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Forfatter D Ellen		Dato 1974	Bedrift Sulfidmalm A/S	
Kommune Tydal	Fylke Sør-Trøndelag	Bergdistrikt Trondheimske	1: 50 000 kartblad 17204 17201	1: 250 000 kartblad Røros
Fagområde Boring geologi geofysikk	Dokument type Rapport	Forekomster Grønnskar Grønnskar		
Råstofftype Malm/metall	Emneord Cu Zn			
Sammendrag Det er tilsammen boret 9 hull med totalt 265 bormeter med negativt resultat. Denne har vi to eksemplarer av.				

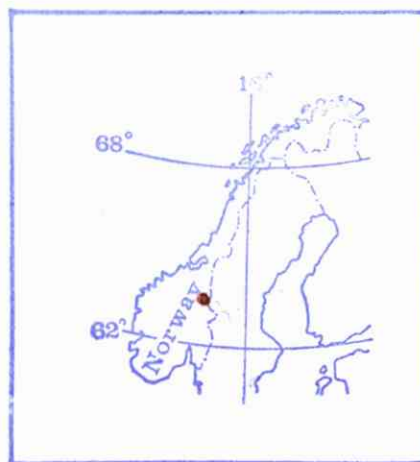
FOR FALCONBRIDGE NIKKELVERK A/S
A/S SULFIDMALM

PROJECT 905-20

REPORT ON THE DIAMOND DRILLING AT GRØNNESKAR,
TYDAL, SOUTH TRONDELAG

1974

D.J. ELLEN



BV 498
Report No. 343/74/20

INTRODUCTION

This report presents the results of the diamond drilling carried out in the Grønnskar area in Tydal in early autumn 1974. Nine short holes were drilled to test geophysical anomalies discovered in 1972.

LOCATION

The Grønnskar area lies in Tydal about 20 kms west of the Swedish border. The area lies 12 kms from the nearest road and about 120 kms from Trondheim. A good track leads up from the road to the northern part of the area.

The area lies at about 900 m above sea level, above the tree line, and partly covered by grass and swamp.

GENERAL GEOLOGY

The area lies in the eastern part of the Trondheim area. Two main rock types occur, separated by a well defined thrust plane. The rocks below the thrust plane (The Røros skifer) consist of a calcareous grey-green schists, while the rocks above (the Hersjø formation) are greenstones. Both have a Cambro-Silurian age. (See fig. 1)

There are a number of old mines in the Grønnskar area which were worked between 1741 and 1830. All are located in the Røros schists.

MINERALIZATION

In the general area, deposits in the Røros schists are generally small and rich with pyrrhotite and chalcopyrite as the ore minerals. In the Hersjø formation, the deposits are larger and carry pyrite, chalcopyrite and sphalerite as ore minerals. It should be noted that the only working mine in the vicinity (Killingdal) is situated in the Hersjø formation.

LEGAL

Rights on the claims in the district are owned by S. Paulsen, and A/S Sulfidmalm have optioned his property.

PREVIOUS WORK

The area was mapped and geophysical work carried out in 1972. This was described in report 222/72/20.

A number of V.L.F. E.M. and magnetic anomalies were outlined. It was planned to drill ten of these in 1973 using the Winkie Drill, but this attempt had to be abandoned due to bad weather.

Fig. 2. Shows the geology, geophysics and sites of the drill holes.

For further information one is referred to report 222/72/20.

DIAMOND DRILLING

The drilling contractor was the diamond drilling section of the Norwegian Geological Survey, using an X 482 machine built onto a Muskeg. This was operated by a two man crew. Generally two shifts were worked each day, but only one at weekends. Moving into the area started on August 21st, and drilling began on 27th August. The last hole was finished on September 9th, and moving out was completed on September 10th. Transport of equipment and drillcore was accomplished using the Muskeg and a sleigh.

The following holes were drilled: -

1. DDH 1A (DDH 1 was abandoned at 10.30 due to the drill bit dropping off in the hole).

This was testing both a V.L.F. E.M. and a magnetic anomaly. (See fig. 2)
The hole was collared at 1000 S/75 E, bearing east with a 45° dip.
(See Fig. 3 for section)

Rocks encountered: chlorite-hornblende-biotite schist, amphibolite (a later basic intrusive) and quartz veins.

Magnetite was intersected in the first few cms of the hole.

A 10 cm intersection of chalcopyrite and pyrite occurred in a shear zone at 9.50 m. This zone was also identified on the surface. At 20.85 3 % pyrite was observed in a contact zone between chlorite hornblende biotite schist and amphibolite, and some pyrite occurs throughout the amphibolite (1 %).

It is considered likely that the E.M. anomaly is explained by the weakly mineralized content zone and the magnetic anomaly by the magnetite in the first part of the hole.

2. DDH 2. This hole was testing an E.M. and a weak magnetic anomaly, associated with two small old showings.

It was collared at 950 S/65 W, bearing east and with dip 45° . For section see Fig. 4.

Rocks encountered: - chlorite hornblende biotite schist, quartz veins and fracture zones.

Weak sulphide mineralization (0 - 10%) was present between 14.75 and 19.60. The sulphide mineral is pyrite. The mineralized section is cut by several fracture zones. It can be seen on the surface that the two showings lie on a faulted zone, and it seems likely that this mineralized and fractured zone is its continuation at depth.

Chalcopyrite occurs in a quartz vein between 20.90 and 21.00.

3. DDH 3. This hole was testing a long and weak V.L.F. E.M. anomaly.

It was collared at 750 S/190 W, bearing east with a 45° dip. See fig. 5 for section.

Rocks encountered: chlorite hornblende biotite schists, amphibolite (later basic intrusive), quartz veins and fracture zones.

Between 23.00 and 24.00 m there is 0 - 2% pyrite. It seems likely, however, that this anomaly is caused by the contacts between the schists and the amphibolite (13.90 - 16.30). The foliation angles suggest this to be the case.

4. DDH 4. This hole was testing an E.M. anomaly occurring with some association with an old showing (Kjørergruben). It was collared at 250 S/240 W, bearing south-east with a 45° dip. See fig. 6 for section.

Rocks encountered: - Chlorite hornblende biotite schist, amphibolite (later basic intrusion), quartz veins and fracture zones.

Occasional specks of pyrite are the only sulphides encountered, and it seems most likely that it is the amphibolite which is causing the anomaly. It should be noted that the EM anomalies drilled by DDH 3 and DDH 4 are of similar size and strength.

5. DDH 5. This was drilled to test a magnetic and an EM anomaly which occur along the same horizon as six small showings. The hole was collared at 0/135 W bearing east, dip 45° . See fig. 7 for section.

Rocks encountered: - chlorite hornblende biotite schist, chlorite rich schist (in shear zones) and quartz veins.

Sulphides were intersected in a shear zone between 17.00 and 17.35.

They make up between 0 and 10% of the rock. Pyrite, chalcopyrite and magnetite occur. Between 17.80 and 17.90 massive magnetite and graphite occur. It is considered that these zones explain the anomalies.

6. DDH 6. This was drilled to test a magnetic and an EM anomaly. The hole was collared at 175 N/330 W, bearing east with dip 45° . See fig. 8 for section.

Rocks encountered: chlorite hornblende biotite schist, chlorite rich shears, fracture zones and quartz veins.

Occasional specks of pyrite are the only mineralization noted.

This hole was drilled in an area with a strong magnetic anomaly - there is a strong dipole (+ 24000 γ to - 9600 γ).

The hole was drilled inbetween the two parts of the dipole, yet no magnetite was observed in the core. One must therefore assume that the magnetite is very localized near the surface, and/or associated with faults which were not actually cut by the hole, to the north and south.

7. DDH 7. This hole was drilled to test a "strong" V.L.F. E.M. anomaly. The hole was collared at 650 N/675 W, bearing east and dip 45° . This hole was drilled starting in the Hersjø formation. See fig. 9 for section. Rocks encountered: - chlorite hornblende schist (greenstone), sometimes with graphite bands, acid intrusive, amphibolite (basic intrusive) and chlorite rich shears.

Occasional pyrite occurs throughout the core length. Between 15.75 and 20.30 chlorite hornblende schist and acid intrusive rocks occur, with shears and fractures and about 2 - 3% pyrite. This zone probably represents part of the thrust zone between the Hersjø formation and the underlying rocks.

Between 23.80 and 27.00 chlorite hornblende schist and metabasite occur with about 2% pyrite and fractures. The foliation is rather variable here.

Further pyrite occurs down the hole. Between 38.55 and 42.90 graphitic bands occur in the chlorite hornblende schist.

It seems likely that the graphite zone is the main cause of the anomaly, and that the fractures, shears, pyrite and contacts all contribute to it.

8. DDH 8. This hole was drilled to test a strong V.L.F. E.M. anomaly. The hole was collared at 2700 N/1510 W, bearing east with a 70° dip. This hole also starts in the Hersjø formation near the thrust plane. Rocks encountered: - Chlorite hornblende schist (greenstone), sometimes graphitic, chlorite-rich shear zones, amphibolite (later basic intrusive) and fracture zones. See fig. 10 for section.

The two main rocks interchange with each other down the hole, and are often fractured or sheared. This part of the Hersjø formation has obviously been broken up during thrusting. Pyrite specks occur throughout the hole. The fracture zones are often rusty.

Graphitic bands occur in the schists in two zones - from 20.85 to 21.35 and from 28.85 to 29.35. Occasional thin graphitic layers occur inbetween. These are the main cause of the anomaly, but the fractures, shears, and contacts also contribute.

9. DDH 9. This hole was drilled to test a V.L.F. E.M. anomaly. It was collared at 2925 N/1050 W, bearing east with a 60° dip. See fig. 11 for section.

Rocks encountered: - Chlorite biotite sericite schist (much more schistose than any of the earlier rocks), biotite schist, chlorite rich shear zones and chlorite hornblende biotite schist. Garnets occur in places in the chlorite biotite sericite schist.

A 5 cm band of biotite with 1% chalcopyrite occurs at 20.15 m. Between 22.50 and 26.50 pyrite (up to 3%) occurs and there are graphitic bands. It is believed that this is the cause of the anomaly.

DISCUSSION AND CONCLUSIONS

Nine holes were drilled with a total of 265.15 drill meters. Sulphides intersected have been of a very minor nature and there have never been enough to warrant assays. In most cases the geophysical anomalies have been explained.

No further work in this area is recommended.

Dec. 12, 1974

D. Ellen/hg

DIAMOND DRILL RECORD

[illegible]

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 45° HOLE NO: 1 SHEET NO: 2
 LOGGED BY: D.E. STARTED: 28/8-74 PROPERTY _____
 CASING: _____ FINISHED: 28/8-74 _____
 CORE SIZE: Ax 32 mm TESTS (CORRECTED): _____

[illegible]

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 45° HOLE NO: 2 SHEET NO: 1
LOGGED BY: DE STARTED: 29/8-74 PROPERTY:
CASING: 3.75 (56 mm) FINISHED: 29/8-74
CORE SIZE: Ax 32 mm TESTS (CORRECTED):

[illegible]

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 45° HOLE NO: 3 SHEET NO: 1
 LOGGED BY: DE STARTED: 30/8-74 PROPERTY _____
 CASING: 1.00 m FINISHED: 30/8-74 _____
 CORE SIZE: Ax 32 mm TESTS (CORRECTED): _____

[illegible]

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 45° HOLE NO: 3 SHEET NO: 2
LOGGED BY: DE STARTED: 30/8-74 PROPERTY _____
CASING: _____ FINISHED: 30/8-74 _____
CORE SIZE: Ax 32 mm TESTS (CORRECTED): _____

From	To	Description
		<u>Core Angles</u>
	0.80	85 g foliation
	1.20	65 g "
	3.20	90 g "
	6.60	75 g "
	7.40	75 g "
	9.70	90 g "
	10.30	80 g "
	10.60	50 g "
	11.50	80 g "
	12.20	70 g "
	14.60	85 g "
	15.15	80 g contact
	16.05	70 g "
	16.30	~ 100 g "
	16.40	65 g "
	17.05	80 g foliation
	18.30	60 g "
	21.20	50 g "
	22.10	70 g "
	25.20	65 g "
	26.90	65 g "

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 150 g DIP: 45° HOLE NO: 4 SHEET NO: 1
LOGGED BY: DE STARTED: 30/8-74 PROPERTY _____
CASING: 3.00 m FINISHED: 1/9-74 _____
CORE SIZE: Ax 32 mm TESTS (CORRECTED): _____

[illegible]

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 150 g DIP: 45° HOLE NO: 4 SHEET NO: 2
 LOGGED BY: DE STARTED: 30/8-74 PROPERTY _____
 CASING: _____ FINISHED: 1/9-74 _____
 CORE SIZE: Ax 32 mm TESTS (CORRECTED): _____

From	To	Description
		<u>Core Angles</u>
	2.80	45 g foliation
	4.20	55 g "
	6.10	30 g "
	7.30	35 g "
	11.10	40 g "
	12.20	50 g "
	13.20	55 g "
	15.20	65 g "
	17.10	50 g "
	19.30	65 g "
	21.00	55 g "
	23.90	50 g "
	26.50	40 g "
	27.50	80 g contact
	28.10	60 g "
	29.00	60 g foliation

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 45° HOLE NO: 5 SHEET NO: 1
LOGGED BY: DE STARTED: 1/9-74 PROPERTY _____
CASING: 75 m FINISHED: 2/9-74 _____
CORE SIZE: Ax 32 mm TESTS (CORRECTED): _____

[illegible]

^{A/s} SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 45° HOLE NO: 5 SHEET NO: 2
LOGGED BY: DE STARTED: _____ PROPERTY _____
CASING: _____ FINISHED: _____
CORE SIZE: Ax 32 mm TESTS (CORRECTED): _____

From	To	Description
		<u>Core Angles</u>
	0.65	60 g foliation
	1.30	70 g "
	2.10	85 g "
	3.40	65 g contact
	3.80	60 g foliation
	4.00	50 g "
	5.00	65 g "
	5.65	40 g contact
	6.10	50 g foliation
	8.10	40 g foliation
	9.70	35 g "
	10.30	60 g "
	11.30	40 g "
	11.50	60 g "
	13.35	65 g "
	14.35	50 g contact
	15.30	70 g foliation
	16.40	75 g contact
	17.35	55 g "
	17.80	65 g "
	18.20	50 g foliation
	18.90	60 g "

DIAMOND DRILL RECORD

[illegible]

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 45° HOLE NO: 6 SHEET NO: 2
LOGGED BY: DE STARTED: 2/9-74 PROPERTY:
CASING: FINISHED: 3/9-74
CORE SIZE: Ax 32 mm TESTS (CORRECTED):

From	To	Description
		<u>Core Angles</u>
	9.00	60 g foliation
	9.60	60 g "
	10.50	55 g foliation
	13.90	55 g foliation
	16.70	60 g shears
	17.00	80 g foliation
	19.00	80 g "
	19.60	50 g "
	20.50	80 g foliation (shear)
	20.80	55 g "
	21.80	65 g "
	24.70	75 g "
	25.70	50 g "
	27.40	60 g shear
	28.00	75 g foliation
	28.40	70 g "

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 45° HOLE NO: 7 SHEET NO: 1
 LOGGED BY: DE STARTED: 3/9-74 PROPERTY
 CASING: 0.75 m (56 mm) FINISHED: 5/9-74
 CORE SIZE: 32 mm Ax TESTS (CORRECTED):

From	To		Description
0	0.65	0.65	Overburden
0.65	1.00	0.35	Chlorite hornblende schist with quartz and feldspar and some pyrite ($\leq 1\%$)
1.00	1.10	0.10	Chlorite rich shear with thin quartz vein and hornblende
1.10	2.00	0.90	Chlorite hornblende schist with feldspar, occasional pyrite and some thin shears, chlorite rich with thin quartz veins.
2.00	2.20	0.20	Chlorite-rich shear with quartz vein
2.20	15.50	13.30	Chlorite hornblende schist with feldspar and narrow shear zones, chlorite rich with quartz veins. Occasional pyrite stringers (possibly including a little chalcopyrite)
15.50	15.75	0.25	Chlorite hornblende schist with porphyroblasts of feldspar
15.75	16.35	0.60	Chlorite hornblende schist with pyrite stringers in places, and chlorite rich shear zones with quartz veins
16.35	16.85	0.50	Fine-medium grained acid rock possibly intrusive. Has a very weak foliation and 2% pyrite. Thin (20 cm) band schist at 16.70
16.85	17.40	0.55	Chlorite hornblende schist
17.40	17.60	0.20	Acid intrusive, fine-medium grained quartz with minor pyrite
17.60	18.60	1.00	Chlorite hornblende schist with pyrite stringers and occasional chalcopyrite - generally chlorite rich, and probably a sheared zone.
18.60	19.10	0.50	Fracture zone in chlorite hornblende schists
19.10	19.30	0.20	Chlorite hornblende schist
19.30	19.50	0.20	Quartzitic rock - probably acid intrusive
19.50	20.30	0.80	Fracture zone in chlorite hornblende schists - occasional pyrite
20.30	21.70	1.40	Chlorite hornblende schist cut by small fracture zones about 10% core loss in this zone.
21.70	21.80	0.10	Quartz vein, probably filling a shear fracture.
21.80	22.95	1.15	Chlorite hornblende schist with pyrite stringers, minor shears
22.95	23.30	0.35	Fracture zone
23.30	23.80	0.50	Chlorite hornblende schist
23.80	24.50	0.70	Plagioclase porphyroblasts in hornblende-chlorite matrix - probably a metabasite.
24.50	25.20	0.70	Chlorite hornblende schist
25.20	25.50	0.30	Porphyroblastic metabasite
25.50	25.70	0.20	Chlorite hornblende schist with pyrite stringers.

DIAMOND DRILL RECORD

[illegible]

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 45° HOLE NO: 7 SHEET NO: 3
LOGGED BY: DE STARTED: 3/9-74 PROPERTY
CASING: FINISHED: 5/9-74
CORE SIZE: Ax 32 mm TESTS (CORRECTED):

From	To	Description
		Core Angles
	0.80	50 g foliation
	3.50	55 g "
	6.60	65 g "
	7.80	60 g "
	10.00	70 g "
	10.30	80 g "
	11.40	65 g "
	13.50	70 g "
	16.35	35 g contact
	16.85	40 g "
	17.40	45 g "
	17.60	20 g "
	17.90	40 g foliation
	19.50	60 g contact
	20.50	70 g foliation
	20.80	50 g "
	22.80	45 g "
	25.40	35 g "
	27.60	20 g "
	28.50	30 g "
	29.60	50 g contact
	31.40	85 g foliation
	35.35	80 g contact foliation 60 g
	35.90	50 g foliation
	37.80	70 g contact
	38.80	45 g foliation/shear
	39.60	70 g foliation
	39.80	35 g shear
	40.55	45 g foliation
	41.90	50 g foliation
	42.90	50 g contact

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 70° HOLE NO: 8 SHEET NO: 1
 LOGGED BY: DE STARTED: 6/9-74 PROPERTY
 CASING: 0.75 m FINISHED: 8/9-74
 CORE SIZE: Ax 32 mm TESTS (CORRECTED):

From	To		Description
0	0.50	0.50	Overburden
0.50	1.65	1.15	Chlorite hornblende schist with occasional plagioclase crystals
1.65	1.90	0.25	Plagioclase rich metabasite - foliated
1.90	2.90	1.00	Chlorite hornblende schist with plagioclase
2.90	3.75	0.85	Porphyroblastic metabasite, foliated - last 20 cm broken by jointing
3.75	3.95	0.20	Jointed chlorite hornblende schist - joint filled by quartz
3.95	4.30	0.35	Chlorite hornblende schist
4.30	4.80	0.50	Basic intrusive, mainly amphibole but with occasional plagioclase crystals. Fine grained pyrite specks occur. Weak foliation.
4.80	5.30	0.50	Chlorite hornblende schist, fractured, with pyrite. Often rusty.
5.30	6.60	1.30	Basic intrusive, later; mainly amphibole with occasional plagioclase and occasional pyrite.
6.60	7.60	1.00	Fracture zone in chlorite hornblende schist. Often rusty.
7.60	7.90	0.30	Chlorite hornblende schist.
7.90	8.10	0.20	Metabasite
8.10	8.55	0.45	Fracture zone in chlorite hornblende schist. Rusty, with occasional pyrite.
8.55	8.70	0.15	Chlorite hornblende schist with minor pyrite
8.70	8.85	0.15	Metabasite
8.85	10.10	1.25	Chlorite hornblende schist with occasional pyrite. Short fracture zone 9.75 - 9.85
10.10	10.80	0.70	Fracture zone
10.80	13.90	3.10	Fresh fine-medium grained basic rock - amphibolite - probably basic intrusive - very weak foliation.
13.90	14.80	0.90	Chlorite hornblende schist
14.80	14.90	0.10	Metabasite
14.90	15.55	0.65	Chlorite hornblende schist - often rusty; well weathered
15.55	16.10	0.55	Metabasite
16.10	16.80	0.70	Fracture zone in chlorite hornblende schist - rusty
16.80	18.10	1.30	Metabasite with plagioclase porphyroblasts - quite fresh with only weak foliation.
18.10	18.70	0.60	Fracture zone in chlorite hornblende schist - part rusty
18.70	19.25	0.55	Chlorite hornblende schist
19.25	20.00	0.75	Fracture zone in chlorite hornblende schist - rusty.

^A/_s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 70° HOLE NO: 8 SHEET NO: 2
 LOGGED BY: DE STARTED: 6/9-74 PROPERTY
 CASING: FINISHED: 8/9-74
 CORE SIZE: Ax 32 mm TESTS (CORRECTED):

From	To		Description
20.00	20.85	0.85	Chlorite hornblende schist - rusty with pyrite occurring on some of the numerous joints
20.85	21.35	0.50	Fractured and sheared zone with chlorite rich schists and some graphite bands. - pyrite.
21.35	25.00	3.65	Chlorite hornblende schist, often fractured and jointed, sharing signs of movement, becoming less further down.
25.00	25.30	0.30	Fracture zone - rusty chlorite hornblende schist with occasional pyrite
25.30	27.50	2.20	Chlorite hornblende schist showing signs of movement - some coarse quartz and feldspar veins
27.50	27.55	0.05	Chlorite rich shear zone with pyrite
27.55	28.85	1.30	Chlorite hornblende schist
28.85	29.35	0.50	Fracture zone, mainly chlorite hornblende schist with rust and pyrite, but occasional graphitic layers.
29.35	29.80	0.45	Chlorite hornblende schist, with rusty spots and occasional pyrite
29.80	31.00	0.20	Fine grained amphibolitic rock, fresh; metabasite occasional plagioclase porphyroblasts lower down.
31.00	31.15	0.15	Fracture-shear zone with chlorite rich schist
31.15	31.35	0.20	Chlorite hornblende schist
31.35	31.40	0.05	Chlorite rich shear zone
31.40	32.60	1.20	Porphyroblastic metabasite, weakly foliated. Some pyrite
32.60	35.45	2.85	Chlorite hornblende schist, with sheared chlorite rich layers. Some quartz-filled joints cutting
35.45	35.75	0.30	Fracture zone in chlorite-rich chlorite hornblende schist
35.75	39.45	3.70	Zones of broken or fractured rock interspersed with chlorite hornblende schist, some pyrite occurring. Fractures and shears, generally chlorite rich.
39.45	39.60	0.15	Fractured shear zone - chlorite rich rock
39.60	40.50	0.90	Jointed sheared chlorite hornblende schist with rust and pyrite, especially on joints
40.50	40.60	0.10	Fracture zone - very broken up.
40.60	41.30	0.70	Sheared and jointed chlorite hornblende schist with pyrite and rust, especially on joints.
41.30	41.60	0.30	Fracture zone with chlorite-rich shears
41.60	42.25	0.65	Chlorite hornblende schist

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 100 g DIP: 70° HOLE NO: 8 SHEET NO: 3
 LOGGED BY: DE STARTED: 6/9-74 PROPERTY
 CASING: FINISHED: 9/9-74
 CORE SIZE: Ax 32 mm TESTS (CORRECTED):

From	To	Description
42.25	42.60	0.35 Porphyroblastic metabasite

		<u>Core Angles</u>
	0.60	60 g foliation
	1.65	70 g contact
	1.90	
	5.70	90 g foliation
	6.70	75 g "
	9.90	75 g "
	13.10	90 g "
	16.10	80 g contact
	20.10	70 g foliation
	20.50	60 g "
	21.30	40 g "
	22.20	65 g "
	25.40	65 g "
	27.50	55 g "
	29.50	75 g "
	31.40	90 g "
	32.50	75 g "
	33.70	70 g "
	36.70	75 g "
	38.70	60 g shear
	39.70	40 g foliation
	40.40	35 g "
	41.40	50 g shear
	42.25	70 g contact

A/s SULFIDMALM

DIAMOND DRILL RECORD

LOCATION: Grønnskar, Tydal BEARING: 095 g DIP: 60° HOLE NO: 9 SHEET NO: 1
LOGGED BY: DE STARTED: 9/9-74 PROPERTY _____
CASING: 1.50 m FINISHED: 9/9-74 _____
CORE SIZE: _____ TESTS (CORRECTED): _____

[illegible]

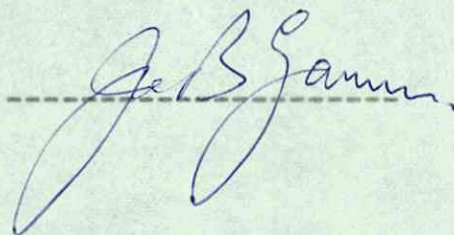
A/S SULFIDMALM
INTER-OFFICE MEMORANDUM

Date: 28th February, 1975
To: Falconbridge Nikkelverk A/S
cc: W. D. Harrison, H. T. Berry, F. Nixon, ✓
D. Ellen
From: J. B. Gammon
Subject:

905.20. Drilling at Grønskarfelt. Report No. 343/74/20.

Please find attached Ellen's report on drilling in the Grønskarfelt area, Trondheimsfelt region. This area was optioned because of its general position along strike from past and presently operating Cu-Zn deposits. Several old showings are present in the area indicating rich mineralization of limited extent. A programme of geophysics carried out in 1972 indicating several promising anomaly zones. These have now been drill tested with negative results.

The option has been dropped and no further work is recommended.

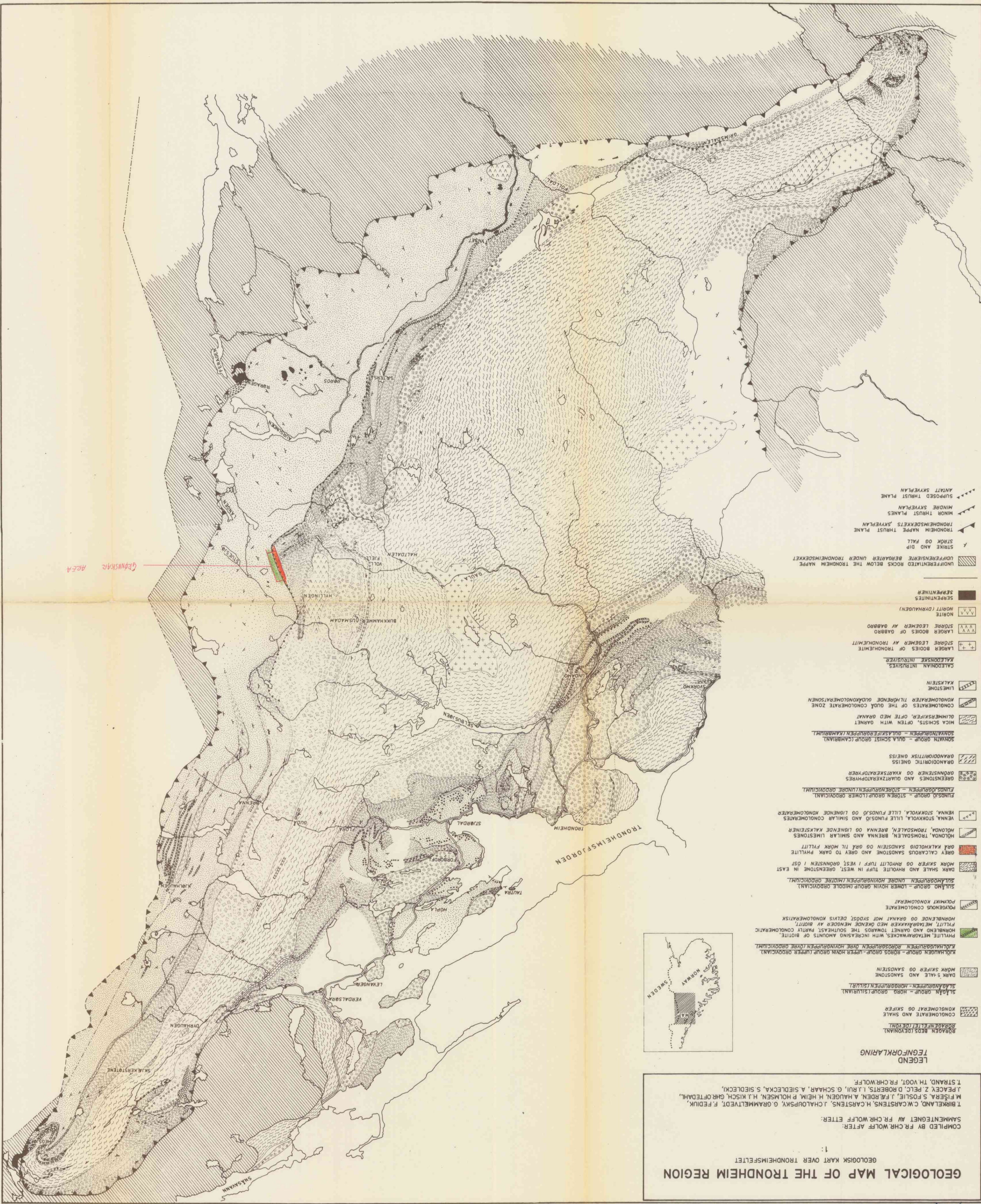
A handwritten signature in blue ink, appearing to read 'J. B. Gammon', is written over a horizontal dashed line.

GEOLOGICAL MAP OF THE TRONDHEIM REGION

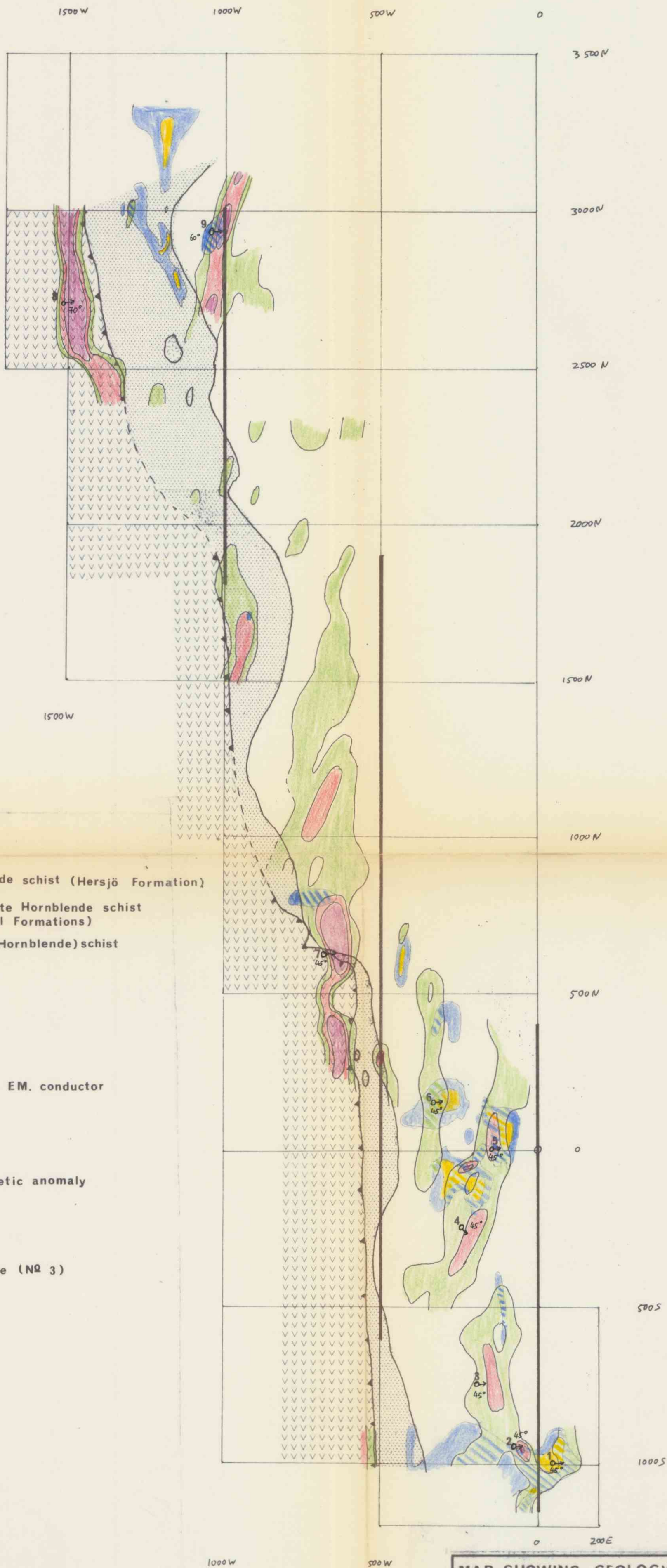
1:
 GEOLOGISK KART OVER TRONDHEIMSFELLET
 SAMMENSETTET AV FR. CHR. WOLFF ETTER:
 T. BIRKELAND, C. W. CARSTENS, H. HAUGEN, H. HEIM, P. HOLMSEN, H. J. KISCH, G. R. OFTEDAL,
 J. PEACEY, Z. PELC, D. ROBERTS, I. RU, G. SCHAAK, A. SIEDLECKA, S. SIEDLECKI,
 T. STRAND, TH. VOGT, FR. CHR. WOLFF.

LEGEND TEGNFORKLARING

- BRØNNER BEG. (DEVONIAN)
 CONGLOMERATE AND SHALE
 KONGLOMERAT OG SKIFER
- SLÅNEN GROUP - HORN GROUP (SLÅNEN)
 DARK SHALE AND SANDSTONE
 MØRK SKIFER OG SANDSTEIN
- KJØLHAGEN GROUP - HORN GROUP (UPPER ORDOVICIAN)
 PHYLITE, METAMORPHIC, WITH INCREASING AMOUNTS OF BIOTITE,
 HORNBLENDE AND GARNET TOWARDS THE SOUTHEAST. PARTLY CONGLOMERATIC
 FILLING METAMORPHIC, WITH INCREASING AMOUNTS OF BIOTITE,
 HORNBLENDE OG GARNET TOWARDS THE SOUTHEAST. PARTLY KONGLOMERATISK
 FILLING METAMORPHIC, WITH INCREASING AMOUNTS OF BIOTITE,
 HORNBLENDE OG GARNET TOWARDS THE SOUTHEAST. PARTLY KONGLOMERATISK
- POLYMIT KONGLOMERAT
- SILAND GROUP - LOWER HOVIN GROUP (UPPER ORDOVICIAN)
 DARK SHALE AND RHYOLITE TUFF IN WEST, GREENSTONE IN EAST
 MØRK SKIFER OG RHYOLIT TUFF I VEST, GRØNSTEIN I ØST
- GREY CALCAREOUS SANDSTONE AND GREY TO DARK PHYLITE
 GRÅ KALKHOLDIG SANDSTEIN OG GRÅ TIL MØRK Fyllitt
- HOLNDA, TRONDAL, BRENNÅ AND SIMILAR Limestones
 VENNA, STOKVOLA, LILLE FJUNDSJØ AND SIMILAR CONGLOMERATES
- FJUNDSJØ GROUP - STØRE GROUP (LOWER ORDOVICIAN)
 GREENSTONES AND QUARTZITIC GNEISS
 GRØNSTEIN OG KVARTSITISK GNEISS
- GRANDIORITIC GNEISS
- SOMVÅN GROUP - GULLA SCHIST GROUP (CAMBRIAN)
 GULLA SCHIST, OFTEN WITH GARNET
 GULLA SCHIST, OFTEN MED GARNET
- CONGLOMERATES OF THE GULLA CONGLOMERATE ZONE
 KONGLOMERATER AV GULLA KONGLOMERATSONEN
- LIMESTONE
- KALEDOONIAN INTRUSIVES
- LARGE BODIES OF TRONDHEIMITE
 STØRE LEGEMER AV TRONDHEIMIT
- LARGE BODIES OF GABBRO
 STØRE LEGEMER AV GABBRO
- MORBITE (DYRHAUGEN)
- SEPIENTINER
- UNDIFFERENTIATED ROCKS BELOW THE TRONDHEIM NAPPE
 UDIFFERENSIERTE BERGARTER UNDER TRONDHEIM NAPPE
- STRIK OG FALL
- TRONDHEIM NAPPE THRUST PLANE
- MINOR THRUST PLANES
- SUPPOSED THRUST PLANE



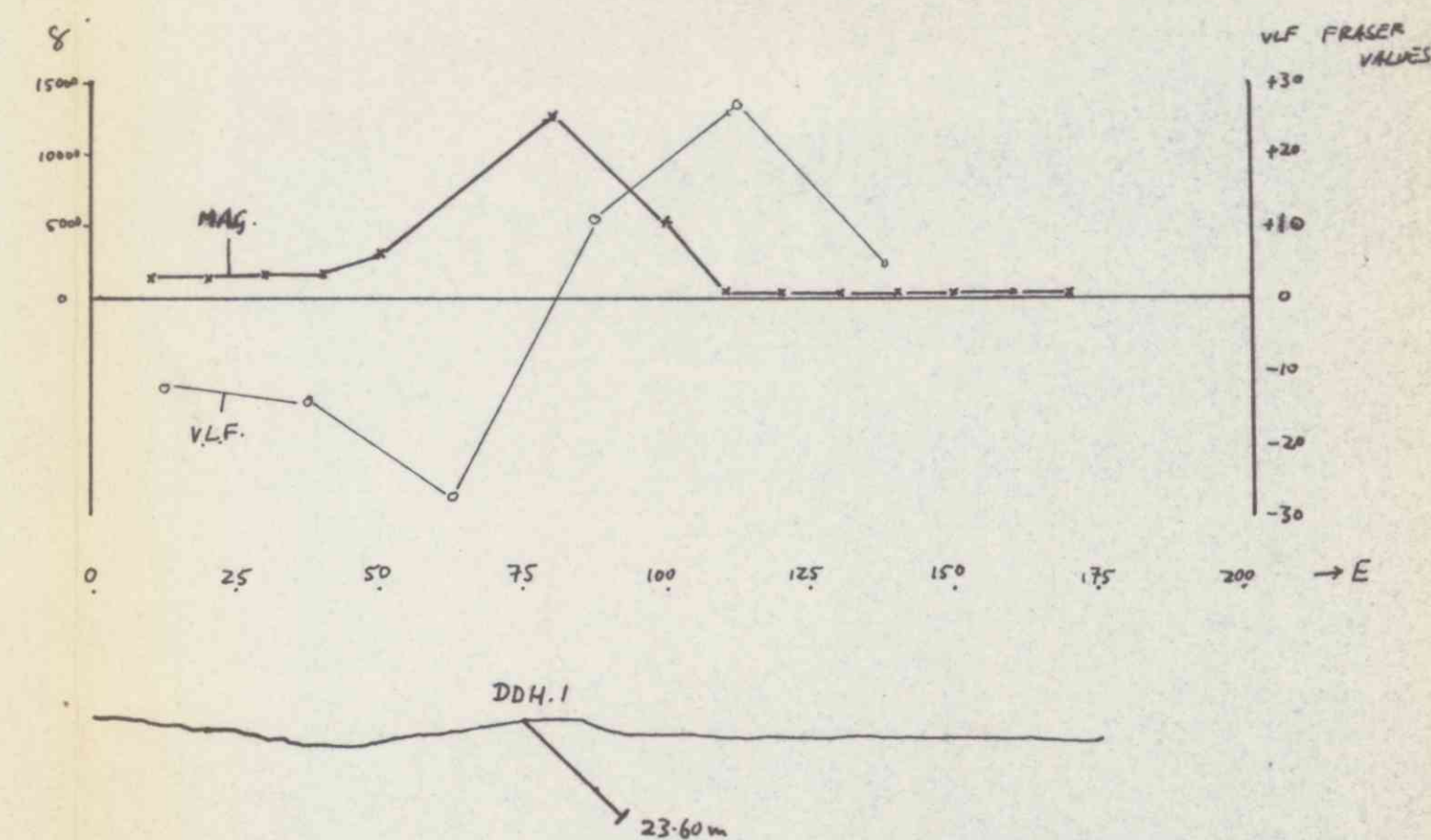
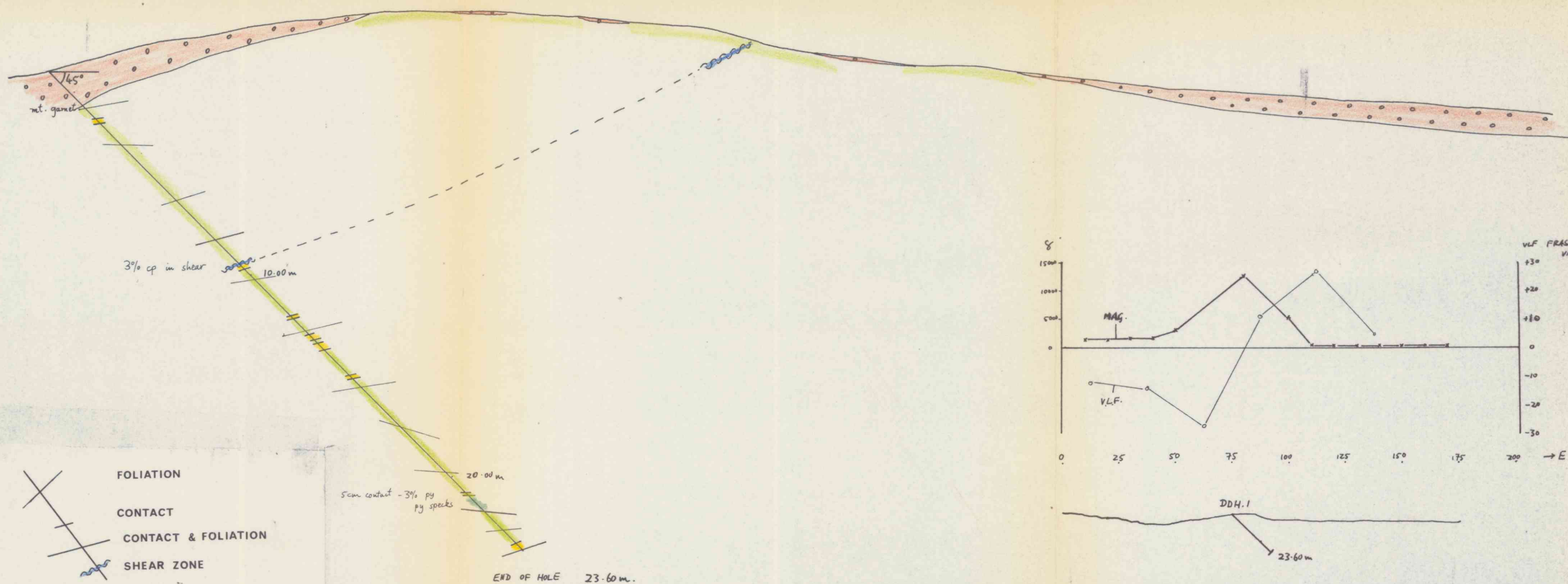
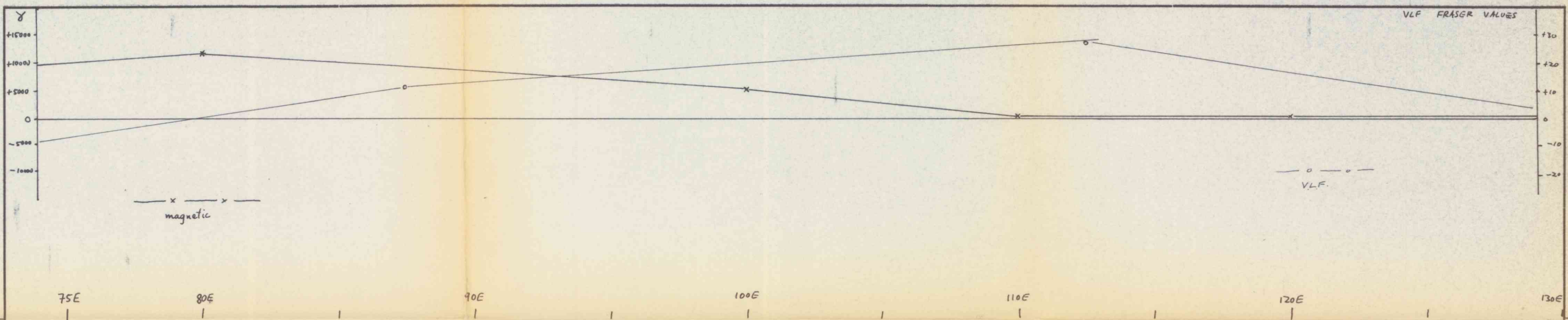
Geologisk kart
 1:50,000



MAP SHOWING GEOLOGY, GEOPHYSICAL
ANOMALIES AND LOCATION OF
DRILL HOLES. GRØNNESKAR, TYDAL

SCALE	OBS.
1:10000	DRAW. DE 11-74
	TRAC. DE 11-74
	CHK.

MAP NO.
20-74-D10
MAP SHEET ALEN 1720 IV

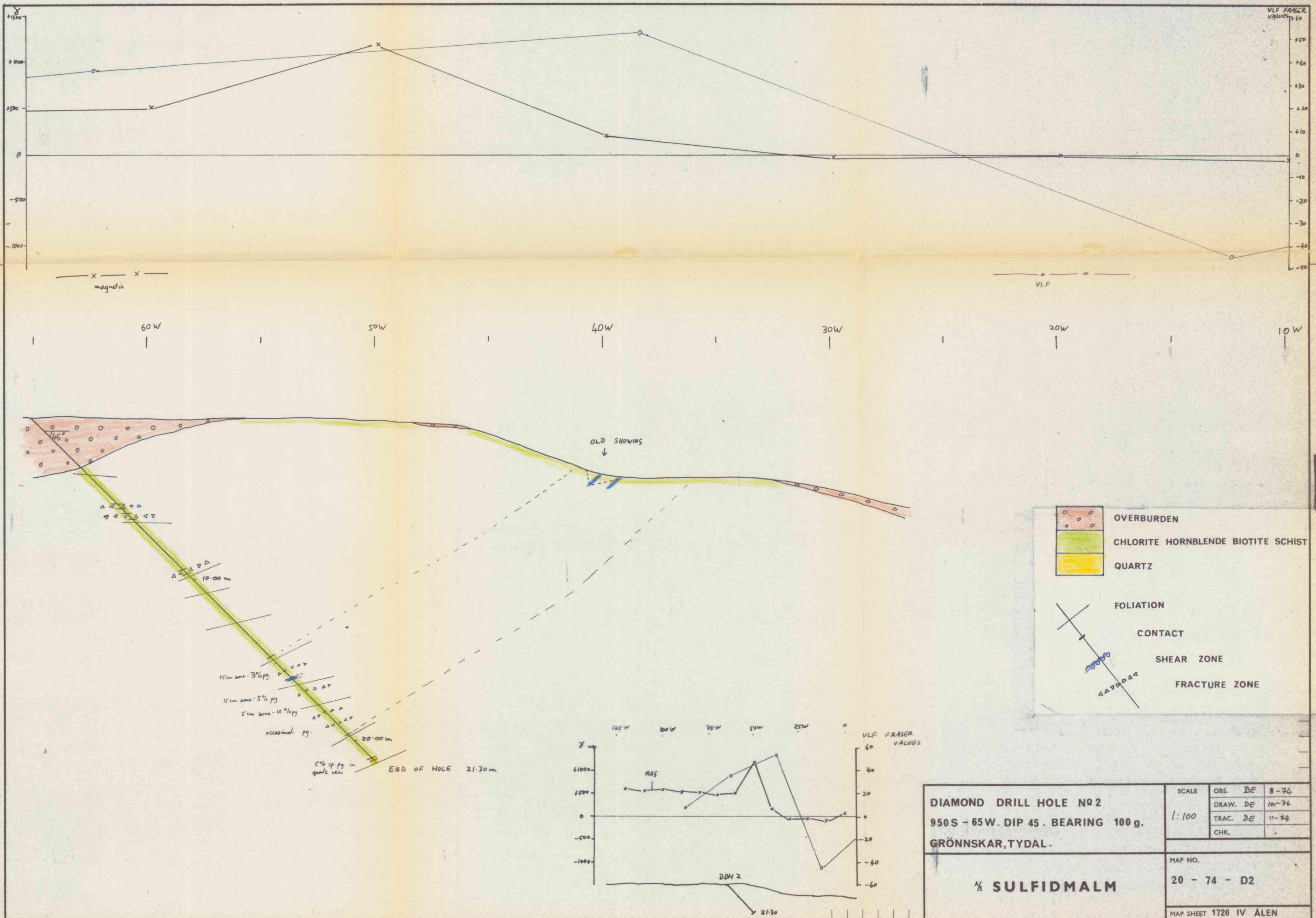


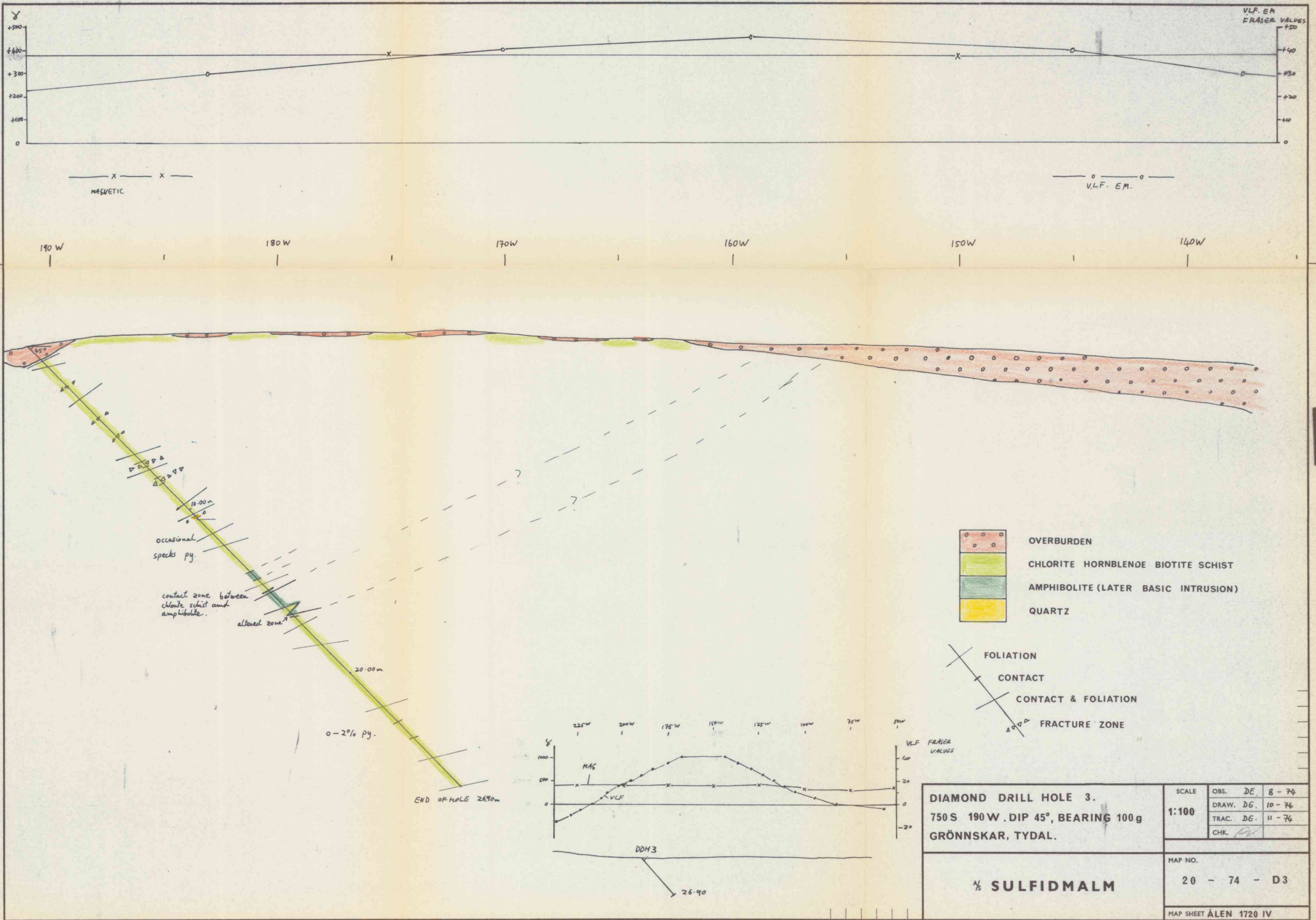
DIAMOND DRILL HOLE NO 1
1000S - 75E. DIP 45° BEARING 100g (E)
GRÖNNISKAR, TYDAL.

SCALE	OBS.	DE	8 - 74
1:100	DRAW.	DE	10 - 74
	TRAC.	DE	10 - 74
	CHK.		

1/2 SULFIDMALM

MAP NO.	20 - 74 - D1
MAP SHEET	1720 IV ÄLEN



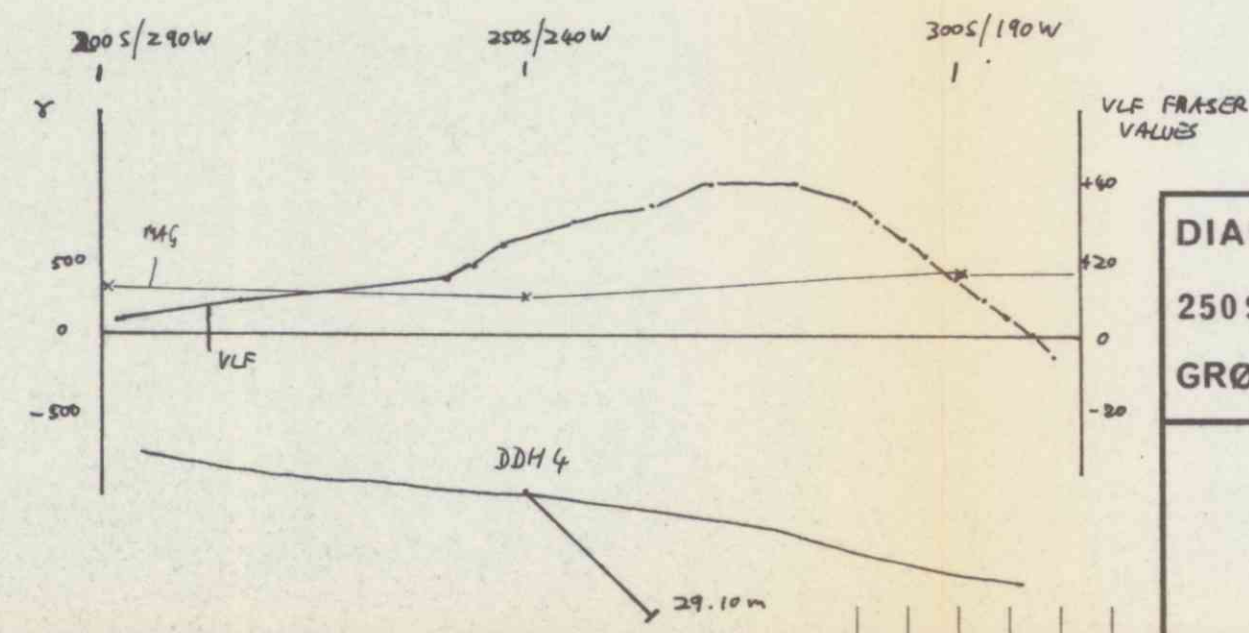
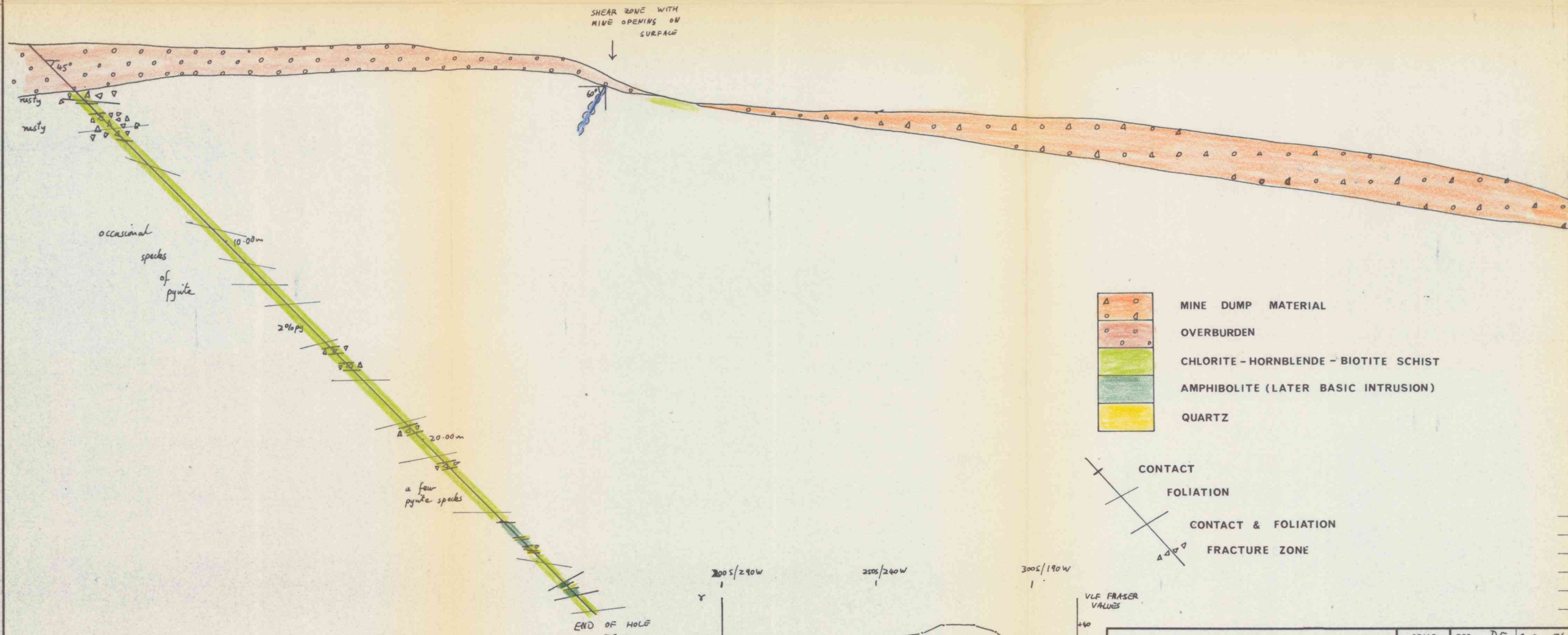
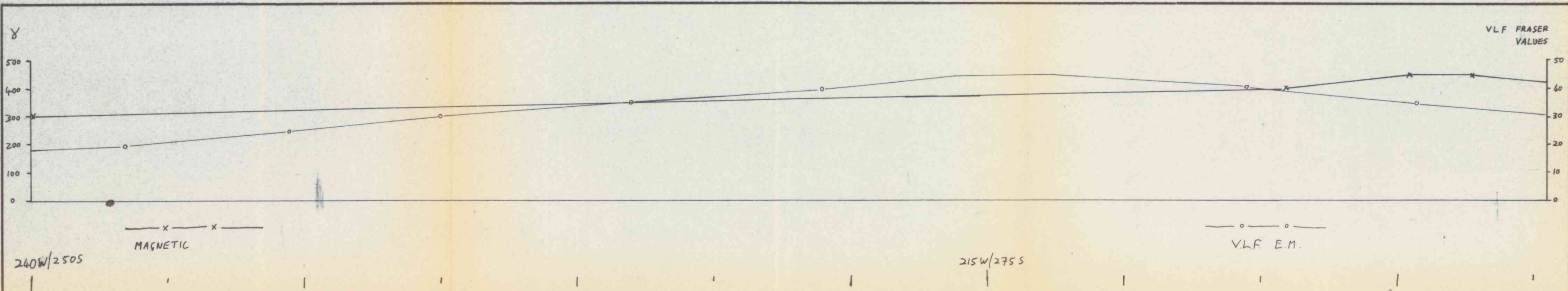


DIAMOND DRILL HOLE 3.
750 S 190 W . DIP 45°, BEARING 100 g
GRÖNNESKAR, TYDAL.

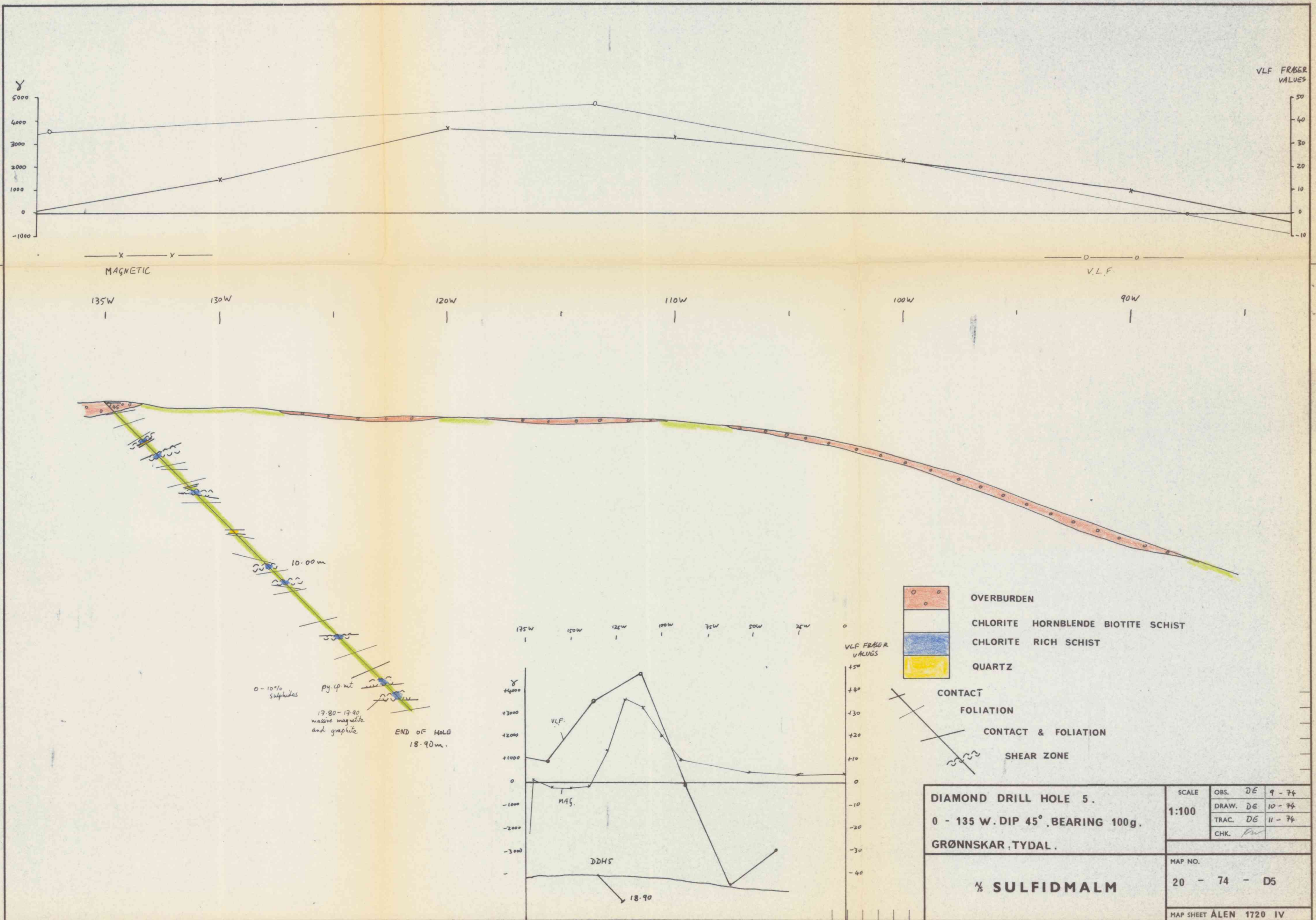
SCALE 1:100	OBS.	DE.	8 - 74
	DRAW.	DE.	10 - 74
	TRAC.	DE.	11 - 74
	CHK.		

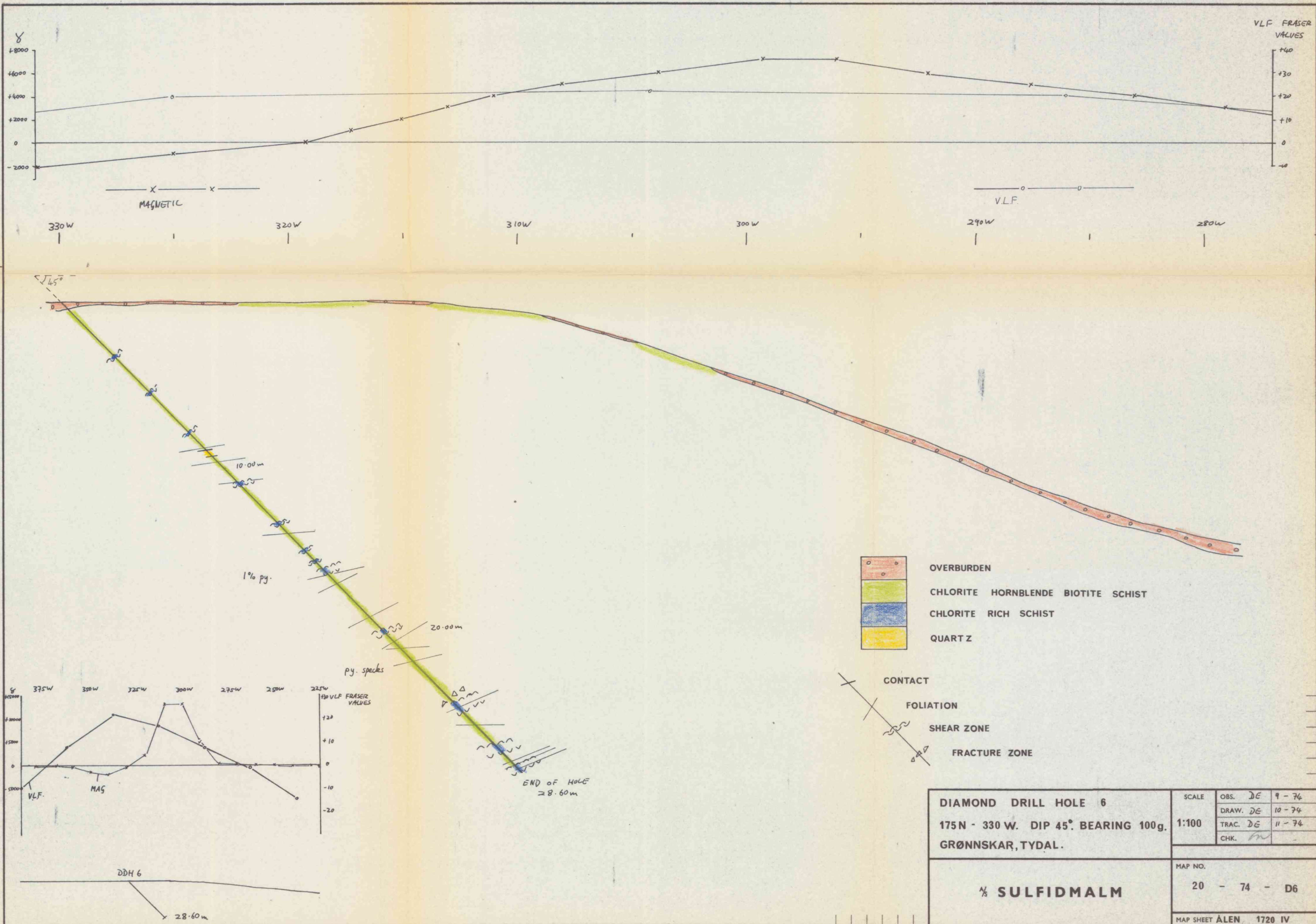
1/2 SULFIDMALM

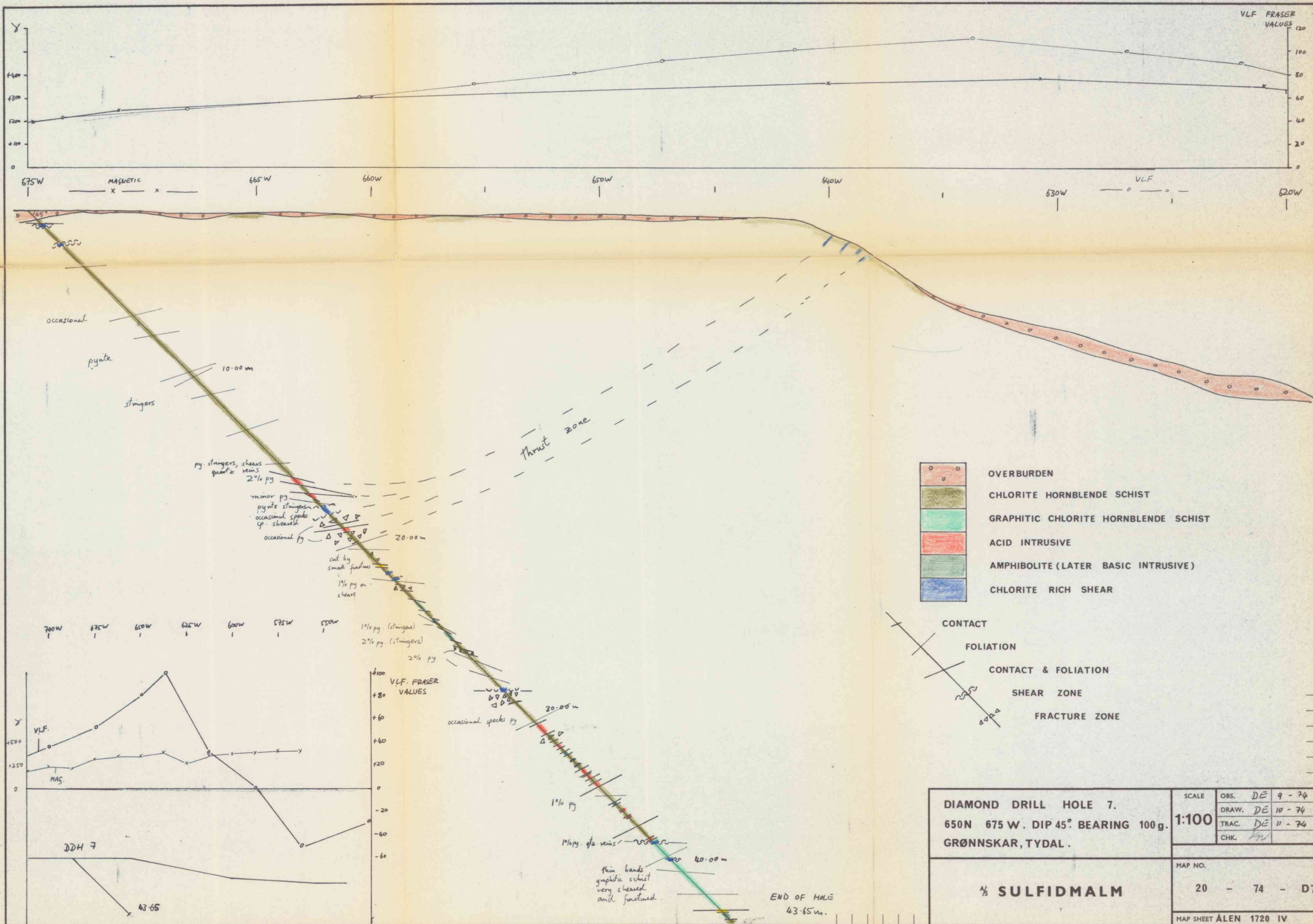
MAP NO.	20 - 74 - D3
MAP SHEET	ÅLEN 1720 IV

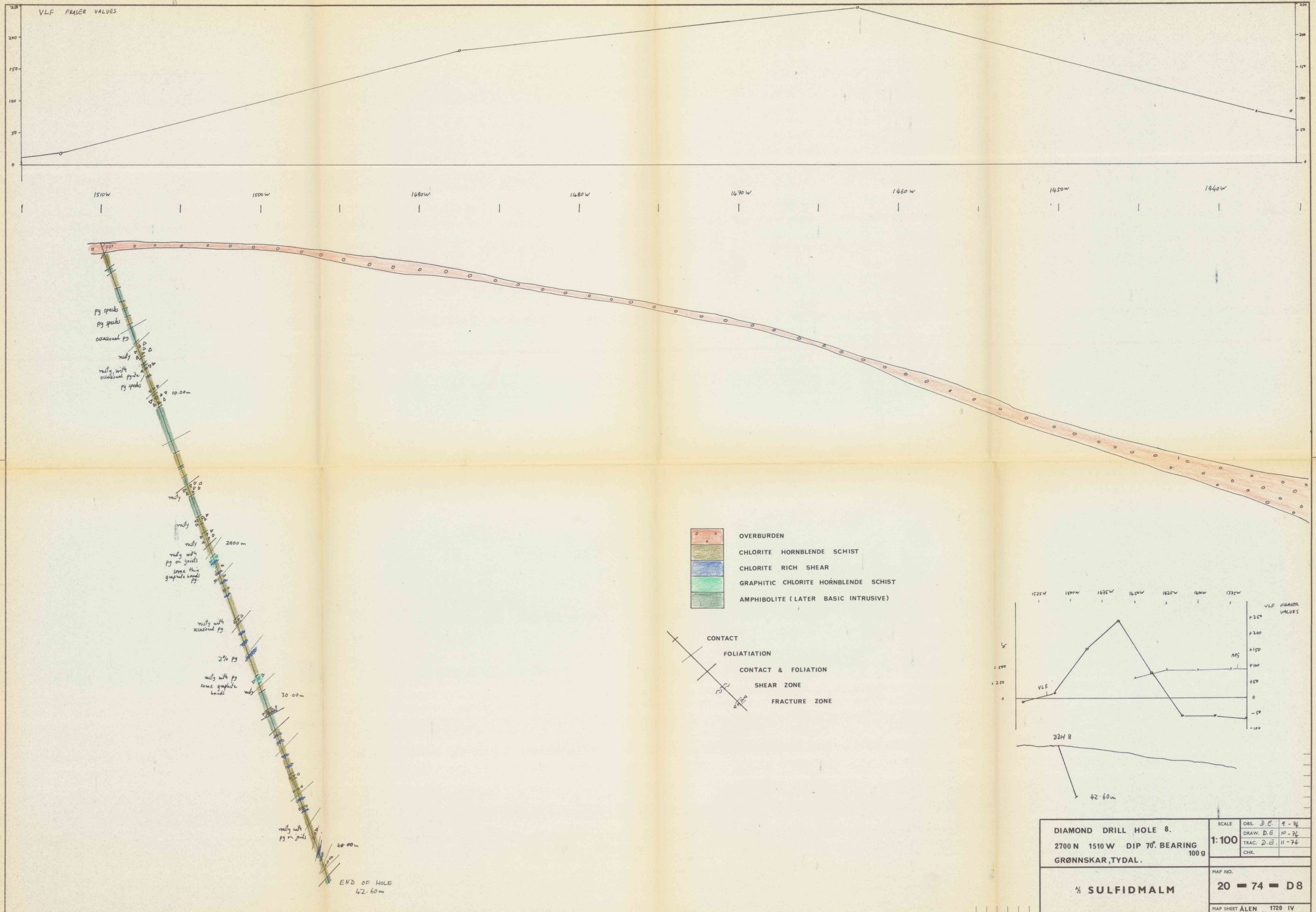


DIAMOND DRILL HOLE 4. 250S 240 W. DIP 45°. BEARING 150 g. GRØNNESKAR, TYDAL.		SCALE	OBS.	DE	8-9-74
		1:100	DRAW.	DE	10-74
			TRAC.	DE	11-74
			CHK.		
1/2 SULFIDMALM		MAP NO.			
		20 - 74 - D4			
		MAP SHEET ALEN 1720 IV			

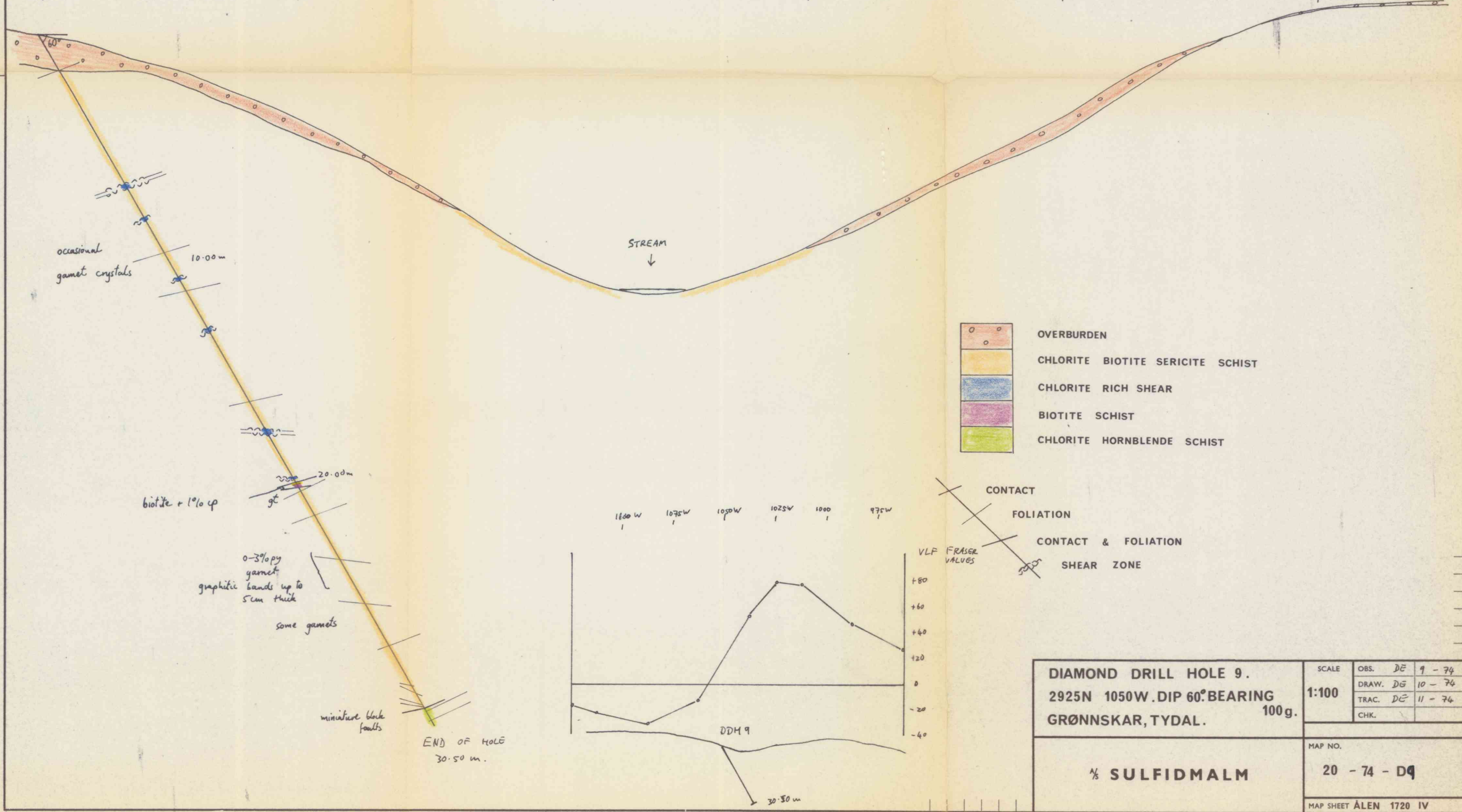
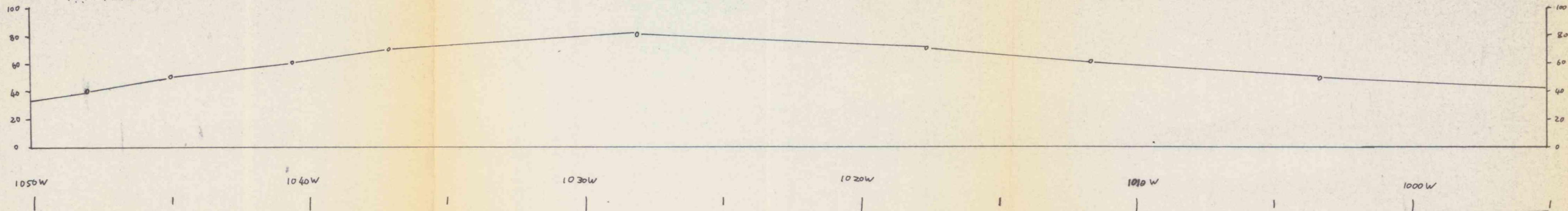








V.L.F. FRASER VALUES



DIAMOND DRILL HOLE 9.
2925N 1050W .DIP 60° BEARING
GRØNNESKAR, TYDAL. 100g.

SCALE	OBS. DE 9 - 74
1:100	DRAW. DG 10 - 74
	TRAC. DE 11 - 74
	CHK.

1/2 SULFIDMALM

MAP NO.
20 - 74 - D9

MAP SHEET ÅLEN 1720 IV
FIS 11