



Bergvesenet

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Rapportarkivet

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Kommer fra ..arkiv Sulitjelma Bergverk A/S	Ekstern rapport nr "542120009"	Oversendt fra	Fortrolig pga	Fortrolig fra dato:

Tittel

Vertical Magnetometer Surveying at Småsorjus.

Forfatter BOYLE A.	Dato 1981	Bedrift Sulitjelma Gruber A/S
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Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
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Fagområde	Dokument type	Forekomster
Råstofftype	Emneord	

Sammendrag

Fra NGU's flymålinger over området ved Småsorjus er det påvist en positiv magnetisk anomali. Denne ble fulgt opp med bakkemålinger kombinert med enkel geologisk kartlegging. Resultatene viser at de lokale anomaliene skyldes kontakten mellom Sulitjelma Gabbro og omkringliggende bergarter. Deler av Sulitjelma-gabbroen som er svakt mineralisert (rust) viser ingen anomalier.

542.120.009

Vertical Magnetometer
Surveying at Småsorjus

1981

Boyle, A

Vertical Magnetometer Surveying at SmåsorjusPurpose

The aim of this short reconnaissance survey was to investigate the positive total field magnetic anomaly indicated at Småsorjus on the NGU 1:250,000 total field aeromagnetic map.

Method

Measurements were carried out using a highly portable vertical magnetometer along three east-west trending profiles chosen to pass through the northern, central and southern parts of the aeromagnetic anomaly. The locations of the profiles and the aeromagnetic total field contours (gammas) are shown on the accompanying 1:10,000 map. Measurements were made routinely every 50m., but at more frequent intervals where local observations made this desirable. Sampling was undertaken at sites with magnetic anomalies and also within the Sulitjelma gabbro where geological observations suggested mineralisation but no strong magnetic anomaly was found. The samples are labelled with two numbers, eg. I6-1, I6-2, where the first number refers to the sampling locality and the second number to the number of the specimen at a particular locality. Sampling localities are indicated on the profile sections (figs. I-4) and/or the accompanying map.

Results

The results are shown on figs. I-4 which superimpose the field measured gamma values (all relative and not absolute), the aeromagnetic total field values, and simplified geological cross-sections summarising the distribution of the Sulitjelma gabbro and its country rock (including country rock screens).

Profile A: there are some small anomalies of c.200 gamma in the Sulitjelma gabbro related to rusty gabbros (eg. 9) and an anomaly of +500 gamma at the gabbro contact in asheared igneous breccia (8-2). Immediately to the south of 8-2 in a more massive dark coloured apparently gabbroic rock (8-1) values of -1400 gamma were recorded. Some larger positive anomalies of up to 1000 gamma are found in a zone between the two exposures of gabbro. The best anomaly is given by a 50m. wide outcrop of massive, grey, granular, almost dioritic looking rock (6-1, 6-2, 6-3). These anomalies (see fig. I) coincide with the aeromagnetic anomaly.

Profile B: this profile is similar to the last one in that there are some small anomalies of c. 200 gamma within the Sulttjelma gabbro itself, and larger anomalies of up to 1500 gamma in the country rock within 250 m. of the gabbro contact. Three anomalies are shown in this region on fig. 2. However it should be emphasised that the anomalies are very local in their distribution on a 5-10m. scale. These anomalies do not coincide with the aeromagnetic total field anomaly.

Profile C1 and C2: these partially traverse a large screen of amphibolitic and metasedimentary rocks which have been hornfelsed, partially melted and locally migmatized by the Sulttjelma gabbro. The areal extent of this body is shown on the accompanying map. It is evident from fig. 3 that the body coincides with a very large positive anomaly of c. 4000 gamma. Gamma falls off rapidly in the adjacent gabbro except at C1 Om. where it is +1600 gamma. This may be due to the anomalous body passing under the gabbro at C1 Om. and perhaps joining up with another similar body to the east (see C.M. Lindsay's 1980 map). The centre of this anomaly is some 1.5km. from the aeromagnetic anomaly.

Profile C9-C12: this profile starts at the +4000 gamma point of profile C2 and traverses westwards. Gamma drops off rapidly into the gabbro to +200 gamma and remains within 200 gamma of that value for most of the rest of the 1.5 km. profile. A wide rusty area of the Sulttjelma gabbro between C11 and C12 does not give appreciable anomalies (see fig. 4). The profile bears no similarity to the aeromagnetic profile.

CONCLUSIONS

1. The aeromagnetic anomaly is a gross simplification of the true magnetic nature of the rocks at Småsorjus.
2. The local anomalies measured in this study appear to relate to contact metamorphosed country rock in the main rather than to the Sulttjelma gabbro proper.
3. Parts of the Sulttjelma gabbro which show signs of mineralisation do not give clear magnetic anomalies.

Future work.

An initial petrographic investigation of the samples will hopefully be completed by the end of this year. If this indicates that the anomalies are not due to something uneconomic such as the development of magnetite bearing skarns during contact metamorphism, a further programme involving geochemical analysis for certain elements might be of value. This could probably be done at Liverpool but if so would be subject to the standard University charges for doing outside work.

APB September 6, 1981.

fig. 1

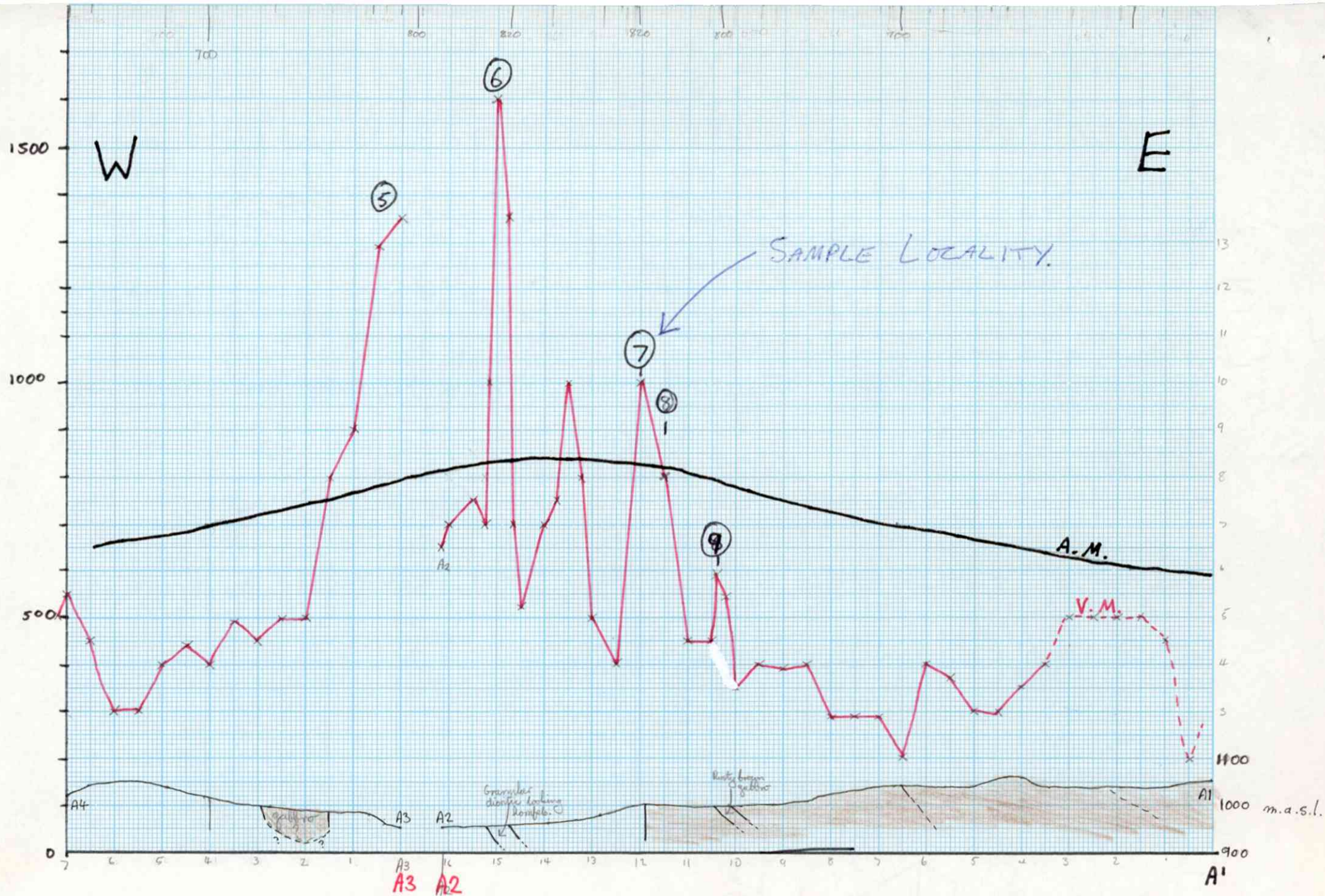


fig. 2.

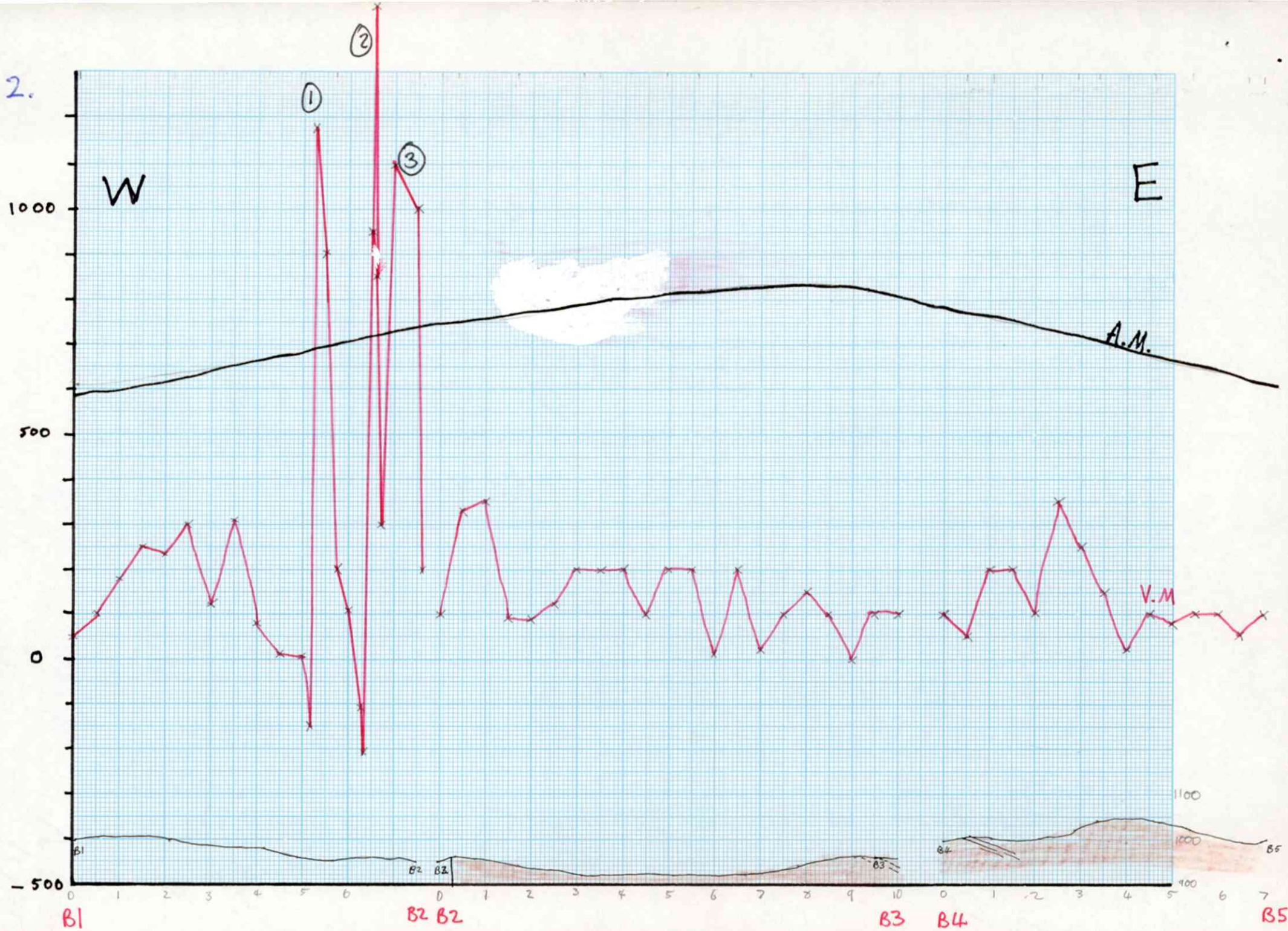
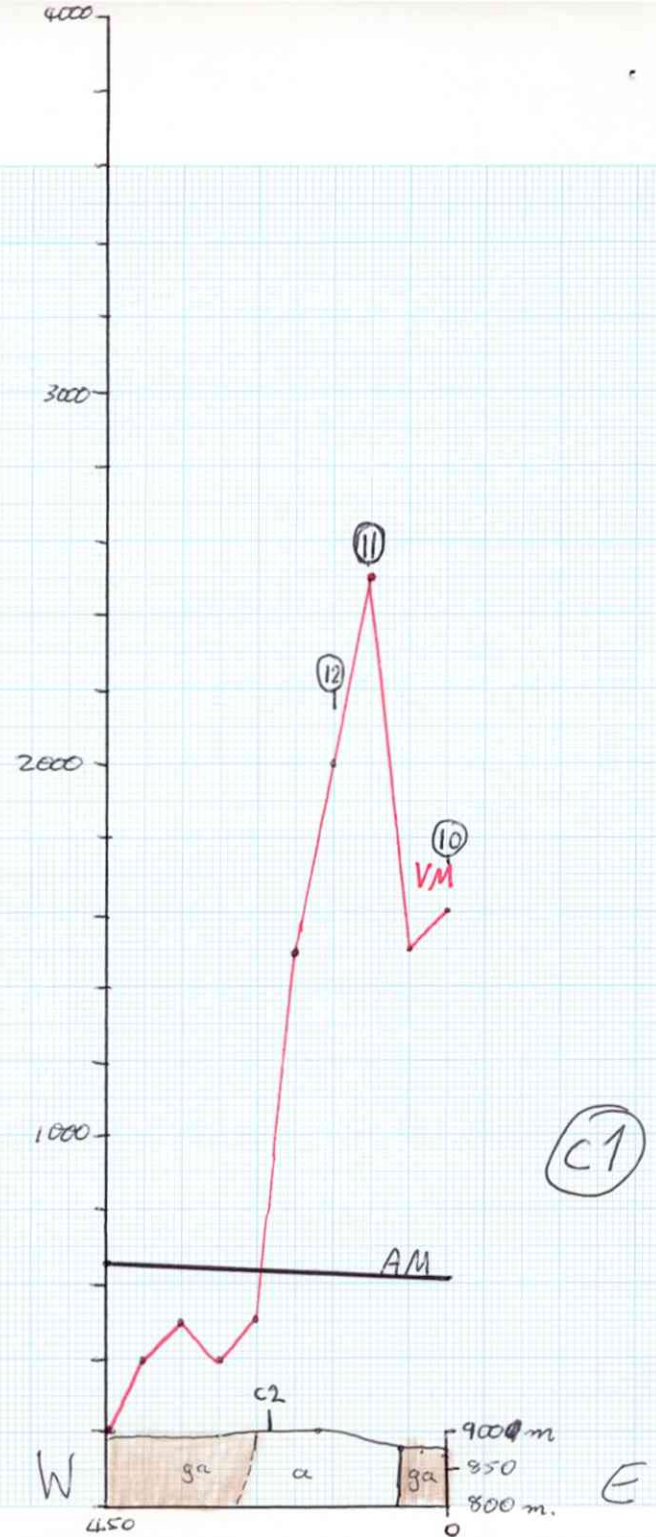
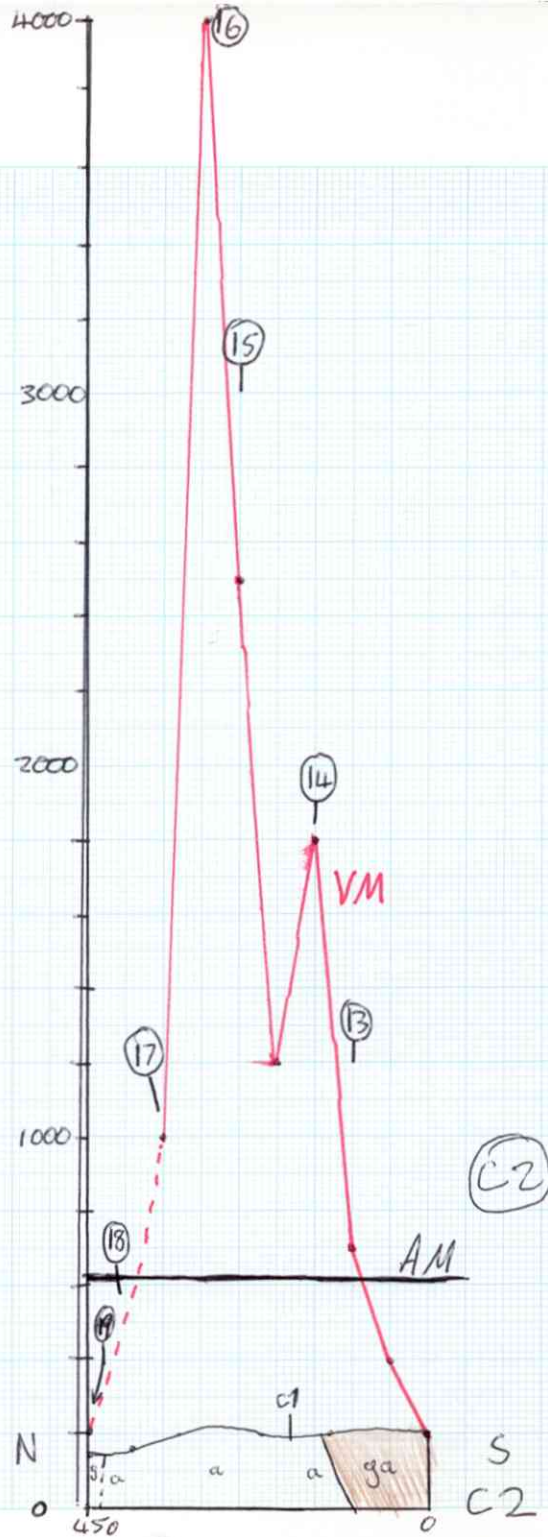
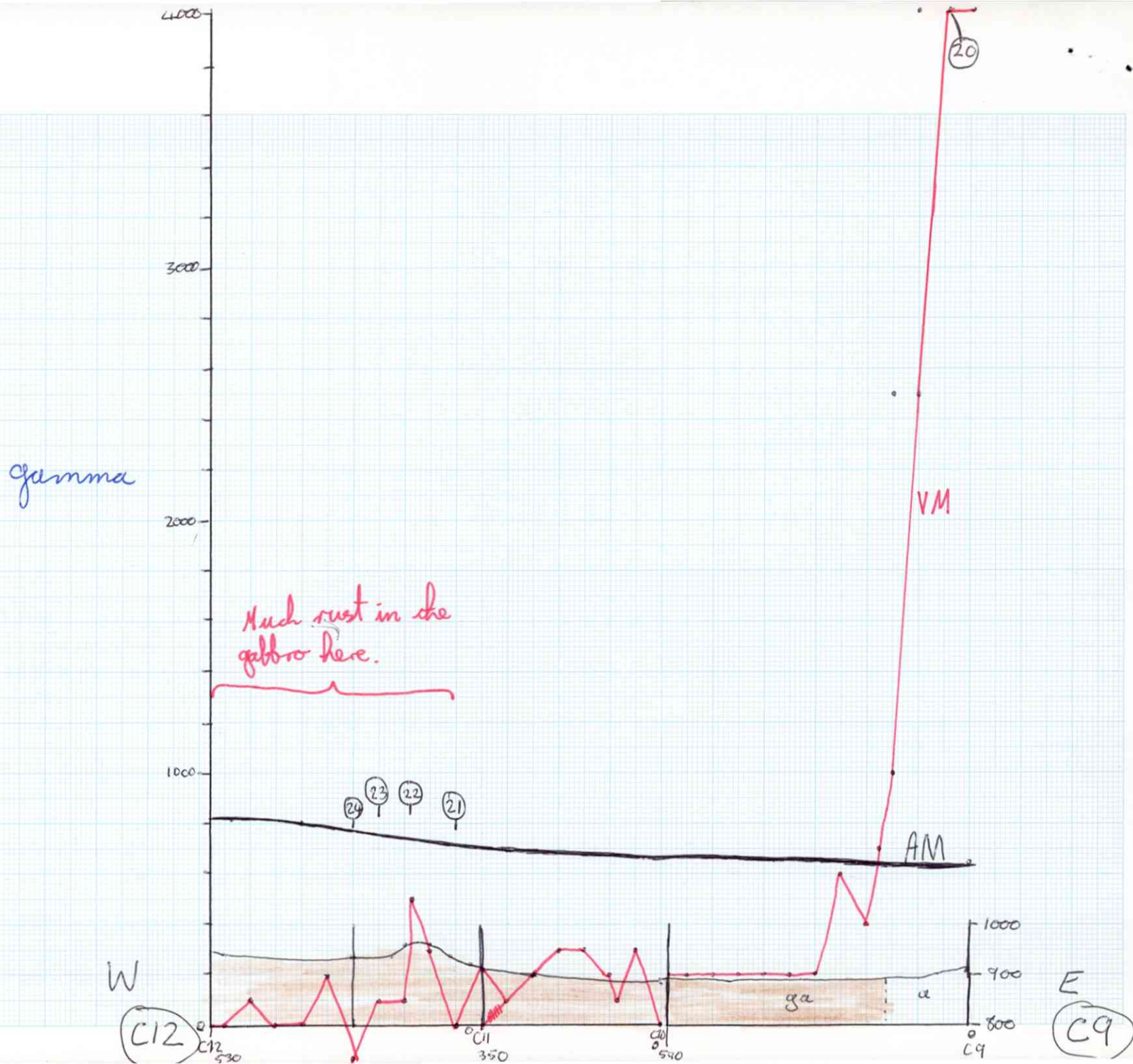


fig. 3





Vertical Magnetometer Surveying at Småsorjus

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Profile CI and C2: these partially traverse a large screen of amphibolitic and metasedimentary rocks which have been hornfelsed, partially melted and locally migmatized by the Sulitjelma gabbro. The areal extent of this body is shown on the accompanying map. It is evident from fig. 3 that the body coincides with a very large positive anomaly of c. 4000 gamma. Gamma falls off rapidly in the adjacent gabbro except at CI 0m, where it is +1600 gamma. This may be due to the anomalous body passing under the gabbro at CI 0m. and perhaps joining up with another similar body to the east (see C.M. Lindsay's 1980 map). The centre of this anomaly is some 1.5km. from the aeromagnetic anomaly.

Profile C9-CI2: this profile starts at the +4000 gamma point of profile C2 and traverses westwards. Gamma drops off rapidly into the gabbro to +200 gamma and remains within 200 gamma of that value for most of the rest of the 1.5 km. profile. A wide rusty area of the Sulitjelma gabbro between CII and CI2 does not give appreciable anomalies (see fig. 4). The profile bears no similarity to the aeromagnetic profile.

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fig. 1

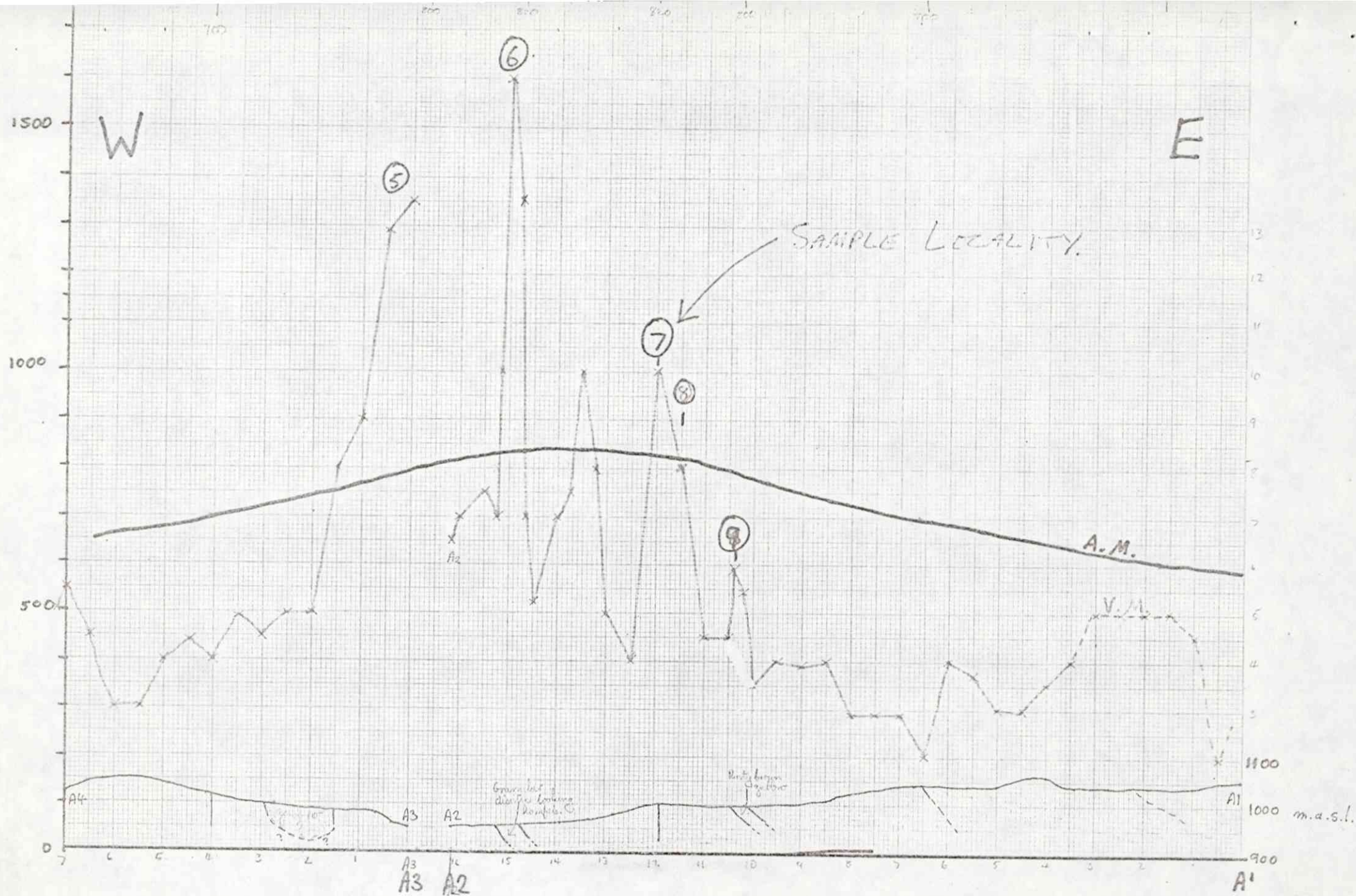


fig. 2.



fig. 3

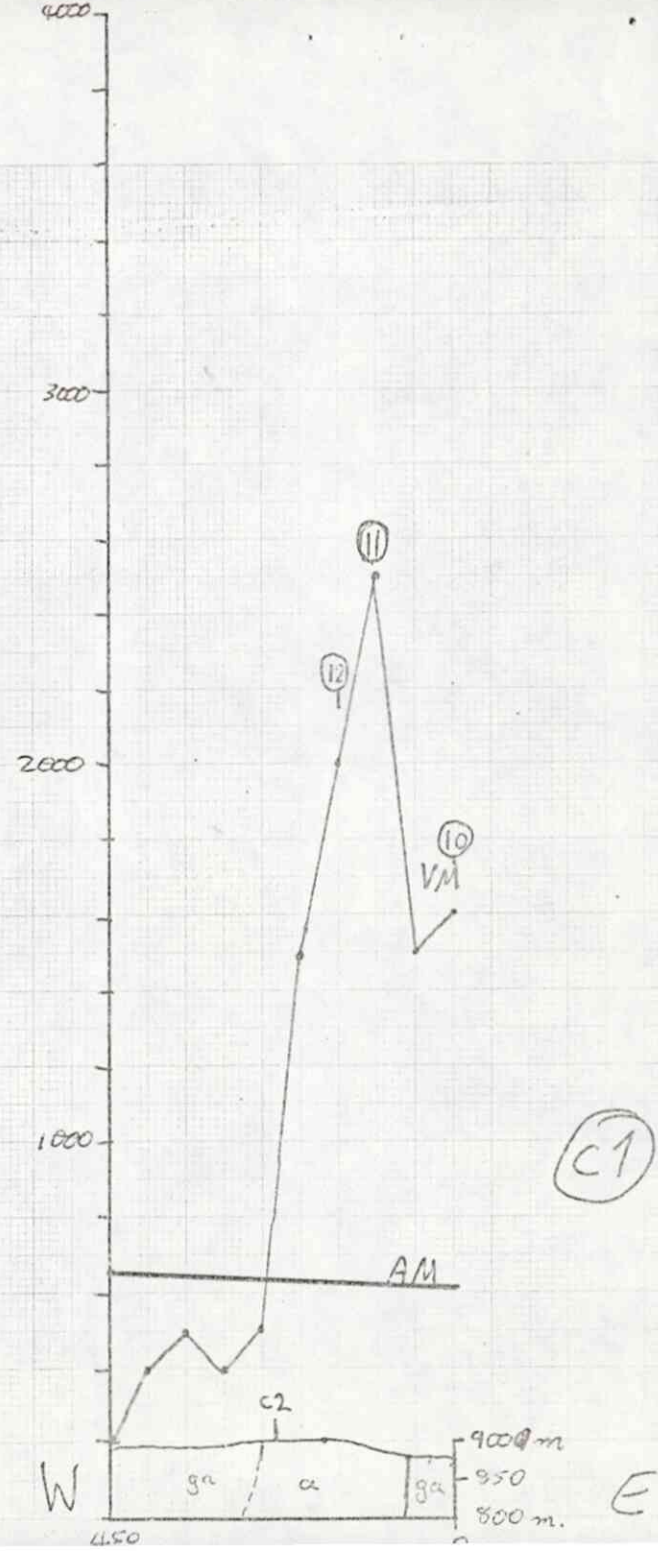
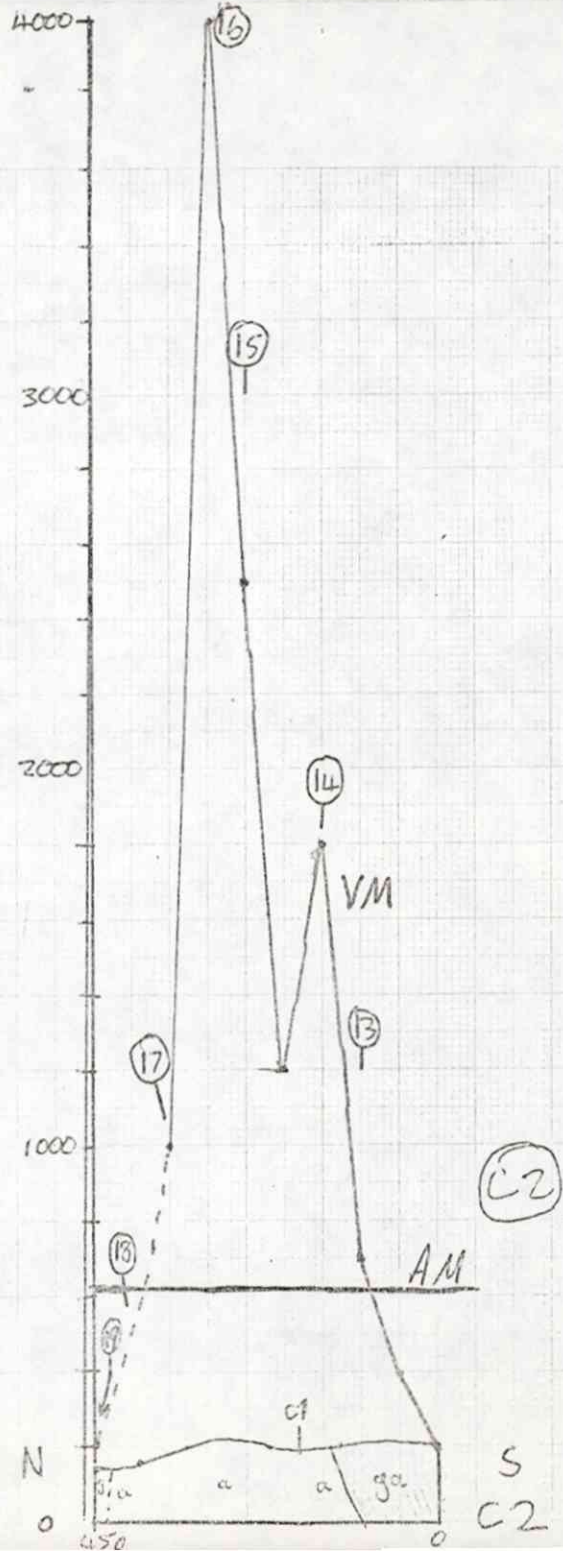


fig. 4.

gamma

3000

2000

1000

Much rust in the
gabbro here.

(24) (23) (22) (21)

VM

AM

W

(C12)

C12 530

C11 350

C10 540

g2

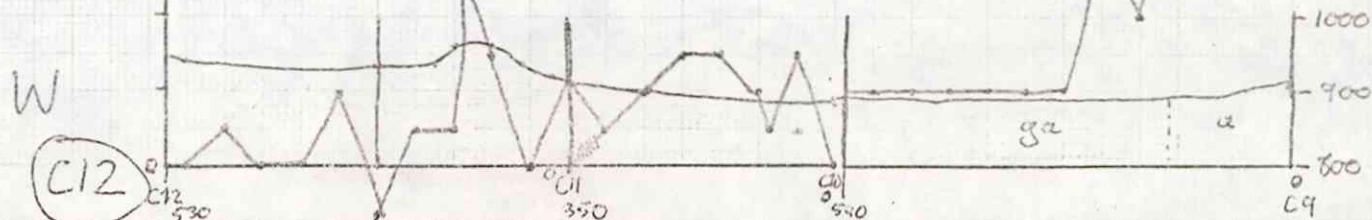
a

C9

(C9)

E

(20)



A21 — A1 TRAVERSE LINE
 500' AEROMAGNETIC VALUES
 * ⑧ SAMPLE LOCALITY
 AREA OF LARGE ANOMALY ON TRAVERSE 'C'

