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RECONNAISSANCE FOLLOW-UP OF SOME AEROMAGNETIC ANOMALIES IN THE DIAL RANGE, EL 24/73 TASMANIA

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AMG REFERENCE POINTS ADDED

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1. INTRODUCTION

Exploration Licence 24/73 of 106 sq.km covers the greater portion of the Dial Range Trough, comprising a thick sequence of Cambro-Ordovician sediments and volcanics in North-western Tasmania.

The licence is/was held by Duval Mining Aust Ltd and during the 1979-1984 period was explored for base metal and tin mineralization in joint venture with Geopeko. The last phase of exploration under the joint venture involved an airborne magnetometer survey with limited ground follow up of anomalies. (Large & Sumpton, December 1983) (Turley & Sumpton, June 1984).

In September 1984, Duval withdrew from the joint venture and Geopeko acquired 100% of equity in the licence area.

Amad NL entered an option agreement with Geopeko which would allow Amad NL to undertake exploration in the Dial Range, up to the end of 1984, to obtain information to assist in a decision on the possibility of a new Geopeko-Amad joint venture.

This report details the results of magnetic/geological reconnaissance of selected Aeromagnetic anomalies carried out on behalf of Amad, by Walter Herrmann, during October, 1984.

2. SUMMARY

Reconnaissance magnetic/geological follow-up work was undertaken on eight aeromagnetic anomalies defined by a previous Austirex survey.

Work completed and results obtained are summarized as follows:

Venture 5: Approx. 500m line cutting
Approx. 2750m Magnetometer traverse.

Small cluster and several isolated occurrences of very small and apparently superficial magnetic anomalies up to 500nT above background. No single large discrete source identified. Airborne anomaly believed attributable to "averaging" effect of numerous small superficial anomalies.

Geological setting similar to nearby Dial Mine Grid.

Venture 10: Approx. 300m line cutting
Approx. 1400m Magnetometer traverse.

Small elongate E-W anomaly (100x25m) peaking at 800nT above background was defined. Associated with magnetic soils of wide distribution. Rock types similar to fine and coarse sedimentary units of Dial Mine - Venture 5 area.

Airborne anomaly possibly caused by "averaging" effect of several small superficial magnetic features combined with survey terrain clearance problem.

Venture 11 South: 2 Magnetic Traverses, Total: 1200m.
Broad, multi-peaked ground magnetic anomaly up to 400nT above background. Associated with outcropping magnetic, porphyritic microgranodiorite-monzodiorite intrusive rock loosely formed "Lobster Creek Volcanic". No further potential.

Venture 11 East: 1 Magnetometer Traverse of 500m along Parton's Road.
Weak multi peaked anomaly max. 300nT above background, related to outcropping (magnetic) porphyritic microgranodiorite.

No further potential.

Venture 12 West: 2 Magnetometer Traverses, Total 800m.
"Noisy" magnetic character up to 2000nT above background related to outlier of (magnetic) Tertiary Basalt.

No potential for target tin mineralization.

Venture 15: 1250m Magnetometer traversing.

"Noisy" magnetic profiles over Metabasalt of "Motton Spilite" close to contact with "Barrington Chert". Peak of anomaly probably attributable to small pods of inconsistently magnetic hematitic jasper of uncertain association. Possible siliceous replacement. Size potential is small but some strike extent is possible.

Venture 16: 700m Magnetometer Traverse
Distinct "flat topped" magnetic anomaly of about 500nT above noisy background over area of metabasalt ("spilite"). Rare jasper float coincides with anomaly peak suggesting similar source to Venture 15 anomaly.

Geological setting not particularly favourable for replacement style target mineralization though clasts of carbonate observed in fragmental volcanics to south.

Venture 17: 1000m Magnetometer Traverse
Very broad "formational" looking magnetic highs up to 400nT above background. Probably attributable to weakly magnetic monzonitic intrusives into non magnetic mudstone-greywacke sequence.

No further potential.

3. CONCLUSIONS AND RECOMMENDATIONS

Reconnaissance follow-up of Aeromagnetic Anomalies reported herein and by previous workers Sumpton and Turley (1984) has failed to define any ground magnetic anomalies with strong potential for the target mineralization of pyrrhotite-cassiterite replacement type.

However, the magnetic features of such deposits may be expected to be quite subtle especially if the mineralized bodies are buried at depths approaching 100 metres.

In fact the anomaly selection and follow up reconnaissance to date has been aimed at discovery of the most obvious, virtually sub-outcropping magnetic targets. It is likely that further second order targets could be generated by a finer tuned geophysical assessment of the magnetic data incorporating modern techniques of spectral analysis, terrain clearance correction, etc.

Historically, the most encouraging exploration results from EL 24/73 have come from the Dial Mine Grid where extensive hydrothermal alteration including development of biotite and tourmaline and widespread Sn-Cu-As soil geochemical anomalies are associated with sulphide rich sedimentary breccias. A total of ten diamond drill holes have tested various geochemical-magnetic targets (Geopeko DDH's 7-10) and IP-MIP-TURAM targets (Pennzoil DDH's 1-6).

It seems that some of the electrical geophysical methods used were hampered by deep oxidation of up to and over 100 metres. It seems the only hole designed to test a Turam target (DDH 5) failed to reach its objective due to bad drilling conditions.

I believe that a modern sensitive deep penetrating EM system such as UTEM might be a useful means of identifying large pyrrhotite replacement bodies which could exist in the Dial Mine area at depths beyond the "reach" of magnetics and IP systems.

There is ample evidence of alteration and geochemical anomalies, structural solution channelways and possibly favourable host rocks in this part of the Cateena Group.

It is regrettable that rough terrain, poor outcrop, complex geology, deep weathering and a piecemeal and fragmental approach to exploration have combined to confuse and frustrate the previous exploration programmes. Any future attempts on the Dial Mine Grid and environs must certainly involve a thorough reappraisal of previous results including geophysical reassessment and geological examination of materials both in core and in the field.

4. METHOD

At the request of Mr Les Davis of Amad NL a review was made of the magnetic follow up reported by Sumpton and Turley, June 1984, and recommendations given for further work.

These recommendations (outlined in a letter to Les Davis of 30/10/84) were accepted by Amad and the work was carried out as follows:

Anomaly locations were plotted by two methods:

(1) Where topographic/cadastral detail was sufficient anomalies were traced directly from the 1:25,000 Aeromagnetic Contour Plan onto Topographic Maps of the same scale.

(Tas. Lands Dept "TASMAP", 1982
1:25,000 ULVERSTONE 4244
" KINDRED 4243)

(2) Where anomalies occurred in featureless country they were plotted onto airphotos of approximately 1:20,865 scale with the aid of AMG Grid transposed onto photo (flight path) mosaic, 1:20,865 reduction of A/Mag Contour Plan and checked against the flight recovery plan.

Access to most anomalies was facilitated by gravel roads and old timber (logging) tracks. However, in most cases access away from the tracks was hampered by steep terrain and thick undergrowth which necessitated hand cutting of traverse lines in some areas.

Magnetic traverses were measured using compass for bearings and topolite for distance. In some instances magnetic traverses were topolith measured along roads and tracks.

Magnetic intensity readings were taken with a Geometrics G816 Magnetometer (Ser. No: 989) which was found to give best (repeatable within 1nT) results with the sensor elevated on a pole 2.3 metres above ground level.

In general, considerable difficulty was experienced in locating markers indicating traverse lines of the previous (May-June 1984) follow up. In several cases these were not located at all, or only detected by chance after further reconnaissance traversing had pinpointed the anomaly on the ground.

5. VENTURE 5

Venture 5 is a broad aeromagnetic anomaly located immediately south west of the Dial Mine Grid (Figure 1).

In the airborne data the anomaly is visible on at least four flight lines, is apparently unaffected by terrain clearance problems and peaks at 290nT which is about 50nT above local background magnetic intensity.

Sumpton and Turley (1984) crossed the anomaly with two magnetic traverses which showed "noisy" magnetic peaks of up to 200nT and one line of C-Horizon geochemical sampling which showed an isolated value of 1850ppm Sn nearly coincident with the magnetic peak.

In my initial review I considered that such a broad and well defined anomaly should give a more significant ground response and therefore suspected that the original reconnaissance lines had been misplaced.

Upon inspecting the area I found Sumpton & Turley's 00N/00W peg on the track as shown in Figure 1 and their 00M cut line passing just north of the anomaly centre. I could find no trace of line 200S but it would have presumably cut the exact centre of the plotted position.

A magnetic traverse of 1800m along the (generally) north-south track (Figure 2) showed only a few small magnetic anomalous "spikes" with no indication of a large, discrete, deeply buried source as suggested by the airborne data.

Short east-west magnetic cross traverses over the peaks at 150 (Road) South and 475 (Road) South (Figure 5) suggested that these related to very small, near surface magnetic sources.

A small detailed magnetic survey on 25m spaced cut lines in the vicinity of the peak centred on 125W/00N (see Figures 3 and 4) gave similar "spiky" profiles suggesting small, surficial fairly strongly magnetic sources. Revell's Creek, which runs immediately west of the anomalous zone is steeply incised and is co-incident wtih a pronounced magnetic low; just possibly as a result of removal of surficial magnetic material.

Soils over the anomalous areas are indeed magnetic. However this appears to be a nearly ubiquitous characteristic of soils in the Dial Range. (*A pencil magnet stirred through loose soil will almost invariably become covered with small magnetic particles of limonite.)

The soils at the far southern end of the road traverse (1000m Road South) appeared to contain equally abundant magnetic particles as those over the anomaly peaks.

The absence of any significant magnetic gradient leading away from the anomaly centre in the ground magnetic data leads to the conclusions that the "airborne" anomaly is caused by the averaging effect of probably numerous small, surficial but fairly strongly magnetic sources scattered about the Revell's Creek area rather than a single large source.

The economic significance of the small surficial sources is uncertain but probably not great.

There is essentially no geological outcrop in the vicinity of the anomalous magnetic peaks. Revell's Creek though steeply incised is choked with logs and ferny vegetation and in places the water runs below surface so the bed of the creek offers no genuine exposure.

Floaters in the creek on line 00N and along the line between 125 and 150 west are of medium to coarse lithic greywackes or argillaceous sandstone with coarse "sedimentary breccias" composed almost entirely of angular fragments of grey chert in a coarse sandy matrix. Many of the rocks are heavily stained with iron and manganese oxides (particularly so in Revell's Creek) but none are detectably magnetic. A few specimens contain irregular quartz veinlets with weakly iron stained vughy zones suggesting former sulphide (minor) and small clots of brownish biotite/chlorite in pale silicified/sericitized fine granular base suggesting that some of the more argillaceous sediments have suffered slight hydrothermal alteration.

Elsewhere in the vicinity coarse greywacke/sandstone and lithic sedimentary breccias are predominant in float and occasionally occur in outcrop along the track. Outcrops on the track north east of Venture 5 are mainly pinkish weathered mudstone and fine greywacke. In short, the principal rock types of the Dial Mine Grid continue southward over Venture 5.

The significance of the 1850ppm Sn reported by Sumpton & Turley 1984, from 00N/150W is uncertain. This value is somewhat higher than the peaks of soil tin anomalies on the Dial Mine Grid but the associated samples in the range 100-200ppm Sn are widespread on the Dial Grid.

Although it might be argued that the tin in soil at 150W/00N is derived from alluvial contamination from Revell's Creek, the distinctly anomalous arsenic and copper values reported by the previous workers are remote from the creek and are consistent with geochemical anomalies reported from the Dial Mine DDH10 area by P Wilson, 1982.

Indeed, Cu, As, Sn values reported for Venture 5 constitute geochemical anomalies at least as strong as the best (DDH10 area) of the Dial Mine Grid.

On the basis of strong geochemical anomalies and general similarity of rock types it is apparent that the Dial Mine area style of mineralization extends southwards over Venture 5.

Although the small magnetic peaks identified do not fit the large pyrrhotite-tin "target" mineralization the Venture 5 area may warrant further investigations in conjunction with work on the encouraging but elusive traces of mineralization on the Dial Mine Grid.

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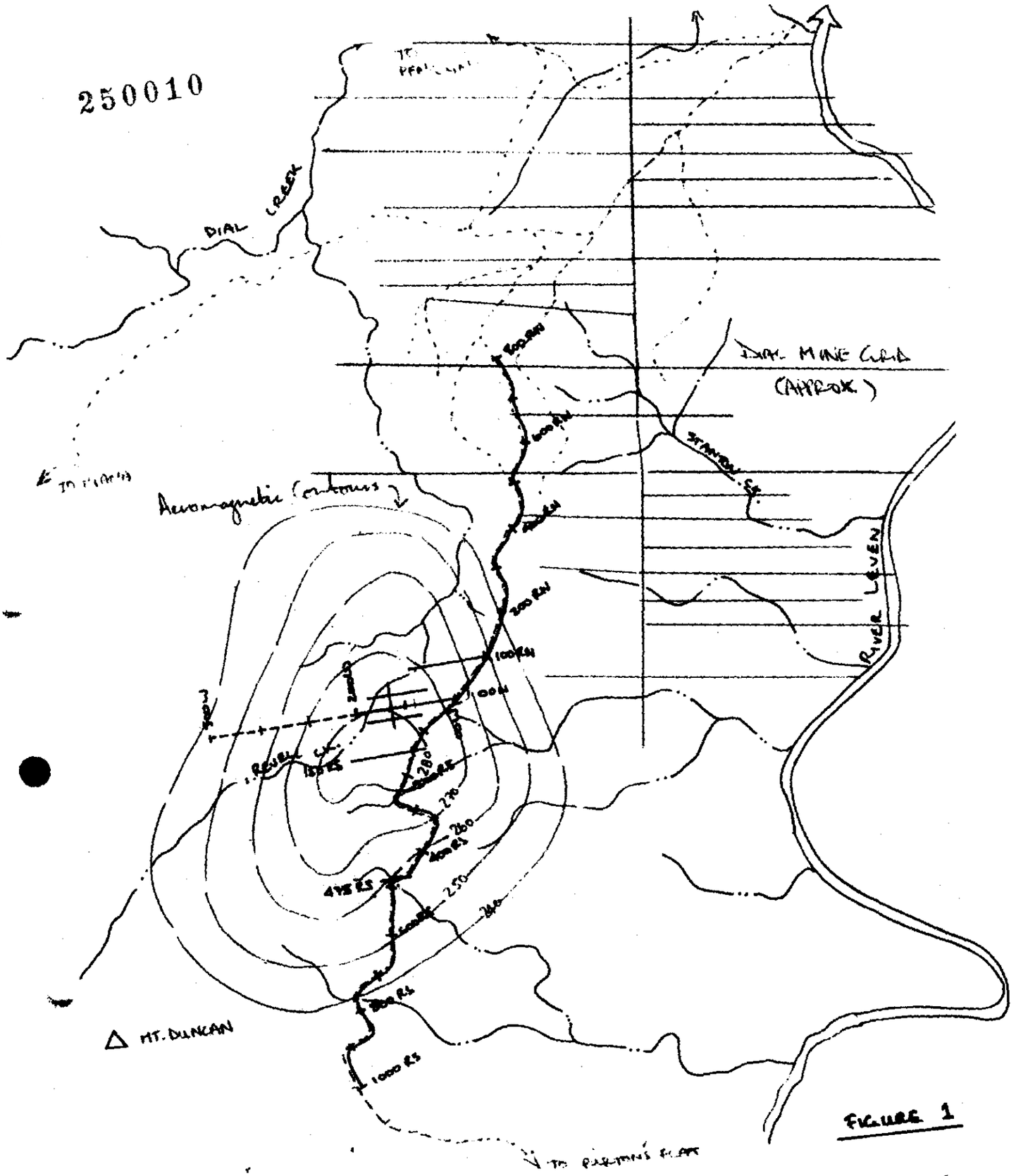

FIGURE 1

DIAL RANGE EL 24/73

VENTURE 5 AREA

SKETCH PLAN SHOWING MAGNETIC RECONNAISSANCE TRAVERSES.

SCALE 1:10000 APPROX.

OCT. 1984

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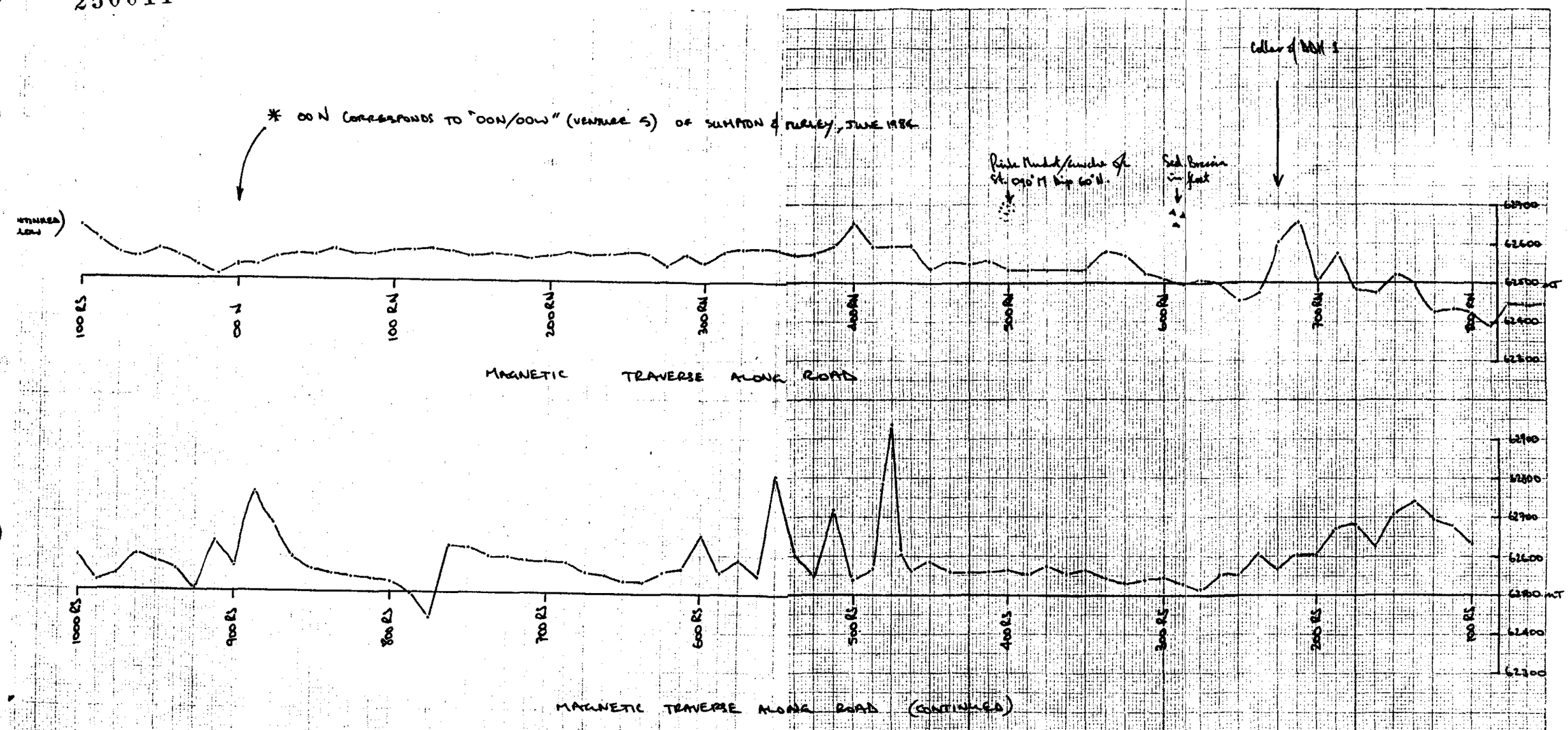

FIGURE 2

DIAL RANGE E.L. 24/73

VENTURE 5

MAGNETIC RECONNAISSANCE PROFILE OF ROAD TRAVERSE.

INSTRUMENT: GEOMETRICS G816
Sensor Elevation: 2.3 metres.

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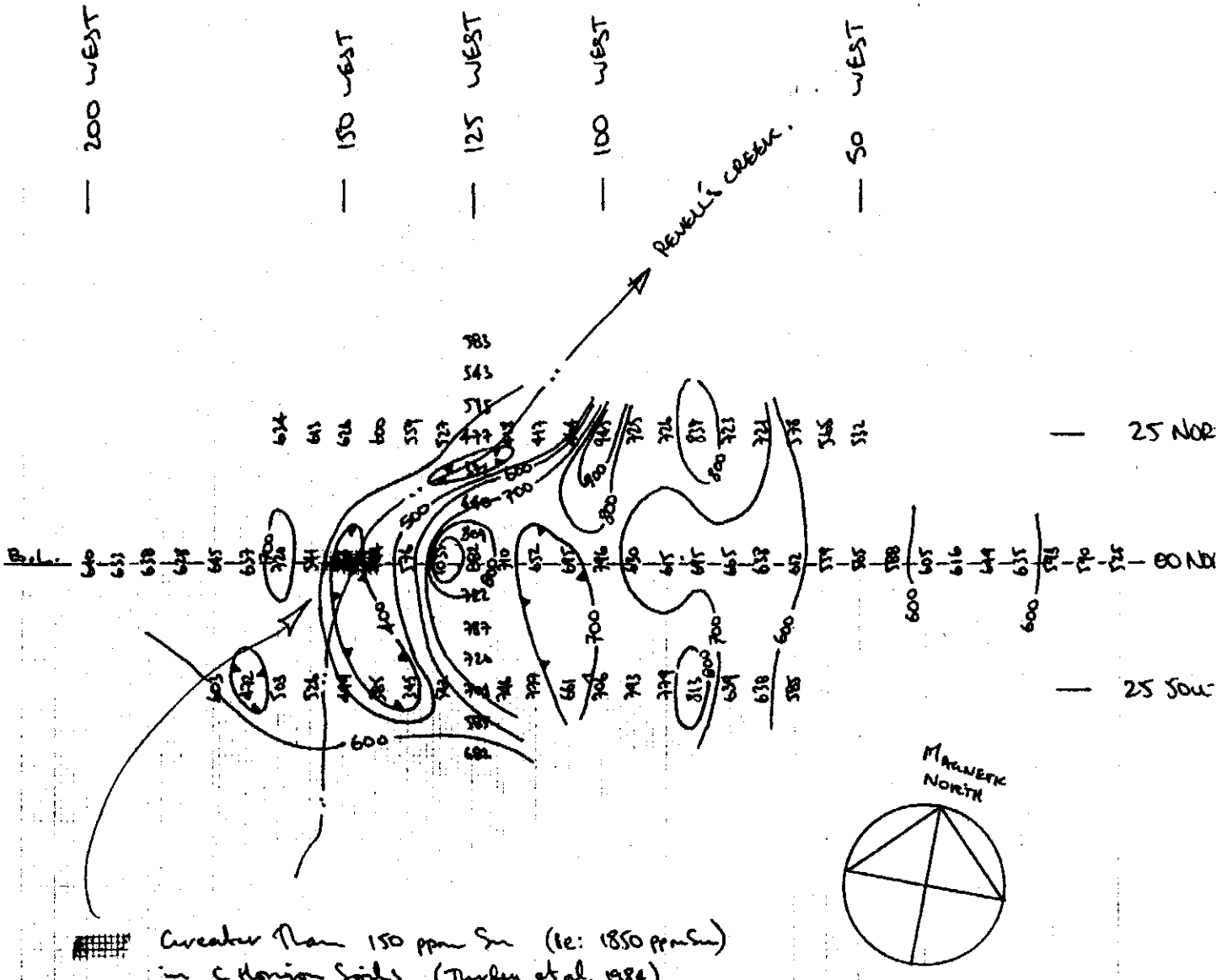

Cuvcator Plan 150 ppm Sn (ie: 1850 ppm Sn) in Channajon Soils (Turley et al. 1984)

FIGURE 3

DIAL RANGE EL 24/73

VENTURE 5.

MAGNETIC RECONNAISSANCE CONTOURS.

* SCALE 1:1250

Instrument: Geometrics G816
Sensor Elev: 2.3 metres.

Magnetic Datum for Contours: 62000 nT.
Contour Interval : 100 nT.

L. Jenman OCT. 1984.

5 cm

GAF AG

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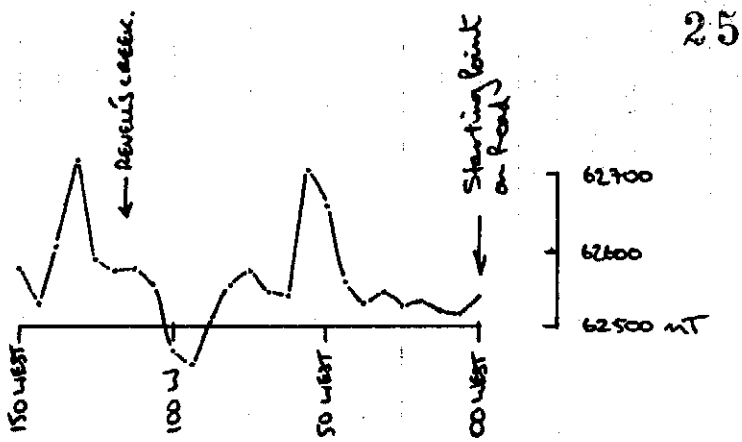
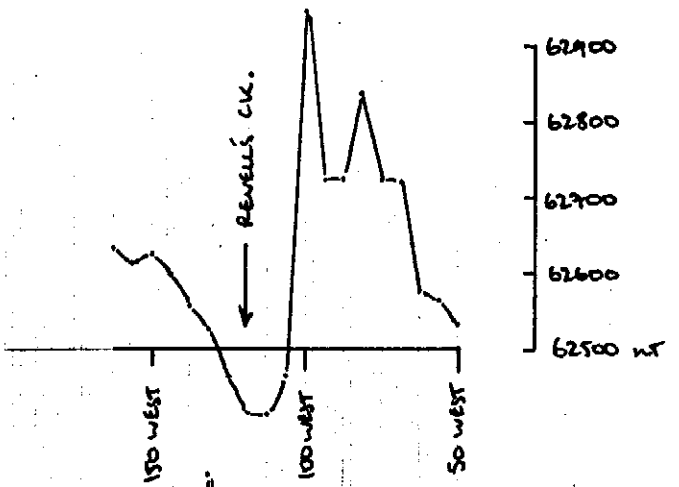
250013

TRAVERSE 100 RN

* 00W IS 100 M. NORTHEAST WARD ALONG ROAD FROM "00N/00W".



TRAVERSE 25 NORTH.



TRAVERSE 00 NORTH.

* Line cut + pegged by Turley et al. 5/84 Azimuth 255°M.

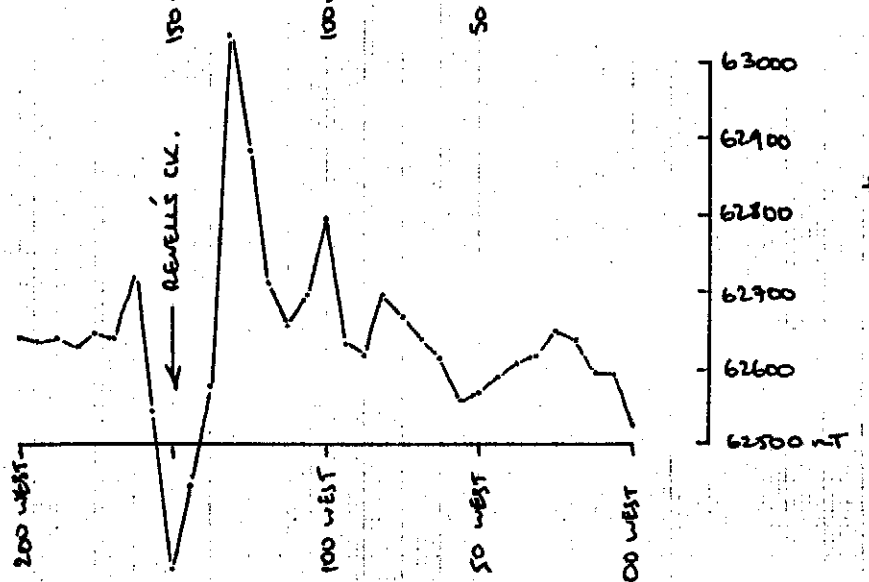
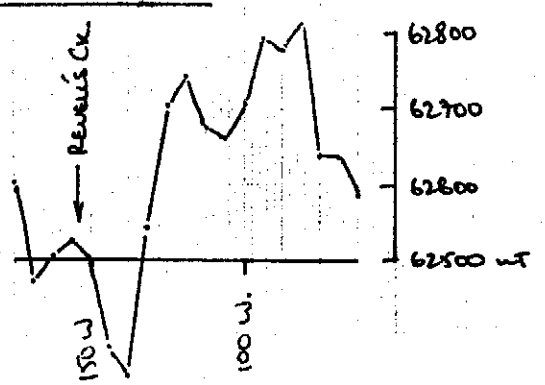


FIGURE 4

TRAVERSE 25 SOUTH



DIAL RANGE EL. 24/73

VENTURE 5.

MAGNETIC RECONNAISSANCE PROFILES.

W. Hemmera . OCT. 1984

Geometrics, G816; Sensor Elev. 2.3 m

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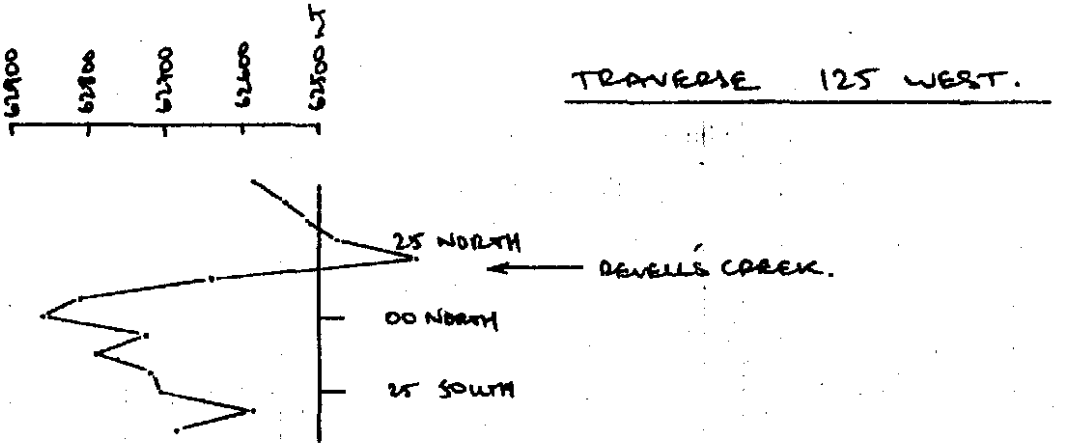
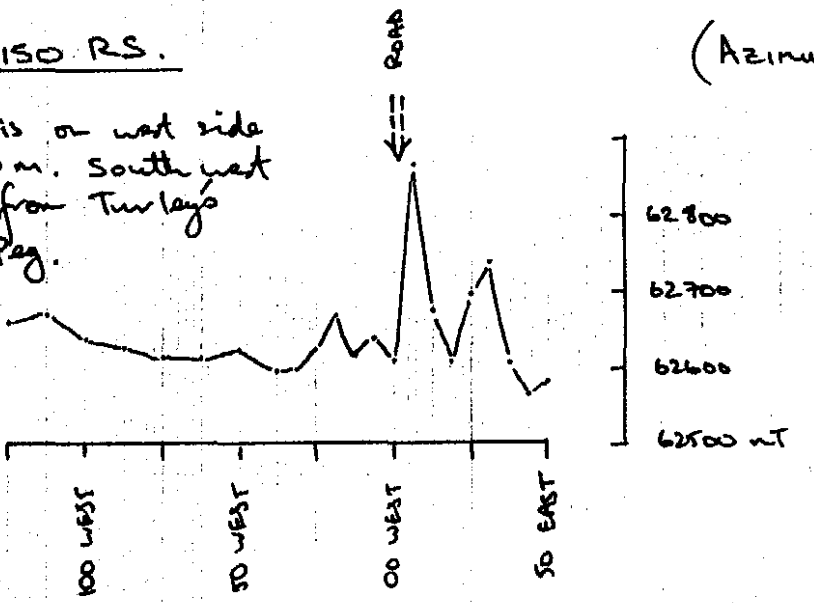


TRAVERSE 125 WEST.

TRAVERSE 150 RS.

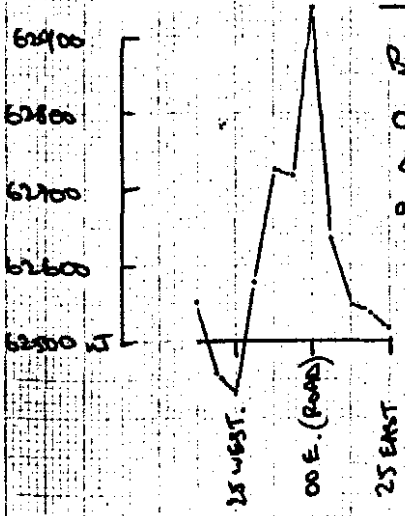
(AZIMUTH : 255° Mag.)

* 150 RS/00W is on west side of Road 150 m. South west along road from Turkeys 00N/00W Peg.



TRAVERSE 475 RS

Bearing 255°M
00E is on Road
475 m. South (generally) along Road from Turkeys 00/00 Peg.



Instrument : Geometrics G 816
Sensor Elevation : 2.3 metres

FIGURE 5

DIAL RANGE EL. 24/73

VENTURE 5.

MAGNETIC RECONNAISSANCE PROFILES.

OCT. 1984.

CAE A4 1mm

6. VENTURE 10

Sumpton and Turley, 1984, concluded that this elongate E-W anomaly related to varying terrain clearances of the survey aircraft on alternate east and west flight lines over magnetic terrain implied to be basalt. (Though their explanatory diagram shows reversed flight direction to the actual survey). However, their logging of C-Horizon auger chips did not indicate any presence of basalt or other magnetic material.

In this reconnaissance, a small grid with lines at 25m spacings was cut over the area of the magnetic peak at 00N/50W. Figure 7 shows the results of magnetic survey over this grid in contour plan form at 1:1250 scale. A narrow elliptical/crescent shaped anomaly peaking at up to 800nT above background, occupies an area of about 100 x 25m centred on 12.5 south/37.5 west and is elongated in an east-west direction.

There is no outcrop over the area of the anomaly. The soil is dark red and distinctly magnetic or more precisely contains abundant (perhaps 5% by volume) small particles of strongly magnetic maghematite or limonite. Occasional siliceous/silicified lithic grit fragments within the soil, though not apparently very ferruginous contain minor blebs of limonite and are distinctly magnetic though not consistently so. Other rocks occurring as float in the area are pinkish weathered cherty mudstones and lithic greywackes no doubt representing the weathered equivalents of rocks described from the mullock dump at Russell's Adit (see below).

It seems quite probable that the source of the strong ground magnetic anomaly (of Figure 7) is superficial and is caused by the observed ferruginous/magnetic soil.

However, this type of soil development is very common in the Dial Range, is almost ubiquitous in the Venture 10 area and has been observed at localities as widely separated as Venture 5 and Venture 17.

There is no indication of topographic or geological control which might have led to a local concentration of magnetic particles in soil near 12.5 south/37.5 west and so, whilst a magnetic source material has been identified its very ubiquity makes the cause of rich discrete ground anomalies all the more conjectural.

It is most likely that there are several of these small, strong anomalies (eg: 250 West/100 South and 250 West/200 South, V10; Sumpton & Turley, 1984) scattered about the V10 vicinity and which, from the terrain clearance and spacing of the airborne survey, give the impression of a single large aeromagnetic anomaly.

The very small size of the defined ground magnetic anomaly and the lack of C-Horizon geochemical encouragement tend to downgrade the Venture 10 area as an exploration target, although it would be of some (academic?) interest to model and test one or two of these miniature magnetic sources.

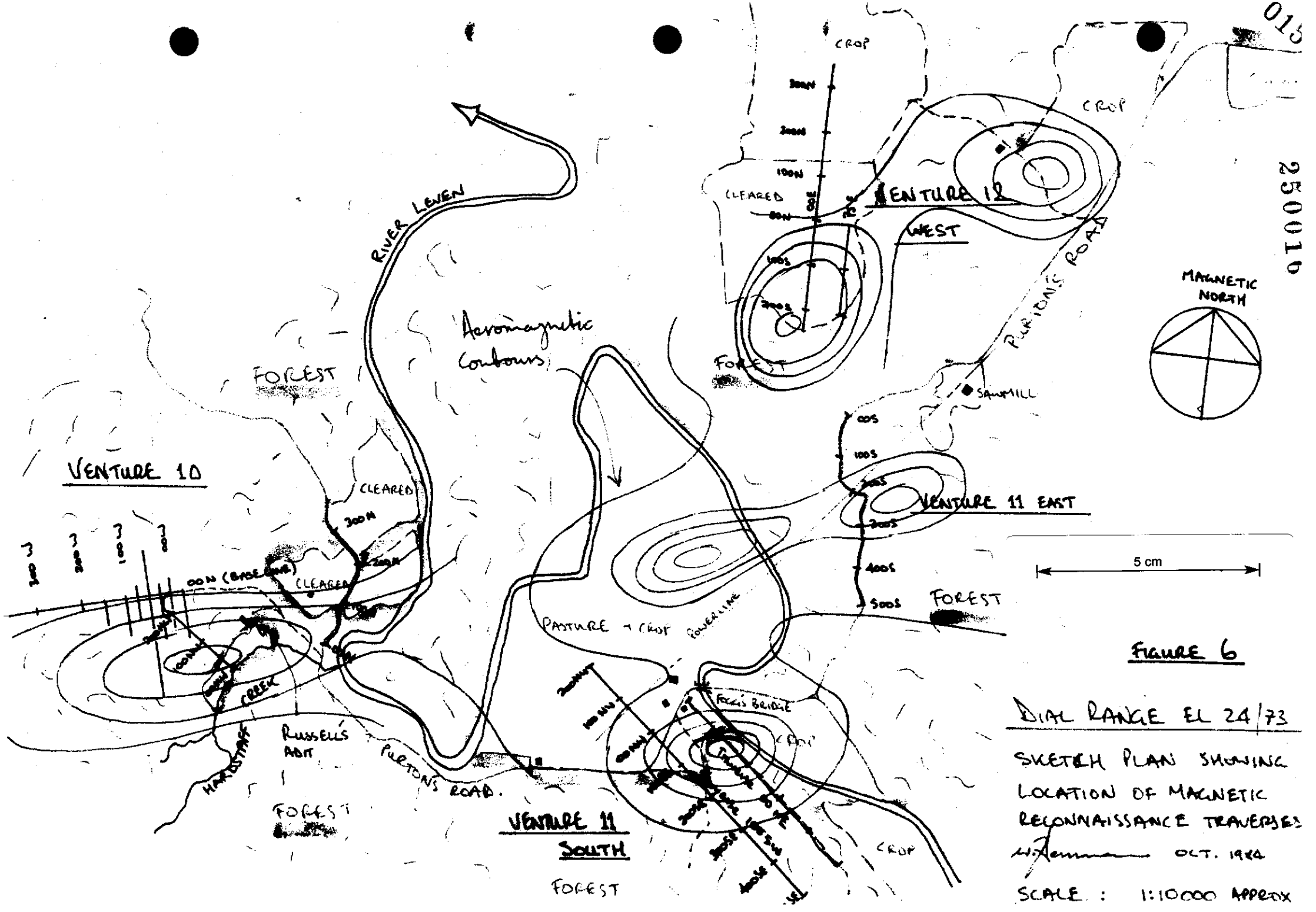


FIGURE 6

DIAL RANGE EL 24/73

SKETCH PLAN SHOWING LOCATION OF MAGNETIC RECONNAISSANCE TRAVERSES

W. Lemmon OCT. 1984

SCALE : 1:10000 APPROX

250019

100 NORTH
50 NORTH
00 NORTH
50 SOUTH
100 SOUTH
150 SOUTH
200 SOUTH

25 EAST
00 EAST
25 WEST
50 WEST
75 WEST
100 WEST
150 WEST

* MAGNETIC DATUM : 62000 nT
CONTOUR INTERVAL : 100 nT
(ie 500 nT CONTOUR = 62500 nT)

* BASELINE AZIMUTH : 075° MAGNETIC

DIAS RANGE EL. 29/73

VENTURE 10

MAGNETIC RECONNAISSANCE CONTOURS

SCALE : 1:1250

INSTRUMENT : GEOMETRICS G816
SENSOR ELEVATION = 2.3 m.

FIGURE 7

OCT. 1973

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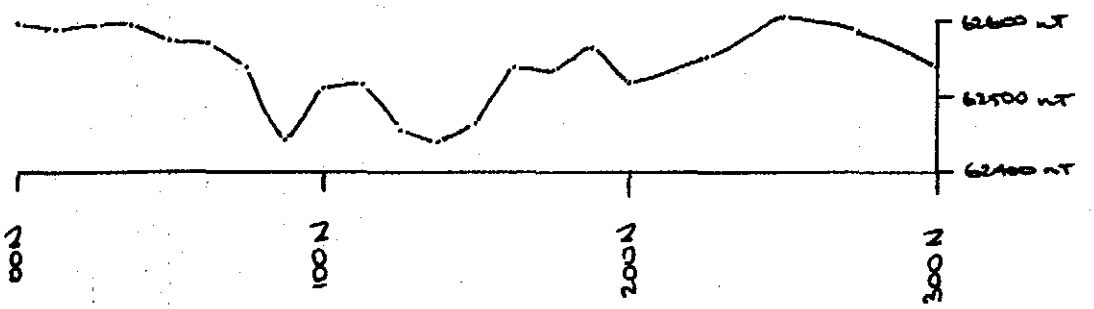


MAGNETIC TRAVERSE ALONG PURTONS ROAD, ORIGIN APPROX. 100M. NORTH OF HARDSTAFF CK. GENERALLY NORTHWARDS.

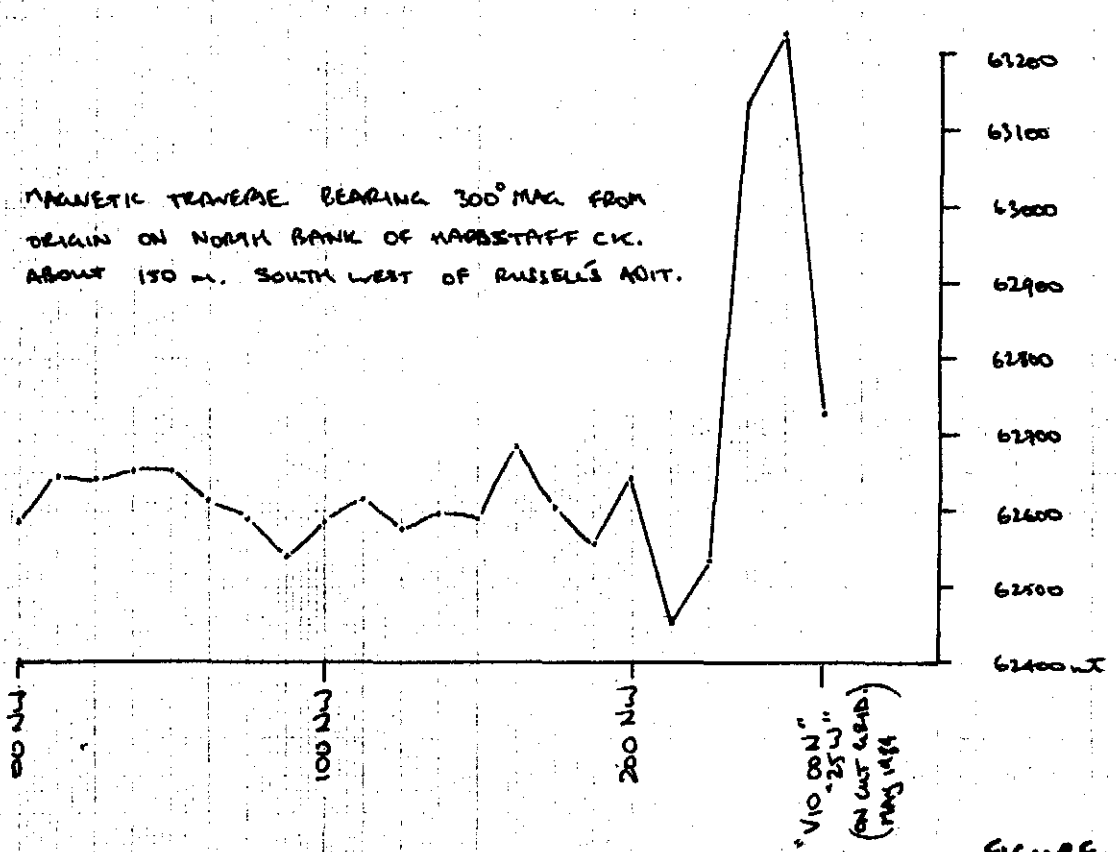


FIGURE B

INSTRUMENT:
Geometrics G816
Sensor Elevation 2.3 m.

DIAL RANGE EL 24/73

VENTURE 10.

MAGNETIC RECONNAISSANCE PROFILES.

OCT. 1984.

GAF A4 1/80

Russell's Adit

Russell's Adit is situated at the northern end of a small alluvial flat on the north bank of Hardstaff Creek and approximately 250 metres west-north-west of the junction of Hardstaff Creek with the Leven River.

The adit penetrates the ridge to the north at a level of about 2 metres above the alluvial flat and at an azimuth of 310° Magnetic Exposure at the entrance of the adit and on the short track down to it, is of pinkish/buff/olive fine grained laminated sedimentary rock resembling cherty mudstone. Principal cleavage which parallels layering, at the entrance strikes 340°M and dips at about 80° to the east.

Spoils on the adjacent dump consist mainly of medium to very fine grained dark bluish-grey lithic greywakes and cherty siltstones. These are generally well sorted and show distinct grain size stratification though individual beds tend to be massive. Lithic grains are dominant grey to block chert and cherty shale with lesser greyish andesitic-acid (?) fine grained volcanic rock, and fragments of quartz and feldspar grains. The rocks are clearly epiclastic.

"Sedimentary breccias" crowded with lithic fragments up to about 1cm in diameter, are less abundant. The matrix of the rocks, especially the coarser sandy types is quite calcareous. Minor (<0.2%) pyrite occurs as small blebs and specks in the matrix and occasionally disseminated within cherty fragments.

The only signs of mineralization are rare, small (1-20mm) white calcite/brown siderite veins (sometimes zoned with quartz median veins containing minute traces of pyrite, possibly chalcopyrite. Hand specimens of the rocks and vein material are not detectably magnetic.

It is likely that the pinkish-buff "cherty mudstone" seen at surface near the adit and also in the vicinity of the magnetic anomaly 200m to the west) represent the weathered equivalents of the finer grained cherty siltstones seen on the dump at Russell's Adit.

Sub outcrop, boulders and floaters some 100m to the east of Russell's (near hut) are much coarser lithic grits and sedimentary breccias with clasts up to 3cm in diameter. They show local grain size stratification, generally pale grey siliceous appearance in outcrop with local heavy iron staining resembling the iron rich breccias of the Dial Mine Grid. They appear to occupy a north trending band approximately 100m in thickness.

Although the sediments described are somewhat calcareous they generally contained rather too much siliceous and argillaceous clastic material to constitute very favourable host rocks for massive pyrrhotite-tin replacement mineralization.

However, purer carbonate beds may possibly occur within the sequence.

7. VENTURE 11

Sumpton and Turley investigated the north western of three small aeromag anomalies, collectively designated Venture 11, and reported a broad 300nT anomaly over an area of river alluvium with no outcrop to suggest the precise source.

Figures 6 and 10, 11 show the locations and magnetic profiles respectively of magnetic traverses run across the southern and eastern individuals of the Venture 11 trio.

Traverse 00SW over the southern anomaly shows a broad double peak of about 400nT above background which corresponds in the field to scattered outcrops of porphyritic Microgranodiorite-Monzodiorite, traditionally lumped in with the "Lobster Creek Volcanics".

The rock consists of small (2-3mm) zoned phenocrysts of plagioclase and wispy, partly chloritized prisms of hornblende contained a fine (<0.5mm) hypidiomorphic granular aggregate of pinkish potash feldspar and lesser quartz with small interstitial granules of magnetite as accessory. The more weathered outcrops are of a brick red-pinkish colour due to staining of feldspars by oxidation of magnetite. Hand specimens are distinctly magnetic. The rock weathers to a reddish brown clayey soil which is dominant over the anomalous area except at the southern end of the traverses where prevalence of cherty scree and gravelly siliceous soil suggest subsurface presence of the sedimentary "Barrington Chert" formation.

A 500 metre magnetic traverse along Pimton's Road southward across the Venture 11 East anomaly (Figure 11) shows a very broad, slightly undulatory magnetic feature of up to about 400nT above background, also corresponding to outcrop of porphyritic micro-granodiorite and its derivative reddish brown clayey soil. The rock is identical in texture and mineralogy to that at V11 South but contains perhaps slightly less quartz and borders on quartz bearing monzo-diorite.

It is confidently concluded that the V11 South and V11 East anomalies (and by association perhaps also V11 North West) may be attributed to the presence of magnetite bearing intrusive rocks of granodiorite to potassic quartz diorite composition. Judging by fairly extensive red brown soil in the area and previous geological maps this rock type may be locally extensive, perhaps as a small, co-eval, high level pluton.

The variation in magnetic intensity may be due to primary variations in magnetite content combined with variation in depth of weathering which latter appears to be generally significant.

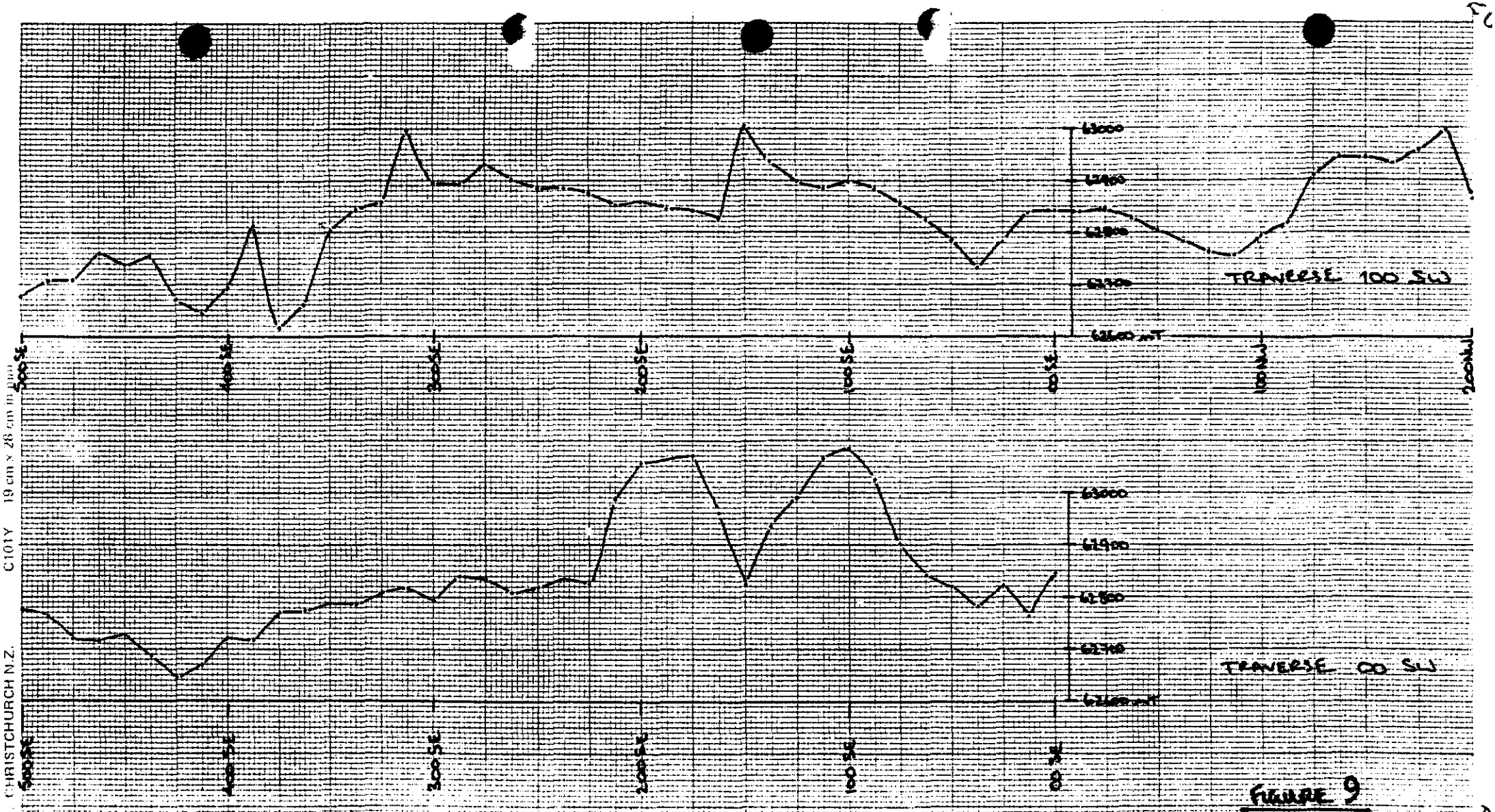


FIGURE 9

DIAL RANGE E.L. 24/73

VENTURE 11 (SOUTH) MAGNETIC RECONNAISSANCE PROFILES.

Instrument: GEOMETRICS G811

* Sensor in Backpack (≈ 1.5 m. above ground)

OCT. 1984.

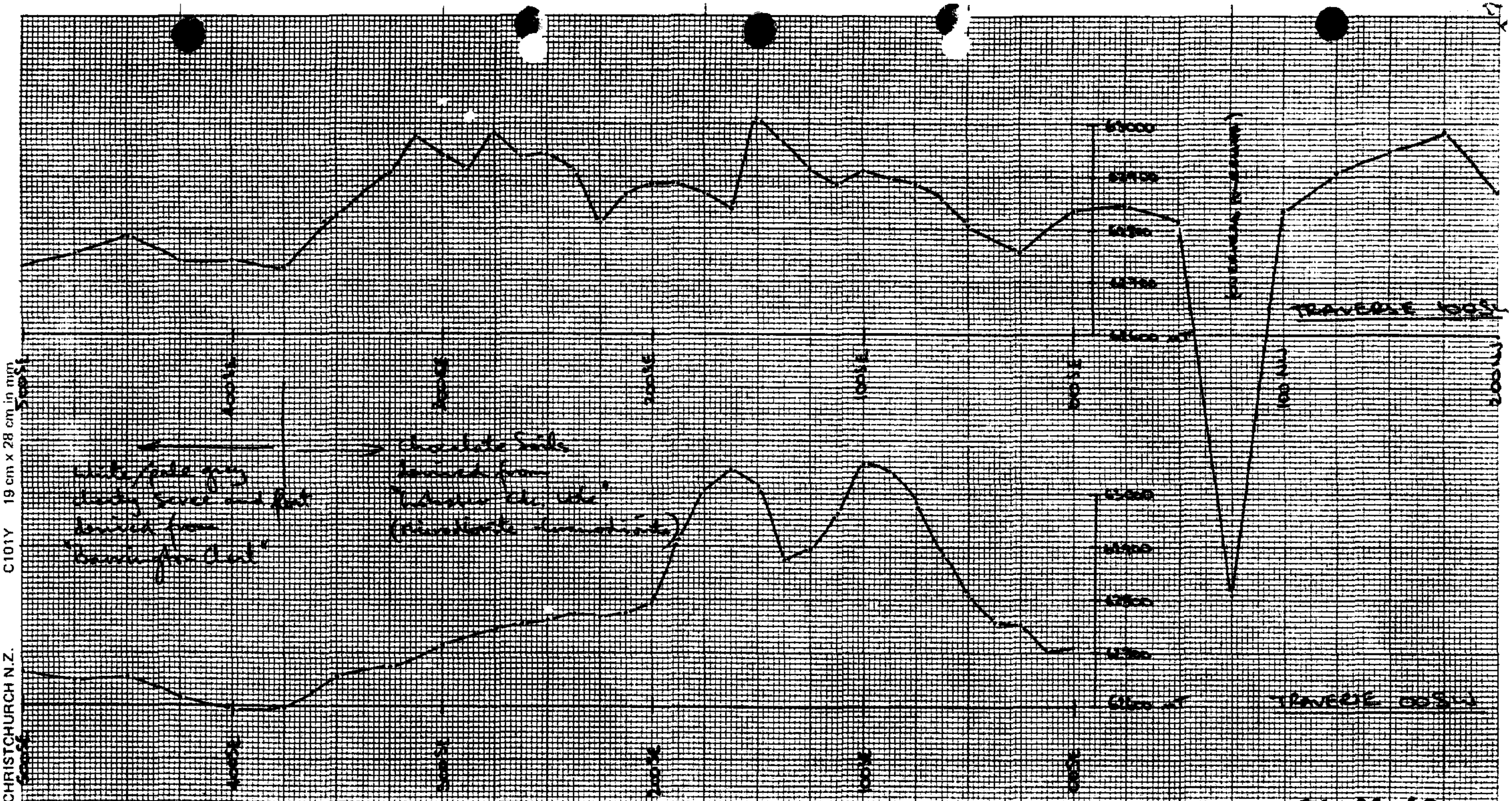


FIGURE 10

INSTRUMENT: GEOMETRICS G816

* SENSOR ELEVATED 2.3m ABOVE GROUND

DIAL RANGE EL. 24/73

VENTURE 11 SOUTH

MAGNETIC RECONNAISSANCE PROFILES.

. OCT. 1984.

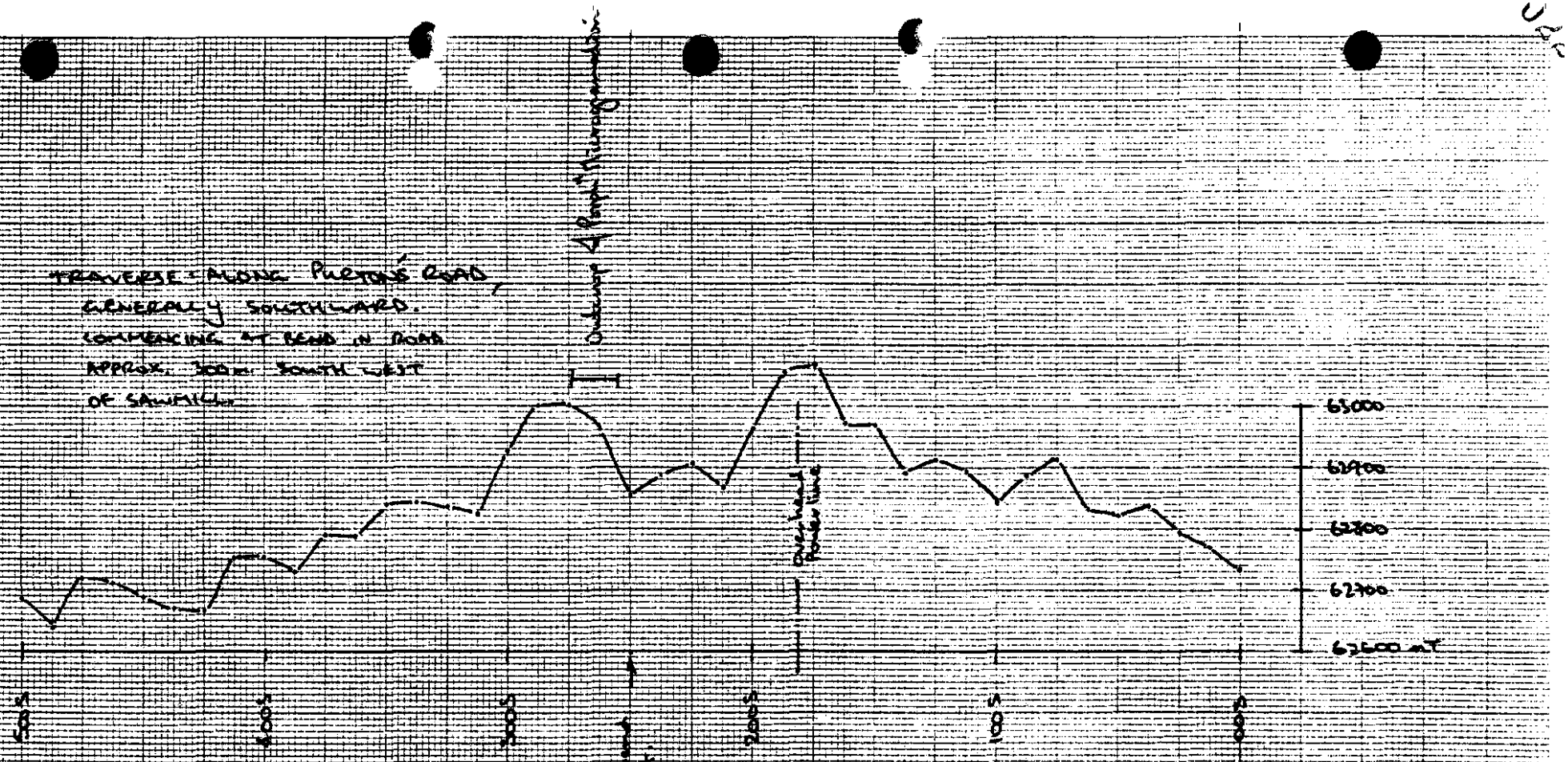


FIGURE 11

INSTRUMENT: GEOMETRICS G816
* Sensor Elevation 2.3m.

DAL RANGE EL. 24/73

VENTURE 11 EAST

MAGNETIC RECONNAISSANCE PROFILE

W. Jenman. OCT. 1984.

8. VENTURE 12 WEST

Landowner: Mr A C Bonde, Mannings Jetty Road

This aeromagnetic anomaly is situated about 500m NW of Venture 11 East and forms one of a cluster of anomalies associated with a small (approx. 2km diameter) apparently pluton like body of (so called) "Lobster Creek Volcanics". (See also: Venture 11 East and Venture 11 South).

Two magnetic traverses, totalling 800m, were made north-south over the plotted anomaly position on crop and rough pasture land surrounded on three sides by thick forest.

The magnetic profiles (Figure 12) show very noisy, spiky character amplitudes commonly up to 1000nT and peaking at 2000nT above background.

This pattern is characteristic of the superficial Tertiary Basalt cover and indeed much evidence of basalt in float and outcrop occurs on both traverses south of 100 NORTH.

North of 100 NORTH the soil is of a lighter red brown colour (there is no outcrop here where the land is under crop) containing sparse floaters of weathered and locally re-silicified, red brown stained massive rocks having a relict porphyritic fabric and accessory hematitic granules after magnetite. There is no doubt that these represent weathered equivalents of the porphyritic microdiorite - microgranodiorite described from Ventures 11 East and South. Even these weathered rocks retain their distinctly magnetic character.

The anomaly may confidently be attributed to an outlier of Tertiary Basalt occurring at the southern end of a ridge of less strongly magnetized porphyritic "microdiorite".

There is no potential for pyrrhotite-tin replacement mineralization.

64600
64400
64200
64000
63800
63600
63400
63200
63000
62900
62800
62700
62600
62500
62400
62300
62200
62100
62000 nT.

TRAVERSE 00 EAST

(AZIMUTH: MAGNETIC NORTH.)

250S 200S 150S 100S 50S 0 50N 100N 150N 200N 250N 300N 350N

Dark Soil, Basalt float and Outcrop.

Lighter Red-brown soil with sparse floaters of sediamented porphyritic Microdiorite

63000
62900
62800
62700
62600 nT.

TRAVERSE 75 EAST.

FIGURE 12

DIAL RANGE E.L. 24/73

VENTURE 12 WEST.

MAGNETIC RECONNAISSANCE PROFILES.

[signature] OCT. 1984.

INSTRUMENT: Geometrics G8K Sensor Elev: 2.3 m

2500 25

9. VENTURE 15

Landholder: Mrs Loone, Maney's Road, North Motton.

The Venture 15 aeromagnetic anomaly was attributed by Sumpton and Turley, 1984, to the outcropping presence of Cambrian ? mafic lavas known as the "Motton Spilite".

A cursory inspection during this reconnaissance indicated that the "Spilite" outcropping at V15 was not detectably magnetic in hand specimen.

Accordingly, a series of short magnetic traverses in crude grid fashion were read over the accessable pasture and crop land and the fringes of the adjoining bush (Figure 13).

The magnetic profiles (Figures 14, 15) show somewhat spiky character of several hundred nano-Tesla amplitude over the area of Motton Spilite with evidently much "flatter" character over the adjacent (west and north) "Barrington Chert".

The most distinct "peak" occurs at 50 west on line 00N and is directly along strike from a small pod of hematitic jasper at the fringe of the bush about 30m south of the traverse. Another jasper pod of similar scale (only several metres in length and breadth) occurs approximately 150 metres to the south south east.

The jasper varies from pale pink to dark steely grey in colour and contains from 2 to 40% of bluish grey "metallic" hematite. Hematite occurs as disseminated blebs and irregular veins and higher concentrations almost forms a meshwork matrix enclosing blebs of quartz and silica. Veins of pale bluish green serpentinite ? (talc or actinolite?) are rarely present as fine slickensided veinlets. The rocks are inconsistently but sometimes strongly magnetic.

The jasper has a curious mottled-blebby structure (quite unlike the nearby finely banded grey cherts of the Barrington Chert formation) suggesting silicifcation-alteration of a pre-existing clastic or granular igneous rock.

The "Spilite" outcrops in various places mainly on the eastern side of the anomaly. It is typically a fine grained, massive, greenish grey metabasalt with rare specks of pyrite associated with fine (prehnite?) veinlets. It does not appear to contain any magnetite and all specimens examined were not detectably magnetic.

Although insufficient magnetic traversing has been done to precisely define the magnetic pattern it is most likely that the Venture 15 aeromagnetic anomaly is attributable to the combined effect of several occurrences of hematite bearing magnetic jasper which appear to occur at or close to the contact between the (sedimentary) "Barrington Chert" and the overyling metabasaltic "Motton Spilite".

Whether the jasper is formational, syndepositional or metamorphic reaction product of chert and basalt contact or some later phase of alteration, remains conjectural.

Several samples of jasper will be submitted for geochemical analysis.

027

250028

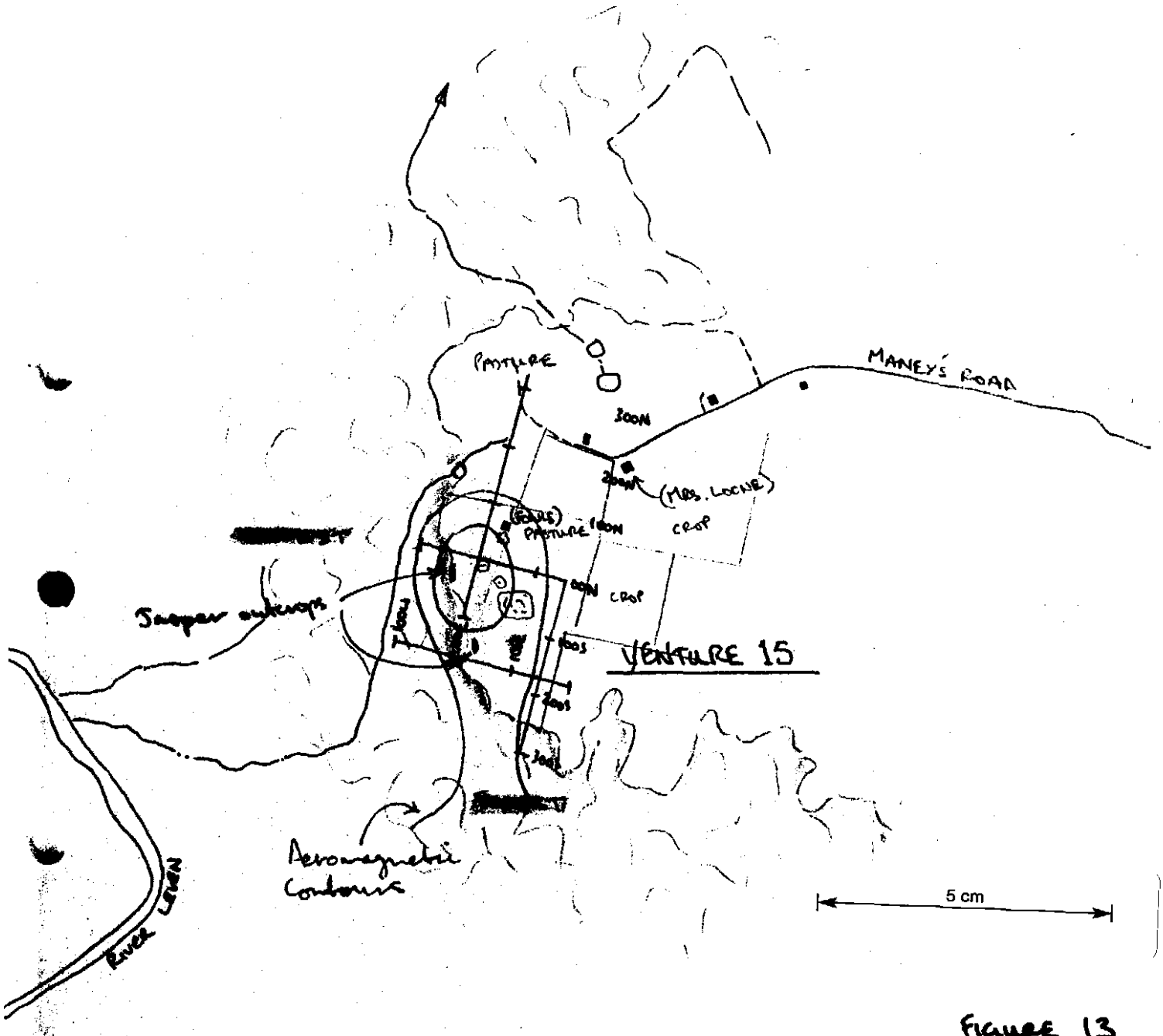


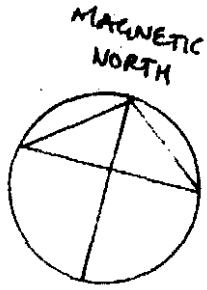
FIGURE 13

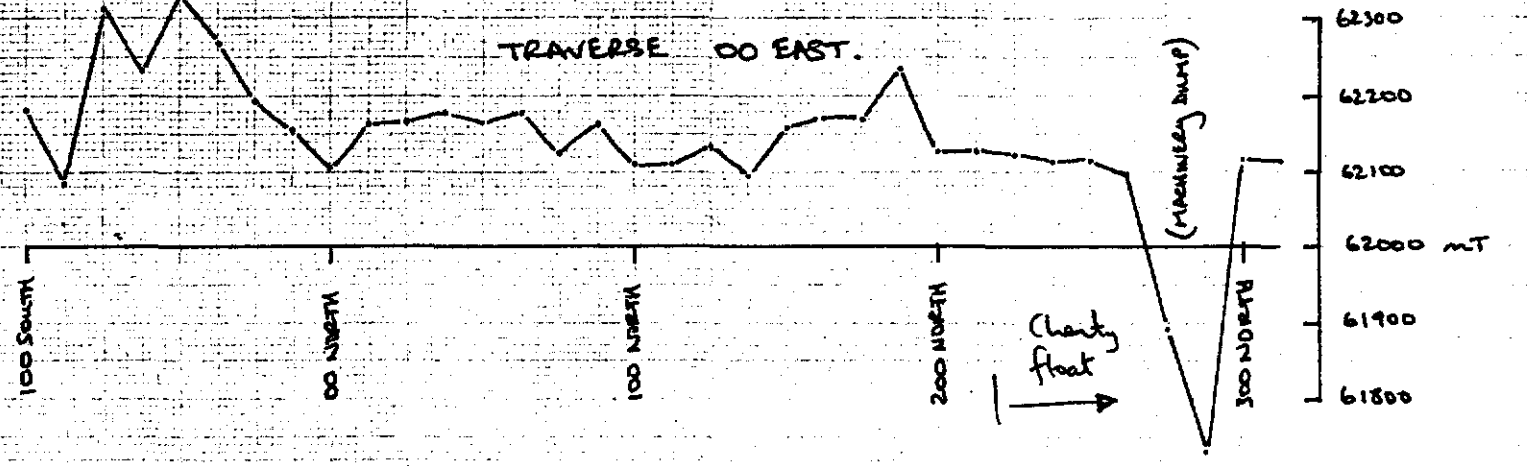
DIAL RANGE EL 24/73

SKETCH PLAN OF VENTURE 15 AREA SHOWING MAGNETIC RECONNAISSANCE TRAVERSES.

OCT. 1984

SCALE : 1:10000 APPROX





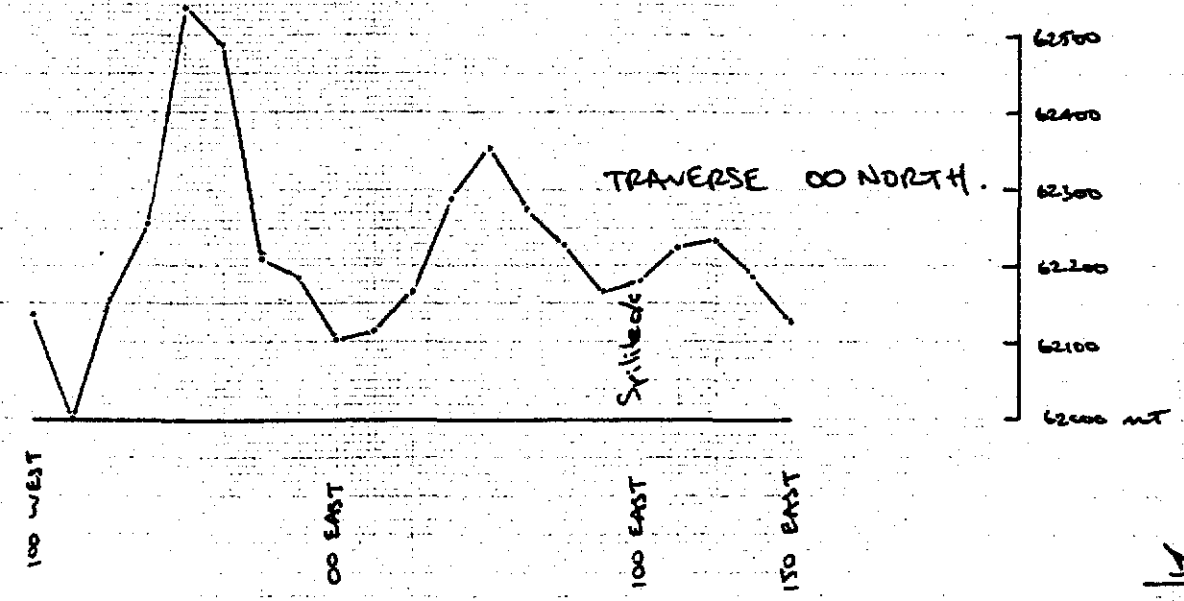


FIGURE 14

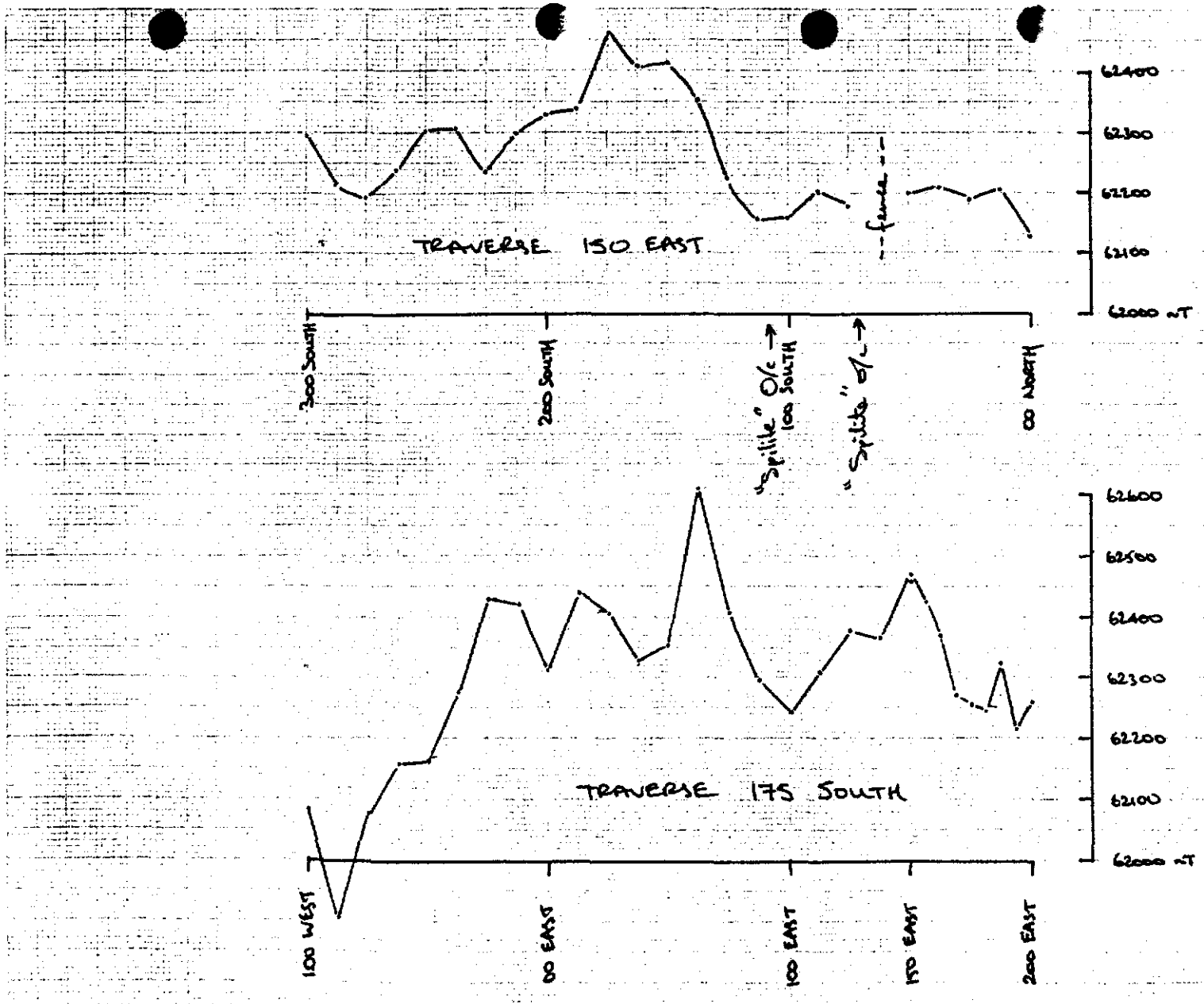
DIAL RANGE EL. 24/73.

VENTURE 15

MAGNETIC RECONNAISSANCE PROFILES : TRAVERSES 00 EAST, 00 NORTH.

OCT. 1984.

INSTRUMENT : GEOMETRICS G816
Sensor Elevation : 2·3 m.



INSTRUMENT: GEOMETRICS G816, Sensor Elevation: 2.3 m.

FIGURE 15

DIAL RANGE EL. 24/73.

VENTURE 15

MAGNETIC RECONNAISSANCE PROFILES TRAVERSES 150 EAST, 175 SOUTH.

OCT. 1984.

10. VENTURE 16

Venture 16 is a relatively broad, circular aeromagneitc anomaly (of about 40nT above local background) located in forest south of the Leven River about 2km north of Bannon's Bridge.

The anomaly appears to lie close to the contact between the "Motton Spilite" and the disconformably ? overlying "Radford's Creek Mudstone" formations. Several other smaller and somewhat weaker anomalies occur to the north and south at approximately the same stratigraphic level.

The area is accessable via an old logging road which follows the river down from Bannon's Bridge. Due to shortness of time, thick vegetation off the track and heavy rain on the day of inspection only one magnetic traverse was read across the anomaly (see Figure 16).

The magnetic profile (read eastward along the logging road) (Figure 17) shows a somewhat flat topped peak of about 500nT above background at about 400m east of the starting point. This coincides closely with the plotted position of the aeromagnetic anomaly centre.

At the track junction at 00EAST, there are several riverbank outcrops of "spilite". These are somewhat variable from massive brownish green metabasalt tending to onion weathering to some cleaved fragmental basaltic tuffs (or epiclastic volcanic?) containing abundant small angular to rounded cherty fragments.

A similar basic tuffaceous/epiclastic rock was observed on the track about 400m east of Bannon's Bridge. In the latter case the basaltic fragmental rock contained large rounded (up to 5cm) clasts of limestone as well as small fragments of grey chert and basic lava. This suggests that the upper contact of the "Motton Spilite" is somewhat transitional with sedimentary/epiclastic material including cherts and carbonates mixing with basic volcanic detritus in a probably fairly shallow subaqueous depositional environment.

None of the "spilitic" rocks were observed to be detectably magnetic in hand specimens.

Outcrop eastward along the magnetic traverse (on road) is almost non-existent. There are occasional earthy-clayey remnants of onion weathering representing completely weathered spilite. The soil is uniformly of clayey texture and brick red-ochre colour containing occasional floaters of weathered or purplish stained metabasalt and flinty fragments no doubt equivalent to those cherty fragments in the basaltic tuffs. Near the western end of the traverse occasional veins and floaters of silicified metabasalt occur in the road cutting.

The vicinity of the magnetic peak is quite unremarkable except for the presence of rare (2) angular floaters of hematitic jasper. One specimen is weakly magnetic, the other not detectably so.

Although it cannot be substantiated for lack of exposure, this coincidence suggests that the magnetic peak may be due to a Venture 15 type magnetic jasper pod within the metabasalt sequence.

Whilst the magnetic peak does have some interesting characteristics the geological setting does not obviously favour massive pyrrhotite-tin replacement mineralization.

Further work would necessitate the cutting of grid lines.

032

250033

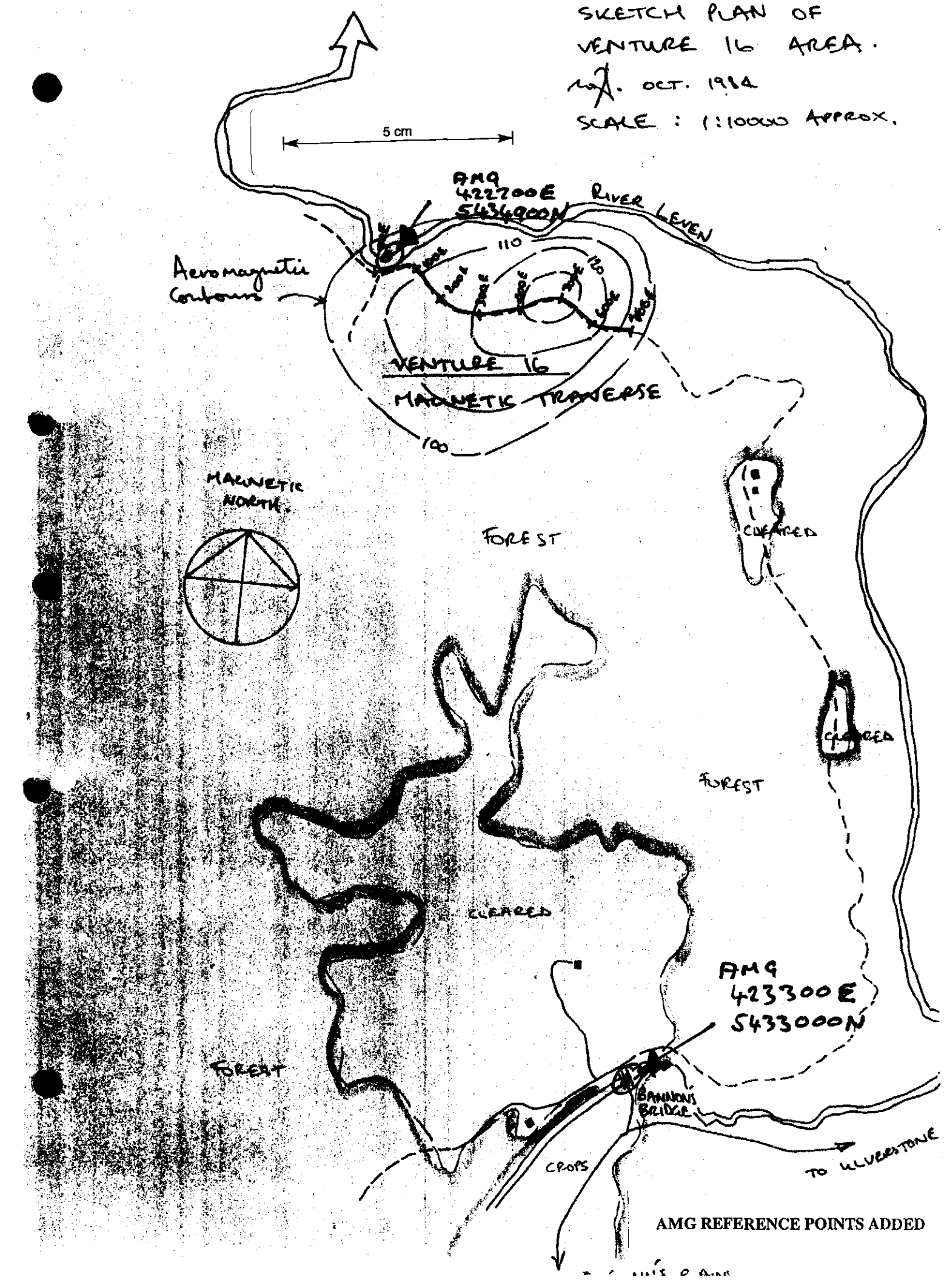
FIGURE 16

DIALRANGE EL 24/73

SKETCH PLAN OF VENTURE 16 AREA.

MA. OCT. 1982

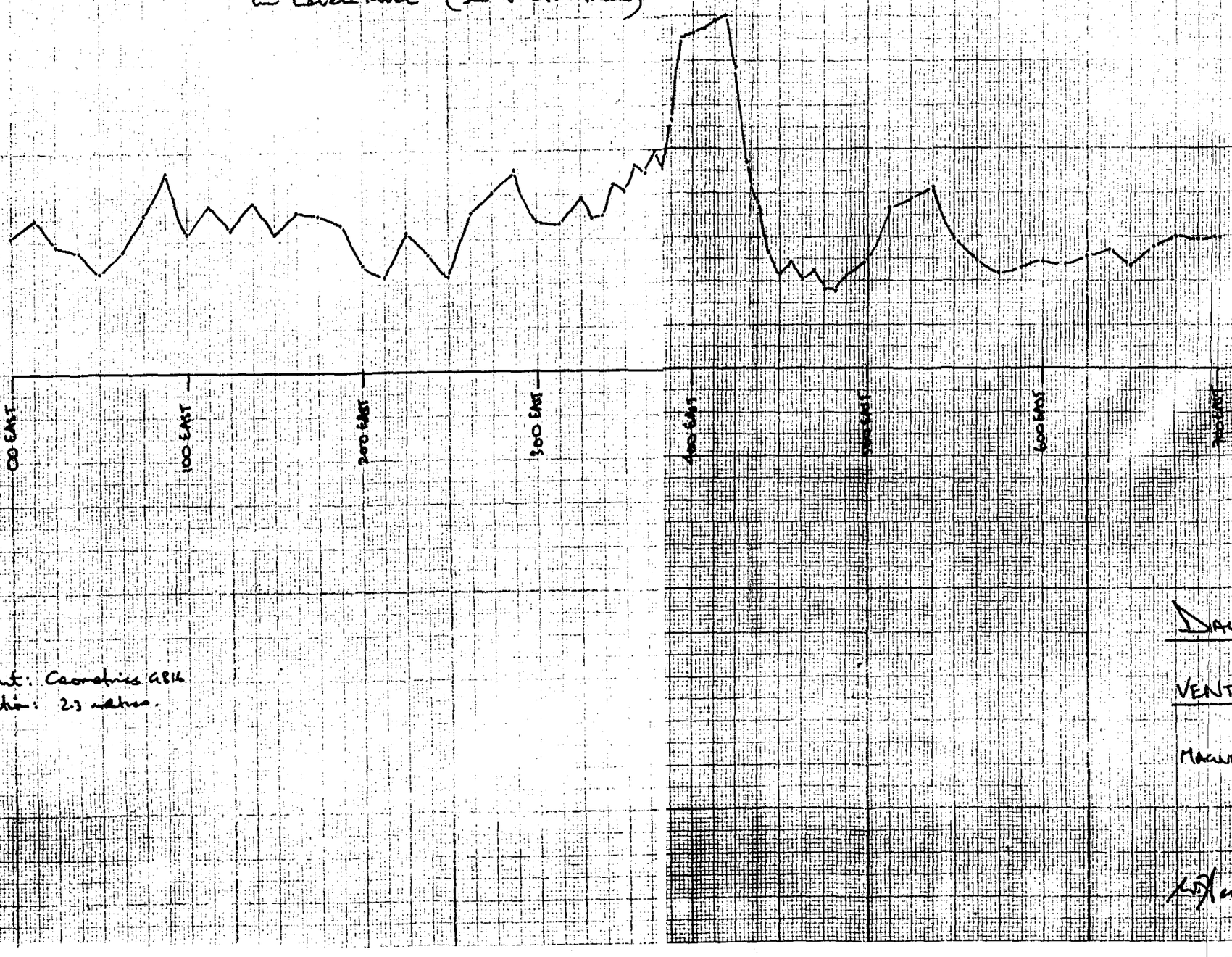
SCALE : 1:10000 APPROX.



AMG REFERENCE POINTS ADDED

MAGNETIC TRAVERSE ALONG ROAD.

Generally Eastward from junction at [redacted] bend in Lawson River (See Sketch Plan)



Instrument: Geometrics G816
Sensor Elevation: 2.3 metres.

FIGURE 17

DAL RANCE E.L. 74/73

VENTURE 16

MAGNETIC RECONNAISSANCE PROFILE

OCT. 1984

11. VENTURE 17

Venture 17 is a fairly large irregular shaped aeromagnetic anomaly peaking at 250nT (air) which is located at the northern end of a large plateau like magnetic feature of at least 100nT above local background. In some respects it is similar to the broad magnetic highs associated with "Lobster Creek Volcanic" - "Dacite" at the north eastern end of the Dial Mine Grid.

P Wilson, 1982, has mapped several digitate bodies (intrusive?) of "potassic dacite" in the area.

The anomaly is accessable by a logging road which runs southwest from Bannon's Bridge for about 2km before turning northward to Venture 17. The terrain is quite steep and generally fairly thickly vegetated in spite of logging activities.

One magnetic traverse of approx. 1000m was read along the road running generally NW-SE across the southwestern part of the anomaly (Fig. 18).

The magnetic profile (Figure 19) shows very broad magnetic highs of up to 300-400nT above local background with the strongest response at 350-600m NW which is displaced slightly westward from the plotted position of the anomaly. (Very heavy rain resulting in magnetometer malfunction restricted the reconnaissance to this single traverse - a traverse northwards across the anomaly along the ridge top track would have been desirable).

Outcrop is generally poor along the track but is dominated by alternating mudstone/sandstone sediment and pink porphyritic "monzonite" giving the impression of a sedimentary group intruded by a series of small dykes and/or stocks.

The sediments (actually best exposed south of V17 near the "U-turn" in the track) are pinkish-buff-grey massive to moderately bedded argillaceous siltstones and fine greywackes. Granular quartz content is estimated at less than 30%. They are non-magnetic (though generally fairly weathered in outcrop).

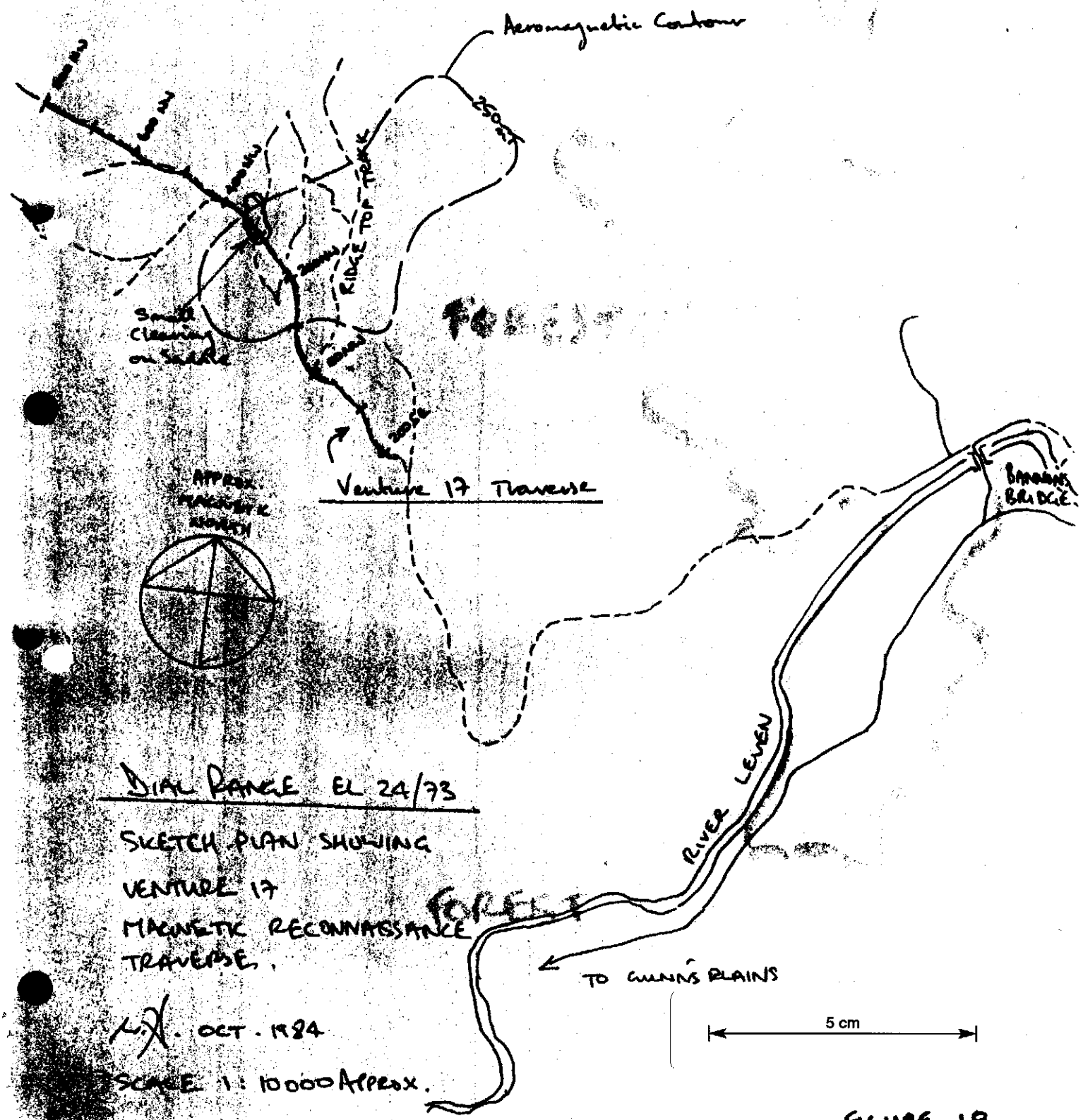
The "monzonite" is a pink rock composed of small (2-3mm) phenocrysts of creamy grey plagioclase sparsely scattered (5%) with chloritized aggregated clots and small prisms of hornblende in a very fine granular mosaic (<0.2mm) of quartz and pink potash feldspar. There are occasional rounded (1-2mm diameter) phenocrysts of grey quartz and accessory granules of magnetite. They are weakly but distinctly magnetic in hand specimen.

These "monzonitic" porphyries are clearly intrusive and bear a passing resemblance to the more potassic members of the igneous intrusive suite associated with porphyry copper-gold mineralization at Goonumbla in Central Western New South Wales.

Although there is not perfect correlation between exposures of "monzonite" and magnetic highs on the traverse, the presence of weakly magnetic intrusive rocks is considered an adequate explanation of the

observed broad anomalies. There may also be some contact metamorphic/magnetic effect in the enclosive sediments.

Neither the magnetic character nor the geological setting appear to favour the target style of mineralization.



DIAL RANGE EL 24/73

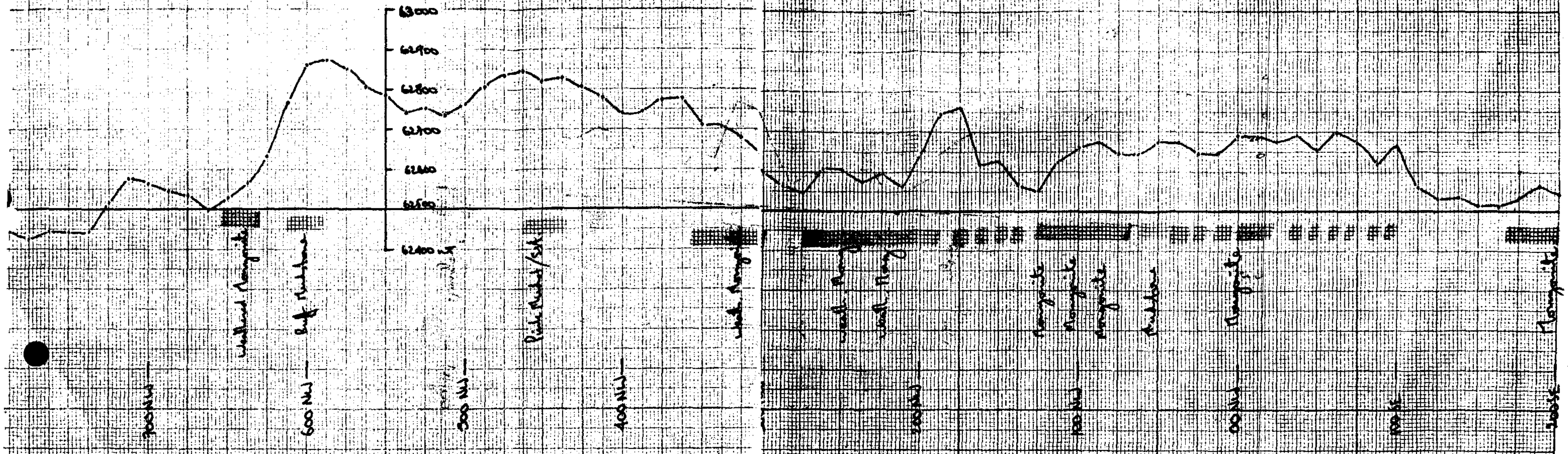
SKETCH PLAN SHOWING VENTURE 17 MAGNETIC RECONNAISSANCE TRAVERSE.

L.A. OCT. 1984

SCALE 1 : 10000 Approx.

FIGURE 18

MAGNETIC TRAVERSE ALONG ROAD ~~[illegible]~~ generally NORTHWESTWARDS.
(See sketch Plan for Location)



Instrument: Geometrics G816
Sensor Elevation : 2.3 m.

FIGURE 19

DIAL RANGE EL. 24/73

VENTURE 17.

MAGNETIC RECONNAISSANCE PROFILE

12. REFERENCES

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"Annual Report EL 24/73 DIAL RANGE, 1981-82 Season"
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2. SUMPTON, J.D. and TURLEY, S.D.
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