ANGLOGOLD AUSTRALIA LTD

EXPLORATION LICENCE 8047
BAN BAN

FINAL REPORT ON EXPLORATION FOR
PERIOD 24TH NOV 1993 TO 23RD NOV 2001

Author: P. Large
Report No: 08. 11779
Date: Feb 2002
Copy No: 1

Map Sheets:
1:250 000 Pine Creek SD52-8
1:100 000 Pine Creek 5270

Distribution:
1 NT Department of Mines & Energy (Digital &Hardcopy)
2 Platsearch NL., Sydney (Hardcopy)
3 AngloGold – Perth (Digital Copy)
4 AngloGold – Darwin (Digital Copy & Hardcopy)
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SUMMARY

Exploration Licence 8047 (Ban Ban) is located in the central Pine Creek Geosyncline, NT, approximately 25km east of the Brocks Creek Mine treatment facilities. The Ban Ban licence was part of the Cullen Joint Venture between title holders Platsearch NL and Solomon Pacific Resources NL. Acacia Resources Limited (now AngloGold Australia) assumed management of Solomon Pacific’s interests on 24th June 1996 including management of the Cullen JV. AngloGold has since gained a 100% holding of the tenement, with Platsearch reverting to a royalty on gross gold production.

Following a review of all exploration completed within the Ban Ban licence and given the lack of encouraging results, AngloGold chose not to renew the licence. Consequently the licence expired on the 23rd of November at the end of its first renewal period. This report details the exploration completed within EL 8047 during the period of tenure from the 24th November 1993 to the 23rd November 2001.
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- AngloGold Geological Logging Codes
- Surface Sample Ledger_EL8047
- Surface Sample Assay Report_EL8047
- Drillhole Ledger_EL8047
- Drillhole Geology Report_EL8047
- Drillhole Assay Report_EL8047
- Gravity Survey Data Points_EL8047
- Detailed Aerial Geophysical Survey
- Digital Copy of 08.11779 (this report)

Format:
- Adobe Acrobat
- ASCII comma delimited
- Various

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1. INTRODUCTION

Exploration Licence (EL) 8047 (Ban Ban) in the Margaret River area, Central Pine Creek Geosyncline NT, expired on the 23rd of November 2001. The Ban Ban licence is located approximately 140 km south east of Darwin and 25km east of the Brocks Creek Gold Mine and treatment facilities. This report details all exploration work completed within EL 8047 during the period 24th November 1993 to the 23rd November 2001.

2. TENEMENT STATUS

EL 8047, originally comprising fifty two (52) blocks was granted to North Exploration on the 24th November 1993 for a period of 6 years. Platsearch NL purchased the lease from North Exploration with a transfer of ownership on 20th October 1995. Under a letter of agreement signed between Solomon Pacific Resources and Platsearch NL on the 15th April 1996, Solomon had the right to earn a 65% interest in the tenements.

On the 24th June 1996, Acacia Resources Limited assumed management of Solomon Pacific Resources NL and all Solomon Pacific interests. Under the existing joint venture agreement signed between these parties Acacia Resources earned 65% of the tenement by sole funding of exploration activities. Platsearch then reverted to a royalty interest in gross gold production, leaving Acacia with 100% ownership.

Group reporting status was granted to EL 8047 (Ban Ban) and SEL8335 (North Ban Ban) on the 10th July 1997 as the two tenements were explored together as the Cullen Joint Venture.

The Aboriginal Areas Protection Authority completed clearances on both licences, within the Cullen Joint Venture.

In December, 1996 an application for full waiver of reduction in area for Ban Ban was granted by the NTDME allowing the retention of fifty two (52) blocks for a further year. An application for partial waiver of reduction of the Ban Ban licence (EL 8047) was granted by the NTDME on the 17th June, 1998, requesting a waiver of ground reduction of twelve (12) blocks and the retention of forty (40) blocks. An application for partial relinquishment of ten (10) blocks, retaining thirty (30) was sent to the NTDME in October 1998. The Department was advised of a partial surrender of four blocks, leaving twenty six, on 19th July 1999. Acacia applied for a two year extension of term on EL 8047 on the 9th of September 1999. The two year renewal was granted on the 4th of March 2001.

AngloGold Australasia Limited (now AngloGold Australia Limited) assumed management of the Cullen Project in late 1999 following the takeover of Acacia Resources Limited.

Following a review of the licence and the closure of the Brocks Creek Mine a decision to relinquish the Ban Ban licence was made in 2001. Consequentially on the 23rd of November 2001 the licence expired.
3. LOCATION AND ACCESS

The Ban Ban licence is located approximately 140km southeast of Darwin in the Northern Territory, approximately 40km south east of the Adelaide River Township and 20km north of the Brocks Creek Gold Mine and treatment facilities (Figure 1). The licence area can be accessed via the Stuart Highway from Darwin to Hayes Creek, then via the Fountain Head and Woolwonga Roads to various station tracks on Ban Ban Springs Station.

EL 8047 falls within Ban Ban Springs and Mary River West Station pastoral leases. Access is severely restricted between the wet season months of December and April.

4. REGIONAL GEOLOGY

The relinquished area is located in the central portion of the Pine Creek Geosyncline. The geosyncline contains Early Proterozoic metasedimentary rocks resting on a gneissic and granitic Archaean basement (Figure 2). The metasediments represent a preserved basinal sequence up to 14km thick (Needham et al., 1980). These rocks were tightly folded and metamorphosed to greenschist facies (in some places amphibolite) at about 1890 to 1870 Ma (Ferguson, 1980).

The geosynclinal sequence is intruded by transitional igneous rocks including predeformational dolerite lopoliths and dykes and post deformational granites. Largely undeformed platform cover of Middle and Late Proterozoic, Cambro-Ordovician and Mesozoic strata rest on these with marked unconformity.

The relinquished portion of EL 8047 cover areas of Early Proterozoic sediments of South Alligator Group, dominantly Burrell Creek Formation. Quaternary alluvium (Qa) and deep humic soils (Qf) occur in low ground and along the Margaret River.


5.1. Data compilation and review

Open file data from previous explorers was compiled and 1987/1988 Multi-client Aerodata aeromagnetic data was purchased. Target areas and known prospects were defined from this work.

5.2. Geochemical Surface Sampling

A total of three hundred and twenty five (325) spot surface soil samples were collected by North Limited from within the remaining portion of Ban Ban during 1994 (Figure 3). The samples were collected on a 25m x 250m spaced grid and a 50m x 250m spaced soil grid covering several "aeromagnetic" targets in the northern portion of the licence. In addition a total of sixteen (16) rockchip samples were collected, mostly from the Waterdrum Hill area (Figure 3), and submitted for analysis.

The results were encouraging with two soil sample results returning > 100 ppb gold (ie. 180ppb Au and 165ppb Au) and four of the rockchip results returning > 100ppb Au (maximum result of 2.05 g/t Au). The majority of the
results, including the 2.05g/t Au rockchip, were located in the north-western portion of the lease at the “Gas Pipeline” prospect.

5.3. **Rotary Air Blast (RAB) Drilling – Gas Pipeline Prospect**

A total of nineteen (19) RAB drill holes (474 metres) were drilled along two east-west traverse lines across the Gas Pipeline soil anomaly. Samples were taken at two metre intervals and assayed for Au (FA3, D.L. 1 ppb Au). A total of two hundred and sixty (260) samples were collected (*Figure 4*).

No significant mineralisation was intersected with a best result of 88 ppb Au (*Figure 6*).

5.4. **Ground Magnetics**

Six line kilometres of ground magnetics were conducted along east-west traverse lines coinciding with soil sampling lines at the Gas Pipeline prospect area. The survey was conducted using a GEM GSM-19 magnetometer. The profiles generated from the survey are included as *Figure 7*.


6.1. **Photogeological survey**

Robertson Australia were contracted by Platsearch to undertake a photogeological survey the entire Ban Ban license during the 1994/1995 field season. The photos used were acquired from the NTDME and consisted of several 1:50,000, 1:60,000 and 1:25,000 scale surveys completed between 1989 and 1994.

The plan generated from the study is included as *Figure 8*.


7.1. **Compilation of Previous Explorers**

All exploration work completed within EL 8047 (mapping, soil, rock chip, and RAB/Air core drill sampling and remote sensed data) by previous explorers, was entered into Acacia’s MAPInfo GIS database.

7.2. **Geophysics**

The Aerodata aeromagnetic survey purchased by North was reprocessed to a smaller pixel size and another interpretation was completed with the improved data.

7.3. **Gridding and Geological Traversing**

A five kilometre baseline was surveyed in by Microsurvey and Mining, Surveying Contractors of Pine Creek. This baseline extended from 50,000N to 55,000N (local grid) and was orientated at 341.5° magnetic. The baseline formed part of Acacia’s regional exploration grid originating at the Union Reefs Gold Mine near Pine Creek.

A total of 21 line kilometres of cross line gridding was established from the surveyed baseline and orientated at 61.5° - 241.5° (magnetic) covering the central portion of the licence area.
The grid was marked with iron fence droppers on a 400m X 50m spacing with the surveyed baseline outlined by 1.5m iron star pickets at 100m intervals.

7.4. **Geochemical Surface Sampling**

During the reporting period four hundred and sixty seven (467) soil samples were collected by either hoepick or power auger from the gridded areas within EL 8047. Samples were collected every 25m along 400m spaced traverses. Samples averaged 2 kg's in weight, of - 5mm sieved B₂ - C horizon soil.

The samples collected were dispatched to Assaycorp Ltd. in Pine Creek and analysed for low level Au by 50g fire assay and Cu, Pb, Zn and As by AAS.

Encouraging results were returned from the soil sampling with a best results of 980ppb Au and 520ppb Au.


8.1. **Surveying/Gridding**

A seven (7) line km surveyed extension to the Pine Creek/Brocks Creek regional baseline was established by Airesearch Mapping of Darwin in August, 1997. The baseline, along 20000E (local grid) is oriented at 334°57′55″ magnetic and now extends from 50,000N to 66,000N (local grid). An additional forty line kilometres of crossline gridding was also completed (oriented to 64°57′55″ magnetic).

8.2. **Geochemical Surface Sampling**

A total of six hand samples were collected during the reporting period. The samples were dispatched to Assaycorp Ltd in Pine Creek for analysis for low level Au by 50g fire assay and Cu, Pb, Zn and As by AAS.

There were no anomalous results.

8.3. **Rotary Air Blast (RAB) Drilling**

A total of five hundred and eight (508) metres of RAB drilling (490 holes) were completed within the Ban Ban licence during the reporting period, with four hundred and ninety six (496) samples taken at the B2-C horizon interface.

The samples collected were dispatched to Assaycorp Ltd. in Pine Creek and analysed for low level Au by 50g fire assay and Cu, Pb, Zn and As by AAS.

The contoured Au results infer a NW trend to the anomalous Au results. The multi-element geochemical data (As, Cu, Pb and Zn) also support this NW trend.

8.4. **Stream Sediment Sampling**

A total of fifty six (56) stream sediment samples were collected from the southern area of EL 8047 during the 1996/1997 reporting period (Figure 3).

The method adopted to screen the area by stream sediment sampling was first to recognise the second and third order drainages. By targeting these higher order streams, anomalous areas could be defined and then followed.
up in more detail. The sample sites were located by air photos and GPS navigation. Two samples were submitted for analysis from each site. A 2-5 kg sample was collected in the field by sieving sand and clays from a trap site in the designated stream to -2mm. This sample was then re-sieved to -70# for a total weight of 300g. The remaining -2mm sample (still >2kg) was analyzed by BLEG for Au and Ag. The -70# sample was submitted for AAS analysis for Cu, Pb, Zn, and As. The sample sites were marked in the field by a band of green flagging tape and a perma-tag.

Encouraging results were received including a best result of 195ppb Au. Another ten results over 3ppb Au (ranging between 3.4 and 6.1ppb Au) were also considered anomalous. The catchment area associated with the high 195ppb Au anomaly was small.


9.1. Gravity Survey
A gravity survey was conducted during late 1997 incorporating Acacia’s Pine Creek and Brocks Creek tenements, including the Ban Ban licence. The survey provided more detailed data than the regional AGSO gravity surveys and was conducted as part of two Honours theses (University of Tasmania) aimed at modelling the depth to granite intrusions in the Brocks Creek area.

Station spacing for the survey was approximately 500m. A Worden gravity meter was used with a differential GPS providing accurate locations and heights for the subsequent data reductions. Eighteen (18) stations were within the remaining portion of the Ban Ban licence. Hungerford Geophysical Consultants reviewed the results of the theses.

9.2. Geophysical Compilation
Regional compilation and interpretation of the magnetic, gravity and radiometric data sets and geology data was completed in the 1997/1998 reporting period.

9.3. Rock Chip Sampling
Rock chip sampling was carried out throughout EL 8047 in areas of interesting structure and stratigraphy, with a total of sixty eight (68) samples collected.

The samples were dispatched to Assaycorp Ltd. in Pine Creek and analysed for low level Au by 50g fire assay and Cu, Pb, Zn and As by AAS. The best value returned was 604ppb in the far north of the tenement. Two other results above 100pb were also received.

10.1. Geochemical Surface Sampling
A total of twenty four (24) rock chip samples were collected and submitted for analysis during the 1998/1999 reporting period. Rock chip sampling was in areas of interesting structure and stratigraphy.

The samples collected were dispatched to Assaycorp Ltd. in Pine Creek and analysed for low level Au by 50g fire assay and Cu, Pb, Zn and As by AAS.

In addition to the rockchip sampling, a total of seventy six (76) base of slope soil samples (1277601-1277678) were collected within EL 8047 during the same period.

The technique is intended for use in steep terrain to obviate the need for gridding and grid based sampling in these areas, which is time consuming, expensive and at times dangerous. Any shedding mineralisation on the hill will be dispersed towards the bottom of the hill. Samples are taken at close intervals around the break in slope at the base of the hill before the scree from the hill is swamped by alluvial sediments. In this way the whole hill can be tested without climbing it twice on each grid line at 100m intervals.

The sampling program involved the collection of 1-2 kg of talus (-5mm fraction) at the base of the hill at regular intervals. The samples were sent to Assaycorp in Pine Creek and assayed for low level gold in the same way as the normal geochemical soil samples (1ppb detection limit).

The results of the surface sampling programs were disappointing. There were no anomalous results from the base of slope sampling whilst only three rockchip samples returned results greater than 10ppb Au (maximum of 48ppb Au).

10.2. Detailed Aeromagnetic and Radiometric Survey
A detailed aeromagnetic and radiometric survey was flown in April 1999 across an area encompassing the southern portion of EL 8047, by contractors UTS Geophysics. Survey lines were flown at 50m spacing, at an average terrain clearance of 25m along 60° magnetic. Tie lines were flown at intervals of 500m along 150° magnetic. Survey specifications are included in Appendix 3. Hungerford Geophysical Consultants processed and made a preliminary interpretation of the aeromagnetic and radiometric data.

The flight line and contoured TMI data are included as Figure 10 and Figure 11 respectively. A Total Magnetic Intensity/Reduced to Pole image is included as Figure 12. The Total Count Radiometric image is included as Figure 13.

10.3. Geophysical compilation and Interpretation
The area incorporated by EL 8047 was included in regional geophysical data compilation of Acacia’s Pine Creek tenement holdings. This work included the following:

Hungerford Geophysical Consultants merged and levelled the multiple aeromagnetic and radiometric data sets that AngloGold had acquired to allow
easier comparison of the images across the boundaries of the different surveys. Revised reduced to the pole and first vertical derivative plots were produced after the following processing was applied to merge the detailed aeromagnetic and multiclient datasets:

- Regrid all surveys to 15m grid cell size.
- Add 47210nT to the UTS grid (if required)
- Boolean join of the multiclient and UTS grids
- Smooth the merged grid with a 3 x Hanning filter

11. WORK COMPLETED 24TH NOV 1999 – 23RD NOV 2000 (ANGLOGOLD)

11.1. Geochemical Surface Sampling

A program of soil sampling was completed over the northern portion of the Ban Ban lease during the 1999/2000 reporting period. The soil sampling was completed on two, 400m spaced lines at 50m centres. A total of seventy nine (79) hand samples were collected from the B2/C horizon. Sample weights of 1.5 to 2 kg were collected and sieved to –5mm.

The soil samples were dispatched to Assaycorp Laboratories in Pine Creek, where they were dried, crushed and pulverised to a nominal 90% passing -100µm. Samples where then analysed for low level Au by Fire Assay (FALL method).

The results from this work were disappointing with only one sample returning an anomalous result of 28ppb.

12. WORK COMPLETED 24TH NOV 2000 – 23RD NOV 2001 (ANGLOGOLD)

No field based exploration was completed within the Ban Ban licence during the reporting period.

13. ENVIRONMENTAL ISSUES

Exploration activities were conducted in such a way as to keep environmental disturbance to a minimum, with existing tracks used where possible. Sampling was carried out on foot in rugged terrain. RAB holes were backfilled on the completion of sampling.

All outstanding rehabilitation, including removal of steel grid pegs and an overall site check, will be completed later in the year in conjunction with several adjacent leases which have also been surrendered.

An environmental register has been compiled for the disturbance, pre-existing and current within the project area. This register is supplied as Appendix 4.
14. REPORTING

A digital copy of this report has been produced in an Adobe Acrobat format and is included as Appendix 1 in the original copy of the report submitted to the NTDME. For further information on opening and reading Adobe Acrobat files please access the web site www.adobe.com.

15. EXPENDITURE STATEMENT

Since attaining management of the Ban Ban licence in 1996 AngloGold’s expenditure on exploration has exceeded the covenant over the period of tenure (see below).

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16. REFERENCES


APPENDIX 1

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APPENDIX 2

Gravity Survey
Reference Point Locations
1. **Gravity Base Station Locations**

**9749-1037**

**Description**: Star picket close to base of tree, near the northern turn-off to the Pine Creek township off the Stuart Highway.

**AMG Coordinates**: 805800.00 mE 8471000.00 mN

**Elevation**: 200 m above sea level

**Observed Gravity**: 978310.71 mGal

**Established**: M. Roach 17/10/96

**Map Series** - Pine Creek 1 : 50,000

![Map of Pine Creek area](image_url)

**9749-1036**

**Description**: Orange strip painted around the base of a light pole in the car park of the Emerald Springs Road House, Stuart Highway.

**AMG Coordinates**: 784500.00 mE 84913500.00 mN

**Elevation**: 220 m above sea level

**Observed Gravity**: 978300.96 mGal
9749-1009

**Description**: Star picket near large road sign on Fountain Head road at the intersection of the Stuart Highway and Fountain Head Road.

**AMG Coordinates**: 759996.30 mE 8503120.15 mN

**Elevation**: 115.66 m above sea level

**Observed Gravity**: 978314.33 mGal

**Established**: M. Roach 17/10/96

**Map Series**: Burrundie 1:50,000

9749.1001

**Description**: Star picket 10m from the Fountain Head road adjacent to the power station

**AMG Coordinates**: 762600mE 85049000mN

**Elevation**: 120.23m above sea level

**Observed Gravity**: 978311.148

**Established**: M. Roach 16/10/96

**Map Series**: Fenton 1:50000
REGIONAL BASE STATION

ADELAIDE RIVER

9289 - 5171

Description: Circular plate, 1.5m west of the Adelaide River township fire station.

AMG Coordinates: 727802 mE 8535522 mN

Elevation: 52.78 m ASL

Observed Gravity: 978314.26 mGal

Established: M.Roach 16/10/96
APPENDIX 3

1999 UTS Aeromagnetic Survey Specifications
DETAILED AEROMAGNETIC AND RADIOMETRIC SURVEY SPECIFICATIONS
1999 SURVEY

SURVEY SPECIFICATIONS

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<td>Spectrometer:</td>
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<td>Radiometric Detector Volume:</td>
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<td>Navigation:</td>
<td>Differential GPS</td>
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APPENDIX 4

Environmental Ledger
TENEMENT ENVIRONMENTAL MANAGEMENT REGISTER

LAND STATUS RECORD

Project: Brocks Creek - Cullen Project Area

Tenement Name: Ban Ban

Tenement No’s: EL8047

Registered Holder(s): AngloGold Australia Limited

Date Granted: 24/11/93  Term: 6yrs  Area: 30 blocks

Bond/Security: None

JV Partners (if any): -

Land Classification: (Crown, Private, Lease) Pastoral Lease

Land Holder/Occupier: Brits Australia  Station: Ban Ban Springs

Address: Ban Ban Springs Station
         Fountain Head Road
         Hayes Creek

Phone: (08) 8985 2430

Fax: 

Contacted By: Helen Clark,
              Damien Stephens, Scott Marsh

Date: April 1997

Land Classification: (Crown, Private, Lease) Pastoral Lease

Land Holder/Occupier: Gary Hamilton  Station: Mary River West

Address: 9 Pall Mall
          Currumbin

Phone: (075) 534 7408

Fax: 

Contacted By: Chris Spurway

Date: May 1997

Pastoral Notes: (Stock, Cultivation, Access, Rainfall)
Fenced grazing land, with cattle, water buffalo and horses. Ban Ban Springs station is operated by Britts Australia as a tourism venture. Access is via the Stuart Highway.

Environmental Notes: (Flora/Fauna, Erosion, Bushfires, Flooding)
Open tropical savannah, prone to flooding during the wet season. Burn offs are carried out at the beginning of the of the dry season.

Groundwater: (Bores/Wells/Dams, streams, drainage, test data)
Margaret river is the largest watercourse, with multiple smaller perennial creeks and streams occurring.
Aboriginal Notes:  (Sacred Sites, Cultural)
An AAPA clearance certificate (23392) has been granted for Ban Ban.

Historic Relics:  (Mine Workings, Equipment, Homesteads etc.)
No recorded site of historical significance.

Previous Activity:  (Mining, Exploration, Forestry, etc.)
Although the Cullen JV tenements have previously been held by several companies, exploration activities has caused only minimal environmental impact.
TENEMENT ENVIRONMENTAL MANAGEMENT REGISTER
PRE-EXISTING ENVIRONMENTAL DISTURBANCE RECORD

Tenement Name: Ban Ban  No(s): EL8047

Exploration Activity Area: Cullen Project Area

Shafts/Pits/Dumps: Nil

Track/Access: Access via Stuart Highway, and/or Fountainhead road and/or Mount Wells road and/or established station tracks on Ban Ban Station and Ringwood Station.

Line Clearing: Nil

Costeaning: Nil

Drill Sites: Nil

Other: Most of previous work not within bounds of relinquished area

Location Data:

Other Ref: 08.8471, 08.8420, 08.9654

Compiled by: Helen Clark  Date: 20/11/97
# TENEMENT ENVIRONMENTAL MANAGEMENT REGISTER

## ANGLOGOLD ENVIRONMENTAL IMPACT RECORD

**Tenement Name:** Ban Ban  
**No(s):** EL8047  

**Report Ref No’s:** 08.8471, 08.8420, 08.9654, 08.8961, 08.8138, 08.9654, 08.10579, 08.10590, 08.10962, 08.11763  

**Exploration Activities:** Surface sampling, posthole RAB, Ground Mag, Detailed Aeromagnetic Survey  

**Grids & Traverses:** Nil  

**Soil Sampling:**  
- 1994 – 325 Soil samples, 16 rockchip  
- 1996 – 6 soils samples, 458 auger samples  
- 1997 – 56 stream sediment samples, 6 hand samples  
- 1998 - 68 Rockchip samples  
- 1999 – 24 rockchip samples, 76 base of slope samples  

**Costeans / Pits:** None  

**Drilling:**  
- 1994 – 19 holes, 474 metres, 260 samples  
- 1997 – 488 holes, 506 metres, 294 samples  

**Drill Traverses:** None  

**Drill Pads:** None  

**Ground Geophysics:** None  

**Access Tracks:** Pre-existing access tracks utilised  

**Camps:** None Known  

**Other:**  

**Compiled by:** Penny Large  
**Date:** 07/02/2002
## TENEMENT ENVIRONMENTAL MANAGEMENT REGISTER

### ANGLOGOLD REHABILITATION RECORD

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<td>Penny Large</td>
<td>Date: 07/02/2002</td>
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FIGURES
Figure 7 - Ground Magnetic Traverse Profiles