000 **RGC EXPLORATION PTY. LIMITED** 744001

E.L. 34/87 - BULL CREEK

ANNUAL REPORT 1988

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Distribution: Mines Department
CRA Exploration Pty. Ltd.
RGC Exploration Pty. Ltd. (2)

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SUMMARY

E.L. 34/87 covers an area of 21 sq. km in Northern Tasmania. Renison Limited entered into an agreement with CRA Exploration Pty. Ltd. on 1st June 1988, whereby Renison Limited, through its associated Company, RGC Exploration Pty. Limited, would be the operators of the licence from that date.

The area is covered by Tertiary basalt and Quaternary alluvium. The lithologies beneath would be Cambrian volcanics and Ordovician sediments. Exploration will be centred on determining the sub-basalt geology and then searching for mineralisation environments similar to those already known and worked in the Moina area.

A detailed literature review has been started by RGC Exploration. The area has been incorporated into regional stream sediment and rock geochemical surveys, and regional aeromagnetics by previous explorers. Only minor follow-up work was carried out, and very little detailed geology has been compiled because other areas always had greater perceived potential.

CRA Exploration started examining aeromagnetic anomalies interpreted by them from the 1980 Shell aeromagnetic survey. Several of these have been gridded with ground magnetic traverses being completed and profiles constructed. As part of RGC Exploration's approach to finding gold deposits in the Moina/Lorinna areas, EL 34/87 is part of a regional geophysical appraisal currently being compiled by Dr. D. Leaman in Hobart. The aim in this area is to define sub-basalt structures, which may have tapped into fluids from the Dolcoath Granite, and magnetic anomalies, which may be related to magnetite skarn which is known to be related to gold mineralisation (e.g. Stormont Bismuth Mine). Also, Lawrence D. Meinert was consulted to give his opinion on the gold-skarn potential in the area.

A summary of the work planned for 1988/89 is:-

1. Complete the detailed literature review.

2. Complete the regional geophysical appraisal of geology and structure and assess priority areas requiring follow-up. This may then proceed to a second stage where further regional geophysical investigations may be warranted to give greater definition to secondary targets.

3. Detailed regional geological mapping and geochemical surveys will be initiated. This will eventually be integrated with the geophysical appraisal.

4. Some target follow-up on the ground will be undertaken with the construction of grids, on which detailed mapping, sampling and geophysical programs will be undertaken.

5. Some targets may be able to be drilled immediately. Percussion holes could be a quick, cheap method to check sub-basaltic lithologies.

1987/88 exploration cost approximately $18,000.
The programme for 1988/89 is expected to cost a minimum $55,000.

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1. INTRODUCTION

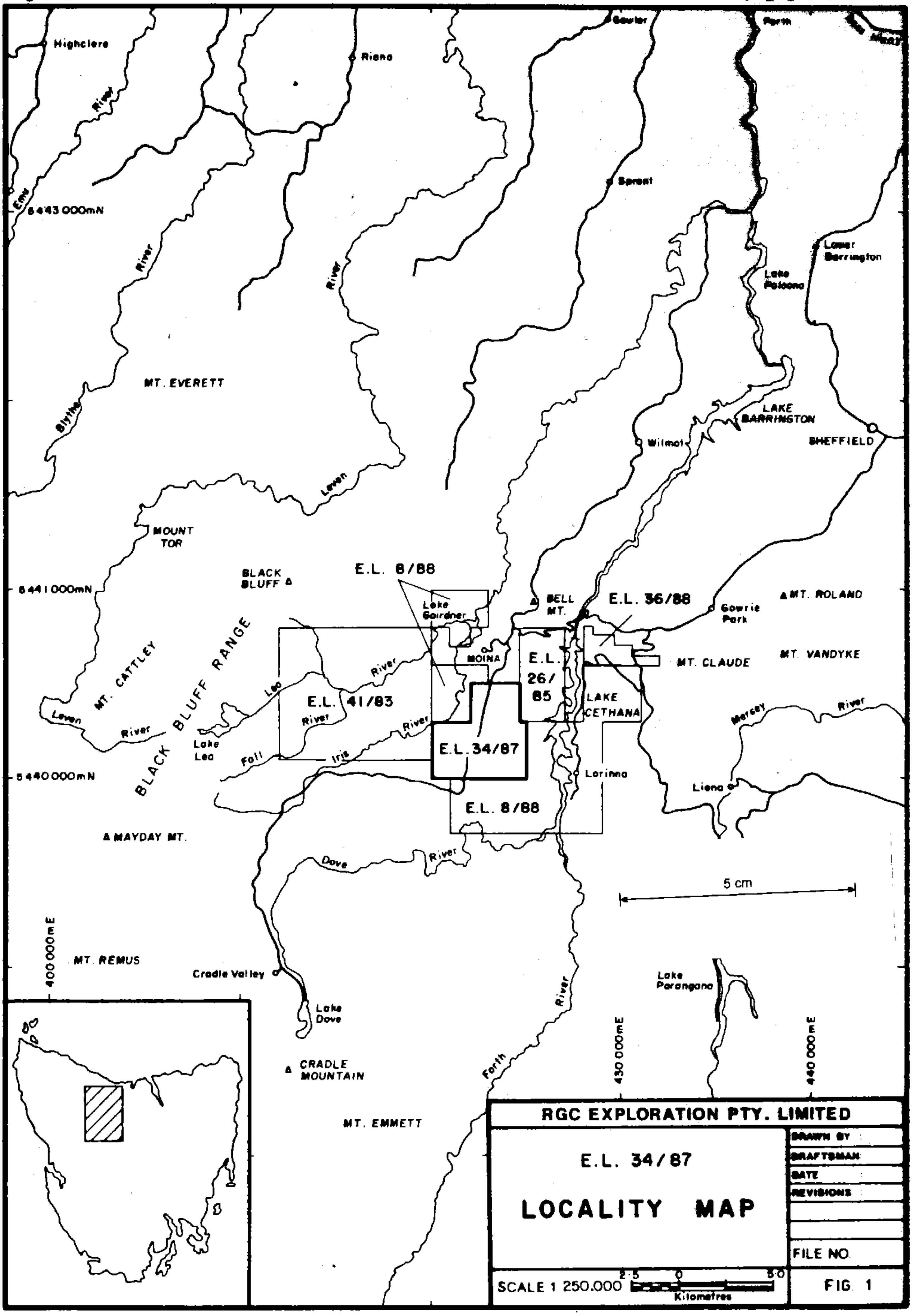
EL 34/87 covers an area of 21 sq km. south of Moina in northern Tasmania (Figure 1). Lake Gairdner lies to the north and Lake Cethana to the east. Bull Creek flows through the area with the Iris River encroaching on the most north-westerly corner. The Cradle Mountain Road bisects the licence from north to south.

The vegetation is variable, showing climatic and altitude control. In the more protected, wetter valley bottoms thick myrtle-sassafrass-man fern rain forest gives way to minor zones of horizontal scrub along the stream courses. Elsewhere thick eucalypt and wattle forest with a dense undergrowth characterised by tea-tree and Bauera dominates the lower slopes and extends onto the upper slopes. The higher, flatter areas are vegetated by open eucalypt forest with generally relatively open undergrowth, apart from occasional stands of dense tea-tree. A portion of the land is relatively open for grazing, and some is dominated by regrowth scrub.

Throughout outcrop is poor, restricted essentially to stream beds and road cuttings.

The licence falls within the northern portion of the Mt. Read volcanic belt where the Cambrian and Ordovician rocks structurally turn east-west around the northern end of the Precambrian Tyennan Block. Tertiary basalt and Quaternary sediments form the majority of the surface exposure on the licence. Previous detailed exploration has been negligible as a consequence, other targets more easily assessable were available. Investigations in this area are now aimed at defining the sub-basaltic geology by a variety of methods. Once the lithologies and structures are known, targets can be defined.

The aim of this report is to outline work carried out since the licence was granted in September 1987, and to detail work planned for the remainder of 1988 and to September 1989.



Highclere
Riana
Gawler
Forth
Sprent
Lower Barrington
Lake Paloona
LAKE BARRINGTON
Wilmot
SHEFFIELD
5443 000mN
5441 000mN
5440 000mN
MT. EVERETT
MOUNT TOR
BLACK BLUFF
BLACK BLUFF RANGE
MT. CATTLEY
Leven River
Blythe
Lake Leo
Leo River
Fall River
Iris River
E.L. 8/88
Lake Gairdner
MOINA
BELL MT.
E.L. 36/88
Gowrie Park
MT. ROLAND
MT. CLAUDE
MT. VANDYKE
E.L. 26/85
LAKE CETHANA
E.L. 41/83
E.L. 34/87
Lorinna
Liena
Mersey River
MAYDAY MT.
Dove River
5 cm
400 000mE
MT. REMUS
Cradle Valley
Lake Dove
CRADLE MOUNTAIN
MT. EMMETT
Forth River
Lake Parangana
430 000mE
440 000mE
RGC EXPLORATION PTY. LIMITED
E.L. 34/87
LOCALITY MAP
DRAWN BY
DRAFTSMAN
DATE
REVISIONS
FILE NO.
SCALE 1 250.000
2.5 0 5.0
Kilometres
FIG. 1

2. LAND TENURE

EL 34/87 was granted on 20th September, 1987, to CRA Exploration Pty. Ltd. (hereinafter referred to CRAE).

A Heads of Agreement over EL 34/87 was signed on 1st June, 1988, between CRAE and Renison Limited (a wholly-owned subsidiary of Renison Goldfields Consolidated Limited). RGC Exploration Pty. Ltd. (the exploration division of RGC) is to carry out exploration on the licence under the terms of the Agreement.

Approximately 14 sq. km. of the land covered by the licence is private property. Appendix 1 gives a listing of land owners obtained from the Kentish Municipality Council Chambers in Sheffield. The bulk of the remaining ground is uncommitted Crown Land.

3. EXPENDITURE

Expenditure on EL 34/87 since the issuing of the licence on 20th September, 1987, by CRAE amounts to $6984. (Appendix 2).

Expenditure by RGC Exploration from 1st June, 1988, to 27th July, 1988, is $1929. (Appendix 2).

Spending to the renewal date is expected to be $18,000.

4. REGIONAL GEOLOGY

The licence is dominated by Tertiary basalt overlying all of the older sequences (Figure 2). It occurs as mainly valley filling flows, often topping and overflowing from numerous small centres.

The underlying lithologies will reflect those in the surrounding areas. The oldest rocks may be the Cambrian Lorinna Greywacke which is a dominantly sedimentary association of volcaniclastic lithicwacke, chert, quartzose sandstone, felsic tuff and quartz porphyry. These are of uncertain age and underlie the Moina Sandstone to the east, just west of Lorinna around Lake Cethana, and to the south in the Five Mile Rise area. Other Cambrian rocks are dominated by the felsic quartz porphyries of the Bull Creek Formation which generally underly Roland Conglomerate to the north-east and north-west.

The Ordovician units sure to be present and which are unconformably on top of the Cambrian rocks are the dominantly well rounded quartzite and vein quartz pebble to boulder Roland Conglomerate; the marine quartzose sandstone, shale and marls of the Moina Sandstone; and the limestone of the Gordon Limestone. All of these units display gradational contacts with each other.

The dominant structural features in the area have been correlated to the Devonian Tabberabberan Orogeny in south-east Australia by most authors (Jennings, 1963). There exists two intersecting fold systems. The first are large scale, symmetrical, open folds which occur sub-parallel to the margin of the Palaeozoic basin and are generally east-west. The second are smaller and asymmetrical, often accompanied by dragfolding and trend north-west. The limbs of these folds can be the sites of deep seated breakthrusts (eg Bismuth Creek Fault).

The intrusion, in the Late Devonian, of the Dolcoath Granite is thought to be the source of all of the mineralisation in the area. This, in conjunction with the pre-existing structures, has led to the variety of mineralisation environments that are listed.

1. Vein deposits - quartz or greisen
2. Skarn deposits - metasomatised Gordon Limestone
3. Structure related deposits

5. PREVIOUS WORK

The previous literature is still under review. A detailed summary with relevant figures will be incorporated in the next annual report. Following is a brief summay.

The area was initially covered by EL 8/65 MOINA, granted to the Mt. Lyell Mining & Railway Co. Ltd. They carried out some regional stream sediment sampling and had a regional aeromagnetic survey flown. No anomalous values were returned draining from the current licence area and the unravelling of the noisey magnetics over the basalt was never a consideration as there existed other areas of far greater potential. EL 8/65 was allowed to expire on May 13th, 1972.

The area was next covered by both EL 7/73 SHEFFIELD, granted to Asarco Ltd., and EL 7/74 MOINA, to Comalco. No work was carried out on the small portion of EL 34/87 that was included in EL 7/73 and was part of an area that was relinquished in 1985. Comalco covered the area with -20 mesh regional stream and rock geochemistry in 1974/75. Anomalous Cu, Pb, Zn & Ag were interpreted around Daisy Dell and Bull Creek along the Bismuth Creek Fault zone. These were thought to be related to windows in the basalt. A localised -80 mesh survey was done in 1979, and again anomalous values to the west of EL 34/87 were attributed to windows in the basalt. In 1981/82 Shell followed-up these anomalies and identified a Moina sandstone outcrop with associated Flourine and Tourmaline values indicating a possible granite related mineralising system. However, no further follow-up was undertaken. Comalco completed a gravity survey along the Cradle Mountain Road in 1978 hoping to locate granitic cusps which may have related mineralisation, to aid in the interpretation of the Bismuth Creek Fault zone, and to explore areas below the basalt. Some minor one station anomalies were identified and no follow-up was done. In 1980 Shell flew a regional aeromagnetic and radiometric survey.

The basalt over EL 34/87 gave areas of high relief but with rapid fluctuations. No major anomalies were identified. In 1983 the portion of EL 7/74 covering EL 34/87 was relinquished.

CRAE reinterpreted Shell's aeromagnetics in 1986/87 and identified several anomalies now contained within EL 34/87.

6. WORK COMPLETED 1987/88

6.1 Magnetic Traverses by CRAE.

Several aeromagnetic anomalies had been identified in the area from the 1980 Shell survey. Seven of these have been gridded with ground magnetic traverses being completed.

The aim was to check these anomalies to see if they were magnetic sources located below the basalt cover in the underlying lithologies. It is assumed that any source would be mineralised similar to the styles already known to be associated with the Dolcoath Granite.

It was determined that some anomalies could have a deep source, and follow-up work was recommended by T. Von Strokirch. See Appendix 3 for the ground traverse profiles and interpretations.

6.2 Regional Geophysical Appraisal

Dr. D. Leaman of Leaman Geophysics in Hobart is currently appraising the available regional gravity and magnetics data with the aim to:-

1. identify anomalies in lithologies not covered by basalt
2. define sub-basaltic lithologies and structure
3. identify sub-basaltic anomalies
4. detail future work requirements

Fieldwork for an infill gravity survey by the Department of Mines over the area was started in August. It is hoped that these readings will be available to be incorporated into the current appraisal.

6.3 Gold Skarn Potential

A report was submitted to RGC by Lawrence D. Meinert of Washington State University (Appendix 4) on his examination of skarns in the Renison & Moina areas.

Larry has done detailed examinations of gold skarns in North America and it was thought worthwhile to have him present his views on the gold-bearing potential of skarns in the Moina area during his recent visit to Tasmania. It is his opinion that the old Stormont Bismuth Mine skarn has the most potential. So finding skarns of this type below the basalt will be one of our exploration targets on EL 34/87. Obviously the appraisal outlined in 6.2 above will help identify possible magnetic skarn and faulting that are known associations in the Stormont area.

6.4 Review of Previous Work

A detailed review of EL 8/65 and EL 7/74 reports has begun. Compilations of geology, geochemistry and geophysics will be completed.

7. WORK PROPOSED 1988/89

Exploration will focus on determining the geology beneath the Tertiary Basalt by utilising conventional exploration techniques and a detailed geophysical data appraisal. The target is gold mineralisation hosted by the Ordovician lithologies and related to the Dolcoath Granite in a variety of mineralisation styles that are found elsewhere in the Moina area.

The work proposed comprises:-

1. Complete review of EL 8/65 & EL 7/74 reports.
2. Complete the geophysical appraisal and define targets for follow-up immediately. This appraisal will also detail further geophysical surveys required.
3. Regional gold stream sediment and rock geochemical surveys will be initiated.
4. Regional mapping will start, hoping to aid the geophysical appraisal and locate the more obvious windows in the basalt.

This work should lead to some areas that can be tested by drilling. Other areas will require follow-up gridding with detailed mapping, geochemistry and geophysics.

The above programme is expected to cost $55,000.

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APPENDIX 1 LISTING OF LAND PARCEL OWNERS

APPENDIX 1

Name	Address	Land Parcel Nos.
BEAUMONT BS	133 Steele Street, Devonport	1861
BUTLER CD	Twiss Street, Latrobe or 8 Edben Street, Adamstown	1848
CHAMPION EJ NC WA & WE	PO Box 33, Devonport	1875
CHARLESTON KA	RSD 513, Devonport	1880, 1881, 1883
CHARLESTON TA	Wilmot	1839, 1864, 1918
CHARLESTON RW	Wilmot	1059, 1860, 1866, 1867, 1868
COX CH & NJ	C/- Staverton Road, Staverton	1061, 1838, 1840
CROWN LAND	Leased by RW Charleston Wilmot	1873
CROWN LAND		1787, 1842, 1844, 1849, 1850, 1852, 1855, 1856, 1857, 1858, 1859, 1863, 1876, 1878, 1879
JACKSON JL	180 Gap Road, Sunbury	1869, 1870, 1871, 1872
KERSTEN DP & DS	Railton Road, Sheffield	1853
KIRKCALDY TJ & DH	Roland	1841
LACEY BD & D	C/- PO Wilmot	1877
MINES DEPARTMENT	Hobart	1851
PAYNE TC & DE	33 Hampden Road, Latrobe	1042, 1063

APPENDIX 1

Name	Address	Land Parcel Nos.
ROBERTSON GA	RSD 548, Ulverstone	1854, 1920
RUSSELL AM & SM	16 Dalvey Road, Rosanna 3084	1874
STATE FOREST		1067
WRIGHT WG P/L	Trevor St., Ulverstone	1056, 1057, 1058, 1865, 1882
WOOTTON TJ	96 James St., Devonport	1862

APPENDIX 2 EXPENDITURE

APPENDIX 2

CRAE Expenditure from September 1987 to June 1988

Item	Cost
Salaries, wages & on-costs	3848
Travel & accommodation	590
Consultants & contractors	327
Stores	22
Vehicle/Plant hire	545
Tenement costs	10
Rent/Property	764
Overheads	878
TOTAL	$6984

RGC Exploration Expenditure from June 1988 to July 1988

Item	Cost
Salaries, wages & on-costs	1445
Vehicle/Plant hire	344
Overheads	140
TOTAL	$1929

APPENDIX 3

PRELIMINARY REPORT ON MAGNETIC TRAVERSES

OVER THE BULL CREEK LICENCE

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Bull Creek

744024

C.R.A. EXPLORATION PTY. LIMITED
(INC. IN N.S.W.)
1207 TASMAN HIGHWAY, CAMBRIDGE, TASMANIA 7170

P.O. BOX 138
BELLERIVE 7018
TELEGRAMS: CRAEX
TELEX: AA57144
TELEPHONE: 48 5499
AREA CODE: (002)

IN REPLY PLEASE QUOTE
TVS.W5.57.

15 December 1987

Memorandum to: T W DICKSON

Copy to: F R FUNNELL

From: T VON STROKIRCH

PRELIMINARY REPORT ON MAGNETIC TRAVERSES OVER THE BULL CREEK LICENCE

INTRODUCTION

A number of ground magnetic traverses over discrete aeromagnetic anomalies were planned in the Bull Creek Area (TASh 3535). At this stage traverses over 7 grids have been completed. These grids contained typically two lines across the interpreted strike of the anomaly. They were only intended as reconnaissance traverses and hence no lines were cut and no pegs used. The lines were marked in flagging tape during the traverse and thus may be approximately relocated.

The aim of the exercise was to locate magnetic sources below the highly magnetic basalt cover. The sources would hopefully be related to the Dolcoath Granite mineralisation as present in the Moina Skarn. This mineralisation occurs in a wide variety of styles from disseminated or vein pyrite/bismithinite to massive magnetite skarns and thus can produce almost any kind of magnetic response and any of these bodies may contain economic gold or base metals. Thus the magnetics was not designed to locate specific targets but rather to define areas where magnetic sources appeared to be present beneath the basalt. Induced polarisation surveys were then planned to define sulphide concentrations, as pyrite or pyrrhotite is typically present, and drilling would then follow.

DATA

The ground magnetic data was collected at 10m intervals along lines pushed through the bush using compass and topofil. A Geometrics G-856 magnetometer was used with a sensor on a 2.5 metre pole. A longer pole was hardly feasible in view of the density of the bush in some parts. The data was processed and levelled using the Strider Magpak series of programs and arbitrary coordinates were assigned separately to each grid. At this stage no detailed filtering or modelling of the data has been completed.

INTERPRETATION

Anomaly 8

The area is dominated by basalt. The eastern line crosses a road and is somewhat affected by a power line. Along the road there are outcrops containing rocks of more agglomeratic appearance with some volcanic glass present suggesting proximity to an eruption site. No pronounced anomaly is present across both lines though a feature occurs at around 650m north on both lines which is well away from the agglomeratic outcrop. It consists of a 300-400nT high with a low to the north. This suggests a strong remnant magnetic component, more characteristic of basalts, rather than a skarn. The fact that the anomaly is displaced some two hundred metres from the plotted position of the airborne anomaly is surprising.

Anomaly 9

Both lines have a distinct magnetic high present at about the middle of the line. The steepness of the gradient suggests a shallow source (less than 30 metres) but this data will have to be filtered and modelled in detail. The amplitudes are much lower than elsewhere in the licence area so it is possible that there is only a thin cover of weathered basalt with bedrock magnetic material visible through it.

Anomaly 10

The data is typically noisy but like Anomaly 9 the noise is of a relatively low amplitude. A broad regional anomaly is present in the data. This suggests that filtering and modelling should be successful in this case though the anomaly source may be at the same depth.

Anomaly 12

A high is present between 380E and 480E, and a low is present between 480E and 600E. The latter section has no outcropping basalt or basalt float present. The likelihood is that this anomaly is due to a magnetic unit in the Cambrian such as the Bull Creek Volcanics.

Anomaly 17/17A

Anomaly 17A is probably represented by the noise patch of data between 5200N and 5325N on the traverse along line 1525E. This is clearly a shallow effect and likely due to basalt. The east-west line contains two anomalies. One centred on 1300E coincides roughly with the plotted position of anomaly 17 and with part of a small high on line 1200E. The anomaly at 1500E-1600E is poorly defined on the north south line though it may be related to a broad zone which is somewhat obscured by the contracted plotting scale. On line 1200E the anomaly between 5000E and 5075E appears to be a discrete feature not explained by basalt though it does have a shallow appearance. Modelling is required.

Anomaly 50

There is a strong anomaly at the southern end of both lines. However it is insufficiently defined for modelling and needs further readings to be taken to the south. The displacement of this anomaly some 350 metres from the aeromagnetic anomaly is difficult to explain.

CONCLUSION

A number of the anomalies that have been surveyed seem at first impression to be due to basalt, however the others may have a deeper source and will require follow-up, initially with detailed magnetic modelling and later with further magnetics and IP perhaps followed by drilling.

T VON STROKIRCH

APPENDIX 4 OBSERVATIONS ON SKARNS IN WESTERN TASMANIA

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744028

Observations on skarns in Western Tasmania - with particular reference to gold

Submitted to Renison Goldfields Corporation

1 August, 1988

by

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Executive Summary

Skarns at Pine Hill, Moina, Fletcher's Adit, and Stormant are systematically zoned relative to their associated plutons. Highest gold grades occur in distal low temperature zones associated with high pyroxene:garnet ratios and distinctive garnet, pyroxene, and amphibole compositions. Stormant has the most potential and has some of the mineralogical features of large producing gold skarns. However, it appears to be limited in size by the composition of the associated pluton. More prospective skarns should be sought associated with more mafic, oxidized plutons.

Introduction

The skarn-associated plutons in Western Tasmania are high silica, leucocratic, "S-type" intrusions that appear to represent a range of intrusion depths of 2-8 km. Such intrusions are associated worldwide with skarns containing Sn, F, and other incompatible elements. The deeper examples tend to contain more tungsten. Skarns with this plutonic association are not known to contain large quantities of gold. The gold that does occur with these skarn systems should follow the general pattern of known gold skarns elsewhere in the world (Meinert, 1987). That is, gold-rich portions of Tasmanian skarn systems should occur in distal regions with low temperature retrograde alteration of high iron pyroxene-rich skarn. Bismuth and arsenic will likely be anomalous in high sulfide rocks. Skarns in four locations in Western Tasmania were examined during my visit, listed in approxiamate order of proximity to their respective igneous sources (and thus in inverse order of their gold potential): 1) Pine Hill near Renison Bell, 2) Moina, 3) Fletcher's Adit, and 4) Stormont.

Pine Hill - Renison Bell system

Skarn at Pine Hill was observed in drill hole #651 which intersected the Pine Hill granite at a depth of 602 meters. The pluton is a coarse-grained, equigranular, quartz-rich granite consistent with a lower crustal petrogenesis. Such plutons are typically associated with tin skarns (Meinert, 1983). At the granite contact the carbonate-poor sedimentary rocks have been converted to a biotite-pyroxene hornfels. From about 590 to 575 meters, this hornfels is overprinted by a pyrrhotite-magnetite-amphibole retrograde alteration. From about 562 to 556 meters, a more calcareous layer has been converted to pinkish-tan garnet skarn. The high garnet:pyroxene ratio and the garnet color are both consistent with a relatively high temperature, proximal skarn occurrence. The garnet is likely to be slightly sub-calcic with minor almandine-spessartine, although largely grossularite. This would be consistent with a tin-bearing skarn system (e.g. Einaudi et al., 1981). Such skarns are not known to contain much gold.

A sample of the retrograde alteration at 586 meters was selected for analysis to compare with the gold-bearing retrograde alteration at Stormant. In thin section, the sample consists of 0.01-0.5mm green pleochroic hornblende with associated pyrrhotite>arsenopyrite≈chalcopyrite>cassiterite. The hornblende has probably replaced pyroxene and biotite grains but no remnants are left. Analysis of the hornblende with electron microprobe indicates a typical iron rich variety with high fluorine (0.47 wt. %) and high chlorine indicative of a proximal location in a tin skarn system (Table 1). Other features indicative of generally high temperatures are the high TiO_2, Al_2O_3, Na_2O, and K_2O contents. This is not the type of amphibole usually associated with economic gold grades and is in clear contrast to the more distal type of ampibole formed in the Stormant system. Based on igneous petrology, skarn mineralogy, and a single amphibole composition, little potential is indicated for either high gold grades or tonnage within the Pine Hill - Renison Bell system.

Skarns associated with the Dolcoath Granite

A series of skarns are associated with the shallow westernly dipping contact of the Dolcoath Granite. Like the Pine Hill granite, the Dolcoath pluton is a coarse-grained, equigranular, quartz-rich granite consistent with a lower crustal petrogenesis. The granite is locally greisenized and cut by quartz-tourmaline veins. Tin has been mined from such veins in the granite as well as surrounding altered sedimentary rocks. Total production appears to have been small. Nowhere does limestone come into direct contact with the granite, thus all the skarns in the district have formed at varying distances from the plutonic contact. The most proximal of these occurs at Moina where Kwak and Askins (1981) estimated 200 meters of unaltered (?) Moina sandstone separates skarn from granite. Skarns at Fletcher's Adit and Stormant are further west from the main Dolcoath contact than Moina and thus, presumably represent even more distal occurrences. From this relationship, one would predict progressively higher pyroxene:garnet ratios, pyroxene iron and manganese content, and gold grade. However, the total gold content is likely to be small due to the associated igneous rocks.

Moina

Surface exposures at Moina are small but descriptions of general geology and skarn mineralogy are reported by Kwak and Askins (1981) based upon limited drill core study (skarn mineral compositions are only reported in holes #5 and 12 west of the main Moina showing). Garnet from the Moina area contains 50-60 mole % andradite and up to 7 mole % almandine; the almandine content increases from core to rim indicating a general increase in subcalcic component with time (Table 1). The composition and enrichment trend of this garnet is typical of tin skarns.

Pyroxene at Moina appears to be compositionally zoned, consistent with the apparent distance to the source intrusion. In hole #5 (interpretted as closest to the fluid conduit by Kwak and Askins, 1981), pyroxene is $Hd_{15}Jo_{0.5}$ whereas in hole #12 (interpretted as furthest from the fluid conduit by Kwak and Askins, 1981), pyroxene is $Hd_{62}Jo_{8}$ (Table 1). This is the typical enrichment trend which occurs as a hydrothermal fluid travels away from its source (e.g. Meinert, 1987). That such a pronounced enrichment trend is developed over a distance of about 100 meters indicates that the overall hydrothermal system is of limited size and that any potential for gold enrichment in distal zones is also likely to be of limited size.

Amphibole compositions at Moina are consistent with the garnet and pyroxene. Furthermore, amphibole at Moina is TiO_2 poor and MnO rich compared to that at Pine Hill. This indicates that skarn at Moina is lower temperature and further from the source than that at Pine Hill. However, the consistently high fluorine content (0.5-0.6 wt % F) of the amphibole at Moina indicates quite clearly that this is a tin skarn system and that it is related to the Dolcoath granite.

Fletcher's Adit

Skarn at Fletcher's Adit was observed briefly in drill core. The skarn is characterized by high garnet:pyroxene ratios relative to Stormant. The relative lack of pyroxene and amphibole alteration indicates that this skarn is very unlikely to contain significant gold mineralization. Because of this limited gold potential, no samples were taken for further study. It probably is not a productive exercise to mineralogically quantify this lack of gold potential.

Stormant

Skarn at Stormant is characterized by high pyroxene:garnet ratios with abundant amphibole alteration and visible bismuth minerals. All of these features are typical of gold-bearing skarns. The details of the skarn mineralogy are consistent with this being the most gold rich part of the skarn hydrothermal system related to the Dolcoath granite. However, even though locally high gold grades are predicted, size potential is still limited by the fundamental igneous petrogenesis.

Average garnet:pyroxene ratios range from a high of 3:1 in samples in the trench outside of the adit to a low of 1:4 in the samples from the face at the end of the adit, a distance estimated at about 50 meters. This indicates an overall fluid flow up the stratigraphic section, consistent with fluids feeding from underneath the limestone-sandstone contact. Garnet is present as veins cutting fine grained pyroxene skarn. Garnet veins contain quartz, amphibole, and native bismuth and typically have an envelope of coarser grained more iron rich pyroxene. The garnets are zoned with the rims more iron but less manganese rich than the cores (Table 1). Some of the cores contain a minor almandine component indicating that this is still part of tin skarn system.

The pyroxene at Stormant is consistently iron rich with minor manganese enrichment. Pyroxene compositions are similar to those of major gold skarn systems (Figure 1) but lack the high aluminum content characteristic of large tonnage gold skarn systems (Meinert, 1987). The relatively small manganese enrichment in samples spanning about 50 meters indicates that the gold mineralized part of this skarn system should extend for at least 2-3 times the length of the present exposures. However, the exposed stratigraphic thickness appears to be at most about 10 meters.

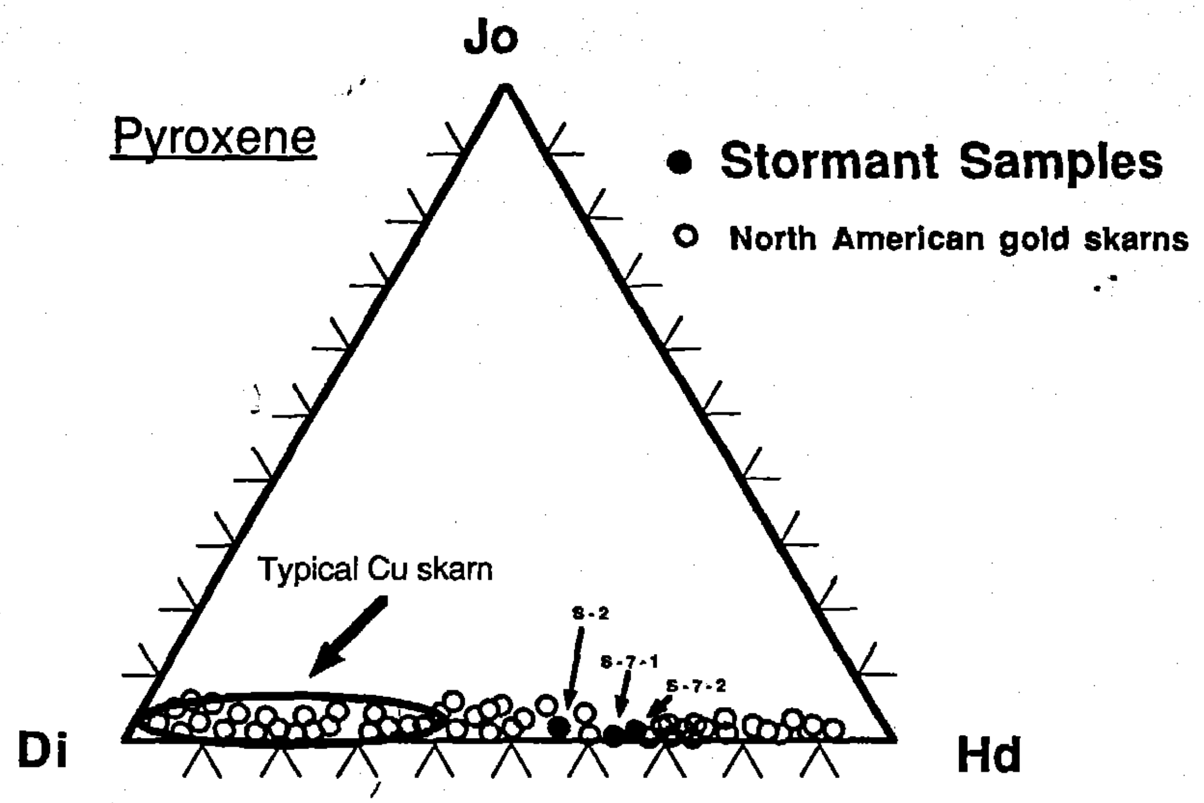
Gold and bismuth mineralization appears to be strongly associated with amphibole retrograde alteration of pyroxene. At the thin section level, amphibole-quartz veins contain native bismuth, gold, and minor arsenopyrite where they cut pyroxene skarn. Many of the amphibole veins contain euhedral garnets along the vein walls. It would appear that gold is being deposited during the crossover from pyroxene stability to garnet-amphibole stability and then continues on to lower temperature where only amphible is stable. Some of the amphibole alteration is quite massive and it is predicted that drilling will encounter rock in which no garnet or pyroxene remains and even some of the amphibole is being altered to chlorite and/or clay. The amphibole is compositionally distinct from that at either Pine Hill or Moina. Stormant amphibole has lower titanium and alkaliis but much higher manganese. All of these features are consistent with Stormant being the lowest temperature and most distal of the three skarn occurrences. However, the relatively high fluorine content (0.46 wt % F) clearly indicates that although Stormant is distal, it is the distal part of a tin skarn system.

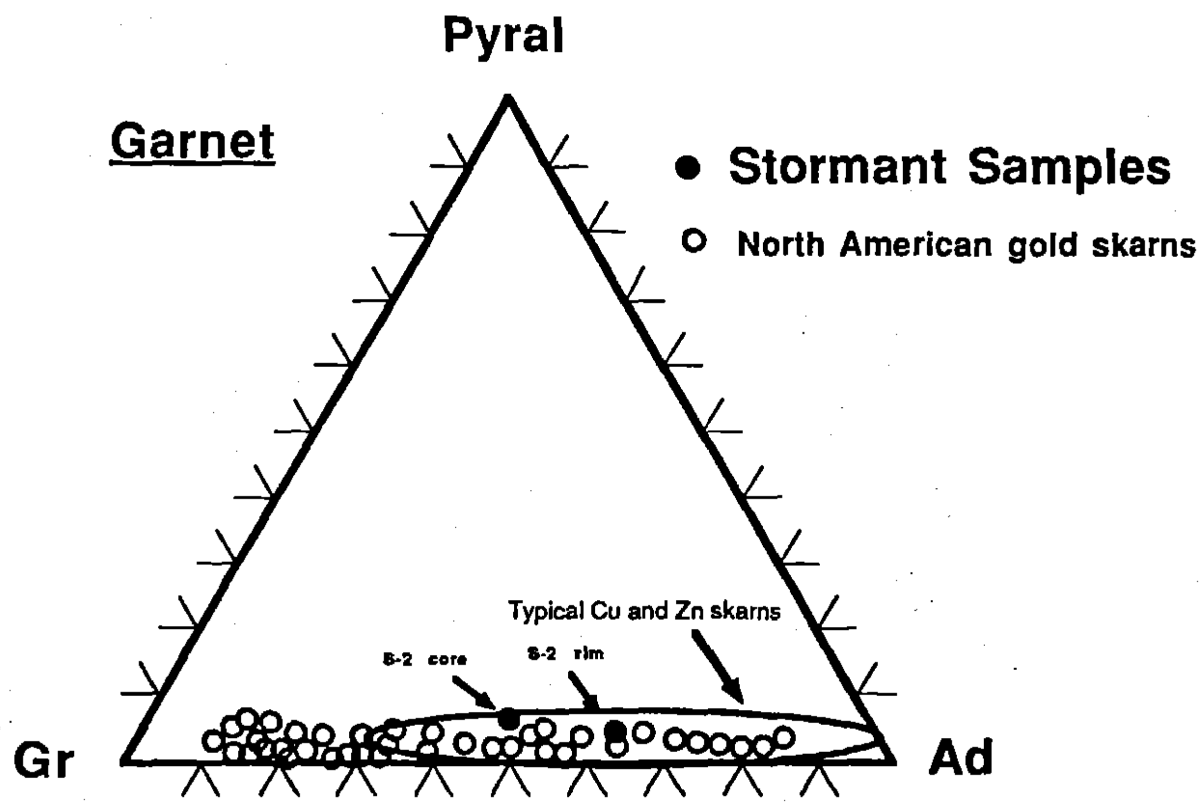
Conclusions and Recommendations

All the skarns examined in western Tasmania are related to high silica, coarse grained granites which may be broadly characterized as "S-type". Such plutons are well known for their association with Sn and W systems, and associated skarn in carbonate rocks, but are not very prospective for gold. There are good petrologic reasons for this including the reduced nature of such plutons, their overall low water content, and the lack of large vertically zoned magma chambers. However, within a given petrologic province the occurrence of the highest gold grade within the available skarn is relatively predictable. The four skarn systems described in this report, Pine Hill, Moina, Fletcher's Adit, and Stormant represent a range of skarn environments, from most proximal to most distal, respectively. For each of these, I have described the characteristic skarn mineralogy and typical mineral compositions. Gold occurs with iron-rich pyroxene in distal zones of abundant amphibole alteration. Systematic changes in garnet:pyroxene ratio combined with the extent of iron and manganese enrichment in pyroxene are good indicators of distance from the source intrusion. The size of the pyroxene dominant zone is a good indicator of the potential size of gold mineralization. Based upon these criteria, Stormant is by far the most prospective of the skarns I observed in Tasmania. However, I would characterize Stormant as the most gold-rich part of a relatively gold poor system. It is probably worth testing Stormant as a potential small ore body, however I would not place the Dolcoath granite high on a list of plutons likely to form major gold deposits.

Tasmanian Skarn Electron Microprobe Data

Sample #	S-2	S-2	K&A 6	K&A 7	K&A 8	K&A 9	S-2	S-7	S-7	K&A 4	K&A 5	RB-651-586	S-2	K&A 10	K&A 11	K&A 12	S-7
Analysis	pt 2 core	pt 2 rim	wrig rim	wrig core	c.s. sk	u. cs sk	pt 1	pt 2	pt 1	c.s. sk	wrigglite	pt 1	pt 2	wrigglite	l. cs sk	u. cs sk	pt 2
Mineral	Gar	Gar	Gar	Gar	Gar	Gar	Pyx	Pyx	Pyx	Pyx	Pyx	Amph	Amph	Amph	Amph	Amph	Carb.
SiO2	36.64	35.70	37.62	37.21	36.89	37.01	49.75	48.33	49.56	53.07	48.94	44.30	48.36	36.80	36.55	39.14	0.00
TiO2	0.12	0.16	0.17	0.20	0.22	0.56	0.00	0.06	0.00	0.00	0.07	0.62	0.09	0.20	0.25	0.34	0.00
Al2O3	9.56	7.35	5.97	6.09	6.97	8.29	0.57	0.35	0.24	0.19	0.37	6.54	3.05	11.54	13.23	14.44	0.08
FeO*	19.06	21.52	22.02	21.12	22.29	20.64	17.85	19.55	19.15	4.97	18.33	28.19	27.19	27.14	26.16	23.83	0.72
MnO	2.71	1.66	1.79	1.00	1.86	2.41	2.58	3.08	1.57	0.27	2.83	0.90	3.01	0.83	1.42	1.26	1.42
MgO	0.06	0.00	0.09	0.08	0.00	0.01	5.73	3.53	5.16	15.01	4.74	3.81	4.71	3.39	2.62	2.00	0.15
CaO	31.56	32.16	31.78	32.51	31.35	31.25	23.71	23.16	23.90	24.86	22.68	10.15	11.10	11.22	9.64	11.05	54.18
Na2O	0.14	0.00	0.05	0.09	0.00	0.01	0.05	0.00	0.00	0.04	0.15	1.32	0.46	1.53	1.49	0.28	0.00
K2O			0.02	0.02	0.00	0.02	0.00			0.01	0.00	0.76	0.14	2.22	2.93	2.25	
F			0.23	0.31	0.31	0.32	0.40			0.11	0.22	0.47	0.46	0.60	0.45	0.29	
Cl			0.02	0.06	0.00	0.05	0.00			0.02	0.00	0.38	0.03	0.52	0.61	0.62	
P2O5							0.02					0.02	0.04				
Total	99.85	98.55	99.76	98.69	99.89	100.57	100.66	98.06	99.58	98.55	98.33	97.46	98.64	95.99	95.35	95.50	56.55
Cations	12	12	12	12	12	12	6	6	6	6	6	24	24	24	24	24	6
Si	2.966	2.958	5.987	6.104	5.992	5.943	1.886	1.98	1.98	1.986	1.976	7.086	7.563	6.288	6.268	6.608	0
Ti	0.008	0.01	0.02	0.025	0.027	0.068	0.000	0.002	0	0	0.002	0.074	0.01	0.026	0.032	0.026	0
Al	0.912	0.718	1.118	1.178	1.335	1.569	0.026	0.017	0.012	0.002	0.018	1.232	0.562	2.326	2.675	2.975	0.009
Fe	1.162	1.342	3.015	2.607	2.7525	2.491	0.566	0.67	0.64	0.156	0.619	3.771	3.557	3.878	3.752	3.878	0.06
Mn	0.186	0.116	0.241	0.139	0.256	0.312	0.083	0.107	0.053	0.009	0.097	0.122	0.399	0.12	0.206	0.12	0.12
Mg	0.006	0	0.021	0.02	0	0.002	0.324	0.216	0.307	0.837	0.285	0.909	1.098	0.863	0.67	0.863	0.022
Ca	2.738	2.856	5.411	5.714	5.457	5.377	0.963	1.017	1.023	0.997	0.981	1.74	1.86	2.054	1.771	2.054	5.784
Na	0.022	0	0.015	0.014	0	0.003	0.004	0	0	0.003	0.006	0.41	0.141	0.507	0.495	0.507	0
K			0.004	0.002	0	0.002	0.000			0.0	0	0.155	0.027	0.484	0.641	0.484	
Hd							58.2	67.5	64.0	15.6	61.8						
Di							23.6	16.1	22.2	45.4	20.9						
Jo							6.4	8.7	4.0	0.5	7.6						
Ad	49.8	61.7	61.8	60.6	56.9	51.2											
Gr	40.4	33.0	25.6	30.0	30.7	35.9											
Sp	8.2	5.3	5.5	3.5	5.9	7.1											
Alm	1.6	0.0	7.2	5.9	6.4	5.8											


Jo
Pyroxene
● Stormant Samples
O North American gold skarns
Typical Cu skarn
S-2
S-7-1
S-7-2
Di
Hd


Pyral
Garnet
● Stormant Samples
O North American gold skarns
Typical Cu and Zn skarns
S-2 core
S-2 rim
Gr
Ad

LEGEND

TERTIARY

Tb	Basalt, Basalt scree & Greybilly

DEVONIAN

Dg	Dolcoath Granite
Dpq	Quartz-porphyry dykes

ORDOVICIAN

Og	Gordon Limestone
Og	Skarn
Om	Moina Sandstone
Oc	Owen Conglomerate Equivalents

CAMBRIAN

€	Undifferentiated Volcanics

30° Strike & Dip

Anticline

Syncline

Cut Grid

Geology Contact

Fault

HIGGS Au — Old Mines & contained metals

Unconformity Surface

GEOLOGICAL RESPONSIBILITY DIAGRAM

Comalco Ltd Weste 1978

COMALCO LTD Askins 1977

C.R.A. EXP. Weber 1982

Comalco Ltd. Askins 1980

Middlesex 1 Mile Sheet

Cradle Mtn. Rd.

COMALCO LTD Komyshan 1978

SHEFFIELD 1 MILE SHEET

MIDDLESEX 1 MILE SHEET

INDEX TO ADJOINING MAPS

GUILDFORD 3841	LOONGANA 4041	WILMOT 4241
PEARSE 3840	LEA 4040	CETHANA 4240
CHARTER 3839	PENCIL PINE 4039	LIENA 4239

RGC EXPLORATION PTY. LIMITED

744037 CETHANA

INTERPRETIVE GEOLOGY

7621

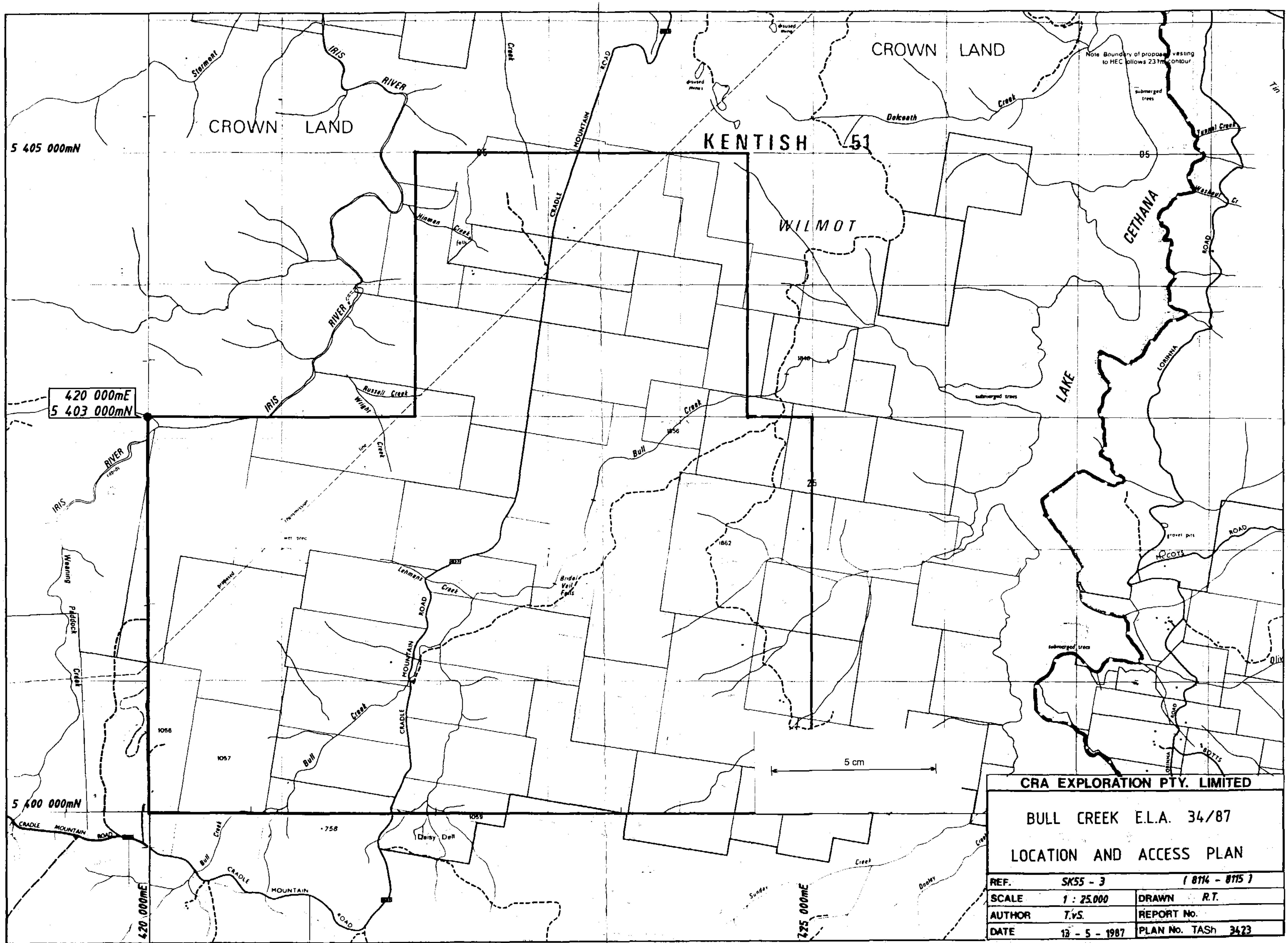
DRAWN BY	R.R.
DRAFTSMAN	S.F.
DATE	
REVISIONS	
FILE NO.	

SCALE 1: 25000

500 250 0 500 1000 METRES

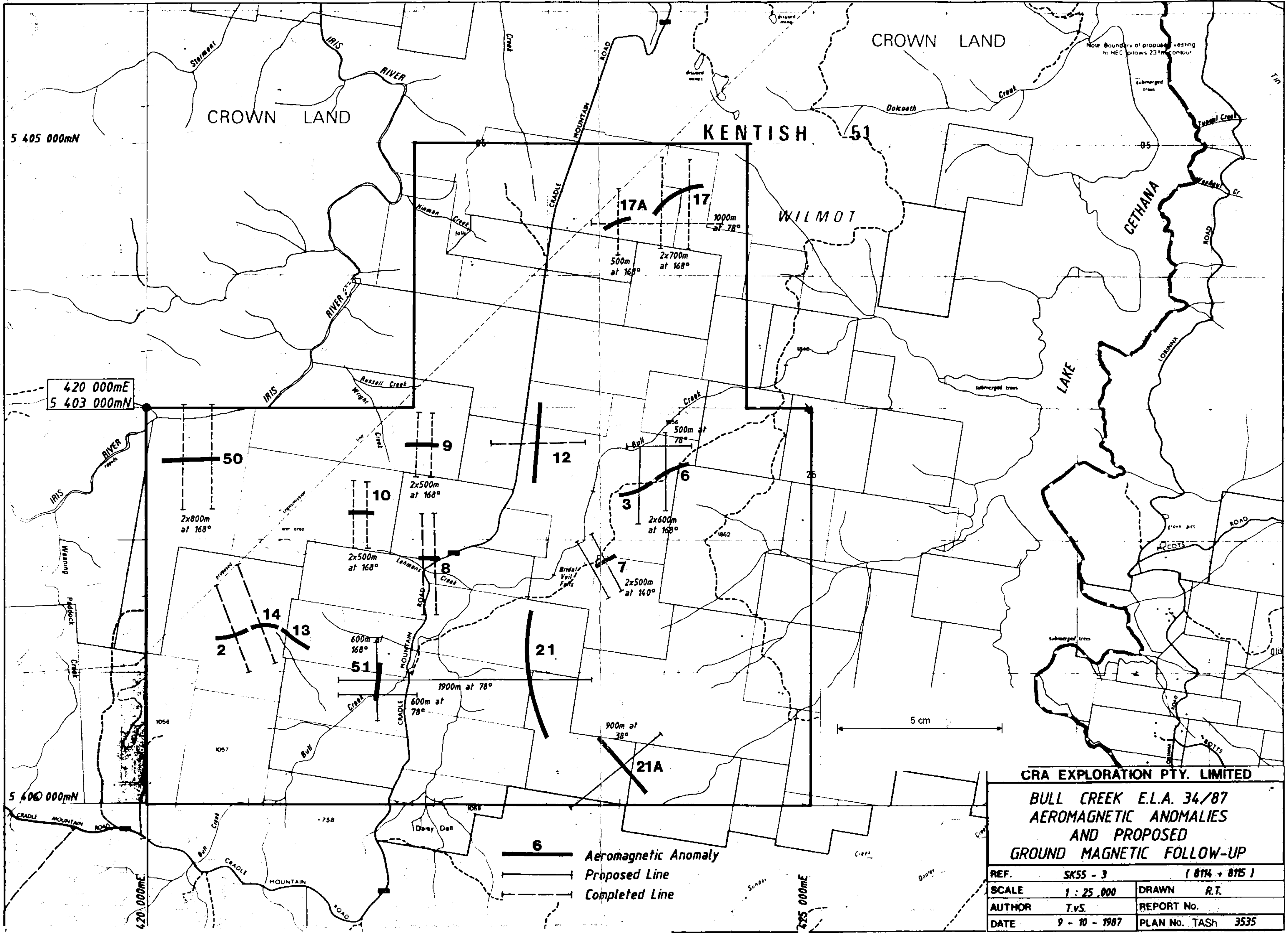
FIG. 2

026


CROWN LAND
CROWN LAND
KENTISH 51
WILMOT
IRIS RIVER
Stormont
Creek
CRADLE MOUNTAIN ROAD
Dolcoath
Creek
Note Boundary of proposed vesting to HEC follows 231m contour
submerged trees
Tunnel Creek
Washout Cr
CETHANA
LAKE
LORINNA
ROAD
5 405 000mN
420 000mE
5 403 000mN
5 400 000mN
420 000mE
425 000mE
Hinman Creek
falls
Russell Creek
Wright Creek
Bull Creek
Lehmans Creek
Bridal Veil Falls
Weaning Paddock Creek
rapids
transmission line
proposed
1056
1057
1862
758
1059
Daisy Dell
gravel pits
McCOTS ROAD
BOTTS
Sunday
Dooley
Creek
disused mines
5 cm
CRA EXPLORATION PTY. LIMITED
BULL CREEK E.L.A. 34/87
LOCATION AND ACCESS PLAN
REF. SK55 - 3 (8114 - 8115)
SCALE 1 : 25.000
DRAWN R.T.
AUTHOR T.vS.
REPORT No.
DATE 13 - 5 - 1987
PLAN No. TASh 3423

74403S

744039



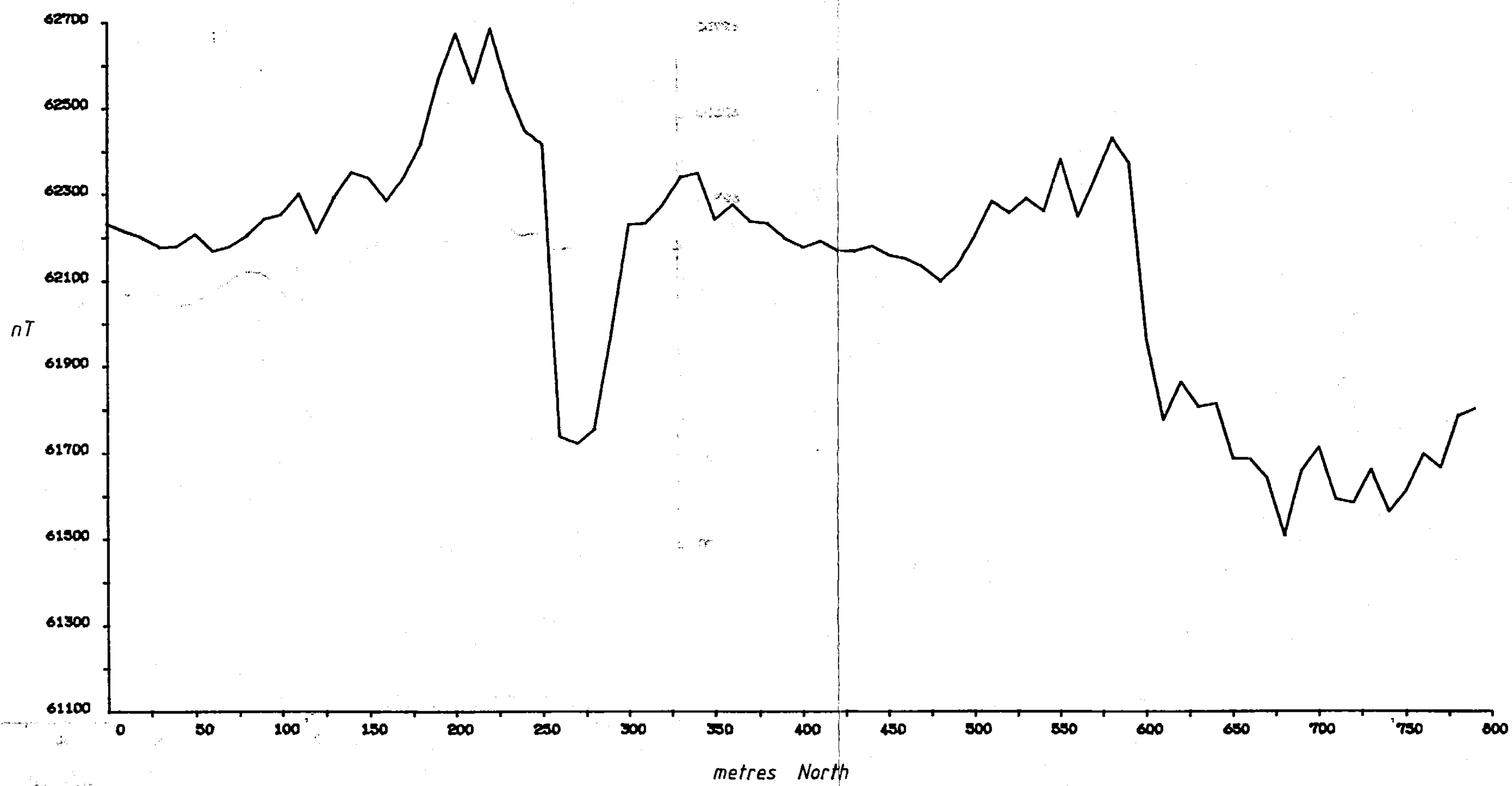
CROWN LAND
CROWN LAND
KENTISH 51
WILMOT
CETHANA
LAKE
IRIS RIVER
Stormont Creek
Dolcoath Creek
Hinman Creek
Russell Creek
Wright Creek
Bull Creek
Lehmans Creek
Weaning Paddock Creek
CRADLE MOUNTAIN ROAD
Note Boundary of proposed vesting to HEC follows 23 fm contour
5 405 000mN
420 000mE
5 403 000mN
5 400 000mN
420 000mE
425 000mE
17A
17
1000m at 78°
500m at 168°
2x700m at 168°
50
2x800m at 168°
9
2x500m at 168°
10
2x500m at 168°
12
6
3
500m at 78°
2x600m at 168°
7
2x500m at 140°
Bridal Veil Falls
8
14
13
2
51
600m at 168°
600m at 78°
1900m at 78°
21
21A
900m at 38°
5 cm
6 Aeromagnetic Anomaly
Proposed Line
Completed Line
CRA EXPLORATION PTY. LIMITED
BULL CREEK E.L.A. 34/87
AEROMAGNETIC ANOMALIES
AND PROPOSED
GROUND MAGNETIC FOLLOW-UP
REF. SK55 - 3 (8114 + 8115)
SCALE 1 : 25,000
DRAWN R.T.
AUTHOR T.v.S.
REPORT No.
DATE 9 - 10 - 1987
PLAN No. TASh 3535

027

88-2852

744040

Bull Creek ground mag Anomaly 8 Line 400E



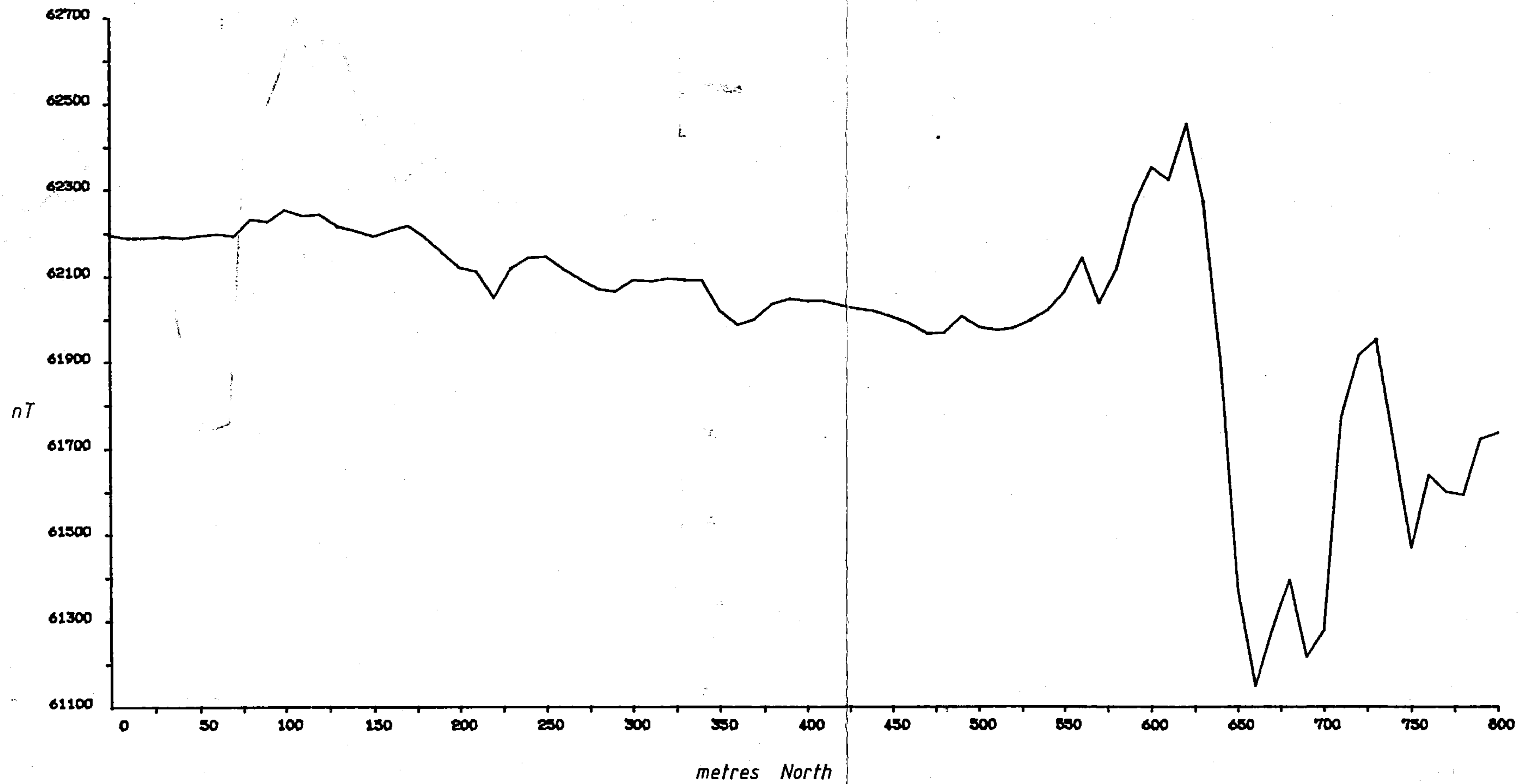
Tash 3659

028

88-2852

744041

Bull creek ground magnetics Anomaly 8 Line 600E



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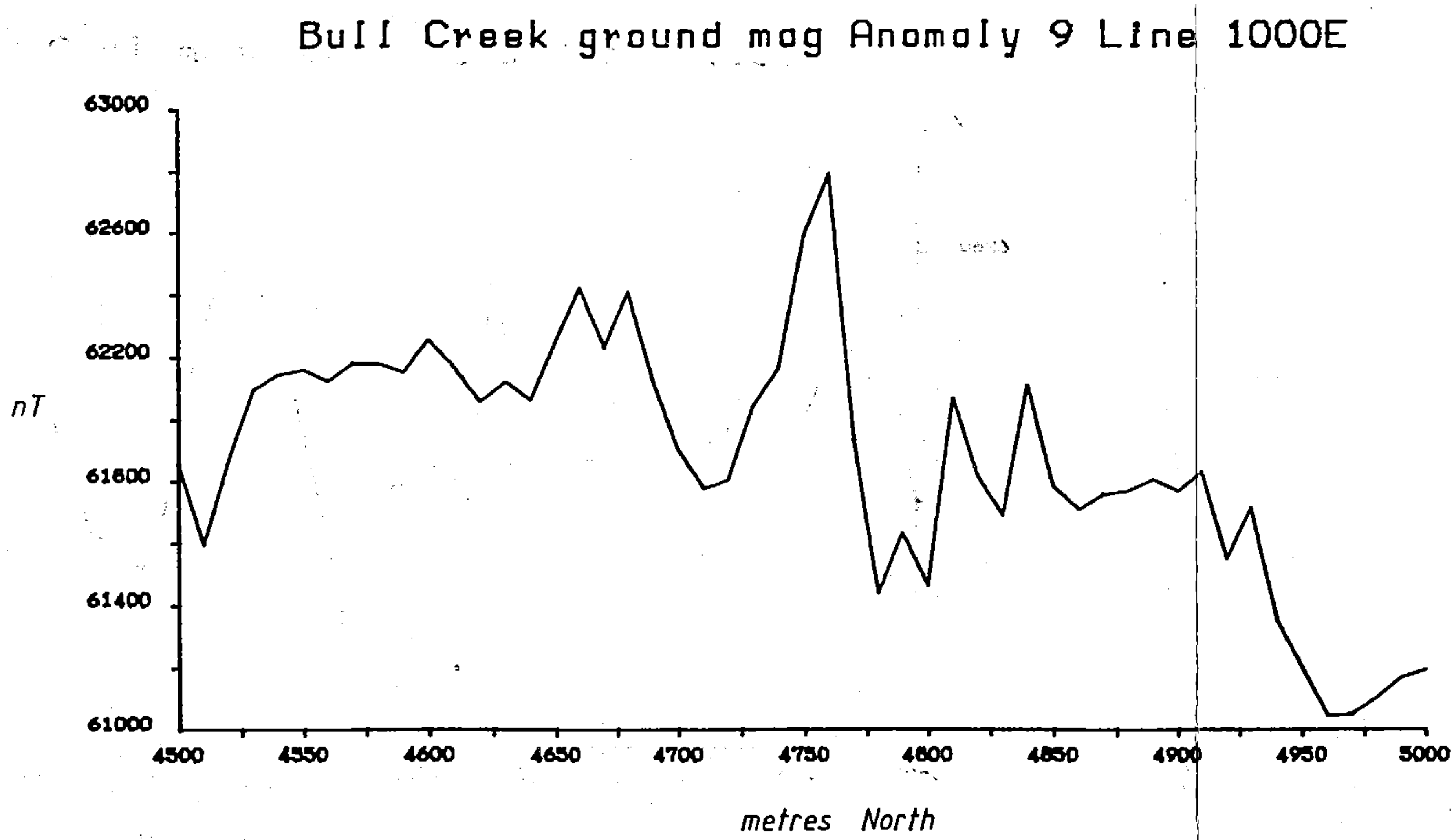
029

88-2852

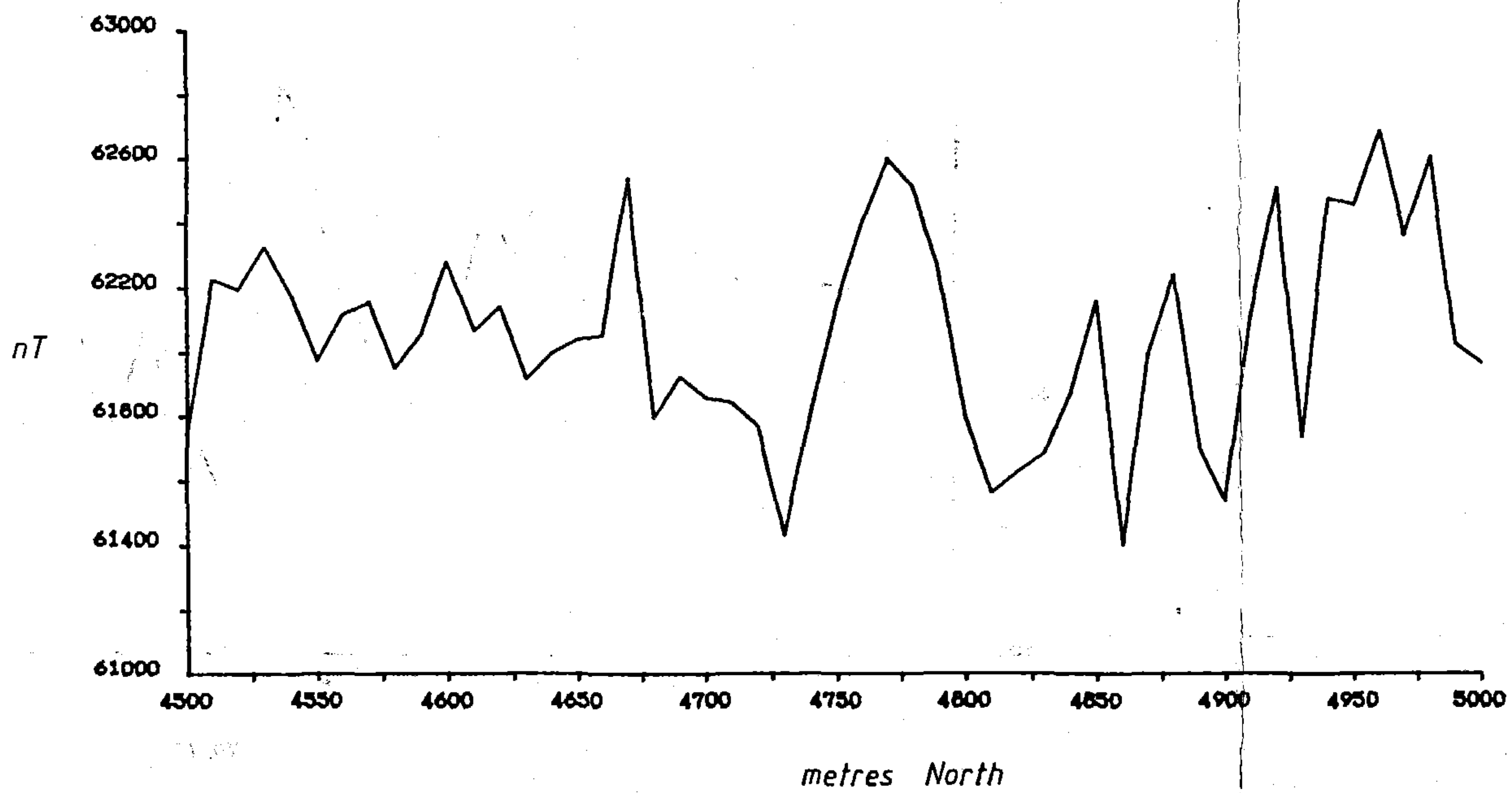
744042



Tash 3661

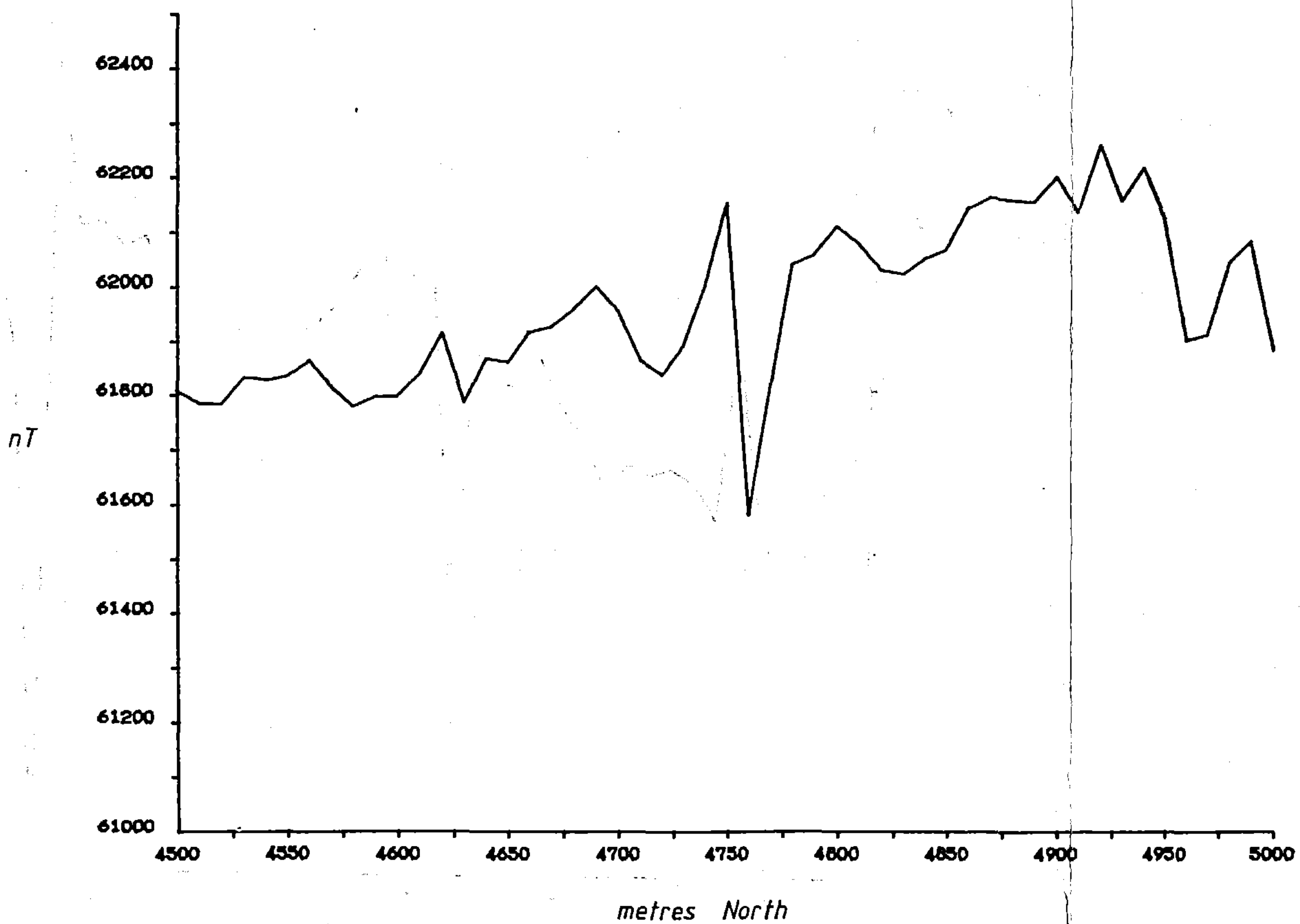
030

Bull Creek groundmag Anomaly 9 Line 1112.5E



Tash 3662

Bull Creek ground mag Anomaly 10 Line 1000E



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88-2852

Tash 3663

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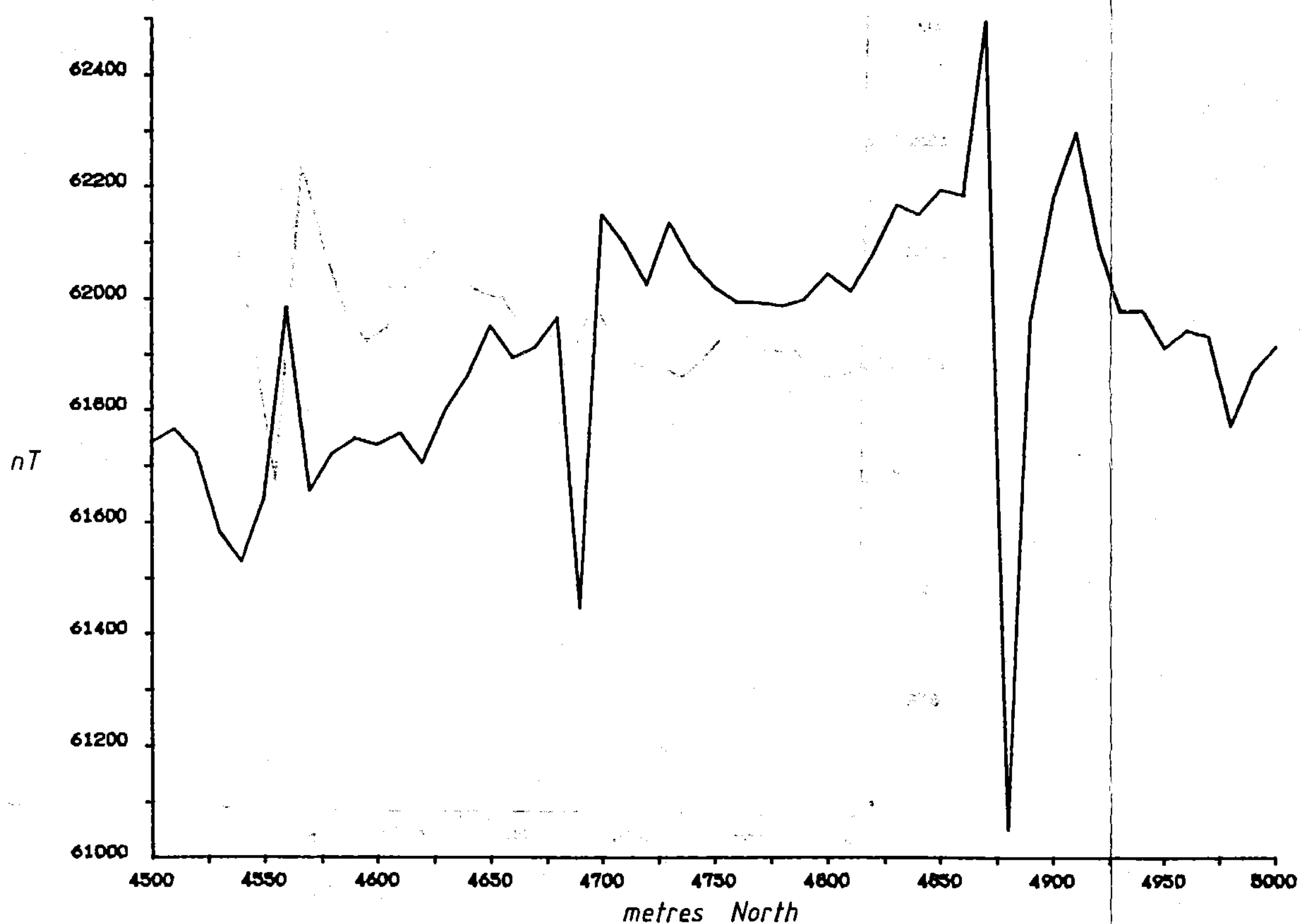

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88-2852

Tash 3664

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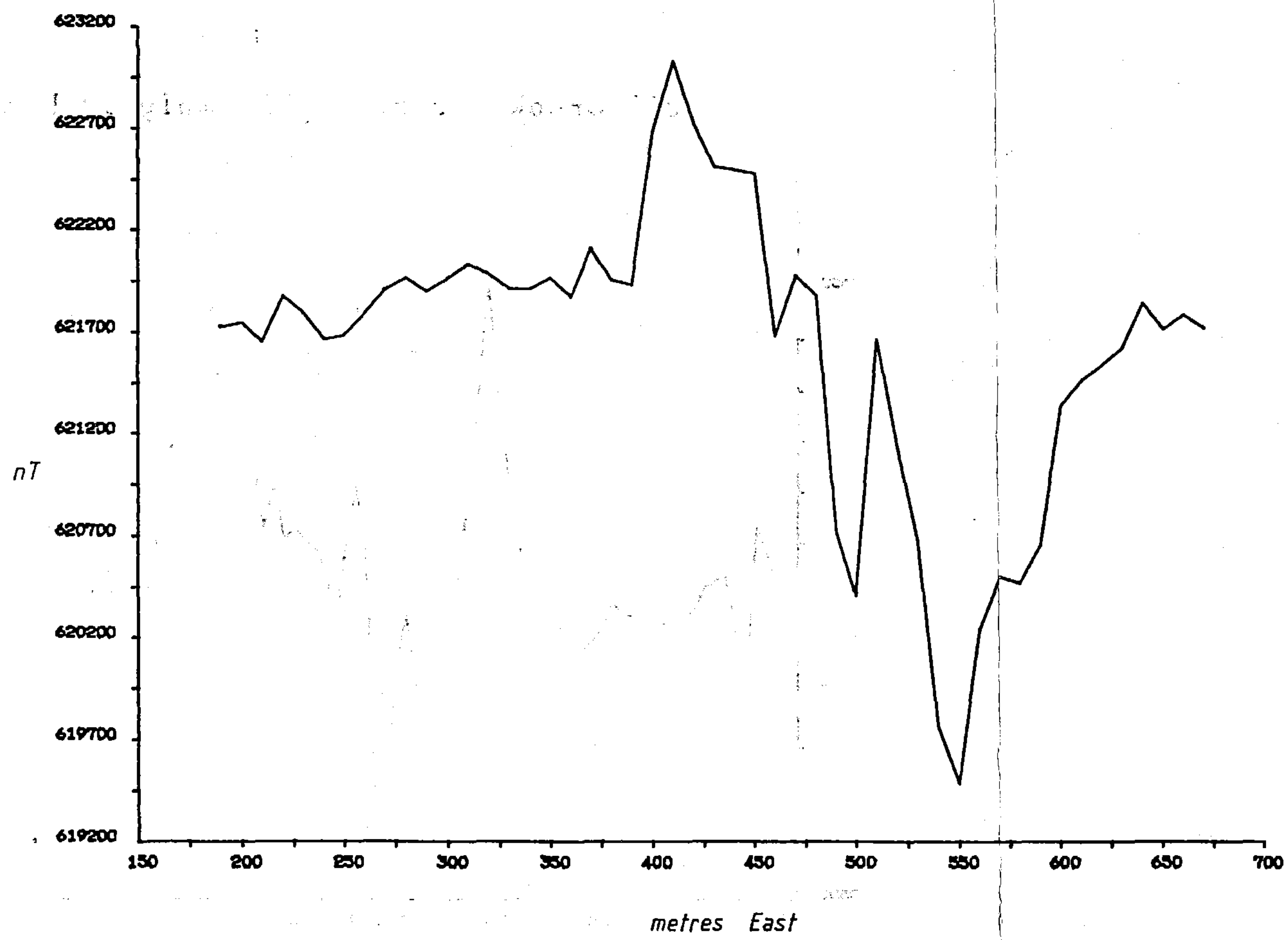
Bull Creek ground magnetics Anomaly 12 Line 1000N



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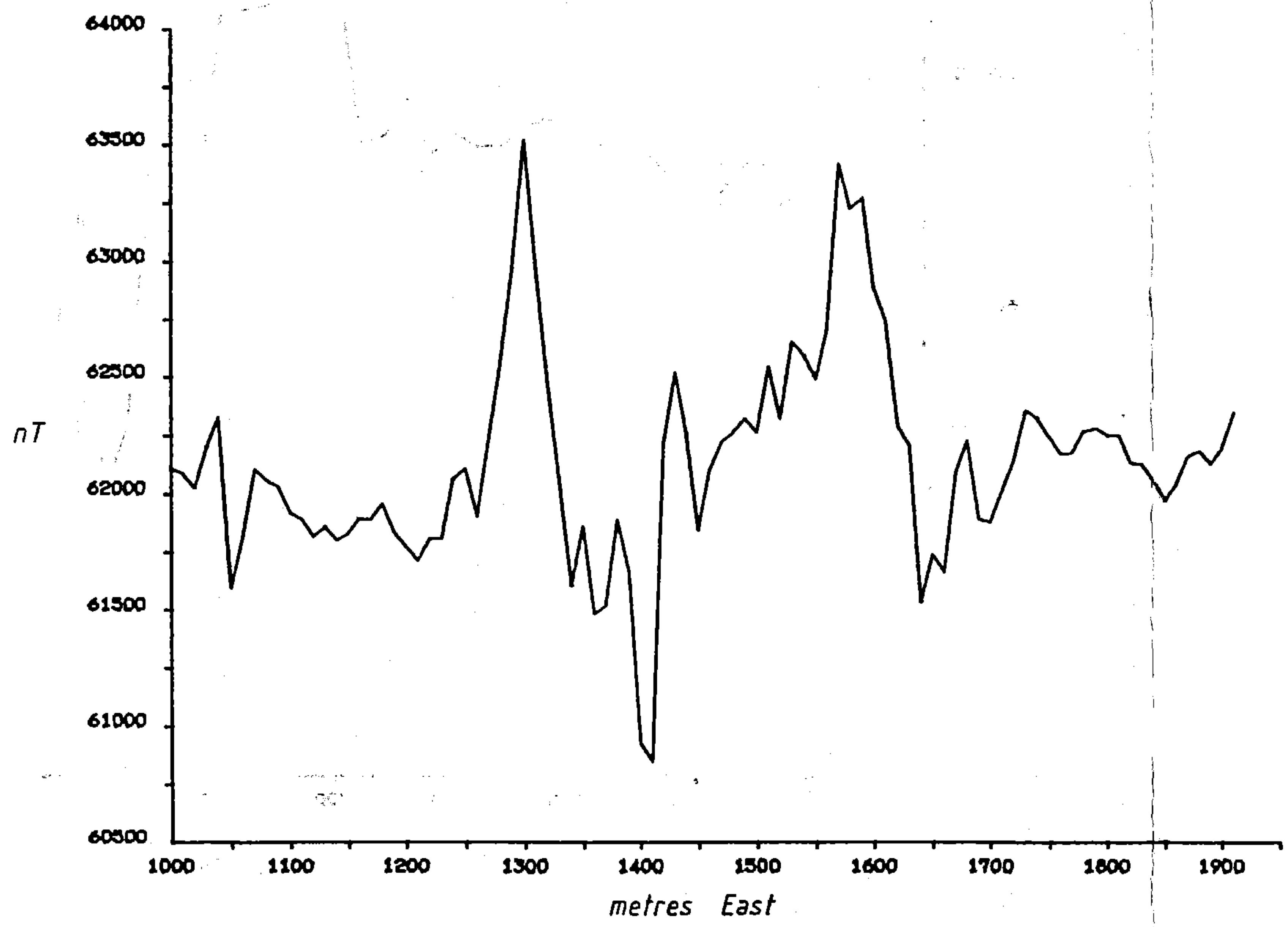
88-2852

Tash 3665

Bull Creek ground mag Anomaly 17 Line 5000N



88-2852

744047

Tash 3666

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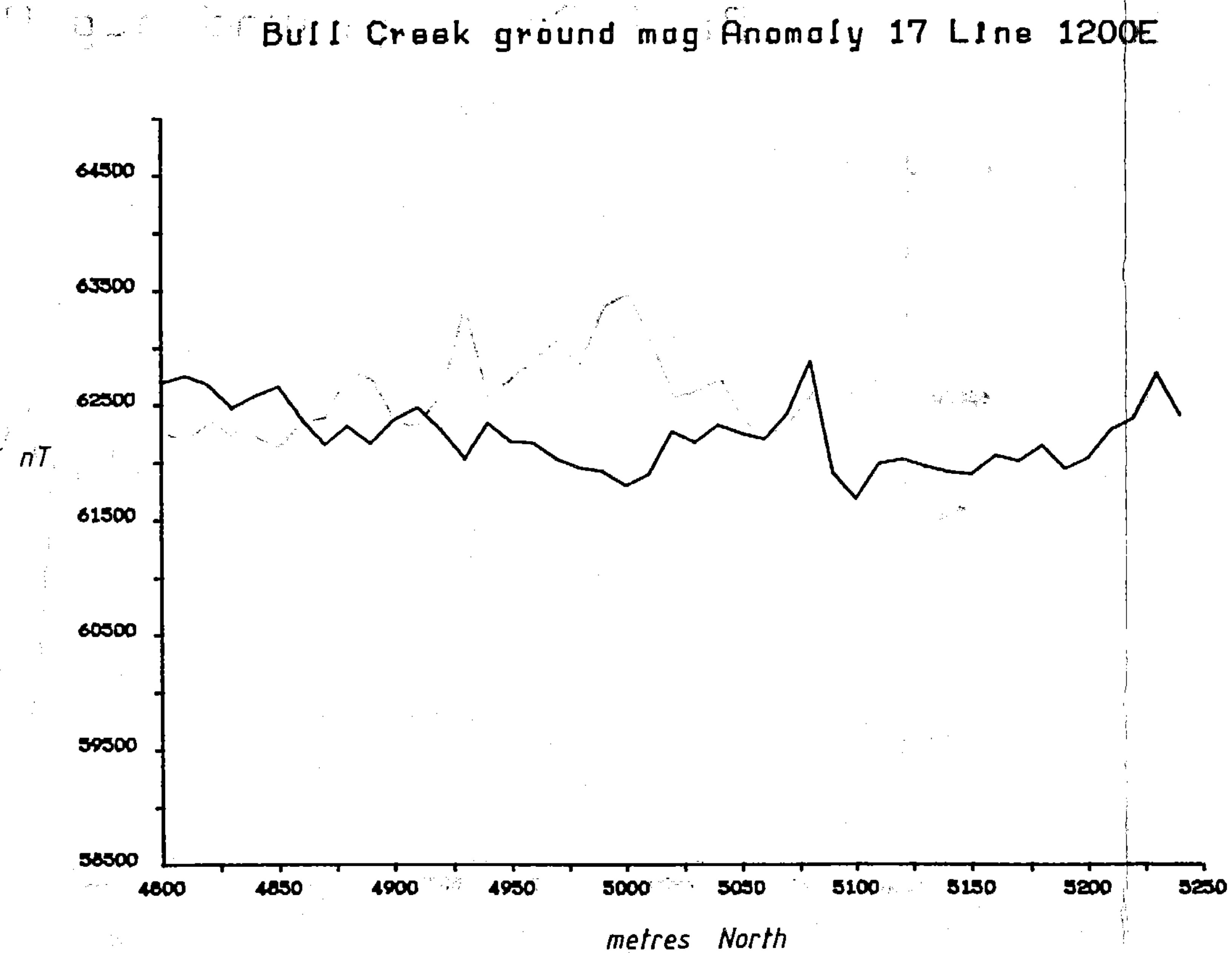

88-2852

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Tash 3667.

036

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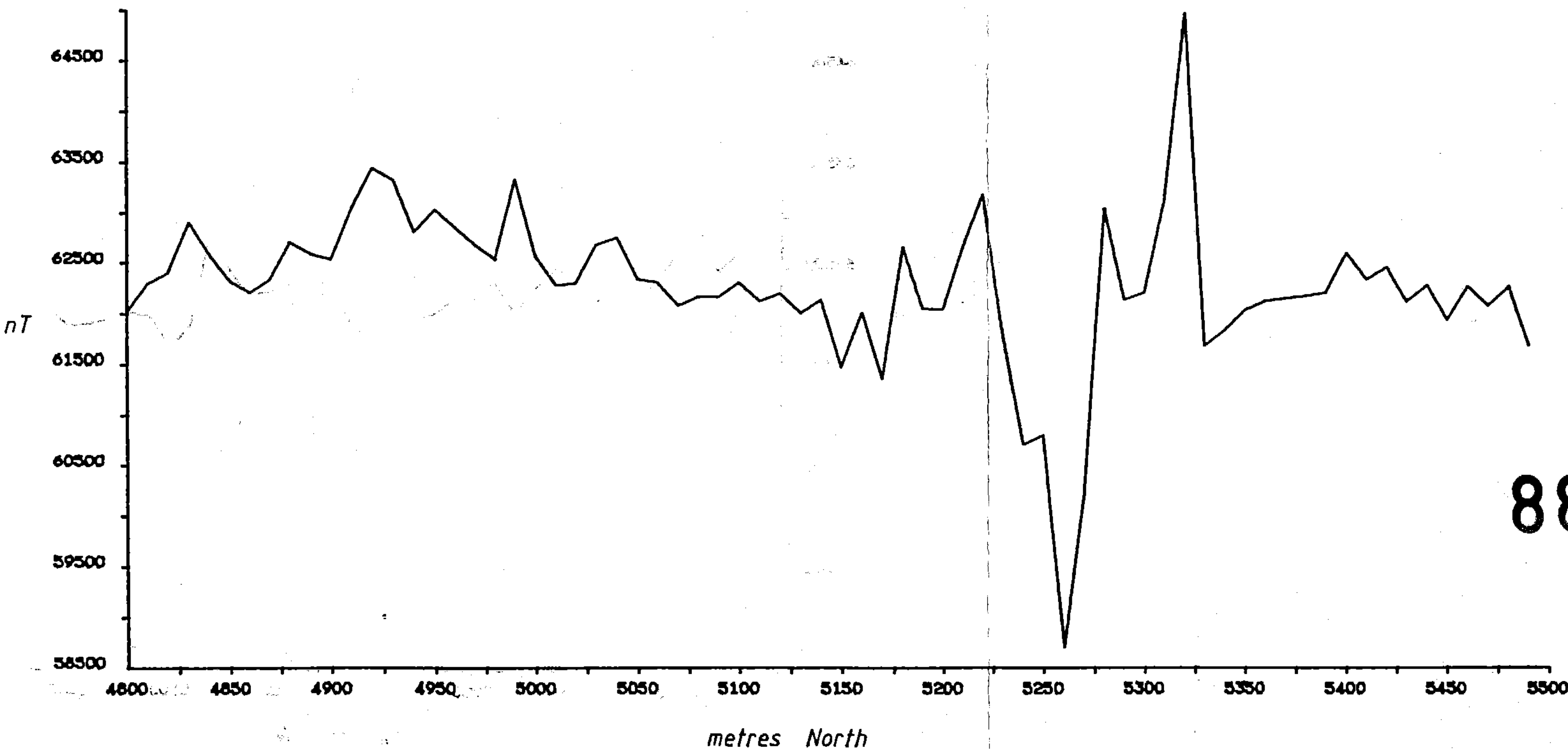

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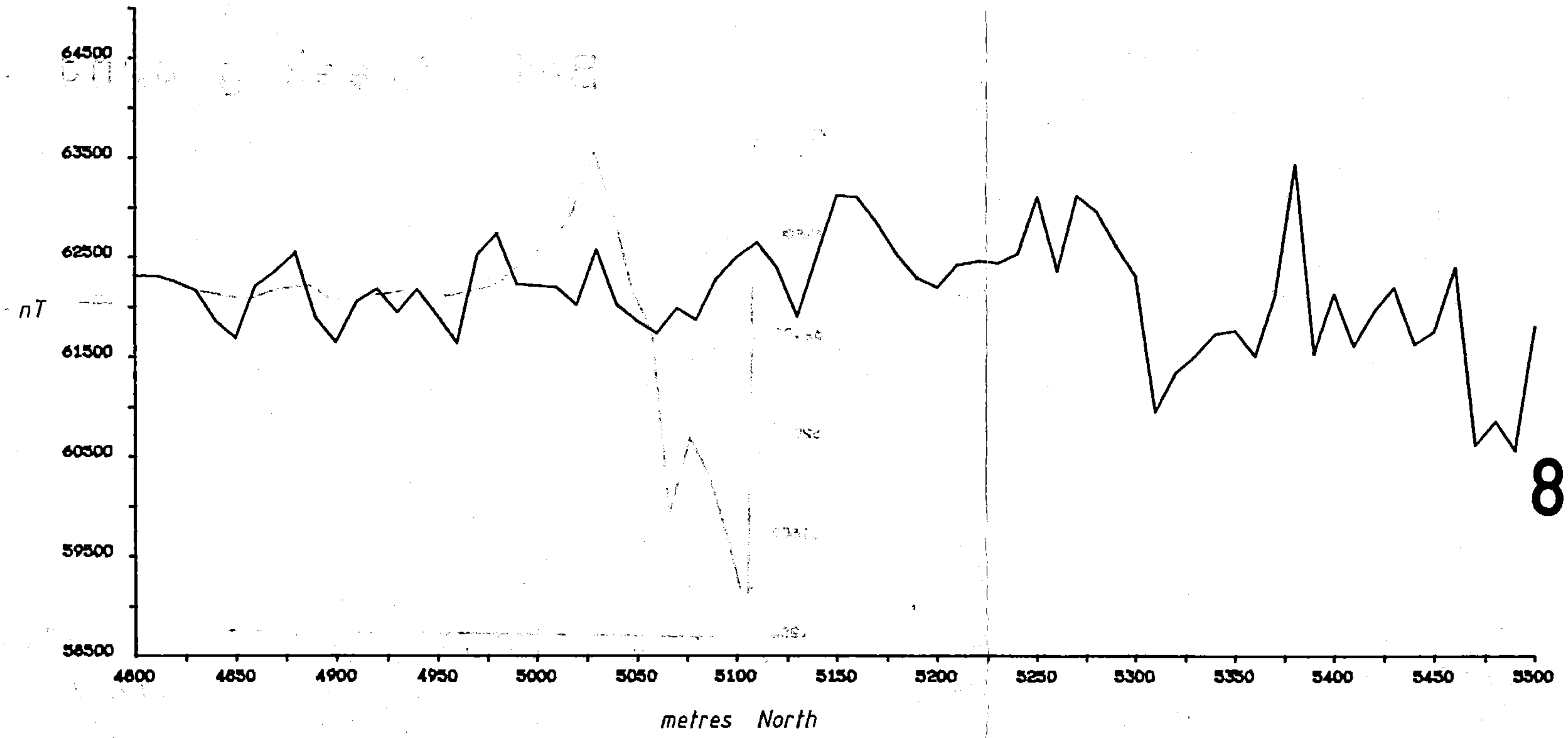
Tash 3668

037

Bull Creek ground mag Anomaly 17 Line 1750E



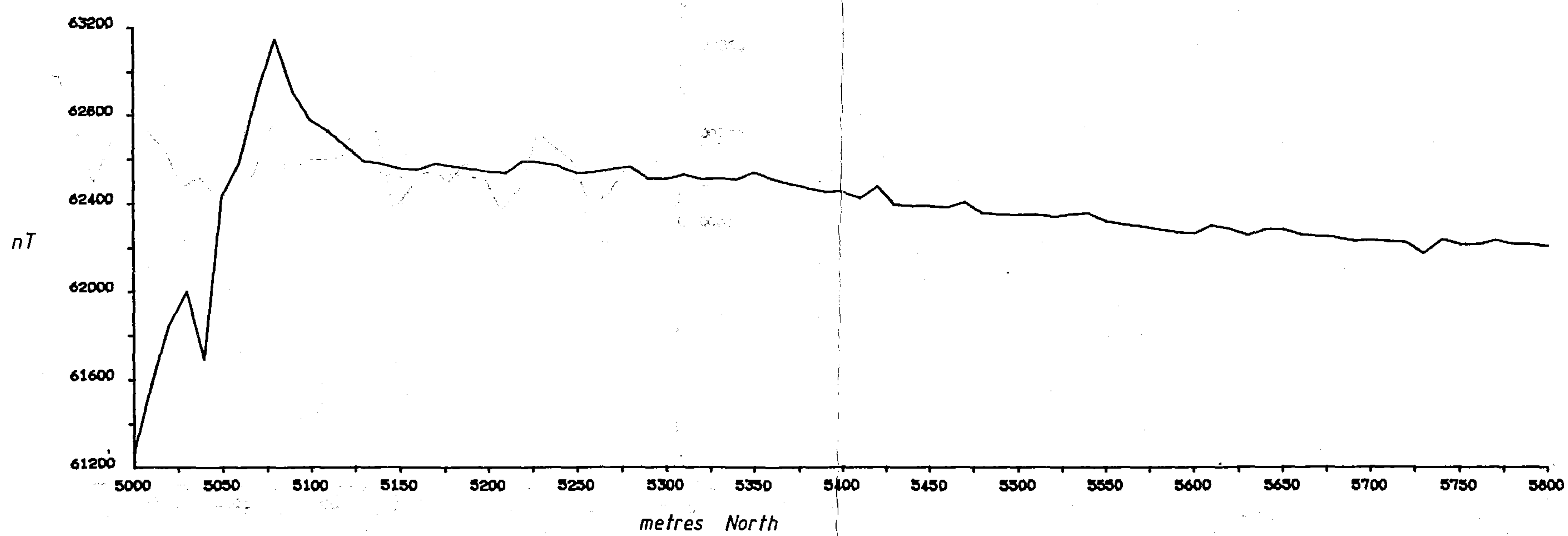
88-2852

744050

Tash 3669

038

Bull creek ground mag Anomaly 50 line 775E



744051

88-2852

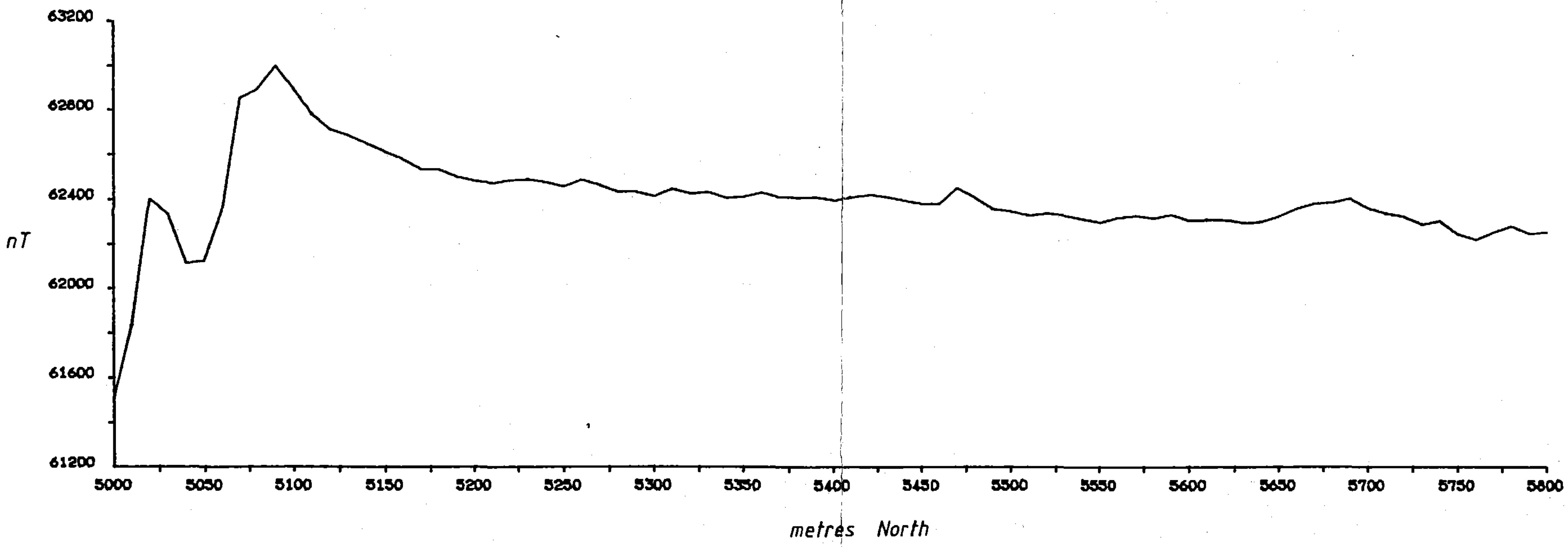
Tash 3670

039

744052

88-2852

Bull Creek ground mag Anomaly 50 Line 1000E



Tash 3671

040