

FOR FALCONBRIDGE NIKKELVERK A/S

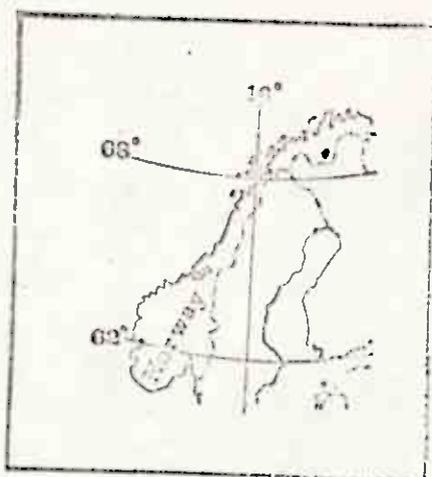
A/S SULFIDMALM

PROJECT 905-2

PRELIMINARY REPORT ON THE VUOLMAS-  
JAVRRE GEOCHEMICAL ANOMALY.

**A/S BIDJOVAGGE GRUBER**

T.H. TAN



## INTRODUCTION

The Vuolmasjavrre anomaly was one of the indications for possible copper mineralization.

The indications appear as:

- 1) Strong electromagnetic anomalies, both from airborne and ground Slingram survey.
- 2) Strong geochemical anomalies (Cu) in the till near the EM anomalies.

Sulfidmalm's own follow-up work consisted mainly of an intensified till sampling in the area. The purpose was to trace the source by sampling the till in the "up-ice" direction. The work was carried out in the Winter of 1971/72. The result so far was that we could define several geochemical anomalous zones, but the sampling is as yet still insufficient to define southern (up-ice) limits of the most promising anomalies.

## HISTORY

In 1959 the Norwegian Geological Survey (NGU) carried out an airborne magnetic and EM survey over the Caskias greenstone zone, around 2500 sq. km large. The main purpose was to try and find additional ore reserves for the Bidjovagge copper deposit (discovered some years earlier in this greenstone belt), which was then under development under the auspices of the Norwegian State.

During the period of 1964-67, a small exploration group from the NGU carried out ground follow-up work on the EM indications from this survey. The exploration was based on the assumption that any worthwhile copper mineralization must be found in the same geological environments and conditions as the Bidjovagge ore, i.e. closely connected to graphitic rocks and black schists, preferably folded into tight anticlines and synclines. The procedure of this work was to follow-up all strong EM anomalies within the greenstone, assuming them to be graphitic schists with copper potential, and then, after a ground check with a light EM (Slingram) equipment, to carry out geochemical sampling in the till. The greenstone area is very poorly exposed, and about 80% of the bedrock is estimated to be covered with ground moraine. The assumption was made that any Cu-mineralization in the underlying bedrock should be indicated by strong Cu-anomalies in the till.

Two localities were found to show strong and definite Cu-anomalies in the till, Vuolmasjavrre being one of them.

A recommendation was forwarded to the NGU in 1969 to continue the exploration on these two anomalous areas with detailed field work. For a variety of reasons, however, the NGU discontinued the exploration in the Caskias greenstone area and the results of the work were presented in an open file report in 1970. (One of the reasons for this change of policy was probably the handing over of the Bidjovagge deposit to a private mining company). A/S Sulfidmalm purchased this report the same year and later claimed the first rights on the Vuolmasjavrre locality.

### GENERAL INFORMATION

The geology of the Caskias greenstone belt is presented in Fig. No. 1. The Bidjovagge deposit lies in the westernmost zone of metamorphic rocks of both sedimentary and intrusive origin, most of them basic. A zone of rocks of similar origin, but much lower metamorphic, lies to the east. Another copper deposit, Suovra Rappat - a property held by the same company owning the Bidjovagge mine - lies in the northern end of this zone. In the same zone lies the Vuolmasjavrre anomaly. The Gassemaras locality probably also belongs to the same zone, lying 10 kms to the SSE of Vuolmasjavrre.

Geological observations are sparse, the outcrops show greenish shales, albite-carbonate rocks and other albite-rich rocks. Stones in the till indicate graphite-rich zones in the bedrock. The geological observations and the Slingram indications are presented in Fig. 2 and 3.

The geochemical anomalies from the NGU reconnaissance are shown on fig. 3. The results of our own geochemical work are shown on fig. 4 and 5. (Fig. 5 is a simplified version of fig. 4, but also showing NGU's Slingram indications and other topographic characteristics). The access to the property is no problem. In the summer one is ferried across the lake Stuorajavrre from the farm Cunovuoppe, and then walk about 2-3 kms to the north, (see fig. 2). Cunovuoppe itself can be reached by car from Kautokeino (12 kms). In the winter the access from Cunovuoppe is even easier by the use of skidoos.

### PROCEDURE

We followed the same sampling method as the NGU in 1964-67, and used the same grid. Profiles were laid out at 200 metres interval and sample points were placed every 25 metre. Digging was done by shovel and pick-axe. The samplers were instructed to dig until they reached the hard and nearly impenetrable part

of the till which we assume to be the lodgement till above the bedrock. Normally the sampling depth was about 70 cm or more. The frozen ground did not present serious problems in the winter of 1972.

The samples were then shipped to Falconbridge Nikkelverk in Kristiansand where drying and sieving (80 mesh) took place. The fine fraction was then shipped to FNM's Geochemical Laboratory in Vancouver to be analysed for Ni, Cu, Zn, Co and Pb.

## RESULTS

No anomalous values for Ni, Zn, Co or Pb have come forth, the only element of importance in this locality is Cu.

The copper values were plotted on a 1: 2500 map (Fig. 5) and after contouring with 60 ppm, 80 ppm and 100 ppm lines, a number of anomalous zones became evident:

1. A long zone of 100-200 m width and unknown length (Proven minimum length was 2200 metres), neither the northern (down-ice) nor the southern (up-ice) limits were outlined. It was originally expected that the source would be in connection with the discontinuity of the EM (graphite schist) zones at 6000N/1500 W, but it became evident that the geochemical zone crossed the EM indication and continued west of it.
2. A narrow zone of about 100 m or less, the southern limits at about 7600 N/ 800 W.
3. A narrow and probably weak zone. The southern limits not yet outlined.
4. A wide zone of around 400 m width. The southern limits probably around 6000 N/ 600 W.

## DISCUSSION

Even though not all anomalous zones were sufficiently outlined, the results seem to warrant further work.

Zone 1 is by far the most spectacular anomaly. We have traced it over a distance of more than 2000 metres and we have not yet seen any sign of us nearing the source. To speed up, we might resume the sampling along profiles with larger intervals than 200 metres, e.g. 400 metres or 600 metres. This zone seems to head towards a "fjord", a bay in Stuurajavrr lake, and is leading away from the Slingram indications by the NGU. This might suggest that

our previous assumption that this copper mineralization is connected to the graphite zones, is not correct, - unless we are able to indicate new EM anomalies West of 2000 W, where the NGU ground survey did not take place. One would therefore recommend that Sulfidmalm carry out a reconnaissance EM survey with its light (Slingram) equipment west of 2000 W.

Zone 2 is a small anomaly, probably suggesting that the source lies SW of point 7600N/ 800 W. Only sub-surface work would check this conclusion because of the absence of outcrops.

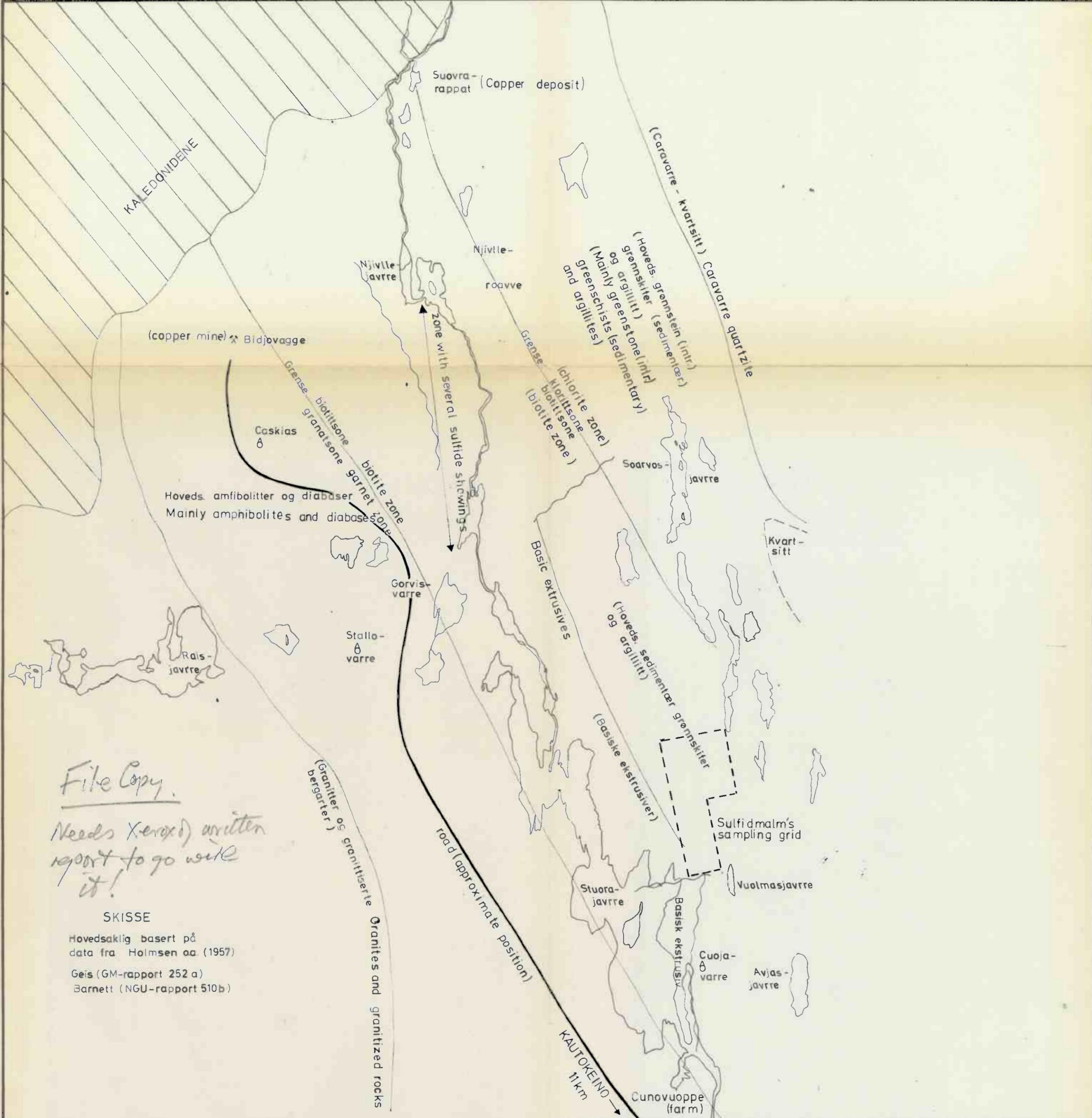
Zone 3 The sampling is insufficient to define the up-ice limits of this zone. It might, however, be related to zone 4.

Zone 4 This is a wide, though somewhat irregular dispersion pattern. Some of the values are very high, the highest being 1300 ppm. The samplers mention that this anomaly coincides with a high ridge with outcrops. These outcrops were not investigated during the NGU follow-up work, as they were nearly 1 km from the known EM anomalies. A geological investigation is recommended in summer conditions.

*Staan*  
-----

LIST OF ENCLOSURES

- Fig. 1 - General geological map (based on NGU's fig. 959-14)
- Fig. 2 - Geophysical map (based on NGU's fig. 756A -191)
- Fig. 3 - Geological observation map with NGU's geochemical profiles (based on NGU fig. 756 A - 194)
- Fig. 4 - Geochemical map 1:2500
- Fig. 5 - Geochemical map 1:20.000 + geophysical anomalies.



*File Copy.  
Needs Xerox'd written  
report to go with  
it!*

SKISSE  
Hovedsaklig basert på  
data fra Holmsen oa (1957)  
Geis (GM-rapport 252 a)  
Barnett (NGU-rapport 510b)

<b>A/S SULFIDMALM</b>	
PROJECT 905 02	FIG.1
VUOLMASJAVRRE	
GEOLOGICAL AND GENERAL INFORMATION	
SCALE	DRAWN
DATE	TRACED EW

STATENS MALMUNDERSØKELSER 1959-67 REGIONAL PROSPEKTERING I CASKIAS-GRUPPEN GEOLOGISK SKISSE BIDJOVAGGE - STUORAJAVRRE, KAUTOKEINO	MÅLESTOKK	KART	
	1:100 000	TEGN THT	
		TRAC AL	APR 1970
		KFR THT	1970
NORGES GEOLOGISKE UNDERSØKELSE TRONDHEIM	TEGNING NR 959-14	KARTBLAD (AMS) 1833 I-IV	

2200V 2000V 1800V 1600V 1400V 1200V 1000V 800V 600V 400V 200V 0

7200N

7000N

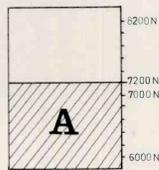
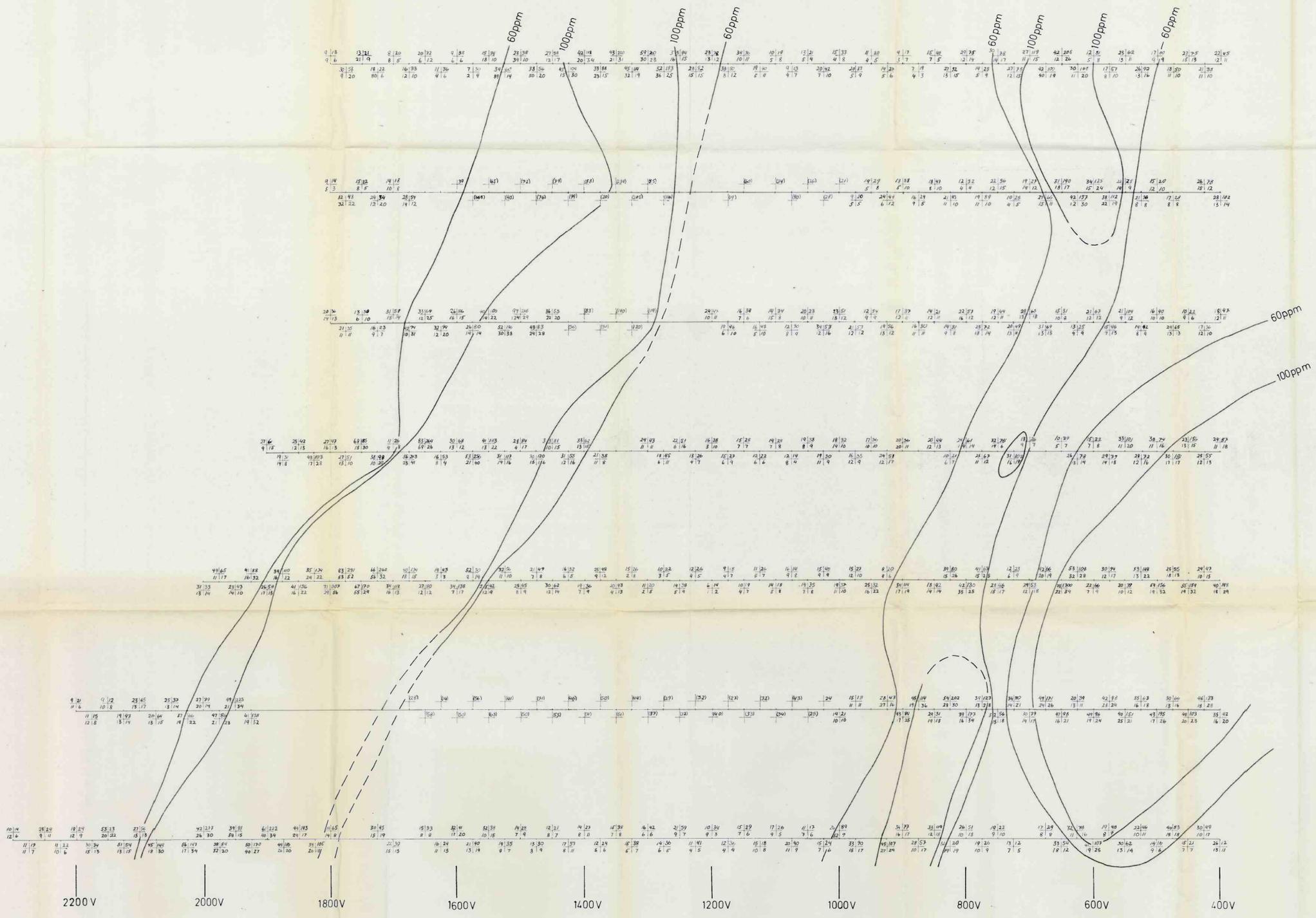
6800N

6600N

6400N

6200N

6000N



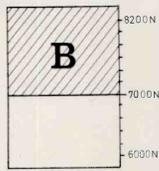
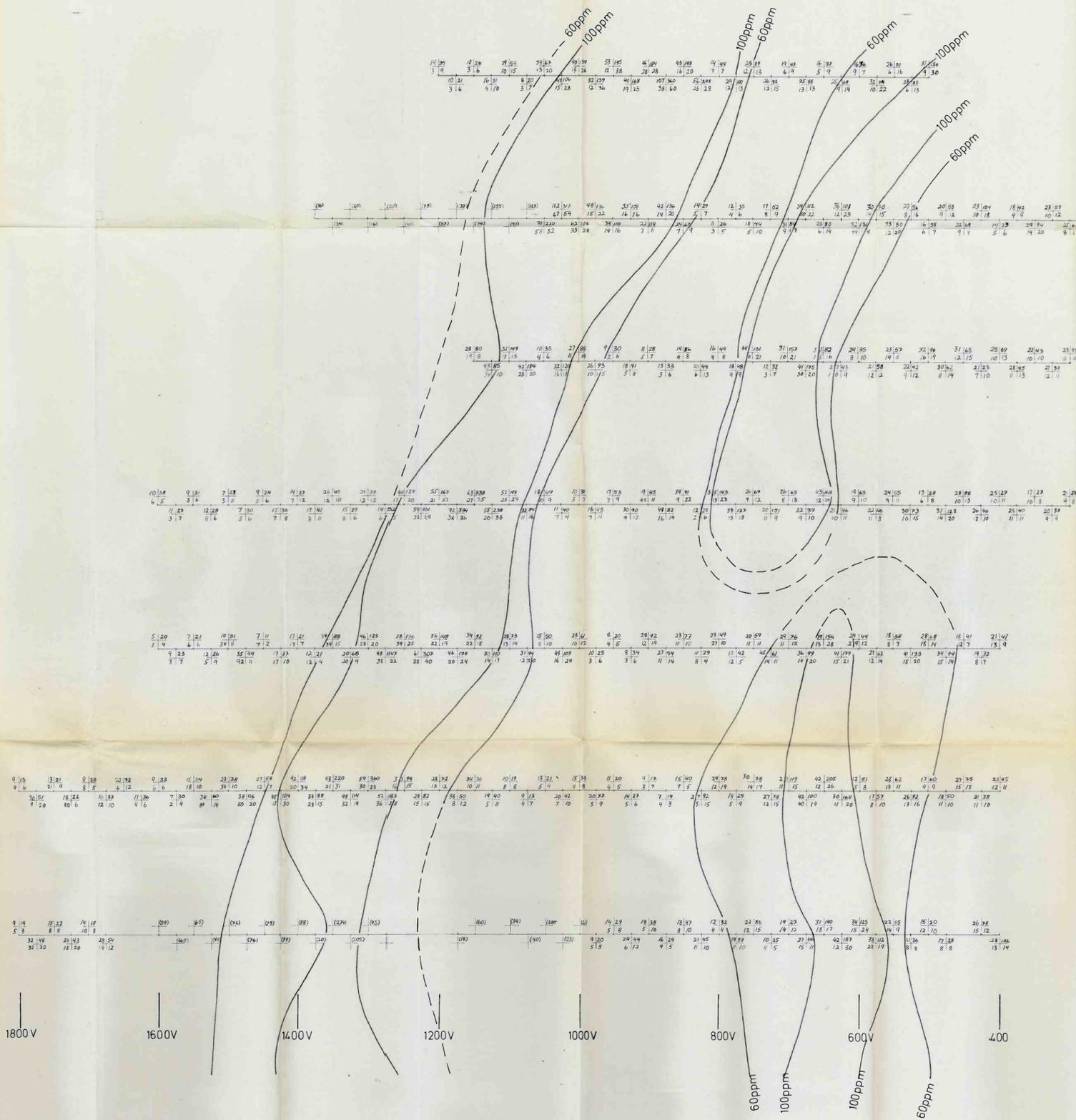
2200V 2000V 1800V 1600V 1400V 1200V 1000V 800V 600V 400V 200V 0



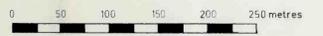
Ni   Cu Zn   Co	TILL GEOCHEMISTRY VUOLMASJAVRRE	Scale	Obs. THT
		1:2500	Drawn THT
% Sulfidmalm			Trac. EW
			Chk.
		Map. no.	
		Map. sheet	

2000V 1800V 1600V 1400V 1200V 1000V 800V 600V 400V 200V 0

8200N  
8000N  
7800N  
7600N  
7400N  
7200N  
7000N



2000V 1800V 1600V 1400V 1200V 1000V 800V 600V 400V 200V 0



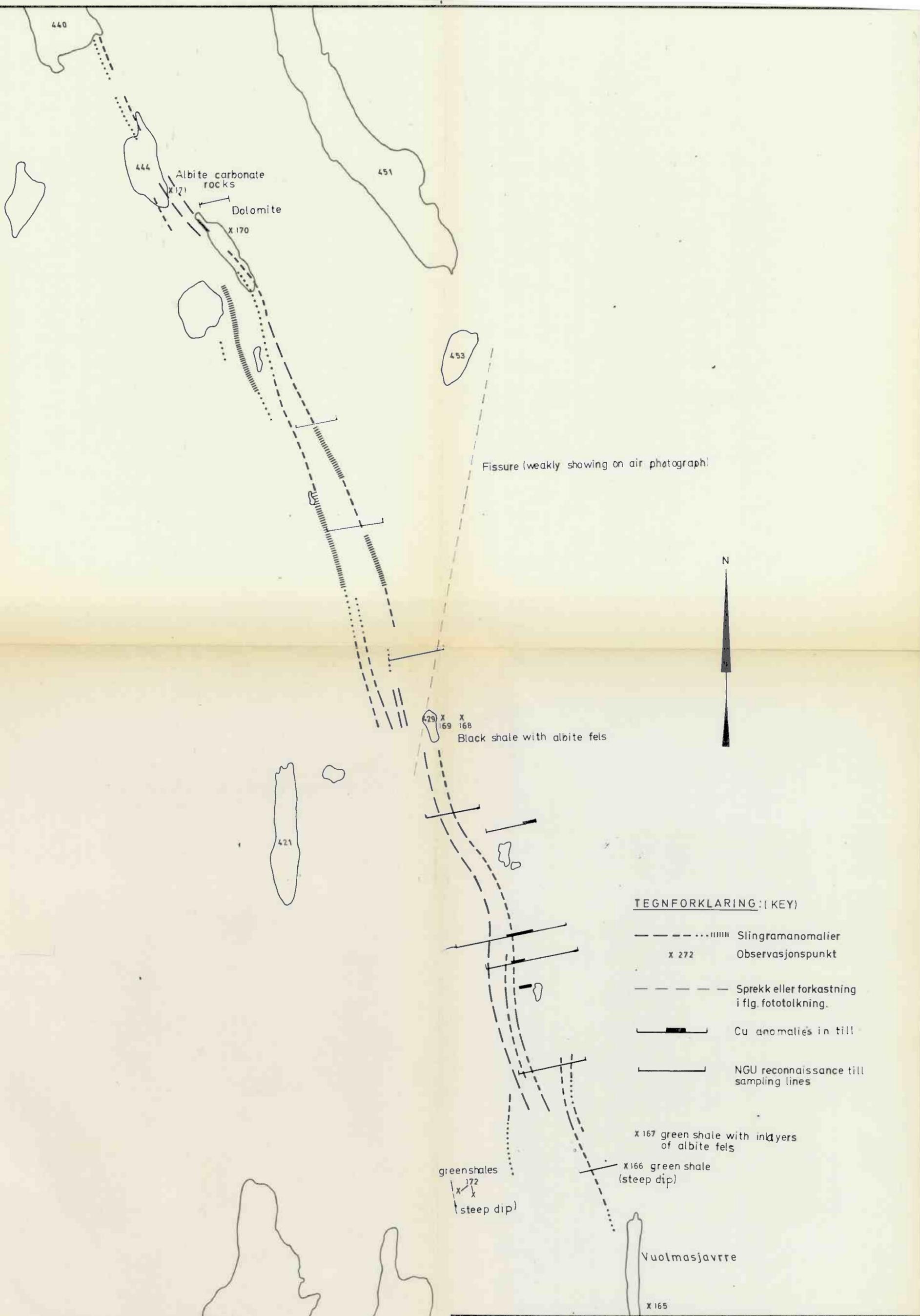
Ni	Cu	Scale	1:2500	Clk: THT
Zn	Co	Drawn	THT	Trac: EW
		Map No.		ES
		Map sheet		

TILL GEOCHEMISTRY VUOLMASJAVRRE

**% Sulfidmalm**







**A/S SULFIDMALM**

**VUOLMASJAVRRE**  
 NGU geological observation and  
 till sampling profiles

Fig. 3

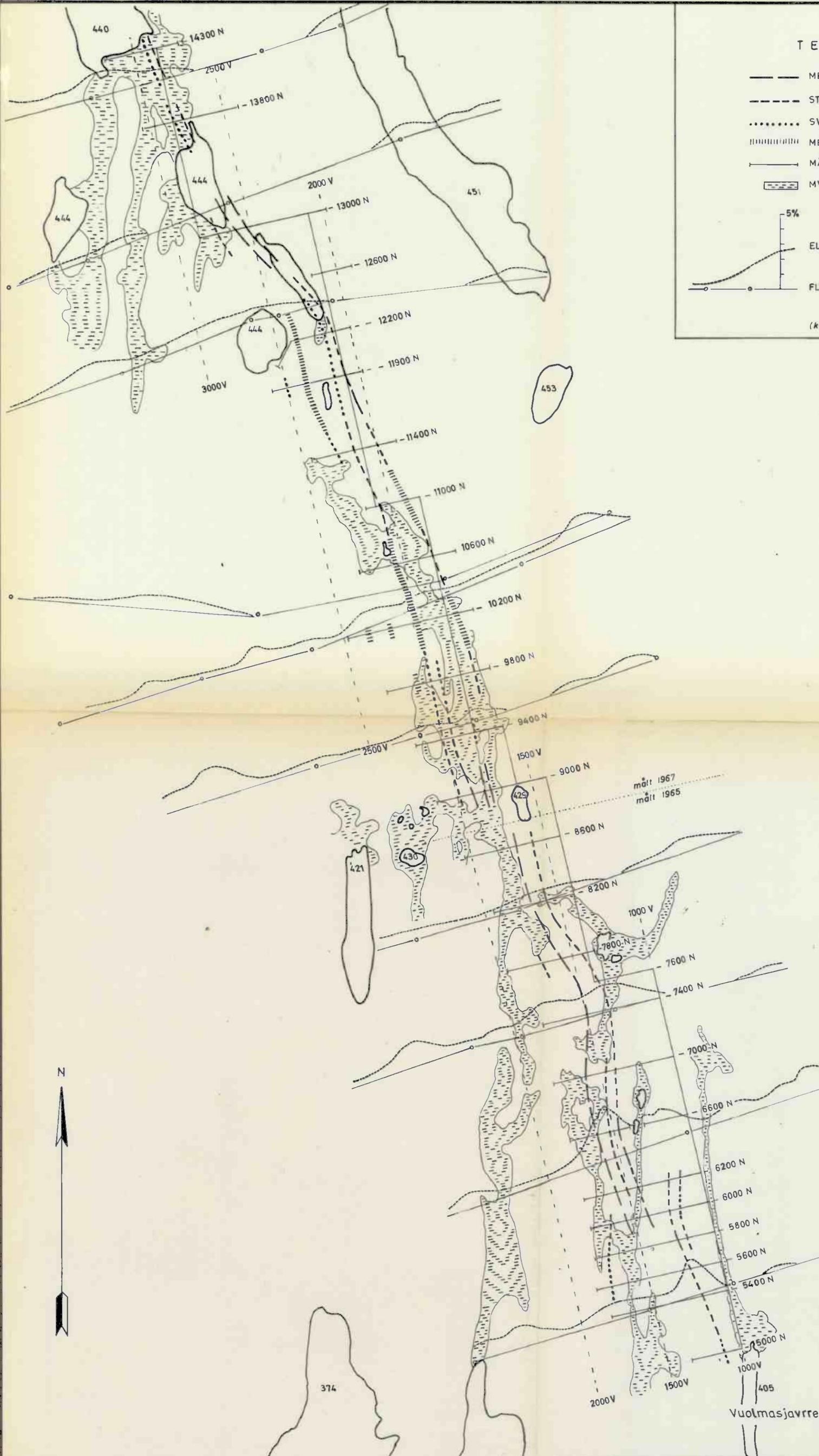
SCALE \_\_\_\_\_ DRAWN \_\_\_\_\_  
 DATE \_\_\_\_\_ TRACED \_\_\_\_\_

Stuorajavrre

STATENS MALMUNDERSØKELSER  
 GEOLOGISKE OBSERVASJONER  
 LOKALITET 8  
**VUOLMASJAVRRE, KAUTOKEINO**

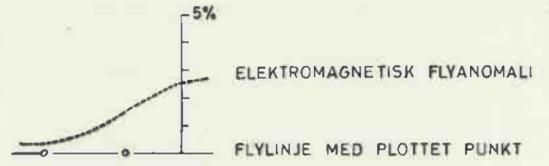
NORGES GEOLOGISKE UNDERSØKELSE  
 TRONDHEIM

MÅLESTOKK	OBS. THT.	JULI 1967
1:20000	TEGN. J.S.	
	TRAC. T.H.	DES. 1969
	KFR. THT.	
TEGNING NR.	KARTBLAD NR.	
756A-194	1833 II	



TEGNFORKLARING

- MEGET STERK INDIKASJON
- - - STERK INDIKASJON
- ..... SVAK INDIKASJON
- ||||| MEGET SVAK INDIKASJON
- MÅLELINJE (slingram)
- ▨ MYRENDE



(kartgrunnlag: flyfoto L 35-40, K 40 serie 2033)



**A/S SULFIDMALM**  
 PROJECT 905-02 FIG. 2  
 VUOLMASJAVRRE  
 NGU slingram indication

Stuora - javrre

STATENS MALMUNDERSØKELSER 1967  
 OVERSIKTSKART SLINGRAMMÅLINGER  
 LOKALITET 8  
**VUOLMASJAVRRE, KAUTOKEINO**  
 NORGES GEOLOGISKE UNDERSØKELSE  
 TRONDHEIM

MÅLESTOKK 1: 20 000	MÅLT J.S.	Juli 1967
	TEGN. J.S.	1967
	TRAC. R.O.	Apr. 1968
	KFR. T.H.T.	1968
Til erstatning for 620A-48		
TEGNING NR.	KARTILAD (AMS)	
<b>756A-191</b>	<b>1833 II</b>	