

000

438001

MICROFILMED

SEARCHED	INDEXED	SERIALIZED	FILED
19 APR 1984			
DEPT. OF MINES			
REF. No. 3955/84			

OPEN FILE

PROGRESS REPORT ON HEAP OF ROCKS

E.L. 46/80

TASMANIA

JOHN PEMBERTON

and

JOHN SUMPTON

JULY, 1983

CONTENTS

	<u>Page No</u>
1. INTRODUCTION	2.
2. SUMMARY	3.
3. RECOMMENDATIONS	4.
4. PREVIOUS WORK	5.
5. WORK COMPLETED THIS SEASON	6.
6. GEOLOGY AND GEOCHEMISTRY	7.
7. GEOPHYSICS	8.
8. CONCLUSION	10.
9. REFERENCES	11.
10. APPENDIX I	12.

1. INTRODUCTION

The Heap of Rocks E.L. 46/80 is in the central north west of Tasmania with it's southern boundary adjacent to the Cradle Mt - Lake St Clair National Park (see Fig 1). In 1980 the area of 7sq km was pegged in order that tin and tungsten could be explored in the Precambrian metasediments. This area was included in the joint venture with Aberfoyle Limited on E.L. 2/70.

In this report previous work and work done during 1983 are discussed and recommendations put forward. John Sumpton was responsible for the section on geophysics and John Pemberton the remainder.

003

2. SUMMARY

During April a series of Dighem II airborne EM and magnetic anomalies were followed up within E.L. 46/80. The area of anomalies is referred to as Prover 11.

A panned concentrate stream sediment survey was completed on two streams draining the area of airborne anomalies. In the N.W. corner of the E.L. two samples were anomalous in tungsten.

The area of the airborne anomalies was covered by a reconnaissance grid. Magnetics was read over the grid and two lines of C horizon sampling was completed over the magnetic anomalies.

Results were disappointing and it is recommended that the ground be relinquished providing that a small follow up survey on the W anomalies proves negative.

004

438005

4.

3. RECOMMENDATIONS

The geophysical and geochemical results from Prover 11 do not suggest that the area is prospective for Sn-W mineralization.

Anomalous values of W in the N.W. corner of the E.L. do warrant follow up to explain the source of the W. If the follow up survey is negative it is recommended that the area be relinquished.

4. PREVIOUS WORK

Paringa Mining and Exploration conducted a helicopter borne electromagnetic and magnetometer survey over the northern parts of E.L. 2/70 in 1979 using McPhar as the contractors. A series of AEM anomalies found within the Heap of Rocks area were attributed to conductors within Precambrian metasediments. No further work was done.

During 1980 the area was flown using the Dighem II electromagnetic/resistivity and magnetic system. This airborne survey revealed a zone of conductive bedrock in the centre of the E.L. with a coincidental weak magnetic anomaly. In the previous progress report on the area Heithersay (1982) noted a sequence of graphitic schists which were probably responsible for the EM anomalies. The magnetic character was not explained.

In 1981 Geopeko took a number of stream sediment and panned concentrate samples up Fleece Creek. The results gave some encouragement with Sn-W anomalies within the Heap of Rocks E.L. 46/80.

5. WORK COMPLETED THIS SEASON

A panned concentrate stream sediment survey was undertaken in Fleece and Amelia Creeks. A total of 23 samples were taken using two full pans from the best available site. These samples were panned down to \pm 20gm and then sent to A.L.S. for assay. Elements analysed were Cu, Pb, Zn, Ag and Fe by A.A.S. and Sn-W by XRF.

A reconnaissance grid of 4.2km was established over the assumed position of the airborne EM and magnetic anomalies. This grid is referred to as Prover 11. Ground magnetics was read over the grid and extended in the south to adequately cover the magnetic anomalies. Two lines of C horizon hand held auger samples were taken over the magnetic zones. These samples were assayed by A.L.S. for Cu, Pb, Zn, Ag, Fe, Sn and W. The grid was mapped at 1:5000 but the lack of outcrop limited interpretation.

6. GEOLOGY AND GEOCHEMISTRY

E.L. 46/80 is part of the central Tasmanian basement known as the Tyennan nucleus. The sequence within the E.L. is dominated by Precambrian quartzite and quartz mica schists with a N.E. trend (see Plan No 1).

The EM and magnetic anomalies are in the central portion of the E.L. and coincide with schists that have a high carbonaceous component. Regional metamorphism has progressed to greenschist facies with sericitic and graphitic schists. Deformation features such as crenulated cleavage and lineations are present.

The panned concentrate results are presented on Plans No 2,3 and 4. High Fe values (upto 39.1%) in the middle portion of Amelia Creek are coincident with one of the magnetic anomalies. Secondary Fe rich concretions were noted in some of these samples. The Pb and Zn values are slightly raised over the same interval.

Fleece Creek has two anomalous W values (160 and 170ppm) in the N.W. corner of the E.L. One of these samples was taken just up stream from Carter's Pb-Ag prospect and reflected this in 840ppm Pb. Previous stream sediment and panned concentrate samples taken in this area have had anomalous values of W and Sn. A report by Rugless (1976) noted the occurrence of sulphide bearing tourmalinized sediment in Fleece Creek about 200m up stream from Carter's prospect.

The auger sampling was on lines 9000N and 9200N (see figs 2 and 3). Results were disappointing with one sample (TS 23603) on 9000N at 10250E having anomalous Cu (200ppm) and Pb (140ppm). The high Fe values of the panned samples was not repeated in the auger samples.

7. GEOPHYSICS

DIGHEM II

Heithersay (1982) draws attention to a series of electromagnetic anomalies with closely related magnetic highs detected during the DIGHEM II airborne electromagnetic/magnetometer survey conducted during 1980. The electromagnetic responses are broad, high amplitude zones such as may be expected from a considerable thickness of conducting material. The graphitic siltstones and mudstones observed during reconnaissance mapping are consistent with being the source of these anomalies. The grid placed over the aeromagnetic anomaly was subjected to a ground magnetometer survey to further assess these responses.

GROUND MAGNETICS

The ground magnetometer survey was conducted with Geometrics 816/826 total field instruments. The profiles are presented in Plan 5. The data was collected on two separate occasions, and on the second occasion there was considerable magnetic storm activity. As can be seen from the profiles this activity degraded the quality of the data considerably, however the data quality is still considered sufficient to enable the assessment of any anomalies within the survey area. Of course, if any future work is undertaken, this work should be repeated.

The magnetometer survey revealed a narrow, elongate magnetic anomaly which is coincident with the major creek bed in the area and parallels, and lies within the zone of low airborne resistivity. This anomaly is 'spikey' and likely to be a response due to a subcropping lithological unit containing a low percentage of magnetite, and possibly more easily weathered than adjacent rock types. It is not likely to have as its source a discrete ore mass.

009

Also encountered within the survey area was a much more discrete anomaly represented best on line 9000N. Fig 6 shows an attempt to model this anomaly with a two dimensional dyke like body. Although this is not strictly valid in this case as the source is likely to be of limited strike length, the solution of a vertical body with a width of 40m and a depth to top of 10m gives a reasonable idea of the likely dimensions of the body. Also shown is the airborne anomaly which would be generated by such a body which, as can be seen, is consistent with the airborne anomaly from flight line 289.

The ground magnetometer survey has revealed that anomaly A (refer Fig 4 taken from Heithersay's Figure 2), is the result of a false correlation between a strike limited shallow body (giving rise to the anomaly on flight line 289) with the linear "creek" anomaly (giving rise to the response on flight lines 287 and 288). Anomalies B, the northern part of anomaly A, and anomaly C are all likely to be attributable to the "creek" anomaly, their failure to form a consistent trend being most likely caused through poor flight path recovery.

010

8. CONCLUSIONS

The results of the investigation of the airborne anomalies at Prover 11 indicate an EM source in the graphitic schists. A lack of encouraging geochemistry and magnetics downgraded the anomalies and it is recommended that no further work be done on Prover 11.

The W anomalies in the N.W. corner of the E.L. have been detected in two surveys. It would be of interest to locate the source of the W prior to relinquishment of the E.L.

9. REFERENCES

- Heithersay, P, 1982: Progress Report on Heap of Rocks.
E.L. 46/80 Tasmania.
- Rugless, C.S., 1976: Final Report on Fury Plains Prospect,
E.L. 14/74.
(Comstaff Proprietary Ltd)

**GEOPEKO**

A DIVISION OF PEKO-WALLSEND OPERATIONS LTD.

INTER-OFFICE MEMO

TO: JOHN PEMBERTON

DATE: 20th July 1983

FROM: SIMON GATEHOUSE

COPIES TO:

SUBJECT: EL 46/80 HEAP OF ROCK - W ANOMALY

Re: Memo dated 13th July 1983

John,

Some thoughts which may or may not assist you in your deliberations are as follows.

A) Ignoring for the moment the .26% - .33% location.

1. The remaining sites may be recalculated to variously 0-4 ppm in total -3 mm stream fraction. In samples containing greater than 100 ppm, the variability of sampling, panning etc. would mean that they all have approximately the same significance and might be considered anomalous with regard to those less than 100 ppm. Such levels could conceivably be produced by say 1-4 0.5 mm diameter grains of wolframite in each of the 3 kgm collected.

2. There is not a significant analytical difference between 1981/1982 and 1983 results when variability of sample size and degree of concentration are considered. I think the imprecision resulting from such a sampling process, involving such small target grain probabilities (1 in 1×10^6), would be much greater than could be expected from analytical variability.

3. It would be easy to imagine a few small wolframite/scheelite grains being in 3 kgm of material in 'selected trap' sites if the area being drained had very sporadic quartz veination containing very sparsely distributed tungsten minerals. Similarly, areas with less quartz veination could give no grains in trap sites.

B) Addressing the .26% - .33% location.

1. One reaction is that the site sampled in 1983 was not the 'best available' because the site sampled the previous time had more tungsten. After U.V. lamping a scheelite bearing stream in North Queensland, I can imagine that if

two 'good' trap sites within 0.5 metres of each other had been panned the results in panned concentrates on a similar basis to yours could have varied between thousands of ppm and tens of percent. I am unable to say whether this type of variability could be expected in the hundreds to thousands of ppm range. I see no reason why it should not. The stream did not drain 'significant' mineralisation.

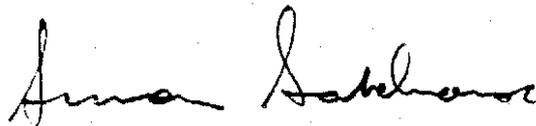
2. Very roughly 0.3% tungsten as say wolframite in 20 gms of 3 mm diameter material calculates to say 100 mm³. This represents 7 grains of 3 mm diameter. At this location you may be looking at the difference between 7 grains of diameter 3 mm in 1981/1982 in trap site A and 3 grains of diameter 0.5 in 1983 in trap site B.

3. An alternative might be that the source of the tungsten bearing material in the 0.3% trap site may be local to the extent that the same material is not being supplied to the 'lesser' trap site. Such a source might be a wolframite bearing vein very near to that trap. If such a source is very near to that trap then 0.33% in concentrates is not a great deal of tungsten.

If there are no analytical errors, (there is no reason to suggest that there has been) then the levels and variability of tungsten are consistent with wolframite or scheelite being derived from low levels in sparse and sporadic veination in a zone represented by the samples highlighted on the photocopies supplied. When compared with the area being drained the absolute levels of tungsten in concentrates does not suggest the presence of significant outcropping tungsten mineralisation actively being eroded into the stream.

I hope those thoughts help you in your deliberations.

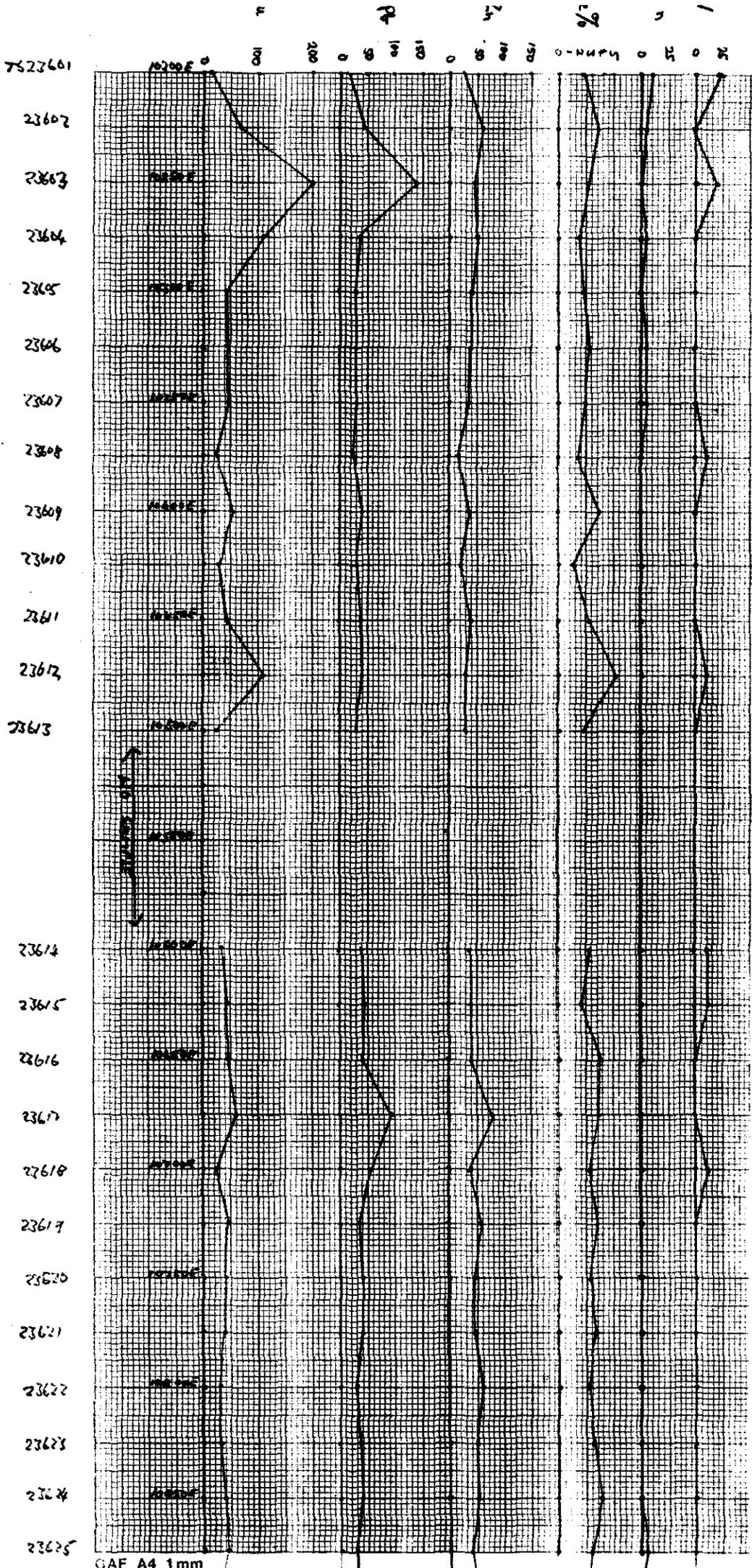
Regards,



SIMON GATEHOUSE

015

438016

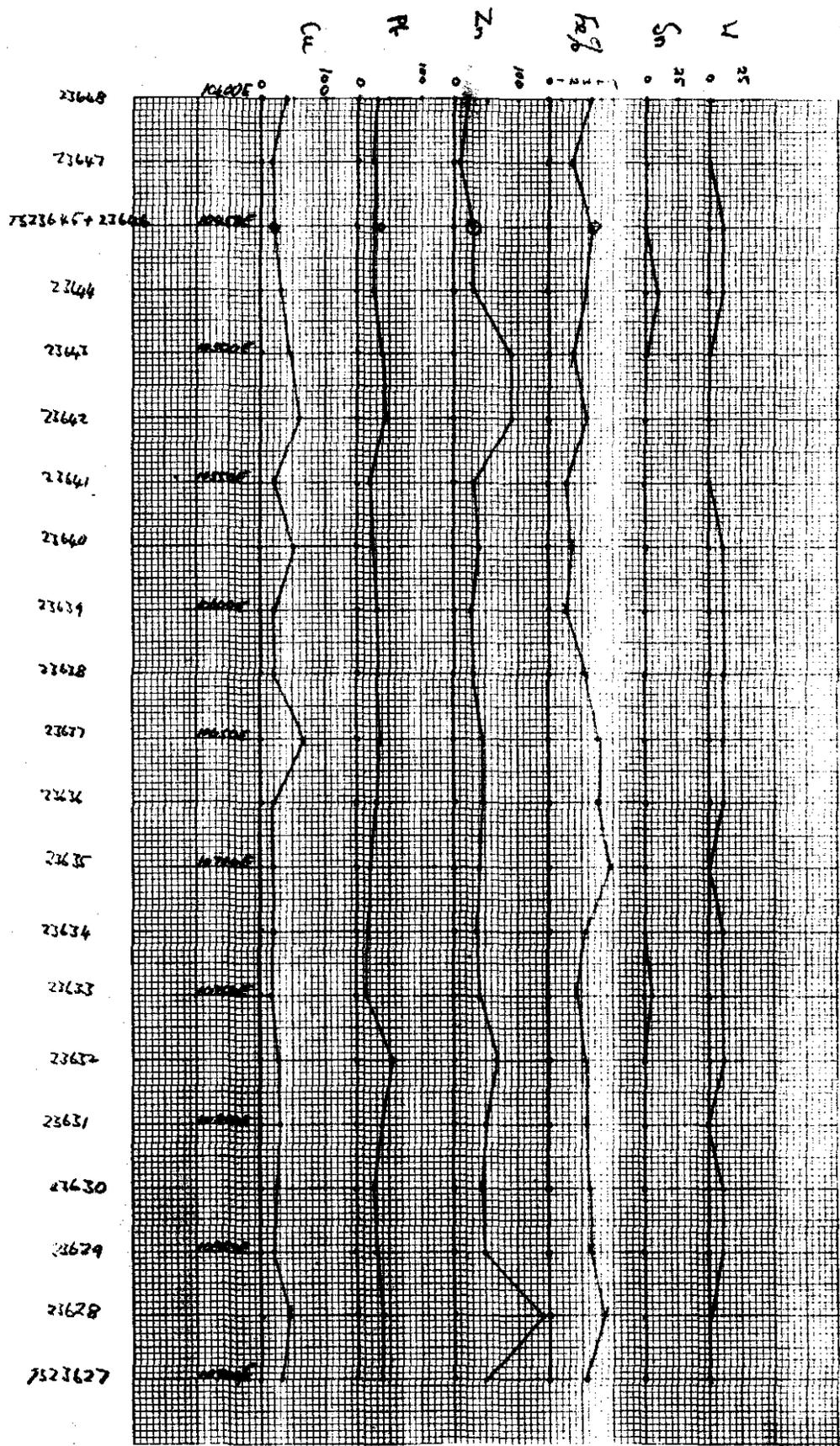


Heap of
Rocks
9000 N

Fig. 2

GAF A4 1mm

J16
438017



Heap of Rocks
9200 N

Fig. 3

E.L. 46/89

ANOMALY A

ANOMALY B

ANOMALY C

CRADLE MT., LAKE ST

E.L. 46/80 HEAP OF ROCKS, TAS.

1:10 000

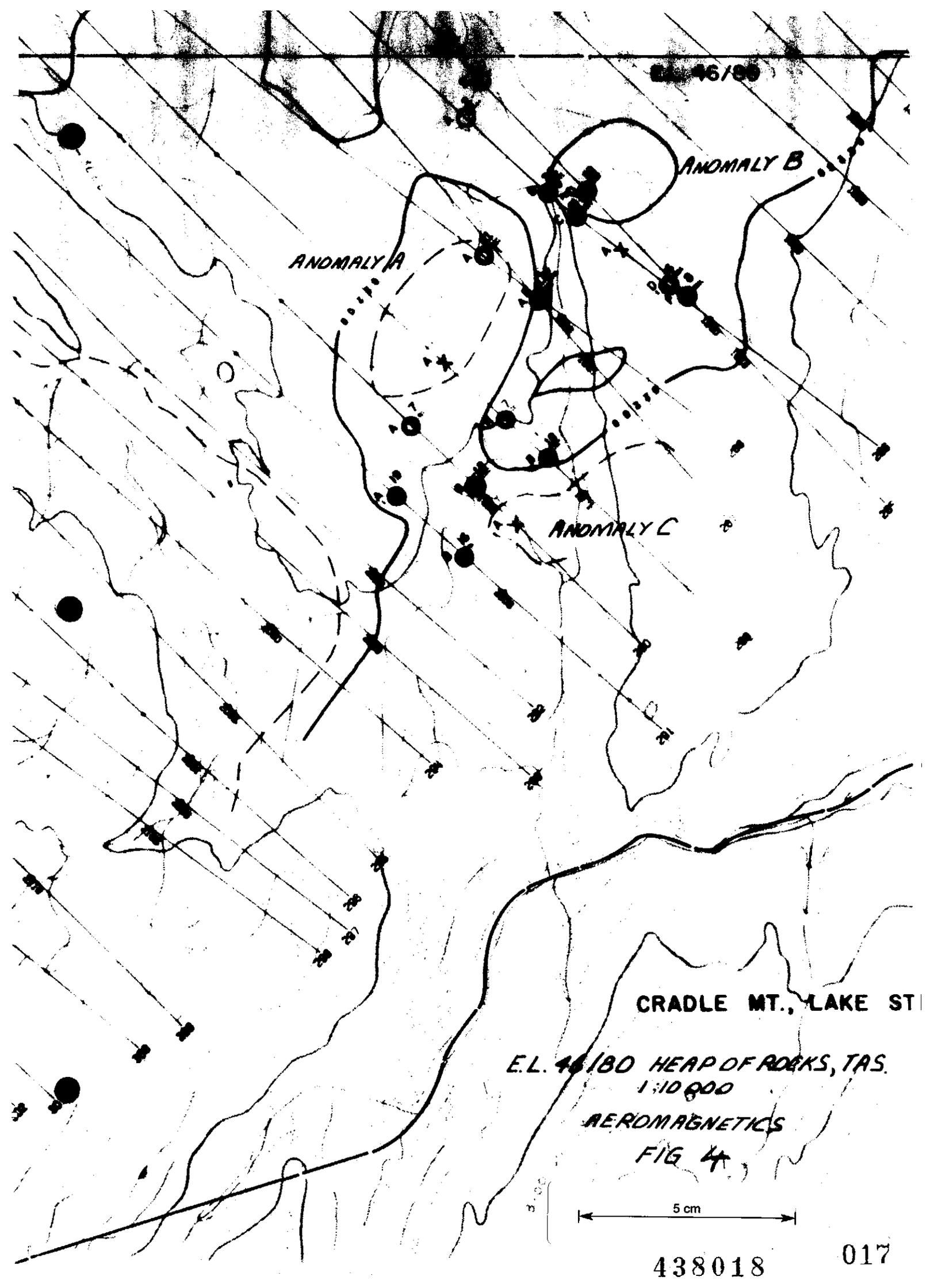
AEROMAGNETICS

FIG 4

5 cm

438018

017



BIRD ALTITUDE ch.21

MAGNETOMETER ch.20

STANDARD-INPHASE ch.22

STANDARD-QUADRATURE ch.23

WHALETAIL-INPHASE ch.24

WHALETAIL-QUADRATURE ch.25
CONDUCTANCE ch.37

DIFFERENCE-INPHASE ch.33

DIFFERENCE-QUADRATURE ch.34

APPARENT DEPTH ch.41

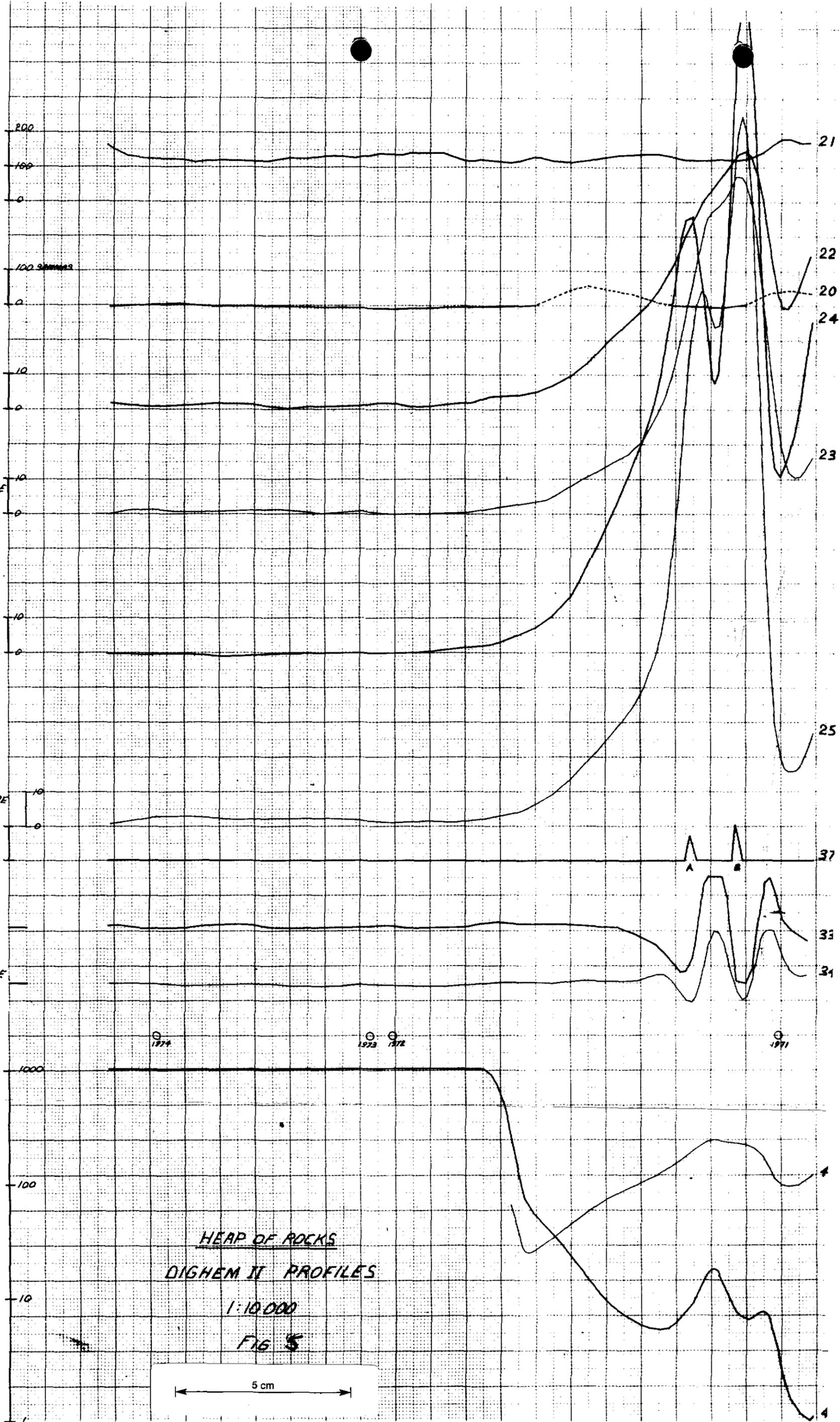
RESISTIVITY ch.40

HEAP OF ROCKS
DIGHEM II PROFILES

1:10,000

FIG 5

5 cm



438019

018

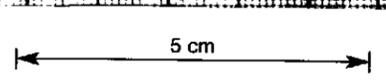
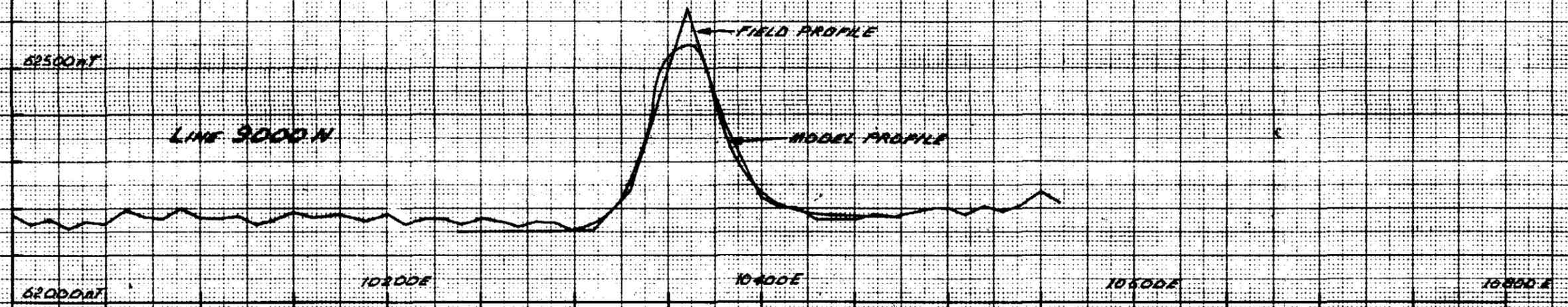
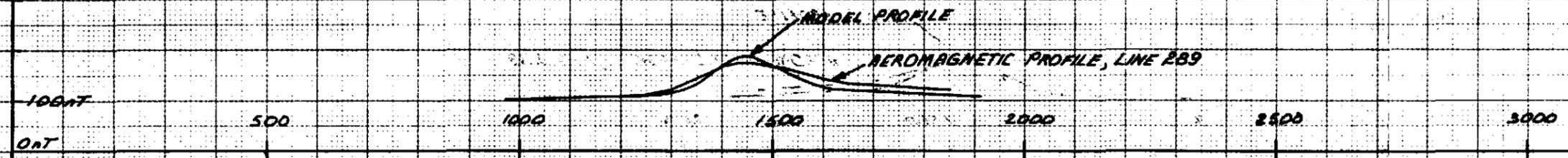
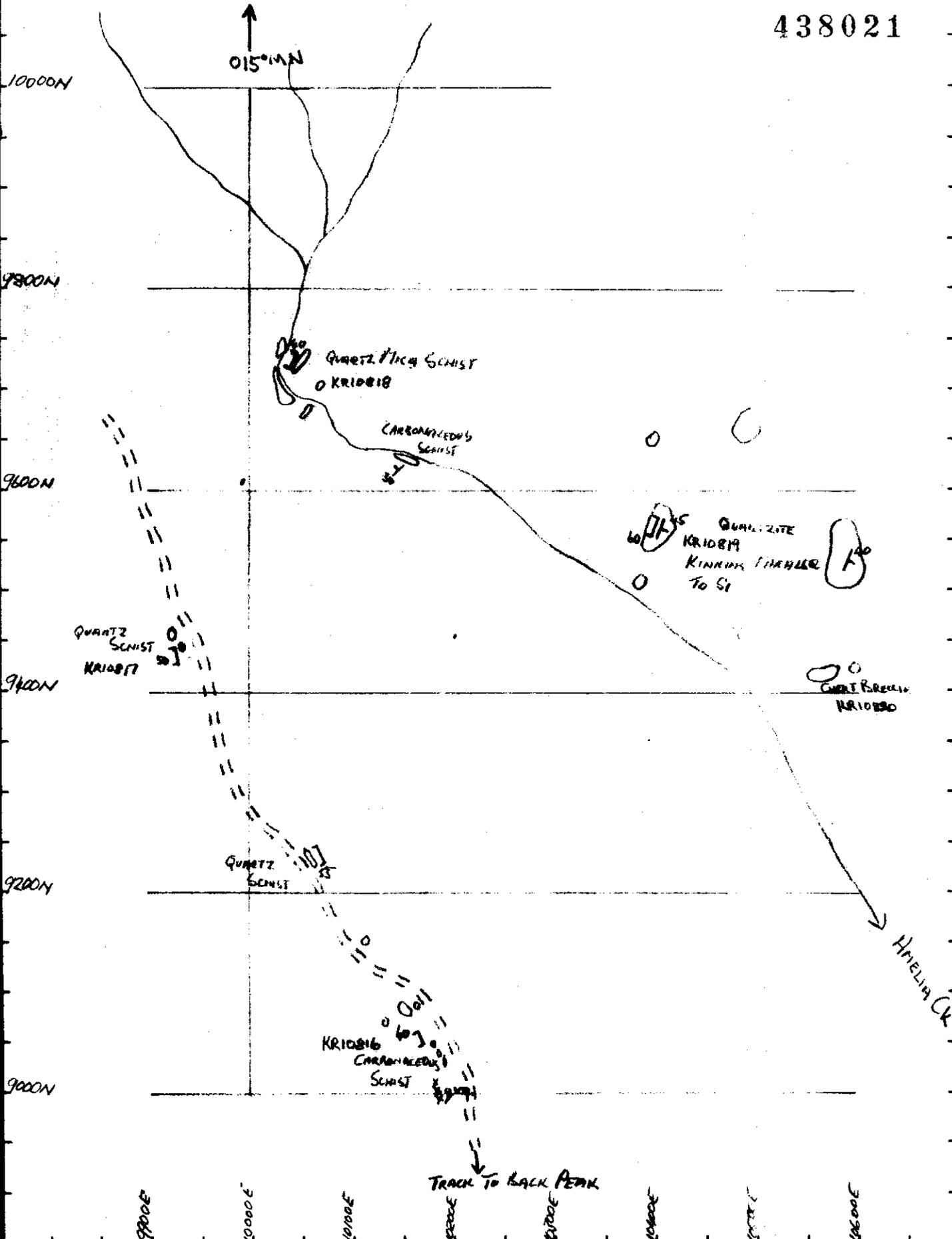


FIG 6
HEAP OF ROCKS
PROFILES OF GROUND AND AIRBORNE TOTAL
MAGNETIC INTENSITY AND THEORETICAL
MODEL OF A 2-D DYKE LIKE BODY WITH
DEPTH TO TOP OF 10m AND WIDTH OF 40m.

020

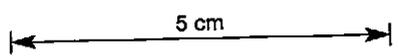
438021



LEGEND:

-
-
-
-

PLAN 1



DATE: 7/83
 GEOL: JP
 DWN:
 CHKO:

GEOPEKO LIMITED
 KING ISLAND

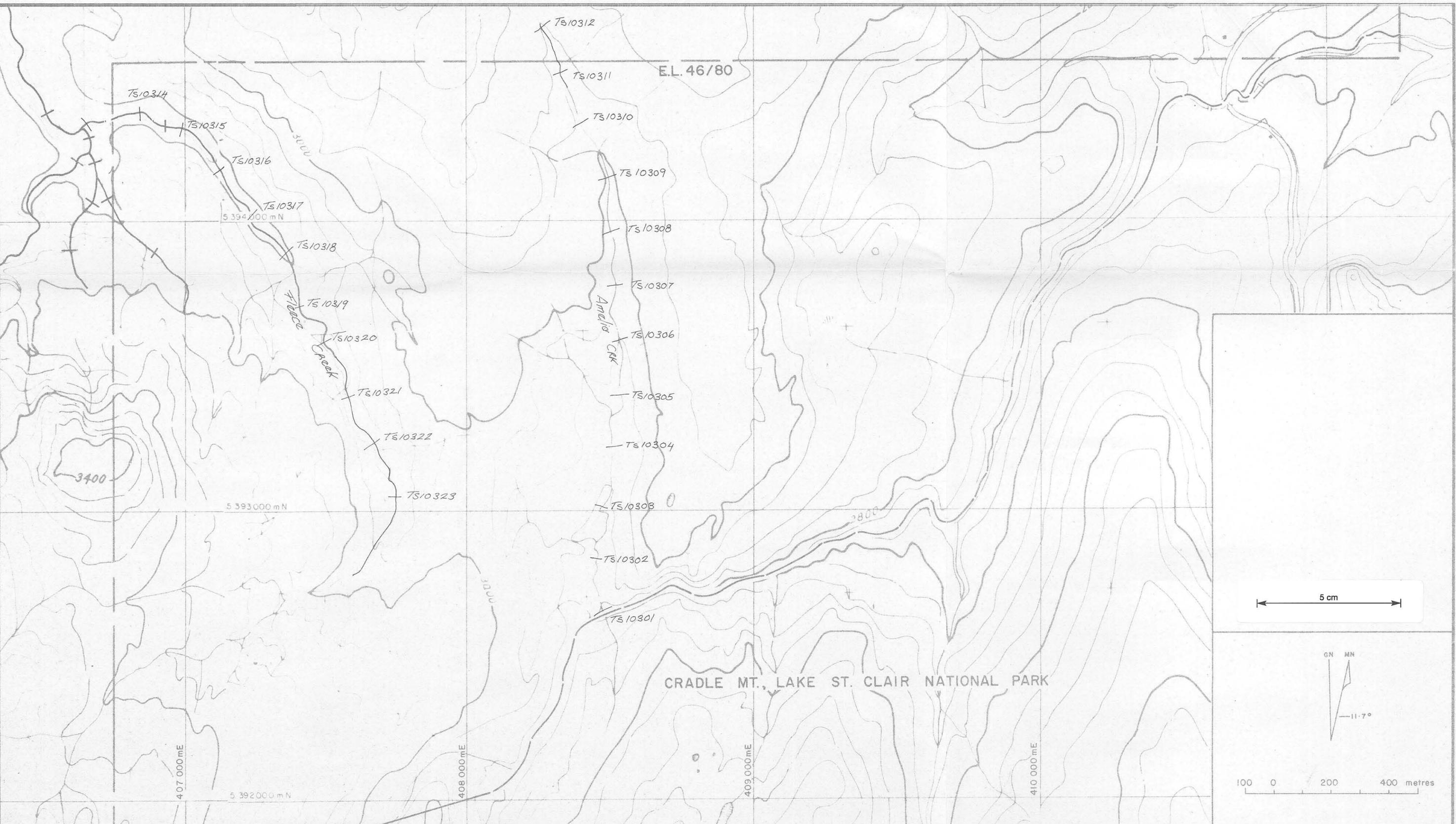
Scale 1:25000

NO K

HETAP OF ROCKS

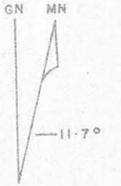
PRIMER II

GEOLOGY



CRADLE MT., LAKE ST. CLAIR NATIONAL PARK

5 cm



100 0 200 400 metres

Sample number Ts12068

sample location

GEOPEKO

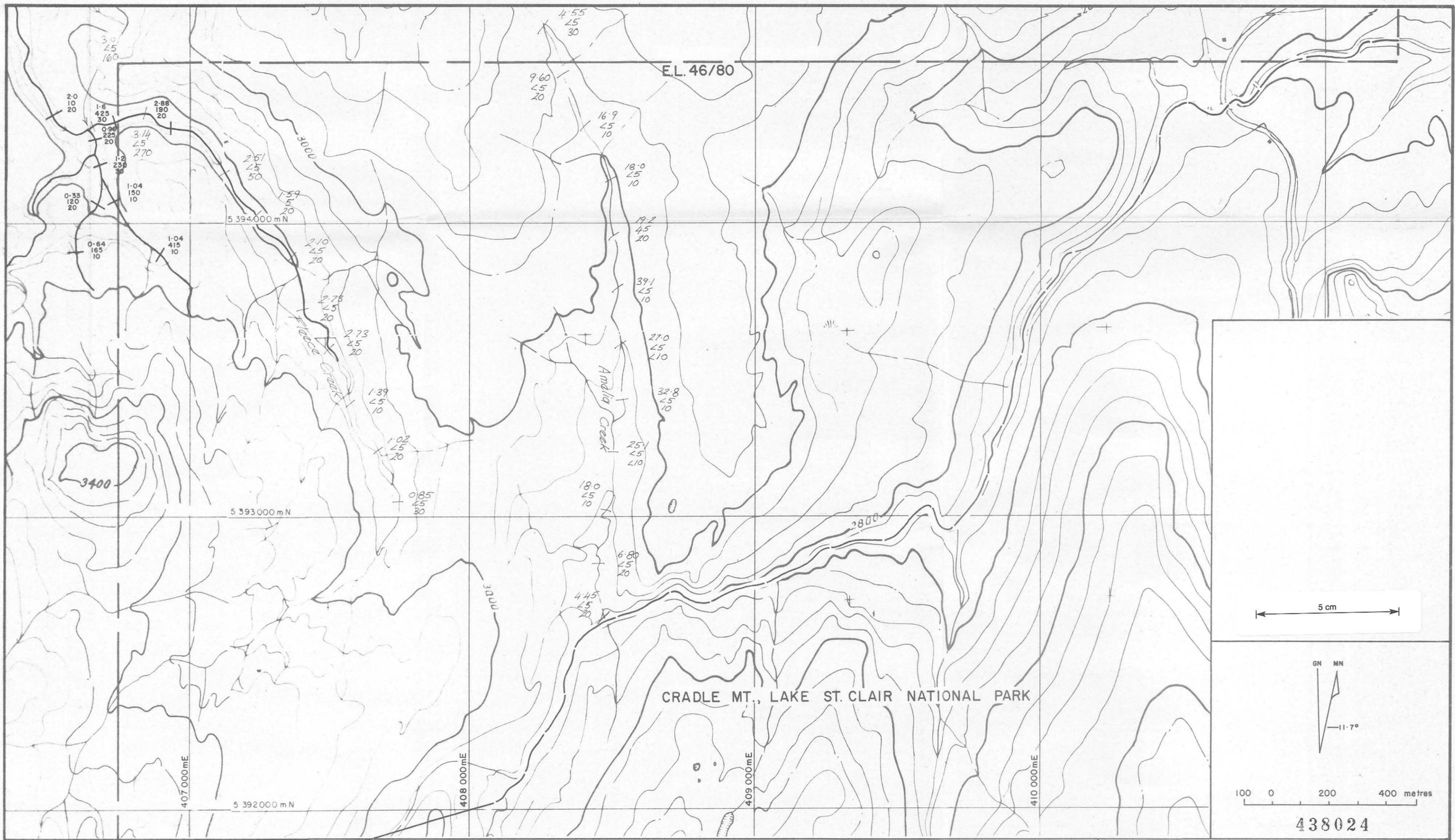
E.L. 46/80 HEAP OF ROCKS, TAS.
 DRAINAGE GEOCHEMICAL RESULTS
Panned Concentrate Sample Location and numbers

022

Plan 2.

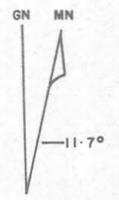
438022

DATE: 13 /12/82 GEOL: P.H. *PH* DRAWN: R.Tog PLAN HR 46/80-3



CRADLE MT., LAKE ST. CLAIR NATIONAL PARK

5 cm



100 0 200 400 metres

438024

ANOMALY THRESHOLDS		Pencil No.
Fe	> 5%	19-33
Sn	> 30ppm	19-6
W	> 30ppm	

sample location — X —

GEOPEKO

E.L. 46/80 HEAP OF ROCKS, TAS.

DRAINAGE GEOCHEMICAL RESULTS

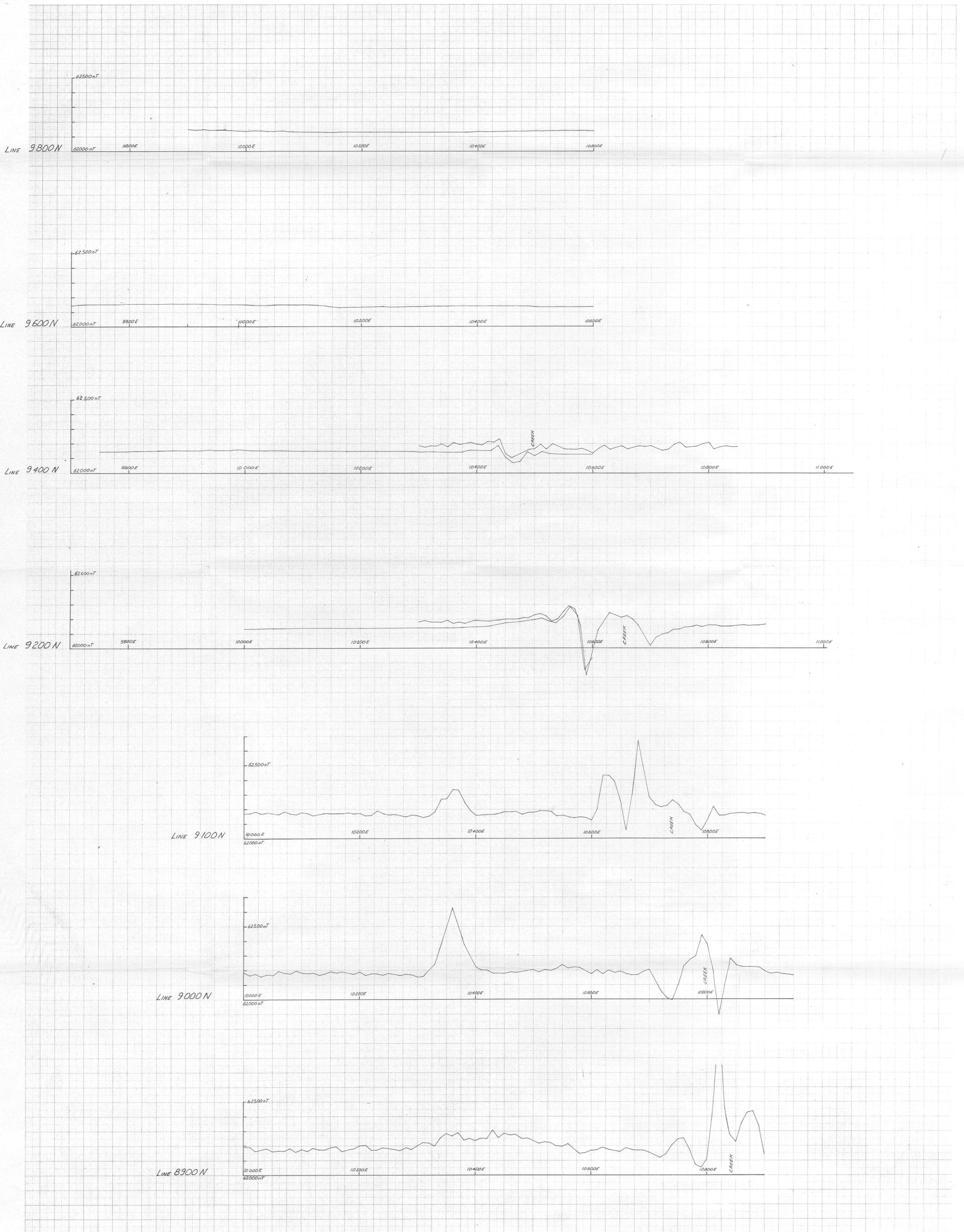
Panned Concentrate 024

Fe, Sn & W

Plan 4.

DATE: 13/12/82 | GEOL: P.H. P.H. | DRAWN: R.Tog | PLAN HR 46/80-2

84-2117



438025



HORIZ. SCALE
1:2500
VERT. SCALE
1cm = 100nT



DATE: MAY 1983
GEOLOGIST:
DRAWN: M.W.S.
CHECKED:

GEOPEKO
A DIVISION OF PEKO-WALLSEND OPERATIONS LTD - DEVONPORT

25 0 25 50 75 100 125
metres

Scale: Sheet No: 025

HEAP OF ROCKS
PROFILES OF TOTAL MAGNETIC INTENSITY

PLAN
5

E.L. 46/80

5 394 000 mN

5 393 000 mN

5 392 000 mN

407 000 mE

408 000 mE

409 000 mE

410 000 mE

Flinders Creek

Amelia Crk.

CRADLE MT., LAKE ST. CLAIR NATIONAL PARK

QUARTZ MICA SCHIST
KR 10818

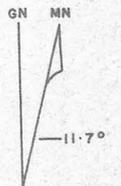
QUARTZITE
KR 10819
KINILING PARALLEL
TO S1

CHEST BRECCIA
KR 10820

TS 10801

TRACK TO
BACK PEAK

5 cm



100 0 200 400 metres

438026

GEOPEKO

E.L. 46/80 HEAP OF ROCKS, TAS.

PROVER II
GEOLOGY

026

DATE: 18-5-84 | GEOL: P.H. B. | DRAWN: M.S. | PLAN HR 46/80-1

84-2117

