Bergvesenet

Postboks 3021, 7002 Trondheim

Rapportarkivet

Bergvesenet rapport nr	Intern Journal nr	Internt arkiv nr	Rapport lokalisering	Gradering
BV 516			Trondheim	**Åpen**
Kommer fra ..arkiv	**Ekstern rapport nr**	**Oversendt fra**	**Fortrolig pga**	**Fortrolig fra dato:**
Falconbridge	Sul 416-76-17	Sulfidmalm A/S		

Tittel

Status Report, Espedalen 1976.

Forfatter	Dato	Bedrift
F Nixon	1976	Sulfidmalm A/S

Kommune	Fylke	Bergdistrikt	1: 50 000 kartblad	1: 250 000 kartblad
Sør-Fron Gausdal	Oppland	Østlandske	17171 17174	Lillehammer

Fagområde	Dokument type	Forekomster
Geologi geofysikk boring geokjemi	Rapport	Statsråd Stang Nicoline Jørstad Evans Gammelseter Rødhaugen Andreasberg Sheerer Dritua Vesle Melgård Megrunnstjern Grasgarli Kong Knut
Råstofftype	**Emneord**	
Malm/metall	Cu Ni	

Sammendrag

Sammendragsrapport, med borprofiler og oppstilling over tidligere rapporter.

A/S SULFIDMALM

INTER-OFFICE MEMORANDUM

Date: 23rd February, 1977

To: W. D. Harrison

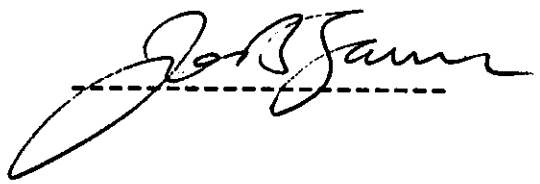
cc: H. T. Berry, R. Jahnsen, E. Wigstøl, Norsk Hydro v/Lenning, F. Nixon, D. Ellen

From: J. B. Gammon

Subject:

Report No. 416/76/15, Espedalen status 1976.

Please find enclosed Nixon's summary of work in Espedalen to date with particular emphasis on the current Status of the Megrundstjern anomaly zone. This will be the focus of the programme planned for 1976 which will attempt to answer the outstanding question about geometry of mineralization and tonnage potential.



FOR FALCONBRIDGE NIKKELVERK A/S
A/S SULFIDMALM

Project 905-15

STATUS REPORT
ESPEDALEN 1976

By

F. Nixon

Report No. 416/76/15

SUMMARY

Work in the Espedalen basic complex has over the last few years been concentrated on a full ground V.L.F. and mag coverage of the complex with detailed investigations being carried out in the Megrundstjern area. During 1975 and 76 a total of 23 holes being drilled here.

From the completed drilling the mineralization at Megrundstjern seems to be of two types with a disseminated type in the 0.4-0.5% Ni range and a massive type probably remobilized and controlled by shears, in the 1-3% Ni range. Mise á la masse measurements have indicated anomalous zones of both mineralization types but much drilling remains to be completed before any tonnage indications can be given.

../2

LEGAL

Sulfidmalm have a joint venture agreement with Norsk Hydro A/S. Espedalen is one of the areas included within this agreement.

Sulfidmalm hold 64 claim blocks. Hydro 18 claim blocks.

Hydro did not partake in the 1976 programme but upheld their right to participate at some later date against a refund of 60% of the 1976 expenditure.

GEOLOGY

The area is part of a thrust mass - the Espedalen Thrust Sheet. The rocks of the sheet can be divided into two large groups: i.e. Precambrian crystalline rocks, essentially of the anorthosite kindred, and Eocambrian sediments. Both groups are allochthonous, resting on autochthonous Cambro-ordovician schists.

The dominant crystalline rock type is anorthosite but in the Megrundstjern area noritic and ultrabasic rocks are much more dominant and four distinct multiple lithological units can be recognized here. These being:

1) Norite - pyroxenite - anorthosite suite.
2) Peridotite - olivine pyroxenite - pyroxenite - olivine gabbro suite.
3) Leucogabbro sill or dyke.
4) Tectonites derived from the above units.

The mineralization of interest seems to be confined to the norite-pyroxenite-anorthosite suite of rocks and in tectonites derived from this suite. Mineralization occurs as disseminations of up to 15% sulphides or as remobilized sulphide zones from 15-60% sulphides in more sheared zones.

../3

STATUS

Although many interesting anomalies occur in the Espedalen area, work over the past two years has been concentrated on the Megrundstjern zone where one saw the possibility for a large tonnage - low grade type of deposit.

INVESTIGATIONS 1975

In 1975 a total of 704.4 m were drilled in 11 holes on a series of V.L.F. and slingram anomalies with some co-incident mag. anomalies. Disseminated mineralization was found in most of the holes and in one hole (hole MG6.75) more massive mineralization.

The main anomaly drilled was from 40S-240S and seems to indicate a zone of disseminated mineralization in the 0.4% Ni range. The zone seems to be closed at depth by barren lithologies.

Hole MG6.75 was located much farther to the south on 520S and gave a better and more massive sulphide intersection.

Preliminary flotation tests carried out on two samples from this drilling programme gave poor results. The rougher concentrate assaying 2.24% Cu and 5.45% Ni and containing 80.7% of the Cu and 71.4% of the Ni.

INVESTIGATIONS 1976

In 1976 the grid was re-established and topographically surveyed in preparation for a mise-á-la-masse survey.

../4

This commenced with the active electrode in the more massive mineralization in MG6.75. Measurement of the grid and down the existing holes gave a clear anomalous picture with a zone over at least 700 m of strike. This zone appears to lie below the mineralization drilled in 1975 (40S-240S) and to have no electrial connection either. This impression was confirmed by placing the active electrode in the disseminated intersection in MG 3.75 and measuring the surface and down drill holes. The resulting picture clearly outlined the area previously drilled in 1975 and indicated no connection to the MG6 zone.

Twelve holes were drilled on this new MG6 anomaly zone on 4 profiles. Drilling had to be stopped fairly early due to extreme weather conditions.

The drilling results together with subsequent mise á la masse measurements indicate that the anomaly zone most probably consists of a discontinous - massive sulphide shear zone or zones with a more or less vertical attitude surrounded by a zone of disseminated sulphides. Far too little drilling has however been carried out and extensive drilling (planned for 1977) is needed to define the geometry of the mineralization.

Most of the mineralization encountered however contained visible pentlandite and usually as free greins. Two representative samples from this drilling programme have been taken out and sent for flotation tests.

A summary of the drilling results is given in table form attached.

HOLE NR.	PROFILE	E/W	BEARING	DIP	DEPTH	SIGNIFICANT MINERALIZATION					
						From	To	Length	Ni%	Cu%	S%
MG 1.75	107.5S	12.5E	270	45	104.1 m	2.5	30.2	27.7 m	0.49	0.15	
MG 2.75	150S	20E	270	45	75.0 m	28.0	31.1	3.1 m	0.47	0.21	
MG 3.75	45S	40E	270	80	40.0 m	4.0	18.1	14.1 m	0.44	0.18	
MG 4.75	40S	38W	-	90	74.5 m						
MG 5.75	240S	58W	-	90	49.8 m	2.2 24.0	5.0 26.75	2.8 m 2.75m	0.69 0.42	0.30 0.15	
MG 6.75	520S	12.5W	-	90	70.0 m	25.0 37.2	61.0 48.3	36 m incl11.1m	0.57 1.09	0.24 0.41	
MG 7.75	640S	160E	-	90	48.5 m						
MG 8.75	636S	110W	-	90	73.0 m						
MG 9.75	36S	10W	053	75	53.50m						
MG10.75	40S	104W	-	90	67.7 m	7.0	8.0	1 m	0.43	0.11	
MG11.75	322N	0	-	90	48.3 m						
MG12.75	520S	37.5W	-	90	66.3 m	26.0 30.0	30.0 45.0	4 m 15 m	0.29 0.48	0.10 0.18	
MG13.76	518S	53W	-	90	58.9 m	45.0	54.0	9 m	0.66	0.22	
MG14.76	518S	66W	-	90	75.5 m	53.0	54.0	1 m	0.46	0.15	

OLE NR.	PROFILE	E/W	BEARING	DIP	DEPTH	SIGNIFICANT MINERALIZATION					
						From	To	Length	Ni%	Cu%	S%
MG.15.76	520S	13E	-	90	52.7 m						
MG.16.76	533S	36W	048°	50	73.5 m						
G.17.76	341S	7W	-	90	71.6 m	33 m	68 m	35 m	0.95	0.29	
.18.76	189S	51E	-	90	90.70m						
G.19.76	196S	38.5E	-	90	57.7 m						
G.20.76	440S	12.5W	-	90	70.80m	21.0m	22.0 m	1 m	0.77	0.22	3.4
MG.21.76	440S	23W	-	90	68.50m						
MG.22.76	340S	17W	-	90	70.10m	11 m 18 m 65 m	12 m 19 m 67 m	1 m 1 m 2 m	0.41 0.42 0.45	0.12 0.16 0.21	1.7 1.9
MG.23.76	340S	29W	-	90	70.70m	11 m	17 m	6 m	0.41	0.16	

PLANNED WORK FOR 1977

1) Flotation tests are now underway.

2) A completion of the detailed drilling of the Megrundstjern area started in 1976.

3) Depending on the amount of financial support from Norsk Hydro A/S - exploratory drilling on several of the other interesting anomalies within the Espedalen basic complex.

SUMMARY LIST OF REPORTS ON THE ESPEDALEN AREA

The reader is referred to the following reports.

32.64.15 Report from a geological and geophysical survey in Espedalen, Oppland.

127.71.15 Mise-á-la-masse potential measurements Espedalen, August 1971. A. Sindre.

128.71.15 A geochemical orientation study in the Espedalen area. R. B. Band.

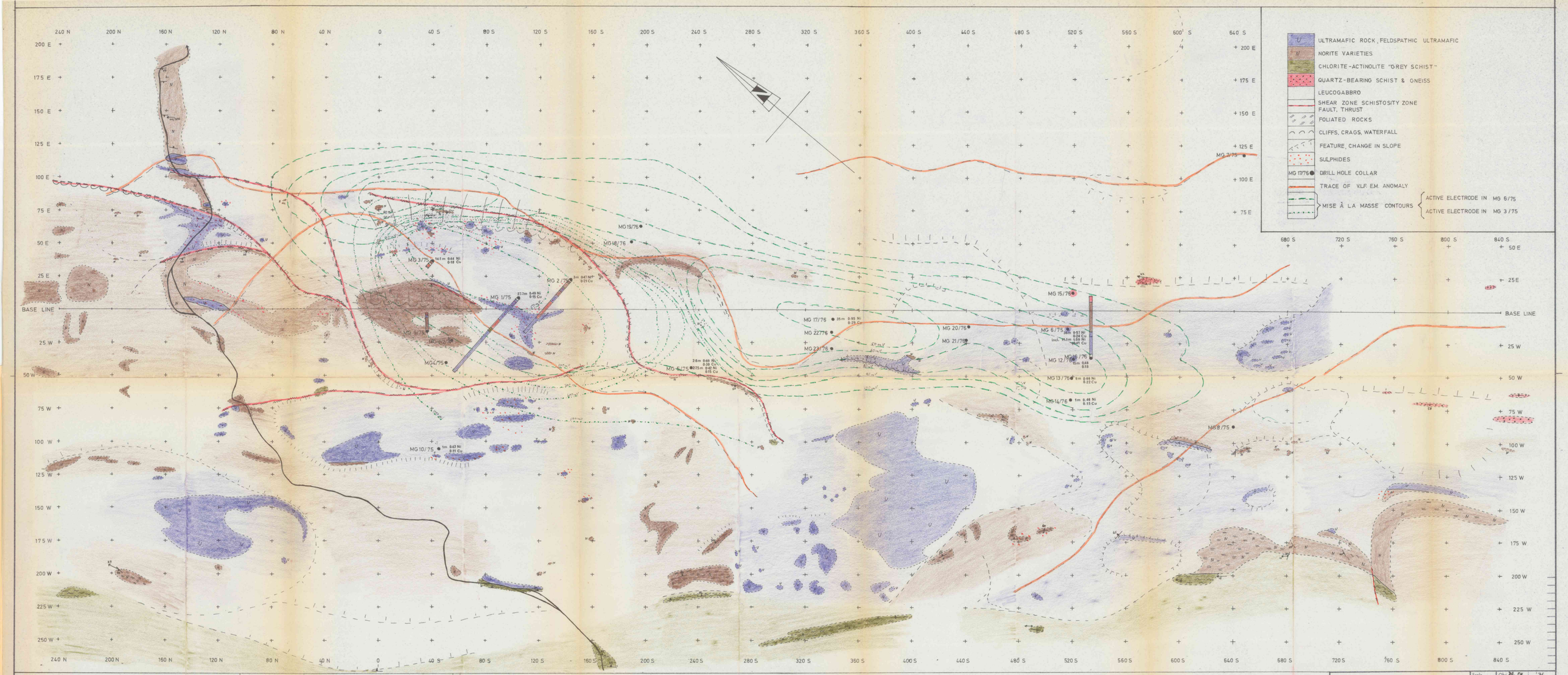
129.71.15 Photogeology of the Espedalen area. L. Lucarelli.

187.72.15 Summary of field work in the Espedalen area, August 1972. B. H. Wilson.

191.72.15 Andreasberg Mine Espedalen. B. H. Wilson.

192.72.15 The Nicoline Mine Espedalen. B. H. Wilson.

193.72.15	Statsråd Stang Mine Espedalen.	B. H. Wilson
229.72.15	Field work in Espedalen 1973.	M. J. Ryan
236.72.15	Geochemical till sampling in Espedalen.	T. H. Tan J. B. Gammon
238.72.15	Ground geophysical surveys over the Andreasberg and Megrund areas Espedalen.	Norsk Hydro A/S
264.73.15	Soil geochemistry in Megrundstjern area, Espedalen.	R. Hovland
265.73.15	Prospecting work in the Grasgardli area Espedalen.	R. Hovland
269.73.15	A summary of the geology, nickel potential and exploration in the Espedalen area.	F. Nixon
344.74.15	Geological, Geophysical and diamond drilling investigations in the Espedalen basic complex 1974.	F. Nixon et all
374.75.15	Report on Diamond drilling, mineralogy of core and metallurgy of nickel, copper mineralization, Megrundstjern Espedalen 1975.	D. Ellen et all
405.76.15	Report on Geophysical surveys Espedalen.	D. Ellen et all



1970: HELICOPTER EM& MAG. SURVEY OUTLINES INTERESTING ANOMALY, CHECKED ON GROUND BY HYDRO.
1971: AREA INCLUDED IN PHOTOGEOLOGICAL SURVEY.
1972: GROUND EM. & MAG. BY HYDRO. SULPHIDES IN ULTRABASIC DISCOVERED. 0.5 % Ni
1973: DETAILED MAPPING & SAMPLING. SOIL SAMPLING.
1974: VLF. EM. & MAG. SURVEYS. GEOLOGICAL MAPPING & SAMPLING. 2 WINKIE DRILL HOLES.

1975: EXPLORATION DRILLING TOTALLING 704.4 m. IN 11 HOLES WERE DRILLED IN THE MEGRUNDSTJERN GRID ON A SERIES OF VLF & SUNGRAM ANOMALIES WITH SOME CO-INCIDENT MAG. ANOMALIES. FLOTATION TESTS.
1976: GRID RE-ESTABLISHED & TOPOGRAPHICALLY SURVEYED. MISE À LA MASSE SURVEYS. DETAILED GEOLOGICAL MAPPING 240 N - 840 S. DRILLING ON MISE À LA MASSE ANOMALY TOTALLING 827 m. IN 12 HOLES.

SUMMARY MAP
MEGRUNDSTJERN
ESPEDALEN

A/s Sulfidmalm

Scale 1:1000
Obs. JE FW MA '76
Draw. DE 12-76
Trac. DE 1-77
Chk.
Map. no.

15-77-A1

Map. sheet


N
SLINGRAM AND/OR STRONG VLF ANOMALY TRACE
WEAK SLINGRAM AND/OR VLF ANOMALY TRACE
DIAMOND DRILL HOLE
OLD WORKINGS
LIMITS OF BASIC COMPLEX
CLAIM BLOCKS
1:50000
Jörstad Grid
Mineralisation plunging to NW
Jörstad
Jörstad Grid
Ni% Cu% Ni% Cu%
WDH 1 4,5 0,34 0,13
WDH 2 14 0,30 0,10
WDH 3 9,5 0,23 0,06
WDH 4 18,8 0,35 0,09 (26,4m 0,30 0,08)
Sprentjern
1132
High Ni values in soil geochem over anomaly
STANG GRID
Base Line
Grimstjern
1065
chip 4m Ni 0·91 Cu 0·38 S 5·0
Evans
Gammelsæter
Andreasberg Grid
Grab; Ni Cu S
Rödhaugen
Kong Knuts
Andreasberg
Dritua Grid
Block Ni 0,23 Cu 0,33 S 4,2
Dritua
Megrund
Stubberud Grid
Base Line
Strand
724
Espedalsvandet
717
Vesle Grid 2
Vesle Grid 13
chip Ni 0.86 Cu 0.14 S 2.9
chip 2m Ni 0·7 Cu 0·1 S 2·3
block Ni 0·58 Cu 0·19 S 2·9
Vesle
VESLE RECONNAISSANCE GRID
Grasgarli
Grasgarli Grid
Ni Cu
GRAB 11m CHIP 0,47 0,07
GRAB 7m CHIP 0,50 0,40 0,08 0,02
Mise à la masse
CP anomaly MG 6 zone
CP anomaly MG 3 zone
Megrundstjern Grid
Nordgårdsaeter Grid
Stylskartjern
Solaatjern
1008
Melgard Grid
1148
Nedre Megrundstjern
1160
1190
Øvre Megrundstjern
Ni Cu Ni Cu
MG 1 27·7 m 0·49 0·15
MG 2 m 0·47 0·21
MG 3 14·1 m 0·44 0·18
MG 5 2·8 0·69 0·30 2·75m 0·42 0·15
MG 6 36 m 0·57 0·24 (11·1m 1·09 0·41
MG 10 1 m 0·43 0·11
MG 12 4 m 0·29 0,10 0.48 0.18
MG 13 9 m 0.66 0.22
MG 14 1 m 0.46 0·15
MG 17 35 m 0.95 0·29
MG 20 1 m 0·77 0.22
MG 22 1 m 0·41 0·12 2 m 0.45 0·21
1 m 0·42 0.16
MG 23 6 m 0·41 0.16
Ni Cu S Ni Cu S
WDH 1 15·25 m 0·42 0·19 1·7 (12·75 m 0·47 0·21 1·95)
WDH 2 13·7 m 0·16 0·06 0·6 (4·40 m 0·31 0·07 1·45)
ESPEDALEN PROJECT
SITUATION MAP
SCALE 1:15000
OBS. – –
DRAW. DE 76
TRAC. DE 76
CHK.
MAP NO. 15-75-A1
A/S SULFIDMALM
MAP SHEET

7ow 5ow 4ow 3ow 2ow 1ow 0 1oE 2oE 3oE 4oE 5oE 6oE 7oE 8oE 9oE 1ooE 11oE 12oE

1120 1110 1100 1090 1080 1070 1060 1050 1040 1030 1020 1010 1000

340s/29w

340s/17w

341s/7w

.41% Ni / .16% Cu / 6m

.74% Ni / .23% Cu / 61m

1.01% Ni / .32% Cu / 29m

MG 23-76
70,7 m

MG 22-76
70,3 m

MG 17-76
71,6 m

KEY:

0.4 - 0.59
0.6 - 0.99
>1% Ni

Overburden
Ultramafic
Norite varieties
Quartz feldspar gneiss
Leucogabbro
Olivine gabbro
Fine grained basic intrusions

MEGRUNDSTJERN, ESPEDALEN.

Profile 340s

% SULFIDMALM

SCALE 1:250

OBS. DE 1976
DRAW. DE
TRAC. BB
CHK.

MAP NO.

MAP SHEET

A.s Terrikopi. 3000. A 1. E 9 gl. 10-71. Sentrum Trykkeri.