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GEOPEKO  
 A DIVISION OF PEKO- WALLSEND OPERATIONS LIMITED  
 1983/84 ANNUAL REPORT E.L. 24/73  
 FOLLOW-UP OF AEROMAGNETIC SURVEY OF  
 THE DIAL RANGE TROUGH

BY

J.D.H. SUMPTON AND S.D. TURLEY

**OPEN FILE**

June 1984  
DEVONPORT

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DEDICATION

This report is dedicated to  
Mr. Charles Copeman, whose  
support and guidance was vital  
to its completion.

J.S. & S.T.

ATTACHED PLANS

Plan 1 Prospect Location Plan (T.M.I.)

Plan 2 Prospect Location Plan (Geology)

Plan 3 Dial Range: Contours of Total Magnetic Intensity

Plan 4 Dial Range: Flight Path

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INTRODUCTION

Exploration Licence 24/73 of 106 Km<sup>2</sup> covers the greater portion of the Dial Range Trough, comprising a thick succession of Cambro-Ordavician sediments and volcanics.

In accordance with the recommendations of Large and Sumpton (1983), the fourteen aeromagnetic anomalies (identified as Venture 5 through Venture 18) which were considered as possibly having sources of economic interest were the subject of ground follow up. These anomalies were interpreted as possibly being attributable to sulphide-cassiterite mineralization of the Renison Cleveland type, rather than magnetic rock formations which, though abundant within the licence, are of no economic interest.

This report deals with the ground follow-up of the abovementioned fourteen anomalies, presents the data so acquired, and offers conclusions concerning the likely source of each anomaly. A copy of the Total Magnetic intensity anomalies identified is included as Plan 1, whilst the anomaly locations with respect to the mapped geology is presented as Plan 2.

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VENTURE 5

This anomaly was given a high priority primarily because of its close spatial association with the Dial Mine Grid and its similarity to the magnetic response given by Aberfoyle's Severn Prospect. The airborne anomaly was followed up on the ground firstly by two lines of magnetics, 200m apart and 500m long. Both lines show a relatively narrow magnetic zone - particularly on the 00 line. See appendix 1. The magnetic response indicated a shallow source or sources which was pursued by means of a line of C horizon soil samples taken with a hand held power auger, between 0 and 250m W on line 00. The samples were taken at 25m spacings from depths of between 1.0m and 1.3m. Two bags of sample were taken at each sample site. Bag A was sent to Aust. Lab. Services in Brisbane where the samples were analysed by AAS for the following elements: Copper, Lead, Zinc, Silver, Bismuth, Iron, Manganese, Arsenic and Nickel. Tin was analyzed by XRF and Gold by carbon rod/AAS after an aqua-regia digest. Bag B was returned to Geopeko Devonport where approximately 200g of the sample were removed, washed and the +1mm fraction logged. See Appendix 1. The rock chips were then rebagged and together with the remainder of Bag B stored.

Results

The soil samples were taken on a relatively steep northward facing slope in what are mapped as sediments of the Cambrian Cateena group. Venture 5 is located some 50 - 100m north-east of the unconformity with the overlying Ordovician conglomerates and sandstones. It is boulders of Ordovician conglomerates that can be seen both in the stream that cuts the anomaly and the rock chips from the soil samples. These are typically of quartzites, oxidized basalts and Cateena Group sediments. All show a high degree of weathering and the presence of Fe oxides such as maghemite and magnetite, which it is thought are the cause of the erratic, spiky nature of the ground magnetic response.

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The geochemical results which are shown in Appendix 1 are summarized below in Table 1.

Table 1.

Summary of Geochemical Results at Venture 5.

Element	Range		Average	Expected Range in soils (Levenson)
	Low	High		
Copper	2	590	299	2-100
Lead	10	140	53	2-200
Zinc	5	290	61	10-300
Silver	<1	2	1	$\bar{x}$ 0.1
Arsenic	14	1150	500	1-50
Iron	0.4	13.9	7.0	
Manganese	30	4450	629	
Nickel	10	170	56	5-500
Bismuth	< 5	170	47	
Gold (ppb)	< 3	10	2	1
Tin	50	1850	265	2-10

N.B. All figures in part per million except Iron in % and Gold in parts per billion.

The results show that the area is enriched in a number of elements, noticeably tin, copper and arsenic as well as iron and manganese. These results are in keeping with those of P.A. Wilson's 1981 - 82 geochemical survey which shows that the area of Venture 5 forms a southward extension of the mineralized area covered by the Dial Mine Grid. Although the results of the soil sampling are coincident with the peaks of the ground magnetics they are not thought to be related to the cause of the magnetic anomaly which is the result of high concentrations of magnetic material in soils probably caused by the weathering of once more abundant Tertiary basalt.

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VENTURE 6

This anomaly is interpreted as being caused by Tertiary basalt, which extends further to the west than previously mapped. Although no outcrop was seen there was abundant basalt float and highly magnetic, basalt derived soils. The anomaly is on the edge of a basalt plateau adjacent to the Leven River.

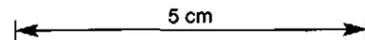
The magnetic field over the area was measured along a track bearing approximately north-west through the anomaly, the erratic shallow sourced response is also typical of Tertiary basalt, see Figure 1.

VENTURE # 6      *FIGURE 1*

DIAL RANGE

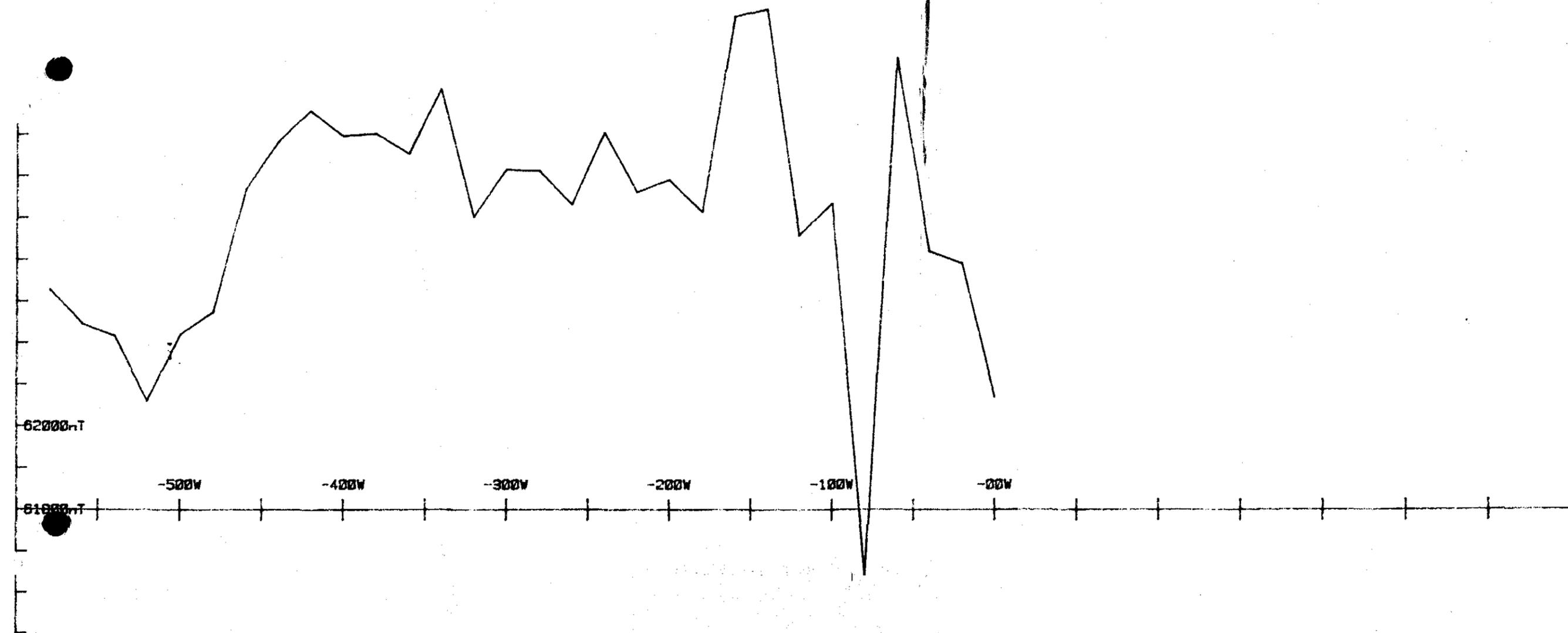
PROFILE OF TOTAL MAGNETIC INTENSITY

HS 1:2500  
VS 1cm=100nT



ROAD TRAVERSE

bearing approx. N. 4.



VENTURE 7

Venture 7 is located adjacent to the Leven River in an area of alluvium, beneath which is the mapped contact of the Lobster Creek Volcanics and the overlying Barrington Chert. The magnetic response is similar in character to that over areas mapped as the Lobster Creek Volcanics. Follow-up ground magnetics indicated an anomaly that was thought to be caused by a rock formation, however it showed sufficient similarities to the expected response given by a Renison type body to require further investigation. The qualitatively modelled magnetic target depth was about 50m and it was therefore decided to test it by means of a percussion drill hole using a Warman 500 drill rig. Samples were to have been taken at three metre intervals. However problems arose with the unconsolidated alluvium and percussion drilling was abandoned at 30.5m, the remainder of the hole was cored (BQ) to a depth of 56m. The percussion section was exclusively clays and coarse gravels of alluvial origin. The cored section was composed initially of a medium to fine, shaly, possibly tuffaceous unit which gradually gave way to a coarse - gravel sized epiclastic unit which included large (up to 48mm) fragments of weathered igneous material in a coarse sand-sized matrix of the same composition. The unit contained accessory amounts of carbonate and magnetite, the latter was sufficient to cause the magnetic anomaly, occurring as it did in relatively coarse grains, probably of detrital origin. The log of the hole is given in appendix 2.

The findings of the hole give no direct indication of mineralization, however rock specimens taken from DDH 10 on the Dial Mine Grid and the entrance to the lower adit of the Dial Mine indicate that they may be a more weathered and mineralized example of the coarse epiclastic found in Venture 7 (DDH 11). Specimens from Venture 7, DDH 10 and the Dial Mine have been sent to W. Fander for petrological examination. The implication that arises is that the epiclastic of Venture 7 may form a host for sulphide mineralization, therefore magnetic anomalies previously dismissed as Lobster Creek Volcanics, i.e. similar to Venture 7 may indeed be lithologically

010

similar to the mineralized unit of the Dial Mine area and as such worthy of further work. The lithological similarity of Venture 7 to the area adjacent to the adit at the Dial Mine would place the unit in the lower part of the Cateena Group rather than within Lobster Creek Volcanics as originally thought, this would be in keeping with the geological descriptions in Burns (1964) for the Cateena Group and ties in with a unit underlying the Barrington Chert, not previously mapped in the area.

## VENTURE 8

Although Tertiary basalt was mapped in the area of this anomaly, the shape of the airborne anomaly was such that a sub-basalt source may have been indicated. Field investigations revealed that the anomaly did indeed occur in basalt, and the magnetic traverse north along Ironcliffe road showed no evidence of a sub-basalt source, the profile rising erratically by about 500nT in a similar fashion to the airborne anomaly, see Figure 2.

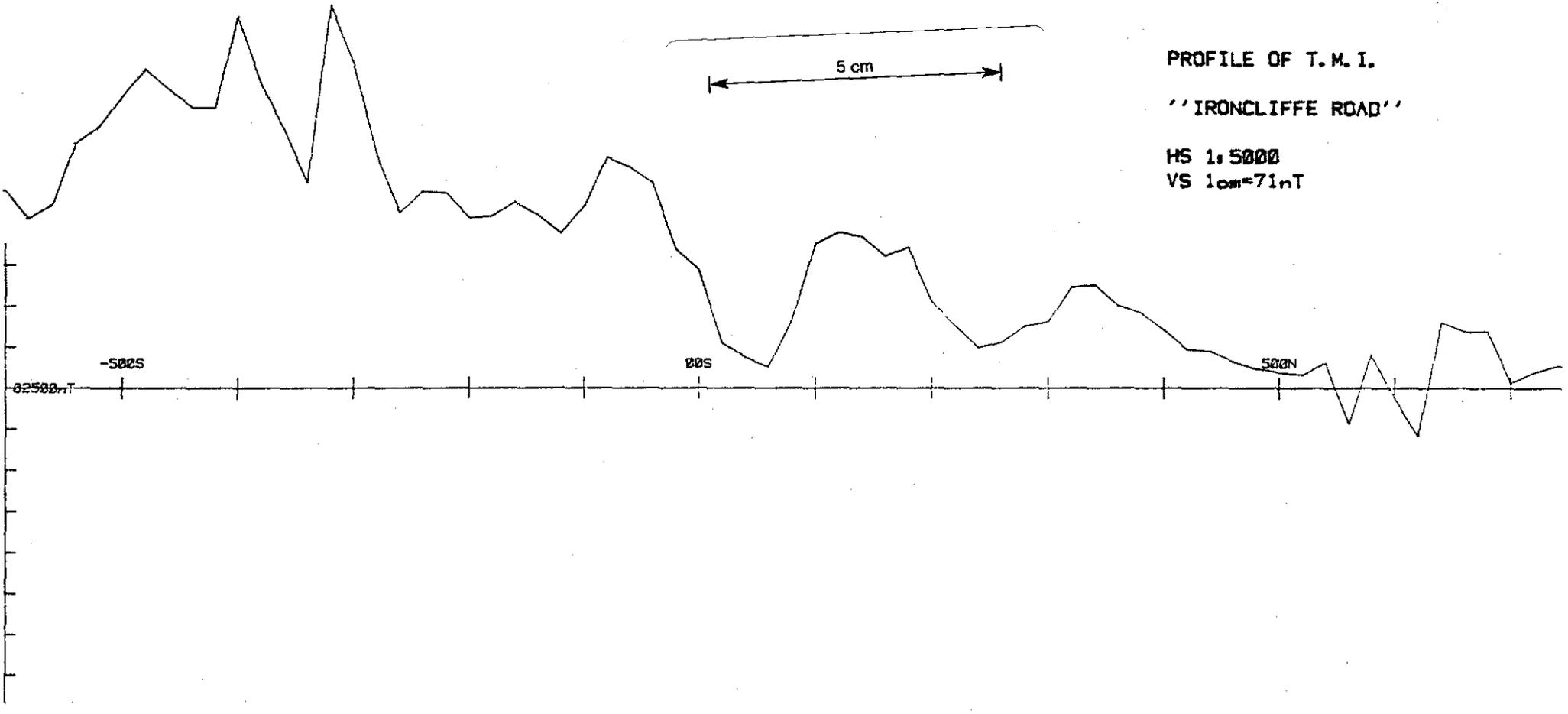
FIGURE 2

VENTURE 8 - DIAL RANGE

PROFILE OF T.M.I.

"IRONCLIFFE ROAD"

HS 1:5000  
VS 1cm=71nT



013

VENTURE 9

Venture 9 was originally given a high priority because of its intensity in a favourable stratigraphic position i.e. in the Cateena Group adjacent to the unconformity with overlying Owen Conglomerate. Reconnaissance ground magnetics pin pointed the source of the anomaly to a large (?Tertiary) basalt outcrop in a small south-eastward flowing tributary to Hardstaff Creek. The magnetic response indicates a plug-like body with some depth extent. A hand specimen was sent to Aust. Lab. Services for an analysis of its oxide content. See table 2. A number of points arose from the analysis that were of particular though somewhat academic interest:

1. The silica content of 43.2% is low in comparison with the expected range for basalts of between 47 and 52%.
2. The sodium and potassium levels were higher than the expected range for basalts.

The chemical composition was found to be in keeping with an alkali-olivine basalt or a basanite. See table 2, this view was endorsed by W. Fander who described it as a <sup>leucite</sup> ~~Renate~~ basanite after petrological examination, the report of which is given in appendix 3.

TABLE 2

	1	2	3
SiO <sub>2</sub>	43.2	42.7	42.5
TiO <sub>2</sub>	2.8	2.0	4.8
Al <sub>2</sub> O <sub>3</sub>	15.7	16.7	16.6
Fe <sub>2</sub> O <sub>3</sub>	11.1	5.1	3.8
FeO		8.1	7.3
MnO	0.3	0.2	0.1
MgO	6.3	5.6	5.6
CaO	10.6	11.0	10.0
Na <sub>2</sub> O	3.9	5.0	3.9
K <sub>2</sub> O	2.1	1.7	2.0
P <sub>2</sub> O <sub>5</sub>	0.6	0.7	0.9

1. Venture 9. Dial Range, Tasmania
2. Alkali Basalt, Fernando de Noronha\*
3. Basanite, Tahiti\*

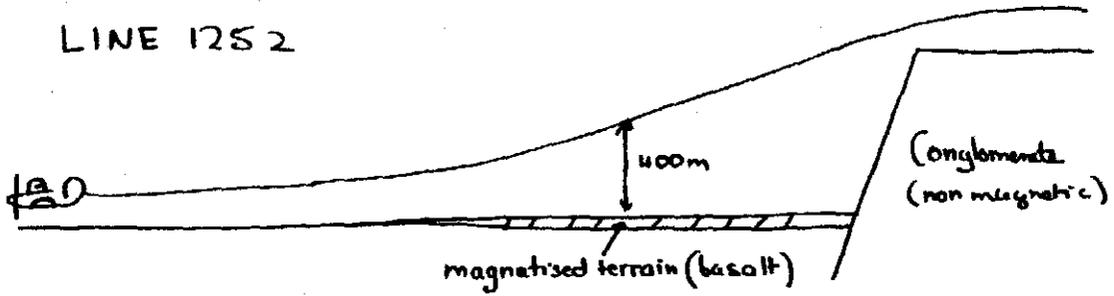
\* Information taken from Carmichael, Turner and Verhoogen.

VENTURE 10

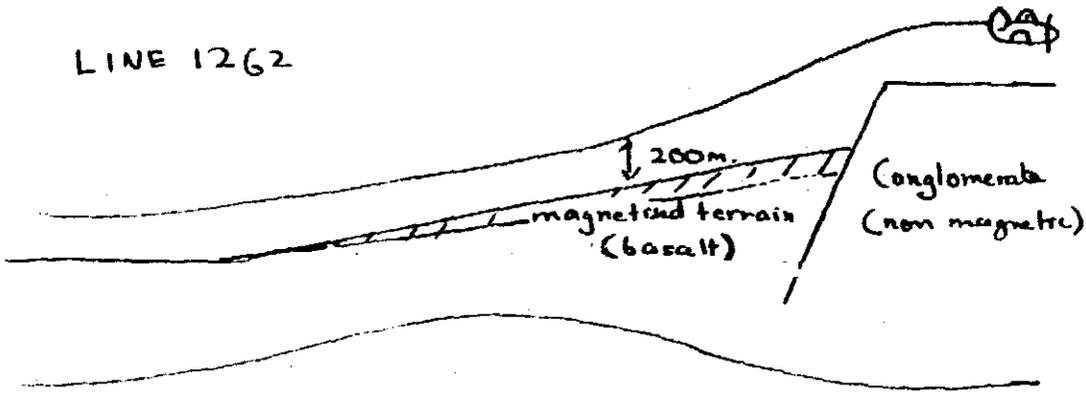
The initial magnetic reconnaissance work was along an east line which showed an area of relatively high magnetic response towards its western end. This work was followed up by additional north-south lines (see appendix 4) all of which show some degree of magnetic noise but no coherent anomaly. The cause of the apparent airborne anomaly is described below, however before the final answer had been achieved it was decided to undertake a line of C horizon soil samples along line OON between OOW and 200W, over the area of greatest magnetic readings. From the geological point of view the anomaly was enhanced by the presence of the adit at Russels Workings which passes almost underneath the Venture 10 anomaly. Russels Workings are recorded as containing copper, silver, gold, sulphur, arsenic and pyrite, however neither the geochemical analyses nor the rock chip samples (from the soil sampling) gave any indication of mineralization. All geochemical and geological results and magnetic profiles are given in appendix 4.

The elongate nature of the Venture 10 aeromagnetic anomaly is most likely caused by the ridge of magnetic material lying beneath flight line no. 1262. The anomaly appears strongest on this line, where the magnetised terrain (probably weathered basalt and basalt soils) is closest to the aircraft, in contrast to the adjacent flight lines away from the ridge where the terrain clearance was much greater. The aircraft could not penetrate these valleys because of the need to clear the Ordovician conglomerate cliffs to the west. The situation is set out diagrammatically in Figure 3.

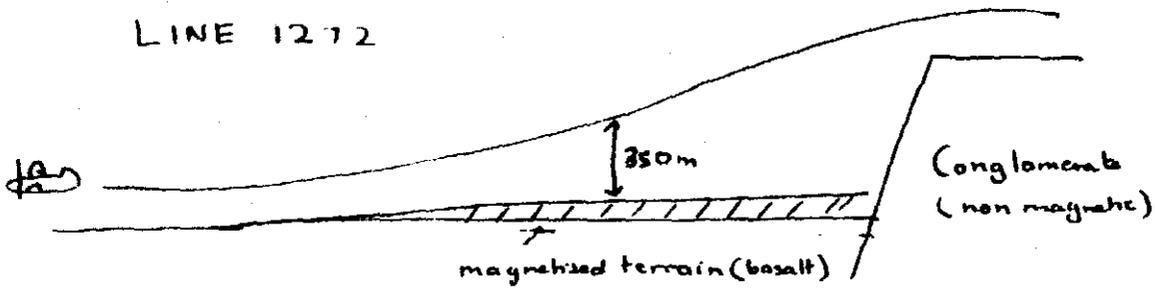
# IDEALISED TERRAIN EFFECTS , VENTURE 10 FIGURE 3



T.M.I



T.M.I



T.M.I

017

VENTURE 11 AND VENTURE 12

These two prospect are minor magnetic peaks superimposed on a large complex magnetic high which most likely has as its source a magnetic formation underlying this area.

Venture 11 was investigated by means of a single traverse across Leven River alluvium, which resolved a peak of about 300nT amplitude. Venture 12 was investigated by three traverses, all of which showed broad changes in measured magnetic intensity, without resolving any discrete magnetic peaks. Figures 4 - 7 show these profiles.

The only magnetic rock unit mapped in the area is the Lobster Creek Volcanics, and it is therefore suggested that this large magnetic high of which Venture 11 and Venture 12 form part is attributable to disseminated magnetite dispersed in the Lobster Creek Volcanics. In the case of Venture 11 however, as a discrete peak was resolved from ground traversing, the comments made concerning magnetic anomalies which are considered to lie within the Lobster Creek Volcanics (see Venture 7) should be borne in mind.

VENTURE 11

DIAL RANGE

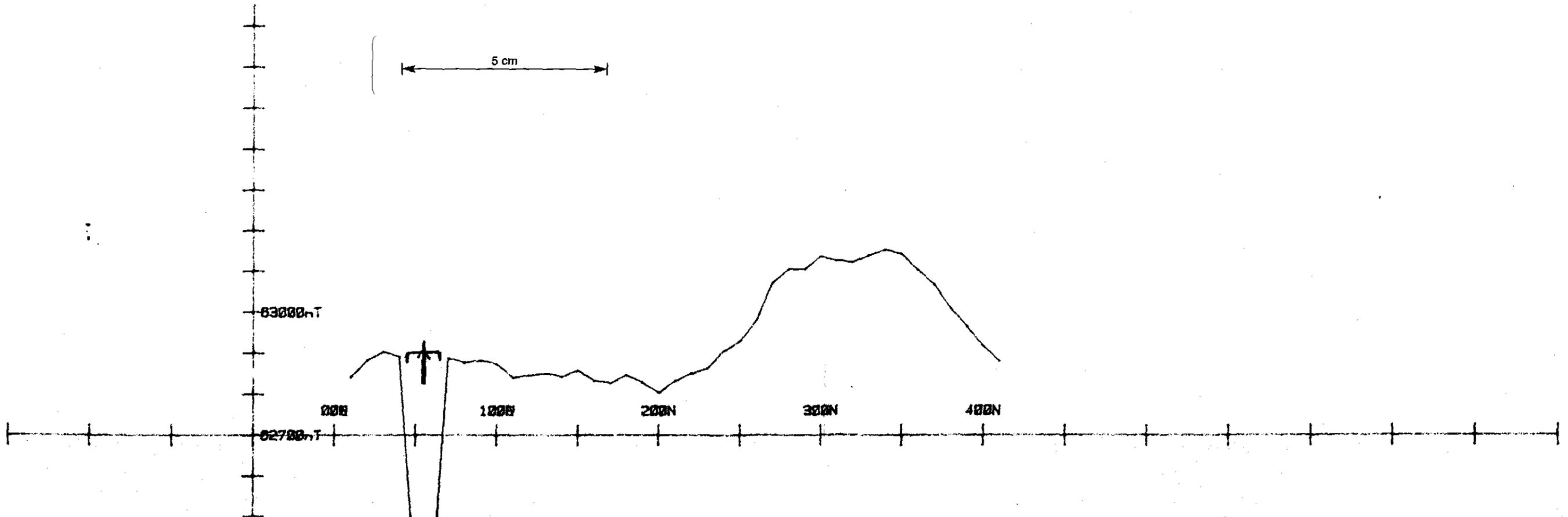
PROFILE OF TOTAL MAGNETIC INTENSITY

TEST LINE # 1 (APPROX. NORTH)

HS 1.2500

VS 1cm=100nT

FIGURE 4



VENTURE 12 (EAST)

DIAL RANGE - TASMANIA

PROFILE OF TOTAL MAGNETIC INTENSITY

HS 1:2500  
VS 1cm=100nT

ROAD TRAVERSE BEARS APPROX. SOUTH WEST

FIGURE 5

5 cm

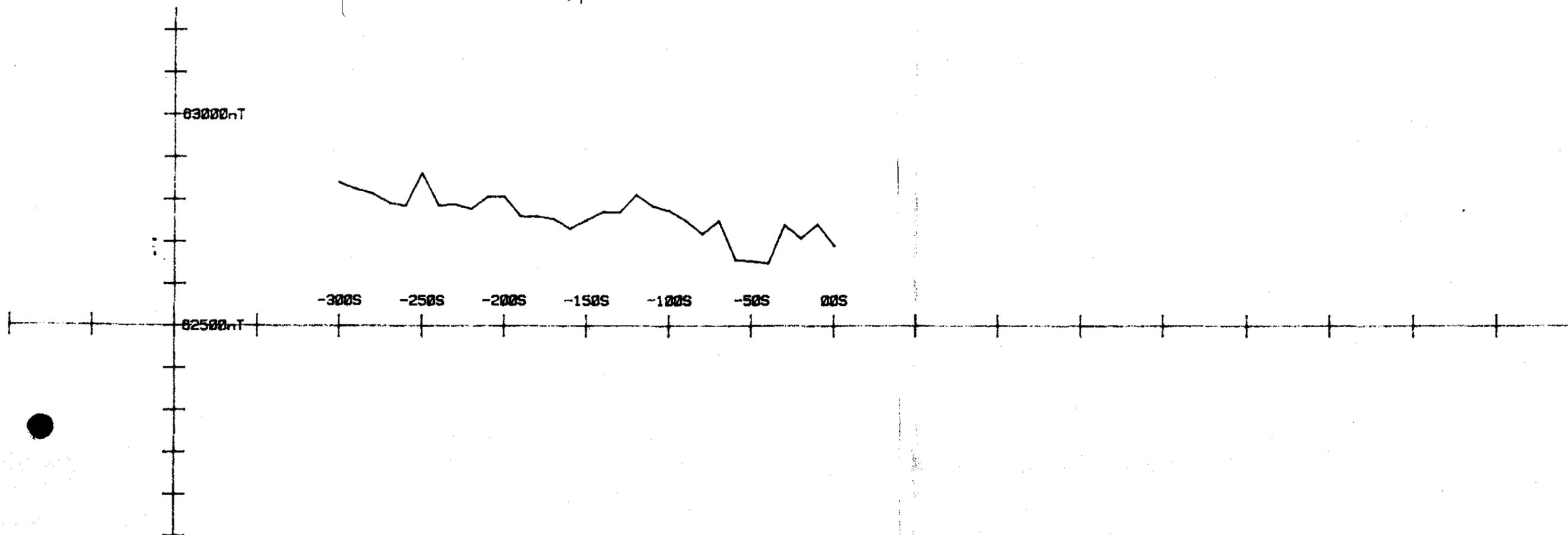
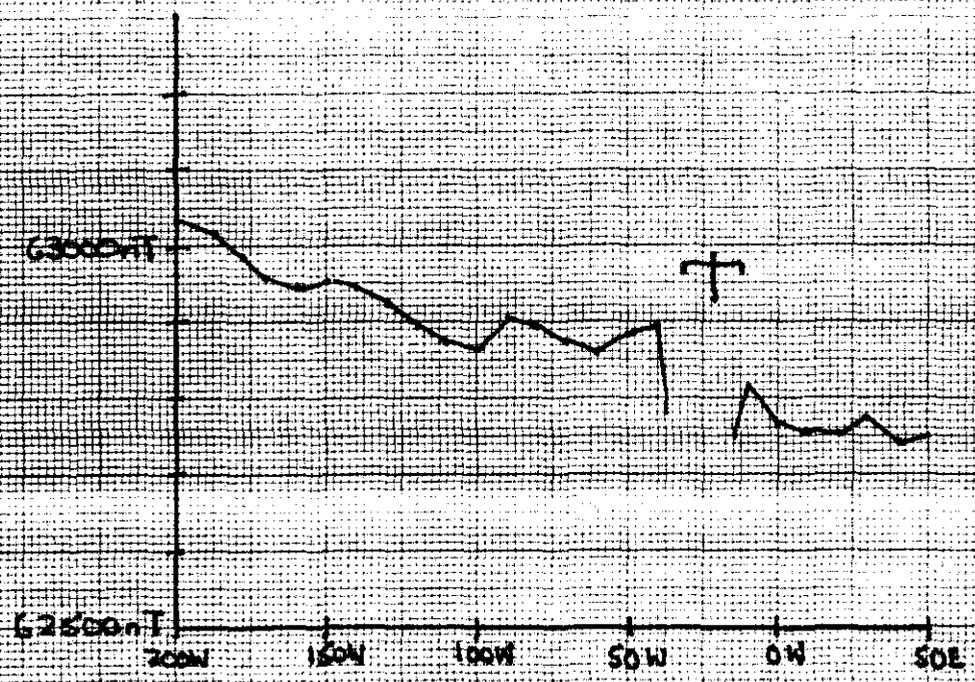


FIGURE 6

VENTURE 12E  
DIAL RANGE

Profile of Magnetic Intensity

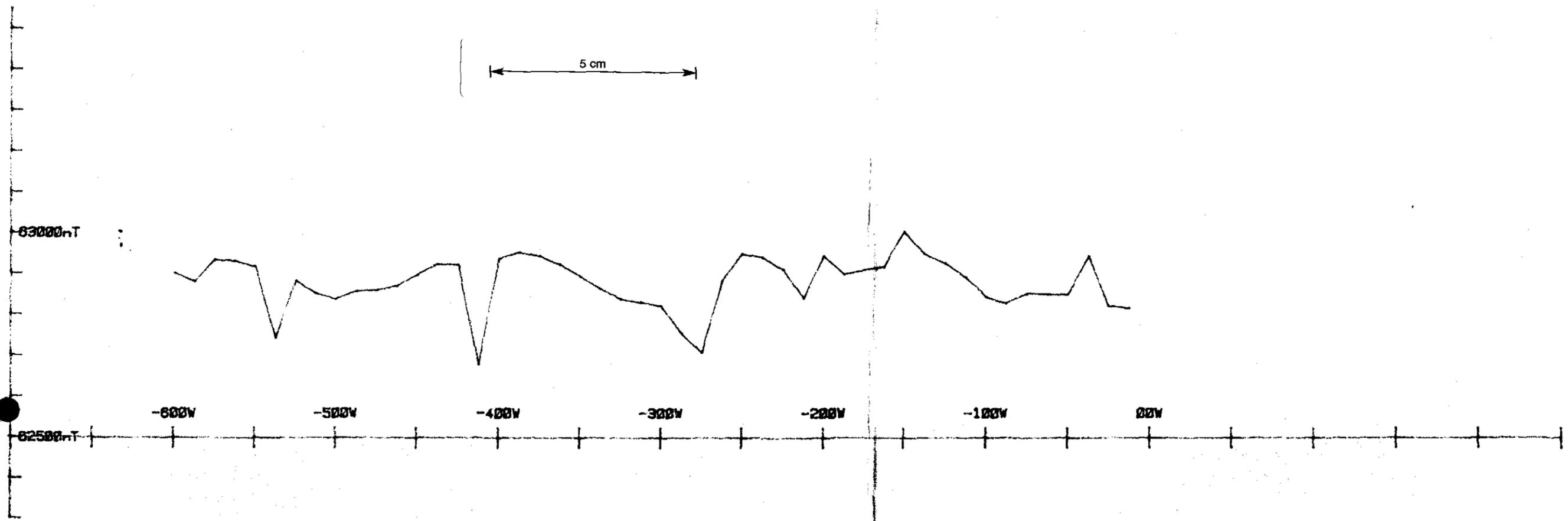
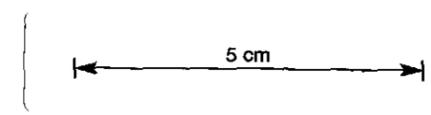
Test Line # 2, (West from Road Traverse 200s  
parallel to power lines)



VENTURE 12E  
PROFILE OF TOTAL MAGNETIC INTENSITY  
TEST LINE # 3  
(APPROXIMATELY EAST-WEST)

HS 1.2500  
VS 1cm=100nT

FIGURE 7



022

VENTURE 13

It has already been suggested that this anomaly is probably attributable to Tertiary basalt. A road traverse running approximately North-East/South-West through the anomaly shows that this is the case . The area of the anomaly is a topographic high, with highly magnetic, probably basalt derived soils and basalt float in evidence. See Figure 8.

### FIGURE 8

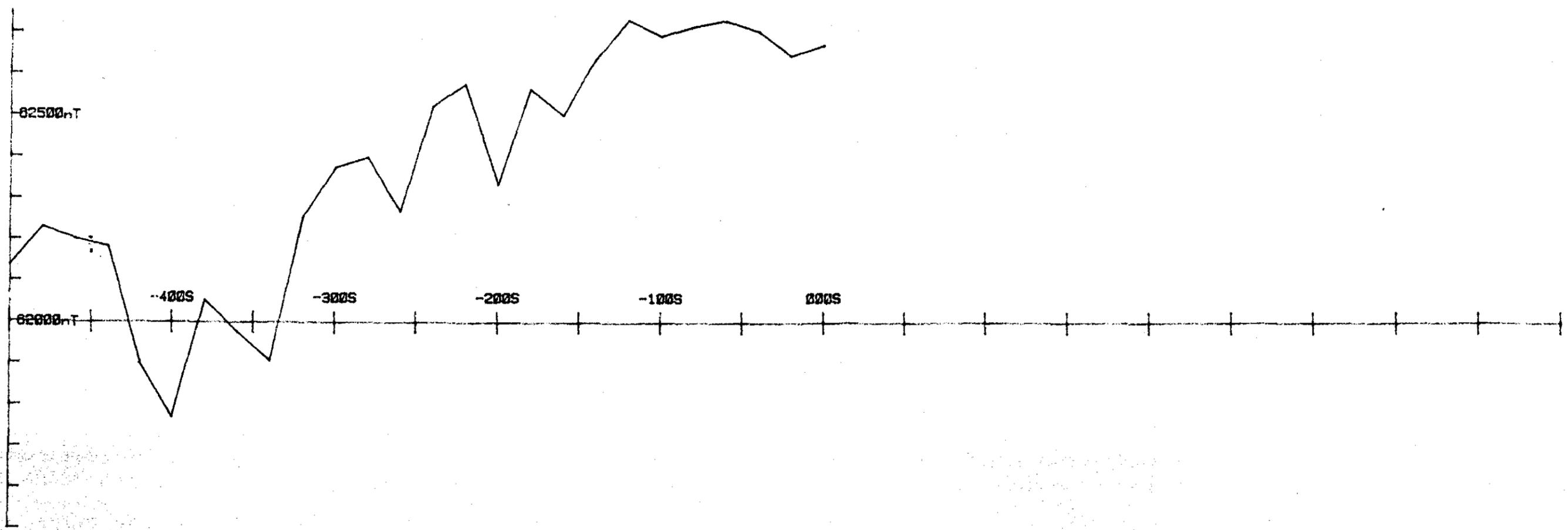
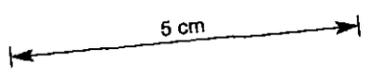
VENTURE 13

DIAL RANGE - TASMANIA

PROFILE OF TOTAL MAGNETIC INTENSITY

HS 1.2500  
VS 1cm=100nT

ROAD TRAVERSE BEARS APPROX. SOUTH WEST



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VENTURE 14

This anomaly lies in open fields south of a mapped Tertiary basalt plateau. A profile bearing due south across the anomaly reveals an intense magnetic high truncated sharply to the south. Even though there was no basalt outcrop or float observed, it is likely that this anomaly marks the southern boundary of the basalt plateau (this being farther south than previously mapped). The lie of the land supports this supposition, dropping away quickly as the magnetically quiet southern portion of the profile is approached. The soil is highly magnetic and looks to be basalt derived. See Figure 9.

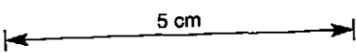
FIGURE 9

VENTURE 14

PROFILE OF TOTAL MAGNETIC INTENSITY

HS 1.2500

VS 1cm=100nT



63000nT

62500nT

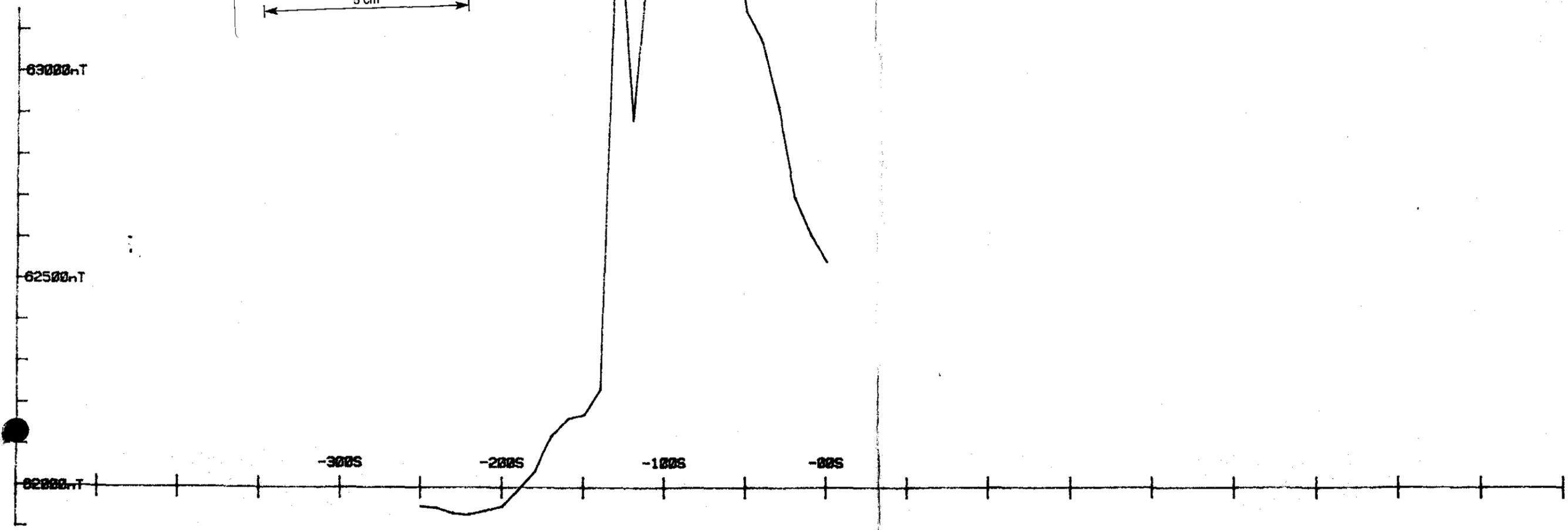
62000nT

-300S

-200S

-100S

-00S



026

VENTURE 15

This anomaly lies on the mapped contact of Barrington Chert and the Motton spilite. A profile running roughly south revealed that the magnetic peak lies over the spilite, (found in outcrop) and the airborne anomaly can be fairly confidently attributed to the spilite.

The magnetic peak on the ground appears to be caused by an outcrop of the spilite between two less magnetic rocktypes to the north and south. See Figure 10.

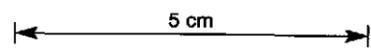
FIGURE 10

VENTURE 15

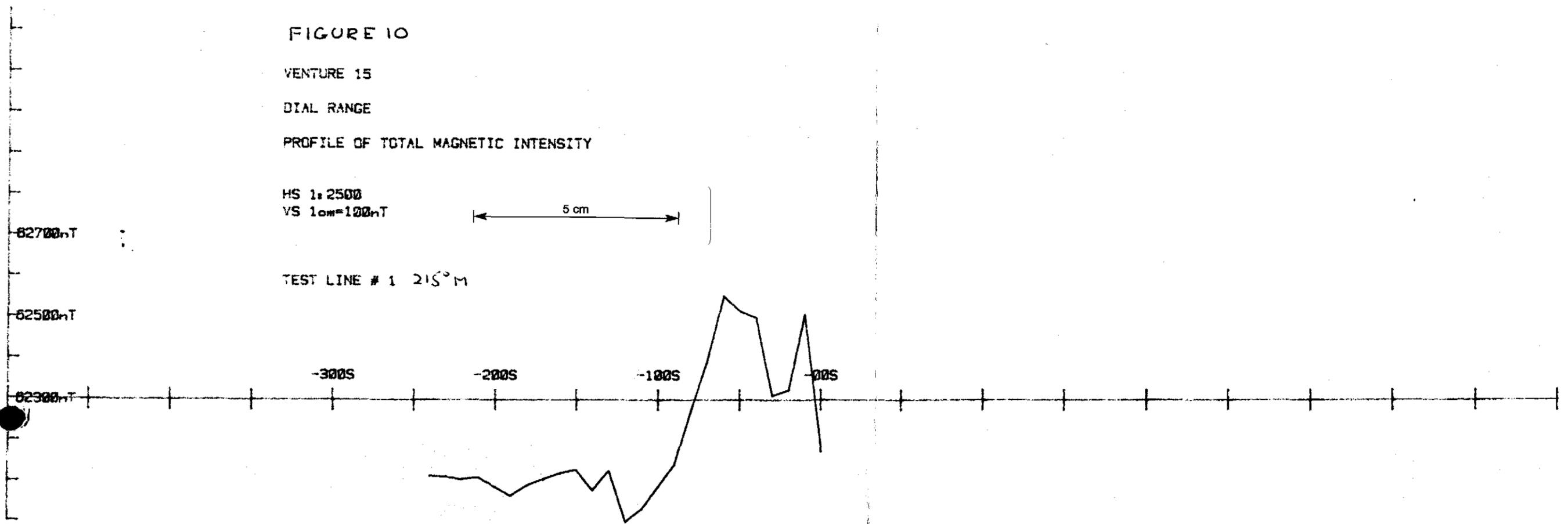
DIAL RANGE

PROFILE OF TOTAL MAGNETIC INTENSITY

HS 1:2500  
VS 1cm=100nT



TEST LINE # 1 215°M



028

VENTURE 16

This anomaly was originally identified for follow-up on the assumption that it lay on the contact of the Radfords Creek Mudstone and Motton Spilite. Subsequent better location of the anomaly using airphotos reveals that the anomaly lies within the spilite, and therefore considered to be of no economic interest. No ground follow-up was undertaken.

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VENTURE 17

The anomaly designated Venture 17 is a minor and diffuse magnetic peak in the overall response from the Lobster Creek Volcanics. No ground follow-up was undertaken.

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VENTURE 18

This anomaly was also probably due to Tertiary basalt, but required field checking. The original east west profile was not over basalt but showed a strong anomaly, so a second line was placed running approximately north-south. This second line showed the basalt contact lying some short distance to the south of the first traverse indicating that the first profile was an "off end" response. Abundant basalt float and typical basalt soil indicates that the airborne anomaly is attributable to the basalt. See Figures 11 and 12.

FIGURE II  
VENTURE 18  
DIAL RANGE  
PROFILE OF TOTAL MAGNETIC INTENSITY  
ROAD TRAVERSE (APPROX. EAST-WEST)  
HS 1:2500  
VS 1cm=100mT

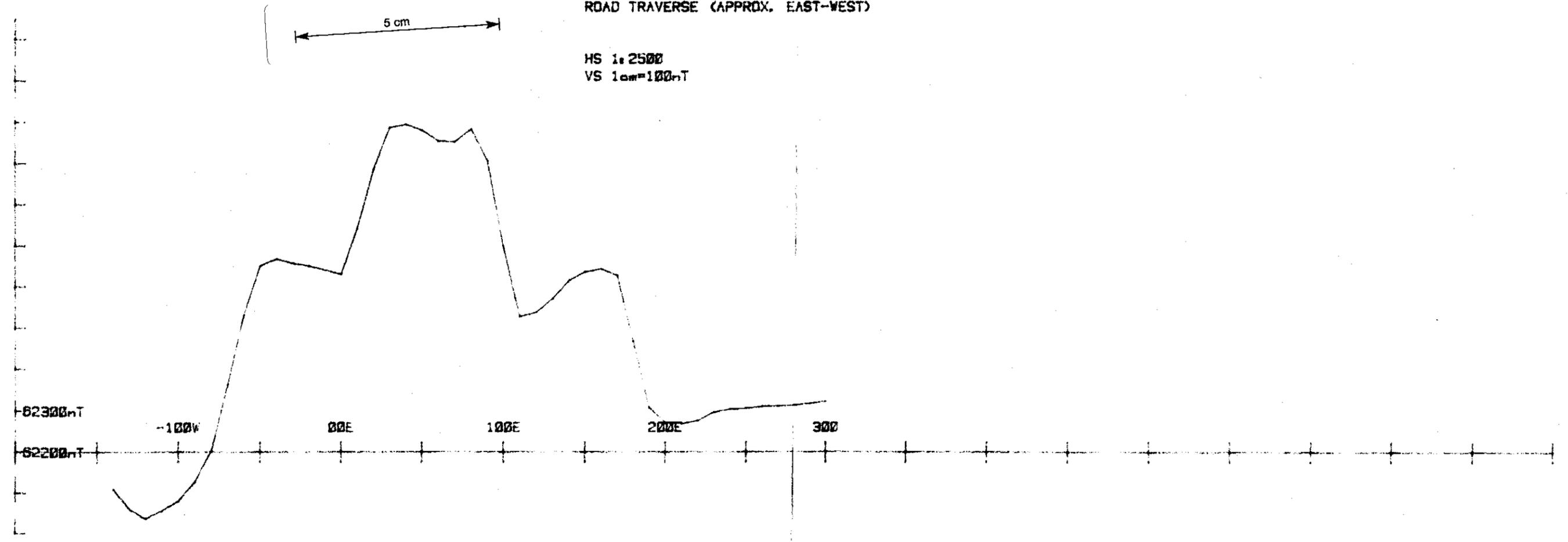


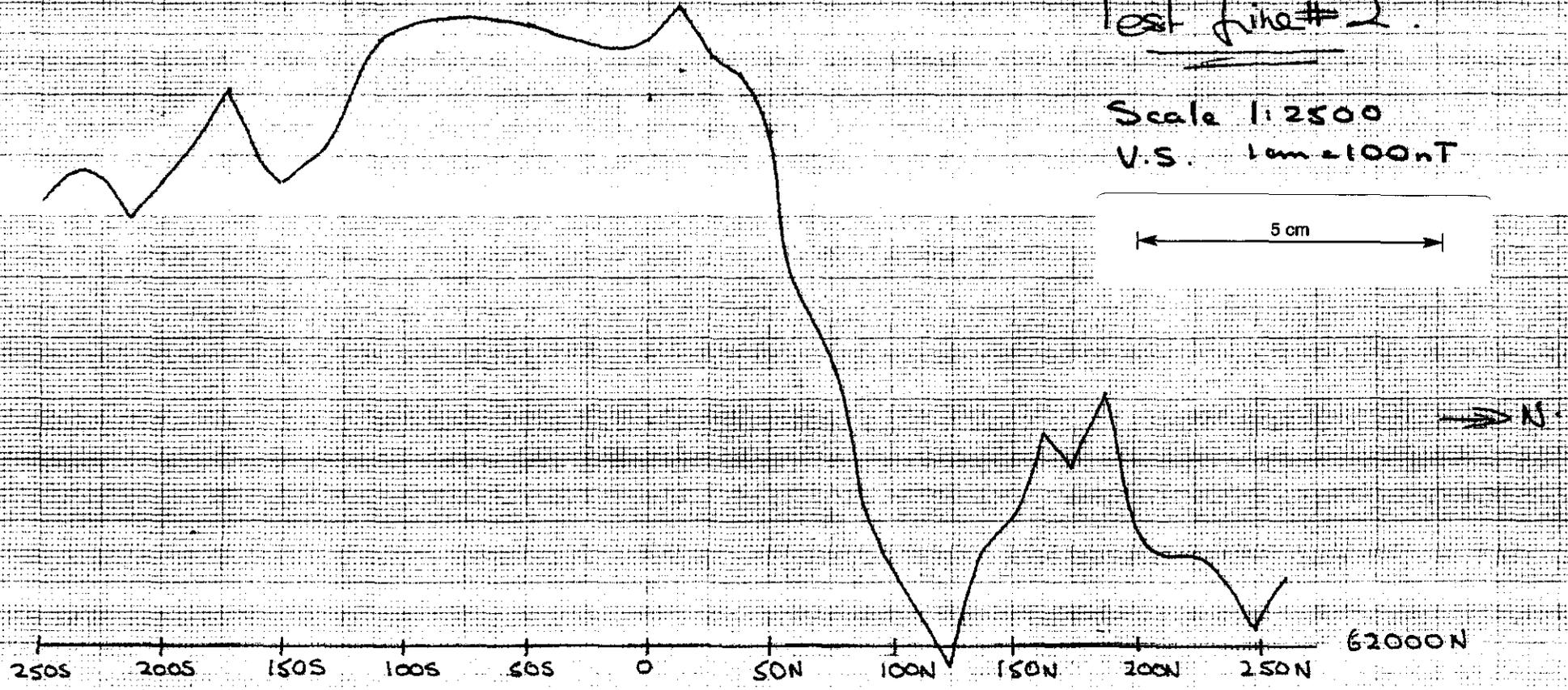
FIGURE 12

Venture 18

Test Line #2

Scale 1:2500  
V.S. 1cm = 100nT

5 cm



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CONCLUSIONS

The follow-up of magnetic anomalies from the 1983 airborne survey gave no direct indication of hitherto unknown mineralization. The most encouraging results came from Venture 5 where high geochemical values indicated a southward extension of the mineralized zone encountered in earlier work on the Dial Mine Grid, although as previously stated the high geochemical values had no genetic association with the cause of the magnetic anomaly. The location of the source of the Venture 7 magnetic anomaly, which appears to have similarities to the mineralized unit at the Dial Mine could open possibilities for the reassessment of a number of areas of similar magnetic character that have been interpreted as being caused by the Lobster Creek Volcanics. A final conclusion gained from the follow-up work was that there were a number of discrepancies between the geology found in the field and the mapped geology, for example the Tertiary basalt was found to be more extensive than is shown on the maps.

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RECOMMENDATIONS

From the work undertaken by the authors during the follow-up of the airborne magnetics the following recommendations are made.

1. That no further work is necessary on the airborne anomalies followed-up to date.
  
2. A thorough assessment be made of the exploration activity undertaken by Duval and Geopeko with a view to:-
  - a. Relinquishing the ground.
  - or b. Providing a clear basis upon which new or improved models and targets can be based. It is the opinion of the authors that the exploration undertaken in the past has been fragmentary with a number of workers spending insufficient time on the project to fully appreciate its true potential.

The assessment should include firstly a review of the regional geology in the light of the airborne magnetics together with its subsequent follow-up and secondly the possibility of carrying out a deep penetrating EM survey over selected parts of the licence area, in particular the Dial Mine Grid.

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ADDENDUM

Venture 7

The petrological report from W. Fander on samples from:

- A. DDH 11 at Venture 7
- B. DDH 10, Dial Mine Grid
- C. Hand specimen from the lower adit at the Dial Mine,

Did not indicate genetic similarities between Venture 7 and the Dial Mine Grid area. The report, which is included in Appendix 2, described the sample from Venture 7 as a "lithic sandstone composed almost entirely of igneous material", whilst the samples from the Dial Mine Grid are thoroughly metasomatized sediments, a conglomerate and a lithic sandstone, the latter containing material of similar composition to the former, yet different from Venture 7.

The findings of the report downgrades the possibility of the Venture 7 unit being of similar composition to the mineralized units of the Dial Mine Grid area.

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Geopeko Co. Report.

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APPENDIX 1

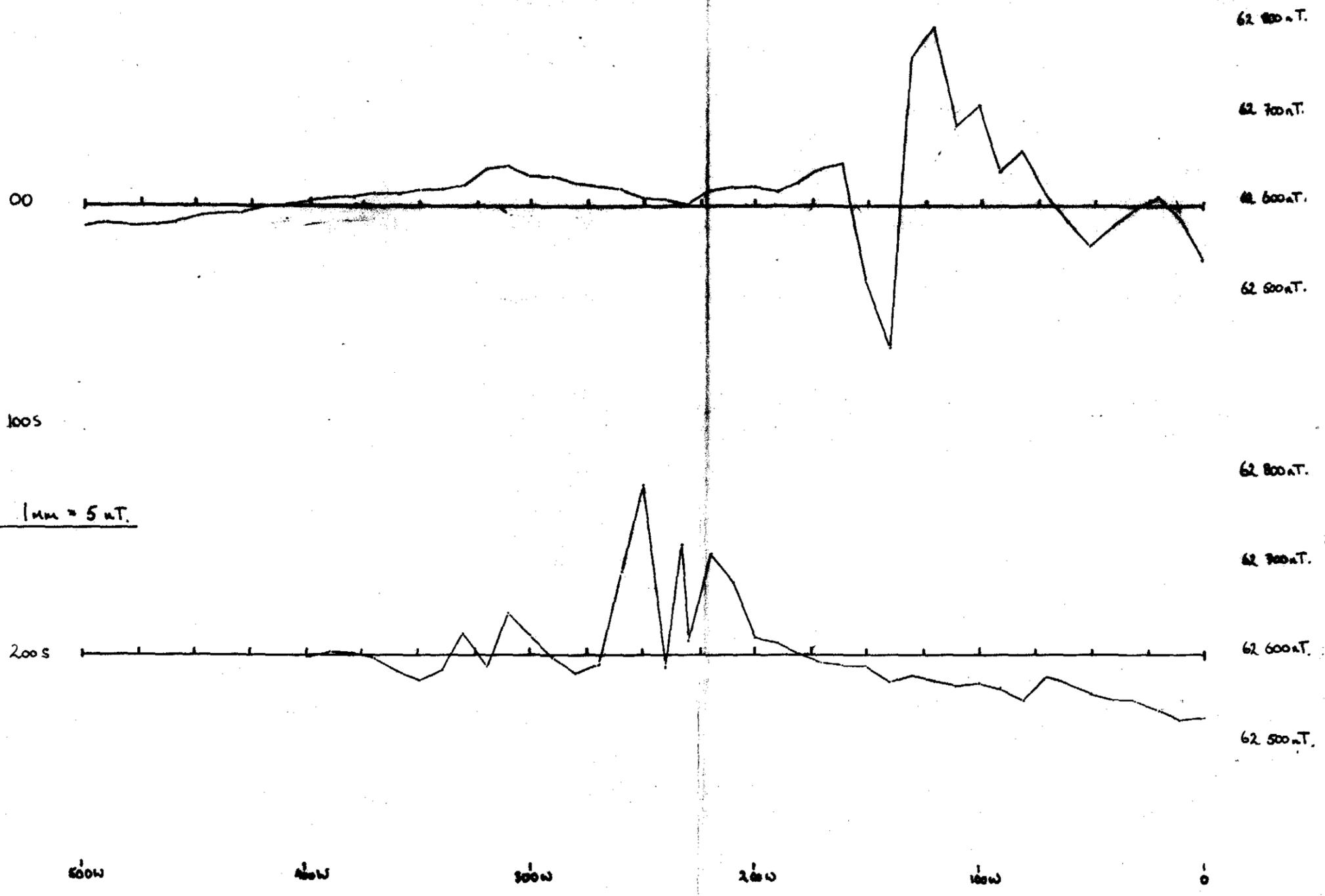
Venture 5

Plans Showing:

- A. GROUND MAGNETIC TRAVERSES
  
- B. RESULTS, GEOCHEMICAL AND  
GEOLOGICAL FROM SOIL  
SAMPLING PROGRAMME

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DATE	DWN	1:5000
GEOLOGIST	CHKD	

IN THE AREA OF ...

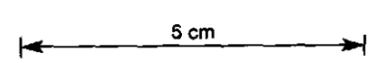
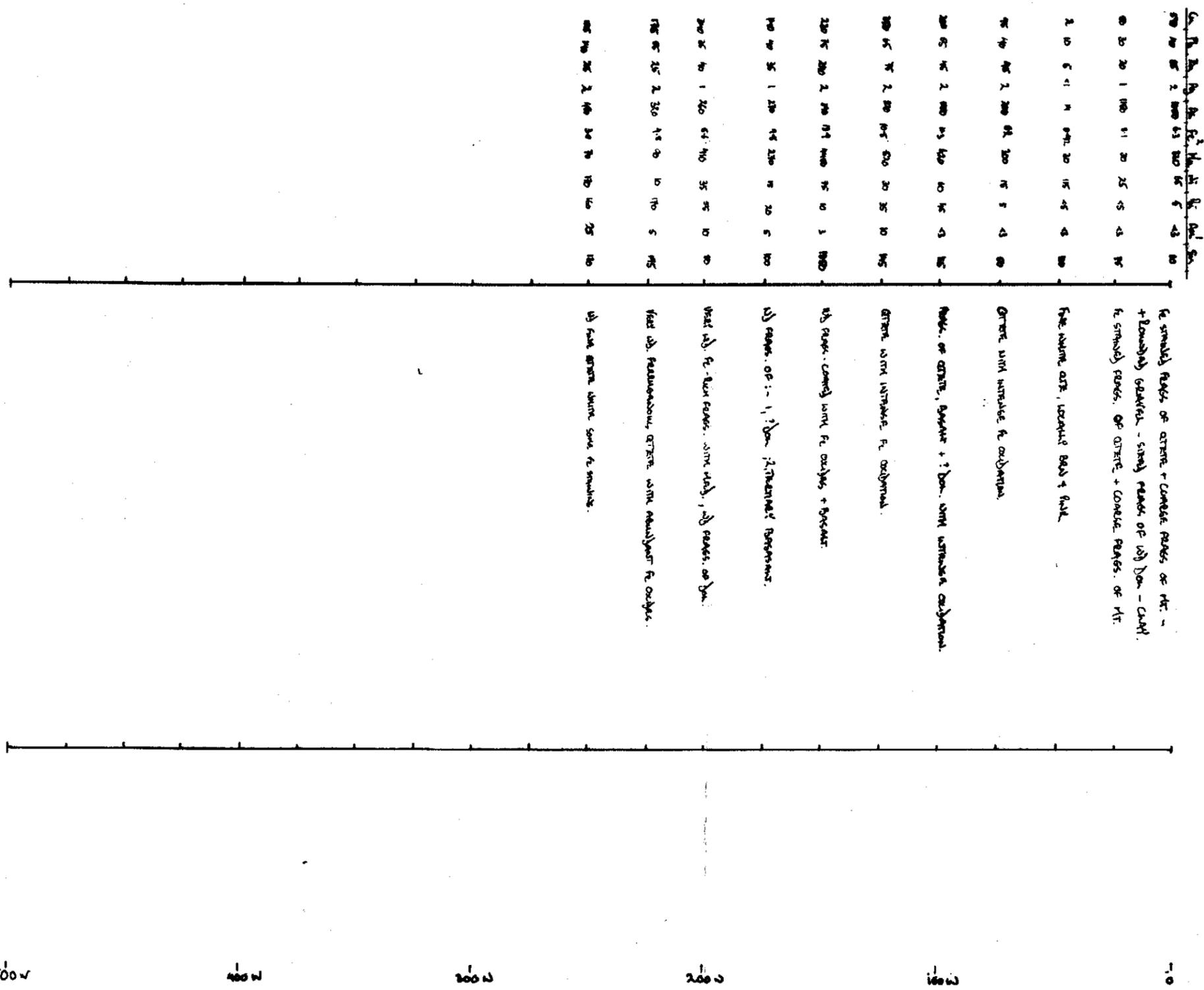


FIG.

1/8" = 100 METERS  
2.5" = 250 METERS  
ALL OTHER DIMENSIONS IN PPM



8

100 S.

200 S.

500 W 400 W 300 W 200 W 100 W 0

5 cm

**GEOPEKO**  
A DIVISION OF PENO-WALLSEND OPERATIONS LTD

**Don RANCA PROJECT** VENTURE 5, GROUND AND SOIL GEOCHEMISTRY.

DATE 28.11.01 DWN ST. EOL ST. CHKD

1:2500

PARAMETERS:  
 Bed. Blank. Fe. Fe. Magnetite. QTR. Quartz.  
 Don. Down. Mg. Magnetite. W. Weathering.  
 Fe. Iron. Mt. Magnetite.

FIG.

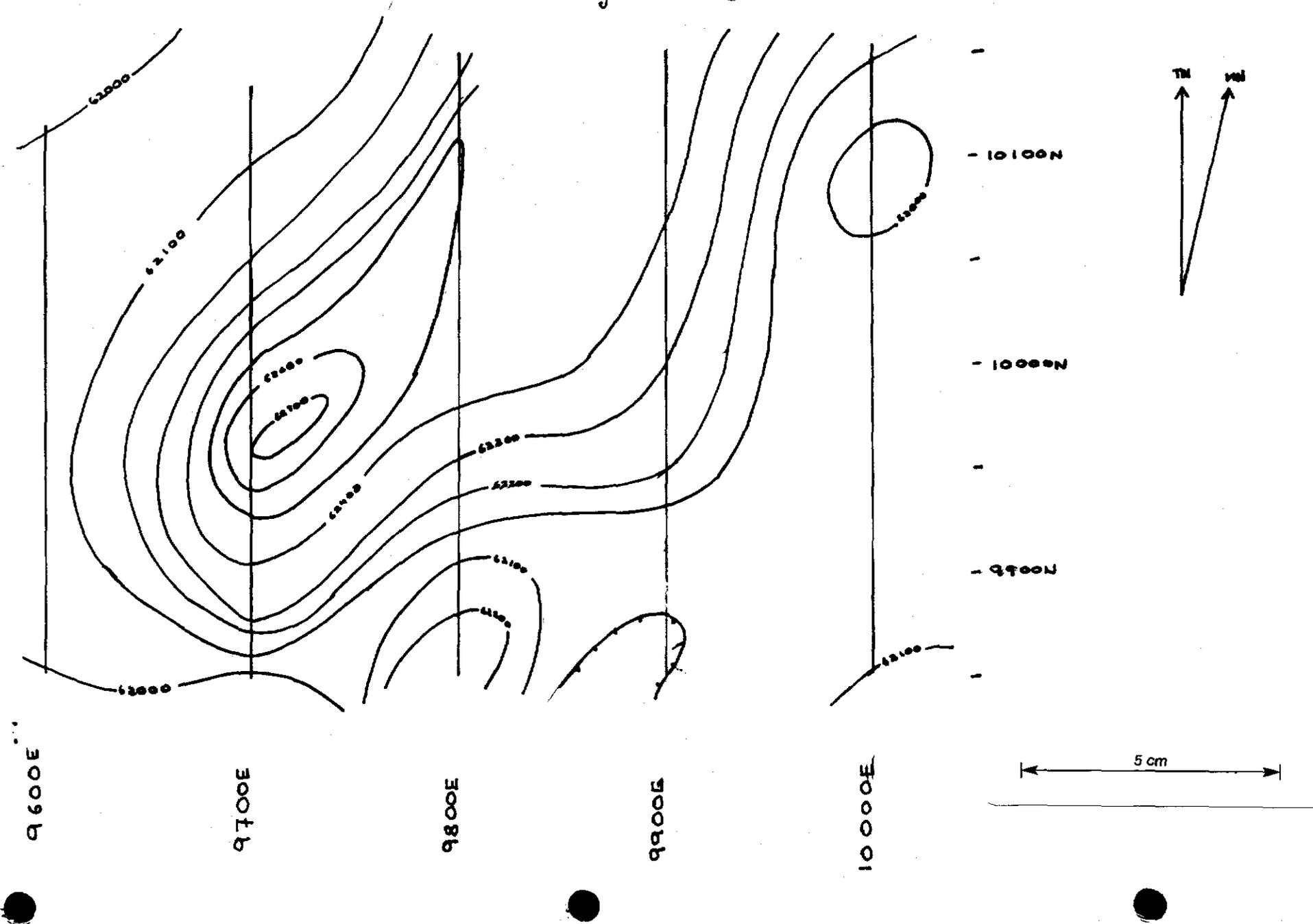
## APPENDIX 2

## Venture 7

- A. Ground Magnetic Traverses
- B. Drill Log of DDH 11
- C. Wally Fanders Petrological  
Reoport.

VENTURE 7 - DIAL RANGE - TASMANIA Contours of Total Magnetic Intensity Scale 1:2500 Cont. Int 100nT

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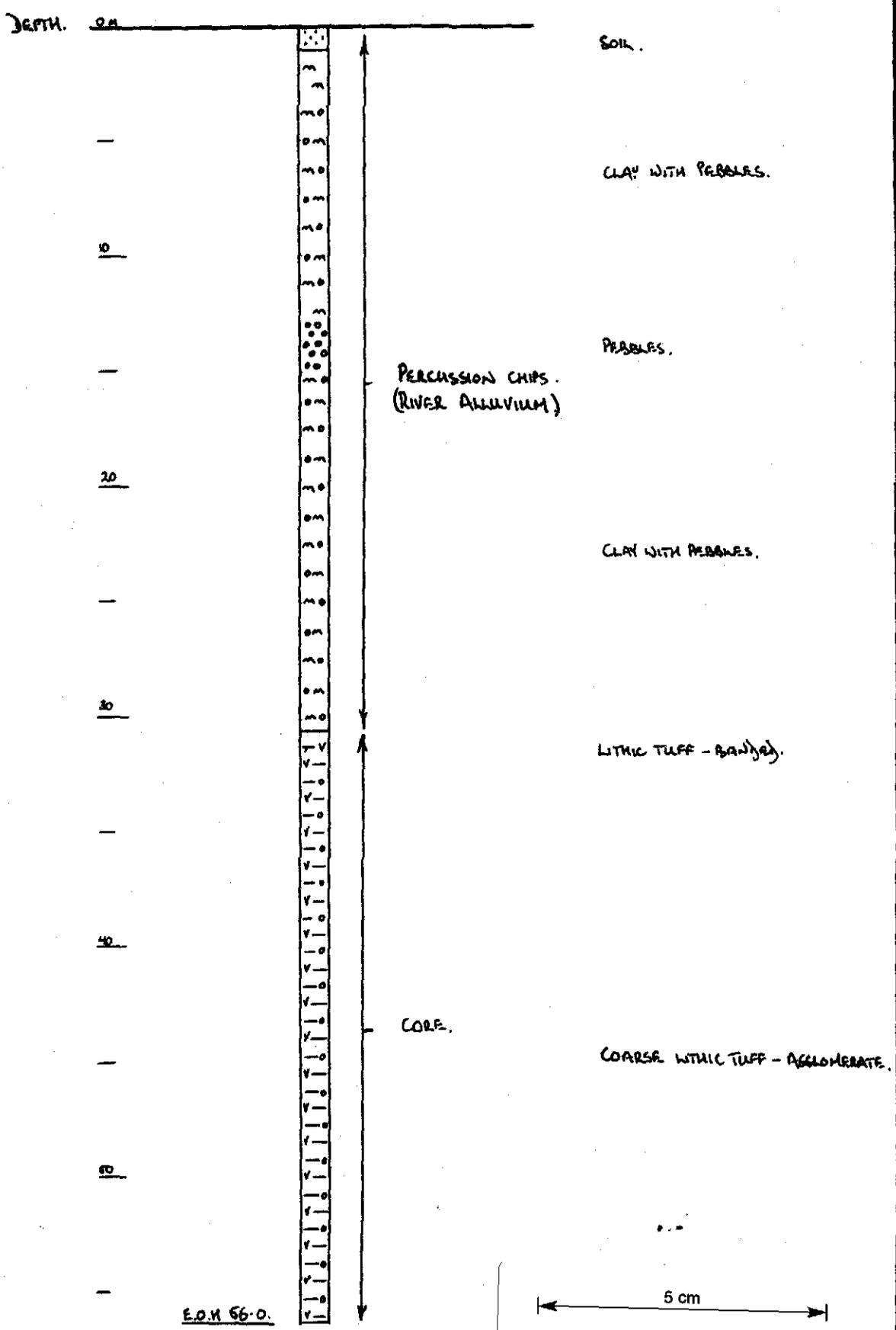


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VENTURE 7.  
DH II.



DRILL HOLE DH II., VENTURE 7. DIAL RANGE.

84-2119

10,150

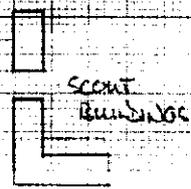
10,100

10,050

9900

9850

DRINK MORE CO-ORDS: 9760E  
10015N



10015N

STRAAL P-6

CO-ORDS OF JPH II  
9754E  
10007N

405044

UTM COORDINATES: 405044E 100000N

# EOPEKO TASMANIA DRILL LOG

Prospect VENTURE 7 Hole no. DDH 11.

DEPTH (m)		GRAVE LOG	ANGLE TO CORE AXIS		GEOLOGICAL DESCRIPTION	MINERALISATION				From (m)	To (m)	% Bt	MAG SUS (X10 <sup>-5</sup> )	ASSAYS (Lab)			
From	to		Dip	Stk		Pt											
0	1				NO SAMPLE												
1	4				GREY - YELLOW CLAY	23						23					
4	7				YELLOW PLASTIC CLAY MINOR GREY GRAVULAR FRAGMENTS	22						22					
7	10				AS ABOVE	20						20					
10	13				BROWN YELLOW CLAY WITH FRAGS OF CHERT (GREENISH, YELLOW BROWN) VARIABLE SIZES - CHERT FRAGS IN CHERT MATRIX + FRAGS OF WEATHERED BASALT	33						33					
13	16				BROWN - YELLOW CLAY WITH COARSE COARSE GRAVULAR FRAGS VARIOUS IN SIZE + SPHERICITY, PRIMARILY COMPOSED OF CHERT + SINICIF PINK VOLCANICS	160						160					
16	19				WATER TABLE												
16	19				AS ABOVE - WITH GENERALLY LARGE BOUNDERS AND MORE PLASTIC CLAY	75						75					
19	22				AS ABOVE - MORE FINE GRAVUL	120						120					
22	25				CLAY WITH SIMILAR BOUNDERS OF QTZ SINICIF ARG BASALT + CHERT - MUCH CONTAMINATED	300						300					
25	30.5				AS ABOVE	320						320					
<u>DIAMOND DRILL LOG</u>																	
30.5	31.75	44			LITHIC TUFF DARK GREY GREEN TUFF MED - FINE GRAINED FINE BANNED, CHLORITE ON FRACTURE SURFACES.					30.5	31.5	40					
										31.5	32.5	60	30				
										32.5	33.5	20					
31.75	32.25				COARSE LITHIC TUFF LARGE GRAVULAR SIZED FRAGMENTS IN A COARSE SAND SIZED MATRIX - EPICLASTIC LARGE FRAGMENTS (NOW WEATHERED) COMPOSED OF QTZ, CHLORITE + CLAYS.												

407043

044

# TOPEKO TASMANIA DRILL LOG

Prospect VENTURE 7 Hole no. 1011

DEPTH (m)		ANGLE TO CORE AXIS	GEOLOGICAL DESCRIPTION	MINERALISATION			Fracturing	From (m)	To (m)	% Rec	MAG. SUS. x 10 <sup>-5</sup>	ASSAYS (Lab)						
From	To			Lab	Si	Al						Fe	1	2	3	4		
32.25	35.5	40	BANDED WITK TUFF THE TWO ABOVE UNITS OCCUR INTERBANDED. THE COARSE BANDS SHOWING GRADED BEDDING OVER INTERVALS OF UP TO 10CMS, LOCALLY THE COARSE BANDS BECOME CHAOTIC															
							33.5	34.5	70		30							
							34.5	35.5			20							
							35.5	36.5			10							
35.5	37.0		COARSE WITK TUFF - AGGLOMERATE EPICLASTIC UNIT (COARSE UP TO 48mm) FRAGMENTS MAINLY ROUNDED SET IN A MATRIX (FINE GRAVEL SIZED). THE COMPOSITION OF THE UNIT IS VERY VARIABLE FROM Qtz, JASPER TO CHLORITE, ? FELDSPAR AND MAG. NEARLY THE MATRIX HAS THE COMPOSITION OF THE FRAGMENTS															
							36.5	37.5	33		20							
							37.5	38.5			1670							
							38.5	39.5			3190							
39.0	56.0	25	COARSE RED WITK TUFF. SIMILAR TO THE ABOVE, BUT WITH AN INCREASE IN THE Fe CONTENT SHOWN BY THE PRESENCE OF HEMATITE AND JASPER. THE UNIT OVERALL IS COARSER THAN THE ABOVE WITH AN INCREASE IN MATRIX SIZE AND A DECREASE IN THE % OF FRAGMENTS. THERE IS AN INCREASE IN THE PRESENCE OF CARBONATE WHICH CAN BE SEEN :- 1. AS A SPARSE CEMENT 2. AS VEINS 3. AS FINE SUB-MEDIAL CRISTALS. THE FRAGMENTS SHOW A CRUDE ORIENTATION AT ~ 25° TO THE CORE AXIS. ACCESSORY Pyrite IS ASSOCIATED WITH THE CARBONATE - Qtz VEINING.															
							39.5	40.5	67		3260							
							40.5	41.5			3400							
							41.5	42.5			2700							
							42.5	43.5	97		2770							
							43.5	44.5			3260							
							44.5	45.5			3050							
							45.5	46.5	91		1870							
							46.5	47.5			2210							
							47.5	48.5			1870							
							48.5	49.5	98		3610							
							49.5	50.5			2560							
							50.5	51.5			3260							
							51.5	52.5	98		3750							
							52.5	53.5			2900							
							53.5	54.5			3120							
							54.5	55.5	93		3610							
							55.5	56.0										
56.0			EOH															

407046

045

046

407047

# Central Mineralogical Services

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39 Beulah Road  
Norwood, S.A. 5067  
Telephone 42 5659

Mr. S.D. Turley  
Geologist  
Geopeko  
P.O. Box 598  
DEVONPORT / TAS. 7310

15th June, 1984

## REPORT CMS 84/6/13

YOUR REFERENCE:	Purchase Order No. KP 3391
DATE RECEIVED:	12th June, 1984
SAMPLE NOS.:	A, B, C
SUBMITTED BY:	S.D. Turley
WORK REQUESTED:	Petrology

*H.W. Fander*  
H.W. Fander, M. Sc.

047

REPORT CMS 84/6/13

Three samples were received for petrographic study; thin-sections were prepared and examined, and are described in the accompanying table.

Summary

Sample A is a type of lithic sandstone composed almost entirely of igneous material, much of which is fairly distinctive; the framework grains (pebble- to coarse-sand size) are mostly rounded or even well-rounded and are thus clearly reworked.

Samples B and C are both characterised by the presence of abundant ultrafine tourmaline which has thoroughly metasomatised the matrix/cement of both rocks. In that sense the rocks are related, though the original sediments differed in several respects; C is much coarser and judging from weathering effects, its component pebbles had a different lithology, which was more prone to alteration than the constituents in B. It is quite possible of course that B represents an intercalation of a finer, quartzose horizon in the conglomerate C, or vice versa, and that both belong to the same sedimentary unit affected by tourmalinisation. The interpretation is hampered by the weathering effects in C.

H.W. Fander, M. Sc.

Sample No.	Rock Type - Composition	Fabric	Minor Minerals	Comments
A DDH 11 (T.S. 50308)	<u>Volcanomict Pebbly Sandstone.</u> Rounded pebbles, granules and coarse sand-size grains of trachyte, melatrachyte/andesite, microtonalite, chert; interstitial quartz, carbonate and chlorite.	Many grains have quench-textures. Most particles are rounded to well-rounded.	A few cleavage fragments of coarse plagioclase; hematite grains. Carbonate veins.	Consists predominantly of extrus and minor intrusive intermediate rocks, but particles are reworked not pyroclastic.
B DDH 10	<u>Tourmalinised Lithic Sandstone.</u> A few pebbles (quartzite) and granules (quartzite, chert); matrix of smaller grains of partly tourmalinised quartzite, chert, in a mass of ultrafine pale tourmaline.	Pebbles up to 10 mm. Most grains corroded by tourmaline matrix. Weakly bedded.	Patches of finely-cellular hematite-goethite, after unknown sulphides, possibly microgranular	Intense, thorough tourmalinisation of original pebbly sandstone. Matrix cement may have been argillaceous more susceptible to metasomatism pyrite.
C Adit	<u>Weathered, Tourmalinised Conglomerate.</u> Rounded pebbles of weathered, ferruginised siltstones, quartzites, chert, micaceous hornfels, in a matrix of fine quartz, minute pale tourmaline needles.	Only the larger-scale features are preserved. Weakly bedded, unsorted.	Ferruginised pebbles with Liesegang-ring banding. Cellular goethite patches.	Severely weathered, many features obliterated, but rock could well be related to B, perhaps with more polymict pebbles.

043

APPENDIX 3

Venture 9

- A. Profiles of Total Magnetic Intensity.
- B. Petrological Report from Central Mineralogical Services.

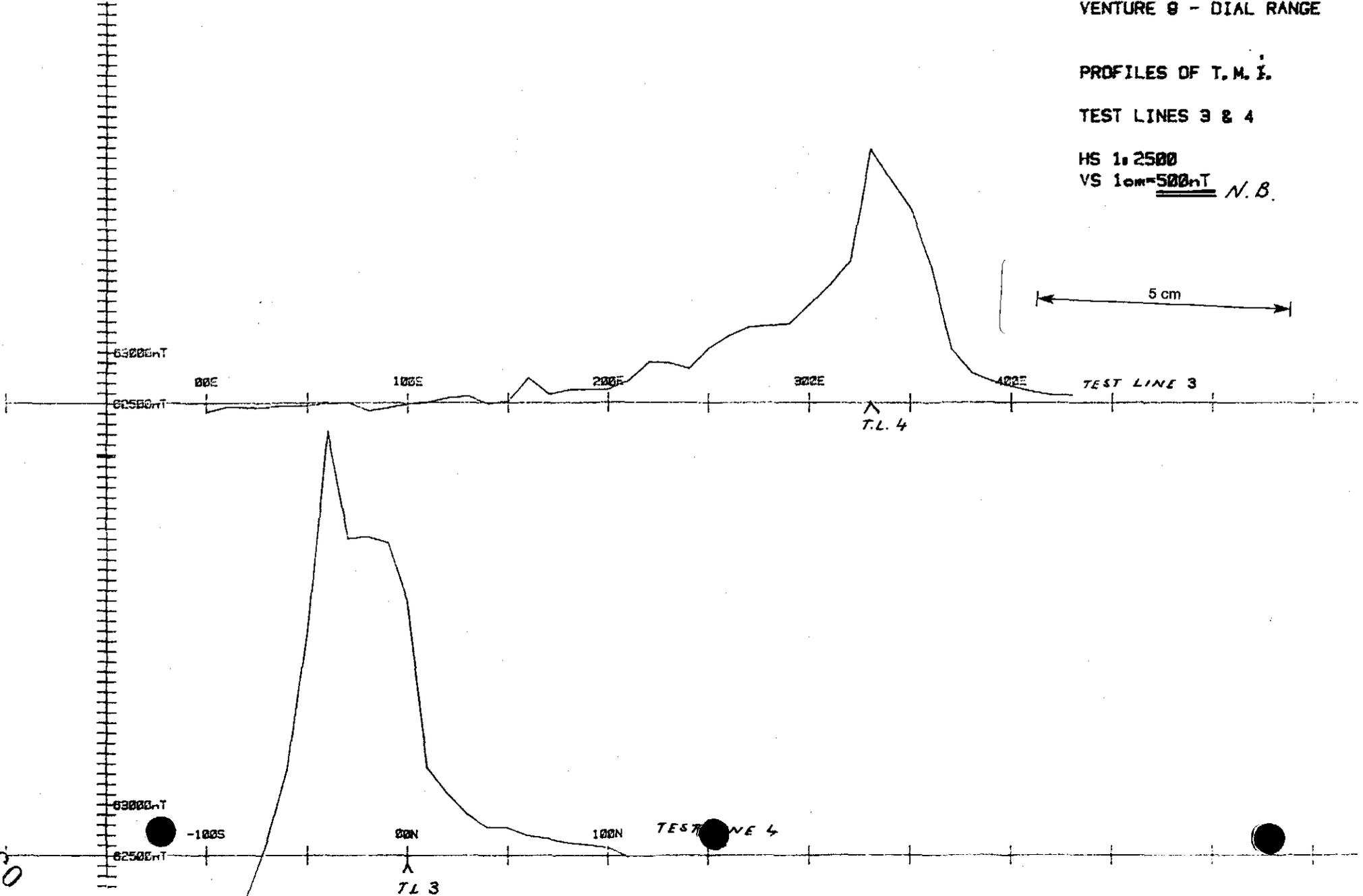
407051

VENTURE 9 - DIAL RANGE

PROFILES OF T. M. I.

TEST LINES 3 & 4

HS 1.2500  
VS 1cm=500nT N.B.



050

051

407052

Central Mineralogical Services



39 Beulah Road  
Norwood, S.A. 5067  
Telephone 42 5659

Mr. S.D. Turley  
Geologist  
Geopeko  
P.O. Box 598  
DEVONPORT / TAS. 7310

7th May, 1984

REPORT CMS 84/5/1

YOUR REFERENCE:	Purchase Order No. KP 3388
DATE RECEIVED:	1st May, 1984
SAMPLE NOS.:	KR 12618
SUBMITTED BY:	S.D. Turley
WORK REQUESTED:	Petrology

*H.W. Fander*  
H.W. Fander, M. Sc.

052  
**CENTRAL MINERALOGICAL SERVICES PTY. LTD.**

Date 7th May, 1984

407053

**SAMPLE REPORT (Mineralogy, Petrology, Ore Microscopy)**

Job No. CMS 84/5/1 Date Received: 1.5.1984  
Reference Purchase Order No. KP3388  
Sample No. KR 12618  
Nature of Sample: Hand Specimen

<b>IDENTIFICATION</b>
KR 12618
Porphyritic Leucite-Basanite

**DESCRIPTION SECTION No. 49714**

**a. Hand Specimen:**

Dark, fine-grained porphyritic igneous rock.

**b. Microscopic:**

This rock is classified as a porphyritic leucite-basanite on the basis that it contains sufficient leucite to be an "essential" mineral; however, the leucite content is marginal (possibly not quite 10 %) and thus the rock could arguably be termed an olivine basalt. The leucite content is difficult to determine optically, because it is fine-grained and interstitial rather than phenocrystal; it is assumed that the  $K_2O$  analysis can be assigned to leucite, which recalculates to about 10 % leucite.

The phenocrysts consist of fresh olivine (Mg end of series, but not forsterite), and of a purplish-brown titanite; a number of the phenocrysts are composite, with a central olivine crystal surrounded by symmetrically arranged augite crystals, or augite cores with olivine crystals (of different orientation) grouped around them; glomeroporphyritic textures are displayed by olivine.

The phenocrysts are randomly scattered through the groundmass of laths of complexly twinned fresh labradorite with random orientation, and interstitial fine matted augite needles, magnetite crystals, and clear colourless leucite which is generally too fine to show the characteristic orientated inclusions.

The rock is very fresh; only traces of chloritic/serpentinous material have developed in the olivine.

The random fabric of the rock, and relatively coarse grainsize of the ferromagnesian minerals and the plagioclase, suggest that this is a minor intrusive or, alternatively, from the interior of a flow.

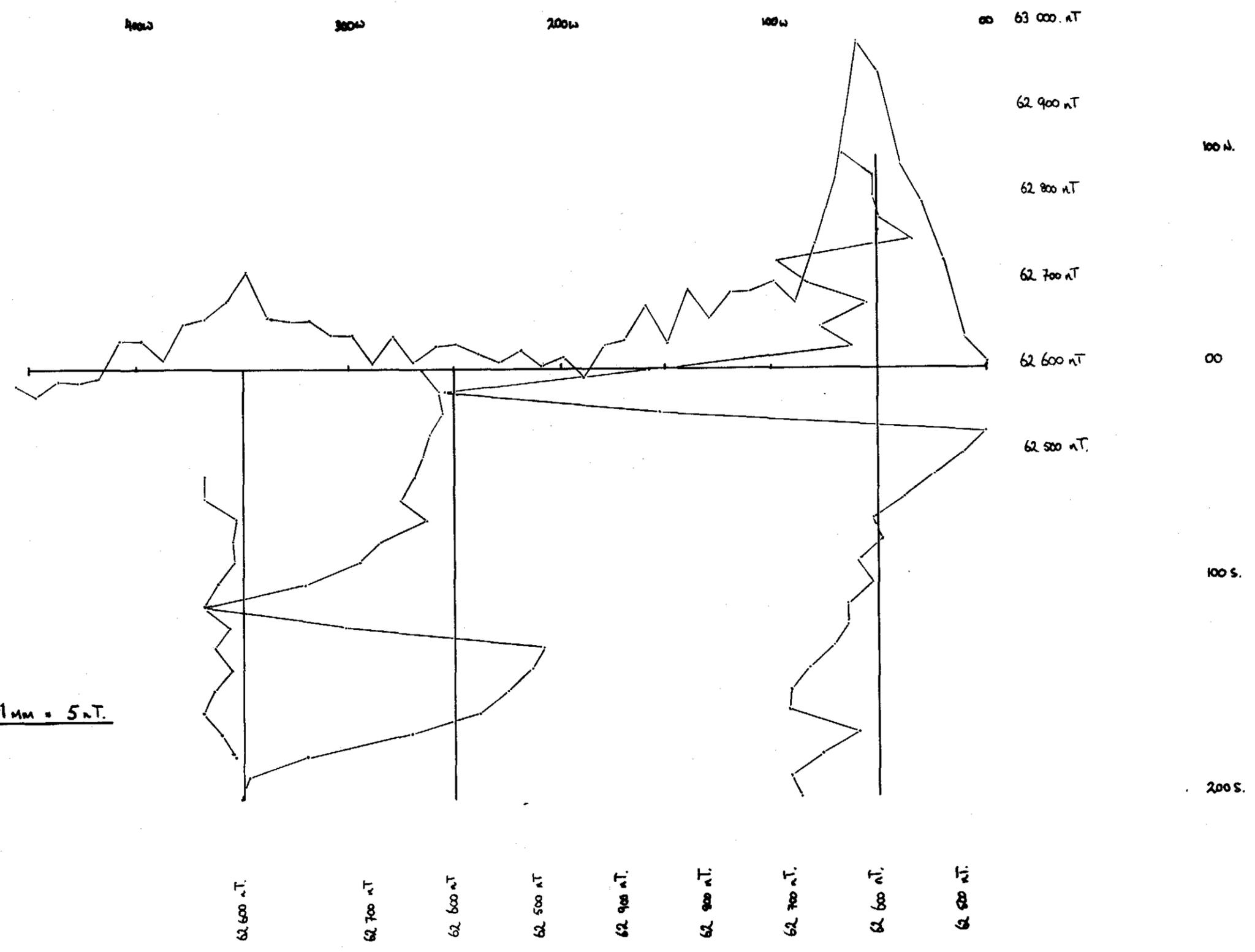
H.W. Fander, M. Sc.

APPENDIX 4

Venture 10

- A. Profiles of Total Magnetic Intensity
  
- B. Results, geochemical and geological from the soil sampling programme.





MAGNETIC SCALE 1mm = 5nT.

5 cm

62,600 nT    62,700 nT    62,600 nT    62,500 nT    62,900 nT    62,800 nT    62,700 nT    62,600 nT    62,500 nT

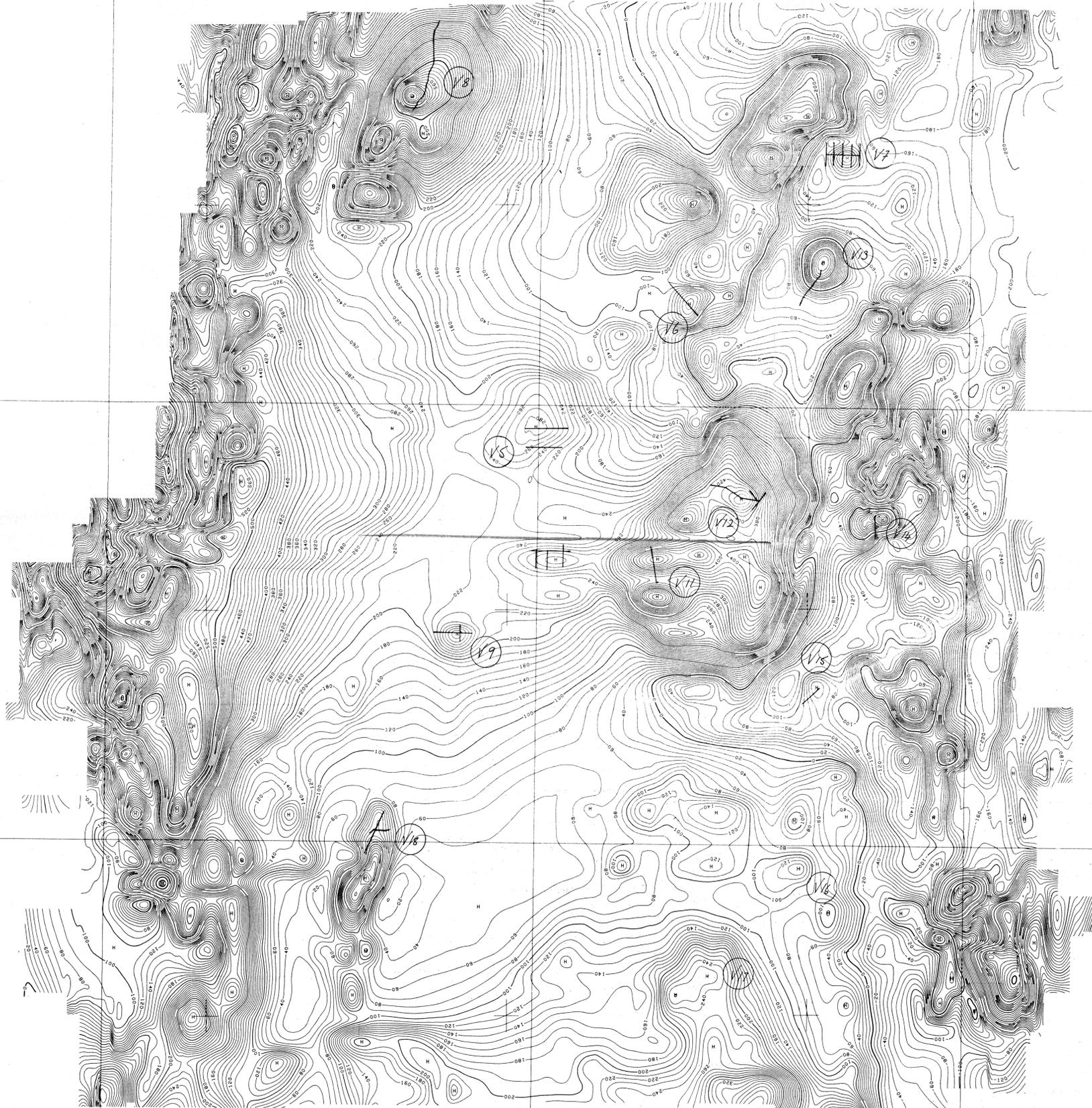
**GEOPEKO**  
A DIVISION OF PERD-WALLBEND OPERATIONS LTD

DATE: 2.11.79    DWN: [initials]  
 GEOL: [initials]    CHKD: [initials]

1:1000

DIAL RANGE PROJECT. VENTURE 5, MAGNETICS.

FIG.



**DIAL RANGE  
AIRBORNE GEOPHYSICAL SURVEY  
TOTAL MAGNETIC INTENSITY**

**BURNIE SK55-3  
FORTH 8115-IV-SW  
GEOPEKO**

*(VS)* PROSPECT LOCATIONS  
ground magnetic traverse lines

**SURVEY SYSTEM**

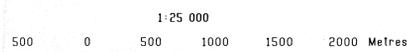
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DOPPLER DECCA 72  
COMPASS SPERRY GM9  
NAVIGATION COMPUTER DECCA TRANS 9447D  
MAGNETOMETER GEOMETRICS G813  
SPECTROMETER Stinger Installation  
GEOMETRICS GR800D  
50340 cc Nall(T1)  
8390 cc Nall(T1)  
ACQUISITION SYSTEM SONOTEK IGSS1

**FLIGHT SPECIFICATION**

TRAVERSE LINE INTERVAL 250 metres  
TRAVERSE LINE DIRECTION 180 or 360 degrees  
TIE LINE INTERVAL 2500 metres  
TIE LINE DIRECTION 90 or 270 degrees  
TERRAIN CLEARANCE 135 metres  
SPEED 55 metres/sec  
ACQUISITION INTERVAL 0.5 seconds  
NAVIGATION AND RECOVERY Aerial photography and vertical tracking films

**DATA PROCESSING**

REGIONAL FIELD IGRF Model 1980 removed  
GRID CELL SIZE 50 metres



AUSTRALIAN MAP GRID  
1:25,000 LOCATION DIAGRAM

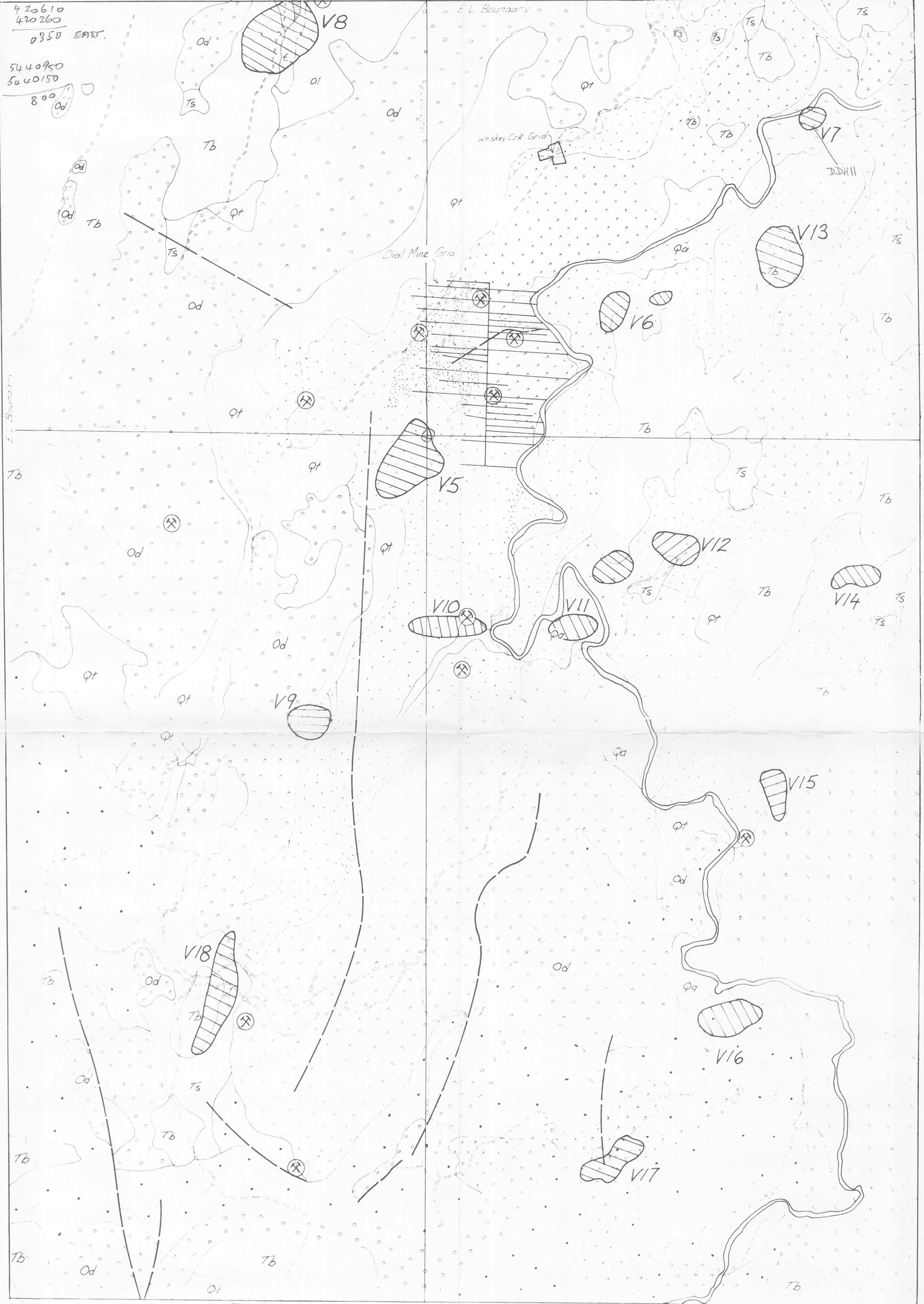
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8015 I SE	8115 IV SW	8115 IV SE
8015 II NE	8115 III NW	8115 III NE

82-2149

DRAWN	REVISION	DATE
GEOPHYSICS		
APPROVED		
DRAWING No Plan I	REVISION No.	

Flown and compiled by  
**AUSTIREX INTERNATIONAL LTD**  
November 1983 - January 1984  
Project management by  
**GEOPEKO GEOPHYSICAL GROUP**

420610  
420260  
0350 EAST.  
5440950  
5440150  
800



**QUATERNARY** Qd Alluvium

**TERTIARY** Tb Basalt Sediments

**CRETACEOUS** Ts Conglomerate Sandstone

**IGNEOUS ROCKS**

- X X X Basaltic 'dacia' possibly intrusive
- Basaltic 'dacia' LOSTER CREEK VOLCANICS

5 cm

Interpreted By \_\_\_\_\_  
 Drawn By \_\_\_\_\_  
 Date \_\_\_\_\_  
 Approved By \_\_\_\_\_  
 Revised By \_\_\_\_\_  
 Revised By \_\_\_\_\_

**GEOPEKO** 1123  
 A DIVISION OF PEKO-WALLSEND OPERATIONS LTD.

Scale 1:25000

DRAWING NO. 2  
 SHEET NO. \_\_\_\_\_

22/24/73 Dial Range Tasmania  
 Geology

407059 84-2149

415000

420000

425000

**DIAL RANGE  
AIRBORNE GEOPHYSICAL SURVEY  
TOTAL MAGNETIC INTENSITY**

**BURNIE SK55-3  
FORTH 8115-IV-SW  
GEOPEKO**

**SURVEY SYSTEM**

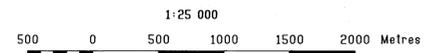
AIRCRAFT NOMAD 228 VH-CPX  
 DOPPLER DECCA 72  
 COMPASS SPERRY GM9  
 NAVIGATION COMPUTER DECCA TMS 9447D  
 MAGNETOMETER GEOMETRICS G813  
 SPECTROMETER Stinger Installation  
 Downward array GEOMETRICS SR900D  
 Upward array 50340 cc Nal(Tl)  
 ACQUISITION SYSTEM 8390 cc Nal(Tl)  
 SONOTEK ICSS1

**FLIGHT SPECIFICATION**

TRAVERSE LINE INTERVAL 250 metres  
 TRAVERSE LINE DIRECTION 180 or 360 degrees  
 TIE LINE INTERVAL 2500 metres  
 TIE LINE DIRECTION 90 or 270 degrees  
 TERRAIN CLEARANCE 135 metres  
 SPEED 55 metres/sec  
 ACQUISITION INTERVAL 0.5 seconds  
 NAVIGATION AND RECOVERY Aerial photography  
 and vertical tracking films

**DATA PROCESSING**

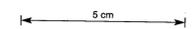
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 GRID CELL SIZE 50 metres



AUSTRALIAN MAP GRID  
 1:25,000 LOCATION DIAGRAM

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8015 I SE	8115 IV SW	8115 IV SE
8015 II NE	8115 III NW	8115 III NE

407060



84-2149

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DATE		
GEOPHYSICS		
APPROVED		
DRAWING No. <i>Plan 3</i>	REVISION No.	

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5445000

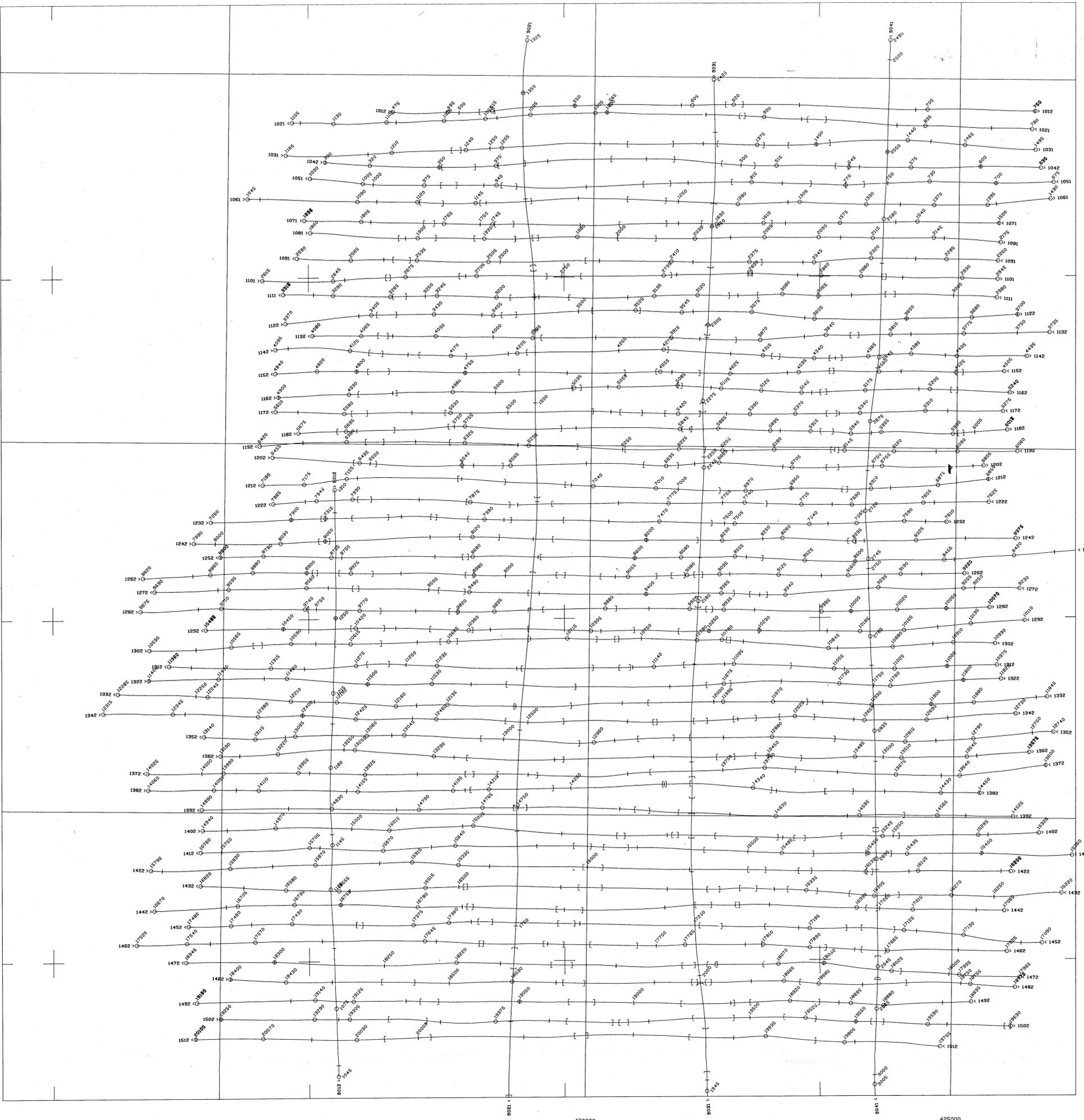
5440000

5435000

41°10'

41°20'30"

41°35'



**DIAL RANGE  
AIRBORNE GEOPHYSICAL SURVEY  
FLIGHT PATH**

**BURNIE SK55-3  
FORTH 8115-IV-SW  
GEOPEKO**

**SURVEY SYSTEM**  
 AIRCRAFT NDMAD 228 VH-CPX  
 DOPPLER DECCA 72  
 COMPASS SPERRY GM9  
 NAVIGATION COMPUTER DECCA TRANS 9447D  
 MAGNETOMETER GEOMETRICS G813  
 SPECTROMETER Stinger Installation  
 GEOMETRICS GR600D  
 Downward array 50340 cc Na(Tl)  
 Upward array 8390 cc Na(Tl)  
 ACQUISITION SYSTEM SONOTEK IG551

**FLIGHT SPECIFICATION**  
 TRAVERSE LINE INTERVAL 250 metres  
 TRAVERSE LINE DIRECTION 180 or 360 degrees  
 TIE LINE INTERVAL 2500 metres  
 TIE LINE DIRECTION 90 or 270 degrees  
 TERRAIN CLEARANCE 135 metres  
 SPEED 55 metres/sec  
 ACQUISITION INTERVAL 0.5 seconds  
 NAVIGATION AND RECOVERY Aerial photography and vertical tracking films



AUSTRALIAN MAP GRID  
1:25,000 LOCATION DIAGRAM

407061



8015 I NE	8115 IV NW	8115 IV NE
8015 I SE	8115 IV SW	8115 IV SE
8015 II NE	8115 III NW	8115 III NE

84-2149

DRAWN	REVISION	DATE
DRAWING No.	REVISION No.	
Plan 4		

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