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# FOURTH ANNUAL REPORT

# FOR EXPLORATION LICENCE 8933

## FOR THE PERIOD 9/1/98 TO 8/1/99

## TENNANT CREEK DISTRICT, NORTHERN TERRITORY

## 765 EAST PROSPECT

## TENNANT CREEK 1:250,000 SHEET SE 53-14



**VOLUME 1 OF 1**

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**DATE:** FEBRUARY 1999

**AUTHORISED BY:**

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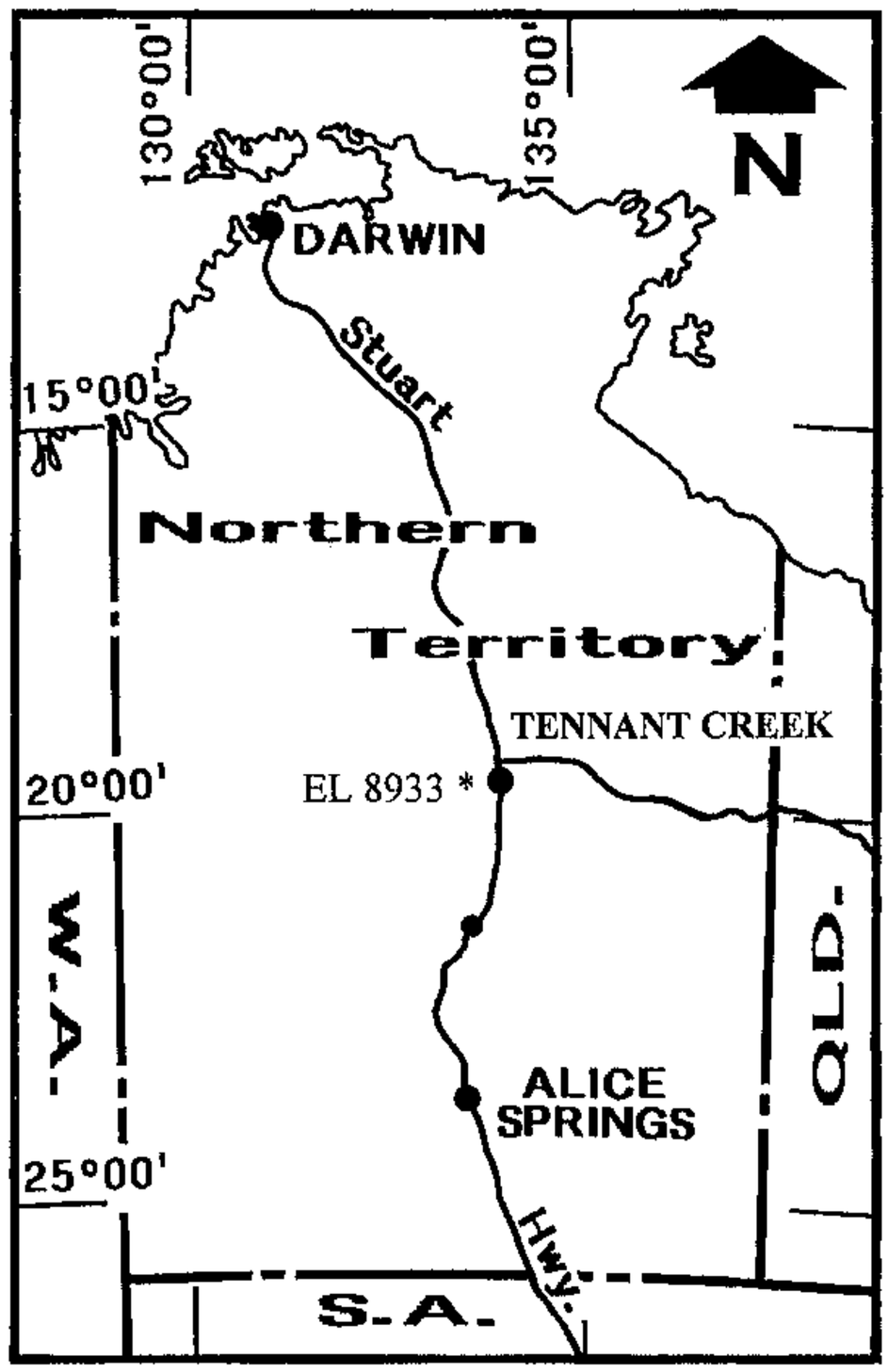
## SUMMARY

**REPORT NO:** TENNANT CREEK: 99006 ADELAIDE: 23697
**TITLE:** FOURTH ANNUAL REPORT FOR EXPLORATION LICENCE 8933 FOR THE PERIOD 9/1/98 TO 8/1/99, TENNANT CREEK DISTRICT, NORTHERN TERRITORY, 765 EAST PROSPECT, TENNANT CREEK 1:250,000 SHEET SE 53-14, VOLUME 1 OF 1.
**AUTHOR:** P O J MOUCHET
**DATE:** FEBRUARY 1999




EL 8933 is located 3km east of the currently operating White Devil Mine which is situated approximately 45km west of Tennant Creek. Access to the lease is via dirt tracks extending east from the White Devil mine site.

This report details work undertaken on EL 8933 during the fourth year of tenure (9 January 1998 to 8 January 1999).

Normandy completed a regional helimagnetic survey between Warrego and Gecko in early 1998. The survey utilised Normandy Tennant Creek Pty Limited's in-house geophysical equipment and was flown on NS lines, 50m apart, at a sensor height of 30m. The survey data confirmed the presence of two small magnetic highs in the north of the licence. Modeling of the anomalies identified two separate magnetic bodies of similar dimensions

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# 1 CONCLUSIONS & RECOMMENDATIONS

Normandy Tennant Creek Pty Limited (Normandy) completed a regional helimagnetic survey between Warrego and Gecko in early 1998. The survey utilised Normandy's in-house geophysical equipment and was flown on NS lines, 50m apart, at a sensor height of 30m. The survey data confirmed the presence of two small magnetic highs in the north of the licence. Modeling of the anomalies identified two separate magnetic bodies of similar dimensions. The first body has an ellipsoid shape (20m wide × 200m long × 400m deep) and is 263m from surface. The second body is also an ellipsoid shape (40m wide × 200m long × 400m deep) and is 401m from surface. The bodies are relatively deep but their structural position along strike from the White Devil Mine makes them prospective.

It is recommended to refine the magnetic model. The shallowest target should then be tested with a 350m RC drill hole. The drill hole will be down hole magprobed upon completion to clarify the dimensions and position of the ironstone if it is present.

# 2 INTRODUCTION

This report details work undertaken on EL 8933 during the fourth year of tenure (9 January 1998 to 8 January 1999).

# 3 LOCATION & ACCESS

EL 8933 is located 3km east of the currently operating White Devil Mine which is situated approximately 45km west of Tennant Creek. Access to the lease is via dirt tracks extending east from the White Devil mine site (Figure 1). The climate of the Tennant Creek district is mild and dry through most of the autumn to spring months. The summer period is hot with seasonal heavy rainfall between January and March making access very difficult during these periods.

# 4 TENURE

Exploration Licence (EL) 8933, known as "765 East", was granted to Normandy on 9 January 1995 for a period of two years. The licence comprises one block and has been renewed twice (in 1997 and 1999) and is due to expire on 8 January 2001.

# 5 REGIONAL GEOLOGY

The geological understanding of the Tennant Creek Inlier has been recently advanced by detailed geological mapping over the Tennant Creek and Flynn 1:100,000 map sheets (Donnellan et. al. 1995), precision dating of stratigraphic components of the region (Compston, 1995) and regional geophysical interpretations.

The oldest exposed Proterozoic lithofacies in the Tennant Creek Inlier are the metasedimentary rocks of the Warramunga Formation, which are the hosts to the ironstone Au-Cu-Bi mineralisation of the Tennant Creek Goldfield. These Palaeoproterozoic metasediments were deposited approximately 1860 Ma. Deformation and intrusion of the Warramunga Formation by volumous porphyries and granitoids occurred during the Barramundi Orogeny (1858 Ma to 1845 Ma).

133°45'
370000E
390000E
134°00'
7850000N
19°30'
7830000N
19°45'
Warrego
White Devil
EL 8933
Warrego Road
Barkly Hwy
Stuart Highway
NTG Pipeline
TENNANT CREEK
N
5k
Darwin
Northern Territory
Tennant Creek
Barrow Creek
Alice Springs
W.A.
S.A.
QLD.
Figure No. 1
Normandy Tennant Creek Pty Ltd
EL 8933 - 765 EAST
LOCATION PLAN
Compiled/Drawn: PM/MCS
Date: JAN.1999
Scale: 1:250000

Following deformation and uplift the volcanics and volcaniclastics of the Flynn Sub-Group were erupted (1845 Ma to 1827 Ma), with intrusion of porphyries and minor granitoids into the Warramunga Formation. An additional deformation event preceded the deposition of the Hatches Creek Group/Tomkinson Creek Sub-Group (1820 Ma to 1785 Ma) and the intrusion of late-stage granitoids and porphyries into both the Warramunga Formation and Flynn Sub-Group at 1650-1712 Ma.

## 6 LOCAL GEOLOGY

In EL 8933 there are minor outcrops of silicified and weathered siltstones and greywackes of the Warramunga Formation and intrusive quartz-feldspar porphyries. Bedding and cleavage in the sediment outcrops is subvertical and strikes WNW. The low magnetic response in the ground magnetics and regional airborne magnetics in the SE corner of the licence suggests that the Red Bluff Granite is present beneath the overlying aeolian sands and sheet wash cover (Morris, 1998).

## 7 PREVIOUS WORK

There is no recorded exploration carried out on EL 8933 before 1991. On the 9 August 1991 EL 7431 was granted for four years to the Tennant Creek Joint Venture, which consisted of North Flinders Mines Ltd and Roebuck Resources NL Ltd. The bottom half of EL 7431 covered the graticular block now known as EL 8933. This block was relinquished from El 7431 on 8 August 1994. A summary of work carried out on EL 7431 is listed below.

- Basic field mapping identified minor outcropping areas of indurated and silicified sediments (siltstone and greywackes) of the Warramunga Formation (Hatcher & Halfpenny, 1991).
- Surface soil sampling was carried out using Roebuck Resources NL Ltd's in-house 'M' technique over a 200m x 200m grid. This technique assayed the magnetic fraction within a surface soil sample. Anomalous Au results up to 118 ppb Au were located in the SE corner of EL 8933 but were discounted as they were located over granite (Archibald, 1994). Doubt over the effectiveness of the 'M" sampling technique exists due to the probability of the sample medium being transported
- North Flinders Mines Ltd acquired the Aerodata multiclient aeromagnetic and radiometric package covering EL 7431 in 1992. Geophysical Exploration Consultants Pty Ltd interpreted the data. A magnetic anomaly was identified that correlated with a "M" surface geochemical anomaly in the northern corner of what is now known as EL 8933.
- A programme of forty-eight vacuum drill holes was then carried out over the coincident anomalies. The holes intersected weathered siltstone and greywacke with some weak alteration (hematite after chlorite). Gold, copper and bismuth assays received were uniformly low.

During 1995, Normandy Gold Ltd completed 2.5km of gridding and drilled 74 vacuum drill holes for 425m along the western side of EL 8933. No anomalous values were returned (Morris, 1996).

In 1996 an extensive exploration programme that included 134 vacuum drill holes and a ground magnetic survey was carried out (Bosel, 1997). Hematite stringers were observed in two vacuum drill holes in the same vicinity as a magnetic high present in the ground magnetic data in the north of the licence.

The ground magnetic survey carried out in the second year of tenure identified two minor magnetic highs in the north of the licence. Modeling of these features suggested it was due to the presence of separate magnetic bodies. However the modeling was limited by the lack of magnetic data to the north of the anomaly and it is not regarded as accurate (Morris, 1998).

Normandy's in-house geophysical department has been trialing a new geophysical technique known as a Moving Loop Time Domain Electro-Magnetic (TDEM) resistivity survey that measures resistivity in the vertical plane. A one-kilometre line survey was carried out over the magnetic high on line 5500E to see if the TDEM could identify the presence of an ironstone body. There was no significant resistor or conductor present at 1400N, the centre of the magnetic high. A resistive feature located at 400N may be silicification along the granite contact (Morris, 1998).

# 8 WORK CARRIED OUT DURING REPORTING PERIOD

## 8.1 Helimagnetic survey

Normandy completed a regional helimagnetic survey between Warrego and Gecko in early 1998. The survey utilized Normandy's in-house geophysical equipment and was flown on NS lines, 50m apart, at a sensor height of 30m. The survey data confirmed the presence of two small magnetic highs in the north of the licence. Modeling of the anomalies identified two separate magnetic bodies of similar dimensions. The first body has an ellipsoid shape (20m wide × 200m long × 400m deep) and is 263m from surface. The second body is also an ellipsoid shape (40m wide × 200m long × 400m deep) and is 401m from surface. The bodies are relatively deep but their structural position along strike from the White Devil Mine makes them prospective. A contour plot of the acquired data for EL 8933 is provided in Figure 2.

# 9 EXPENDITURE STATEMENT FOR THE PERIOD 9/1/98 TO 8/1/99

During year four of tenure, EL 8933 incurred an allowable exploration expenditure of $18,273 against a covenant of $4,500. A breakdown of this expenditure follows (Table 1):

Table 1: Exploration Expenditure for EL 8933 from 9/1/98 to 8/1/99

| EXPENSE | COST | |
|---|---|---|
| Employee Costs | $ | 12,640 |
| Overheads | $ | 112 |
| Drilling | $ | 0 |
| Assays | $ | 0 |
| Operating Costs | $ | 2,328 |
| Specialist Services | $ | 3,167 |
| Tenement Costs | $ | 26 |
| Research | $ | 0 |
| **TOTAL** | **$** | **18,273** |

The Tenement Rental Costs incurred are $320; Normandy total expenditure on EL 8933 for year four of tenure is $18,593.

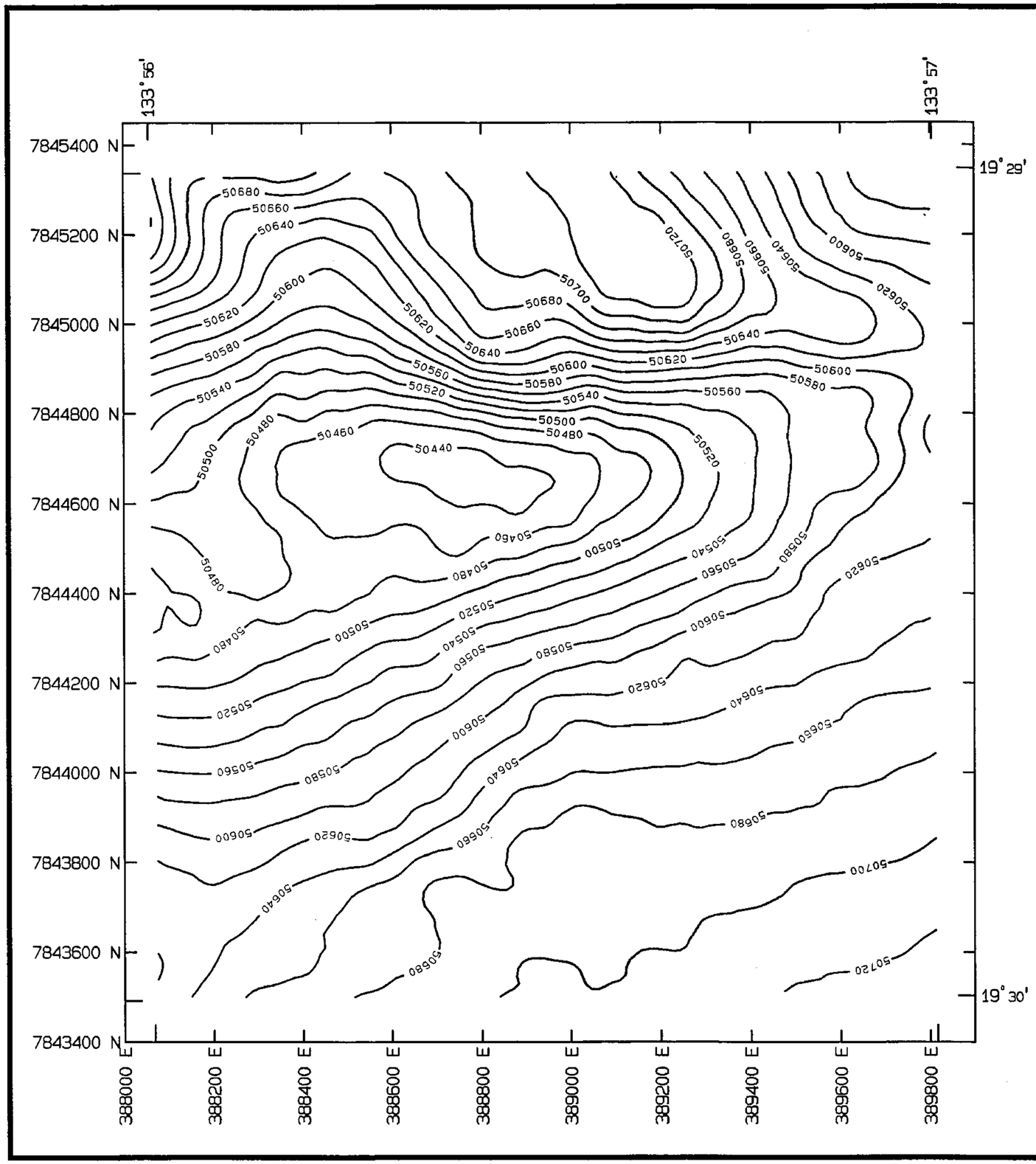


**Figure No. 2**

NORMANDY TENNANT CREEK PTY LTD

765 EAST - EL8933

TOTAL FIELD MAGNETIC CONTOURS

HELIMAGNETICS SURVEY DEC 97 - JAN 98
SENSOR HT 30m LINE SPACING 50m
SAMPLE INT 7m LINE DIRECTION N-S
DATA CORRECTED, LEVELLED AND GRIDDED 12.5m
DHI 1999JAN19

## 10 RECOMMENDED WORK PROGRAMME & PROPOSED EXPENDITURE FOR THE PERIOD 9/1/99 TO 8/1/00

The fifth year exploration programme will include refining the magnetic model. The shallowest target would then be tested with a 350m RC drill hole. The drill hole will be down hole magprobed upon completion to clarify the dimensions and position of the ironstone if it is present. The proposed exploration expenditure for EL 8933 for year five of tenure is as follows (Table 2):

Table 2: Proposed Exploration Expenditure for EL 8933

| EXPENSE | COST | |
|---|---|---|
| Employee Costs | $ | 3,336 |
| Overheads | $ | 974 |
| Drilling | $ | 11,000 |
| Assays | $ | 1,417 |
| Operating Costs | $ | 2,400 |
| Specialist Services | $ | 400 |
| Tenement Costs | $ | 880 |
| Research | $ | 0 |
| **TOTAL** | **$** | **20,407** |

## 11 ENVIRONMENTAL/REHABILITATION REPORT

Normandy has commenced an active rehabilitation programme over much of the Tennant Creek field. This commitment has been reinforced within the Normandy Group with the appointment of a Group Environmental Engineer to oversee and implement the Group's guidelines and objectives. In addition to this an Environmental Superintendent has been engaged at Tennant Creek to design and implement the Group's objectives throughout the Tennant Creek area.

As an example of the Group's commitment to environmental issues several active rehabilitation programmes are currently being undertaken in the Tennant Creek field. These include programmes at Nobles Nob, Eldorado, White Devil and Warrego.

Environmental Management Plans for the Company's Tennant Creek Operations (Fowler, 1993; Fowler et al., 1998) have been submitted to the Department of Mines and Energy under separate cover. These plans detail the strategies to be implemented over various areas following completion of exploration programmes and mining operations.

## 12 REFERENCES


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# APPENDIX ONE

# BIBLIOGRAPHIC DATA SHEET

# BIBLIOGRAPHIC DATA SHEET

**REPORT NUMBER:** TENNANT CREEK: 99006 ADELAIDE: 23697

**REPORT NAME:** FOURTH ANNUAL REPORT FOR EXPLORATION LICENCE 8933 FOR THE PERIOD 9/1/98 TO 8/1/99, TENNANT CREEK DISTRICT, NORTHERN TERRITORY, 765 EAST PROSPECT, TENNANT CREEK 1:250,000 SHEET SE 53-14, VOLUME 1 OF 1.

**PROSPECT NAME(S):** 765 EAST

**TENEMENT NUMBER(S):** EL 8933

**OWNER/JV PARTNERS:** NORMANDY TENNANT CREEK PTY LIMITED

**AGREEMENT**:

**COMMODITIES:** GOLD, COPPER

**TECTONIC UNITS:** TENNANT CREEK INLIER

**STRATIGRAPHIC UNITS:** WARRAMUNGA FORMATION

**1:250,000 MAP SHEET:** TENNANT CREEK SE53-14

**1:100,000 MAP SHEET:** SHORT RANGE 5659

**KEYWORDS:** HELIMAGNETIC SURVEY, AEROMAGNETIC SURVEY, GEOPHYSICS, EXPLORATION PROPOSAL