NORTH FLINDERS MINES LIMITED

JOINT VENTURE PROJECT
Roebuck Resources\Central Field Minerals\North Flinders Mines Limited

SUPPLEMENTARY ANNUAL REPORT FOR EL 8164 (RANKIN)
FOR THE PERIOD AUGUST TO DECEMBER 1995

1:250 000: Sheet SF 53-14 Alice Springs
1:100 000: Sheet 5751 Laughlen

D.R. Lovett
A.F. Beckwith
DECEMBER 1995
RH:DRL388
SUMMARY

This report describes the exploration activity at EL 8164 (Rankin) during the three month period from August to 15th December 1995.

Work undertaken included:

- field familiarisation for logistical support and access
- assessment to the effectiveness of the past exploration programmes
- assessment of possible alteration mineral assemblages
- assessment of usefulness of previous detailed airborne magnetic survey over western portion of the tenement
- future effective exploration programme formulation
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1. INTRODUCTION

This supplementary annual report covers initial assessment work undertaken by North Flinders Mines, in the period from mid to late August to 14th December 1995, for the licence EL 8164 “Rankins” prior to specific field evaluation of the conceptual models and mineralisation indicators evoked by NFM and Roebuck personnel.

Roebuck Resources and Centrailfield Minerals secured the area via a granted tenement on the 15 th of December 1993. Subsequently North Flinders Mines has negotiated and lodged a “Heads of Agreement” covering the tenement. This agreement is effective from mid to late August 1995.

The licence essentially covers the known gold mineralisation and various old workings of the Winnecke Goldfield and other “volcanogenic” base metal prospects.

Various previous exploration and production has occurred over specific portions of the present tenement and review of results acheived in this past evaluation add to the prospective nature of the tenement.

Essentially the work undertaken during this period includes

- field familiarisation for logistical support and access
- assessment to the effectiveness of the past exploration programmes
- assessment of possible alteration mineral assemblages
- assessment of usefulness of previous detailed airborne magnetic survey over western portion of the tenement
- future effective exploration programme formulation

2. TENEMENT DETAILS

The tenement, EL 8164, consists of 100 graticular blocks trending east west over the northern portion of the 1:100,000 Laugliem map sheet and covers approximately 310 square kilometres.

The registered tenement holders being Roebuck Resources (80%) and Centrailfield Minerals (20%).

**TABLE 1: Tenement Summary**

<table>
<thead>
<tr>
<th>Title</th>
<th>Name</th>
<th>Holder</th>
<th>Blocks</th>
<th>Grant Date</th>
<th>Expiry Date</th>
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<tr>
<td>EL8164</td>
<td>Rankin</td>
<td>Roebuck Resources (80%) and Centrailfield Minerals (20%)</td>
<td>100</td>
<td>15/12/93</td>
<td>14/12/99</td>
</tr>
</tbody>
</table>
3. LOCATION, ACCESS AND PHYSIOGRAPHY

The tenement, exploration licence EL 8164, is located approximately 70 kilometres North East of the township of Alice Springs (Fig 1) on the Laughlen 1:100,000 map sheet.

Access to the licence area is via the main Stuart Highway to the north of Alice Springs then along the graded and formed "Garden Station" road to the east. This road passes immediately to the north of the western most extremity of the tenement and continues to the station where access to the main Golden Goose workings is via a graded track to the south west.

Many of the minor prospect tracks within the tenement are currently impassable and will require upgrading should heavy equipment usage be required.

The topography of the tenement varies from colluvium covered flats with isolated knolls to large areas of rugged hills of Arunta basement lithologies and a core region of very rugged and steep Heavitree Quartzite ridges, which are only accessible on foot.

4. EXPLORATION OBJECTIVES

The objective of the work carried out to date by North Flinders Mines was directly related to familiarising the project geologists and management team responsible for the project with

- access concerns due to the rugged nature of a large portion of the tenement
- assessment of previous sampling media due to the potential contamination from highly mineralised prospect workings
- initial alteration assemblages to base further programme methodology, ie potential usage of the developing "state of the art" PIMA mapping and drill chip logging.
- application of airborne geophysics as a targeting tool for structures postulated as controlling mineralisation or the potential to highlight alteration magnetite depletion zones.

5. WORK UNDERTAKEN

Work undertaken during this period includes

- field inspection by the Supervising Geologist for initial assessment of potential (1 day) and two days of management programming
- field inspection by senior field manager to assess access to initial work programme areas, logistical support and camp facility needs (1 day)
- field inspection by senior project geologist and "in house" structural geologist (1 day)
- sample collection of known mineralised lithologies closely related to the better gold mineralisation at "Golden Goose" prospect for analysis utilising the PIMA II. (3 days total)
- literature search and review of previous data and reports related to of relevant mineralisation models and assessment of geological conceptual target mineralisation models and potential programmes requirements designed to determine associated geological and geochemical signatures (10 days)
- review, interpretation and recommendations of application of airborne magnetics to the delineation of mineralising structures utilising contours maps of previously flown data together with processing and presentation of regional BMR regional magnetics (3 days)

Supplementary Annual Report For EL 8164, Joint Venture Project, December 1995
6. RESULTS

6.1 Conceptual Model

As a result of studying the known geology, mineralisation and previous exploration within the area of the tenement it is clear that parts of it hold good potential for hosting epithermal disseminated replacement-type Carlin style gold mineralisation. The principal characteristics of this deposit type are:

- regional stratigraphy containing limestones, calcilutites, dolomite and quartzite.
- mine stratigraphy of silty calcareous dolomite limestone containing diagenetic pyrite and organic material.
- regional scale thrust zones
- mine scale normal faulting
- hydrothermal gold mineralisation with associated As, Ba, Hg and Sb.
- sub-aqueous - marine volcanic activity (ryolite and rhyodacite)

Many of these characteristics are known to exist within the tenement area - the Bitter Springs Formation (partly carbonaceous limestones), regional scale thrust faulting, local scale normal faulting and hydrothermal gold and arsenic mineralisation.

The exploration programme for 1996 will be directed at determining if the potential for this exploration model is sufficient to justify a full scale comprehensive exploration programme. Additional work will be done on the areas of known mineralisation to study the characteristics of the mineralisation and associated alteration.

6.2 PIMA II Samples

PIMA scanning of two rock samples collected from the "Golden Goose" identified them as being essentially muscovite with subordinate illite. Our experience in the Tanami has shown that illite is a clay mineral derived from the gold associated hydrothermal alteration of pelitic rocks.

The exercise has demonstrated that routine scanning of drill and surface samples that we generate during the 1996 programme may be fruitful in identifying and tracing the distribution of hydrothermal alteration associated with the deposition of gold mineralisation.

As part of the 1996 work programme all suitable samples will be scanned by the PIMA.

6.3 Assessment of Detailed Magnetics

The high resolution aeromagnetic data was able to identify major structural lineaments which form part of the G3 Gravity Corridor which hosts the gold mineralisation in The Granites - Tanami Block and which forms the northern margin to the Canning basin in W.A. (North West striking). The East West striking thrust faults which form part of the Arltunga Nappe Complex can also be easily recognised. Previous exploration has shown that these thrusts can be loci for the deposition of epigenetic gold deposits, particularly where they intersect North East trending lineaments.

Despite the restricted coverage of the aeromagnetics and the lack of processing that has been done, the detail that has emerged so far indicates that it would probably be worthwhile extending it to cover the remainder of the tenement. This decision will be made after we have confirmed our long term interest in the tenement.
7. EXPENDITURE INCURRED FOR THE THREE MONTH PERIOD TO DEC 1995

EL 8164 (RANKIN)

<table>
<thead>
<tr>
<th>ACTIVITY</th>
<th>$</th>
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<tr>
<td>Supervising Geologist (3 day @ $450/day)</td>
<td>1350</td>
</tr>
<tr>
<td>Project Geologist (11 days @ $350/day)</td>
<td>3850</td>
</tr>
<tr>
<td>Geophysicist (6 days @ $350/day) includes PIMA study</td>
<td>2100</td>
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<tr>
<td>Field Assistant (1 day @ $250/day)</td>
<td>250</td>
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<tr>
<td>Purchase, Processing and Imaging of Magnetic Data (20% of $8500 for Alice Springs 1:1,000,000 sheet includes contract processing and inhouse re-presentation and further image processing using TNT MIFS software for internal usage by geophysicist</td>
<td>1700</td>
</tr>
<tr>
<td>Vehicles (4 days usage @ $100/day)</td>
<td>400</td>
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<td>Airfare (1 return flight to Adelaide @ $745)</td>
<td>745</td>
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<td>Base Support Costs (drafting computing etc.)</td>
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<td>Administration (office overhead costs, rent etc.)</td>
<td>1715</td>
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<td><strong>TOTAL</strong></td>
<td><strong>13150</strong></td>
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8. PROPOSED WORK

8.1 Reconnaissance Exploration

The heavily field based programme for the next twelve month period is aimed at defining the overall geological and geochemical indicators to the known mineralisation and integrate these empirical parameters into the models developed from review of all previous data to be used directly in subsequent exploration within this prospective geological environment. Therefore the following programme is proposed to define the important parameters associated with this style of mineralisation.

The proposed programme

- detailed examination of previously drilled core using PIMA II for alteration assemblages particularly in the identification of clay minerals in the weathered bedrock.
- PIMA II mapping of alteration minerals within outcrop, previously excavated costeans, trenches, adits and shafts where accessible.
- surface sampling (rock chip, lag, stream BLEG) in areas of non contamination covering the Bitter Springs Formation in particular.
- 2-3 detailed RAB drill fences at Golden Goose aimed at defining mineralisation halo geochemistry, alteration mineral assemblage(s) that defines mineralised envelope(s) and lithological host(s) to mineralisation
- Second phase of bedrock sampling utilising RAB drill traverses along strike from known areas of mineralisation due to the high level of expected surface contamination expect in these areas.
8.2 Expenditure

Exploration expenditure on EL 8164 is anticipated to exceed $80,000 for the twelve month period to 14.12.1996.

9. REFERENCES


APPENDIX 1

Rankins EL8164
Alteration Assemblage
using
PIMA II
RANKINS EL8164
ALTERATION ASSEMBLAGE
USING
PIMA II

A. BONTENAKEL
NOVEMBER 1995
ER95011
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<td>4  CONCLUSIONS AND RECOMMENDATIONS</td>
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- **FIGURE 1** PIMA II Short Wave Infrared Spectra
1 INTRODUCTION

Previously, identification and discrimination between hard-to-recognise alteration minerals associated with many ore deposits has required samples to be sent to a laboratory for XRD or XRF analysis. Reflectance technology is now at a stage where recognition of these alteration minerals is possible within the short wave infrared. The field Portable Infrared Mineral Analyser (PIMA II) is capable of rapid measurement of the short wave infrared spectrum of any rock or mineral. The PIMA measures the reflected radiation from the surface and operates in the 1300 to 2500 nm wavelength range. Measurements can be made from any type of sample including, diamond drill core, RC and RAB chips, rockchips and soil samples.

Two rock chip samples, namely GG1 and GG2 from the NWA, were received from Alistair Morrison for short wave infrared spectroscopic measurement. The aim of the measurements were to;

- identify and distinguish any alteration minerals that may be present within the rocks.
- determine whether PIMA would be able to delineate alteration haloes and help in the understanding of alteration / mineralisation system that may be present.

2 SPECIFICATIONS AND DATA COLLECTION

All spectroscopic measurements were carried out by North Flinders Mines Exploration using the PIMA II serial number PH-02-052. The specifications of the PIMA II are as follows

<table>
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<th>Parameter</th>
<th>Specification</th>
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<tr>
<td>Wavelength interval</td>
<td>1300 to 2500 nm</td>
</tr>
<tr>
<td>Spectral resolution</td>
<td>7 to 10 nm</td>
</tr>
<tr>
<td>Spectral sample interval</td>
<td>2 or 4 nm (selectable)</td>
</tr>
<tr>
<td>Data acquisition time</td>
<td>20 to 60 seconds</td>
</tr>
<tr>
<td>Data storage capacity</td>
<td>600 spectra</td>
</tr>
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</table>

No sample preparation was required prior to measuring the short wave infrared spectrum. Several PIMA measurements were taken on each sample until a representative spectra was collected from each rock. The short wave infrared spectrum was then plotted and interpreted.

3 INTERPRETATION

Interpretation of the spectra was carried out using the CSIRO developed XSPECTRA program. XSPECTRA is a windows based application which allows detailed interpretation of short wave infrared spectra collected using the PIMA II. Currently up to two clay mineral mixtures can be interpreted using this program. The following interpretation and relative percentages of minerals present is based on modelled spectral results.

3.1 Sample GG1

This sample has a relatively high albedo and has strong absorption features in the OH/H₂O and AlOH ranges. The combination of absorptions at 1411, 2203, 2345, and 2436 nm suggests the presence of sericite/ilite. The 2203 nm feature suggests that muscovite may be the main constituent in the sample, however a small H₂O feature exists at 1924 nm suggesting some illite is also present. The strong absorptions and the presence of a 2119 nm features indicates that the muscovite and minor illite are highly crystalline.

Mineral Percentages

<table>
<thead>
<tr>
<th>Mineral</th>
<th>Percentage</th>
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<tr>
<td>Muscovite</td>
<td>98%</td>
</tr>
<tr>
<td>Illite</td>
<td>2%</td>
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</table>
3.2 Sample GG2

This sample has a lower albedo (sample slightly darker) than GG1 but has strong absorption features in the OH/H$_2$O and AlOH ranges. The combination of absorptions at 1411, 2203, 2346, and 2437 nm once again suggests the presence of sericite/illite. The 2203 nm feature suggests that muscovite and/or illite is the main constituent in the sample. A large H$_2$O feature exists at 1924 nm suggesting illite is present. Although the absorption features are quite strong, the depth of the water absorption suggests that more illite is present when compared with sample GG1.

<table>
<thead>
<tr>
<th>Mineral Percentages</th>
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<tbody>
<tr>
<td>Muscovite</td>
<td>80%</td>
<td></td>
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<tr>
<td>Illite</td>
<td>20%</td>
<td></td>
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</tbody>
</table>

4 CONCLUSIONS AND RECOMMENDATIONS

The short wave infrared spectra from both GG1 and GG2 do not exhibit great changes in their sericite compositions. GG2 does however appear to be more illitic in composition and may reflect alteration. It is therefore suggested that more PIMA measurements be made of drill core and RAB chip samples to determine whether:

- illitic samples do suggest hydrothermal alteration
- any other alteration minerals are present within the hydrothermal system.
North West Aruntas - PIMA II Short wave infrared spectra

Sample GG1

Muscovite/illite - Diagnostic single absorption feature at 2202 nm. Wavelength may vary with changing composition of sericites.

Sample GG2

Muscovite/illite - Two diagnostic absorptions at higher wavelengths.

Reflectance

Wavelength in nm

nwa rock chips
APPENDIX 2

Rankins EL8164
Assessment of Detailed Airborne Magnetics in defining Host Structures
ASSESSMENT OF DETAILED AIRBORNE MAGNETICS
OVER WESTERN PORTION OF EL 8164 "RANKINS"

A. Bontenakel
NOVEMBER 1995
ER95046
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FIGURE 2.1 Regional aeromagnetic interpretation with distribution of magnetic domains.
FIGURE 3.1 Rankin aeromagnetic interpretation with distribution of magnetic domains.

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PLAN 2.1 Regional aeromagnetic interpretation scale 1 : 250 000
PLAN 3.1 Rankin aeromagnetic interpretation scale 1 : 100 000
1 INTRODUCTION

RANKINS EL 8164 is located on the northern portion of the ALICE SPRINGS 1:250000 geological map and lies approximately 60 kilometres north east of Alice Springs (figure 1). Proterozoic rocks dominate the outcropping geology within the exploration licence, where outcrop constitutes 80 to 90 percent of the physiography. Several magnetic rocks occur within both areas and include magnetic gneisses and amphibolites.

A complex of linear to curvilinear magnetic anomalies ranging in amplitude from 20 to 500 nT with high amplitude anomalies ranging from 1000 nT to in excess of 2000 nT. The high amplitude features are restricted to both the northern and southern sections of Rankin where curvilinear features dominate the magnetic texture. The central area is dominated by discontinuous linear to curvilinear magnetic features. The regional magnetic texture (ALICE SPRINGS sheet) of the non magnetic Proterozoic rocks forms magnetic lows within the mottled magnetic texture of the Arunta Complex rocks.

High resolution aeromagnetics over RANKINS were used to:-

- Identify major lineaments and map structural trends.
- Assess the information gained from detailed aeromagnetic data.

The regional aeromagnetic data was also interpreted in conjunction with RANKINS to identify major regional trends and lineaments not identifiable on the project scale.
2  REGIONAL AEROMAGNETIC INTERPRETATION

Two major Proterozoic to Archaean rock groups occur within the ALICE SPRINGS area (sheet SF/53-14), these being from youngest to oldest; the Archaean Arunta Complex magnetic rocks and the non magnetic Proterozoic Bitter Spring Formation and Heavitree Quartzite.

Amedeus Basin Rocks

The Amadeus Basin Rocks consists of folded and faulted Dolomites, Limestones, siltstones, and sandstones, with rare basic volcanics. These rocks are found to contain no magnetite (Shaw and Wells, 1983) and are unlikely to cause any magnetic anomalies.

Arunta Complex

The Arunta Complex group of rocks consist of retrogressed greenschist facies rocks, schists, quartzites, and amphibolites with some mylonites and rare breccias. These rocks may contain some magnetite, particularly the amphibolites, and are likely to cause most of the magnetic anomalies found within the Arunta group.

In 1985 the BMR commissioned a regional aeromagnetic and radiometric survey for indications of deeper regional structures. The survey height was in excess of 100 metres and was flown in a NS direction at 1 to 1.5 kilometre line spacing.

Aeromagnetic contours and enhanced imaging show two magnetic domains, within the ALICE SPRINGS sheet SF/53-14;

1) A medium to high magnetic amplitude domain with a mottled magnetic texture with minor curvilinear 1000 to 2000 nT magnetic features (MD 1) and minor to major cross cutting structural trends,

2) A low amplitude domain with minor discrete and curvilinear 20 to 200 nT features (MD 2) with minor parallel structural trends,

Figure 2.1 shows the distribution of these magnetic domains within ALICE SPRINGS. Aeromagnetic interpretations at 1 : 250 000 scale were produced for this report and are given in Appendix A plan 2.1.
2.1 Magnetic Domain 1 (MD 1)

2.1.1 Lithology

Image enhanced aeromagnetic data show no major distinctive features within MD1. Total magnetic intensity images shows that this domain has a predominantly mottled magnetic texture. The northern section of the ALICE SPRINGS sheet exhibits this feature and can be attributed to either magnetic fractions within a granitic rock and/or Archaean Arunta complex gneiss and amphibolite. Both regional geological mapping and aeromagnetic data suggest that this domain is dominated by retrograded gneiss and amphibolite with a component of retrograde schists at relatively shallow depths.

Several low magnetic amplitude areas exist within MD 1. These domains are suggested to be areas of thrusting where Bitter springs formation may occur.

2.1.2 Structure

Several minor structural trends crosscut MD1. These minor features have a limited strike extent and trend in a predominantly EW direction. These EW structures are presumed to be thrusts within the Arunta Complex. Many minor structural features crosscut MD1 in all directions indicating that the area has undergone many if not all of the deformational events within the ALICE SPRINGS sheet. One major structure crosscut stratigraphy in MD1 in a NW direction. This structural feature propagates to the center of the RANKINS EL and subparallels the G3 mega structures. This G3 interpreted lineament is then refracted along EW trending thrusts along which Au shows seem to occur. Another NW trending G3 interpreted structure occurs to the western end of RANKINS EL. This structure once again is refracted along EW trending thrusts, coincident with Gecko, RANKINS and Gum tree prospects.

2.2 Magnetic Domain 2 (MD 2)

2.2.1 Lithology

MD2 shows low amplitude magnetic domain. Both contour plots and enhanced aeromagnetic imaging show no significant near surface magnetic features suggesting that this area is dominated by Proterozoic non-magnetic rocks of the Amadeus Basin Group.

2.2.2 Structure

As the rocks of this area are non magnetic, parallel and cross cutting structures could not be identified. However deep magnetic rocks in the central southern section of MD2 suggests that the Amadeus Basin thins in this area.
3 RANKINS EL 8164 AEROMAGNETIC INTERPRETATION FROM CRAE SURVEY, EL4420

Three major Proterozoic to Archaean rock groups occur within the survey area, these being from youngest to oldest; the Bitter Springs Formation, the Heavitree Quartzite and the Arunta metamorphic complex. Of the three groups both the Bitter Springs formation and the Heavitree Quartzite dominate the RANKINS EL.

Bitter Springs Formation

The Bitter springs formation consists of two main members; the Loves Creek member and the Gillian Member. The Loves creek member consists of red calcareous or dolomitic siltstones and sandstones with stromatolitic limestones. The Gillian member is dominated by intercalated dolomite, siltstones, shales, and red sandstone, with rare basic volcanics. None of these sediments contain magnetite and are unlikely to cause magnetic anomalies.

Heavitree Quartzite

The Heavitree Quartzite is a silicified sandstone, with discontinuous units of siltstone, shale and conglomerates at the base. Again, none of these sediments contain magnetite and are unlikely to cause any magnetic anomalies.

During 1988 CRAE flew a detailed airborne magnetic and radiometric survey over the north western portion of the RANKIN EL 8164. The survey was flown at 100 metre line spacing using a mean terrain clearance of 80 metres.

Aeromagnetic contours and enhanced imaging show two magnetic domains, within RANKIN EL 8164;

1) A medium amplitude domain with a mottled magnetic texture with minor discontinuous curvilinear magnetic features MD1 and minor to major structural trends,

2) A low amplitude domain comprising of discrete, discontinuous curvilinear magnetic features (MD 2) with minor structural trends that parallel stratigraphy,

Figure 3.1 shows the distribution of these magnetic domains within RANKINS. An aeromagnetic interpretation at 1 : 100 000 scale was produced for this report and is given in Appendix A plan 3.1.
3.1 Magnetic Domain 1 (MD1)

3.1.1 Lithology

Contoured aeromagnetic data show that this domain has a predominantly mottled magnetic texture with minor linear to curvilinear magnetic features. Both the northern and southern sections of RANKIN exhibit this magnetic texture and can be attributed to either magnetic fractions within a granitic rock and/or Archaean gneiss and amphibolite of the Arunta Complex. Differentiation between gneiss, granitic rock and amphibolite maybe possible with enhanced aeromagnetic images and would be useful for mapping purposes, particularly in areas of partial to complete cover.

3.1.2 Structure

Several major structural trends parallel and crosscut MD1. Some of these features, such as those outlined in section 2, extend for hundreds of kilometres and strike in a dominantly NW direction. These NW trending features subparallel the G3 corridor and are suggested to be prime pathways for mineralising fluids. The dominant cross cutting structural trend is in a NW direction, however a strong NNE trend can also be inferred. These major structures are long lived as they parallel and crosscut stratigraphy. Many minor structural features crosscut MD1 in all directions indicating that the area has undergone several phases of deformation.

Structural mapping using the aeromagnetic has been difficult due to the poor quality of the contour plot. More detail would be gained if the data were processed and imaged.

3.2 MAGNETIC DOMAIN 2 (MD2)

3.2.1 Lithology

MD2 shows low amplitude short wavelength discrete and semi continuous magnetic features. Contoured aeromagnetics shows several EW trending medium amplitude magnetic features throughout the central portion of RANKIN. These medium amplitude features appear to be parallel to stratigraphy and are suggested to be amphibolites or basic volcanics. No other magnetic features related to lithology are apparent within MD2 suggesting that the majority of the area consists of non magnetic Bitter Springs formation and Heavitree Quartzite.
3.2.2 Structure

MD2 is bounded to the north and south by magnetically busy areas. These boundaries represent major EW trending thrust faults. These EW trending thrust faults also occur within the magnetically quite area of MD2 and parallel the medium amplitude magnetic features. Structures cross cutting stratigraphy are absent within the magnetic data.

Structural mapping using the areomagnetics has been difficult due to the poor quality of the contour plot. More detail would be gained if the data were processed and imaged.
4 RANKIN :- POTENTIAL MINERALISATION

Potential mineralisation within RANKIN is not restricted to any particular mineral and exploration within the whole of the Archaean and Proterozoic metamorphic complex has been carried out for gold, uranium, and base metals. Major structures indicated in magnetics are the prime targets for epigenetic gold mineralisation as well as base metal mineralisation.

From regional mapping conducted by BMR and structural interpretations of the aeromagnetics, two styles of mineralisation seems to occur within RANKIN. These being:-

- Mississippi Valley Type (MVT) carbonate hosted Pb / Zn.
- Epigenetic Au in quartz veins with or without hypothermal base metals.

Epigenetic Au in quartz veins

An abundant array of major to minor non magnetic lineaments occur throughout RANKIN. Regional mapping by the BMR have indicated only minor quartz veins within the ALICE SPRINGS sheet, striking in a variety of directions but mostly striking within an NS direction. NW trending structures subparallel to the G3 corridor are prime targets for epigenetic Au, particularly were these major NE trending structures appear to change direction or parallel the EW trending thrust within RANKIN were most Au shows occur.

Abundant faulting cuts most of the magnetic stratigraphy and are also targets for epigenetic Au mineralisation. Several late faults at RANKIN occur within MD1 and are to numerous to systematically investigate, so prime targets at this stage should be restricted to NE to EW trending lineaments.

Other styles of mineralisation

The Bitter Springs Formation, conducive to base metal mineralisation, is also present within the central section of RANKIN. Magnetic highs within these shear zones/fault thrusts could be basement highs which are potential sites for the formation of limestone reefs. These limestone reefs are prime targets for MVT carbonate hosted Pb / Zn deposits. MVT deposits are generally not detectable using geophysical techniques due to the disseminated nature of the sulphides, however magnetics and gravity can outline prospective areas on a regional scale (Scott et al 1994).
5 SUMMARY AND RECOMMENDATIONS

Summary

High resolution aeromagnetic data over RANKIN was mainly used to aid geological/structural mapping for both the regional and prospect scale. The detailed aeromagnetic interpretations over the RANKIN area had two objectives:

- to identify major lineaments and structural trends.
- from detailed aeromagnetic interpretations, outline magnetically favourable areas for mineralisation.

Both of theses objectives were achieved satisfactorily as the aeromagnetic data was of a high density and hence the resolution of major and minor magnetic features was relatively high. However more detail would be gained from reprocessed data and aeromagnetic imaging of detailed airborne magnetics.

Several major regional structures have been interpreted to be prime targets for epigenetic Au mineralisation, in particular NE trending features which were refracted into EW trending thrusts. The dominant Au shows within RANKIN occur in areas were NE trending structural lineament refract into EW trending thrusts.

Recommendations

Two aeromagnetic data sets were used in the structural interpretation of the RANKIN area. The regional BMR data set only allowed identification of some of the major EW and NE trending lineaments that occur within the ALICE SPRINGS sheet. Some major lineaments could easily be misinterpreted in the widely spaced data. These NE and EW trending lineaments, considered to be of prime importance when exploring for epigenetic Au, in the RANKIN area were easily interpreted from the CRAE data set. Further effort should be placed into acquiring detailed aeromagnetic data in areas of interest to allow definition of structural targets for Au mineralisation. Any further regional aeromagnetic surveys that NFM commissions should have tight line spacings and low altitudes; ie 100 metres line spacing and 60 to 80 metre terrain clearance.
6 REFERENCES


APPENDIX A

Aeromagnetic Interpretation Plans