TERRITORY IRON LTD
A.C.N. 100 552 118

MT GOYDER
EXPLORATION LICENCE 23921

ANNUAL REPORT
FOR THE PERIOD
18th DECEMBER 2003 TO 17th DECEMBER 2004

Darwin 1:250,000 Sheet
NORTHERN TERRITORY

R Vivian
February 2005
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1. SUMMARY

This report details exploration activities conducted by Territory Iron Limited within the EL23921 (Mt Goyder) area during the year ending 17th December 2004. Expenditure during the year was $8,296.49.

Exploration activities during the reporting year comprised a review of historical data by Territory iron personnel and consultant geologist Mackay & Schnellmann, and reprocessing and re-interpretation of available aeromagnetic data on the property by Southern Geoscience Consultants and Resource Potentials.

This work confirmed the original anomalies evident in 1964 survey data and that the magnetic data would indirectly detect haematite mineralisation associated with underlying magnetite mineralisation.

A total of 14 magnetic targets of varying follow-up priority was detected in the data. Of these, target A5 appears to be the most similar to the Mt Bundey magnetic response.

It was also concluded that the data was too widely spaced to delineate magnetic bodies for drill targeting with precision, and acquisition of high resolution (50m line spaced) airborne data was recommended.

Year 2 exploration activities planned for the 2005 field season include:

— the acquisition of new, high resolution (80m line x 25m height) airborne magnetic and radiometric data;
— follow-up work comprise gridding, mapping, geochemical sampling, ground magnetic surveys and scout RAB drilling of aeromagnetic anomalies; and where appropriate definition RC drilling to determine resource grade and tonnages.
2. INTRODUCTION

The report details exploration activities conducted by Territory Iron Limited within Exploration Licence area E23921 during the year ending 17\textsuperscript{th} December 2004.

Exploration Licence 23921, covering 16 graticular blocks or a total of 53.58 square kilometres, was granted for a 6-year term on 18\textsuperscript{th} December 2003. The tenement with Exploration Licence 23791 and Exploration Licence Application 24468 forms the Mt Bundy Project area.

Exploration Licence 23921 is located approximately 100km ESE of Darwin. From Darwin, access to the property is by way of the Arnhem Highway that runs eastwards to Jabiru. The Arnhem Highway crosses the western portion of the Mount Bundey property and also its southern and eastern parts (Figure 1).

Climate is tropical and humid with a rainy season from December to March. Field work is largely restricted to the dry season.

3. REGIONAL GEOLOGY

The Mount Bundey property is located on the Lower Proterozoic Pine Creek Orogen sedimentary sequence.

The sequence unconformably overlies Archaean gneissic granite. The basal unit of the Pine Creek Orogen present in the area is the Mount Partridge Group that is represented by the Mundogie Sandstone and the Wildman Siltstone. The Mundogie Sandstone consists of sandstone and conglomerate with siltstone and shale. The Wildman Siltstone consists predominantly of fine grained sediments with minor sandstone and carbonate units. Many of the finer grained units are ferruginous.

Unconformably overlying the Mount Partridge Group is the South Alligator Group that has three members. At the base is the Koolpin Formation consisting of carbonaceous and pyritic fine grained sediments that are ferruginous in outcrop. Above is the Gerowie Tuff of fine grained sediments and tuff whilst the top unit is the Mount Bonnie Formation of generally fine grained sediments.

At the top of the Pine Creek Orogen sequence is the Finniss River Group represented by the Burrell Creek Formation of fine to medium grained sediments.

In the Mount Bundey property area, there is present the entire Lower Proterozoic sequence from the Mundogie Sandstone to the Burrell Creek Formation although outcrops are predominantly of the middle portions of the sequence.

Sills of the Zamu Dolerite intrude the Lower Proterozoic sedimentary sequence. The sequence is also intruded by the Lower Proterozoic Mount Bundey Granite and the Mount Goyder Syenite that are considered to be two phases of an intrusive complex. The older Mount Bundey Granite is present in the west central portion of the property with the Mount Goyder Syenite flanking it to the north and northeast. The upper surface of the intrusive is interpreted to dip away to the north at a shallow angle.
Figure 1   Tenement Location EL23921
The bedrock sequence is covered in many areas by Tertiary and Quaternary surficial deposits of various types.

4. LOCAL GEOLOGY& STRUCTURE

The Koolpin Formation to Burrell Creek Formation portions of the Lower Proterozoic sequence crop out in the eastern part of the Mount Bundey property area and on the western margin of the property. The stratigraphically lower Wildman Siltstone and in parts the Mundogie Sandstone are present in the central property area and in the north.

There is a major area of granite and syenite intrusive occurring in the western and central portions of the property.

The broad overall structure is a synclinorium with the intrusive granite and syenite being located approximately on the fold axis. In detail, the synclinorium is composed of many constituent anticlines and synclines that have fold axes that trend northerly to north northeasterly and that plunge at low angles to the south.

5. MINERALISATION

Iron mineralisation in the Mount Bundey area is present on the margin of the Mount Bundey intrusive complex in the Mount Goyder Syenite. Two approximately parallel lodes occur that strike north easterly. The Main or Pritchards Lode is around 700 metres long and has a maximum width of 32 metres. To the northwest is the Parallel Lode that ranged up to 9 metres in width. Between and adjacent to these two structures are greatly altered and ferruginised sediments probably of the country rock.

The iron bearing materials present are of four types. The martite caprock lode consisted of massive martite with little texture but abundant vugs and various amounts of massive goethite generally along fractures. Quartz was present in stringers and filling some of the vugs. Boxworks were present and rarely pyrite. The hematite lode comprised massive hematite with small amounts of goethite whilst the hematite-goethite lode consisted of massive amorphous goethite associated with hematite. The limonite-clay lode consisted of limonite of lateritic origin. The lodes passed downwards in to a martite-magnetite-pyrite rock.

Flanking the original outcrop of the iron deposit there were developed rubble and scree of iron bearing materials that were partially cemented in places.

The broad origin of the iron mineralisation at Mount Bundey is considered by most to be the intense ferruginisation of a roof pendant of country rock within and associated with the emplacement of the Mount Goyder Syenite followed by further ferruginisation during the formation of a land surface. Others have suggested that the iron mineralisation is associated with deeper ultrabasic rocks. Some aspects of the deposits are obscure and there are several theories as to their genesis although the predominant opinion is that the deposit is a skarn.
6. PREVIOUS EXPLORATION

This section on Previous Exploration was compiled by geological consultants, Mackay & Schnellmann, for Territory Iron.

Introduction
The old Mount Bundey deposit mined from 1968 to 1971 is located on an excised area within Exploration Licence 23791. Much of the historical exploration in the area was undertaken on this deposit. An account of this exploration is presented in this report section as although the deposit is excised, the data are relevant to the geological model of the target sought.

Exploration by the Bureau of Mineral Resources Geology and Geophysics 1958 to 1966
During geological mapping in 1958, the presence was recorded of hematite pseudomorphing magnetite near the northern margin of the Mount Bundey Granite. The body was reported as being around 600 metres long by 12 metres wide. The occurrence is not shown on the extant map but is probably the Mount Bundey iron deposit.

Also in 1958, a diamond core hole was drilled to around 152 metres at Mount Bundey. It was angled to intersect Pritchard’s Lode to investigate the possible presence of a sulphide deposit at depth; results were negative.

A ground magnetometry test survey was undertaken over the Mount Bundey deposit in 1962. Readings were taken at various intervals on seven grid lines at some 122 metre spacings. Martite was noted on a prominent ridge some 670 metres long. The survey purpose was to decide whether aeromagnetics would detect the iron mineralisation: it was considered that the aeromagnetometry should be successful. The body responsible was interpreted as trending northeast, as around 370 metres long and present from 15 to 45 metres below surface.

In the second half of 1962, a diamond coring programme comprising some 622 metres was undertaken on the Pritchard’s Lode with 15 angled holes at 12 locations. The drilling was designed to investigate not only the main part of the deposit but also the peripheries. Core recovery overall was generally poor ranging from around 1% to 56% per hole. Recoveries were low in the surficial material but also generally low in the mineralisation.

Samples of the iron mineralised material were analysed for iron, phosphorus, copper and sulphur. Iron contents ranged from 52.0% to 66.7%, phosphorus from 0.009% to 0.165%, copper 0.004% to 0.785% and sulphur 0.020% to 5.73%.

Surface samples of unknown type were taken across the deposit aligned with the drillholes and were analysed for iron, silica, phosphorus, copper and sulphur. Eight samples were collected with the results ranging from 65.1% to 67.1% iron, 1.10% to 3.19% silica, 0.016% to 0.156% phosphorus, 0.023% to 0.053% copper and 0.013% to 0.116% sulphur.
Following on the drilling and surface sampling, a resource estimate was prepared. Few details are available on the estimation procedure. The resource estimate does not accord with the present JORC Code as no grade was estimated and it was termed a reserve although no economic studies are recorded. The resource is not presented in this report.

An aeromagnetic survey was completed in the area in late 1964. The western and central parts of the property and other areas were flown on east-west lines at around 160 metre spacings and a sensor height of 75 metres. More detailed aeromagnetometry at Pritchard’s Lode had flight lines at some 107 metre spacings. A magnetic anomaly was detected over the Pritchard’s Lode mineralisation. Other lower intensity anomalies were detected around the margins of the Mount Bundey intrusive. Interpretation of the data suggested that the granite margin here slopes northwards at a very shallow angle. Around 1.5 kilometres northerly of Pritchard’s Lode is a northerly trending anomaly at 30 to 75 metres interpreted depth with other anomalies around the Mt Goyder intrusive to its west, north and east.

In mid 1966 further drilling was undertaken at the Mount Bundey deposit. Three diamond core holes were drilled for a total of around 105 metres. Core recovery was generally high but no core was recovered from parts of two holes. Core was split and samples analysed for iron, phosphorus, sulphur and copper. High grade hematite was intersected in all holes over much of the drilling with the average intercept iron contents ranging from 62.74% to 67.54% and the phosphorus from 0.018% to 0.054%.

**Exploration 1965**
The north end of the deposit was investigated by 16 jackhammer holes to some 4.6 metres depth with five trenches being dug to assess the width in the south.

Also during 1965, five trenches and nineteen pits were dug around the Pritchard’s Lode area to investigate the rubble iron mineralised material. Digging was to the decomposed syenite at some 3 metres depth. Samples were collected and bulked then quartered to produce 0.91 tonnes of test material. A second sample presumably from the same excavations was collected and a 0.15 tonne quarter sample produced for testing.

Areas of scree iron bearing material were pitted at 61 metre centres. The pits were dug to the weathered syenite with two channel samples being collected at each pit. The pit samples were bulked over five geological sub areas and quartered down to around 0.45 tonnes each for testing. A second sample was taken similarly to the rubble programme.

A sectional resource was estimated based on the core drilling and surface rock sampling of 1962. The material was termed “ore” and thus does not conform to the present JORC Code as no economic assessment appears to have been undertaken. The resource is not presented in this report.
Exploration by the Bureau of Mineral Resources Geology and Geophysics 1969

A helicopter reconnaissance was undertaken in the Mount Bundey area for occurrences of ferruginous outcrop. The rock unit mainly examined was the Koolpin Formation.

One of the areas of outcrop is located in the east of the present Mount Bundey property. The intermittent outcrops examined extend over a distance of around 8 kilometres in an approximately east-west direction. One sample of unknown type was collected from this area in the east of the present property. The sample was analysed for iron, manganese and phosphorus with the results being 54%, 0.10% and 0.03% respectively. The presence of limonite boxworks was noted at the single location at which a landing was made.

Exploration 1988 to 1989

The aeromagnetic data was reassessed in 1988. Although the anomaly over Pritchard’s Lode was of much greater magnitude than others, it was also true that the only area with outcrop coinciding with an anomaly was at Pritchard’s Lode. The other anomalies could originate from similar deposits beneath alluvial cover.

The anomalies occurring north of Pritchards Lode and on the margins of the Mount Goyder intrusive were considered worth exploring further. Other anomalies were lower ranked but assessed as of interest. All anomalies were considered to represent vertical or near vertical features at shallow depths.

Locations of many of these anomalies were examined in the field and ground magnetometry was undertaken. As a result of this work, eight anomalies were considered worthy of follow up.

Two first ranking anomalies were the Pritchard’s Lode Northwest Anomaly and the G1 Anomaly. The former is located within the excised area and is not discussed further.

Anomaly G1 is located in the central portion of Exploration Licence 23921. Four small areas of martite-magnetite outcrop three of which had been trenched were observed but no further geological details are available. The five constituent anomalies extend around 2.5 kilometres north-south. Eleven ground magnetometry traverses were run over the anomalies. Strong responses at Anomaly G1C implied the body is 200 metres or more long. Erratic high readings were obtained at Anomaly G1D but no extensions were detected. Anomaly G1E is broad and on the metasediment- syenite contact. Overall the Anomaly G1 was considered to represent a zone of discontinuous iron bearing lenses.

The second ranking G2 Anomaly is in the central part of Exploration Licence 23921. The area is on the northern margin of the intrusive and is soil covered. Ground magnetometry identified anomalous high values comparable to those of the G1 Anomaly on two of the four traverses.

Anomaly B1 is in the western part of Exploration Licence 23921 and the northern part of Exploration Licence 23791. An east-west anomaly extends over some 3 kilometres with a spur to the north extending some 1.5 kilometres. At the northern end of the
spur are siliceous ironstones with the southern anomaly being on the granite contact. The area is largely covered in alluvium. No ground magnetometry was undertaken.

West of the Arnhem Highway in the western portion of Exploration Licence 23791 is the easterly trending Anomaly B3 that is along strike from the Pritchard’s Lode deposit. At the western end of the anomaly are siliceous ironstones: the eastern end is covered by surficial material. Ground magnetometry traverses run on the western end of the anomaly produced broad highs but the eastern end was not investigated.

Anomaly B2 is in the northern part of Exploration Licence 23791. It is under a kilometre long with a northerly orientation and was not examined.

The third ranking Anomaly M1 in the northeastern part of Exploration Licence 23791 is around 2 kilometres long with a northerly orientation.

Another third ranking anomaly is located outside the present Mount Bundey property.

One magnetometry traverse was undertaken over Anomaly G3 in the east of Exploration Licence 23921 but this was not considered indicative of Mount Bundey type iron mineralisation. Note however that the anomaly orientation coincides with the Wildman Siltstone strike on the Mount Goyder Syenite eastern margin. The anomaly may be associated with bedrock iron mineralisation.

A later explorer reported that drilling was undertaken in 1989 on the Mount Bundey deposit. Twelve percussion holes were drilled for a total of 222 metres. Ten of the holes tested depth extensions in the pit. Two other holes tested a magnetic anomaly to the southwest. Samples were collected over 1 metre intervals and analysed for iron and sulphur. Six pit holes returned intercepts with greater than 55% iron: the best was 18.6 metres at 63.5% iron and 1.02% sulphur in a hole that ended in mineralisation. No analyses are extant for four holes. The deposit was shown to extend some 10 metres below the pit over some 450 metres.

**Exploration 1992 to 1993**

A survey was undertaken of the dumps, stockpiles and tailings at Mount Bundey. The eight main dumps were independently sampled in late 1992. Iron bearing material was collected and composited with Fe, SiO$_2$, Al$_2$O$_3$, P, S and eleven other chemical species being determined plus loss on ignition. The material returned 62.4% iron, 5.45% silica, 1.90% alumina, 0.049% phosphorus and 0.140% sulphur with loss on ignition being 1.87%.

The tonnage of material at the Mount Bundey Mine below the pit bottom was estimated. The resource was categorised as an Inferred Resource although insufficient data are available to be certain whether this is present JORC Code compliant. It appears that the resource was estimated on a geological basis rather than any grade or minimum width criteria being applied. The resource estimate is not reported here.

A detailed ground magnetic survey was undertaken over Anomaly A around 400 metres west of the pit and on the western edge of the excision. An area 350 metres by probably 200 metres was covered with readings taken at 10 metre intervals on east-
west lines. A north-south anomaly some 350 metres long was interpreted with the southern end at shallower depth than the northern. The positions of the two holes drilled in 1964 could not be identified but it was believed that they had not tested the most prominent part of the anomaly.

Ground magnetometry at Anomaly B1 involved readings at 10 metre intervals on six east-west lines at 100 metres spacings. The anomaly was traced over 500 metres. Top of the body was assessed as at 15 to 30 metres below ground surface.

**Exploration 1994**
During gold exploration in the Mount Bundey area, ground magnetometry was undertaken at two of the anomalies previously delimited. At Anomaly B1, five north-south traverses were completed over the east-west portion of the anomaly: each line was some 500 metres long. Readings were at 25 metre intervals. The anomaly source was interpreted as beneath the alluvium at around 25 metres in the west but deepening to the east. Three ground magnetometry traverses were completed at Anomaly B2. Two were east-west and one north-south with each around 700 metres long. The anomaly was not interpreted.

**Exploration 2000**
During a programme that concentrated mainly on the Frances Creek deposits, one sample was taken from a Mount Bundey reference core and analysed for Fe, SiO$_2$, Al$_2$O$_3$, P, S and loss on ignition and a suite of sixteen other chemical species. The sample hematite returned 67.0% Fe, 1.94% silica, 0.54% alumina, 0.013% phosphorus and 2.0% loss on ignition.

**Mining History**
Mining commenced at the Mount Bundey deposit in 1968 based upon an approximately 1.5 million tonne reserve. Production continued through to late 1971 with the final shipment being in early 1972. During this period 843 063 tonnes of lump and fine iron ore were transported by truck and train to Darwin and exported although other sources give the production as 1.35 million tonnes. Average grade was 63.43% iron, 0.057% phosphorus (reported probably incorrectly as P$_2$O$_5$) and 0.108% sulphur. Around 60% of production came from the bedrock deposits and the balance from loose surface material.

Mining ceased due to the increasing level of sulphur in the material at depth.

**7. EXPLORATION ACTIVITIES - 2004**

**7.1 Work Completed**
Exploration activities during the reporting year concentrated on reviewing historical data on the property generated since the late 1950s. This study comprised 1) compiling and reviewing all technical reports, and 1) reprocessing of available aeromagnetic data on the property. This data was retrieved from the NT Geological Survey Library.

A comprehensive listing of retrieved technical reports is presented in the Reference section.
Of the two aeromagnetic data sets that exist, one is a survey completed in late 1964 by the Bureau of Mineral resources Geology and Geophysics. The western and central parts of the property and other areas were flown on east-west lines at around 160 metre spacings and a sensor height of 75 metres. More detailed aeromagnetometry over and around the Mt Bundey mine (Pritchard’s Lode) had flight lines at some 107 metre spacings. This data was used to generate the original anomalies by past explorers, however only a hardcopy print of this survey exists and is of poor resolution.

The second, NTGS Mary River, survey was flown in 2000 on 400m line separations at 80m average terrain clearance. This data was reprocessed in February 2004 by Southern Geoscience Consultants to determine the relationship between the magnetic data and iron mineralisation. In addition, their brief was to identify any magnetic features/anomalies.

A brief review of this latter data set was undertaken by Resource Potentials in July 2004 to assess the quality of the data in detecting magnetite bodies and hence by association haematite/martite mineralisation.

7.2 Results Achieved
A full report of Southern Geoscience Consultants and Resource Potentials processing methodology and findings is found in Appendices A and B, respectively. A brief summary of findings is given here.

The work by both Southern Geoscience Consultants and Resource Potentials confirmed the original anomalies evident in the 1964 survey data. The two main B1 and G1/G2 anomaly groupings are shown on Figure 2.

In addition, Southern Geoscience Consultants and Resource Potentials collectively concluded that:

— the magnetic data would indirectly detect haematite mineralisation associated with underlying magnetite mineralisation;

— A total of 14 magnetic targets of varying follow-up priority was evident in the data. Of these target A5 looks to be the most similar to the Mt Bundey magnetic response (Figure 3);

— The data was too widely spaced to delineate magnetic bodies for drill targeting with precision, and acquisition of high resolution (50m line spaced) airborne data was recommended.

8. YEAR 2 PROGRAMME

As a result of these two geophysical studies, it was decided to fly a survey over the two EL tenements during late 2004. UTS Geophysics of Perth, WA quoted for this work.

However, the survey was postponed until 2005 because a suitable aircraft was not available until November, at which time the chance of persistent rain could possibly disrupt the survey. Certainly it was considered that wet ground conditions would
Figure 2 Main Anomaly Groupings: Mt Bundey-Mt Goyder
(1VD/2VD Total magnetic intensity data)
Figure 3 SGC Magnetic Anomalies: Mt Bundey-Mt Goyder district

degrade the quality of the radiometric data and thus its usefulness in delineating granites associated with skarn iron mineralisation.

Work proposed for the 2005 field season is:

— the acquisition of new, high resolution (80m line x 25m height) airborne magnetic and radiometric data;
— follow-up work comprise gridding, mapping, geochemical sampling, ground magnetic surveys and scout RAB drilling of aeromagnetic anomalies; and where appropriate definition RC drilling to determine resource grade and tonnages.

The budget for this work is estimated at approximately $284,000.

9. EXPENDITURE

Expenditure for Year 1 exploration was $8,296.49 as detailed in the attached expenditure report.
10. REFERENCES


DATE: February 2, 2004
TIME: 2:54 PM
FROM: Bill Peters, SGC
TO: Murray Surtees

MT BUNDEY PROJECT
ASSESSMENT OF MAGNETIC DATA FOR IRON ORE

INTRODUCTION
It has been requested that the magnetic data over the Mt Bundey Project be examined and some comment be made as to the relationship between the magnetic data and the known iron deposit. In particular any suggested new targets should be indicated.

It was advised by SGC that in order to do this, the data should be processed, put into a Mapinfo GIS, collated with other available data, and a quick interpretation done. The time and cost needed to do this exceeded the client’s budget and we were subsequently advised to constrain the time to the budget. Consequently some aspects of this work are short on detail, some aspects are not looked at, and some products are not to a standard that SGC normally delivers. The work did take considerably longer than the budget allowed and consequently some products that were generated and used are not provided at this stage.

DATA PROVIDED
1. Total Magnetic Intensity colour fill contour plan 1:50 000 – laminated. From NTGS Mary River Survey.
2. Tenement Plan – A4
3. Magnetic contours over geology – B&W – A4
4. Magnetic contour plan – from 1964 BMR Mt Bundey Survey
5. Iron Ore, Manganese & Bauxite Deposits of the Northern Territory, NTGS Report 13
6. Mt Bundey Iron Ore Deposit, NT. By G. R. Ryan
7. Darwin 1:250 000 map sheet
8. CD with the following Mapinfo tables:
   • Contours of the Mary River TMI
   • Four shadowed and plain raster images of the Mary River TMI
   • TMI contours superimposed on the Mt Bundey Geology
9. CD with Darwin, Pine Creek and Burundie Geology
10. CD with NTGS Mineral locations

**DATA SOURCED AND PROVIDED BY SGC**

- Aeromagnetic data from the NTGS Mary River Survey delivered in GDA94.
- Digital tenements

**ASSESSMENT OF DATA**

The Mary River data is a relatively recent survey flown by the NTGS. It is 400m line spacing and flown east-west. The line spacing is too wide to properly assess the Mt Bundey deposits and other targets.

The 1964 BMR Mt Bundey survey is much more detailed than the Mary River survey with what seems to be 100m line spacing. Unfortunately there is no digital data provided (if it exists) and the paper contour map is all that exists.

**SGC PROCESSING**

All processing is in GDA94 Zone 52S

The Mary River aeromagnetic RTP TMI grid supplied by the NTGS was imaged. Mapinfo raster and contour files and also image maps at 1:25000 scale were made for:

- TMI RTP East AGC shadowed colour
- TMI RTP FVD East AGC shadowed colour

The enhancement of colour on these images has been deliberately directed to highlighting discrete small magnetic bodies rather than the overall broad magnetic highs shown in the images supplied by the client.

The Mary River survey also has radiometric and terrain data which would add considerably to the interpretation. Unfortunately processing of this data was outside of the financial scope of this review.

**DISCUSSION**

The Mt Bundey deposit is now mined out, but was massive martite which graded down into a magnetite-pyrite zone within sediments. Martite is a variety of hematite formed from alteration of magnetite. The lodes are believed to be skarn deposits related to the Mt Bundey Granite/ Syenite immediately to the south. The syenitic intrusion is thought to have converted pyrite to magnetite and then subsequent supergene enrichment has formed the martite.

The magnetic data would be expected to show the distribution of magnetite rather than the non-magnetic martite. Thus any isolated strong magnetic anomalies are of
interest as a primary source, but whether the necessary supergene production of hematite has taken place will not be easily seen from the magnetic data.

The magnetic data have been reduced to pole in order to position positive anomalies directly over their magnetic source rocks. Using these images, some basic structure and lithology information has been interpreted. The interpreted lithologies are:

- Non-magnetic Intrusive – Mt Bundey Granite?
- Magnetic Intrusive – Mt Gorder Syenite?
- Weakly magnetic rocks – hornfelsed sediments? (magnetite after pyrite?)

A bitmap of the TMI contours superimposed onto NTGS geology is the primary geological information. The Mt Bundey Deposit is indicated on this map and corresponds to a discrete magnetic high.

Magnetic targets have been selected based on their similarity to the Mt Bundey magnetic anomaly. These have been classified as follows:

- Priority 1: A1 to A5
- Priority 2: B1 to B4
- Priority 3: C1 to C5

It is clear that there is much more detail in the 1964 magnetic survey contour plan than in the images from the modern survey. These contours have been used qualitatively where possible and for example, Targets A1-A4 are largely interpreted from this contour plan rather than the images.

**CONCLUSIONS AND RECOMMENDATIONS**

The magnetic data shows that the Mt Bundey deposit is a clear discrete magnetic anomaly and is in fact the most distinctive anomaly within the survey area. The detailed BMR data shows that there are in fact at least three anomalies (A1-A3) within the main Mt Bundey anomaly (B1) seen on the images.

A total of fourteen magnetic targets with some similarity to Mt Bundey have been selected, although the lower priority targets have relatively low chance of success. Of these targets, Target A5 looks to be the most similar to the Mt Bundey magnetic response.

The magnetic data will not locate martite/hematite directly but should locate the underlying magnetite-pyrite concentration.

The digital magnetic data available is too widely spaced for the task of delineating the magnetic bodies with the precision required. Prior to any further work on the above targets, it is recommended that the area be re-flown with a high resolution airborne survey with a line spacing of 50m. This survey should collect magnetic, radiometric and elevation data. This data would considerably refine the target selection and it is expected that some targets would subsequently be rejected as not of interest, and others would be resolved into multiple smaller targets.
Gravity and EM surveys could be considered as complementary methods to aid with the selection of targets.
(All data is on my computer under Murray Surtees)

Everything in Mapinfo as well as Hard copy

We have:
- Magnetic data
- Radiometric Data
- Terrain Data
- Geology
- Tenements

We do not have:
- Gravity data

*The magnetic data is in WGS84 Zone 52 (Same as MGA94 Zone 52) so stay with MGA*

**Sheet:**
774000E – 796000E (22km)
8562000E – 8586000E (24km)
1:50 000 (44cm x 48cm)

**Airborne Data:**
TMI RTP East AGC shade with contours – special stretch to highlight iron deposit
TMI RTP FVD East AGC shade with contours – special stretch to highlight iron deposit

**Geology:**
The NTGS Darwin 1:250K scale geology. No legend needed.

**Interp:**
Film overlay
APPENDIX B   RESOURCE POTENTIALS STUDY
MEMORANDUM

To : Bob Vivian
From : Mathew Cooper
Subject : Mt Bundey Aeromagnetics
CC :
Date : 20 May 2005

Dear Bob,

After our meeting on the 9th July 2004, Resource Potentials were commissioned to perform a brief review of the available aeromagnetic data over the Mt Bundey Project, in the Northern Territory. The scope of work was to assess whether the data were suitable for targeting highly magnetic magnetite/pyrite bodies that would underly hematite/martite iron ore mineralisation, and recommend possible follow up surveys.

Digital line and gridded data were supplied, along with a CD containing Southern Geoscience Consultants (SGC) processed images and their brief interpretation report. As mentioned in the SGC report, only a brief review was undertaken and limited processing completed due to their costs and the clients budget.

Resource Potentials were able to locate additional aeromagnetic digital data in the Mt Bundey area, apart from the NTGS Mary River 400m data. The survey was flown for Australian Coal and Gold Holdings by Geoterrex in 1986, over the south west portion of the Mt Bundey Granite, acquiring magnetic and radiometric data. The survey was flown on east–west lines with 150m line spacings, and 100m nominal terrain clearance. The data was visually located using air photos. Though the survey is not over the current tenement holdings of Territory Iron, it shows an example of higher resolution data in comparison to the NTGS 400m data.

BMR aeromagnetic data acquired over the project area in 1964 using 160m and 100m infill line spacings, were only available as hardcopy contour plans.

Using the historical and NTGS data, Resource Potentials have created additional products derived from the available aeromagnetic data including: 1st and 2nd vertical derivatives of the TMI, radiometric images, and terrain models. We have also created contour plans for the TMI, 1st vertical derivatives, elevation, and stacked magnetic profiles, all of which have been provided in arcview format on CD.
The additional processing of the aeromagnetics and radiometrics has shown extra information not previously imaged. Of particular interest is the radiometric data which maps out the exposed boundaries of the Mt Bundey Granite and Mt Goyder Syenite.

In summary, the 400m spaced data is suitable for targeting and classification of highly magnetic anomalies that may represent massive magnetite/pyrite concentrations on a more regional scale. For more in-depth interpretation and targeting of magnetic anomalies and drill hole positioning, higher resolution data would be required.

We recommend flying the project area with a low level, 50m line spaced aeromagnetic survey, acquiring magnetics, radiometrics and dem data. Timing for this would be dependant on contractor availability with preliminary enquiries indicating September/October 2004. We would be happy to help you plan survey boundaries and obtain quotations from the various contractors.

Ground magnetic profiling would not be required if a close line spaced survey was undertaken, as the resolution of the 50m line spaced survey would be sufficient to detect large magnetite bodies close to surface and at depth. Also, as magnetics does not directly detect the non-magnetic martite ore, gravity surveying might be considered to detect density and weathering variations.

If you have any questions please feel free to let me know.

Regards,
Mathew Cooper

CD-Contents:

All data in GDA94 MGA52

Images
  total magnetic intensity reduced to the pole sun shaded image
  total magnetic intensity reduced to the pole 1st vertical derivative AGC filtered
  total magnetic intensity reduced to the pole 2nd vertical derivative AGC filtered
  total magnetic intensity reduced to the pole 1st vertical derivative over 2nd vertical derivative AGC filtered
  total magnetic intensity reduced to the pole analytic signal sun shaded image
  total magnetic intensity reduced to the texture filtered image
  radiometrics RGB (K/Th/U)
  radiometrics K image
  radiometrics Th image
  radiometrics Ur image
  DTM

Vector Data
  total magnetic intensity reduced to the pole contours 20nt divisions
  total magnetic intensity reduced to the pole contours 50nt divisions
  total magnetic intensity reduced to the pole 1st vertical derivative contours 0.01nt/m divisions
  total magnetic intensity reduced to the pole 1st vertical derivative contours 0.005nt/m divisions
  total magnetic intensity reduced to the pole stacked profiles 2nt/cm divisions 4800nt base
  total magnetic intensity reduced to the pole 1st vertical derivative stacked profiles 0.025nt/cm divisions 0nt/m base
  Graticular outline

PDF Plot Files
total magnetic intensity reduced to the pole sun shaded image
total magnetic intensity reduced to the pole sun shaded image with contours
total magnetic intensity reduced to the pole 1st vertical derivative AGC filtered
total magnetic intensity reduced to the pole 2nd vertical derivative AGC filtered
total magnetic intensity reduced to the pole 1st vertical derivative over 2nd vertical derivative
total magnetic intensity texture filtered
total magnetic intensity analytic signal
radiometrics RGB (K/Th/U)
DTM
Scanned Geology
total magnetic intensity reduced to the pole contours
total magnetic intensity reduced to the pole 1st vertical derivative contours