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**PACIFIC-NEVADA MINING PTY LTD**  
Level 11, St Georges Square, 225 St Georges Terrace  
Perth, Western Australia

**EL29/97 CYGNET**  
**ANNUAL REPORT TO 30.12.1999**

EL29/97 PT 1

See folio 64

Volume 1 of 1

00\_4412

Annual Report to 30/12/1999 - EL 29/97 - Cygnet

Pacific Nevada Pty Ltd; Turner Geological Services  
Turner, N.J. EL29/97

Prepared by N.J. Turner Geological Services Pty Ltd  
35 Lochner St, West Hobart, Tasmania 7000

14<sup>th</sup> December 1999

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## 1.0 Summary

- Relogging was carried out on 560m of diamond drill core from six, relatively shallow holes put down at the old Mt Mary mine and at Black Jack Ridge by Cyprus Minerals. The work included resampling and reanalysing 198m of core from five of the holes.
- At the old Mt Mary mine there are intervals of hydrothermal and supergene alteration which display polymetallic anomalism in gold, copper, lead, zinc, silver and arsenic. Best gold grades in drill samples are 4-5gpt. At Black Jack Ridge there is anomalism in gold and arsenic.
- Imaging and interpretation of Pacific-Nevada's previously reported, detailed aeromagnetic survey have been carried out, and the results integrated into the company's drill planning.
- Four drill holes of nominally 400m length are planned for the old Mt Mary workings.
- Drilling at Mt Mary has commenced and the first hole, CM1, was at a depth of about 200m at the time of writing.

## 2.0 Introduction

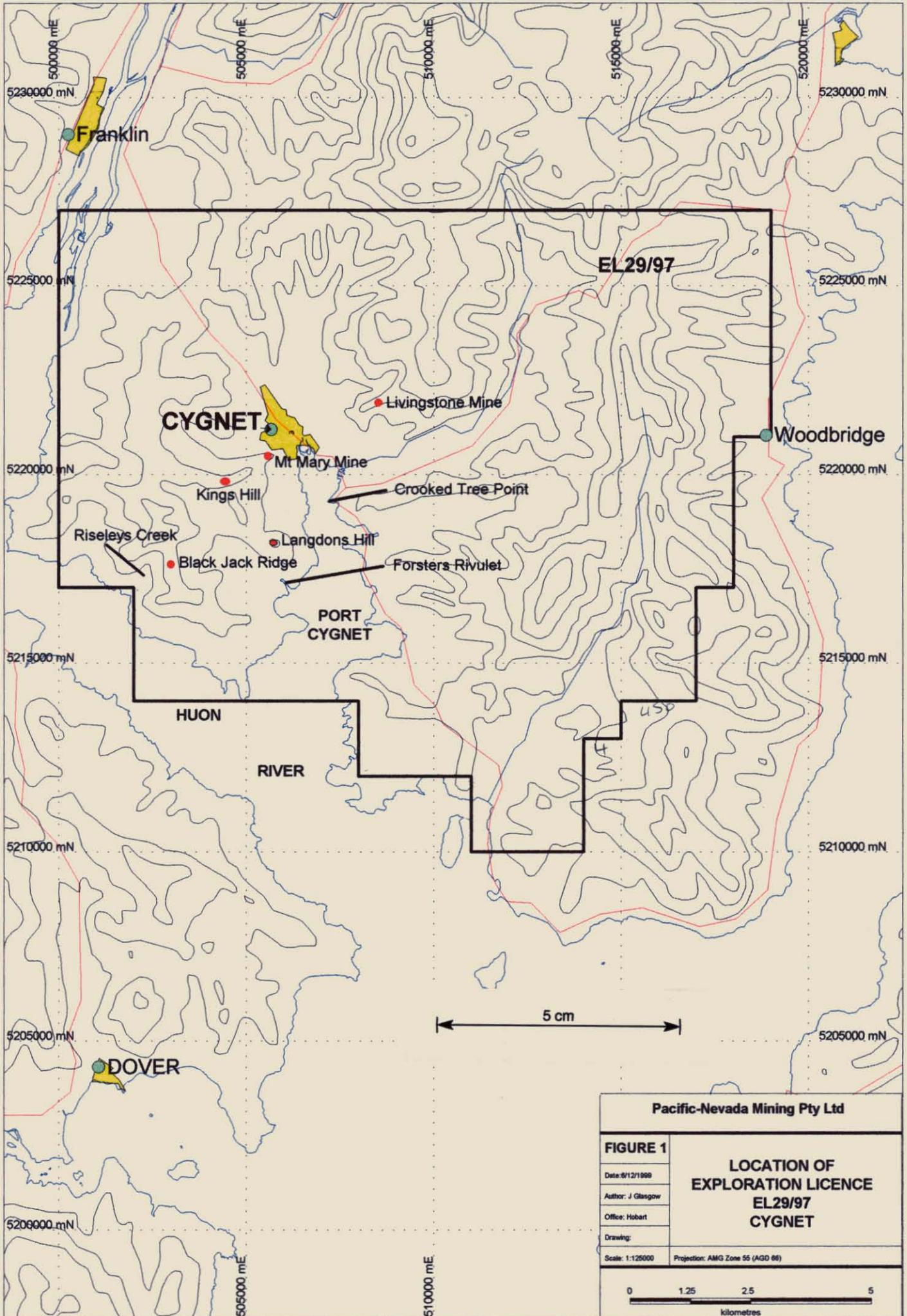
This is the second annual report relating to Pacific-Nevada's work on EL29/97 Cygnet. It should be read in conjunction with the first annual report (Reid, 1998) which outlined tenement details, exploration concepts and previous mineral exploration work. As well, the first report briefly described the detailed aeromagnetic survey that was carried out by the Company at 30m terrain clearance and 50m line spacing. The first report also presented the results of preliminary stream sediment and rock chip sampling at Langdon's Hill, which is 2km south of Cygnet.

Work during the period covered by this second annual report has focussed on studies of drill core obtained by Cyprus Minerals, on interpreting the detailed aeromagnetic survey, and on identifying new drill sites in the vicinity of the old Mt Mary mine and at Crooked Tree Point. Drilling by Pacific-Nevada near the Mt Mary workings commenced in early November 1999, and is ongoing.

## 3.0 Regional geology and exploration concepts

The Cygnet district is characterised by a large, roughly circular, aeromagnetic anomaly that has a diameter of about 15km and a complex peak to the south and south west of the town of Cygnet. The anomaly is well displayed by the 1:500,000 Total Magnetic Intensity map of Tasmania (BMR/TDM, 1988). It is unlike any of the smaller, more complicated aeromagnetic features related to Jurassic dolerite that are numerous in eastern and south eastern Tasmania.

The aeromagnetic anomaly coincides with a domal structure in the Carboniferous to Triassic Parmeener Supergroup (Farmer, 1985). The basal



<b>Pacific-Nevada Mining Pty Ltd</b>	
<b>FIGURE 1</b>	<b>LOCATION OF EXPLORATION LICENCE EL29/97 CYGNET</b>
Date: 9/12/1999	
Author: J Glasgow	
Office: Hobart	
Drawing:	
Scale: 1:125000	Projection: AMG Zone 55 (AGD 86)

formation of this supergroup, the Truro Tillite, occupies the centre of the dome with higher formations dipping away from the centre at generally 5°-20°. The thickness of the Truro Tillite at Cygnet is thought to be at least 400m below the summits of the hills west of the town. These summits are at an elevation of about 200m asl, suggesting that the base of the formation is below -200m asl. The total thickness of the formation is unknown because its base, and the underlying earlier Palaeozoic or Proterozoic rocks, have not been penetrated by previous drilling.

The inner part of the Cygnet Dome is intensively intruded by a petrographically varied suite of Cretaceous alkaline igneous rocks comprising silica-oversaturated syenite porphyries and later dykes of silica-undersaturated sanidine porphyry (Ford, 1989). There are several substantial sheet-like igneous bodies and innumerable, smaller dykes and sills. Thermal metamorphism caused by the alkaline igneous rocks is locally strong in the Truro Tillite and overlying formations.

Gold in stream sediments is widespread across the Cygnet Dome (Jones, 1985). It is more abundant in some streams with about 3000 ounces having been produced from mainly Forsters Rivulet and Riseleys Creek (Figure 1). Hard-rock gold is also widespread with old shafts and adits at Black Jack Ridge, the old Mt Mary and Livingstone mines, and elsewhere.

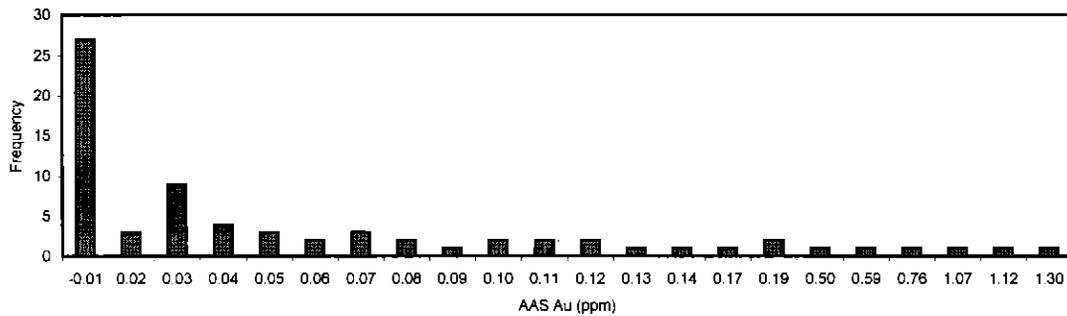
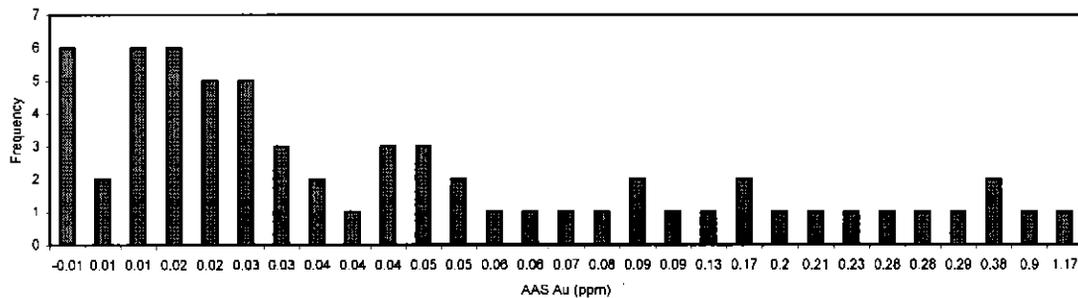
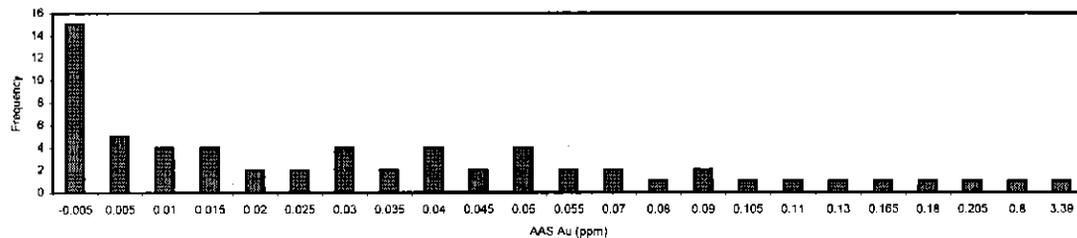
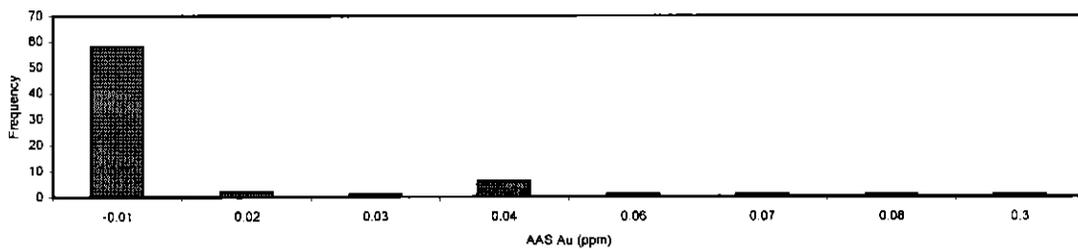
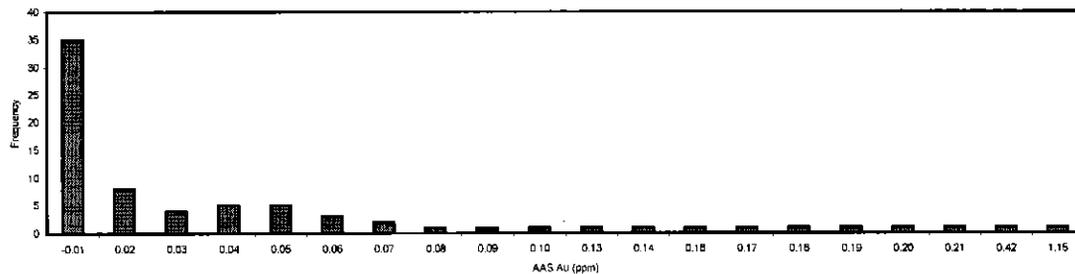
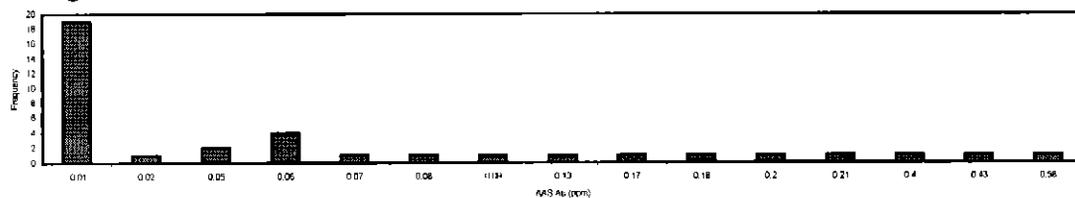
Taheri and Bottrill (1999) divide the hard-rock gold occurrences into porphyry-hosted and sedimentary-hosted categories. The former category includes gold in hydrothermally altered porphyry, in hydrothermal breccias and in veins. The latter category includes gold in hydrothermally altered calcareous fossils or pebbles and in veins. Magmatic fluids produced the porphyry-hosted gold mineralisation. Mixed magmatic-meteoric fluids caused carbonate replacement in the sedimentary rocks, produced gold-bearing pyritic veins, and produced pervasive zinc-rich clay alteration with associated gold, lead and arsenic. Late supergene alteration produced gold-bearing limonite and jarosite. Supergene alteration appears to have been substantial at the old Mt Mary mine where weathering extends to a depth of 100m or more (Appendix 1).

Pacific-Nevada's exploration program is targeting both the porphyry-hosted and sedimentary-hosted styles of gold mineralisation. Of particular interest in the latter category are gold-bearing skarns, possibly developed in calcareous lenses in the Truro Tillite, or in calcareous or dolomitic formations that may lie below the unconformity at the base of the tillite.

## **4.0 Work carried out by Pacific-Nevada**

### **4.1 RELOGGING OF CYPRUS MINERALS' DIAMOND CORE**

Cyprus Minerals carried out a program of diamond and percussion drilling at the old Mt Mary mine, at Kings Hill and at Black Jack Ridge

**A Mt Mary CT-87-1****B Mt Mary CT-87-19****C Mt Mary CT-87-20****D Black Jack Ridge CT-87-2****E Black Jack Ridge CT-87-3****F Black Jack Ridge CT-87-4****Figure 2:**

**Frequency distribution of gold analyses in Cyprus Minerals' diamond drill core. Holes CT-87-19,20 were sampled at 2m intervals, other holes were sampled at 1m intervals.**

(Jones, 1987; 1988). This program included six diamond holes, three at Mt Mary and three at Black Jack Ridge. Figure 2 shows frequency plots for Cyprus Minerals' gold analyses from the six diamond drill holes. The best result from these holes was an intersection of 2m at 3.07gpt from CT-87-20 at Mt Mary. The best overall result for the drilling program was from percussion hole CTR87-5, also at Mt Mary, which returned 3m averaging 4.6gpt in a 17m interval which averaged 1.0gpt. These intersections in CTR87-5 and CT-87-20 may represent the same lode structure (Figure 4, profile 10,300E).

The Cyprus drill holes were inclined at  $-45^{\circ}$  to  $-60^{\circ}$ , and were mostly of less than 75m length. However, diamond holes CT-87-19 and 20 were of 132.9m and 130m length respectively. This corresponds to a vertical depth of penetration of about 110m below the collars, which puts the bottoms of the holes at about 10m asl. Thus, it appears that there is an untested thickness of at least 200m of Truro Tillite below the level reached by Cyprus Minerals' drilling.

Cyprus Mineral's six diamond drill holes have been relogged and selected intervals have been resampled and reassayed (Appendix 1). The resampling was carried out with respect to geological boundaries rather than solely by regular depth increments of 1m or 2m. The resultant data for the Mt Mary holes shows a marked correlation between metal values and intervals in which the core is much fractured, limonitic and/or decomposed to clay. These partly ?supergene features are displayed by the interval 13.2-23.9m in CT-87-1, the intervals 14.1-17m and 38.6-49.9m in CT-87-19, and the intervals 87-90m and 119-123.6m in CT-87-20.

All these intervals also display polymetallic anomalism, usually including gold (max. 4.35gpt), copper (max. 472ppm), lead (max. 1.643%), zinc (max. 2.010%), silver (max. 72ppm) and arsenic (max. 410ppm). High levels of zinc are a persistent feature of the polymetallic anomalism. Though Pacific-Nevada's zinc analyses have apparently been artificially elevated through corrosion of the galvanised core trays, the original Cyprus Minerals' analyses also demonstrate strong zinc anomalism. The polymetallic anomalism appears to be independent of the parent rock type, being present in both igneous and sedimentary rocks.

Polymetallic anomalism is also displayed in the interval 45.7- 49.2m in CT-87-20, but supergene features are not pronounced. Instead, the pebbly mudstone shows alteration of clasts, a paler grey matrix and contains fractures coated with a soft greenish mineral (?smectite). These features may correspond with the magmatic-meteoritic phase of hydrothermal alteration identified by Taheri and Bottrill (1999). It seems likely that the other polymetallic intervals also reflect this phase of hydrothermal alteration, which has probably made them susceptible to subsequent supergene alteration.

Metal anomalism in the Black Jack Ridge drillholes is unlike that at Mt Mary. There is anomalous gold in the intervals 29-36m in CT-87-4 and 11-12m in CT-87-3, but no comparable polymetallic association. Anomalous gold in the interval 4-18m in CT-87-4 is associated only with anomalous arsenic. Thus, it

appears that mineralising conditions and/or fluids were different in the two areas. The presence of pyrrhotite as the dominant sulphide at Mt Mary, and pyrite as the dominant sulphide at Black Jack Ridge may be a further reflection of these differences.

## 4.2 AEROMAGNETIC INTERPRETATION

Flagstaff Geo-consultants have carried out an interpretation of Pacific-Nevada's detailed aeromagnetic survey. Their report is presented as Appendix 2.

Though it is not depicted in Flagstaff's summary interpretation (Appendix 2, Figure C8), a linear structure trending about  $60^{\circ}$  AMG between the old Mt Mary mine and the area around the old Livingstone mine is suggested by the total field map with north west shading (Appendix 2, Figure C1). This structure appears to also extend to the south west of the Mt Mary mine, close to the old prospects of Martins, Kings Hill and Coads Adit. A similar trend may be interpreted in Cyprus Minerals' soil geochemical data from the Mt Mary-Kings Hill area, outside the near vicinity of the old Mt Mary mine (Figure 3).

## 4.3 CURRENT DRILLING PROGRAM

Compilations of Cyprus Minerals' drilling and soil geochemical data (Figures 3,4) suggest that the mineralised structures in the immediate vicinity of the old Mt Mary mine trend north and north north east. These trends are oblique to the inferred aeromagnetic structural trend of  $60^{\circ}$  AMG. The mineralised structures appear to dip moderately to steeply west and west north west.

In order to test the inferred structures near the old workings and the more regional, aeromagnetic structural trend, Pacific-Nevada is putting down a series of four diamond drill holes along the north western side of the aeromagnetic structure, over a strike length of about 1km. All the holes will have an inclination of  $-50^{\circ}$ , an azimuth of  $152^{\circ}$  AMG and a depth of 400m, or greater. They will reach a minimum vertical depth of about -240m asl and may penetrate the unconformity at the base of the Truro Tillite.

The first hole (CM1) is being drilled directly under the old Mt Mary mine and is was at about 200m depth at the time of writing. It has penetrated mainly Truro Tillite which has shown progressively intensifying thermal metamorphism and an increase in the number of small igneous intrusions. Near 200m there is the first appearance of veinlets of bright green ?smectite and rare sulphide. Sampling is in progress, but analytical data are not yet to hand.

## 5.0 Future work

The current round of four diamond drill holes will be completed early in the coming year. Lithological, analytical and geophysical logs of the core will be

compiled, integrated and interpreted. The drill holes may also be subjected to geophysical surveys. Surface mapping, rock chip sampling and magnetic susceptibility surveys will be carried out nearby in selected areas.

A proposal by the company to drill from Crooked Tree Point (Figure 1) into the intense magnetic feature that is beneath Port Cygnet (Appendix 2, Figure C1) is currently under consideration by the regulatory authorities. If approval is given, the hole may go ahead in the coming year.

## 6.0 Environmental matters

Considerable care has been taken to minimise the disturbance caused by drilling in the outskirts of the town of Cygnet. A quiet LM75 rig has been selected, and acoustic sheeting has been used to partially enclose the rig's engine so as to further reduce sound output. A water recirculation system is in place which will limit drilling water from leaving the drillsites. Also, a particular effort has been made to keep the affected landowners, and the community in general, informed of the company's activities.

Concern has been expressed by Malcom Bendall, and associates, in relation to possible intersections with pressurised natural gas during the course of Pacific-Nevada's drilling in the Cygnet Dome. Whilst the Company, together with Mineral Resources Tasmania, considers that this is unlikely because of the extensive Cretaceous structural, intrusive and hydrothermal activity, it has taken the precaution of installing a gas monitor at the drill site.

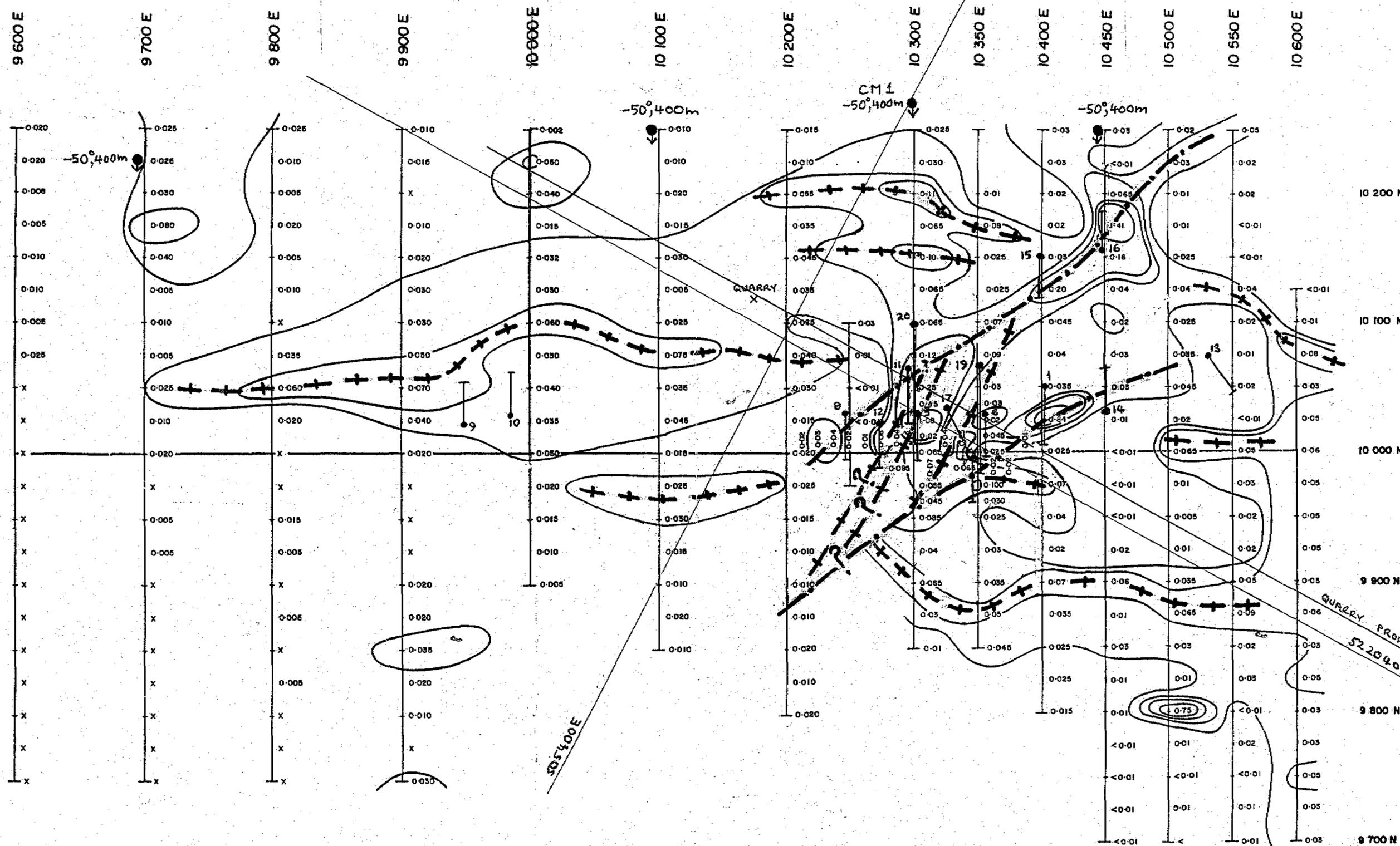
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Proposed diamond drill hole.  
 CM 1 at 260m depth, 20-12-99.  
 Cyprus Minerals' drill hole  
 projected on horizontal plane.

Contours of gold in soil (modified after Jones, 1987).  
 Inferred gold-bearing structure.  
 Inferred fault - locally mineralised.

See Figure 4 for profiles drawn along the grid lines, etc.

Contour Interval = 0.025, 0.05, 0.1, 0.5 etc.

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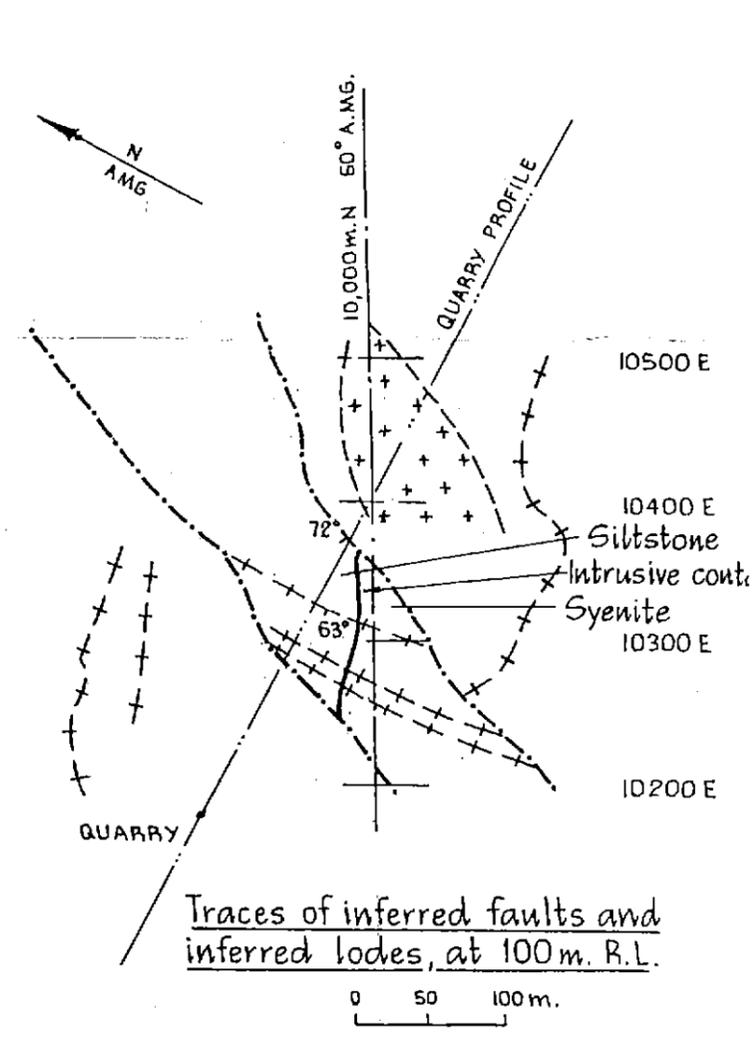
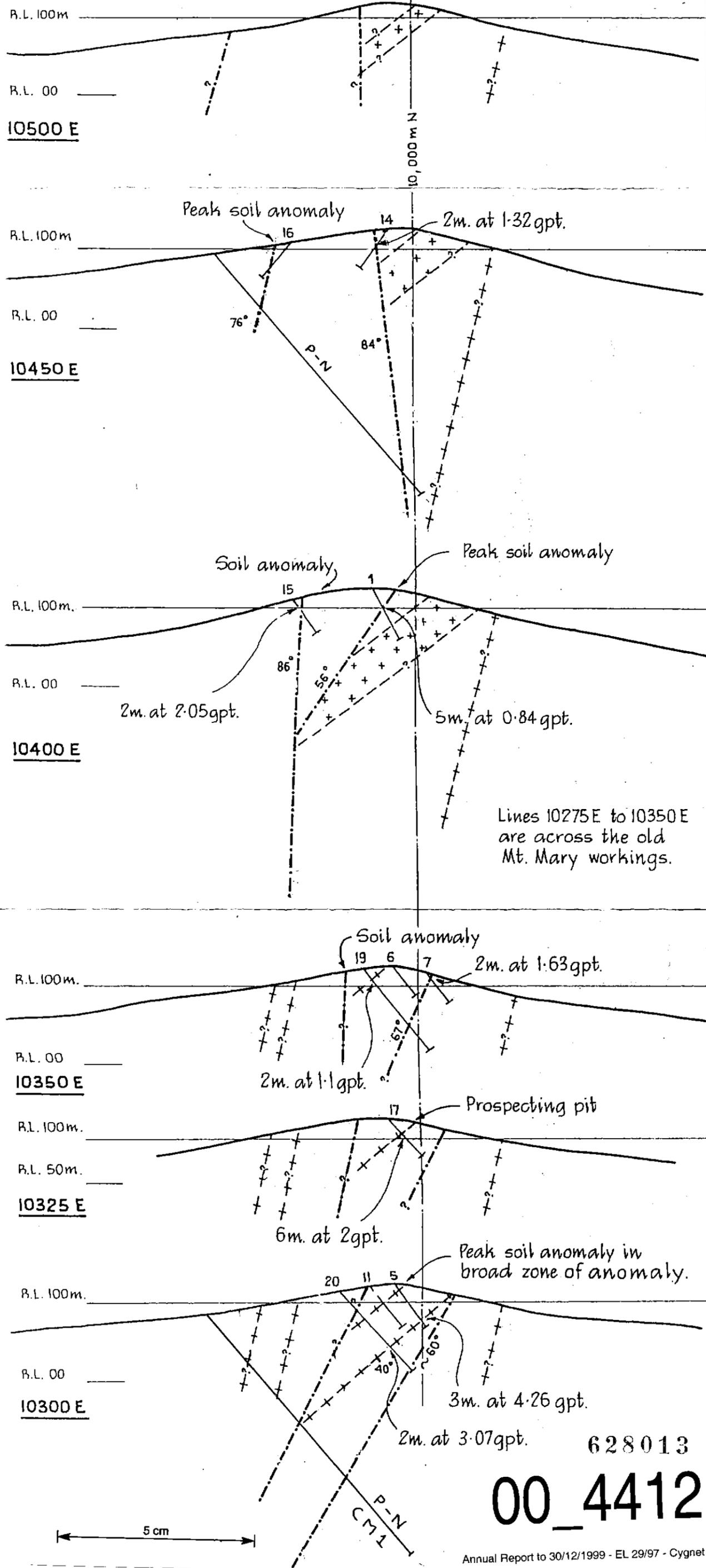
Annual Report to 30/12/1999 - EL 29/97 - Cygnet  
 Pacific Nevada Pty Ltd; Turner Geological Services  
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5 cm

FIGURE 3.

Jones (1987), TCR87-2743

CYPRUS MINERALS	
MOUNT MARY	
GOLD GEOCHEMISTRY	
SCALE 1:2500	FILE NO.
DRAWN BY: P.J.	DATE: Nov '87
DRAFTSMAN: E.D.S.	REVISIONS:
DATE:	FIG. 14



- Inferred lode.
- Inferred fault
- Position/dip poorly controlled.
- Possible zone related to old surface scratchings.
- Cyprus drill hole with number. Diamond holes 1, 19, 20. Remainder percussion.
- Proposed Pacific-Nevada holes are all of 400m. depth.

**INTERSECTIONS**

All intersections  $\geq 1$ gpt. are shown. Some are within broader, lower grade intervals.

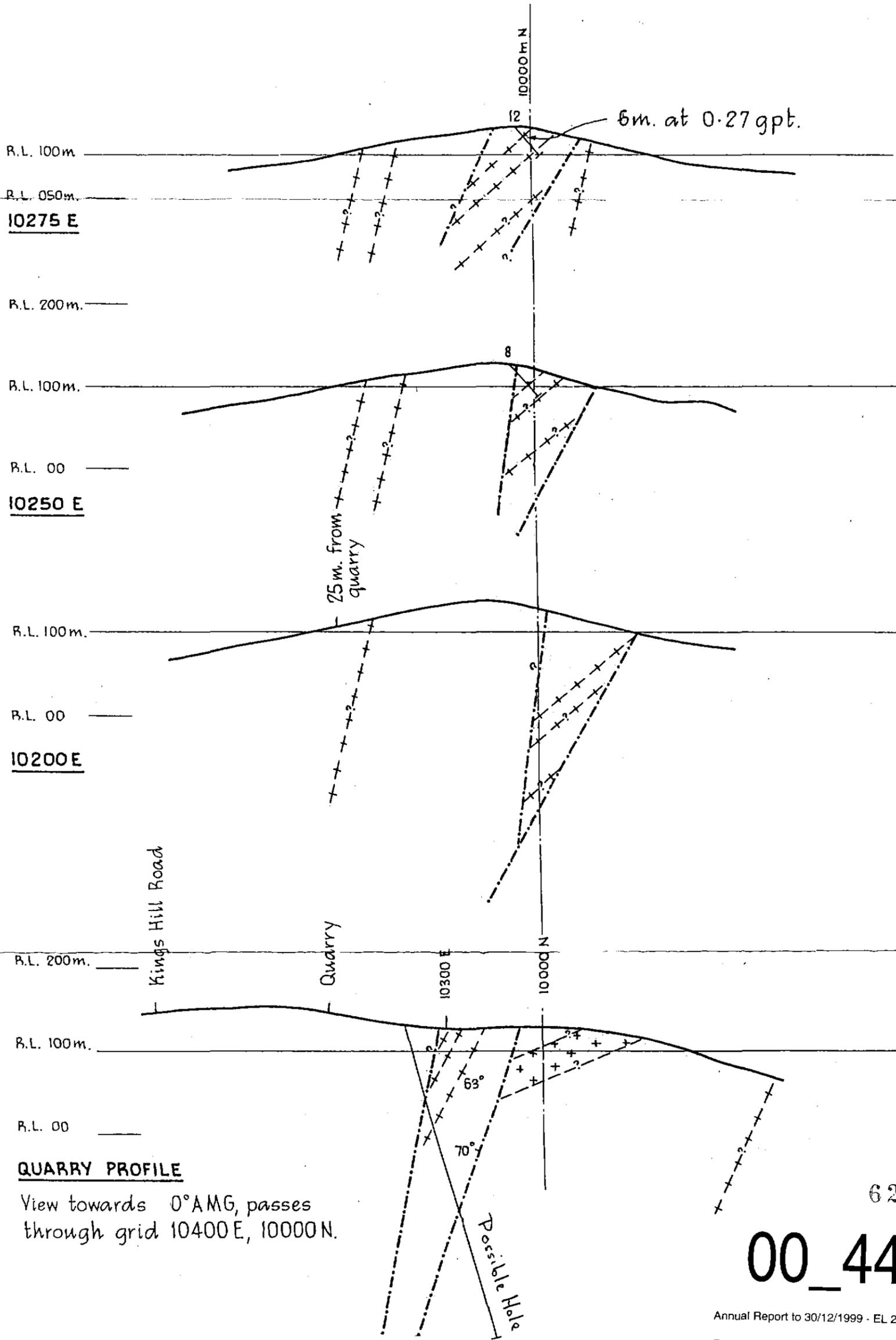
- Hole 15: 2m. at 2.05 gpt. in 10m. at 0.6 gpt.
- Hole 7: 2m. at 1.63 gpt. in 18m. at 0.21 gpt.
- Hole 17: 6m. at 2.0 gpt. in 20m. at 0.72 gpt.
- Hole 20: 2m. at 3.07 gpt. in 4m. at 1.60 gpt.
- Hole 5: 3m. at 4.26 gpt. in 17m. at 1.0 gpt.

E.L. 29/97 CYGNET FIG. 4c

**PACIFIC - NEVADA MINING PTY. LTD**

Mt. Mary drilling profiles derived from Cyprus Minerals data (Jones, 19 1988). Profiles vertical and drawn with view towards 60° AMG. Drill hole 17 is 25° off-section in azimuth.

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**QUARRY PROFILE**

View towards 0°AMG, passes through grid 10400E, 10000N.

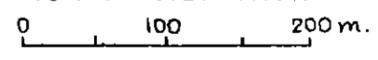
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 Pacific Nevada Pty Ltd\*; Turner Geological Services  
 Turner, N.J. EL29/97

E.L. 29/97 CYGNET FIG. 4b.  
**PACIFIC - NEVADA MINING PTY. LTD.**

Mt. Mary drilling profiles derived from Cyprus Minerals data (Jones, 1987; 1988). Profiles vertical and drawn with view towards 60°AMG. Drill hole 17 is 25° off-section in azimuth.



Compiled: Nic Turner 27.7.99 Drawn: P. Nankivell

## EL29/97 Cygnet: Annual Report to 30.12.99

## APPENDIX 1

## RELOGGING OF CYPRUS MINERALS' DIAMOND DRILL HOLES (1987).

**1A: Old Mt Mary mine area CT 87-1.**

Local grid 10400mE10050mN	AMG(estimate) 505595mE 5220463mN
Azimuth(estimate) 152° AMG	Inclination -60°
RL (estimate) 115m	Depth 71.3m

**1B: Old Mt Mary mine area CT 87-19.**

Local grid 10350mE10070mN	AMG(estimate) 505542mE5220457mN
Azimuth(estimate) 152° AMG	Inclination -50°
RL(estimate) 125m	Depth 132.9m

**1C: Old Mt Mary mine area CT 87-20.**

Local grid 10300mE10100mN	AMG(estimate) 505484mE5220460mN
Azimuth(estimate) 152° AMG	Inclination -45°
RL(estimate) 125m	Depth 130m

**1D: Black Jack Ridge CT 87-2**

Local grid 10000mE10100mN	AMG(estimate) 503000mE5217700mN
Azimuth(estimate) 93° AMG	Inclination -50°
RL(estimate) 290m	Depth 73.2m

**1E: Black Jack Ridge CT 87-3**

Local grid 9970mE10030mN	AMG(estimate) 502970mE5217625mN
Azimuth(estimate) 273° AMG	Inclination -60°
RL(estimate) 285m	Depth 77.3m

**1F: Black Jack Ridge CT 87-4**

Local grid 9975mE9845mN	AMG(estimate) 502975mE5217450mN
Azimuth(estimate) 93° AMG	Inclination -60°
RL(estimate) 280m	Depth 75.6m

## OTHER DATA

**Core recovery**

See original logs.

**Analytical samples**

Nominally over 1m intervals except at geological boundaries.

**Analytical methods - Analabs**

Dry, jaw crush, fine pulverize, ring mill (S033); gold by 30g fire assay, lead collection, AAS (F630); copper, lead, zinc, arsenic, iron by total acid digest, AAS (G104/A104); arsenic by hydride generation, AAS (G104/H104).

**1A: E29/97 Cygnet, Old Mt Mary mine area DDH CT 87-1.**

From (m)	To (m)	Description
		Weathering is evident throughout the hole. Also, core is very broken with no piece longer than 300mm.
00.60	02.80	Clay with orange and grey silty mudstone.
02.80	06.80	Similar silty mudstone but of pale to medium grey colour. Limonite patchy on fractures. Sandy material at 6.3m.
06.80	08.80	Massive, dark grey, richly pebbly, sandy and silty mudstone. Fractured. No alteration. Rounded to angular pebbles up to 30mm across, of black mudstone, siltstone, coarse and medium grained quartz sandstone, granule quartz conglomerate.
08.80	08.90	Fine grained, cream, siliceous rock with leached patches 5-15mm across - ?igneous.
08.90	09.60	Medium grey, limonitic pebbly mudstone - clasts and matrix altered by ?silicification.
08.90	11.00	Dark grey pebbly mudstone, partly altered to medium grey colour. Clasts altered - some limonitic, others consist of bluish ?quartz. Limonite and soft, pale coloured minerals on fractures.
11.00	11.70	Fine grained, cream igneous rock with ~5mm green epidote patches after phenocrysts of ?feldspar.
11.70	13.20	Similar but with sparse tabular feldspar phenocrysts up to 15mm. Patches of epidote within phenocrysts and in groundmass - commonly leached giving patches with mesh texture.
13.20	23.90	Rocks very broken and mostly decomposed to clay, possibly marking a fault though no polished or slickensided shears recognised. Limonite on fractures throughout. 13.20-15.85: pebbly mudstone; 15.85-18.00: altered igneous; 18.00-20.00: altered cream igneous material rich in tabular feldspar phenocrysts; 20.00-23.90: pebbly mudstone.
23.90	30.95	Dark grey, unaltered pebbly mudstone. Clasts similar to above with a few medium grained felsic igneous rocks.
30.95	31.50	Light buff, fine grained igneous rock with common leached patches ?after anhedral phenocrysts.
31.50	32.10	Dark grey pebbly mudstone with patchy alteration and minor 2-3mm, non-planer, vuggy quartz veins.
32.10	34.30	Fine grained, light buff igneous rock with scattered feldspar phenocrysts - both tabular and anhedral with each type commonly showing epidote alteration, which tends to be weathered and leached.
34.30	41.40	Dark grey pebbly mudstone. No alteration apparent.

41.40	44.95	First interval of igneous rock that includes completely fresh patches, which consist of porphyry with tabular feldspar phenocrysts in fine grained, medium grey groundmass. Common patches of epidote. Up to 3-5% pyrite eg 41.40-42.00. Intrusive contact clear at 44.95.
44.95	56.10	Dark grey, pebbly mudstone. There are pale halos around the more reactive clasts. Pyrrhotite is common as a replacement mineral in these clasts, and is a minor disseminated constituent of the matrix. An unusually large clast (of milky quartz) 50mm across is present. Irregular fractures coated with limonite are present throughout the interval.
56.10	71.30	Feldspar porphyry with fine grained grey groundmass. Phenocrysts are equant rather than tabular. Common epidote alteration. Disseminated pyrrhotite common in places. 66.00-71.30: weathered with limonitic fractures.
71.30		End of hole.

# ASSAYS

Project: Cygnet

Prospect:

Exploration Licence: EL29/97

Hole Number: CT-87-1

Sample Number	Units		ppm	ppm	ppm		ppm	%	ppm	%	ppm	ppm							%				
	Detection Limit		0.01	0.01	4		5	0.001	4	0.001	2	1	100							0.01			
	Method	From	To	F630	F630	A104		A104	A105	A104	A105	A104	H104	A104							A104		
	From	To	Au	Au(R1)	Au(R2)	Au(R3)	Cu	Cu(R1)	Pb	Pb(R1)	Zn	Zn(R1)	Ag	Ag(R1)	As	As(R1)	Sn	Pt	Pd	Ni	Fe	Bi	
7660115	7	8	0.05	-			32		12	-	1605	-	-2		-1	-100						2.9	
7660116	8	8.8	0.03	-			31		15	-	2280	-	-2		1	-100						2.45	
7660117	8.8	9.6	-0.01	-			70		39	-	3250	-	-2		30	-100						3	
7660118	9.6	10	0.08	-			107		21	-	1645	-	-2		71	-100						4.15	
7660119	10	11	0.02	-			79		18	-	1875	-	-2		30	-100						3.7	
7660120	11	12	-0.01	-			61		61	-	2170	-	-2		25	-100						3.4	
7660121	12	13	0.24	0.25			56		63	-	1230	-	-2		10	-100						2.95	
7660122	13	14	0.02	-			135		134	-	4640	-	-2		40	-100						7.6	
7660123	14	15	-0.01	-			115		228	-	6890	-	-2		26	-100						4.7	
7660124	15	15.85	-0.01	-			96		161	-	4070	-	-2		4	-100						3.9	
7660125	15.85	17	-0.01	-			70		146	-	2410	-	-2		14	-100						4.2	
7660126	17	18	0.04	-			70		406	-	3380	-	-2		32	-100						4.05	
7660127	18	19	0.07	-			51		352	-	1475	-	-2		9	-100						1.72	
7660128	19	20	1.64	1.55			82		2370	-	3610	-	-2		22	-100						3.3	
7660129	20	21	0.17	-			87		3260	-	6370	-	-2		2	-100						3.45	
7660130	21	21.55	0.06	-			91		4270	-	6790	-	-2		16	-100						3.55	
7660131	21.55	22	0.6	0.52			181		8960	-	10800	-	15		84	-100						8.8	
7660132	22	22.3	0.92	0.78			472		>10000	1.643	>20000	2.01	40		65	-100						10.6	
7660133	22.3	23	0.09	-			105		3140	-	6430	-	-2		5	-100						4.45	
7660134	23	23.9	0.03	-			84		453	-	6590	-	-2		8	-100						4.75	
7660135	23.9	25	-0.01	-0.01			37		134	-	1675	-	-2		-1	-100						3.65	
7660136	25	26	-0.01	-			31		156	-	1380	-	-2		6	-100						3.85	
7660137	26	27	-0.01	-			31		41	-	1290	-	-2		-1	-100						3.9	

628018

Sample Number	Units		ppm	ppm	ppm			ppm	%	ppm	%	ppm	ppm		ppm							%	
	Detection Limit		0.01	0.01	4			5	0.001	4	0.001	2	1	100						0.01			
	Method	From	To	F630	F630	A104	A104	A105	A104	A105	A104	H104	A104						A104				
	From	To	Au	Au(R1)	Au(R2)	Au(R3)	Cu	Cu(R1)	Pb	Pb(R1)	Zn	Zn(R1)	Ag	Ag(R1)	As	As(R1)	Sn	Pt	Pd	Ni	Fe	Bi	
7660138	27	28	-0.01	-			25		47	-	1025	-	-2		-1	-100						3.95	
7660139	28	29	-0.01	-			26		18	-	767	-	-2		8	-100						3.65	
7660140	29	30	0.11	-			26		24	-	638	-	-2		5	-100						3.3	
7660141	41	41.4	0.11	-			26		-5	-	798	-	-2		3	-100						4.9	
7660142	41.4	42	0.02	-			7		10	-	372	-	-2		4	-100						3	
7660143	42	43	0.06	-			11		27	-	1010	-	-2		8	-100						4.35	
7660144	43	44	0.16	0.16			10		21	-	183	-	-2		2	-100						2.55	
7660145	44	45	0.16	-			8		11	-	96	-	-2		-1	-100						3.3	
7660146	45	45.7	0.04	-			27		10	-	634	-	-2		15	-100						4.25	
7660147	45.7	46	0.3	-			35		12	-	293	-	-2		-1	-100						4	
7660148	46	47.2	0.11	-			34		-5	-	148	-	-2		7	-100						3.45	
7660149	47.2	47.7	0.11	-			38		7	-	466	-	-2		-1	-100						3.45	
7660150	47.7	48.6	0.38	-			18		5	-	165	-	-2		5	-100						3.3	
7660151	48.6	49	0.22	-			39		17	-	1315	-	-2		4	-100						3.8	
7660152	49	49.3	0.2	-			20		-5	-	126	-	-2		-1	-100						3.05	
7660153	49.3	50.35	0.2	-			52		8	-	427	-	-2		-1	-100						4.3	
7660154	50.35	51	0.09	-			21		18	-	132	-	-2		2	-100						3.5	
7660155	51	52	0.19	-			22		7	-	350	-	-2		5	-100						3.75	
7660156	52	53	0.16	-			31		9	-	165	-	-2		2	-100						3.4	
7660157	53	53.3	0.06	-			11		18	-	187	-	-2		5	-100						3.35	
7660158	53.3	54	0.04	-			9		15	-	203	-	-2		-1	-100						2.95	
7660159	54	55	0.06	-			14		20	-	374	-	-2		-1	-100						4.2	
7660160	55	56	0.12	0.14			14		5	-	410	-	-2		-1	-100						3.7	
7660161	56	57	0.04	-			30		20	-	218	-	-2		1	-100						2.6	
7660162	57	58	0.02	0.02			35		14	-	212	-	-2		1	-100						2.55	

628019

## 1B: EL29/97 Cygnet. Old Mt Mary mine area DDH CT 87-19

From (m)	To (m)	Description
		Weathering patchy throughout core, though some reduction below 65m and markedly less below 99m. Core very broken.
00.00	03.60	Fine grained, cream, igneous rock mixed with intermixed porphyry. Latter has a fine grained, dark grey groundmass and scattered phenocrysts of tabular feldspar (to 10mm) and black amphibole.
03.60	06.30	Dark grey pebbly, sandy and silty mudstone with angular to rounded clasts up to 30mm across. Reactive clasts are strongly altered with pale halos and partial replacement by pyrrhotite. Some weathering such that sulphide is represented by limonitic mesh.
06.30	07.25	Fine grained, cream igneous rock with leached patches (after ?sulphide).
07.25	07.95	Pebbly mudstone with pale altered matrix and altered clasts. No sulphide, possible epidote.
07.95	13.30	Distinctive even grained, medium grained, mafelsic igneous rock.
13.30	13.50	Porphyry with sparse, tabular, feldspar phenocrysts and black, euhedral amphibole.
13.50	14.10	Dark grey, pebbly mudstone. Clasts altered, some contain pyrrhotite.
14.10	16.70	Cream porphyry with small, equant feldspar phenocrysts and fine grained groundmass. Common patches of epidote, no black amphibole. Limonitic fractures abundant.
16.70	17.00	Ditto but with some tabular feldspar phenocrysts. Particularly strong limonitic fractures at 45° to core axis. Green copper salts on surface of part of interval.
17.00	18.85	Similar porphyry but limonitic fractures not conspicuous.
18.85	21.50	Dark grey pebbly mudstone. Not much clast alteration and no halos.
21.50	23.30	Cream igneous rock with leached grains after epidote or sulphide.
23.30	37.75	Dark grey, pebbly mudstone with very little clast alteration, no halos.
37.75	38.60	Porphyry - mostly deeply weathered and decomposed. Tabular feldspars to 10mm in medium grey groundmass. Epidote alteration shows weathering and leaching.
38.60	46.00	Dark grey, pebbly mudstone showing little clast alteration. Much fracturing with limonitic and soft greenish coatings on fractures.
46.00	46.20	Richly limonitic material.
46.20	49.90	Tabular feldspar porphyry strongly decomposed to clay.

		Alteration includes green granular material.
49.90	65.20	Dark grey, pebbly mudstone with patchy clast alteration marked by halos and recrystallisation. No sulphide discerned though some cores of the altered clasts have been leached away.
65.20	73.70	Porphyry with fine grained, medium grey to khaki groundmass and phenocrysts of mainly equant feldspar, black amphibole and rounded quartz. Patchy magnetism = ?patchy pyrrhotite.
73.70	74.10	Pebbly mudstone with minor clast alteration.
74.10	74.80	Distinctive khaki porphyry with 15% tabular feldspars to 20mm in very fine grained groundmass. Contact at 74.80 is at 20° to core axis.
74.80	77.20	Distinctive even grained, medium grained, mafelsic rock. Patchy magnetism.
77.20	78.45	Dark grey, pebbly mudstone with minor clast alteration.
78.45	78.65	Light grey clay = complete rock decomposition.
78.65	81.00	Porphyry with fine grained, medium khaki groundmass and phenocrysts of fairly equant feldspar, quartz, very sparse black amphibole, common epidote, disseminated pyrite. Contact at 81 is 35° to core axis.
81.00	93.8	Dark grey, pebbly mudstone with intervals of pale matrix alteration at 81.8-82.2 and 86.6-87.2. Strong clast alteration throughout with common halos. Limonitic cores in altered clasts suggest previous sulphide.
93.80	95.35	Mudstone is very finely broken with fragments of breccia (?fault) in places.
95.35	99.00	Alteration rock of uncertain protolith-vague porphyritic texture in places but most is like a fine grained, medium grey quartzite. Contains 5-10% pyrite.
99.00	108.30	Dark grey, pebbly mudstone with very little clast alteration. Unusually large clast up to 100mm at 105.
108.30	108.50	Very finely broken mudstone.
108.50	111.40	Alteration rock that looks like quartzite but contains some tabular feldspar phenocrysts and epidote. Up to 15% pyrite and pyrrhotite.
11.40	112.10	Distinctive porphyry with fine grained, khaki groundmass and about 30% of tabular feldspars which are flow aligned at 20° to core axis. Common euhedral black amphibole and patches of epidote. Common pyrrhotite causes good response from magnet.
112.10	118.70	Dark grey, pebbly mudstone-unaltered.
		<b>Note:</b> Core reduces in diameter from about 60mm (HQ) to about 48mm (NQ) at 114.9.
118.70	132.90	Porphyry with very fine grained, grey to khaki groundmass containing abundant, small (<5mm), stubby,

		feldspar phenocrysts and common epidote patches. Contains 1-5% disseminated pyrrhotite and ?pyrite. Common joints at 45° to core axis which are coated with pyrrhotite, limonite and a very soft, greenish mineral.
132.90		End of hole.



Sample Number	Units		ppm	ppm	ppm			ppm	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
	Detection Limit		0.01	0.01	4			5	0.001	4	0.001	2	1	100							0.01	
	Method	From	To	F630	F630	A104	A104	A105	A104	A105	A104	H104	A104	A104	A104	A104	A104	A104	A104	A104		
			Au	Au(R1)	Au(R2)	Au(R3)	Cu	Cu(R1)	Pb	Pb(R1)	Zn	Zn(R1)	Ag	Ag(R1)	As	As(R1)	Sn	Pt	Pd	Ni	Fe	Bi
7660024	26	27	0.03	-			27		25	-	991	-	-2		11	-100						3.7
7660025	27	28	-0.01	-			26		16	-	1290	-	-2		6	-100						3.85
7660026	28	29	-0.01	-			25		13	-	628	-	-2		7	-100						3.85
7660027	29	30	-0.01	-			25		16	-	527	-	-2		6	-100						3.65
7660028	30	31	-0.01	-			28		25	-	489	-	-2		1	-100						3.65
7660029	31	32	-0.01	-			30		17	-	485	-	-2		3	-100						3.3
7660030	32	33	-0.01	-			39		28	-	365	-	-2		13	-100						3.55
7660031	33	34	-0.01	-0.01			68		16	-	779	-	-2		5	-100						3.8
7660032	34	35	-0.01	-			54		26	-	1020	-	-2		1	-100						4.15
7660033	35	36	-0.01	-			33		23	-	2140	-	-2		1	-100						4.1
7660034	36	37	-0.01	-			33		-5	-	1355	-	-2		1	-100						3.5
7660035	37	37.75	-0.01	-0.01			30		16	-	1730	-	-2		2	-100						3.6
7660036	37.75	38.6	-0.01	-			27		25	-	1670	-	-2		2	-100						3.85
7660037	38.6	39	-0.01	-			38		34	-	2450	-	-2		5	-100						3.7
7660038	39	40.2	-0.01	-			48		112	-	2050	-	-2		8	-100						3.5
7660039	40.2	40.85	0.09	0.13			78		3290	-	2990	-	-2		58	-100						6.1
7660040	40.85	42	-0.01	-			51		139	-	1965	-	-2		3	-100						3.65
7660041	42	43	-0.01	-			48		59	-	1585	-	-2		-1	-100						3.5
7660042	43	44	-0.01	-			53		356	-	2770	-	-2		2	-100						4.25
7660043	44	45	0.06	0.04			67		379	-	3080	-	-2		3	-100						4.2
7660044	45	46	0.1	-			55		1565	-	4260	-	-2		3	-100						3.9
7660045	46	46.2	4.35	4.25			216		4480	-	5940	-	5		>100	310						15.6
7660046	46.2	47	0.33	0.32			76		881	-	8420	-	-2		21	-100						4.85
7660047	47	48	0.12	-			82		181	-	4330	-	-2		-1	-100						4.4
7660048	48	49	0.04	-			65		133	-	3620	-	-2		10	-100						4.45
7660049	49	50	0.43	0.46			73		338	-	2440	-	-2		4	-100						3.9
7660050	50	51	0.11	-			63		115	-	2130	-	-2		4	-100						3.75
7660051	51	51.75	0.09	-			77		46	-	2960	-	-2		12	-100						4.35

628024

Sample Number	Units		ppm	ppm	ppm			ppm	%	ppm	%	ppm	ppm		ppm	ppm						%
	Detection Limit		0.01	0.01	4			5	0.001	4	0.001	2	1	100						0.01		
	Method		F630	F630	A104			A104	A105	A104	A105	A104	H104	A104						A104		
From	To	Au	Au(R1)	Au(R2)	Au(R3)	Cu	Cu(R1)	Pb	Pb(R1)	Zn	Zn(R1)	Ag	Ag(R1)	As	As(R1)	Sn	Pt	Pd	Ni	Fe	Bi	
7660052	51.75	43	0.03	-		40		25	-	1325	-	-2		1	-100						3.55	
7660053	53	54	0.05	-		35		15	-	851	-	-2		3	-100						3.8	
7660054	54	55	0.05	-		40		53	-	1025	-	-2		1	-100						3.9	
7660055	55	56	0.04	-		34		16	-	686	-	-2		-1	-100						3.95	

**1C: EL29/97 Cygnet. Old Mt Mary mine area DDH CT 87-20**

From(M)	To(m)	Description
		Weathering evident throughout the hole. Still quite strong at bottom (130m). Core very broken throughout the hole.
00.00	03.00	Pebbly, sandy, silty mudstone mostly decomposed to orange and grey clay.
03.00	14.15	Dark grey, pebbly mudstone. Some clasts altered to well crystallised quartz and golden mica around void (?leached) cores. Not many halos, no other matrix alteration.
14.15	18.15	Porphyry, largely decomposed to olive clay. Minor tabular feldspar phenocrysts, no quartz evident, common green alteration patches (epidote), sparse black euhedral amphibole, disseminated limonitic spots (?after sulphide).
18.15	40.00	Dark grey, pebbly mudstone similar 3-14.5. No preserved sulphide. Altered clasts comprise 1-5% of the rock.
40.00	40.75	Porphyry with very fine grained, medium grey groundmass and phenocrysts of black amphibole and subordinate feldspar to 5mm.
40.75	44.90	Dark grey, pebbly mudstone with selected clasts altered to quartz and golden mica around void cores.
44.90	45.70	Porphyry, weathered. Tabular feldspar and black amphibole.
45.70	49.20	Pebbly mudstone as above with matrix becoming pale grey 47.5-48.1, becomes darker again and passes to mudstone 48.1-49.2
49.20	52.50	Porphyry with medium grey groundmass and about 10% tabular feldspar phenocrysts, also black amphibole, patches of epidote alteration, disseminated limonitic spots and a tiny amount of residual pyrrhotite.
52.50	54.15	Mudstone as above.
54.15	55.00	Porphyry like 49.2-52.5
55.00	61.50	Pebbly mudstone, no clast alteration evident.
61.50	69.30	Pebbly mudstone with very strong alteration of many clasts, common halos and alteration elsewhere in matrix. Much fracturing, in many directions. Very soft green and cream minerals coat the fractures.
69.30	74.00	Porphyry with fine grained, olive to grey groundmass. Phenocrysts of mostly-fairly-equant feldspar are abundant, black euhedral amphibole is minor, alteration patches of epidote are common. Numerous, variably oriented fractures coated with soft green mineral and minor limonite.
74.00	75.90	Dark grey mudstone, very broken, uncertain alteration.

75.90	80.00	Porphyry, very broken, like 69.3-74, weathered.
80.00	83.40	Dark grey, pebbly mudstone with alteration of selected clasts. No halos or other matrix alteration. Shearing at 80-80.5.
83.40	91.55	Porphyry like 69.3-74. Mostly weathered but fresher at 88-88.3 with 1-5% pyrite. At 87-87.5 there are unusual, limonite veins up to 15mm thick, at 75° to core axis. At 90.2-91.55 the porphyry is characterised by 10% of tabular feldspar phenocrysts up to 10mm long.
91.55	92.35	Dark grey, pebbly mudstone without apparent alteration.
92.35	105	Porphyry like 69.3-74 but all weathered. Disseminated limonitic spots imply 1-5% sulphide.
105.00	114.6	Dark grey, pebbly mudstone to 107.2, then medium grey pebbly mudstone to 114.6 but no clear clast or matrix alteration. Common irregular fractures coated by very soft cream mineral.
114.60	116.75	Probable lamprophyre consisting of 30% small (~3mm) laths of black amphibole in a very fine grained, olive groundmass.
116.75	123.60	Weathered porphyry like 69.3-74, fresher 117-119 with pyrrhotite. Very broken and much decomposed to clay at 119-123.6.
123.60	124.5	Silicified pebble breccia with minor pyrite in matrix. Clasts rounded to angular - probable fault origin but no fabric.
124.5	130.00	Dark grey, pebbly mudstone. Very broken and much is decomposed to clay. Probable selective alteration of clasts.
130.00		End of hole.

# ASSAYS

Project: Cygnet

Prospect:

Exploration Licence: EL29/97

Hole Number: CT-87-20

Sample Number	Units		ppm	ppm	ppm		ppm	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
	Detection Limit		0.01	0.01	4		5	0.001	4	0.001	2	1	100								0.01	
	Method	From	To	F630	F630	A104	A104	A105	A104	A105	A104	H104	A104	A104	H104	A104	A104	A104	A104	A104	A104	
			Au	Au(R1)	Au(R2)	Au(R3)	Cu	Cu(R1)	Pb	Pb(R1)	Zn	Zn(R1)	Ag	Ag(R1)	As	As(R1)	Sn	Pt	Pd	Ni	Fe	Bi
7660056	36	37	-0.01	-			36		70	-	1720	-	-2		-1	-100						4.05
7660057	37	38	0.02	-			33		76	-	1855	-	-2		2	-100						3.75
7660058	38	39	0.05	-			41		67	-	1570	-	-2		-1	-100						3.8
7660059	39	40	0.27	0.26			43		38	-	1365	-	-2		4	-100						4.05
7660060	40	40.75	0.04	0.03			47		79	-	1510	-	-2		7	-100						5.1
7660061	40.75	42	0.07	-			42		86	-	1515	-	-2		1	-100						4.1
7660062	42	43	-0.01	-			35		22	-	649	-	-2		-1	-100						3.65
7660063	43	44	-0.01	-			34		63	-	943	-	-2		1	-100						3.95
7660064	44	44.9	0.02	-			31		71	-	1305	-	-2		9	-100						4.1
7660065	44.9	45.7	0.02	-			34		180	-	917	-	-2		12	-100						3.75
7660066	45.7	46.5	0.02	-			49		1720	-	1895	-	-2		5	-100						4.35
7660067	46.5	47.5	0.02	-			59		5880	-	1730	-	-2		23	-100						4.2
7660068	47.5	48.1	0.99	0.9			97		3110	-	1700	-	3		>100	150						3
7660069	48.1	49.2	0.17	-			38		859	-	1005	-	-2		17	-100						3.1
7660070	49.2	50	0.02	-			37		280	-	925	-	-2		13	-100						2.55
7660071	50	51	0.02	-			21		164	-	873	-	-2		8	-100						3.35
7660072	51	52	0.06	-			20		147	-	1120	-	-2		13	-100						3.7
7660073	52	52.5	0.12	-			28		112	-	661	-	-2		14	-100						3.5
7660074	52.5	53.1	0.22	-			47		110	-	2730	-	-2		23	-100						5.8
7660075	53.1	54.15	0.04	-			30		37	-	905	-	-2		10	-100						3.95
7660076	54.15	55	-0.01	-			62		175	-	898	-	-2		7	-100						5.1
7660077	55	56	0.05	-			37		98	-	997	-	2		31	-100						4.35
7660078	82	83	-0.01	-			42		9	-	1960	-	-2		-1	-100						3.3

628028

Sample Number	Units		ppm	ppm	ppm			ppm	%	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
	Detection Limit		0.01	0.01	4			5	0.001	4	0.001	2	1	100									0.01
	Method		F630	F630	A104			A104	A105	A104	A105	A104	H104	A104									A104
From	To	Au	Au(R1)	Au(R2)	Au(R3)	Cu	Cu(R1)	Pb	Pb(R1)	Zn	Zn(R1)	Ag	Ag(R1)	As	As(R1)	Sn	Pt	Pd	Ni	Fe	Bi		
7660079	83	83.4	0.02	-		38		14	-	1570	-	-2		2	-100						3.55		
7660080	83.4	84	0.02	0.03		48		11	-	1765	-	-2		1	-100						2.35		
7660081	84	85	0.03	-		34		19	-	1710	-	-2		1	-100						3.5		
7660082	85	86	0.02	-		18		16	-	1750	-	-2		9	-100						4.25		
7660083	86	87	0.03	-		22		12	-	1345	-	-2		-1	-100						3.2		
7660084	87	88	0.13	-		21		74	-	792	-	-2		4	-100						3.75		
7660085	88	89	3.2	3.25		134		643	-	2770	-	9		73	-100						4.35		
7660086	89	90	0.11	-		34		295	-	2630	-	-2		-1	-100						2.85		
7660087	90	91	0.09	-		57		82	-	1330	-	-2		-1	-100						3.4		
7660088	91	91.55	0.01	-		57		20	-	1495	-	-2		1	-100						3		
7660089	91.55	92.35	0.05	-		33		9	-	1320	-	-2		1	-100						3.05		
7660090	92.35	93	0.02	-		45		8	-	773	-	-2		-1	-100						3.45		
7660091	93	94	0.02	-		37		16	-	1095	-	-2		1	-100						2.5		
7660092	94	95	0.02	0.02		23		10	-	1380	-	-2		3	-100						2.45		
7660093	95	96	0.01	-		15		9	-	1535	-	-2		-1	-100						2.5		
7660094	106	107	-0.01	-		22		8	-	1410	-	-2		17	-100						3.25		
7660095	107	108	-0.01	-		24		21	-	1695	-	-2		10	-100						3.15		
7660096	108	109	-0.01	-		21		34	-	1525	-	-2		5	-100						3.15		
7660097	109	110	-0.01	-		25		47	-	1860	-	-2		1	-100						3.05		
7660098	110	111	0.04	-		20		119	-	2180	-	-2		3	-100						3.2		
7660099	111	112	-0.01	-		35		42	-	1505	-	-2		3	-100						3.2		
7660100	112	113	0.04	-		24		15	-	1765	-	-2		6	-100						3.5		
7660101	113	114	0.26	0.26		34		34	-	2910	-	-2		33	-100						3.1		
7660102	114	114.3	0.03	-		21		16	-	1835	-	-2		2	-100						3.05		
7660103	114.3	115	-0.01	-		96		35	-	1890	-	-2		1	-100						3.6		
7660104	115	116	-0.01	-		82		27	-	895	-	-2		-1	-100						4.3		
7660105	116	117	-0.01	-		59		36	-	596	-	-2		7	-100						3.9		
7660106	117	118	0.02	-		20		22	-	1295	-	-2		-1	-100						2.35		

628029

Sample Number	Units		ppm	ppm	ppm			ppm	%	ppm	%	ppm	ppm	ppm	ppm						%
	Detection Limit		0.01	0.01	4			5	0.001	4	0.001	2	1	100						0.01	
	Method		F630	F630	A104			A104	A105	A104	A105	A104	H104	A104						A104	
From	To	Au	Au(R1)	Au(R2)	Au(R3)	Cu	Cu(R1)	Pb	Pb(R1)	Zn	Zn(R1)	Ag	Ag(R1)	As	As(R1)	Sn	Pt	Pd	Ni	Fe	Bi
7660107	118	119	0.09	-			25	18	-	3430	-	-2		11	-100					2.9	
7660108	119	120	0.24	0.16			39	21	-	5570	-	-2		3	-100					2.9	
7660109	120	121	0.04	-			12	22	-	3080	-	-2		-1	-100					2.55	
7660110	121	122	0.05	0.06			14	40	-	2920	-	-2		-1	-100					2.4	
7660111	122	123	0.15	-			18	26	-	2170	-	-2		-1	-100					3.2	
7660112	123	123.6	0.05	-			25	37	-	2580	-	-2		10	-100					2.45	
7660113	123.6	124.5	0.02	-			15	39	-	801	-	-2		-1	-100					1.51	
7660114	124.5	126	0.02	-			20	32	-	1320	-	-2		1	-100					2.15	

## 1D: EL29/97 Cygnet. DDH CT 87- 2 Black Jack Ridge

From(m)	To(m)	Description
		Weathering throughout core, but marked reduction at 36.5 and patchy below this level.
00.00	06.70	Pale, leached, ?altered, sandy, quartzose rock with 20-40% fossils. A soft, medium green, alteration mineral is uncommonly preserved in the fossils, which are usually limonitic and/or leached. Bedding at 45° to core axis at 6.0.
06.70	11.00	Intensely altered porphyry in which phenocrysts display uniform green alteration.
11.00	12.20	Fossiliferous interval with fossils strongly altered to pyrite, closely fractured with limonite seams in fractures.
12.20	14.70	Similar fossiliferous interval but without the intense fracturing. Altered fossils comprise about 20% of rock. Fossils are replaced by pyrite and black ?silicate. Bedding 45° to core axis at 13.2.
14.70	18.00	Altered ?lamprophyre = fine grained porphyry with pale green (amphibole) phenocrysts, disseminated pyrite 0-5% of rock.
18.00	29.15	Uniform, medium grey to greenish, short jointed, easily scratched, finely crystalline, massive rock - skarn or hornfels.
29.15	54.50	Relatively coarse grained porphyry with 10-20% tabular feldspars up to an uncommon 60mm. Also small equant feldspars, quartz, black hornblende <10%, and disseminated pyrite 1-5% in places. Core covered with yellow powder and trays corroded. Contact at 29.15 is at 45° to the core axis.
54.50	60.00	Uniform, purplish grey to greenish grey, easily scratched, finely crystalline rock with not much sulphide. Lack of acid reaction may imply a pelitic hornfels.
60.00	64.20	Rock like 54.5-60, but with 10-20% fossils which are mainly replaced by massive pyrite. Bedding at 45° to core axis at 63.2.
64.20	73.20	Rock like 54.5-60 with a few fossils around 69 that are strongly replaced by pyrite. Anastomosing, spaced cleavage developed around 73.1, at about 40° to core axis - possibly stylolitic.
73.20		End of hole.

## 1E: EL29/97 Cygnet. DDH CT 87- 3 Black Jack Ridge.

From(m)	To(m)	Description
		Weathering evident throughout as patchy oxidation to limonite. Generally less below about 40m.
00.00	10.00	Soft, cream coloured, sandy textured but clay-rich, altered or metamorphosed rock (?pelitic hornfels), with abundant fossils below 5m. A very soft, medium to bright green mineral occurs as a replacement in some fossils. However, in most fossils weathering and leaching have created cavities, some containing limonitic mesh.
10.00	16.00	Same rock with bright green mineral preserved in most fossils. This mineral appears to oxidize to limonite. At 14.3 there is a small ?remnant patch in which the fossils contain pyrite.
16.00	31.10	Massive, short jointed, hard, impure ?quartzite (?thermal metamorphic) with a few thin fossil intervals. Pyrite in fossils at 20.6, 28.1. Bedding at 45° to core axis at 22.8. <b>Note:</b> It appear that the bright green mineral and pyrite do not occur together.
31.10	34.40	Similar ?pelitic hornfels to 0-16, but fossils replaced by pyrite - no bright green mineral. Fossils comprise 5-10% of rock overall. Bedding 45° to core axis at 31.3 and 55° to core axis at 34.
34.40	39.60	?Quartzite similar to 16-31.1 with a few scattered fossils (eg 38.4) replaced by pyrite that is mostly oxidized to limonite. Common limonite on fractures.
39.60	40.60	Similar ?pelitic hornfels as 0-16, but fossils are mostly leached cavities, some containing limonite.
40.60	42.80	?Lamprophyre - medium brown, fine grained, porphyritic rock containing 5-10% of 2-3mm long phenocrysts of black amphibole and a few percent of felsic prisms. Phenocrysts define a flow foliation which is 85° to the core axis at 42.
42.80	45.70	Fossiliferous interval with fossils replaced by spongy pyrite and by fawn mineral in radiating sheaves. Bedding 55° to core axis at 45.
45.70	48.30	Uniform, massive, medium purplish to greenish grey, impure ?quartzite (?chloritic). Limonite on fractures.
48.30	57.10	Fossiliferous interval with fossils replaced by spongy pyrite and black to medium grey ?silicates. Bedding is 40° to core axis at 50.2 and 45° to core axis at 55. <b>Note:</b> The core in the fossiliferous intervals in this hole is coated by a yellowish powder which appears to have formed during storage in the core trays. The trays are corroded and the rocks smell and feel acidic. A few fossil cavities contain replacement minerals whilst

		most contain limonite or are leached voids. The fossils are oriented parallel to bedding.
57.10	61.40	Fractured and limonite stained ?quartzite like 16-31.1.
61.40	62.60	Fossiliferous interval in which fossils are largely replaced by silicate minerals, sulphide is apparently minor.
62.60	72.40	Porphyry with relatively coarse grained, tabular, feldspar phenocrysts up to 30mm long. Free quartz present. Also about 10% dark mineral = ?black amphibole. Pyrite is 1-5% and is spatially associated with the dark mineral. The intrusive contact at 62.6 is at 45 <sup>0</sup> to the core axis whilst the intrusive contact at 72.4 is at 40 <sup>0</sup> .
72.40	75.00	Fossils comprise about 20% of the rock and show strong pyrite replacement. The pyrite is massive and coarse grained in places and shows a spatial relationship with a black ?silicate mineral. <b>Note:</b> These rocks may contain radioactive minerals and should be scanned with a scintillometer.
75.00	77.37	Purplish-grey, easily scratched, medium grained, crystalline rock that looks like quartzite, but is too soft. Possibly calc-silicate hornfels or skarn.
77.37		End of hole.

# ASSAYS

**Project:** Cygnet

**Prospect:**

**Exploration Licence:** EL29/97

**Hole Number:** CT-87-3

Sample Number	Units		ppm	ppm	ppm		ppm	ppm	ppm	ppm	ppm	ppm	%									
	Detection Limit	Method	F630	F630	A104	A104	A104	A104	A104	A104	A104	A104	A104	H104	H104	A104	H104	A104	H104	A104	A104	
	From	To	Au	Au(R1)	Au(R2)	Au(R3)	Cu	Cu(R1)	Pb	Pb(R1)	Zn	Zn(R1)	Ag	Ag(R1)	As	As(R1)	Sn	Pt	Pd	Ni	Fe	Bi
7660163	4	5	0.04	-			56			8		402		-2		-100	11					2.2
7660164	5	6	0.06	-			162			9		147		-2		-100	12					3.6
7660165	6	7	0.15	-			122			7		149		-2		-100	33					3.8
7660166	7	8	0.12	-			278			11		234		-2		-100	13					7.35
7660167	8	9	0.04	-			139			7		377		-2		-100	2					3.75
7660168	9	10	0.02	-			125			7		444		-2		-100	6					2.9
7660169	10	11	-0.01	-			122			10		524		-2		-100	8					4.9
7660170	11	12	-0.01	-			77			8		187		-2		-100	2					4.1
7660171	12	13	0.09	-			50			-5		157		-2		-100	5					7.25
7660172	13	14	0.29	0.26			53			6		321		-2		-100	7					5.6
7660173	14	15	0.08	-			74			-5		570		-2		-100	7					3.35
7660174	15	16	0.1	-			103			7		829		-2		-100	8					2.3
7660175	16	17	0.04	-			191			8		257		-2		-100	15					2.8
7660176	17	18	0.02	-			43			-5		69		-2		-100	4					3
7660177	18	19	-0.01	-			68			-5		161		-2		-100	18					2.95
7660178	19	20	0.06	-			245			-5		519		-2		-100	8					2.75
7660179	20	21	-0.01	-			50			-5		444		-2		-100	14					1.61
7660180	21	22	-0.01	-			27			-5		285		-2		-100	13					3.25

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**1F: EL29/97 Cygnet. DDH CT 87- 4 Black Jack Ridge**

From(m)	To(m)	Description
		Weathering is fairly uniform and minor throughout the core. It is expressed as limonite on joint surfaces and partial oxidation of disseminated sulphide.
00.00	13.00	Porphyry with pale grey, very fine grained groundmass and phenocrysts of mostly equant feldspar up to 5mm across. Minor phenocrysts of rounded quartz. Disseminated pyrite is 1-5%, but up to 15% in places. It is intergrown with a black mineral which it appears to replace. Pyrite also occurs as thin veinlets in fractures, notably from 7.9-8.5.
13.00	15.40	Fine grained, even grained, pale grey rock with about 10% disseminated pyrite. Sharp boundary at 13, but transitional to porphyry at 15.4. May be silicified porphyry.
15.40	27.65	Porphyry with about 5% of tabular feldspars up to 25mm long, also quartz, and black amphibole prisms and patches. Pyrite occurs in disseminated patches, apparently replacing amphibole, and in fractures. There are 2-3mm wide pyrite veinlets parallel to the core axis at 21.4-21.7.
27.65	42.20	Impure ?quartzite, not easily scratched at 28. With about 10% fossils, which are replaced by pyrite and pyrrhotite. Rock appears to be chloritic. Bedding angle with the core axis is 75° at 28.2, 55° at 33.5, and 60° at 40.4.
42.20	43.20	Unaltered porphyry with phenocrysts of tabular feldspar up to 20mm long (about 15%), black amphibole, subhedral quartz and disseminated pyrrhotite. Flow foliation at 35° to core axis.
43.20	54.00	Purplish, fine grained ?quartzite, not easily scratched at 44.6, with uncommon fossils, pebbles at 45. Fossils are replaced by pyrrhotite around 45.2 and 49.9, but elsewhere replaced by pyrite.
54.00	55.30	Complicated intrusive boundary.
55.30	75.60	Porphyry with tabular phenocrysts of feldspar up to 35mm long comprising about 15-20% of rock. Subordinate phenocrysts of rounded quartz and minor anhedral black mineral, disseminated pyrite. From 60.5 to 60.45 the tabular feldspars show crude flow alignment at 90° to core axis. After 71.5 the grain size reduces and feldspar phenocrysts are less abundant. There is a corresponding appearance of pyrrhotite as the sulphide, and patches of green alteration mineral (?epidote).
75.60		End of hole.

# ASSAYS

**Project:** Cygnet

**Prospect:**

**Exploration Licence:** EL29/97

**Hole Number:** CT-87-4

Sample Number	Units		ppm	ppm	ppm		ppm	ppm	ppm	ppm	ppm	%										
	Detection Limit		0.01	0.01	4		5	4	2	100	1										0.01	
	Method	From	To	F630	F630	A104	A104	A104	A104	A104	A104	A104	A104	H104						A104		
			Au	Au(R1)	Au(R2)	Au(R3)	Cu	Cu(R1)	Pb	Pb(R1)	Zn	Zn(R1)	Ag	Ag(R1)	As	As(R1)	Sn	Pt	Pd	Ni	Fe	Bi
7660181	3	4	0.06	-			46		8		254		-2		-100	31						2.9
7660182	4	5	0.17	0.17			195		-5		147		-2		-100	52						4
7660183	5	6	0.17	-			166		12		142		-2		200	>100						2.85
7660184	6	7	0.36	0.34			101		14		124		-2		270	>100						2.7
7660185	7	8	0.15	-			205		17		125		-2		180	>100						3.35
7660186	8	9	0.14	-			107		7		135		-2		170	>100						3.15
7660187	9	10	0.09	-			53		6		368		-2		230	>100						2.85
7660188	10	11	0.04	-			43		13		199		-2		140	>100						2.4
7660189	11	12	0.44	0.39			76		14		130		-2		330	>100						3.8
7660190	12	13	0.28	-			59		15		117		-2		110	>100						2.15
7660191	13	14	0.07	-			86		23		199		-2		140	>100						3.05
7660192	14	15	0.04	-			118		14		385		-2		710	>100						6.35
7660193	15	16	0.05	-			60		20		277		-2		210	>100						3.95
7660194	16	17	0.02	-			204		18		407		-2		110	>100						3.8
7660195	17	18	0.02	-			134		14		170		-2		-100	74						2.5
7660196	18	19	-0.01	-			87		-5		189		-2		-100	22						2.6
7660197	19	20	-0.01	-0.01			87		19		362		-2		-100	78						3.05
7660198	20	21	0.14	-			102		5		424		-2		-100	32						2.45
7660199	21	22	0.08	-			142		-5		754		-2		-100	19						4
7660200	22	23	-0.01	-			82		5		747		-2		-100	35						3.45
7660201	23	24	-0.01	-			146		-5		288		-2		-100	26						3.3
7660202	24	25	0.02	-			108		7		282		-2		-100	43						2.85
7660203	25	26	-0.01	-			82		7		597		-2		-100	43						3.45

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Sample Number	Units		ppm	ppm	ppm		ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	
	Detection Limit		0.01	0.01	4		5	4	2	100	1											0.01
	Method		F630	F630	A104		A104	A104	A104	A104	A104	H104										
From	To	Au	Au(R1)	Au(R2)	Au(R3)	Cu	Cu(R1)	Pb	Pb(R1)	Zn	Zn(R1)	Ag	Ag(R1)	As	As(R1)	Sn	Pt	Pd	Ni	Fe	Bi	
7660204	26	27	0.15	-			87		7	378		-2		-100	49						2.25	
7660205	27.65	28	0.15	0.14			88		-5	451		-2		-100	89						3.4	
	27	27.65	0.08	-			169		-5	315		-2		-100	60						3.6	
	27	27.65	0.08	-			169		-5	315		-2		-100	60						3.6	
	27.65	28	0.15	0.14			88		-5	451		-2		-100	89						3.4	
7660206	28	29	-0.01	-			108		-5	303		-2		-100	15						5.25	
7660207	29	30	0.32	-			117		-5	234		-2		-100	3						3.75	
7660208	30	31	0.21	-			170		5	250		-2		-100	6						3.6	
7660209	31	32	0.15	-			154		-5	285		-2		-100	6						4.05	
7660210	32	33	0.84	0.81			107		7	150		-2		-100	7						3.55	
7660211	33	34	0.17	-			135		6	253		-2		-100	32						3.5	
7660212	34	35	0.07	-			84		-5	194		-2		-100	10						2.65	
7660213	35	36	1.34	1.11			101		18	308		-2		-100	52						2.2	
7660214	36	37	-0.01	-			73		17	278		-2		-100	19						2.4	

628037

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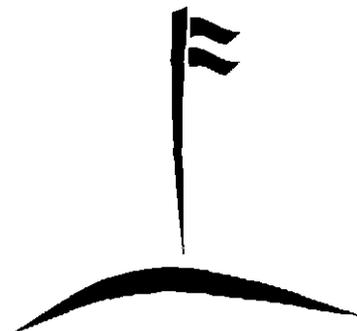
Geophysical Interpretation - Cygnet - EL 29/97

Flagstaff Geo-Consultants; Pacific Nevada Pty Ltd\*  
Hungerford, N. EL29/97

628038

# Flagstaff Geo-Consultants

PACIFIC NEVADA PTY LTD  
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GEOPHYSICAL INTERPRETATION



**Flagstaff**  
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CYGNET, TASMANIA  
GEOPHYSICAL INTERPRETATION

BY N. HUNGERFORD  
FLAGSTAFF GEOCONSULTANTS  
AUGUST 1999

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**SUMMARY**

At the request of Pacific Nevada Mining Pty Ltd, the geophysical data covering the Cygnet area have been interpreted. These include detailed aeromagnetic survey data acquired recently by Pacific Nevada, and regional gravity data from the Tasmanian Government.

The data clearly define a large strongly magnetic syenite intrusion, plus other less magnetic intrusions and ring structures nearby. There is also a discrete, very high amplitude anomaly which is attributed to pyrrhotite or magnetite alteration in sediments adjacent to the main intrusion. This very magnetic source is at shallow depth beneath Port Cygnet bay.

The main syenite intrusion has created associated zones of considerable structural complexity that should provide drill targets for structurally controlled gold mineralisation, particularly where old workings occur, such as those south-west of the Mt Mary mine.

**PLANS**

**CYGNET AREA 1:25,000**

- Fig C1 Total Magnetic Field (Reduced to Pole)
- Fig C2 1<sup>st</sup> Vertical Derivative (Reduced to Pole)
- Fig C3 2<sup>nd</sup> Vertical Derivative (Reduced to Pole)
- Fig C4 Magnetic Analytic Signal
- Fig C5 Residual Bouguer Gravity
- Fig C6 Geology with 1<sup>st</sup> V.D. Magnetic Contours
- Fig C7 Digital Terrain from aeromagnetic survey
- Fig C8 Geophysical interpretation

**MT MARY AREA 1:25,000**

- Fig M1 1<sup>st</sup> Vertical Derivative (Reduced to Pole)
- Fig M2 2<sup>nd</sup> Vertical Derivative (Reduced to Pole)
- Fig M3 Digital Terrain with Syenite Outcrops

N.B. Maps at the above scales have been provided to Pacific Nevada's Perth office. These scales have been reduced by a factor of 2 (Cygnet) and 2.5 (Mt. Mary) for this report, in order to include the maps at A3 size.

### AIRBORNE GEOPHYSICAL SURVEY

The airborne survey was flown by UTS Geophysics in May 1998 using a data acquisition system mounted in a single engine Squirrel helicopter and magnetic sensor in a stinger.

Data acquisition parameters were specified to be:

Line spacing = 50 metres  
Reading interval = approx 4 metres  
Line direction = 0-180 degrees TN  
Mean sensor height = 30 metres  
Navigation by Differential GPS.

Due to the topography over the Cygnet area, the sensor height varied considerably and frequently exceeded the 30 metres specified. Statistically the aircraft radar-altimeter readings varied between 15 and 260 metres with a mean of 72 metres.

This is not too important for magnetic surveys in terms of shallow source detection, but the measured magnetic field will be distorted because no terrain corrections have been carried out.

Data quality is good with 4<sup>th</sup> differences (a measure of noise in the data) being generally low. No noise levels for the magnetic data were specified in the contract.

## **DATA PROCESSING**

The airborne data were diurnally – corrected and levelled by UTS, and the data were delivered on CD-ROM to Pacific Nevada via Flagstaff GeoConsultants.

Flagstaff subsequently processed the levelled data using Geosoft software, to produce a variety of images from the magnetic data.

Initially the levelled, located data were gridded using a bi-directional algorithm to produce a TMI grid with a cell size of 13 metres. This grid was then filtered using the Fast Fourier Transform (FFT) process to produce the following grids and images:

- Total Magnetic Intensity (Reduced To Pole) (Fig C1)
- 1<sup>st</sup> Vertical Derivative (RTP) (Figs C2,M1)
- 2<sup>nd</sup> Vertical Derivative (RTP) (Figs C3, M2)
- Analytic Signal (Fig C4)

A Digital terrain grid and image were produced from the radar-altimeter and GPS height information obtained during the survey. (Figs C7,M3)

A Bouguer gravity image was also produced from a grid created using open-file data from MRT (Mineral Resources, Tasmania) (Fig C5). The station spacings varied considerably, from 200 to 1200 metres over the Cygnet area, so the gridding was carried out using a minimum-curvature procedure with a cell-size of 250 metres.

Images over the whole Cygnet survey area have been plotted at 1:25,000 scale, with those over the Mt Mary's area at 1:50,000 scale. (Reduced by factors of 0.5 and 0.4 for inclusion in this report).

## GEOPHYSICAL INTERPRETATION

The outcrop geology of the Cygnets area consists of Permian sediments (generally mudstones and siltstones overlying a basal tillite which is presumed to unconformably overlie Ordovician basement).

Introduced into and through the sediments are Jurassic dolerites and Cretaceous syenites. From outcrop mapping (Tas Dept. of Mines, Kingborough 1:50,000 sheet, 1981), the dolerites predominate in the east of the aeromagnetic survey area with the main body of syenite in the centre.

The syenite has intruded so as to produce a domal form to the sediment package, with the basal Truro Tillite Formation exposed over the centre of the area.

These sediments are essentially non-magnetic, at least in comparison with the much more magnetic syenites and dolerites, so their distribution cannot be mapped from the airborne survey.

The geophysical interpretation plan (Fig C8) shows the plan position of the magnetic sources taken from the airborne magnetic survey, as well as the outcrop distribution of the sediments (as one non-magnetic unit), the Jurassic dolerites and the main syenite outcrops.

Clearly the distribution of the syenite varies with depth below surface, and this is hard to represent in plan. On Fig C8 the sub-surface (syenite?) sources have been shown as red crossed areas, with the outcrop in solid red. Some of these magnetic sources have been modelled quantitatively using the Model Vision program, and the depths to the top of the sources are indicated along the modelled profiles (which were extracted from the TMI grid). The modelled profiles are included at the end of this report.

The distribution of the syenite is derived from the various magnetic images which each show different aspects of the data. The TMI image (Reduced to the Pole in order to place the magnetic anomaly directly over the magnetic source) indicates the responses from sources at all depths, whereas the 1<sup>st</sup> and 2<sup>nd</sup> vertical derivatives give indications of source distributions at shallow and very shallow depths which will relate most closely to outcropping syenite.

It will be noticed from the geological map (Fig C6), which has 1<sup>st</sup> vertical derivative magnetic contours superimposed, that many of the syenite outcrops, as along the road below the Mt Mary mine, apparently have no magnetic signature.

This is either because the particular syenite phase is non-magnetic, or the outcrop if magnetic, is thin with little (strike) extent. The variability in magnetic susceptibility was verified during a field visit, during which it was apparent that the syenite outcrops (at least those few visited) generally vary between .001 and .02 SI units (100 to 2000 x 10<sup>-5</sup>SI).

With regard to the magnetic susceptibilities of the other rock types, the sediments as expected are non-magnetic except where they contain pyrrhotite such as occurs in outcrop along the fore-shore of Port Cygnets (both west and east shores). At these

locations, susceptibilities of samples with only a few percent pyrrhotite increase up to .04 SI units.

No susceptibility measurements were taken on the Jurassic dolerites, since no outcrop was visited. Dolerites can normally be expected to have a susceptibility range similar to that of the syenite. However in the Cygnet area the dolerites generally appear to be rather less magnetic judging from their magnetic responses observed from the airborne survey (see the TMI image, Fig C1 and Geology plan, Fig C6).

That the dolerite has a weaker magnetic signature to the syenite may be less a function of susceptibility, and more a function of volume. Since the dolerite appears to be in the form of thin sheets (ie flows) and narrow feeder dykes, it can be expected to have less magnetic response than the syenite which appears to be more like a large deep domal intrusion (with subsidiary dykes off it).

Leaman (1967) indicates from previous work that both syenite and dolerite are remanently magnetised with magnetic field inclinations of about -85 deg and declinations of about 320deg. (The present earth's field has an inclination of -73 and declination of 13.5). He does not state what the Königsberger ratio is (ratio of induced to remanent field), which is important in deciding whether remanence has an effect on magnetic responses. (Remanence has been ignored in the present modelling.) Leaman also <sup>does</sup> not state whether any susceptibilities were previously measured.

From the magnetic images, particularly the TMI which includes responses from sources at all depths, it can be seen that there are a number of discrete magnetic features over the Cygnet area. (Fig C1).

The magnetic field is dominated by two sources in the centre of the survey area. The western one is a circular feature with a diameter of about 1400 metres, centered at about 504600mE, 5219600mN (A, Fig C8). This appears to be a syenite stock having a core less magnetic than its periphery. This variation in magnetisation may be due to different magnetic phases, or there may be some thermal metamorphism of the surrounding sediments with a corresponding increase in magnetite and/or pyrrhotite content within these sediments.

The other main magnetic source has its peak located under the waters of Port Cygnet at 507060mE, 5219250mN (B, Fig C7). The outcrop along the closest fore-shores may give some clue to the source in that the outcropping syenites and sediments are generally weakly magnetic except where disseminated pyrrhotite and magnetite are present. The so-called 'hybrid' zone which is supposedly a mix of dolerite and syenite (near Robleys Pt) is very variably magnetic, with values from .00002 to .03 SI.

This strong magnetic feature appears to be in the form of a synclinal fold plunging to the south-west, so that its western limb will be at some depth below the foreshore. This form is unlikely to be an actual stratigraphic unit, but more a function of the attitude of some feeder system from an adjacent less magnetic syenite.

The magnetic modelling lines 1 and 2 (locations on Fig C1) suggests a very broad magnetic feature with a susceptibility of about 0.1 SI. This can be envisaged as a

combination of magnetic syenite intrusion and surrounding magnetic alteration, but as with all magnetic modelling the shape is non-unique.

The presence of disseminated pyrrhotite and possibly magnetite in foreshore rocks, suggests that the main underlying magnetic feature may well be caused by massive pyrrhotite and/or magnetite, either as alteration or replacement in the sediments. The latter is least likely since no limestones are known to exist at the base of the tillite sequence unless it is unusually fossiliferous at this location.

The evidence for stating that these two main magnetic features have different sources arises firstly from the aeromagnetics which indicates the eastern source (B) to be much more magnetic in keeping with the presence of pyrrhotite rather than just syenite. Secondly the gravity data (Fig C5) clearly show a distinction in density between the two sources, with the western source (A) having a much lower density more appropriate to syenite, whereas the eastern source (B) appears to have no distinct gravity response. (A low amplitude residual gravity response may be semi-coincident, but the lack of gravity stations across Port Cygnet means a consequent lack of spatial resolution at this location).

There are other large magnetic sources in the Cygnet area as follows (see Fig C8).

C,D. Two ring-structures to the south of the main intrusion, A, are best expressed on the 1<sup>st</sup> vertical derivative image (Fig C2). These are different types of intrusive being less magnetic and more dense (probably having less quartz) with weak metamorphic aureoles. A large outcrop of syenite occurs in this area, at about 504000mE, 5216500mN on the geological map, Fig C6. The lack of any magnetic response coincident with the outcrop is a good example of the variability in syenite susceptibility which elsewhere can be so high ( This can be seen from the contours of 1<sup>st</sup> vertical derivative superimposed on the geology on Fig C6).

E. A fairly magnetic source is located with a peak at 508500mE, 5220560mN. Modelling of this source (line 3, Fig C1) indicates a large intrusive, with a depth to the top of the main body of about 100meters. It appears to be bounded to the south by a major SW-NE fault with thin dykes extending from it. Since it only has a weak associated gravity low, it is probably a different syenite phase compared with the main syenite intrusion (A) which is about 4kms to the WSW.

### STRUCTURE

A number of faults are evident from the magnetics and these are shown on the geophysical interpretation map (Fig C8). The predominant strike directions are 75, 110 and 140 degrees with considerable faulting centered on the main syenite intrusion, A. Presumably much of this faulting is as a result of the uplift due to the intrusion.

Many of these magnetic-derived faults have not been mapped in outcrop geology, presumably because they do not offset different lithologies and are therefore not obvious in the field.

Conversely most of the faults shown on the geological map have no expression on the aeromagnetic images. This is not only because the faulted sediments are not magnetic,

but also presumably because the faulting in the sediments well pre-dates the Cretaceous intrusion. Nonetheless these earlier faults may have been conduits for the later syenite (and dolerite?) dykes and sills.

## GEOPHYSICAL TARGETS

The main syenite intrusion, A, should provide a focus for any mineralising fluids since considerable faulting and fracturing is present throughout this area. The depth to the main intrusion (excluding dykes and sills) is likely to be about 150 metres, so drilling should extend at least this deep.

A number of structural possibilities exist as drill targets, such as the intersection of major faults, and these can be ranked by their proximity to old gold-diggings, such as Coad Adit, Kings Hill and Martins which all lie on a trend south-west from the Mt Mary mine. Deep holes beneath these mines may tap into higher grade gold mineralisation adjacent to the syenite-sediment contact. ( Note that several gold deposits in the Laverton area of Western Australia are associated directly with syenite intrusions)

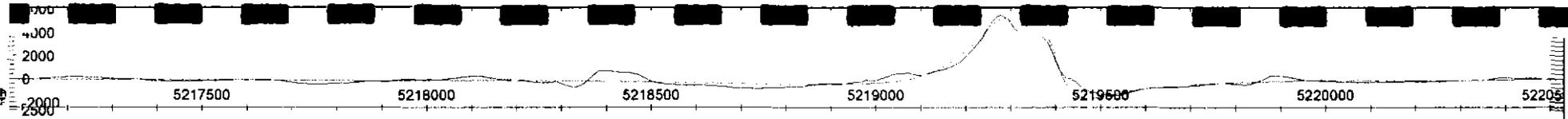
Figs M1, M2 and M3 are close-up images around the old Mt Mary mine. The magnetic images show that the Mt Mary mine is situated within a low magnetic zone, which implies that no substantial amount of (magnetic) syenite is present here. (No comment can be made on the likely depth to Ordovician basement under Mt Mary since this does not appear to be magnetic). The images also show the presence of some discreet strong magnetic anomalies that are either caused by shallow magnetic syenites or alteration from underlying syenites. These locations should be ground checked and soil sampled. (eg 504570mE, 5219900mN; 505000mE, 5219980mN; 505570mE, 5219680mN)

The other outstanding magnetic target, B, is of considerable interest since it is likely to contain significant amounts of pyrrhotite and therefore possibly gold. However drill access will not be easy due to cultural and environmental constraints, since any drill hole would have to be on the eastern foreshore. The shore at Crooked Tree Point is within 150 metres horizontal distance to the peak of the magnetic anomaly.

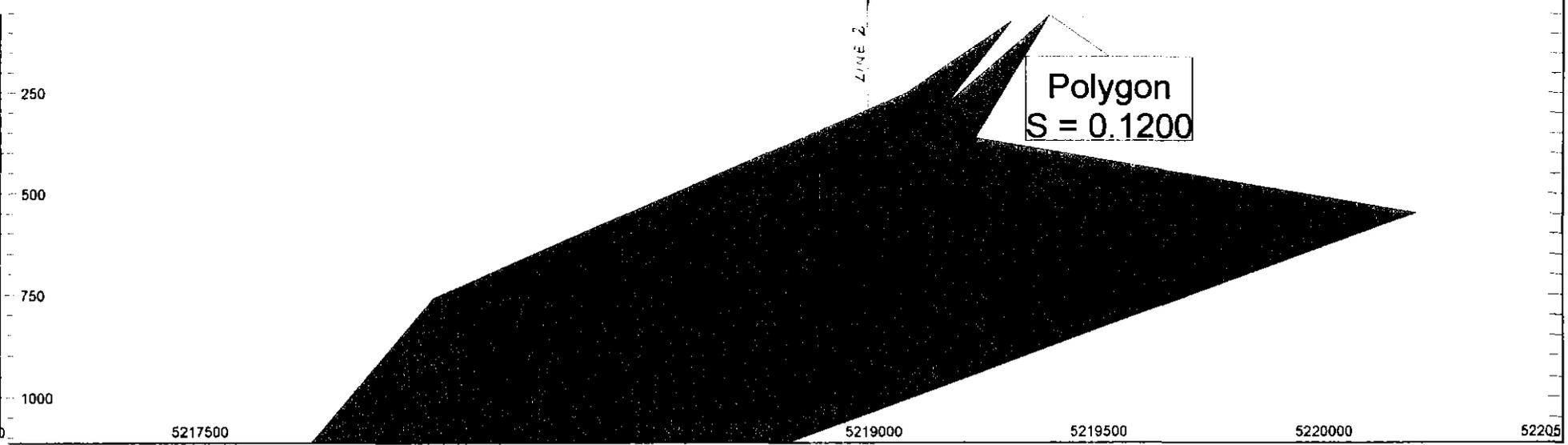
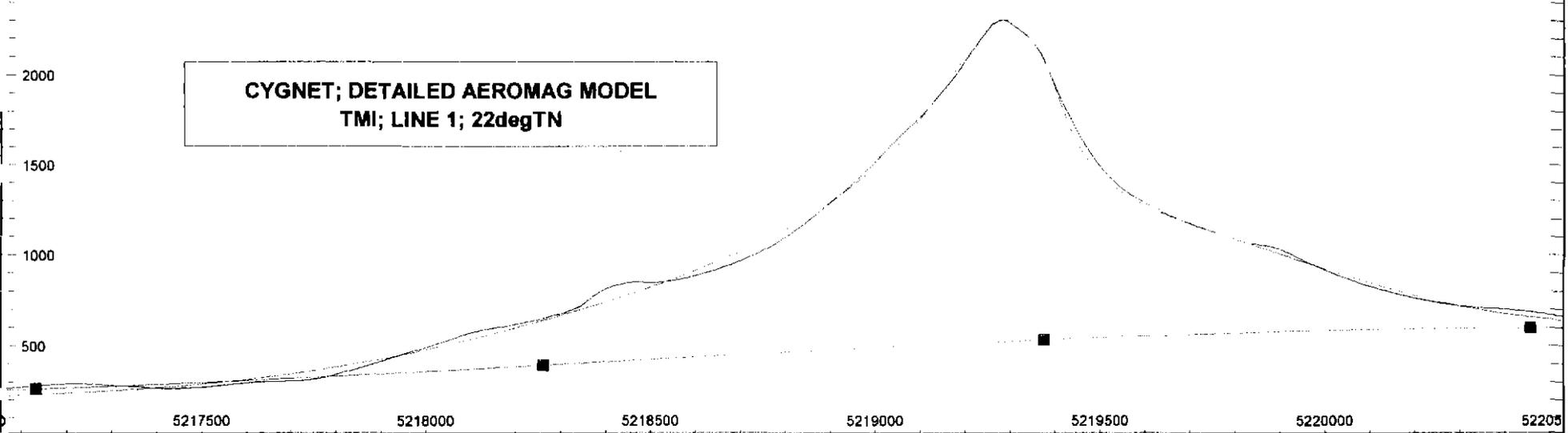
If this anomaly was on land, the presence of conductive pyrrhotite could easily be verified by the use of electromagnetic methods. In this instance that is not possible for obvious reasons. At an inclination of 60°, azimuth of 250°TN, and collar at Crooked Tree Point (507190mE, 549300mN), a hole of length about 300 metres would be required to test the magnetic source.

## REFERENCES:

Leaman (1967). Geology & Geophysics of the Cygnet District by D.E. Leaman and I.H. Naqvi. Geological Survey Bulletin No. 49. Tasmania Department of Mines.



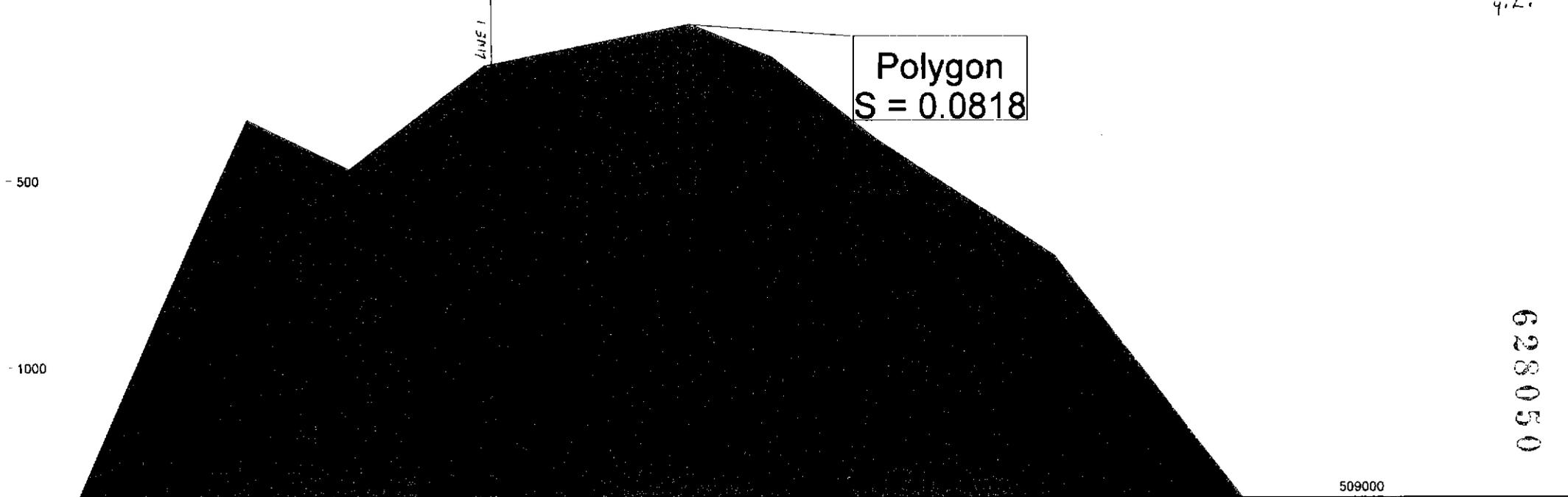
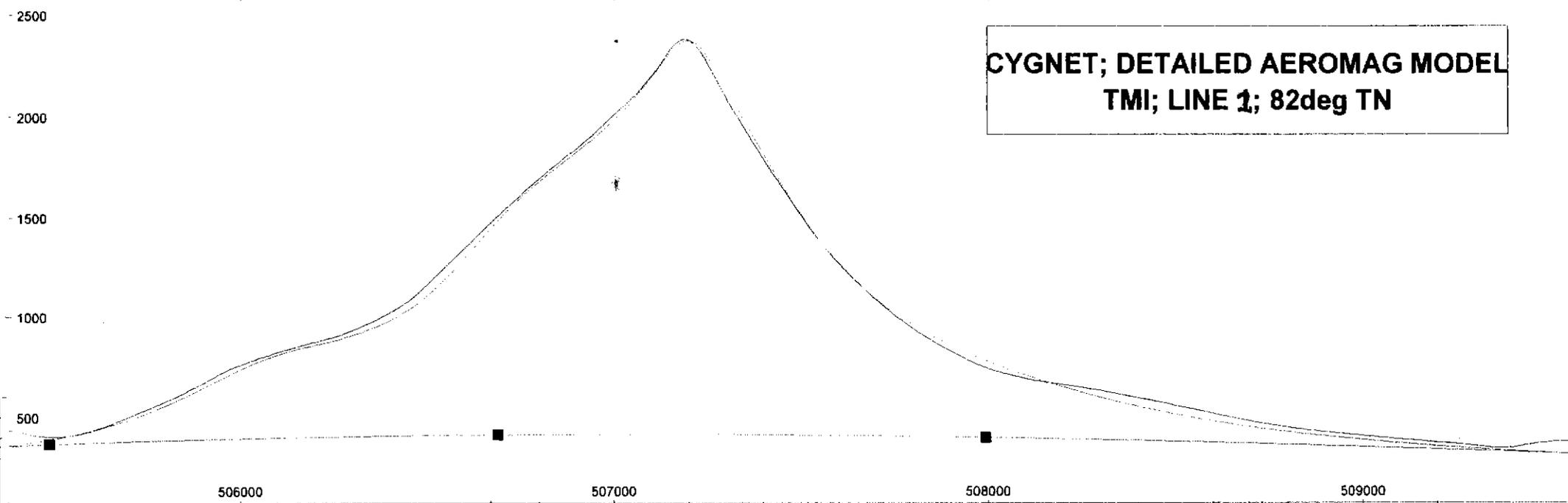
CYGNET; DETAILED AEROMAG MODEL  
TMI; LINE 1; 22degTN



628049



CYGNET; DETAILED AEROMAG MODEL  
TMI; LINE 1; 82deg TN



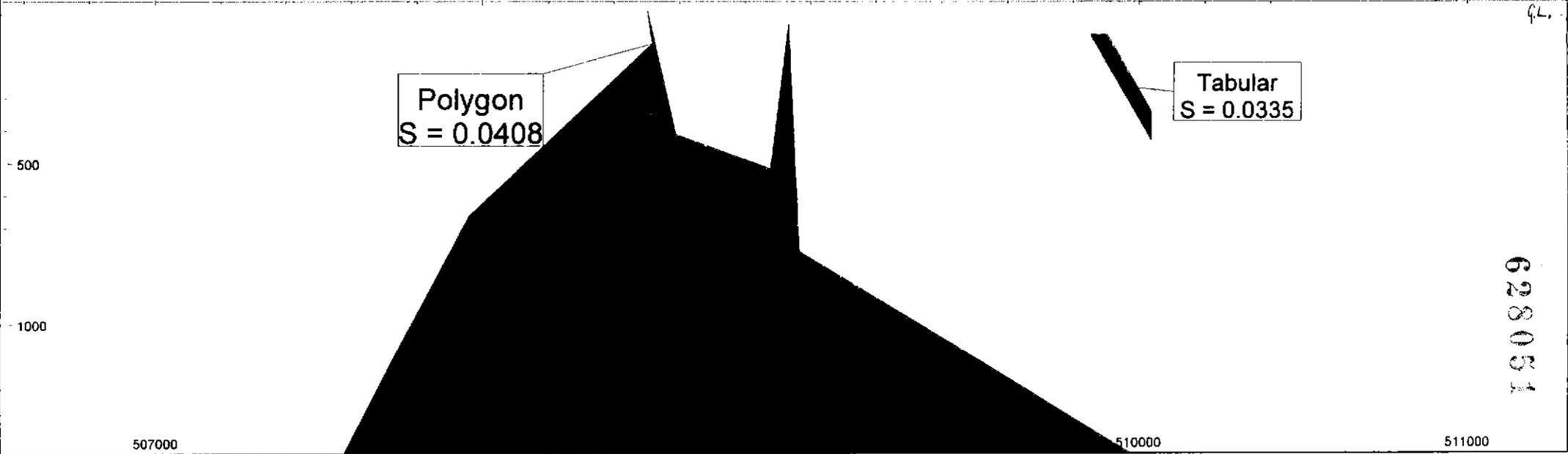
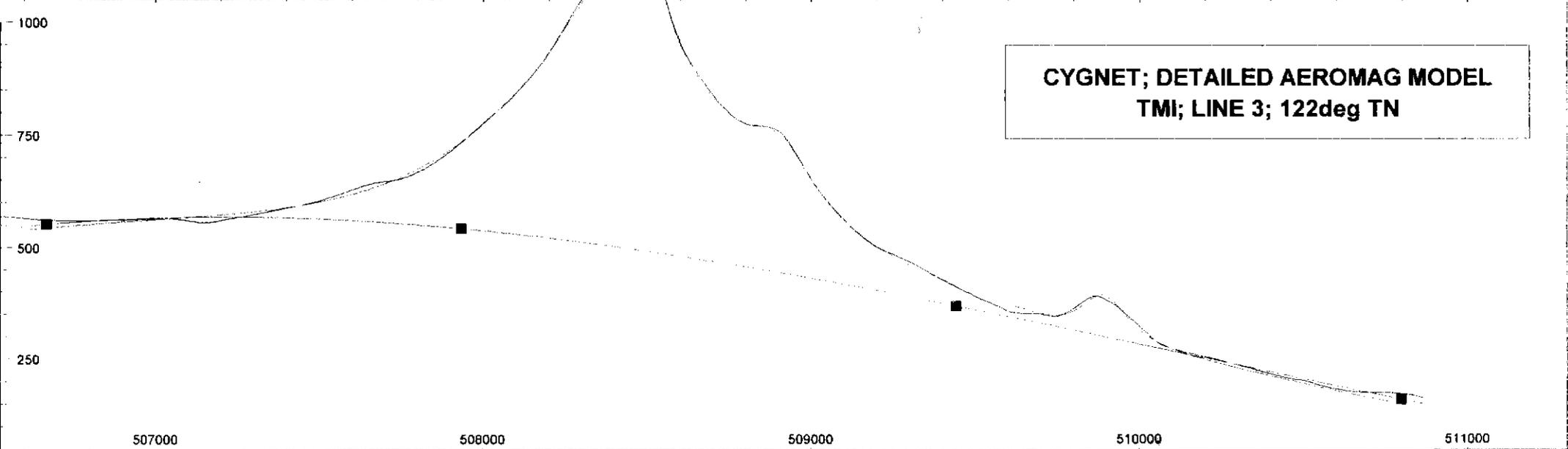
q.l.

628050

509000



**CYGNET; DETAILED AEROMAG MODEL  
TMI; LINE 3; 122deg TN**



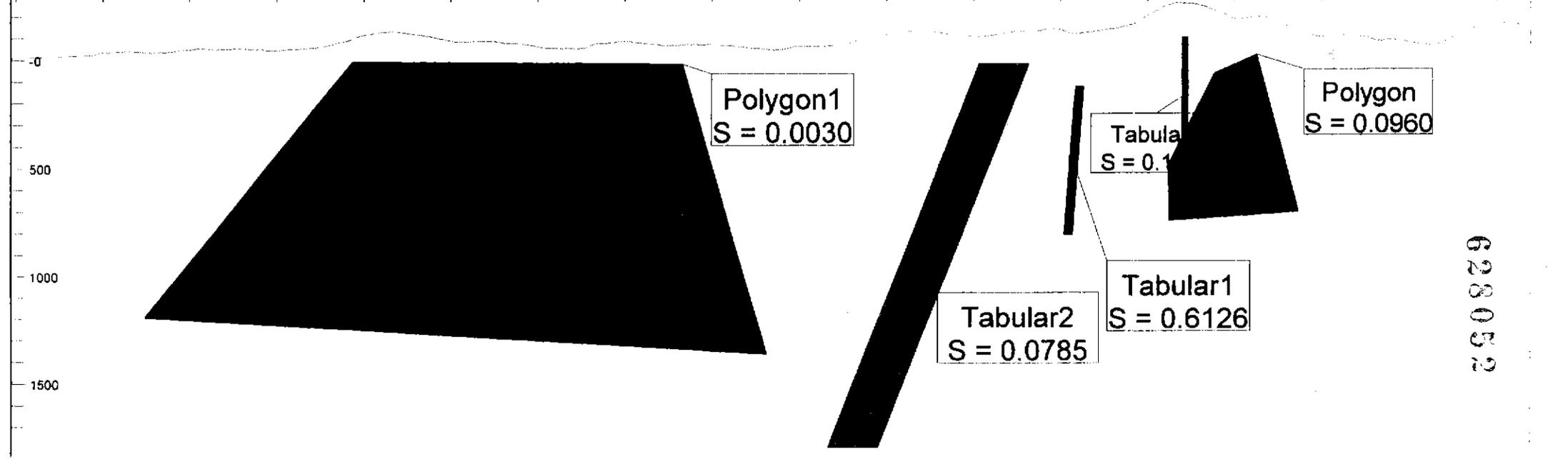
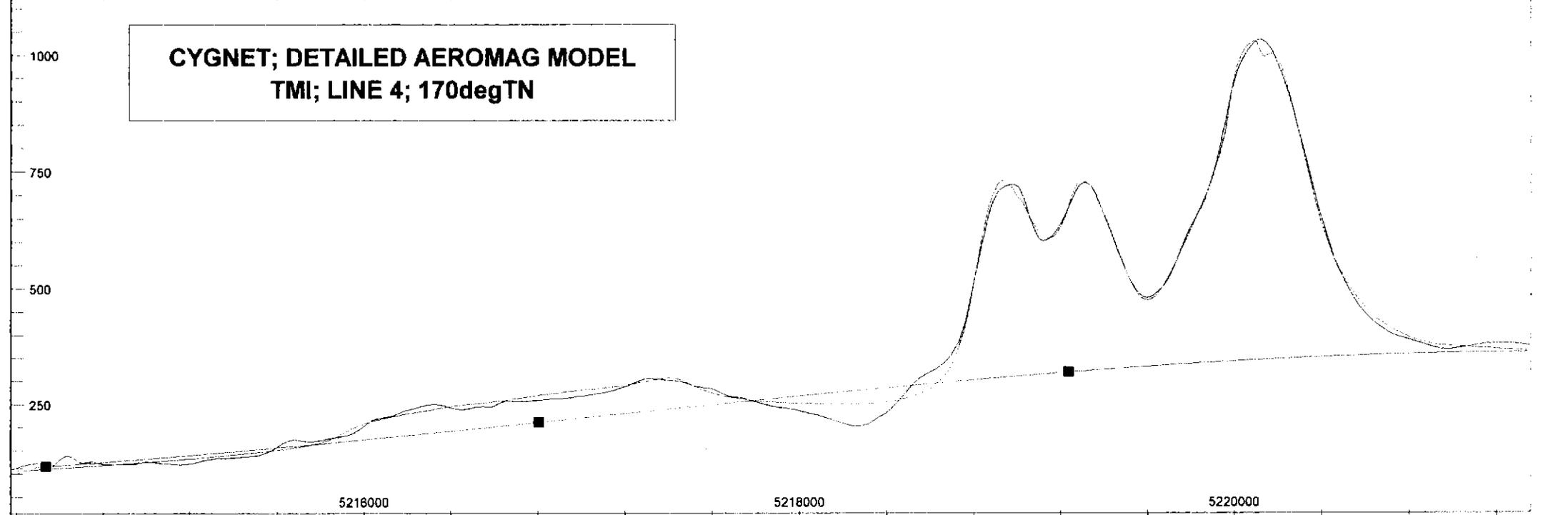
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S = 0.0408**

**Tabular  
S = 0.0335**

628051



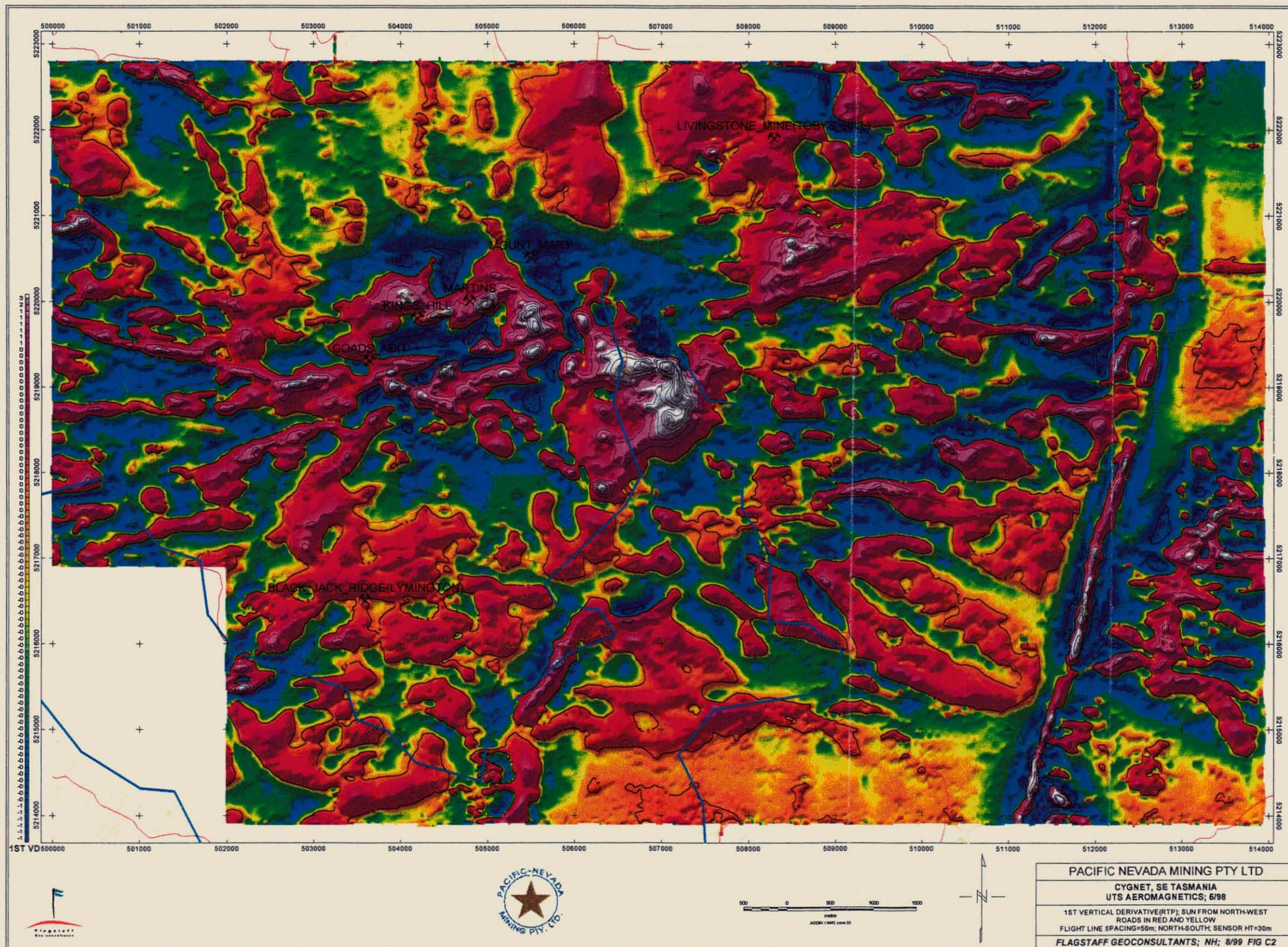
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TMI; LINE 4; 170degTN**

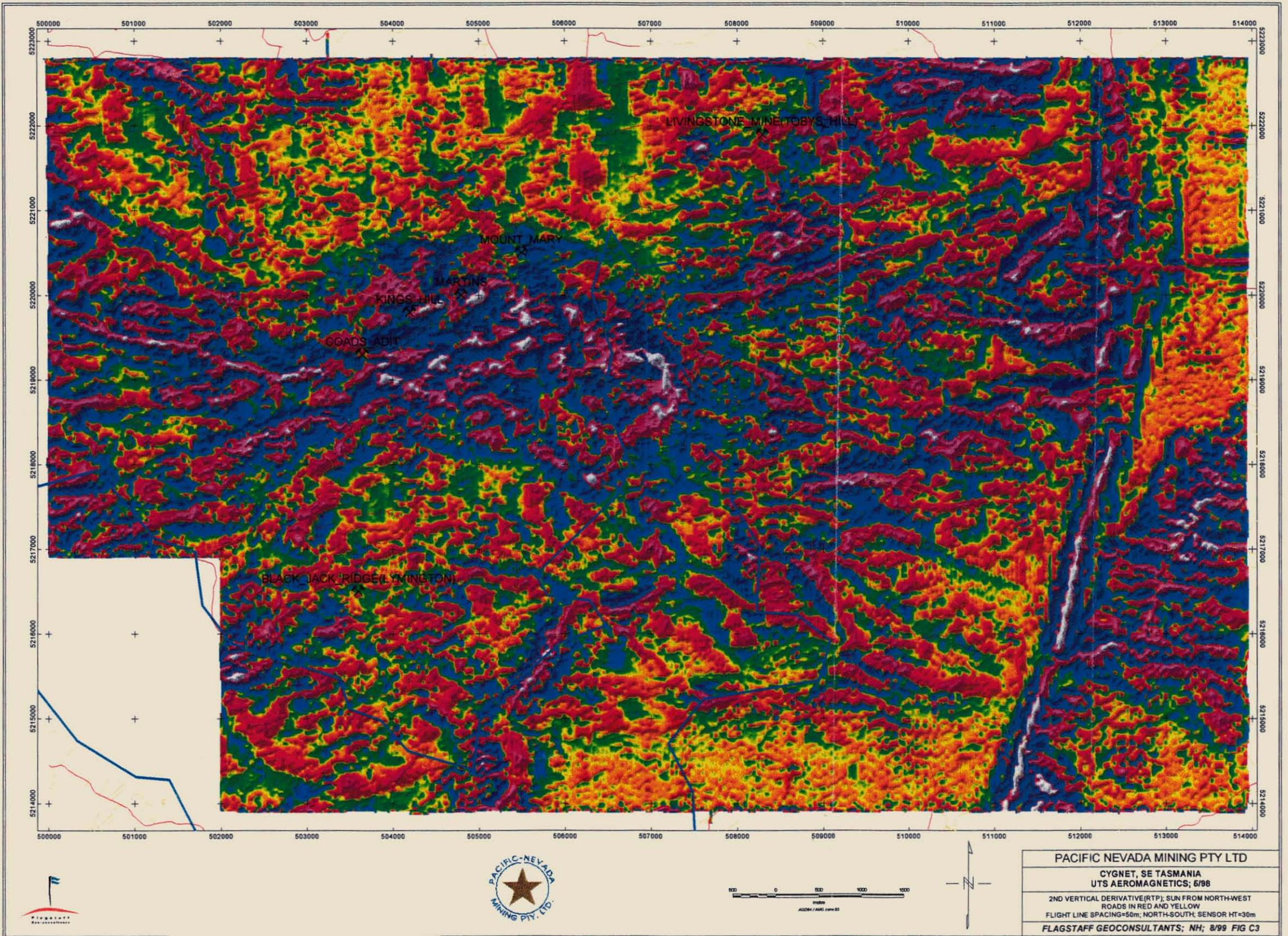


628052



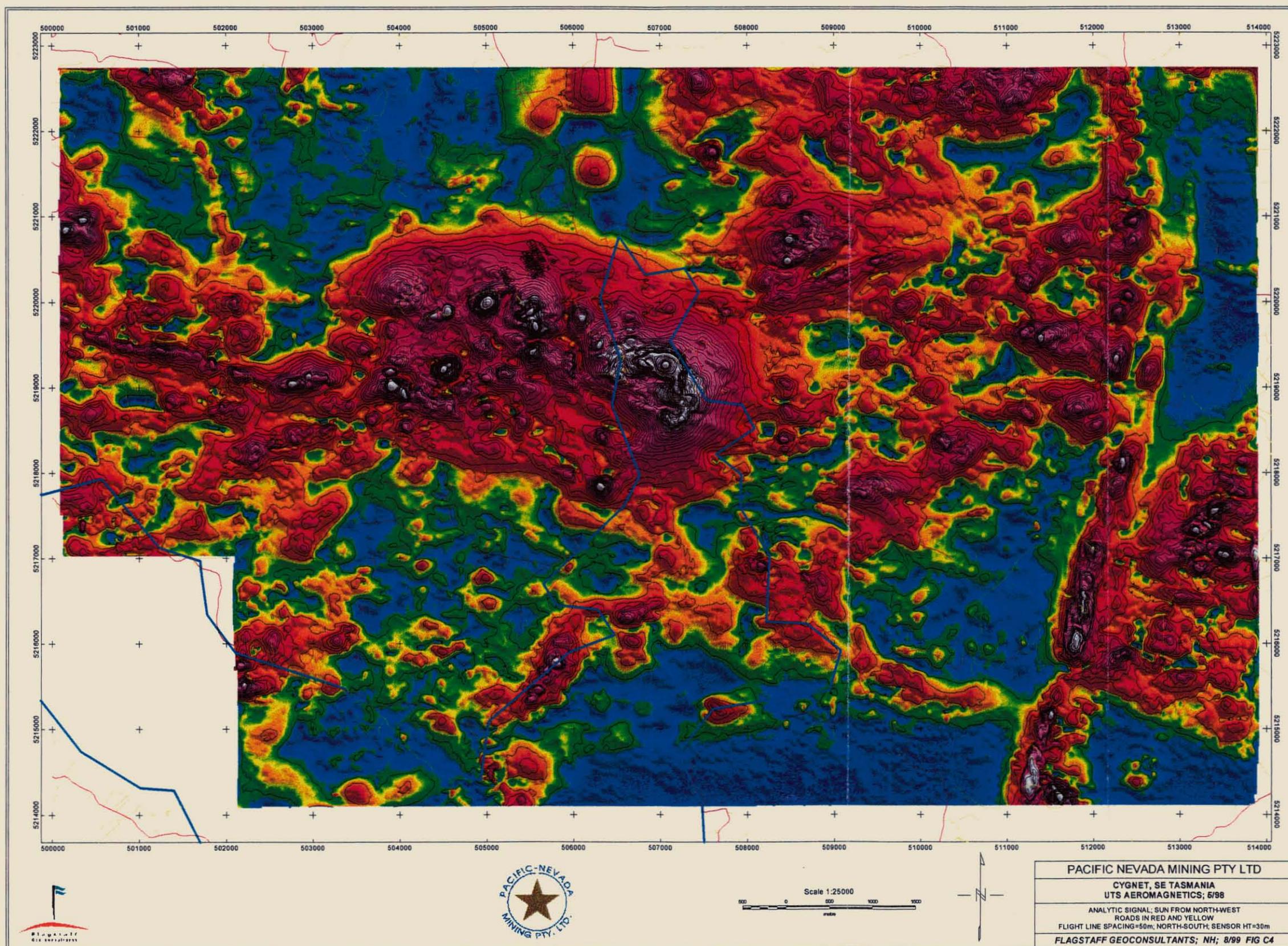




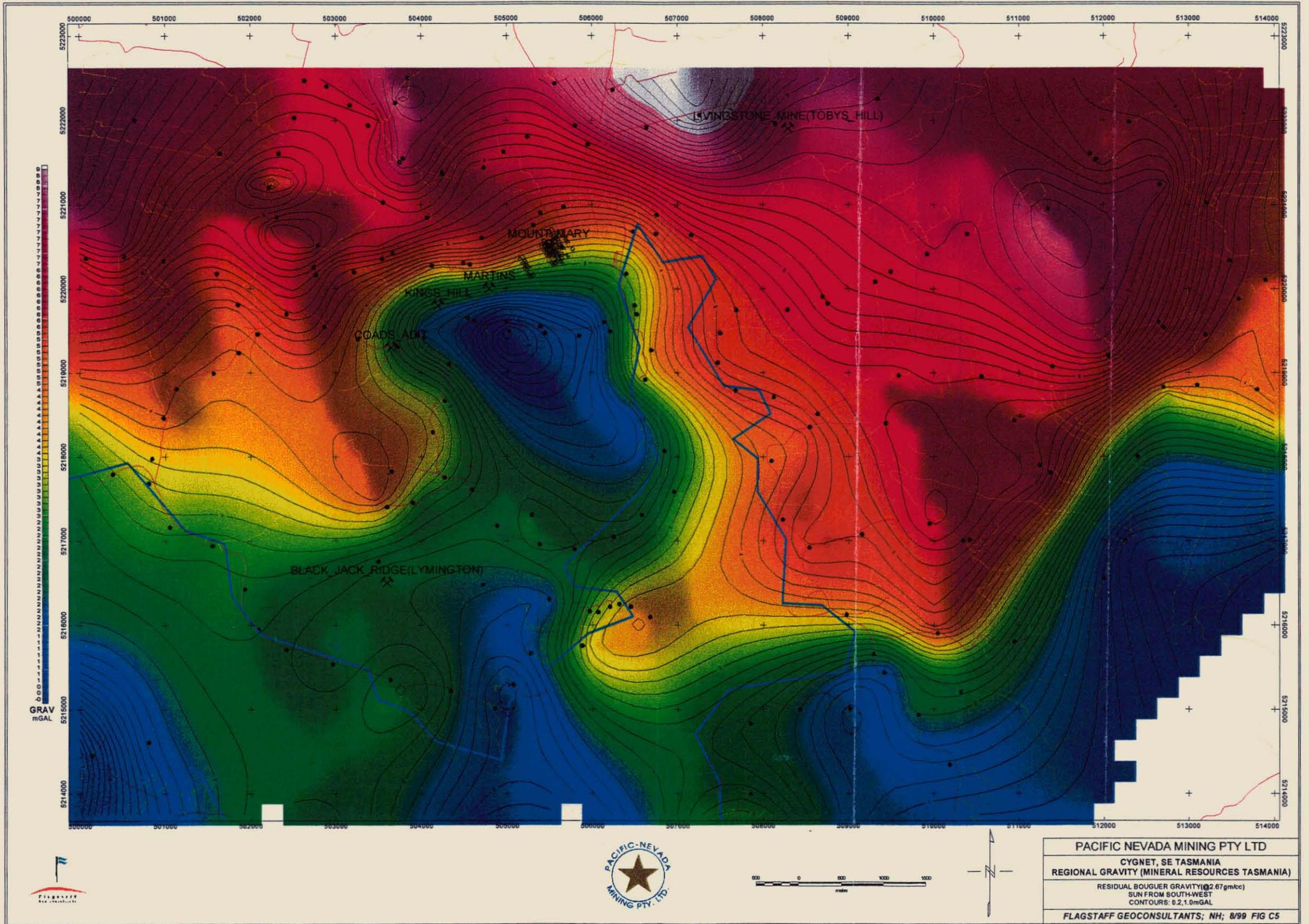


5 cm

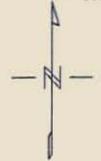
PACIFIC NEVADA MINING PTY LTD  
 CYGNET, SE TASMANIA  
 UTS AEROMAGNETICS; 5/98  
 2ND VERTICAL DERIVATIVE (RTP); SUN FROM NORTH-WEST  
 ROADS IN RED AND YELLOW  
 FLIGHT LINE SPACING=50m; NORTH-SOUTH, SENSOR HT=30m  
 FLAGSTAFF GEOCONSULTANTS; NH; 8/99 FIG C3



5 cm

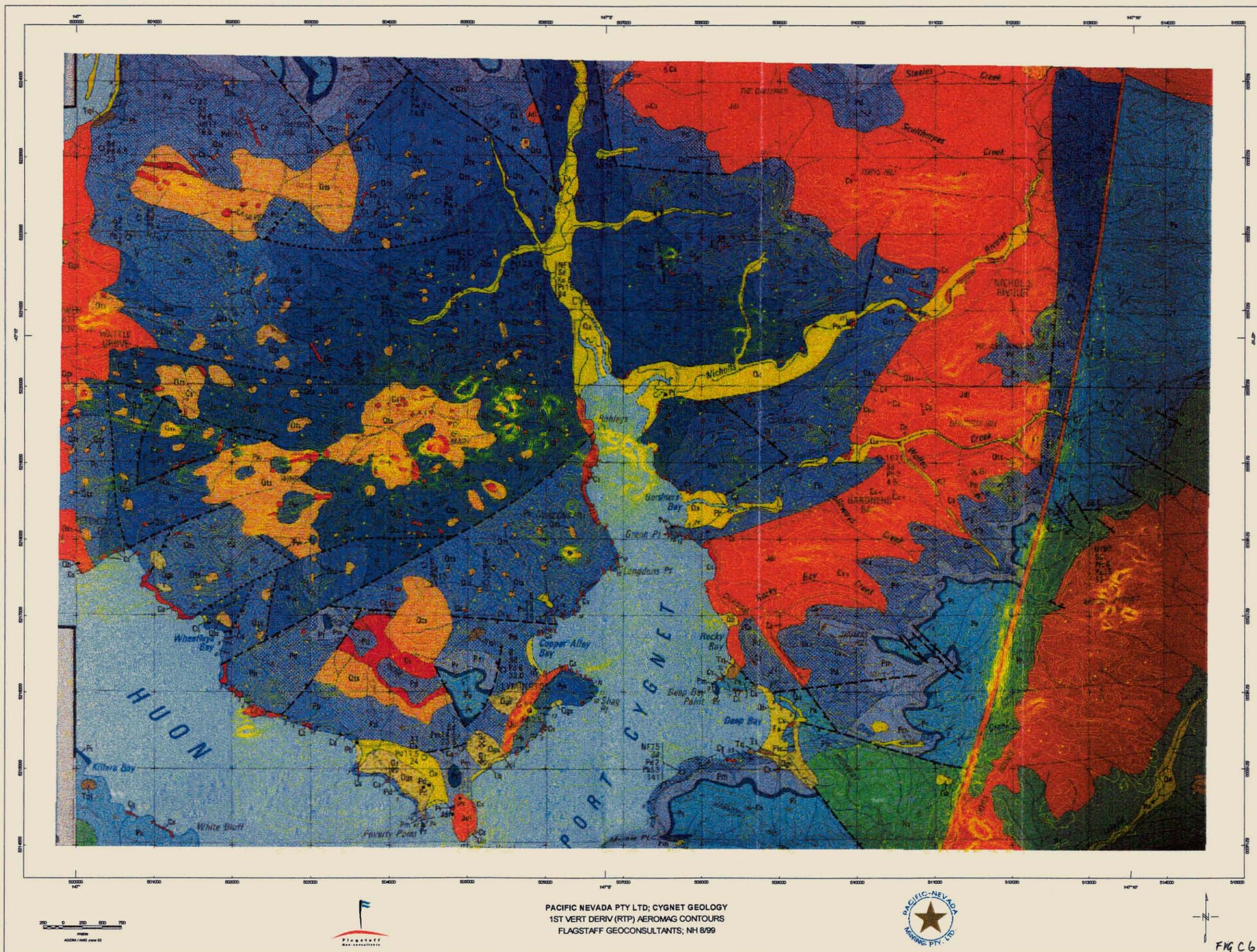


GRAV  
mGAL



PACIFIC NEVADA MINING PTY LTD  
 CYGNET, SE TASMANIA  
 REGIONAL GRAVITY (MINERAL RESOURCES TASMANIA)  
 RESIDUAL BOUGUER GRAVITY (@2.67 gm/cc)  
 SUN FROM SOUTH-WEST  
 CONTOURS: 0.2, 1.0 mGAL  
 FLAGSTAFF GEOCONSULTANTS; NH; 8/99 FIG C5

5 cm



PACIFIC NEVADA PTY LTD; CYGNET GEOLOGY  
 1ST VERT DERIV (RTP) AEROMAG CONTOURS  
 FLAGSTAFF GEOCONSULTANTS; NH 8/99

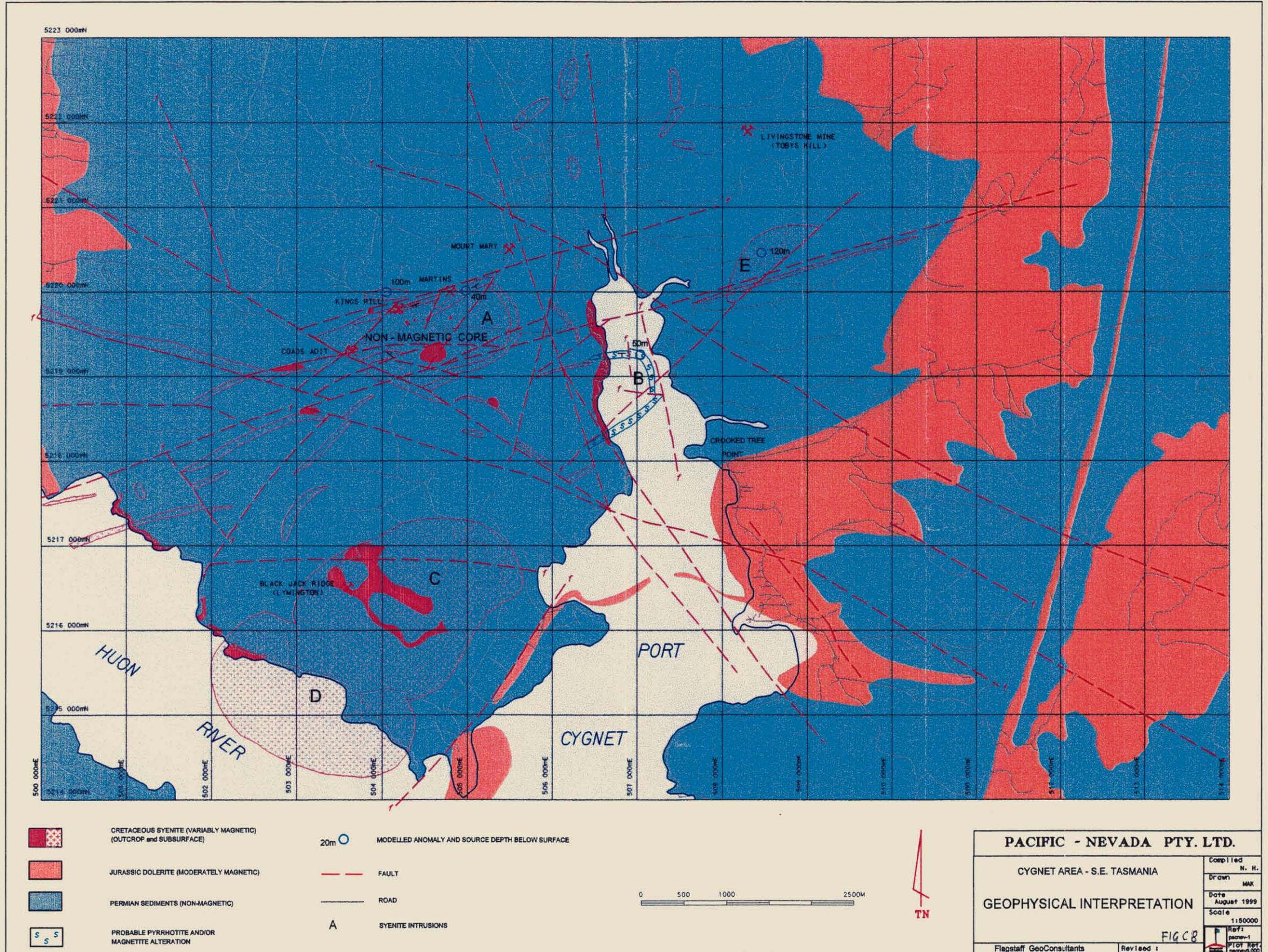


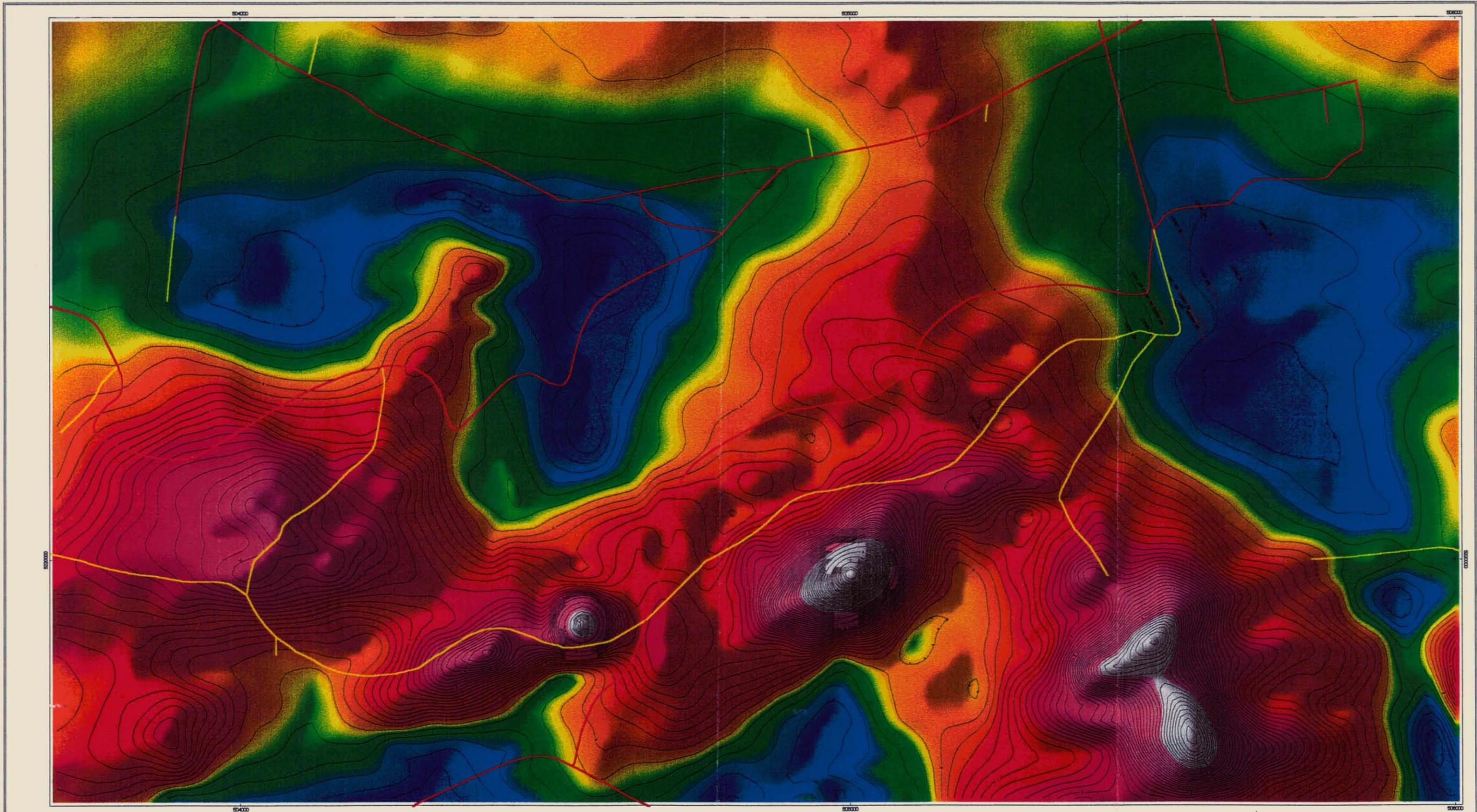
FIG C6

5 cm



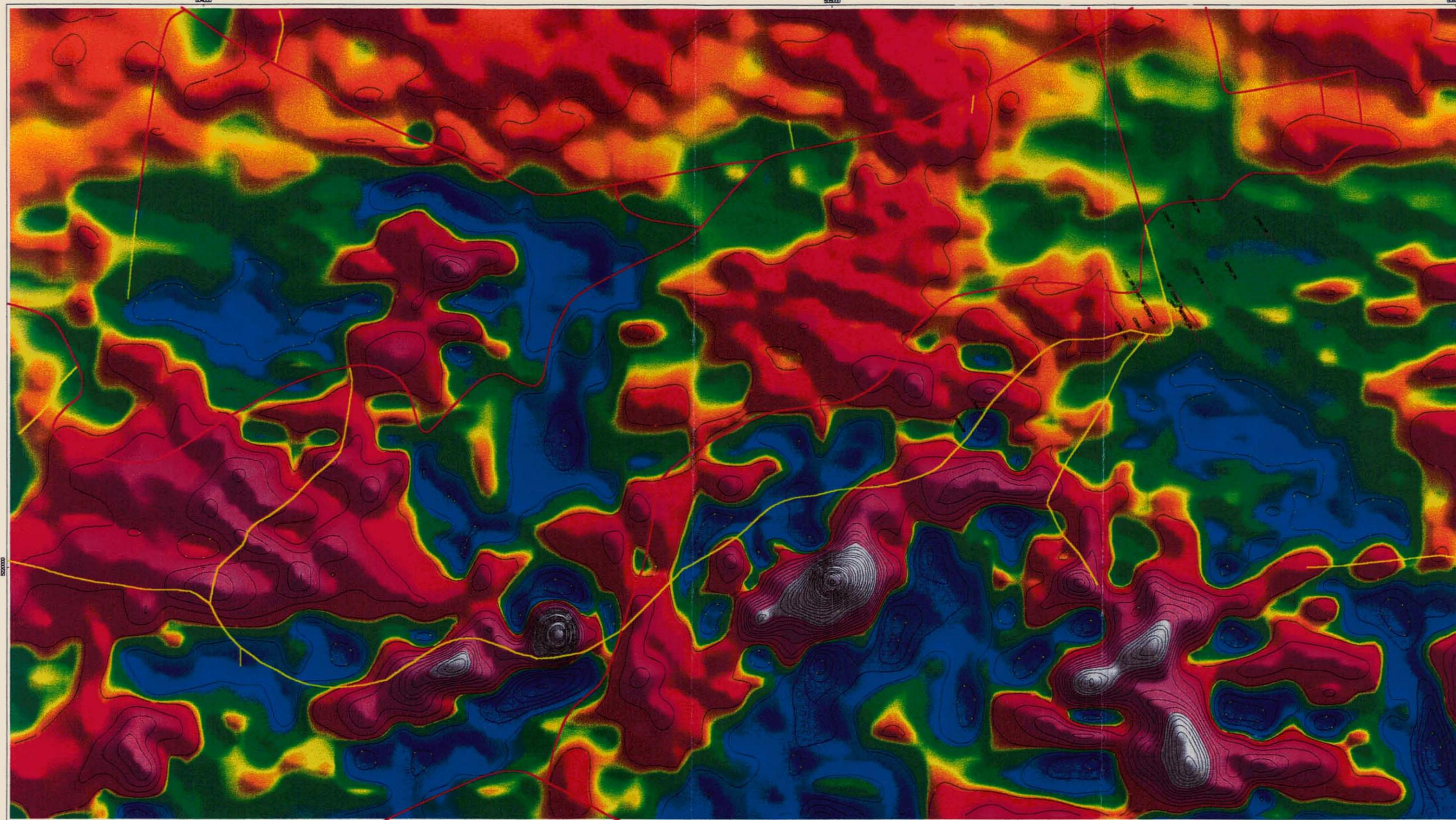
5 cm





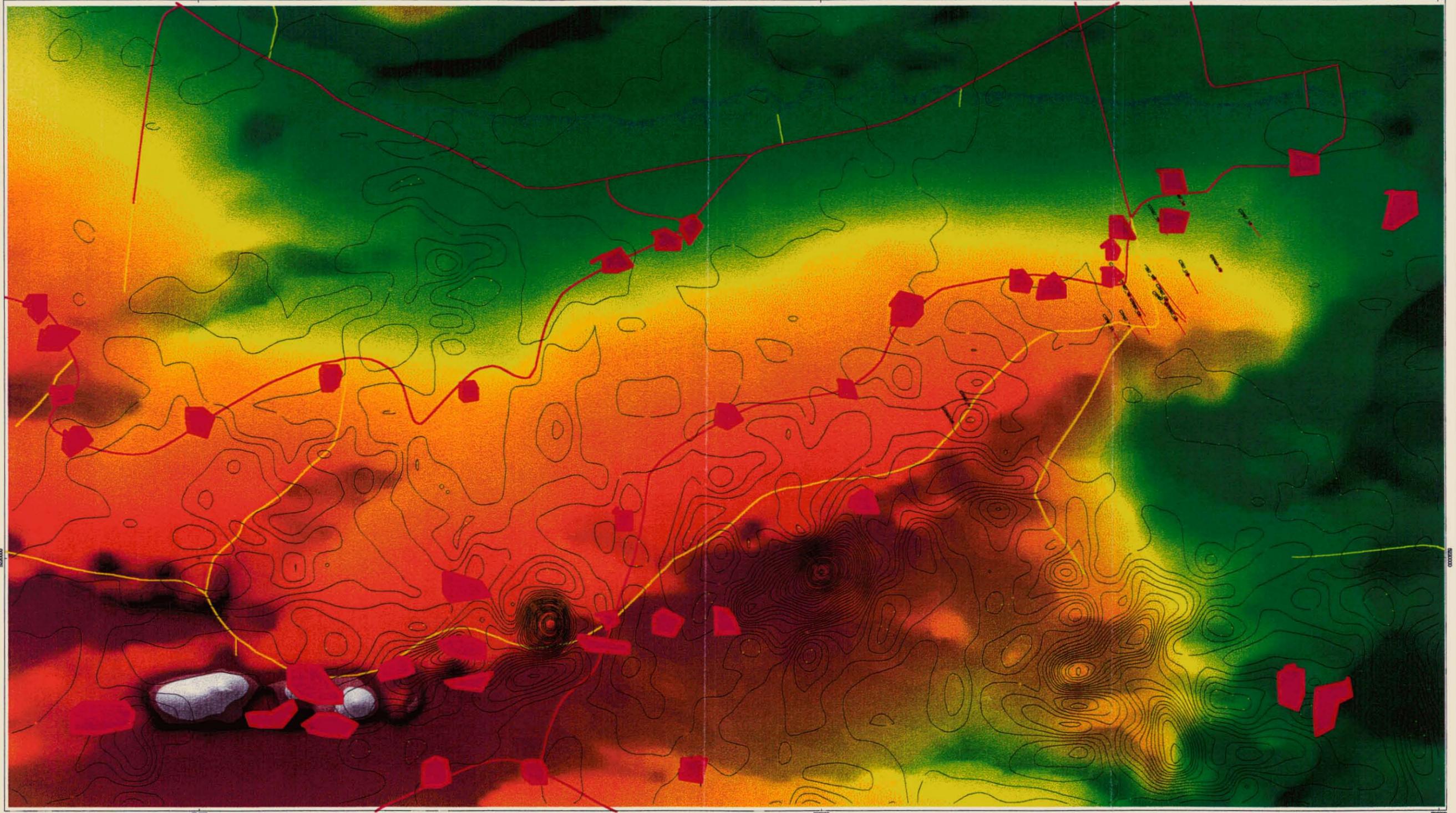
PACIFIC NEVADA MINING PTY LTD  
CYGNET, SE TASMANIA; MT MARY PROSPECT AREA  
UTS AEROMAGNETICS; 5/98  
1ST VERTICAL DERIVATIVE (UTPS, SWL FROM NORTH-WEST  
ROADS IN RED AND YELLOW; DRILLHOLES IN RED  
FLIGHT LINE SPACING: 50m; NORTH-SOUTH; SENSOR HT: 100m  
FLAGSTAFF GEOCONSULTANTS; NH; 8/99 FIG M 1

5 cm



PACIFIC NEVADA MINING PTY LTD  
CYGNET, SE TASMANIA; MT MARY PROSPECT AREA  
UTS AEROMAGNETICS; 5/98  
2ND VERTICAL DERIVATIVE (PTP), SUN FROM NORTHWEST  
ROADS IN RED AND YELLOW; DRILL HOLES IN RED  
FLIGHT LINE SPACING 400m, NORTH-SOUTH; SENSOR HT 400m  
FLAGSTAFF GEOCONSULTANTS; NH; 8/99 FIG M2

5 cm



DTM



5 cm



PACIFIC NEVADA MINING PTY LTD  
 CYGNET, SE TASMANIA; MT MARY PROSPECT AREA  
 UTS AEROMAGNETICS; 5/98  
 DIGITAL TERRAIN SHOWN FROM NORTH  
 2ND VERTICAL DERIVATIVE MAGNETIC CONTOURS  
 ROADS IN RED AND YELLOW; DRILL HOLES IN RED  
 FLIGHT LINE SPACING 400m; NORTH-SOUTH SENSOR HT-300  
 FLAGSTAFF GEOCONSULTANTS; NH; 8/98 FIG M 3