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Rapportarkivet

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Tittel Ground geophysical surveys in south Pasvik.				
Forfatter E Kreivi F Hansen		Dato 1978	Bedrift Sulfidmalm A/S	
Kommune Sør-Varanger	Fylke Finnmark	Bergdistrikt Finnmark	1: 50 000 kartblad 23332	1: 250 000 kartblad Kirkenes
Fagområde Geofysikk	Dokument type Rapport		Forekomster	
Råstofftype Malm/metall	Emneord Ni Cu			
Sammendrag Vintergeofysiske målinger (Mag VLF-EM) øst for Rømlingsåsen i 9 områder i Blankvann grid				

A/S SULFIDMALM

TO: Falconbridge Nikkelverk A/S
FROM: F. Nixon
DATE: June 27, 1978
COPY: W. D. Harrison, H. T. Berry, E. Kveivi

Report 483/78/23 Pasvik Winter Geophysics

Please find enclosed a report covering the geophysical work carried out in Pasvik this winter. The work has given us a much better picture of the geological build-up of this heavily covered area.

Magnetic anomalies seem to be of immediate interest and will be one of the main exploration targets this summer.



F. Nixon

Encl.

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 earths 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 profil 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 zones. Two main zones 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 zone 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 zone.

It is interesting to note that the initial block finds ($4\frac{1}{2}\%$ Ni) are located just down-ice of this zone and that preliminary geochemical work has given 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 zone 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 zone seems to be discordant to the regional geological strike.

Sones 1 and 2 are separated from each other by a marked tectonic feature (the Tonnamoen Fault trending approx $35^\circ - 40^\circ$), and one possible interpretation is that there has been local movement along the Tonnamoen 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 Tonnamoen Fault having a lateral movement of ca. 1.5 kms and displacing both VLF and magnetic zones.

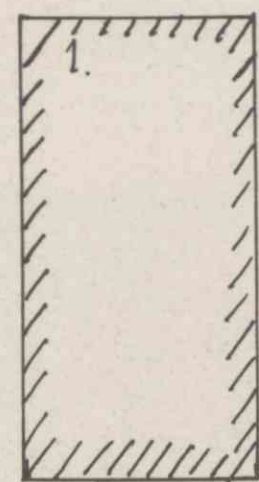
Both magnetic zones are considered very interesting as they are thought to represent areas of ultrabasic rock. They will now be subjected to detailed geochemical-geophysical and geological investigations during the summer. Photogeological interpretations now under way will hopefully throw some light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



Limitation of ground geophysics
winter -78

EM (Real)

Pos. real comp.

EM (Imag):

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

CONDUCTIVITY
THICKNESS.

Magnetic :

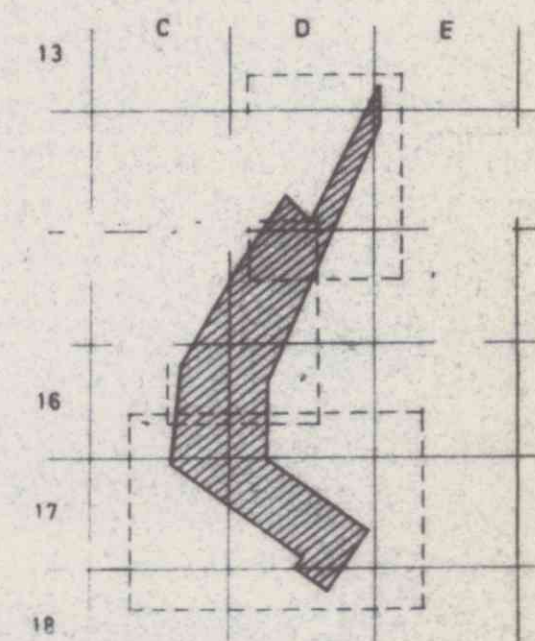
$> 53500 \gamma$
 $53400-53500 \gamma$
 $53200-53400 \gamma$
 $< 53100 \gamma$



KOTEAVSTAND
100r

FLYLINJE MED
plotlet pkt.

0 1000m



Location map
ground geophysics winter 78
South Pasvik

1/2 SULFIDMALM

SCALE
1:20000

OBS.	
DRAW.	
TRAC.	
CHK.	

MAP NO. 0 78 23

23-78-B29

MAP SHEET

SORTBRYST TJERN

GJØKVANN

78/EK-77

RØMLINGÅS

ØBJØRNTJERN

TOMMAVANN

N



— Major fault

— Fracture zone

Main geophysical zones:

--- strong VLF

--- weak VLF

● strong positive Mag

● anomalous Mag

▲ Ni-Cu-rich block

HESTEFOSS

ØVRE PASVIK NATIONAL PARK

RAUTAKURU

SOUTH PASVIK 2378
Winter-geophysics

1/2 SULFIDMALM

SCALE	OBS. EK F.H.	4-78
1:20,000	DRAW. EK	6-78
	TRAC. EK	6-78
	CHK.	

MAP NO.
10/78

MAP SHEET