NORMANDY NFM Limited

ANNUAL REPORT

# THIRD ANNUAL REPORT FOR THE MT FREDERICK PROJECT

for the
**calendar year 2001**

**Exploration Licenses covered by this report:**
**EL 8301 Alpha**
**EL 8796 Beta**
**EL 8797 Gamma**
**EL 8976 Delta**
**EL 8977 Epsilon**
**EL 8804 Pointer**
**EL 9015 Solo**
**EL 8899 Frederick**

NORTHERN TERRITORY

Volume **1** of **1**

| | | |
|---|---|---|
| **1:250,000 SHEET:** | Tanami | SF52-15 |
| **1:100,000 SHEET:** | Pargee | 4758 |

**AUTHOR:** DM Power

**TENEMENT HOLDERS:** Normandy NFM Ltd.

**DISTRIBUTION:**
- ❑ NT Department of Business, Industry and Resource Development
- ❑ Normandy Mining Limited

# SUMMARY

The Mt Frederick Project, located in the Tanami desert region approximately 150km northwest of the Granites Gold Mine, currently comprises 8 exploration licences. EL's 8804, 8899 & 9015 were granted on the 29th April 1999, while EL's 8301, 8796, 8797, 8976 & 8977 were granted on the 9th September 1999. During 1999, Normandy NFM negotiated an agreement with the NT DME to provide technical reports on the Project Area for an entire field season rather than anniversary year. A submission date of the 28th February each year was established. This is the third annual report for the Mt Frederick Project covering the period to 31/12/2001.

During 2001, exploration comprised surface work over areas of outcrop/subcrop as well as regolith assessment drilling.

Exploration activity during the current reporting period has incorporated:

- Soil Sampling 764 samples
- Aircore Drilling: 103 holes for 5049m, 1514 samples
- Gridding 24.6 line kms

It is proposed that future work will involve the evaluation of prospect areas using surface sampling and/or aircore drilling. Vacuum and Aircore drilling will be utilised to empirically evaluate areas of deeper cover. Conceptual targets may also be tested.

# TABLE OF CONTENTS

**Page Number**

## LIST OF FIGURES



## LIST OF TABLES



## LIST OF APPENDICES

# 1. INTRODUCTION

This report covers the Mt Frederick Project for the period ending 31/12/2001.

The Mt Frederick Project area is located north of the Tanami Road, approximately 150km north west of the Granites Gold Mine. Access to the Tenements can be gained via the Old Tanami Road or from a seismic line that runs north of the Tanami Road toward the Pargee Range. Exploration Licences 8804, 8899 & 9015 were granted to Normandy NFM on 29th April 1999 for a period of six years. Exploration Licences 8301, 8796, 8797, 8976 & 8977 were granted on 9th September 1999.

Table 1 outlines Tenement details.

**Table 1: Mt Frederick Project Tenement Summary**

| EL Number | Name | Blocks | Km² | Grant Date | Expiry Date |
|---|---|---|---|---|---|
| EL 8301 | Alpha | 70 | 225 | 09/09/1999 | 08/09/05 |
| EL 8796 | Beta | 17 | 55 | 09/09/1999 | 08/09/05 |
| EL 8797 | Gamma | 3 | 10 | 09/09/1999 | 08/09/05 |
| EL 8976 | Delta | 8 | 26 | 09/09/1999 | 08/09/05 |
| EL 8977 | Epsilon | 1 | 3 | 09/09/1999 | 08/09/05 |
| EL 8804 | Pointer | 3 | 9 | 29/04/1999 | 28/04/05 |
| EL 9015 | Solo | 1 | 3 | 29/04/1999 | 28/04/05 |
| EL 8899 | Frederick | 93 | 299 | 29/04/1999 | 28/04/05 |
| | | **196** | **630** | | |

## 1.1 LOCATION, ACCESS AND PHYSIOGRAPHY

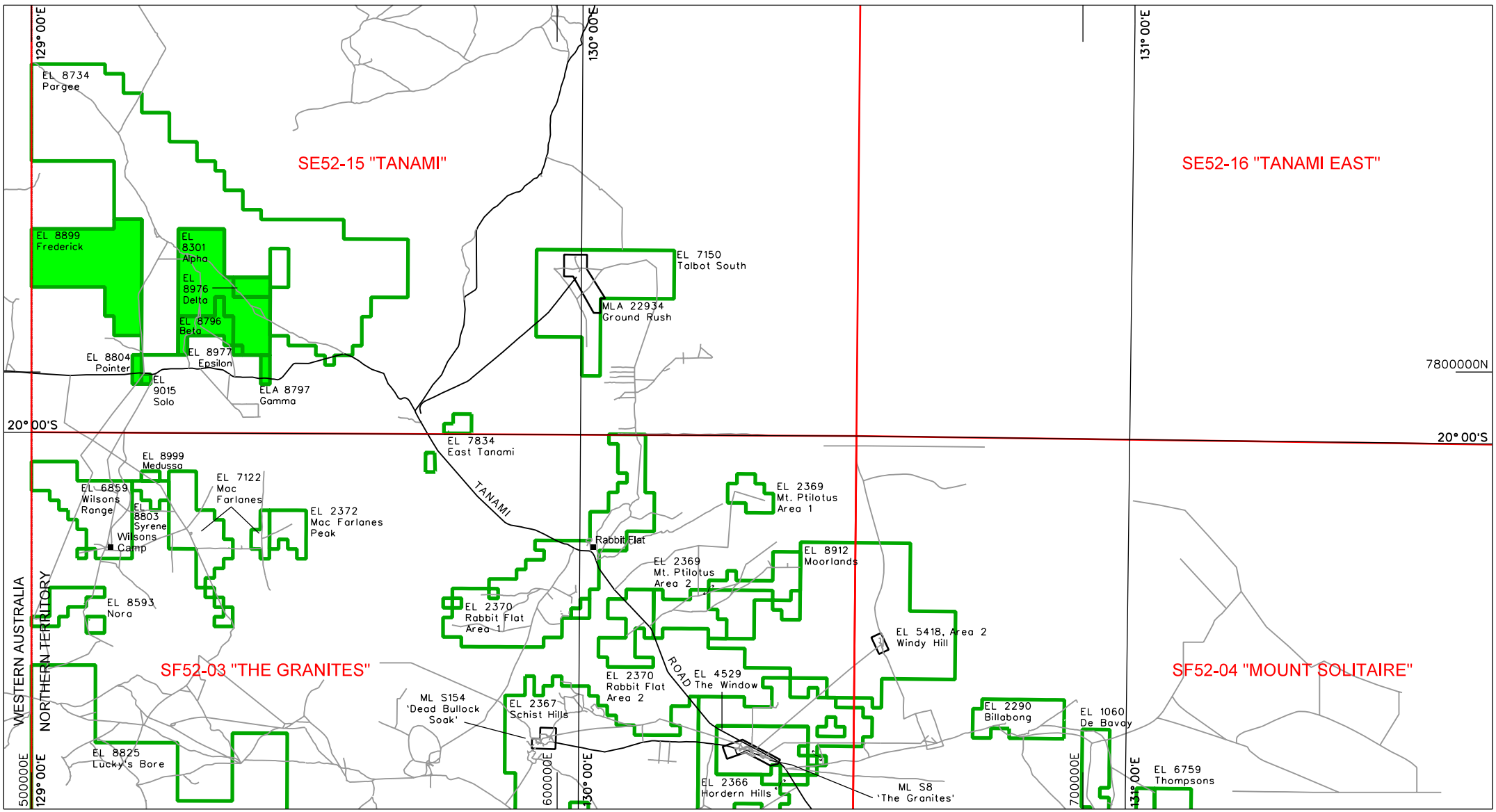
The Mt Frederick Project is located in the Tanami Desert region, approximately 150km NW of the Granites Gold Mine. The area is covered by the Tanami (SF52-15), 1:250 000 series map sheet, as shown on Figure 1.

Access to the Tenements can be gained via the Old Tanami Road or from a seismic line that runs north of the Tanami Road toward the Pargee Range.

Approximately 80% of the project area is dominated by various thicknesses of alluvial cover, the depth of which is greatest within either of two palaeodrainage channels transecting the Alpha and Frederick EL's. Ground water calcrete/silcrete is developed extensively on the margins of these channels. Limited areas of subcrop/outcrop are generally characterised by low, undulating rises. Prominent features include the NS-trending cherty ridges in the central region, the Pargee and Gardiner Ranges to the north of the Project Area and the Killi Killi Hills to the west of the Project area.

Vegetation mainly consists of spinifex with scattered low trees (mostly species of eucalyptus and acacia), shrubs and herbaceous plants, but is generally sparse due to the arid climate and predominantly sandy soils. Few trees are taller than 8m with relatively large trees present only along creeks.

There are no permanent watercourses in the region, however water apparently persists at the Pargee Rockhole and in some creeks for at least a few months following seasonal rains.




Normandy NFM Limited

NORTH FLINDERS EXPLORATION

MT FREDERICK PROJECT

# TENEMENT LOCATION MAP

UTM Zone 52 (AGD66)

30/01/2002

FIGURE 1

..\mtfal001.dgn

510000E

525000E

540000E

EL 8734
Pargee

Pargee Rockhole

. MT FREDERICK
529

EL 8899
Frederick

EL 8301
Alpha

ULYSSES

AMBROSIA

HERCULES

ODYSSEY

Old Tanami Road

EL 8976
Delta

KILLIKILLI
HILLS

KILLIKILLI
HILLS

Claypan Well

VENUS

EL 8796
Beta

WESTERN AUSTRALIA

NORTHERN TERRITORY

ZEUS

MARS

ZEUS
(COOMARIE
EXTENDED)

EL 8977
Epsilon

EL 8797
Gamma

TANAMI

TANAMI ROAD

EL 8804
Pointer

EL 9015
Solo

Cleared line

510000E

525000E

540000E

N

W E

S

0 3000m

SCALE 1:150,000

UTM Zone 52 (AGD66)

Normandy NFM Limited

NORTH FLINDERS EXPLORATION

MT FREDERICK PROJECT

# PROSPECT LOCATION, GRIDS AND ACCESS PLAN

12/02/2002

T:\msdata\diagram\frede

## 1.2 HISTORICAL EXPLORATION

Limited exploration has been undertaken within the region presently occupied by the Mt Frederick Project Area. Power and Nuclear Corporation (PNC Exploration Australia) began exploring the district for uranium in 1986. They generated anomalies at outcrop sites referred to as Areas 20, 21a & 21b. Surface mapping and rock chip sampling was conducted at each site with gold anomalism up to 26 ppb reported at Areas 20 and 21b. Lag sampling at Area 21a generated a cohesive Cu-As anomaly (size and tenor unknown). RAB and DDH drilling and surface geophysical surveys were conducted at Area 20 following the discovery of a thin (0.5m to 2m) occurrence of metatorbenite and saleeite mineralisation. Very few samples were collected from these programs and even less were assayed for gold.

In April 1989 a joint venture was formed between PNC and WMC (Western Desert Joint Venture) at which time WMC began exploring primarily for gold. PNC ceased uranium exploration in the region in 1990. WMC's exploration approach involved lag sampling (-6+2mm fraction) over areas of outcrop/subcrop. Arsenic anomalism (>100ppm) was reported at Areas 21a & 21b with sample densities of 400x40m. A low order gold anomaly (max 42ppb Au) was generated at 800x100m and 200x50m lag sample spacings. This anomaly was named Coomarie Extended.

Interest was first raised in the *Killi Killi Hills* area during 1960 with the discovery of radioactive material by New Consolidated Goldfields. Two prospects were identified; Killi Killi and Watts rise, 11km to the northwest.

At Killi Killi, anomalous radioactivity extends over 1350m strike length, with samples selected using maximum radioactivity criteria returning up to 0.23% $U_3O_8$, 0.1% La and 1ppm Au. The source of the radioactivity is confirmed as Xenotime [$YPO_4$] and is restricted to the basal 6-12m conglomeratic unit of the Middle Proterozoic Gardiner Sandstone. This unit lies unconformably over Lower Proterozoic fine-grained Killi Killi Beds.

Also highlighted is Sr-REE mineralisation consisting of Florencite [$CeAl_3(PO_4)_2(OH)_6$] and Svalbergite [$SrAl_3PO_4SO_4(OH)_6$]. These minerals occur as crystals within the matrix cement, as optically continuous overgrowths on quartz grains and rarely, as reworked fragments of sandstone. Mineralisation is considered to be broadly similar to that in unconformity related U-Au deposits of the South Alligator Valley, NT (Jagodzinski *et al*, 1992).

## 1.3 GEOLOGY

The Geology of the Mt Frederick Project area consists of interpreted Palaeoproterozoic Mt Charles Beds of the Tanami Complex intruded by both felsic and mafic igneous bodies. The Mt Charles Beds have been further subdivided into a number of units by a number of Normandy-NFM Geologists. These subdivisions from oldest to youngest are:

The distal turbidites of the Blake Beds sequence;

Chemical and pelitic sediments of the Davidson Beds;

The proximal turbidites of the Madigan Beds sequence.

Early Proterozoic Pargee Sandstone overlies the Mt Charles Beds to the north of the Project Area. This is inturn overlain by Mesoproterozoic Gardiner Sandstone in various locations, specifically in the Gardiner Range, and along the margin of the Coomarie Dome.

# 2. WORK COMPLETED

## 2.1 SURVEYS

### 2.1.1 Gridding

A total of 24.6 line kilometres of gridding has been established (see Figures 2 and 5) within EL8301 Alpha to assist with the drilling program.

## 2.2 SURFACE SAMPLING

### 2.2.1 Soil Sampling

Two programs were conducted during the reporting period.

Verification sampling was conducted within EL8804. Soil samples were samples were collected at 20m spacings from a depth of 15-25cm using a paint-free pelican pick, plastic sieve with a nylon mesh and a clean, plastic bucket. Material was sieved to a -80# (-0.180mm) size fraction and a 300g amount was double bagged and retained for analysis (see Tables 2 & 4 for details).

A regional surface geochemical program was conducted within EL8899. Samples were collected at 500 x 500m spacings from a depth of 15-25cm using a paint-free pelican pick and a clean plastic bucket. Material was put through a 0.5mm plastic sieve with a nylon mesh and a 500g amount was bagged and retained for analysis. Samples were subject to an in-house digest and assayed at Genalysis by Mass Spectrometry (MS) (see Tables 2 & 4 for details).

Sample locations are shown on Figures 3 and 4.

**Table 2: Soil Sample Details**

| Tenement | Sample ID | Total Samples |
|---|---|---|
| Pointer (EL 8804) | 3242101-3242138. | 38 |
| Frederick (EL 8899) | 3216909-3217100; 3217472-3218000; 3219302-3219306. | 726 |
| | TOTAL | 764 |

## 2.3 DRILLING

### 2.3.1 Aircore Drilling

Aircore drilling was completed within EL 8301. No drilling was conducted within EL's 8796, 8797, 8877, 8804, 8899 and 9015. Refer to Figure 4 for drill hole locations.

Drilling was conducted to define bedrock geology and geochemistry at the Ambrosia and Odyssey Prospects. See Figure 5 for drill hole locations.

Holes were invariably drilled vertically, however, holes were drilled $60^0$ towards AMG east in areas proximal to outcrop. Samples were collected from 3m composites by spearing piles four times from different directions. Samples were sent to Amdel for multielement analysis by the ARM1 analytical technique (see Tables 7 & 8 for details) and drill chips were retained for later inspection and storage.

All drill holes were plugged on completion by inserting a concrete bung approximately 1m below surface. The cavity is then back filled and mounded with the original drill spoils.

**Table 3: Aircore Drill Sample Details**

| Tenement | Drill Hole ID | Sample ID | Total Samples |
|---|---|---|---|
| Alpha (EL 8301) | AMAC0001-0073 | 3140820-3140900; 3674901-3675000; 3139602-3140000; 3254901-3255000; 756701-757000; 3506001-3506011. | 991 |
| | ODAC0001-0030 | 756325-756700; 3506201-3506347. | 523 |
| | | TOTAL | 1514 |

**Table 4. Laboratory, analytical code and method of analysis.**

| SAMPLE TYPE | LABORATORY | CODE | DESCRIPTION |
|---|---|---|---|
| SOIL | Amdel | ARM 1 | 10-20g sample, Aqua Regia digestion, ICP-MS finish. |
| | Genalysis | MS | Mass Spectrometry finish. |
| ACORE | Amdel | ARM 1 | 10-20g sample, Aqua Regia digestion, ICP-MS finish. |

# 3. RESULTS AND DISCUSSION

## 3.1 SURFACE SAMPLING

### 3.1.1 Frederick EL 8899

Assays not yet returned. These will be reported subsequently.

### 3.1.2 Pointer EL 9015

Verification sampling failed to return results of similar magnitude to those reported last year. Contamination of original sample material is suspected.

## 3.2 DRILLING

Drilling intersected interbedded sediments and basalts overlain by aeolian cover and occasional Gardiner Sandstone. Intervals of quartz veining and associated silicic and minor hematitic alteration appear to be coincident with sediment/basalt contacts and/or interpreted linear magnetic structures.

All samples returned assays less than 200ppb Gold.

Refer to Appendix 1 for comprehensive drillhole logs and assays.

530000E 532500E 535000E

7820000N

7817500N

7815000N

EL 8301
Alpha

AMBROSIA

HERCULES

ODYSSEY

EL 8796
Beta

N
W E
S

0 500m
SCALE 1:25,000

UTM Zone 52 (AGD66)

Normandy NFM Limited
NORMANDY EXPLORATION PTY LTD

ANNUAL REPORT FOR THE MT FREDERICK PROJECT

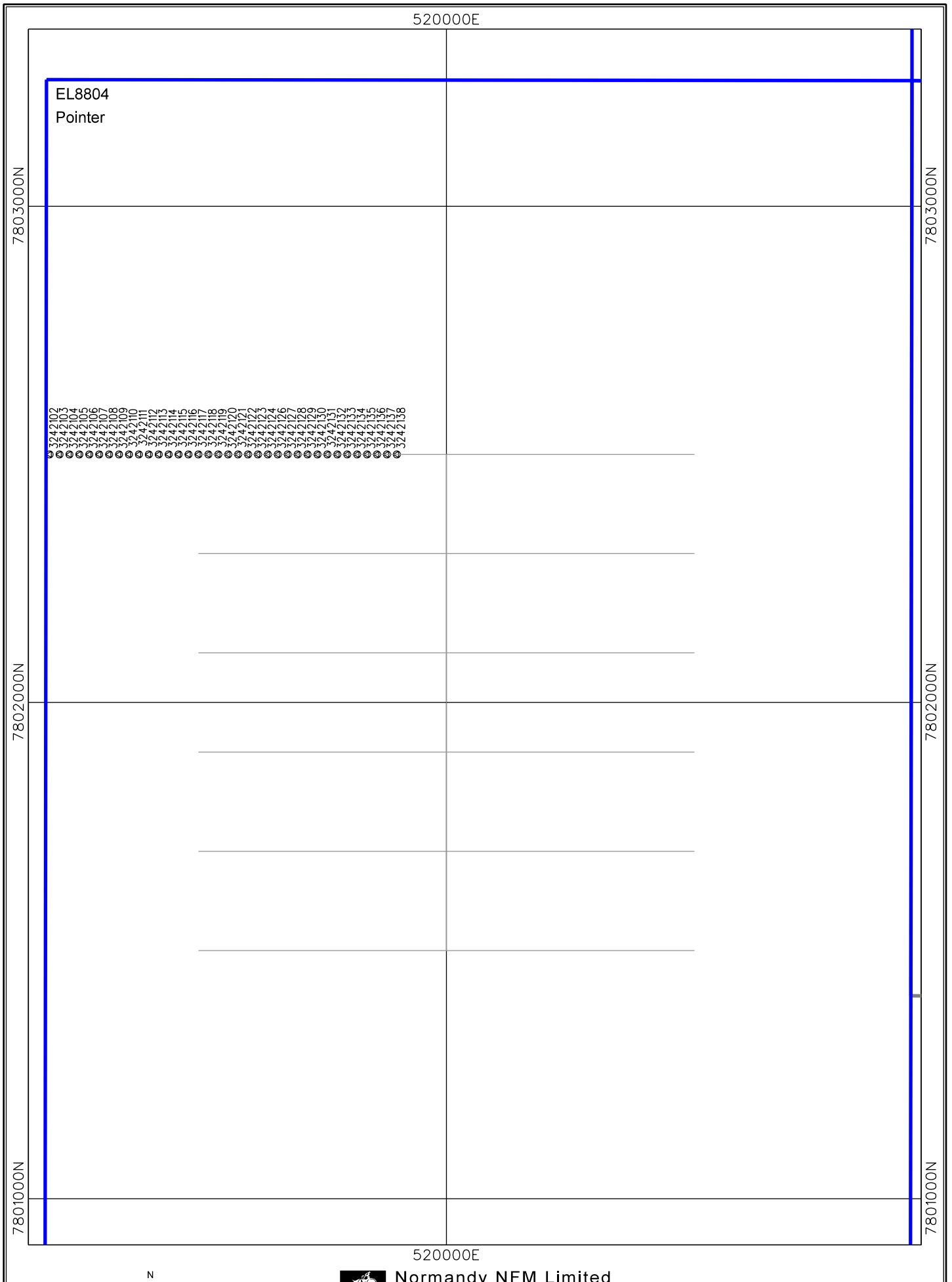
# Aircore Drilling Completed During 2001

12/02/2002

Aircore Drillhole
Gridding Completed during 2001

FIGURE 5

T:\msdata\diagram\frederick\mtfav003.dgn




N
W E
S

0 200m

SCALE 1:10,000

UTM Zone 52 (AGD66)

Normandy NFM Limited

NORMANDY EXPLORATION PTY LTD

ANNUAL REPORT FOR THE MT FREDERICK PROJECT

## Soil Samples Collected During 2001

12/02/2002

FIGURE 3

T:\msdata\diagram\frederick\mtfav004.dgn

500000E

510000E

520000E

7820000N

7810000N

EL8899
Frederick

ELA10408
Kryton

KILLIKILLI HILLS

KILLIKILLI HILLS

N
W E
S

0 1500m
SCALE 1:75,000

UTM Zone 52 (AGD66)

Normandy NFM Limited

NORMANDY EXPLORATION PTY LTD

# ANNUAL REPORT FOR THE MT FREDERICK PROJECT

## Soil Samples Collected During 2001

12/02/2002

FIGURE 4

T:\msdata\diagram\frederick\mtfav005.dgn

# REFERENCES

Blake, D.H, 1978. The Proterozoic and Palaeozoic rocks of The Granites Tanami Region, Western Australia and Northern Territory, and interregional correlations. BMR Journal of Australian Geology and Geophysics, **3**, 35-42.

Blake, D.H, Hodgson, I.M, and Muhling, P.C, 1979. Geology of The Granites – Tanami Region, Northern Territory and Western Australia. Australian Government Publishing Service, BMR Bulletin 197.

Davidson, A.A. 1905. Journal of Explorations in Central Australia, by the Central Australian Exploration Syndicate, Limited, *South Australia Parliamentary Paper 27.*

Gee, L.C.E. 1911. General Report on Tanami Goldfield and District (Northwestern Central Australia). *South Australia Parliamentary Paper 31.*

Hossfeld, P.S. 1940b. The Gold Deposits of The Granites-Tanami District, Central Australia. *Aer. Geol. Geophys. Surv. N.Aust., Northern Territory Report 4*3.

Jagodzinski, E.A. Wyborn, L.A.I. and Heinrich, C.A., 1992. A Report on the Potential of the Granites Tanami Block for Unconformity style Au-Pt-Pd+/-U mineralisation, Australian Geological Survey Organisation, Minerals and Land Use Program. Unpub Report to NFM. CFN 08-614.

Plumb, K.A. 1990. Halls Creek Province and The Granites-Tanami Inlier - regional geology and mineralisation, in *Geology of the Mineral Deposits of Australia and Papua New Guinea* (Ed F.E. Hughes) pp 681-695 (The Australasian Institute of Mining and Metallurgy: Melbourne).

**REPORTS TO NT DME**

Power, D., 2001. Second Annual Report for the Mt Frederick Project for the Calendar Year 2000.

Power, D., 2000. First Annual Report for the Mt Frederick Project for the Calendar Year 1999.

# APPENDIX 1

## DIGITAL DATA

**ambro_Assay.DAT**
**ambro_CodeGeol.DAT**
**ambro_Collar.DAT**
**ambro_Survey.DAT**

**odyssey_Assay.DAT**
**odyssey_CodeGeol.DAT**
**odyssey_Collar.DAT**
**odyssey_Survey.DAT**

**el8804_Soil.DAT**
**el8899_soil.DAT**

## BIBLIOGRAPHIC DATA SHEET

| | |
|---|---|
| REPORT NUMBER: | CR29453 |
| REPORT TITLE: | THIRD ANNUAL REPORT FOR THE MT FREDERICK PROJECT FOR THE CALENDAR YEAR 2001 |
| PROJECT NAME: | MOUNT FREDERICK |
| TENEMENT NUMBERS: | 8301 ALPHA, 8796 BETA, 8976 DELTA, 8977 EPSILON, 8797 GAMMA, 8804 POINTER, 9015 SOLO, 8899 FREDERICK. |
| OWNER: | Normandy NFM Limited |
| COMMODITIES: | Gold |
| TECTONIC UNITS: | Tanami Inlier |
| STRATIGRAPHIC UNITS: | Mount Charles Beds, Pargee Sandstone, Gardiner Sandstone, Talbot Well Formation |
| 1:250,000 MAPSHEET: | SE52-15 “Tanami” |
| 1:100,000 MAPSHEET: | 4758 |
| KEYWORDS: | Aircore Drilling, Geochemical Anomalies, Geochemical Sampling, Reconnaissance, Soil Sampling. |