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18. 4. '88	
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PROGRESS REPORT

12 MONTHS TO MARCH 1988

COX BIGHT
1:25000 sheets: Cox Bight

EXPLORATION LICENCE 13/86

TASMANIA

OPEN FILE

ROGER POLTOCK GEOLOGICAL PTY LTD for A.C.P.WEBB

R. Pollock

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Interpretation by: J.SLADE & ASSOCIATES PTY LTD

CONSULTANT GEOPHYSICIST

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 A.C.P.WEBB

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 CYPRUS MINERALS AUSTRALIA & A.C.P.WEBB

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GEO-FLITE RESEARCH PTY LTD

= VOL 2

PLATES

1. VIEW EAST FROM NEW HARBOUR RANGE

Fore ground left to right

- Freney and Miller Lagoons.
- Cox Bight beach and airstrip.

Middle distance

- Devonian granite.
- Point Eric.

Distance

- Black Bluff Hills, forested with cloud shadow.

2. GORINGS CREEK AREA

a) Eluvial and alluvial tin workings on the SE flank of the granite.

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Coastal heath, typical of the vegetation in the area.
Bathurst Range in the background.

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Penders Creek 3150E 1175N sample No 1665.

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Penders Creek 3175E 1200N sample No 1666

7. BLACK BLUFF HILLS MAGNETIC ANOMALY

View NE from Penders, the anomaly is located on the forested hillside.

8. THE BEACH MAGNETOMETER TRAVERSE

Maatsuyker Island centre horizon.

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Contech Pty Ltd.

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SUMMARY AND CONCLUSIONS

Magnetic anomalies detected by an airborne survey have been investigated at Penders Creek, Black Bluff Hills and Cox Bight beach.

The Devonian granite and surrounding metamorphic aureole in Precambrian sediments was assessed on a reconnaissance basis for gold.

A reconnaissance assessment using panned concentrates was made of the alluvials and beach sands in the Breakspear valley for gold, platinoids, chromite and rare earths.

A low altitude Remote Sensing Multispectral Scanning survey was flown by Geo-Flight Research Pty Ltd to define lineaments and fracture systems which may be associated with mineralization both in hardrock and placer deposits. Geo-Flight's report wasn't available at the time of writing this report. — APPENDED AS VOL 2

Geochemical sampling has failed to locate anomalous base or precious metal mineralization associated with magnetic anomalies or veining in the granite or metasediments.

The Breakspear valley alluvials contain significant amounts of tin, zircon and titanium. Sampling to date indicates that they are not anomalous in gold or platinoids.

RECOMMENDATIONS

Lineaments and fracture systems defined by the Remote Sensing Multispectral Scanning survey will be followed up by detailed geological mapping.

If major lineaments are located in areas of alluvial potential these features will be tested with Wacker percussion drilling to define the base profile and nature of the heavy mineral concentrates.

INTRODUCTION

Work on E.L.13/86 during 1987 - 1988 included followup of . airborne magnetic anomalies, assessment of vein systems in the granite and metasediments for gold, assessment of alluvials and beach sands for gold platinoids chromite and rare earths and the flying of a remote sensing multispectral scanning survey.

Field work was carried out in two phases. In April Nick Poltock gridded and Wacker sampled the Penders Creek magnetic anomaly, accessing the area by helicopter from the Scotts Peak road 50km to the north. Cyprus Minerals carried out a concurrent program of rock and stream sampling.

In November Roger Poltock completed the assessment of the magnetic anomalies, the gold potential of the granite and Precambrian metasediments and precious metals' and rare earths' potential of the alluvials and beach sands.

The area was accessed by light aircraft from Hobart, landing on the beach opposite Freney Lagoon.

Tent camps were set up at established camping sites at Point Eric in April and Freney Lagoon in November.

EXPLORATION TARGETS

The licence covers a Devonian granite and its contact aureole in Precambrian metasediments. Extensive alluvials derived from this terrain occurring as valley fill and coastal plain deposits.

The primary exploration target is the area of alluvials in the Breakspear Valley which have been shown by previous explorers to contain significant concentrations of cassiterite, zircon and ilmenite. There is little record of gold being associated with the alluvials; however at King's workings 10km to the north at Melaleuca gold does occur in the wash.

A secondary exploration target is gold and tin hosted by vein and skarn deposits in the granite contact aureole. A few cobbles of garnet skarn were located in beach gravels near Point Eric. The Penders Magnetic Anomaly may be a skarn but its small size makes it economically insignificant.

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DESCRIPTION OF THE PROPERTY

Exploration Licence 13/86 is held by A.C.P. Webb and was granted on 15-4-1986, covering an area of 24skm. The area was previously held by Stannous Investments as SPL 782.

E.L.13/86 is part of the Port Davey State Reserve and is bounded to the east and west by the South West National Park.

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LOCATION AND ACCESS

The exploration licence is located in SW Tasmania between Cox Bight and Port Davey (Fig 1).

Topographically the area consists of the broad alluvial filled Breakspear valley and a coastal plain bounded to the south by the ocean and inland by steep mountain ranges. Miller and Freney Lagoons have formed behind beach spits at the southern end of the Breakspear valley (Plate 1).

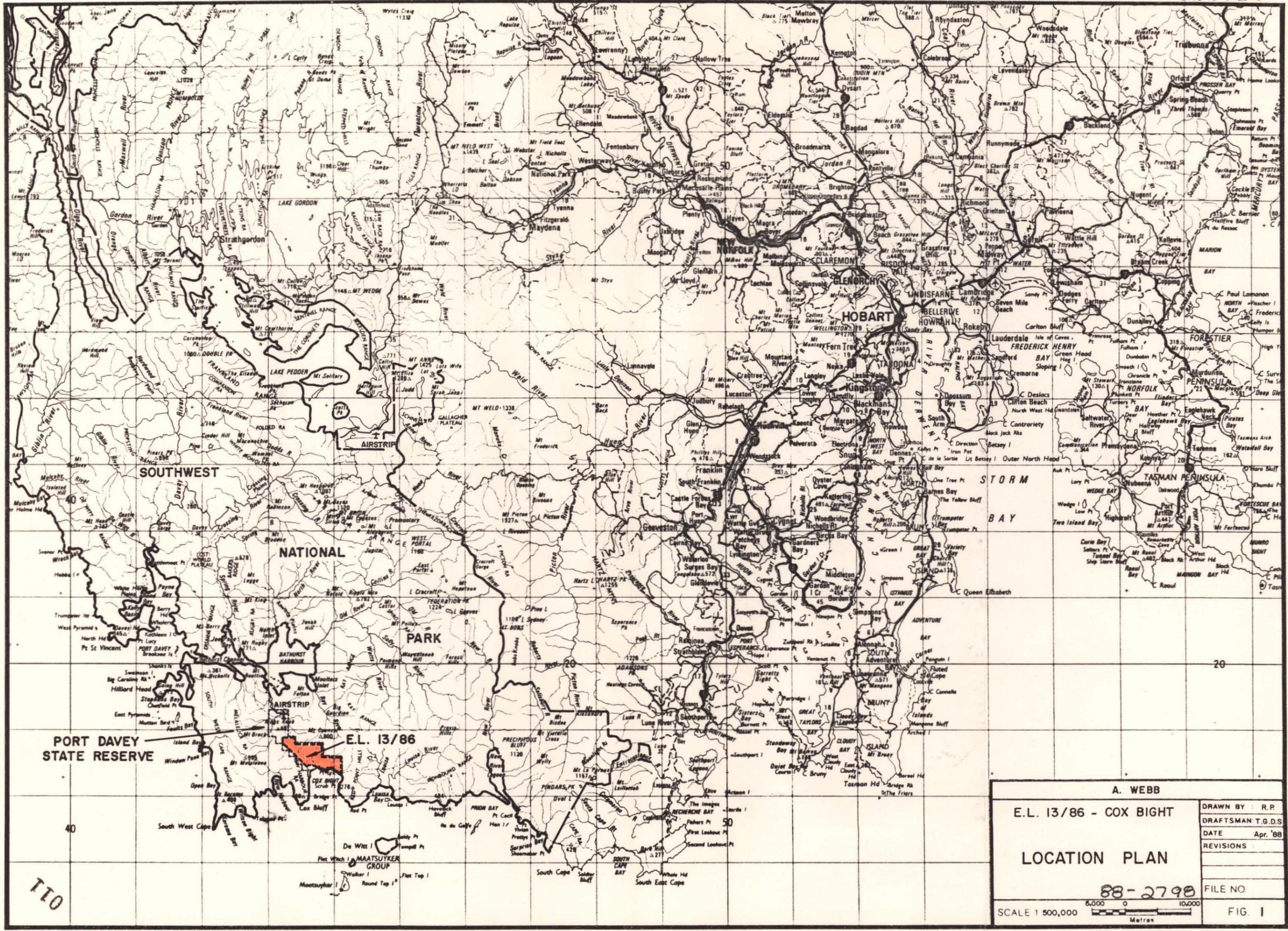
The average annual rainfall for Melaleuca inlet 10km to the north of Cox Bight is 2381mm, July having the maximum rainfall of 258mm with 25 rain days; the minimum rainfall is 133 - 166 mm on 15 - 17 rain days a month, in December - March.

Vegetation consists primarily of coastal heath and buttongrass with dense tea-tree eucalypt thickets in creek gullies.

The area can only be accessed by light aircraft, fishing boats or barge. The nearest roads are 50km away, Scotts Peak to the north and Cockle Creek to the east. The South Coast walking track linking these two roads passes through the lease. Light aircraft can land on the beach near Freney Lagoon at low tide (Plate 1) and a gravel airstrip is located at Melaleuca. With strong southerly or northerly cross winds, landing on the beach is impractical.

Helicopters can be readily landed in most areas, as the vegetation is usually less than a metre high.

Drill testing of the alluvials by previous explorers has been supported by bombadiers, ideally suited to the flat swampy conditions which overlie most of the alluvials.



A. WEBB	
E.L. 13/86 - COX BIGHT	
LOCATION PLAN	
88-2798	
SCALE 1 500,000	
DRAWN BY : R.P.	FILE NO.
DRAFTSMAN T.G.D.S.	FIG. 1
DATE Apr. '88	
REVISIONS :	

5 cm

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PLATE 1 VIEW EAST FROM NEW HARBOUR RANGE

Foreground left to right

- Freney and Miller Lagoons
- Cox Bight beach and airstrip

Middle distance

- Devonian granite
- Point Eric

Distance

- Black Bluff Hills (forested with cloud shadow)

HISTORY AND PREVIOUS EXPLORATION

Tin was first discovered in the Cox Bight area in 1891, (McIntosh Reid, 1927) small amounts of cassiterite being produced from eluvial and alluvial deposits up till the 1930's (Plate 2a,b). This mining focussed on streams in close proximity to the granite; quartz and griesen veins were also tested with shallow pits and drives.

Several companies have investigated the alluvial tin potential since the 1930's. Contech Pty Ltd reviewed this phase of exploration up till 1972 for Ludbrooks Ltd.

In 1973 Metals Exploration Ltd entered a joint venture with Ludbrooks, making a detailed appraisal of the alluvial tin potential with mapping and drilling, (McGain & Burger, 1974).

Stannous Investments were granted the area as SPL 782 in 1978; this group proposed a small scale mining operation to define the true tin grade of the alluvials. This program apparently was never implemented.

From these investigations two areas of alluvial potential have been defined:

- Breakspear Valley - comprising 12.9 million cubic metres of wash and overburden at a ratio of 1:10. The grade of these alluvials is unknown.
- Terrace alluvials - comprising 5.5 million cubic metres of wash and overburden at a ratio of 1:2.6, the estimated grade of the wash is 1.2kg cassiterite per cubic metre (Plate 3).



PLATE 2 GORING CREEK AREA

- a) Eluvial and alluvial tin workings on the SE flank of the granite.



GORING CREEK AREA

- b) Alluvials overlying deeply weathered granite.

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PLATE 3 TERRACE ALLUVIALS BREAKSPEAR VALLEY

REGIONAL GEOLOGY AND MINERALIZATION

The geology and topography are dominated by the Precambrian quartzites, phyllites, schists and minor carbonates. This sequence is exposed as steep mountain ranges and cliffs on the coastline. These metasediments are foliated and folded, the dominant trend is north south (Plan 1, Plate 1).

The Precambrian has been intruded by a Devonian porphyritic biotite granite which has an outcrop area of 1skm immediately south of Point Eric. Drilling by Metals Exploration in the Breakspear valley and the widespread occurrence of cassiterite in quartz veins in the Precambrian indicates that the granite may occur beneath alluvial cover and have a shallow dipping contact with the metasediments.

Aplitic phases occur within the granite and granitic dykes have been mapped in the Precambrian at Penders Creek. Contact hornfelsing and some silica iron metasomatism has taken place in the Precambrian, the only evidence for the latter are garnet skarn cobbles on the beach west of Point Eric.

A hypabyssal rock associated with anomalous chromite in alluvials has been reported by Alstergren Pty Ltd near the western granite contact in the Breakspear valley. This rock type may be associated with Cambrian ultramafics. There is no airborne magnetic anomaly associated with this unit; it would appear to be of very limited extent.

Mineralization is primarily associated with the granite and its wide contact aureole, quartz and griesen veins occurring in both the granite and metasediments. The veins frequently contain cassiterite, pyrite, arsenopyrite, chalcopyrite and molybdenite. From previous reports and the current exploration these veins aren't anomalous in gold.

Nye (1927) reports that some of these veins have been prospected for tin in shallow pits and drives; a trench on a quartz arsenopyrite vein was located near the Penders Creek Magnetic anomaly.

Pleistocene to Recent alluvials are the only economically significant unit in the area; heavy minerals derived by stream erosion from veins in the granite and Precambrian have been concentrated by stream and wave action in terrace and deep lead deposits. Nye describes these as stratified deposits of coarse gravels, sand and peat.

WORK CONDUCTED BY A.C.P.WEBB

An airborne magnetics survey of the southern section of the licence was flown in January 1986. The results of the survey have been interpreted by J. Slade & Associates Pty. Ltd., defining the Penders Creek, Black Cliff Hills and Beach anomalies as warranting ground followup (Appendix 1a, Fig 1).

Penders Creek Magnetic Anomaly

- pegging two grid lines and a connecting baseline comprising 3.2km
- ground magnetics recorded along lines using a Geometrics Proton magnetometer
- 52 Wacker percussion drill samples over the magnetic anomaly
- geological mapping and logging drill cuttings

Black Bluff Hills Magnetic Anomaly

- reconnaissance magnetometer and geological mapping traverse
- collection of 2 panned concentrates and -80# stream samples
- " " 3 rock samples for assay

Beach Magnetic Anomaly

- magnetometer traverse along the low tide mark from Freney Lagoon to Point Eric.

Assessment of alluvials and beach sands for gold, platinoids, chromite and rare earths.

- 4 panned concentrates of sand and alluvials

A low altitude remote sensing multispectral scanning survey was flown by Geo-Flite Research Pty Ltd in March 1988. The geophysicists report was not available at the time of writing this report.

Reconnaissance assessment of quartz sulphide veins for gold. This work was carried out by Cyprus Minerals and Webb.

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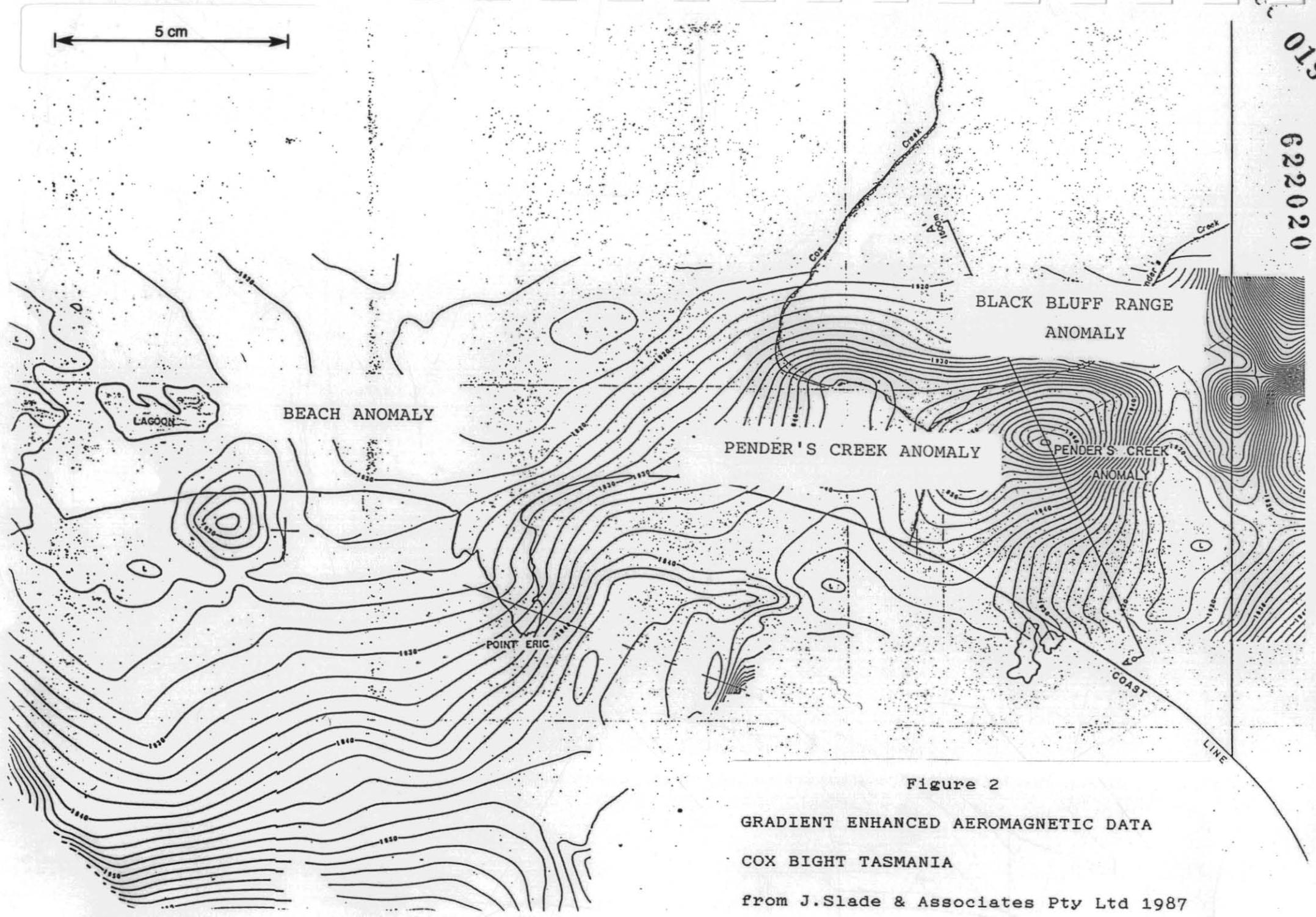


Figure 2

GRADIENT ENHANCED AEROMAGNETIC DATA
COX BIGHT TASMANIA

from J. Slade & Associates Pty Ltd 1987

3. PENDERS CREEK MAGNETIC ANOMALY

The only evidence of previous exploration in the area are shallow pits on narrow quartz arsenopyrite veins; these were most likely excavated between the 1890's and 1930's.

Work conducted this season defined the anomaly with ground magnetics and bedrock geochemistry.

The Penders area is located in the SE sector of the licence on a coastal plain covered with sparse buttongrass and heath (Plate 4).

Gridding

3.2kms of lines have been pegged, comprising two lines 150m apart and bearing 335 degrees magnetic (Fig 3a).

Geology

Precambrian quartzite, phyllite, graphitic - micaceous schist and minor carbonates underlie the area; outcrop is poor, being obscured by a thin mantle of sand and quartz gravel.

Lithologies strike from NS to EW the former trend may be due to a fault or unconformity within the Precambrian, dips are moderate to the north (Fig 3a,b,c).

Small granite exposures have been previously mapped on the northern bank of Penders Creek - these are interpreted to be shallow dipping sills; the main body of the granite may only be a few hundred metres below surface.

Outcropping mineralization is restricted to pyritic and graphitic schists and quartz arsenopyrite veins (Plate 5&6).

Magnetics

Ground magnetics have been read at 10m spacings along the lines. The maximum response a 200nt anomaly at 1300N 3150E is coincident with the best base metal geochemistry (Fig 3b).

The anomaly is conformable with the lithologies and has a strike length of approximately 300m and width of 25m.

Geochemistry

52 Wacker percussion bedrock samples have been taken at 20m intervals on the two lines over the magnetic anomaly. Depth to bedrock varied from 0.8m to 13.8m (Appendices 2a 3a).

The maximum geochemical response is at 3150E 1280N, Cu 680, Pb 420, Zn 3750, Sn 2650 and Au 0.02; all values are in ppm. Wacker cuttings at this location were of an orange brown sandy material which has been interpreted to be a weathered carbonate.

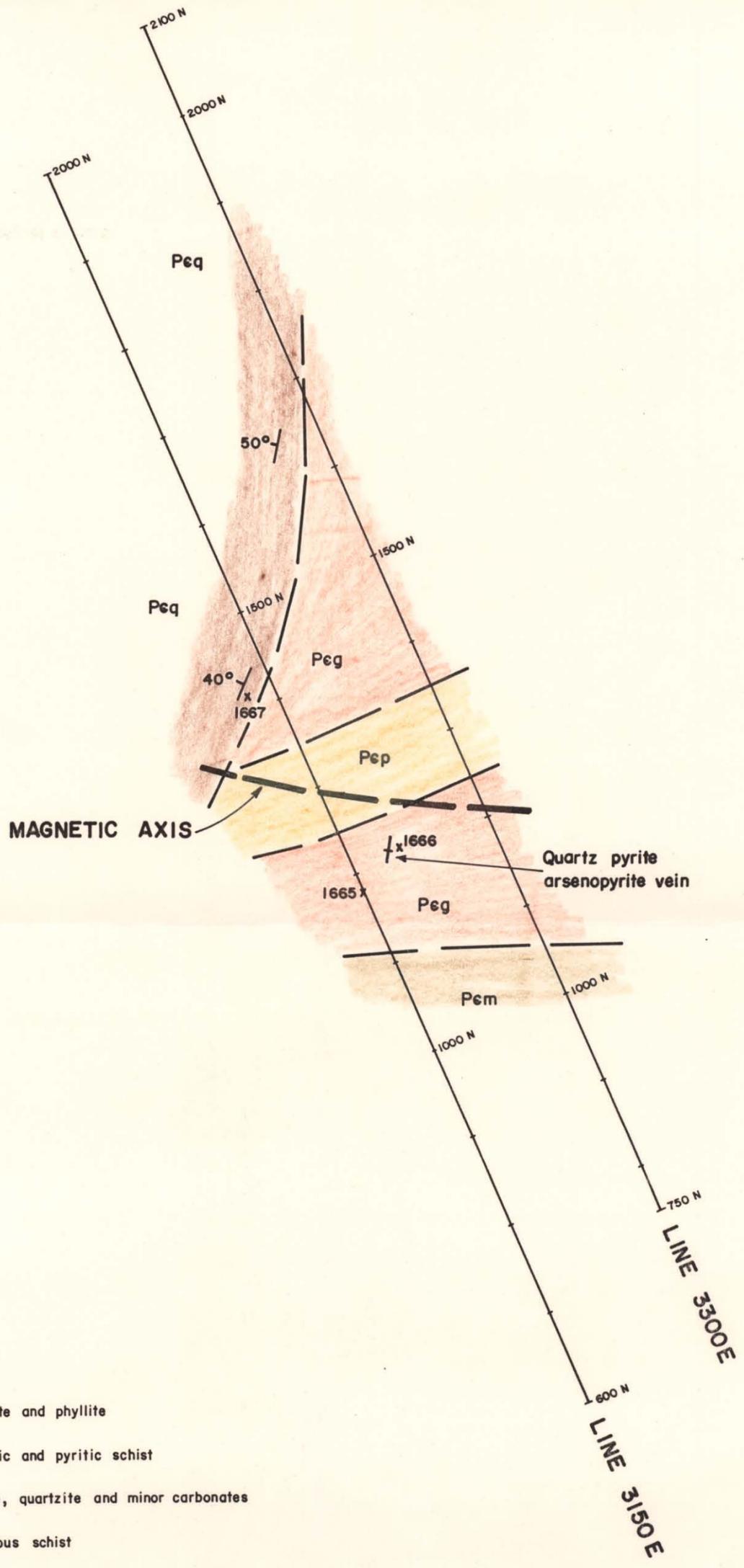
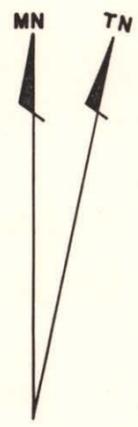
Three rock samples of quartz arsenopyrite veins and a pyritic graphitic schist were analyzed from this area (Appendices 2a, 3a & Plates 5, 6); only the vein was anomalous Pb 500, Ag 3.5, As 17500 and Sn 289, Au assayed <0.005ppm.

Conclusions

The magnetic anomaly has been located and is coincident with a bedrock base metal response.

Outcrop in the area is poor, the magnetic anomaly is interpreted to be either a small pyrrhotite skarn or mafic dyke. The anomaly is too small an amplitude to host economically significant gold or tin mineralization in a skarn or platinoids in mafics (Appendix 1b).

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LEGEND

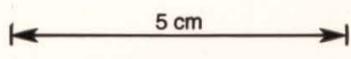
- DEVONIAN Dg Granite
- PRE CAMBRIAN Peg Quartzite and phyllite
- Pgp Graphitic and pyritic schist
- Pep Phyllite, quartzite and minor carbonates
- Pem Micaceous schist

— — — — — Interpreted Geological Contact

50° Dip and Strike

— — — — — Magnetic Anomaly Axis

x 1666 Rock Sample



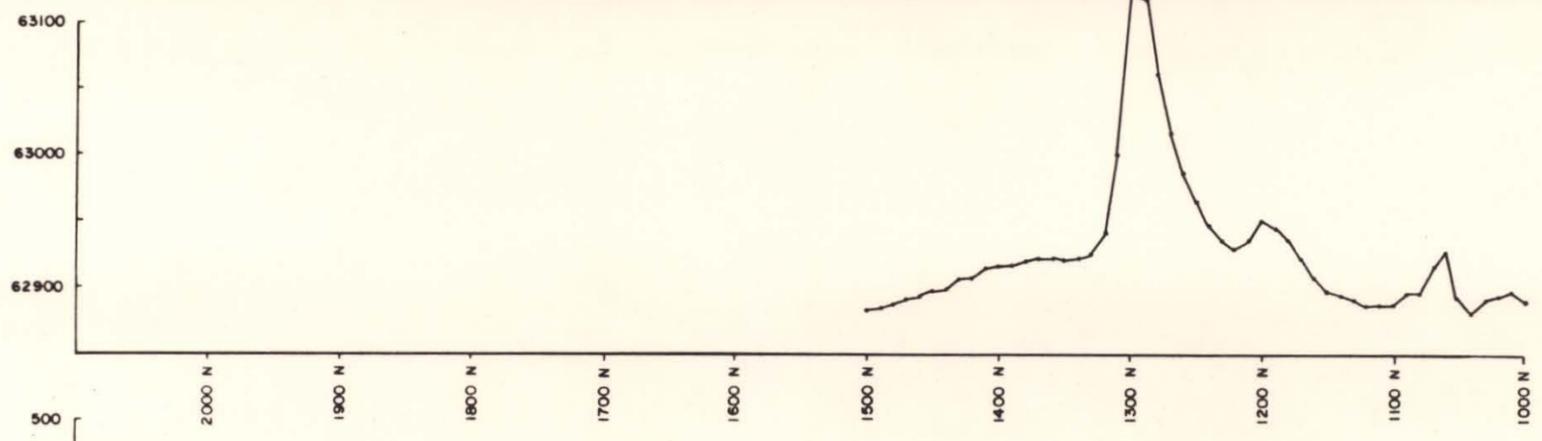
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A. WEBB	
E.L. 13/86 - COX BIGHT PENDERS CREEK MAGNETIC ANOMALY	
DRAWN BY : RP	DATE : Apr '88
INTERPRETED GEOLOGY	
SCALE 1:5000	
FILE NO.	FIG. 3a

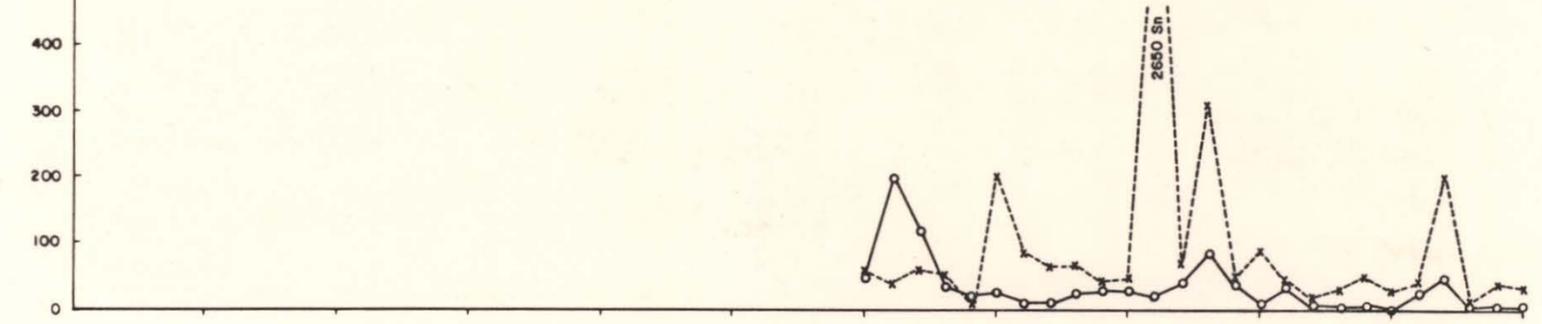
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MAGNETICS
nt

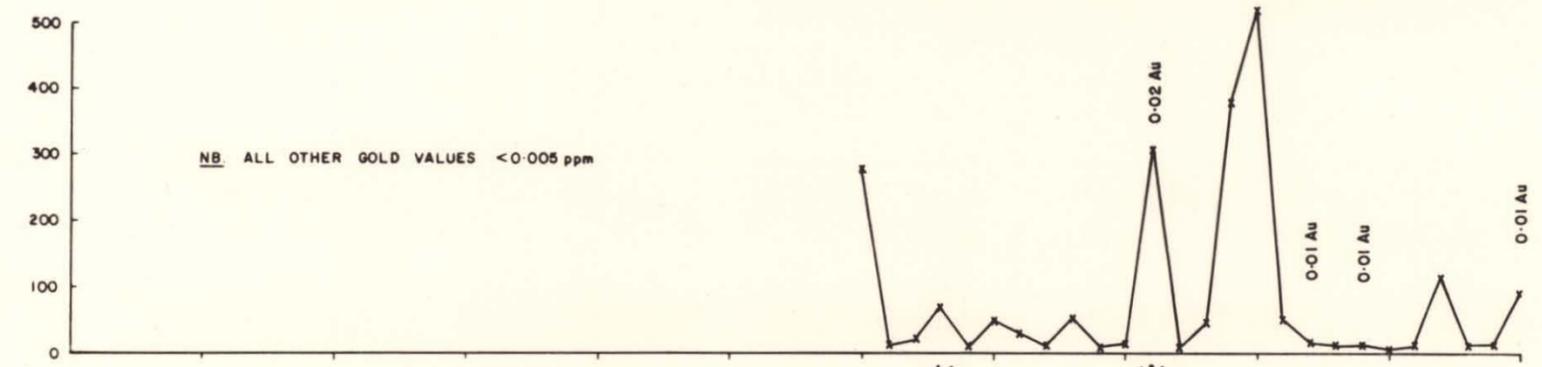


Sn x
W o

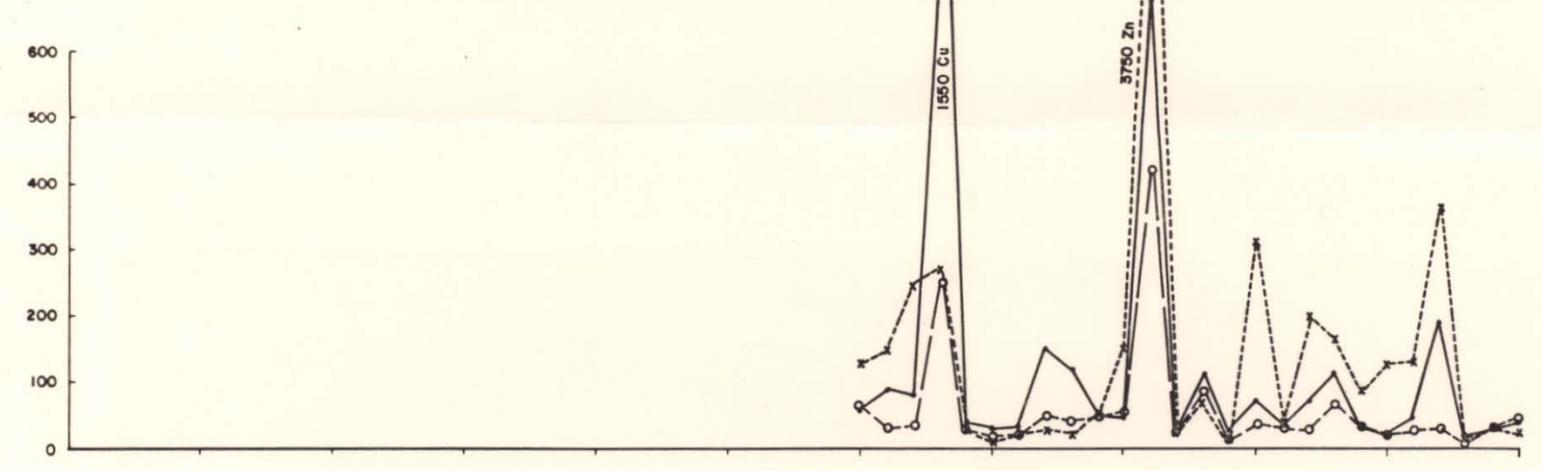


BEDROCK GEOCHEMISTRY
p.p.m.

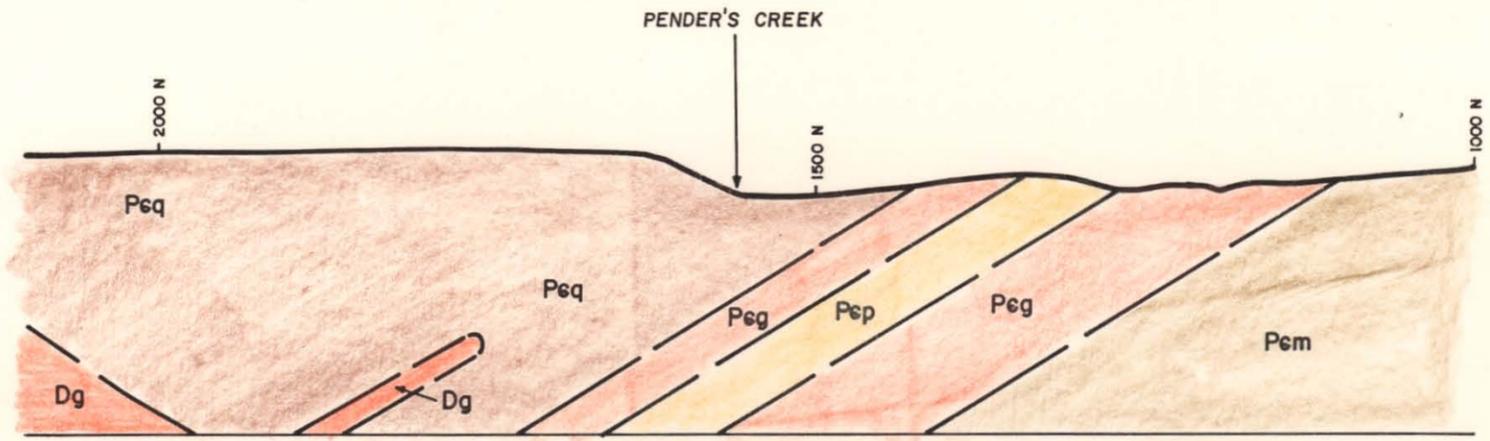
Au
As x



Cu
Pb o
Zn x

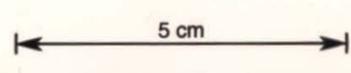


GEOLOGY



'WACKER' Sample Numbers 1622 1651 1650 1649 1648 1647 1646 1645 1644 1643 1642 1641 1640 1639 1638 1637 1636 1635 1634 1633 1632 1631 1630 1629 1628 1627

NOTE
KEY AS ON PLAN 3a.



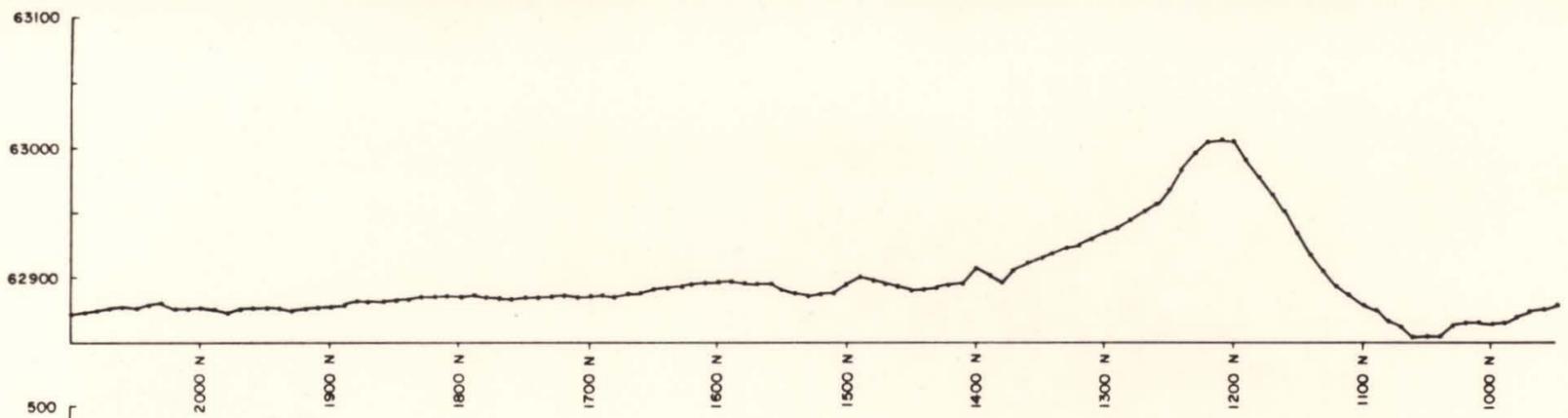
A. WEBB	
E.L. 13/86 - COX BIGHT PENDERS CREEK MAGNETIC ANOMALY SECTION LINE 3150 E	
DRAWN BY : R.P.	DATE : Apr '88
DRAFTSMAN: T.D.G.S.	
REVISIONS :	
FILE NO.	
SCALE 1:5000	50 0 50 100 Metres

FIG. 3b

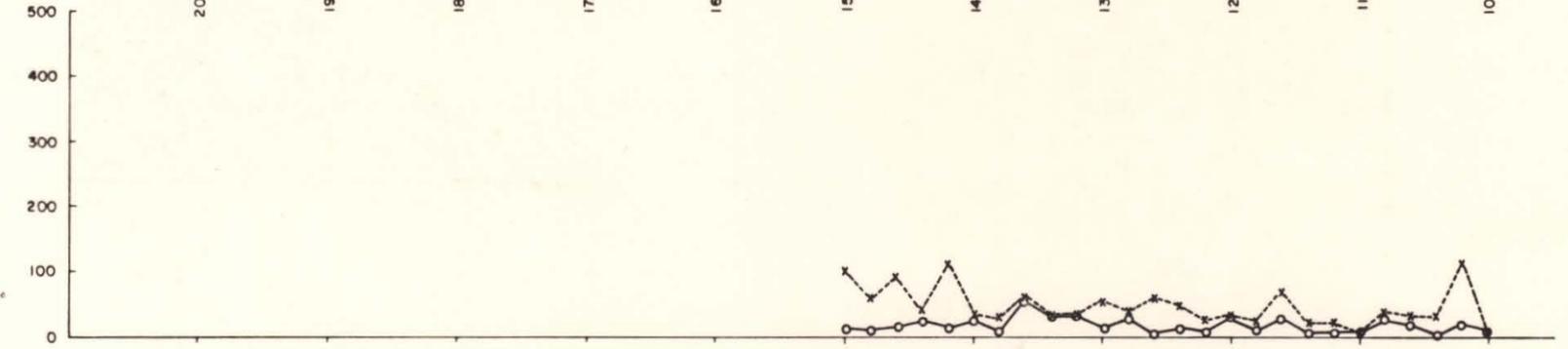
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MAGNETICS
nt

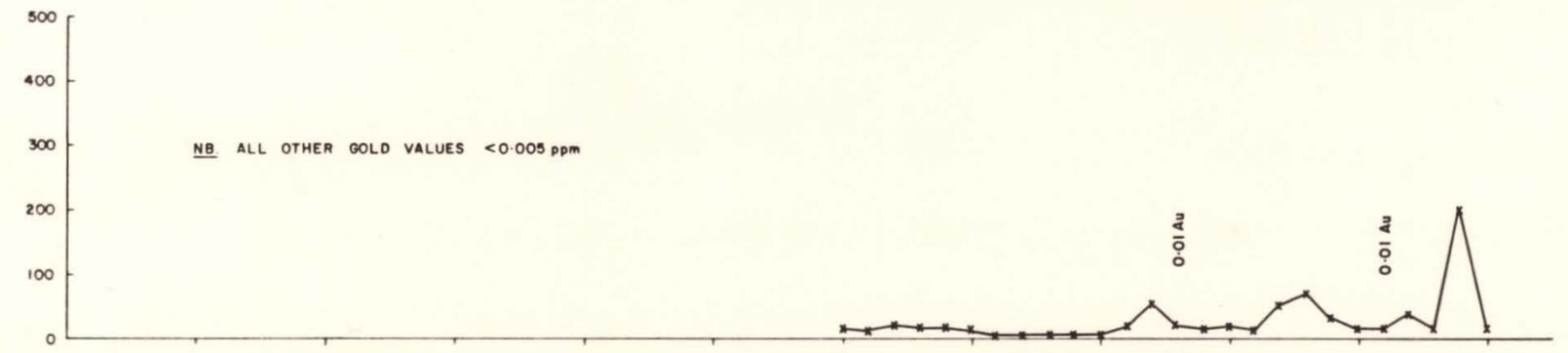


Sn x
W o

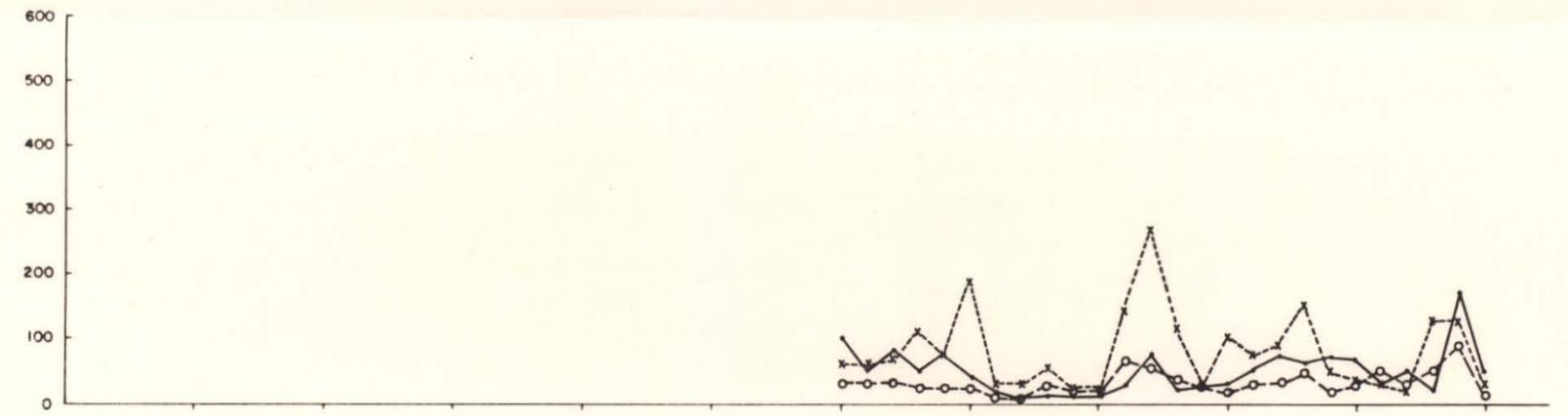


p.p.m.

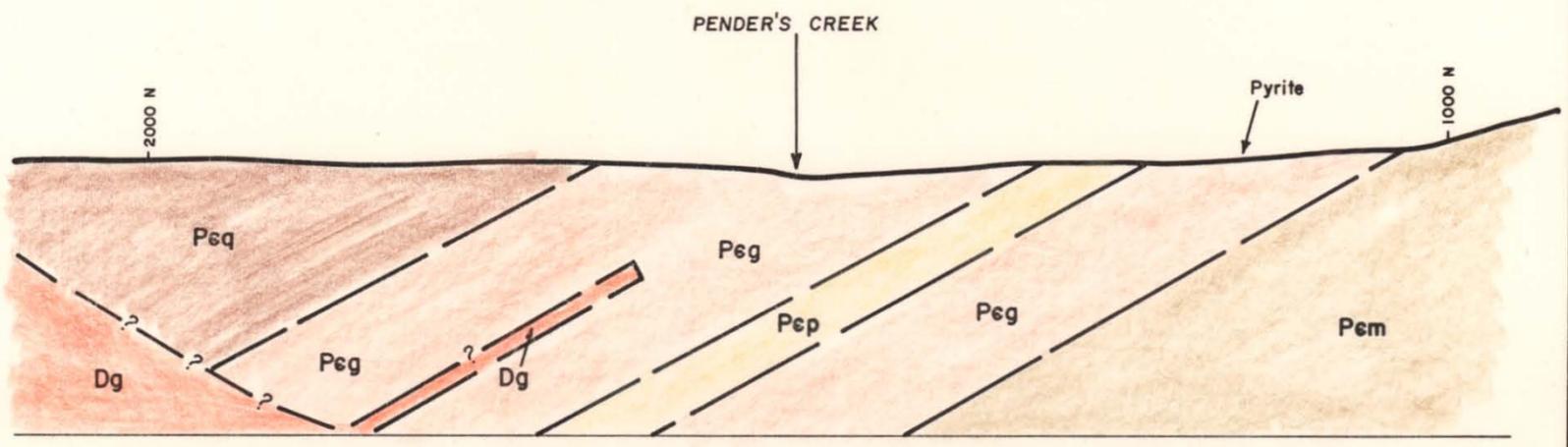
Au
As x



Cu ·
Pb o
Zn x



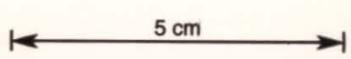
GEOLOGY



'WACKER' Sample Numbers 1609 1608 1607 1606 1605 1604 1603 1602 1601 1610 1611 1612 1613 1614 1615 1616 1617 1618 1619 1620 1621 1622 1623 1624 1625 1626

NOTE
KEY AS ON PLAN 3a.

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A. WEBB	
E.L. 13/86 - COX BIGHT PENDERS CREEK MAGNETIC ANOMALY	
SECTION LINE 3300 E	
88-2798	
SCALE 1:5000	
DRAWN BY : R.P.	DRAFTSMAN: T.D.S.
DATE : Apr '88	REVISIONS :
FILE NO.	FIG. 3c

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PLATE 4 PENDERS CREEK MAGNETIC ANOMALY LINE 3150E 1290N

Coastal heath, typical of vegetation in the area.
Bathurst Range in the background.



PLATE 5 PRECAMBRIAN PYRITIC & GRAPHITIC SCHIST
Penders Creek 3150E 1175N Sample No 1665



PLATE 6 QUARTZ PYRITE ARSENOPYRITE VEIN
Penders creek 3175E 1200N Sample No 1666

5 cm

BLACK BLUFF HILLS MAGNETIC ANOMALY

There is no evidence of previous exploration or prospecting in the area. Work conducted this season included a reconnaissance traverse along Smiths Creek with ground magnetics, geology and stream geochemistry. It was hoped that the magnetic source would be well exposed, giving some indication as to the nature of the Penders Creek anomaly.

The magnetic anomaly is located on the eastern boundary of E.L 13/86 with the SW National Park (Fig 2, Plate 7).

Geology

A sequence of pyritic graphitic schist with minor quartzite is well exposed in a series of cascades in Smiths Creek. These metasediments strike N-S.

Magnetics

Readings were taken at 10m intervals with a proton magnetometer along Smiths Creek. Several anomalies of 50 to 60nt were located over the pyritic schists, no magnetic minerals or rock types were located.

Geochemistry

-80# sediments and panned concentrates were collected at two sites in Smiths Creek, concentrate No 1657 had elevated values of Ti 2.1% and Ce 0.33%. Gold and platinoids assayed <0.03ppm in the concentrates (Plan 1, Appendices 2b,3b).

Rock samples of pyritic schist and gossan were assayed. The gossan was anomalous in As 1100ppm; this is probably a ferricrete derived from the pyritic schist.

Conclusions

A northern extension of the Black Cliff Hill magnetic anomaly has been found to be coincident with graphitic schists similar to those at Penders. However magnetic minerals or rock types weren't located and the exact source of the anomalies still hasn't been determined.

Geochemical samples from the area weren't anomalous in gold, tin or platinoids.

BEACH MAGNETIC ANOMALY

This anomaly is located just off shore from Cox Bight near Freney Lagoon and has been interpreted by Slade as either a sunken steel boat or concentration of heavy mineral sands. (Appendix 1a)

A single ground magnetometer traverse was read along the beach at low tide mark from the stream outlet at Freney Lagoon east to Point Eric (Appendix 4, Plate 9). The anomaly wasn't located, the magnetic background varying 20nt.

The anomaly is interpreted to lie further off shore. No further work is recommended.



PLATE 7 BLACK BLUFF HILLS MAGNETIC ANOMALY

View NE from Penders, the anomaly is located on the forested hillside.

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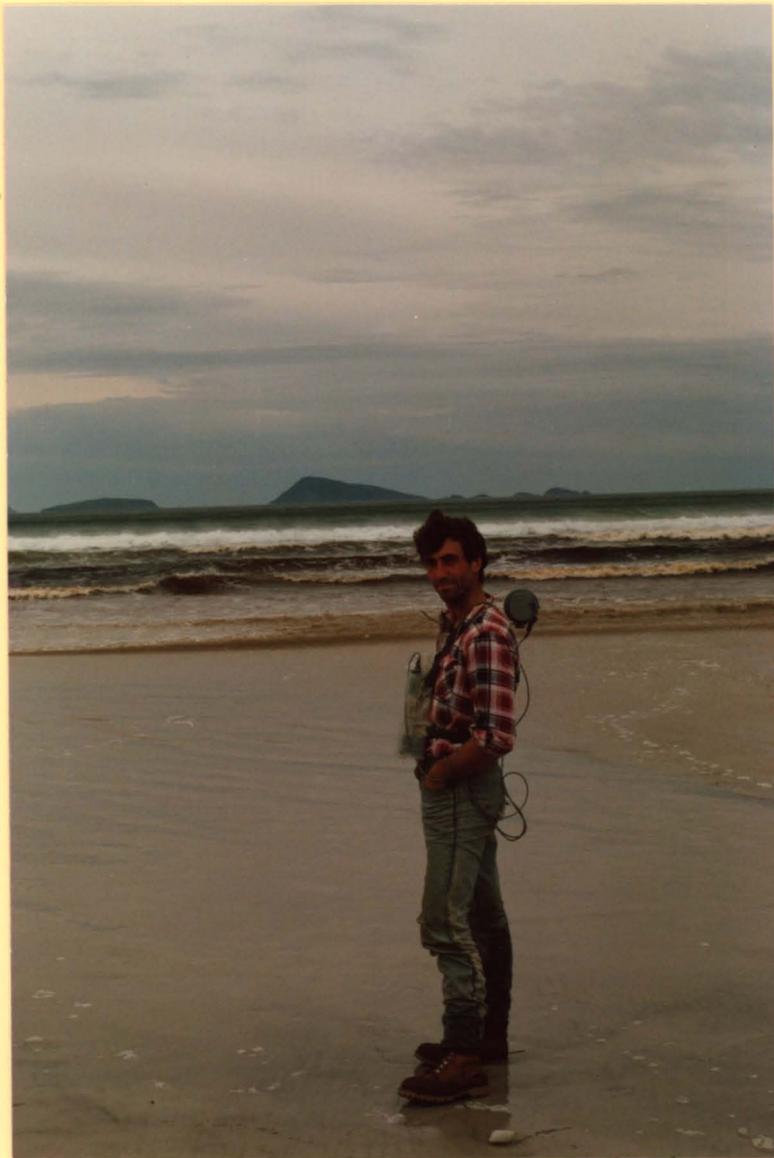


PLATE 8 THE BEACH MAGNETOMETER TRAVERSE
Maatsuyker Island centre horizon.

ASSESSMENT OF ALLUVIALS AND BEACH SANDS IN THE BREAKSPEAR VALLEY
AND FRENEY LAGOON AREA.

These deposits were sampled with panned concentrates to determine if they contained anomalous amounts of gold, platinoids, chromite and rare earths.

A multispectral scanning survey has been flown to define negative topographic features which may be associated with greater concentrations of heavy minerals.

In the past this area has attracted most of the exploration effort, evidence of trenching, shafting and drill traverse lines can still be seen. Stannous Investments estimated that 18.4 million cubic metres of overburden and wash as valley fill and terrace deposits existed in the area (Plate 3) with anomalous levels of tin ilmenite and zircon.

Four pan concentrates were collected from streams incised in alluvials, alluvials exposed in trenches and beach sands (Plan 1). The concentrates were panned from approximately 20kg of -2mm gravel. Significant amounts of heavy minerals occurred but no visible gold or platinoids were detected.

Maximum values in concentrates were from Knights Creek, Sn 0.88%, Ti 0.17% and Zr 0.29%. Ruthenium assaying at 20ppb, the highest value for precious metals (Appendices 2b, 3b).

This pan concentrate sampling was only of a reconnaissance nature but has established that exposed sections of the alluvials are anomalous in Sn, Ti and Zr but not in gold and platinoids. However the basal section of the wash may contain gold as at the Melaleuca alluvials and this will only be established by bulk sampling.

Multispectral features in areas of alluvials will be followed up with geological mapping and Wacker drilling to define the base profile of the alluvials and associated heavy mineral assemblage.

RECONNAISSANCE ASSESSMENT OF QUARTZ SULPHIDE VEINS FOR GOLD

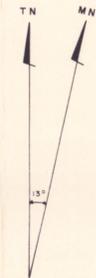
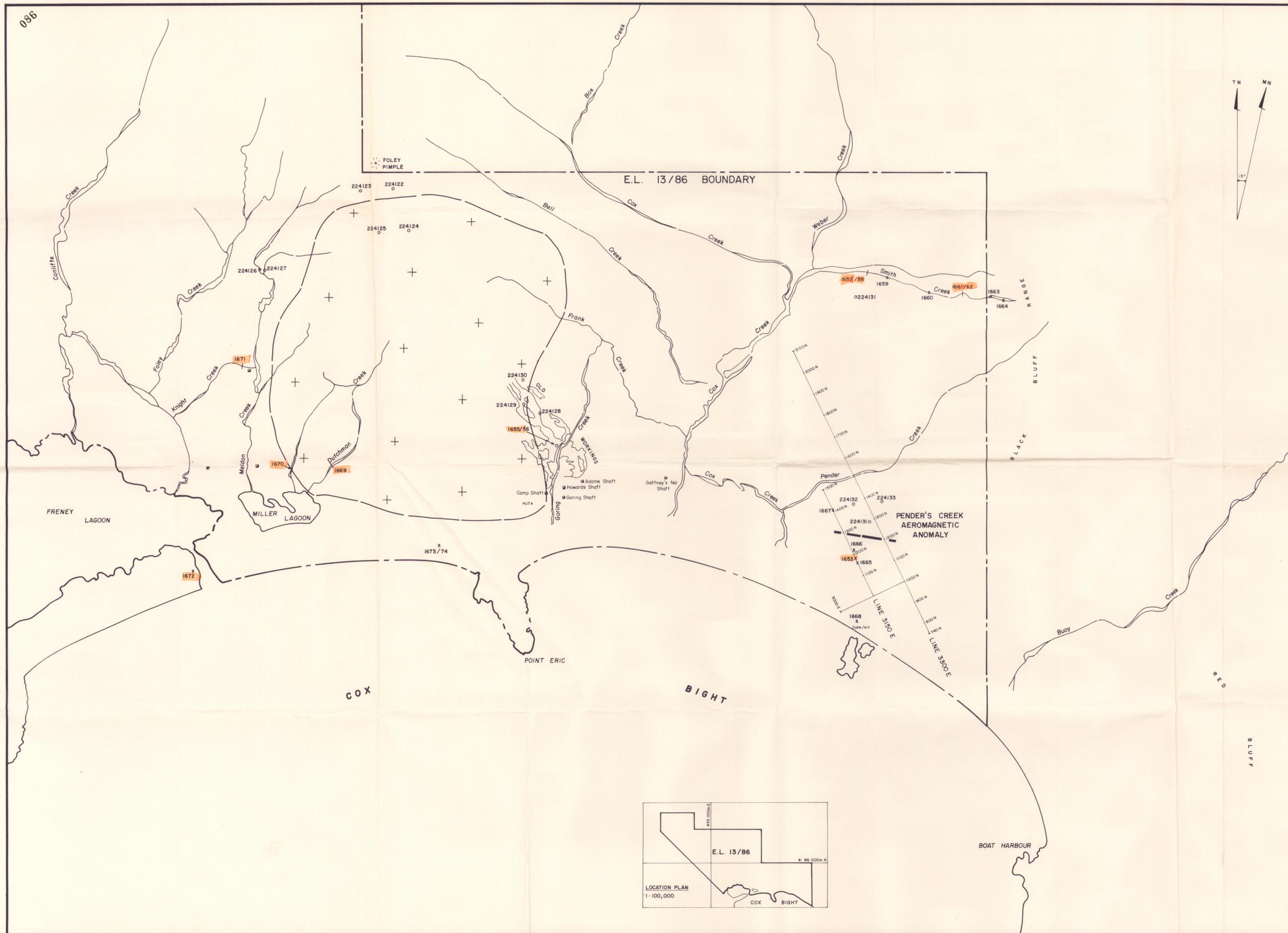
Veins and greizens in both the granite and metasediments have been prospected in the past with shallow pits and drives. It is assumed that this work was aimed at locating a significant hard rock source for the alluvial tin in the area.

In the southern section of the licence stream sediment and rock samples have been collected by Cyprus Minerals and Webb. These samples have been assayed for Cu Pb Zn Ag Au As Sn and W. Stream sediments assayed <10ppm for base metals and <0.005ppm for gold. The maximum rock chip assays were from quartz pyrite arsenopyrite veins less than 0.5m wide in the Penders area:

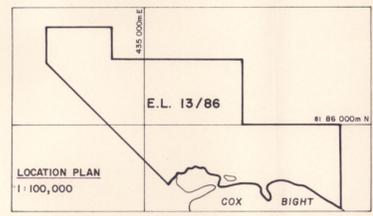
No 224131 Au 0.035ppm, Ag 4.5ppm, As 1.94% and Sn 0.26%
No 1666 " <0.005ppm, " 3.5ppm, " 1.75% " " 0.02%

The only other registration above detection level for gold was 0.03ppm near Foleys Pimple.

Veins in the area do not contain significant precious metals. No further exploration for this style of mineralization is warranted.



- LEGEND**
- Rock Chip Sampling (CYPRUS 1987)
 - × Rock Chip Sampling (WEBB 1987)
 - ×/ Stream Sediment Sampling (WEBB 1987)



A. WEBB		DRAWN BY : R.P.
E.L. 13/86		DRAFTSMAN: T.G.D.S.
COX BIGHT		DATE April '88
88/2798 Vol 1/2		REVISIONS :
GEOLOGICAL PLAN		FILE NO.
622032		PLAN
SCALE IN METRES 0 100 200 300 400		

APPENDIX 1

a) COX BIGHT HELICOPTER MAGNETIC SURVEY

Interpretation by: J.Slade & Associates Pty Ltd
Consultant Geophysicist

033

622034

J. SLADE & ASSOCIATES PTY. LTD.
(Inc. in Queensland)
Consultant Geophysicists

COX BIGHT HELICOPTER MAGNETIC SURVEY

MR. A. WEBB

Interpretation by: J. SLADE & ASSOCIATES PTY. LTD.
CONSULTANT GEOPHYSICIST,
18 Cutler Road,
Clontarf, N.S.W.

Date: 3rd April 1987.

034

1 INTRODUCTION

At the request of Mr. R. Henderson, General Manager, Geo Instruments Pty. Limited, 18 Gertrude Street, Arncliffe, N.S.W. an interpretation of three magnetic anomalies in the Cox Bight area of Tasmania has been carried out on behalf of Mr. A. Webb, G.C. The area was flown previously using a gradientometer system. From the results of this survey three anomalies were identified which warranted detailed investigation. These were the Pender's Creek Anomaly, the Beach Anomaly and the Black Bluff Range Anomaly, (Figure 1).

The available geology of the area shows the rocks to consist mainly of Proterozoic quartz mica schists, metamorphosed sediments and the Black Bluff Range schists, intruded by a Devonian porphyritic granite. The area of greatest magnetic activity is located over the Black Bluff Range schists in the extreme east of the area. The granite outcrop, as mapped, does not correlate with a magnetic anomaly in the gradient enhanced map. There is no evidence of a metamorphosed aureole surrounding the granite. Limestones and dolomites have not been observed in the immediate area although there is some evidence that they do exist. This would indicate that the magnetic anomalies would be related to skarns. Extensive Cainozoic soils, swamps and sand cover most of the low lying areas. These alluvial deposits were worked for tin at one time, however the source rocks were not identified. There is a suggestion of a regional structural strike to the north east.

622036

035

5 cm

2

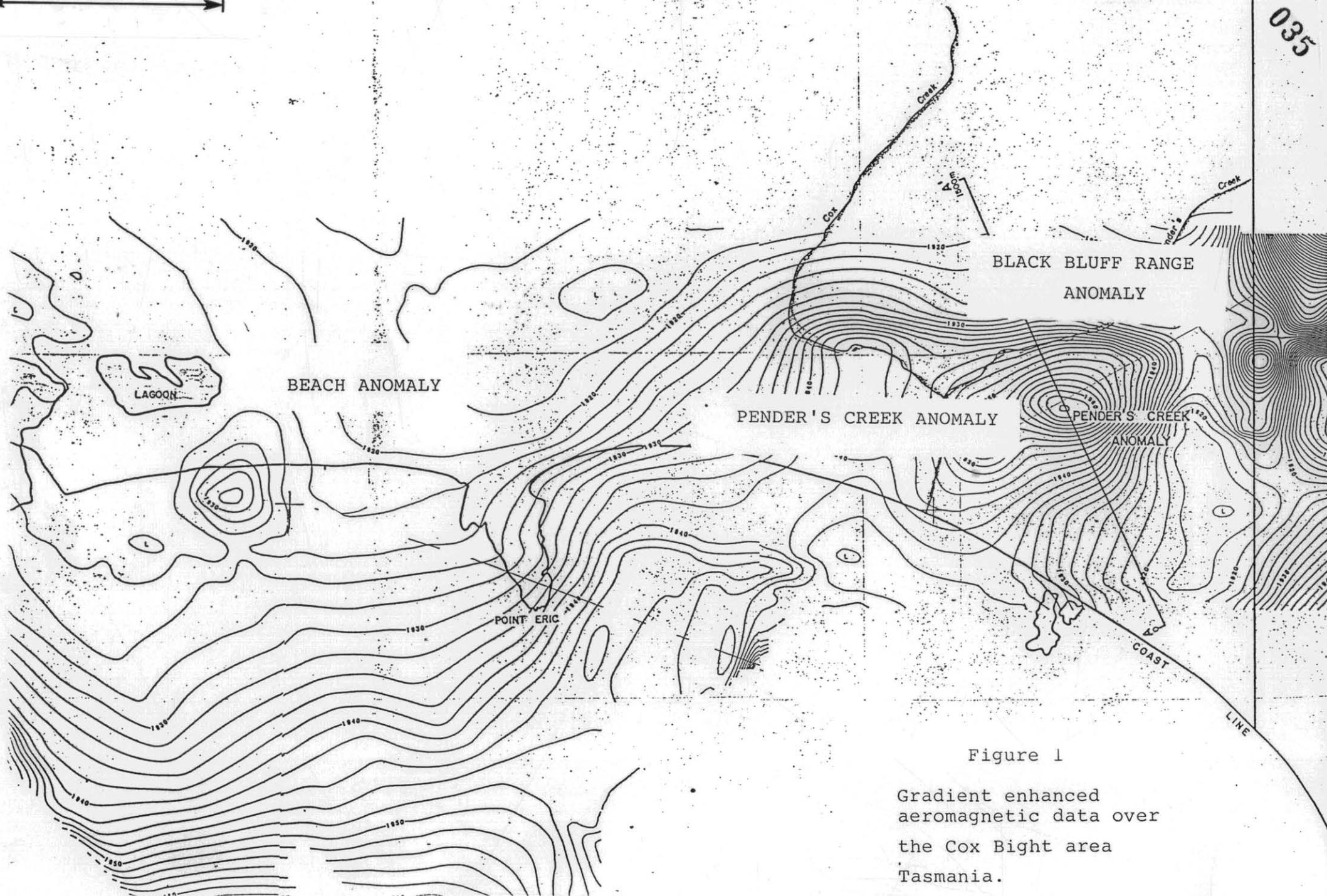


Figure 1

Gradient enhanced
aeromagnetic data over
the Cox Bight area
Tasmania.

A detail helicopter magnetic survey was carried over the region by Geo Instruments on 24th. March 1987. Pender's Creek Anomaly was covered by eight lines flown in a north north westerly direction, spaced at approximately 100 metres, plus three orthogonal tie lines. The Beach Anomaly had eight north south lines flown at an interval of 100 metres with two tie lines. The Black Bluff Range Anomaly was covered by five lines in a north south direction. The survey was flown at an altitude of 80 metres mean terrain clearance with a magnetometer sample interval of one cycle per second. This gave an average distance between readings of 25 metres. The magnetometer data were recorded digitally, however there was no record of the ground clearance. The survey was flown using visual navigation from aerial photography and the flight path recorded using a vertical 35mm tracking camera.

The digital data were transcribed onto one floppy disk suitable for processing on an IBM XT computer. These data consisted of the fiducial values and the magnetometer readings. The distance between readings was taken from the flight path recovery. The data have been plotted as profiles (Appendix 1) and the major anomalies modelled to estimate the depth, shape and possible source of the responses (Appendix 2).

037

2 INTERPRETATION OF RESULTS

2-1 Pender's Creek Anomaly

The Pender's Creek Anomaly is located south west of the creek, after which it was named, in an area mapped as Cainozoic swamp deposits covering Black Bluff Range schists. The eight lines which cover the anomaly (Appendix 1) show the maximum response of 70 nano-tesla on Line 103 (Figure 2 & 3) and a similar shaped anomaly with an amplitude of 40 nano-tesla on Line 102. The response on Line 103 has been modelled successfully with a source at a depth of 80 metres and with a 60° dip to the north north west. The body has a true width of 30 metres and magnetic susceptibility of 0.004 cgs units. On Line 103 the same body is used to explain the anomaly, however in this case the depth to the top has been reduced to 55 metres below the surface, the width reduced to 15 metres, the 60° dip to the north and the magnetic susceptibility remain constant. On Line 101 the same body is used as for Line 102 and in this case the reduction in the amplitude of the anomaly is due to the line being located to the west of the body.

The source of the Pender's Creek magnetic anomaly is a lens striking west to east or 60° E of N and approximately 400 metres in strike length, dipping at 60° to the north north west. The maximum true width of the body is 30 metres and at a depth of 55 metres below the surface. The magnetic susceptibility in all three models is 0.004 cgs units which is equivalent to a basic or mafic volcanic (basalt, gabbro, or serpentine Figure 4). If the width of the body is reduced to 15 metres the magnetic susceptibility increases proportionally to 0.008 cgs units which is equivalent to a serpentine. It is not possible to interpret from the magnetic data whether the magnetic anomaly is associated with mineralisation however the known minor sulphides in the Black Bluff Range formation could indicate the anomaly is due to pyrrhotite rather than magnetite.

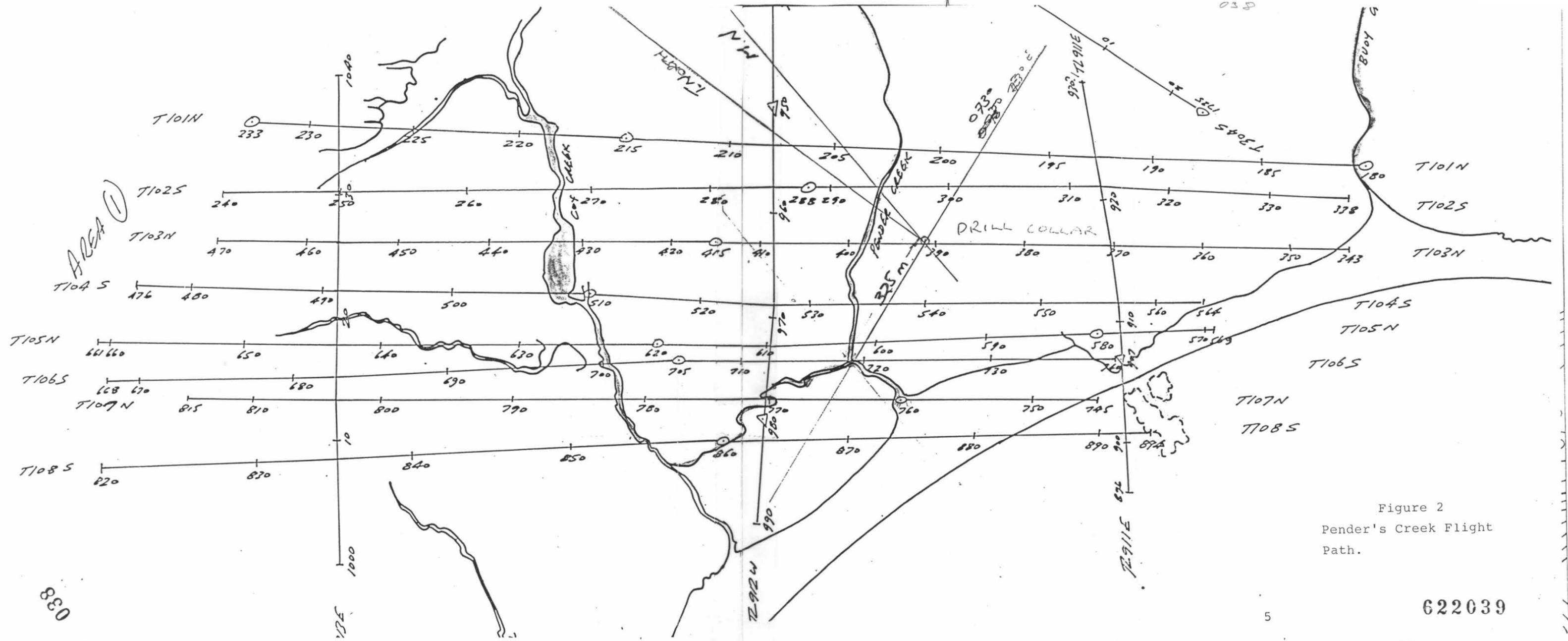
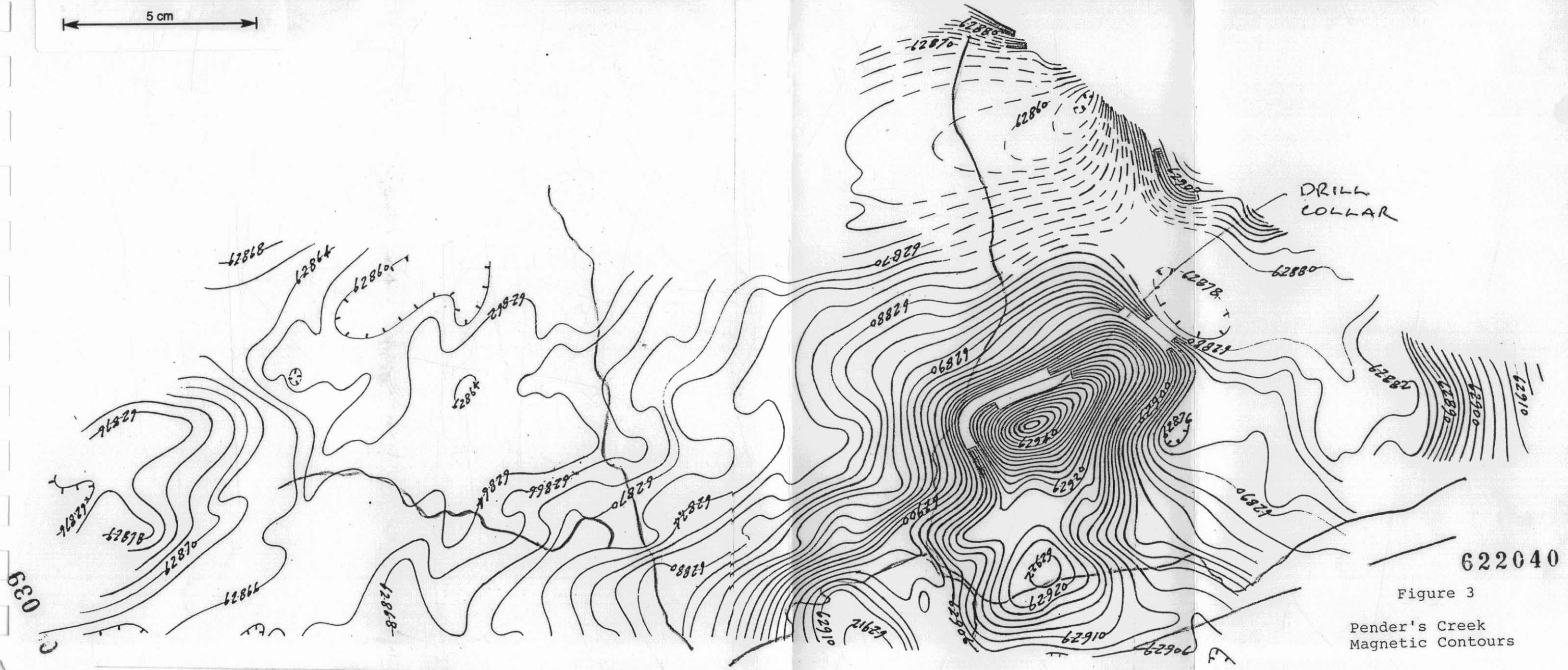


Figure 2
Pender's Creek Flight
Path.

622039

5
5 cm

5 cm



DRILL
COLLAR

622040

Figure 3
Pender's Creek
Magnetic Contours

RANGE OF MAGNETIC SUSCEPTIBILITIES OF COMMON ROCKS

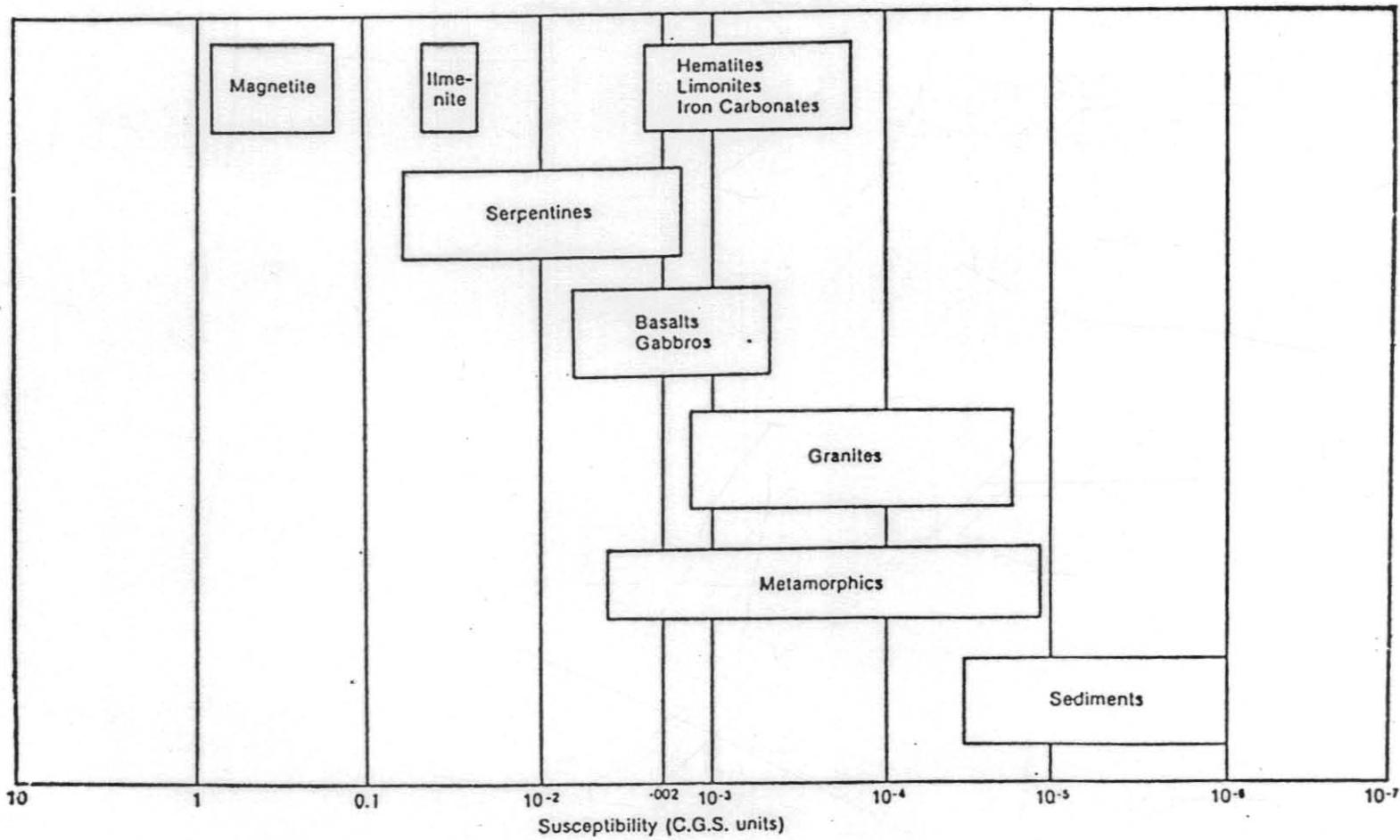


Figure 4 •

041

622042

J. SLADE & ASSOCIATES PTY. LTD.
(Inc. in Queensland)
Consultant Geophysicists

To test this anomaly a 70° inclined hole to the south should be drilled on Line 103, fiducial 391 (Figure 2). The approximate collar location is 325 metres from the junction of Cox Creek and Pender's Creek on a magnetic compass heading of 073° E of N. The target depth would be approximately 100 metres ensuring the hole passes through the magnetic body and not over the top of it. The collar location plotted on Figure 3 is based upon approximate positional data. To locate the drill collar more accurately a short duration ground magnetic survey should be carried out and interpreted on site before the final position is decided. While the drilling equipment is being ferried into the area, a geophysicist could implement this investigation and therefore position the hole with far greater accuracy. The cost of such a survey would far out weigh the cost of a second hole should it be required.

2-2 Beach Anomaly

The Beach Anomaly, detected on Lines 203 and 204, was covered by eight lines (Appendix 1). The response has a relatively short wavelength which indicates minimal depth extent. This is interpreted as a steel mass, such a sunken trawler or barge, washed up on the beach and now covered with sand. This model has been successfully applied to the data and the responses on Lines 203 and 204 are explained by a body midway between the lines, at a depth of 12 metres under the sand and 4 metres high, with a length of 10 metres and a width of 4 metres. This gave the mass of steel a volume of 160 cubic metres or 1250 tonnes. A magnetometer traverse along the beach at low tide would quickly pinpoint the position of the interpreted wreck.

The alternative interpretation warranting investigation is that the anomaly is due to a concentration of heavy minerals in the sands. The anomaly is located at the eastern end of Miller Lagoon and it is possible that at some time both Miller Lagoon and Weber Lagoon were connected and the river mouth was at the eastern end of the larger lagoon. If this was the case there could have been a build up heavy minerals, probably including tin and ilmenite at the river mouth sufficient to cause the anomaly. A geochemical survey along the beach at low tide would adequately test this alternative interpretation.

2-3 Black Bluff Range Anomaly

Discussion with Z. Beldi, the magnetometer operator, indicated the Black Bluff Range Anomaly is coincident with the top of a hill. His comments were that access to the area would be extremely difficult as it is covered with thick vegetation. The magnetic anomaly is most probably due to a magnetic formation outcropping on the hilltop. To test this anomaly a drainage geochemical survey should be carried out over the area and if these results are positive, further ground magnetic surveys would be warranted. If there is no geochemical response, the area does not warrant further investigations.

3 CONCLUSIONS & RECOMMENDATIONS

The magnetic data over the Pender's Creek Anomaly has been modelled assuming a source at a depth between 55 to 80 metres with a strike length of 400 metres, striking 60° E of N, and dipping 60° to the north north west. To test this Anomaly a 70° inclined hole to the south should be located on Line 103, fiducal 391, at the position indicated on

Figure 2. This point is located 325 metres from the junction of Cox Creek and Pender's Creek on a compass heading of 073° E of N. From the magnetic data, it is not possible to determine the probable style of mineralisation which would be associated with this anomaly, however a pyrrhotitic tin deposit is a possibility. The geologist supervising the drilling should log the core using a portable magnetic susceptibility meter and once the extent of the magnetic formation is known the magnetic data should be reinterpreted before the decision is made to drill a second hole.

Before the drilling commences, it is recommended that a geophysicist carry out a short detail ground magnetic survey over the Pender's Creek Anomaly to accurately position the drill collar location. This survey could be carried out while the components of the drill rig are being ferried into the area by helicopter.

The Beach Anomaly has been modelled assuming a source similar to a trawler or barge washed up onto the beach. The size of the magnetic anomaly indicates the steel in such a vessel would have been 1250 tonnes. A ground magnetometer traverse along the beach at low tide would pinpoint the wreck accurately. An alternative interpretation assumes the two lagoons were once joined and the river mouth was located over the magnetic anomaly. Any heavy minerals carried in the river would have been deposited on the shoreline. This interpretation could be readily checked by a geochemical survey along the beach.

From discussion with Z. Beldi the Black Bluff Range Anomaly is coincident with the top of the range and the most likely source of the anomaly is a magnetic formation on top of the hill. A stream sediment geochemical survey of the creeks draining the Black Bluff ranges will indicate whether the source of the magnetic anomaly is mineralised. If these results are negative no further work is warranted in this area.

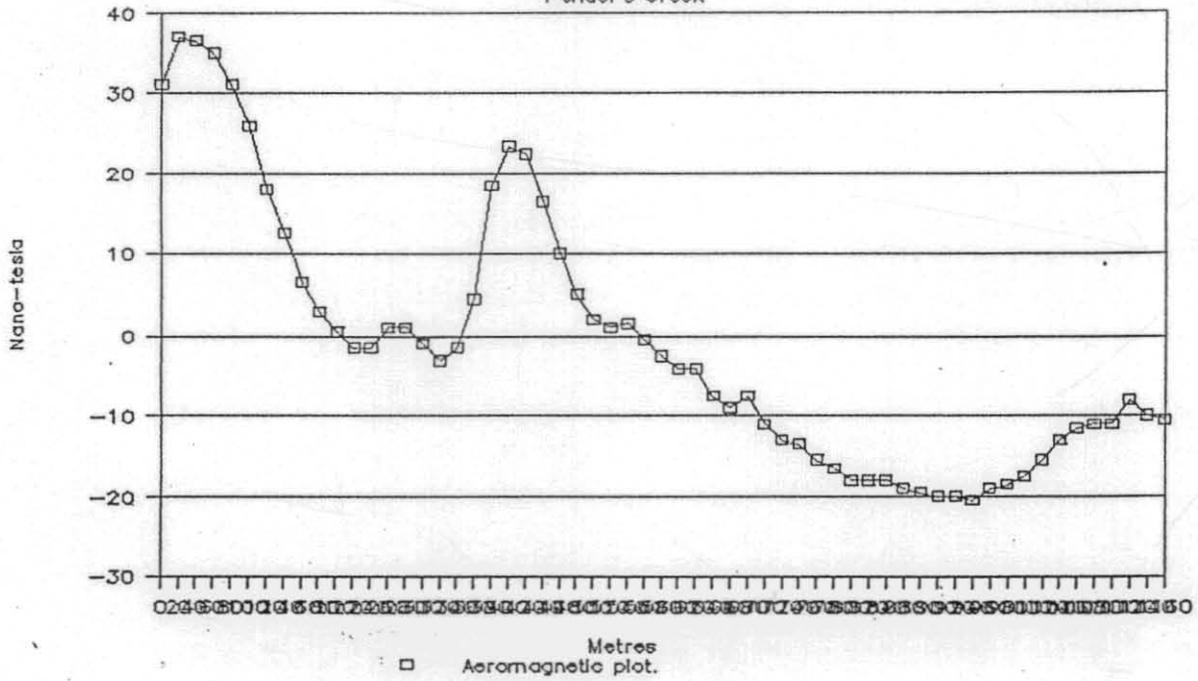
044

APPENDIX 1

Magnetic profiles over the
Pender's Creek and Beach
Anomalies.

045

Line 101
Pender's Creek

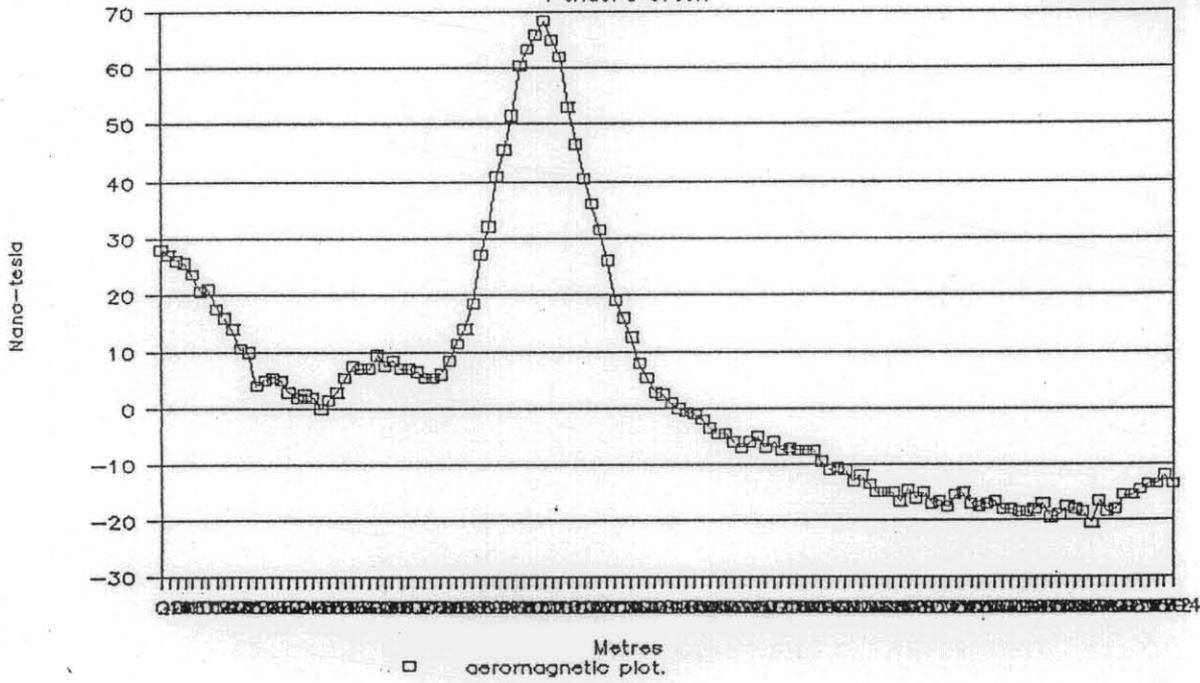


046

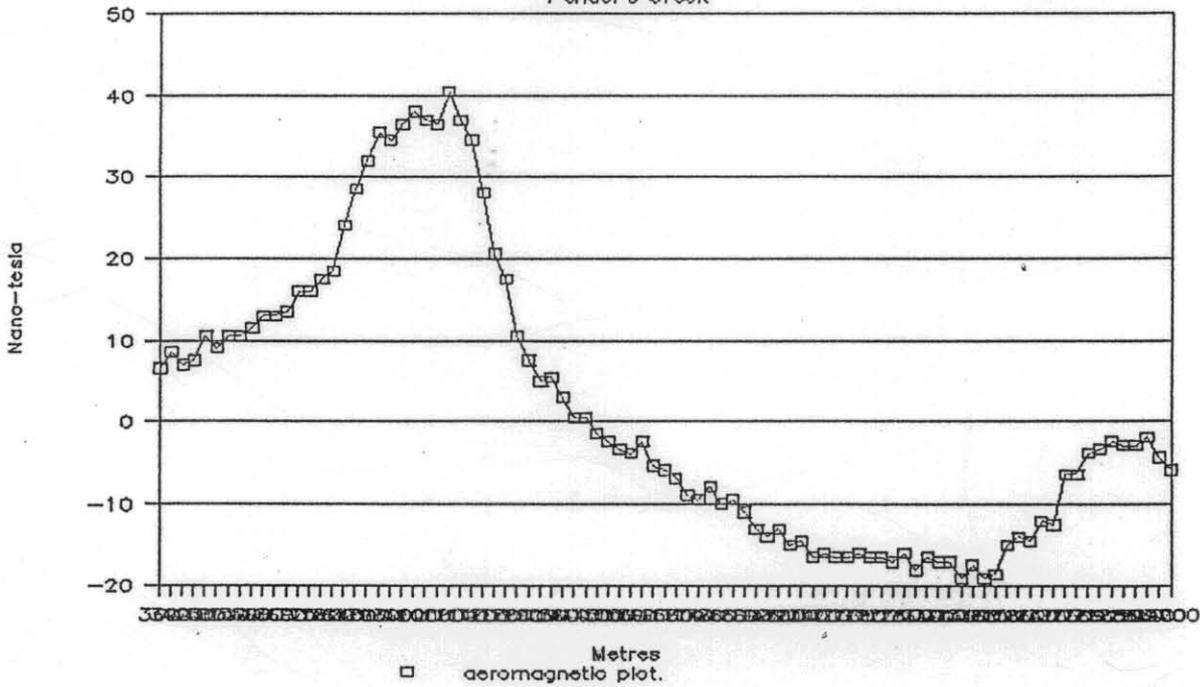
622047

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(Inc. in Queensland)
Consultant Geophysicists

Line 103
Pender's Creek



Line 104
Pender's Creek

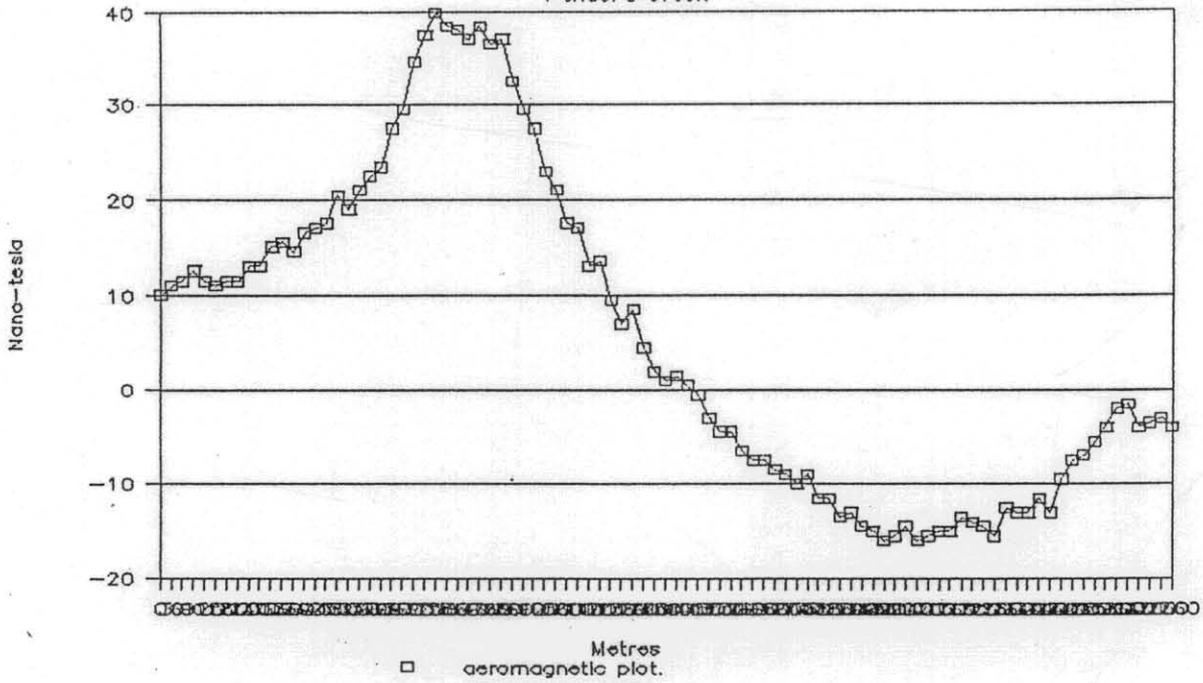


047

622048

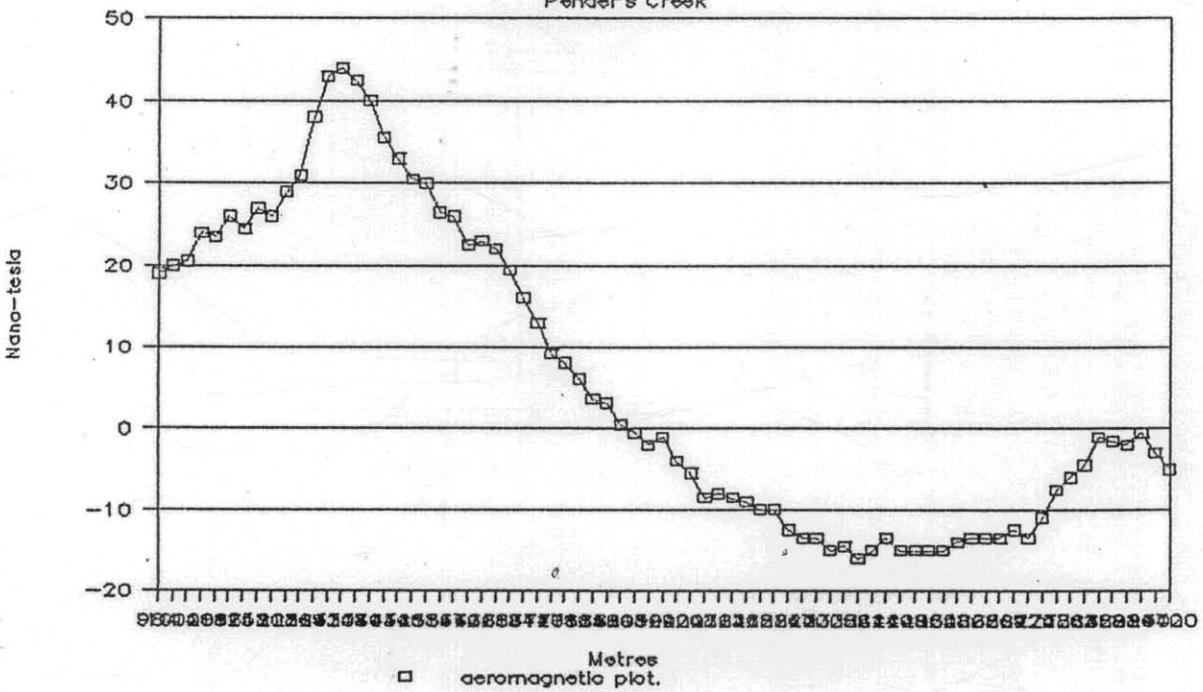
J. SLADE & ASSOCIATES PTY. LTD.
(Inc. in Queensland)
Consultant Geophysicists

Line 105
Pender's Creek

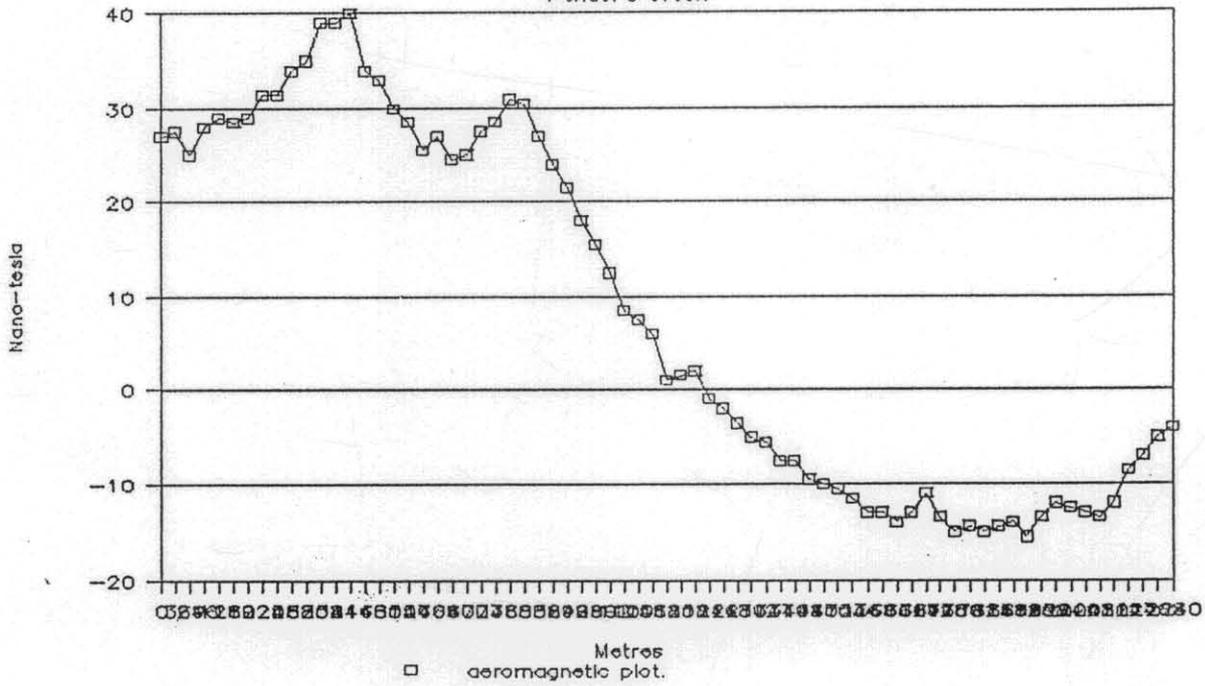


5 cm

Line 106
Pender's Creek

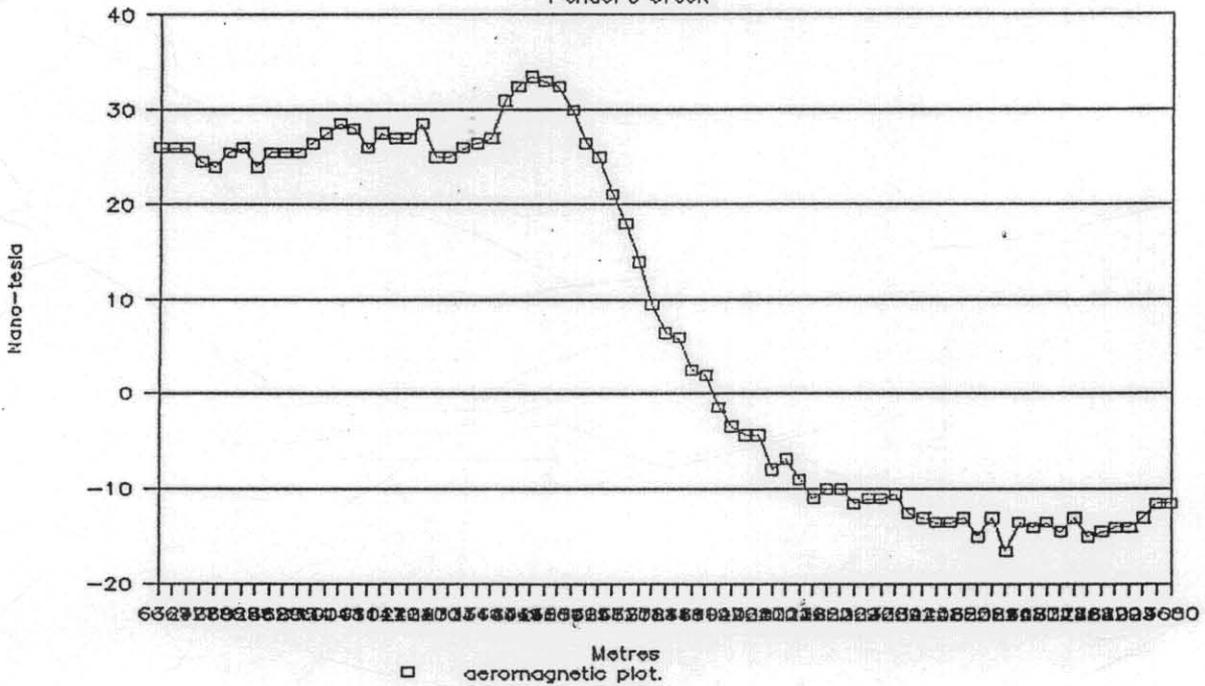


Line 107
Pender's Creek



5 cm

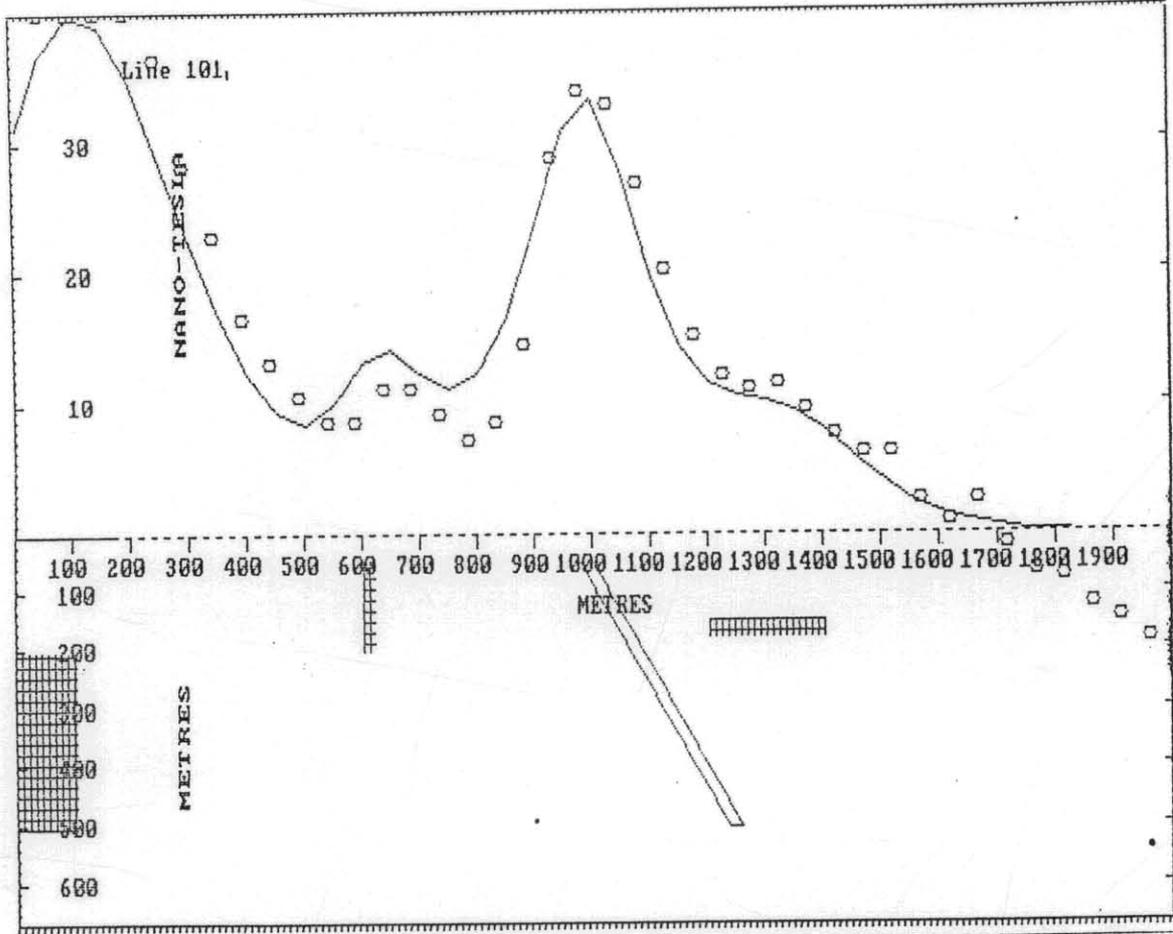
Line 108
Pender's Creek



APPENDIX 2

Magnetic modelling results
for the Pender's Creek and
Beach Anomalies.

050



MODEL PARAMETERS

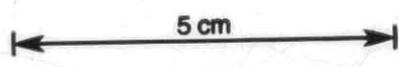
Model name *Line 101*

Field parameters
 1 Total field 62880.
 2 Inclination -72.

Profile parameters
 3 X co-ordinate of 1st station 0.
 4 Y co-ordinate of 1st station 100.
 5 Z co-ordinate of 1st station 80.
 6 Number of stations 41
 7 Station increment 50.00
 8 Profile direction 30.
 Number of bodies 4

X1	X2	Y1	Y2	Z1	Z2	DIP	STRIKE	MAG	SUSC.
980.	1000.	105.	500.	55.	500.	120.	120.	.0041000	
600.	620.	50.	400.	50.	200.	90.	120.	.0012000	
5.	105.	-200.	400.	200.	500.	90.	120.	.0020000	
1200.	1400.	0.	200.	150.	180.	90.	120.	.0010000	

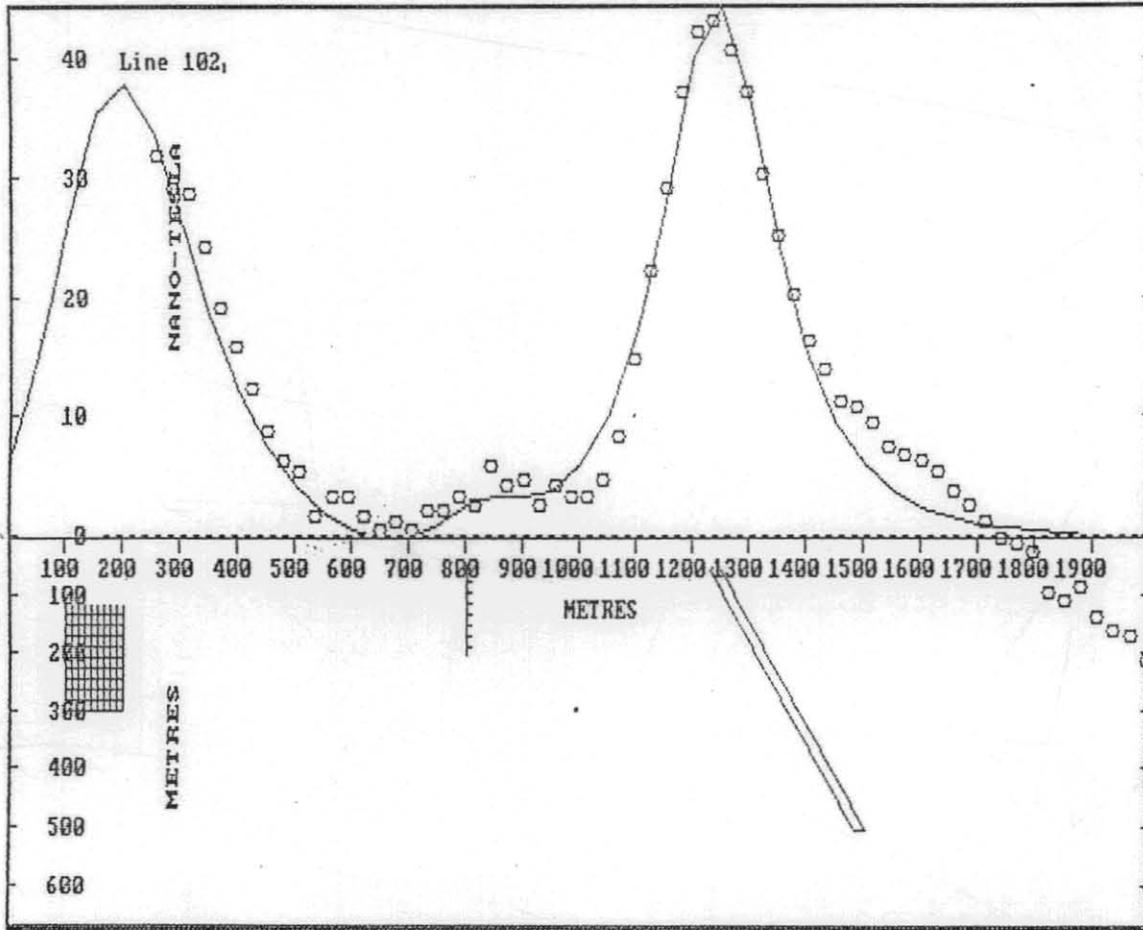
Do any require changing ?



051

622052

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Consultant Geophysicists



MODEL PARAMETERS

Model name *Line 102*

Field parameters

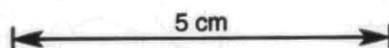
1 Total field 62880.
2 Inclination -72.

Profile parameters

3 X co-ordinate of 1st station 0.
4 Y co-ordinate of 1st station 200.
5 Z co-ordinate of 1st station 80.
6 Number of stations 41
7 Station increment 50.00
8 Profile direction 30.
Number of bodies 3

X1	X2	Y1	Y2	Z1	Z2	DIP	STRIKE	MAG	SUSC.
1230.	1248.	100.	500.	55.	500.	120.	120.	.0041000	
800.	810.	195.	400.	50.	200.	90.	120.	.0012000	
100.	200.	0.	400.	120.	300.	90.	120.	.0015000	

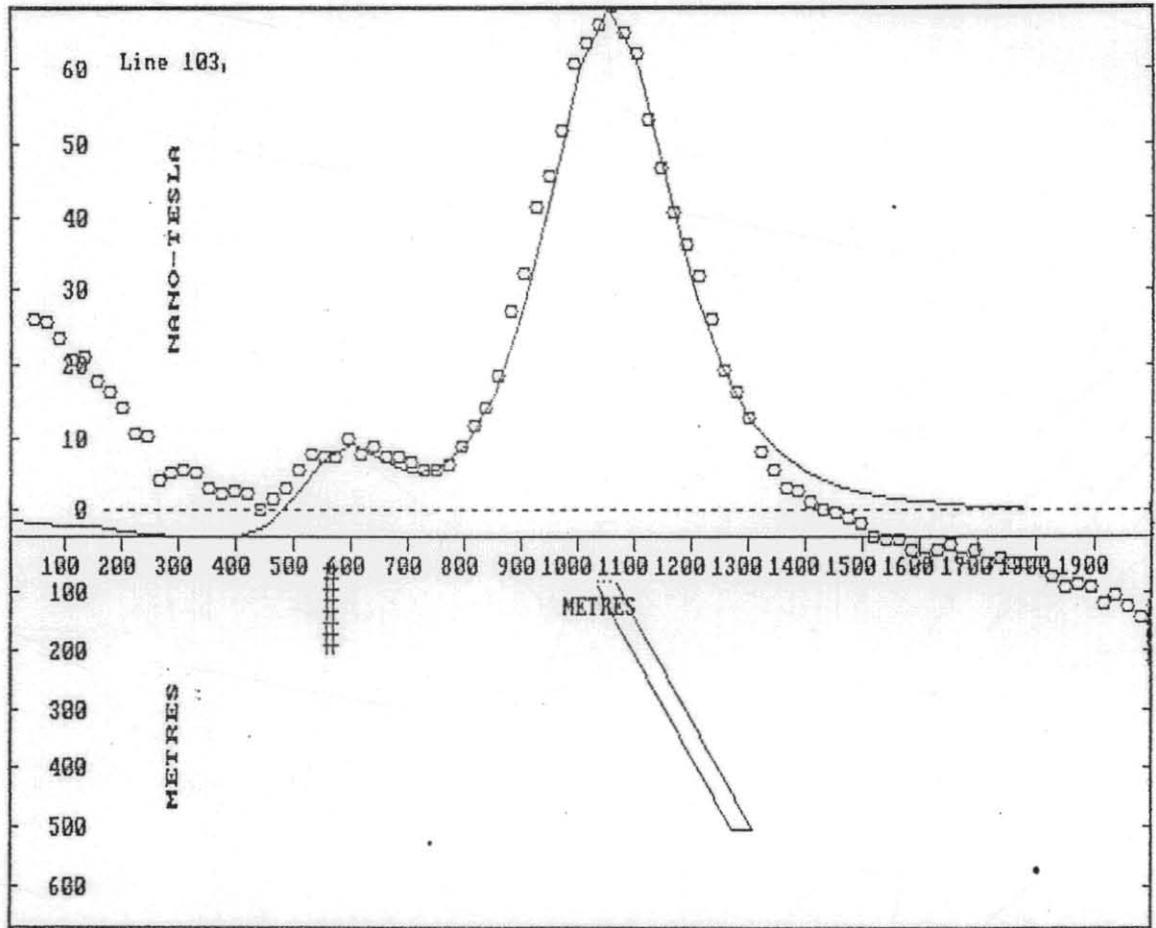
Do any require changing ?



052

622053

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Consultant Geophysicists



MODEL PARAMETERS

Model name *Line 103*

Field parameters

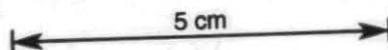
1 Total field 62880.
2 Inclination -72.

Profile parameters

3 X co-ordinate of 1st station 0.
4 Y co-ordinate of 1st station 300.
5 Z co-ordinate of 1st station 80.
6 Number of stations 41
7 Station increment 50.00
8 Profile direction 30.
Number of bodies 2

X1	X2	Y1	Y2	Z1	Z2	DIP	STRIKE	MAG	SUSC.
1030.	1065.	100.	500.	80.	500.	120.	120.	.0041000	
550.	575.	200.	400.	50.	200.	90.	120.	.0012000	

Do any require changing ?



APPENDIX 1

b) COX BIGHT MAGNETIC DATA - PENDERS CREEK ANOMALY

Interpretation by: J.Slade & Associates Pty Ltd
Consultant geophysicist

054 JSA

622055
J. SLADE & ASSOCIATES PTY. LTD.
(Inc. in Queensland)
Consultant Geophysicists

15th. March 1988

Mr. A. Webb, Q.C.
Suite 617,
205 William Street,
Melbourne, VIC. 3000.

Ref: Cox's Bight Magnetic Data

Dear Arthur,

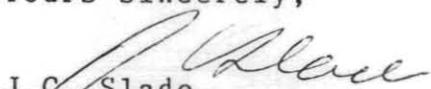
As discussed on the telephone, 15th March 1988, the magnetic data over the Cox's prospect was forwarded to me by Roger Poltock. The two lines over Penders Creek area showed the airborne anomaly had been successfully located on the ground. The anomaly appears to be located over the contact between the phyllite carbonate quartzite and a graphic pyritic schist. The only significant geochemical response is a tin anomaly at the same contact on Line 3150N. If the magnetic anomaly is associated with any mineralisation, which is doubtful, it could be a small skarp due to the intrusion of the granite into the carbonates. The airborne anomaly shows a limited strike length and there is no potential for a large skarn deposit.

The magnetic anomalies are too small in amplitude to be interpreted as a possible ultramafic body which could potentially host a platinum occurrence.

The follow-up of the magnetic anomalies has successfully demonstrated that there is little potential in the area for any minerals other than tin. If there is a tin deposit it will be very small.

In view of these results it is recommended that no further work be done on the area.

Yours sincerely,


J.C. Slade,
Consultant Geophysicist.

cc: Roger Poltock,
Mineral Exploration Contractor,
C/O P.O. Wilmot,
Tas. 7310.

Postal Address:
P.O. Box 479,
Spit Junction,
N.S.W. 2088

Telephone:
(02) 949-3315

Business Address:
18 CUTLER ROAD
CLONTARF, N.S.W. 2093

APPENDIX 2

ANALYTICAL REPORTS

- a) Penders Creek Magnetic Anomaly
B/C Horizon Wacker Geochemistry

ANALABS

A division of MacDonald Hamilton & Co. Pty. Ltd.

52 Murray Road, Welshpool, W.A. 6106

TLX: AM 59224

Telex AA92560

Phone (09) 458 7999

ANALYTICAL REPORT No. 999.20.08.04490

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

A.C.P. Webb
205 William St.
Melbourne
Vic. 3000

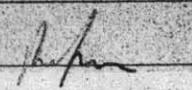
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		DRY	CRUSH	SPLIT	PUL-VERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD	
	RP 1601/1652	90	Prep: 005,013,016							Cu,Pb,Zn,Ag/101,Bi/102,As/114		
	RP 1601/1652	90								Sb/117,Sn/118,W/124,Mo/140		
	RP 1601/1652	90								Au/313		
	RP 1601/1652	90								Pt,Pd/311		
	RP 1601/1652	90								Sb,W/401		

RESULTS TO	A.C.P. Webb 205 William St. Melbourne Vic. 3000	REMARKS
RESULTS TO	R. Poltock C/- Post Office Wilmot Tasmania 7310	

STATE OF SAMPLES	ANALYSIS — PREPARATION	ANALYSIS — METHOD
hole core	perchloric acid A1	atomic absorption AAS
split core	hydrochloric acid A2	x-ray fluorescence XRF
cutting	nitric acid A3	spectrophotometry SPEC
rock	aqua regia A4	colorimetry COL
soil	nitric-perchloric A5	chromatography CHR
slurp	HF mixture A6	titration TTN
water	HF under pressure A7	other chemical means CHEM
sludge	fusion A8	miscellaneous MISC
stream sediment		fluorescence FLUOR
heavy mineral		inductively coupled plasma ICP

AUTHORISED OFFICER 

057

622058

ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

PAGE

999.20.08.04490

28/05/87

1 OF 6

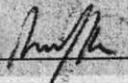
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3	RP 1603	10	15	30	<0.5	3	2	0.5	0.2	-
4	RP 1604	40	30	185	<0.5	1	9	0.5	0.2	-
5	RP 1605	70	25	70	<0.5	1	15	<0.5	0.2	-
6	RP 1606	45	25	105	<0.5	2	17	<0.5	0.2	-
7	RP 1607	80	35	70	<0.5	1	19	<0.5	0.2	-
8	RP 1608	50	15	130	<0.5	<1	9	<0.5	0.2	-
9	RP 1609	100	15	60	<0.5	<1	14	<0.5	0.2	-
10	RP 1610	10	20	20	<0.5	5	3	1.0	0.2	-
11	RP 1611	10	15	15	<0.5	5	2	<0.5	<0.2	-
12	RP 1612	25	65	120	<0.5	6	18	<0.5	0.2	-
13	RP 1613	75	60	265	<0.5	1	56	1.5	0.2	-
14	RP 1614	20	40	115	<0.5	7	20	1.5	0.2	-
15	RP 1615	35	30	30	<0.5	2	14	1.0	0.2	-
16	RP 1616	35	20	100	<0.5	1	18	0.5	0.2	-
17	RP 1617	55	35	75	<0.5	2	13	2.0	0.2	-
18	RP 1618	70	35	85	<0.5	3	56	9.0	0.4	-
19	RP 1619	60	50	145	<0.5	2	67	12.5	0.2	-
20	RP 1620	70	20	45	<0.5	3	28	1.5	0.8	-
21	RP 1621	65	25	35	<0.5	3	14	3.5	1.2	-
22	RP 1622	30	50	30	<0.5	4	7	0.5	0.2	-
23	RP 1623	50	30	20	<0.5	<1	37	5.5	1.4	-
24	RP 1624	20	55	125	<0.5	<1	15	<0.5	0.2	-
25	RP 1625	165	90	125	0.5	<1	200	<0.5	1.4	-

Results in ppm unless otherwise specified

T = element present; but concentration too low to measure

X = element concentration is below detection limit

- = element not determined

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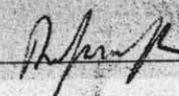
28/05/87

2 OF 6

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Bi	As	Mo	Sb	Sb
1	RP 1626	50	15	35	<0.5	<1	11	1.0	0.4	-
2	RP 1627	40	50	25	<0.5	7	92	0.5	0.4	-
3	RP 1628	30	30	25	<0.5	2	4	1.5	0.4	-
4	RP 1629	5	<5	10	<0.5	<1	5	<0.5	0.2	-
5	RP 1630	190	30	335	0.5	4	110	<0.5	0.6	-
6	RP 1631	45	30	130	<0.5	<1	10	0.5	0.4	-
7	RR 1632	20	25	130	<0.5	2	3	0.5	0.2	-
8	RP 1633	35	35	85	<0.5	3	19	1.5	0.2	-
9	RP 1634	115	65	165	<0.5	3	13	6.5	0.4	-
10	RP 1635	70	25	200	<0.5	<1	19	5.5	0.4	-
11	RP 1636	40	30	30	<0.5	3	54	1.5	0.4	-
12	RP 1637	75	35	310	<0.5	7	520	<0.5	1.8	-
13	RP 1638	25	5	10	<0.5	3	380	<0.5	7.0	-
14	RP 1639	115	95	70	<0.5	3	42	1.0	-	40
15	RP 1640	25	25	25	<0.5	<1	4	<0.5	2.4	-
16	RP 1641	680	420	3750	2.5	74	310	1.0	-	100
17	RP 1642	45	45	155	<0.5	<1	18	0.5	1.0	-
18	RP 1643	50	45	45	<0.5	1	8	<0.5	1.0	-
19	RP 1644	120	40	20	<0.5	6	49	<0.5	0.4	-
20	RP 1645	150	50	25	<0.5	<1	17	0.5	0.4	-
21	RP 1646	35	25	20	<0.5	8	28	<0.5	0.4	-
22	RP 1647	35	25	15	<0.5	5	49	0.5	0.2	-
23	RP 1648	40	20	30	<0.5	3	5	<0.5	<0.2	-
24	RP 1649	1550	255	275	<0.5	2	83	8.5	0.4	-
25	RP 1650	80	35	245	<0.5	<1	21	0.5	<0.2	-

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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059

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622060

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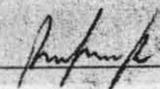
28/05/87

3 OF 6

TUBE No.	SAMPLE No.	Cu	Pb	Zn	Ag	Bi	As	Mo	Sb	Sb
1	RP 1651	90	35	145	<0.5	3	14	<0.5	<0.2	-
2	RP 1652	60	60	135	<0.5	1	280	<0.5	0.2	-
3										
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12										
13										
14										
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17										
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20										
21										
22										
23	DETECTION	5	5	5	0.5	1	1	0.5	0.2	3
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	101	101	101	101	102	114	121	117	401

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
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 - = element not determined

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4 OF 6

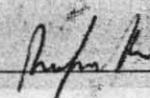
TUBE No.	SAMPLE No.	W	W	Pt	Pd	Au	Sn			
1	RP 1601	27.0	-	<0.005	<0.001	<0.005	35			
2	RP 1602	60.0	-	<0.005	0.003	<0.005	60			
3	RP 1603	11.5	-	<0.005	<0.001	<0.005	25			
4	RP 1604	27.5	-	<0.005	<0.001	<0.005	25			
5	RP 1605	14.5	-	<0.005	<0.001	<0.005	110			
6	RP 1606	21.5	-	<0.005	<0.001	<0.005	40			
7	RP 1607	15.5	-	<0.005	<0.001	0.005	90			
8	RP 1608	9.0	-	<0.005	<0.001	<0.005	60			
9	RP 1609	14.5	-	<0.005	<0.001	<0.005	100			
10	RP 1610	34.5	-	<0.005	<0.001	<0.005	35			
11	RP 1611	19.5	-	<0.005	0.002	<0.005	50			
12	RP 1612	26.0	-	<0.005	<0.001	<0.005	40			
13	RP 1613	4.0	-	<0.005	0.001	0.005	60			
14	RP 1614	14.0	-	<0.005	0.003	0.010	45			
15	RP 1615	6.0	-	<0.005	<0.001	<0.005	25			
16	RP 1616	28.5	-	<0.005	<0.001	<0.005	30			
17	RP 1617	7.0	-	<0.005	<0.001	<0.005	20			
18	RP 1618	25.5	-	<0.005	0.001	<0.005	70			
19	RP 1619	5.5	-	<0.005	0.002	<0.005	20			
20	RP 1620	6.0	-	<0.005	0.001	0.005	20			
21	RP 1621	9.0	-	<0.005	<0.001	0.005	7			
22	RP 1622	23.0	-	<0.005	0.009	0.100	35			
23	RP 1623	20.0	-	<0.005	<0.001	<0.005	30			
24	RP 1624	3.0	-	<0.005	<0.001	<0.005	30			
25	RP 1625	21.0	-	<0.005	0.002	<0.005	110			

Results in ppm unless otherwise specified

T = element present; but concentration too low to measure

X = element concentration is below detection limit

- = element not determined

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A Division of Macdonald Hamilton & Co. Pty Ltd

ANALYTICAL DATA

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28/05/87

5 OF 6

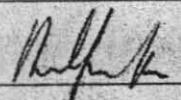
TUBE No.	SAMPLE No.	W	W	Pt	Pd	Au	Sn			
1	RP 1626	4.5	-	<0.005	<0.001	<0.005	10			
2	RP 1627	3.0	-	<0.005	<0.001	0.010	35			
3	RP 1628	7.5	-	<0.005	0.002	<0.005	40			
4	RP 1629	2.5	-	<0.005	<0.001	<0.005	10			
5	RP 1630	41.5	-	<0.005	<0.001	<0.005	200			
6	RP 1631	21.5	-	<0.005	<0.001	<0.005	40			
7	RP 1632	4.5	-	<0.005	<0.001	<0.005	35			
8	RP 1633	7.5	-	<0.005	<0.001	0.010	55			
9	RP 1634	5.5	-	<0.005	0.002	<0.005	35			
10	RP 1635	6.0	-	<0.005	0.002	0.010	20			
11	RP 1636	36.0	-	<0.005	0.002	0.005	45			
12	RP 1637	13.0	-	<0.005	<0.001	<0.005	90			
13	RP 1638	40.0	-	<0.005	<0.001	<0.005	50			
14	RP 1639	86.5	-	<0.005	<0.001	<0.005	310			
15	RP 1640	41.5	-	<0.005	<0.001	<0.005	70			
16	RP 1641	20.5	-	<0.005	0.002	0.020	2650			
17	RP 1642	31.5	-	<0.005	<0.001	<0.005	55			
18	RP 1643	33.5	-	<0.005	<0.001	<0.005	45			
19	RP 1644	22.0	-	<0.005	<0.001	<0.005	70			
20	RP 1645	14.0	-	<0.005	<0.001	<0.005	70			
21	RP 1646	12.5	-	<0.005	<0.001	0.005	90			
22	RP 1647	28.0	-	<0.005	<0.001	<0.005	200			
23	RP 1648	20.5	-	<0.005	<0.001	<0.005	15			
24	RP 1649	39.0	-	<0.005	<0.001	<0.005	55			
25	RP 1650	-	120	<0.005	<0.001	<0.005	60			

Results in ppm unless otherwise specified

T = element present; but concentration too low to measure

X = element concentration is below detection limit

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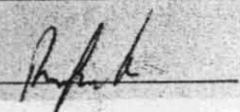
28/05/87

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TUBE No.	SAMPLE No.	W	W	Pt	Pd	Au	Sn			
1	RP 1651	-	200	<0.005	<0.001	<0.005	40			
2	RP 1652	48.5	-	<0.005	<0.001	<0.005	60			
3										
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18										
19										
20										
21										
22										
23	DETECTION	0.5	10	0.005	0.001	0.005	3			
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM			
25	METHOD	124	401	337	337	313	402			

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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063

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622064

Phone (09) 458 7999

52 Murray Road, Warragul, Vic. 3104
TLX: AA 59224

ANALYTICAL REPORT No. 109/06/04521

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ANALYTICAL DATA

A.C.P. Webb
205 William St.
Melbourne
Vic. 3000

Id. 308 04490

19/06/87

ASAP

NO. OF PAGES OF RESULTS	DATE REPORTED	NO. OF COPIES	ANALYST
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PRE-TREATMENT

TYPE	SAMPLE NUMBERS	DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	REMARKS	REFER TO ANALYSIS SECTION	PREPARATION	METHOD
	RP 1601/52	PU									Ni, Co/101
	RP 1601/52	PU									Hg/144

RESULTS

A.C.P. Webb
205 William St.
Melbourne
Vic. 3000

RESULTS

R. Pollock
C/- Post Office
Wilmot
Tasmania 7310

STATE OF SAMPLES ANALYSIS — PREPARATION ANALYSIS — METHOD

whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorption	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
soil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp	PU	HF mixture	A6	ignition	IG	titration	TTN
water	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemical means	CHEM
issue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
heavy mineral	HM					inductively coupled plasma	ICP

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RE JOB 04490

1 OF 3

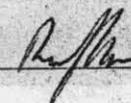
TUBE No.	SAMPLE No.	Mg	Co	Ni					
1	RP 1601	6500	5	25					
2	RP 1602	3100	5	10					
3	RP 1603	6500	10	10					
4	RP 1604	7000	20	40					
5	RP 1605	7000	20	35					
6	RP 1606	7250	20	30					
7	RP 1607	6750	15	25					
8	RP 1608	7750	15	35					
9	RP 1609	8250	20	35					
10	RP 1610	5250	10	35					
11	RP 1611	3350	10	10					
12	RP 1612	1675	10	25					
13	RP 1613	3750	20	60					
14	RP 1614	4000	15	25					
15	RP 1615	5500	10	20					
16	RP 1616	5000	20	30					
17	RP 1617	3950	25	50					
18	RP 1618	5500	25	55					
19	RP 1619	8000	25	80					
20	RP 1620	5000	30	20					
21	RP 1621	3850	10	20					
22	RP 1622	3750	10	15					
23	RP 1623	6250	10	15					
24	RP 1624	5000	15	25					
25	RP 1625	5500	25	80					

Results in ppm unless otherwise specified

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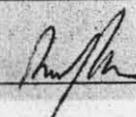
RE JOB 04490

2 OF 3

TUBE No.	SAMPLE No.	Mg	Co	Ni					
1	RP 1626	8250	10	10					
2	RP 1627	2850	10	15					
3	RP 1628	4750	10	20					
4	RP 1629	3650	5	10					
5	RP 1630	35500	80	130					
6	RP 1631	5250	10	20					
7	RP 1632	6500	10	15					
8	RP 1633	5250	15	20					
9	RP 1634	8250	20	40					
10	RP 1635	5500	25	70					
11	RP 1636	7500	10	10					
12	RP 1637	5250	20	35					
13	RP 1638	3500	5	10					
14	RP 1639	5500	10	15					
15	RP 1640	3075	10	10					
16	RP 1641	3400	10	20					
17	RP 1642	5000	15	25					
18	RP 1643	3250	10	15					
19	RP 1644	3475	10	20					
20	RP 1645	5750	15	15					
21	RP 1646	7250	5	20					
22	RP 1647	6000	10	10					
23	RP 1648	7000	10	10					
24	RP 1649	8750	10	15					
25	RP 1650	4000	25	20					

Results in ppm unless otherwise specified
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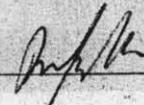
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3 OF 3

TUBE No.	SAMPLE No.	Mg	Co	Ni					
1	RP 1651	4750	15	15					
2	RP 1652	9250	25	15					
3									
4									
5									
6									
7									
8									
9									
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14									
15									
16									
17									
18									
19									
20									
21									
22									
23	DETECTION	25	5	5					
24	UNITS	PPM	PPM	PPM					
25	METHOD	104	101	101					

Results in ppm unless otherwise specified
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APPENDIX 2

ANALYTICAL REPORTS

b) Regional rock and stream geochemistry

Cyprus Minerals Australia & A.C.P.Webb

068

622069

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E18780

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TUBE No.	SAMPLE No.	Cu	Pb	Pb	Zn	Zn	Ag	Ag	Au	AuChk
1	224122 Rock	10	10	-	15	-	<0.5	-	<0.005	-
2	224123 Rock	5	15	-	5	-	<0.5	-	0.030	-
3	224124 Rock	5	5	-	10	-	<0.5	-	<0.005	-
4	224125 Rock	5	15	-	10	-	<0.5	-	<0.005	-
5	224126 sls	5	<5	-	<5	-	<0.5	-	<0.005	-
6	224127 sls	5	<5	-	<5	-	<0.5	-	<0.005	-
7	224128 Rock	5	<5	-	5	-	<0.5	-	<0.005	-
8	224129 sls	40	30	-	30	-	<0.5	-	<0.005	-
9	224130 Rock	125	45	-	15	-	<0.5	-	<0.005	-
10	224131 Rock	120	265	-	20	-	4.5	-	0.035	-
11	224132 Rock	60	70	-	10	-	<0.5	-	<0.005	-
12	224133 sls	5	<5	-	10	-	<0.5	-	<0.005	-
13	224134 sls	5	5	-	15	-	<0.5	-	<0.005	<0.005

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 1987
 (Delivered)
 2/6/87
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26/05/87

E18780

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TUBE No.	SAMPLE No.	W	As	As	Sn	Ba				
1	224122	<10	<2	-	73	-				
2	224123	<10	4	-	<3	-				
3	224124	<10	<2	-	15	-				
4	224125	<10	8	-	149	-				
5	224126	<10	<2	-	33	-				
6	224127	<10	<2	-	90	-				
7	224128	<10	<2	-	3	-				
8	224129	166	78	-	38	-				
9	224130	229	221	-	200	-				
10	224131	<10	19400	1.94	2620	-				
11	224132	20	7020	-	41	-				
12	224133	<10	12	-	159	-				
13	224134	<10	6	-	72	-				

070

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A division of MacDonald Hamilton & Co. Pty. Ltd.

Phone (09) 458 7999

52 Murray Road, Welshpool, W.A. 6106

Telex AA92560

FAX: 004 31 8890

ANALYTICAL REPORT No. 999.20.08.04962

THIS REPORT MUST BE READ IN CONJUNCTION WITH THE ACCOMPANYING ANALYTICAL DATA

A.C.P. Webb
205 William St.
Melbourne
Vic. 3000

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DATE RECEIVED 30/11/87 RESULTS REQUIRED ASAP

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4	15/02/88	1	17

DATE OF SAMPLES	REFER BELOW	SAMPLE NUMBERS	PRE-TREATMENT						ANALYSIS				
			DRY	CRUSH	SPLIT	PULVERISE	SIEVE	OTHER SEE REMARKS	NONE	REFER TO ANALYSIS SECTION	PREPARATION	METHOD	
	Various		PC	Prep: 004,199,016							Cu,Pb,Zn,Ag,Bi/102,As/114		
	Various		PC								Au/313,Sn,W,Mo,Cr/401		
	RP1658,RP1662		So	Prep: 004,007							Cu,Pb,Zn,Ag,Bi/102,As/114		
	RP1658,RP1662		Pu								Au/313,Sn,W,Mo,Cr/401		
	Various		Ro	Prep: 004,009,011,012,013,016							Cu,Pb,Zn,Ag,Bi/101,As/114		

RESULTS TO

R. Poltock
C/- Post Office
Wilmot
Tasmania 7310

RESULTS TO

REMARKS

STATE OF SAMPLES	ANALYSIS — PREPARATION				ANALYSIS — METHOD		
whole core	WC	perchloric acid	A1	cold acid	CA	atomic absorption	AAS
split core	SC	hydrochloric acid	A2	specific sulphide	SS	x-ray fluorescence	XRF
cutting	CU	nitric acid	A3	other mixed acids	Ma	spectrophotometry	SPEC
rock	Ro	aqua regia	A4	alkaline attack	AA	colorimetry	COL
oil	SO	nitric-perchloric	A5	volatilization	VO	chromatography	CHR
pulp	PU	HF mixture	A6	ignition	IG	titration	ITN
water	WA	HF under pressure	A7	pressed powder (XRF)	PP	other chemicals means	CHEM
tissue	TI	fusion	A8	glass fusion (XRF)	GF	miscellaneous	MISC
stream sediment	SS					fluorescence	FLUOR
heavy mineral	HM					inductively coupled plasma	ICP

AUTHORISED OFFICER *[Signature]*

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15/02/88

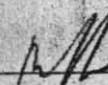
18703

1 OF 4

TUBE No.	SAMPLE No.	Ti	Cr	Cu	Cu	Zn	Zn	As	Y	Zr
1	RP1653 PL	4150	1410	-	4	-	29	2	44	44
2	RP1655 PL	1120	25	-	4	-	10	3	207	796
3	RP1656	-	154	160	-	90	-	2700	-	-
4	RP1657 PL	21000	-	-	7	-	26	22	196	120
5	RP1658	-	133	-	7	-	26	49	-	-
6	RP1659	-	59	20	-	100	-	22	-	-
7	RP1660	-	84	5	-	50	-	3	-	-
8	RP1661 PL	17900	183	-	6	-	26	19	109	150
9	RP1662	-	109	-	7	-	32	41	-	-
10	RP1663	-	<5	85	-	405	-	1100	-	-
11	RP1665	-	97	65	-	70	-	37	-	-
12	RP1666	-	125	125	-	25	-	17500	-	-
13	RP1668	-	19	150	-	185	-	750	-	-
14	RP1669 PL	506	139	-	7	-	11	53	23	39
15	RP1670 PL	1230	20	-	7	-	5	18	54	510
16	RP1671 PL	1650	173	-	5	-	7	9	61	2890
17	RP1672 PL	1190	248	-	2	-	5	<1	9	1350
18										
19										
20										
21										
22	NOTE: Sample No. RP1653 for Th is reported <50 due to quartz dilution.									
23	DETECTION	10	5	5	1	5	1	1	1	20
24	UNITS	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM	PPM
25	METHOD	201	401	101	102	101	102	114	201	203

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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072

622073

ANALABS

A Division of Macdonalds Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

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REPORT DATE

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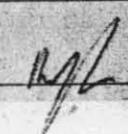
15/02/88

18703

2 OF 4

TUBE No.	SAMPLE No.	Mo	Ru	Rh	Pd	Ag	Ag	Sn	Sn	La
1	RP1653	55	37.0	1.5	5.5	-	<0.1	617	-	48
2	RP1655	24	14.0	<0.5	6.0	-	<0.1	24400	24.40	140
3	RP1656	5	-	-	-	6.0	-	83	-	-
4	RP1657	-	27.0	1.0	4.5	-	0.3	-	-	1470
5	RP1658	5	-	-	-	-	0.3	12	-	-
6	RP1659	25	-	-	-	<0.5	-	24	-	-
7	RP1660	<3	-	-	-	1.0	-	17	-	-
8	RP1661	4	18.0	0.5	3.5	-	0.1	421	-	713
9	RP1662	4	-	-	-	-	<0.1	20	-	-
10	RP1663	47	-	-	-	<0.5	-	133	-	-
11	RP1665	20	-	-	-	1.0	-	47	-	-
12	RP1666	8	-	-	-	3.5	-	289	-	-
13	RP1668	5	-	-	-	<0.5	-	269	-	-
14	RP1669	<3	18.0	0.5	2.0	-	<0.1	869	-	20
15	RP1670	<3	13.0	0.5	1.5	-	<0.1	5070	-	88
16	RP1671	6	20.0	1.0	5.5	-	<0.1	8810	-	160
17	RP1672	5	9.5	0.5	1.0	-	0.1	349	-	15
18										
19										
20										
21										
22	NOTE: Sample No. RP1653 for Th is reported <50 due to quartz dilution.									
23	DETECTION	3	5.0	0.5	0.5	0.5	0.1	3	0.01	5
24	UNITS	PPM	PPB	PPB	PPB	PPM	PPM	PPM	%	PPM
25	METHOD	401	1807	1807	1807	101	102	401	404	201

Results in ppm unless otherwise specified
 T = element present; but concentration too low to measure
 X = element concentration is below detection limit
 - = element not determined

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073

622074

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A Division of Macdonald Hamilton & Co. Pty Ltd.

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CLIENT ORDER No.

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15/02/88

18703

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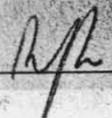
TUBE No.	SAMPLE No.	Ce	W	Os	Ir	Pt	Au	Au	Pb	Pb
1	RP1653	97	231	2	1.0	2.0	14	<0.005	-	14
2	RP1655	331	1100	<2	<0.5	0.5	6	<0.005	-	69
3	RP1656	-	<20	-	-	-	-	<0.005	610	-
4	RP1657	3350	-	<2	<0.5	<0.5	6	-	-	39
5	RP1658	-	<20	-	-	-	-	<0.005	-	22
6	RP1659	-	<20	-	-	-	-	<0.005	75	-
7	RP1660	-	<20	-	-	-	-	<0.005	30	-
8	RP1661	1470	<20	<2	<0.5	1.5	4	<0.005	-	33
9	RP1662	-	<20	-	-	-	-	<0.005	-	22
10	RP1663	-	<20	-	-	-	-	<0.005	70	-
11	RP1665	-	34	-	-	-	-	<0.005	45	-
12	RP1666	-	<20	-	-	-	-	<0.005	500	-
13	RP1668	-	25	-	-	-	-	<0.005	90	-
14	RP1669	38	<20	<2	<0.5	2.0	4	<0.005	-	7
15	RP1670	182	<20	<2	<0.5	1.5	2	<0.005	-	2
16	RP1671	334	45	<2	<0.5	2.0	4	<0.005	-	3
17	RP1672	25	<20	<2	<0.5	1.0	<2	<0.005	-	2
18										
19										
20										
21										
22	NOTE: Sample No. RP1653 for Th is reported <50 due to quartz dilution.									
23	DETECTION	15	20	2	0.5	0.5	2	0.005	5	1
24	UNITS	PPM	PPM	PPB	PPB	PPB	PPB	PPM	PPM	PPM
25	METHOD	201	401	1807	1807	1807	1807	313	101	102

Results in ppm unless otherwise specified

T = element present; but concentration too low to measure

X = element concentration is below detection limit

- = element not determined

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ANALABS

A Division of Macdonald Hamilton & Co. Pty. Ltd.

ANALYTICAL DATA

SAMPLE PREFIX

REPORT NUMBER

REPORT DATE

CLIENT ORDER No.

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15/02/88

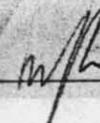
18703

4 OF 4

TUBE No.	SAMPLE No.	Bi	Bi	Th	Wt				
1	RP1653	-	5*****	51.80					
2	RP1655	-	20	60	103.56				
3	RP1656	30	-	-	-				
4	RP1657	-	9	98	71.25				
5	RP1658	-	<1	-	-				
6	RP1659	<10	-	-	-				
7	RP1660	<10	-	-	-				
8	RP1661	-	<1	47	68.50				
9	RP1662	-	<1	-	-				
10	RP1663	<10	-	-	-				
11	RP1665	<10	-	-	-				
12	RP1666	<10	-	-	-				
13	RP1668	<10	-	-	-				
14	RP1669	-	6	<10	81.67				
15	RP1670	-	9	29	62.36				
16	RP1671	-	7	62	64.85				
17	RP1672	-	9	<10	109.96				
18									
19									
20									
21									
22	NOTE: Sample No. RP1653 for Th is reported <50 due to quartz dilution.								
23	DETECTION	10	1	10	0.01				
24	UNITS	PPM	PPM	PPM	gms				
25	METHOD	101	102	201	199				

Results in ppm unless otherwise specified
T = element present; but concentration too low to measure
X = element concentration is below detection limit
- = element not determined

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APPENDIX 3

SAMPLE RECORD AND ANALYTICAL DATA SHEETS

a) Penders Creek Magnetic Anomaly

B/C Horizon Wacker Geochemistry

ROGER POLTOCK GEOLOGICAL PTY. LTD.

CLIENT A.C. WEBBS

SAMPLE RECORD AND ANALYTICAL DATA SHEET

622077

PROJECT Ew 1326

LABORATORY

COLLECTED BY: N Poltock

PROSPECT COX BIGHT MAG ANOM

SAMPLE TYPE BEDROCK "WACKA"

DATE DISPATCHED:

DATE RECEIVED:

A 28305

SAMPLE NUMBER	LOCATION		DESCRIPTION	ANALYSES											
				Cu	Pb	Zn	Ag	Bi	As	Mg/Sb	W	Sn	Au	Pd	
RP 1609	1500N	3300E	2.0m Graph' schist ± sandy lenses.	100	15	60	<0.5	<1	14	<0.5	14.5	<0.05	<0.01		
1608	1480N		2.3m " " - chl Pender CK 1490	50	15	130	<0.5	<1	9	<0.5	9.0	<0.05	<0.01		
1607	1460N		2.6m Qtz gravel / bedrock interface?	80	35	70	<0.5	1	19	<0.5	15.5	<0.05	<0.01		
1606	1440N		2.8m Graphitic schist	45	25	105	<0.5	2	17	<0.5	21.5	<0.05	<0.01		
1605	1420N		3.2m " " "	70	25	70	<0.5	1	15	<0.5	14.5	<0.05	<0.01		
1604	1400N		1.6m " " " sandy lens (after cut?)	40	30	185	<0.5	1	9	0.5	27.5	<0.05	<0.01		
1603	1380N		1.2m " " "	10	15	30	<0.5	3	2	0.5	11.5	<0.05	<0.01		
1602	1360N		0.9m Quartzite? or sand after carb.?	5	10	15	<0.5	5	2	<0.5	60.0	<0.05	<0.03		
1601	1340N		1.0m Grey schist	10	15	25	<0.5	1	3	<0.5	27.0	<0.05	<0.01		
1610	1320N	*	0.6m Graphitic schist - sandy	10	20	20	<0.5	5	3	1.0	34.5	<0.05	<0.01		
1611	1300N		1.0m orange brw fine sandy, well	10	15	15	<0.5	5	2	<0.5	19.5	<0.05	<0.02		
1612	1280N		1.4m " " " " "	25	65	120	<0.5	6	18	<0.5	26.0	<0.05	<0.01		
1613	1260N		1.0m " " " " "	75	60	265	<0.5	1	56	1.5	4.0	<0.05	<0.01		
1614	1240N	*	0.8m " " " " "	20	40	115	<0.5	7	20	1.5	14	<0.05	<0.03		
1615	1220N		1.3m Graphitic - mw schist + qtz gran	35	30	30	<0.5	2	14	1.0	6.0	<0.05	<0.01		
1616	1200N		7.8m Graphitic schist	35	20	100	<0.5	1	18	0.5	28.5	<0.05	<0.01		
1617	1180N		6.4m " " " minor pyrite	55	35	75	<0.5	2	13	2.0	7.0	<0.05	<0.01		
1618	1160N		2.3m " " " " "	70	35	85	<0.5	3	56	9.0	25.5	<0.05	<0.01		
1619	1140N	*	5.6m Very " " " qtz pyrite	60	50	145	<0.5	2	67	12.5	5.5	<0.05	<0.02		
1620	1120N		2.5m Graphitic " " "	70	20	45	<0.5	3	28	1.5	6.0	<0.05	<0.01		
1621	1100N		2.4m " " " " "	65	25	35	<0.5	3	14	3.5	9.0	<0.05	<0.01		

ROGER POLTOCK GEOLOGICAL PTY. LTD.

622078

CLIENT A.C. WEBB

SAMPLE RECORD AND ANALYTICAL DATA SHEET

COLLECTED BY: N Pollock

PROJECT EL 13/86

LABORATORY

DATE DISPATCHED:

PROSPECT COX BIGHT MAG ANOM

SAMPLE TYPE WACKA-BEDROCK

DATE RECEIVED:

A 28305

SAMPLE NUMBER	LOCATION		DESCRIPTION	ANALYSES													
				Cu	Pb	Zn	Ag	Bi	As	Mo	Sb	W	SW	Au	Pd		
RP 1622	3300E	1080N	4.9m Graphitic schist - sandy base could be weath carbonate?	30	50	30	<0.5	4	7	0.5	0.2	23.0	35	10	0.009		
1623		1060N	7.5m Graphitic schist + sandy ↑	50	30	20	<0.5	<1	37	5.5	1.4	20	30	<0.005	<0.001		
1624		1040N	6.4m Muscovite schist - pt fragments	20	55	125	<0.5	<1	15	<0.5	0.2	3.0	30	<0.005	<0.001		
1625		1020N	9.5m Orespite w/ schist may have been	165	90	125	0.5	<1	200	<0.5	1.4	21.0	110	<0.005	0.002		
1626		1000N	4.6m Schist kukki-graphitic	50	15	35	<0.5	<1	11	1.0	0.4	4.5	10	<0.005	<0.001		
1627	3150E	1000N	3.8m Musc schist orange	40	50	25	<0.5	7	92	0.5	0.4	3.0	35	0.016	<0.001		
1628		1020N	9.3m Very graphitic schist + pt granular?	30	30	25	<0.5	2	4	1.5	0.4	7.5	40	<0.005	0.002		
1629		1040N	1.0m Musc schist	5	<5	10	<0.5	<1	5	<0.5	0.2	2.5	10	<0.005	<0.001		
1630		1060N	13.8m Schist grey-cream	190	30	335	0.5	4	110	<0.5	0.6	41.5	200	<0.005	<0.001		
1631		1080N	6.4m " " muscovite	45	30	130	<0.5	<1	10	0.5	0.4	21.5	40	<0.005	<0.001		
1632		1100N	6.9m " " " + sandy	20	25	130	<0.5	2	3	0.5	0.2	4.5	35	<0.005	<0.001		
1633		1120N	3.8m Grg-graphitic schist	35	35	85	<0.5	3	19	1.5	0.2	7.5	55	0.01	<0.001		
1634		1140N	1.2m Graphitic schist pyrite	115	65	165	<0.5	3	13	6.5	0.4	5.5	35	<0.005	0.002		
1635		1160N	1.2m " " "	70	25	200	<0.5	<1	19	5.5	0.4	6.0	20	0.01	0.002		
1636		1180N	1.8m Very graphitic schist	40	30	30	<0.5	3	54	1.5	0.4	36.0	45	0.005	0.002		
1637		1200N	2.3m Graphitic schist sandy base	75	35	310	<0.5	7	520	<0.5	1.8	13.0	90	<0.005	<0.001		
1638		1220N	0.9m Schist weath	25	5	10	<0.5	3	380	<0.5	7.0	40.0	50	<0.005	<0.001		
1639		1240N	4.6m Vfine siltite w/ carb?	115	95	70	<0.5	3	42	1.0	40	86.5	310	<0.005	<0.001		
1640		1260N	1.2m Vfine sandy - orespite	25	25	25	<0.5	<1	4	<0.5	2.4	41.5	70	<0.005	<0.001		
1641		1280N	2.3m " " " pyrite could be Test sands?	680	420	3750	2.5	74	310	1.0	100	20.5	2650	0.02	0.002		

APPENDIX 3

SAMPLE RECORD AND ANALYTICAL DATA SHEETS

b) Regional rock and stream geochemistry

Cyprus Minerals Australia & A.C.P.Webb

080

Phil Jones and Associates Pty. Ltd. 522081

Geotechnical Personnel

Mr Roger Pobbok,

Saddle Road
Kettering 7155
TASMANIA.

6. August 1987.

Dear Roger,

Please find enclosed a copy of the Cox's
Bright data (Map + assays) requested earlier this month. Following
is a description of the samples taken:

- 224122 - vein quartz in PE quartzite. (Foley Pimple).
- 224123 - " " " " minor ferruginous staining.
- 224124 " " " Devonian granite. (near sed / granite contact).
- 224125 Greisenous quartz veined Devonian Granite.
- 224126 } stream sedo - sandy quartz gravels, little fines.
- 224127 } stream sedo - sandy quartz gravels, little fines.
- 224128 Quartz veined Devonian Granite, weakly stockworked.
- 224129 stream sed. - micaceous silts and sands.
- 224130 Orange, altered veined, coarse grained Devonian Granite.
- 224131 Arsenopyritic quartz vein in orange micaceous schists (PE)
- 224132 Arsenopyritic / pyritic quartz veined schist.
- 224133 stream sed. - sandy silts
- 224134 " " - " "

Any queries Roger just give me a ring.

Yours Faithfully.
P Jones.

9A WAIMEA AVENUE, SANDY BAY, TASMANIA, 7005.

PHONE: (002) 28 2256

ROGER POLTOCK GEOLOGICAL PTY. LTD.

622082

081

CLIENT A.C.P. WEBB
PROJECT En 13/86 Cox BIGHT.
PROSPECT

SAMPLE RECORD AND ANALYTICAL DATA SHEET

LABORATORY ANALABS COSEE
SAMPLE TYPE Rock

COLLECTED BY: R. POLTOCK
DATE DISPATCHED: 30-11-87
DATE RECEIVED:

A 28305

SAMPLE NUMBER	LOCATION	DESCRIPTION	ANALYSES										
			Cu	Pb	Zn	Ag	As	Au	Cr	B ₁ Sn	W	Mn	
1656	Alluvial workings	GRANITE Qtz pyrite cobbles from wash.	160	610	90	6.0	2700	<0.005	154	30	83	<20	5
1659	Smith CK	Graphitic schist with qtz pyrite lenses	20	75	100	<0.5	22	<0.005	59	<10	24	<20	25
1660	" "	Foliated granite?	5	30	50	1.0	3	<0.005	84	<10	17	<20	<3
1663	" "	Grossan blocks in creek	85	70	405	<0.5	1100	<0.005	<5	<10	133	<20	47
1664	" "	Foliated granite?	NOT		ANALYZED								
1665	LENDER ANOM 1175N 3150E	Graphitic schist with qtz pyrite lenses.	65	45	70	1.0	37	<0.005	97	<10	47	34	20
1666	" " 600N 3175E	Qtz pyrite arsenopyrite veins in graphitic schist	125	500	25	3.5	17500	<0.005	125	<10	289	<20	8
1667	" " 1420N 3125E	Quartzite	NOT		ANALYZED								
1668	" "	Granite-granodiorite sill	150	90	185	<0.5	750	<0.005	19	<10	289	25	5
1673	Nest Cox Bight Beach	Beach cobbles feld qtz porphyry	NOT		ANALYZED								
1674	" "	Carnet schist or calc-silicate.	"		"								

ROGER POLTOCK GEOLOGICAL PTY. LTD.

622083

CLIENT A.C.P. Webb
 PROJECT R 13/26
 PROSPECT PANDERS BLACK CLIFF HILLS

SAMPLE RECORD AND ANALYTICAL DATA SHEET

LABORATORY ANALABS COOL
 SAMPLE TYPE -20# stream sediment

COLLECTED BY: R. Poltock
 DATE DISPATCHED: 30-11-82
 DATE RECEIVED:

A 28305

SAMPLE NUMBER	LOCATION		DESCRIPTION	ANALYSES										
				Cu	Pb	Zn	Ag	As	Au	Bi	Sn	W.Mo	Cr	
1658	Smithct	As for 1657		7	22	26	0.3	4.9	<0.005	<1	12	<20	5	133
1662	"	As for 1661		7	22	32	<0.1	41	<0.005	<1	20	<20	4	109
				ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	
							0.1		0.005	1		20		

083

ROGER POLTOCK GEOLOGICAL PTY. LTD.

SAMPLE RECORD AND ANALYTICAL DATA SHEET

622084

COLLECTED BY: R. Poltock.

CLIENT A.C.P. WEBB

LABORATORY ANTARIS

DATE DISPATCHED:

PROJECT EL 13126 COX BIGHT

SAMPLE TYPE PAN CON

DATE RECEIVED:

ROSPPECT PENDERS CREEK, BLACKCLIFF HILLS, BREAKSPEAR

SAMPLE NUMBER	LOCATION	DESCRIPTION	ANALYSES										ANALYSES						ANALYSES							
			Cu	Pb	Zn	Ag	As	Au	Bi	Sn	W	Mo	Ti	Y	Zr	La	Ce	Th	Cr	Pt	Pd	Ir	Os	Rh	Ru	
1653	PENDERS CK	Room 3150E	WT 51.80gms	4	14	29	<0.1	2	14	5	617	231	55	4150	44	44	48	97	<50	1410	2.0	5.5	1.0	2.0	1.5	37.00
1655	Gorrips CK	Alluvial deposits	" 103.58gms	4	69	10	<0.1	3	6	20	2400	1100	24	1120	207	796	140	331	60	25	0.5	6.0	<0.5	<2.0	<0.5	14.00
1657	Smith CK		" 71.25gms	7	39	26	0.3	22	6	9	-	-	-	21000	196	120	1470	3350	98	-	<0.5	4.5	<0.5	<2.0	1.0	27.00
1661	"		" 68.50gms	6	33	26	0.1	19	4	<1	421	<20	4	17900	109	150	713	1470	47	183	1.5	3.5	<0.5	<2.0	0.5	18.00
1669	Dutchmanck		" 81.67gms	7	7	11	<0.1	53	4	6	869	<20	<3	566	23	39	20	38	<10	139	2.0	2.0	<0.5	<2.0	0.5	18.00
1670	Prospect trench in alluvials, 100m Sth of Miller Lagoon		" 62.36gms	7	2	5	<0.1	18	2	9	5070	<20	<3	1230	54	510	88	182	29	20	1.5	1.5	<0.5	<2.0	0.5	13.00
1671	Knight Creek		" 64.85gms	5	3	7	<0.1	9	4	7	8810	45	6	1650	61	2890	160	334	62	173	2.0	5.5	<0.5	<2.0	1.0	20.00
1672	Beach sands, mouth of Freney Lagoon		" 109.96gms	2	2	5	0.1	<1	<2	9	349	<20	5	1190	9	1350	15	25	<10	248	1.0	1.0	<0.5	<2.0	0.5	9.50
				ppm	ppm	ppm	ppm	ppm	ppb	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppb	ppb	ppb	ppb	ppb	ppb
							0.1	10000	0.002	1	20	3							10		0.0005		0.0005	0.002	0.0005	

083

APPENDIX 4
BEACH MAGNETIC ANOMALY - RAW DATA

085

APPENDIX 4
 BEACH MAGNETIC ANOMALY
 RAW DATA 23-11-1987.

NB: DISTANCE IN METRES EAST OF THE STREAM
 DRAINING FRENET LAGOON.

Distance	nt	Distance	nt	Distance	nt	Distance	nt	Distance	nt.
0	62898	210m	62915	420m	62904	630m	62904	840m	62890
	62916		62905		62897		62897		62895
	62897		62910		62904		62904		62885
	62903		62900		62896		62899		62900
	62888		62905		62893		62895		62892
	62896		62900		62891		62896		62890
	62901		62900		62898		62895	900m	62884
	62896		62905		62900	700m	62905		62890
	62899		62895	500m	62892		62902		62890
	62902	300m	62907		62900		62901		62896
100m	62900		62905		62891		62894		62883
	62892		62900		62899		62900		62896
	62896		62905		62900		62894		62890
	62900		62893		62895		62890		62890
	62900		62903		62900		62895		62891
	62900		62904		62900		62889		62893
	62910		62891		62898		62892	1000m	62892
	62910		62899		62895	800m	62893		62897
	62910		62903	600m	62893		62890		62890
	62895	400m	62905		62898		62893		62893
200m	62904		62900		62903		62890		62895
									62897
									62890
									62898
									62892
									62890
								1100m	62893

087

622087

APPENDIX 5

G E O - F L I T E

88-2798

MINES	
File Ref.	EL 13/86
18 APR 1988	
Doc. Ref.	
Action Officer	Initials
COVER	SHEET
ON FILE	
Resubmit to	Date

FRACTURE AND MINERALIZATION STUDY

COX BIGHT - TASMANIA

E.L. 13/86

for

MR A. WEBB, Q.C.

April, 1988

PLANS: OVERLAY AND 2 MAPS

GEO-FLITE RESEARCH PTY. LTD.

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INTRODUCTION

The area is situated in a remote portion of South - Western Tasmania, some 100 kilometres south west of Hobart. The study area is comprised of the Exploration Licence 13/86 and the immediate surrounding area. The prospect is currently held by Mr Arthur Webb Q.C. who commissioned this survey. Alluvial tin deposits were discovered in the area over 100 years ago but limited access by light plane and boat has made development and exploration very difficult.

It was suggested that the new Geo-Flite Multispectral Low Altitude Sensing Method could help evaluate the geology, structure and fracture systems and plot the extent of the alluvial deposits and define the prime exploration targets. The following study was initiated to evaluate the fracture pattern of the area and its relationship to the primary tin mineralization and general geology of the area. Particular attention was directed to the application of the system to known and potential placer deposits and beach sands, to evaluate the possible concentration areas for heavy minerals and to define the best exploration targets.

Most of the previous efforts in mining and reconnaissance exploration had been directed toward the tin potential of the area but the general geology suggests other more exotic economic mineral potential which will be examined here. All previous work has been made very difficult by the rugged terrain and the remote and difficult access.

GEOLOGY AND BACKGROUND

Tin deposits in the area have been worked with varied success since the start of the century and most of the activity was at Melaleuca, approximately 20km to the north west of Cox's Bight, adjacent to Bathurst Harbour. Considerable exploration and development work was carried out in the 1970's by Ludbrook's Ltd, and later by Metals Exploration Ltd, to determine whether a dredgable alluvial tin deposit existed in the area. Geological reconnaissance, sampling and some drilling were undertaken and the results are given in report # 482. The results show some very good grades of tin concentrates but the origin and exact distribution of reserves is still not clear. A recent proposal suggests the use of environmentally acceptable shallow geophysical work to further evaluate the deposits and this possibility will be discussed later.

The exploration problem for the present company is to delineate the extent of the known alluvials and determine the best locations for further testing. There is also the possibility that other mineralization may have been

overlooked in relation to the granite body at Cox's Bight and its metamorphic contacts. Also the extensive beach sand and alluvial deposits may have additional mineral value for exotic heavy minerals and rare earths which has not yet been recognized. It is also important to determine the possible relationship between the mineralization and the extensive fracturing known to exist in the area and the extent to which structural control and fracturing may have controlled the deposition of the various placers.

GENERAL GEOLOGY

The geology of the area is complex with a regional bedrock of Pre-Cambrian metasediments, including quartzite, quartz mica schists and phyllites. The area is portion of the north south trending Tyenna Geanticline, which is a prominent structure in this part of south eastern Tasmania fold belt. Many tectonic phases have produced deformation in this area and large scale granitic intrusions accompanied a major phase of orogenic activity in the Devonian period. One such small granitic area outcrops at Cox's Bight in the present area.

The primary tin mineralization is related to the granite and both the metamorphic rocks and the granites contain quartz veins which are variously mineralized with cassiterite, pyrite, chalcopyrite, wolframite, sphalerite and possibly other previously unrecognized minerals. Many other areas in western Tasmania have shown tin mineralization associated with granite contacts and these include; Renison-Bell, Read Roseberry, Queen Hill, Cleveland, and Razorback. Most of these areas are hydrothermal contacts between the granite and metasediments with tin mineralization in the granite and disseminated in contact rocks or associated with carbonate skarns. There does not appear to be any skarn mineralization in this area. The weathering of the rocks mineralized by the granite intrusion has produced extensive debris contributing to alluvial deposits.

Extensive alluvial deposits and beach sands contain placer deposits of heavy minerals and there may be two different suites of minerals for the marine and non-marine deposits. Earlier workers referred to these deposits as the eastern and western terrace alluvials. Production records in the company files indicate that approximately 200 tonnes of concentrates have been recovered from the area with grades of several kilogrammes per metre reported. At the present time a clear picture of the reserves and grades for the area is not available and further testing to acquire this data should be a priority of the company. To this end, this present study will use high resolution imagery and analysis to help locate the source of the mineralization and to define future priority exploration targets in a cost effective manner.

Previous work in the area has been directed at shallow workings and production of the tin placers by shafts and pits and some reconnaissance sampling and drilling. This work has been limited by problems of access and transportation of equipment to the site by small boat and light aircraft. A light aircraft strip is presently available at Melaleuca, some 20km from Cox's Bight by rough track.

The present project did not involve regional geology or field work. Ground truth to calibrate the imagery was taken from the rock types reported in previous company reports and shown on geological sketch maps. The typical spectral reflectance curves for these rock types were then used to calibrate the imagery. Field observations of previous company geologists and ideas expressed in reports were also incorporated as ground truth data for the project.

I. CURRENT GEO-FLITE APPROACH

The main theme of the Geo-Flite Low Altitude Multispectral Remote Sensing Method is to determine the fracture and micro-fracture pattern of an area, through soil and vegetation cover, and to relate this to the known mineralization and alteration to define ore body extensions and generate new exploration targets.

In the present study area the analysis will focus on a possible primary source for the various placer deposits and the geological and fracture controls on their formation. This includes possible fracture control of the drainage and the terrain beneath the alluvium which may have determined the concentration sites of the heavy minerals.

The method is new and it is therefore appropriate at this point to discuss the method first and then relate it to exploration targets for the various types of mineralization. Past exploration work has been difficult due to the remoteness of the location, the rugged terrain, vegetation cover, limited ground access and the high cost of exploration. All of these problems are minimized by the Geo-Flite system.

METHOD

Geo-Flite uses a new high resolution Multispectral Remote Sensing method for use with light aircraft at low altitude. The system detects detailed fractures, micro-fractures, faults and lineaments in surface outcrop or through soil and vegetation cover. These are features with no surface expression which cannot be detected using normal air photos or satellite imagery. The method also differentiates mineralized zones associated with these fractures, by

multispectral analysis of the associated rock, soil and vegetation. The system was developed by Professor Bruce Moore at the University of Kentucky in the United States, where the imagery is processed. It has been very successful for the detection of all types of fracture systems associated with mineralization, groundwater and hydrocarbon seeps from oil and gas structures.

A basic postulate of the method is that fracturing in the upper brittle zones of the earth's crust is the main controlling factor in the emplacement of hydrothermal and other mineralization. This includes that micro-fracture and joint system on the order of 5 to 10 metre separation spacings detected for the first time by this imagery, and which have enormous total permeability in otherwise low porosity rocks. The method first delineates the controlling fracture system by high resolution computer enhanced imagery, and then compares the multispectral response of known to unknown mineralized zones to locate possible new deposits.

AIMS AND PROCEDURES

The area of the study is principally the Exploration Licence 13/86 and its immediate surroundings. The general aims of the study are as follows:

1. To utilize the Geo-Flite Method to evaluate the fracture pattern of the area in relation to the general geology, and in particular, the emplacement of the main granitic body at Foley Pimple and the associated mineralization.
2. To use the multispectral analysis of the imagery to determine the extent of the alluvial deposits and the main paleo-channels and possible best economic placer deposits.
3. To attempt to determine the full mineral potential of the placer deposits including tin and rare earth and other minerals not previously recognized, in the light of modern granitic theory.
4. To indicate the best locations for resampling the placers.
5. To assess the role of fracturing and possible faulting in the emplacement of the placers.
6. To attempt to determine the source of the tin mineralization.
7. To explore the potential for exotic minerals in mineralized contact zones and pegamitite phases.

8. To investigate the previously reported graben structure beneath the western terrace alluvials.
9. To assess the extent of fracture control on the drainage.

PROCEDURES

The imagery and data was acquired from light aircraft and was processed in the United States. The imagery was first analysed by fracture and lineament enhancement to delineate the fracture systems in the bedrock and beneath the alluvials. The development of the drainage system in relation to the fractures was then studied in relation to the known mineralization and the limited bore hole data.

The second phase of the image processing involved multipsectral image analysis to determine the paleo-channels in the alluvials and investigate the contact zones of the granite and fractures for the primary source of mineralization.

II. BRIEF REVIEW OF APPLICABLE MINERALIZATION THEORY

MINERALIZATION

The main control of the mineralization throughout the area appears to be the Cox's Bight granitic intrusion producing an extensively mineralized contact zone. It appears that the intrusion is much larger than the small area of outcrop at Foley Knob would indicate and that most of the Bathurst Range consists of contact metamorphic and mineralized rocks forming a thin cover over the intrusion, which underlies it close to the surface.

It appears that the area of mineralization to supply the very large quantity of placer alluvials in the area did not come entirely from the small granite outcrop and its contact zone at Foley Knob. From the position of the known placers it is obvious that alluvial tin is being shed from all of the streams draining the Bathurst Range from Cox's Bight all the way to the northeast to Melaleuca. Also the drainage to the east and northeast of Foley Knob is also carrying alluvial tin from Cox's Creek and its tributaries.

Several localities along Bathurst range have quartz veins with mineralization and these appear to be in the contact zone. It is most likely that there is disseminated tin and other mineralization along the entire length of the Range.

It is likely that the heavy mineral suite in the beach sands will differ from the alluvials and has been transported from elsewhere, when the mineral species are identified it is likely that rare earth minerals will be found shedding from the contact and pegmatite zones and can be traced to a source.

GENERAL DISCUSSION OF MINERALIZED PLUTONIC BODIES

The main plutonic granite body at Cox's Bight apparently the source of the known mineralization and this is supported by the current fracture and spectral analysis. The phases and mechanism of intrusion should be re-examined and related to granitic intrusions, which will be briefly reviewed here.

The Cox's Bight Granite appears to be an S type granitoid as opposed to an I, M or A type. The S type usually carries garnet, monazite, magnetite, zircon and apatite as accessory minerals. The S type occurs in orogenic belts and the rocks are believed to be due to partial melting of continental crust or sediments. They commonly contain tin, tantalum, tungsten, molybdenum, beryllium, niobium, bismuth, uranium and rare earths. Most of these have been reported from this region. Other notable occurrences of S type granitoids are in Malaya, Cornwall, France, the Bushveldt Complex of South Africa, and importantly the Blue Teir, and Pieman River areas of Tasmania. This makes this area a very favourable location for further exploration for the above minerals.

A greisen and possibly pegmatitic phase has previously been mapped along Cox's Creek adjacent to the eastern margin of the main granite body and the position is shown on the 1:10,000 map enlargement. Other potential pegmatite areas occur along the western and northwestern contact of the granite at Foley's Knob and should be investigated if heavy minerals from this type of source are found in the drainage of Race Creek.

Pegmatites result from the final stage crystallization of water rich melts of intermediate to silicic igneous rocks. They are usually a source of beryllium, lithium, cesium, rubidium, tantalum, niobium, uranium, thorium and the rare earth elements. The associated minerals include the tin-tungsten group and beryl, topaz, garnet and tourmaline.

Hence S type granites can be a valuable source of minerals other than tin which have not been seriously explored in this area and have recently become very valuable for aerospace and computer applications.

III. RESULTS

The findings and results of the study are discussed in this report and presented on accompanying maps with some selected computer enhanced imagery examples. The general geological relationships and fractures are presented on a scale of 1:25,000 on a topographic base map, and the more detailed exploration targets are shown on a scale of 1:10,000.

a) FRACTURE ANALYSIS

There is very well developed fracture pattern in the area with a particularly strong north westerly trend and a less prominent north easterly trend. Mention has been previously been made in company reports, of prominent graben type faulting in the valley of Breakspeare Creek controlling placer deposition. There is a strong fracture trend in this region but no positive evidence of graben displacement. It is possible that this fracture direction may have controlled stream drainage or the development of an ancient glacial valley without fault displacement. This fracture trend and stream valley have had a strong influence on the deposition of the western terrace alluvials along Breakspeare Creek. A very prominent fracture extends northwest from Point Eric through localities 16, 17, 5, 6, and 8 and appears ? 18 to mark the northern boundary of this ancient valley.

Prominent fracture directions also control drainage off the granite and potential mineralized zones along the Bathurst Range and the fractures certainly control the channels bringing heavy mineals to the placer localities of the western terrace. The most important to the west of Point Eric are Race Creek, Hidden Valley, Foley Creek and Dutchman Creek. To the east of Point Eric, Cox's Creek and its tributaries occupy valleys controlled by fractures, which have supplied heavy minerals to the eastern terrace in the vicinity of localities 11, 12 and 13.

(b) MINERALIZATION AND DISSEMINATED TIN

The Cox's Bight granite body, outcropping at Foley Pimple, is the primary source of the tin mineralization in the area. The area of granite outcrop is very small in comparison to large area of the known tin placers of the eastern and western terraces, and the Melaleuca area to the northwest. It would appear that past erosion of the small granite outcrop, at present exposed, would not have produced sufficient material for the known deposits

and an additional source would be necessary to supply this material volume.

Analysis of the imagery shows contact alteration and quartz vein material with potential mineralization in most of the rocks along the Bathurst Range, including Mount Counsel. It would appear that the entire Bathurst Range may be a source of disseminated tin and therefore be contributing to both the eastern and western terrace placers, and even as far north west as Melaleuca. There is also a tin placer deposit reported to the northeast of Mount Counsel, along the main drainage to the northeast side of Bathurst Range. This has undoubtedly come from a disseminated source on the Bathurst Range, and there may be more. This area was outside the present flight area and no imagery was available. The implication is that a large portion of the Bathurst range is underlain by granite at a shallow depth and is possibly a mineralized contact zone with widely disseminated tin. Localities #18, #19 and #20 draining the Hidden Valley area should be tested for disseminated tin in the creeks, to help establish this source.

Multispectral analysis of the imagery shows contact alteration areas between the granite and basement at localities #7 and #8 on Race Creek and #17 on Knight Creek and #16 on Dutchman Creek which could supply tin and other minerals to the western terrace deposits. Contact alteration and possible mineralization also occurs north of locality #1 along Goring Creek. There is also an outcrop of contact rock or pegmatite on Cox's Creek at locality #13 which should be more closely investigated for rare earths and other contact minerals.

Previous efforts at mining and exploration have all been concentrated on the tin placers because they were accessible and easily worked. Tin prices in the 1960's and 70's were extremely good, but current prices and the isolated location could make a dredging operation, solely for tin, a marginal economic proposition at the present time. If however, the placers and beach sands proved to contain other heavy minerals, and rare earth elements in particular, the deposit could be very valuable. A priority exploration aim must therefore be to determine the extent and nature of possible rare earth concentrations.

(c) PEGMATITE PHASES AND RARE EARTH MINERALS

Possible pegmatite phases of the granite are showing on the imagery along Race Creek and tributaries at localities #2, #7, and #8, and also on Cox's Creek at locality #13. Greisenization has been reported at #13

and should be checked. Heavy mineral sampling in the creeks at these locations will indicate pegmatite and greisen phases.

Pegmatites are the final water rich crystallization phases of granitic igneous rocks. They are important sources of beryllium, lithium, rubidium, cesium, tantalum, niobium, uranium, thorium, rare earth elements, in addition to tin, tungsten and molybdenum. There are verbal reports from prospectors of some of these elements and lanthanides in the area. Breisen is a type of alteration of granite, often occurring in pegmatites, that produce topaz, tourmaline, fluorite, rutile, cassiterite, wolframite and magnetite. Most of these have been reported in the area.

Laboratory analysis of heavy mineral concentrates from these localities is necessary to make an evaluation.

(d) ALLUVIAL PLACERS

The extensive alluvial placers of the eastern and western terrace areas at Point Eric have been worked and tested on a reconnaissance basis. It has previously been suggested, that graben down-faulting along Breakspere Creek from Point Eric to the northwest, may have contributed to the infilling of the area by alluvials, producing the placers. The present study shows extensive fracturing in the area, but it does not appear necessary to invoke graben faulting to explain the deposit, unless field work shows definite fault movement. It would suffice that a prominent glacial or stream valley developed and was infilled with material eroded from the Bathurst Range. Alluvial fans would have formed at the point of entry of tributary streams from the Bathurst Range contact and granite zones, into the main valley of Breakspere Creek. The most productive placers could be expected at the change of stream valley slope and these are indicated as numbered sample locations. These paleo-channels and the deposit portions of the alluvials can be defined from the imagery. Localities #3 and #4 have previously shown economic tin in boreholes. Locality numbers 5, 6, 9, 10, 16, 17, 18 and 19 all look promising to the west of Point Eric.

To the east of Point Eric, in the eastern terrace area and Cox's Creek, there is also a promising and partially proven placer area. The main channel of Cox's Creek appears to be fracture controlled and should be further tested at localities 11, 12 and 13. Locality #1 is at Point Eric and the site of the original workings and these should be resampled for heavy mineral concentrates.

It is apparent from the fracture analysis that the development of the drainage is fracture controlled and the position of the bedrock fractures beneath the alluvium can be plotted from the imagery.

Potential reserves of tin concentrate were previously estimated by Metal Exploration Ltd to be of the order of 1500 tonnes of 70% SnO₂ concentrates, assuming potential placer targets of the order of 100 to 150m in width and 300 to 600m in length. The imagery analysis supports these figures as being possible and shows room for a somewhat larger potential area of placer than was originally suggested and reserves could exceed the above figures. Also reserves do not include any additional heavy minerals or rare earths and the beach sands, which were not previously considered. Recommendations will be made here regarding further testing and establishment of reserves.

(e) BEACH SAND DEPOSITS

In addition to the alluvial placer deposits, there has been considerable reworking of alluvials by wave action on the beaches and deposition of back-beach and dune deposits. These could be expected to have a different suite of heavy minerals and verbal prospector reports include ilmenite, rutile, zircon and chromite from this depositional environment. Analysis of the imagery suggests depths of up to 30m of beach sand and dune deposits to the east and west of Point Eric. The most promising localities for testing are from #10 to #3 to the west, and close to the beach at #1 through #11 and at #15 to the east. Magnetic anomalies have been reported in the vicinity of #11 and #15 from ground magnetics and could be due to heavy minerals in the beach sands.

(f) IMAGE EXAMPLES

Two types of image examples are included to illustrate the many phases of the image processing. The scenes in blue-grey tones show some of the stages of fracture analysis and some fractures can be seen beneath the alluvium. It is also possible to see the outline of channels within the alluvium, particularly in the Freney Lagoon area. The multicoloured scenes are examples of the multispectral analysis for particular rock, mineral and soil types and these also define the alluvial channels, placers and relative depth of alluvium.

PHOTO AREA A

This details the area round Freney Lagoon. The structure enhancement shows tributary channels controlled by fractures beneath the alluvium leading to the main channel along the Breakspeare Creek area.

One color enhancement in orange-yellow and white shows the main channel area in yellow with the deepest areas in white. The other enhancement in blue-green-yellow and red shows beach deposits in white and the deep alluvium in blue.

PHOTO AREA B

This covers a larger area to the west of Point Eric. The structure enhancement shows the fracture pattern in the bedrock clearly, beneath the alluvium.

One colour enhancement in blue-green and pink shows the potential placer channels in blue and the beach deposits in white. The other enhancement in yellow-orange and white shows the potential placers in yellow and white and the beach deposits also in white.

PHOTO AREA C

Covers the area to the east of Point Eric. The structure enhancement shows fractures in the north west corner beneath the alluvium under Cox's Creek. In the colour enhancements the deepest alluvial and beach deposits are shown in yellow on one scene and white on the other.

(g) EXPLORATION TARGETS

The accompanying maps show twenty recommended exploration targets or localities which should be further explored and tested. On the basis of the analysis and interpretation the targets have been selected as the most likely areas for aluvial heavy mineral concentration or mineralization.

LOCATION #1

This is in the vicinity of the original mining area at Pt Eric and should be resampled and analyzed for the full mineral suite of the placer deposits.

LOCATION #2

Is a fracture intersection adjacent to an apparent pegmatitic or alteration phase of the granite and may

show the presence of rare earth elements. Rock and stream samples should be selected and analyzed for the full range of rare earth elements and minerals.

LOCATIONS #3 AND #4

These locations are in the vicinity of original drill holes which intersected placer at depth and were used as a ground truth reference to plot other potential placers from the imagery. These locations are essential targets for further trenching of beach sands above the known placer to determine mineral content.

LOCATION #5

This location shows potential placer of the type which is present at locations #3 and #4 and should also be tested by trenching and bulk sample analysis.

LOCATION #6

This location is situated at a fracture controlled channel along Race's Creek and shows potential for placer deposits at a change in bedrock slope. Trenching should be undertaken at this location and stream sediment samples should be taken and analyzed for heavy minerals and rare earths.

LOCATIONS #7 AND #8

These locations stream sediment samples should be taken and the heavy mineral fraction analyzed.

LOCATION #9

The imagery indicates the presence of placer material at this location and the area should be trenched and bulk sampled for the heavy mineral fraction.

LOCATION #10

At this location deep beach sands are indicated with good potential for heavy mineral deposits and possibly rare earths. This area appears to be a good site for trenching and testing.

LOCATION #11

The location shows a deep fracture controlled channel beneath Cox's Creek and should be trench tested for beach and alluvial placer deposits of heavy minerals.

LOCATION #12

The imagery indicated that this is the deepest section of the eastern alluvials and should be trenched and tested.

LOCATION #13

Potential pegmatite, greisen and rare earth minerals indicated at this location and trenching and stream sampling is suggested.

LOCATION #14

At this location the imagery indicates that a potential placer may be present along Goring Creek.

LOCATION #15

This location is in the vicinity of the reported magnetic anomaly and deep beach sands are present. This target should be trenched and analyzed for heavy minerals.

LOCATION #16 AND #17

Shows potential placer deposits and should be trenched and sampled for heavy minerals.

LOCATION #18, #19 AND #20

These locations should be tested by stream sediment sampling to check for disseminated tin from the Hidden Valley and Bathurst Range.

IV. RECOMMENDATIONS AND TESTING**TESTING METHODS**

The key to testing the economic feasibility of the deposits in the area lies in evaluating the stream sediments, alluvial placers and beach sand deposits in the region. Samples are required for a full laboratory examination of the heavy mineral suites, particularly potentially valuable minerals containing rare earth and other exotic elements not previously recognized. The results will indicate whether any further work on rock outcrop in the inaccessible hilly source areas is warranted.

Other factors in the choice of testing methods are:-

1. The area is environmentally sensitive and subject to regulation.
2. The cost and difficulty of transporting testing equipment into the area.
3. The normal problems of estimating the reserves of placer deposits due to their irregular shape and dimension.
4. Drilling usually gives inaccurate and unsatisfactory estimates of placer reserves and deep trenching by backhoe and/or bulldozer is normally required to generate proven reserve figures.

V. RECOMMENDATIONS

Previous exploration emphasis has been placed on tin and the area has to be re-sampled to determine the complete mineralogy of the heavy mineral suites. Even if the estimated tin reserves holdup the economic feasibility at current prices could be marginal. It is therefore important to establish the presence of other valuable placer minerals to make the operation economic. This should be undertaken in the following two phases.

PHASE A

A small ground party should re-sample the major localities of indicated in this report for stream sediment samples, contact zones, old workings or with the help of a portable hand or power auger. Heavy mineral concentrate samples should be sent to Dr McLaughlin at the Geo-Flite laboratories for full mineral identification.

PHASE B

If the results and the mineral types are favourable, a trenching program with tractor backhoe, small bulldozer and augers should be undertaken to determine reserves and economic feasibility. This program could be combined with on-site shallow geophysical methods such as seismic, resistivity and magnetics to speed up and help direct the testing and site selection.

VI CONCLUSIONS

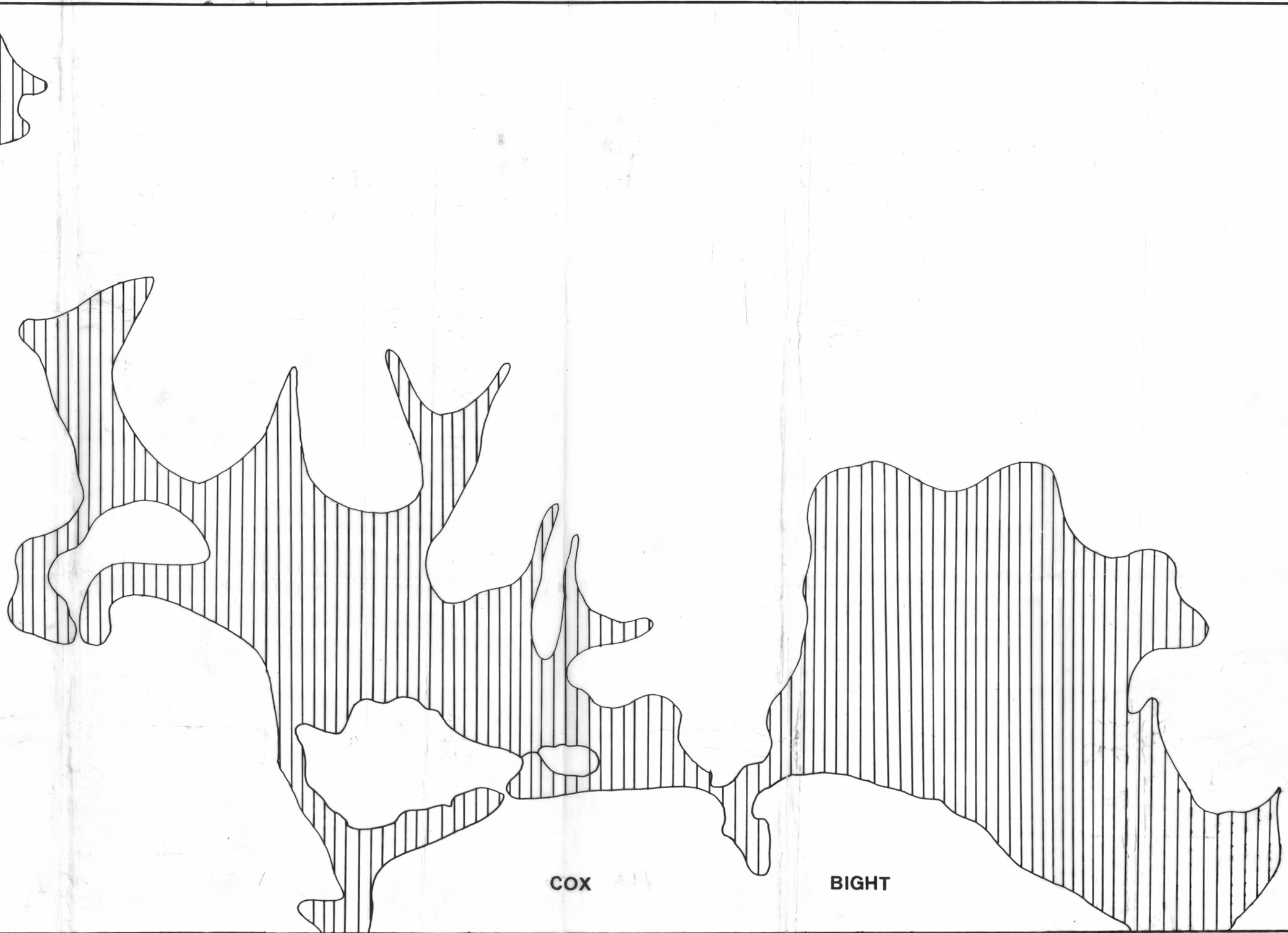
1. The image analysis shows that there is sufficient volume of alluvial material to prove up a sizable economic deposit if the placer grades can be tested and proven.

Previously reported reserve estimates appear reasonable and may exceed that stated values.

2. A tin operation alone would be economically marginal at current prices.
3. Successful exploration for rare earth and other exotic elements in minerals could make the deposit very valuable.
4. Pegmatitic and contact phases are indicated on the imagery analysis and are prime targets for the rare earths and other minerals and these should be tested at the localities indicated.
5. Potentially economic beach and mineral sands are indicated from the imagery analysis and reported ground magnetic anomalies. These could have a different heavy mineral suite from the known alluvial placer deposits, due to a difference in source and depositional environment.
6. Image analysis shows the important role of fractures in the control of the drainage to produce the eastern and western terrace alluvials and placers.
7. Follow up exploration and testing should definitely be undertaken in the two phases suggested in this report.
8. It would seem appropriate to seek government support to improve access and landing facilities for light aircraft. This would also benefit Wildlife Management, Forestry, Emergency Rescue and other uses and would help in the execution of exploration Phase B.
9. I consider that the area has good potential for a valuable economic deposit, particularly if rare earth and other exotic elements can be proven. I strongly recommend that further exploration proceed according to the two phases suggested.

**PROFESSOR BRUCE R. MOORE MSc, PhD
GEO-FLITE RESEARCH PTY. LTD.
MELBOURNE, AUSTRALIA**

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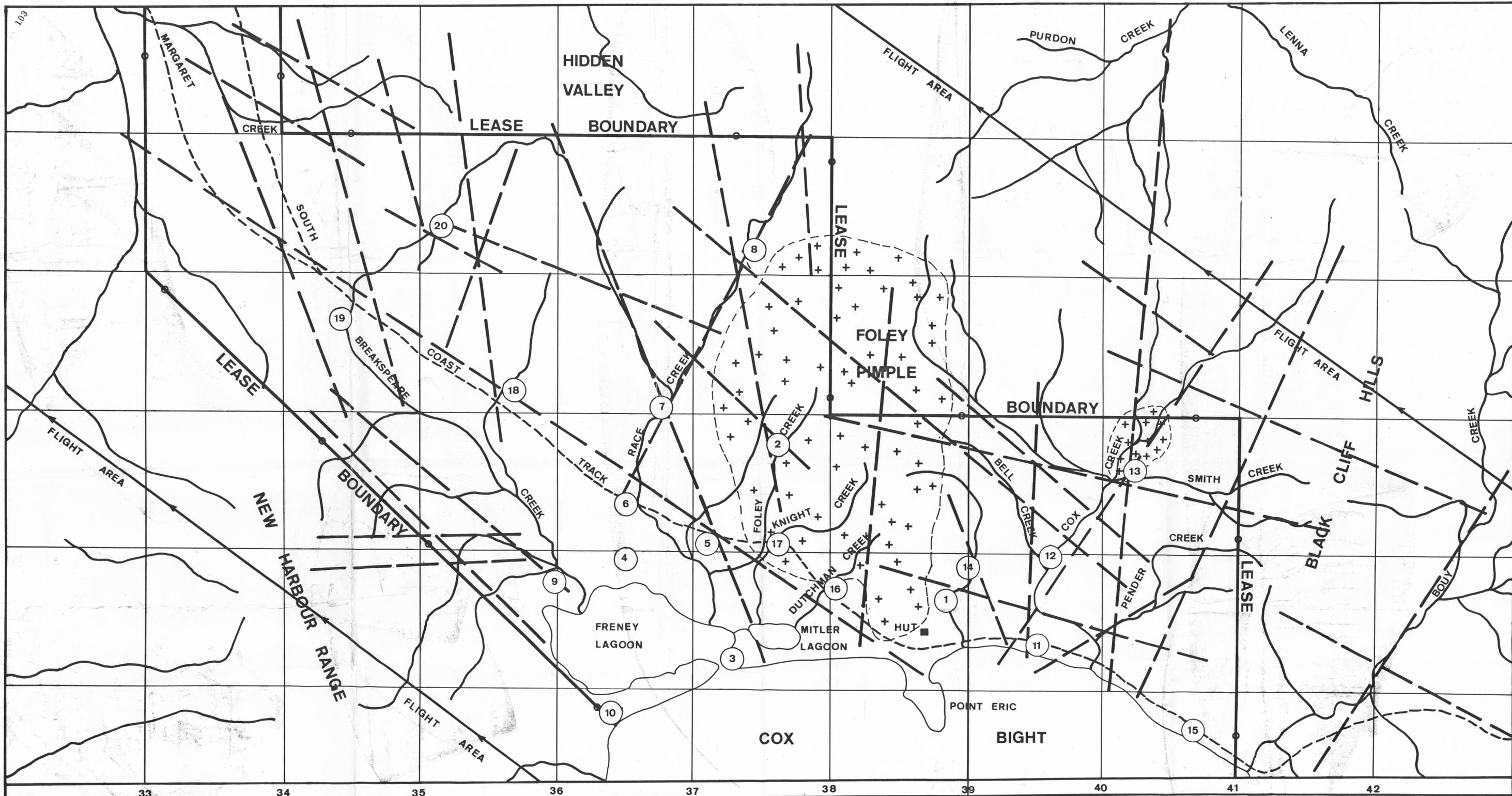
FRACTURE AND MINERALIZATION SURVEY OVERLAY
 COX BIGHT TASMANIA

E. L. 13/86

LEGEND

PLACER MATERIAL





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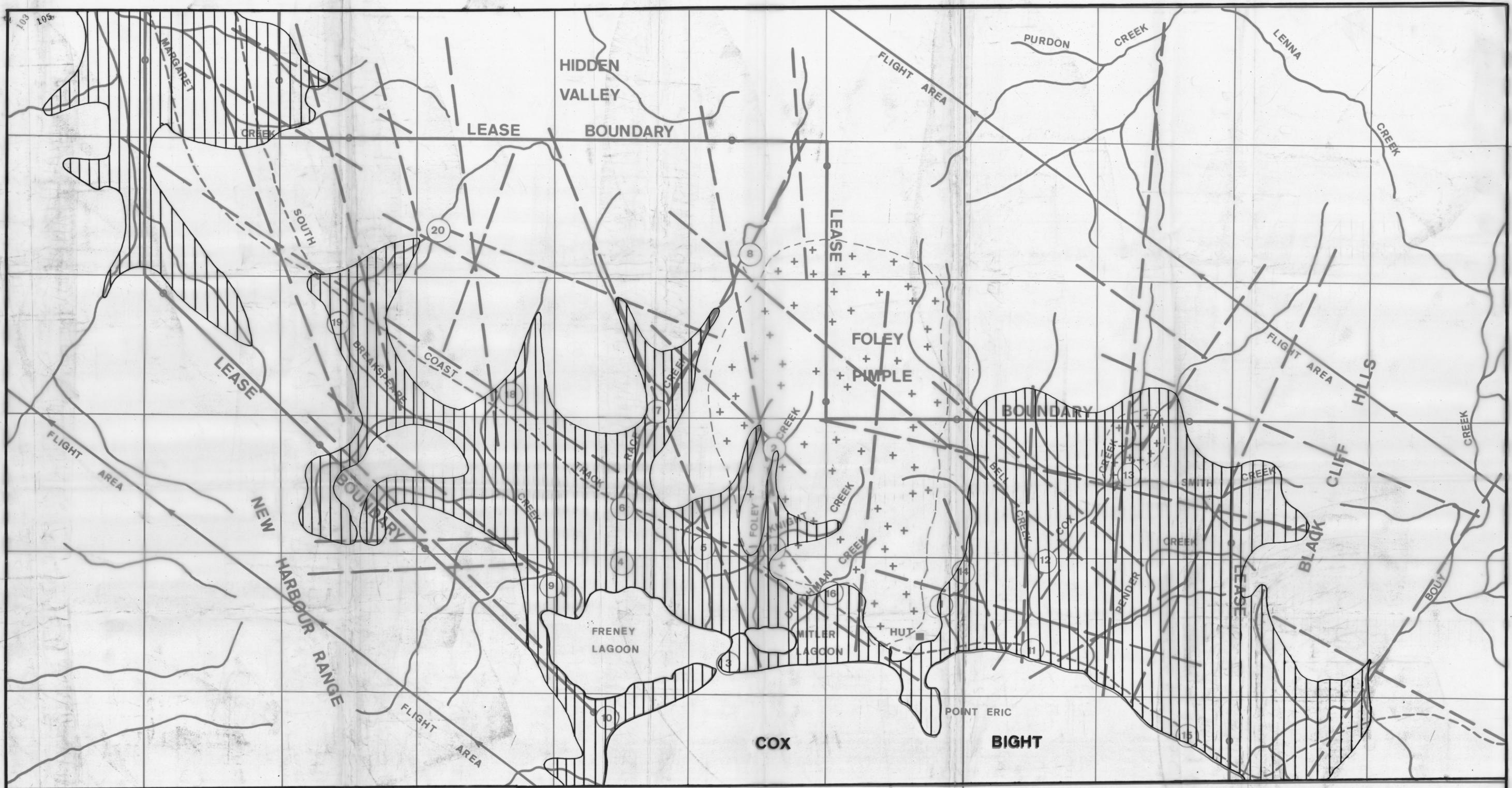
LEGEND

- FRACTURE
- LEASE BOUNDARY
- TRACK
- EXPLORATION TARGET
- CREEK
- GRANITE

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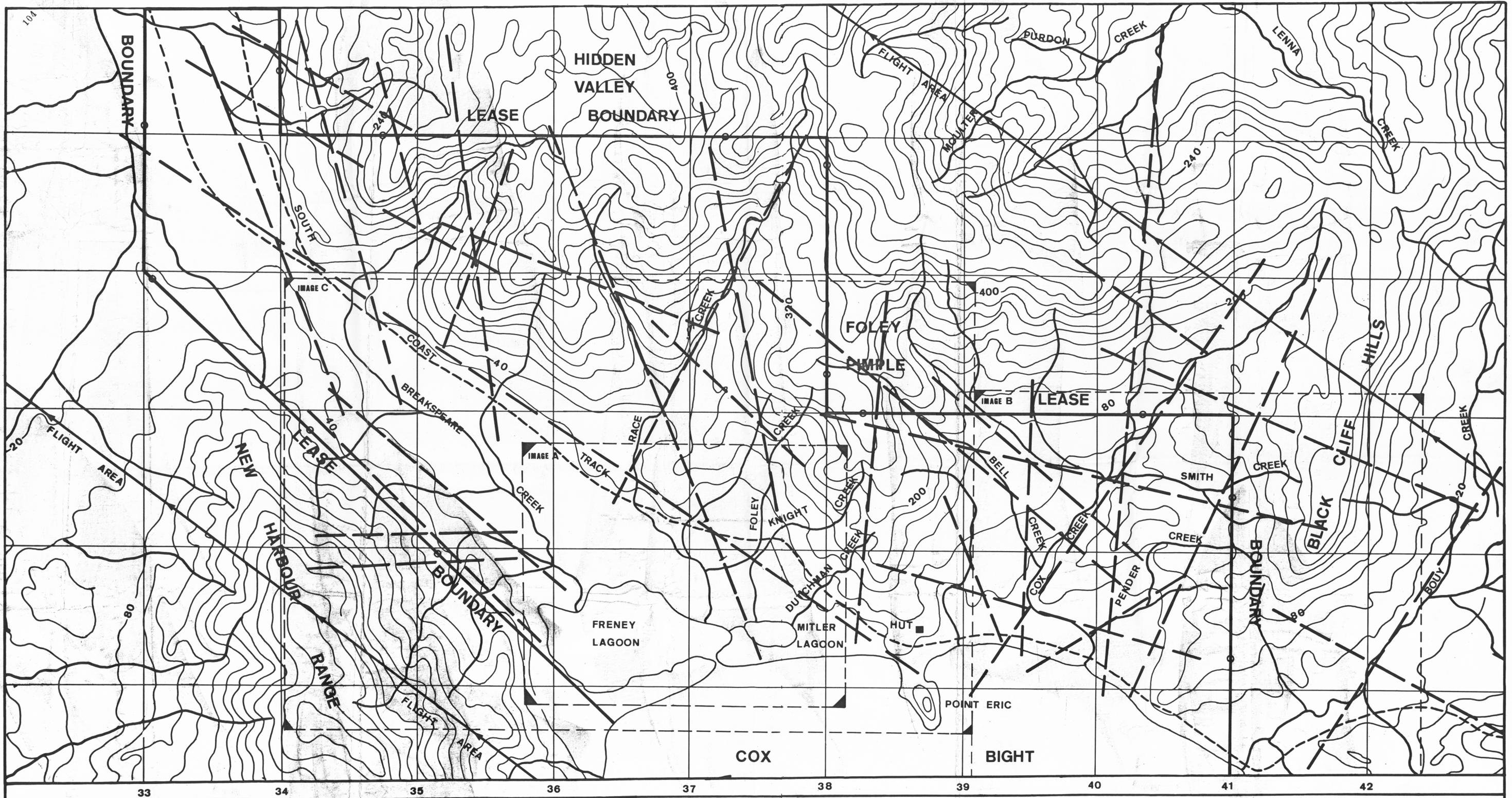


LEGEND

- PLACER MATERIAL
- LEASE BOUNDARY
- TRACK
- EXPLORATION TARGET
- CREEK
- GRANITE

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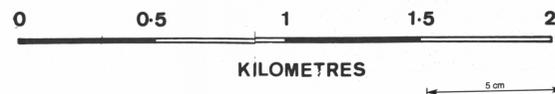


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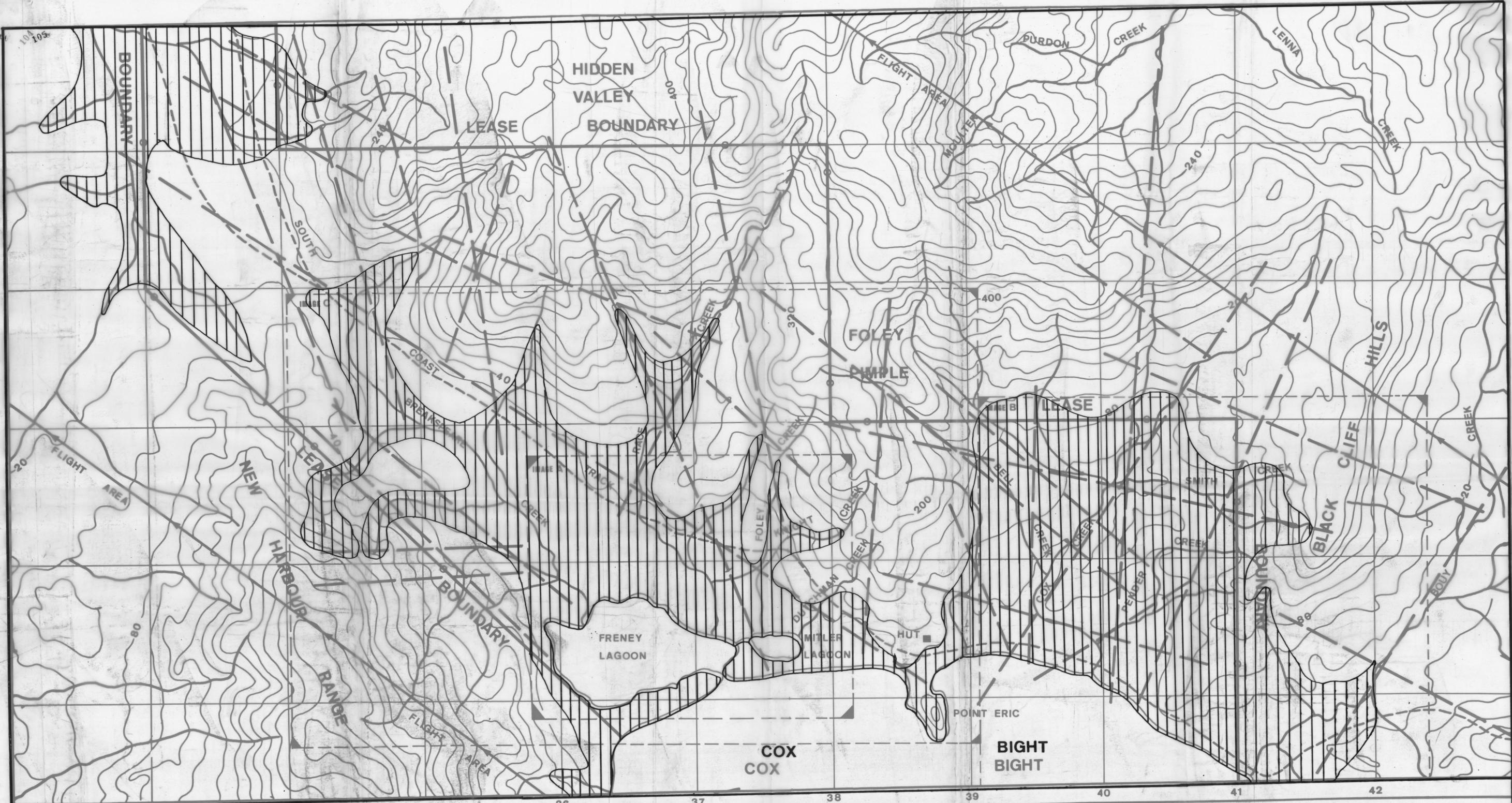
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LEGEND

- FRACTURE
- LEASE BOUNDARY
- CONTOUR
- IMAGE EXAMPLE



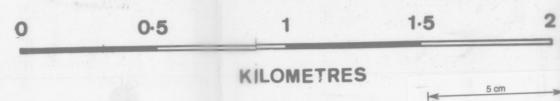


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LEGEND

- FRACTURE MATERIAL
- LEASE BOUNDARY
- CONTOUR

IMAGE EXAMPLE



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