



Bergvesenet

Postboks 3021, 7002 Trondheim

Rapportarkivet

Bergvesenet rapport nr BV 472	Intern Journal nr	Internt arkiv nr	Rapport lokalisering Trondheim	Gradering Åpen
Kommer fra ..arkiv Falconbridge	Ekstern rapport nr Sul 227-72-16	Oversendt fra Sulfidmalm A/S	Fortrolig pga	Fortrolig fra dato:
Tittel Investigations in the Melkvann area, Seiland.				
Forfatter H A Rosenqvist		Dato 1972	Bedrift Sulfidmalm A/S	
Kommune Alta	Fylke Finnmark	Bergdistrikt Troms og Finnmark	1: 50 000 kartblad 18351	1: 250 000 kartblad Hammerfest
Fagområde Geologi geofysikk geokjemi	Dokument type Rapport	Forekomster Melkevann		
Råstofftype Malm/metall	Emneord Cu Ni			
Sammendrag				

A/S SULFIDMALM

INTER-OFFICE MEMORANDUM

Date: 9th March, 1973

To: Falconbridge Nikkelverk A/S

cc: A. M. Clarke, D. R. Lochhead,
H. A. Rosenqvist

From: J. B. Gammon

Subject:

905-16, Melkevann area, Seiland, West-Finnmark, Report No.
227-72-16.

Please find attached Rosenqvists report on follow up work on one of the anomalous areas outlined by Folldal Verk's stream sediment survey on Seiland. Interesting soil geochemical anomalies have been outlined and further activities will be planned in cooperation with our joint venture partners.

W. G. Gammara

[illegible]

FOR FALCONBRIDGE NIKKELVERK A/S

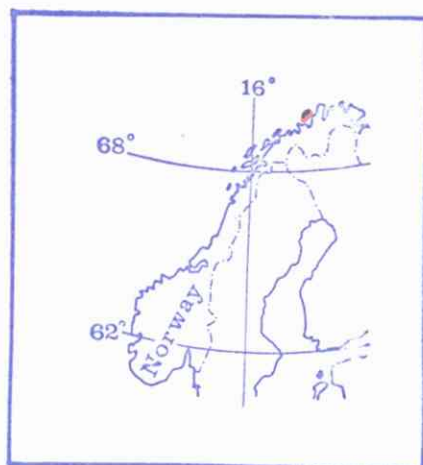
A/S SULFIDMALM

PROJECT 905-16

INVESTIGATIONS IN THE MELKEVANN
AREA, SEILAND, WEST-FINNMARK.

by

H. A. ROSENQVIST



INTRODUCTION.

The island of Seiland is the general target for an exploration joint venture between A/S Follidal Verk and A/S Sulfidmalm. Stream sediment geochemistry carried out by the former company in 1971, outlined the Melkevann area as one of the most potential areas for Ni-Cu mineralization.

After a brief orientation visit (Memo 24.6.72) soil sampling by Sulfidmalm and sulphide prospecting by Follidal were decided to be used as follow up tools in 1972. This report deals with the work carried out by Sulfidmalm.

LOCATION AND ACCESS.

The location of Seiland and the Melkevann area is shown by fig. 1. The area can best be reached by floatplane to the main Melkevann, but also access by boat/foot from St. Bekkarfjord (E) or St. Kuffjord (W) is possible.

In comparison with the rest of Seiland, the Melkevann area is moderate in topographic relief. The landscape is characterized by gentle grassy hills and ridges with frequently occurring bogs and shallow lakes in between.

GEOLOGY.

The Melkevann area is dominated by a large peridotite body, mainly consisting of olivine pyroxenite. The border zone is characterized by a tiilaitic (mafic olivine gabbro) "contamination facies" and often contains preserved xenoliths of the intruded gabbro as well. This rock mixture is well observeable in the area S of Steinfjellvand.

The Melkevann peridotite body occupies the core zone of the "S Seiland synform" and is thus considered to be lopholith-like in form. The peridotite has been intruded by dykes locally forming dense swarms, involving rock types similar to the olivine pyroxenite host, olivine gabbros, nepheline syenites, carbonatites and very rarely granitic pegmatites.

The dykes occupy dominantly the E-W master-joints, which post date the deformation of the peridotite body during the formation of the "S Seiland Synform".

The geology of S Seiland has recently been described by Brian Robins (Univ. of Bergen) in his unpublished PhD-thesis *). His findings are reviewed by prof. Sturt in a Sulfidmalm report (228-72-16) to which it is here referred. Robins' geological map is also included in the report.

SOIL GEOCHEMISTRY.

General.

Soil sampling was carried out by students Engberg, Austrheim, Methner and Söderholm during a 2 week period in July-August 72. Samples were collected from the B-horizon, generally at 20-30 cm depth, along profiles 200 m apart the sampling interval being 50 m.

A total of 1015 samples were brought to the Folldal Verk laboratory at their Repparfjord mine. After drying and sieving to -80 mesh, the acid extractable Cu and Ni content was analysed by AAS.

Results.

Assay results are shown on map 1-227-72-16 and the frequency distribution for Cu and Ni content is presented in fig. 2. This figure also gives the threshold values used in the interpretation of the results.

Interpretation.

Copper and nickel anomalies are shown on the accompanying map 1-227-72-16.

The initial source for coincident Cu/Ni anomalies is considered to be sulphide mineralization. Whether this from an economic point of view is interesting or not, soil geochemistry alone

*) Univ. of Leeds, UK 1971.

does not reveal. One can only assume that the mineralization is wide spread and of a disseminated type with a grade probably below 1% Cu and/or Ni. The generally high background and the fact that the top anomalies (98%) only reach 3-4 times above this level, point towards such an interpretation.

When using the soil geochemistry in locating the richest mineralized portions, the effect of hydromorphic accumulation of metal in soil should be kept in mind. The hilly and boggy landscape of the Melkevann area is thought favourable in creating such - in a way false - anomalies.

What this means is only that the strongest anomalies do not necessarily relate directly to a mineralization underneath. One should thus not be "blinded" by a few extreme anomalies, but instead consider as large as possible area of the actual water shed as potential. Also these "accumulation anomalies" have their source after all, the question is only where.

In conclusion the soil geochemistry suggests two priority areas for further work.

- I The SW corner of the sampling grid.
- II The area E of Steinfjellvand.

VLF-EM PROFILES.

Reconnaissance VLF-electromagnetic measurements were carried out along four lines over the Melkevann grid. A Crone Radem instrument was used, utilizing the transmitter station at Bordeaux, France (15,1 kHz). Dip angles of the resultant electromagnetic field were recorded.

Dip angle data and calculated "Fraser values" are presented on map 2-227-72-16. The perhaps most interesting anomaly occurs immediately E of Steinfjellvand, obtained on line 600 W and supported by incomplete measurements along line 200 W. Another outstanding anomaly was picked up on these lines at 600 S. This is however clearly related to a tectonic feature, which of course not necessarily exclude the possibility of an ore mineralized anomaly source. The same goes for several of the smaller anomalies shown.

The VLF-survey should be considered for what it actually was i.e. reconnaissance measurements. It has besides increasing the potential of the Steinfjellvann E area, also suggested itself as a tool for mapping structural geology. It is believed that more systematic work (10 m station intervals, line spacing depending on size of area) in combination with magnetic measurements would be a suitable and easy tool for further geophysical prospecting in the area.

CONCLUSIONS AND RECOMMENDATION.

The main conclusions to be drawn from our investigations 1972 are included in the text above. In summary:

- (1) Soil geochemistry has suggested the existence of disseminated sulphide mineralization (Cu, Ni) within the Melkevann peridotite.
- (2) Possible ore mineral enrichment (s) is likely to occur within the two suggested priority areas.
- (3) VLF-electromagnetic reconnaissance traverses has increased the potential of the Steinfjellvann E area.

In the light of Sulfidmalm investigations the following procedure is recommended for further work in 1973.

- (a) Detailed prospecting and check up (soil and drainage conditions) of soil geochemical anomalies.
- (b) Systematic VLF-EM/Mag. coverage of the two outlined priority areas.
- (c) Selection and staking ("muting") of claims according to the new mining law.

These recommendations are tentative. Concrete plans should await the results of investigations carried out by Folldal.

Encl. Map. 1-227-72-16 Soil geochemistry.
2-227-72-16 VLF-reconnaissance.

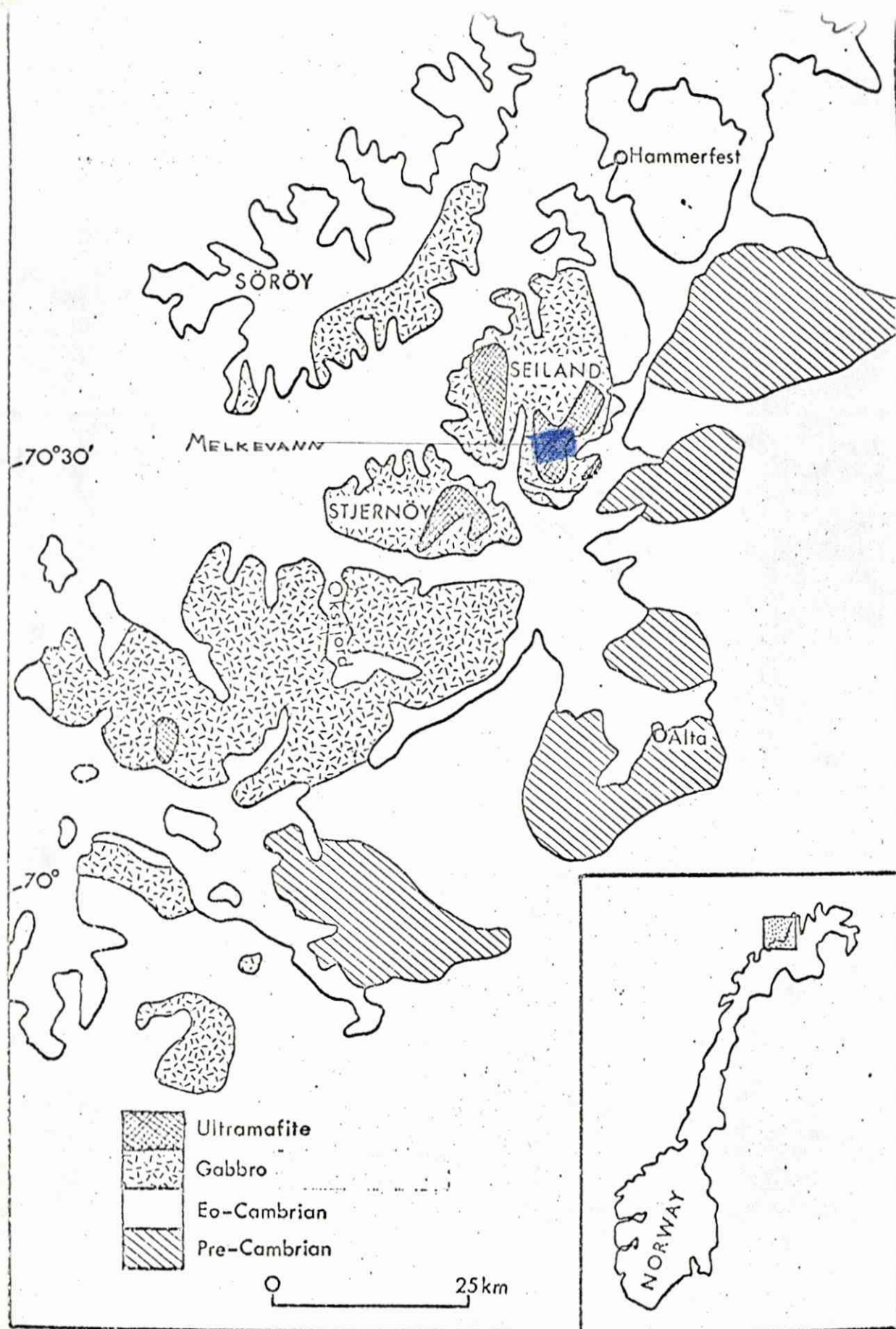
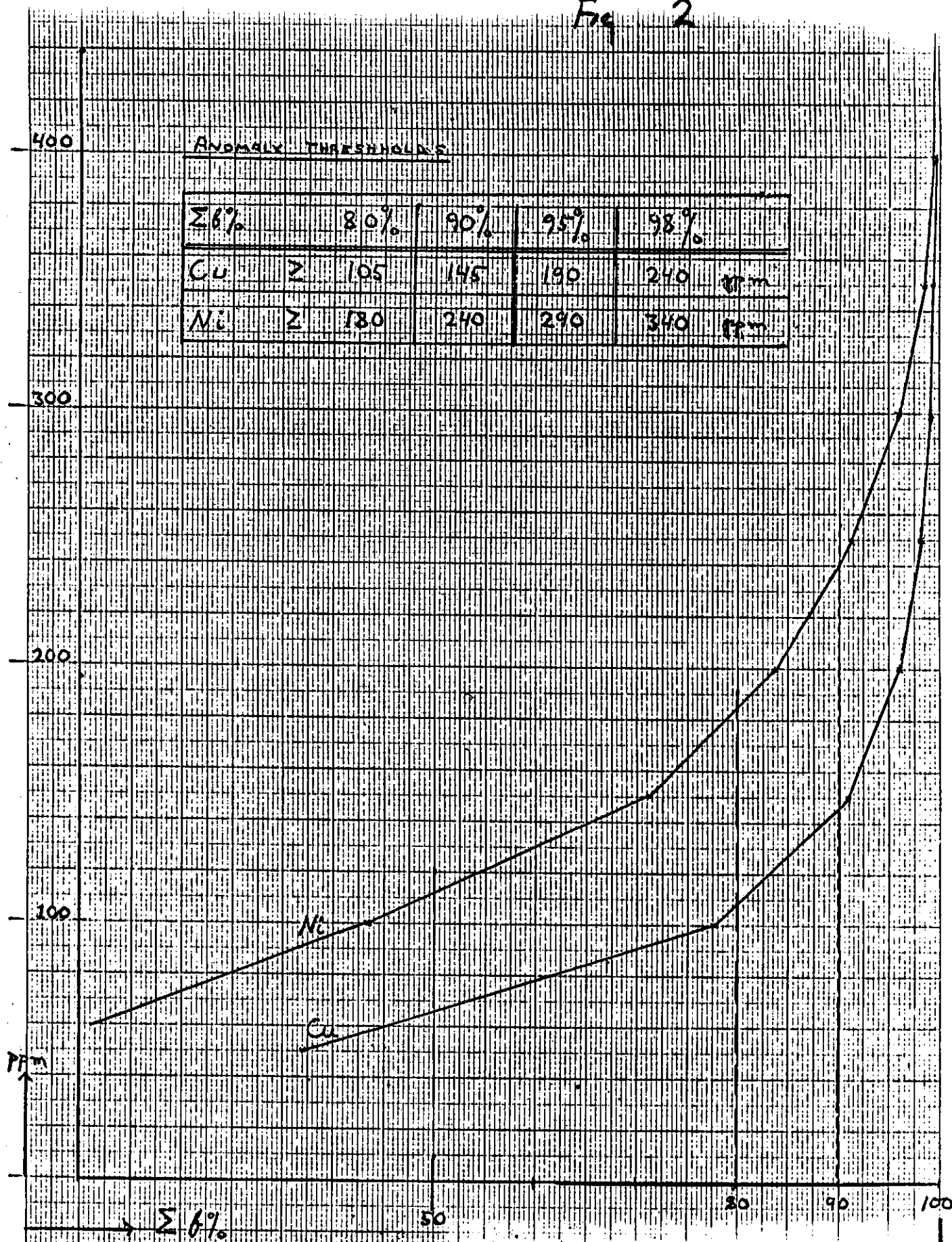


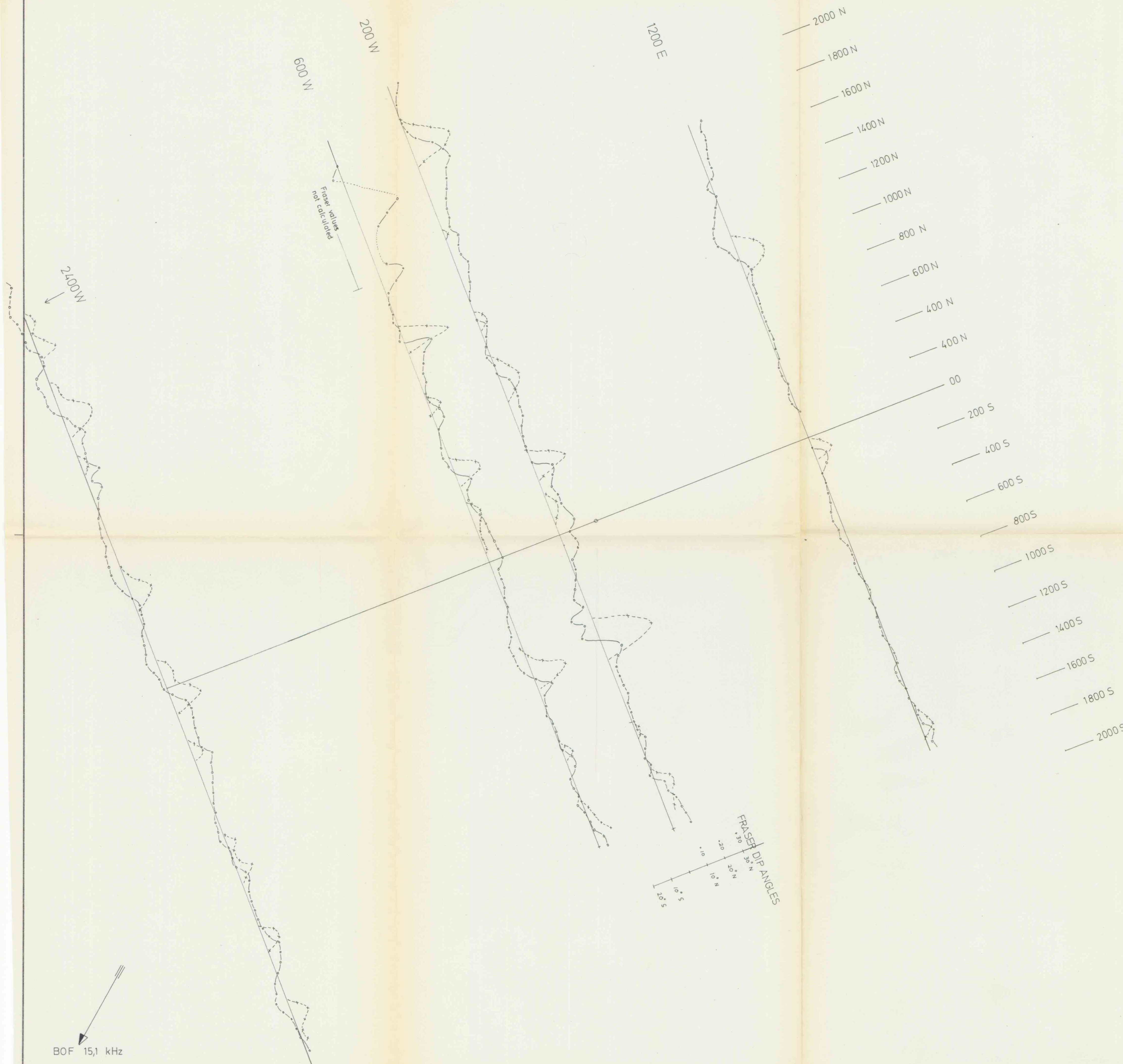
Fig. 1

General pattern of distribution for mafic and ultramafic rocks in the Seiland Province

Fig 2



A/S SULFIDMALM	
FREQUENCY DISTRIBUTION OF Cu AND Ni IN SOIL	
MELKEVANN AREA, SEILAND	
SCALE	DRAWN
DATE 2/73	TRACED HCR



INSTRUMENT : CRONE RADEM
 STATION : BORDEAUX, FRANCE (15,1 kHz)
 o — o : DIP ANGLES OF RESULTANT FIELD
 x — x : DIP ANGLES DATA COMPUTED BY
 THE FRASER METHOD (neg. values ignored)

BOF 15,1 kHz

Bilag til rapport
 BV 472

REC. VLF-EM PROFILES MELKEVANN AREA SEILAND W-FINNMARK	SCALE	OBS. HaR	8-72
		DRAW. HaR	8-72
	1:10 000	TRAC. BL	9-72
		CHK. <i>Ben</i>	1-72
% SULFIDMALM	MAP NO.		
	MAP SHEET		



KEY:

Cu	Ni	Metal content in ppm (B-horizon)	
70	110		
≥ 105	≥ 180	"High background"	Σ%a.b 90 %
≥ 145	≥ 240	Possible anomalous	90 %
≥ 190	≥ 290	Probably anomalous	95 %
≥ 240	≥ 340	Sign. anomaly	98 %

0 750 1500 m

SOIL GEOCHEMISTRY
MELKEVALL, SEILAND
WEST FINNMARK

1/8 SULFIDMALM

SCALE

OBS. HaR/ Folldal	
DRAW. HaR	
TRAC. BL	2-73
CHK. HaR	2-73

MAP NO.

1-227-72-16

MAP SHEET

