Bergvesenet

Postboks 3021, 7002 Trondheim

Rapportarkivet

Bergvesenet rapport nr	Intern Journal nr	Internt arkiv nr	Rapport lokalisering	Gradering
BV 452			Trondheim	**Åpen**
Kommer fra ..arkiv	**Ekstern rapport nr**	**Oversendt fra**	**Fortrolig pga**	**Fortrolig fra dato:**
Falconbridge	Sul 151-71-9	Sulfidmalm A/S		

Tittel

Report on a geochemical survey in the Bygland area, Setesdal, Aust-Agder, Norway

Forfatter	Dato	Bedrift
F Nixon	1971	Sulfidmalm A/S

Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
Bygland	Aust-Agder	Trondheimske	15124	Mandal

Fagområde	Dokument type	Forekomster
Geokjemi	Rapport	Sandnesheii Grådåsheii Listølheia
Råstofftype	**Emneord**	
Malm/metall	Mo Cu	

Sammendrag

Bekkesedimentundersøkelser med 454 prøver som dekket ca 200 kvadratkm.

FOR FALCONBRIDGE NIKKELVERK A/S

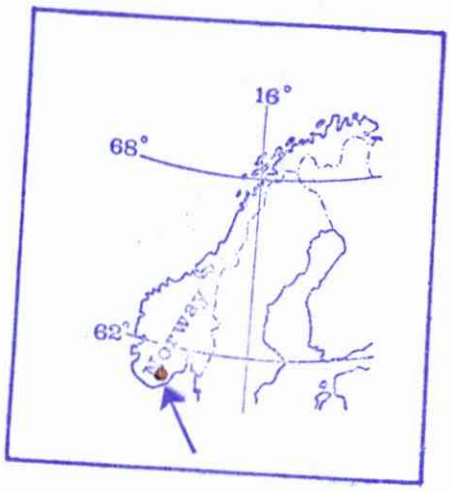
A/S SULFIDMALM

PROJECT 905 -9

REPORT ON A GEOCHEMICAL SURVEY IN THE BYGLAND AREA. SETESDAL, AUST-AGDER, NORWAY.

1971.

F. NIXON



151/71/9

INTRODUCTION

This report deals with a stream sampling survey that was carried out during the summer of 1971 in the Bygland area.

The area in question lies approximately 100 km north of Kristiansand in the Setesdal valley, on the eastern side of the Byglandsfjord.

An area of approximately 200 km^2 was covered by a total of 454 samples. The work was carried out by the writer and two students. The area rises from the main Setesdal valley (202 m above sea level) to an elevation of 850 m above sea level, only in the lower parts of the valleys is there a heavy forest cover, the majority of the area having little in the way of tree cover.

GEOLOGICAL SETTING

The area is situated in an area of Pre-Cambrian gneisses that geograhphically are located between the supracrustals of the Telemark region to the north and the more geologically well known Pre-Cambrian rocks of the coastal belt. The area is only about 30 km north of the Flåt nickel mine at Evje.

A few small molybdenum showings are known in the area, these being associated with quartz veins of limited extent.

A copper deposit previously described by the writer in 1970, lies to the immediate west of the area at Hamre. This deposit is mainly chalcocite in a pegmatite - high grade - low tonnage.

The aeromagnetic map of the area shows an interesting magnetic feature of a relatively stable magnetic high area flanked by a steep mag. gradient and a series of closed low areas that follow the "contacts" of the high central area. From the aeromagnetic map, it can be seen that this "contact zone" between the high and low areas swings considerably.

The copper deposit at Hamre is located in the vicinity of one of these "low areas" and it was thought that there was a possible repetition of this type of deposit in the continuation of the low magnetic feature and that stream geochemistry might be used to check this.

..../2

Prospecting and general mapping in the area this year did not discover any significant mineralization. The central magnetic high area proved to be granitic in nature varying from massive to gneissic in texture. This central zone was surrounded by amphibolitic and quartzitic rock units, the foliation of which is reflected by the magnetic features. The low magnetic areas seem to represent concentrations of quartz-rich material within the quartzitic series.

GEOCHEMICAL RESULTS

The collected samples were dry sieved in the field and sent to Vancouver for Cu and Mo assay. The following tables show the frequency distribution of Mo and Cu.

TABLE 1 Mo

ppm Mo	f	% f	% f
0 - 2	272	60,0	60,0
3 -			
3 - 4	94	20,6	80,6
5 - 6	29	6,4	87,0
7 - 8	31	6,8	93,8
9 - 10	12	2,6	96,4
11- 12	2	0,44	96,84
13- 14	2	0,44	97,28
15- 16	4	0,88	98,16
17- 18	3	0,66	98,82
19- 20	2	0,44	99,26
21- 22	1	0,22	99,48
23- 24			
24 -25	1	0,22	99,70
50	1	0,22	99,92

TABLE 2, Cu

0 - 2	120	25,8	25,8
3 - 4	183	40,0	65,8
5 - 6	88	19,2	85,0
7 - 8	33	7,1	92,1
9 - 10	14	3,0	95,1
11- 12	7	1,5	96,6
13- 14	7	1,5	98,1
15- 16	4	0,7	98,8
17- 18	3	0,6	99,4
19- 20	2	0,4	99,8
21- 22			
23	1	0,2	100,0

On the basis of these frequency distributions, the following classification of anomalous values was taken:

Mo

7 - 8 ppm	-	possibly anomalous
9 - 14 ppm	-	probably anomalous
15	-	anomalous

Cu

9 - 10 ppm	-	possibly anomalous
11- 14	-	probably anomalous
15	-	anomalous

The plotted molybdenum values show some interesting anomalous areas, notably in the vicinity of Leivsvann, Sandsvatnet and Asbjørnsvann.

Three of the anomalous areas, i.e. Sandsvatnet, Eksvann and ASbjørnstølsvann lie on the margins of the stable high magnetic area and this might reflect some genetic significance.

The copper values are extremely low, and it is difficult to envisage any of the results as being of significance. Only in the area around Leivsvann are anomalous copper values co-incident with molybdenum in notable numbers.

The theory that the "magnetic low" areas might be indicative of pegmatite type copper deposits has not been substantiated.

CONCLUSIONS AND RECOMMENDATIONS

1) Geochemical stream sediment sampling has not located any interesting copper anomalies.

2) Molybdenum values indicate several anomalous areas, only in one case is there any significant association with copper values.

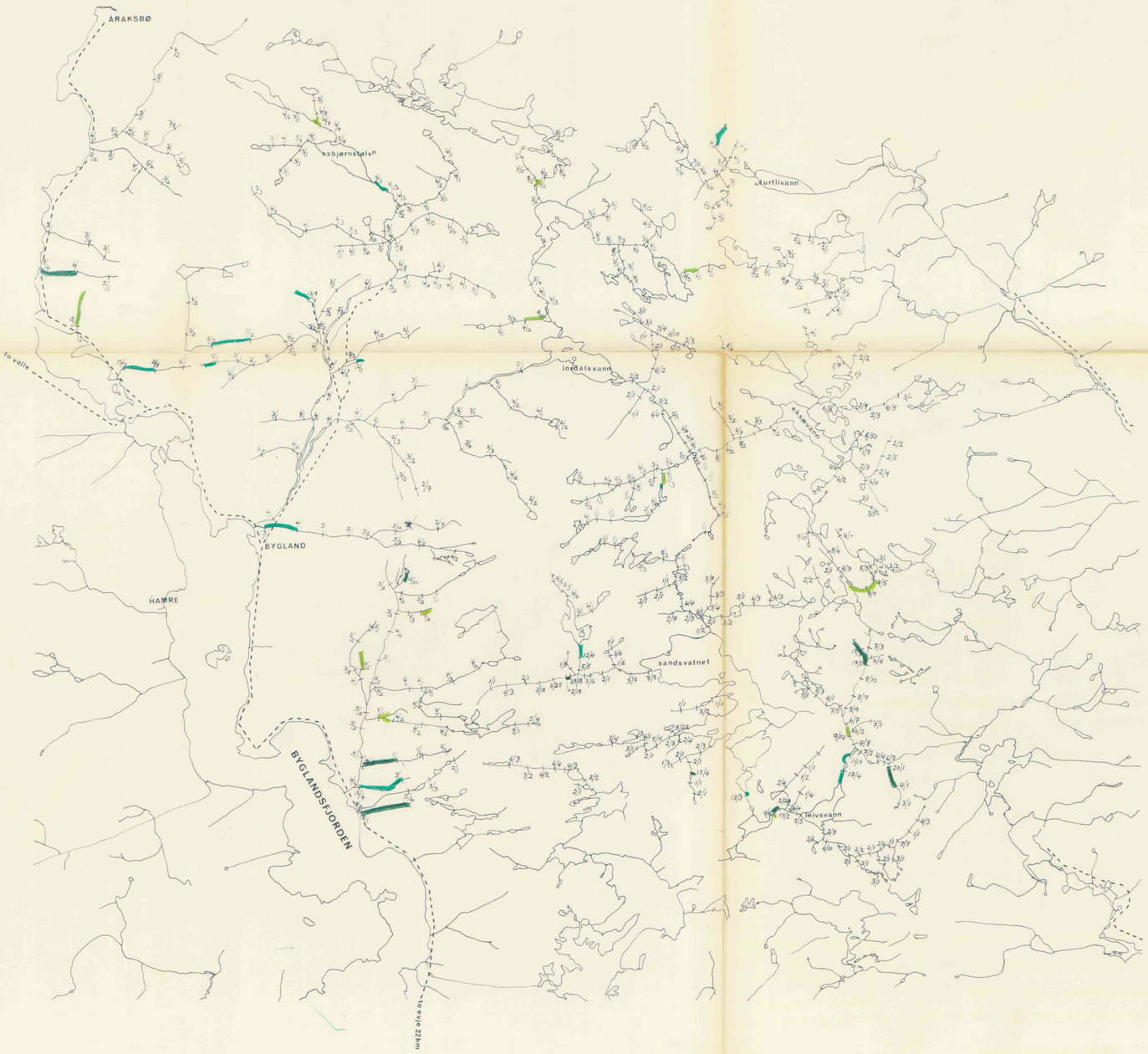
3) The molybdenum anomalies are suggested to be indicative of small quartz vein Mo deposits.

4) Limited follow up geochemistry and ground geology are recommended to check out the obtained molybdenum anomalies.

Enclosures:

1) Geochemical map showing anomalous Cu values
2) Geochemical map showing anomalous Mo values.
3) Aeromagnetic map of the Bygland area.

Frank Nixon



N
mN

KEY

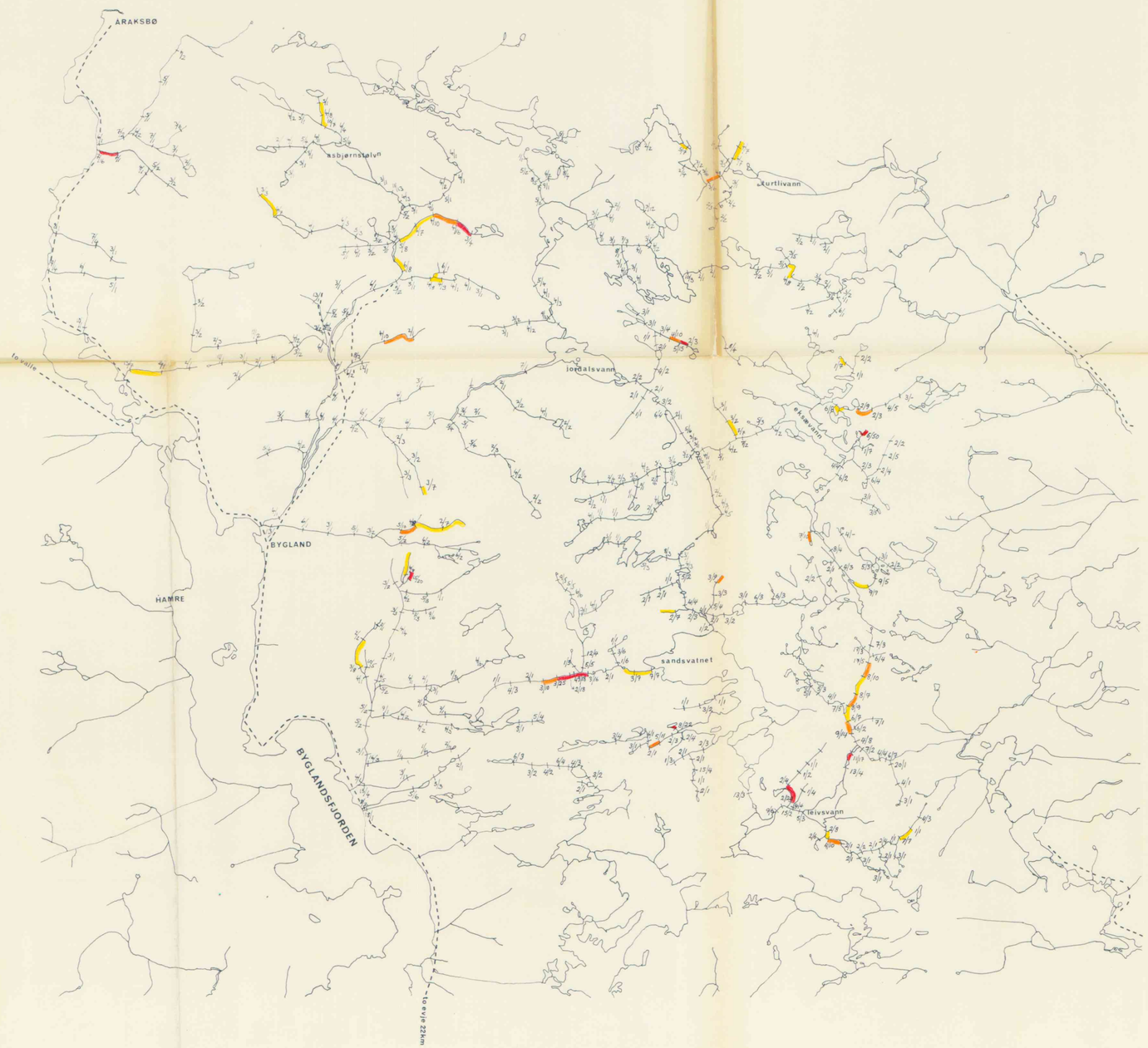
×	SAMPLE POINT
Cu/Mo	VALUES p.p.m.
---	ROAD
9 - 10 ppm	POSSIBLY ANOMALOUS
11 - 14 ppm	PROBABLY ANOMALOUS
15 - 49 ppm	ANOMALOUS

1 0 1 2 3 4 5 km
1000 0 2000 4000 5000 yards

Encl. 1

STREAM SEDIMENT GEOCHEMISTRY, Cu	SCALE 1:50000	OBS. FN.	JUL 71
BYGLAND. SETESDAL, AUST-AGDER		DRAW. FN.	AUG 71
		TRAC. LN.FN	NOV 71
		CHK.	
A/S SULFIDMALM	SAMPLED NIXON DRY SIEVE -80MESH ANALYSED FOR Cu.Mo. ANALYSED BY VANCOUVER		
	MAP SHEET 1512 IV		

A.s Torrkopi. 3000. A 1. E 9 gl. 10-71. Sentrum Trykkeri.



N
mN

KEY

×	SAMPLE POINT
Cu/Mo	VALUES p.p.m.
---	ROAD

7 - 8	ppm	POSSIBLY ANOMALOUS
9 - 14	ppm	PROBABLY ANOMALOUS
15 - 50	ppm	ANOMALOUS

1 0 1 2 3 4 5 km
1000 0 2000 4000 5000 yards

End. 2

STREAM SEDIMENT GEOCHEMISTRY, Mo	SCALE 1:50000	OBS. FN.	JUL 71
		DRAW. FN.	AUG 71
		TRAC. LN.FN	NOV 71
BYGLAND. SETESDAL, AUST-AGDER		CHK.	
A/S SULFIDMALM	SAMPLED NIXON DRY SIEVE -80MESH ANALYSED FOR Cu.Mo. ANALYSED BY VANCOUVER		
	MAP SHEET 1512 IV		

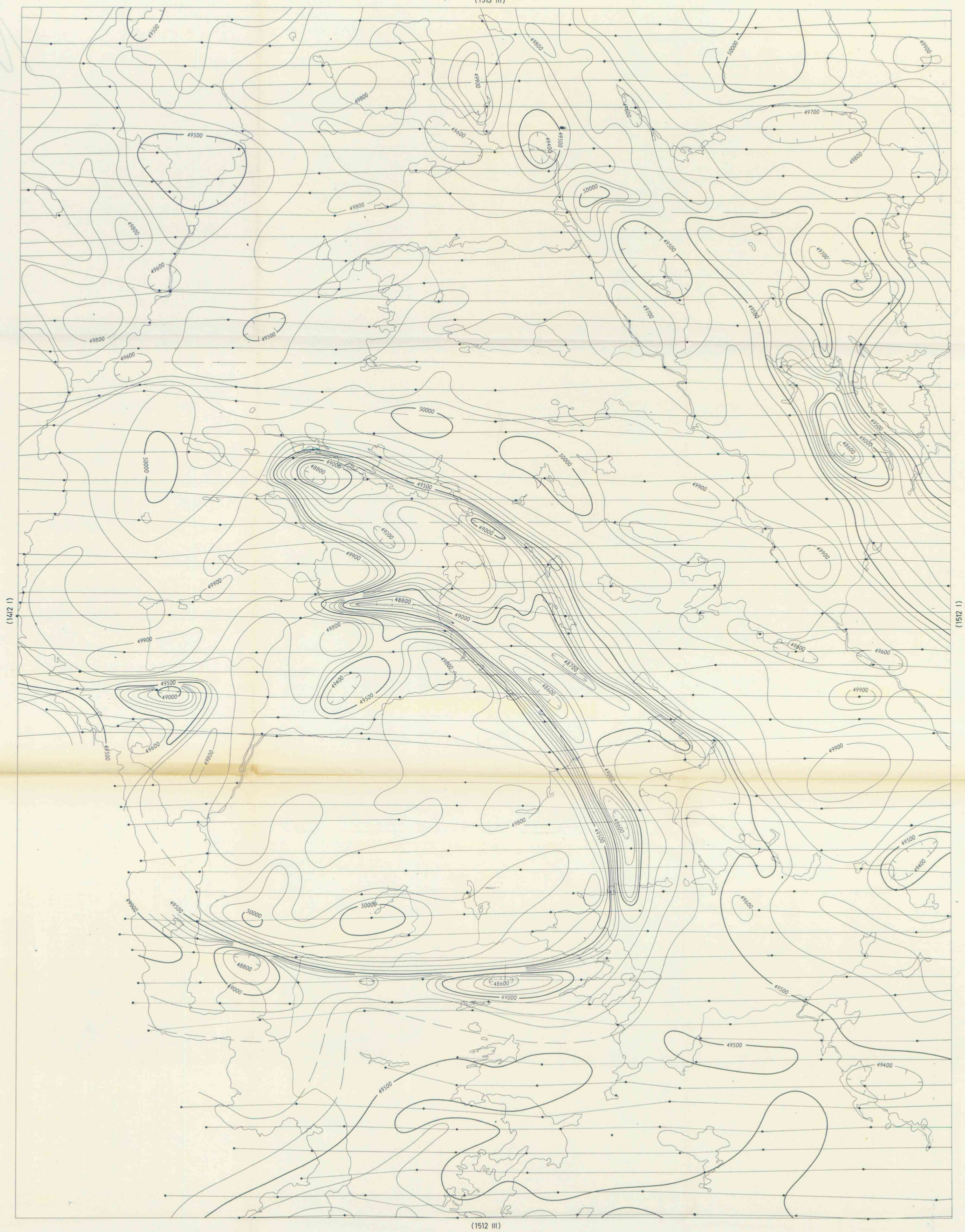
A.s Tørrkopi. 3000. A 1. E 9 gl. 10-71. Sentrum Trykkeri.

AEROMAGNETISK KART

NORGES GEOLOGISKE UNDERSØKELSE

BYGLAND — 1512 IV

(1513 III)



MÅLESTOKK 1:50.000

1 0,5 0 1 2 3 4 5 km

Flylinje med plottet punkt

Maksimum 50000

Minimum 50000

Isomagnetiske kurver med intervall 100 gamma

De magnetiske data er utarbeidet av Geofysisk avdeling ved NGU på grunnlag av målinger utført i 1968 med et kontinuerlig registrerende flux-gate magnetometer av type AN/ASQ-3A montert i fly.

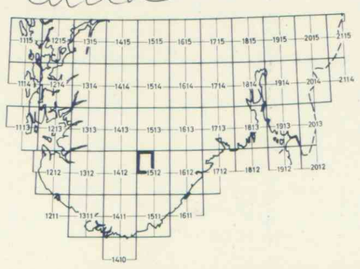
Ved målinger i oktober 1964 med et protonmagnetometer av type ELSEC 592 er feltets absolutte verdi bestemt.
De angitte verdier viser det magnetiske totalfelt i gamma.

Flygingen er utført etter kart i målestokk 1:50 000 og flylinjene er senere fastlagt ved hjelp av 36 mm film av bakken. Bildene er tatt under målingen med tidsintervall på 1,5 sekund.

Flyhöyden er forsökt holdt mellom 100 og 150 meter over bakken i den utstrekning terrengforhold og flyets yteevne har tillatt dette.

All topografi er basert på Norges geografiske oppmålings kart, serie M. 711. Bare de viktigste elver og vann samt kystkontur er tatt med.

Eurdo 3



Kartet er utgitt av Norges geologiske undersökelse, Trondheim, i mai 1969