

A RAB program was planned to test a magnetic and gravity feature within the dizzy area were some historical mines are located to the east along strike. Compilation of historical data to assess the potential for a Tier 1 deposit was completed. Ranking for this target was lower priority than others in the Red Bluff Camp and drilling was not undertaken due to the onset of the ‘wet season’.

With the ‘Proof of Concept’ drilling being extremely encouraging with interceptions of high grade copper and intersections of mineralisation present in many of the holes drilled Emmerson is encouraged further to conduct HeliTEM over the identified VRMI anomalis and identified areas of Ironstone to identify any mineralised parts of the system within the Red Bluff Area, including the ground formally covered by EL 10052 (now SEL 28774).

### 7. REHABILITATION

All rehabilitation has been completed in accordance with Emmerson’s Western Project Area Mining Management Plan, Authorisation 0461-03. This has been detailed in the Authorisation submission for 2010/11, and will be reaffirmed in the 2011/12 submission.
8. CONCLUSIONS

Emmerson’s considers the area covered by EL 10052, now covered by SEL 28774 to be highly prospective. During 2010 Emmerson applied the VRMI concept to the area revealing extensive VRMI anomalism. Drilling of this anomalism confirmed the presence of ironstone, although assay results were mixed. Emmerson’s application of HeliTEM and the success of the ‘Proof of Concept’ drilling of HeliTEM anomalies in the Gecko Area has increased the potential for EL 10052. Emmerson will continue with ‘Proof of Concept’ drilling for the remainder of 2011, should success continue then during 2012, Emmerson will look to conduct further HeliTEM surveys of its highest ranked prospective areas, EL 10052 (now SEL 28774) would be one of these, with the aim of identifying areas HeliTEM targets within the VRMI anomalism for drill testing.

Emmerson considers EL 10052 to be highly prospective and is encouraged by early interpretations of the HeliTEM and VRMI data and will continue exploration over the area under the newly granted SEL 28774.
9. EXPENDITURE

Expenditure for the term of the tenure for EL 10052 is as follows:

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