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NEWNHAM EXPLORATION & MINING SERVICES

E.L. 20/92

MOINA AREA - NORTHERN TASMANIA

REPORT FOR 12-MONTH PERIOD

ENDING 30 APRIL, 1997

Prepared for:

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CONTENTS

APPENDICES:

387003

A. **Stormont Drill Logs**

B. **Laboratory Assay Sheets**

C. **Pitt Research Airmag Report**

MAPS:

1.	**Locality Plan**	
2.	**District Geology**	**1 : 25,000**
3.	**Stormont Drilling Results and Interpretative Geology**	**1 : 1,000**
4.	**Stormont Cross Sections**	**1 : 1,000**
5.	**Collation of Exploration Results**	**1 : 10,000**

1. SUMMARY

The Moina area has recently been quantified (RFA process) as one of the most prospective areas in Tasmania.

Varied mineral deposit styles present are genetically associated with the very large iron-fluorine enriched hydrothermal convection system developed above a spine-like cupola on the flanks of the Dalcoath Granite.

Of special interest are the gold-base metal enriched skarn bodies formed in a folded and faulted synclinal trough of Ordovician Gordon Limestone, two kilometres wide and six kilometres long.

Exploratory interest to date on EL 20/92 and RL 8810 has centered on five such bodies:

- **Hugo:** resource potential 0.25 Mt 5-6 %Zn, 1 g/t Au, 0.1 %Bi; little scope to increase potential
- **Shepherd & Murphy:** resource potential 26 Mt 18 %CaF_2, 0.1 %Sn, 0.1 %W; scope to increase potential
- **Brampton Creek:** indicated by 2 drill holes; best intersection 8 m 1.5 g/t Au
- **Stormont:** resource potential 0.25 Mt 2-4 g/t Au; scope to increase potential to south beneath cover
- **Fletchers:** drill indicated skarn body; best intersection 21m 0.3 g/t Au; scope for body to extend beneath cover to north and south-east

No further work is recommended on Hugo and Shepherd & Murphy Skarns.

Core drilling programs are recommended on both Brampton Creek and Stormont to test for extensions of the drill indicated gold bearing skarns.

The opportunity to do this on Brampton Creek will depend on successful negotiations with the holders of RL 8810 to extend the Hugo Joint Venture Agreement to cover all of RL 8810.

Air core drilling programs are recommended on Fletchers to test for auriferous skarn extensions beneath cover rocks to the north-west (north of Lea River) and to the east-south-east (south of Lea River).

The above drilling programs would cost approximately $175,000 to complete.

A statutory requirement exists for a 50% reduction in the area of EL 20/92 from 25 square kilometres to 12.5 square kilometres by September, 1997. To achieve this, it is recommended that the eastern and central-southern areas underlain by pre-limestone formations and granite be relinquished. This recommendation is illustrated on Map 5.

2. LAND TENURE

Exploration Licence 20/92 of 24 square kilometres lies approximately 50 km south of Devonport in northern Tasmana (Map 1).

It is explored under a joint venture agreement between Goldstream Mining NL and Titan Resources NL.

Because this licence is five years old in September, Mineral Resources Tasmania will require it be reduced in area by 50% at that date; ie, to 12.5 square kilometres.

Under the new ***Mineral Resources Development Act***, this renewed 12.5 square kilometre area will be granted for a further 5-year period.

If either one or both of the current joint venture partners is keen to maintain an interest in the relinquished area, they may attempt to do so by application under the exempt area tender system.

Within EL 20/92 is Retention Licence 8810 of two (2) square kilometres jointly held by CRA Exploration and Acacia Resources Ltd. The eastern half of this RL is explored under a joint venture agreement between these two companies, and Goldstream and Titan.

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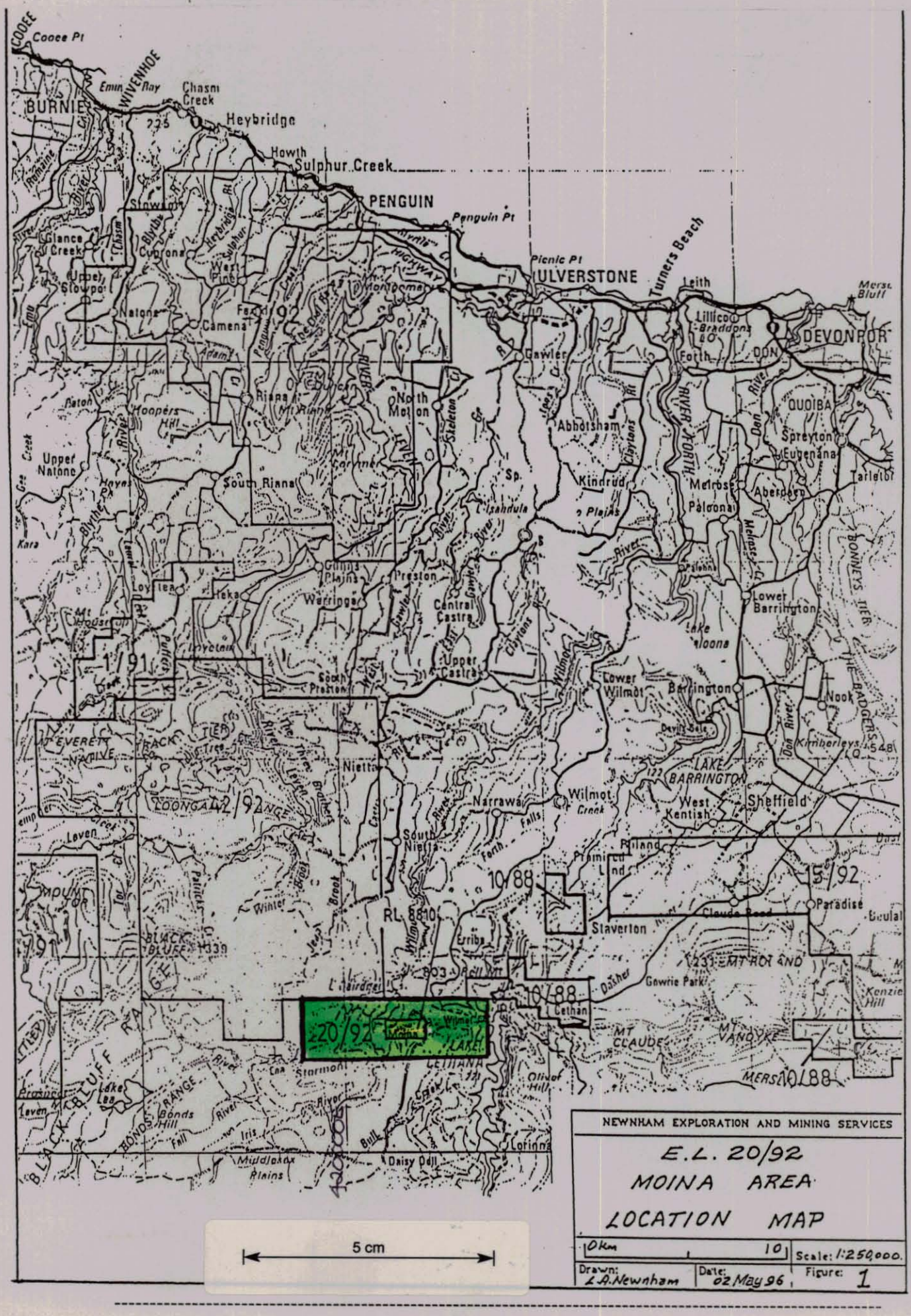

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E.L. 20/92
MOINA AREA
LOCATION MAP

0km 10 Scale: 1:250,000.

Drawn: L.A. Newnham | Date: 02 May 96 | Figure: 1

3. GEOLOGICAL OVERVIEW

EL 20/92 is underlain by a thin sequence of Ordovician shallow marine water graded sediments, deposited unconformably on Cambrian volcanic formations.

The **Cambrian volcanics** are part of the Mt Read Volcanic arc which underlies much of northern and western Tasmania and is the host and source rocks for a wide range of significant base and precious metal deposits.

In the southern section of the tenement, the volcanics consist dominantly of quartz-felspar-biotite-hornblende porphyries, tuffaceous sandstones and various quartz-felspar-biotite crystal lithic tuffs.

To the immediate north of the tenement, the volcanics are represented by correlates of the Tyndall and Dundas Groups, including lavas, andesites, various tuffs and volcaniclastic pebble-cobble conglomerates and sandstones.

The overlying **Ordovician marine sediments** are correlates of the Denison Group (Owen Conglomerate) and Gordon Group (limestone). They grade from pebble-cobble conglomerates, locally known as Roland Conglomerate, up into coarse grained sandstones, often tubicolar, known locally as Moina Sandstone, up into stylolitic limestones with minor shale beds (Gordon Limestone).

This sedimentary sequence is typically 300-500 m thick.

During the upper Devonian-lower Carboniferous, the area was folded along an E-W axis into a broad syncline, and along a large number of NW axes into a succession of low amplitude folds.

Accompanying, and possibly postdating, this folding the area was intruded by the **Dalcoath Granite**. This is a coarse-medium grained alkali-felspar granite which outcrops in the eastern section of the licence.

Gravity surveys indicate this granite is connected to the Housetop Granite to the west, and extends beneath the EL 20/92 as a shallow, narrow E-W spine, plunging gently to the west.

A complex pattern of faulting accompanied intrusion and subsequent collapse of this granite, dominated by NW trending normal and thrust faulting.

A contact aureole is developed around this granite spine and is characterised by a wide range of alteration styles and accompanying mineralisation. Silicification and hydrothermal alteration are pervasive within this aureole. The principal types of mineral deposits formed are:

(i) epidote-chlorite-actinolite-garnet skarns containing Au, Zn, Bi (Hugo) or Au-Bi (Stormont)

(ii) fluorite-magnetite skarns +/- wolframite-cassiterite (Shepherd & Murphy)

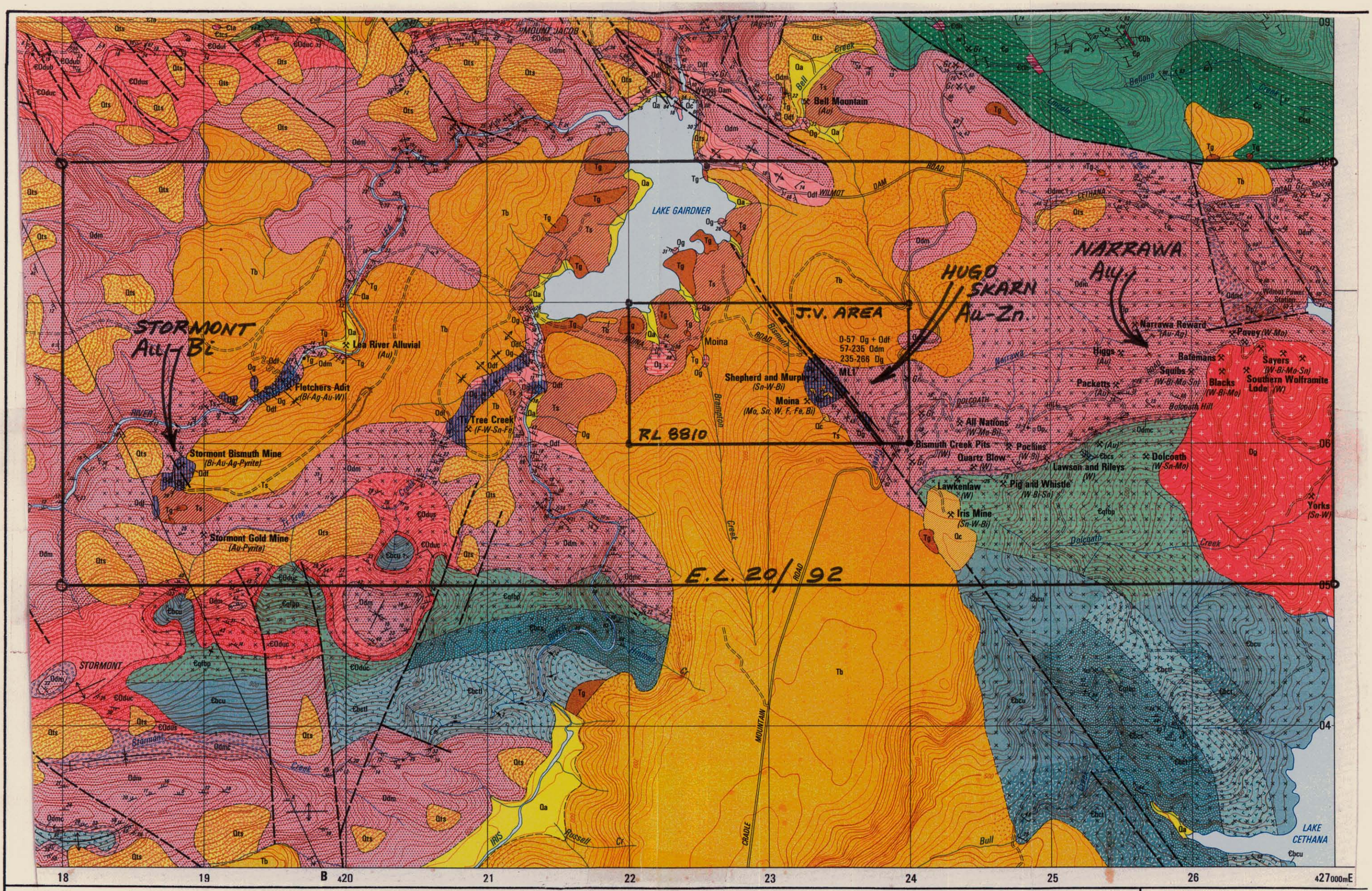
(iii) wolframite-cassiterite-quartz veins (Shepherd & Murphy, All Nations)

(iv) gold-pyrite veins in fractured sandstones (Stormont Gold, Narrawa)

(v) Sn-W-Bi-Mo veinlets in granite and adjacent sediments (Sayers, Squibs, etc)

In the **Tertiary**, thin **basalt** flows covered much of the area. Also in the Tertiary, a **silicified gravel** was locally formed by the rapid erosion of siliceous sediments. This cemented gravel is locally known as "graybilly" and is often mistaken for Ordovician conglomerate.

Quaternary talus slopes are widespread in the NW of the tenement area.



Hugo Fault projected outcrop

Hugo Skarn Au-Zn mineralisation

Possible skarn extensions beneath Basalt.

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Tb Tertiary Basalt

Tg, Ts Tertiary sediments and gravels

Og Gordon Limestone (Vertical stripes = skarn)

Odm Moina Sandstone

Odmc Roland Conglomerate

€xxx Various Cambrian Volcs + Seds

Dg Dalcoath Granite

Contact alteration zone around Dg.

Map is a photocopied section of the State 1:25,000 Winterbrook–Moina Geol. Map. (MRVP Map 9.).

5 cm

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MOINA AREA

REGIONAL GEOLOGY

0 km. 0.5 km 1 | Scale: 1:25,000

Drawn: LAN | Date: APR 97 | Figure: 2

4. PREVIOUS WORK

The Moina area has been recently quantified as one of the most prospective areas in the whole of Tasmania. It is, therefore, understandable that it has attracted a very large amount of previous work over a 120 year period of exploration and mine development.

A plethora of abandoned mine workings exists throughout the area, many of which were little more than prospecting ventures, but several can be considered significant producers.

This previous exploration and mining work is reviewed in summary form below on a genetic basis rather than chronological.

4.1 Sn-W-Mo-Bi Veining Adjacent to Dalcoath Granite: (Figs 2,5)

A large number of small mines have been developed on quartz vein systems developed on the northern outcropping flank of the Dalcoath Granite and in the sedimentary and volcanic units due west of this section of the granite.

The systems are dominated by steeply dipping quartz veins carrying variable amounts of wolfram, cassiterite, molybdenite and bismuthinite, and are concentrated in the basal Denison Group sediments (Roland Conglomerate and Moina Sandstone) and the underlying Cambrian volcanic porphyries, extending for 2-3 kilometres west of the granite outcrop.

The majority of veins are narrow and were very small producers. The most significant producer was the All Nations Mine, developed on several 0.2-1.0 m wide veins, and mined intermittently until recent times for coarse wolframite.

Genetically, the deposits are considered to have formed from fluorine-metal rich hydrothermal fluids eminating from the highly fractionated Dalcoath Granite ridge or cupola, and ascending through intensely fractured siliceous sediments and volcanics adjacent to that ridge.

4.2 Shepherd & Murphy Deposit:

The Shepherd & Murphy deposit is essentially part of the above 4.1 deposits, but is described separately here because the veins were substantially larger and supported a significant mine.

The Shepherd & Murphy Mine was developed by a series of shafts and adits on six principal E-W, near vertical poly-metallic quartz veins.

The veins were typically 0.2-2 m wide and were mined over a strike length of up to 400 m and to a depth of 150 m. (See various reports on RL 8810 for more details.)

The veins were mined principally for tin and tungsten but also contained significant bismuth and molybdenum. They transected both Moina Sandstone and Gordon Limestone (skarn).

Recorded production was 200,000t 0.23 %Sn, 0.11%WO_3. The estimated **pre-mining resource is 280,000t 0.23 %Sn, 0.18 %WO_3.**

Depth and lateral extensions of the veins have been tested with no success by drilling programs undertaken by Comalco-Shell, and Mt Lyell Mining & Railway Company.

The veins are disrupted to the east by the Bismuth Creek Fault which is a large transverse-thrust structure. East of this fault, recent drilling by Goldstream-Titan has indicated the vein system continues as abundant narrow quartz veins containing coarse wolframite developed in both skarn and sandstone; eg, drill hole HS 5 intersected several narrow veins averaging 0.2-0.8 %W, whilst HS 6 intersected widespread veining over an 80 v.m. interval of skarn which was tin and tungsten anomalous.

4.3 Moina Wrigglite Skarn:

During the 1970s and 1980s Comalco, then CRA and Shell (Acacia) drill defined a large fluorine rich skarn deposit developed in Gordon Limestone adjacent to the Bismuth Creek Fault, and partly hosting the Shepherd & Murphy vein swarm described above.

The skarn is a vesuvianite-fluorite-magnetite body, characterised by a swirling banded texture known as wrigglite.

On the basis of their drilling, CRA-Comalco-Shell estimated a **geological resource of 26 Mt 0.1 %Sn, 0.1 %WO_3 and 18 %CaF_2,** lying in a discrete body to the immediate west of the Bismuth Creek Fault (Fig 5).

However, the wrigglite skarn is far more extensive than this, as demonstrated by subsequent drilling. It extends east of the Bismuth Creek Fault where it is known as the Hugo Skarn (see below) and west of Moina for several kilometres, at least as far as Ti Tree Creek and possibly discontinuously as far as Stormont. In these western extensions, the wrigglite skarn is developed principally in the footwall section of the Gordon Limestone.

This writer has not attempted to estimate a global wrigglite resource through the whole area, but it is probably in the vicinity of 100 Mt of

10-15 %CaF_2; ie, 10-15 Mt of fluorite. The resource is genetically linked to the hydrothermal fluids ascending from the granite spine which underlies the resource area. As such, this massive fluorine rich hydrothermal system had an enormous capacity to leach and mobilise metals from rock formations through which it passed.

4.4 Hugo Au-Zn-Bi Skarn:

The Hugo Skarn is the name given to the skarn block lying east of the Bismuth Creek Fault. The body consists of a mixture of skarn styles including wrigglite, garnet-vesuvianite-actinolite-chlorite skarns, and limestone. The body is concealed beneath an overthrust block of Moina Sandstone, and is internally disrupted by steeply dipping N-S faults.

Drilling in the 1970s and 1980s by Comalco-Shell indicated sections of the skarn were sphalerite rich with variable amounts of Bi and Au.

Subsequent drilling by Goldstream and Titan has indicated a geological resource of **250,000t 5-6 %Zn, 1 g/t Au, 0.1 %Bi.**

The mineralisation occurs in a garnet skarn with minor chlorite, magnetite, calcite, fluorite.

There appears to be limited scope for additional resources. Details of this resource are presented in various reports on RL 8810.

4.5 Au-Base Metals Deposits in Fractured Sediments (Narrawa):

The Higgs and Narrawa Reward Mines were developed on narrow auriferous veins close to the outcropping Dalcoath Granite in the eastern section of EL 20/92.

In the 1980s, the area was first explored by CRA and later by RGC.

CRA undertook various geophysical and geochemical surveys in the region and completed two drill holes targetted at base metal mineralisation in fractured sandstones. Results were disappointing with low levels of base metals being located in strongly pyritic sediments, which were in places Au anomalous.

The best results were:

DG 1 : 9 m 0.24 g/t Au

DG 2 : 6 m 0.28 g/t Au

RGC was primarily interested in gold and extensively sampled all the old workings and completed four cored drillholes.

High grade Au zones were defined in the shallow workings but only broad, low grade zones were intersected in drill holes. Best results were:

ND 1 :	20 m 0.48 g/t Au Including 1 m 6.18 g/t Au
ND 2 :	11 m 0.15 g/t Au
ND 3 :	4 m 0.5 g/t Au 13 m 0.12 g/t Au

RGC commissioned Dr Greg Morrison to review the data on Narrawa and a direct extract from his report *An Overview of Gold Occurrences in Northern Tasmania* for Goldfields Exploration, November 1987, is presented below. More detailed data on the area is contained in various RGC reports on EL 26/85 held in the Mineral Resources Tasmania library.

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HIGGS-NARRAWA REWARD

An evaluation of bulk tonnage potential based on a reconnaissance of surface and underground workings and graphic logging of two representative drill holes.

The Higgs and Narrawa Reward workings have produced approximately 28 kg of gold from quartz veins and disseminations in sheared sandstone, siltstone, calc-silicates and porphyry dykes. The old workings were limited in depth by a rapid fall off in grade that has been interpreted as the transition from surface enriched to primary mineralisation. Similarly in the recent exploration programme encouraging results from rock chip sampling have not been duplicated in drilling intersecting the shear zone approximately 100 m below the workings. There are two possible explanations for the grade drop off:

1. Surface enrichment due to oxidation as suggested by most previous workers

2. Structure controlling small shoots with shallow plunge so that drill intersections below old workings intersect the structure but not the ore shoot

For the explanation based on surface enrichment there is strong support in the nature of the workings, the available assay data and the fact that similar features have been noted in many other goldfields of northern Tasmania. However there are some puzzling observations:

1. Fresh sulphides are exposed near surface or within a few centimetres of surface in many places suggesting oxidation is incomplete.

2. In all the drill holes there is strong depletion of all elements analysed including gold down to approximately 30 m. The cutoff to anomalous grades is sharp and in ND 1 and DG 1 at least, below the level of even partial oxidation and distinctly below the level of complete oxidation (<10 m).

3. Good surface gold grades are restricted to discrete patches (eg. main Higgs workings, West Higgs) with only occasional good grades between.

These features suggest the simple process of surface oxidation and gold enrichment typical of the arid environment in Western Australia is not entirely applicable here.

A structural explanation is suggested by observations of ore shoot geometry and surface grade distribution. In the Higgs and Narrawa Reward workings the principal 'reef' is an irregular shear zone striking NW and dipping approximately 70° NE and hence cutting bedding which has a similar strike but shallower dip. The orientations of the walls of the workings and the distribution of ore shoots suggest the low angle intersection causes refraction of the shear zone where it intersects beds of varying competence at low angles. The geometry is consistent with the process of Reidel Shear that gives rise to a complex of small, shallow plunging ore shoots. This model is well documented for the Far Fanning deposit in North Queensland (Roy Kidd, BSc Hons thesis, JCUNQ, 1985) where moderately plunging ore zones have been shown to consist of numerous shallow plunging ore shoots with dimensions of a few metres by 10's of centimetres. Definition of ore reserves at Far Fanning was so difficult that eventually 5000 tonne bulk samples were taken to establish overall grade and leachability (Elliot and Houtgraaf,1986).

Plotting of all the assay data and features of the drill core on graphic logs for holes ND 1 and DG 1 has demonstrated a strong overall element zoning pattern and distinct controls on gold distribution. Although there is some duplication in DG 1 there is a strong single pass zoning pattern in ND 1 from shallow Pb-Zn-Ag through Cu-Bi-Au (As, W) to Mo-W-Bi and Sn Mo (As) at depth. This is similar to the zoning pattern for the whole Moina field relative to the Dalcoath granite and suggests that even dykes that are part of the system may telescope the whole zoning pattern. In DG 1 the dykes themselves are sheared, and mineralised with the whole element assemblage, suggesting deformation, intrusion and mineralisation are broadly contemporaneous. Overprinting relationships suggest the deeper zones are younger and that the gold mineralisation is most closely linked to the earliest stage of greisen alteration overprinting the Pb-Zn-Ag mineralisation. If the zoning pattern and time sequence are more generally applicable then there may be a distinct 'gold corridor' in space and time and on a variety of scales that may help focus exploration.

For Narrawa and Higgs the complexities of variable surface grades, ore shoot geometry and element zoning make definition of deep exploration targets difficult. The fundamental problem at this stage seems to be the depth extent of the good surface grades. This could be tested with a programme of detailed surface rock chip sampling and drill hole sampling to a few metres or tens of metres. Confidence in these results might justify a programme of shallow ore reserve definition.

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4.6 Gold-Bismuth Distal Skarns (Fletchers, Stormont):

On the western end of EL 20/92, there are a number of auriferous gold skarns developed in gently folded, but deeply weathered, Gordon Limestone, close to the basal contact with Moina Sandstone.

The two principal areas are known as Fletchers Adit and Stormont Bismuth Mine (Maps 2, 5).

At **Fletchers Adit**, a number of shallow workings were developed in outcropping skarn earlier this century. In the 1980s, RGC drilled nine (9) cored holes to test the skarn extensions to the north. These holes indicated the skarn extended north of the Lea River, concealed beneath zeolitic Tertiary basalts.

Low level gold was widespread in these holes. Results are summarised below:

FD 1 : 26 v.m. skarn
Best interval 2 m 0.16 g/t Au, 0.12 %Cu, 0.04 %Bi, 0.2 %Sn

FD 2 : Collared beneath skarn

FD 3 : 22 v.m. skarn - no significant Au

FD 4 : 16 v.m .skarn
Best interval 5 m 0.32 g/t Au

FD 5 : Collared beneath skarn

FD 6 : 25 v.m. skarn
Scattered short intervals 0.1-0.3 g/t Au

FD 7 : 14 v.m. skarn
Best interval 2 m 1.5 g/t Au

FD 8 : 40 v.m .skarn
Best intervals 21 m 0.29 g/t Au
4 m 0.27 g/t Au
2 m 0.31 g/t Au

FD 9 : Angled hole near Fletchers Adit
Best interval 1 m 0.18 g/t Au

It is instructive to note that the best intersection FD 8 was the most northerly hole and was concealed beneath a thick cover of Tertiary basalt. This is in an area which could erroneously be interpreted from state maps to be underlain by Moina Sandstone.

At **Stormont**, high gold bismuthinite concentrates were produced from a small open cut and underground operation in the 1920s and 1930s. The mineralisation occurs in a pyroxene-garnet skarn, containing variable amounts of amphibole and magnetite, developed in the basal sections of Gordon Limestone.

In the late 1980s RGC drilled approximately 30 cored holes to test for extensions of this mineralisation. They obtained several encouraging intersections but concluded the deposit lacked their desired size criteria.

Since 1994 Goldstream and Titan have completed two programs of core drilling in the area. These programs demonstrated the presence of a modest gold resource in the skarn, with scope to extend further south beneath Tertiary basalt cover. The results of this work are commented upon in detail in the following sections of this report.

5. WORK COMPLETED 1996-1997

Principal work programs completed during 1996-1997 were:

- drilling program at Stormont Mine
- high-resolution aeromagnetic survey over whole licence area

5.1 Stormont Drilling Program:

A nineteen (19) hole core drilling program totalling 710 m was completed to further evaluate previously intersected gold mineralisation in skarn bodies adjacent to the former Stormont Bismuth Mine.

Drill logs and assays are attached as Appendices A and B respectively. Results are presented and interpreted on Maps 3, 4.

Drilling was undertaken by Diamond Drilling (Tas) using a Scout 250 track mounted rig.

All holes were collared vertical and because of their short lengths, no down hole surveys were undertaken. At this time, drill collars have not been surveyed by licenced surveyor.

Following logging and photographing, core for assay was split by diamond saw and freighted to Amdel in Adelaide for assay. Gold assaying was by fire assay on a 50 g sub-sample following pulverisation of the entire sample.

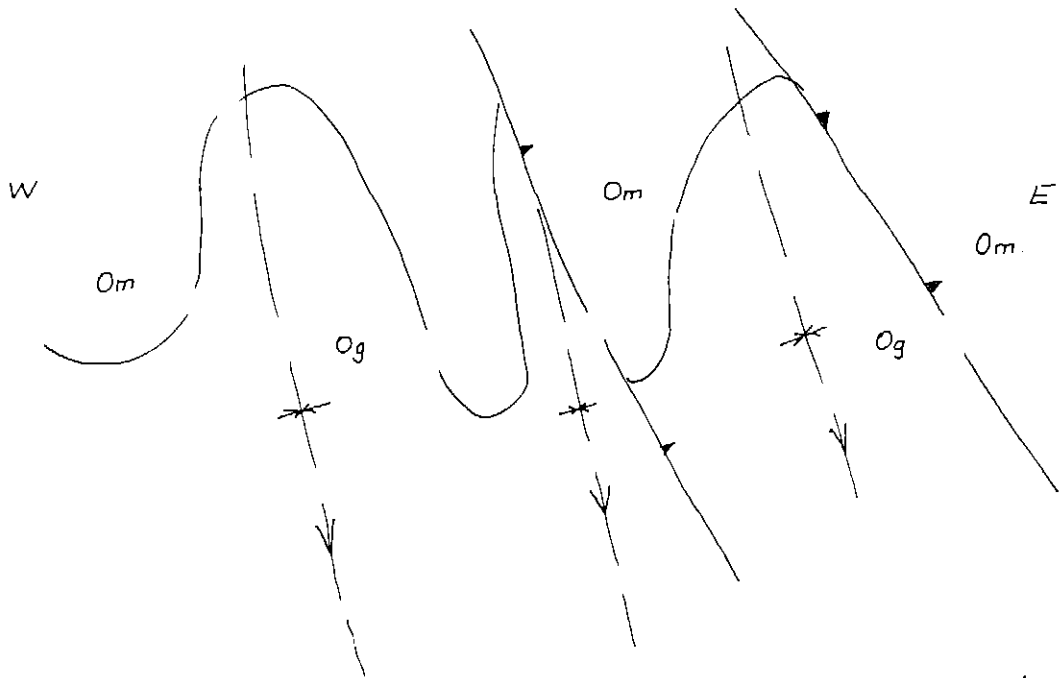
Drill core is currently stored in this writer's shed in Devonport, soon to be moved to a shed in Beaconsfield where all laboratory reject samples are stored.

Sixty-one (61) cored holes have now been completed by various companies at Stormont. An evaluation of data from these holes suggests the following **geological interpretation**:

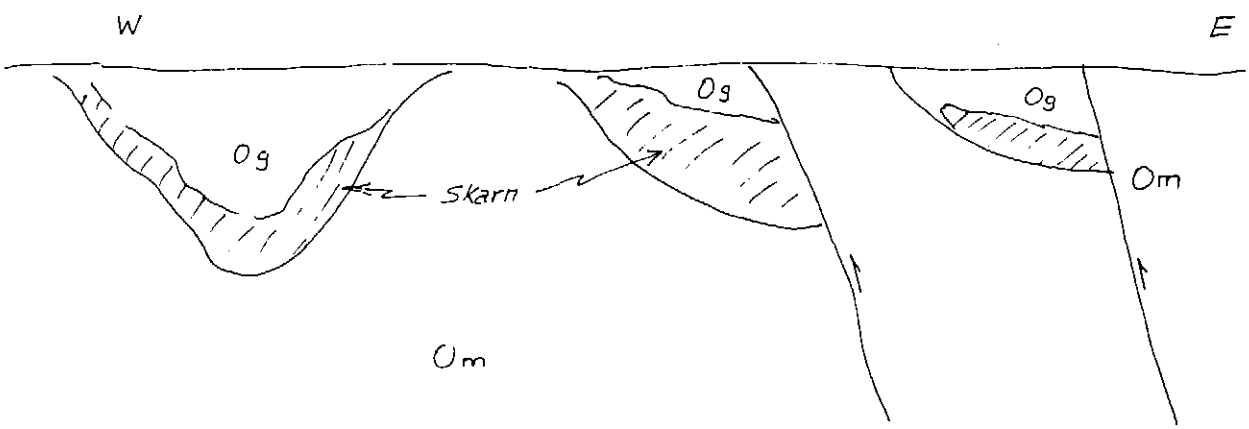
Ordovician Denison Group tubicolar sandstones and conformably overlying Gordon Limestone have been gently folded along a series of close spaced NW trending axes. Subsequent erosion has meant the limestone has only been preserved in synclinal structures.

Three such synclines have been recognised - the western, central and eastern synclines. They appear to plunge at a low angle to the south, meaning that the intervening outcropping anticlines of Moina Sandstone will vanish to the south beyond the current drilling pattern.

Sub-parallel to the fold axes are two steeply east dipping thrust faults. The Stormont Fault truncates the eastern margin of the central syncline, whilst the Eastern Thrust truncates the eastern margin of the eastern syncline.



Simplified geological plan through Stormont area



Simplified schematic section through Stormont

Iron-fluorine rich hydrothermal fluids ascending from the granite spine approximately 500 m beneath Stormont have resulted in extensive greisenisation of the Moina Sandstone and skarn development in the Gordon Limestone.

The skarn is typically 20-30 m thick, and any un-skarned limestone above that is degraded to black and orange clays.

Much of the area, particularly to the south, is covered by Tertiary basalt and Tertiary gravels and graybilly.

The skarn mineralogy is complex and varies significantly across the three synclines. The principal skarn type is a garnet-iron pyroxene style. Bismuth and gold mineralisation appear associated with retrograde alteration of pyroxene to amphibole and magnetite.

However, drilling of the western syncline has also intersected substantial "wrigglite skarn" composed of magnetite, fluorite and amphiboles. This is rather unusual and suggests that whilst Stormont is essentially a "distal" lower temperature skarn than, say, Moina, there are still sections containing higher temperature "tin skarn" type assemblages. Interestingly, there is significant gold in drill holes in the wrigglite skarn.

Interpretation of Results:

The drill holes completed to date, combined with previous drilling, lead to the following principal interpretations:

(a) The **eastern syncline** contains only a relatively thin skarn zone with occasional patchy low level gold values.

The one surprising hole was SD 60 which was drilled in an area previously mapped as being underlain by Moina Sandstone. It intersected a 12 m skarn zone beneath a thin basalt cover. This extended the western boundary of the syncline but, more importantly, it highlighted the potentially misleading nature of previous mapping in this very difficult area.

(b) The **western** and **central skarn synclines** both plunge south and thus predictably will join as a single skarn zone just south of the main access road.

The western skarn syncline will terminate just north of SD 52 and thus potential in this direction is limited.

(c) All of the encouraging gold intersections to date have been obtained in the western and central synclines.

These are tabulated below:

Hole No.	Depth	Width	Grade	
			g/t Au	%Bi
SD 1	4.5 - 17.5	13.0	4.1	0.46
SD 3	16.9 - 19.0	2.1	12.7	0.35
SD 8	27.0 - 34.4	7.4	0.6	<0.1
	Including	1.3	2.9	
SD 10	17.6 - 23.0	5.4	2.5	0.1
	within broader Au-Bi anomalous zone			
SD 20	9.0 - 15.0	6.0	0.4	<0.1
	Including	2.0	0.9	<0.1
SD 33	24.5 - 35.0	10.5	1.4	0.1
	Including	1.5	9.0	0.17
SD 36	0 - 27.3	27.3	1.4	<0.1
	Including	9.5	2.7	0.1
SD 39	0 - 19.6	19.6	2.9	0.1
	Including	4.0	9.7	0.35
SD 44	13.5 - 21.5	8.0	1.8	<0.1
	Including	3.0	2.8	0.12
SD 50	11.0 - 16.0	5.0	0.86	<0.1
	Including	3.0	1.34	

(d) The gold mineralisation in the eastern skarn is terminated to the east by the Stormont Fault but there is little evidence (one way or the other) to suggest this fault is genetically associated with the mineralisation.

(e) Whilst a modest gold resource has been identified by drilling to date, scope for a more substantial tonnage appears to be confined to southerly extensions of the central and western synclines beneath thin Tertiary basalt and gravels.

5.2 Aeromagnetic Survey:

A high resolution aeromagnetic survey was completed over the entire licence area in May, 1996.

Survey specifications are:

- acquisition by UTS Geophysics Pty Ltd
- aircraft AS350B helicopter
- magnetometer Scintrex CS-2 Cesium
- traverse lines grid N-S
- line spacing 50 m

  tie lines 500 m
- mean terrain clearance 60 m
- sample interval 3-4 m
- navigation GPS

The data was processed by Pitt Research Pty Ltd. In March 1997, Pitt was contracted to undertake various imaging and modelling studies of the raw data and their report on this work is affixed as Appendix C.

With respect to the modelling, they were directed to concentrate on the unexplained anomalous area covering most of the NW section of the licence.

This anomalous area appears on state geological plans as being underlain by Moina Sandstone and other Denison Group formations with widespread cover of Tertiary basalt and scree.

However, Denison Group rocks are typically "non-magnetic". Further, the magnetic data suggested the source of the anomalism was not shallow, surficial basalt which can be variably magnetic.

Three options to explain the anomalous area were considered probable:

(a) skarn bodies at depth, beneath either concealing Tertiary cover or overthrust Moina Sandstone

(b) large body of Cambrian Mt Read Volcanics at relatively shallow depth

(c) combination of the above two

The possibility of skarn beneath this area is supported by RGC drilling and mapping to the north of Fletchers Adit. This work

indicated that the skarns extend further north and are generally more extensive than shown on existing state geological maps.

The most northerly skarn hole at Fletchers was FD 8 which intersected 40 v.m. of skarn beneath Tertiary basalt. Virtually, this whole intersection was Au anomalous including a 21 v.m. interval of 0.3 g/t.

It is therefore considered highly probably that this skarn continues at least some distance to the NW into the aeromagnetic anomalous area.

However, two kilometres to the ENE of FD 8 a previously drilled hole LG 1, which collared in Moina Sandstone, passed into Cambrian volcanics at 100 v.m.

This hole therefore suggests that at least part of the anomalous area is underlain at relatively shallow depths by volcanics.

Thus, it is considered that the most likely explanation for the aeromagnetic anomaly is (c) above - a combination of skarns in the west, and volcanics in the east.

6. REVIEW OF TENEMENT POTENTIAL

Whilst a wide range of deposit styles are represented on EL 20/92, the ones of principal interest to Goldstream and Titan are probably the gold skarns and associated fault structures.

The near surface gold mineralisation in fractured sandstones close to the Dalcoath Granite (Narrawa) is not rated highly because of its proximity to the higher temperature environments adjacent to the granite.

Tin-tungsten mineralisation is also discounted as a viable target for the Companies at this point in time, although it should be noted that if Sn-W become an exploration target for either Goldstream or Titan, then this is a prospective region.

With respect to gold skarn targets, potential for this style of deposit is, of course, limited to those areas underlain by Gordon Limestone; ie, west of 424,000 E (see Map 5), within a synclinal trough approximately 2 kilometres wide (N-S) and 6 kilometres long (E-W).

Much of this 12 square kilometre trough is covered by thin Tertiary basalts or Quarternary sediments.

Drilling to date in this zone has highlighted four areas of immediate Au-skarn potential:

(a) Au-Bi-Zn Hugo Skarn

(b) Brampton Creek Au-pyrrhotite skarn

(c) Fletchers Adit Skarn

(d) Stormont Skarn

This drilling has also indicated that the basal section of the Gordon Limestone through most of this trough has been skarned, probably by ascending hydrothermal fluids from the underlying granite ridge.

The genetic model underlying development of gold skarns in this area is that fluorine and iron rich hydrothermal fluids ascending from the granite cupola or ridge would pass through adjacent volcanic sequences, leaching gold and base metals from these sequences and transporting these along feeder structures to repositories in the base of the limestone.

This model assumes that the fluids on leaving the granite may have contained some Bi, Mo, Sn and W, but the granite was **not** the source of the gold. This is supported by data which shows the Dalcoath Granite to be a high silica, coarse grained 'S-type' granite which are regarded as good source rocks for tin and tungsten but not gold.

Following this model through, for substantial gold deposits to form, the hydrothermal fluids must have leaching access to large volumes of Cambrian volcanics. This will only occur where there is a significant vertical gap between the base of the Denison Group and the top of the cupola; ie, towards the western end of the licence area.

Several phases of metasomatic alteration appear necessary to form a substantial gold bearing skarn. The early skarn phase at Stormont, for example, is typically a pyroxene-garnet skarn phase. Most of the gold and bismuth appears associated with a later retrograde phase of alteration which resulted in the formation of amphiboles and chlorite.

The pyrrhotite-gold skarn in SMD 9 and SMD 35 is somewhat of an anomaly in this region with pyrrhotite appearing to form at the expense of magnetite, probably in more reducing conditions.

Skarn temperature considerations are probably also important. The later stage hydrothermal phases, ie, those carrying the gold, may only precipitate substantial gold in relatively cooler environments; ie, in those environments most distal to the cupola.

In summary, the principal factors considered important are:

- presence of repository rocks (limestones)
- presence of faults (plumbing)
- location adjacent and above the cupola (heat and fluid source)
- large volumes of volcanics between repository and fluid source
- cooler (distal) depositional environments

The four gold skarns listed above are considered in more detail below:

(a) Hugo:

Drilling to date has identified a resource of approximately 250,000 t 5-6 %Zn, 1 g/t Au, 0.1 %Bi.

Potential to define further resources in the area appears limited.

This is an interesting deposit in that it does not meet too many of the above model criteria. It is close to the granite and surrounded by higher temperature skarn assemblages, and there are not large volumes of volcanic rocks between it and the granite. It is possible that the granite was the source of the zinc - a not uncommon feature with tin bearing 'S-type' granites.

(b) Brampton Creek:

The pyrrhotite rich skarn in SMD 9 and SMD 35 appears to be confined in this area to a zone adjacent to Brampton Creek Fault. The best gold intersection was in SMD 9 with 8 m 1.5 g/t Au.

If the skarn is confined to a zone along the Fault, then the current drilling pattern is inadequate, both to the north and south.

(c) Fletchers Adit:

Fletchers Adit meets most of the favourable model criteria.

Drilling to date has intersected only modest gold mineralisation, but has been confined to a small area. The best hole FD 8 was the most northerly hole and intersected 21 m 0.3 g/t Au.

The skarn zone may extend NW beneath basalt and possibly also SE beneath basalt towards Ti Tree Creek, 1,500 metres away; ie, there is potential in this area for much greater areas of skarn than those already drill tested.

(d) Stormont:

Drilling to date at Stormont has identified a resource of approximately 150,000t 2-4 g/t Au in two skarn synclines which meet most of the model criteria.

These synclines appear to extend SE beneath Tertiary cover and possibly north of the Lea River where aeromagnetic anomalies may indicate skarn bodies concealed beneath Tertiary or Denison Group cover.

In summary, the following areas are considered prospective for the definition of additional Au-skarn resources:

(i) Stormont skarn extensions to the SE of current drilling

(ii) Stormont and Fletchers skarn extensions on the north side of the Lea River in an area of aeromagnetic anomalism

(iii) Fletchers skarn extensions to the south and east between Fletchers and Ti Tree

(iv) Brampton skarn extensions N and S along both sides of the postulated Brampton Creek Fault

Programs of work are recommended in the followint section on each of these areas.

7. RECOMMENDATIONS

7.1 Further Work:

Drilling programs are recommended on four potential gold skarn areas described above.

7.1.1 Brampton Creek Skarn:

This area is currently within RL 8810 held by CRA-Acacia. It is not subject to the Joint Venture agreement with Titan and Goldstream.

It is recommended that negotiations be entered into to modify the existing agreement so that it incorporates all of RL 8810.

Three cored holes, each 150 m long, are recommended to further test the skarn adjacent to SMD 19, north and south along the Brampton Creek Fault.

One hole should be midway between SMD 9 and SMD 35, one hole 100 m north and one 100 m south of this hole.

The total budget for this 450 m of drilling would be approximately $55,000.

7.1.2 Fletchers Adit - Ti Tree Creek Area:

This area is covered by basalt, incorporates several magnetic anomalies, and has never been drill tested. There are doubts as to the geology underlying the basalt. Is it limestone (skarn) or sandstone?

The main access track to Stormont cuts through the middle of the area and it is recommended that a fence of short air core holes be completed along this road by the Scout 250 on its way in to drill at Stormont.

Five holes, each 50 m long, on 100 m centres are recommended.

Total cost for this 250 m would be approximately $15,000.

7.1.3 North of Fletchers Adit - Stormont:

In order to establish the sub-basaltic geology in this area and hopefully explain the aeromagnetic anomalism, it is

recommended that a fence of air-core holes be drilled along the access track north of the Lea River. Ten (10) holes each 50 m long are proposed.

Whilst the drilling is in progress, some detailed mapping of the rugged area between this track and the Lea River should be completed.

Unfortunately, this track no longer connects with the track south of the Lea River and some tedious access will be required from the north.

Total cost for this 500 m of drilling would be approximately $30,000.

7.1.4 Stormont:

The gold bearing central and western synclines at Stormont remain open to the south beneath Tertiary basalts and gravels.

Because of the complex geology and variable gold mineralisation in this area, it is recommended that these extensions be followed up by a pattern of cored holes on 50 m centres (Fig 3).

Twelve (12) holes, each 50 m long, of HQ coring are recommended. Whilst this drilling is in progress, holes drilled in 1996-1997 should be surveyed.

Total cost for this 600 m of coring would be approximately $75,000.

7.1.5 Hugo:

No further work is recommended.

7.1.6 Budget Summary:

Brampton	:	**55,000**	**(RL 8810)**
Fletchers - Ti Tree	:	**15,000**	
Fletchers - Stormont North	:	**30,000**	
Stormont South	:	**75,000**	
Total		**$ 175,000**	

7.2 Relinquishment:

Regulations require that 50% of the area be relinquished on the 5th anniversary; ie, September, 1997.

The Licence has been renewed for a further 5 years to 2002 but is reviewed annually in terms of work and expenditure commitments.

Thus, 12.5 square kilometres should be relinquished. This can be varied under extenuating circumstances.

It is recommended that the eastern and southern section of the Licence area, underlain by Denison Group sediments, Cambrian volcanics and Dalcoath Granite be relinquished.

A small section of Gordon Limestone, largely covered by Lake Gardner, is also in the proposed relinquished area.

Please refer to Map 5 for details.

APPENDIX A

STORMONT DRILL LOGS

COMPANY: Goldstream-Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 43

Commenced:	29 October 96
Completed:	01 November 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
.to test the Stormont skarn 50 m. along strike to the SE of SD 10 which intersected 14.4 m. 0.95 g/t Au

Comments on Completion
a 29 m.skarn zone was intersected beneath 11 m. of basalt; the skarn was represented by 17 m. clay and 12 m.of fresh garnet skarn; the highest gold assay was 0.03 g/t.

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5405763	419050	665	- 90	-

Length (m)
44.0

Hole Size	
To (m)	Size
44.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	14.0	<50
		see log

Hole Condition on Completion
all casing removed from hole

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length							
			no significant assays								

COMPANY: Goldstream-Titan
PROJECT: Stormont
HOLE NUMBER: SD 43

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au (dup)	
0.0	11.2	**.BASALT (Tertiary):** dark gray Tertiary basalt; magnetic in part; mixed rubbly fresh basalt and soft dark brown clayey rubble;	0.0 2.0 8.0	2.0 8.0 11.0	20 33 60										
11.2	16.4	**CLAY (after skarn ?):** cream-light gray-light orange soft clay;	11.0 14.0	14.0 17.0	33 80										
16.4	18.8	**ORANGE CLAY:** orange clay with relict skarn textures and some gritty sections;	17.0	20.0	95										
18.8	24.4	**BLACK CLAY:** soft black clay; pyritic in part,becoming mottled gray below 23.0m.,with relict skarn textures;	20.0	24.4	100				23.0	24.0	<0.01	<10			
24.4	28.4	**WEATHERED SKARN:** intermixed weathered skarn, black and orange clay intervals; greenish- limonitic units probably weathered garnet-epidote skarn;	24.4 26.0	26.0 29.0	100 80				24.0 25.0 26.0 27.0	25.0 26.0 27.0 28.0	<0.01 <0.01 <0.01 <0.01	<10 <10 <10 <10		<0.01	
28.4	40.8	**SKARN:** mottled green-pink garnet skarn; dark green mottled pink skarn consists of large patches honey colored garnet and large clots fibrous actinolite set in fine grained light green epidote ? ground mass; several massive units of light green- light pink-brown finer grained garnet skarn; no magnetite apart from trace amounts in actinoliteclots; very sharp change at 28.4 m. from weathered to fresh skarn; skarn very competent with many fractures being driller breaks;	29.0	40.8	100				28.0 29.0 30.0 31.0 32.0 33.0 34.0 35.0 36.0 37.0 38.0 39.0 40.0	29.0 30.0 31.0 32.0 33.0 34.0 35.0 36.0 37.0 38.0 39.0 40.0 41.0	<0.01 <0.01 0.03 <0.01 0.01 <0.01 <0.01 <0.01 <0.01 <0.01 <0.01 0.01 <0.01	<10 <10 <10 <10 <10 <10 <10 <10 <10 <10 <10 <10 <10			

COMPANY: Goldstream-Titan
PROJECT: Stormont
HOLE NUMBER: SD 43

Description			Core Recovery			RQD			Assays							
From	To		From	To	%	From	To	%	From	To						
.28.4 cont.....	40.8	.skarn becomes greenish fine grained calc-silicate towards base of unit;														
40.8	43.7	**SILICIFIED SHALE-QUARTZITE:** light brown-cream hornfelsed shaley beds with characteristic streaky appearance, interbedded with massive white-light gray quartz-quartzite, cut by light green fibrous greisen veins (?tremolite); BCA 70-80; 1-2 % pyrite as blebs in shale units;	40.8	43.7	100											
43.7	44.0	**ALTERED SANDSTONE:** light gray-green sandstone; fine grained with soft sericitic ? altered felspathic groundmass;	43.7	44.0	100											
		END OF HOLE														

COMPANY: Goldstream-Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 44

Commenced:	05 November 96
Completed:	07 November 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the extension of Stormont Skarn 50 m. SE of SD 10, which intersected 14.4 m. 0.95 g/t Au

Comments on Completion
hole intersected approximately 34 m. skarn beneath a thin cover of Tertiary basalt. An 8 m. section near the HW of this skarn assayed 1.81 g/t Au and 0.06 % Bi. There was some core loss in this interval; important to note that in the fresh skarn where there was no core loss, the gold values were 50 % higher and the Bi grades double; it is likely that weathering above 18.5 m removed significant Au and Bi

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5405773	419060	665	- 90	-

Length (m)
50.0

Hole Size	
To (m)	Size
50.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	20.0	significant
	(see log)	

Hole Condition on Completion
all casing and materials removed from hole

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au g/t	Bi %					
13.5	21.5	65-70	weathered skarn changing abruptly to garnet-amphibole skarn at 18.5 m.	8.0	1.81	0.06					
18.5	21.5	100	Fresh skarn with 100 % recovery	3.0	2.8	0.12					

COMPANY: Goldstream-Titan
PROJECT: Stormont
HOLE NUMBER: SD 44

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au (dup)	
0.0	4.0	**TERTIARY BASALT:**													
			0.0	2.0	60										
		basalt rubble, variably magnetic;	2.0	5.0	60										
4.0	14.0	**SKARN - CLAY - WEATHERED:**													
			5.0	8.0	50				4.0	5.0	0.11	25			
		orange-yellow-white mottled gritty clayand	8.0	11.0	90				5.0	6.5	0.02	15			
		decomposed skarn;	11.0	14.0	60				6.5	8.0	0.55	<10		0.51	
		recoveries generally poor;							8.0	9.5	0.62	20			
		vague foliation 45 CA ? bedding?							9.5	11.0	0.03	15			
		grading from clay to decomposed rock below							11.0	12.0	0.03	10			
		12.0 m;							12.0	13.5	0.15	20			
14.0	18.5	**WEATHERED SKARN:**													
		highly decomposed weathered skarn; strongly	14.0	17.0	50				13.5	15.5	2.55	370		2.46	
		limonitic in part;	17.0	20.0	85				15.5	17.0	0.22	40			
									17.0	18.5	0.4	80			
18.5	37.8	**SKARN:**													
		abrupt change to fresh skarn at 18.5 m;	20.0	37.8	100				18.5	19.5	1.59	850			
		mottled light brown-pink and dark green							19.5	20.5	4.82	2500		5.01	
		garnet- amphibole skarn;							20.5	21.5	2.04	410			
		22.7-25.5 m., garnets are up to 2 mm. across							21.5	22.5	0.05	280			
		and occur in large mottled masses;							22.5	23.5	<0.01	15			
		dark gray fibrous mineral probably an							23.5	24.5	<0.01	<10			
		amphibole? chlorite/tremolite;							24.5	25.5	0.03	<10			
		31-32 m: clots up to 20 mm. of darker small							25.5	26.5	<0.01	<10			
		garnets;							26.5	27.5	<0.01	<10			
		darker green-black zones below 36.5							27.5	28.5	<0.01	<10			
		m.contain significant magnetite, but in							28.5	29.5	<0.01	<10			
		general skarn is magnetite poor;							29.5	30.5	<0.01	<10			
		no sulfides recognised;							30.5	31.5	<0.01	<10		<0.01	
		sharp base;							31.5	32.5	<0.01	<10			
		core very competent;							32.5	33.5	<0.01	<10			
37.8	50.0	**HORNFELSED SHALES AND QUARTZITES:**							33.5	34.5	<0.01	<10			
									34.5	35.5	<0.01	<10			
		dark gray-reddish purple hornfelsed shales							35.5	36.5	<0.01	<10			
		interbedded with fine-medium grained	37.8	50.0	100				36.5	37.5	<0.01	35			
		quartzites:							37.5	38.5	<0.01	15			
		BCA 70-80;													

COMPANY: Goldstream - Titan
PROJECT: Stormont
HOLE NUMBER: SD 44

Description			Core Recovery			RQD			Assays							
From	To		From	To	%	From	To	%	From	To						
37.8 cont	50.0	minor disseminated pyrite; pervasive greenish tinge suggests widespread alteration; 20 mm. quartz vein at 42 m. core generally competent but a few broken zones; **END OF HOLE**														

COMPANY: Goldstream-Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 45

Commenced:	08 November 96
Completed:	11 November 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test extensions of the Stormont Skarn to the SE of previous intersections beneath Tertiary basalt

Comments on Completion
no skarn was intersected; either it was severely upturned NE of SD 44 or it was faulted out by thrust fault;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5405785	419070	664	-90	-

Length (m)
42.0

Hole Size	
To (m)	Size
42.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	35

Hole Condition on Completion
all casing and other materials removed from hole;

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Bi					
			no significant intersections								

COMPANY: Goldstream - Titan
PROJECT: Stormont
HOLE NUMBER: SD 45

Description			Core Recovery			RQD			Assays							
From	To		From	To	%	From	To	%	From	To	Au	Bi				
0.0	3.2	**CLAY:**														
		brown-orange-purple clays with relict bedding	0.0	2.0	35				0.0	2.0	<0.01	35				
		45 CA;	2.0	5.0	90				2.0	3.2	<0.01	25				
		minor Tertiary basalt rubble at collar <1 m; clay probably after skarn;														
3.2	42.0	**SANDSTONE:**														
		3.2-13.2 m: weathered broken light gray-cream tubicolar sandstone; more felspathic sections decomposed to gritty clay; limonite and manganese common on fracture surfaces;	5.0	8.0	90											
			8.0	13.0	100											
		13.2-23.5 m: dark gray medium grained felspathic tubicolar sandstone; moderately fresh and competent;	13.0	14.0	80											
			14.0	22.6	100											
		dominant joint directions 30 and 70 CA; 30 degree set commonly infilled with leached quartz-biotite greisen veins; disseminated pyrite <1%;	22.6	24.8	95											
		23.5-42.0 m: dark gray, medium grained pyritic, tubicolar sandstone with felspathic light brown-cream altered siltstone-shale unitsBCA ? 45;	24.8	42.0	100											
		3-5% pyrite as aggregates and coarse disseminated grains in sandstone, ocassionally 5-10 % over short intervals; between 28-42 m: eight major quartz-greisen veins, 100-200 mm. wide and 60-70 CA; veins consist of massive white fractured quartz +/- actinolite in fibrous rosettes and along vein margins; minor pyrite and mica;							27.2	28.2	<0.01	40				
		vein at 28.0-28.2 m. contains abundant weathered soft actinolite; adjacent sandstones are altered to dark green color, indicating intense greisenisation;							31.0	32.0	<0.01	<10				
		core reasonably competent except for fractures associated with 0-30 CA 1-5 mm. quartz-mica greisen vein set;														
		END OF HOLE														

COMPANY: Goldstream-Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 46

Commenced:	13 November 96
Completed:	15 November 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the eastern margin of the western skarn syncline at Stormont Mine

Comments on Completion
no skarn was intersected which places a limit on the eastern margin of the western syncline;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5405850	418835	640	-90	-

Length (m)
44.0

Hole Size	
To (m)	Size
44.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	50

Hole Condition on Completion
all casing and other materials removed from hole;

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Ag	Cu	Pb	Zn	As	S
			no significant mineralisation								

COMPANY: Goldstream - Titan
PROJECT: Stormont
HOLE NUMBER: SD 46

Description			Core Recovery			RQD			Assays							
From	**To**		**From**	**To**	**%**	**From**	**To**	**%**	**From**	**To**						
0.0	23.0	**INTERBEDDED SANDSTONE AND SHALE:**														
			0.0	2.0	50				(no assays)							
		dark gray tubicolar fine-medium grained	2.0	5.0	95											
		sandstone, interbedded with light brown-	5.0	8.0	90											
		cream-purple shale beds;	8.0	10.7	95											
		BCA 75-85;	10.7	18.9	100											
		worm tubes becoming more abundant towards	18.9	20.0	95											
		base;	20.0	23.0	100											
		20 mm. limonitic quartz vein at 11.5 m;														
		minor coarse disseminated pyrite <1%														
		confined to darker sandy beds;														
		strong joint sets 10 and 30 CA; limonite														
		staining common on fracture surfaces;														
		core reasonably competent with fracturing														
		along soft shale beds common;														
		very broken below 20 m;														
23.0	44.0	**TUBICOLAR SANDSTONE, minor shale:**														
		dark gray medium grained, and felspathic	23.0	44.0	100											
		medium grained sandstone interbedded with														
		minor cream and purple shale beds;														
		sandstone tubicolar, especially near top;														
		BCA constant 75-80;														
		43-44 m: two 30 mm., and one 60 mm. quartz														
		veins, 80 CA., (ie) sub-parallel to bedding;														
		pyrite 2-5% in sandstone beds as coarse														
		aggregates and infilling fracture surfaces;														
		reasonably competent below 24.7 m;														
		END OF HOLE														

COMPANY: Goldstream-Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 47

Commenced:	18 November 96
Completed:	20 November 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the eastern margin of the western skarn syncline

Comments on Completion
8.0 m. of weathered skarn were intersected from the collar but gold assays were < 0.1 g/t; experience elsewhere at Stormont suggests most Au is near the HW section of the skarn, which in this case has been eroded away;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5405815	418840	642	-90	-

Length (m)
50.0

Hole Size	
To (m)	Size
50.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	20

Hole Condition on Completion
all casing and other materials removed from hole;

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Bi					
0.0	8.5	85	weathered skarn	8.5	0.02	<100					

COMPANY: Goldstream - Titan
PROJECT: Stormont
HOLE NUMBER: SD 47

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au (dup)	
0.0	8.2	**WEATHERED SKARN:**													
		soil to 1.7 m;	0.0	2.0	20				0.0	2.0	0.05	120		0.51	
		sand and clay to 2.5 m;	2.0	5.0	80				2.0	3.5	0.02	55			
		2.5-6.3 m: intensely leached, weathered skarn, green-cream, limonitic, very broken;	5.0	8.0	90				3.5	5.0	0.02	<10			
		6.3-8.2 m: weathered garnet-amphibole skarn, mottled light brown-dark green, strongly leached;							5.0	6.5	<0.01	<10			
									6.5	7.5	0.01	<10			
									7.5	8.5	<0.01	<10			
8.2	50.0	**SANDSTONE AND SHALE:**													
		8.2-16.0 m: light gray-orange weathered felspathic sandstone, interbedded with light gray-cream well bedded shales;	8.0	50.0	100										
		BCA 80;													
		16.0-29.5 m: dark gray-purple fine grained sandstone with minor light gray shaley beds;													
		1-2% disseminated pyrite in sandstone;													
		BCA 80;													
		tubicolar in places;													
		core very broken;													
		29.5-41.0 m: silicified and veined, light gray, fine-medium grained sandstone with convoluted shale beds;													
		sandstone intensely silicified, and containing fine grained disseminated pyrite;													
		numerous thin greisen veins generally 20-30 CA, composed mainly of quartz-pyrite-fibrous mineral, and often greenish in color;													
		core very broken;													
		41.0-50.0 m: felspathic fine-medium grained sandstone, and dark gray sandstone; tubicolar in part;													
		2-3 % pyrite, as coarse disseminations;													
		END OF HOLE													

COMPANY: Goldstream- Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 48

Commenced:	21 November 96
Completed:	22 November 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the SE extension of the western skarn syncline

Comments on Completion
8.5 m. of weathered skarn were intersected from the collar; all gold assays were less than 0.02 g/t;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5405795	418885	656	-90	-

Length (m)
50.5

Hole Size	
To (m)	Size
50.5	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	5
2.0	5.0	60

Hole Condition on Completion
all materials removed from hole

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Bi					
2.0	8.5		weathered skarn	6.5	0.02	<100					

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387044

COMPANY: Goldstream - Titan
PROJECT: Stormont
HOLE NUMBER: SD 48

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au (dup)	
0.0	8.5	**SKARN - severely weathered:**													
		0.0-6.0 m: completely decomposed skarn; orange-gray-white gritty clays and sand;	0.0	2.0	5				2.0	3.5	0.02	<10			
			2.0	5.0	60				3.5	5.0	<0.01	<10			
		6.0-8.5 m: severely weathered and leached garnet skarn; light gray-off white color; becomes more competentbelow 8.0 m., light gray-green ?epidote color; darker green and gritty towards base;	5.0	8.0	90				5.0	6.5	0.02	80		0.02	
									6.5	7.5	0.02	30			
									7.5	8.5	0.07	<10			
8.5	22.5	**INTERBEDDED SHALES AND SANDSTONE:**													
		silicified fawn-purple shales, BCA 80, interbedded with gray-orange felspathic sandstone, strongly silicified in places; 200 mm. quartz veinat 86 m. perpendicular to CA; minor disseminated coarse pyrite; core very broken below 16.0 m;	8.0	22.5	100										
22.5	50.5	**SANDSTONE, minor shale:**													
		dark gray-purple fine-medium grained massive sandstone with thin shale interbeds; blotchy texture in places due to chlorite-pyrite clots; sandstones tubicolar in part; some sections intensely silicified; core generally competent but some broken zones; **27-30 m:** crushed shale zone with abundant high angle (70-80 CA) 5-20 mm. quartz veins; several wider 20-100 mm. quartz veins continue to 38 m;	22.5	50.5	100										
		END OF HOLE													

COMPANY: Goldstream-Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 49

Commenced:	25 November 96
Completed:	26 November 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the southern extension of the western skarn syncline;

Comments on Completion
a 17 m. skarn zone was intersected from surface; the FW half was Bi anomolous, but the highest gold value was 1.0 m. 0.19 g/t;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5405775	418870	655	-90	-

Length (m)
50.0

Hole Size	
To (m)	**Size**
50.0	**HQ**

Significant Core Loss Zones		
From	**To**	**%Rec.**
0.0	**2.0**	**40**
2.0	**5.0**	**85**

Hole Condition on Completion
all materials removed from hole

Summary of Results:

Depth		Recovery	Description	Assays							
From	**To**	**%**		**Length**	**Au**	**Bi**					
7.0	13.0	100	magnetite skarn, wrigglite in places	6.0	0.06	577					
incl. 10.0	11.0	100		1.0	0.19	850					

COMPANY: Goldstream - Titan
PROJECT: Stormont
HOLE NUMBER: SD 49

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au (dup)	
0.0	16.8	**SKARN:**													
		0.0-4.0 m: interbedded orange-black-white clays	0.0	2.0	40				0.0	2.0	0.01	<10			
		4.0-7.7 m: intensely weathered orange-brown decomposed rock to 4.8 m., then very soft weathered dark gray-black skarn to 7.7 m;	2.0	5.0	85				2.0	3.0	<0.01	<10			
		7.7-12.7 m: magnetite skarn, dark gray-black-dark green skarn with intervals of abundant magnetite;	5.0	8.0	95				3.0	4.0	0.13	15			
		between 8-9 m., wrigglite textures developed which is the first time this has been described at Stormont;	8.0	14.0	100				4.0	5.0	<0.01	<10			
		below 11.3 m., magnetite concentrated in network of 2-5 mm. wide veins cutting through light brown-orange-green skarn (ie) late stage magnetite veining;	14.0	16.7	95				5.0	6.0	0.01	<10			
		12.7-16.8 m: severely weathered orange-off white-mottled green skarn with only minor blebs and veinlets of magnetite;							6.0	7.0	<0.01	<10			
		bottom metre extremely broken;							7.0	8.0	0.04	210		0.01	
16.8	30.0	**INTERBEDDED SHALES and SANDSTONES:**							8.0	9.0	0.05	1200			
		light gray-buff brown-purple hornfelsed shales interbedded with light-dark gray massive sandstones;							9.0	10.0	0.05	400			
		BCA 75-85;							10.0	11.0	0.19	850			
		<1% disseminated pyrite;							11.0	12.0	0.01	650			
		fibrous mineral common in some sandstone beds, decomposed to soft orange material;							12.0	13.0	0.01	155			
		strong joint direction 50 CA;							13.0	14.0	<0.01	15			
		interval weathered and broken in part but generally competent;							14.0	15.0	<0.01	20			
									15.0	16.0	<0.01	<10			
									16.0	17.0	<0.01	135			
									17.0	18.0	0.03	90			
			16.7	26.0	100										
			26.0	29.0	95										
			29.0	30.0	100										
30.0	50.0	**SANDSTONE, minor shale:**													
		light-dark gray tubicolar sandstone with minor hornfelsed shale beds; gradational with unit above; BCA in shales 70-80; pervasive 2-3% pyrite as coarse blebs in sandstone; core moderately competent but some broken zones;	30.0	38.0	100										
			38.0	41.0	95										
			41.0	47.0	100										
			47.0	50.0	100										
		END OF HOLE													

COMPANY: Goldstream-Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 50

Commenced:	27 November 96
Completed:	28 November 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the southern extension of the western skarn syncline;

Comments on Completion
a 21 m. skarn zone was intersected beneath a 5 m. graybilly cover; a 5 m. interval in the middle of this skarn assayed 0.86 g/t Au, including 3 m. 1.34 g/t; recoveries above this unit were poor and Au and Bi values may have been severely reduced due to weathering;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5405765	418855	654	-90	-

Length (m)
50.0

Hole Size	
To (m)	Size
50.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
2.0	5.0	10
5.0	8.0	66
8.0	11.0	50

Hole Condition on Completion
all materials removed from hole;

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Bi					
11.0	16.0	93	magnetite-amphibole skarn	5.0	0.86	499					
incl: 12.0	15.0	93		3.0	1.34	420					

COMPANY: Goldstream - Titan
PROJECT: Stormont
HOLE NUMBER: SD 50

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au(dup)	
0.0	5.0	**GRAYBILLY and SOIL:**													
		white-cream fragmental (conglomeratic) Tertiary graybilly and brown soil;	0.0	2.0	25										
			2.0	5.0	10										
5.0	26.0	**SKARN:**													
		5.0-8.5 m: black-orange-light brown clay;	5.0	8.0	66				5.0	6.5	<0.01	<10		<0.01	
		8.5-13.0 m: orange-green sandy, completely weathered and disaggregated skarn;	8.0	11.0	50				6.5	8.0	<0.01	<10			
		13.0-17.0 m: dark gray-black-dark green wrigglite skarn with patches orange decomposed skarn;	11.0	14.0	90				8.0	9.5	0.02	<10			
		strongly magnetic;	14.0	26.0	100				9.5	11.0	0.05	30			
		dark green fibrous amphibole ? actinolite;							11.0	12.0	0.12	480			
		thin white veins possibly fluorite-quartz-mica;							12.0	13.0	0.63	165			
		core generally competent;							13.0	14.0	1.18	600			
		17.0-26.0 m: garnet-amphibole-magnetite skarn;							14.0	15.0	2.23	500		2.11	
		mottled pink-light brown-dark green appearance; granular magnetite occurs as large patches and beds as well as in numerous thin greisen veins;							15.0	16.0	0.14	750		0.12	
									16.0	17.0	0.05	1100			
									17.0	18.0	0.03	140			
									18.0	19.0	0.03	165			
									19.0	20.0	0.02	210			
									20.0	21.0	0.01	210			
		coarse aggregates dark green fibrous actinolite set in groundmass pink-light brown garnet-diopside ?							21.0	22.0	0.02	20			
									22.0	23.0	0.02	20			
									23.0	24.0	0.03	25			
		no sulfides observed;							24.0	25.0	0.02	125			
		core competent;													
26.0	50.0	**SANDSTONE minor shale and skarn:**													
		light-medium gray fine-medium grained sandstone with interbedded shale below 28.0m;	26.0	29.0	100										
			29.0	32.0	50										
			32.0	38.0	100										
		26.0-30.0m: sandstone cut by dbundant 1-10 mm. laminated greisen veins, consisting of quartz-mica-topaz+/-magnetite ;	38.0	41.0	90										
			41.0	50.0	100										
		some mottled granular skarn-magnetite patches in sandstone;													
		shale BCA 70-80;													
		pyrite <1% as coarse aggregates;													

COMPANY: Goldstream - Titan
PROJECT: Stormont
HOLE NUMBER: SD 50

Description			Core Recovery			RQD			Assays							
From	**To**		**From**	**To**	**%**	**From**	**To**	**%**	**From**	**To**						
26.0 cont	50.0	**below 30.0m:** dominantly sandstone with minor shale; some greisen veining and small irregular patches ?diopside - amphibole +/- magnetite skarn/calc silicates continue to bottom of hole; **END OF HOLE**														

COMPANY: Goldstream-Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 51

Commenced:	29 November 96
Completed:	03 December 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the NW extension of the western skarn syncline

Comments on Completion
3.2 m., skarn at collar, weathered; gold and bismuth anomalous; intersection must be on the extreme western edge of the syncline;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5405870	418750	656	-90	-

Length (m)
50.5

Hole Size	
To (m)	Size
50.5	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	90

Hole Condition on Completion
all materials removed from hole;

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Bi					
1.0	2.0	90	decomposed and weathered limonitic skarn	1.0	0.16	700					

COMPANY: Goldstream - Titan
PROJECT: Stormont
HOLE NUMBER: SD 51

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au (dup)	
0.0	3.2	**SKARN:**													
			0.0	2.0	90				0.0	1.0	<0.01	270			
		0.0-1.5 m: decomposed orange skarn with dark masses of magnetite;	2.0	3.2	100				1.0	2.0	0.16	700			
									2.0	3.0	0.03	70			
		1.5-3.2 m: green-gray partly decomposed weathered limonitic skarn, with abundant veins and aggregates of magnetite;													
3.2	8.0	**MIXED SKARN-SANDSTONE-SHALE ZONE:**													
									3.0	4.0	0.01	210			
		light-dark gray felspathic sandstone, minor shale beds, mottled granular skarn/calc - silicate with magnetite common;	3.2	8.0	100				4.0	5.0	0.02	85			
		unit cut by numerous 1-5 mm. greisen veins composed of white mica-magnetite and ocassionally cores massive pyrite;													
		2-4% pyrite as coarse clots in fine-medium grained sandstone;													
		joint and fracture surfaces coated with limonite;													
		BCA 45;													
8.0	25.5	**SHALE - SANDSTONE:**													
		cream-purple-dark gray shales with minor fine-medium grained dark gray sandstone;	8.0	25.5	100										
		13-22 m: unit extremely broken;													
		several minor yellow-orange sandy beds;													
		BCA 50-70;													
25.5	27.5	**SILICIFIED ZONE:**													
		light gray-light brown fine grained silicified zone, ? quartzite?/ calc-silicates?	25.5	27.5	100										
27.5	50.5	**SANDSTONE, minor shale:**													
		interbedded dark gray sandstone and light gray-cream felspathic sandstone; both units tubicolar; lighter units more pyritic, 3-5% as coarse euhedral clots and individual grains;	27.5	50.5	100										
		darker sandstone 2-4% pyrite; BCA 40-50:													
		END OF HOLE													

COMPANY: Goldstream-Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 52

Commenced:	03December 96
Completed:	04 December 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the NW extension of the western skarn syncline

Comments on Completion
a 15.4 m. skarn intersection was obtained from the collar; core recoveries in the first 5 m. were poor; the skarn was Bi anomolous and the top 3 m. contained 0.16 g/t Au;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5405885	418765	658	- 90	-

Length (m)
50.0

Hole Size	
To (m)	Size
50.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	50
2.0	5.0	75

Hole Condition on Completion
all materials removed from the hole

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Bi					
0.0	3.0	60	weathered magnetic skarn	3.0	0.16	290					
3.0	7.0	80	wrigglite skarn	4.0	<0.01	1187					

COMPANY: Goldstream-Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 52

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au (dup)	
0.0	15.4	**SKARN:** **0.0-2.5 m:** Highly weathered and decomposed magnetite skarn, orange-dark brown-black; **2.5-7.7 m:** dark gray-black wrigglite skarn strongly magnetic, mottled dark green amphibole ? in part; **7.7-13.8 m:** mottled diopside (honey colored)-magnetite skarn; competent generally, but decomposed in parts to light green-brown sandy weathered skarn; 1-10 mm greisen veins at 60-80 CA common, with white mica cores and magnetite margins; **13.8-15.4 m:** light green saccharoidal epidote ? skarnwith only minor magnetite; weathered and broken towards base - possibly a zone of intermixed sandstone and skarn;	0.0	2.0	50				0.0	2.0	0.16	165		0.15	
									2.0	3.0	0.15	430		0.18	
									3.0	4.0	<0.01	1000			
			2.0	5.0	75				4.0	5.0	<0.01	1150			
									5.0	6.0	<0.01	1600			
									6.0	7.0	<0.01	1000		<0.01	
			5.0	15.4	100				7.0	8.0	0.17	500		0.13	
									8.0	9.0	<0.01	200			
									9.0	10.0	0.01	390			
									10.0	11.0	<0.01	550			
									11.0	12.0	<0.01	105			
									12.0	13.0	<0.01	260			
									13.0	14.0	<0.01	370			
									14.0	15.0	0.01	40			
									15.0	16.0	<0.01	<10			
15.4	25.2	**SHALE and minor SANDSTONE:** buff brown hornfelsed shales; minor light gray sandstone beds; BCA 70-80 CA; very broken in parts;	15.4	20.0	100										
			20.0	23.0	90										
			23.0	25.2	100										
25.2	50.0	**SANDSTONE minor SHALE:** gradational with unit above; interbedded dark gray medium grained sandstone and creamy-buff brown felspathic sandstone, both tubicolor and pyritic; former contains 1-2 % coarse euhedral pyrite and the latter 2-4% coarse clots of pyrite; minor beds of shale, dense dark gray-purple; top part of unit to 28.5 m. finer grained and silicified; **END OF HOLE**	25.2	50.0	100										

COMPANY: Goldstream-Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 53

Commenced:	05 December 96
Completed:	05 December 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the northern extension of the western skarn syncline

Comments on Completion
a 4.6 m. skarn was intersected from the collar, with only minor gold values; thus this hole probably tested close to the NW boundary of the syncline where the HW section of the skarn, which usually carries most of the gold, was eroded away;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5405898	418780	656	- 90	-

Length (m)
29.0

Hole Size	
To (m)	Size
29.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	10
2.0	5.0	60

Hole Condition on Completion
all materials removed from hole

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Bi					
2.0	3.0	60	weathered skarn	1.0	0.17	40					

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 53

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au (dup)	
0.0	4.6	**WEATHERED SKARN:**													
		severely weathered disaggregated skarn;	0.0	2.0	10				0.0	2.0	0.02	<10			
		orange, cream, pink saccharoidal material,	2.0	5.0	60				2.0	3.0	0.17	40		0.16	
		strongly limonitic in places;							3.0	4.0	0.01	<10			
		very broken with poor recoveries;							4.0	5.0	<0.01	<10			
4.6	29.0	**SHALE, SANDSTONE minor SKARN:**													
		interbedded buff brown-purple-gray shales,and	5.0	29.0	100				5.0	6.0	<0.01	<10			
		fine-medium grained, gray sandstone;							6.0	7.0	<0.01	<10		0.01	
		minor skarn beds to 20 m., represented by							7.0	8.0	<0.01	<10			
		dark green fibrous amphibole rich bedsor													
		orange - cream clayey zones;													
		BCA 70;													
		at 25.0 m., 50 mm quartz-amphibole vein 80							16.0	17.0	<0.01	<10			
		CA;													
		BCA below 23 m. shallowing to 40-50;													
		at 26 m., 30 mm quartz vein, 40 CA;													
		below 28 m., fine grained, light gray quartzite;													
		END OF HOLE													

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 54

Commenced:	06 Dec 96
Completed:	10 Dec 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the northern extension of the eastern skarn syncline

Comments on Completion
only a thin (3.8 m.) skarn zone was intersected at the collar, with no gold or bismuth values;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5 406 065	418 945	640	- 90	-

Length (m)
23.0

Hole Size	
To (m)	Size
23.0	HQ

Significant Core Loss Zones		
From	To	%Rec.

Hole Condition on Completion
all materials removed from hole on completion;

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Ag	Cu	Pb	Zn	As	S
			no significant mineralisation								

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 54

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au (dup)	
0.0	3.8	**WEATHERED SKARN:** intensely weathered light gray-green and mottled dark green-black skarn, limonitic and chloritic; non-magnetic; original skarn mineralogy non apparant, possibly garnet-amphibole skarn;	0.0	2.0	90				0.0	1.0	<0.01	<10			
			2.0	3.8	100				1.0	2.0	<0.01	<10			
									2.0	3.0	<0.01	<10			
									3.0	4.0	<0.01	<10			
									4.0	5.0	0.01	<10		0.01	
3.8	11.4	**SANDSTONE minor SHALE:** light gray felspathic sandstone; minor disseminated pyrite; interbedded with minor shale beds; very broken with limonite on fracture surfaces;	3.8	11.4	100										
11.4	15.0	**SHALE minor SANDSTONE:** hornfelsed shale, mottled light brown-gray; BCA 80-90;	11.4	15.0	100										
15.0	23.0	**SHALE and SANDSTONE:** interbedded shale and sandstone; BCA 90; minor quartz veins in places; minor narrow skarn zones; some altered sections with minor magnetite; **END OF HOLE**	15.0	23.0	100										

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 55

Commenced:	11 Dec 96
Completed:	16 Dec 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the northern extension of the eastern skarn syncline

Comments on Completion
only a thin skarn zone with low gold was intersected at the collar; combined with SD 54 this suggests the skarn extension to the NE is very limited and probably dies out alltogether to the immediate N of SD 55 because of topography;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5,406,080	418,960	640	- 90	-

Length (m)
22.0

Hole Size	
To (m)	Size
22.0	HQ

Significant Core Loss Zones		
From	To	%Rec.

Hole Condition on Completion
all materials removed from hole

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Ag	Cu	Pb	Zn	As	S
			no significant assays								

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 55

Description			Core Recovery			RQD			Assays							
From	To		From	To	%	From	To	%	From	To	Au	Bi				
0.0	3.0	**WEATHERED SKARN:**														
		very weathered, degraded skarn;	0.0	2.0	80				0.0	1.0	0.01	<10				
		non-magnetic;	2.0	5.0	90				1.0	2.0	0.01	<10				
		light gray-green-orange limonitic;							2.0	3.0	0.01	<10				
		sandy in places (possibly weathered							3.0	4.0	<0.01	<10				
		sandstone);							4.0	5.0	<0.01	<10				
3.0	9.0	**SANDSTONE:**														
		light-dark gray intensely silicified (hornfelsed)	5.0	9.0	100											
		sandstone with minor shale beds;														
		core moderately broken with limonite coated														
		fracture surfaces;														
9.0	14.4	**SHALES minor SANDSTONE:**														
		well bedded purple-light brown shales, minor	9.0	14.4	100											
		light green, medium grained sandstone;														
		BCA 80;														
14.4	22.0	**SANDSTONE minor SHALE:**														
		mottled medium grained sandstone, minor	14.4	22.0	100											
		shale and patches of skarn (green, fibrous														
		and fine grained);														
		broken towards base of unit;														
		END OF HOLE														

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 56

Commenced:	17 Dec 96
Completed:	18 Dec 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the northern extent of the eastern skarn syncline

Comments on Completion
only a thin 4.0m. skarn zone was intersected at the collar, underlain by an altered magnetite bearing sandstone; gold values were low with only moderate Bi levels; SD 54, 55, 56 indicate that the eastern skarn syncline is limited in extent to the north

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5,406,050	418,935	640	- 90	-

Length (m)
23.5

Hole Size	
To (m)	Size
23.5	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	75

Hole Condition on Completion
all materials removed from hole on completion

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Bi					
			no significant mineralisation								

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 56

Description			Core Recovery			RQD			Assays						
From	**To**		**From**	**To**	**%**	**From**	**To**	**%**	**From**	**To**	**Au**	**Bi**		**Au (dup)**	
0.0	4.0	**SKARN with MAGNETITE VEINING:** **0.0-1.0:** very weathered, broken skarn rubble, poor recovery: **below 1.0 m:** fresher but still weathered skarn; mottled light gray - dark green skarn with abundant 1-5 mm. magnetite veins, generally 40 CA and associated with coarse pyrite; core competent with good recoveries below 1.0 m; limonite and manganese on fractures;	0.0	2.0	75				0.0	1.0	0.01	130			
			2.0	4.0	100				1.0	2.0	<0.01	210			
									2.0	3.0	<0.01	25			
									3.0	4.0	<0.01	110			
4.0	8.2	**SANDSTONE with MAGNETITE:** light-dark gray fine-medium grained sandstone, with abundant thin magnetite-pyrite veins; **6.0-7.0 m:** semi-massive magnetite-coarse euhedral pyrite and low angled narrow quartz veining; ? possible fault zone ? core generally broken with limonite on fractures;	4.0	8.2	100				4.0	5.0	<0.01	140			
									5.0	6.0	<0.01	65			
									6.0	7.0	0.04	270		0.05	
									7.0	8.0	0.05	270		0.05	
8.2	11.4	**SANDSTONE with magnetite, pyrite and quartz veining:** broken silicified fine grained sandstone with 3-5 % coarse pyrite and several brecciated 100-200 mm. quartz veins ? small faulting? 10.5-11.5 m: several large patches pyrite-magnetite;	8.2	11.4	100				8.0	9.0	<0.01	35			
									9.0	10.0	<0.01	25			
									10.0	11.0	<0.01	25			
									11.0	12.0	<0.01	40			
11.4	17.0	**SHALE minor SANDSTONE:** well bedded dark gray -light gray-purple shales with minor sandstone beds; BCA 80-90; unit generally very broken;	11.4	17.0	100										
17.0	23.5	**SANDSTONE minor SHALE:** very broken dark gray medium grained sandstone with minor shale beds;	17.0	19.0	100										
			19.0	20.0	90										
			20.0	23.5	100										
		END OF HOLE													

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 57

Commenced:	18 Dec 96
Completed:	19 Dec 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the skarn in the central section of the eastern skarn syncline;

Comments on Completion
only a 2.0 m. thick skarn zone at the collar underlain by possible calc silicate zone; low gold and bismuth values;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5,406,023	419,010	640	-90	-

Length (m)
25.0

Hole Size	
To (m)	**Size**
25.0	HQ

Significant Core Loss Zones		
From	**To**	**%Rec.**
0.0	2.0	60

Hole Condition on Completion
all materials removed from hole on completion

Summary of Results:

Depth		Recovery	Description	Assays							
From	**To**	**%**		**Length**	**Au**	**Ag**	**Cu**	**Pb**	**Zn**	**As**	**S**
			no significant mineralisation								

COMPANY: Goldstream - Titan
PROJECT: Stormont
HOLE NUMBER: SD 57

Description			Core Recovery			RQD			Assays							
From	To		From	To	%	From	To	%	From	To	Au	Bi				
0.0	2.0	**SKARN:** intensely weathered limonitic skarn;	0.0	2.0	60				0.0	2.0	<0.01	35				
2.0	5.2	**QUARTZITE (? calc silicate):** light gray, very fine grained silicified unit with wispy veinlets light green material; fracture surfaces coated with limonite and pyrolusite;	2.0	5.2	100				2.0 3.0	3.0 4.0	0.01 <0.01	40 30				
5.2	7.8	**SANDSTONE minor shale:** medium grained light gray sandstone with minor shale bands;	5.2	7.8	100											
7.8	14.2	**SHALE:** light brown-purple shale with minor interbedded sandstone; BCA 80;	7.8	14.2	100				13.5 14.5	14.5 15.5	<0.01 <0.01	<10 <10				
14.2	15.2	**SKARN or ALTERED SANDSTONE:** mottled white-green-brown saccharoidal textured rock; several small rosettes and aggregates white fibrous mineral ? wollastonite ?	14.2	15.2	100											
15.2	25.0	**SANDSTONE minor SHALE:** dark gray-cream hornfelsed sandstone,minor shale beds, and altered felspathic zones; unit very broken with sericite on low angled joint surfaces;	15.2 17.0 20.0	17.0 20.0 25.0	100 90 100											
		END OF HOLE														

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 58

Commenced:	19 Dec 96
Completed:	20 Dec 96
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the eastern margin of the central section of the eastern skarn syncline;

Comments on Completion
no skarn intersected; the base of the eastern skarn syncline must outcrop between SD 57 and SD 58;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5,406, 038	419, 023	638	- 90	-

Length (m)
26.0

Hole Size	
To (m)	Size
26.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	30
2.0	5.0	60

Hole Condition on Completion
all materials removed from hole on completion of hole;

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au						
			no significant mineralisation								

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 58

Description			Core Recovery			RQD			Assays							
From	To		From	To	%	From	To	%	From	To						
0.0	7.0	**SHALES:** very weathered and broken buff brown-cream shale with limonite and manganese on fracture surfaces; 0.0-1.0 m.: site fill- no recovery BCA 80;	0.0	2.0	30											
			2.0	5.0	60											
			5.0	8.0	80											
7.0	26.0	**SANDSTONE minor SHALE:** dark gray-purple medium grained sandstone with minor shale beds; tubicolor; minor disseminated coarse pyrite; core very broken in places with strong joint sets 10-20 CA; drusy pyrite on joint surfaces; core competent below 22.0 m;	8.0	11.0	90											
			11.0	13.5	100											
			13.5	15.1	95											
			15.1	26.0	100											
		END OF HOLE														

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 59

Commenced:	09 Jan 97
Completed:	13 Jan 97
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the western margin of the central section of the eastern skarn syncline

Comments on Completion
a 15.5 m. skarn zone was intersected from the collar; this was much thicker than anticipated; gold values were generally low (best 1.0 m. 0.12 g/t) within a 4.0m. wide high Bi interval;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5,406,006	418,996	638	-90	-

Length (m)
30.0

Hole Size	
To (m)	Size
30.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	40

Hole Condition on Completion
all materials removed from hole on completion

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Bi					
8.5	12.5	100	mottled pink-green skarn with minor magnetite	4.0	0.04	1412					
incl. 10.5	11.5			1.0	0.12	2250					

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 59

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au (dup)	
0.0	1.5	**CHOCOLATE SOILS:** brown-chocolate colored soil, possibly derived from Tertiary basalt;	0.0	2.0	40				0.0	1.5	<0.01	<10			
1.5	2.3	**CLAY (AFTER SKARN):** light orange-green sandy clay derived from skarn; mottled skarn textures still present;							1.5	2.5	<0.01	<10			
2.3	5.9	**CLAY and SAND AFTER SKARN:** interbedded black-cream-white clays with remnant mottled skarn texture; several minor off-white sandy beds; trace disseminated pyrite;	2.0	5.0	85				2.5	3.5	0.01	<10			
									3.5	4.5	<0.01	<10			
									4.5	5.5	0.01	<10			
5.9	6.8	**LEACHED SKARN:** sandy light brown-greenish skarn, strongly leached, resulting in vuggy appearance;	5.0	8.0	90				5.5	6.5	<0.01	130			
6.8	15.5	**SKARN:** relatively fresh competent skarn; **6.8-8.5 m:** light brown-honey colored garnet skarn with large patches of coarse accicular dark-green actinolite and patches coarse granular magnetite abundant near top of unit; **8.2-12.5 m:** mottled pink-green skarn with only minor patches magnetite; pink-honey colored garnet mixed with fine grained medium green ?epidote/vesuvianite and ocassional aggregates coarse fibrous amphibole (actinolite?); **12.5-15.5 m:** skarn dominated by fine grained light gray-light brown fibrous mineral (? pyroxene?); minor garnet, actinolite, trace smeared silvery mineral;	8.0	15.5	100				6.5	7.5	<0.01	65			
									7.5	8.5	<0.01	60			
									8.5	9.5	<0.01	1400			
									9.5	10.5	<0.01	750			
									10.5	11.5	0.12	2250		0.11	
									11.5	12.5	0.03	1250			
									12.5	13.5	<0.01	40			
									13.5	14.5	<0.01	<10			
									14.5	15.5	<0.01	<10			
15.5	17.9	**MIXED SKARN-SANDSTONE:** interbedded light green skarn and silicified sandstone-grit; skarn dominated by chloritised actinolite?	15.5	17.9	100				15.5	16.5	<0.01	<10			
									16.5	17.5	<0.01	<10			
									17.5	18.5	<0.01	<10			

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 59

Description			Core Recovery			RQD			Assays							
From	To		From	To	%	From	To	%	From	To						
17.9	30.0	**SHALE and SANDSTONE:** interbedded light gray-purple shale and light gray coarse grained sandstone with minor patches of chloritised skarn; BCA 85; core generally broken and rubbly in part; **END OF HOLE**	17.9	30.0	100											

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 60

Commenced:	14 Jan 97
Completed:	15 Jan 97
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the western margin of the central section of the eastern syncline in an area of basalt cover

Comments on Completion
a 12 m. section of skarn was intersected beneath a thin basalt cover; most of the skarn was weathered to clay; no skarn was anticipated in this area; gold and bismuth values were low

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5,405,970	419,015	642	-90	-

Length (m)
26.0

Hole Size	
To (m)	Size
26.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	40
2.0	5.0	75

Hole Condition on Completion
all materials removed from hole on completion

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Bi					
3.0	4.0	75	skarn weathered to clay	1.0	0.19	20					

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 60

Description			Core Recovery			RQD			Assays						
From	To		From	To	%	From	To	%	From	To	Au	Bi		Au (dup)	
0.0	3.4	**TERTIARY BASALT:** basalt rubble, weakly magnetic; some chocolate soil;	0.0 2.0	2.0 5.0	40 75										
3.4	13.0	**CLAYS after SKARN:** **3.4-4.3 m:** orange and white clay with relict bedding 85 CA; **4.3-5.3 m:** black clay **5.3-6.3 m:** white clay **6.3-7.7 m:** mottled brown and orange clay, faint relict bedding 80 CA; **7.7-8.5 m:** white and gray clays **8.5-11.7 m:** brown and dark gray clay and decomposed rock; **11.7-13.0 m:** light gray-off white decomposed sandy rock with dark gray banding;	5.0 8.0 11.0	8.0 11.0 14.0	85 80 80				3.0 4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0	4.0 5.0 6.0 7.0 8.0 9.0 10.0 11.0 12.0 13.0	0.19 0.01 <0.01 <0.01 <0.01 <0.01 <0.01 0.01 <0.01 <0.01	20 <10 <10 <10 <10 <10 <10 <10 <10 <10		0.15 0.01 		
13.0	15.5	**SKARN:** weathered and leached light green-orange-light brown mottled skarn; intensely limonitic in part; highly degraded and difficult to determine mineralogy;	14.0	17.0	95				13.0 14.0 15.0	14.0 15.0 16.0	0.09 0.02 0.02	85 <10 <10		 0.01	
15.5	18.5	**INTERBEDDED SANDSTONE-SKARN-SHALE** dark gray pyritic greisenised sandstone interbedded with light brown-pink garnet skarn containing large soft chloritic dark green patches; very broken rubbly zones probably shales;	17.0	18.5	100				16.0 17.0 18.0	17.0 18.0 19.0	0.01 0.01 <0.01	<10 <10 <10		 0.01 	
18.5	26.0	**SANDSTONE and SHALE:** dark gray medium grained pyritic sandstone interbedded with light brown-off white shales; BCA 80-85; limonite on joint surfaces near top of unit; unit extremely broken and rubble in places; **END OF HOLE**	18.5 23.0	23.0 26.0	100 85										

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 61

Commenced:	15 Jan 97
Completed:	16 Jan 97
Logged By:	L A Newnham
Drilled By:	Dia. Drill Tas

Purpose of Hole
to test the SE extension of the eastern skarn syncline beneath a thin Tertiary cover

Comments on Completion
the hole passed through a thin sequence of Tertiary cover rocks directly into shales and sandstones, indicating it was located to the immediate east of the skarn FW;

Collar Details

Grid	Northing	Easting	Elevation	Dip	Bearing
AMG	5,405,980	419,105	633	-90	-

Length (m)
26.0

Hole Size	
To (m)	Size
26.0	HQ

Significant Core Loss Zones		
From	To	%Rec.
0.0	2.0	40
2.0	5.0	50
5.0	8.0	70

Hole Condition on Completion
all materials removed from hole on completion;

Summary of Results:

Depth		Recovery	Description	Assays							
From	To	%		Length	Au	Bi					
			no significant mineralisation								

COMPANY: Goldstream - Titan
PROJECT: Stormont EL 20/92
HOLE NUMBER: SD 61

Description			Core Recovery			RQD			Assays							
From	To		From	To	%	From	To	%	From	To						
0.0	1.8	**TERTIARY CONGLOMERATE (graybilly):** light gray conglomerate, medium grained groundmass, large rounded quartz pebbles up to 50 mm;	0.0	2.0	40											
1.8	3.5	**TERTIARY BASALT:** dark gray basaltic rubble and soil, weakly magnetic, poor recovery;	2.0	5.0	50											
3.5	26.0	**INTERBEDDED SHALE and SANDSTONE:** **3.5-12.0 m:** light gray and purple shale with minor interbedded dark gray medium grained sandstone; BCA 80; minor 10-20 mm. quartz veining parallel to bedding; very broken with limonite on joint surfaces to 7.0 m; **12.0-26.0 m:** dark gray medium grained sandstone with minor shale beds, gradational with shales above; tubicolor texture in places; joint set semi parallel to CA results in very broken core in places; minor greenish alteration below 24 m;	5.0 8.0 11.0	8.0 11.0 26.0	70 90 100											
		END OF HOLE														

APPENDIX B

STORMONT DRILL HOLE ASSAYS

MINERAL CHEMISTRY

Amdel Laboratories Ltd
PO Box 338
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387075

Mr Lindsay Newnham
Newnham Exploration & Mining Services
PO Box 132
RIVERSIDE TAS 7250

FINAL ANALYSIS REPORT

Your Order No:

Our Job Number : 7AD0032

Sample rec'd : 08/01/97
No. of samples : 103
Report comprises a cover sheet and pages 1 to 1

Results reported : 22/01/97

This report relates specifically to the samples tested in so far that the samples as supplied are truly representative of the sample source.

This final analysis report replaces the preliminary reports sent on 22/01/97.

Approved Signature:

for
Alan Ciplys
Manager - Mineral Chemistry

Report Codes:
N.A. - Not Available.
L.N.R. - Listed But Not Received.
I.S. - Insufficient Sample.

Distribution Codes:
CC - Carbon Copy
EM - Electronic Media
MM - Magnetic Media

amdel

Job: 7AD0032 387076
O/N:

Final

ANALYTICAL REPORT

SAMPLE	Au	Au Dp1	Bi
SD43 23.0-24.0	<0.01	--	<10
SD43 24.0-25.0	<0.01	<0.01	<10
SD43 25.0-26.0	<0.01	--	<10
SD43 26.0-27.0	<0.01	--	<10
SD43 27.0-28.0	<0.01	--	<10
SD43 28.0-29.0	<0.01	--	<10
SD43 29.0-30.0	<0.01	--	<10
SD43 30.0-31.0	0.03	--	<10
SD43 31.0-32.0	<0.01	--	<10
SD43 32.0-33.0	0.01	--	<10
SD43 33.0-34.0	<0.01	--	<10
SD43 34.0-35.0	<0.01	--	<10
SD43 35.0-36.0	<0.01	--	<10
SD43 36.0-37.0	<0.01	--	<10
SD43 37.0-38.0	<0.01	--	<10
SD43 38.0-39.0	<0.01	--	<10
SD43 39.0-40.0	0.01	--	<10
SD43 40.0-41.0	<0.01	--	<10
SD44 4.0- 5.0	0.11	--	25
SD44 5.0- 6.5	0.02	--	15
SD44 6.5- 8.0	0.55	0.51	<10
SD44 8.0- 9.5	0.62	--	20
SD44 9.5-11.0	0.03	--	15
SD44 11.0-12.0	0.03	--	10
SD44 12.0-13.5	0.15	--	20
SD44 13.5-15.5	2.55	2.46	370
SD44 15.5-17.0	0.22	--	40
SD44 17.0-18.5	0.40	--	80
SD44 18.5-19.5	1.59	--	850
SD44 19.5-20.5	4.82	5.01	2500
SD44 20.5-21.5	2.04	--	410
SD44 21.5-22.5	0.05	--	280
SD44 22.5-23.5	<0.01	--	15
SD44 23.5-24.5	<0.01	--	<10
SD44 24.5-25.5	0.03	--	<10
SD44 25.5-26.5	<0.01	--	<10
SD44 26.5-27.5	<0.01	--	<10
SD44 27.5-28.5	<0.01	--	<10
SD44 28.5-29.5	<0.01	--	<10
SD44 29.5-30.5	<0.01	--	<10
SD44 30.5-31.5	<0.01	<0.01	<10
SD44 31.5-32.5	<0.01	--	<10
SD44 32.5-33.5	<0.01	--	<10
SD44 33.5-34.5	<0.01	--	<10
SD44 34.5-35.5	<0.01	--	<10
SD44 35.5-36.5	<0.01	--	<10
SD44 36.5-37.5	<0.01	--	35
SD44 37.5-38.5	<0.01	--	15
SD45 0- 2.0	<0.01	--	35
SD45 2.0- 3.2	<0.01	--	25
UNITS	ppm	ppm	ppm
DET.LIM	0.01	0.01	10
SCHEME	FA1	FA1	AA1R

Final

ANALYTICAL REPORT

SAMPLE	Au	Au Dp1	Bi
SD45 27.2-28.2	<0.01	--	40
SD45 31.0-32.0	<0.01	--	<10
SD47 0- 2.0	0.05	0.51	120
SD47 2.0- 3.5	0.02	--	55
SD47 3.5- 5.0	0.02	--	<10
SD47 5.0- 6.5	<0.01	--	<10
SD47 6.5- 7.5	0.01	--	<10
SD47 7.5- 8.5	<0.01	--	<10
SD48 2.0- 3.5	0.02	--	<10
SD48 3.5- 5.0	<0.01	--	<10
SD48 5.0- 6.5	0.02	0.02	80
SD48 6.5- 7.5	0.02	--	30
SD48 7.5- 8.5	0.07	--	<10
SD49 0- 2.0	0.01	--	<10
SD49 2.0- 3.0	<0.01	--	<10
SD49 3.0- 4.0	0.13	--	15
SD49 4.0- 5.0	<0.01	--	<10
SD49 5.0- 6.0	0.01	--	<10
SD49 6.0- 7.0	<0.01	--	<10
SD49 7.0- 8.0	0.04	0.01	210
SD49 8.0- 9.0	0.05	--	1200
SD49 9.0-10.0	0.05	--	400
SD49 10.0-11.0	0.19	--	850
SD49 11.0-12.0	0.01	--	650
SD49 12.0-13.0	0.01	--	155
SD49 13.0-14.0	<0.01	--	15
SD49 14.0-15.0	<0.01	--	20
SD49 15.0-16.0	<0.01	--	<10
SD49 16.0-17.0	<0.01	--	135
SD49 17.0-18.0	0.03	--	90
SD50 5.0- 6.5	<0.01	<0.01	<10
SD50 6.5- 8.0	<0.01	--	<10
SD50 8.0- 9.5	0.02	--	<10
SD50 9.5-11.0	0.05	--	30
SD50 11.0-12.0	0.12	--	480
SD50 12.0-13.0	0.63	--	165
SD50 13.0-14.0	1.18	--	600
SD50 14.0-15.0	2.23	2.11	500
SD50 15.0-16.0	0.14	0.12	750
SD50 16.0-17.0	0.05	--	1100
SD50 17.0-18.0	0.03	--	140
SD50 18.0-19.0	0.03	--	165
SD50 19.0-20.0	0.02	--	210
SD50 20.0-21.0	0.01	--	210
SD50 21.0-22.0	0.02	--	20
SD50 22.0-23.0	0.02	--	20
SD50 23.0-24.0	0.03	--	25
SD50 24.0-25.0	0.02	--	125
SD51 0- 1.0	<0.01	--	270
SD51 1.0- 2.0	0.16	--	700
UNITS	ppm	ppm	ppm
DET.LIM	0.01	0.01	10
SCHEME	FA1	FA1	AA1R

inal

ANALYTICAL REPORT

SAMPLE		Au	Au Dp1	Bi
SD51	2.0- 3.0	0.03	--	70
SD51	3.0- 4.0	0.01	--	210
SD51	4.0- 5.0	0.02	--	85

UNITS	ppm	ppm	ppm
DET.LIM	0.01	0.01	10
SCHEME	FA1	FA1	AA1R

MINERAL CHEMISTRY

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Facsimile (08) 8234 0321

387079

Mr Lindsay Newnham
Newnham Exploration & Mining Services
PO Box 132
RIVERSIDE TAS 7250

FINAL ANALYSIS REPORT

Your Order No:

Our Job Number : 7AD0146

Sample rec'd : 23/01/97
No. of samples : 84
Report comprises a cover sheet and pages 1 to 2

Results reported : 06/02/97

This report relates specifically to the samples tested in so far that the samples as supplied are truly representative of the sample source.

Approved Signature:

for
Alan Ciplys
Manager - Mineral Chemistry

Report Codes:
N.A. - Not Available.
L.N.R. - Listed But Not Received.
I.S. - Insufficient Sample.

Distribution Codes:
CC - Carbon Copy
EM - Electronic Media
MM - Magnetic Media

amdel

Job: 7AD0146
O/N:

Final

ANALYTICAL REPORT

387080

SAMPLE	Au	Au Dpl	Bi
SD52 00.0-02.0	0.16	0.15	165
SD52 02.0-03.0	0.15	0.18	430
SD52 03.0-04.0	<0.01	--	1000
SD52 04.0-05.0	<0.01	--	1150
SD52 05.0-06.0	<0.01	--	1600
SD52 06.0-07.0	<0.01	<0.01	1000
SD52 07.0-08.0	0.17	0.13	500
SD52 08.0-09.0	<0.01	--	200
SD52 09.0-10.0	0.01	--	390
SD52 10.0-11.0	<0.01	--	550
SD52 11.0-12.0	<0.01	--	105
SD52 12.0-13.0	<0.01	--	260
SD52 13.0-14.0	<0.01	--	370
SD52 14.0-15.0	0.01	--	40
SD52 15.0-16.0	<0.01	--	<10
SD53 00.0-02.0	0.02	--	<10
SD53 02.0-03.0	0.17	0.16	40
SD53 03.0-04.0	0.01	--	<10
SD53 04.0-05.0	<0.01	--	<10
SD53 05.0-06.0	<0.01	--	<10
SD53 06.0-07.0	<0.01	0.01	<10
SD53 07.0-08.0	<0.01	--	<10
SD53 16.0-17.0	<0.01	--	<10
SD54 00.0-01.0	<0.01	--	<10
SD54 01.0-02.0	<0.01	--	<10
SD54 02.0-03.0	<0.01	--	<10
SD54 03.0-04.0	<0.01	--	<10
SD54 04.0-05.0	0.01	0.01	<10
SD55 00.0-01.0	0.01	--	<10
SD55 01.0-02.0	0.01	--	<10
SD55 02.0-03.0	0.01	--	<10
SD55 03.0-04.0	<0.01	--	<10
SD55 04.0-05.0	<0.01	--	<10
SD56 00.0-01.0	0.01	--	130
SD56 01.0-02.0	<0.01	--	210
SD56 02.0-03.0	<0.01	--	25
SD56 03.0-04.0	<0.01	--	110
SD56 04.0-05.0	<0.01	--	140
SD56 05.0-06.0	<0.01	--	65
SD56 06.0-07.0	0.04	0.05	270
SD56 07.0-08.0	0.05	0.05	270
SD56 08.0-09.0	<0.01	--	35
SD56 09.0-10.0	<0.01	--	25
SD56 10.0-11.0	<0.01	--	25
SD56 11.0-12.0	<0.01	--	40
SD57 00.0-02.0	<0.01	--	35
SD57 02.0-03.0	0.01	--	40
SD57 03.0-04.0	<0.01	--	30
SD57 13.5-14.5	<0.01	--	<10
SD57 14.5-15.5	<0.01	--	<10
UNITS	ppm	ppm	ppm
DET.LIM	0.01	0.01	10
SCHEME	FA1	FA1	AA1

amdel

Job: 7AD0146
O/N:

inal

ANALYTICAL REPORT

337081

SAMPLE		Au	Au Dp1	Bi
SD59	0.0- 1.5	<0.01	--	<10
SD59	1.5- 2.5	<0.01	--	<10
SD59	2.5- 3.5	0.01	--	<10
SD59	3.5- 4.5	<0.01	--	<10
SD59	4.5- 5.5	0.01	--	<10
SD59	5.5- 6.5	<0.01	--	130
SD59	6.5- 7.5	<0.01	--	65
SD59	7.5- 8.5	<0.01	--	60
SD59	8.5- 9.5	<0.01	--	1400
SD59	9.5-10.5	<0.01	--	750
SD59	10.5-11.5	0.12	0.11	2250
SD59	11.5-12.5	0.03	--	1250
SD59	12.5-13.5	<0.01	--	40
SD59	13.5-14.5	<0.01	--	<10
SD59	14.5-15.5	<0.01	--	<10
SD59	15.5-16.5	<0.01	--	<10
SD59	16.5-17.5	<0.01	--	<10
SD59	17.5-18.5	<0.01	--	<10
SD60	03.0-04.0	0.19	0.15	20
SD60	04.0-05.0	0.01	--	<10
SD60	05.0-06.0	<0.01	--	<10
SD60	06.0-07.0	<0.01	--	<10
SD60	07.0-08.0	<0.01	--	<10
SD60	08.0-09.0	<0.01	--	<10
SD60	09.0-10.0	<0.01	--	<10
SD60	10.0-11.0	0.01	0.01	<10
SD60	11.0-12.0	<0.01	--	<10
SD60	12.0-13.0	<0.01	--	<10
SD60	13.0-14.0	0.09	--	85
SD60	14.0-15.0	0.02	--	<10
SD60	15.0-16.0	0.02	0.01	<10
SD60	16.0-17.0	0.01	--	<10
SD60	17.0-18.0	0.01	0.01	<10
SD60	18.0-19.0	<0.01	--	<10
UNITS		ppm	ppm	ppm
DET.LIM		0.01	0.01	10
SCHEME		FA1	FA1	AA1

APPENDIX C

PITT RESEARCH

AEROMAGNETIC REPORT

To: Lindsay Newnham - Newnham Exploration and Mining Services
From: Grant Archer - Pitt Research
Date: 15 April, 1997
Subject: Modelling and Imaging of Moina Aeromagnetic Survey

Dear Lindsay,

As a result of your visit to Pitt Research on Friday 7 March, 1997 and the resulting request for additional magnetic modelling and image production applied to the Moina aeromagnetic survey (northern Tasmania), the following work has been carried out.

Magnetic Modelling

Objective of magnetic modelling

As outlined on March 7, the objective of magnetic modelling was to focus on a large NEE trending magnetic ridge located in the NW corner of the Moina survey.

Description of NW magnetic ridge

The NW magnetic ridge strikes approximately NEE and has a variable magnetic intensity ranging from a peak response (measured in a NS sense) of approximately 1700nT (measured peak to trough of anomaly) to a minimum of around 700nT (peak to trough). Strike length of the ridge is at least 4km and extends outside the bounds of the survey in both directions. The area covering the anomaly has been geologically mapped at the surface as Moina sandstone and basalt, with sandstone covering the sources of most intense magnetic anomalism. Two options for magnetic modelling were pursued in accordance with our discussions:

option 1

The magnetic source of the NW ridge is caused by skarn with geological constraints:

- flat dipping
- depth below surface 50 - 150m
- magnetic susceptibility 0.4 - 0.5 S.I. units (as determined by magnetite content)
- width 10 - 40m
- lateral dimensions 200-300m by 200-300m

option 2

The magnetic source of the NW ridge is caused by a flat dipping volcanic layer with geological constraints:

- flat to 20 degrees dip
- minimum depth below surface 300m
- magnetic susceptibility 0.01 S.I. units
- width > 500m

Results of modelling Option 1

The various images of the Moina acromagnetic survey (see section " Magnetic Image Production" later in this document), in particular the residual and the vertical derivative images, were used to assist in interpreting possible magnetic body positions and their lateral extents to be used in the model of the NW magnetic ridge.

Three north-south oriented traverses intersecting the NW magnetic ridge were chosen for the purpose of modelling and presentation for this document (although obviously other traverses were considered during the course of modelling). The three traverses were positioned over magnetic highs on the ridge, and (hence) intersected the positions of magnetic bodies as interpreted using residual imagery. Locations of traverses were 418650E, 419550E and 420650E. (see figure 1 for contour map of area covering traverses presented)

Effort was put into attempting to derive a model within the geological constraints proposed by option 1, however considerable difficulty was encountered trying to explain the broadness of the observed magnetic anomaly, as a result of using the shallow depths to magnetic sources as proposed by option 1 (ie 50-100m below surface) - broadness of anomaly can be interpreted as being associated with deeper sources. A more detailed discussion follows.

Modelling of traverse 420650E
(see figure 2a for traverse location)

Some "success" in modelling was obtained by putting the main magnetic body ("skarn") in section 420650E deeper in the section than as proposed by option 1. Figure 2a shows a plan view of magnetic (observed) contours with annotation of traverse 420650E. Figure 2b shows a plan view of the model derived for the traverse. Only bodies in the vicinity of the line have been included in the model. Magnetic susceptibilities are annotated in S.I. units and **body 2** represents "**skarn**" and is the main magnetic body in the section. Figure 2c is a sectional view of the model. A reasonable match between observed and modelled profile is observed. While width, lateral extent and dip of body 2 ("skarn") approximate the constraints of option 1, obviously depth and magnetic susceptibility **do not.** The magnetic susceptibility for body 2 has been increased (to perhaps unrealistic levels ?) from the value suggested by option 1 to compensate for reduction in anomaly amplitude due to placing the body at a greater depth (than proposed by option 1), in order to achieve a reasonable correlation between the observed and theoretical field. I have sent you quantitative information on the relationship between magnetite content and magnetic susceptibility. Nevertheless a reduction in susceptibility for body 2 could be achieved by increasing

the body thickness while using a similar depth to magnetic source within limitations, and a reasonable match between profiles is maintained, and I would suggest this as a more likely model ? Figure 2d is the same as figure 2c only with the individual contribution of body 2 ("skarn") to the magnetic anomaly also plotted (black line), and is included to illustrate that body 2 is indeed the main magnetic source in the section.

I emphasise I have tried to constrain the model to the parameters of option 1. I also emphasise that a similar looking modelled profile could be derived by increasing the width of the main magnetic body (using a similar depth) and reducing its magnetic susceptibility, within limitations, if desired. Figures 2e and 2f are the result of simply doubling the thickness of body 2 with magnetic susceptibility decreased from 1.53 to 0.75 S.I. units, for example - a similar match in profiles is achieved using the alternative parameters. The possibility of the source of the NW magnetic ridge being Mount Read volcanics has been suggested by you, and I think is worthwhile considering at least based on the regional magnetics (see section "Regional Aeromagnetics" later in this document).

Modelling of traverse 419550E
(see figure 3a for traverse location)

Figure 3a is a plan view of magnetic (observed) contours with annotation of traverse 419550E. Figure 3b shows a plan view of the model generated for the traverse. Magnetic susceptibilities are annotated and **body 6** represents **"skarn"** and is the main magnetic body in the section. Figure 3c shows the sectional view of the traverse. A fair match between observed and modelled profile is observed. Body depth and magnetic susceptibility are larger than those suggested in the constraints of option 1. Similar to traverse 420650E the magnetic susceptibility of the "skarn" (body 6) could be lowered to "more realistic" levels (?) by increasing body thickness and keeping depth similar, within limitations, while still obtaining a similar reasonable profile correlation. I emphasise I have not done this so as to try to keep within some of the constraints of option 1 (*c/f figures 2e and 2f*). I suggest the alternative parameters as a more likely possibility ? Figure 3d is included to illustrate that body 6 is the main magnetic source in the section (contribution to the magnetic profile is plotted in black).

Modelling of traverse 418650E
(see figure 4a for traverse location)

Figures 4a, 4b and 4c represent a plan of contours of the observed field (showing traverse for modelling), a plan of the model constructed, and the sectional view of the profile, respectively. The result of observation of figure 4c reveals a poor match between observed and modelled profile due to the "inflated" negative lobe of the observed anomaly - though the "regional" wavelength is a reasonable match. The inflated negative lobe of the anomaly (relative to this magnetic latitude) could possibly be explained by magnetic remanence in the source, though I have tried to avoid including remanence in the model - to my knowledge no field measurements of remanence are available. As a very superficial attempt to illustrate one way of

improving the match between profiles, I have introduced remanence in the model for this line and altered body dips to come up with the model shown in figures 5a and 5b, where a reasonable match is observed between modelled and observed profile (naturally magnetic susceptibilities have altered). I emphasise this is very superficial and do not seriously suggest this as a good solution, but show it as a demonstration of the type of thing that could be done using remanence. Additional knowledge of susceptibility and remanence measured in the field would be of great assistance here.

Results of modelling Option 2

This option was ruled out relatively quickly on the basis of some very simple modelling. I report modelling using an "enormous" magnetic block with dimensions of approximately 4km by 2km in lateral extent and more than 1km in width (much larger, hence more magnetic than the volume constraints of option 2) with a magnetic susceptibility of 0.01 S.I. (a constraint of option 2) used in a model and placed at the surface, did not generate enough field intensity to explain even the weakest part of the NW ridge (approximately 700nT peak-trough; the strongest part of the ridge is approximately 1700nT peak-trough).A magnetic susceptibility of 0.01 S.I. is simply not magnetic enough to explain the NW magnetic ridge. In addition a flat dipping layer as proposed by the option would more likely be noticed as a regional contribution to the magnetic field in the survey. The NW ridge (based on its signature) could better be described by a more steeply dipping body. Plots illustrating the above are available on request.

Regional Aeromagnetics

A preliminary view of the regional magnetics of the Devonport area, in the form of the 1:50000 scale contour map supplied by the Tasmanian mines department shows what looks like a distinctive magnetic texture associated with the Mount Read volcanics (ie to the north of the Moina survey). The NW magnetic ridge of the Moina aeromagnetic survey appears to have a similar general magnetic texture and strike to the Mount Read volcanics, expressed in the Mines Department contoured magnetic map, though this all needs to be verified with a more detailed observation of the data. If the apparent correlation between the magnetics and Mount read volcanics is indeed valid it might be possible to considerably extend at a depth, the boundaries of the mapped Mount Read volcanics.

Magnetic Model of Shepherd and Murphy anomaly Area

As you are already aware time was put into preliminary work carried out in preparation for possible modelling of the Shepherd and Murphy anomaly and adjacent areas. Although a preliminary result was derived for the Shepparton-Murphy anomaly, this work was not concluded due to a change of focus to the NW magnetic ridge of the Moina survey.

Image Production

Magnetic imagery

A number of filters and image enhancements were applied to the Moina aeromagnetic survey at Pitt Research during the period, to possibly assist with delineation of NW trending structures, as requested. This work was carried out by Mark Deuter, and hard copies of these results and comments have been sent to you. Images were also used as an aid to magnetic modelling. Results of reduction to the pole processing lend further evidence to the possibility of the NW magnetic ridge (results of modelling discussed above) being due to a deep magnetic source (see item "6" of "Notes of colour image products generated for Moina survey" by Mark Deuter), though this conclusion relies to some extent on a no remanence assumption for the anomaly.

Conclusion

On the basis of having very limited data pertaining to physical measurements on the rocks responsible for the NW magnetic ridge in the Moina aeromagnetic survey, magnetic modelling was carried to explore some of the structural possibilities proposed. It needs to be pointed out that if some of the unknowns in the modelling of the magnetic data (such as magnetic susceptibility and remanence) could be clarified (eg via drilling) a more reliable solution could be derived, nevertheless ideas were still able to be tested yielding useful results The modelling was carried out using aeromagnetics flown at an average altitude of 60m. For information, modelling of ground magnetic data, if it existed would give a more reliable solution eg by getting closer to the magnetic sources would allow better resolution of magnetic bodies used in the model.

The possibility of the NW magnetic ridge being caused by a magnetic sheet is suggested as not being likely based primarily on the given constraint on susceptibility, and the constraint of flat dip.

The possibility of discrete shallow (50-150m below surface) bodies being the source of magnetism of the NW magnetic ridge was explored, and the interpretation implies the probability of these magnetic sources actually being deeper in the section and thicker than was suggested by the constraints of option 1.

The idea of the NW ridge being due to Mount Read volcanics as suggested by you, I think is given support by preliminary observations made on the regional magnetics contours provided by the Tasmanian Mines department, but needs verifying. It would be useful if some magnetic susceptibility measurements on the Mount Read volcanics could be provided.

The possibility of magnetic remanence in the ridge has been suggested by inspection of profiles and could be pursued further if required. In the case of modelling using remanence it would be more optimal to have some data from known physical measurements of remanence, if it could be arranged.

387088

Grant Archer
Geophysicist

Notes on Colour Image Products generated for Moina survey

1. Residual after 8-pass Hanning filter (colour)

This product is essentially a high-pass filter (residual = total - low-pass) which shows the location of the major high-frequency (shallower) features of the area. It is used as a first-pass approximation of the location and extent of magnetic bodies in a particular area, and produces a similar image to the Laplacian filter below. The chromatic key indicates the relative amplitude of the residual anomalies. The residual image displays a number of flight-line dependent features caused by variable terrain clearance in difficult topography.

2. Second vertical derivative (upward continued 10m) - greyscale.

This image has been produced by a 2D FFT process. 2VD images are typically very noisy, and this has been minimised by arbitrarily upward continuing the 2VD gridded data by 10m. The image clearly displays a number of NW trending structures in the centre and eastern parts of the area. An ovalshaped anomaly of diameter approximately 300mx400m appears to the north of the major skarn feature, at approx 423000 mE, and 5407500 mN. It is located adjacent to a NW trending structure. A line of anomalies extending in a NE direction across the lower right of the image may be cultural in origin, perhaps a power line or fence.

3. First vertical derivative (colour).

The 1VD grid has been colour scaled, with relief shading and highlights to emphasise subtle trends in the NW direction. It is a useful image for comparison against the 2VD image.

4. Laplacian filter.

Another high-pass filter of similar character to image 1.

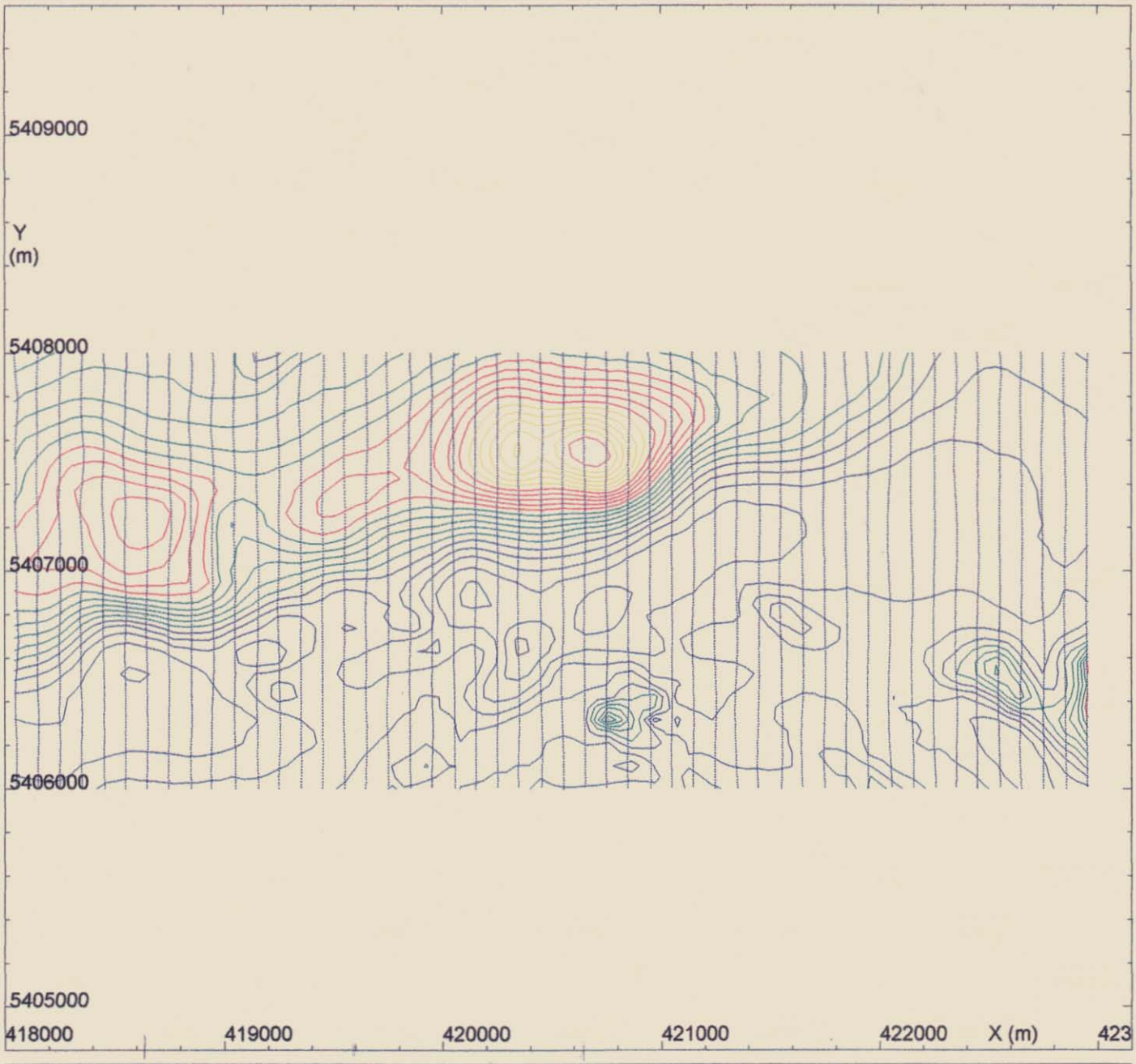
5. Sobel edge-enhancement of TMI (colour)

The Sobel filter is an edge-detecting filter, and has the property when applied to magnetic data that it identifies the edges of magnetic units. This image needs to be interpreted with caution ! The colour assignment no longer applies to the magnetic values, but to the gradients of the magnetic data. Therefore a ridge will be depicted as two red flanks (high gradient) either side of a blue ridge-top (low gradient). A large number of NW trending magnetic structures appear in this image, and the known skarn bodies have a consistent appearance. The oval-shaped anomaly identified in 2. is also well depicted on this image.

6. Reduced to Pole Magnetics (colour)

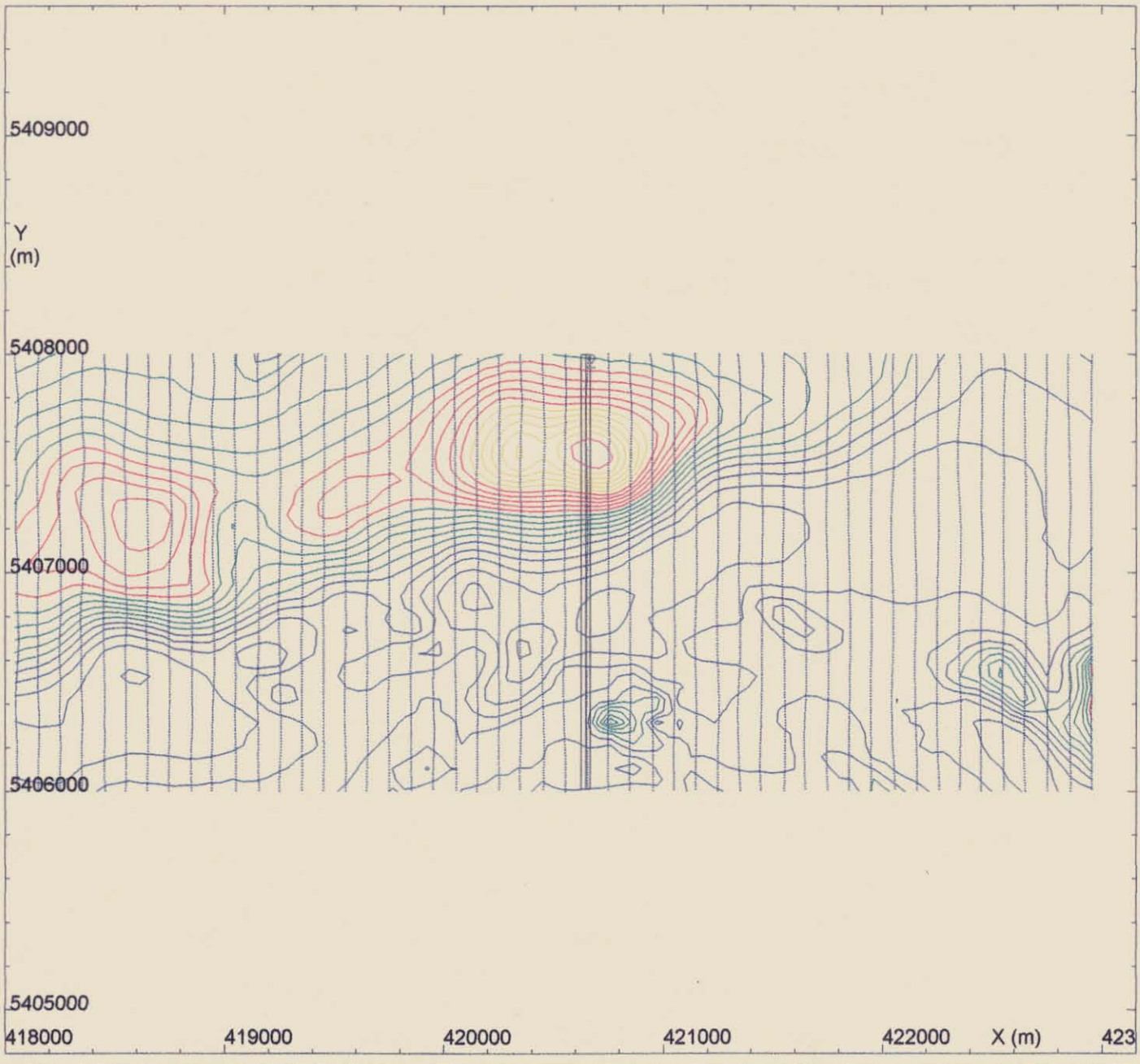
The reduction to pole of TMI was generated to see the effect of this process on the major anoamly in the NW of the area. Comparison against the TMI image will show that the anomaly has shifted considerably to the south, indicating a deep source. Most of the other features have retained a position close to the TMI position, reflecting shallow sources and steep angle of inclination at this latitude.

Contact: Mark Deuter Pitt Research. Ph: (08) 8362 9966 Fax: (08) 8362 9977.



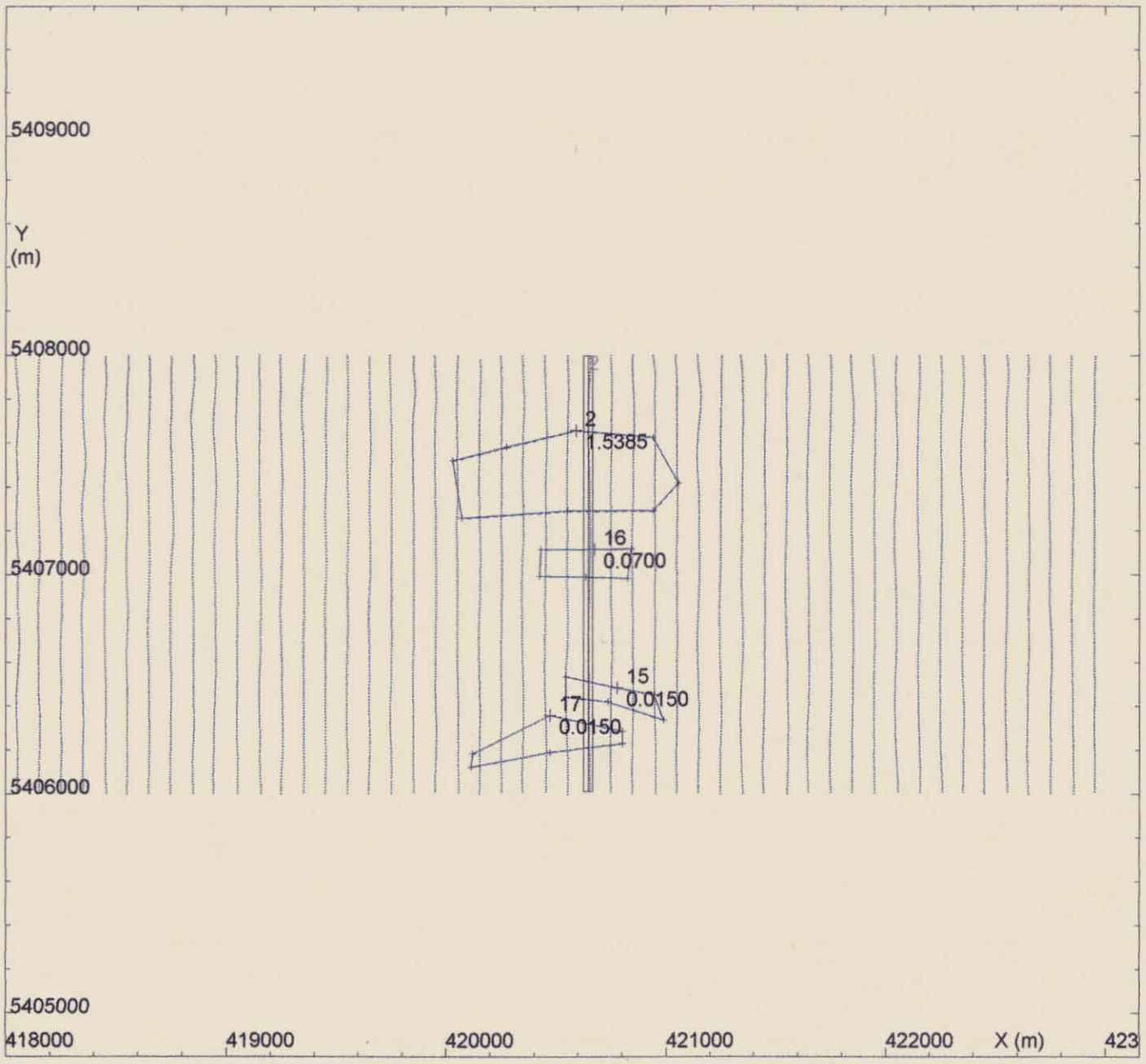
Observations:	Data Area: Moina - Tasmania
Model:	
Contours of:	Observed field; Contour intervals: 80.0000, 400.0000 nT
POTENT v3.08	Plan drawn at 18:11 15/03/1997 for Pitt Research Ltd

Figure 1



Observations:	Data Area: Moina - Tasmania
Model:	
Contours of:	Observed field; Contour intervals: 80.0000, 400.0000 nT
POTENT v3.08	Plan drawn at 18:48 15/03/1997 for Pitt Research Ltd

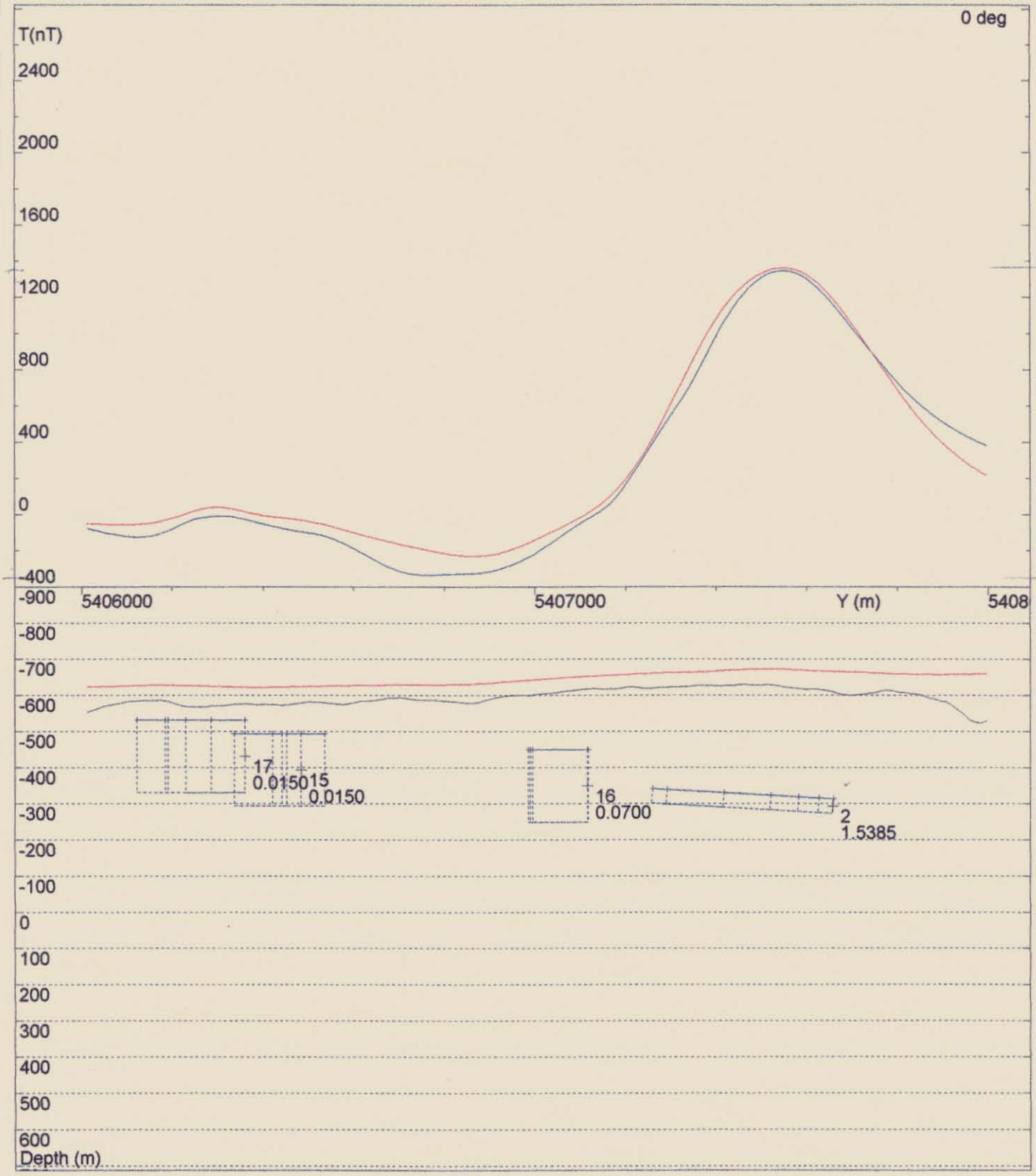
Figure 2a



Observations:	Data Area: Moina - Tasmania
Model:	Section 420650E (nb only bodies in vicinity of lines have been modelled)
POTENT v3.08	Plan drawn at 18:43 15/03/1997 for Pitt Research Ltd

Figure 2b

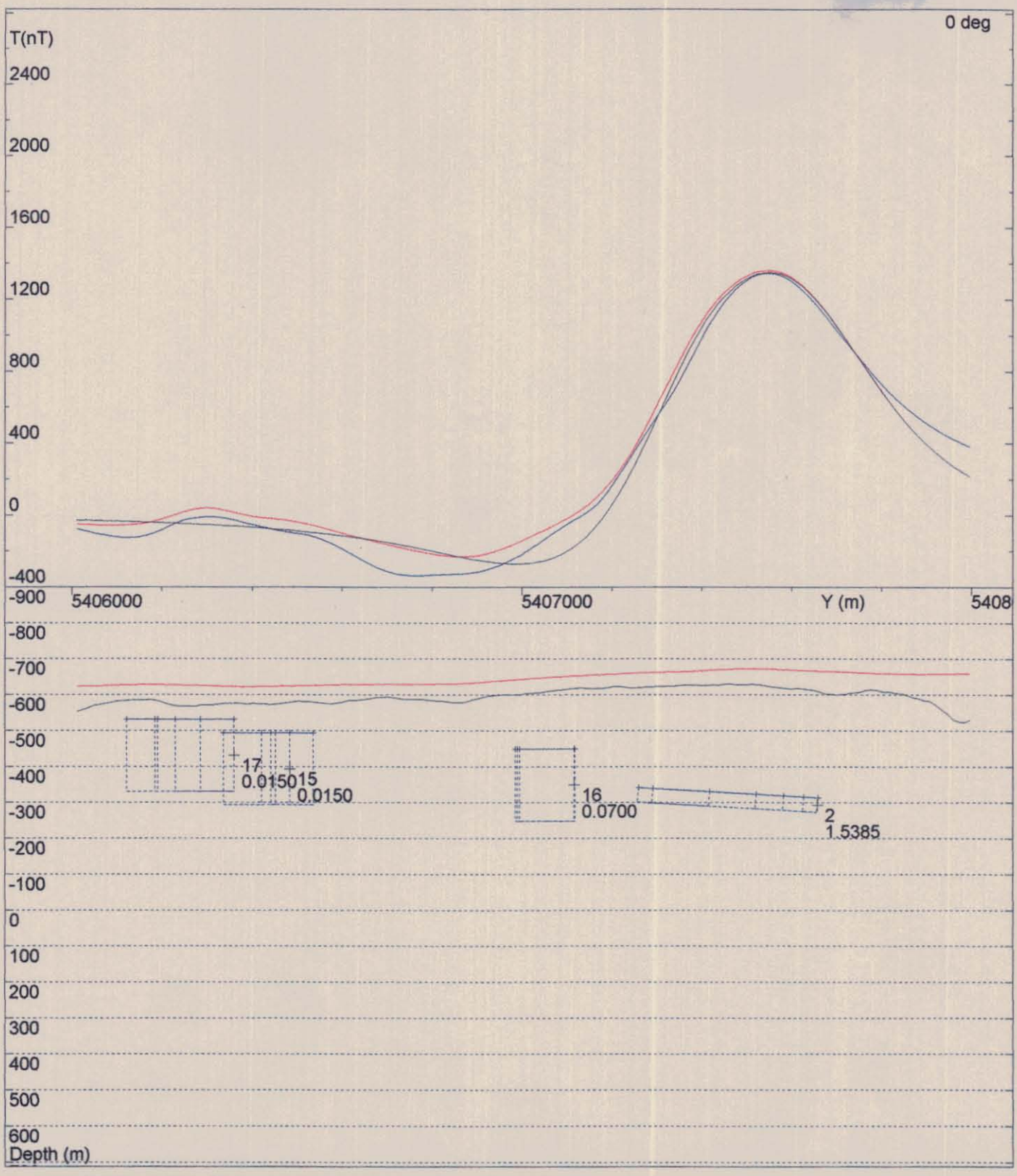
387093



Observations:	Data Area: Moina - Tasmania
Profile #2;	profile section 420650E
Model:	Section 420650E (nb only bodies in vicinity of lines have been modelled)
Calculation mode:	Total Magnetic Intensity
Observed:	Calculated:
Residual:	Individual body:
POTENT v3.08	Profile drawn at 18:43 15/03/1997 for Pitt Research Ltd

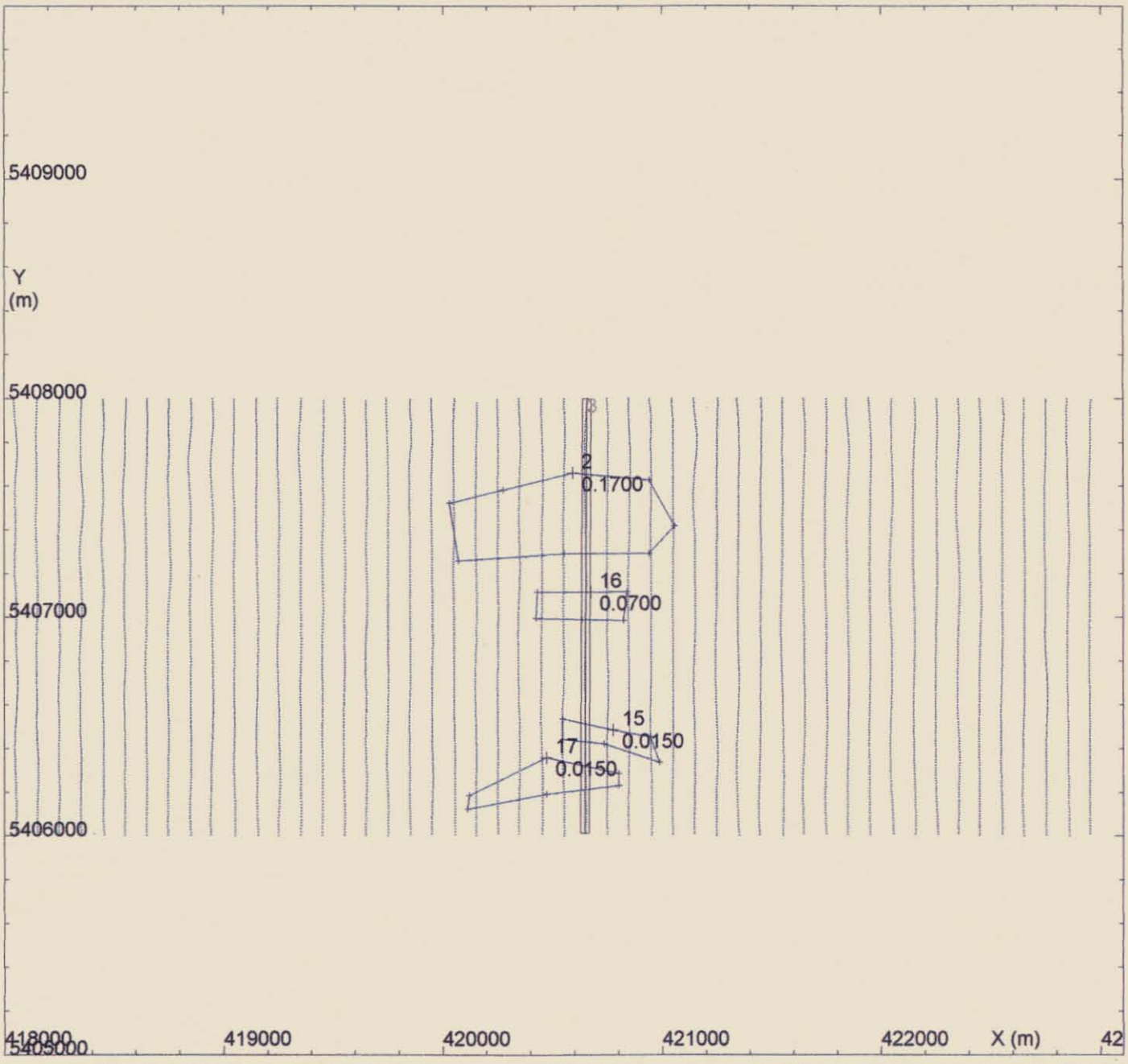
Figure 2c

387094



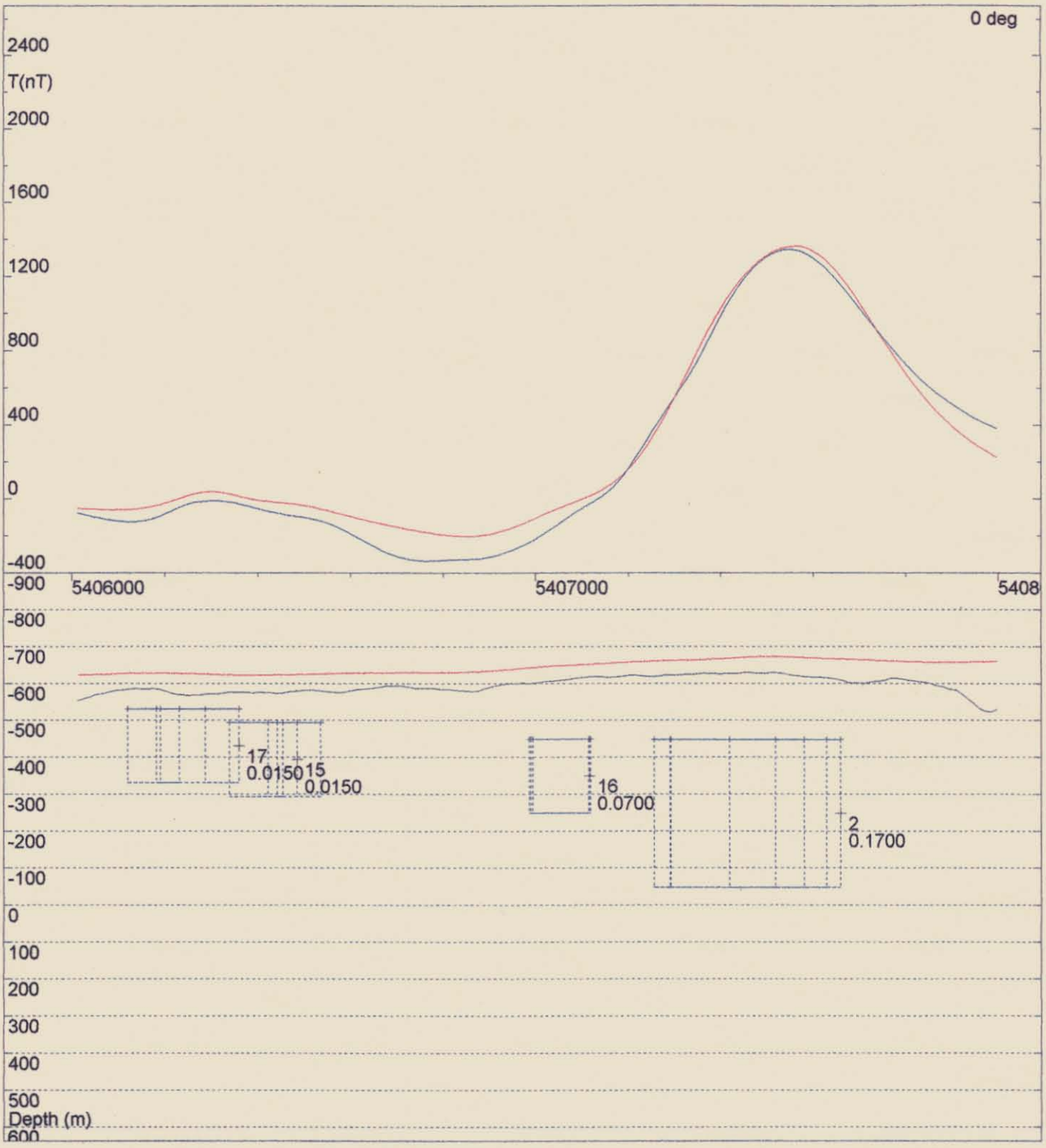
Observations:	Data Area: Moina - Tasmania
Profile #2;	profile section 420650E
Model:	Section 420650E (nb only bodies in vicinity of lines have been modelled)
Calculation mode:	Total Magnetic Intensity
Observed:	Calculated:
Residual:	Individual body:
POTENT v3.08	Profile drawn at 18:44 15/03/1997 for Pitt Research Ltd

Figure 2d



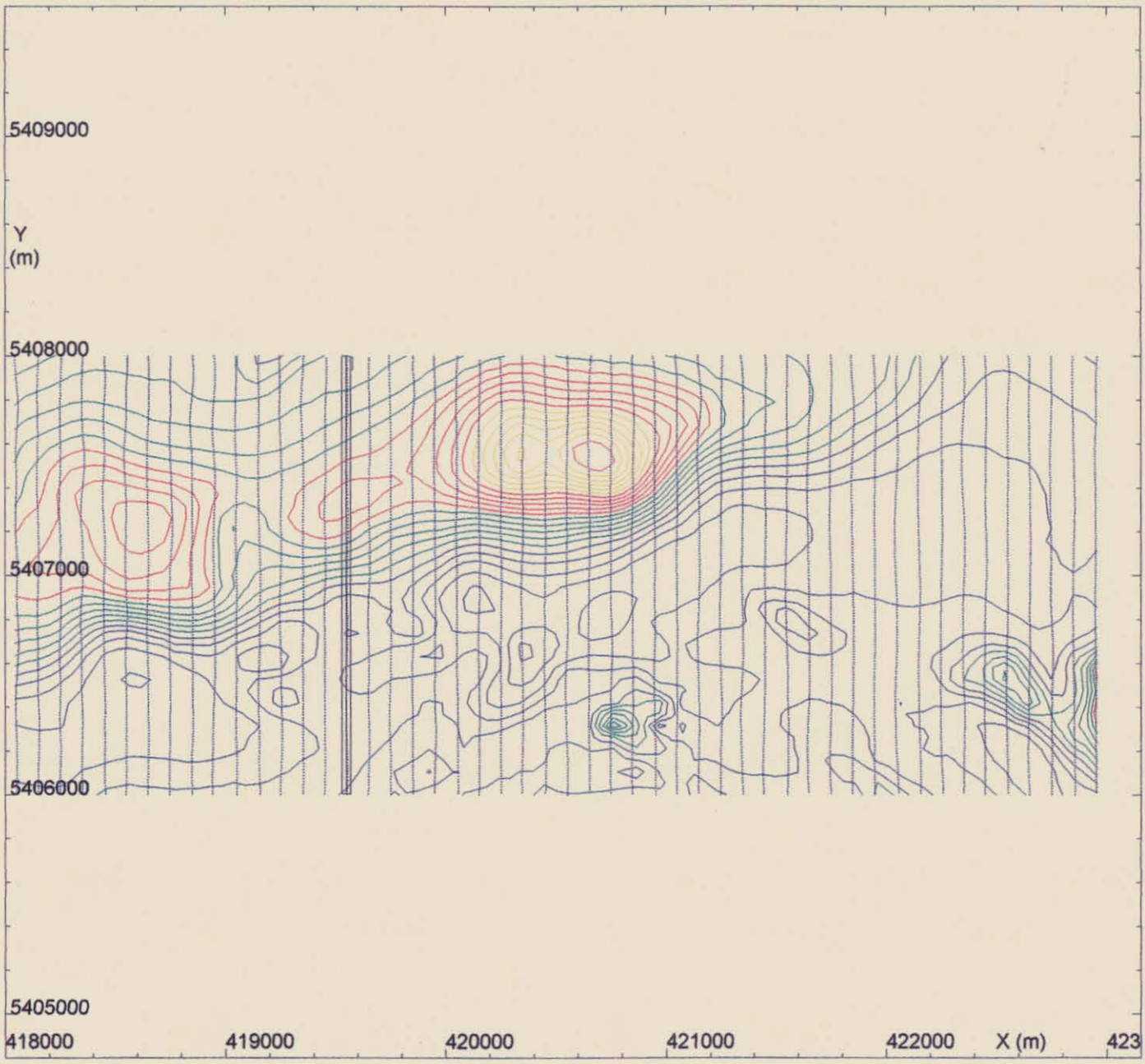
Observations:	Data Area: Moina - Tasmania
Model:	section 420650E - highly magnetic basalt
POTENT v3.08	Plan drawn at 01:25 17/03/1997 for Pitt Research Ltd

Figure 2e



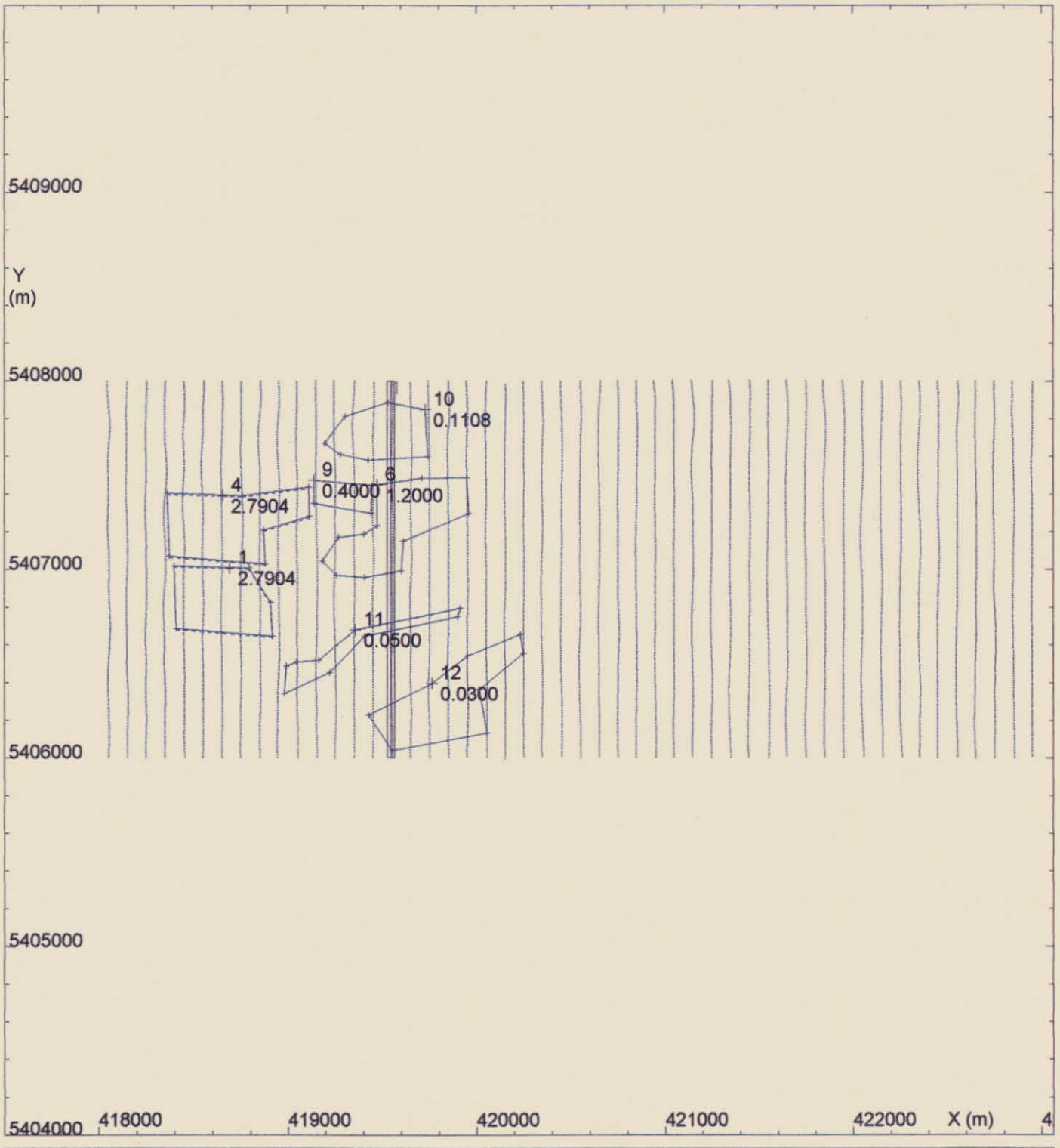
Observations:	Data Area: Moina - Tasmania
Profile #3;	profile section 420650E
Model:	section 420650E - highly magnetic basalt
Calculation mode:	Total Magnetic Intensity
Observed:	Calculated:
Residual:	Individual body:
POTENT v3.08	Profile drawn at 01:20 17/03/1997 for Pitt Research Ltd

Figure 2f



Observations:	Data Area: Moina - Tasmania
Model:	
Contours of:	Observed field; Contour intervals: 80.0000, 400.0000 nT
POTENT v3.08	Plan drawn at 18:22 15/03/1997 for Pitt Research Ltd

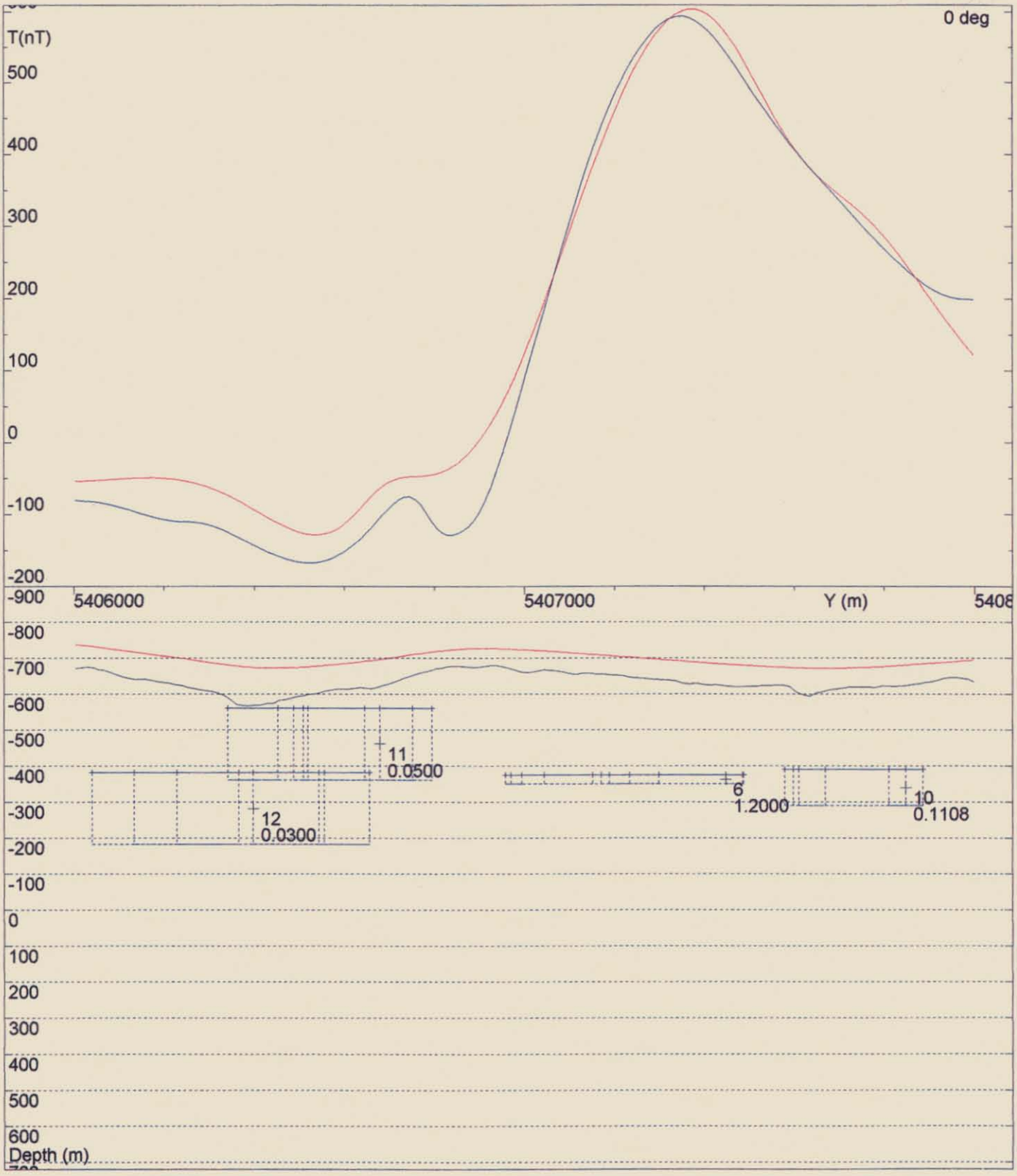
Figure 3a



Observations:	Data Area: Moina - Tasmania
Model:	Section 419550E (nb only bodies in vicinity of line have been modelled)
POTENT v3.08	Plan drawn at 00:46 16/03/1997 for Pitt Research Ltd

Figure 36

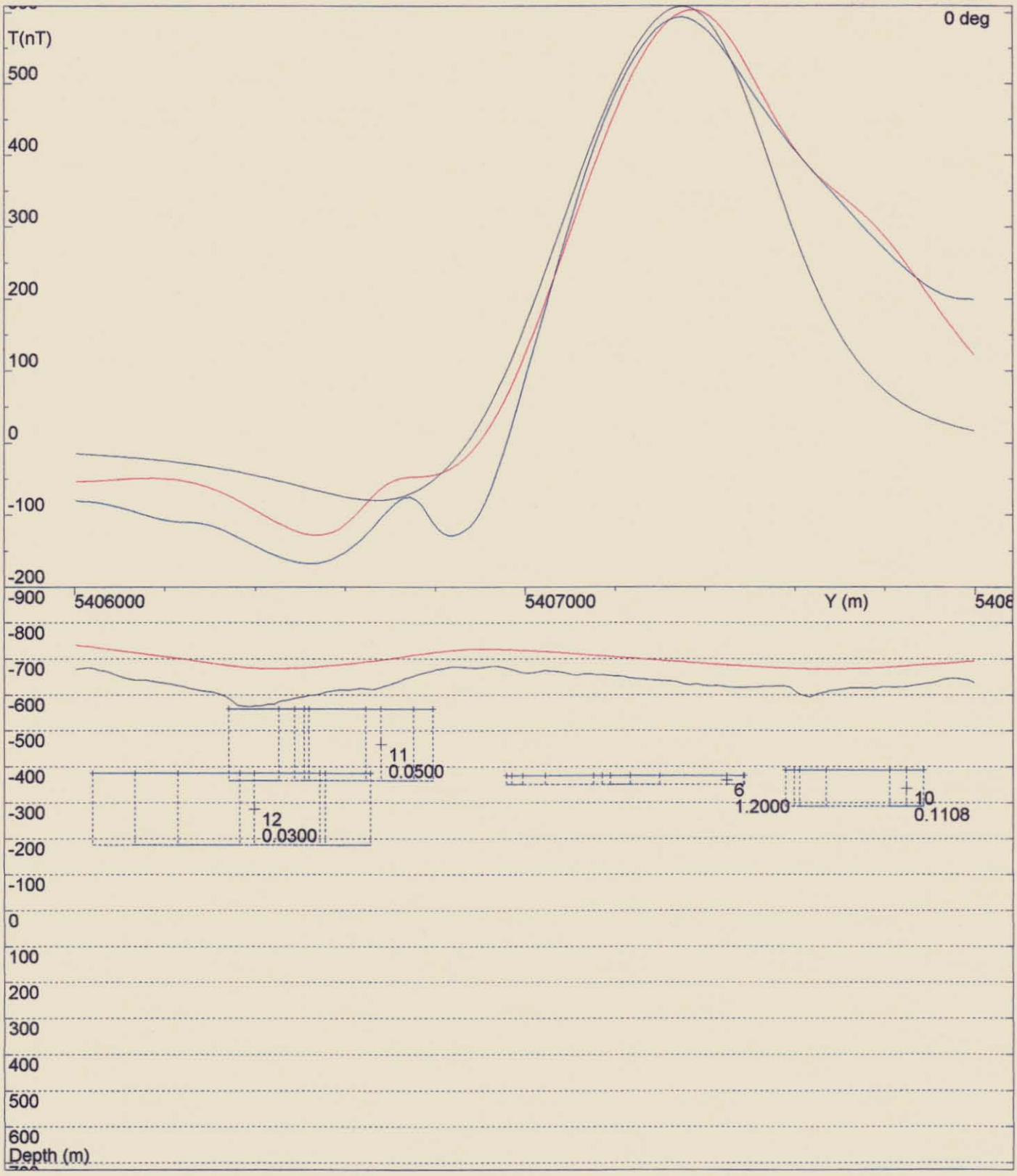
387099



Observations:	Data Area: Moina - Tasmania
Profile #1;	profile section 419550E
Model:	Section 419550E (nb only bodies in vicinity of line have been modelled)
Calculation mode:	Total Magnetic Intensity
Observed:	Calculated:
Residual:	Individual body:
POTENT v3.08	Profile drawn at 00:45 16/03/1997 for Pitt Research Ltd

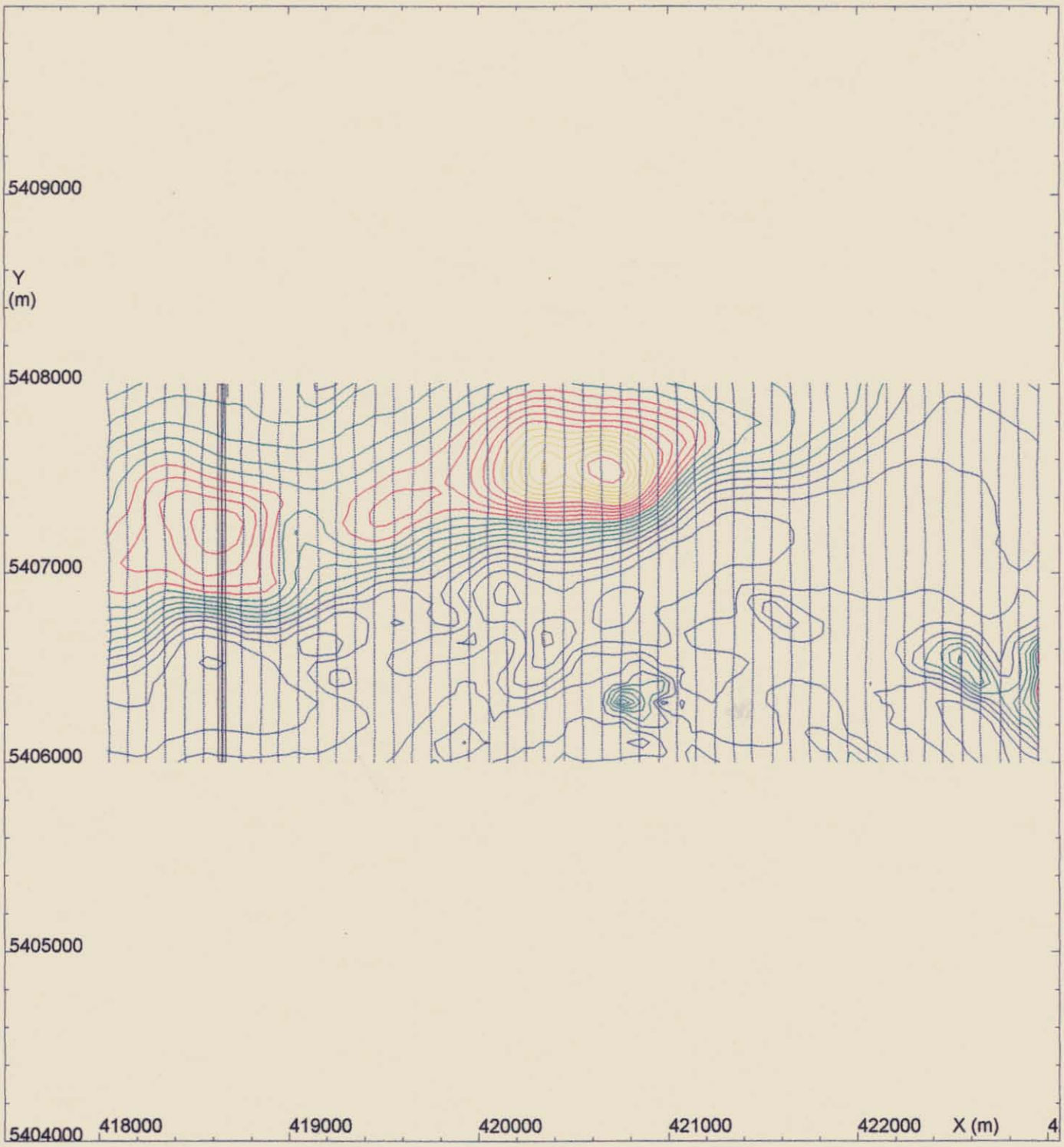
Figure 3c

387100



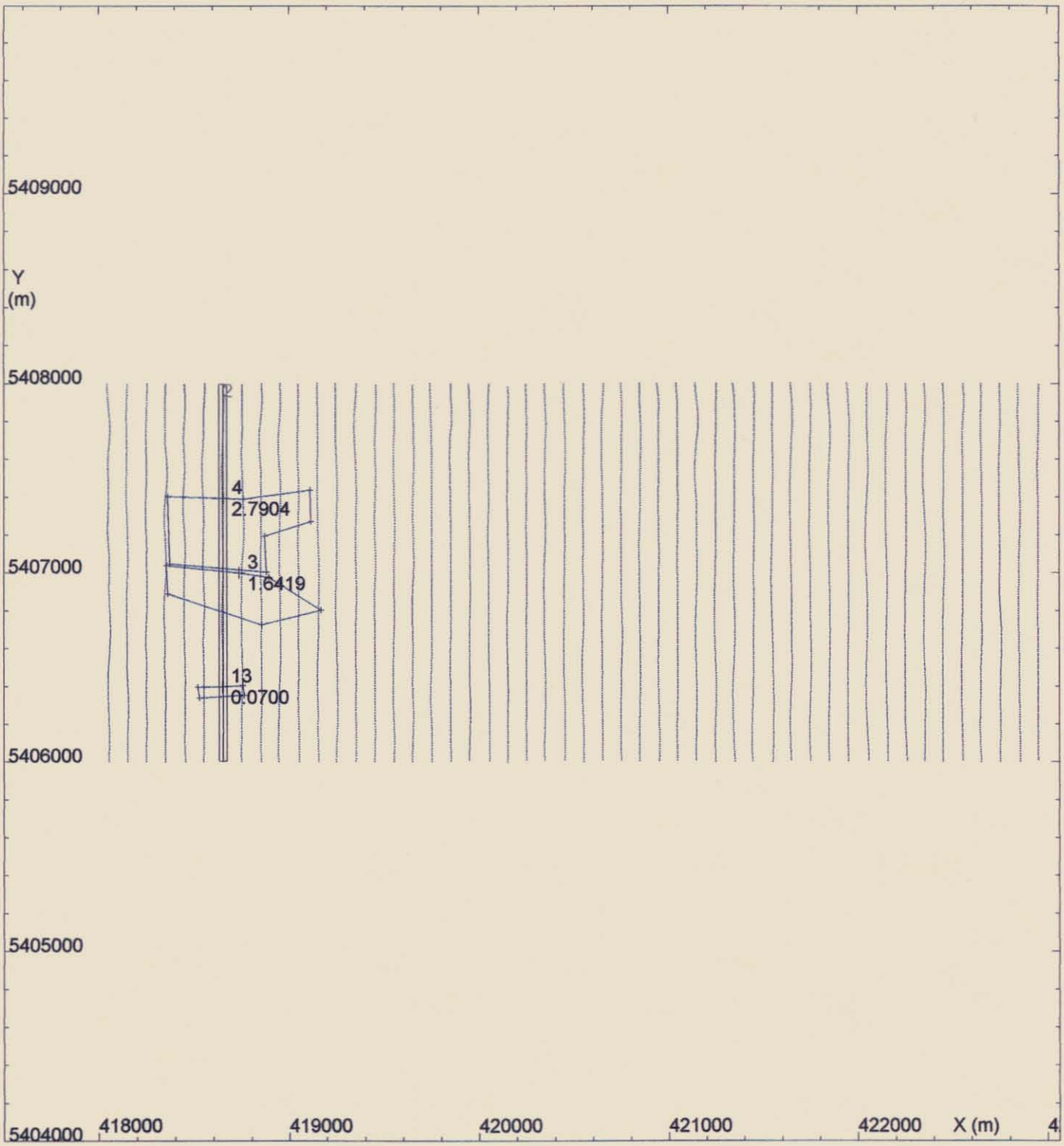
Observations:	Data Area: Moina - Tasmania
Profile #1;	profile section 419550E
Model:	Section 419550E (nb only bodies in vicinity of line have been modelled)
Calculation mode:	Total Magnetic Intensity
Observed:	Calculated:
Residual:	Individual body:
POTENT v3.08	Profile drawn at 00:53 16/03/1997 for Pitt Research Ltd

Figure 3d



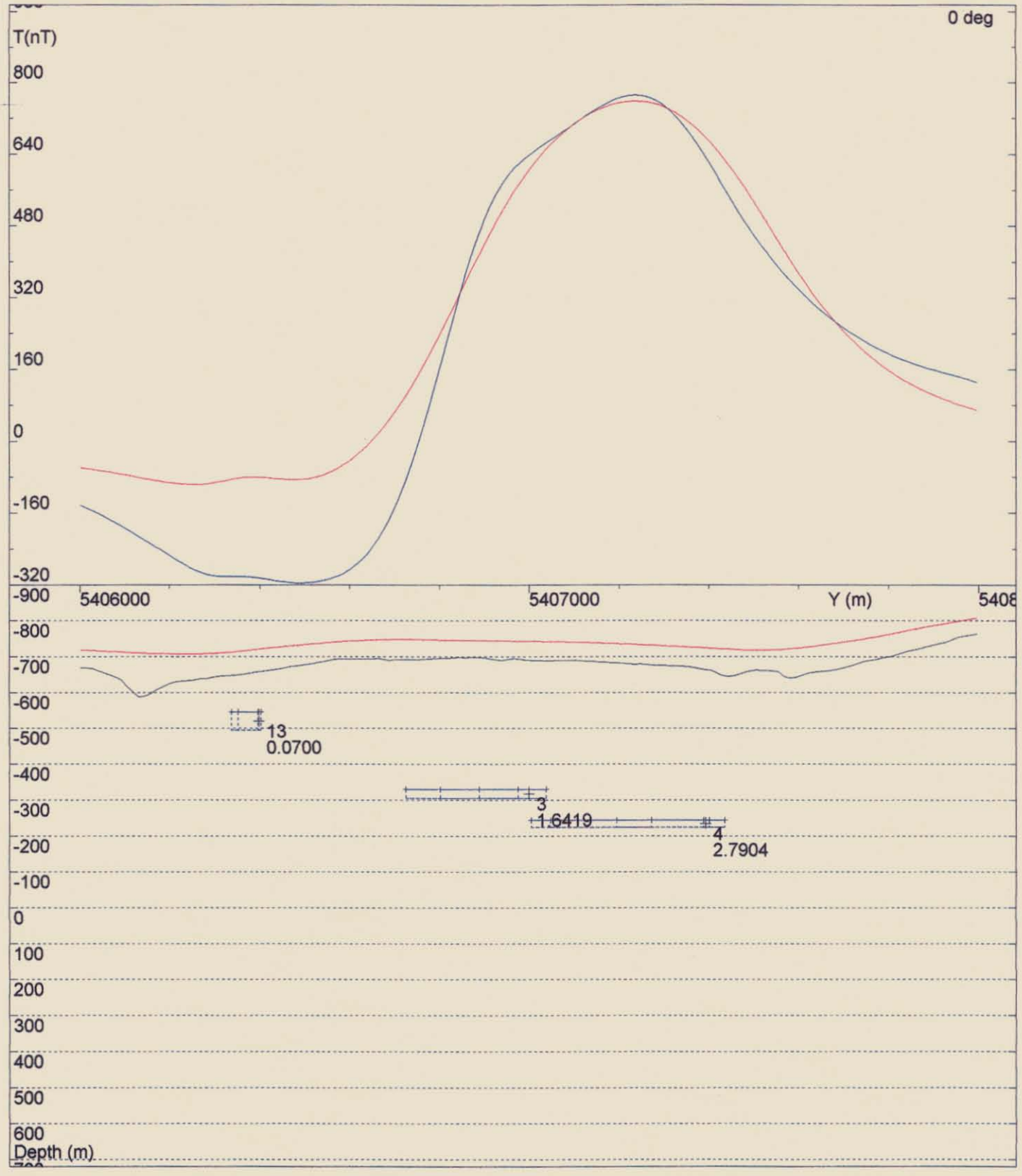
Observations:	Data Area: Moina - Tasmania
Model:	
Contours of:	Observed field; Contour intervals: 80.0000, 400.0000 nT
POTENT v3.08	Plan drawn at 21:55 15/03/1997 for Pitt Research Ltd

Figure 4a



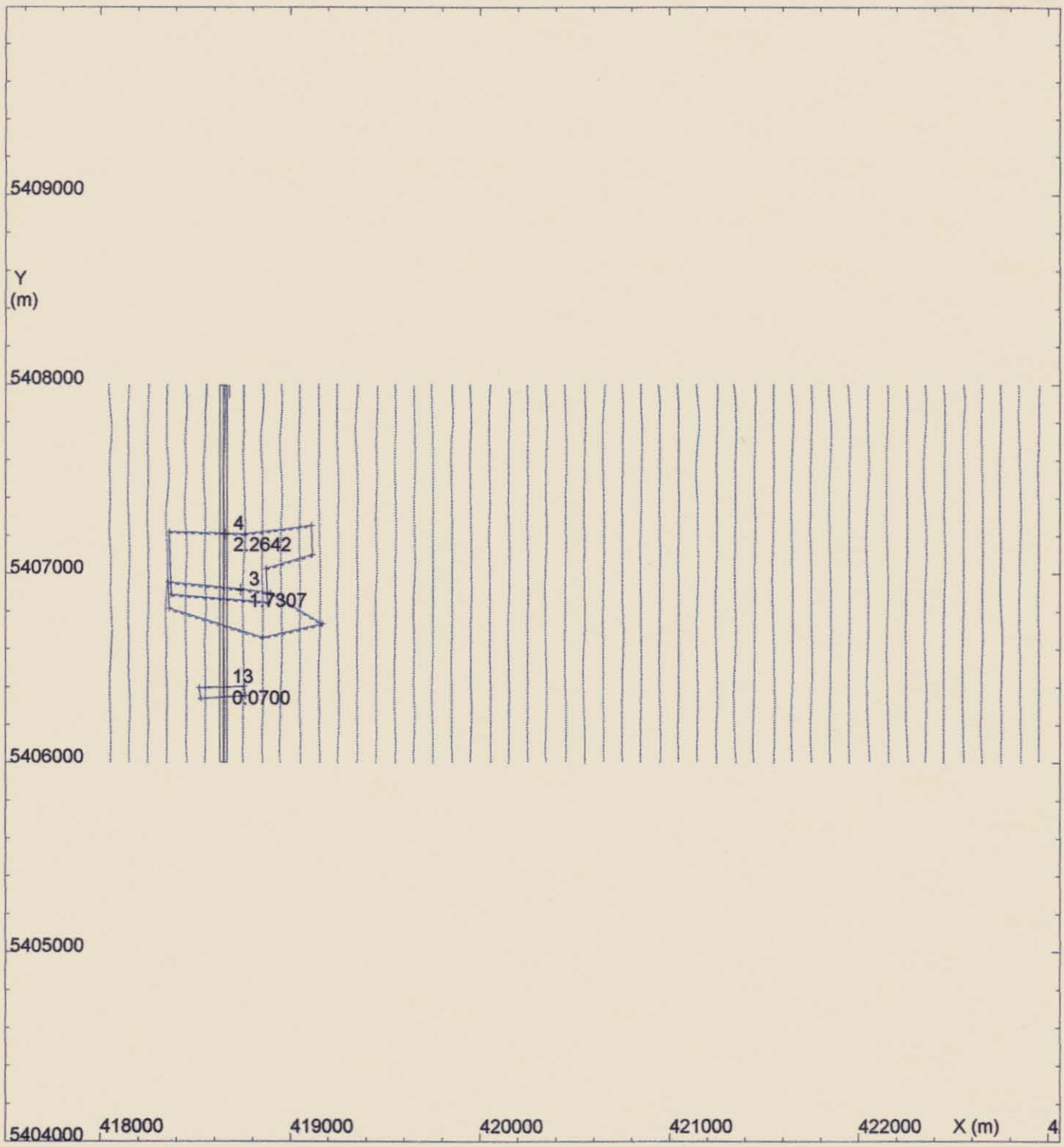
Observations:	Data Area: Moina - Tasmania
Model:	Section 418650E - no remanence (nb only bodies in vicinity of line have been modelled)
POTENT v3.08	Plan drawn at 00:34 16/03/1997 for Pitt Research Ltd

Figure 4b



Observations:	Data Area: Moina - Tasmania
Profile #2;	profile section 418650E
Model:	Section 418650E - no remanence (nb only bodies in vicinity of line have been modelled)
Calculation mode:	Total Magnetic Intensity
Observed:	Calculated:
Residual:	Individual body:
POTENT v3.08	Profile drawn at 00:34 16/03/1997 for Pitt Research Ltd

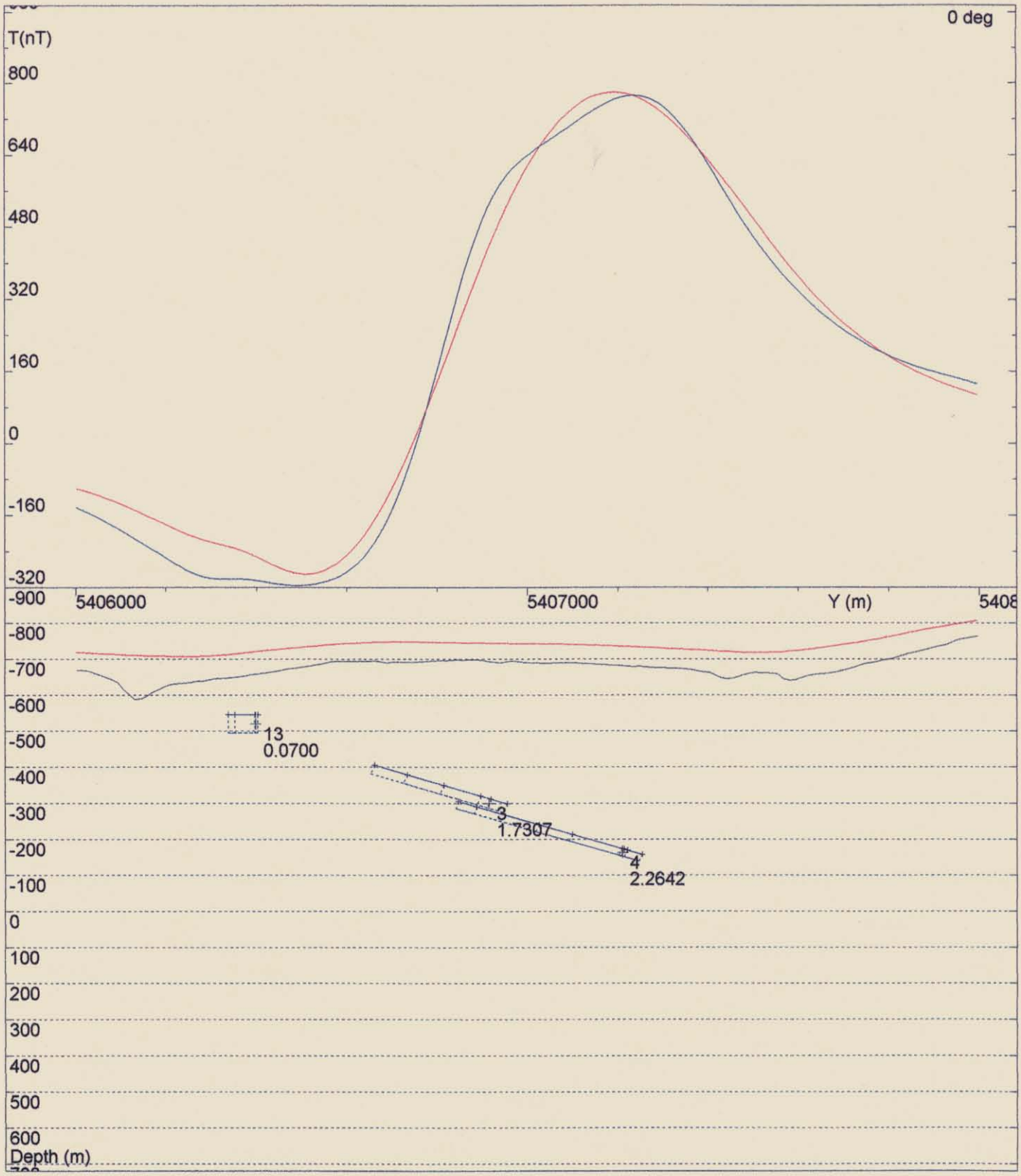
Figure 4c



Observations:	Data Area: Moina - Tasmania
Model:	Section 418650E (nb only bodies in vicinity of line have been modelled)
POTENT v3.08	Plan drawn at 21:40 15/03/1997 for Pitt Research Ltd

Figure 5a

387105

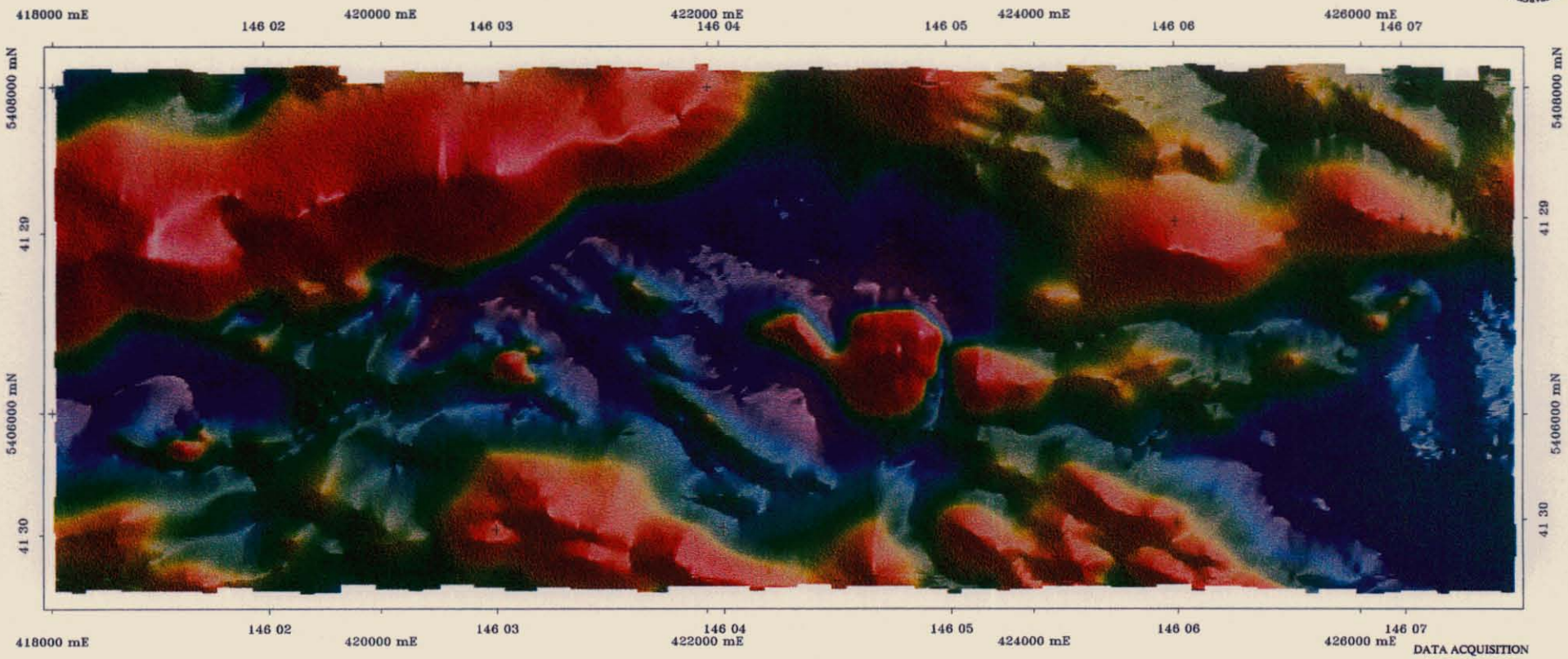


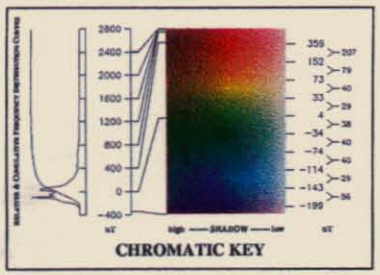
Observations:	Data Area: Moina - Tasmania
Profile #1;	profile section 418650E
Model:	Section 418650E (nb only bodies in vicinity of line have been modelled)
Calculation mode:	Total Magnetic Intensity
Observed:	Calculated:
Residual:	Individual body:
POTENT v3.08	Profile drawn at 21:35 15/03/1997 for Pitt Research Ltd

Figure 56

Moina

Titan Resources





COLOUR SCALED RTP of TMI
WITH RELIEF SHADING & HIGHLIGHTS FROM 45°

500 0 500 1000 1500 2000 2500 metres

Universal Transverse Mercator Projection
Central Meridian: 147° East, AMG Zone 55
Grid Cell Size: 10 metres
Graticules 1 minute and 2000 metres

SURVEY SPECIFICATIONS

FLIGHT LINE DIRECTION	TRAVERSE LINES: along Grid NS TIE LINES: along Grid EW
FLIGHT LINE SPACING	TRAVERSE LINES: 50 metres TIE LINES: 500 metres
SURVEY HEIGHT	MEAN TERRAIN CLEARANCE: 60 metres
SAMPLE INTERVAL	0.1 secs (approx 3-4 metres along ground)
NAVIGATION	Differential GPS
SURVEY FLOWN	May 1996

DATA ACQUISITION

UTS Geophysics Pty Ltd
Valentine Rd, Perth Airport, Belmont, WA, 6104
Phone: 09 479 4232 Fax: 09 479 7361

AIRCRAFT	AS350B Helicopter
MAGNETOMETER	Scintrex CS-2 Cesium
RESOLUTION	0.001 nT
SENSITIVITY	0.001 nT
RECORDING INTERVAL	10 Hz
COMPENSATION	RMS AADC II Compensator
ACQUISITION MANAGEMENT	Neil Goodey, Nino Tulili

DATA PROCESSING

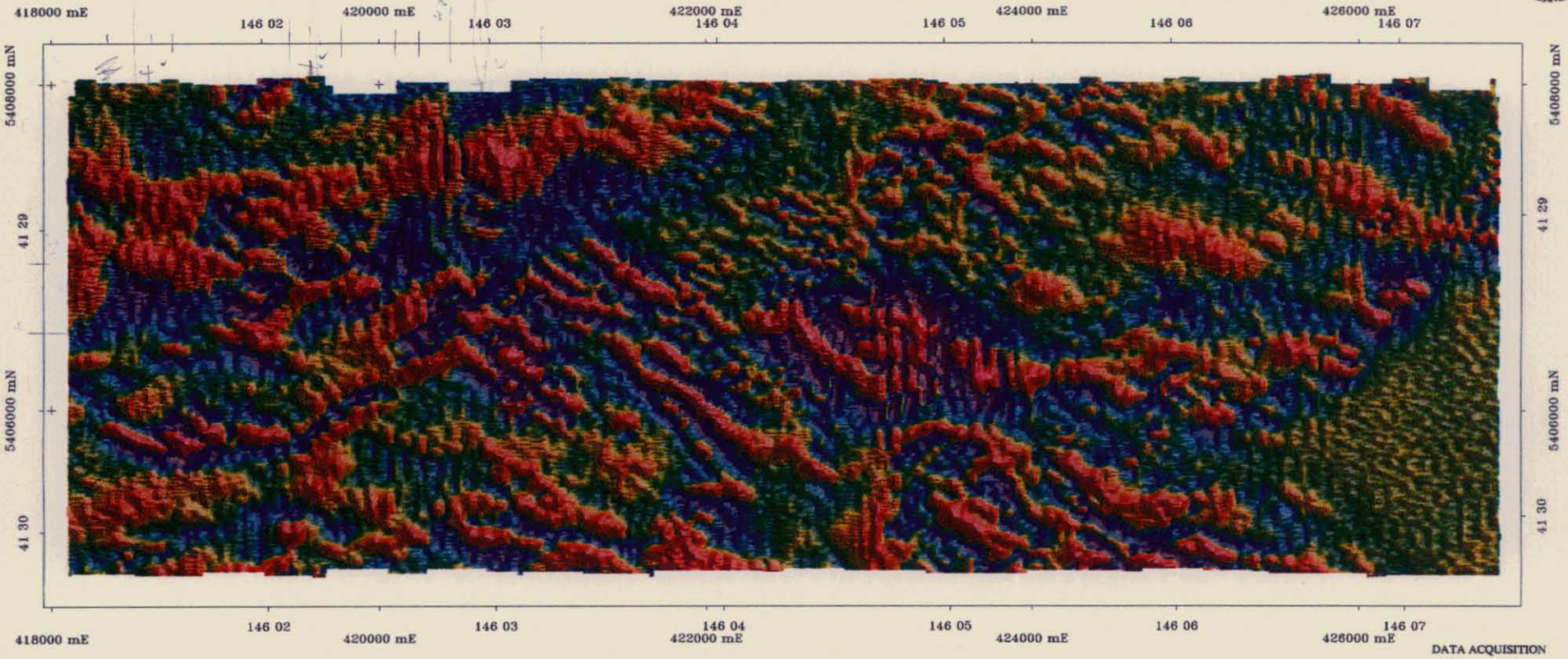
Pitt Research Pty Ltd
45 Hackney Road, Hackney, SA, 5069
Phone: 08 8362 9966 Fax: 08 8362 9977

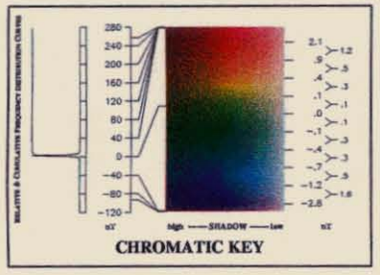
MAGNETIC DATA PROCESSING	The magnetic data have been corrected for regional gradient by subtraction of IGRF model 1995 computed at survey date. Diurnal magnetic variations have been removed. System parallax has been removed. Microlevelling has been applied.
GRIDDING PARAMETERS	ALGORITHM: bicubic spline MESH SIZE: 5 × 5 metres
PROCESSING MANAGEMENT	Mark Deuter, Mark Wegner

387106

Moina

Titan Resources





COLOUR SCALED RESIDUAL AFTER 8-PASS HANNING FILTER
RELIEF SHADED & HIGHLIGHTED FROM 45°

500 0 500 1000 1500 2000 2500 metres

Universal Transverse Mercator Projection
Central Meridian: 147° East, AMG Zone 55
Grid Cell Size: 10 metres
Graticules 1 minute and 2000 metres

SURVEY SPECIFICATIONS

FLIGHT LINE DIRECTION	TRAVERSE LINES: along Grid NS TIE LINES: along Grid EW
FLIGHT LINE SPACING	TRAVERSE LINES: 50 metres TIE LINES: 500 metres
SURVEY HEIGHT	MEAN TERRAIN CLEARANCE: 60 metres
SAMPLE INTERVAL	0.1 secs (approx 3-4 metres along ground)
NAVIGATION	Differential GPS
SURVEY FLOWN	May 1996

DATA ACQUISITION

UTS Geophysics Pty Ltd
Valentine Rd, Perth Airport, Belmont, WA, 6104
Phone: 09 479 4232 Fax: 09 479 7361

AIRCRAFT	AS350B Helicopter
MAGNETOMETER	Scintrex CS-2 Cesium
RESOLUTION	0.001 nT
SENSITIVITY	0.001 nT
RECORDING INTERVAL	10 Hz
COMPENSATION	RMS AADC II Compensator
ACQUISITION MANAGEMENT	Neil Goodey, Nino Tuffi

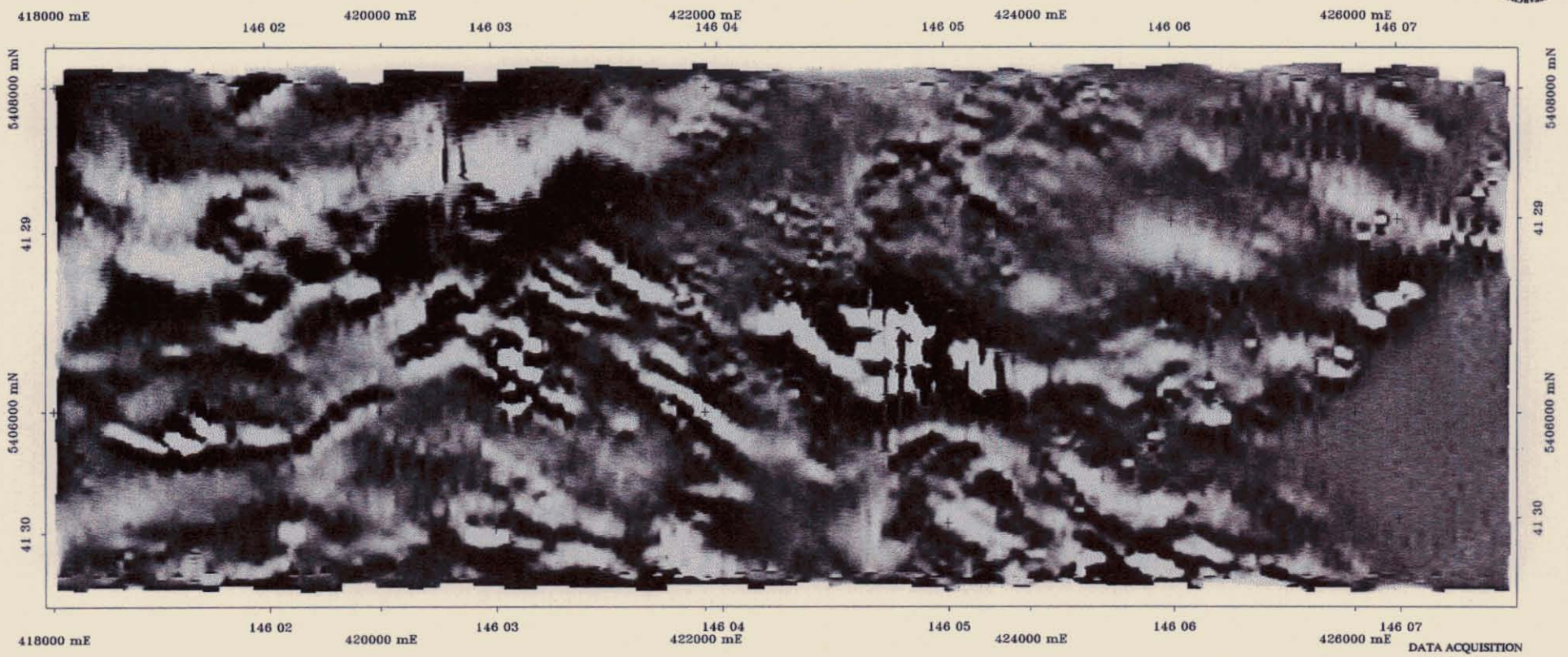
DATA PROCESSING

Pitt Research Pty Ltd
45 Hackney Road, Hackney, SA, 5069
Phone: 08 8362 9966 Fax: 08 8362 9877

MAGNETIC DATA PROCESSING	The magnetic data have been corrected for regional gradient by subtraction of IGRF model 1995 computed at survey date. Diurnal magnetic variations have been removed. System parallax has been removed. Microlevelling has been applied.
GRIDDING PARAMETERS	ALGORITHM: bicubic spline MESH SIZE: 6 × 6 metres
PROCESSING MANAGEMENT	Mark Deuter, Mark Wegner

Moina

Titan Resources



GREY SCALED SECOND VERTICAL DERIVATIVE
UPWARD CONTINUED by 10 metres

MAP SHADING
(nonlinear scale)

-0.1 0 0.3

SECOND VERTICAL DERIVATIVE

500 0 500 1000 1500 2000 2500 metres

Universal Transverse Mercator Projection
Central Meridian: 147° East, AMG Zone 55
Grid Cell Size: 10 metres
Graticules 1 minute and 2000 metres

SURVEY SPECIFICATIONS

FLIGHT LINE DIRECTION	TRAVERSE LINES: along Grid NS TIE LINES: along Grid EW
FLIGHT LINE SPACING	TRAVERSE LINES: 50 metres TIE LINES: 500 metres
SURVEY HEIGHT	MEAN TERRAIN CLEARANCE: 60 metres
SAMPLE INTERVAL	0.1 secs (approx 3-4 metres along ground)
NAVIGATION	Differential GPS
SURVEY FLOWN	May 1996

DATA ACQUISITION

UTS Geophysics Pty Ltd
Valentine Rd, Perth Airport, Belmont, WA, 6104
Phone: 09 479 4232 Fax: 09 479 7361

AIRCRAFT	AS350B Helicopter
MAGNETOMETER	Scintrex CS-2 Cesium
RESOLUTION	0.001 nT
SENSITIVITY	0.001 nT
RECORDING INTERVAL	10 Hz
COMPENSATION	RMS AADC II Compensator
ACQUISITION MANAGEMENT	Neil Goodey, Nino Tuilli

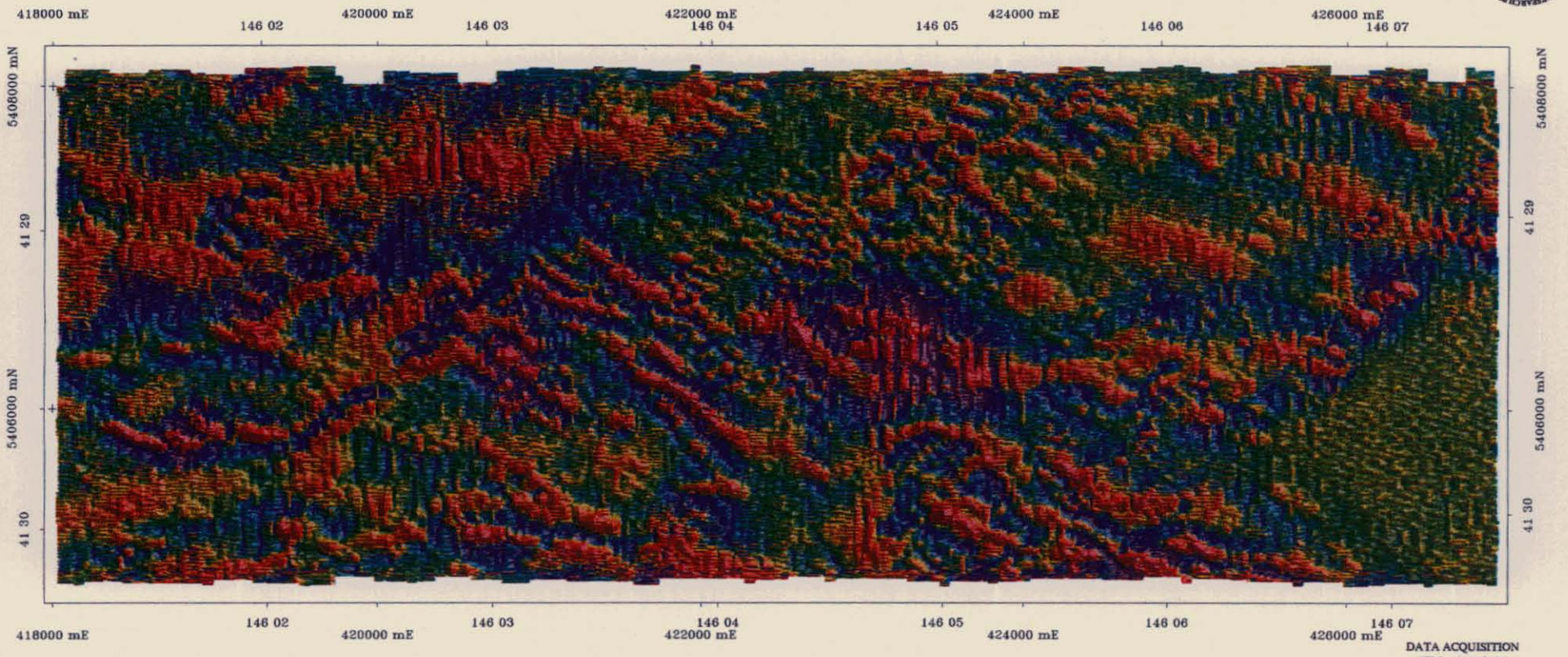
DATA PROCESSING

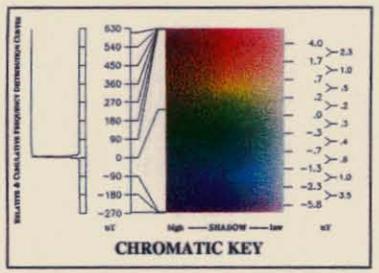
Pitt Research Pty Ltd
45 Hackney Road, Hackney, SA, 5069
Phone: 08 8362 9966 Fax: 08 8362 9977

MAGNETIC DATA PROCESSING	The magnetic data have been corrected for regional gradient by subtraction of IGRF model 1995 computed at survey date. Diurnal magnetic variations have been removed. System parallax has been removed. Microlevelling has been applied.
GRIDDING PARAMETERS	ALGORITHM: bicubic spline MESH SIZE: 6 x 6 metres
PROCESSING MANAGEMENT	Mark Deuter, Mark Wegner

Moina

Titan Resources





COLOUR SCALED LAPLACIAN FILTER of TMI WITH RELIEF SHADING & HIGHLIGHTS FROM 45°

500 0 500 1000 1500 2000 2500 metres

Universal Transverse Mercator Projection
Central Meridian: 147° East, AMG Zone 55
Grid Cell Size: 10 metres
Graticules 1 minute and 2000 metres

SURVEY SPECIFICATIONS

FLIGHT LINE DIRECTION	TRAVERSE LINES: along Grid NS TIE LINES: along Grid EW
FLIGHT LINE SPACING	TRAVERSE LINES: 50 metres TIE LINES: 500 metres
SURVEY HEIGHT	MEAN TERRAIN CLEARANCE: 60 metres
SAMPLE INTERVAL	0.1 secs (approx 3-4 metres along ground)
NAVIGATION	Differential GPS
SURVEY FLOWN	May 1996

DATA ACQUISITION

UTS Geophysics Pty Ltd
Valentine Rd, Perth Airport, Belmont, WA, 6104
Phone: 09 479 4232 Fax: 09 479 7381

AIRCRAFT	AS350B Helicopter
MAGNETOMETER	Scintrex CS-2 Cesium
RESOLUTION	0.001 nT
SENSITIVITY	0.001 nT
RECORDING INTERVAL	10 Hz
COMPENSATION	RMS AADC II Compensator
ACQUISITION MANAGEMENT	Neil Gooley, Nino Tufilli

DATA PROCESSING

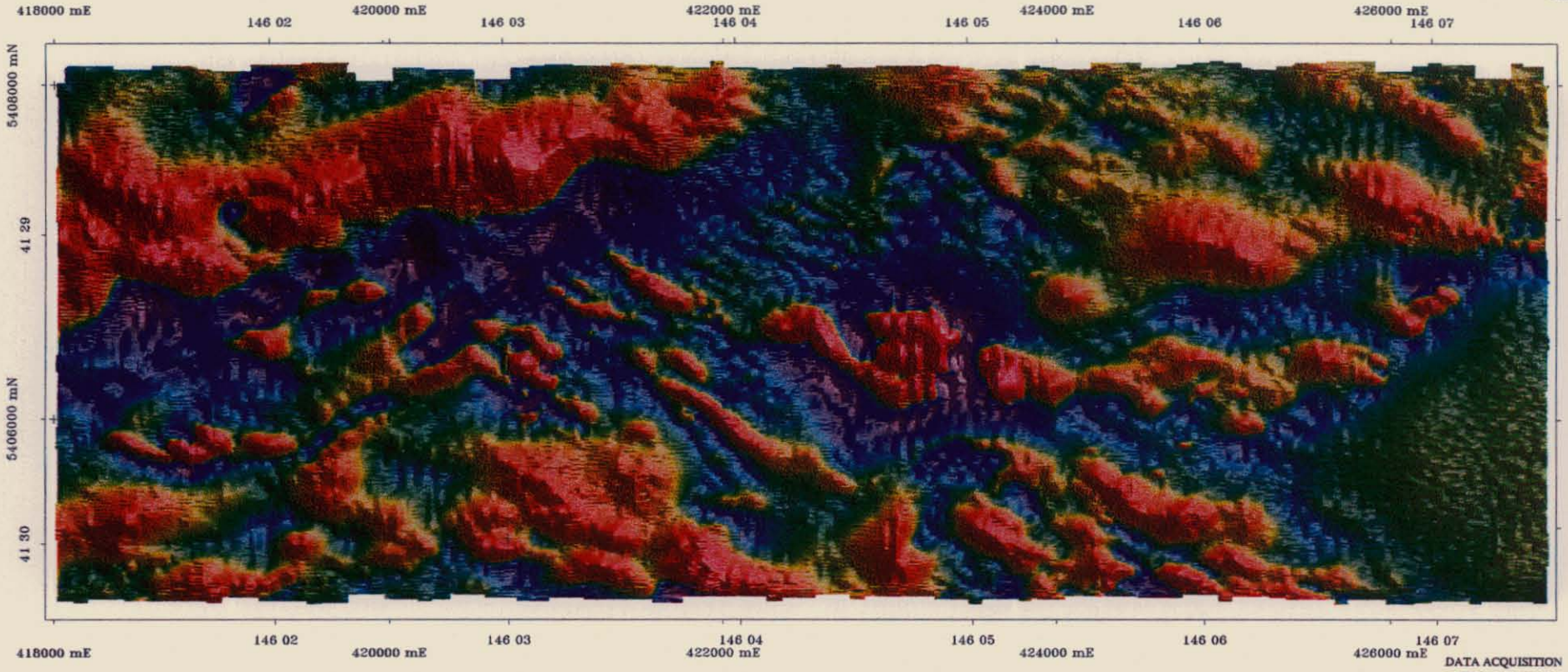
PIR Research Pty Ltd
45 Hackney Road, Hackney, SA, 5069
Phone: 08 8362 9966 Fax: 08 8362 9977

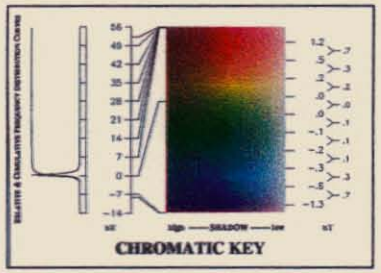
MAGNETIC DATA PROCESSING	The magnetic data have been corrected for regional gradient by subtraction of IGRF model 1995 computed at survey date. Diurnal magnetic variations have been removed. System parallax has been removed. Microlevelling has been applied.
GRIDDING PARAMETERS	ALGORITHM: bicubic spline MESH SIZE: 6 x 6 metres
PROCESSING MANAGEMENT	Mark Doutre, Mark Wegner

387109

Moina

Titan Resources





COLOUR SCALED FIRST VERTICAL DERIVATIVE WITH RELIEF SHADING & HIGHLIGHTS FROM 45°

500 0 500 1000 1500 2000 2500 metres

Universal Transverse Mercator Projection
Central Meridian: 147° East, AMG Zone 55
Grid Cell Size: 10 metres
Graticules 1 minute and 2000 metres

SURVEY SPECIFICATIONS

FLIGHT LINE DIRECTION	TRAVERSE LINES: along Grid NS TIE LINES: along Grid EW
FLIGHT LINE SPACING	TRAVERSE LINES: 50 metres TIE LINES: 500 metres
SURVEY HEIGHT	MEAN TERRAIN CLEARANCE: 60 metres
SAMPLE INTERVAL	0.1 secs (approx 3-4 metres along ground)
NAVIGATION	Differential GPS
SURVEY FLOWN	May 1996

DATA ACQUISITION

UTS Geophysics Pty Ltd
Valentine Rd, Perth Airport, Belmont, WA, 6104
Phone: 09 479 4232 Fax: 09 479 7361

AIRCRAFT	AS350B Helicopter
MAGNETOMETER	Scintrex CS-2 Cesium
RESOLUTION	0.001 nT
SENSITIVITY	0.001 nT
RECORDING INTERVAL	10 Hz
COMPENSATION	RMS AADC II Compensator
ACQUISITION MANAGEMENT	Neil Goodey, Nino Tulli

DATA PROCESSING

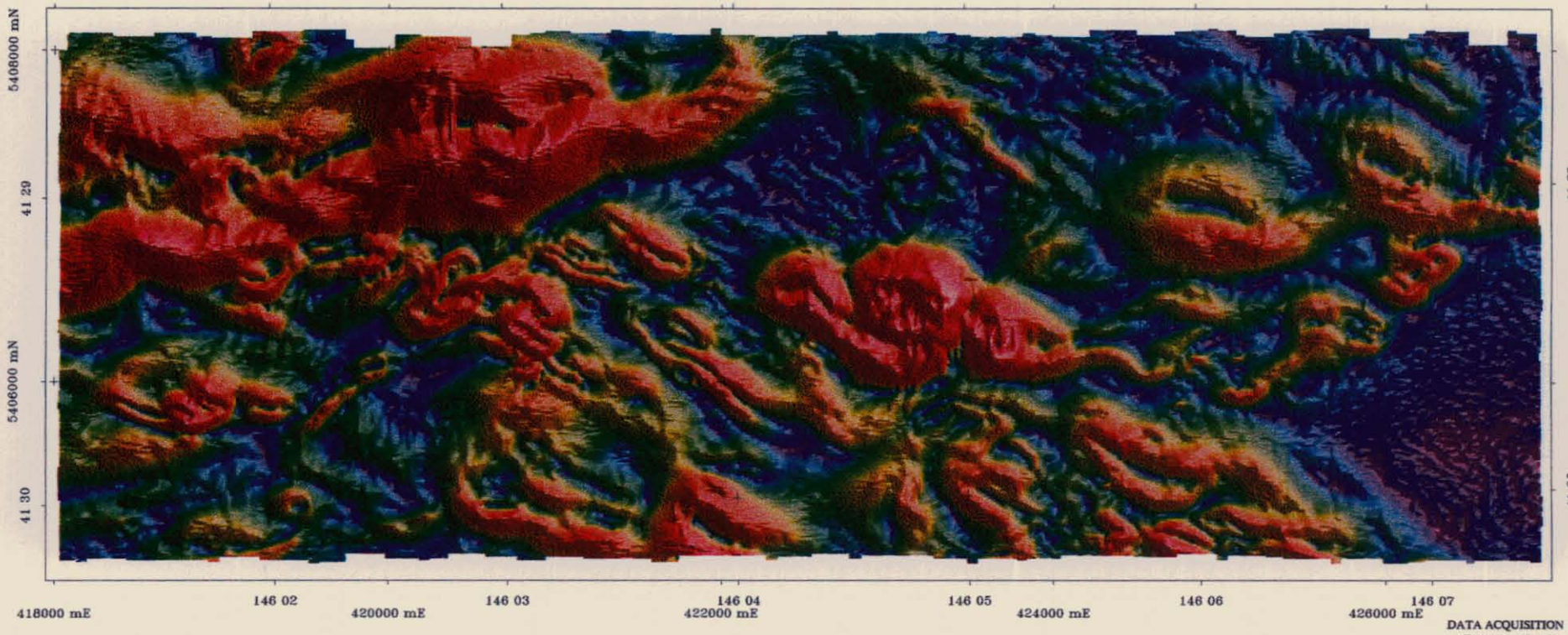
Pitt Research Pty Ltd
45 Hackney Road, Hackney, SA, 5069
Phone: 08 8362 9966 Fax: 08 8362 9977

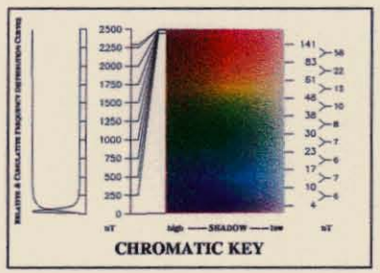
MAGNETIC DATA PROCESSING	The magnetic data have been corrected for regional gradient by subtraction of IGRF model 1995 computed at survey date. Diurnal magnetic variations have been removed. System parallax has been removed. Microlevelling has been applied.
GRIDDING PARAMETERS	ALGORITHM: bicubic spline MESH SIZE: 6 × 6 metres
PROCESSING MANAGEMENT	Mark Dauter, Mark Wegner

387110

Moina

Titan Resources





COLOUR SCALED SOBEL EDGE ENHANCEMENT OF TMI WITH RELIEF SHADING & HIGHLIGHTS FROM 45°

500 0 500 1000 1500 2000 2500 metres

Universal Transverse Mercator Projection
Central Meridian: 147° East, AMG Zone 55
Grid Cell Size: 10 metres
Graticules 1 minute and 2000 metres

SURVEY SPECIFICATIONS

FLIGHT LINE DIRECTION	TRAVERSE LINES: along Grid NS TIE LINES: along Grid EW
FLIGHT LINE SPACING	TRAVERSE LINES: 50 metres TIE LINES: 500 metres
SURVEY HEIGHT	MEAN TERRAIN CLEARANCE: 60 metres
SAMPLE INTERVAL	0.1 secs (approx 3-4 metres along ground)
NAVIGATION	Differential GPS
SURVEY FLOWN	May 1996

DATA ACQUISITION

UTS Geophysics Pty Ltd
Valentine Rd, Perth Airport, Belmont, WA, 6104
Phone: 09 479 4232 Fax: 09 479 7361

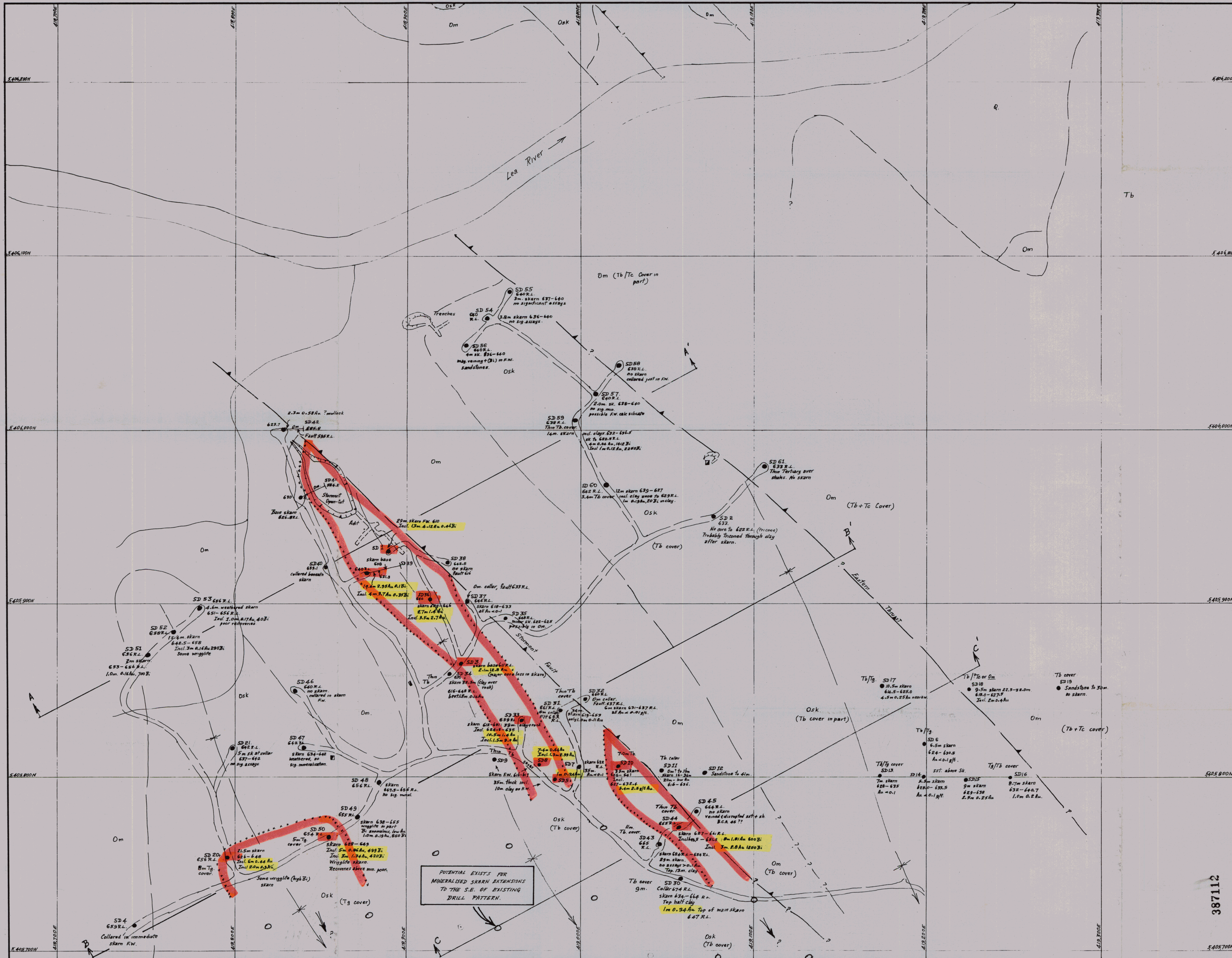
AIRCRAFT	AS350B Helicopter
MAGNETOMETER	Scintrex CS-2 Cesium
RESOLUTION	0.001 nT
SENSITIVITY	0.001 nT
RECORDING INTERVAL	10 Hz
COMPENSATION	RMS AADC II Compensator
ACQUISITION MANAGEMENT	Neil Goodey, Nino Tullii

DATA PROCESSING

Pitt Research Pty Ltd
45 Hackney Road, Hackney, SA, 5069
Phone: 08 8362 9966 Fax: 08 8362 9977

MAGNETIC DATA PROCESSING	The magnetic data have been corrected for regional gradient by subtraction of IGRF model 1995 computed at survey date. Diurnal magnetic variations have been removed. System parallax has been removed. Microleveling has been applied.
GRIDDING PARAMETERS	ALGORITHM: bicubic spline MESH SIZE: 6 × 6 metres
PROCESSING MANAGEMENT	Mark Deuter, Mark Wegner

3871111



LEGEND

- Main access tracks
- Cored drill holes.
  - Holes SD 30–42 Surveyed
  - Holes SD 43–61 not surveyed
  - Holes SD 1 – SD 21 surveyed where located.
- Tb Tertiary basalt
- Tg Tertiary gravels and conglomerate (graybilly)
- Osk Ordovician skarn – Gordon Limestone
- Om Moina Sandstone
- Geological boundary
- Thrust fault, arrows pointing to overthrust block
- Syncline with plunge
- Former workings.
- Gold anomalous zones.
- Section Lines

Note: The geology shown on this plan is largely the interpreted sub-Tertiary geology. Tb and Tg cover is generally < 15m.

5 cm

97-4015

ANNUAL REPORT-MOINA
EL20/92 - L.A.NEWNHAM
NEWNHAM EXPL.& MINING SERV.

387112

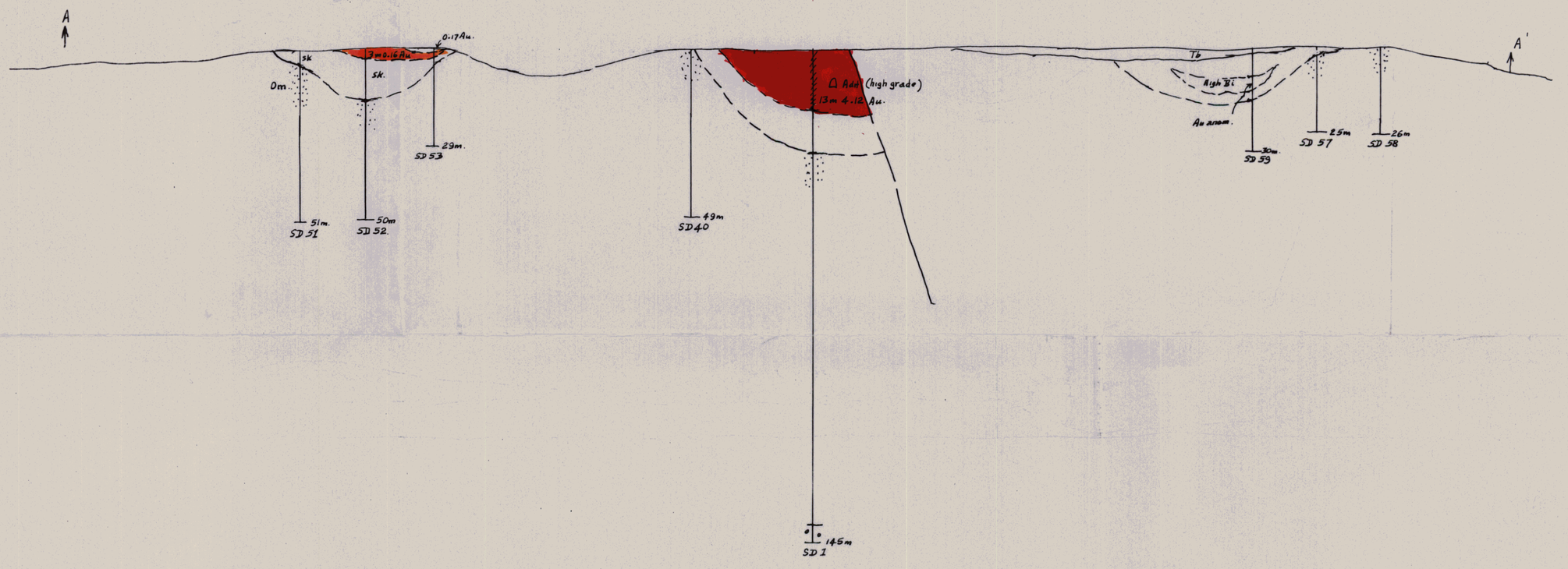
NEWNHAM EXPLORATION AND MINING SERVICES

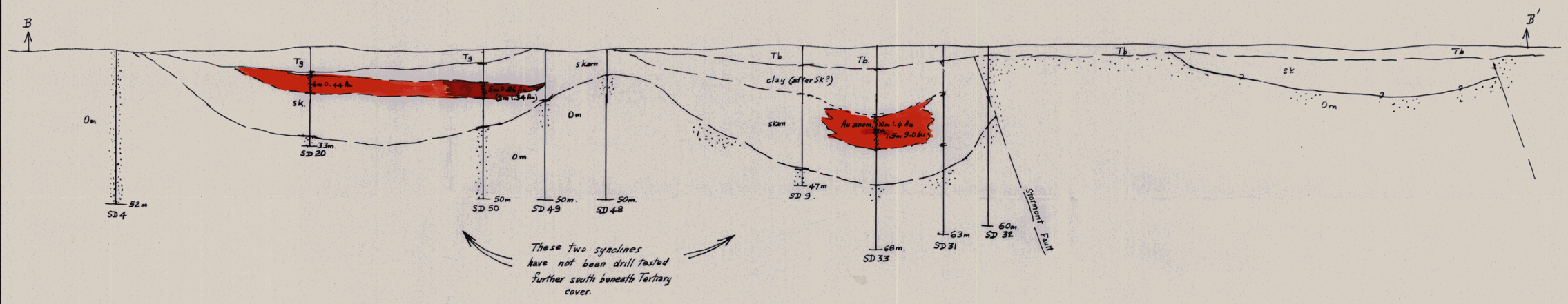
GOLDSTREAM–TITAN J.V.
MOINA AREA E.L. 20/92
DRILLING RESULTS and
INTERPRETATIVE GEOLOGY

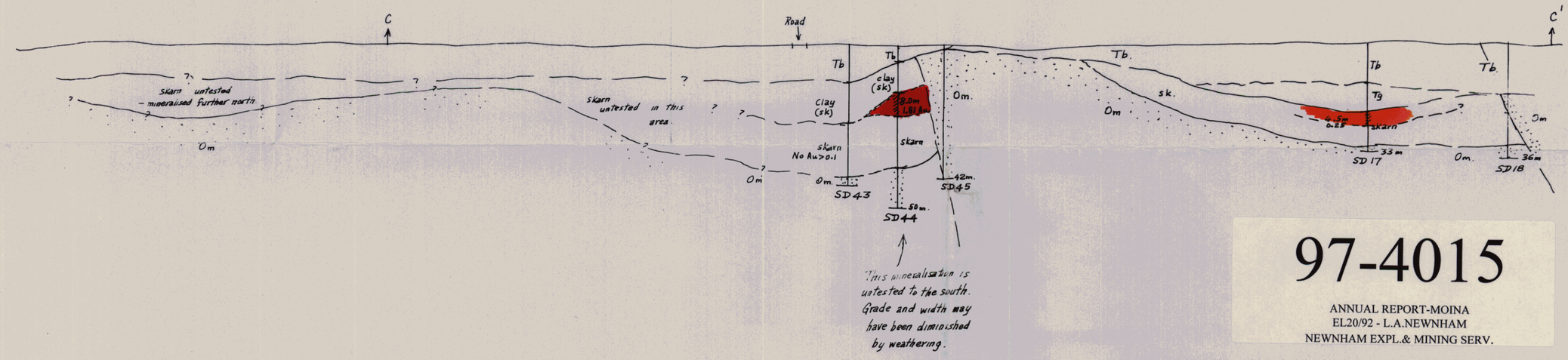
DRAWN: L.A. Newnham.
DRAFTSPERSON:
DATE: Feb. 97.
FILE No.

SCALE: 1: 1,000 0m 20 60

FIG. No. 3.







97-4015

ANNUAL REPORT-MOINA
EL20/92 - L.A.NEWNHAM
NEWNHAM EXPL.& MINING SERV.

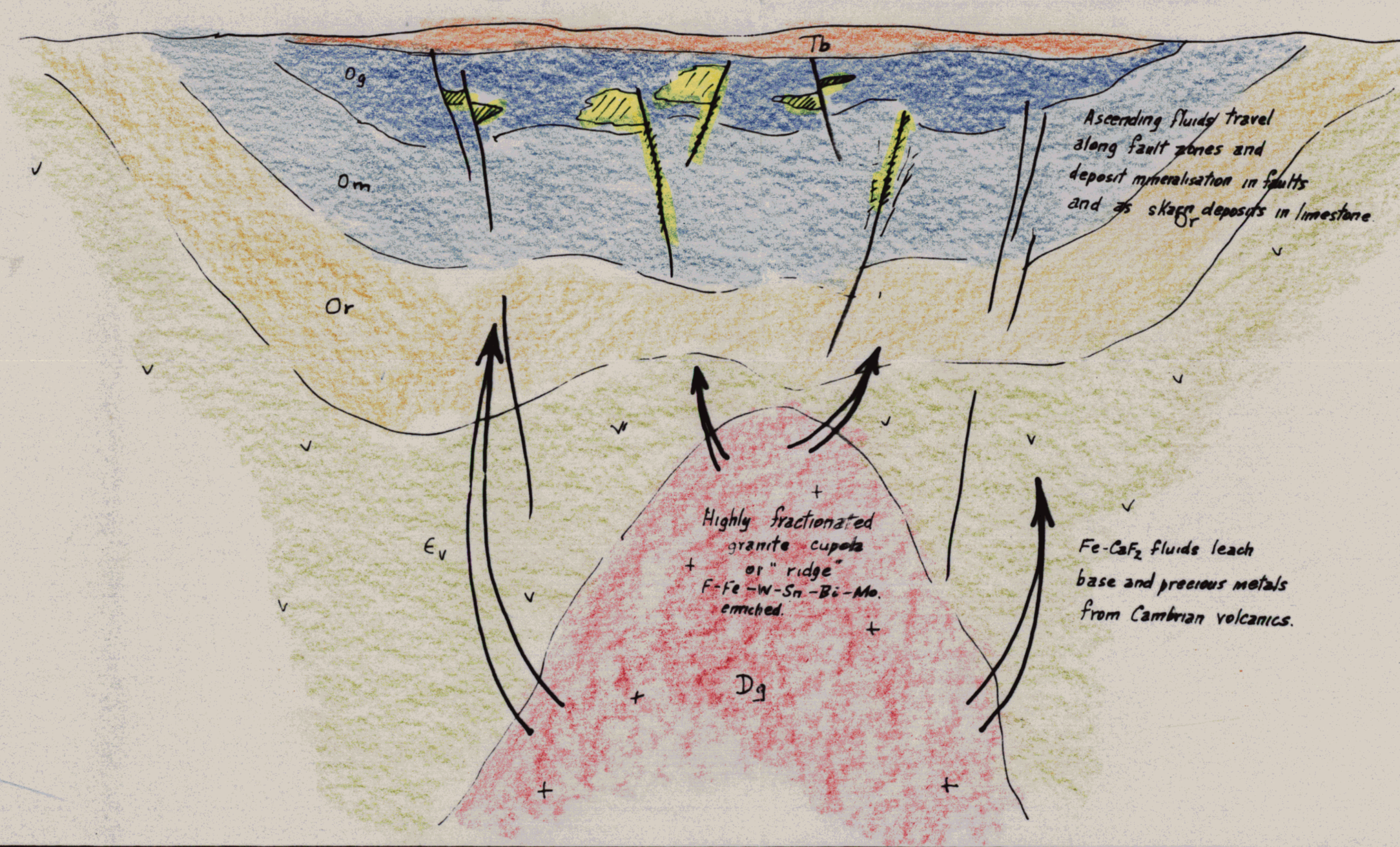
387113

NEWNHAM EXPLORATION AND MINING SERVICES

GOLDSTREAM- TITAN J/V.
MOINA PROJECT E.L. 20/92
STORMONT MINE
CROSS - SECTIONS

DRAWN: L.A.Newnham.
DRAFTSPERSON:
DATE: Mar. 97.
FILE No.
SCALE: 1: 1,000 (0m 20 60)
FIG. No. 4

5 cm



EXPLORATION MODEL

Key features in this model are :

- substantial volume of Ev between granite and deposit repository.
- substantial vertical distance between granite and favourable host to permit cooling and deposition of lower temperature minerals.

NOTE: The geological interpretation on the above plan is derived from a range of sources, including :

- State 1:25,000 mapping
- CRA and Comalco reports
- RGC reports
- Goldstream and Titan Reports
- other miscellaneous sources.

Data from these various sources frequently conflicts and an interpretative resolution by LAN has been required.

AREA RECOMMENDED FOR RELINQUISHMENT

5 cm

97-4015

ANNUAL REPORT-MOINA
EL20/92 - L.A.NEWNHAM
NEWNHAM EXPL.& MINING SERV.

KEY

Symbol	Description
Tb, Tg, Ts	Tertiary Basalt, gravels, soils.
Og / SK	Ordovician Gordon Limestone, skarned in part.
Om	Moina Sandstone
Or	Rowland Conglomerate, sandstone, grit, volcaniclastics. — of Lower Ordovician – upper Cambrian age
Ev	Cambrian volcanics (Mt. Read Volcanics)
Dg	Dalcoath Granite: upper Devonian – lower Carboniferous age
	Geological contacts.
	Access roads
	Creeks and dams.
	Major structures
	Drill holes.

NEWNHAM EXPLORATION AND MINING SERVICES

GOLDSTREAM – TITAN JOINT VENTURE
MOINA E.L. 20/92
COLLATION OF EXPLORATION RESULTS

DRAWN: L.A. Newnham
DRAFTSPERSON:
DATE: April 97
FILE No.
SCALE: 1:20,000 (0 M. 200 600)
FIG. No. 5

387114