



Bergvesenet

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Rapportarkivet

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Tittel Bouldertracing on detailed grids: Korsvann, Berit, Grete, Gjeddevann, Abborvann, Haukvann S, Haukvann E, and Føllvann in South Pasvik. (Blokkleting i S.Pasvik)				
Forfatter E Kreivi		Dato 1977	Bedrift Sulfidmalm A/S	
Kommune Sør-Varanger	Fylke Finnmark	Bergdistrikt Troms og Finnmark	1: 50 000 kartblad 23332	1: 250 000 kartblad Kirkenes
Fagområde Geologi løsmassegeologi	Dokument type Rapport	Forekomster Korsvann, Berit, Grete, Gjeddevann, Abborvann, Haukvann S, Haukvann E, and Føllvann		
Råstofftype Malm/metall	Emneord Ni Cu			
Sammendrag 1 duplikat				

Inv. 328/79 FB.

BLOKKETING PAIVIK
1977

RAPPORT 471/77/23

FOR FALCONBRIDGE NIKKELVERK A/S
A/S SULFIDMALM

PROJECT 905-23

Bouldertracing on detailed grids, Korsvann,
Berit, Grete, Gjeddevann, Abborvann,
Haukvann-S, Haukvann-E and Føllvann in South-
Pasvik.

by
Erkki Kreivi

Introduction and conclusions

Boulder-hunting was carried out by Tuomo Alapieti and Erkki Kreivi on the detailed grids layed out and surveyed with geophysics in the spring of 1977. The work was done in June-August camping in a tent. The camp-gear was transported by our small Drabant-belt-tractor.

The areas are very blocky pine-forests and difficult to move around in especially with vehicles. Swamps and lakes are usually narrow, but elongated in a south-north direction, in the direction of glacial movement (22°E from magnetic north, 30°E from grid-north). Most of the areas are covered by a thick till.

Exposures are very rare and it is often difficult to find any local blocks, because of an aplatation-moraine, which has covered the till. Lots of meta-peridotite-blocks were found down-ice of magnetic anomalies. Only three exposures of meta-peridotite (20-22/EK) were found, all of them in the Korsvann grid. Several mineralized amphibolite- or amphibole-gneiss-blocks were found, especially on a boulder fan in the Korsvann-grid. Among this fan was found a mica-gneiss-block (7/EK) with quartzose-veins and bismuth-glance and chalcopryrite. The rock which is the most interesting in the areas assayed 780 ppm Ag, 0.40 Pb and $>2\%$ Bi. The other mineralizations in the found blocks were of pyrrhotite and pyrite with some chalcopryrite, 0.54 Cu at Lille Føllvann and 0.44 Cu at Gjeddevann. Ultramafic rocks in the areas are very barren of sulphides, only a little malachite was found mainly in fissures.

KORSVANN GRID

Bedrock

The area is very blocky, but very weakly exposed. In addition to the geophysics the blocks give a quite clear illustration of the lithology of the area.

The main part of the bedrock in the grid-area is formed of pre-svecokarelian mica- and mica-amphibole-gneisses striking about N-S-direction with the dip of 40W (250W/540N). Among the gneisses there are a few amphibole-zones parallel to the strike of the gneisses. The zones are visible as long anomalies on VLF- and Mag-anomaly maps and are exposed in two different places in 50W/500N and 500W/2400N. The latter has a contact with a serpentinite-intrusion and causes the strongest Mag.-anomaly. This rock can be seen in the core of DDH 2/71. The schistosity of the amphibolite is N55E/80W, which also is the direction of the contact with the serpentinite. The strike of the former amphibolite-zone is N15E/30W. This rock contains a little of iron-sulphides.

In the grid-area three massives of ultramafics occur, but only the northernmost and the southernmost ones are exposed. Because of a varying serpentizing these rocks are strongly magnetic and therefore clearly visible on the magnetic anomaly-map. On magnetic anomalies there occur plenty of ultramafic blocks, which show the lithology of the massives.

The northernmost massif is strongly serpentized, but the primary layering (NS/35W) is still visible. One can assume that if the layers have been nearly horizontal during the crystallisation then the whole massif could plunge towards the east at present.

The middlemost massif is not exposed. According to the magnetic anomaly and the distribution of blocks the massif is the widest one (800 ms long). The blocks are of quite homogenous meta-peridotites.

The southernmost massif is exposed in one place (100W/200S). The rock is meta-peridotite, like most of the blocks on and close to the Mag.-anomaly.

Boulder tracing

The ultramafic intrusions have produced a lot of erratic blocks, but no block containing sulphides were found. A couple of meta-peridotite-blocks containing malachite in fissures were found in 585E/3500N and 625E/3650N. Sulphides were found chiefly in amphibolites and mica-amphibole-gneisses. The sulphide-bearing blocks in the northern part of the grid form a boulder fan. Source of the fan seems to be situated out of the grid. The blocks contain mainly pyrrhotite with some pyrite and often also some chalcopyrite. One block containing 60-70% po gave a weak positive result in DMG-test.

3/TA	(2770N/400W)	Afb-mc-graf-s	20% po, some cpy, trace cp
4/TA	(35S/250W)	Tuffaceous schist	po+py in cracks some cp
4/EK	(3450N/625E)	Afbt	po-diss., py-droplets traces of cp
6/EK	(2770N/400W)	Afb-mc-graf.-s.	20% po, some py, traces of cp
7/EK	(2500N/600W)	Mc-gn	py + bismunt-glance in vein, cp in hostr.
8/EK	(2950N/0)	Afbt.	some po + py
9/EK	(2700N/220W)	Afbt	some po + py trace cp
10/EK	(250S/300W)	Afbt	some po + cp cp in cracks and diss.

14/EK	(2850N/360W)	Afb-me-graf-s.	60-70% po tc. cp, py
15/EK	(3400N/340E)	Afb-mc-gn	a little of po some cp
16/EK	(3360N/275E)	Pgt	10% po+py tc. cp
17/EK	(3165N/20E)	Chl.-afb-rock	some po
18/EK	(2760N/200W)	Afb-gn	some po+py tc. cp
19/EK	(2460N/540W)	Afb-mc-gn	40% po, tc. cp.
5/EK	(Berit 1490N/340E)	Afb	10-20% po +py - diss. some cp in cracks and diss.

BERIT-GRID

Bedrock

According to blocks and geophysics the area consists of mainly gneisses and two parallel iron-sulphide-bearing amphibolite-zones 25/EK (1000N/75W). A small metaperidotite-intrusion is connected with the westernmost amphibolite-zone around 1100N/250W.

Boulder-tracing

Lots of amphibolite-blocks with ironsulphides were found on and E-side of the westernmost VLF-anomaly-zone. In the area of 250W-350W/1150N-1225N there were found meta-peridotite blocks of the ultramafic intrusion mentioned above.

GRETE-GRID

Bedrock

The bedrock in the area consists of ultramafic intrusion surrounded by mica-gneisses.

The exposed ultramafic rock is serpentinite, but according to blocks it sometimes approaches metapyroxenites. Measured schistosity in mica-gn. was NS/75W.

Boulder tracing

Among abundant ultramafic blocks there were found a couple of blocks containing malachite mainly in fissures 5/TA (890N/30E) and 28/EK (about 1 km NE of Grete-grid). One amphibolite block with rounded edges, 32/EK (30N/100W), contained a little of po + cp.

GJEDDEVANN-GRID

Bedrock

Gneissose bedrock in the area contains two long parallel partly granitized amphibolite-zones, which can be seen as conductors on VLF- and Shoot-back-anomaly maps. Measured schistosity at 900N/70E was N15E/30W.

Boulder tracing

Several graphite-bearing amphibolite-blocks containing up to 10-20% po and some py + cp were found along the western conductor-zone. A part of the blocks being probably weathered exposed bedrock (38/EK). One very folded granitized block (37/EK) with 10-20% po and some py + cp was found close to the easternmost anomaly probably representing the source of the concerned anomaly.

Abborvann

Lots of serpentinite and meta-prd blocks were found among gneiss-blocks. The blocks might be transported from south of the grid from Haukvann-S. Trace of sulphides with positive DMG-test and trace of malachite were found in serpentinite.

Haukvann-S

Lots of serpentinite-and meta-prd-blocks were found among gneiss-blocks. No sulphide was found.

Haukvann-E

Lots of meta-prd-blocks were found among gneiss-blocks. No sulphide was found. The profile 400S was measured by Shoot-back-EM between 0-45W. A weak anomaly was picked up at 270W.

Føllvann

Under the magnetic anomaly is a partly migmatized amphibolite/amphibole-gn. No sulphide was found.

Observations

1977

B = block, Oc = outcrop

		Rock type	Ore-mineral	Remarks	Locations	
1/EK	B	M-prd	Malachite	in fissures	Korsvann	3500N/585E
4/EK	B	Afb+gtz-vein	5% po, py, (cp)	impregnation(po)	"	3450N/625E
5/EK	B	Afb?	10-20% po,py(cp)	po,py-disseminations,cp in cracks	Berit	1490N/340E
6/EK	B	Afb	some po, py		Korsvann	2770N/400W
7/EK	B	Mc-gn+gtz-v	Bi+cp	2 cm veinlet Bi, >2% Bi, 780 ppm Ag	"	2500N/600W
8/EK	B	Mc-afb	some po+py		Korsvann	2950N/0
9/EK	B	Mc-afb	some po+py(cp)		"	2700N/220W
10/EK	B	Mc-afb	po,cp	cp mainly in joints	"	250S/300W
11/EK	Oc	M-prd			"	220S/100W
12/EK	Oc	Afb		S:N15E 30W	"	50E/500N
14/EK	B	Graf-Afb-Mc-s	50% po,(cp),(py)	Weak posit DM6	"	2850N/360W
15/EK	B	Afb-Mc-gn	po, cp		"	3400N/340E
16/EK	B	Qtz-Fel	10% po,py (cp)		"	275E/336N
17/EK	B	Chl-Afb-rock	po		"	3165N/20E
18/EK	B	Afb-gn	po,(cp)		"	2760N/200W
19/EK	B	Afb-Mc-gn	40% po, (cp)		"	2460N/540W
20/EK	Oc	Sp			"	2400N/410W
21/EK	Oc	M-prd			"	2400N/500W
22/EK	B	M-prd			"	A) 375W/1950N B) 350W/1950N
23/EK	Oc	gn		S:NS/40W Banded Mc-gn	"	250W/540N
24/EK	Oc	M-prd			"	200S/100W
25/EK	B	Afb	po, py	Lots of similar blocks near 600-700N/0	Berit	1000N/75W
26/EK	B	M-prd		"	"	250-350W/1150-1225N
27/EK	B	Carb-rock			W of Lille Føllvann	
28/EK	B	sp	malachite	in fissures as a supergenetic enrichment	1 km NE of Grete-grid	
29/EK	B	M-prd			Grete	500N/250W
30/EK	Oc	sp			"	360N/350W
31/EK	Oc	Mc-gn		S:NS 75W	"	300N/360W
32/EK	B	Afb	po, cp		"	30N/100W
33/EK	B	Afb	po, py, cp		NE-side of Abborvann	
34/EK	B	Afb	10-20% po,py, cp	mainly in fissures, some graf.	Gjeddevann	290N/115E
35/EK	B	Afb	"	"	"	300N/115E
36/EK	B	Afb	"	"	"	310N/115E
37/EK	B	Afb	"	Like 34/EK, but more Qtz,folded	"	790N/210E
38/EK	B	Afb	"	Like 34/EK,0.06Ni, 0.44Cu	"	960N/ 15E
39/EK	Oc	sp	malach.+po	Positive DM6,rare sulphides	Aborvann	780W/150S
40/EK	B	M-prd			Korsvann	1350N/500W
41/EK	Oc	Hb-gn+afb-layers		partly migmatized Afbt or Afb -gn. S: N25W 30W	Føllvann	350-250N/0

Enclosures

South Pasvik	Location map
South Pasvik	Summary map
Korsvann-Berit-grids	Summary map
Grete-grid	Summary map
Gjeddevann-grid	Summary map
Korsvann-grid	Drill-section

primary school back FM



LOKALITETSKART

Kirkenes

Gjeddevann:
7,8 km VLF/Mag.

Føllvann:
144 km VLF Mag.
1,6 km shootback EM.

Abborvann:

Berit:

Grete:
5,6 km VLF/Mag.
0,5 km shoot-back EM.

Villrennvann

Korsvann:
23,4 km VLF/Mag.
+3,6 km control VLF/Mag.
over Villrennvann grid.

KEY:

- >53500 γ
- 53400-53500 γ
- 53200-53400 γ
- <53100 γ

EM(Real)

- Pos. real comp.

EM(Imag)

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

CONDUCTIVITY
THICKNESS

Bor object:

- Geofysisk måling utført
- Geofysisk måling må utføres

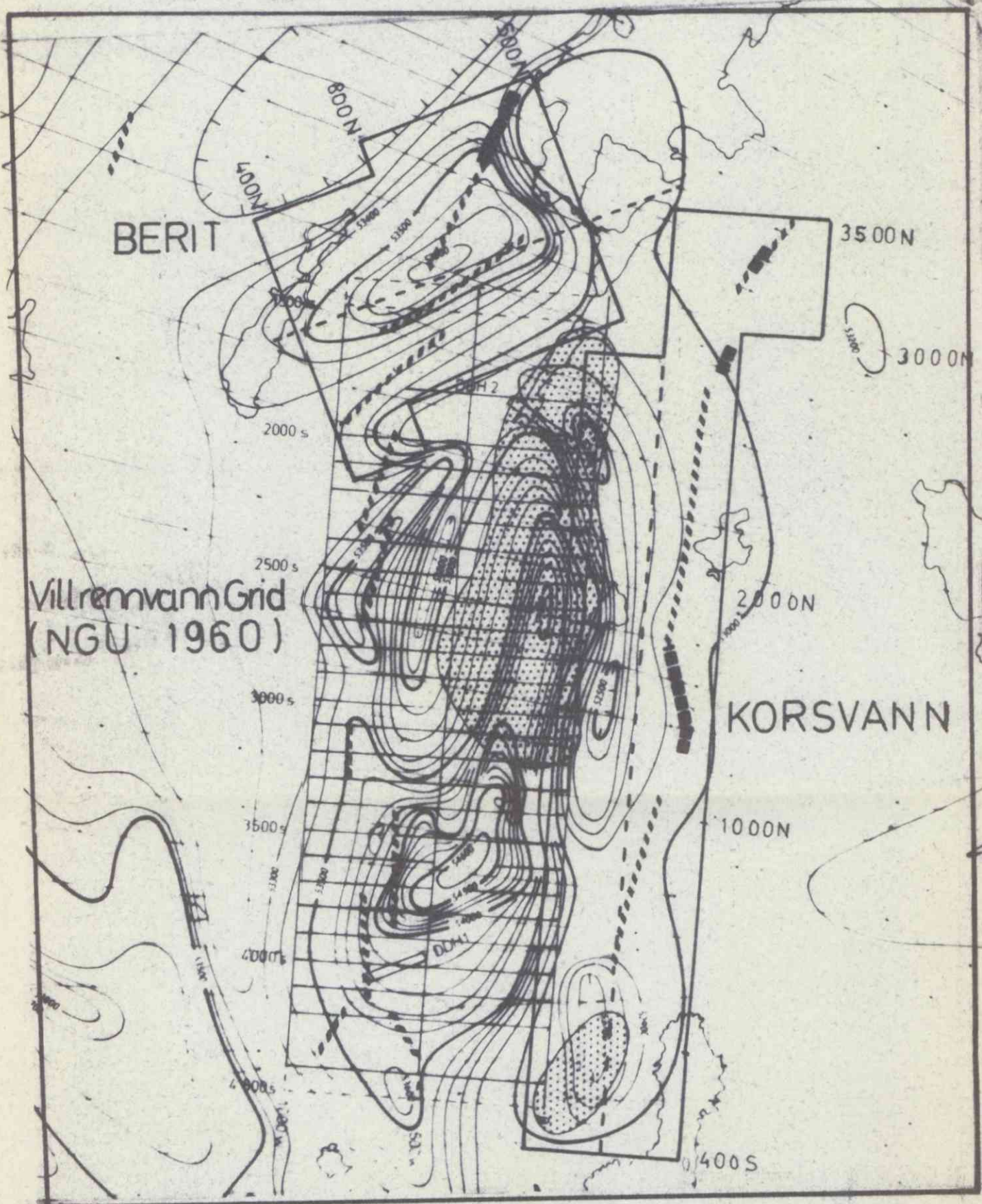
KOTEAVSTAND 100 GAMMA

FLYLINJE MED PLOTTET PUNKT

South PASVIK, Finmark.
SUMMARY MAP
Ground Geophysical coverage
MARCH 1977

NORGES GEOLOGISKE UNDERSØKELSE
TRONDHEIM & AS SULFIDMALM

REVISJON NR. HH. JUNI 1978
1:20000
TRONDHEIM, NOV 1978
TRONDHEIM, NOV 1978
1489-02



KEY:

- MAG
- | BERIT/KORSVANN | VILLRENNVANN |
|---------------------------------------|--------------------------------------|
| ☐ > 4000 γ | ☐ > 4000 γ |
| ☐ 2000-4000 γ | ☐ 1500-4000 γ |
| ☐ 1000-2000 γ | ☐ 500-1500 γ |
| ☐ 500-1000 γ | ☐ < -500 γ |
| ☐ 0-500 γ | ☐ < -1000 γ |
| ☐ ±500 γ - 0 γ | |
| ☐ < 500 γ | |
- EM
- VLF ☐ Fraser values 20-40
- Shoot-back ☐ check profiles
- 66/20 ☐ Ni/Cu in stream sediment
- DDH 171 ☐ Drill hole (projected upfoliation)
- TURAM
- | |
|-------------------------|
| — very strong conductor |
| --- strong conductor |
| weak conductor |
| — very weak conductor |
- ☐ granitic gneiss
- ☐ garnet-amphibolite
- ☐ coarse amphibolite
- ☐ serpentinite

Detailed mag-vlf surveys
50m line spacing (fill-in)
VLF 25m
mag 12.5m tied in to '77 grid
25m line-spacing VLF-mag

S.PASVIK Geophysics,
Summary map: boulder tracing-77
Villrennann-Korsvann -
Berit grids

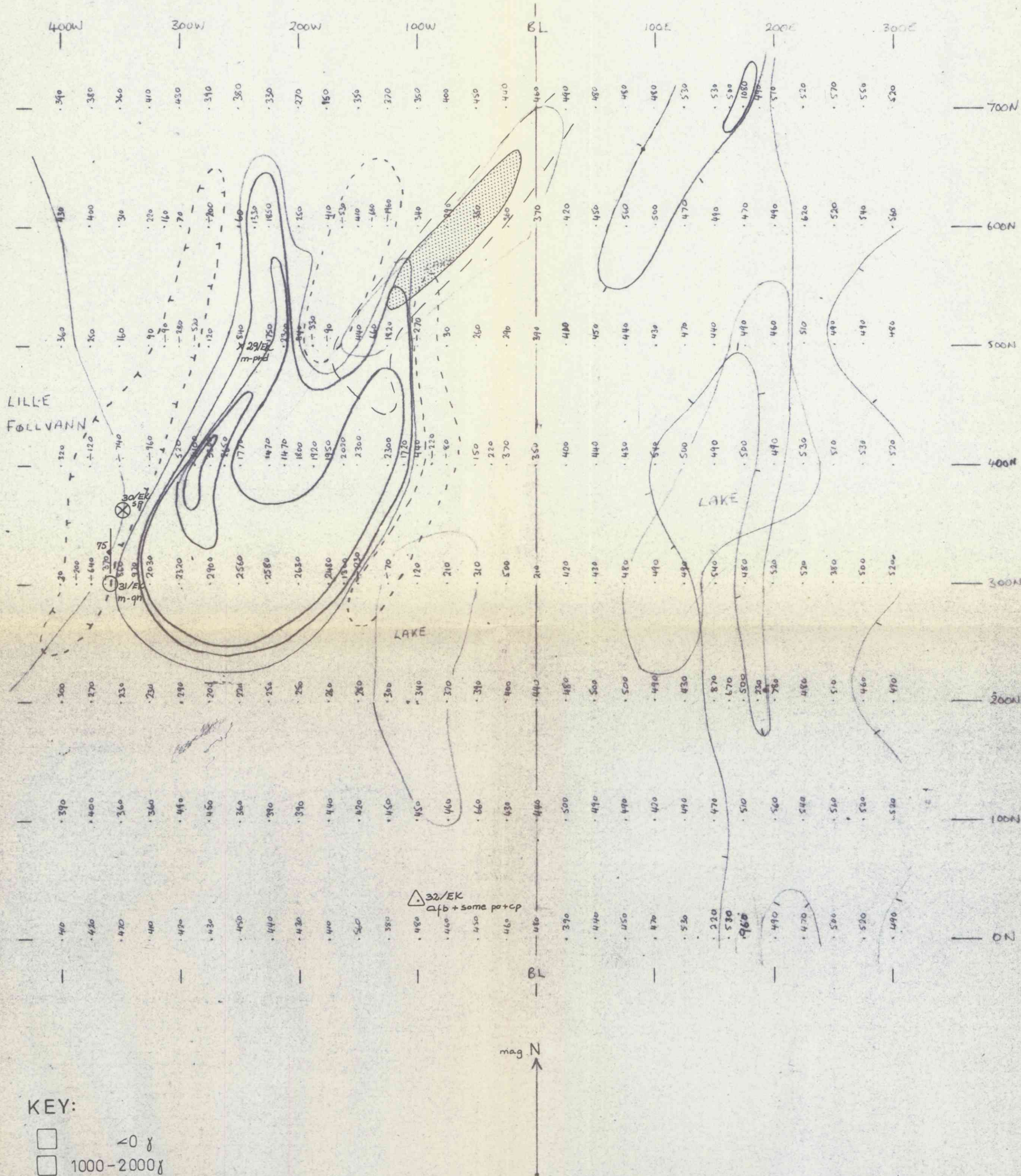
SCALE 1:4000

MAP NO.

MAP SHEET

% SULFIDMALM

△ 5/TA
sp+ malachite in
fissures



KEY:

- ☐ <0 γ
- ☐ 1000-2000 γ
- ☐ >2000 γ

- ☐ 10-20 VLF-Fraser values.
- ☐ 20-40

— Shoot-Back profile.

Grete grid, south Pasvik.

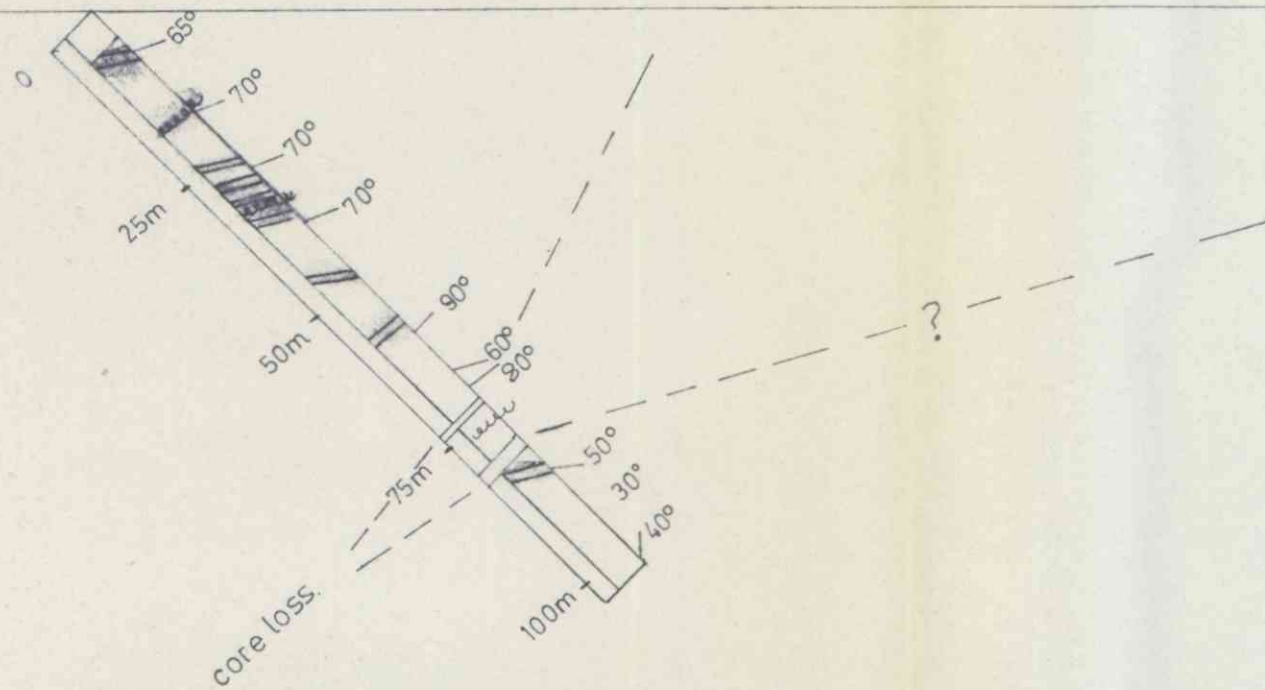
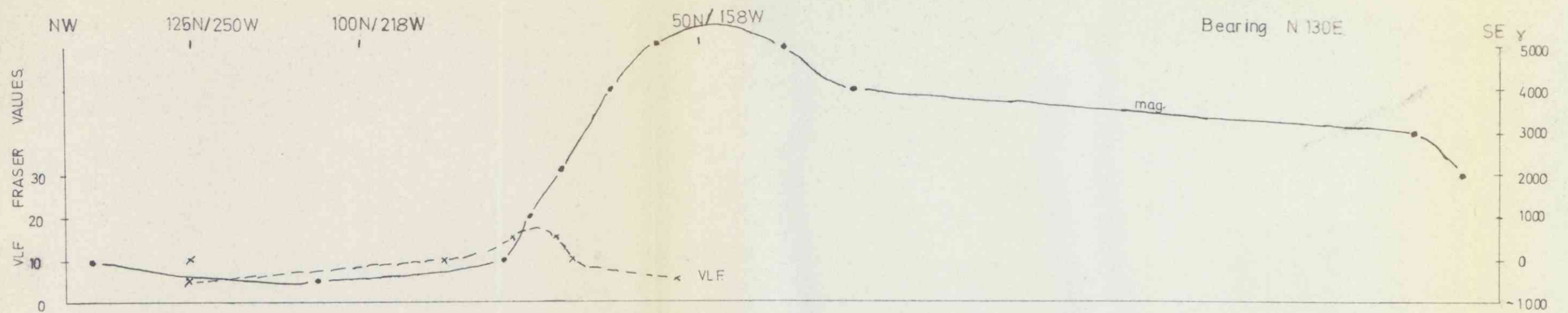
GEOPHYSICAL SUMMARY MAP
Block-tracing - 77

Σ SULFIDMALM

SCALE	OBS. RBB	3-77
1:2500	DRAW. RBB	---
	TRAC.	
	CHK.	HB

MAP NO.
450-77-23- 7

MAP SHEET



- ☐ overburden.
- ☐ acid biotite gneiss.
- ☒ amphibolite bands in biotite gneiss.
- ☐ tremolite-actinolite ultramafic.
- ☐ gouge or crush zone.
- ☐ core loss.
- ||||| breccia zone.

S-PASVIK.
KORSVANN GRID.
DDH 35/77
125N/250W
DIR N. N 130E.

SCALE 1:1000	OBS. KMRK.	8-77.
	DRAW. KMRK.	9-77.
	TRAC. L.H.	11-77.
	CHK.	

MAP NO.

$\frac{1}{2}$ SULFIDMALM

MAP SHEET