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Rapportarkivet

Bergvesenet rapport nr BV 888	Intern Journal nr 329/79 FB	Internt arkiv nr T & F 7	Rapport lokalisering Trondheim	Gradering Åpen
Kommer fra ..arkiv Troms & Finnmark	Ekstern rapport nr Sul 483-78-23	Oversendt fra	Fortrolig pga	Fortrolig fra dato:

Tittel

Ground geophysical surveys in south Pasvik, spring 1978. (Vintergeofysikk Pasvik)

Forfatter Frank Nixon	Dato 1978	Bedrift Sulfidmalm A/S
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Kommune Sør-Varanger	Fylke Finnmark	Bergdistrikt Troms og Finnmark	1: 50 000 kartblad 23332	1: 250 000 kartblad Kirkenes
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Fagområde Geofysikk	Dokument type Notat	Forekomster Rømlingsås Bjørntjern Blankvann
Råstofftype Malm/metall	Emneord Ni Cu	

Sammendrag

A/S SULFIDMALM

For Falconbridge Nikkelverk A/S

A/S Sydvaranger, Pasvik Joint Venture

A/S SULFIDMALM

Ground geophysical surveys in south Pasvik
spring 1978

483/78/23

INTRODUCTION

The work was agreed upon at a meeting between A/S Sydvaranger and A/S Sulfidmalm 8.2.1978.

The aim was to detail an area surrounding an important boulder find in 1977 with ground VLF and magnetics. The area has been previously covered by helicopter geophysics and the survey was intended to give more detail of HEM anomalies as well as picking up new anomalous areas.

THE GRID

The grid outline is shown on the location map. (Enclosure 078.23). Five base lines totalling 19 kms were put out in a N/S direction and marked in the field for every 50 m with a wooden picket. Profiles were run for every 100 m and marked with tape for every 25 m.

EQUIPMENT

One CRONE VLF E.M. unit (RADEM) and the PAULSEN VLF E.M. unit were used in the survey. Magnetic measurements were taken with two McPhar m700 fluxgate measuring the vertical component of the earth's magnetic field. A magnetic base station measuring diurnal variations was in use throughout the survey. (A McPhar M 700 unit and a Rustrak chart recorder were utilized).

THE SURVEY

The work was carried out under winter conditions by two two man teams. A total of 154 profile kms were measured. Profile separation was 100 m and station intervals of 25 m for VLF and 12.5 m for magnetics. The job was completed during April.

THE RESULTS

The VLF results are presented both as dip angle and contoured Fraser values. Magnetic results are presented as contoured magnetic maps.

These maps are on file in Kristiansand as 27 separate map sheets in scale 1:2500 (a duplicate set in scale 1:5000 has also been made).

The location map shows the position of the individual map sheets.

DISCUSSION

There is a good general correlation between the helicopter E.M. and mag. survey and the results of the ground winter survey, although the ground work gives a much more detailed picture of the magnetic anomalous areas-giving much better resolution. Several new magnetic anomalies have also been outlined.

The main features of the VLF results are fairly long broad weak to moderate anomalies that generally have little or no magnetic association and which in all probability represent geological features. They reflect the general geological strike and most are thought to be due to amphibolite horizons with pyrrhotite (such as the western most VLF anomaly which has been drilled on ca. 10900 N - 6000 W-Bjorntjern, and where po bearing blocks can be traced back to the anomaly zone).

As mentioned above the magnetic results generally have no direct VLF correlation and are usually made up of several small circular to elongated dipole areas that form anomalous sones. Two main sones are apparent.

Sone 1 which is situated on sheets 2 and 5 is made up of a series of generally rounded anomalies of variable lengths that make up a sone trending in a 340° direction over a length of ca. 2.5 kms. This direction is somewhat discordant to the regional strike and it is thought that the anomalies may represent intrusive bodies of basic/ultrabasic material distributed along a fracture sone.

It is interesting to note that the initial block finds (4% Ni) are located just down-ice of this sone and that preliminary geochemical work has given some anomalous Ni values.

"Sone 2" is very similar to sone 1 with the anomalies generally having the same amplitude and being built up of a system of dipoles. The sone forms an apparent fold closure with a marked dipole effect (on sheet 7). The anomaly extends over 1 km and has a possible continuation 1 km further to the S.E. Again the sone seems to be discordant to the regional geological strike.

Sones 1 and 2 are separated from each other by a marked tectonic feature (the Tommamoen fault trending approx $35 - 40^{\circ}$), and one possible interpretation is that there has been local movement along the Tommamoen fault and that the "magnetic fold closure" of sone 2 may represent a drag feature along this fault.

Enclosure 10.7823 shows a possible interpretation with the Tommamoen fault having a lateral movement of ca. 1.5 kms and displacing both VLF and magnetic sones.

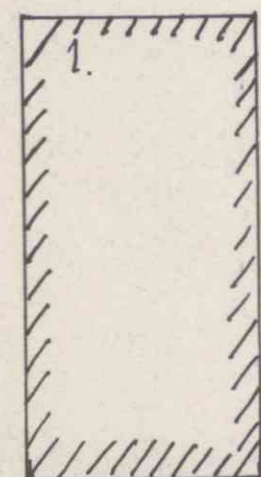
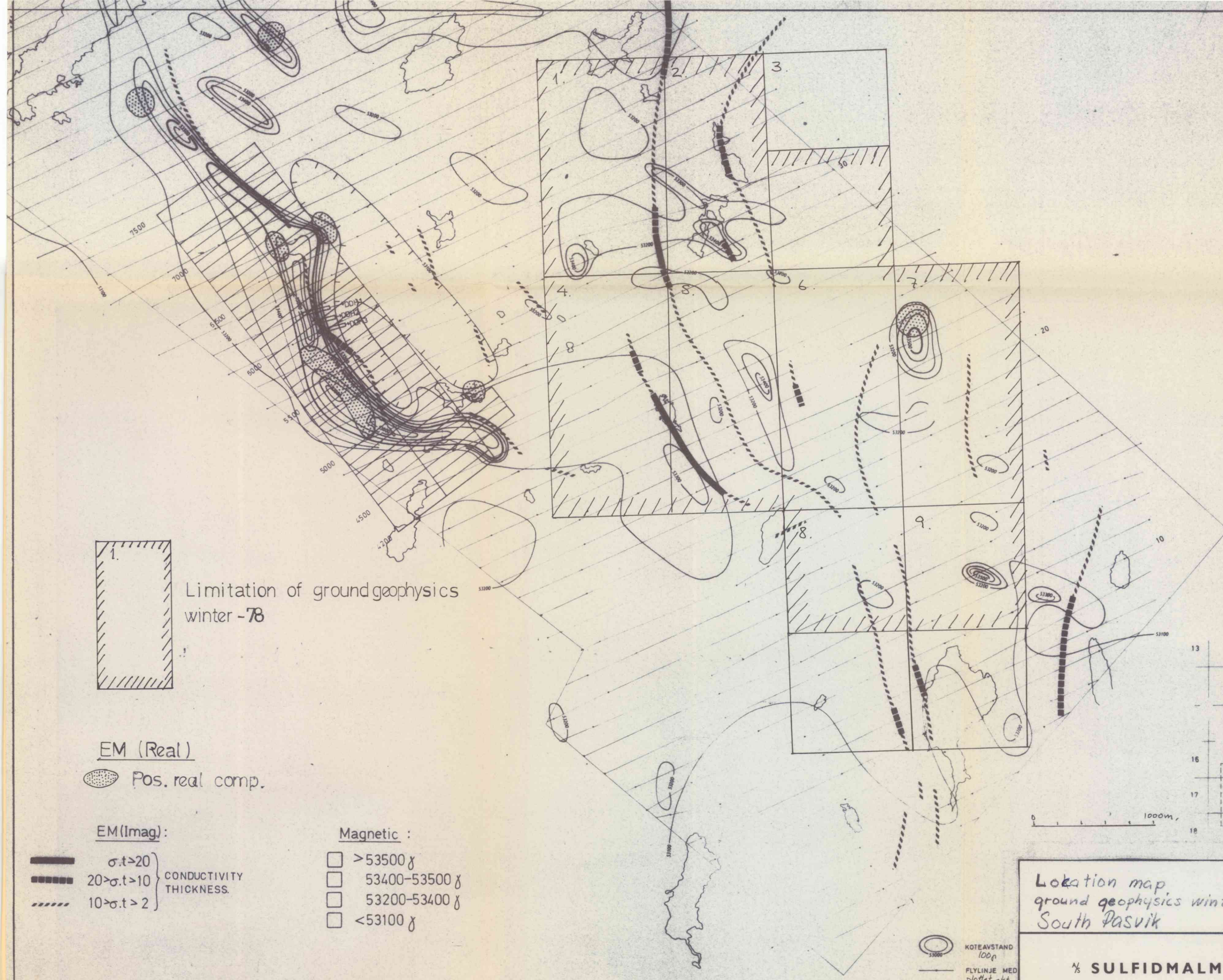
Both magnetic sones are considered very interesting as they are thought to represent areas of ultrabasic rock. They will now be subjected to detailed geochemical-geophysical and geological investigations during the summer. Photogeological interpretations now under way will hopefully throw some light on the structural patterns in this area.

Enclosures:

- 1) 0.78.23 Location map 1:20.000
- 2) 10.78.23 Interpretation map 1:20.000

Dip angle VLF, Fraser VLF and magnetic maps in scale 1:2500 and 1:5000 are on file in Kristiansand S.

Frank Lickson



Limitation of ground geophysics
winter -78

EM (Real)

Pos. real comp.

EM (Imag):

$\sigma.t > 20$
 $20 > \sigma.t > 10$
 $10 > \sigma.t > 2$

CONDUCTIVITY
THICKNESS.

Magnetic :

☐ $> 53500 \gamma$
☐ $53400 - 53500 \gamma$
☐ $53200 - 53400 \gamma$
☐ $< 53100 \gamma$



KOTEAVSTAND
100 p

FLYLINJE MED
plottet pkt.

Lokation map
 ground geophysics winter 78
 South Pasvik

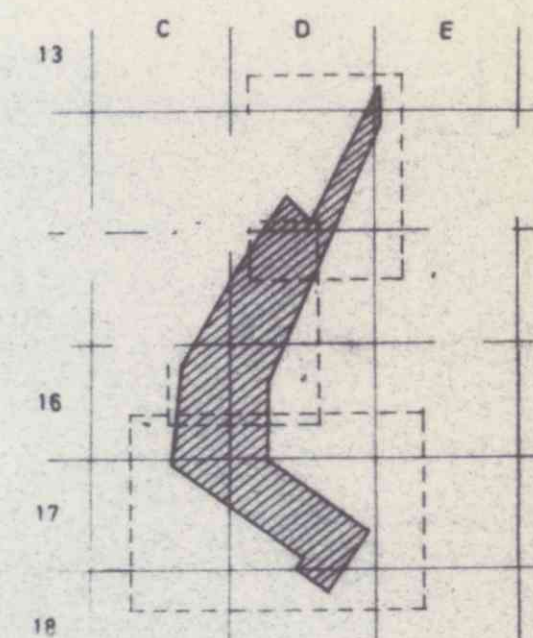
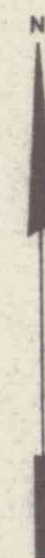
$\frac{1}{2}$ SULFIDMALM

SCALE
 1:20000
 OBS.
 DRAW.
 TRAC.
 CHK.

MAP NO. 0 78 23

23-78-B29

MAP SHEET



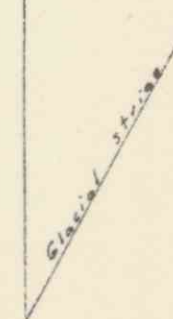
0 1000m

SORTBRYST TJERN

GJØKVANN

79/EK-77

N



- Major fault
- Fracture zone

Main geophysical zones :

- - - strong VLF
- - - weak VLF
- strong positive Mag
- anomalous Mag
- ▲ Ni-Cu-rich block

RØMLINGÅS

BJØRNTJERN

TOMMAVANN

HESTEFOS

ØVRE PASVIK NATIONAL PARK

RAUTAKURU

SOUTH PASVIK 2378
Winter - geophysics

SCALE	OBS. EK, Fih	4-78
1:20.000	DRAW. EK	6-78
	TRAC. EK	6-78
	CHK.	

1/2 SULFIDMALM

MAP NO.
10/78

MAP SHEET