



**INTERN RAPPORT.**

**DATO:** 27.05.1986

**RAPPORT NR:** 1688

**KARTBLAD** 1833 I

**Antall sider** 5  
**—||— bilag** 7

**SAKSBEARBEIDER** Ragnar Hagen

**RAPPORT VEDRØRENDE:**

FOLLOW-UP WORK OF AREA 37 AND AREA 67 (GÆSSAMARAS)  
NEAR KAUTOKEINO IN THE MOBIL (SUPERIOR)-SYDVARANGER  
JOINT VENTURE

**RESYMÉ:**

In 1985 two areas close to Kautokeino were explored. The work was a supplement to the follow-up work from 1983 to 1984 of a geophysical helicopter survey.

In Area 37 one diamond drill hole of 42 m was drilled to test an EM conductor. No mineralization was intersected.

In Area 67 magnetic susceptibility measurements and a detailed magnetic survey was done to find the source of a train of boulders mineralized with chalcopyrite and gold. Interesting anomalies were drilled with two holes, totalling 110 m. No mineralization was intersected. In one of the holes extensive fracturing and weathering occurred.

No more work is recommended in Area 37.

A limited amount of trenching should be done in Area 67.

**FORDELING**

**OSLO:**

- 1 Arkiv
- 1 R. Hagen
- 
- 
- 
- 
- 
- 

**KIRKENES:**

- 1 Adm. direktør
- 
- 
- 
- 
- 
- 

**ANDRE:**

- 1 Bergmester
- 1 Mobil
- 1 Sulfidmalm
- 1 A. Bjørlykke
- 
- 
- 

**KOMMENTAR:**



# PROSPEKTERING A/S

GAMLE RINGERIKS VEI 14, POSTB. 83 - 1321 STABEKK

HELEID AV AKTIESELSKABET SYDVARANGER

TLF.: (02) 53 89 76      TLF.: (02) 53 08 35  
TLF.: (02) 53 08 34      TLF.: (02) 12 05 18

TELEX 72 987 aspro n

•  
•  
Prospektering A/S  
v/Frank Nixon  
Vesterveien 28 A  
4600 KRISTIANSAND S

•  
•  
ARKIV/REF.

RH/rf

STABEKK

29.06.1986

VEDR. RAPPORT NR. 1688 FRA UNDERSØKELSER I PROSJEKT KAUTEOKKEINO

Vedlagt oversendes vår rapport nr. 1688 fra diamantboringer av objekt 37 og 67 i 1985. Som tidligere avtalt betraktes oversendte eksemplar som Sulfidmalms eksemplar.

Med hilsen  
for PROSPEKTERING A/S

Thor L. Sverdrup  
Adm. direktør

Ragnar Hagen  
Geolog

Vedlegg.

## Contents

Introduction	page	1
Area 37	"	1
Area 67 (Gæssamaras)	"	2
Conclusions	"	4

Table 1. Core log reports
" 2. Chemical analysis

Fig. 1. Location map, 1:50 000
" 2. Area 37, 1:5000
" 3. Drill hole section 37-1, 37-3, 1:500
" 4. Gæssamaras, geology and geophysics, 1:5000
" 5. Area 67, magnetics, 1:1000
" 6. Area 67, drill hole section 200 S, 1:500

## Introduction

The work described in this report was done in 1985. The investigations form a supplement to a larger exploration program conducted from 1982 to 1984. The results of the main program were presented in report no 1619, "Oppfølging av helikoptermålinger i Kautokeino-området, innenfor avtale-området Kautokeino/Masi". Two out of the nine targets for follow-up work contained in report no 1619 were recommended for further work. This report contains only the 1985-work and does not give the full background for each target (for details of the earlier work, see report no 1619). Figures from report no 1619 with legends in Norwegian have been used also in this report.

The two target areas which were explored in 1985 were no 37 and no 67. Both areas are located close to the village of Kautokeino (Fig. 1). Area 37 is close to the airfield, just 2 km to the North of the village and area 67 is located 5.5 km to the North-West of Kautokeino, but close to the road to Bidjovagge.

### Area 37.

The geophysical interpretation map of Area 37 (Fig. 2) shows two EM-conductors with different strike and dip. Both zones were drilled in 1984, but due to a mis-interpretation of the slingram results hole 37-1 was drilled parallel to the dip and did not intersect the conductor. The mis-interpretation was corrected by a new slingram survey. Very weak mineralization was associated with the graphitic schist in hole 37-2, and the overall geological environment (diabase, tuff and graphitic units) seemed favourable for Bidjovagge-type mineralization. It was therefore decided to test the northern conductor with one additional hole.

Drill hole 37-3 was drilled in the same section as 37-1, but with a 180 degrees change of direction. The result is presented in Fig. 3. A graphitic felsite which explains the EM-conductor was intersected at about 35 m. The position of the conductor as estimated from the drill holes does not quite fit with the

slingram interpretation. The slingram profiles are not at right angles to the strike of the conductor (Fig. 2) and this makes the slingram interpretation uncertain.

On both sides of the graphitic felsite albite alteration of the diabase occurs. No mineralization was found. The core log report and chemical analysis are enclosed in Table 1 and 2.

An interesting feature in drill hole 37-3 is the occurrence of a graphitic felsite with diabase on both sides. When approaching the graphitic unit, the diabase shows a gradual transition from fresh diabase to diabase-textured albite carbonate rock and albitic felsite. The alteration of the diabase may have been caused by the chemical reaction between the intruding diabase and the xenolith of graphitic sediment. Another explanation to be considered is that the graphite was formed from the hydrothermal solutions that altered the diabase.

A thesis on the origin of the albite felsite is being made by Iver E. Jensen at The University of Oslo. Samples from drill hole 37-3 were collected by I. Jensen and his studies will hopefully give additional information about the processes that form albitic and graphitic felsites.

The follow-up work of Area 37 shows the right geological environment for Bidjovagge-type mineralization, but does not indicate an economic potential in the target area. No further work is recommended.

#### **Area 67 (Gæssamaras)**

Area 67 is located at the southern end of a train of mineralized boulders (the Gæssamaras boulders). The mineralization is disseminated chalcopyrite and gold in albitic rocks. The boulders have been known for almost 30 years and several attempts have been made to find the source mineralization. In report no 1619 a compilation of previous work was made. Geology and geophysics of the Gæssamaras area are shown in Fig. 4. The recommendations for

further work was that the most likely source area is between 4600 N and 4900 N and that drilling targets in this area could be outlined by measurements of magnetic susceptibility of mineralized boulders and country rock, followed by a detailed magnetic survey.

Magnetic susceptibility measurements made in 1985 showed that the susceptibility of the boulders was clearly lower than of the tuffites and diabases of the area - new targets should therefore be situated in a magnetic low.

The result of the magnetic survey is shown in Fig. 5. The old Gæssamaras grid could not easily be reconstructed and a new grid was constructed. The position of the new grid is shown in Fig. 4.

The most promising area of magnetic low seemed to be around 200 S - 90 E. This area was selected on the basis of the direction of the latest ice-movement and of the estimated length of transportation of the boulders. Drill hole 67-1 was placed to test this magnetic low. Only diabase and tuffite was intersected, (Fig. 6).

Hole 67-2 was then drilled in the same section to test the transition from a magnetic high towards North to a magnetic low in the South (Fig. 5). The model for this target was that the alteration associated with mineralization oxydizes magnetite in the greenstones and may be the cause of a change in the magnetite contents along strike.

Drill hole section of 67-2 is shown with hole 67-1 in Fig. 6. Core log reports and chemical analysis of both holes are enclosed in Table 1 and 2.

Extremely fractured and weathered rock was encountered in hole 67-2. Extensive zones with no core recovery were drilled and only the highly skilled drillers of the local drilling company (T. Holmen) made it possible to complete the hole. Fractured and weathered rocks were also found in old drill holes of the Gæssamaras area (Fig. 4). This may indicate weathering along approximately North-South striking fracture zones. The minera-

lized boulders are quite fresh and and it is not likely that the weathered zones in bedrock represent former mineralized zones. The weathered zones may however explain parts of the magnetic pattern. The magnetic low over drill hole 67-1 is not explained by the drilling results.

The 1985 work of Area 67 did not reveal the source of the Gæssamaras boulders. The drill holes in the most likely source area are now numerous and very little space is available for an ore body (Fig. 4). A source mineralization to the North of the river Cabardasjåkka must be very limited and/or consist of of several small showings. A confirmation of these theories may be obtained by additional trenching. The trench along line 5000 N should be extended towards West. Overburden is thin in this area and trenching may be done at a low cost.

The experiences at Gæssamaras can be added to the results from Suovrarappat (a small showing of mainly boulders 40 km to the North) and the "Gæssamaras-Suovrarappat syndrome" may be expressed: "The greater the number of mineralized boulders found, the smaller the remaining bedrock mineralization".

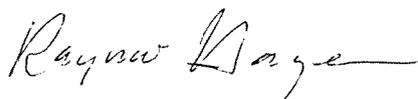
The most recent studies of Quarternary geology indicates a short transportation of the boulders (see report no 1619). The possibilities of a source area to the South of the river cannot however be completely ruled out. Three holes have been drilled in this area (Fig. 4) but an uncertain potential for mineralization is still present. The area is covered with swamps over large till-thicknesses and in the present situation no more work is recommended.

#### Conclusions.

Area 37 represents the right geological environment for Bidjovagge-type mineralization. The surveyed area contains no economic potential and claims covering the area should be abandoned.

The Gæssamaras problem is still not solved, but the results from Area 67 have reduced the chances of finding a mineable ore body. A limited amount of trenching is recommended as future follow-up work. The joint venture partners should keep a small number of claims as long as the Bidjovagge Mine is in operation.

Stabekk, 27.05.86.



Ragnar Hagen





## Kjerneobservasjoner.

Borhull nr. 37-3  
 Koordinator: Y 25 W  
 Påsatt i høyde ca. 370 m.  
 • i retning 335°  
 • med helning 50°  
 Borhullets lengde 42.00 m

Profil X 40 N

Boret meter	Bergart	Kjerne- mangel	Skifrihet	Bergart- prøve
0-11.00	Jordboring.			
11.00-32.40	Diabas. Grovk., massiv. Delvis ofittisk. MS=1. Spredte karb.årer < 2 cm m/cp og po. Py og mørk kloritt finnes på stikk.  26.25-26.55: Karb.årer m. qtz og lite sulfider. 26.55-29.50: Middelsk. diabas m. økende flsp og biotitt innh.			
32.40-32.65	Albitth.a. lys, middelsk. m. rester av diabas og diabastekstur. MS=1.			
32.65-35.00	Grafittfels, fink., middels C-innh. MS=0. Tynne flsp årer.  33.70-33.85: Qtz-flsp åre m. noe py.		34.30:50°	
35.00-37.50	Albittb.a. - delvis lys og delvis biotitt-rik. Spredte karb.årer m. noe sulfider. Omv. diabas. MS=1.  36.25: 50 m grafitt.			
37.50-42.00	Diabas, middels-fink. massiv. Spredte tynne karb.årer. MS=1. Mot slutten middelsk.  Hullet avsluttet v/42.00 m.  Ragnar Hagen			



## Kjerneobservasjoner.

Borhull nr. 67-1  
 Koordinator: Y 200 S  
 Plassert i høyde 356 m.  
 • i retning 270°  
 • med helning 45°  
 Borhullets lengde 55.70 m

Profil X 125 Ø

Boret meter	Bergart	Kjerne- mangel	Skifrihet	Bergart- prøve
0-10.00	Jordboring.			
10.00-18.60	Diabas, massiv, middelsk. MS=1-2. Spredte tynne kalkårer. Oppknust med litt kjernetap. Siste 2 m forskifret bergart.	15.75-16.60		
18.60-55.75	Tuffitt, grønn, fink. lokalt lagdelt. MS=1. Kalk i 1-3 cm årer og slirer og i opptil 5 cm kalkrike bånd.		19.80:42° 24.55:47° 28.30:50° 34.40:50° 38.05:49°	
	Kalkholdig fels-sone 35.40-35.85 Argillittisk fels-sone 39.30-39.75		43.40:51° 49.80:53° 53.60:53°	
	Hullet avsluttet v/55.70 m.			
	Ragnar Hagen			

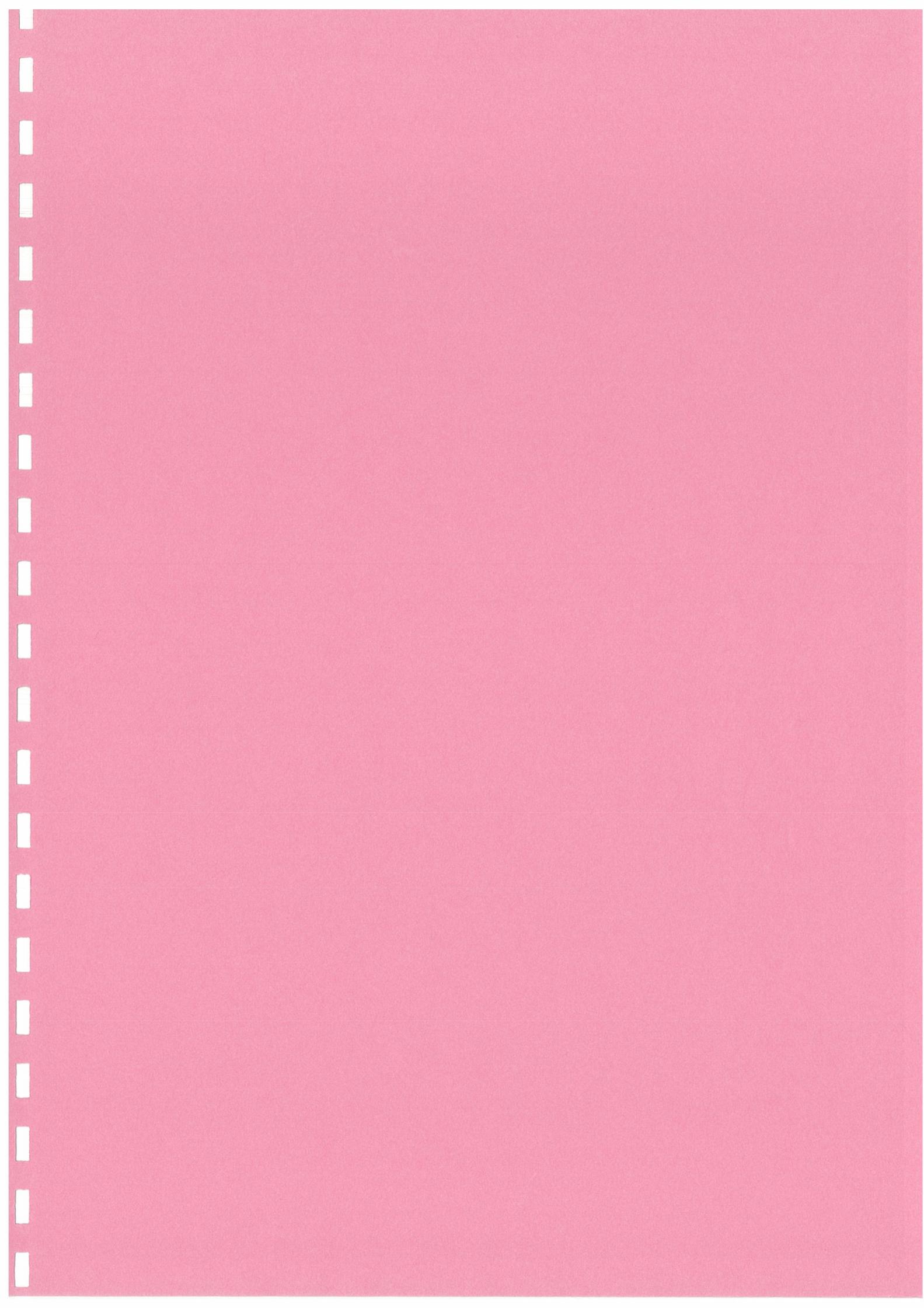


## Kjerneobservasjoner.

Borhull nr. 67-2  
 Koordinator: Y 200 S  
 Plassert i høyde 359 m.  
 • i retning 270°  
 • med helning 45°  
 Borhullets lengde 55.50 m

Profil X 75 Ø

Boret meter	Bergart	Kjerne- mangel	Skifrihet	Bergart- prøve
0-12.00	Jordboring.	13.05-13.80	18.60:35°	
		14.00-14.20	23.70:58°	
12.00-55.50	Tuffitt, grønn, fink., lagdelt. Lokalt kalkholdig. MS=1. Bergarten er oppknust og tildels fullstendig forvitret. Forvitrede soner : MS=0-1.	15.00-15.75	29.90:58°	
	30.20-31.50 Grønn tuff. fink. MS=3	16.60-17.00		
		22.20-22.50	30.50:57°	
		24.70-26.00	35.30:55°	
		26.60-29.00		
	45.50-47.60 : Hm-farget tuffitt.	31.35-32.45	38.80:53°	
		34.30-35.25	52.90:44°	
		36.00-37.30		
		39.50-40.65		
	Fra 54.00 : Vesentlig rødfarget gjørme.	41.00-41.45		
		42.60-43.95		
		44.40-45.50		
		47.60-48.00		
		48.80-49.55		
		50.70-51.00		
		53.45-53.90		
		54.00-54.50		
	Hullet måtte avbrytes v/54.00 m.			
	Ragnar Hagen			



Borhull	meter	% Fe	ppm Co	ppm Ni	ppm Cu	ppm Zn	ppm Ag	ppm Au
37-3	32.00-32.65	6.34	40	89	272	x	- 0.1	- 20
"	32.65-33.00	4.10	14	136	275	x	"	"
"	35.00-36.00	7.01	30	65	145	x	"	"
67-1	39.30-39.75	2.8	17	45	175	4	x	3
67-2	45.50-46.00	1.2	10	44	12	20	x	- 1
"	51.00-52.00	2.9	16	153	40	61	x	3
"	55.00-55.56	2.9	20	30	43	13	x	- 1

x : Ikke analysert.

Tabell 2. Kjemiske analyseser borhull 37-3, 67-1 og 67-2.

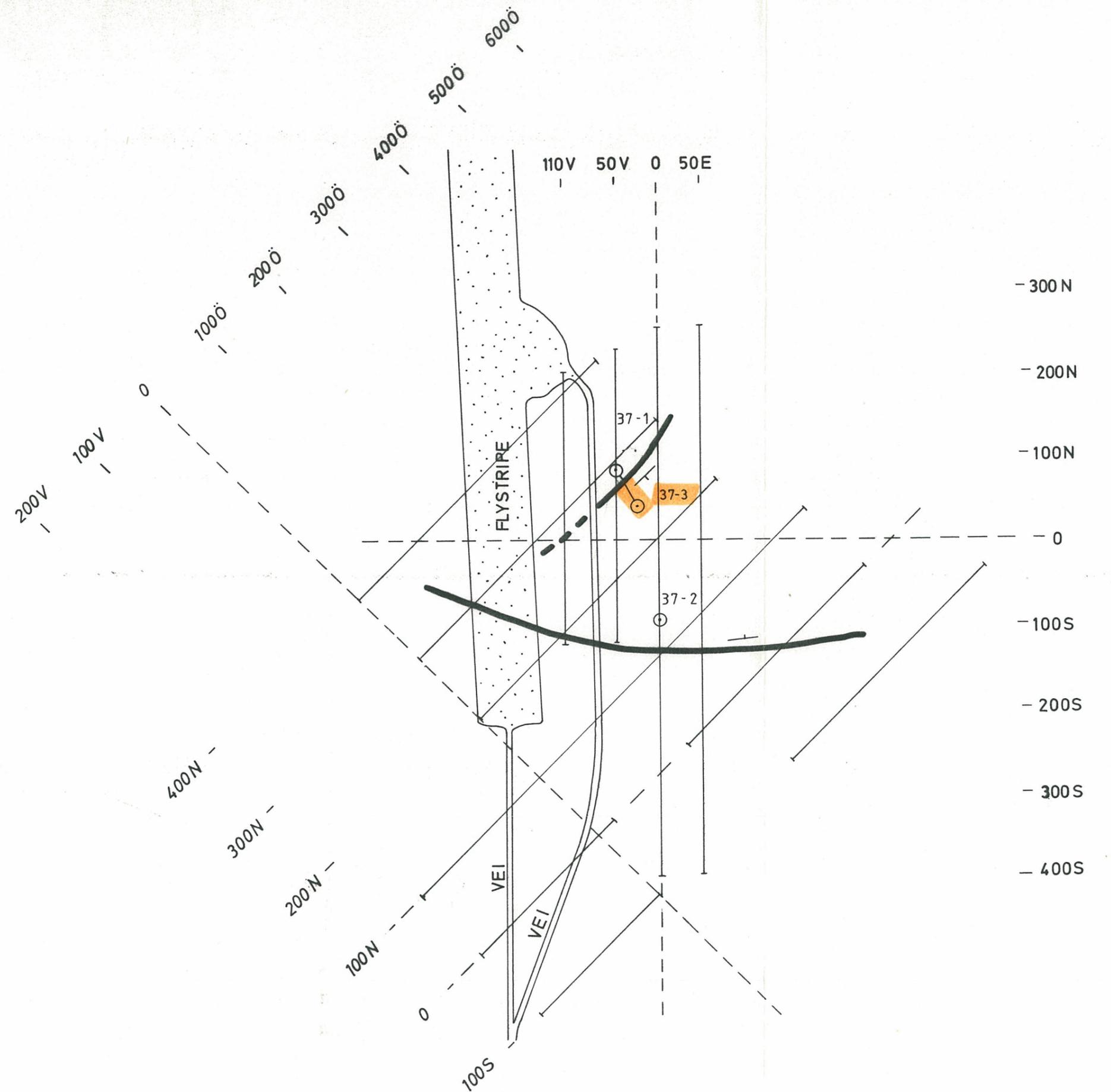
F  
I  
G.  
1



F  
1  
G.  
2

TEGNFORKLARING

- | Geofysisk målelinje
- Em - leder (slingram)
- 37-1  
—○ Borhull



Område 37 Oversikt	M
	1 5000
Korr. 5/86 RH	Målt:
	Tegn: R.H 3/85
	Trace: HB 3/85
PROSPEKTERING A/S	Fig. 2

F  
1  
G.  
3

40N/25W

57N/40W

80N/50W

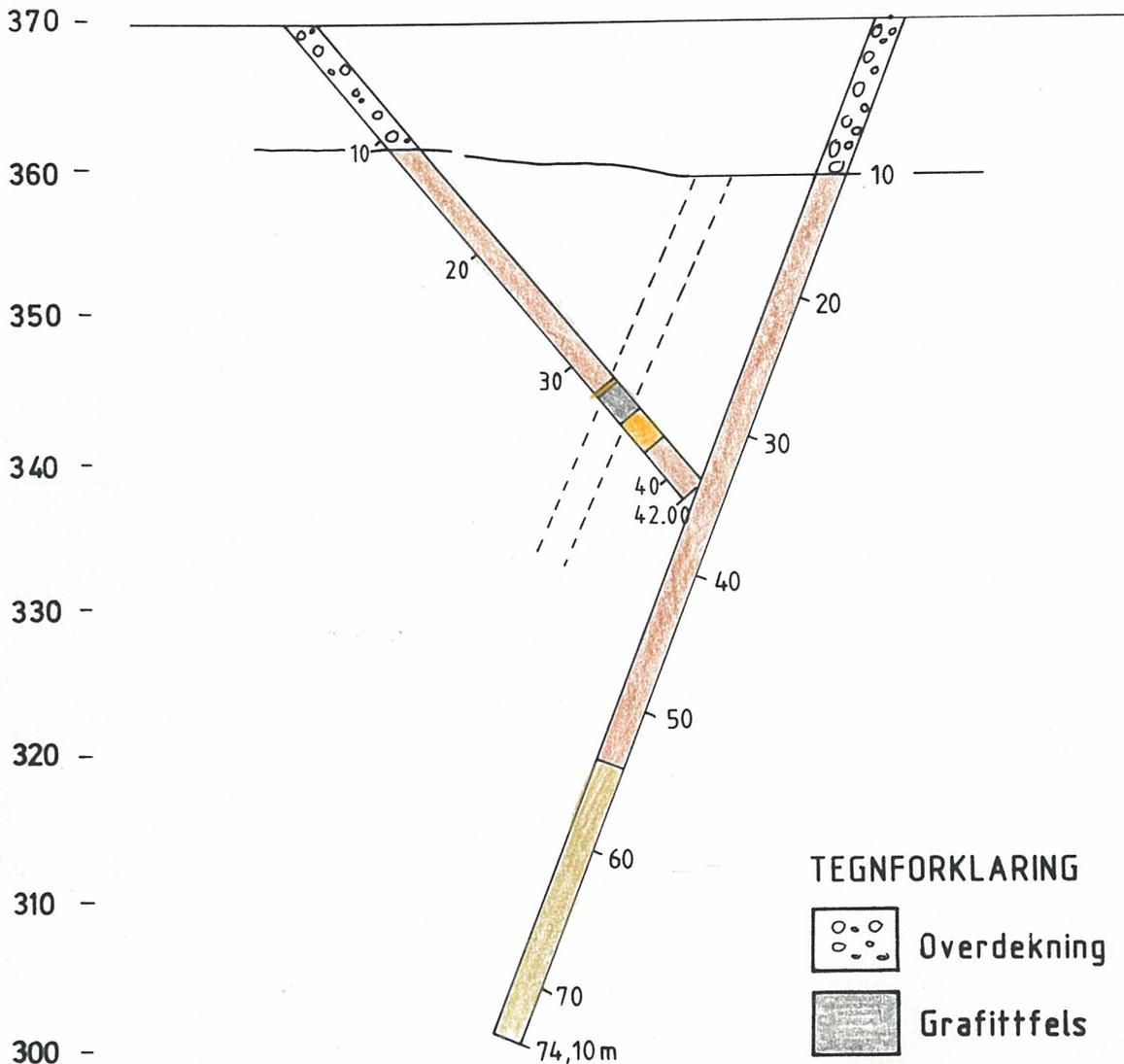


EM - leder



37-3

37-1



TEGNFORKLARING



Overdekning



Grafittfels



Albittomv.

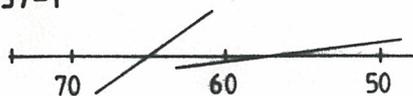


Diabas

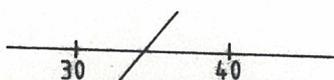


Tuff

skifrihet  
37-1



37-3



Område 37  
Borhull 37-1, 37-3

M

1:500

RH 5/85

Målt: KSN 5/84

RH 5/86

Tegn: RH 3/85

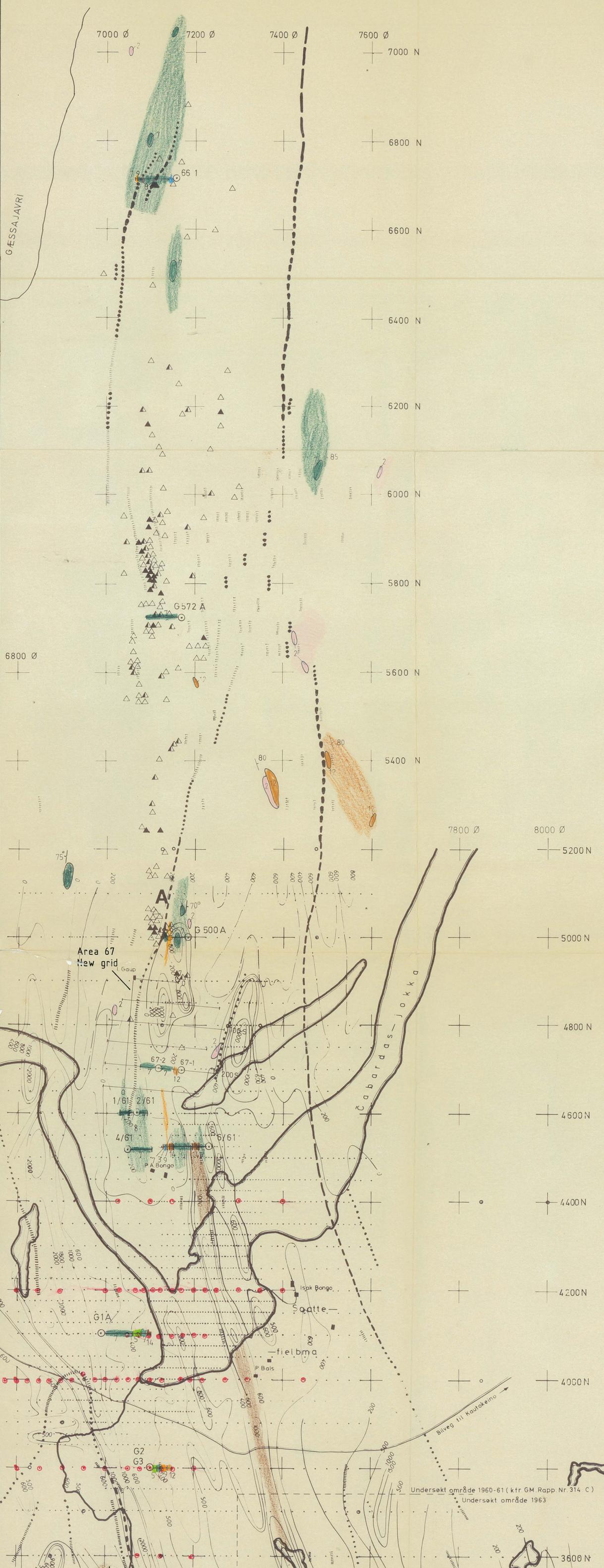
HB 5/86

Trace: HB 3/85

PROSPEKTERING A/S

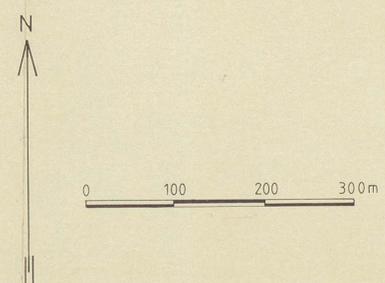
Fig. 3.

F  
I  
G.  
4



TEGNFORKLARING

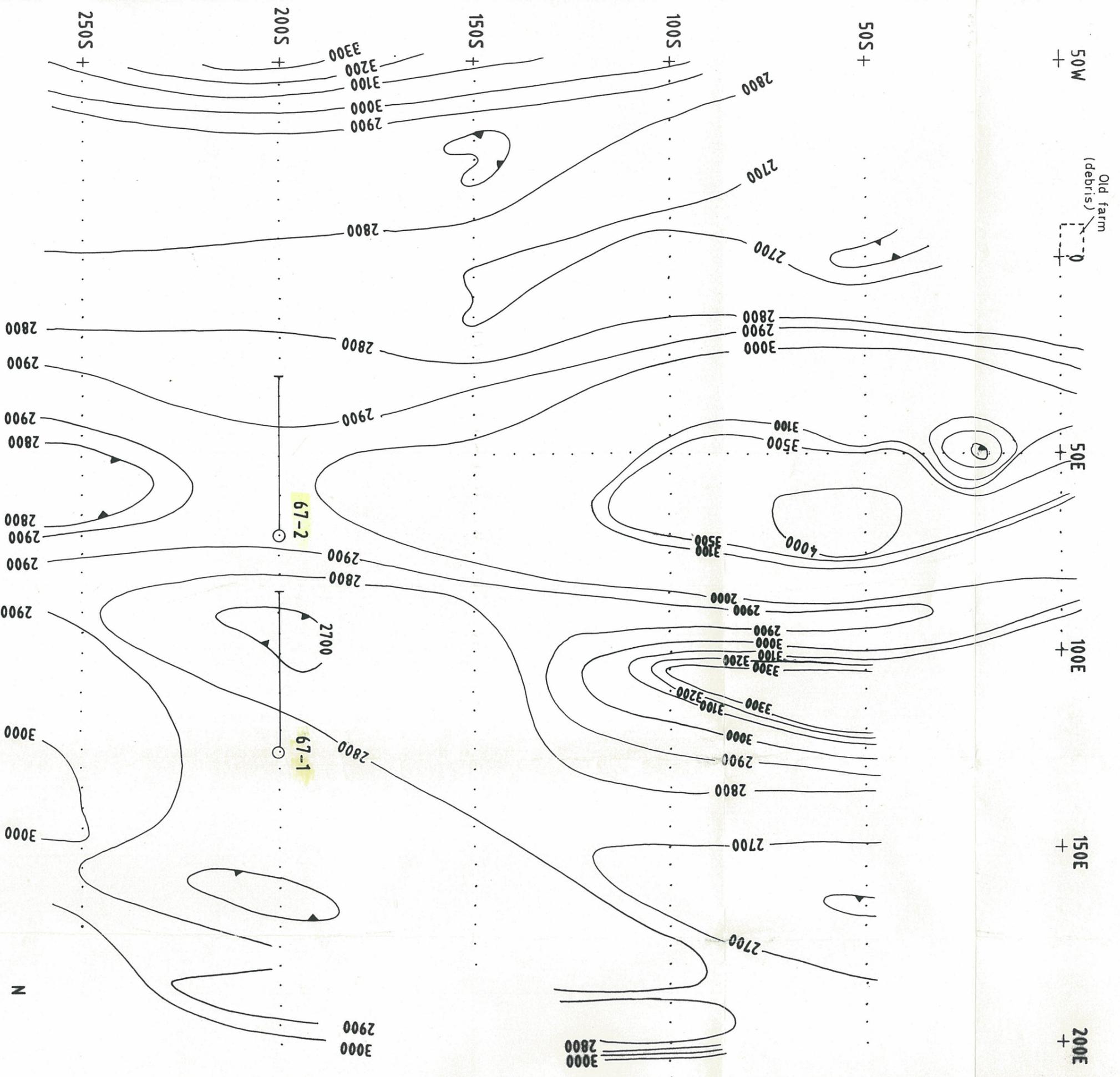
-  Positiv magnetisk anomali
-  Negativ
-  Målepunkter
-  Fastmerke
-  Meget sterk elektromagnetisk anomali
-  Sterk
-  Svak
-  Meget svak
-  Albitt - karbonat - breksje
-  Karbonat - bergarter
-  Argillitt
-  Albittfels / leuco - diabas
-  Grafittskifer
-  Grønn skifer m/karbonat
-  Diabas
-  Basalt
-  Borhull
-  Blokk Rik / Middels / Fattig
-  Sulfidminerale moten prøvetaking 1982



Undersøkt område 1960-61 (kfr GM Rapp Nr. 314 C)  
Undersøkt område 1963

GÆSSAMARAS Geologi / geofysikk	M
	1:5000
	Målt:
	Tegn:
Korr. 5/86 RH	Trace: HB 3/85
PROSPEKTERING A/S	Fig. 4

F  
I  
G.  
5



Magnetic total field  
-50.000nt.

4000 — Isomagnetic line

2900 — Magnetic depression

Uncertain data

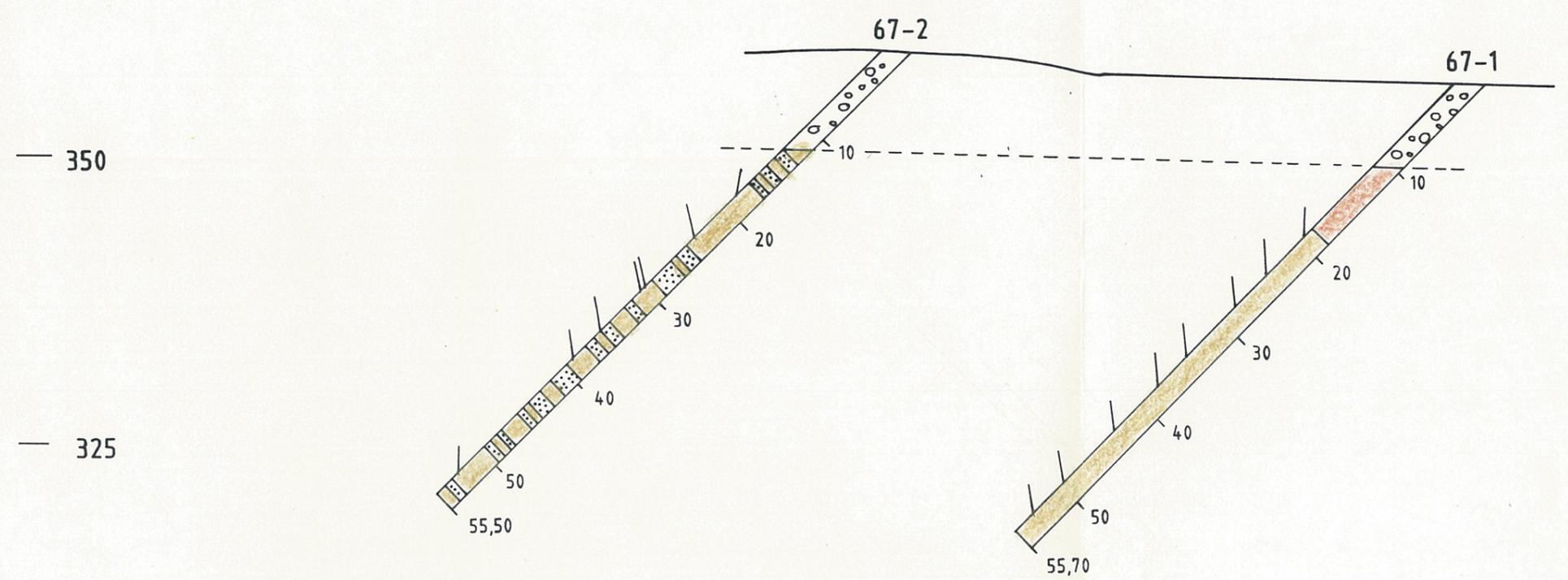
67-1  
Drill hole



Area 67 Gassemaras Mag. tot. field		M
PROSPEKTERING A/S		1:1000
Obs. TA 7/5	Draw. RH 8/85	Trace: HB 5/86
Fig. 5.		

F  
I  
G.  
6

0                      25E                      50E                      75E                      100E                      125E



- LEGEND:**
-  Overburden
  -  No core recovery
  -  Diabase
  -  Tuffite

<b>Area 67</b> <b>Gæssamarras</b> <b>Drill hole section 200S</b>	Scale: <b>1:500</b>
	Obs: RH 8/85 Draw: RH 5/86 Trace: HB 5/86
	<b>PROSPEKTERING A/S</b> Fig. 6.