NORMANDY NFM Limited

FINAL REPORT

FINAL REPORT FOR EL 8977 (EPSILON)

for the period
09/09/1999 to **20/09/2002**

Mt Frederick
NORTHERN TERRITORY

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

1:250,000 SHEET:	Tanami	SE52-15
1:100,000 SHEET:	Pargee	4758

AUTHOR: M.Walter

TENEMENT HOLDERS: Normandy NFM Ltd (trading as Newmont NFM)

DISTRIBUTION:

- ❑ Northern Territory Department of Business, Industry & Resource Development
- ❑ Newmont Australia
- ❑ Central Land Council

SUMMARY

The Mt Frederick Project, located in the Tanami desert region approximately 150km northwest of the Granites Gold Mine, previously comprised of 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 final report for the EL 8977 (Epsilon) covering the period to 20/09/2002.

Exploration comprised surface work over areas of outcrop/subcrop as well as regolith assessment drilling.

Exploration activity during the current reporting period has incorporated:

- Gridding 10.44 line km
- Ground Magnetic Survey 1.73 line km
- Lag Sampling 43 samples
- Aircore Drilling: 4 holes for 177m, 59 samples
- Petrology 2 descriptions

TABLE OF CONTENTS

Page Number

LIST OF FIGURES

LIST OF TABLES

LIST OF APPENDICES

1. INTRODUCTION

This is the final report for EL 8977 (Epsilon) which is part of the Mt Frederick Project for the period 09/09/1999 to 20/09/2002.

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**		

2. LOCATION, ACCESS AND PHYSIOGRAPHY

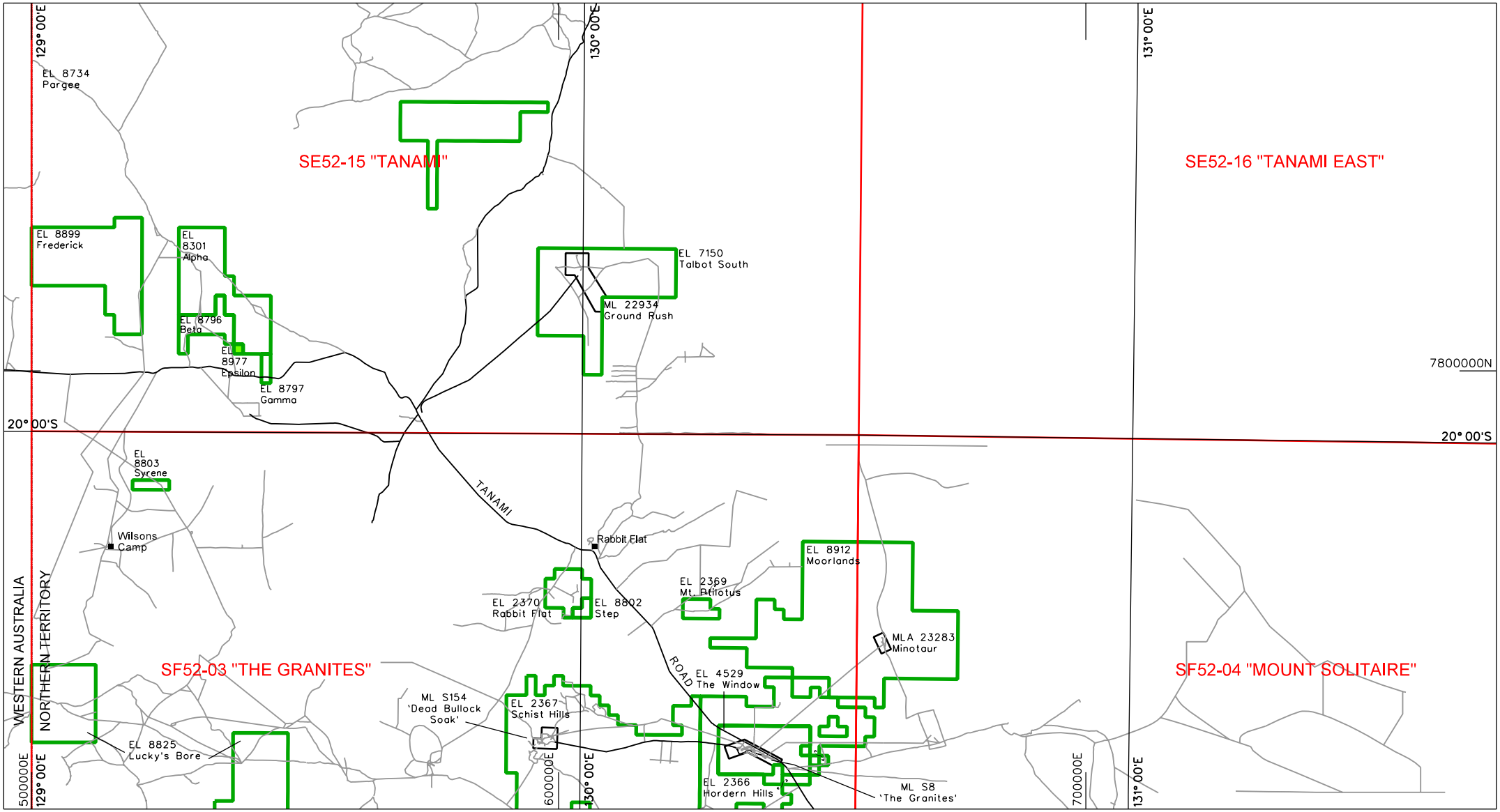
The Mt Frederick Project is located in the Tanami Desert region, approximately 150km NW of the Granites Gold Mine. The area is covered by the Tanami (SF52-15), 1:250 000 series map sheet, as shown on Figure 1.

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.



N
W E
S

0 50km

SCALE 1:1,000,000

UTM Zone 52 (AGD66)

Normandy NFM Limited

NORTH FLINDERS EXPLORATION

EL 8977 - EPSILON

TENEMENT LOCATION MAP

04/11/2002

Tanami Location

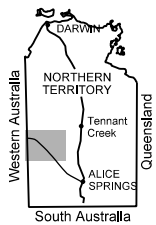


FIGURE 1

..\epsol001.dgn

3. 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 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).

4. 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.

5. WORK COMPLETED

1.1 GRIDDING & GEOPHYSICAL SURVEYS

1.1.1 Gridding

A total of 10.44 line kilometres of gridding has been established (see Figure 2) over the Zeus prospect within the tenement to assist with the geochemical sampling and drilling program and the ground magnetics survey.

1.1.2 Ground Magnetics Survey

One ground magnetics traverse (total 1.73 line kilometres) was surveyed over a conceptual target during tenure.

Total magnetic intensity readings were recorded using a G856 Proton Precession magnetometer. Diurnal measurements were recorded using a second magnetometer as a base-station. Base readings were taken every 30 seconds. On completion of the survey, diurnal variations were removed from the data using the MAGPAC program. No modeling was carried out on the profiles. Figure 2 displays the location of the ground magnetic traverses. Appendix 2 catalogues magnetic profiles and traverse origins.

1.2 SOIL SAMPLING

Lag samples were collected within EL 8977. Refer to Figure 2 for lag sample coverage within the licence.

Objectives of the surficial geochemical sampling program were to conduct regional lag sampling at reconnaissance spacings (250×500m - 1000×500m) within appropriate regolith domains.

All verification lag samples were collected along surveyed grid lines. Reconnaissance lag samples were collected using a Scoutmaster Global Positioning System (GPS) with an external aerial for navigation and lag sample location. In both cases, surface lag material was sieved to a +2mm size fraction and a 100-300g amount was double bagged and retained for multi-element and low level gold analysis (see Table 3). Notes were made regarding the sample type, quality, description and grain size.

Table 2: Lag Sample Details

Tenement	Sample ID	Total Samples
Epsilon (EL 8977)	3127977-8000; 3202101-118.	42
	TOTAL	**42**

Table 3. Laboratory, analytical code, method of analysis, and elements assayed.

SAMPLE TYPE	LABORATORY	CODE	DESCRIPTION
Lag	Genalysis	B*ETA	Aqua Regia digest with Enhanced Sensitivity Graphite Furnace Atomic Absorption Spectrometry.
		A/MS	Multi Acid digest with Inductively Coupled Plasma Mass Spectrometry.

1.3 AIRCORE DRILLING

The primary objective of the drilling program was to make a broad assessment of the regolith profile and bedrock geology. A secondary objective utilised ground magnetics to target drilling across.

Four drillholes were drilled within the licence for a maximum of 60 metres depth (177m in total). Samples were collected from 3m composite from the entire hole by spearing piles four times from different directions. Samples were sent to Amdel for multi-element analysis by the ARM1 analytical technique (see Tables 2 & 3 for details) and drill chips were retained for later inspection and storage.

The drill hole was 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 (see Figure 2 for location).

Table 2: Aircore Drill Sample Details

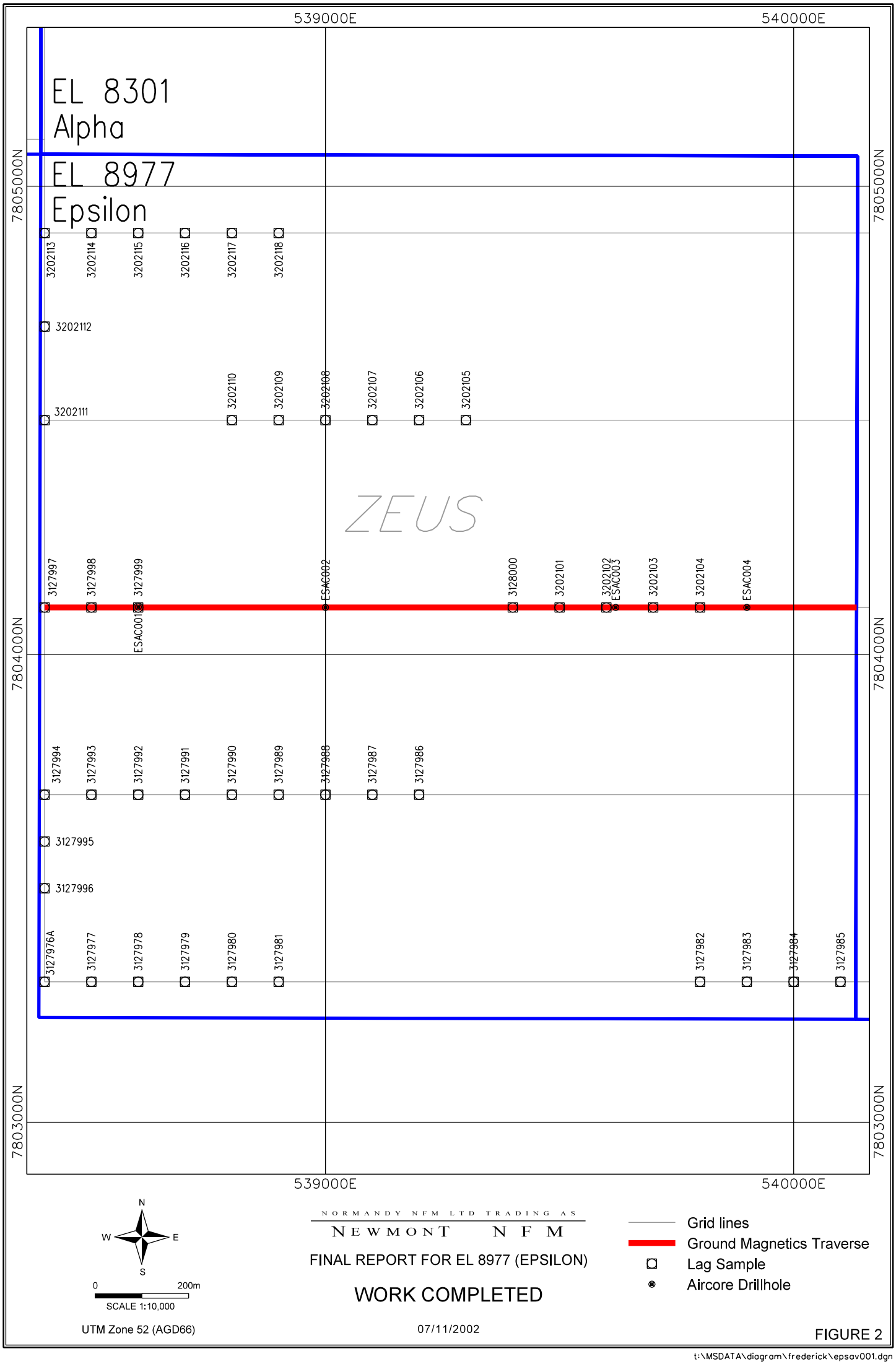
Tenement	Drill Hole ID	Sample ID	Total Samples
Epsilon (EL 8977)	ESAC001-004	446336-446394.	59
		TOTAL	**59**

Table 3. Laboratory, analytical code, method of analysis, and elements assayed.

SAMPLE TYPE	LABORATORY	CODE	DESCRIPTION
RAB/AC	Amdel	ARM1	10-20g sample, Aqua Regia digestion, ICP-MS finish.

1.4 PETROLOGY

Two drill chips from ESAC003 were sent to Pontifix and Associates for petrological analysis. Results are submitted in Appendix 3.


539000E
540000E
EL 8301
Alpha
EL 8977
Epsilon
7805000N
7804000N
7803000N
3202113
3202114
3202115
3202116
3202117
3202118
3202112
3202111
3202110
3202109
3202108
3202107
3202106
3202105
ZEUS
3127997
3127998
3127999
ESAC001
ESAC002
3128000
3202101
3202102
ESAC003
3202103
3202104
ESAC004
3127994
3127993
3127992
3127991
3127990
3127989
3127988
3127987
3127986
3127995
3127996
3127976A
3127977
3127978
3127979
3127980
3127981
3127982
3127983
3127984
3127985
N
W
E
S
0
200m
SCALE 1:10,000
NORMANDY NFM LTD TRADING AS
NEWMONT NFM
FINAL REPORT FOR EL 8977 (EPSILON)
WORK COMPLETED
Grid lines
Ground Magnetics Traverse
Lag Sample
Aircore Drillhole
UTM Zone 52 (AGD66)
07/11/2002
FIGURE 2
t:\MSDATA\diagram\frederick\epsav001.dgn

6. REFERENCES

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. Unpubl. Report to NFM. CFN 08-614.

REPORTS TO NT DBIRD

Power, D., 2000. First Annual Report for the Mt Frederick Project for the Calendar Year 1999. Normandy NFM Ltd. Normandy RN: 50049.

Power, D., 2001. Second Annual Report for the Mt Frederick Project for the Calendar Year 2000. Normandy NFM Ltd. Normandy RN: 27959.

Power, D., 2002. Third Annual Report for the Mt Frederick Project for the Calendar Year 2001. Normandy NFM Ltd. Normandy CR: 29453.

APPENDIX 1

DIGITAL DATA

EPS_WADG1_DOW2002S.TXT

EPS_WADL1_DOW2002S.TXT

EPS_WADS1_DOW2002S.TXT

EPS_WASG1_SUR2002S.TXT

EPS_WASG2_SUR2002S.TXT

EPS_WASL1_DRI2002S.TXT

APPENDIX 2

GEOPHYSICAL SURVEY DATA

Epsilon.XYZ
(Space delimited text file)

APPENDIX 3

PETROLOGICAL DESCRIPTIONS

Report #	Author	Date	Work	Geo	Prospect					Notes
Petrology #	Count	ID	Type	NFM	Sample #	From	To	Easting	Northing	Description
7916	**PU**	**9/10/1999**	**TS**		**DP**	**Mt Frederick**				
P06072	14	ESAC 003	DC		446377	21	24	539620	7804100	Weathered probable mafic, conceivably the equivalent of the fresh rock forming P06073
P06073	14	ESAC 003	DC		446377	48	51	539620	7804100	Fresh but altered amphibolite, also weathered biotite-plagioclase rock (both with sericitised plagioclase) derived from a dolerite. Potassic alteration in one chip and a prehnite vein in another.

Northern Territory Department of Mines and Energy

REPORT METADATA FORM
(MINERAL EXPLORATION)

PART A (DME USE ONLY)					
Report Number	Date Received				
Collation	___ pp.	___ figs	___ logs	___ maps	___ apps.
Media	___ CDs	___ 1.5"	___ Exab.	___ DLT	___ vols.

PART B			
Tenure Number(s)	EL 8977	Company Report Number	31002
Report Date	November 2002	Anniversary Date	09/09/**
Group Project Name	Mt Frederick		
Report Title	Final Report for EL 8977 (Epsilon) for the period 09/09/1999 to 20/09/2002		
Author(s)	M. Walter		
Corporate Author(s)	Newmont Australia		
Maps 1 : 250 000	SE52-15		
Maps 1 : 100 000	4758		

Tectonic Units			
❑ Amadeus Basin	❑ Carpentaria Basin	❑ McArthur Basin	❑ Pine Creek Inlier
❑ Arafura Basin	❑ Daly Basin	❑ Money Shoal Basin	❑ Simpson Basin
❑ Arnhem Inlier	❑ Dunmarra Basin	❑ Murphy Inlier	❑ South Nicholson Basin
❑ Arunta Inlier	❑ Eromanga Basin	❑ Musgrave Block	❑ Tennant Creek Inlier
❑ Birrindudu Basin	❑ Fitzmaurice Mobile Zone	❑ Ngalia Basin	❑ Victoria Basin
❑ Bonaparte Basin	❑ Georgina Basin	❑ Ord Basin	❑ Warburton Basin
❑ Browse Basin	✓ Granites-Tanami Inlier	❑ Pedirka Basin	❑ Wiso Basin
Other structural units			

Stratigraphic Names			
Mount Charles Beds	Pargee Sandstone	Gardiner Sandstone	Talbot Well Formation

AMF Thesaurus Terms - General			
❑ Geological mapping	❑ Regional Geology	❑ Stratigraphy	❑ Structural Geology
❑ Metallogenesis	❑ Remote sensing	❑ Imagery	❑ Landsat
✓ Petrology	❑ Lithology	❑ Literature reviews	❑ Metamorphism
❑ Lineaments	❑ Photogeology	❑ Reconnaissance	❑ Indicator minerals
Other terms ...			

AMF Thesaurus Terms - Target Minerals

✓ Gold	❑ Silver	❑ Tin	❑ Diamonds
❑ Lead	❑ Copper	❑ Platinum Group Minerals	❑ Industrial Minerals
❑ Zinc	❑ Uranium	❑ Bauxite	
Others…			

AMF Thesaurus Terms - Mining			
❑ Environmental impact surveys	❑ Feasibility studies	❑ Geostatistics	❑ Metallurgy
❑ Ore reserves	❑ Resource assessment	❑ Mineral resources	❑ Mining geology
❑ Mine design	❑ Mine drainage	❑ Mine evaluation	❑ Pits
Other terms ...			

AMF Thesaurus Terms - Geophysical Surveys			
❑ Aerial magnetic surveys	❑ Aerial radioactivity surveys	❑ Aerial EM surveys	❑ Ground EM surveys
❑ Gravity surveys	❑ Geophysical anomalies	❑ Gravity anomalies	❑ Bouger anomaly maps
❑ Sirotem surveys	✓ Ground magnetic surveys	❑ IP surveys	❑ Resistivity surveys
❑ Seismic surveys	❑ Magnetic anomalies	❑ Geophysical interpretation	❑ Geophysical logs
Other terms ...			

AMF Thesaurus Terms - Geochemical Exploration – Surface sampling			
✓ Geochemical sampling	❑ Stream sediment sampling	❑ Rock chip sampling	❑ Bulk sampling
❑ Soil sampling	❑ Heavy mineral sampling	❑ Geochemical anomalies	✓ Assaying
❑ Isotope geochemistry	❑ Whole rock analysis	❑ X ray diffraction	✓ Sample location maps
Other terms ...	Lag Sampling		

AMF Thesaurus Terms - Geochemical Exploration - Drill sampling			
❑ Diamond drilling	❑ RAB drilling	❑ Percussion drilling	✓ Air drilling
❑ RC drilling	❑ Rotary drilling	❑ Vacuum drilling	❑ Auger drilling
❑ Drill core	❑ Drill cuttings	✓ Drill hole logs	❑ Drill core analysis
Other terms ...			

Drilling Type	**No. of holes**	**Hole name(s)**
Diamond		
Percussion		
Vacuum		
RAB	4	ESAC001-004
Auger		
Air		
RC		
Rotary		
Other ...		

Mine / Deposit / Prospects		Location - AMG	Location - Datum
Mines			
Deposits			
Prospects	Zeus	539175E, 7804300N	AGD 66, zone 52
Other …			