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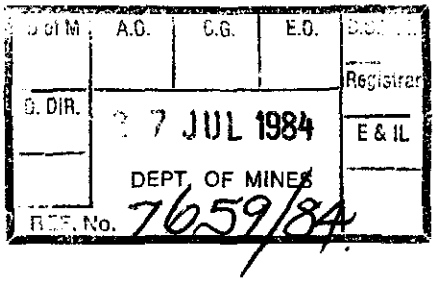
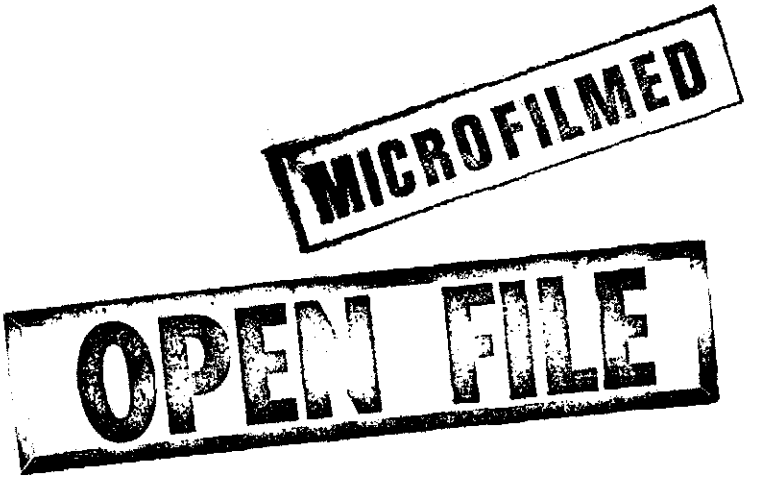
384001






PROJECT A-78-60
DISC 205

AMOCO MINERALS AUSTRALIA COMPANY




# PART RELINQUISHMENT REPORT

## ZEEHAN PROJECT

## EXPLORATION LICENCE 4/78

## TASMANIA

P.A. JONES

JULY 1984

REPORT 398

DISTRIBUTION

- o EZ - Hobart Office
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- o Denver
- o Sydney
- o Field
- o Spare

002

384003

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003

384004

APPENDICES

1 STREAM SEDIMENT GEOCHEMISTRY - Analytical Results
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BY Mitre Geophysics
3 RECONNAISSANCE SOIL GEOCHEMISTRY - ANOMALY E

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| | | Scale |
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| 1 | EL 4/78 - GEOLOGY AND PROSPECT LOCATION | 1:50000 |
| 2 | - Stream Sediment Geochemistry • LOCATIONS | 1:25000 |
| 3 | • LEAD/ZINC | 1:25000 |
| 4 | • GOLD/TIN | 1:25000 |
| 5 | • COPPER/SILVER | 1:25000 |
| 6 | • NICKEL/CHROMIUM | 1:25000 |
| 7 | - RESIDUAL TOTAL MAGNETIC INTENSITY | 1:50000 |


QUEENSLAND
NEW SOUTH WALES
VICTORIA
TASMANIA
AUSTRALIA
Rockhampton
Gladstone
Mackay
Townsville
Charleville
Roma
Toowoomba
BRISBANE
GOLD COAST
Lismore
Grafton
Armidale
Tamworth
Dubbo
Broken Hill
Port Augusta
Whyalla
Port Pirie
Mount Gambier
ADELAIDE
Mildura
Wagga Wagga
Albury
Canberra
SYDNEY
WOLLONGONG
NEWCASTLE
Port Macquarie
Coffs Harbour
Bundaberg
Hervey Bay
Maryborough
Gympie
Dalby
Warwick
Moree
Inverell
Bourke
Cobar
Orange
Bathurst
Forbes
Parkes
Griffith
Leeton
Young
Goulburn
Nowra
Batemans Bay
Ballarat
Bendigo
Geelong
Warrnambool
Portland
Hamilton
Horsham
Shepparton
Wangaratta
Benalla
Seymour
Castlemaine
Maryborough
Colac
Warragul
Sale
Morwell
Orbost
Bega
Cooma
Albury
Wodonga
Launceston
Devonport
Burnie
Smithton
George Town
St Marys
Scottsdale
Deloraine
Great Lake
Mt Ossa 1617
Queenstown
Zeehan
Rosebery
Strahan
New Norfolk
HOBART
Port Davey
SW Cape
Geeveston
Tasman Pen
Storm Bay
Bruny I
SSE Cape
C Pillar
Flinders I
Furneaux Group
Cape Barren I
Eddystone Point
King I
Hunter I
C Grim
BASS STRAIT
TASMAN SEA
SOUTH PACIFIC OCEAN
Lake Eyre
L Frome
L Torrens
L Gairdner
L Yamma Yamma
L Machattie
L Philippi
L Albert
L Victoria
L Tyrrell
L Pedder
L Gordon
Simpson Desert
Sturt Stony Desert
Strzelecki Desert
Tirari Desert
Great Sandy Desert
Gibson Desert
Great Victoria Desert
Nullarbor Plain
Great Dividing Range
Flinders Ranges
Mt Kosciusko 2228
Mt Bogong
Mt Buller
Mt Hotham
Mt Feathertop
Mt Hotham
Mt Tabletop
Mt Isa
Mt Unbunmaroo
Mt Remarkable
Mt Bryan
Mt Robe
Mt Booroondarra
Mt Nurri
Mt Hope
Mt Wood
Mt Lofty
Mt Barker
Mt Gambier
Mt Gambier
Mt Gambier

005



## SUMMARY AND CONCLUSIONS

Exploration targets for the relinquished area are volcanogenic massive sulfides within Cambrian volcanics and sediments and Renison style replacement tin/pyrrhotite bodies associated with aeromagnetic features.

Exploration Licence 4/78 was granted to Amoco Minerals Australia Company for a period of six months from June 14, 1978 with further renewals subject to Mines Department approval. With new Mines Department regulations Amoco is required to reduce the area of EL 4/78 to a maximum of 125 square kilometers. This has been achieved by relinquishing two blocks totalling 83.1 square kilometers.

The excluded blocks lie south of Zeehan in thickly vegetated and rugged terrain.

No production or workings are recorded within the areas and only limited exploration has been conducted by Minops Pty Ltd and Tenneco during 1970 and 1971.

Precambrian basement sediments are overlain by Cambrian sediments and volcanics which are localized within graben structures. These are in turn overlain by Lower Ordovician conglomerate. Transgressive upon these units are Ordovician to Devonian basinal units including sandstones, siltstones, shales, dolomites and limestones.

Work conducted by Amoco over the relinquished areas included regional stream sediment/panned concentrate surveys, minor reconnaissance gridding, sampling and ground magnetic follow up of an airborne magnetic response.

It is considered that the area being relinquished has little potential for a large economic mineral deposit.

INTRODUCTION

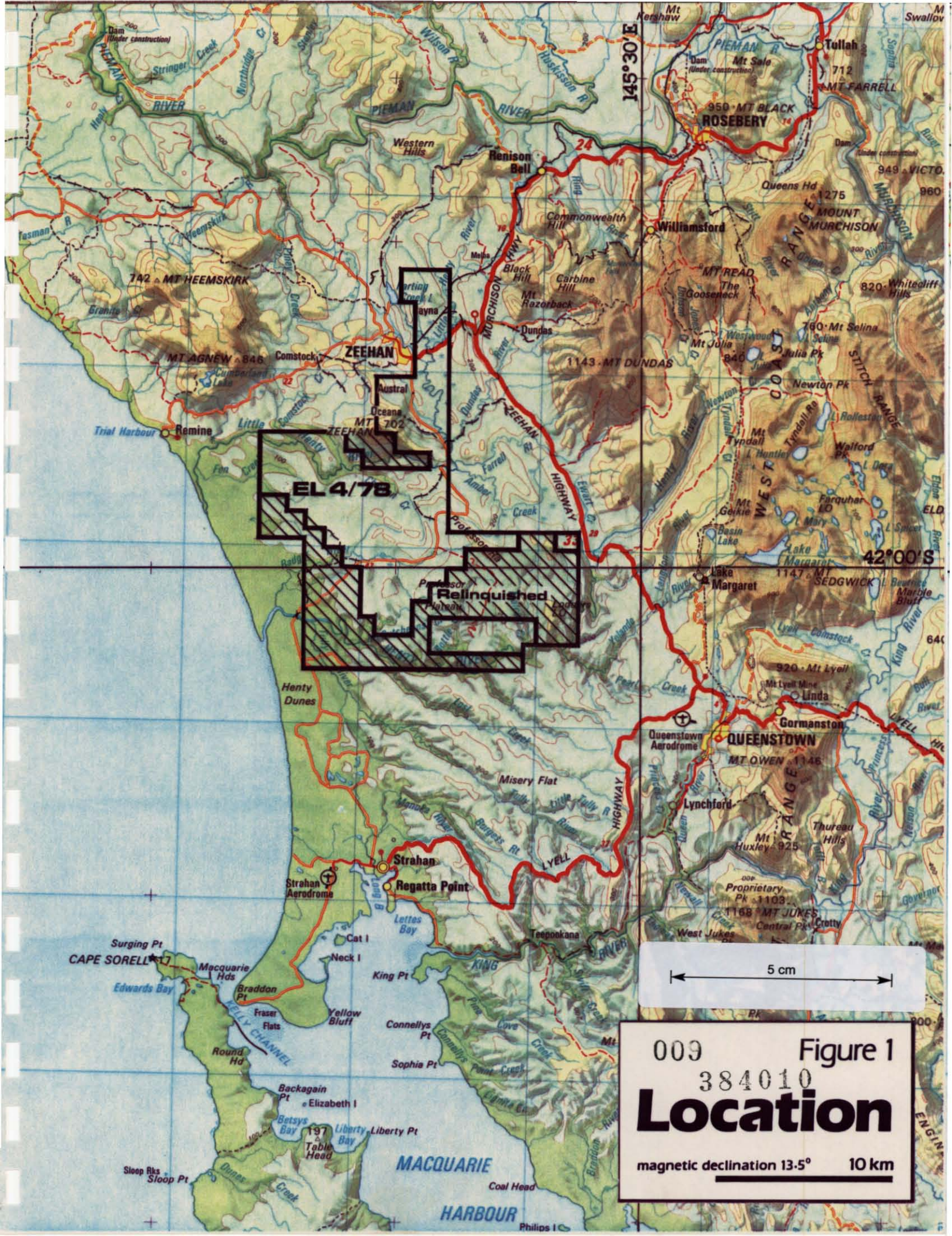
Amoco's exploration target for the relinquished area is twofold:

1 Volcanogenic massive lead/zinc/silver/copper/gold sulfides wihtin intercolated Cambrian volcanics and sediments in the vicinity of the Queensberry Mine and in areas previously as undifferentiated Cambrian sediments.

2 Replacement Renison style and/or stock work greissen tin deposits associated with recently defined air-magnetic responses.

## LOCATION AND ACCESS

The excluded blocks are located immediately south of the town of Zeehan (Figure 1), service town for the nearby Renison tin mine, and access is poor due to rugged topography and thick vegetation. The area has an annual rainfall of 250 centimeters.


EL 4/78
Relinquished
ZEEHAN
Renison Bell
ROSEBERY
Tullah
Williamsford
Remine
Trial Harbour
Strahan
Regatta Point
Strahan Aerodrome
Queenstown Aerodrome
QUEENSTOWN
Gormanston
Linda
Lake Margaret
Lynchford
Teepookana
Cape Sorell
Surging Pt
Macquarie Hds
Edwards Bay
Braddon Pt
Fraser Flats
Yellow Bluff
Round Hd
Backagain Pt
Elizabeth I
Betsys Bay
Liberty Bay
Liberty Pt
Table Head
Sloop Pt
Sophia Pt
Connellys Pt
Cat I
Neck I
King Pt
Lettes Bay
Coal Head
Philips I
MACQUARIE HARBOUR
KING RIVER
LYELL HIGHWAY
ZEEHAN HIGHWAY
MURCHISON HIGHWAY
WEST COAST RANGE
MT FARRELL
MOUNT MURCHISON
MT READ
MT DUNDAS
MT HEEMSKIRK
MT AGNEW
MT SEDGWICK
MT OWEN
MT JUKES
Henty Dunes
Misery Flat
Thureau Hills
145°30'E
42°00'S
5 cm
009
384010
Figure 1
Location
magnetic declination 13·5°
10 km

## DESCRIPTION OF THE PROPERTY AND OWNERSHIP

Exploration Licence 4/78 of approximate area 208 square kilometers was granted to Amoco Minerals Australia Company for the period of six months from June 14, 1978. The tenement was recently renewed for 12 months to July 14, 1985.

New Mines Department regulations in force since July 1, 1982 have required Amoco to reduce by 50% the area of EL 4/78 on July 14, 1984. In complying with these new regulations Amoco have relinquished a total area of 83.1 square kilometers encompassing two separate areas of 6.8 square kilometers and 76.3 square kilometers.

The following details description of the area to be relinquished from EL 4/78.

Area 1

Commencing at the northeastern angle of the area whose grid co-ordinates are 5357000N:362000E thence grid south to 5356000N thence grid east to 364000E thence grid south to 5355000N thence grid west 360000E then grid north to 5356000N thence grid west to 359000E thence grid north to 5356900N thence grid east to 361000E thence grid north to 5357000N thence grid east to the point of commencement.

Total area 6.8 square kilometers.

Area 2

Commencing at the northeastern angle of the area whose grid co-ordinates are 5351000N:371000E then grid south to 5350000N thence grid east to 372305E thence grid south to 5344760N then grid west to 369180E thence grid south to 5343350N thence grid west to 356775E thence grid north to 5350063N thence grid west to 354430E thence grid north to 5353000N thence grid east to 356000E thence grid south to 5352000N thence grid east to 357000E thence grid south to 5351000N thence grid east to 358000E thence grid south to 5350000N thence grid east to 359000E thence grid south to 5349000N thence grid east to 360000E thence grid south to 5346000N thence grid east to 362000E thence grid south to 5345000N thence grid east to 363000E thence grid north to 5347000N thence grid east to 364000E thence grid north to 5348000N thence grid east to 365000E thence grid north to 5349000N thence grid east to 366000E thence grid north to 5350000N thence grid east to 369000E thence grid north to 5351000N thence grid east to the point of commencement.

Total area 87.69 square kilometers.

Excluding a block within Area 2 whose co-ordinates are:

Commencing at the northeastern angle of the area whose grid co-ordinates are 5346000N:370000E thence grid south to 5344760N

thence grid west to 369180E thence grid south to 5344000N thence grid west to 364000E thence grid north to 5346000N thence grid east to the point of commencement.

Total area 11.38 square kilometers.

Total area of reduction equals: 6.8 + (87.69 - 11.38) = 83.11 square kilometers.

## HISTORY AND PREVIOUS EXPLORATION

No production or workings are recorded within the relinquished areas and only very limited regional exploration has been carried out by Minops (1970) and Tenneco (1971).

Minops Pty Ltd conducted stream sediment and geological mapping surveys within a Cambrian volcanic belt in the vicinity of the Queensberry Mine (within EL 4/78). Tenneco implemented an airborne EM survey (HEM-701) over the Gordon Limestone carbonate sequence and partly overflew some of the relinquished areas.

No further work is recorded prior to the commencement of Amoco's program.

REGIONAL GEOLOGY

The basement complex is comprised of Precambrian schists, quartzites, siltstones, shales, andesitic and basaltic lavas and pyroclastics which form a stable craton to the northwest of the tenement. The Lower Cambrian units such as the Crimson Creek Formation are predominantly shallow water volcaniclastic sediments including argillites, grits, tuffaceous arenites and minor dolomites. Cambrian sedimentation appears confined to fault bounded blocks or graben structures.

The Ordovician to Devonian strata of the Zeehan Basin occur within a series of synclinal structures with northwest axial trends. The quartzose and hematitic Owen Conglomerate at Mt. Zeehan was deposited within a graben structure in the Lower Ordovician period and is transgressively overlain by micaceous siltstones, tubicolar sandstones, grits, minor sandstones and

shales. It is the time equivalent of the Moina Sandstone which was deposited in the Zeehan Basin. The Moina Sandstone is overlain disconformably by the Ordovician Gordon Limestone. The disconformity is marked by a discontinuous white quartz pebble conglomerate followed by the Gordon Limestone sequence which is comprised of interbedded massive to laminar, fossiliferous limestones and argillaceous dolomites with numerous zones of clastic sedimentation including fossiliferous calcareous sandstones, siltstones and shales.

The western portion of the tenement has been blanketed by Permian glacials, lacustrine sediments and Jurassic dolerite flows.

Extensive Tertiary and Quaternary gravel deposits blanket much of preferentially eroded carbonate and shale units.

The Zeehan area has been intensely disturbed by the Paleozoic Tabberaberan orogeny which caused major northwest folding and faulting. East and northwest trending fault systems are considered to have been contemporaneous with sedimentation. North-northeast striking faults are thought to have developed in post Permian times and are not common within the tenement area.

A geologic map of the tenement (Enclosure 1) incorporates data from Blissett (1962), Amoco field mapping and airphoto interpretation.

WORK CONDUCTED BY AMOCO

Work conducted over the areas to be relinquished include regional stream sediment/panned concentrate surveys, minor reconnaissance gridding, sampling and ground magnetic follow-up of an airborne magnetic response.

Analytical Techniques

Regional soil, stream sediment and panned concentrate samples were dried, crushed and pulverized or seived to -80 mesh and despatched to Comlabs for analysis for copper, lead, zinc, silver and tin. Analysis for basemetals was by AAS after hydrochloric acid digestion and tin by XRF.

The regional stream samples were analyzed for the following additional elements - gold, nickel and chromium and regional soil samples (airmagnetic follow up) for gold, nickel, cobalt,

chromium and tungsten.

Check assays on every twentieth sample were carried out by Amdel in Adelaide.

Stream Geochemistry

A regional stream sediment program collecting -80 mesh and panned concentrate samples was completed over the greater part of EL 4/78. A total of 152 samples were collected during the program approximately one third of which were samples generated from detailed follow up of initial results (Enclosures 2 to 6, Appendix 1).

Weakly anomalous values occur within the relinquished areas however none warranted follow up surveys due to their isolated nature.

Geophysics

Results were received from an airborne magnetic survey (line spacing 500 meters) conducted by Geoex in conjunction with the Tasmanian Mines Department late in 1982 (Enclosure 7). Several anomalies were identified by Amoco as being of potential interest one of which Anomaly E lies within the relinquished area. Follow up surveys were conducted by Mitre Geophysics during late 1982 using a Geometrics G816 magnetometer (Appendix 2). A 200 nanotesla response was delineated on two traverse lines associated with sampling quartzites and siltstones. A 250 meter reconnaissance soil line was established over the magnetic feature sampling at 25 meter intervals. All values are included (Appendix 3). Coincident with Anomaly E are well defined but weakly anomalous copper, lead and zinc values over 100 meters. Tin values for the same zone were low.

EXPLORATION POTENTIAL

It is considered the area being relinquished has little potential for a large economic mineral deposit.

SIGNED: N Smyth-King for .....

P.A. JONES

013

384020

APPENDIX 1

STREAM SEDIMENT GEOCHEMISTRY - Analytical Results

020

384021

# COMLABS Pty. Ltd.

COMPUTERISED ANALYTICAL LABORATORIES

Head Office and
Central Laboratory
305 SOUTH ROAD,
MILE END SOUTH
STH. AUST. 5031
TEL.: (08) 43 5722
TELEX: AA89323

NATA REGISTERED No. 1526

OUR REF.: COM 830360

YOUR REF.: O/N E 9358 Des. 4374

Mr. P. Jones,
Amoco Minerals Aust. Co.,
61 Counsel Street,
ZEEHAN TAS 7469,

9.3.83

Dear Phil,

RE: JOB COM 830360

Enclosed are the assays for the samples delivered to our laboratory on the 28th February 1983.

Yours sincerely,
COMLABS PTY LTD

per :

c.c.: Mr. S. Fowler

021

384022

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COMPUTERISED ANALYTICAL LABORATORIES



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# ANALYTICAL REPORT

JOB COM830360 O/N : 4374

Results in ppm Stream Sediments

| SAMPLE | Cu | Pb | Zn | Ni | Cr | Ag | Au |
|---|---|---|---|---|---|---|---|
| 92170 A | 4 | 14 | 20 | <4 | 8 | <1 | <0.05 |

022

384023

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# ANALYTICAL REPORT

JOB COM830360 O/N : 4374

Results in ppm Stream Sediments

| SAMPLE | Cu | Pb | Zn | Ni | Cr | Ag | Au |
|---|---|---|---|---|---|---|---|
| 92170 B | 4 | 14 | 12 | 6 | 40 | <1 | <0.05 |

023

384024

# COMLABS Pty. Ltd.

COMPUTERISED ANALYTICAL LABORATORIES

Head Office and Central Laboratory
305 SOUTH ROAD,
MILE END SOUTH
STH. AUST. 5031
TEL.: (08) 43 5722
TELEX: AA89323

NATA REGISTERED No. 1526

OUR REF.: COM 830546

YOUR REF.: O/N E 9369 Des. 4375

Mr. G. Kary,
Amoco Minerals Aust. Ltd.,
61 Counsel Street,
ZEEHAN TAS 7469,

6.4.83

Dear Greg,

RE: JOB COM 830546

Enclosed are the assays for the samples delivered to our laboratory on the 24th March 1983.

Yours sincerely,
COMLABS PTY LTD

per :

P R Harvey

c.c.: Mr. B. Roxburgh

024

384025

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# ANALYTICAL REPORT

JOB COM830546 O/N : 4375

Results in ppm Stream Sediments

| SAMPLE | Cu | Pb | Zn | Ag | Au | Ni | Cr | Sn |
|---|---|---|---|---|---|---|---|---|
| 92206 A | 10 | 16 | 22 | 1 | <0.05 | <4 | 6 | 6 |
| 92214 A | 22 | 65 | 70 | 1 | <0.05 | 20 | 20 | 4 |
| 92217 A | 16 | 42 | 36 | 1 | <0.05 | <4 | 18 | 6 |
| 92218 A | 24 | 40 | 44 | 1 | <0.05 | 8 | 16 | 4 |
| 92219 A | 14 | 24 | 36 | 1 | <0.05 | <4 | 12 | <4 |
| 92220 A | 14 | 28 | 42 | 1 | <0.05 | 6 | 6 | 4 |

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# ANALYTICAL REPORT

JOB COM830546 O/N : 4375

Results in ppm Stream Sediments

| SAMPLE | Cu | Pb | Zn | Ag | Au | Ni | Cr | Sn |
|---|---|---|---|---|---|---|---|---|
| 92251 A | 4 | 10 | 18 | 1 | <0.05 | <4 | 4 | <4 |
| 92252 A | 2 | 4 | 16 | 1 | <0.05 | <4 | 18 | 4 |

.../ 3

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384027

# ANALYTICAL REPORT

JOB COM830546 O/N : 4375

Results in ppm Stream Sediments

| SAMPLE | Cu | Pb | Zn | Ag | Au | Ni | Cr | Sn |
|---|---|---|---|---|---|---|---|---|
| 92253 A | 6 | 18 | 20 | 1 | <0.05 | <4 | 20 | 4 |
| 92254 A | 8 | 16 | 26 | 1 | <0.05 | 4 | 14 | 4 |
| 92256 A | 14 | 80 | 50 | 1 | <0.05 | 22 | 16 | 4 |
| 92261 A | 6 | 18 | 24 | 1 | <0.05 | <4 | 12 | 6 |
| 92265 A | 12 | 24 | 20 | 1 | <0.05 | 10 | 22 | <4 |
| 92266 A | 18 | 32 | 28 | 1 | 0.10 | 14 | 20 | 6 |
| 92267 A | 10 | 18 | 18 | 1 | 0.10 | 8 | 16 | <4 |
| 92268 A | 46 | 30 | 100 | 1 | <0.05 | 60 | 30 | <4 |
| 92269 A | 38 | 44 | 70 | 2 | <0.05 | 32 | 28 | <4 |

027

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384028

# ANALYTICAL REPORT

JOB COM830546 O/N : 4375

Results in ppm Stream Sediments

| SAMPLE | Cu | Pb | Zn | Ag | Au | Ni | Cr | Sn |
|---|---|---|---|---|---|---|---|---|
| 92206 B | 4 | 6 | 16 | 1 | 0.10 | 10 | 65 | <4 |
| 92214 B | 6 | 22 | 30 | 1 | <0.05 | 20 | 75 | 8 |
| 92217 B | 6 | 16 | 30 | <1 | <0.05 | 14 | 65 | 6 |
| 92218 B | 4 | 8 | 20 | <1 | <0.05 | 6 | 70 | <4 |
| 92219 B | 4 | 8 | 24 | <1 | <0.05 | 12 | 105 | 6 |
| 92220 B | 4 | 10 | 30 | <1 | <0.05 | <4 | 60 | 4 |

028

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384029

# ANALYTICAL REPORT

JOB COM830546 O/N : 4375

Results in ppm Stream Sediments

| SAMPLE | Cu | Pb | Zn | Ag | Au | Ni | Cr | Sn |
|---|---|---|---|---|---|---|---|---|
| 92251 B | 4 | <4 | 10 | <1 | <0.05 | 4 | 180 | 4 |

029

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384030

# ANALYTICAL REPORT

JOB COM830546 O/N : 4375

Results in ppm Stream Sediments

| SAMPLE | Cu | Pb | Zn | Ag | Au | Ni | Cr | Sn |
|---|---|---|---|---|---|---|---|---|
| 92252 B | 2 | <4 | 10 | <1 | <0.05 | <4 | 80 | <4 |
| 92253 B | 2 | <4 | 10 | <1 | <0.05 | <4 | 95 | <4 |
| 92254 B | 6 | 4 | 20 | <1 | <0.05 | 8 | 95 | <4 |
| 92255 B | 16 | 26 | 120 | <1 | <0.05 | 44 | 32 | 4 |
| 92256 B | 8 | 34 | 40 | <1 | <0.05 | 20 | 50 | <4 |
| 92261 B | 4 | 6 | 16 | <1 | <0.05 | 6 | 95 | <4 |
| 92265 B | 8 | 4 | 26 | <1 | <0.05 | 4 | 36 | <4 |
| 92266 B | 8 | 4 | 22 | <1 | 0.10 | 6 | 50 | <4 |
| 92267 B | 6 | 6 | 22 | 1 | <0.05 | 10 | 65 | <4 |
| 92268 B | 28 | 12 | 90 | <1 | <0.05 | 40 | 55 | 4 |
| 92269 B | 12 | 10 | 36 | <1 | <0.05 | 14 | 50 | <4 |

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# ANALYTICAL REPORT

JOB COM830546 O/N : 4375

| | | | |
|---|---|---|---|
| Method of Analysis : | Cu Pb Zn Ni | : | AAS1 |
| | Cr | : | AAS2 |
| | Ag | : | AAS3 |
| | Au | : | AAS5A |
| | Sn | : | XRF1 |

031

384032

APPENDIX 2

GROUND FOLLOW UP OF AEROMAGNETIC ANOMALY

by Mitre Geophysics

052

384033

MITRE GEOPHYSICS PTY LTD
MINERAL EXPLORATION AND ENGINEERING CONSULTANTS
DUGGS LANE ELLIOTT TASMANIA 7325 PHONE 004-363143

# GROUND FOLLOW UP

# OF

# AEROMAGNETIC ANOMALIES NEAR ZEEHAN, TAS.

# FOR

# AMOCO MINERALS

Several aeromagnetic anomalies from the 1982 Geoex survey of Western Tasmania were identified by S. Collins as being of potential interest. These have been labelled alphabetically from A to G (not in order of merit).

The centres of these anomalies were marked on air photos and traverses were made across three of them: E, F, and I. A flagged tree (on open ground) was used as a reference point for each anomaly, and positioning was effected by either tape and compass or (more efficiently) by 'topolite' and compass.

None of the anomalies were fully defined (and no corrections were made for diurnal variation) but the following amplitudes were recorded:

| Anomaly | Value (nt) |
|---|---|
| E | 230 |
| F | 750 |
| I | 450 |

NB. LYING WITHIN RELINQUISHED AREA

J. R. Bishop

Jan. 1983.

033

384034

# ANOMALY 'E'

Aeromagnetic Survey :

amplitude : 45 - 60 nt

approx. location of max. value : 368,400 mE
5,348,400 mN

approx strike : 350° (AMG)

Ground Follow Up :

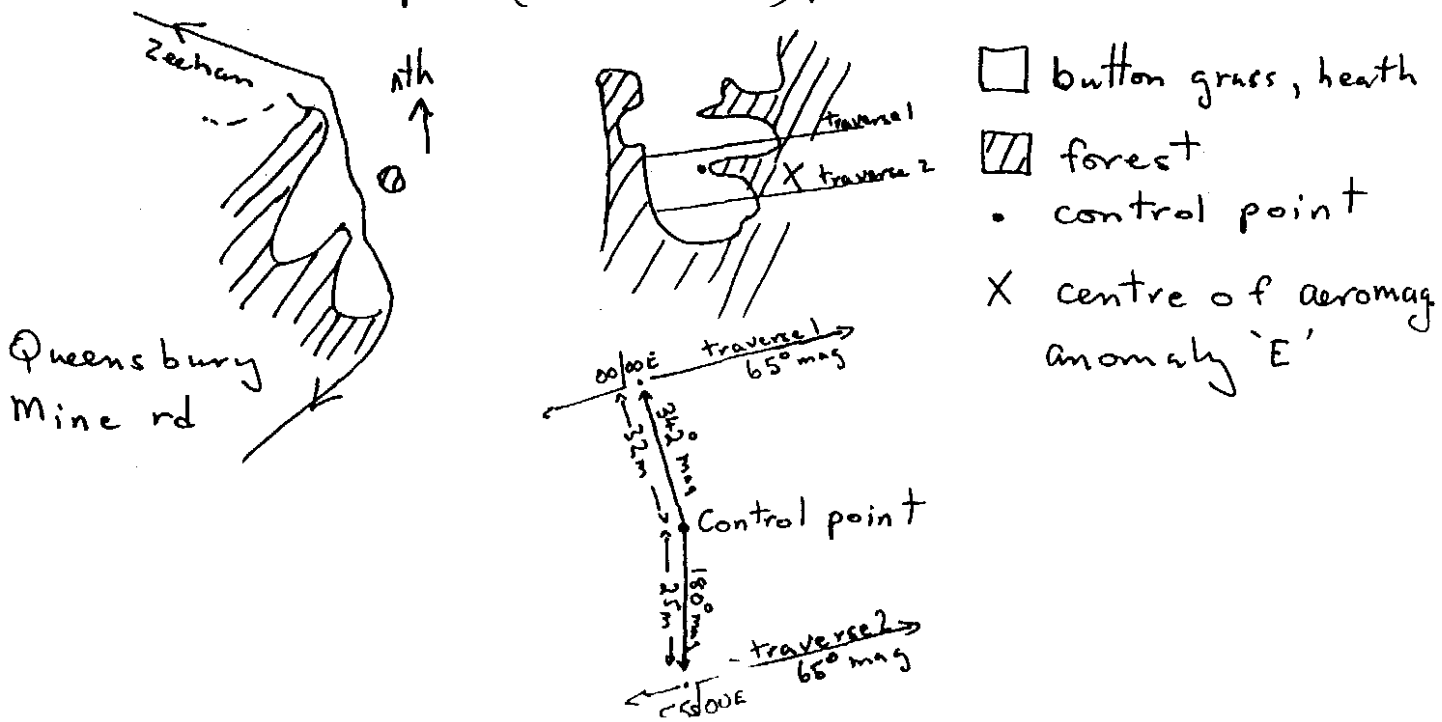
two traverses bearing 65° mag (53° AMG)

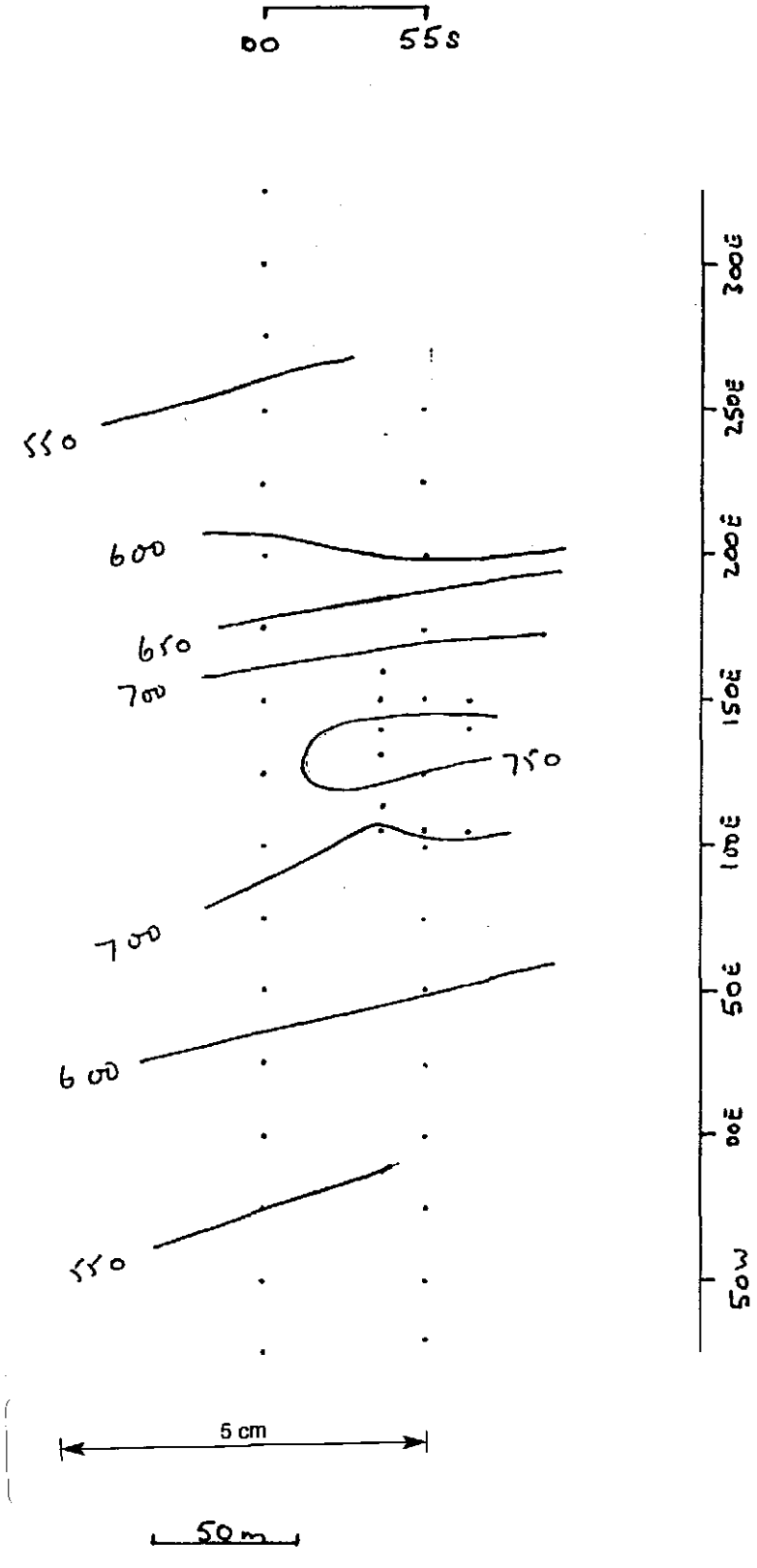
00 (traverse 1) : 75 W to 325 E

55 S (traverse 2) : 70 W to 250 E

Control point for traverses : a flagged (red), young eucalypton edge of forest.

sketch from air photo (not to scale):





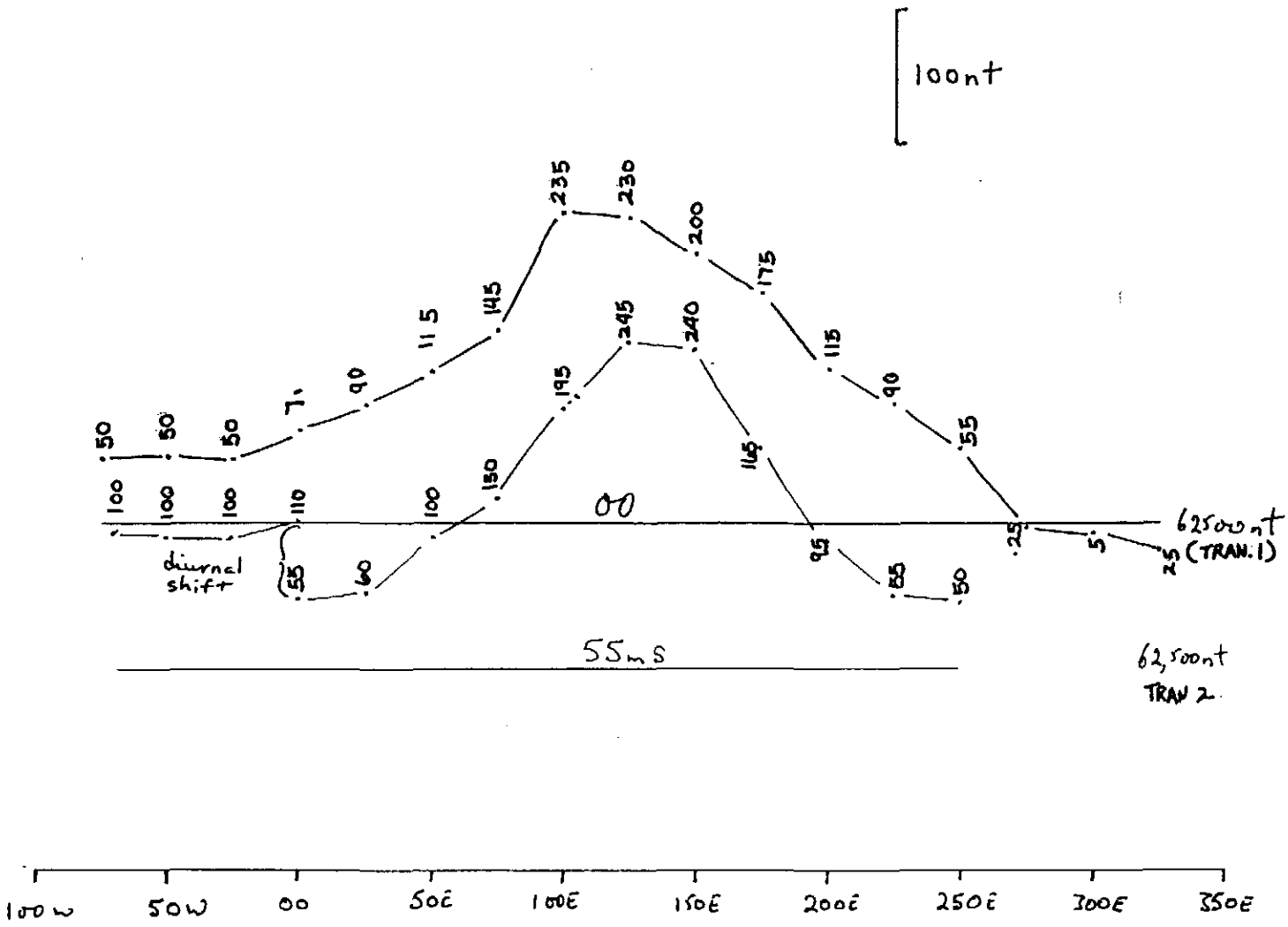

note: • data point

add 62,000 nt to all contours.

ANOMALY E

plan map

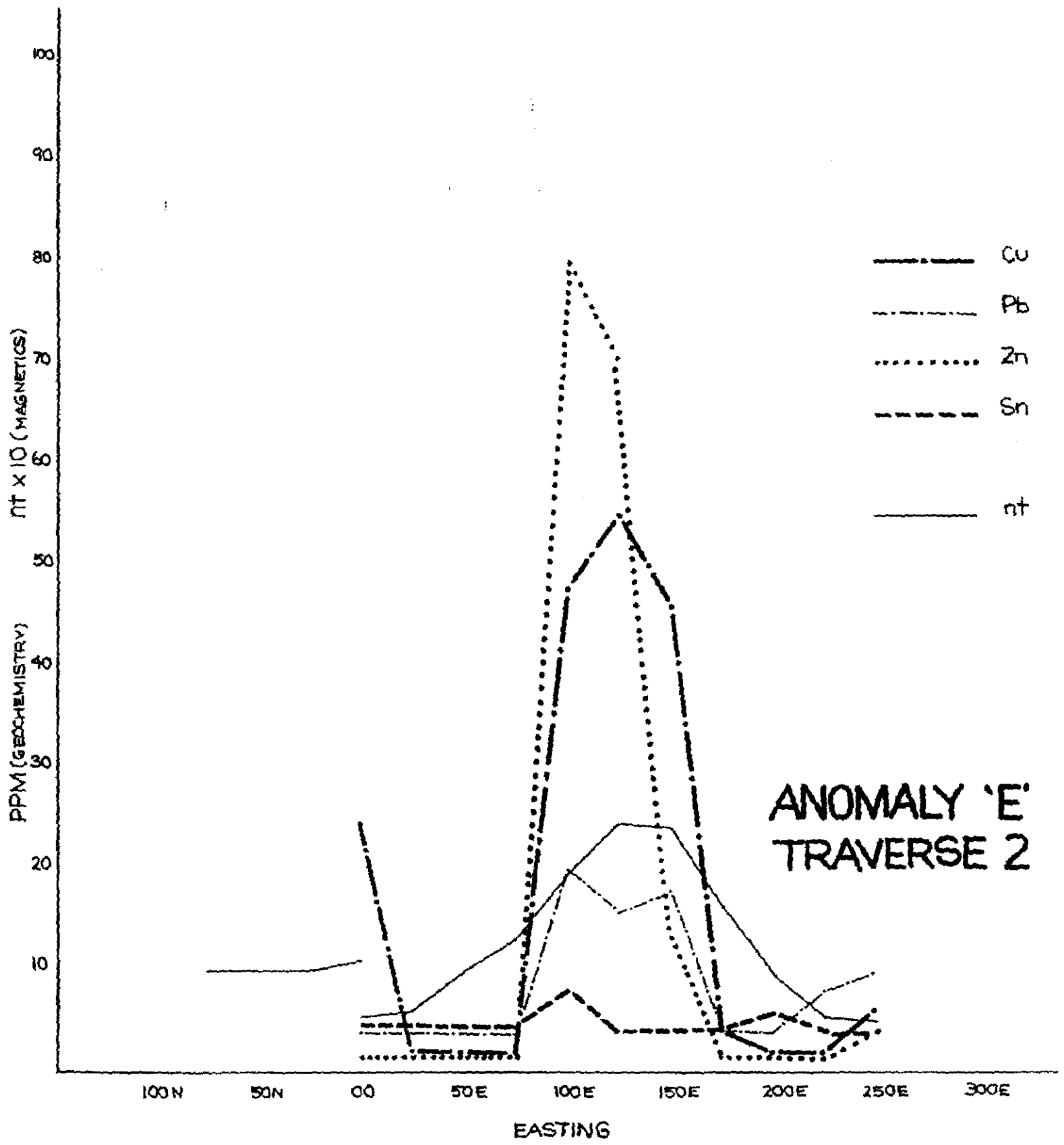
contour interval




ANOMALY E
Profiles

036

384037


PPM (GEOCHEMISTRY)
nt x 10 (MAGNETICS)
10
20
30
40
50
60
70
80
90
100
Cu
Pb
Zn
Sn
nt
ANOMALY 'E'
TRAVERSE 2
100N
50N
00
50E
100E
150E
200E
250E
300E
EASTING

037



APPENDIX 3

RECONNAISSANCE SOIL GEOCHEMISTRY - ANOMALY E

033

384039

# COMLABS Pty. Ltd.

COMPUTERISED ANALYTICAL LABORATORIES

Head Office and
Central Laboratory
305 SOUTH ROAD,
MILE END SOUTH
STH. AUST. 5031
TEL.: (08) 43 5722
TELEX: AA89323

NATA REGISTERED No. 1526

OUR REF.: COM 822662

YOUR REF.: Despatch 4365 O/N E 9121

Mr. J. Suppree,
Amoco Minerals Aust. Ltd,
61 Counsel Street,
ZEEHAN. TAS. 7469,

4.1.83

Dear Jonathan,

RE: JOB COM 822662

Enclosed are the assays for the samples delivered to our laboratory on the 23rd December, 1982.

Yours sincerely,
COMLABS PTY LTD

per :

c.c.: NORTH SYDNEY.

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES



384040
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# ANALYTICAL REPORT

JOB COM822662 O/N : 4365

Results in ppm

| SAMPLE | | Cu | Pb | Zn | Ni | Co | Cr | Ag |
|---|---|---|---|---|---|---|---|---|
| TRAVERSE 2 00 | 91701 | 24 | <4 | <2 | <4 | <4 | 44 | <1 |
| ANOMALY 'E' 25 | 91702 | 2 | <4 | <2 | <4 | <4 | 28 | <1 |
| 50 | 91703 | 2 | <4 | <2 | <4 | <4 | 34 | <1 |
| 75 | 91704 | 2 | <4 | <2 | 8 | <4 | 46 | <1 |
| 100 | 91705 | 48 | 20 | 80 | 80 | <4 | 40 | <1 |
| 125 | 91706 | 55 | 16 | 70 | 60 | 12 | 36 | <1 |
| 150 | 91707 | 46 | 18 | 14 | 16 | <4 | 38 | <1 |
| 175 | 91708 | 4 | <4 | <2 | 10 | <4 | 55 | <1 |
| 200 | 91709 | 2 | <4 | <2 | <4 | <4 | 65 | <1 |
| 225 | 91710 | 2 | 8 | <2 | 6 | <4 | 32 | <1 |
| 250 | 91711 | 6 | 10 | 4 | 10 | <4 | 70 | <1 |

040

COMLABS Pty. Ltd.
COMPUTERISED ANALYTICAL LABORATORIES



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# ANALYTICAL REPORT

JOB COM822662 O/N : 4365

Results in ppm

TRAVERSE 2
ANOMALY 'E'

| | SAMPLE | Sn | W | Au |
|---|---|---|---|---|
| 00 | 91701 | <4 | 10 | <0.05 |
| 25 | 91702 | 4 | <10 | <0.05 |
| 50 | 91703 | <4 | <10 | <0.05 |
| 75 | 91704 | <4 | <10 | <0.05 |
| 100 | 91705 | 8 | <10 | <0.05 |
| 125 | 91706 | <4 | <10 | <0.05 |
| 150 | 91707 | <4 | <10 | <0.05 |
| 175 | 91708 | <4 | <10 | <0.05 |
| 200 | 91709 | 6 | <10 | <0.05 |
| 225 | 91710 | <4 | <10 | <0.05 |
| 250 | 91711 | <4 | <10 | <0.05 |

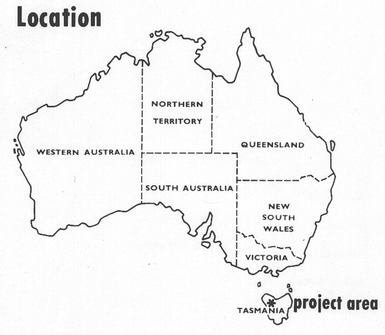
350000E
360000E
370000E
145°20'E
145°30'E
41°50'S
5360000N
5350000N
42°00'S

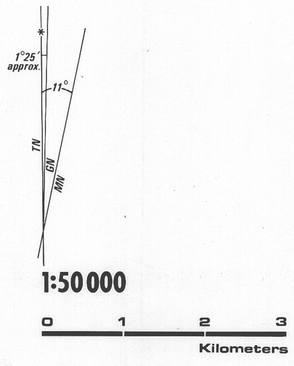
Lead Blocks
Serpentine Hill
Renison Bell
Dundas Cuni
McKimmie
Grand Prize
Big Ben
Montana SL.
Crown
Zeehan Western
Junction
Oonah
Montana
Despatch
Doric
Zeehan
Stormsdown
New Mt. Zeehan
Florence
Argent
Tenth Legion
Kynance
Silver Stream
Sylvester
Nike
Silver King
Central Balstrup
Black Jack's
Comstock
Boss
Susanite
Britannia
Sth. Comstock
Cumberland Lake
Globe
Stonehenge
Nth. Colonel
Sprot
Montagu
Nth. Austral
Maxim
Zeehan Bell
Monte Cristo
North Austral
Austral
Mariposa
Nth. Tasmanian
Tasmanian
Grubbs
Nubeena
Sth. Nubeena
Swansea
Nubeena
Silver Duke
Oceana
Oceana
Sunny Corner
Bonnockburn
Remine
Little
Mt Zeehan
EL 4/78 AREA 1
RELINQUISHED
River
Pyramid
Henty
SOUTHERN
OCEAN
Myrtle and
Myrtle Extended
Baura
Grieve
Grieve Siding
AREA 2
RELINQUISHED
Rose Valley
Queensberry Mine
Henty
River
Queenstown

## Symbols

- Mine
- Established fault
- Fault–position approximate
- Fault inferred
- Geological boundary–accurate
- Geological boundary–approximate
- Anticline showing plunge
- Syncline showing plunge

## Location




Compiled from enlargement of Zeehan 1:63360 scale and Strahan 1:50000 scale geologic maps.
Transverse Mercator Projection

5 cm

## Geology

| | | | | | |
|---|---|---|---|---|---|
| QUATERNARY | 6 | 1 | Quartz porphyry talus | 65 | 14 | Misery Conglomerate |
| | 6 | 2 | Older alluvium marsh deposits | 63 | 15 | Climie Formation |
| TERTIARY | 6 | 3 | Sand, silt and clay | 60 | 16 | Comet Formation |
| PERMIAN | 67 | 4 | Coal, lacustrine sediments | CAMBRIAN 62 | 17 | Fernfields Formation |
| DEVONIAN | 35 | 5 | Bell Shale | 57 | 18 | Dundas Group Unassigned |
| | 68 | 6 | Florence Quartzite | 64 | 19 | Crimson Creek Formation |
| SILURIAN | 71 | 7 | Austral Creek Siltstone | 61 | 20 | Cambrian Unassigned |
| | 70 | 8 | Keel Quartzite | PRECAMBRIAN 59 | 21 | Oonah Quartzite and Slate |
| | 69 | 9 | Amber Slate | 10 | 22 | Jurassic Dolerite |
| | 66 | 10 | Crotty Quartzite | IGNEOUS ROCKS 14 | 23 | Granite |
| ORDOVICIAN | 33 | 11 | Gordon Limestone | 12 | 24 | Quartz porphyry |
| | 19 | 12 | Moina Sandstone | 48 | 25 | Gabbro, norite and dolerite |
| | 17 | 13 | Mt. Zeehan Conglomerate | 46 | 26 | Serpentinite and pyroxenite |

384042

Amoco Minerals Australia Company

EL 2/74

| | | | |
|---|---|---|---|
| Project | ZEEHAN | | Nº A-78-60 |
| Project Partner | | | ELECTROLYTIC ZINC |

Zeehan EL4/78

# GEOLOGY AND PROSPECT LOCATION

| | | | | | |
|---|---|---|---|---|---|
| Map Ref. ANG | K-55-5 | Latitude | 42°00'S | Longitude | 145°20'E |
| Surveyed | | Date | | Scale | 1:50000 |
| Drawn | R. Smyth-King | Date | December 1978 | Drawing Nº | M79-1231 |

Report 398

123

Enclosure 1

EL 4/78
Amoco

EL 15/76
CSR

EL 15/76
Amoco/CSR JV Area

AREA 1
RELINQUISHED

AREA 2
RELINQUISHED

Zeehan
Granville Harbour
Comstock
Renison Bell
Rayna
Dundas
Misery Hill
Black Hill
Carbine Hill
Mt. Razorback
Kosminski Hill
Oonah Hill
McIvor Hill
Stoneheng
Mt. Zeehan
Oceana
Old smelter
Lake Mallanna
Henty Bridge
Strahan
Queenstown
Professor Plateau
Lodders Lookout
Howards

HIGHWAY
MURCHISON
ZEEHAN
Old Line
Railway
Road
Creek
RIVER
RANGE
OCEAN

92106 92105 92249 92250 92125 92126 92107 92108 92109 92110 92104 92113 91596 91595 92112 92111 92101 92102 92114 92115 92116 92117 88043 88044 92118 92119 88167 88168 92129 88048 88045 88047 92190 174 88169 173 170 172 171 175 92121 92122 92120 92123 92124 88159 160 66 88158 88052 88050 88051 88049 88048 92131 88161 92133 92132 92160 88036 88035 88037 88034 91653 91654 91652 92167 88032 88033 92155 92156 88031 92148 92149 92147 88030 88029 92146 92145 92144 92150 92143 92142 92141 88027 88028 92161 92162 92163 92140 92138 92139 92168 92169 92171 92172 92151 92152 92154 92153 92195 92197 92196 92199 92226 92225 92222 92265 92266 92267 92268 92269 92278 92277 92276 92275 92274 92220 92219 92218 92217 92214 92270 92271 92260 92262 92263 92264 92257 92258 92259 92255 92256 92209 92206 92252 92251 92254 92253 92204

5365000 N
5360000 N
5355000 N
5350000 N
5345000 N AMG
355000 E AMG
360000 E
365000 E
370000 E
145°15' E
145°20' E
145°25' E
41°55' S
42°00' S

Location




TN 11° MN

5 cm

1:25000

0 1 2 kilometers

**Notes**

Stream sediment sample location and number 92259

Base compiled from 1:15840 scale Pieman Project mapping series

Topographic contours in feet

384043

Amoco Minerals Australia Company

84-2174

| | | | |
|---|---|---|---|
| Project | ZEEHAN | | Nº A·78·60 |
| Project Partner | | | ELECTROLYTIC ZINC |

Zeehan EL 4/78

STREAM SEDIMENT GEOCHEMISTRY
**SAMPLE LOCATIONS**

| | | | | | |
|---|---|---|---|---|---|
| Map Ref. ANG | K-55-5 | Latitude | 42°00'S | Longitude | 145°20'E |
| Surveyed | Amoco | Date | 1983 | Scale | 1:25000 |
| Drawn Geodfng | R.S-K., S.F. | Date | July 1983 | Drawing Nº | M83-2084 |

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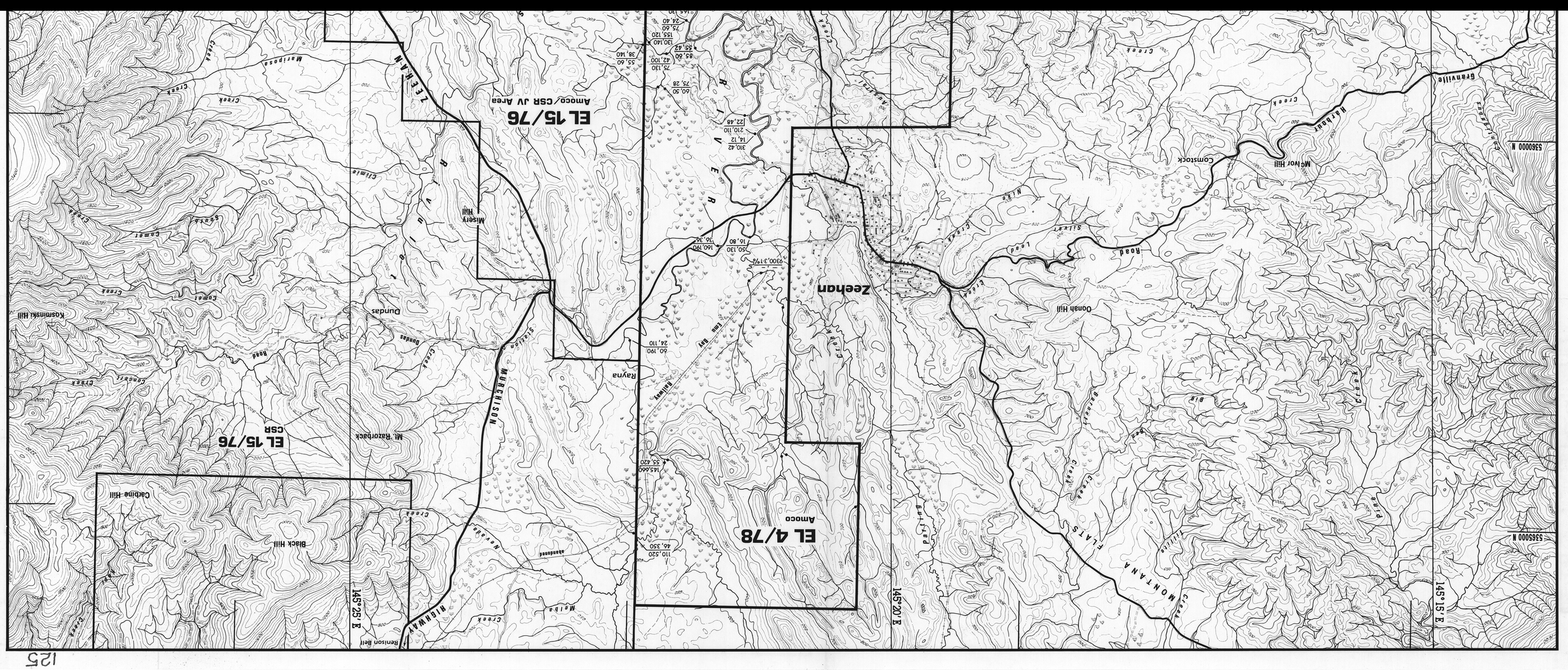

EL 15/76
Amoco/CSR JV Area
EL 15/76
CSR
EL 4/78
Amoco
Zeehan
Renison Bell
Cabbage Hill
Black Hill
Mt. Razorback
Kosminski Hill
Dundas
Misery Hill
Comstock
Mt Ivor Hill
Donah Hill
Granville
Rayna
Tasmania
Western Explorer
Zeehan Highway
Henty River
Montana Flats
Road
Creek
Marlpose
Cattle
Camel
Cemetery
Heemskirk
Burgess
Bird
Bear
Burying
Pipeline
Abandoned
Mobbs
Lead
Silver
Hatchet
Fall
Bay
Cliffs
145°25' E
145°20' E
145°15' E
5365000 N

126

EL 4/78
Amoco

EL 15/76
CSR

EL 15/76
Amoco/CSR JV Area

AREA 1
RELINQUISHED

AREA 2

RELINQUISHED

RELINQUISHED

Zeehan
Renison Bell
Rayna
Dundas
Oonah Hill
McIvor Hill
Comstock
Granville
Granville Harbour
Mt. Zeehan
Oceana
Old smelter
Misery Hill
Mt. Razorback
Black Hill
Carbine Hill
Kosminski Hill
Howards
Queenstown
Professor Plateau
Lodders Lookout
Lake Mallanna
Henty Bridge
Strahan

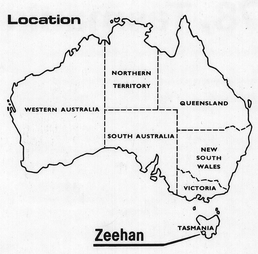
MONTANA FLATS
LITTLE HENTY RIVER
HENTY RIVER
PROFESSOR RANGE
DUNDAS
ZEEHAN HIGHWAY
MURCHISON HIGHWAY
WESTERN RIVER
SOUTHERN OCEAN

Tributo Creek
Pine Creek
Big Creek
Barnes Creek
Pasfield Creek
Melba Creek
Nevada Creek
Trial Creek
Dundas Creek
Comet Creek
Mariposa Creek
Silver Lead Creek
Nine Mile Creek
Harbour Creek
Stonehenge Creek
Mclvor Creek
Oceana Creek
Pyramid Creek
Chevron Creek
Shell Creek
Eden Creek
Bluestone Creek
Badger Creek
Tullah Creek
Geologist Creek
Mackintosh Creek
Farrell Creek
Amber Creek
Professor Creek
Melody Creek
Majority Ridge
Tom Creek
Berry Creek
Westerway Creek
Fossil River
Old Line Road
Queenstown Track
Emu Bay Railway
Abandoned Railway

5365000 N
5360000 N
5355000 N
5350000 N
5345000 N
145°15'E
145°20'E
145°25'E
41°55'S
42°00'S
355000 E
360000 E
365000 E
370000 E
ANG

× .55 / × .20
× .12 / × .70
× .42 / × .24
× .32 / × .20
× .105 / × .36
× .20 / × .44
× .24 / × .175
× .18 / × .38
× .18 / × .75
× .8 / × .34
× .20 / × .95
× .10 / <0·05, 55
<0·05, 38
× .70 / × .80
× .8 / <0·05, 30
× .4 / × .90
× .18 / × .210
× .18 / × .75
× .44 / × .20
0·25, 140 / 0·3, 115
0·4, 170 / × .32
0·25, 100 / × .80
× .4 / 0·1, <4
0·1, 6 / 0·1, <4
0·1, <4 / <.4
0·1, 6 / × .4
0·05, <4 / × .10
× .6 / 0·1, <4

Location




TN 11° MN

5 cm

1:25000

0 1 2 kilometers

## Notes

Top results denoted from stream sediment sampling
Bottom results from panned concentrate
Order of results - gold, tin
Only values considered anomalous shown -
_0·05 and greater for gold, 30 and greater for tin
All other results appended to this report
Values in ppm

Base compiled from 1:15840 scale Pieman Project mapping series

Topographic contours in feet

AMOCO

384045

Amoco Minerals Australia Company

EL-2174

| | | | |
|---|---|---|---|
| Project | ZEEHAN | | Nº A·78·60 |
| Project Partner | | | ELECTROLYTIC ZINC |
| Zeehan EL 4/78 | | | |
| STREAM SEDIMENT GEOCHEMISTRY | | | |
| **GOLD, TIN** | | | |
| Map Ref. ANG | K-55-5 | Latitude | 42°00'S Longitude 145°20'E |
| Surveyed | Amoco | Date | 1983 Scale 1:25000 |
| Drawn Geoffrey R. S-K., S. F. | | Date | July 1983 Drawing NºM83-2086 |

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126

Enclosure 4

EL 4/78
Amoco

EL 15/76
CSR

EL 15/76
Amoco/CSR JV Area

AREA 1
RELINQUISHED

AREA 2
RELINQUISHED

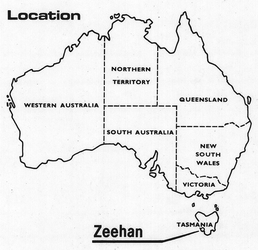
Zeehan
Rayna
Dundas
Renison Bell
Black Hill
Carbine Hill
Mt. Razorback
Kosminski Hill
Misery Hill
Oonah Hill
MT. ZEEHAN
Comstock
McIvor Hill
Granville
Granville Harbour
Stonehenge
Oceana
Old smelter
Howards
Queenstown
Professor Plateau
Lodders Lookout
Lake Mallanna
Henty Bridge
Strahan

MONTANA FLATS
LITTLE HENTY
HENTY RIVER
PROFESSOR RANGE
DUNDAS
ZEEHAN HIGHWAY
MURCHISON HIGHWAY
WESTERN RIVER
SOUTHERN OCEAN

5365000 N
5360000 N
5355000 N
5350000 N
5345000 N
ANG
145°15' E
145°20' E
145°25' E
355000 E
360000 E
365000 E
370000 E
41°55' S
42°00' S

130, <1
24, <1
6,2
4, <1
130, <1
32, <1
200,39
12,2
4, <1
8,2
N/S
46,3
4,1
55,10
28,6
6,2
N/S
32,2
4, <1
85,12
830,20
85,11
440,11
28,3
30,2
12,1
30,2
22,5
10,1
34,9
10,2
115,13
140,9
65,15
16,2
55,9
90,7
8, <1
40,3
38,2
12, <1
32,8
2, <1
8,1
105,23
170, <1
20, <1

Location




TN 11° MN

5 cm

1:25000

0 1 2 kilometers

**Notes**

Top results denoted from stream sediment sampling
Bottom results from panned concentrate
Order of results - copper, silver
Only values considered anomalous shown -
ie. 50 and greater for Cu, 2 and greater for Ag
All other results appended to this report
Values in ppm

Base compiled from 1:15840 scale Pieman Project mapping series

Topographic contours in feet

AMOCO

384046

Amoco Minerals Australia Company

84-2174

| | | | |
|---|---|---|---|
| Project | ZEEHAN | | Nº A-78-60 |
| Project Partner | | | ELECTROLYTIC ZINC |
| Zeehan EL 4/78 | | | |
| STREAM SEDIMENT GEOCHEMISTRY **COPPER, SILVER** | | | |
| Map Ref. ANG | K-55-5 | Latitude | 42°00'S Longitude 145°20'E |
| Surveyed | Amoco | Date | 1983 Scale 1:25000 |
| Drawn Geodfing R.S-K., S.E. | | Date | July 1983 Drawing NºM83-2087 |

Report 398

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Enclosure 5

# EL 4/78
Amoco

# EL 15/76
CSR

# EL 15/76
Amoco/CSR JV Area

# AREA 1
RELINQUISHED

# AREA 2

RELINQUISHED

RELINQUISHED

Zeehan

MT. ZEEHAN

Oonah Hill

Mt. Razorback

Black Hill

Carbine Hill

Rayna

Dundas

Misery Hill

Kosminski Hill

Renison Bell

Oceana

Professor Plateau

Lodders Lookout

Queenstown

Granville

Comstock

McIvor Hill

Granville Harbour

Howards

Henty Bridge

Strahan

Lake Mallanna

Pieman River

Henty River

Zeehan Highway

Murchison Highway

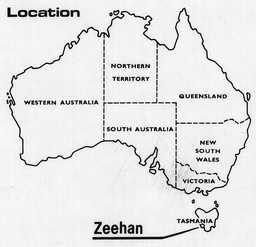
Little Henty River

Professor Range

Southern Ocean

145°15'E
145°20'E
145°25'E
41°55'S
42°00'S
5365000 N
5360000 N
5355000 N
5350000 N
5345000 N
355000 E
360000 E
365000 E
370000 E

## Location




TN 11° MN

5 cm

1:25000

0 1 2 kilometers

## Notes

Top results denoted from stream sediment sampling
Bottom results from panned concentrate
Order of results - nickel chromium
Only values considered anomalous shown -
ie. 25 and greater for Ni, 50 (ss), 200 (pc) and greater for Cr
All other results appended to this report
Values in ppm

Base compiled from 1:15840 scale Pieman Project mapping series

Topographic contours in feet

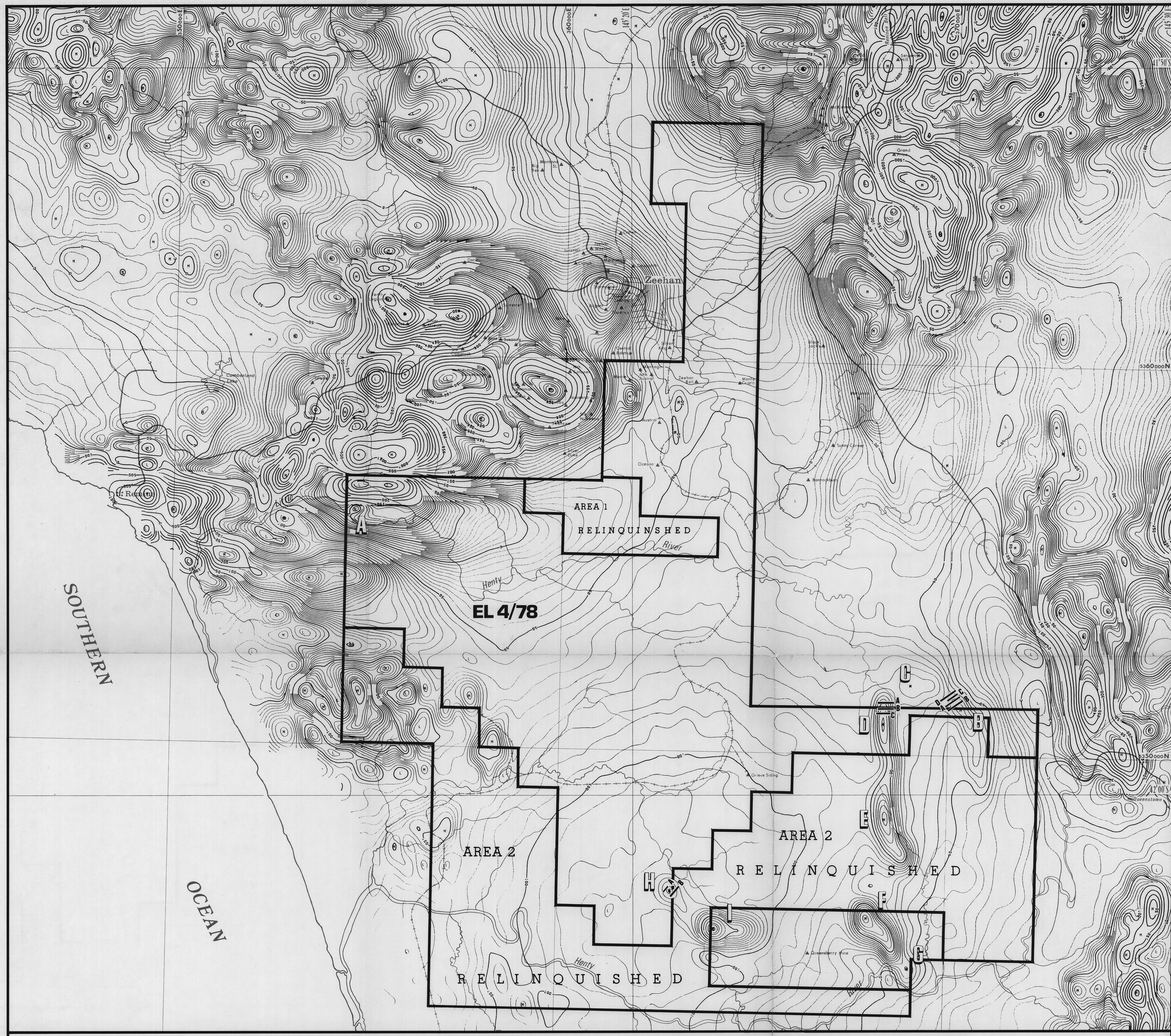
384047

Amoco Minerals Australia Company

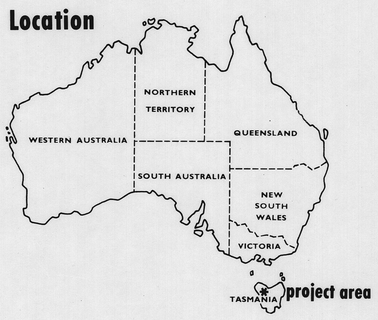
84-2174

| | | | |
|---|---|---|---|
| Project | ZEEHAN | | Nº A-78-60 |
| Project Partner | | | ELECTROLYTIC ZINC |
| Zeehan EL 4/78 | | | |
| STREAM SEDIMENT GEOCHEMISTRY NICKEL, CHROMIUM | | | |
| Map Ref. ANG | K-55-5 | Latitude | 42°00'S Longitude 145°20'E |
| Surveyed | Amoco | Date | 1983 Scale 1:25000 |
| Drawn Geodftng R.S-K., S.F. | | Date | July 1983 Drawing NºM83-2088 |

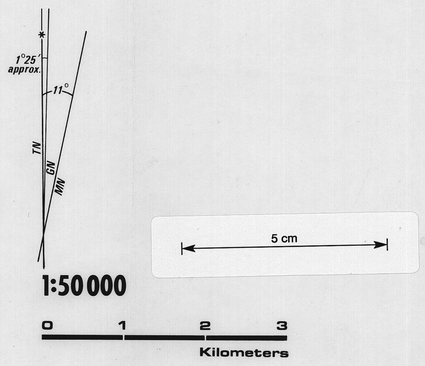
Report 398




## Location




Compiled from enlargement of Zeehan 1:63360 scale and Strahan 1:50000 scale geologic maps.
Transverse Mercator Projection




## Notes

Survey by Geoex for the Tasmanian Department of Mines, flown May 1981.
Contour interval is 5 nTesla

Magnetic anomalies selected by Amoco for follow-up

Reconnaissance ground magnetics and soil geochemistry traverses

384048

Amoco Minerals Australia Company

84-2174

| | | | |
|---|---|---|---|
| Project | ZEEHAN | | Nº A-78-60 |
| Project Partner | | | ELECTROLYTIC ZINC |
| Zeehan EL 4/78 | | | |
| **RESIDUAL TOTAL MAGNETIC INTENSITY** | | | |
| Map Ref. ANG | K-55-5 | Latitude | 42°00'S |
| Longitude | 145°20'E | | |
| Surveyed | Geoex | Date | May 1981 |
| Scale | 1:50000 | | |
| Drawn | Amoco | Date | 1983 |
| Drawing NºM83-1972 | | | |

Report 398