

ALLSTATE EXPLORATIONS NL

ACN 000 679 033

**OPEN FILE**

96-3822

**MICROFILMED**  
FICHE No.013836-

**SUMMARY REPORT  
ON ACTIVITIES IN 1995**

**ON**

**EL 35/94 SAVAGE RIVER**

**&**

**EL 36/94 MT BERTHA**

**NORTH WEST TASMANIA**

**for**

**ALLSTATE EXPLORATIONS NL**

SEARCHED	INDEXED
SERIALIZED	FILED
15 JAN 1996	
FBI - TASMANIA	
EL 35/94	SEE FOLIO 3103R
EL 36/94	SEE FOLIO 28

96-3822

SUMMARY OF ACTIVITIES IN 1995 ON EL 35/94  
& EL 36/94 MT BERTHA -  
ALLSTATE EXPLORATIONS NL - RIDGE, K J

by K.J. Ridge *PK*  
KNR Pty Ltd  
Geological Consulting and  
Contracting Services  
8 Jacaranda Court  
MT GRAVATT EAST QLD 4122

**INTRODUCTION:**

This report outlines aspects of geological data gathering undertaken in the latter part of 1995 over the area covered by EL 35/94 Savage River and EL 36/94 Mt Bertha in northwest Tasmania.

**TENEMENT DETAILS:**

These two E.L.'s cover a continuous area of 406 square kilometres centred on the Arthur Lineament from an area surrounding the Savage River Mine extending northeast to the Arthur River.

Both E.L.'s were granted to Allstate Exploration NL on 17/2/94 for a period of ten years.

Annual expenditure commitments are as follows:

EL 35/94 Savage River	175 sq km	\$35,000
EL 36/94 Mt Bertha	231 sq km	\$46,000

**REGIONAL GEOLOGY:**

The Arthur Lineament contains an assemblage of metasedimentary rocks and amphibolite referred to as the Arthur Metamorphic Complex. In turn the Arthur Mobile Belt covers both the Arthur Lineament and the relatively unmetamorphosed rocks on either side. (Turner et al 1992).

Although the Arthur Lineament has not been studied in detail in the area between Savage River to the south and Arthur River to the north, the main lithological association in the south is also extensively developed in the Arthur River district in the north. (Turner, 1990).

Lithologies comprise: pelitic and carbonate - rich schist, lesser amphibolite with minor quartzose schist and carbonate.

**CURRENT ACTIVITIES:**

Exploration effort in 1995 on the two EL's comprised essentially a data gathering exercise, preliminary field investigations and aeromagnetic interpretation.

Open file company reports were evaluated by geologists M. McKeown and K. Ridge to establish the intensity of past exploration in the area and to enable a relevant exploration strategy to be developed for on-going exploration with emphasis on gold-base metal targets.

In conjunction with the open-file research programme, consultant geophysicist Dr J.R. Bishop was engaged to undertake a preliminary aeromagnetic interpretation of the Arthur Lineament. This interpretation was based for the main part on information gathered by a helicopter-borne aeromagnetic/radiometric survey commissioned by the Tasmanian Geological Survey in 1993.

As the tenements held by Allstate Explorations NL cover a key part of the Arthur Mobile Belt, discussions were held with Tasmanian Geological Survey Senior Geologists John Pemberton and Dr David Seymour to gain the latest insight into the aspects of the geology of this area. Departmental mapping at 1:50,000 has been completed over the Corinna Sheet to the south and the Trowutta Geology Sheet is due to be published in 1996.

Currently, the Tasmanian Geological Survey has available a geological compilation of the Allstate tenements in digital form. This compilation has been produced from unpublished geological mapping and interpretation of helicopter borne magnetic and radiometric data.

In December 1995, the two E.L.'s 35/94 and 36/94 were field inspected to aid in planning of future exploration programmes.

During this work, access along the Savage River Pipeline road was found to be excellent. Thick bush and forest together with rugged terrain severely restricts access over most of the two tenements apart from the development of button grass on the northern margin of EL 36/94 (Mt Bertha).

A major part of E.L. 36/94 is capped by Tertiary Basalt of variable thickness and this will have to be addressed in future exploration programmes.

**CONCLUSIONS AND RECOMMENDATIONS:**

This report summarises activities undertaken over the two tenements EL 35/94 and EL 36/94 during 1995.

Future work will comprise initially, a full evaluation of past exploration. This will be linked to the aeromagnetic interpretation undertaken by Dr J R Bishop.

Following the study of pertinent data available for the Allstate tenements, prospective target styles will be developed for this area with emphasis on gold-base metal deposits and suitable exploration strategies to search for these targets will be developed to enable on-going exploration in 1996.

A full report covering these aspects will be available in February 1996.

K J RIDGE  
January 1996

**REFERENCES:**

Turner, N.J. 1990. Late Proterozoic of northwest Tasmania - Regional Geology of Mineral Deposits.

Geology of the Mineral Deposits of Australia and Papua New Guinea (Ed. F.F. Hughes) pp 1169 - 1174. (The Australian Institute of Mining and Metallurgy: Melbourne).

Turner, N.J.; Bottrill R.S.; Crawford, A.J.; Villa. I. 1992  
Geology and Prospectivity of the Arthur Mobile Belt.

Bull. Geol. Surv. Tasm. 70:227 - 233.



**Report on an Aeromagnetic Survey over the  
Arthur Lineament, N.W. Tasmania.**

for

Allstate Explorations

by

Dr J.R. Bishop

## **Introduction**

Allstate Explorations have pegged two exploration licences over a belt of regionally metamorphosed and deformed Proterozoic rocks in northwest Tasmania. The belt, referred to as the Arthur Lineament, consists mostly of quartz mica schists, chloritic schists, phyllites, dolomites and amphibolites. A considerable proportion of the area is overlain by Tertiary basalt. Most of these units, including the basalt, are magnetic.

The area contains the Savage River iron ore mine and has a number of magnesite deposits with economic potential. There are also a number of occurrences of chalcopyrite (with pyrite and magnetite), of which the best known are the Keith River gossan and the old Victory mine. However, Allstate's primary target is for gold. Apart from alluvial gold workings in the cross-cutting rivers (including a 7.5 kg nugget taken from the Rocky River), there are also occurrences of auriferous quartz veins; e.g., Specimen Reef and Golden Ridge (Burrett and Martin, 1989). However the area is extremely difficult to access and has been little explored, the last attempt apparently being in 1982-3 by CRAE.

Shears and zones of intersecting linears, as well as individual magnetic highs (or lows), are commonly favourable sites for mineralisation and this report presents a set of interpreted linears from a recent aeromagnetic survey over the area.

## **Survey Details**

A helicopter-borne aeromagnetic/radiomagnetic survey covering most of the Arthur Lineament was flown by Geo Instruments for the Tasmanian Geological Survey in 1993. The flight lines were east-west and spaced 200m apart. The survey did not cover the southernmost section of the licence and to complete the coverage, some data from an earlier, broader spaced, fixed-wing survey has been used.

Contours of the total magnetic field and various enhanced images have been produced (using ERMMapper) at a scale of 1:50,000 and these were used for the interpretation. For this report, the linears have been reduced to 1:250,000 scale and overlain onto the total magnetic intensity (TMI) and geology (Figures 1 and 2 respectively). The program 'Infoview' was used to produce the images which can be reproduced at any scale and with any combination of data (geology, geochemistry, etc).

## Previous Work

In 1982, Austirex flew an aeromagnetic/radiometric survey for CRAE using a 250m line spacing. Flis (1982) noted that the magnetic units included Arthur Lineament metamorphics, amphibolites, dolerite dykes, some sedimentary units and Tertiary basalt. CRAE's evaluation of the area also included anomalies from an Input (i.e., airborne EM) survey which had been previously carried out for Esso Minerals but not adequately followed up. Twenty anomalies were identified, most of which were found to be due to Tertiary basalt and others were ascribed to dolerite dykes or amphibolites. The causes of ~5 were not established, however in conjunction with the (rather limited) stream sediment sampling, none were considered to be worthy of further investigation and the leases were relinquished.

CRAE's exploration emphasis appears to have been on discrete magnetic anomalies in areas of relatively quiet background on either side of the Lineament (where presumably the target was for a magnetite-bearing, sediment-hosted base metal deposit). There appears to have been little attention paid to structurally controlled gold deposits within the more magnetic schists and phyllites. CRAE's interpretation included a plan of lineaments interpreted from air photos and landsat images and these have been included on the overlays to Figures 1 and 2. It is interesting to note that there is little correlation with the aeromagnetic interpretation. Also included in the figures are the areas chosen by CRAE for follow up. (To assist in their magnetic modelling, CRAE made a few measurements of the magnetic remanence of the Tertiary basalts. They were found to have a strong remanence ( $Q \sim 5$ ), but this paralleled the present day field: Flis and Clementson (1983). Bishop (1986) quotes a magnetic susceptibility range of 0.0001 to 0.02 cgs for the basalts, with  $Q$  between 1 & 71. Much of the basalt has a reversed magnetism.)

Bishop (1986) produced an interpretation of a regional aeromagnetic survey (500m line spacing) carried out over northwest Tasmania by AGSO. Modelling suggested that the bulk of the response over the Arthur Lineament could be due to a large (6 to 7 km wide) deeply buried body, but that a much shallower source was required for the main high amplitude anomaly. A prominent response at the northern end of the lineament was drilled by BHP and found to be due to amphibolite (Anon., 1984).

Preliminary results from a recent seismic survey by AGSO, suggest the presence of a number of east dipping faults at depth beneath the Arthur Lineament. As possible pathways for mineralised fluids, the integration of these faults with the magnetic interpretation should be done when the data becomes available.

## Interpretation

Although only the Keith River and Victory deposits appear to be associated with magnetic features (in this case a very prominent fault, sub-parallel to the main magnetic trend), the most appropriate gold deposit model for the Arthur Lineament is probably a shear-related, iron oxide - hosted relationship. Thus, a qualitative interpretation of the Geological Survey's aeromagnetic survey over the Arthur Lineament has identified two types of magnetic features: those apparently paralleling the stratigraphy and those cross-cutting it. These have been put onto 1:250,000 scale transparencies which have been presented as overlays for the TMI (Figure 1) and geology (Figure 2).

In this 'first-pass' interpretation, no attempt has been made to identify individual anomalies for quantitative analysis, although this should be done if given some encouragement to study a particular area in detail. Similarly no attempt has been made here to use the magnetics to help map the Lineament's lithologies, although with the appropriate processing this could be done for several units. It should be particularly useful for helping determine the extent of the Tertiary basalt.

## Conclusions

The Arthur Lineament is a major tectonic zone, with some known mineral occurrences including gold and copper. However, rugged topography, numerous cross-cutting creeks and rivers and thick vegetation have all combined to make the area difficult to explore. The last serious effort was in the early 1980s and that program appears to have been biased towards a copper(?) deposit in the dolomitic sediments, rather than gold in the iron-rich rocks. Also, only a small proportion of the prospective streams appear to have been sampled.

The recent aeromagnetic survey has assisted the geological mapping of the region although the effects of the Tertiary basalt are widespread and significant. The interpretation of the magnetics carried out for this report was essentially a preliminary undertaking which concentrated on identifying linears which could be related to magnetic stratigraphy and faulting. More detailed work could be done after specific areas have been identified for follow up. This would include modelling to establish depth, size and attitude of the magnetic source rocks as well as better recognition of more subtle sub-parallel faults, splays, etc.

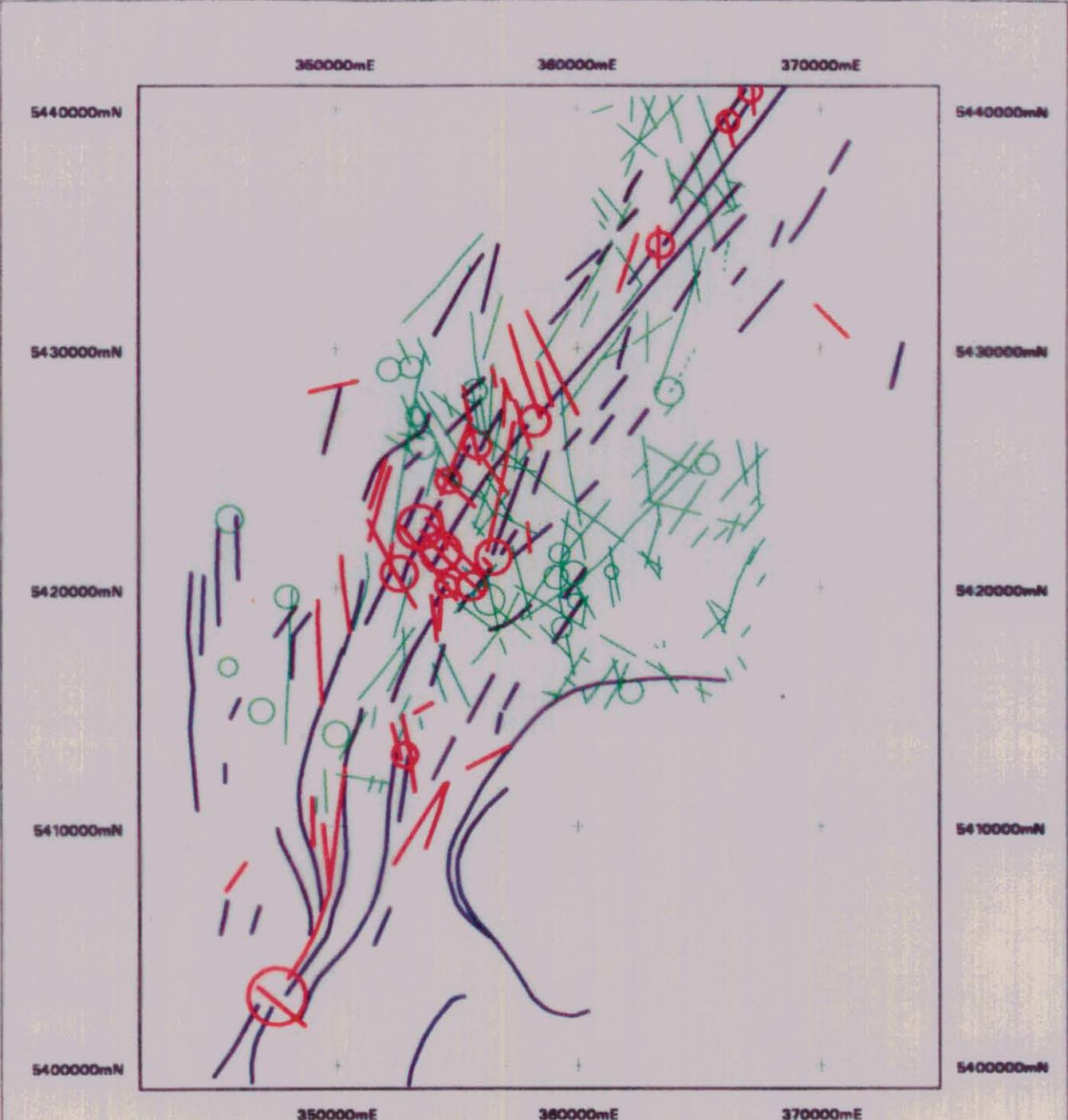
JRB  
Dec., 1995

## References

- Anon., 1984. E.L. 23/79 (Wynyard). Report for year ended 1/12/84. BHP company report to Mines Dept (Geol Survey reference 85/5305).
- Bishop, J.R., 1986. Interpretation of the northwest Tasmania aeromagnetic survey. Mitre Geophysics report 86/11 for the Tasmanian Mines Dept.
- Burrett, C.F. and Martin, E.L. (eds), 1989. Geology and Mineral Resources of Tasmania. G.S.A. special publication 15.
- Flis, M.F., 1982. Preliminary report on an airborne geophysical survey, Rapid River, E.L. 1/79. CRAE report 11637 (Geol. Survey reference 82/1816).
- Flis, M.F. and Clementson, I.M., 1983. First progress report on the follow up of aeromagnetic anomalies Rapid River, E.L. 1/79. CRAE report 12276 (Geol Survey reference 83/2030).

## List of Figures

- Figure 1. Arthur Lineament total magnetic intensity showing Allstate's leases, mineral occurrences and interpreted features.
- Figure 2. Arthur Lineament geology and interpreted magnetic features.

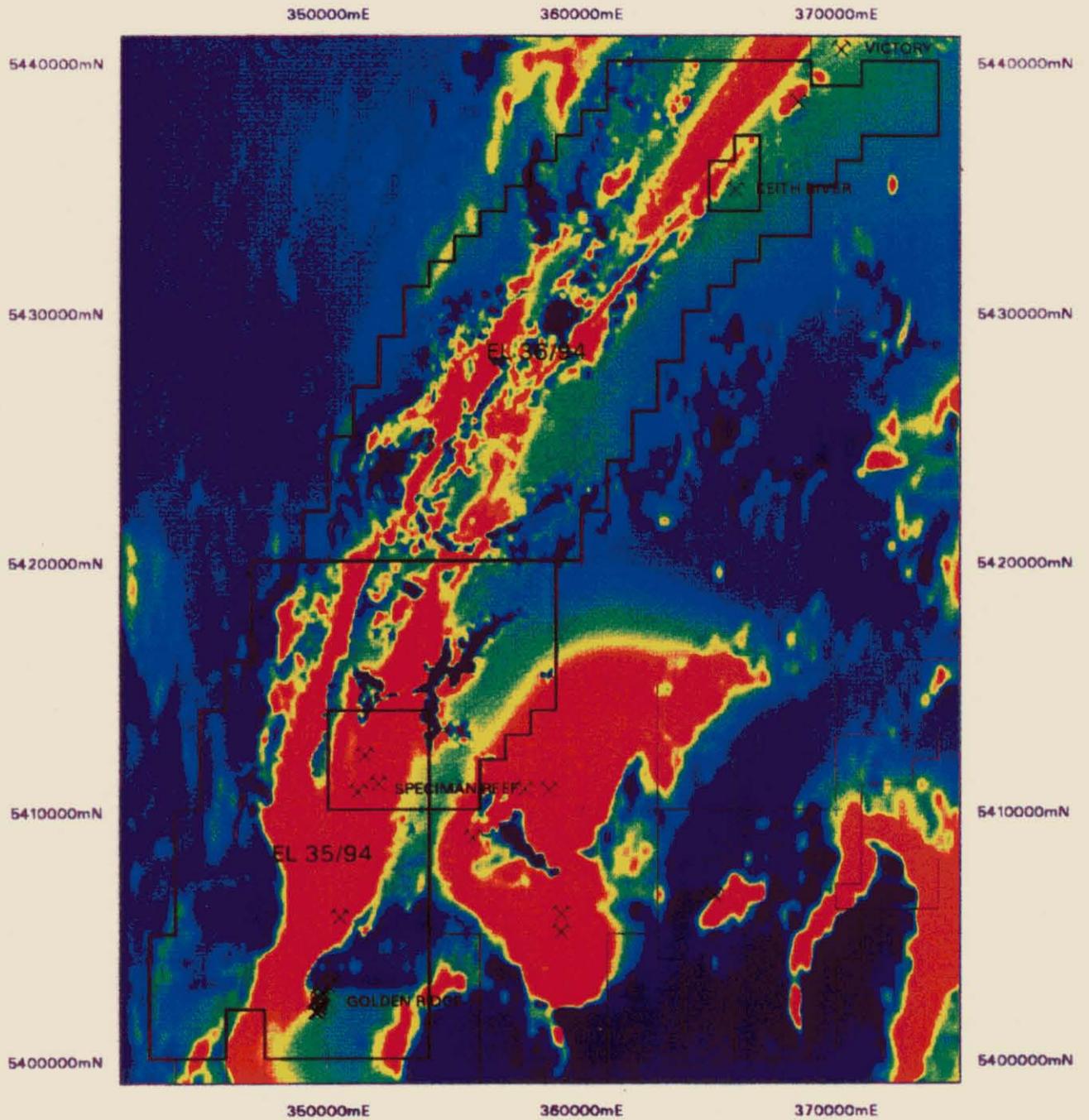


**ALLSTATE EXPLORATIONS  
ARTHUR LINEAMENT  
AEROMAGNETIC INTERPRETATION**

Scale - 1 : 250000  
Date 12/12/95  
Drawn by: JRB

- 'Parallel' magnetic lineament.
- 'Cross cutting' magnetic lineament.
- Areas recommended for follow up.
- - - CRAE air photo interpreted lineaments (1983).
- CRAE areas recommended for follow up (1983).

729010

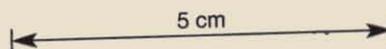


**ALLSTATE EXPLORATIONS  
ARTHUR LINEAMENT  
AEROMAGNETIC IMAGE**

Scale - 1: 250000

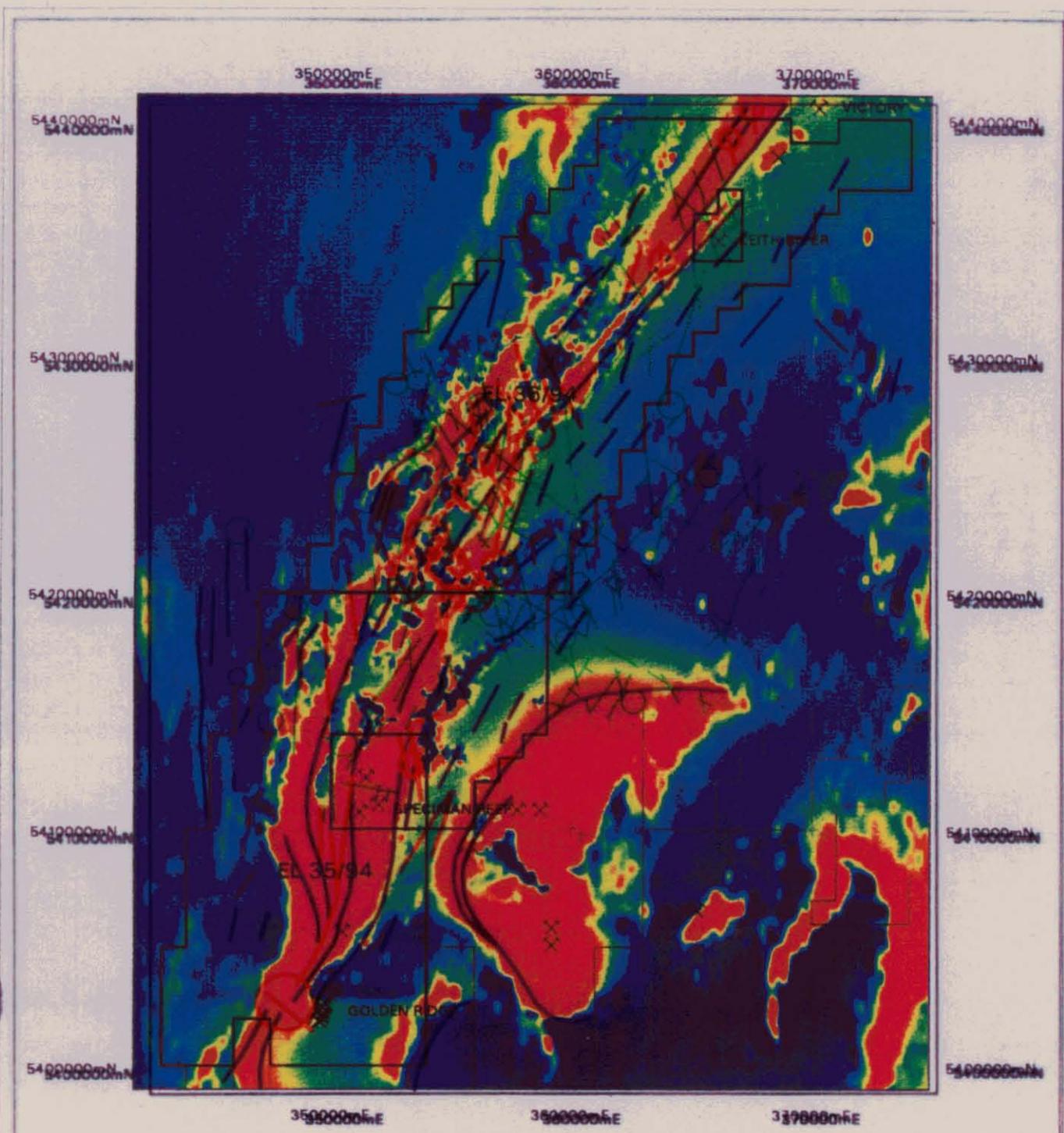
Date 12/12/95

Drawn by: JRB



**Fig 1**

729011



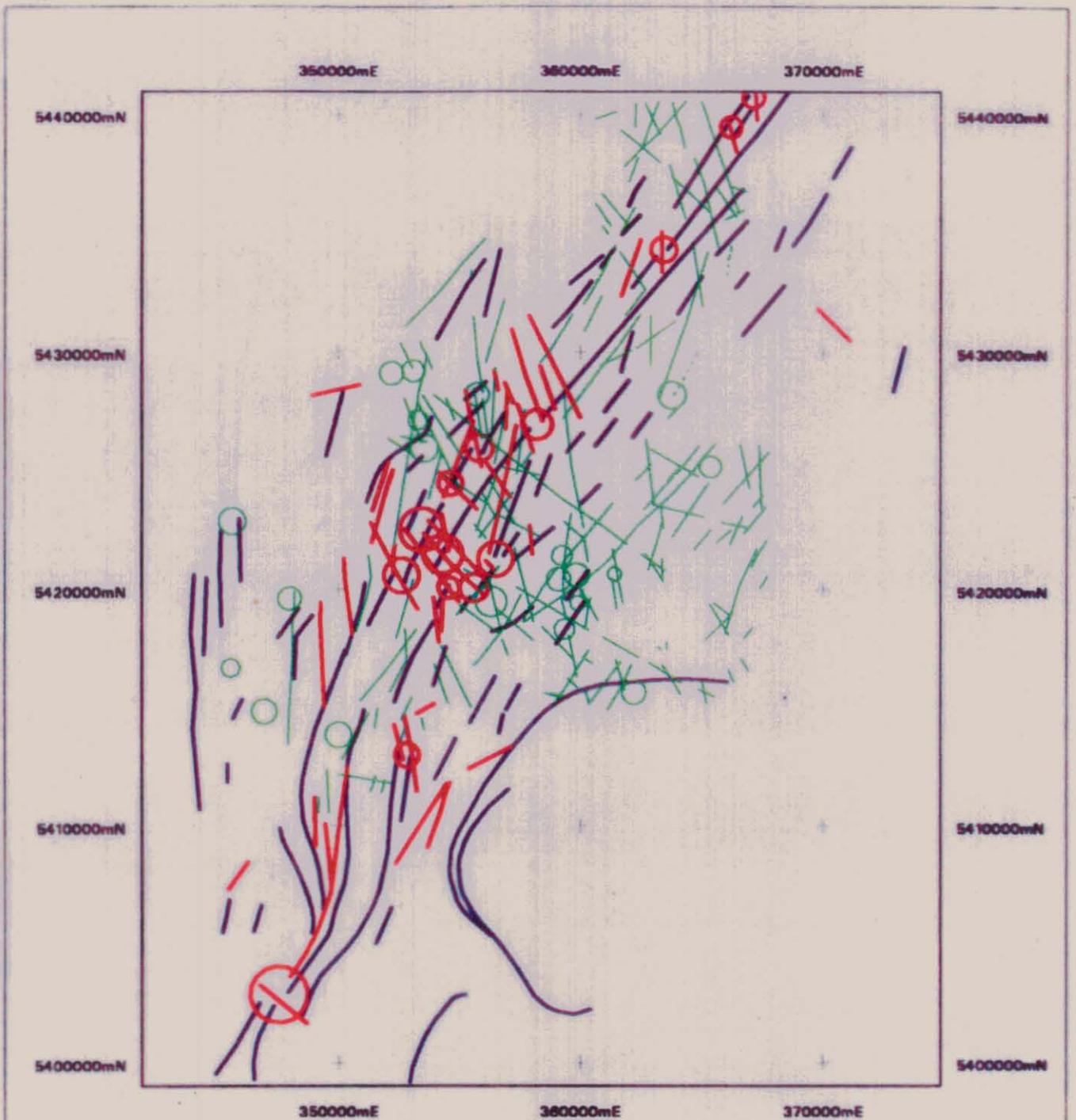
**ALASKA EXPLORATIONS  
ARTHUR LINEAMENT  
AEROMAGNETIC INTERPRETATION**

Scale 2500000000  
 Date 12/21/95  
 Drawn by: JRB  
 Drawn by: JRB

-  'Parallel' magnetic lineament
  -  'Cross cutting' magnetic lineament
  -  Areas recommended for follow up
  -  CRAE air photo interpreted lineaments (1983)
  -  CRAE areas recommended for follow up (1983)
- 5 cm

**Fig 1**

729011  
 729010



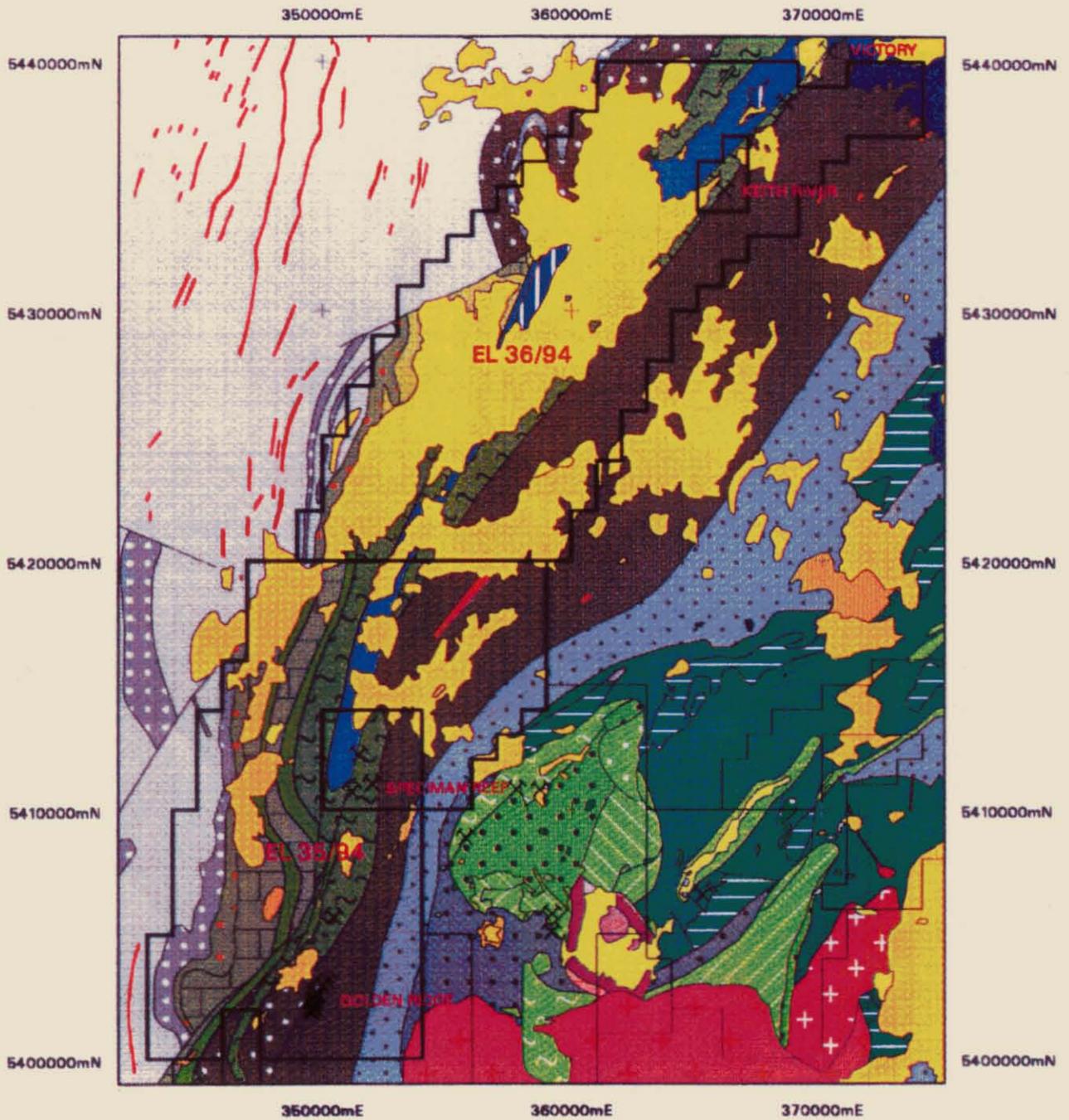
**ALLSTATE EXPLORATIONS  
ARTHUR LINEAMENT  
AEROMAGNETIC INTERPRETATION**

Scale - 1 : 260000

Date 12/12/95

Drawn by: JRB

- 'Parallel' magnetic lineament.
- 'Cross cutting' magnetic lineament.
- Areas recommended for follow up.
- CRAE air photo interpreted lineaments (1983).
- CRAE areas recommended for follow up (1983).



**ALLSTATE EXPLORATIONS  
ARTHUR LINEAMENT  
GEOLOGY**

Scale - 1 : 250000

Date 12/12/95

Drawn by: JRB

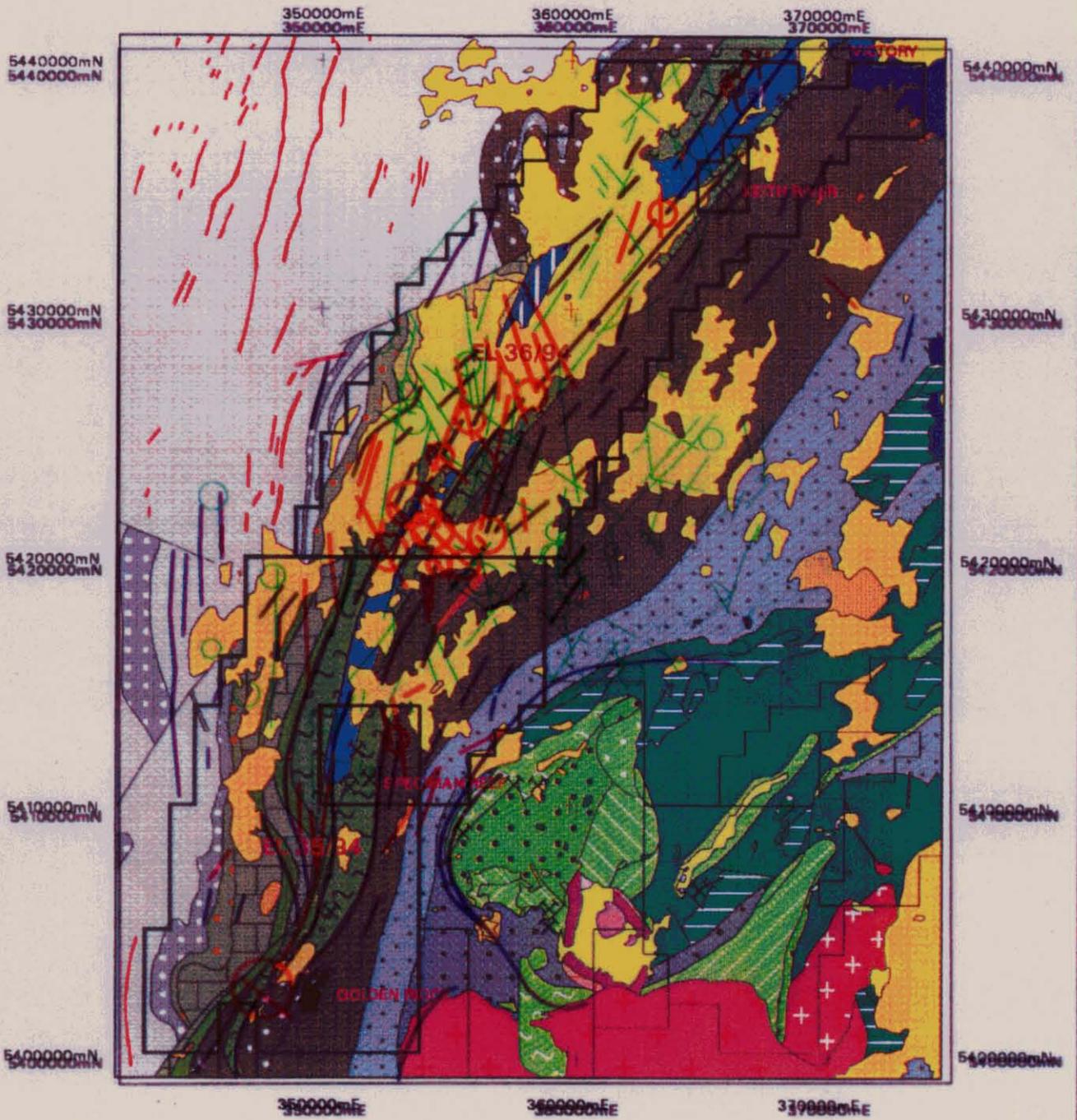
Geology from Tasmanian Geological Survey -  
1:250000 GEOLOGY OF NORTHWEST TASMANIA.

For geological legend refer to Tasmanian Geological Survey -  
1:250000 GEOLOGY OF NORTHWEST TASMANIA.

**Fig 2**

5 cm

729013



**ANISSTATE EXPLORATIONS  
ARTHUR LINEAMENT  
AEROMAGNETIC GEOLOGY**

Scale 1:250000

Date 27/12/95

Drawn by: JRB

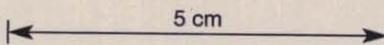
— 'Parallel' magnetic lineament.

Geology from Tasmanian Geological Survey -  
1:250000 GEOLOGY OF NORTHWEST TASMANIA.

For geological legend refer to Tasmanian Geological Survey -  
1:250000 GEOLOGY OF NORTHWEST TASMANIA.

CRAE areas recommended for release up (1983)

**Fig 2**



729013  
729012