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**EL 9930**

*New Moon*

**FINAL REPORT**

*LICENSEE:*

**GIANTS REEF EXPLORATION PTY LTD**

A.B.N.009 200 346

*(A wholly owned subsidiary of Emmerson Resources Ltd)*

19 October 2001 – 18 October 2011

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JANUARY 2012

**DISTRIBUTION:**

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**MAP SHEETS:**

TENNANT CREEK	SE53-14
TENNANT CREEK	5758
	1:100 000

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## 1. SUMMARY

This Final Report records exploration work done on EL 9930 between 19 October 2001 and 18 October 2011.

Emmerson's exploration activities are currently focused on 'proof of concept' drilling of identified HeliTEM anomalies, further integration of the HeliTEM data, VRMI, geological, historical, geochemical and other relevant data sets to further define targets for drill testing.

Focus over the next reporting period will be on the areas where HeliTEM surveys have already been conducted, given success in these areas then HeliTEM will be expanded to other tenements, with the aim of generating quality targets for drill testing, this will occur during the 2012 field season and further into the future.

As EL 9930 has expired all future exploration will be conducted under EL 28761.

Although HeliTEM is yet to be flown over EL 9930, the expansion of HeliTEM surveys is likely to include the licence.

Emmerson considers EL 9930 to remain prospective until it can be fully assessed by HeliTEM, once the HeliTEM data and interpretations have been proved and made applicable across the Tennant Creek Mineral Field.

EL 9930 expired on 18 October 2011.

## 2. INTRODUCTION

Exploration Licence 9930 NEW MOON, is located approximately 18km north east of the Tennant Creek Township on the Tennant Creek 1:100 000 scale map sheet (5758).

Figure 1 below, shows the location of EL 9930 and surrounding tenure.

This Final Report records exploration work done on EL 9930 between 19 October 2001 and 18 October 2011.

## 3. LOCATION

Exploration Licence 9930 NEW MOON, is located approximately 18km north east of the Tennant Creek Township on the Tennant Creek 1:100 000 scale map sheet (5758).

Access to the Licence area is via the Stuart Highway, east via Peko Road, then along the road to the Lone Star Mine. Access to the licence from the Lone Star Mine Road is east via a series of unsealed tracks and fence line tracks, which during and immediately after rain generally become inaccessible.

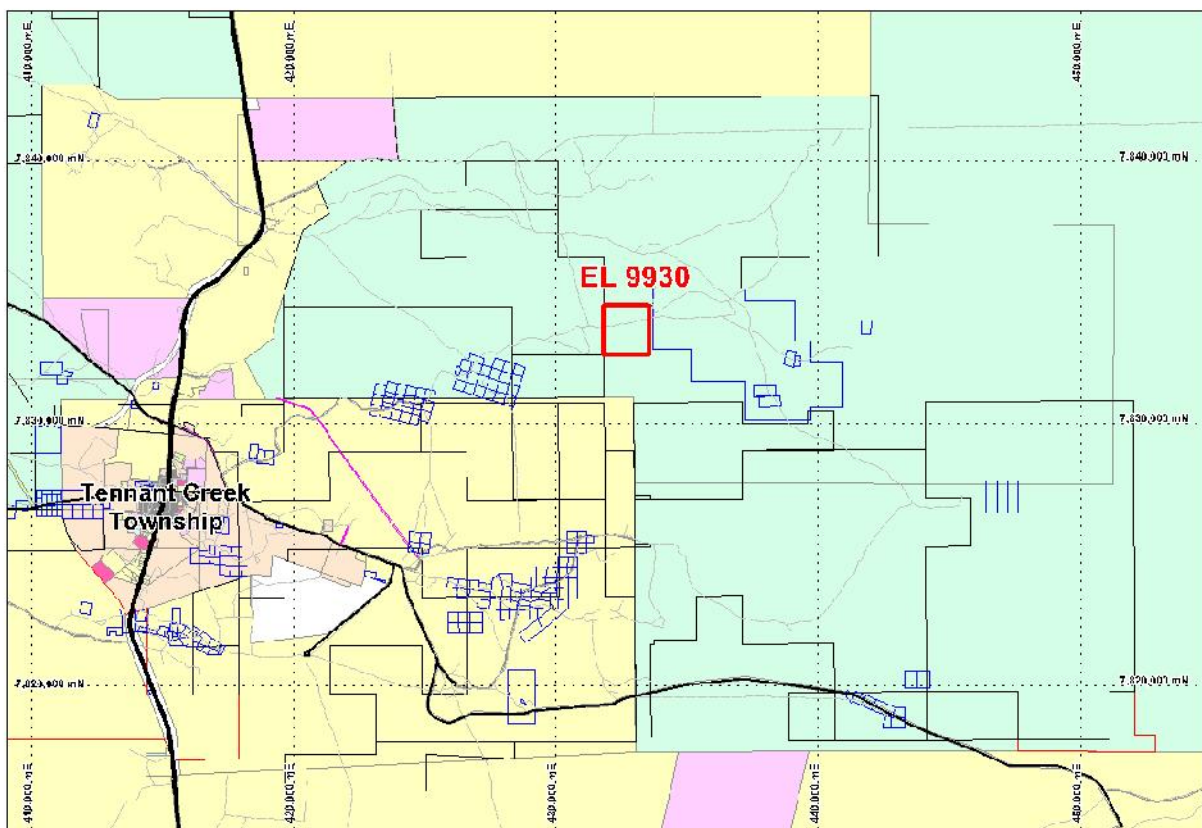


Figure 1: Location of EL 9930 and surrounding tenure.

## 4. TENURE

Exploration Licence 9930 New Moon, consisted of one graticular block and was granted to Giants Reef Exploration Pty Ltd (a wholly owned subsidiary of Emmerson Resources Pty Ltd) on the 19 October 2001 for a period of six years, with 2 year renewal terms granted in 2007 and 2009.

The entire licence falls on within with in NT Portion 494, Perpetual Pastoral Lease 1142 (Tennant Creek Station) and 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 Central Land Council, and Giants Reef.

The Exploration License expired on 18 October 2011 and has been replaced by EL 28761 which was granted on 16 November 2011. EL 28761 amalgamates the area covered by the now expired EL's 8879, 10113, 10203, 10312, 9930 & 27135.

## 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 geology of EL 9930 is dominated by outcrops, which coincide with ridges and isolated hills that dominate the central and northern regions of EL 9930. These ridges and isolated hills consist of scattered outcrops of weathered siltstone and greywacke of the Palaeoproterozoic Warramunga Formation, and most likely underlie the Cainozoic colluvium scree, alluvial red soil plains and less extensive alluvial deposits in active channels and on flood plains. The Quartz Hill Fault system dominates the structure of the licence, and is the major control on mineralisation and ironstone emplacement.

The licence contains the historical New Moon mine workings (12.9oz Au @ 5g/t).

In 1995 the Northern Territory Geological Survey released geological maps and explanatory notes for the Tennant Creek 1:250,000 sheet, and the Tennant Creek 1:100 000 sheet 5758, which covers the area of the license.

## 6. EXPLORATION

### 6.1 Targets and Concepts

Exploration for large base metal deposits, 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 – 19 October 2001 to 18 October 2011

Exploration License 9930 was initially applied for to cover the area over the known mine workings of New Moon, and to further investigate, review and model an isolated magnetic anomaly.

Previous exploration work conducted on EL 9930 is dominated by the New Moon mine workings. The New Moon mine was worked to a depth of 18m but no records of production could be found. The main shaft of the mine is situated on the southern side of the conical hill in the centre of the prospect.

GeoPeko conducted exploration work over the New Moon area, which included: Drilling of five airtrac holes ATH 1 – 5 and one diamond hole DDH1 into the central hill. ATH 1 – 4 intersected almost solely hematite-quartz ironstone. AHT 5 intersected hematitic sediments. Au was slightly anomalous in all holes, up to 0.26 g/t in AHT 1, while Bi was up to 1.36% in AHT 2. DDH1 was terminated at a depth of 76.2m after intersecting 9.25m

of ironstone, assays returned results of 1.6m @ 15.3g/t Au, 330ppm Cu, 15440ppm Bi from 24.2m; Lead Isotope analysis was undertaken on samples from the diamond and airtrac holes. Results are listed in table 3:

Table 3: GeoPeko Lead Isotope Analyses at New Moon/Explorer 196

	208/206Pb	207/206Pb	206/204Pb	207/204Pb	208/204Pb
EX196/1 (core)	1.9750	0.8182	19.192	15.703	37.904
EX196/2 (chip)	1.9938	0.8072	19.531	15.765	38.940
EX196/3 (chip)	1.8470	0.7445	21.418	15.946	39.559
EX196/4 (chip)	1.9725	0.8170	19.229	15.710	37.928

Five rock chip samples were collected from around the mine area; results returned are listed in the table 4:

Table 4: New Moon Rock Chip Assays (ppm)

Number	Au	Cu	Bi
F30651	0.03	98	7
F30652	0.05	452	81
F30653	0.01	137	13
F30654	0.22	291	64
F30655	0.07	228	10

Under a Joint Venture between North Flinders Mines Ltd (NFM) and PosGold further exploration of the New Moon area was conducted during the second half of 1992. This exploration work included: Ground Magnetic Survey – With the regional aero-magnetics showing the New Moon anomaly as a small but distinct magnetic high in a sea of magnetic low material, closer and more detailed surveys needed to be conducted. Nine north south lines of ground magnetics were conducted by NFM over the tenement for a total survey of 4.5km. Lines were 50m apart and readings were taken every 10m. The diurnally corrected data was used to create a contour plan. The plan is dominated by the explorer 196 magnetic anomaly, which has a strong dipole in the south. The dipole is very even and has an approximate width of 30m, is steep sided (indicating a shallow source).



Geophysical consultant Hugh Rutter expressed the opinion that it was unlikely to continue at depth, or to be laterally extensive; Vacuum drilling consisted of 432 vacuum holes, totalling 2378m, hole spacing was determined by the prospectivity of the geology encountered. A Geological map was produced from the bottom of hole geology logged. This drilling program revealed that the bedrock in the tenement was dominated by Warramunga Formation Siltstones and fine to medium grained greywackes. The rocks were moderately hematitic and sporadically quartz veined. Two main areas of ironstone were delineated, the main ironstone body making up the central hill and a minor ironstone occurrence in the north west of the prospect. Results from the drilling returned an anomaly coinciding with the main ironstone. A peak Au value of 29ppb occurred in dark pink indurated slightly cherty siltstone with 10% white vein quartz and 2% black manganese staining. A peak Cu value of 1464ppm occurred in oxidised hematitic ironstone and yellow clay. A peak Bi value of 68ppm occurred in black hematite ironstone, partly oxidised to gossan yellow. The main zone of anomalous geochemistry is extended east by Cu values (and to a lesser extent by Au and Bi) together with minor ironstone occurrences; A seven hole RAB, totalling 392m and RC, totalling 132m, drilling program was conducted in four sections. Section one was aimed to test the south eastern extension of the main ironstone body. Section two passed through the mine hill at New Moon. Section three was aimed at testing the northern extension. Section four was aimed to test for a second ironstone zone in the northwest of the prospect. Significant results are summarised in table 5:

Table 5: Significant RAB and RC intersections.

Hole No.	From	To	Au (ppm)	Cu (ppm)	Bi (ppm)	Geology
NMB001	15	18	0.44	2976	5	Siltstone with up to 80% Mn
	18	21	0.27	2150	19	Siltstone with up to 80% Mn
NMB002	36	39	0.10	835	15	Silst + 60% He vns
NMR001	38	41	0.74	261	212	Mt ironstone
	41	44	0.35	219	16	Mt ironstone
	44	47	0.25	152	20	Mt ironstone
	50	53	1.02	300	109	Bdry b/n Mt

						Festone (upper) and He-q Festone (lower)
NMR002	47	50	0.30	337	82	Si/chert-slst-he
	53	55	0.35	353	632	Si/chert-slst-he

In 1996 Normandy conducted an evaluation of all previous exploration data over MC C1350 (MCC held within EL 9930). The Explorer 196 magnetic anomaly over the New Moon mine within MC C1350 was chosen for a Mobile Metal Ion (MMI) geochemical survey. The objective of the MMI survey was to assess the soils over Explorer 196 magnetic anomaly to determine whether there was anomalous Au, Cu, Bi and other indicator ions that may suggest the magnetic anomaly is Au/Cu/Bi mineralised. The samples were taken on 50m spaced lines at 100m intervals. A total of 38 samples were collected over MC C1350 a surrounding tenure. The results of the program were reported by Normandy as inconclusive. There was no reported follow up exploration to the results from the MMI survey. An environmental audit covering all historical disturbances in the Tennant Creek mineral field was undertaken by NTC in 1998. The audit located and detailed all occurrences of substantial disturbance including mine workings, tracks, dumps, drill holes, excavations, buildings and rubbish. The survey documented the historic New Moon workings within the Mineral Claim.

In May 1999 NFM were appointed as operators of the Central Joint Venture tenements, including MC 1350. NFM conducted no on-ground work over the Claim.

During the 1999/2000 year of tenure, Northern Gold N.L., as manager of the Mineral Claim completed evaluation studies and data compilation of the Tennant Creek region, including MC C1350.

In June 2001, Giants Reef purchased NTC and all its assets, and took over management of the Joint Venture tenements including MC C1350. Giants Reef gained full ownership and management of MC C1350 in January 2003. Giants Reef conducted no on-ground work over the Claim.

In September 2002 an internal review of the Giants Reef tenement portfolio and a classification of exploration opportunities included a detailed assessment of all the tenements purchased from NTC, including the Central Joint Venture tenements.

Giants Reef recognised that significant exploration potential at Explorer 196 remains, however will require a great deal of work. Giants Reef noted that the prospect ranked high on the NTC list, however is located a long way east of Tennant Creek. As part of the a

rationalisation program the Claim was recommended for surrender to allow exploration over Explorer 196 to be conducted under Giants Reefs granted Exploration Licence 9930.

Giants Reef surrendered the Mineral Claim 1350 on the 31st December 2003.

In the following tenure years Giants Reef's report to DBIRD, "Mineral Claim C1350, New Moon Final Report for the period 19 September 1995 to 31 December 2003" (J Cahill, February 2004) details all the historical exploration conducted over the Mineral Claim. As a consequence all the ground previously explored under MC C1350 is now being explored under EL9930. The New Moon mine is located over a magnetic anomaly referred to as Explorer 196, and no other magnetic or gravity anomalies have been identified in EL 9930 by Giants Reef. During the third tenure year all the historical drill and geochemical data over the EL was collated and converted from datamine format, and combined with the Company's database. This data has been reviewed for target areas with shallow oxide Au potential. Review of the vacuum and geochemical data have identified a number of small geochemical Au anomalies with a NW-SE strike over Explorer 196.

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. Emmerson has now built a highly capable and skilled staff including an excellent team of Geoscientists to exploit Emmerson's strong prospective tenement holding in the Tennant Creek Region.

During 2010 Emmerson and contract geophysical consultants, Spinifex Geophysics, further developed a processing technology, Vector Residual Magnetic Intensity (VRMI) aimed at existing magnetics data from Emmerson's Tennant Creek tenure package, figures 2 (pre-VRMI) & 3 (VRMI) represent the success of the VRMI technology.

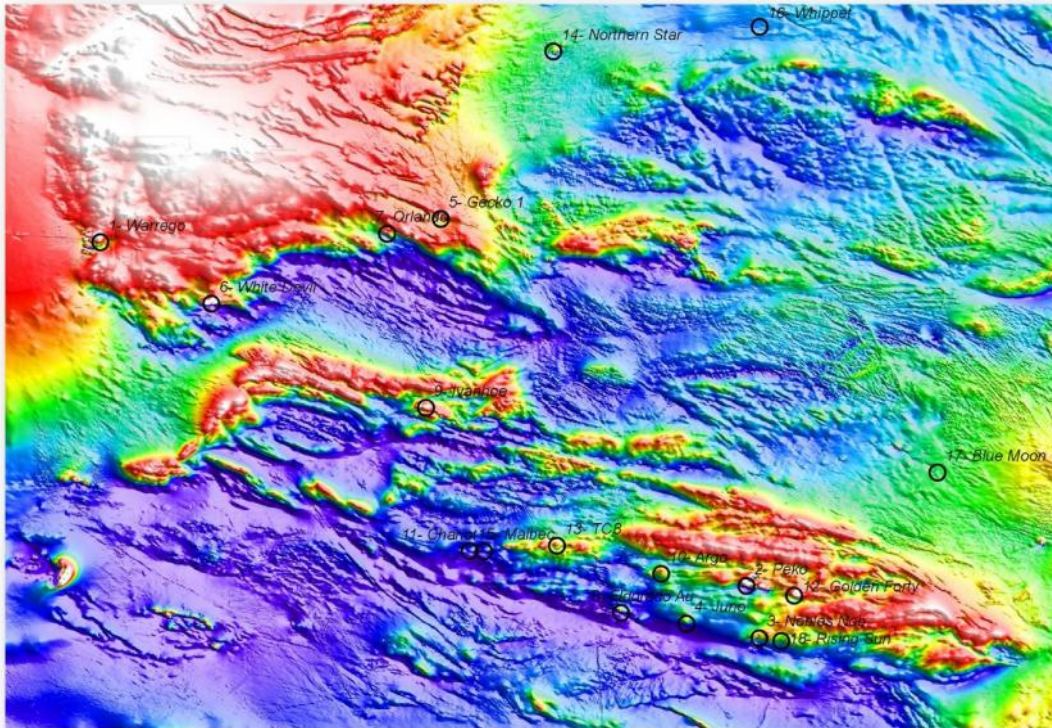


Figure 2: Regional Magnetic Image (pre-VRMI)

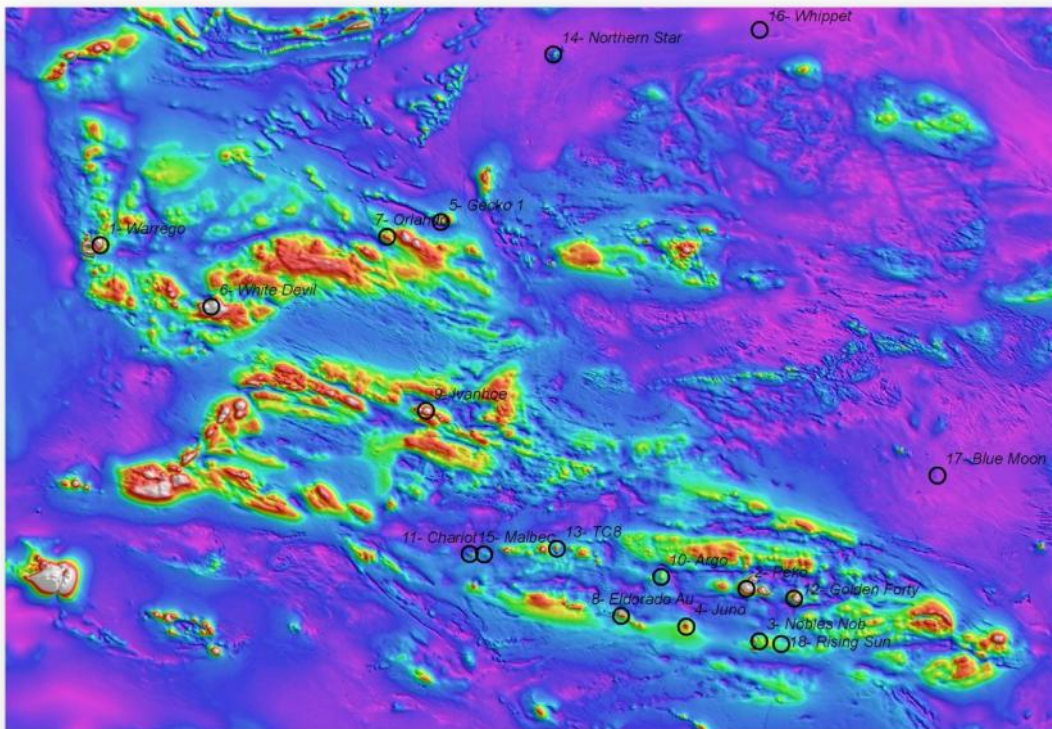


Figure 3: Regional Magnetic Image using VRMI

Immediate identification of highly prospective VRMI targets reprioritised Emmerson's target matrix, the Red Bluff Area in Emmerson's Western Project 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.

Further to the VRMI technology Emmerson has completed a Heli-TEM survey over a number of areas early in 2011 to firstly orientate the survey over known deposits and secondly to fly over the highest priority VRMI target areas. Heli-TEM is a helicopter mounted system capable of measuring the conductivity of the rocks to significant depth and will utilise 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 80times the background levels. Emmerson hopes that encouraging results from the Heli-TEM survey will further refine the exploration search workspace within recognised VRMI targets areas.

Emmerson is currently focused in the Northern Project Area on 'proof of concept' drilling for the recently applied geophysical HeliTEM survey. Results to date have been very encouraging with intercepts of mineralised rock, predominately copper & gold. Exploration in this area will continue into 2012 to further prove up the concept around the application of HeliTEM. Should results continue to be positive then a detailed analysis of the HeliTEM over the Golden Forty and East Peko Areas, immediately to the south of the licence will be undertaken applying all knowledge gained from the drilling at Gecko and Orlando and from the various trials of HeliTEM data processing techniques. Should the results of this analysis be encouraging then Emmerson would propose to expand its HeliTEM surveys to include further tenure including EL 9930. There is also potential for further geophysical surveys such as Induced Polarisation (IP), prior to drill testing of any identified HeliTEM anomalies.

## **7. REHABILITATION**

Emmerson's exploration of the licence was dominated by non-invasive geological, geophysical and geochemical reassessments and reviews and non-invasive geophysical surveys. Previous holders of the licence conducted a small amount of RC Drilling and reported that rehabilitation had been completed for all holes drilled in accordance with the relevant Mining Management Plan.

## **8. CONCLUSIONS**

Emmerson's exploration activities are currently focused on 'proof of concept' drilling of identified HeliTEM anomalies, further integration of the HeliTEM data, VRMI, geological, historical, geochemical and other relevant data sets to further define targets for drill testing.

Focus over the next reporting period will be on the areas where HeliTEM surveys have already been conducted, given success in these areas then HeliTEM will be expanded to other tenements, with the aim of generating quality targets for drill testing, this will occur during the 2012 field season and further into the future.

As EL 9930 has expired all future exploration will be conducted under EL 28761.

Although HeliTEM is yet to be flown over EL 9930, the expansion of HeliTEM surveys is likely to include the licence.

Emmerson considers EL 9930 to remain prospective until it can be fully assessed by HeliTEM, once the HeliTEM data and interpretations have been proved and made applicable across the Tennant Creek Mineral Field.

## 9. EXPENDITURE

Expenditure for the term of the tenure for EL 9930 is as follows:

ITEM	YEAR 1	YEAR 2	YEAR 3	YEAR 4	YEAR 5	YEAR 6	YEAR 7	YEAR 8	YEAR 9	YEAR 10	TOTAL
Geology		\$123	\$592	\$1,221.08	\$1,355.89	\$2,924	\$880	\$3,123	\$2,532	\$8,110.00	
Geophysics				\$0.00	\$0		\$3,560.60	\$1,200	\$3,505.50	\$11,527.75	
Geochemistry				\$0.00	\$0						
Surveying				\$0.00	\$0						
Data Integration			\$140	\$500.00	\$321.00			\$535	\$2,880		
Drafting				\$200.00	\$200.00						
Analytical				\$0.00	\$0						
Drilling				\$0.00	\$0						
Tenure Admin	\$450	\$171	\$237	\$254.07	\$854.07	\$250	\$480	\$240	\$727.50	\$1,616.00	
Administration and Overheads			\$426	\$178.22	\$143.65						
Rehabilitation				\$0.00	\$0						
<b>TOTAL</b>	<b>\$450</b>	<b>\$294</b>	<b>\$1,395</b>	<b>\$2,353.37</b>	<b>\$2,874.61</b>	<b>\$3,174</b>	<b>\$4,920.60</b>	<b>\$5,098</b>	<b>\$9,645</b>	<b>\$21,253.75</b>	<b>\$51,458.33</b>

**EMMERSON RESOURCES LTD*****HARD COPY REPORT META DATA FORM***

REPORT NAME: EL 9930 NEW MOON FINAL REPORT 19 OCTOBER 2001 TO 18 OCTOBER 2011

PROSPECT NAMES(s):

GROUP PROSPECT NAME:

TENEMENT NUMBERS(s): EL 9930

ANNIVERSARY DATE: 19 OCTOBER

OWNER/JV PARTNERS: GIANTS REEF EXPLORATION PTY LTD

AUTHOR(s): ADAM WALTERS

COMMODITIES: GOLD, COPPER, LEAD, ZINC, SILVER, BISMUTH

MAPS 1:250 000: TENNANT CREEK SE53-14

MAPS 1:100 000: TENNANT CREEK 5758

MAPS 1:50 000:

TECTONIC UNIT(s): TENNANT CREEK INLIER,

STRATIGRAPHIC NAME(s) WARRAMUNGA FORMATION, CAMBRIAN WISO BASIN

AMF GENERAL TERMS:

AMF TARGET MINERALS: GOLD, COPPER, LEAD, ZINC.

AMF GEOPHYSICAL:

AMF GEOCHEMICAL:

AMF DRILL SAMPLING:

HISTORIC MINES:

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