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# Forsmark site investigation

# Boremap mapping of percussion boreholes HFM09-12

Christin Nordman, Geosigma

April 2004

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This report concerns a study which was conducted for SKB. The conclusions and viewpoints presented in the report are those of the author and do not necessarily coincide with those of the client.

A pdf version of this document can be downloaded from www.skb.se

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# 1 Introduction

This document reports the data gained by Boremap mapping of four percussion boreholes drilled within the site investigation at Forsmark.

Two percussion drilled boreholes, HFM09 and HFM10, are located at drill site 4, close to the 1000 m deep, telescopic drilled borehole KFM04A. The other two percussion drilled boreholes, HFM11 and HFM12, are drilled through the Eckarfjärden deformation zone (Figures 2-1) in order to study it closer. HFM09–10 were drilled in order to enable groundwater level monitoring and to gain hydrogeochemical data. Borehole HFM09 also provided the flushing water needed for drilling the core drilled part of borehole KFM04A.

The percussion drilled boreholes were after completion of drilling investigated with several logging methods, for example, conventional geophysical logging, borehole radar and TV-logging. The latter method implies logging with a colour TV-camera to produce images of the borehole wall, so called BIPS-images (Borehole Image Processing System). The method is described in SKB MD 222.006 (Metodbeskrivning för TV-loggning med BIPS).

Mapping of percussion boreholes according to the Boremap method is based on the use of BIPS-images of the borehole wall, supported by the study of drill cuttings. Although the rock is crushed into fine-grained fractions, the mineralogical composition of the samples can still be studied. During drilling, the sampling of drill cuttings is discontinuous, and this introduces a degree of uncertainty in the classification of the rock composition between the sampling points. However, the combination of BIPS-images and samples of drill cuttings offers a reasonably efficient method for a continuous mapping of the geology along the borehole.

The BIPS-images also enable the study of the distribution of fractures along the borehole. Fracture characteristics like aperture, colour of fracture minerals etc are possible to study as well. Furthermore, since the BIPS software has the potential of calculating strike and dip of planar structures such as foliations, rock contacts and fractures intersecting the borehole, also the orientation of each planar structure is documented with the Boremap method. Important to keep in mind is that the mappings only represent the thin lines of boreholes that intersect the rock body.

# 2 Objective and scope

The aim of this activity was to document lithologies, ductile structures and the occurrence and character of fractures and fracture zones in the bedrock penetrated by the four percussion drilled boreholes HFM09–12, see Figure 2-1. Data were collected in order to obtain a foundation for a preliminary assessment of the bedrock conditions adjacent to the telescopic drilled borehole KFM04A and in the Eckarfjärden deformation zone down to about 150 m depth. Other data obtained from the percussion drilled boreholes, such as thickness of soil cover, soil stratigraphy, groundwater level and groundwater flow, will not be treated in this paper.

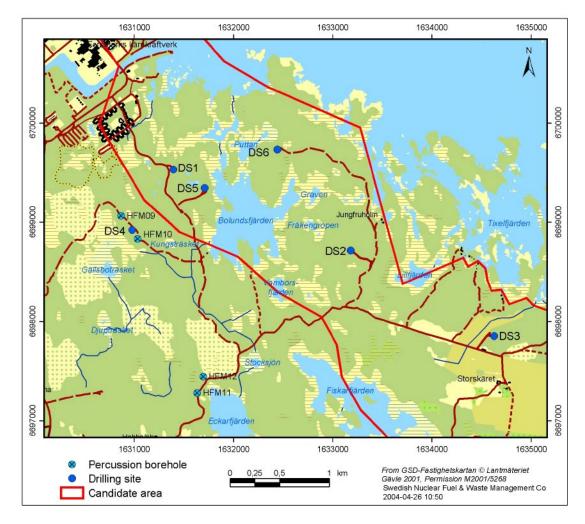


Figure 2-1. Locations of HFM09–12, Forsmark. (DS = drill site).

# 3 Equipment and methods

### 3.1 Software

Mapping was performed with the software Boremap 3.2.2. The Boremap software calculates actual directions (strike and dip) of planar structures penetrated by the borehole (foliations, fractures, fracture zones, rock contacts etc). Data on inclination, bearing and diameter of the borehole are used as in-data for the calculations (Table 4-1). The Boremap software uses the bedrock and mineral standard used by the Geological Survey of Sweden for surface mapping at the Forsmark investigation site to enable correlation with the surface geology.

Results from the investigation of drill cuttings were documented in an Excel database, while the stereographic projections were created with the software StereoNet. Schematic presentations of the boreholes were presented with the software WellCad.

### 3.2 Other equipment

Stereo microscope, a day light lamp and an ordinary kitchen strainer were used to investigate drill cuttings.

### 3.3 BIPS-image quality

The BIPS-image quality is generally good. The image from HFM09 is good with a few exceptions: at 22.5 m there is a jump in the BIPS-image that makes it impossible to interpret a possible thin crush zone. At 46.3 m the image is diffuse, probably due to some water outflow from an open fracture. The light greenish colour of epidote is generally difficult to discern in the BIPS-image.

The BIPS-image from HFM10 is good down to 116.5 m. From 116.5 m and downwards drill debris on the lower side of the borehole wall makes half of the image diffuse. As in the images from HFM09 the light greenish colour of epidote is difficult to discern in the BIPS-image.

The BIPS-image from HFM11 is quite good, but the centre of the image is darker (upper side of borehole wall) whereas the edges are light in colour (lower side of borehole wall). The reason for this is probably that the BIPS-camera has not been enough centralized in the borehole. In the end of the BIPS-image some stick-slip pattern occurs.

The BIPS-image of HFM12 is good, but in the second half of the borehole some suspensions have settled down on the lower side of the borehole wall. From ~168 m depth it is difficult to observe things behind the settled material which covers 35–40% of the image. From 172 m and downwards stick-slip pattern of the image makes it difficult to make reliable observations.

# 4 Execution

Boremap mapping of the percussion drilled boreholes HFM09–HFM12 was performed and documented according to activity plan AP PF 400-03-73 (SKB, internal document) referring to the SKB method description for Boremap mapping (SKB MD 143.006, Version 1.0, Metodbeskrivning för Boremap-kartering).

### 4.1 Preparations

The lengths of the boreholes are listed in Table 4-1. Length corrections of the BIPS-images were made for HFM10, HFM11 and HFM12. The BIPS-image of HFM10 was originally 148.9 m and was adjusted to 149.55 m. For HFM11 and HFM12 the corresponding adjustments were from 181.35 m to 182.0 m and from 207.6 m to 208.6 m, respectively. The BIPS-image for HFM09 ends at 49.79 m depth and therefore no length correction was needed. The corrections were made since it is known that the registered length in the BIPS-images in general deviates with approximately 0.5 m per 100 m from the real length.

Background data collected from SICADA prior to the Boremap mapping included:

- borehole diameter (Appendix 10),
- total borehole length (Appendix 10),
- borehole deviation data (Appendix 11),
- drilling penetration rate (Appendix 12).

After the Boremap mapping of HFM09–12 was completed, the boreholes HFM10–12 were investigated with geophysics. The new information from the geophysical logs from Geovista AB was used to check and revise the earlier Boremap mappings.

Measurements of borehole directions were refined using deviation data from the SKB SICADA database (field note no Forsmark 147, 210 and 179). Geometric data for boreholes HFM09–12 are given in Table 4-1.

ID-code	Northing	Easting	Bearing (degrees)	Inclination (degrees)	Diameter	Borehole length (m)	BIPS-image interval (adj. length in m )	End of casing	Appr. depth to bedrock surface (m)
HFM09	6699065	1630869	139.4	-68.9	141	50.25	16.0-49.8	17.0	5
HFM10	6698835	1631037	92.9	-68.7	140	150.00	11.1-149.6	11.8	5
HFM11	6697283	1631636	63.5	-49.3	139	182.35	11.0-182.0	12.0	3
HFM12	6697446	1631696	245.1	-49.1	137	209.55	14.1-208.6	15.0	5

## 4.2 Execution of measurements

Available geological information is more limited for Boremap mapping of percussion drilled boreholes than core drilled boreholes, where the continuous drill core can be directly compared with BIPS-images of the borehole wall. During mapping of percussion boreholes, fractures can only be seen on the BIPS-images and rock samples are merely available as crushed fragments. As solid rock samples are not accessible, certain assumptions and simplifications have to be made during mapping. These are described below.

### 4.2.1 Fractures

As fractures could be studied only in the BIPS-image they could not be confidently classified as rough, smooth or slickensided, nor could their mineralogy or alteration be reliably determined. Hence, classifications of fracture minerals in the percussion boreholes should be treated with caution. The following assumptions were made:

- Width of very thin fractures (<1 mm) were impossible to measure accurately and was therefore, as a rule, interpreted as 0.7–1 mm thick or, if only vaguely observed, as 0.5 mm thick.
- Fractures were assumed to be open if not clearly observed to be sealed.
- Dark coloured fractures were interpreted to contain some amount of chlorite (such colouration may, however, also be caused by shadows caused by the fracture walls or by other dark coloured minerals).
- Bright white (commonly sealed) fracture fillings were interpreted to contain calcite.
- White to greyish fracture material was interpreted as feldspar/epidote or quartz.
- Greenish sealed fractures were interpreted to contain epidote or X1, see Section 4.2.2 below.
- Pyrite, epidote, rust and fragments of very fine-grained, possibly cataclastic rocks (mapped as X1), were identified in some of the drill cutting samples. It was, however, not always possible to correlate these occurrences to certain structures in the BIPS-image.
- The pegmatites are usually fractured. It was very difficult to determine from BIPS whether they are open or sealed and some misinterpretations must therefore be accounted for.

### 4.2.2 Minerals

Unidentified minerals or mineral aggregates were mapped as:

- X1= a light grey, beige or greenish aphanitic to very fine grained mineral assembly, occurring as filling in sealed/open fractures observed in the drill cuttings.White-grey-green fracture filling in the BIPS-images is interpreted to be of the same kind. They are possibly thin brittle-ductile shear zones.
- X2= red fracture fill. Strongly hematite pigmented, but the host mineral is uncertain.
- X3= dark grey fracture filling observed together with calcite.
- X4= black-green fracture filling.

- X5= an almost black, slightly reddish, and usually euhedral mineral found together with calcite in the drill cuttings. It is also observed in the BIPS-image. In cross section it seems rectangular.
- X6= lighter bands in BIPS, usually with no sharp contacts. These are interpreted as possible epidotization or bleaching of wall rock. They might also represent very thin white fractures.

### 4.2.3 Rock colour

Rock colour documented during Boremap mapping was classified from the observations of drill cuttings (dry samples). Minor differences in colour of drill cutting samples were usually not recognizable in the BIPS-images and were therefore not documented in Boremap.

Rock colour in the BIPS-images appears bleached and a little different, so the classification of colour of minor rock occurrences only observed in the BIPS-image is likely to be less accurate.

### 4.2.4 Rock contacts

Orientation of irregular or diffuse rock contacts may be difficult to observe and measure with the Boremap method, since only planar and discrete features can be accurately measured.

### 4.2.5 Lithologies

Lithological classifications were sometimes difficult, since the boreholes consist mostly of fine grained rock types.

HFM09–10 consist mostly of an almost black, fine grained rock, with bands rich in amphibole (very dark coloured) and bands rich in plagioclase (lighter in colour). The bands which are lighter in colour are interpreted to be granodioritic to tonalitic in composition, while the darker bands are interpreted to be amphibolite.

HFM11–12 show in places strong deformation and in these sections the minerals become almost aphanitic and beige, light green or green coloured. In these deformed sections the host rock is not always easy to determine. The probable grain size reduction also results in a darker rock colour, and in a few cases it is even difficult to determine from BIPS whether the host rock is an oxidized amphibolite or a metagranite-granodiorite. This becomes a problem towards the end of the boreholes where both rock types occur mixed in the drill cutting samples. Therefore some misinterpretations should be accounted for.

Thin bands, veins or segregates of felsic rocks were commonly observed in the BIPS-images, but were often very difficult to recognize in the drill cutting samples. The classification of these rock occurrences was therefore mainly based on observations in the BIPS-images.

When BIPS-images were not available, i.e. at the upper, cased part of the boreholes, rock classification was based on the observations of drill cuttings only. Therefore the exact positions of rock contacts are not certain.

### 4.2.6 Grain size

Classification of grain size can be difficult, especially for minor rock occurrences. If the mineralogy of the rock type in question does not differ from the dominating rock in which it is included, it may be difficult to separate the two lithologies in the fine-grained drill cutting samples. When the rock is composed of minerals of similar colours, the grain size can be overestimated when relying too much on the BIPS-images, since single grains are hard to distinguish.

Also classification of grain size in the drill cuttings can be treacherous. During drilling the rock has a tendency to break up through individual grains and not along grain boundaries, making the rock look more fine-grained in the drill cuttings than it actually is. This phenomenon is typical for the metagranite-granodiorite in the candidate area.

### 4.2.7 Brittle-ductile deformational structures

Brittle-ductile deformational structures were frequently indicated in the drill cuttings. Singular grains show elongation and the deformation is probably also characterized by grain size reduction. Thin, light green bands with aphanitic grains occur and they are interpreted as thin brittle-ductile shear zones.

Due to the fine grain size of the rock types the deformation is usually not noticeable in BIPS, unless greenish, thin, brittle ductile shear bands or fragments from cataclastic deformation occur. It is also not possible to determine for certain from the BIPS-image, whether these greenish bands are brittle-ductile shear zones or sealed fractures, and therefore some misinterpretations may occur.

Sections with deformation recognizable in the drill cuttings but not in the BIPS-image are mapped as weak brittle-ductile shear zones. If brittle-ductile deformation or cataclasis also is evident in the BIPS-image, the intensity is marked as medium or strong.

Orientation of linear and curved structures cannot be measured with the Boremap software. Therefore no measurements of the lineation were made.

Classification of structural character of minor rock occurrences was generally not possible.

### 4.2.8 Supporting data in Boremap-mapping

Data from the investigation of drill-cuttings (Appendix 14) were used to support the mineralogical classification and the extent of secondary alteration or deformation in lithological units observed in the BIPS-image.

The drilling penetration rate was used as complementary data for the geological interpretation (Appendix 12). For example, major anomalies in the drilling penetration rate increase correlated well with crush zones.

BIPS-images were also compared with the drill cores from the boreholes KFM03A and some parts of KFM04A, located at drill sites DS3 and DS4 (Figure 2-1). The complete core from borehole KFM03A (100–1000 m) was available on roller tables during the Boremap mapping.

After the Boremap mapping of HFM09–12 was completed, geophysical logging of the boreholes was performed (Appendix 13). The new information from the geophysical logs was then used to revise the Boremap mapping. Silica density is good for separating

dark coloured tonalites from amphibolites, while natural gamma radiation is good for recognizing younger granitic occurrences.

P-reports of the bedrock mapping in Forsmark /1, 2/ were also helpful when interpreting the lithologies, as well as discussions with Mike Stephens (SGU) and Jesper Petersson (SwedPower).

## 4.3 Data handling

The mappings of drill cuttings of HFM09–12 were performed on-line on SKB's network, while the Boremap mappings of HFM09–12 were performed on a local computer disk at Geosigma, Uppsala. After each break exceeding 15 minutes, a back up file was saved on Geosigma's network. When the mapping was finished and quality checked by the author, the data was submitted to SKB.

Quality of mapping data was also checked by a routine with a series of logical tests by the Boremap software before saving and exportation to SICADA.

All data both from the Boremap mapping and the investigation of drill cuttings, are stored in the SKB SICADA database under field note no Forsmark 223.

# 5 Results

Geology of the four percussion drilled boreholes HFM09–12 corresponds well with the geology in outcrops at and around drill site DS4 and the Eckarfjärden deformation zone, documented during regional and detailed bedrock mapping /1, 2/.

Results from the Boremap mapping are briefly described in Sections 5.1–5.4 below, and graphical presentations of the data are given in Appendices 1–8 (BIPS- and WellCad-images). Equal area stereo diagrams showing fractures and other deformational structure planes are shown in Appendix 9.

### 5.1 HFM09

### Lithologies

The dominant rock type of HFM09 is a fine-grained, very dark coloured metatonalite to granodiorite (77.2%). A foliated, fine grained amphibolite (10.6%), which usually seems slightly banded, is also observed frequently in the borehole. 8.7% of the borehole consists of aplitic granite, 2% of felsic to intermediate volcanic rock and 1.5% of pegmatite.

The orientation of the banding is  $\sim 135^{\circ}/80^{\circ}$  (3 measurements). The foliation is mostly observed in the drill cuttings.

### Fractures

The open fracture frequency of HFM09 is calculated to ~0.9 fractures/m from BIPS-images (17–49.8 m). No section rich in open fractures was observed. Two open fracture sets were documented having the orientations  $230^{\circ}/80^{\circ}$  and  $050^{\circ}/15^{\circ}$ . Three sets of sealed fractures occur with the orientations  $005^{\circ}/10^{\circ}$ ,  $235^{\circ}/85^{\circ}$  and  $125^{\circ}/80^{\circ}$ . The orientations of fractures are shown in Appendix 9.

Two sub-horizontal crush zones were observed, at 22.3-23.1 m and at 25.8-27.3 m. The exact strike of these crush zones are uncertain, but it is within the range  $355^{\circ}-55^{\circ}$ .

### 5.2 HFM10

### Lithologies

The dominant rock type of HFM10 is the same fine-grained, very dark, metatonalite to granodiorite (71.2%) as in HFM09 followed by a foliated, fine-grained amphibolite (12.3%). Metagranite to granodiorite may comprise as much as 9.2% of the borehole. 4.8% of the borehole consists of aplitic granite, 1.8% of pegmatite, and only 0.7% of fine-grained, foliated to banded, felsic to intermediate rock of possibly volcanic origin.

Probable foliation is usually observed in the drill cuttings from the lower part of the borehole, where also some aphanitic greenish grains are found. They are probably a result from deformation. The orientation of banding is  $\sim 130^{\circ}/75^{\circ}$ , whereas the orientation of foliation is  $\sim 200^{\circ}/75-90^{\circ}$ .

### Fractures

The frequency of open fractures of HFM10 has been calculated to ~0.7 fractures/m from the BIPS images (11.8–149.6 m). One section rich in open fractures was observed; 66.0-66.6 m has 8.3 fractures/m. Three open fracture sets were observed. The orientations of these are  $050^{\circ}/10^{\circ}$ ,  $130^{\circ}/75^{\circ}$  and  $230^{\circ}/85^{\circ}$ . Also three sets of sealed fractures were observed;  $230^{\circ}/85^{\circ}$ ,  $225^{\circ}/05^{\circ}$  and  $130^{\circ}/75^{\circ}$ , showing similar trends as the open fractures. Fracture orientations are shown in Appendix 9.

One densely fractured section striking ~ $240^{\circ}/90^{\circ}$  was observed at 67.4–67.7 m borehole length.

### 5.3 HFM11

### Lithologies

Dominant rock type is metagranite to granodiorite (65.1%), followed by amphibolite (21.9%), pegmatite (6.9%) and aplitic granite (4.6%). The mapped rock type proportion is only approximate (see Chapter 4.2.5 in this report). About 1% of the borehole length consists of an unknown rock type, possibly metagranite-granodiorite-tonalite (code 101051). This rock type is dark grey to dark greenish grey and looks massive in BIPS. The silica density implies a granitic composition.

### Deformational structures

Brittle-ductile deformation in HFM11 is observable at 107.0-162.3 m. Medium to strong cataclastic deformation is observed in the intervals 107.0-115.0 m, 117.3-120.2 m, 130.9-131.9 m, 138.8-149.0 m and 156.2-158.0 m. The orientation of banding is inferred to be  $130^{\circ}/60^{\circ}$ , whereas the foliation is inferred to be  $150^{\circ}/80-90^{\circ}$  (also overturned; based on very few observations). The orientations of mapped brittle-ductile shear zones vary too much for determination of the dominating orientation of the deformation. Also the orientations of the upper contacts of deformed rock sections are scattered. Possible dominating orientations are  $140^{\circ}/65-70^{\circ}$ ,  $180^{\circ}/70^{\circ}$  and  $105^{\circ}/65^{\circ}$ .

### Fractures

The frequency of open fractures in HFM11 was calculated to ~0.6 fractures/m (12.0–182.0 m). One section with 5.8 open fractures/m was observed between 36.0 and 37.2 m. Four dominating open fracture sets were observed having the orientation  $200^{\circ}/50^{\circ}$ ,  $305^{\circ}/80^{\circ}$ ,  $215^{\circ}/80^{\circ}$  and  $130^{\circ}/35^{\circ}$ . The orientation of mapped open fractures in the Eckarfjärden deformation zone varies and the total amount of fractures is too small to make confident judgements about the orientations. Indications of sub-horizontal (5–20° dip) fractures in the zone occur.

The dominating orientations of sealed fractures are 125°/85° and 220°/75°. Also some horizontal to sub-horizontal sealed fractures can be observed. The orientations of fractures are shown in Appendix 9.

No crush zones were observed.

### 5.4 HFM12

### Lithologies

Dominant rock type is metagranite to granodiorite (54.8%), followed by amphibolite (21.7%), pegmatite (13.6%) and aplitic granite (9.2%). About 2.2% of the borehole consist of a possible ultra mafic rock, while 0.7% of the borehole consist of a possible granite-granodiorite-tonalite (code 101051), the same unknown rock type that was observed in HFM11. The mapped rock type proportions are only approximate (see Chapter 4.2.5 in this report).

### Deformational structures

Brittle-ductile deformation in HFM12 is observable between 92.2 and 168.9 m. Medium to strong cataclastic deformation is observed in the intervals 106.3–108.7 m and 109.9–115.8 m. The orientation of banding is inferred to be  $130^{\circ}/80^{\circ}$ , whereas the foliation is inferred to be  $110^{\circ}/90^{\circ}$  (one observation).

Brittle-ductile shear zones strike ~ $125^{\circ}/80-90^{\circ}$  (also overturned), two observed breccias strike ~ $135^{\circ}/80^{\circ}$  and a possible mylonite that strikes  $140^{\circ}/35^{\circ}$ . Also the upper contacts of deformed rock sections are orientated almost parallel with the observed brittle-ductile shear zones, namely in  $125^{\circ}/85^{\circ}$  (also overturned). This indicates a transposition of earlier bedding/rock contacts.

### Fractures

The frequency of open fractures in HFM12 is calculated to ~0.9 fractures/m (15.0–208.6 m). Two sections rich in open fractures were observed: 38.6-39.6 m (12 open fractures/m) and at 202.0–202.5 m (16 open fractures/m). One dominating set of open fractures was observed. The orientation of this is  $130^{\circ}/90^{\circ}$ . A subordinate set of open fractures has the orientation  $325^{\circ}/35^{\circ}$ . The orientation of mapped open fractures in the Eckarfjärden deformation zone is scattered. Possible fracture orientations occurring in the zone but not outside are ~ $350^{\circ}/45^{\circ}$  and ~ $290^{\circ}/25^{\circ}$ . One dominating set of sealed fractures is observed and it is parallel to the dominating set of open fractures, having the orientation  $125^{\circ}/85^{\circ}$ . Also some horizontal to sub-horizontal sealed fractures occur. The orientations of fractures are shown in Appendix 9.

No crush zones were observed.

# 5.5 Discussion

From the above described working procedures, it is understood that Boremap mapping of percussion drilled boreholes suffers from certain shortcomings compared to the corresponding method for core drilled boreholes. For example, classification of thin fractures as open or sealed, classification of fracture minerals and identification of the colour and grain size of minor rock occurrences are clearly problematic.

The pixel resolution of the BIPS-image is not good enough for making confident judgements of structures of fine- and medium-grained rock types. If better knowledge of the structures is required, the author suggests that a core drilled borehole should be drilled through the same structures as the percussion drilled ones. A comparison with the BIPS-images and the core would be helpful in interpreting the BIPS-images from the percussion drilled boreholes.

The sampling frequency of drill cuttings (one sample per metre, stored in each sampling box) enhances the possibility of making confident judgements of the mineralogical composition of rocks along the borehole, compared to earlier methods (where three samples were stored together on each other in each sampling box). The delay of drill cuttings for most of the material does not seem to be more than 1 m even towards the end of the boreholes. On the other hand the mixing of cuttings, representing a wider depth range, is greater than in the upper part of the borehole.

Geophysical data were a good help in interpreting the rock types, and some reinterpretations were made when the geophysics were compared with the first Boremap mapping of HFM09–12. For example, all ultra mafic rocks in the mappings were interpreted much on the basis of the geophysical data.

Still, geophysics does not solve all the problems with classifying rock types. In some sequences when the author interpreted a cataclastic mixture of metagranite to granodiorite and amphibolite, the geophysics indicated a silica density that is between the densities for these two rock types. Neither geophysics nor the observation of drill cuttings can easily separate different fine- or medium-grained granitic rocks from each other, for example, the metagranite to granodiorite (code 101057) from the granite-granodiorite-tonalite (code 101051). This separation has to be done on the basis of the BIPS-image.

The mapping also benefits from synchronous analysis of supporting data from the drilling, such as penetration rate and the colour of the out coming water. Furthermore, observations of drill cores and outcrops from the drill site can be of important value.

# 6 References

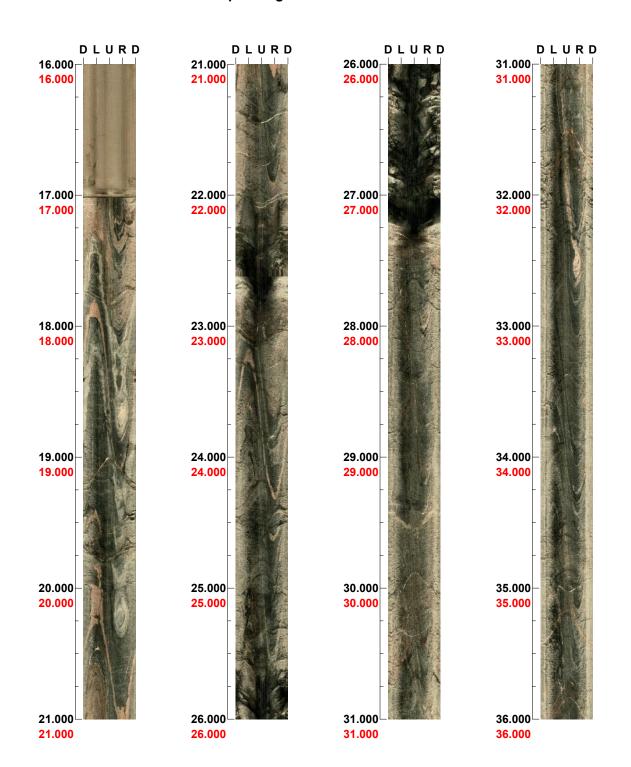
- /1/ Stephens M B, Lundqvist S, Bergman T, Andersson J, Ekström M, 2003. Forsmark site investigation. Bedrock mapping – Rock types, their petrographic and geochemical characteristics, and a structural analysis of the bedrock based on Stage 1 (2002) surface data. SKB P-03-75. Svensk Kärnbränslehantering AB.
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# BIPS-images of HFM09

# Project name: Forsmark

Image file	: c:\304095~1\bips-b~1\skbhfm09.bip			
BDT file	: c:\304095~1\bips-b~1\skbhfm09.bdt			
Locality	: FORSMARK			
Bore hole number	: HFM09			
Date	: 03/09/04			
Time	: 11:15:00			
Depth range	: 16.000 - 49.786 m			
Azimuth	: 141			
Inclination	: -68			
Diameter	: 141.0 mm			
Magnetic declination	: 0.0			
Span	: 4			
Scan interval	: 0.25			
Scan direction	: To bottom			
Scale	: 1/25			
Aspect ratio	: 90 %			
Pages	: 2			
Color	: <b></b> +0 +0			

Azimuth: 141 Inclination: -68



#### Depth range: 16.000 - 36.000 m

(1/2)

Scale: 1/25

Azimuth: 140

Inclination: -67



#### Depth range: 36.000 - 49.786 m

(2/2) Scale: 1/25

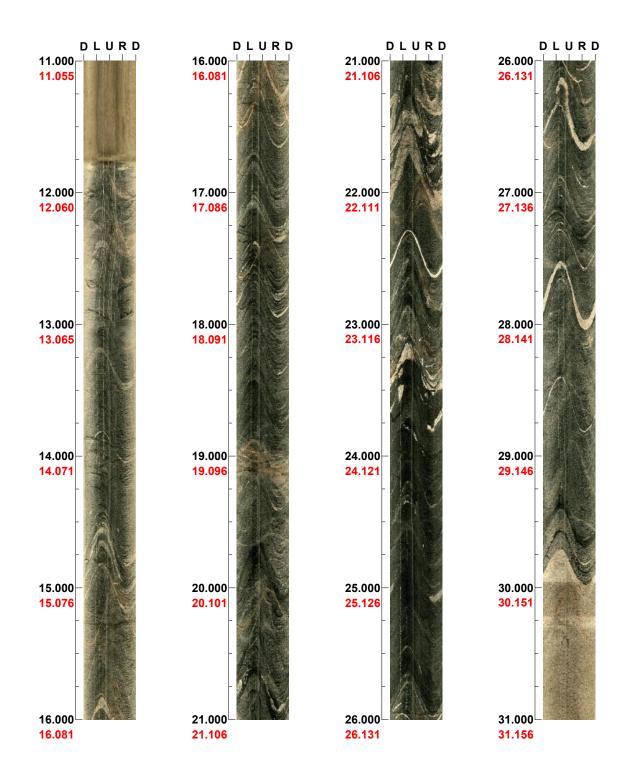
# BIPS-images of HFM10

# Project name: Forsmark

Image file	: c:\304095~1\bips-b~1\hfm10.bip
BDT file	: c:\304095~1\bips-b~1\hfm10.bdt
Locality	: FORSMARK
Bore hole number	: HFM10
Date	: 03/08/29
Time	: 19:46:00
Depth range	: 11.000 - 148.890 m
Azimuth	: 96
Inclination	: -70
Diameter	: 140.0 mm
Magnetic declination	: 0.0
Span	: 4
Scan interval	: 0.25
Scan direction	: To bottom
Scale	: 1/25
Aspect ratio	: 90 %
Pages	: 7
Color	: <b></b> +0 +0

Azimuth: 96

#### Inclination: -70



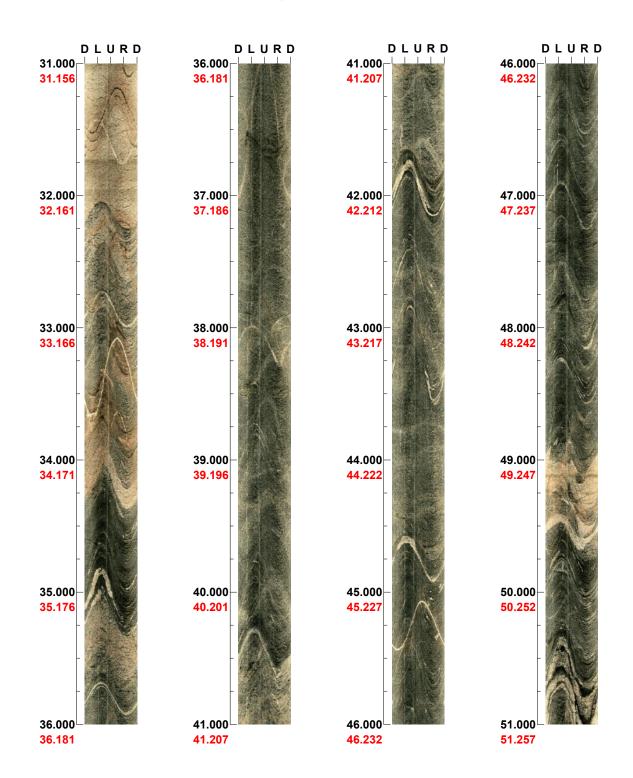
### Depth range: 11.000 - 31.000 m

(1/7)

Scale: 1/25

Azimuth: 100 In

Inclination: -70

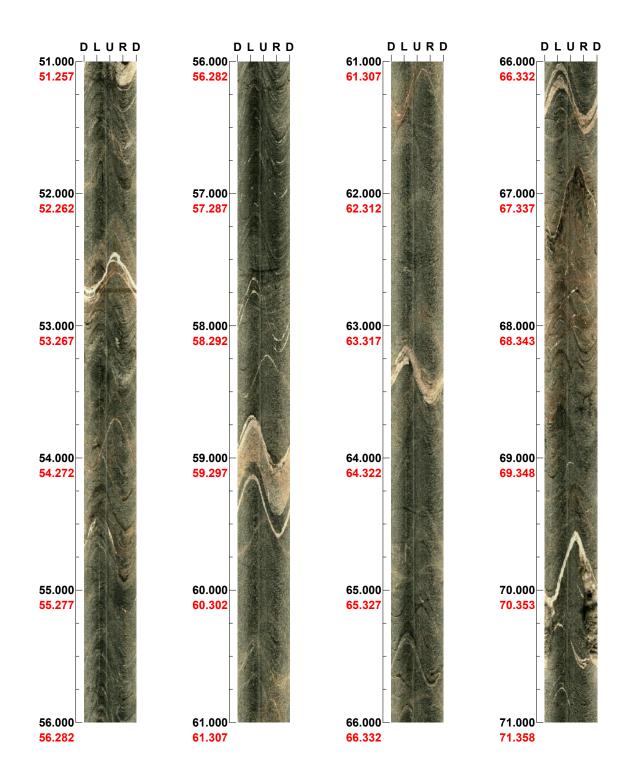


### Depth range: 31.000 - 51.000 m

(2/7)

Scale: 1/25

Azimuth: 110 Inclination: -69



### Depth range: 51.000 - 71.000 m

(3/7)

Scale: 1/25

Azimuth: 115 Inclination: -69

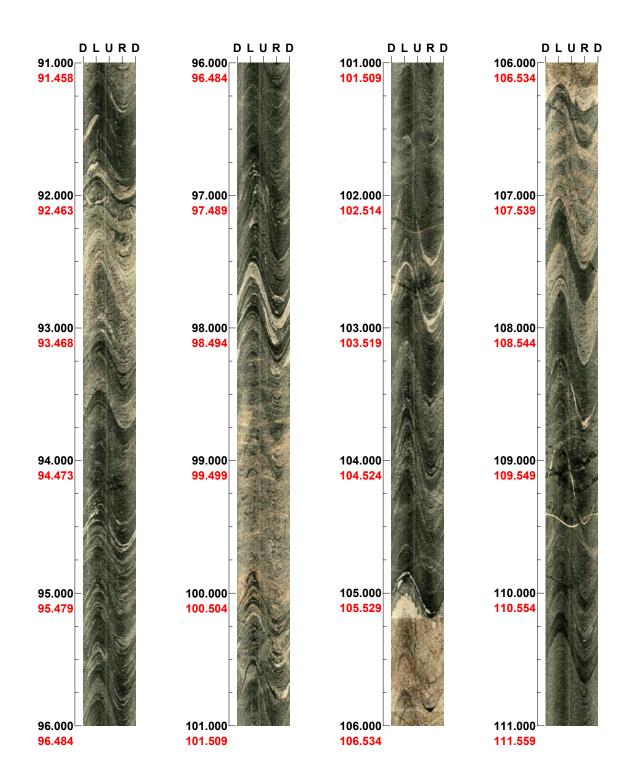


### Depth range: 71.000 - 91.000 m

(4/7)

Scale: 1/25

Azimuth: 118 Inclination: -67

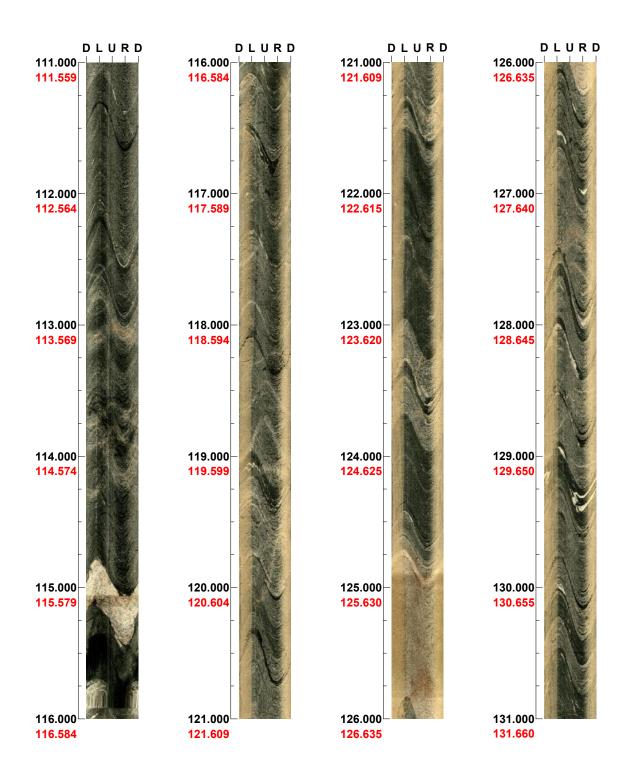


#### Depth range: 91.000 - 111.000 m

(5/7)

Scale: 1/25

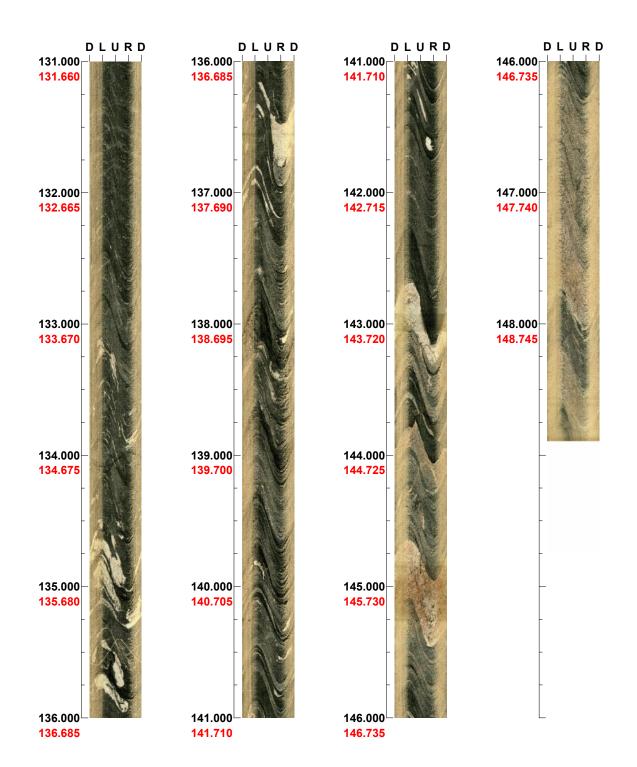
Azimuth: 123 Inclination: -66



### Depth range: 111.000 - 131.000 m

(6/7) Scale: 1/25

Azimuth: 128 Inclination: -66



### Depth range: 131.000 - 148.890 m

(7/7)

Scale: 1/25

# BIPS-images of HFM11

# Project name: Forsmark

Image file	: c:\304095~1\bips-b~1\hfm11.bip
BDT file	: c:\304095~1\bips-b~1\hfm11.bdt
Locality	: FORSMARK
Bore hole number	: HFM11
Date	: 03/10/23
Time	: 15:10:00
Depth range	: 11.000 - 181.323 m
Azimuth	: 64
Inclination	: -48
Diameter	: 139.0 mm
Magnetic declination	: 0.0
Span	: 4
Scan interval	: 0.25
Scan direction	: To bottom
Scale	: 1/25
Aspect ratio	: 90 %
Pages	: 9
Color	: <b></b> +0 +0

Azimuth: 64





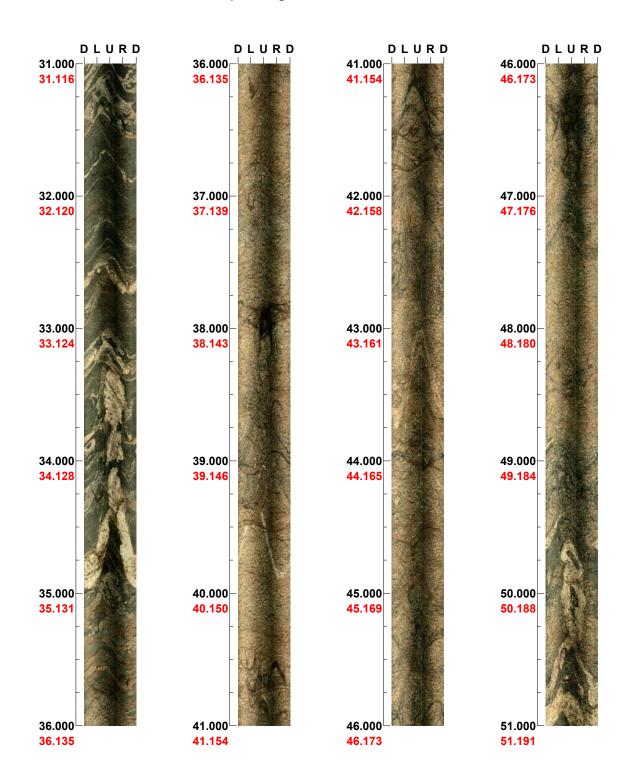
### Depth range: 11.000 - 31.000 m

(1/9)

Scale: 1/25

Azimuth: 65

**Inclination: -48** 



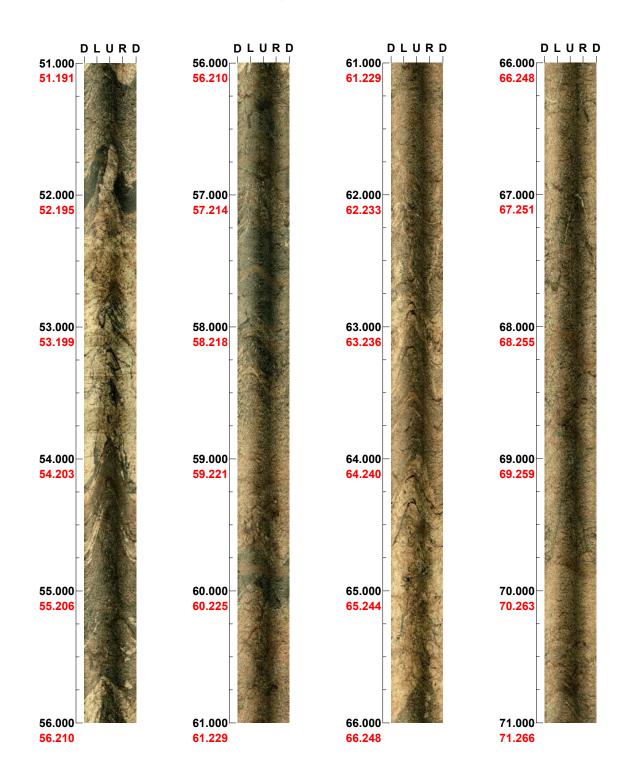
### Depth range: 31.000 - 51.000 m

(2/9)

Scale: 1/25

Azimuth: 68

#### Inclination: -47



### Depth range: 51.000 - 71.000 m

(3/9)

Scale: 1/25

Azimuth: 69

Inclination: -46



#### Depth range: 71.000 - 91.000 m

(4/9) Scale: 1/25

Azimuth: 69

#### Inclination: -44



### Depth range: 91.000 - 111.000 m

(5/9)

Scale: 1/25

Azimuth: 71 In

Inclination: -43

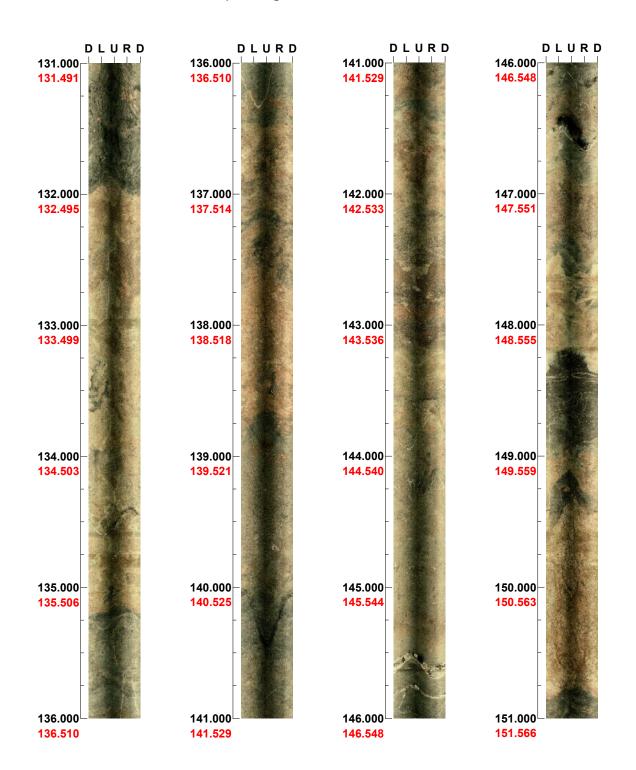


### Depth range: 111.000 - 131.000 m

(6/9) Scale: 1/25

Azimuth: 70 Incli





### Depth range: 131.000 - 151.000 m

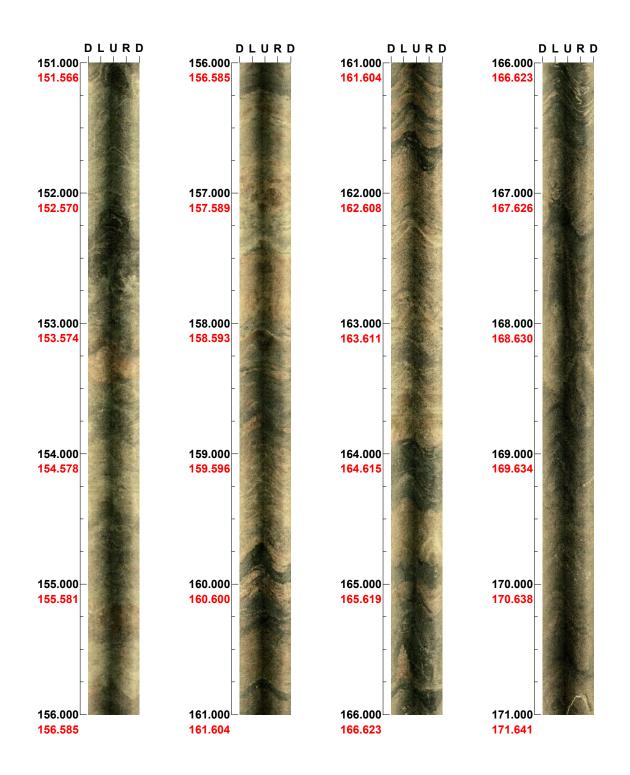
(7/9)

Scale: 1/25



Azimuth: 69 Incl

Inclination: -38



#### Depth range: 151.000 - 171.000 m

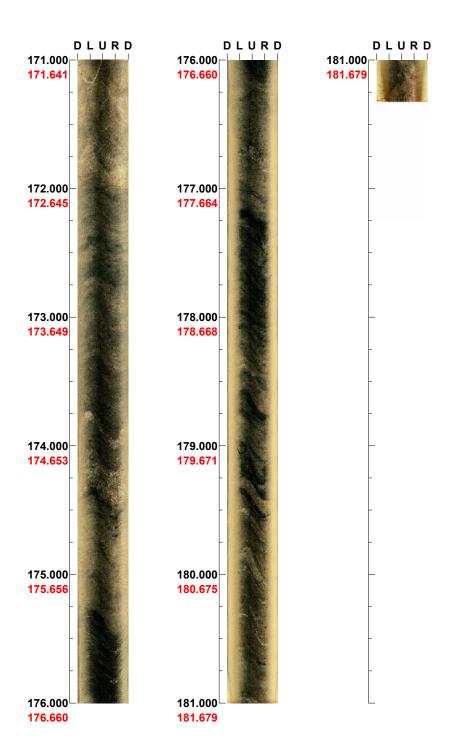
Scale: 1/25

Aspect ratio: 90 %

(8/9)

Azimuth: 69

Inclination: -36



#### Depth range: 171.000 - 181.323 m

(9/9)

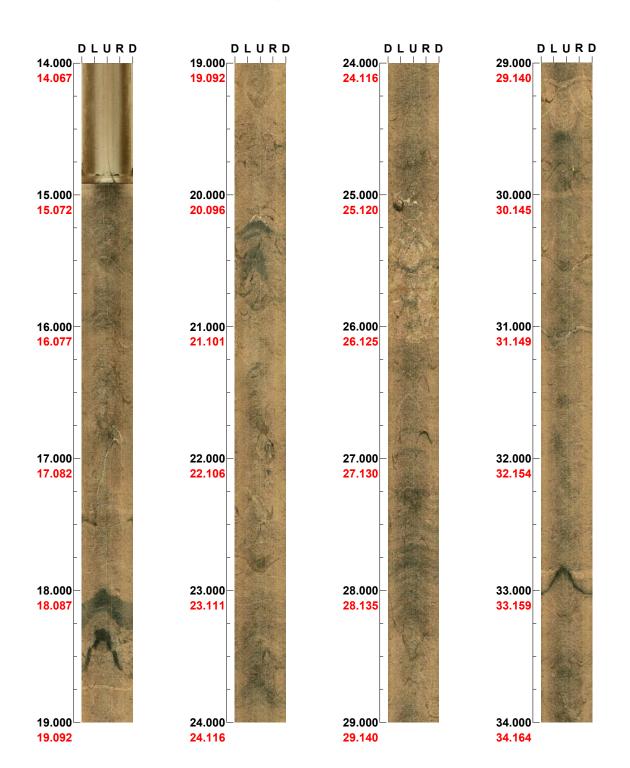
Scale: 1/25

# BIPS-images of HFM12

## Project name: Forsmark

Image file	: c:\304095~1\bips-b~1\hfm12.bip
BDT file	: c:\304095~1\bips-b~1\hfm12.bdt
Locality	: FORSMARK
Bore hole number	: HFM12
Date	: 03/10/22
Time	: 15:02:00
Depth range	: 14.000 - 207.604 m
Azimuth	: 244
Inclination	: -49
Diameter	: 137.0 mm
Magnetic declination	: 0.0
Span	: 4
Scan interval	: 0.25
Scan direction	: To bottom
Scale	: 1/25
Aspect ratio	: 90 %
Pages	: 10
Color	: <b></b> +0 +0

Azimuth: 244 Inclination: -49



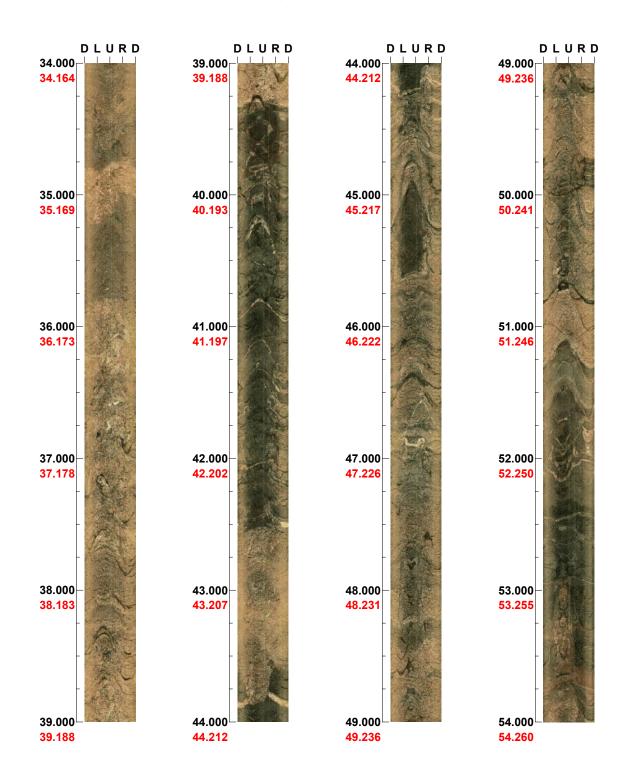
#### Depth range: 14.000 - 34.000 m

(1/10)

Scale: 1/25

Azimuth: 244 Incl

Inclination: -48



#### Depth range: 34.000 - 54.000 m

(2/10) Scale: 1/25

Azimuth: 244 Inclination: -46



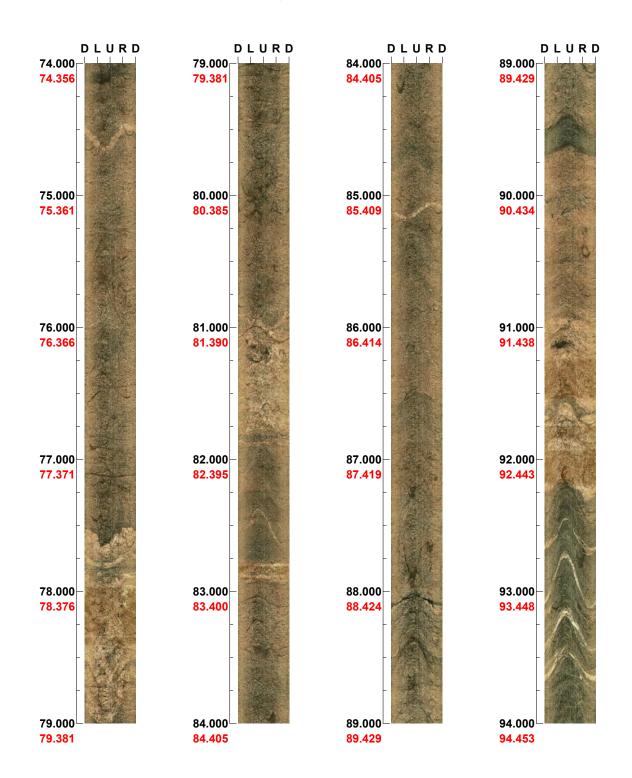
#### Depth range: 54.000 - 74.000 m

(3/10)

Scale: 1/25

Azimuth: 245 Inc

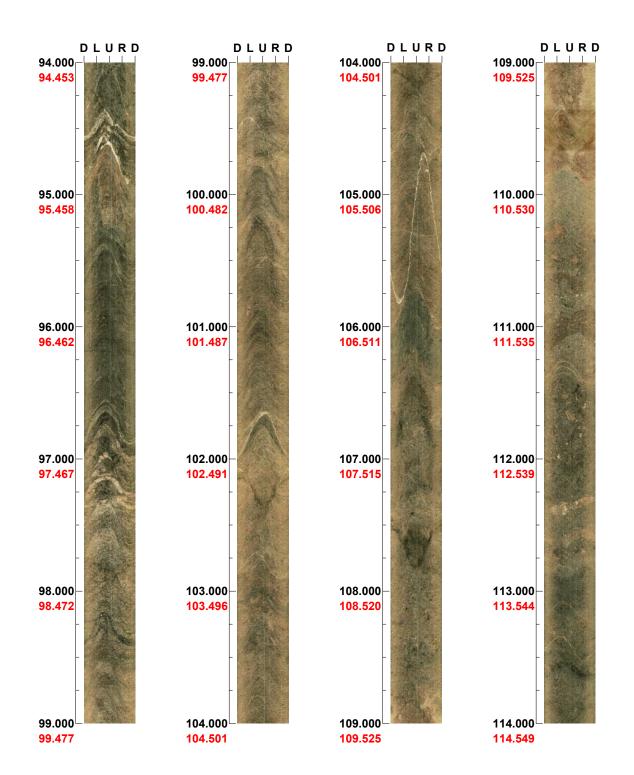
Inclination: -45



#### Depth range: 74.000 - 94.000 m

(4/10) Scale: 1/25

Azimuth: 244 Inclination: -45



#### Depth range: 94.000 - 114.000 m

(5/10)

Scale: 1/25

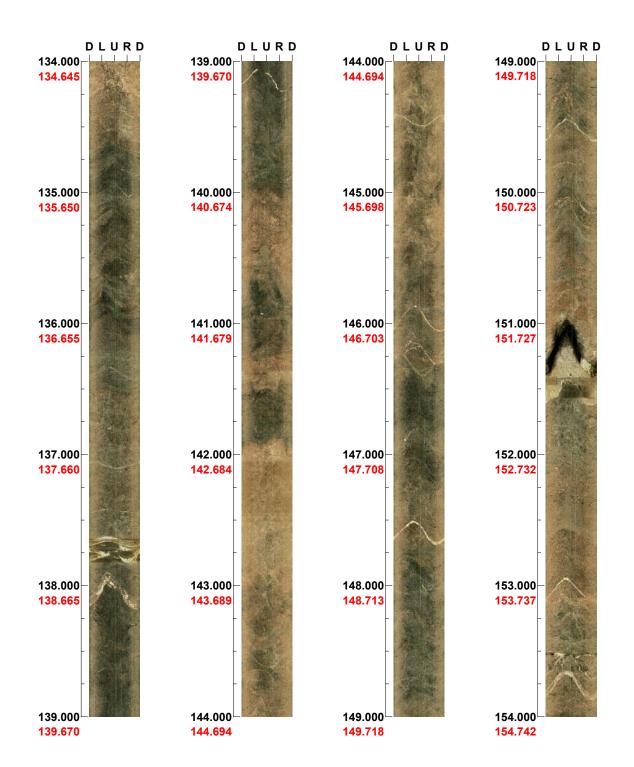
Azimuth: 244 Inclination: -43



## Depth range: 114.000 - 134.000 m

(6/10) Scale: 1/25

Azimuth: 245 Inclination: -42



## Depth range: 134.000 - 154.000 m

(7/10)

Scale: 1/25



Azimuth: 244 Inc

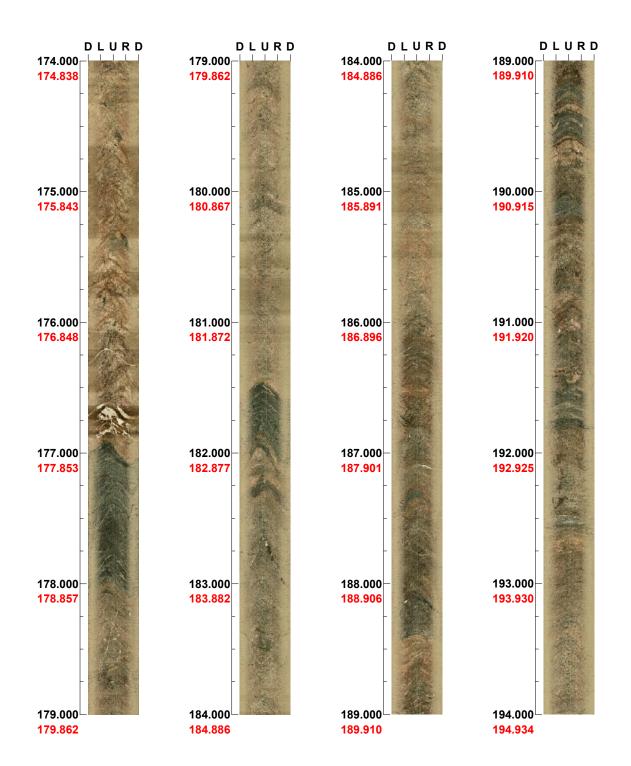
Inclination: -40



## Depth range: 154.000 - 174.000 m

(8/10) Scale: 1/25

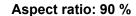
Azimuth: 244 Inclination: -38



### Depth range: 174.000 - 194.000 m

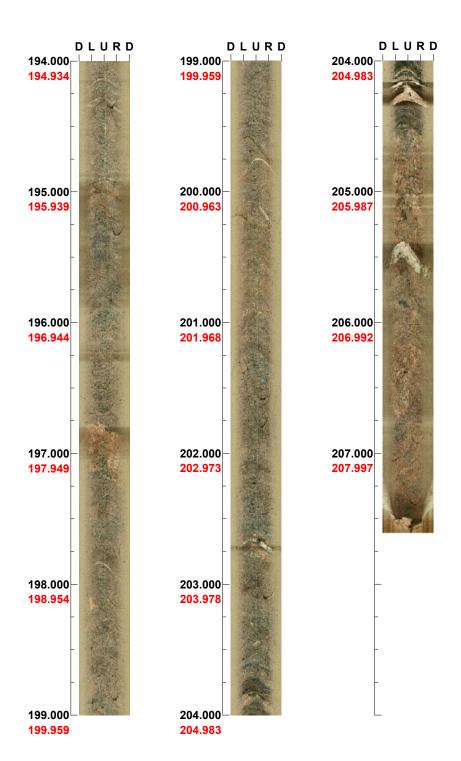
(9/10)

Scale: 1/25



Azimuth: 244 Ir

Inclination: -37



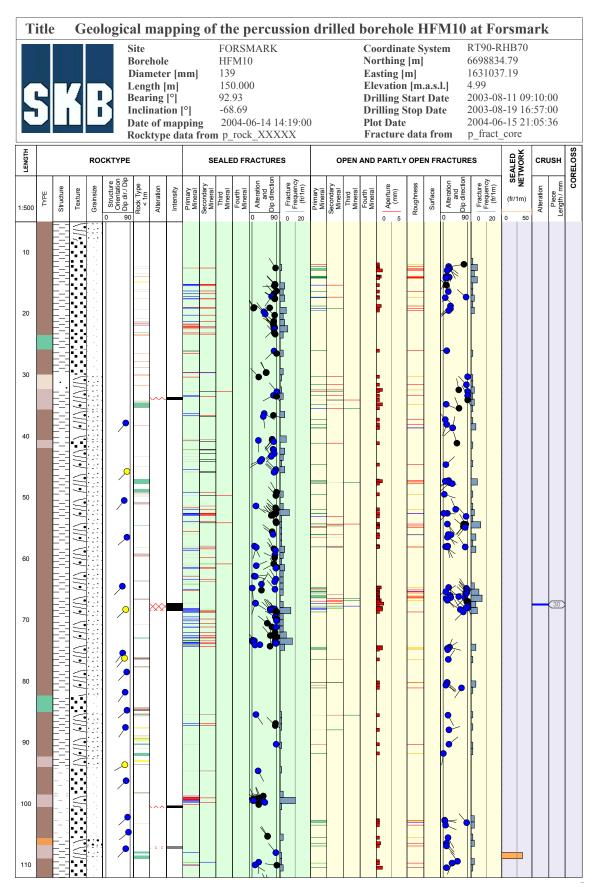
### Depth range: 194.000 - 207.604 m

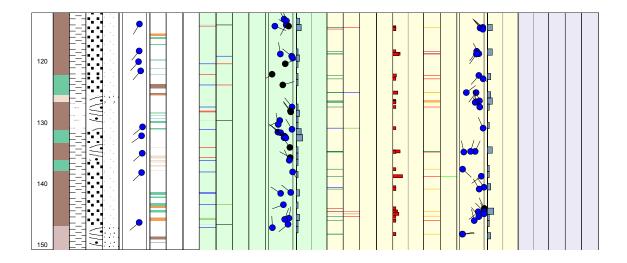
(10/10)

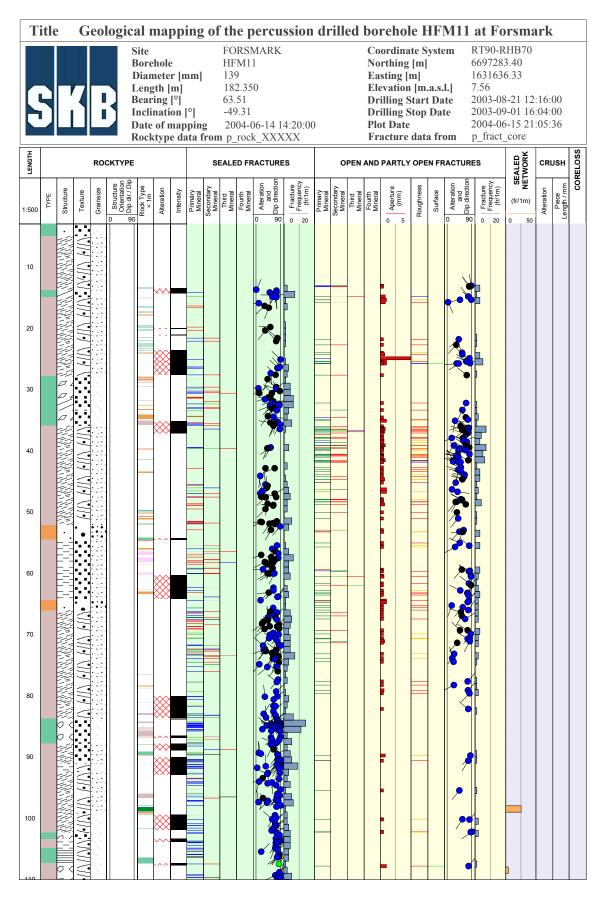
Scale: 1/25

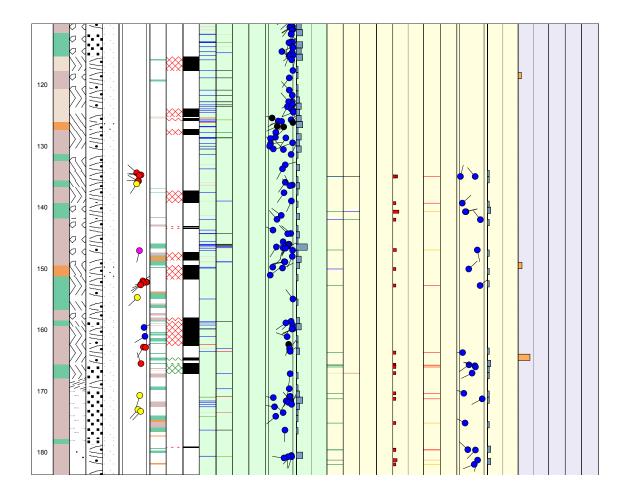
Title	LEGEND FOR F	ORSMARK	HF	M09-12		
S	K B Site Borehole Plot Date	FORSMARK HFM09-12 2004-08-26 21:02:06				
ROCKTYPE	FORSMARK		ROCK AL	TERATION	MINERA	L
G	ranite, fine- to medium-grained		$\boxtimes$	Oxidized		Calcite
P	egmatite, pegmatitic granite		$\boxtimes \boxtimes$	Chloritisized		Chlorite
G	ranitoid, metamorphic			Epidotisized		Unknown
	ranite, granodiorite and tonalite, meta	amorphic, fine- to medium-grained	$\boxtimes$	Weathered		
	ranite, metamorphic, aplitic		$\boxtimes$	Tectonized		
	ranite to granodiorite, metamorphic, i	medium-grained		Sericitisized		
	ranodiorite, metamorphic			Quartz dissolution		
	onalite to granodiorite, metamorphic			Silicification		
	iorite, quarts diorite and gabbro, meta ltramafic rock, metamorphic	amorphic		Argillization		
	mphibolite			Albitization		
	alc-silicate rock (skarn)			Carbonatization		
	lagnetite mineralization associated wit	th calc-silicate rock (skarn)		Saussuritization Steatitization		
	ulphide mineralization	(, , ,		Uralitization		
	elsic to intermediate volcanic rock, me	etamorphic	00000000	Clandzation		
М	lafic volcanic rock, metamorphic	•				
Se	edimentary rock, metamorphic					
STRUCTUR	RE STRUCTUR	E ORIENTATION	INTENSI	ГҮ	FRACTL	JRE ALTERATION
00 C	Cataclastic O Ca	ataclastic		No intensity	,	
//// S	chistose			Faint	Ó	Fresh
*•*• G	aneissic 🗸 Be	dded		Weak		
	Iylonitic			Medium	Ó	Gouge
D D	Ouctile Shear Zone	neissic		Strong		
В	Brittle-Ductile Zone	leissie	ROUGHN	IESS	•	Completely Altered
🖂 v	/eined			Planar		
B	anded Sci	histose		Undulating	6	Highly Altered
	Iassive			Stepped		
F	oliated Br	ittle-Ductile Shear Zone		Irregular	4	Moderately Altered
	Brecciated		SURFAC	E	•	niouciucity intereu
	ineated 🖉 Du	actile Shear Zone		Rough	4	Slightly Altered
	Iornfelsed /			Smooth	•	Sugnuy Anereu
	orphyritic	neated		Slickensided		
	Dehitic /					
		unded	CRUSH /	ALTERATION	FRACTU	RE DIRECTION
	ugen-Bearing			Slightly Altered	STRUKT	URE ORIENTATION
	° ° ′	eined		Moderately Altered	Dip Dir	rection 0 - 360°
<	Ietamorphic			Highly Altered		0/360 °
GRAINSIZE	S Br	recciated		Completley Altered		
	phanitic			Gouge	270°-	
	ine-grained	liated		Fresh	2.0	
	ine to medium grained					T
	Iedium to coarse grained	ylonitic				180°
	oarse-grained	Jonate			Dip 0 ·	- 90 °
M	1edium-grained					

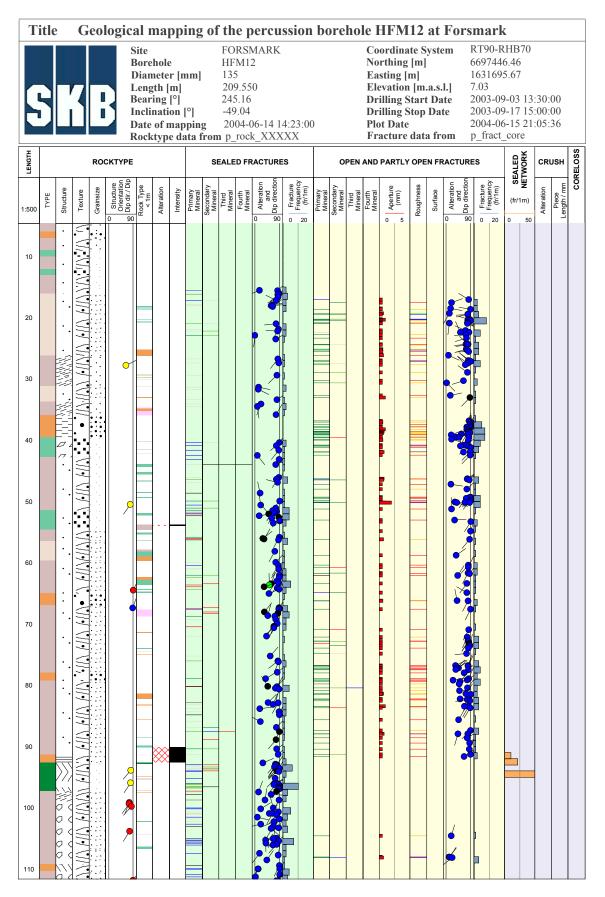
Ti	itle	e	G	eol	logic	al 1	naj	ppi	ing	of	'th	e p	ercu	ssi	on	dı	ill	ed	bo	reho	le I	łF	M09	) at	Fo	ors	ma	ırk		
			7	1		Dian Leng Bear Incli Date	FORSMARKCoordinate SystemreholeHFM09Northing [m]imeter [mm]141Easting [m]ogth [m]50.250Elevation [m.a.s.l.]iring [°]139.36Drilling Start Datelination [°]-68.89Drilling Stop Datee of mapping2004-06-14 14:18:00Plot Datektype data from p_rock_XXXXXFracture data from				HFM09 n] 141 50.250 139.36   -68.89 ing 2004-06-14 14:18:00			l.] ite te																
LENGTH				RO	ROCKTYPE SEALED FRACTURES					OPEN AND PARTLY OPEN FRACTURES				CORELOSS																
1:500	TYPE	Structure	Texture	Grainsize	O Structure Orientation Dip dir./ Dip	Rock Type < 1m	Alteration	Intensity	Primary Mineral	Secondary Mineral	Third Mineral	Fourth Mineral	G Alteration and Dip direction		C [fr/1m]	Primary Mineral	Secondary Mineral	Third Mineral	Fourth Mineral	o Aperture (mm)	Roughness	Surface	<ul> <li>Alteration and</li> <li>Dip direction</li> </ul>	o Fracture	Erequency (fr/1m)		/1m)	Alteration	Piece Length / mm	COF
10																														
20							~~																						40	
30			11/ 11/ 11/																										40	
40			1 111 111 111																											
50			· / / ·				~~~																•							

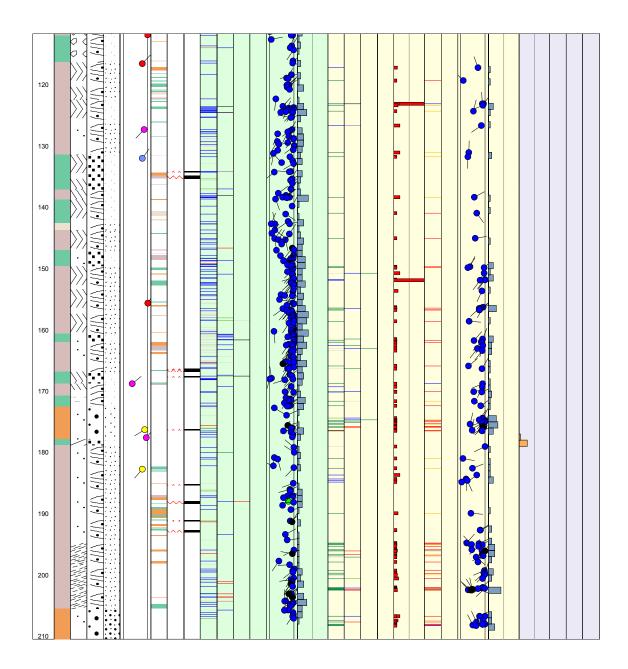




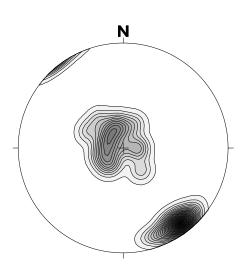






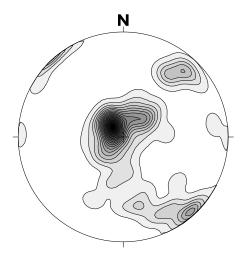


## Stereogram: fractures and other structures, HFM09-12

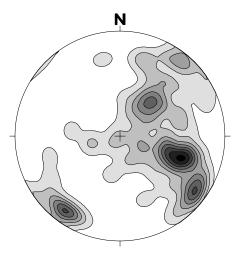


Open fractures

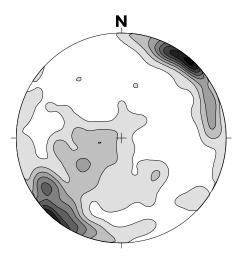
HFM09: Contoured pole to plane stereogram showing open fractures (N=31).



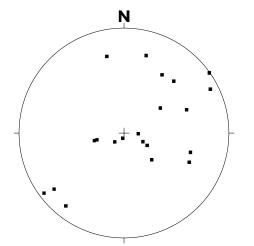
HFM10: Contoured pole to plane stereogram showing open fractures (N=94).



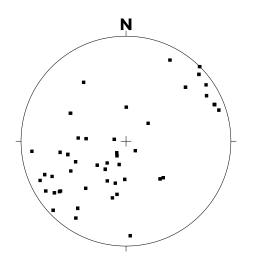
HFM11: Contoured pole to plane stereogram showing open fractures (N108).

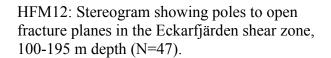


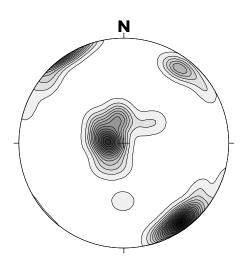
HFM12: Contoured pole to plane stereogram showing open fractures (N=183).



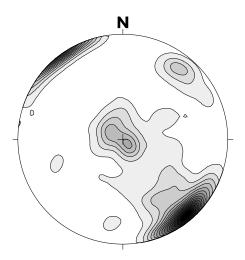
HFM11: Stereogram showing poles to open fracture planes in the Eckarfjärden shear zone, 105-180 m depth (N=21).



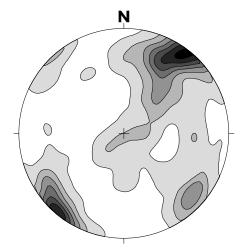




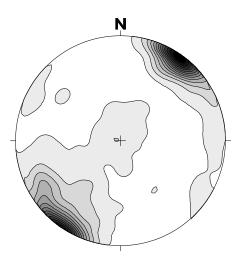
HFM09: Contoured pole to plane stereogram showing sealed fractures (N=77).



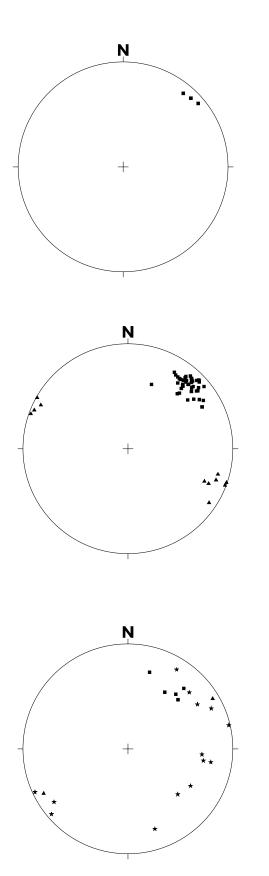
HFM10: Contoured pole to plane stereogram showing sealed fractures (N=202).



HFM11: Contoured pole to plane stereogram showing sealed fractures (N=404)



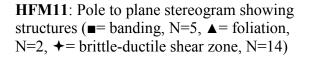
HFM12: Contoured pole to plane stereogram showing sealed fractures (N=447).

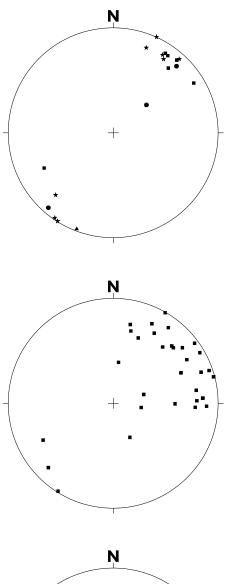


**Deformational structures** 

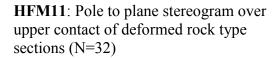
**HFM09**: Pole to plane stereogram showing structures (**=**=banding, N= 3)

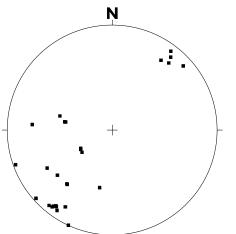
**HFM10**: Pole to plane stereogram showing structures ( $\blacksquare$ = banding, N=41,  $\blacktriangle$  = foliation, N=11).





**HFM12**: Pole to plane stereogram over structures ( $\blacksquare$ = banding, N=6,  $\blacktriangle$ = foliation, N=1,  $\bigstar$ = brittle-ductile shear zone, N=8,  $\bullet$ = breccia, N=2,  $\bullet$ = mylonite, N=1)





**HFM12**: Pole to plane stereogram over upper contact of deformed rock type sections (N=27)

## In data: Borehole length and diameter, HFM09-12

## Hole Diam T - Drilling: Borehole diameter

### HFM09, 2003-06-18 12:30:00 - 2003-06-30 09:00:00 (0.000 - 50.250 m)

Sub Secup (m)	Sub Seclow (m)	Hole Diam (m)	Comment
0.000	5.300	0.190	NOex190
5.300	17.000	0.190	
17.000	50.250	0.141	Real diam. at end is 0.1409

Printout from SICADA 2003-09-24 16:16:04.

## Hole Diam T - Drilling: Borehole diameter

HFM10, 2003-08-11 09:10:00 - 2003-08-19 16:57:00 (0.000 - 150.000 m)

Sub Secup	Sub Seclow	Hole Diam	Comment					
(m)	(m)	(m)						
0.000	4.500	0.219	NOEX 190 rör kvar i borrhål					
0.001	11.800	0.190						
11.800	110.000	0.140						
110.000	150.000	0.139						
Printout from SICADA 2003-10-20 16:23:13.								

## Hole Diam T - Drilling: Borehole diameter

HFM11, 2003-08-21 12:16:00 - 2003-09-01 16:04:00 (0.000 - 182.350 m)

Sub Secup	Sub Seclow	Hole Diam	Comment				
(m)	(m)	(m)					
0.000	3.100	0.235	Noex 190				
3.100	11.900	0.190					
11.900	110.200	0.140	139.9 mm				
110.000	158.350	0.139	139.3 mm				
158.350	182.350	0.139	138.8 mm				
Printout from SICADA 2003-10-20 16:25:44.							

## Hole Diam T - Drilling: Borehole diameter

### HFM12, 2003-09-03 13:30:00 - 2003-09-17 15:00:00 (0.000 - 209.550 m)

		Hole Diam	Comment				
(m)	(m)	(m)					
0.000	4.300	0.235	Noex190				
4.300	14.900	0.189					
14.900	110.000	0.138					
110.000	170.350	0.137					
170.350	209.550	0.135					
Printout from SICADA 2003-10-20 16:26:49.							

## In data: Deviation data for HFM09-12

# Magnetic Acc Dev T - Magnetic accelerometer deviation measurement

## HFM09, 2003-10-29 11:00:00 (21.000 - 51.000 m)

Bhlen (m)	Magnetic Bearing (degrees)	Dip Northing (degrees) (m)	Easting (m)	Elevation (m)	Locala (m)	Localb (m)	Localc (m)
21.00	141.8	-68.0					
24.00	139.7	-67.5					
27.00	141.6	-67.0					
30.00	140.0	-67.3					
33.00	139.4	-67.3					
36.00	139.3	-66.8					
39.00	139.4	-66.8					
42.00	139.0	-66.9					
45.00	139.7	-66.8					
48.00	139.6	-66.7					
51.00	139.5	-66.7					

Printout from SICADA 2003-12-01 13:40:37.

# Magnetic Acc Dev T - Magnetic accelerometer deviation measurement

HFM10, 2003-08-20 14:00:00 - 2003-08-20 15:00:00 (15.000 - 150.000 m)

Bhlen (m)	Magnetic Bearing (degrees)	Dip (degrees)	Northing (m)	Easting (m)	Elevation (m)	Locala (m)	Localb (m)	Localc (m)
15.00	96.7	-70.3						
18.00	96.9	-70.4						
21.00	110.9	-70.4						
24.00	100.8	-70.4						
27.00	102.3	-70.3						
30.00	102.3	-70.3						
33.00	106.8	-70.3						
36.00	105.3	-70.3						
39.00	106.8	-70.2						
42.00	108.0	-70.1						
45.00	109.6	-70.0						
48.00	111.3	-69.9						
51.00	110.8	-69.9						
54.00	111.9	-69.8						
57.00	114.8	-69.6						
60.00	112.9	-69.5						
63.00	114.1	-69.4						
66.00	118.0	-69.2						
69.00	115.3	-69.2						
72.00	113.3	-68.8						
75.00	113.4	-68.5						
78.00	116.2	-68.1						
81.00	116.1	-68.0						
84.00	116.4	-67.9						
87.00	118.1	-67.7						
90.00	118.8	-67.3						
93.00	119.6	-67.2						
96.00	120.6	-67.0						
99.00	121.9	-66.9						
102.00	123.0	-66.8						
	123.0	-66.6						
108.00	124.6	-66.4						

111.00	123.8	-66.2
114.00	124.6	-66.0
117.00	127.9	-66.3
120.00	128.6	-66.3
123.00	128.3	-66.1
126.00	135.0	-65.9
129.00	129.3	-65.8
132.00	128.6	-65.6
135.00	130.0	-65.4
138.00	129.3	-65.2
141.00	133.4	-64.9
144.00	130.7	-64.7
147.00	129.8	-64.5
150.00	130.5	-64.2

Printout from SICADA 2003-12-01 13:42:12.

# Magnetic Acc Dev T - Magnetic accelerometer deviation measurement

HFM11, 2003-11-26 10:30:00 - 2003-11-26 11:30:00 (15.000 - 182.000 m)

Bhlen (m)	Magnetic Bearing (degrees)	Dip (degrees)	Northing (m)	Easting (m)	Elevation (m)	Locala (m)	Localb (m)	Localc (m)
15.00	62.1	-48.3	( )	( )	( )	( )	( )	( )
18.00	62.6	-48.4						
21.00	63.0	-48.4						
24.00	62.8	-48.3						
27.00	63.9	-48.2						
30.00	63.6	-48.2						
33.00	65.7	-48.1						
36.00	65.5	-47.9						
39.00	64.7	-47.8						
42.00	65.6	-47.7						
45.00	66.1	-47.3						
48.00	68.0	-47.0						
51.00	66.6	-47.0						
54.00	66.9	-46.6						
57.00	67.7	-46.6						
60.00	67.9	-46.3						
63.00	67.5	-46.1						
66.00	66.7	-45.8						
69.00	68.4	-45.6						
72.00	68.5	-45.2						
75.00	68.3	-45.1						
78.00	68.0	-45.0						
81.00	68.6	-44.8						
84.00	68.2	-44.8						
87.00	68.0	-44.5						
90.00	68.3	-44.5						
93.00	68.4	-44.4						
96.00	68.5	-44.4						
99.00	68.8	-44.1						
102.00		-43.8						
105.00		-43.4						
108.00		-43.4						
111.00		-43.0						
114.00		-42.8						
117.00		-42.7						
120.00		-42.3						
123.00		-42.1						
126.00		-41.6						
129.00		-41.3						
132.00		-41.0						
135.00		-40.6						
138.00		-40.1						
141.00	07.4	-39.6						

144.00	68.1	-39.4
147.00	67.2	-38.9
150.00	66.6	-38.4
153.00	67.1	-38.0
156.00	66.6	-37.9
159.00	67.1	-37.6
162.00	67.0	-37.4
165.00	67.1	-37.0
168.00	67.1	-36.8
171.00	67.7	-36.6
174.00	66.9	-36.3
177.00	67.0	-36.0
180.00	67.1	-35.6
182.00	66.9	-35.5

Printout from SICADA 2003-12-02 18:36:14.

# Magnetic Acc Dev T - Magnetic accelerometer deviation measurement

## HFM12, 2003-10-16 15:00:00 (18.000 - 210.000 m)

Bhlen	Magnetic Bearing		Northing	Easting	Elevation	Locala	Localb (m)	Localc
<b>(m)</b> 18.00	(degrees) 244.4	(degrees) -49.0	(m)	(m)	(m)	(m)	(11)	(m)
21.00	244.5	-48.8						
24.00	244.3	-40.0 -48.6						
24.00	244.5	-48.0 -48.3						
30.00	244.5	-48.3 -48.0						
33.00	244.6	-47.8						
36.00	244.5	-47.5						
39.00	244.7	-47.4						
42.00	244.5	-47.2						
45.00	244.7	-47.0						
48.00	244.8	-46.9						
51.00	244.6	-46.8						
54.00	244.5	-46.5						
57.00	245.0	-46.4						
60.00	245.1	-46.2						
63.00	243.0	-46.1						
66.00	245.0	-46.0						
69.00	245.3	-45.9						
72.00	245.0	-45.8						
75.00	245.4	-45.7						
78.00	245.4	-45.6						
81.00	245.0	-45.5						
84.00	242.0	-45.3						
87.00	243.5	-45.3						
90.00	244.9	-45.3						
93.00	245.0	-45.0						
96.00	244.3	-44.9						
99.00	244.6	-44.8						
	244.5	-44.6						
	244.3	-44.3						
108.00	244.5	-43.9						
111.00	244.7	-43.6						
114.00	244.6	-43.3						
117.00	244.8	-43.1						
120.00	244.8	-42.7						
123.00	245.1	-42.3						
126.00	245.0	-42.1						
129.00	244.5	-41.9						
132.00	244.7	-41.5						
135.00	244.9	-41.4						
138.00		-41.0						
141.00		-40.8						
144.00		-40.5						

147.00 150.00 153.00	244.8 244.8 244.6	-40.4 -40.2 -40.2
156.00	244.9	-40.2
159.00		-39.9
162.00	245.1	-39.6
165.00	244.9	-39.3
168.00	244.9	-39.0
171.00	244.5	-38.7
174.00	244.5	-38.5
177.00	244.5	-38.3
180.00	244.4	-38.1
183.00	244.3	-37.9
186.00	244.6	-37.7
189.00	244.6	-37.4
192.00	244.5	-37.3
195.00	244.5	-37.3
198.00	244.8	-37.1
201.00	244.7	-37.0
204.00	245.0	-36.9
207.00	245.2	-36.8
210.00	244.9	-36.8

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In data: Drilling	penetration	rate,	HFM09-12
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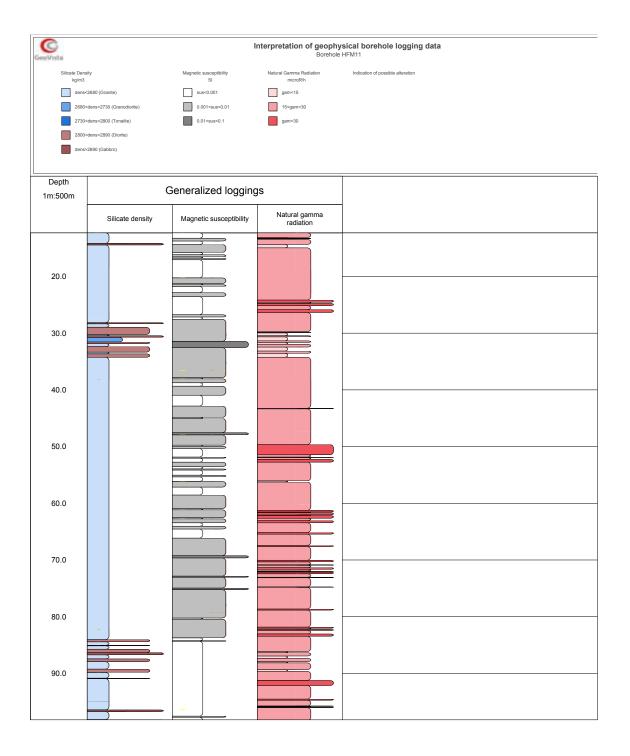
	HFM09	HFM10	HFM11	HFM12	APPENDIX 12
Depth 1m:500m	Penetration rate	rate	Penetration rate	Penetration rate (sec./20 cm)	
	(sec./20 cm)		(sec./20 cm)		
	0 5	0 0 50	0 0 50	0 50	Percussion drilling penetration rate with manual timing
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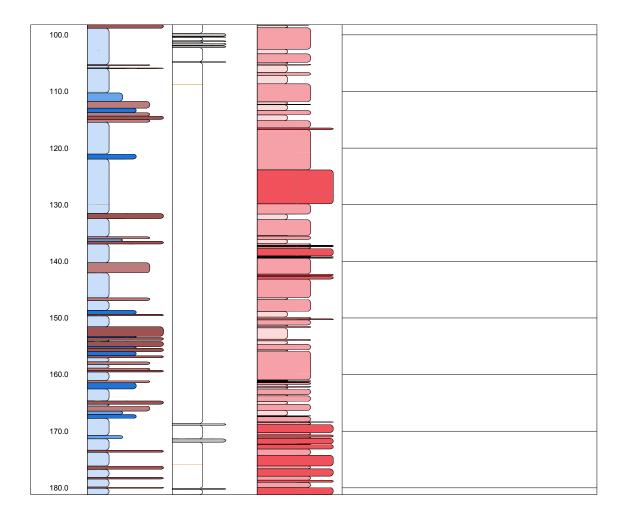
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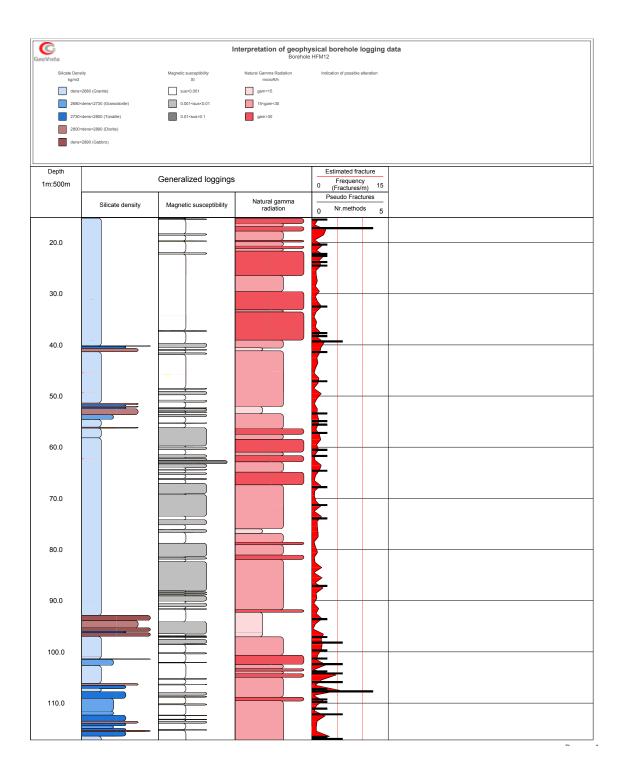
## In data: Geophysical logs, HFM10-12

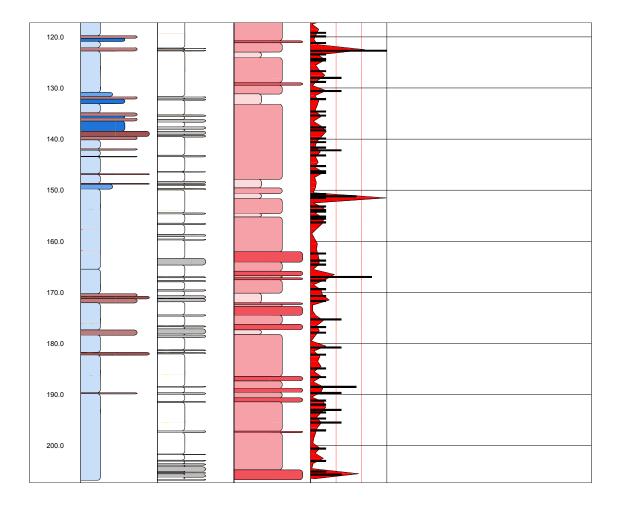
GeoVista		li	nterpretation of geoph Borehol	ysical borehole logging data e HFM10
Silicate Der	nsity	Magnetic susceptibility	Natural Gamma Radiation	Indication of possible alteration
kg/m3 SI dens<2680 (Granite) sus<0.001		microR/h gam<15		
	0 <dens<2730 (granodiorite)<="" td=""><td>0.001<sus<0.01< td=""><td>15<gam<30< td=""><td></td></gam<30<></td></sus<0.01<></td></dens<2730>	0.001 <sus<0.01< td=""><td>15<gam<30< td=""><td></td></gam<30<></td></sus<0.01<>	15 <gam<30< td=""><td></td></gam<30<>	
2730	0 <dens<2800 (tonalite)<="" td=""><td>0.01<sus<0.1< td=""><td>gam&gt;30</td><td></td></sus<0.1<></td></dens<2800>	0.01 <sus<0.1< td=""><td>gam&gt;30</td><td></td></sus<0.1<>	gam>30	
280	0 <dens<2890 (diorite)<="" td=""><td></td><td></td><td></td></dens<2890>			
dens	s>2890 (Gabbro)			
Depth 1m:500m		Generalized loggings		Estimated Fracture Frequency 30
			Natural gamma	Pseudo Fractures
	Silicate density	Magnetic susceptibility	Natural gamma radiation	0 Nr.methods 5
20.0				
30.0				
40.0				
50.0				
60.0				
70.0				
80.0				
90.0				
		<u> </u>		
100.0				
110.0				

120.0			
130.0			
140.0		-	









## Appendix 14

## Investigations of drill cuttings, HFM09-12

	<b>m to</b> - 5.1 - 6.3	Untreated drill cuttings sample Lightn. Chrom. Hue Grainsize 0; 0; 4: Brown 6: Fine-to medium	igs sample Hue Grainsize	Washed and sieved drill cutti Lightn. Chrom. Hue 0; Greyish [9; Black	drill cuttir Hue 9: Black	iings sample Grainsize	Rock type A		hin-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
		0; 0;	4. Brown & Eine to medium	0: 80; Greyish	9; Black				I IIII				Г		
			grained			2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	metamorphic, aplitic	49; Plagioclase		36; Quartz	ase		90/10	Foliated. Perhaps also some amphibolite? Some calcite grains from overburden (aphantitic dark red or green). Quartz grains from possible fracture. Traces of enitytic
		0; 80; Greyish 4	4; Brown 9; Medium-grained (1- 5 mm)	0; 20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101058; Granite, metamorphic, aplitic	49; Plagioclase	3; Amphibole	36; Quartz	49; Plagioclase	50; Pyrite 9	90; 90/10	for the second s
		200; Dark 0; 5	5; Green 9; Medium-grained (1- 5 mm)	1- 0; 0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite metamorphic		49; Plagioclase	3; Amnhihole	36; Quartz	49; Planioclase	16; Epidote 1	100; 100 %	Foliated. Traces of epidote. Quartz also as fracture mineral
	- 7.3	200; Dark 0; 5	5; Green 6; Fine-to medium	; 0	9; Black	2; Fine-grained (<1	102017; Amphibolite		49; Plagioclase	Amplibole Amplibole	50; Pyrite	36; Quartz		0; 100	mineteral. Strongly foliated. Similar to tonalite, but poorer in ligh
	8	6 .0	9; Black 9; Medium-grained (1-	:0	9; Black	mm) 2; Fine-grained (<1	102017; Amphibolite		49; Plagioclase	Ampnibole 3; Amshihola	50; Pyrite	36; Quartz		% 100; 100 %	Foliated. Rusty surface (open fracture?). Quartz as
	6 -	200; Dark 0; 5	5; Green 6; Fine-to medium	:0	9; Black	2; Fine-grained (<1	102017; Amphibolite		49; Plagioclase	Ampinuue 3; Amnhihola	50; Pyrite	36; Quartz		0; 100	inacture minierial. foliated. Some more felsic bands - segregation?
	- 10	200; Dark 0; 5	5; Green 6; Fine-to medium	:0 :0	9; Black	2; Fine-grained (<1	102017; Amphibolite		49; Plagioclase	3; Amobibola	50; Pyrite		- 6	0; 100	foliated. Only traces of pyrite.
		200; Dark 0; 5	5; Green 6; Fine-to medium	;0 ;0	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amnhihola	50; Pyrite	36; Quartz	16; Epidote 1	0; 100	foliated. Only traces of qz, ep, py.
	- 12	200; Dark 20; Reddish 4	4; Brown 6; Fine-to medium grained	0; 20; Reddish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	30; Calcite			0; 100	Foliated. In places strongly oxidized (strong red). white and also green calcite. Oxidation probably
	- 13	200; Dark 0; 5	5; Green 6; Fine-to medium arained	;0	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	36; Quartz			100	Foliated. Some more felsic grains, banded, could be secrectation. Quartz in veins/felsic bands.
	- 14	0; 40; Brownish	9; Black 8; Medium to coarse grained	0; 20; Reddish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	33; Chlorite 30; Calcite		36; Quartz 1	100; 100 %	Oxidized and chlorite altered. Calcite light green/dark red. Also epidote and rust. Probable crush zone. Calcite sealed? Permatite or rzzwein?
HFM09 14	- 15	;0 ;0	4; Brown 6; Fine-to medium grained	0; 20; Reddish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	30; Calcite	16; Epidote	36; Quartz 1	100; 100 %	Brittle ductitle shear zone? Deformed. Calcite and calcite probably in veins. Possibly also deformed aplite/pegmatite (less than 10%).
HFM09 15	- 16	0; ;0	4; Brown 6; Fine-to medium crained	0; 20; Reddish 9; Black		8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	49; Plagioclase	32; Potash Feldsnar	36; Quartz	3; Amphibole	10; Biotite 6	60; 60/40	Amph. Clearly foliated. Peg. Also foliated. Traces of light green calcite. epidote.
HFM09 16	- 17	0; 0;	4; Brown 6; Fine-to medium grained	200; Dark 20; Reddish	9; Black	grained (<1	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite 8	80; 80/20	foliated. Feldpar ratio? Traces of epidote, quartz from ped or fracture. Epidote together with calcite.
HFM09 17	- 18	0; 50; Greenish	4; Brown 6; Fine-to medium grained	0; 50; Greenish	9; Black	ne-grained (<1	102017; Amphibolite	103076; Felsic to intermediate volcanic rock. metamorphic	49; Plagioclase	3; Amphibole	16; Epidote	32; Potash Feldspar	36; Quartz 5	50; 50/50	appr 45% amph, 45% volcanite. 10% aplite (stronigy red, with some biotite). Some calcite
HFM09 18	- 19	200; Dark 20; Reddish 5	5; Green 6; Fine-to medium grained	0; 50; Greenish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	103076; Felsic to intermediate volcanic rock, metamorphic	49; Plagioclase	3; Amphibole		16; Epidote 32; Potash Feldspar	36; Quartz 9	90; 90/10	appr 90% amph, 5% volcanite, 5% aplite.biotite, red possible fracture surfaces. Strong foliation.
HFM09 19	- 20	0; 50; Greenish	4; Brown 6; Fine-to medium grained	0; Greenish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole		33; Chlorite 16; Epidote (	36; Quartz 1	100; 100 %	foliated, slightly altered. Red possible fracture surfaces (probably only oxidation and no laumontite). Traces of solve
HFM09 20	- 21	0; 20; Reddish 8	8; Grey 9; Medium-grained (1-2 5 mm)	:00; Dark 20; Reddish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101058; Granite, metamorphic anlitic	49; Plagioclase	3; Amohihole	32; Potash Feldsnar	36; Quartz	10; Biotite 6	60; 60/40	foliated. Traces of epidote.
HFM09 21	- 22	200; Dark 0; 8	8; Grey 9; Medium-grained (1 5 mm)	1- 200; Dark 20; Reddish 9; Black		2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite. metamorphic		49; Plagioclase	52; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole 1	100; 100 %	Foliated. Calcite. Not as dark as tonalite.
HFM09 22	- 23	0; 0;	4; Brown 4; Coarse-grained (> 5 200; Dark mm)	5 200; Dark 0;	2; Red	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite. metamorphic		49; Plagioclase	32; Potash Feldsnar	36; Quartz	10; Biotite	3; Amphibole 9	90; 90/10	follated. Seems weathered. Probable crush zone. Calcite sealed? Traces of amobibolite.
HFM09 23	- 24	0; 20; Reddish 9	9; Black 4; Coarse-grained (> 5(), mm)	5 0; 20; Reddish 9; Black		2; Fine-grained (<1 mm)	102017; Amphibolite	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	e	32; Potash Feldspar	36; Quartz	10; Biotite 5	50; 50/50	and aprile. Foliated. Epidote, Probable fracture surface almost aphanitic, various minerals, light green, aiso cactle (cataclastic?). Amph. Slightly altered. Probable crush zone.
HFM09 24	- 25		9; Black 9; Medium-grained (1- 5 mm)	ö		2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic			32; Potash Feldspar		10; Biotite		100; 100 %	foliated. Traces of aplite and amphibolite. Probably boht biotite and amph (very fine grained. Amp 100%), traces of epidote.
HFM09 25	- 26	40; Brownish	8; Grey 4; Coarse-grained (> 5 0; mm)	ö		2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite		32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole 9	90; 90/10	strongly foliated to banded. C-type granite?
	- 27	40; Brownish	Grey		Black	₹.	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite		32; Potash Feldspar	36; Quartz			50/50	uncertain rock type ratio. Altered. Foliated. Probable crush zone or fracture zone. Calcite.
HFM09 27	- 28		8; Grey 8; Medium to coarse grained	:0	9; Black 2	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	33; Chlorite 9	90; 90/10	Foliated. Some grains slightly chlorite attered.Open fracture? Oxidized surfaces - probably no laumontite.
HFM09 28	- 29	200; Dark 40; 8 Brownish	8; Grey 9; Medium-grained (1- 5 mm)	I- 0; 40; Brownish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite 9	90; 90/10	Foliated. Epidote bands -thin brittle ductile shear zones? Calcite. Weathered grain - probably from open fracture/crush zone.
HFM09 29	- 30	200; Dark 0; 4		40; Brownish		2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite 1	100; 100 %	Follated. Epidote bands -thin brittle ductile shear zones? Calcite. Weathered grain - probably from open fracture/crush zone.
HFM09 30	- 31			20; Reddish		2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite 8	80; 80/20	Foliated. Epidote bands -thin brittle ductile shear zones? Quartz-calcite vein.Red possible fracture surfaces.
	- 32	0; 20; Reddish 9		5 0; 20; Reddish 9; Black		2; Fine-grained (<1 mm)	102017; Amphibolite	101058; Granite, metamorphic, aplitic	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite 7	0/30	Actually appr. 35% amph, 35% tonalite and 30% aplite. Foliated. Oxidized surfaces. Traces of Epidote. Biotite uncertain.
	- 33	0;	Black	0; 0;	Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole					Foliated. Traces of amphibolite.
HFM09 33	- 34	0: 0	9; Black 8; Medium to coarse grained	°;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	3; Amphibole	36; Quartz	10; Biotite	32; Potash 9 Feldspar	90; 90/10	foliated. Also traces of aplite (111058). Traces of pyrite, red oxidized surfaces.

Drill cuttings	cuttin	gs				Date: 2003-10-10														
			Untreated	Untreated drill cuttings sample	ngs san	nple	Washe	ed and s	<b>Nashed and sieved drill cuttin</b>	ill cuttir	ngs sample									
Hole	from		Lightn.	Chrom.	Hue	Grainsize	Lightn.		Chrom. H	en	Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM09	34	- 35	ö	20; Reddish	9; Black	20; Reddish 9; Black 8; Medium to coarse			20; Reddish 9; Black		2; Fine-grained (<1	101054; Tonalite to	101058; Granite,	49; Plagioclase		36; Quartz	36; Quartz 10; Biotite	-	80; 80/20	80; 80/20 Foliated. Traces of pyrite, epidote and
											(mm)	granodiorite, metamorphic	metamorphic, aplitic		Amphibole					chlorite.111058: red, finegrained.
HFM09	35	- 36	:0	20; Reddish 9; Black	9; Black		- <del>1</del> 0;	20; 1	20; Reddish 9; Black		2; Fine-grained (<1	101054; Tonalite to	101058; Granite,	49; Plagioclase		36; Quartz	36; Quartz 10; Biotite		90; 90/10	
						5 mm)				-	nm)	granodiorite, metamorphic	metamorphic, aplitic		Amphibole					surfaces.
HFM09	36	- 37	:0	:0	9; Black		;; ;	ö	ð	9; Black 2	2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase		36; Quartz	36; Quartz 10; Biotite	50; Pyrite	100; 100	
											mm)	granodiorite, metamorphic			Amphibole					surfaces.
HFM09	37	- 38	ö	20; Reddish 9; Black	9; Black		;; ;;	ö	6	9; Black 2	2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase 10; Biotite	10; Biotite	36; Quartz		33; Chlorite	100; 100	
											nm)	granodiorite, metamorphic					Amphibole			calcite.
HFM09	38	- 39	200; Dark	20; Reddish 8; Grey	8; Grey		:°	20; 1	20; Reddish 9; Black		2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase 10; Biotite	10; Biotite	36; Quartz	36; Quartz 32; Potash	n 33; Chlorite		80; 80/20 foliated. Traces of calcite. Any amphibole?
						grained					mm)	granodiorite, metamorphic					Feldspar			
HFM09	39	- 40	200; Dark	40;	8; Grey	8; Medium to coarse	.: 6	40;	40; 9;	Black	2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase 10; Biotite	10; Biotite	36; Quartz 32; Potash	32; Potas	_	100; 100	foliated. Not as dark as earlier - more granodioritic?
								Bro			mm)	granodiorite, metamorphic					Feldspar		%	Also muscovite, calcite
HFM09	4	- 41	200; Dark		8; Grey		;; ;;	40;		9; Black 2	2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase 10; Biotite	10; Biotite	36; Quartz	36; Quartz 32; Potash	n 50; Pyrite	100; 100	
								Brov	vnish		mm)	granodiorite, metamorphic					Feldspar		%	oxidized surfaces, chlorite and epidote.
HFM09	41	- 42	200; Dark	40;	8; Grey	8; Medium to coarse	::	40;	40; 9;	Black 2	2; Fine-grained (<1	101054; Tonalite to	102017; Amphibolite	49; Plagioclase 10; Biotite	10; Biotite	36; Quartz	36; Quartz 32; Potash		3; Amphibole 90; 90/10	Foliated. Some chlorite. Red oxidized
				Brownish		grained		Bro	vnish	-	mm)	granodiorite, metamorphic					Feldspar			surfaces.Quartz probably also as fracture material.
HFM09	42	- 43	200; Dark	80; Greyish	4; Brown	200; Dark 80; Greyish 4; Brown 9; Medium-grained (1-0;	1- 0;	40;		9; Black 2	2; Fine-grained (<1	101054; Tonalite to	102017; Amphibolite	49; Plagioclase 10; Biotite	10; Biotite		36; Quartz 32; Potash		3; Amphibole 80; 80/20	
						5 mm)		Bro	Brownish		nm)	granodiorite, metamorphic					Feldspar			amphibolite. Larger qz grains probably from fracture
																				filling.Some aphanitic red or green grains.
																			-	
HFM09	43	4	200; Dark	0;	4; Brown	4; Brown 9; Medium-grained (1- 0;	1- 0;	40;	40; 9;	9; Black 2	2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase 10; Biotite	10; Biotite	36; Quartz	36; Quartz 32; Potash	n 33; Chlorite	-	
						5 mm)		Bro	vnish		nm)	granodiorite, metamorphic					Feldspar		%	altered. Traces of pegmatite and amphibolite? Some
																				oxidized surfaces.
HFM09	4	- 45	::	ö	9; Black	: 8; Medium to coarse	:0	ö	6	9; Black 2;	2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase 10; Biotite	10; Biotite	36; Quartz 32; Potash	32; Potas	-	100; 100	
						grained					mm)	granodiorite, metamorphic					Feldspar			
HFM09	45	- 46	200; Dark	80; Greyish 2; Red	2; Red	8; Medium to coarse	;; ;;	20;1	20; Reddish 9; Black		2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase 10; Biotite	10; Biotite		36; Quartz 32; Potash	n 33; Chlorite		_
						grained					mm)	granodiorite, metamorphic					Feldspar		%	Strongly red coloured surfaces (hematite in qz or
																				feldspar?), X1, Probably also some stronlgy foliated
																			_	
HFM09	46	- 47	200; Dark	200; Dark 80; Greyish 2; Red	2; Red	8; Medium to coarse	:0	20; 1	20; Reddish 9; Black		2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase 10; Biotite	10; Biotite	36; Quartz	36; Quartz 32; Potash	n 33; Chlorite	100; 100	Foliated. Some amphibole. Strongly oxidized
											mm)	granodiorite, metamorphic					Feldspar		%	surfaces, usually associated with calcite.
HFM09	47	- 48	ö	20; Reddish 9; Black	9; Black	: 8; Medium to coarse	:0	20;	20; Reddish 9; Black		2; Fine-grained (<1	101054; Tonalite to	101058; Granite,	49; Plagioclase 10; Biotite	10; Biotite	36; Quartz	32; Potas		3; Amphibole 90; 90/10	Foliated. Some biotite rich aggregates. Oxidized
						grained					(mm)	granodiorite, metamorphic	metamorphic, aplitic			Feldspar	Feldspar			
HFM09	48	- 49	:0	20; Reddish 9; Black	9; Black	B; Medium to coarse	÷0	20; 1	20; Reddish 9; Black		2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase 10; Biotite	10; Biotite	36; Quartz	36; Quartz 32; Potash	~	100; 100	<u> </u>
						grained				4	mm)	granodiorite, metamorphic					Feldspar		%	veins? Also one vein with calcite.
HFM09	49	- 50	:0	80; Greyish	7; White	80; Greyish 7; White 8; Medium to coarse	100; Light	ght O;	ŝ	8; Grey 8;	<ol><li>Medium to coarse</li></ol>	-	101054; Tonalite to	49; Plagioclase 32; Potash	32; Potash		36; Quartz 10; Biotite		80; 80/20	80; 80/20 Tonalite very fine grained. Red oxidized surfaces,
						grained					grained	pegmatitic granite	granodiorite, metamorphic		Feldspar					also as thin sealed fractures.
				ĺ																

<b>Drill cuttings</b>	gs			Date: 2003-10-14	Sign.:	<b>Christin Nordman</b>	iman										
-l-H		ed drill cut	uttings sa	mple		Washed and sieved drill cutti	1 2 4	e						, vi			
HFM10 4	2 -	D: 50:	9: Black	I B: Medium to coarse		50: 19	9: Black l6:		101054: Tonalite to	ROCK LYPE D	49: Pladioclase	10: Biotite 36	36: Quartz 132	: Potash		100: 100 rich in biotite	
	0	Greenish	5	grained		Greenish	10		granodiorite, metamorphic				Fe Fe	Feldspar	%		
HFM10 5	- 6	0; 20; Reddi	ish 9; Black	sh   9; Black   8; Medium to coarse	ő	50; Greenish	9; Black 6;	6; Fine-to medium	101054; Tonalite to granodiorite. metamorphic		49; Plagioclase	10; Biotite 36	36; Quartz 32	32; Potash Feldsnar	10 %	100; 100   rich in biotite %	
HFM10 6	- 7	0;	9; Black	8; Medium to coarse	÷		9; Black 6;		101054; Tonalite to		49; Plagioclase	10; Biotite 36	36; Quartz 32	sh 3;	Amphibole 10	100; 100 rich in biotite. Traces of epidote.	
HEM10 7	8	Greenish 200: Dark 20: Reddis	sh 5. Gree	grained	ċ	Greenish a	9. Black 2.	grained 2: Fine-orained (<1	granodiorite, metamorphic 101054: Tonalite to		49. Planinclase	3.	10. Rintite 36	Feldspar 36: Quartz	11	% Amphibolite or very dark tonalite?	
	0			grained		Greenish			granodiorite, metamorphic		to, riagiouase	Amphibole		, wuark	%		
HFM10 8	6 -	200; Dark 20; Reddish	ish 5; Green		:ô	20; Reddish 5	9; Black 2;	2; Fine-grained (<1		111058; Granite, fine to	49; Plagioclase	3; Amnhihola	10; Biotite 36	36; Quartz	6	90; 90/10 111058 fine-medium grained, red. Amphibolite or	Amphibolite or
HFM10 9	- 10	0:	9: Black	9: Medium-arained (1-	1- 0:		9: Black 2:	ne-arained (<1		101061: Peamatite.	49: Plagioclase	È	10: Biotite 36	36: Quartz	6	90: 90/10 foliated or lineated. Traces of epidote. pvrite.	ote. pvrite.
				5 mm)			_			pegmatitic granite	0		-				
HFM10 10	- 11	0; 50; Greenish		<ul> <li>8; Medium to coarse arained</li> </ul>	ő		9; Black 6;	5; Fine-to medium	101054; Tonalite to granodiorite. metamorphic		49; Plagioclase	10; Biotite 3; Al	3; 36 Amphibole	36; Quartz 32; Fel	32; Potash 10 Feldsnar %	100; 100  traces of pyrite. Rich in dark minerals %	als.
HFM10 11	- 12	200; Dark 0;		5; Green 6; Fine-to medium	ö	50;	9; Black 2;	grained (<1	101054; Tonalite to		49; Plagioclase	1		36; Quartz	1	100; 100 traces of calcite and red possible fracture surfaces.	racture surfaces.
				grained		Greenish	_		granodiorite, metamorphic			Amphibole			%		o medium grained).
HFM10 12	- 13	0; Greenish	9; Black		ö	50; Greenich	; Black	2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase	3; Amnhihola	0; Biotite 36	36; Quartz	10%	100; 100 traces of pyrite. Foliated or lineated	Ū.
HFM10 13	- 14	200; Dark 0;	5; Green	n 6; Fine-to medium	;0	50; 9	Black 2	ne-grained (<1	101054; Tonalite to		49; Plagioclase	,	10; Biotite 36	36; Quartz	27 2	100; 100 traces of rust on possible fracture surface	surface.
HFM10 14	- 15	200: Dark 0:	5: Green	grained n 9: Medium-orained (1-	-	Greenish 50: 9	Black 2:	2: Fine-arained (<1	granodiorite, metamorphic 101054: Tonalite to	102017: Amphibolite	49: Pladioclase	Amphibole 10	10: Biotite 36	36: Quartz 32:	32: Potash 6(	% 60: 60/40 Prock type ratio uncertain. Traces of pyrite. Both rock	f pvrite. Both rock
	2			. 1	5	Greenish	iΕ		granodiorite, metamorphic			Amphibole					
HFM10 15	- 16	0; 50; Greenish			ö	20; Reddish 5	9; Black		101054; Tonalite to granodiorite. metamorphic		49; Plagioclase		36; Quartz 32		3; Amphibole 10		dote and white
HFM10 16	- 17	0; 50; Greenish	9; Black		ö	50; S	9; Black	2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase	3; Amobibolo	0; Biotite 36	36; Quartz 50;	50; Pyrite 10	100; 100 some surfaces with calcite and oxidized minerals.	dized minerals.
HFM10 17	- 18	0;	9; Black		ö	50;	9; Black 2	ne-grained (<1		111058; Granite, fine to	49; Plagioclase		10; Biotite 36	36; Quartz 50;	50; Pyrite 90	90; 90/10 only traces of pyrite. Appr 10% felsic material (fine to	sic material (fine to
HFM10 18	- 19	200; Dark 0;	5; Green	n 8; Medium to coarse	ö	Greenish 50; 9	9; Black	nm) 2; Fine-grained (<1		medium grained 111058; Granite, fine to	49; Plagioclase	- F	10; Biotite 36	36; Quartz 32;	۲.	90; 90/10 traces of epidote and red surfaces (oxidized)	) (oxidized).
	00			grained	. d	Greenish				medium grained		Amphibole				_	
	- 20	0; 50; Greenish			:0	50; Greenish	9; Black		101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; 10 Amphibole				= 0	tterial(fine-medium
HFM10 20	- 21	200; Dark 0;	5; Green	n 8; Medium to coarse		20; Reddish 5	9; Black	2; Fine-grained (<1	101054; Tonalite to		49; Plagioclase		10; Biotite 36	36; Quartz 32; Fel.	32; Potash 10 Feldenar %	100; 100 Traces of pyrite and epidote	
HFM10 21	- 22	200; Dark 0;	8; Grey	9; Medium-grained (1- C	1- 0;	50; Greenich	9; Black 6;	ne-to medium	101057; Granite to	102017; Amphibolite	49; Plagioclase		36; Quartz 10	10; Biotite 3; /	l o	60; 60/40 some red surfaces (hematite and feldspar???)	eldspar???)
				(IIIII c					medium grained			_					
HFM10 22	- 23	200; Dark 0;	5; Green	n  6; Fine-to medium grained	ö		9; Black	2; Fine-grained (<1 ) mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	3; 10 Amphibole	10; Biotite 36	36; Quartz		larger qz grains- from fractur? Red surfaces as above. Traces of epidote and 101057? Amph folitated	l surfaces as 057? Amph
HFM10 23	- 24	200; Dark 0;	5; Green	n 8; Medium to coarse	ö		9; Black 2;	2; Fine-grained (<1	102017; Amphibolite		49; Plagioclase		36; Quartz 32	32; Potash 50;	50; Pyrite 10	0; 100	z-vein or
HFM10 24	- 25	200; Dark 0;	5; Green	n 8; Medium to coarse	:0		9; Black 2;	2; Fine-grained (<1	102017; Amphibolite		49; Plagioclase		50; Pyrite 36	36; Quartz	<u>15</u>	0; 100	rein.
HFM10 25	- 26	200: Dark 0:	5: Green	grained in 8: Medium to coarse	ö		9: Black 2:	2: Fine-arained (<1	102017: Amphibolite		49: Plagioclase	Amphibole 50	50: Pvrite 36	36: Quartz	10	% 100 foliated. Traces of granitic/grapodioritic material. Fine	ioritic material. Fine
	1			grained	5 6			mm)	4040E 4. Totalite 4.				-				
	17 -	ZUU; Dark U;	o; Green	n 8; medium to coarse grained	5		NE	_	101054; I onalite to granodiorite, metamorphic		49; Plagloclase		3; Amphibole		52; Potasn 10 Feldspar %		es or larger qz-
HFM10 27	- 28	200; Dark 0;	5; Green		:0		9; Black 6;	6; Fine-to medium	101054; Tonalite to granodiorite. metamorphic		49; Plagioclase	10; Biotite 3; Al	3; 36 Amphibole	36; Quartz 32; Fel		30; 100   Pyrite:appr 10-15% leucocratic grains, fine-med or lorained. stronaly foliated.	ains, fine-med
HFM10 28	- 29	200; Dark 0;	5; Green	n 8; Medium to coarse	ö	50; Greenich	9; Black 6;	o medium	101054; Tonalite to		49; Plagioclase	10; Biotite 3;	-	36; Quartz 32;	£	0; 100	
HFM10 29	- 30	200; Dark 0;	5; Green	n 8; Medium to coarse	:0		9; Black 2;	jrained (<1	101054; Tonalite to	101058; Granite,	49; Plagioclase	10; Biotite 36	36; Quartz 32	Ч	oole	80; 80/20 Relatively leucocratic. Pyrite.	
UEM10 30	24	200: Dark 10: Dinkish	P E. Croon	grained	100-1 inht		E 0	5	granodiorite, metamorphic	metamorphic, aplitic	40: Dissioclase	20. Dotoch 30	26. Ounty 10	Feldspar	2. Amobibolo 10	100: 100 traces of murits	
	5			grained			20		granodiorite, metamorphic, medium grained, medium		- 100 - 100						
HFM10 31	- 32	0; 10; Pinkish	sh 5; Green	n 9; Medium-grained (1- 100; Light 5 mm)	1- 100; Light	80; Greyish 2	2; Red 5	; Medium-grained (1- mm)	gramed 101057; Granite to granodiorite, metamorphic, medium grained, medium		49; Plagioclase	10; Biotite 36	36; Quartz 32 Fe	32; Potash 50; Feldspar	50; Pyrite 10 %	100; 100 traces of 101054, %	
HFM10 32	- 33	0; 20; Reddish	ish 5; Green	n 8; Medium to coarse	:0	20; Reddish 9;	Black	ie-grained (<1		101057; Granite to	49; Plagioclase	10; Biotite 36	36; Quartz 32	32; Potash	8	80; 80/20 rock type ratio very uncertain. Some part oxidized	ne part oxidized
				grained			E		granodiorite, metamorphic	granodiorite, metamorphic, medium grained			<u> </u>	Feldspar		(101054?). Probably foliated/linea	.ed.
HFM10 33	- 34	0; 20; Reddish	ish 5; Green	n 8; Medium to coarse grained	200; Dark	80; Greyish 2	2; Red 6; 91	; Fine-to medium Irained	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium	49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10	10; Biotite 16;	16; Epidote	strongly oxidized 7?? Some grains show strong foliation to mylonitic fabric.	s show strong
HFM10 34	- 35	0; 20; Reddish	ish 5; Green	n 8; Medium to coarse grained	:0	20; Reddish 9	9; Black 2; m	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium	49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10	10; Biotite 50;	50; Pyrite 80	80; 80/20 Possible 101057 deformed- therefore rock typ uncertain. Some grains show strong foliation.	ore rock typ ng foliation.
HFM10 35	- 36	;0 ;0	5; Green	n 8; Medium to coarse	ö	20; Reddish 9;	9; Black 2;	; Fine-grained (<1	101054; Tonalite to	grained 101057; Granite to	49; Plagioclase		36; Quartz 10	10; Biotite 50;	50; Pyrite 50;	50/50	ngly foliated,
				grained			-		norphic	granodiorite, metamorphic, medium grained, medium orained	2	Feldspar					bands of epidote.
																-	

Drill cu	<b>Drill cuttings</b>	6			Date: 2003-10-14	Sign.:	Christin Nordman	lman										
Hole	from	to	ĕ	drill cuttings s Chrom. Hue	sample Grainsize		Washed and sieved drill cutti Lightn. Chrom. Hue	Irill cuttin Hue G		Rock type A	Rock type B	Min-1		Min-3		Min-5		Kommentar
HFM10	36 -	- 37 0;	0; 50; Gree		lack 8; Medium to coarse	:0	20; Reddish 9; Black			101054; Tonalite to granodiorite metamorphic		gioclase	32; Potash Feldsnar	벌	10; Biotite 3;	libole	100; 100 tr %	traces of pyrite, calcite (vein). Traces of possible vein: verv fine grained mossibly granitic
HFM10	37 -	- 38			reen 6; Fine-to medium	ó		9; Black 6;	ne-to medium	101054; Tonalite to		49; Plagioclase	3; Amnhihola	36; Quartz 1	10; Biotite 32; Fel	Potash	0; 100	some grains strongly foliated. Traces of pyrite,
HFM10	38	- 39	ö	ي تن	reen 8; Medium to coarse	ö		9; Black 6;		101054; Tonalite to rranodiorite metamorphic		49; Plagioclase		36; Quartz 1	10; Biotite 3		100	uprocessor traces of more granitic material. Strongly fullated/lineated Traces of ovrite evidence
HFM10	- 39	- 40 20	200; Dark 80; 0	Greyish	reen 8; Medium to coarse	: <b>;</b>		9; Black 6;	o medium	101054; Tonalite to		49; Plagioclase		36; Quartz 1	10; Biotite 3;	32; Potash 1 Feldenar	100; 100 %	
HFM10	- 40	- 41	ö	ق ئ	5; Green 8; Medium to coarse grained	ö	50; Greenish	9; Black 6; 97		101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz 1	10; Biotite 3		0; 100	possibly more granodionitic relative to former samples? Some grains are mylonitic. Traces of calcite, epidote and X1(?). Not as rich in dark
HFM10	41	- 42	:0	9 8	Grey 9; Medium-grained (1- 0; 5 mm)	1- 0;	20; Reddish 9	9; Black 6; gr	6; Fine-to medium	101054; Tonalite to granodiorite, metamorphic	111058; Granite, fine to medium grained	49; Plagioclase	3; Amphibole	36; Quartz 1	10; Biotite 3	32; Potash Feldspar	90; 90/10 1 1	minerais as earlier. 111058??? Not so rich in dark minerals as 101054. Traces of pyrite. Some grains show deformation(fine remined erronoliv foitabed/in-aaled/
HFM10	42	- 43	ö	ي ت	Green 8; Medium to coarse grained	ö	50; Greenish	9; Black 6; 9r		101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz 1	10; Biotite 3	32; Potash 1 Feldspar 9	100; 100 a %	gramed, sucringly interconnected). almost black grains and lighter grains. Slightly banded? Some grains show strong foliation/lineation.
HFM10	43	- 44	200; Dark 0;	5; Gr	Green 8; Medium to coarse	ö		9; Black 6;	6; Fine-to medium	101054; Tonalite to vranodiorite metamorphic		49; Plagioclase	3; Amohibole	36; Quartz 1	10; Biotite 32		100; 100 e	epidote. Rich in dark minerals.
HFM10	44	- 45 0;	ö	ی ن	Green 8; Medium to coarse arained	ó	50; Greenish	9; Black 2; m		granodione, metamorphic 101054; Tonalite to granodiorite, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	Amphibole	36; Quartz 1	10; Biotite 3	32; Potash 9 Feldspar	; 90/10	epidote altered. Probably strong deformation. Appr 5% of Peamatite(oz.
HFM10	45	- 46	ö	5; Gr	Green 8; Medium to coarse grained	ö		9; Black 2; m	ne-grained (<1	101054; Tonalite to granodiorite, metamorphic	2	49; Plagioclase	3; Amphibole	16; Epidote			100; 100 s %	strongly foilated/lineated. Amphibole rich. Qz vein. Traces of epidote.
HFM10	46 -	- 47 0;	ö	ي بن	Green 8; Medium to coarse grained	ö		9; Black 2; m	ne-grained (<1	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole				100	strongly foliated. Traces of granitic/granodioritic fine grained material
HFM10	47 -	- 48	:: ::	ت: ئ	Green 8; Medium to coarse arained	ö		9; Black 2; m	ne-grained (<1	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	50; Pyrite	16; Epidote		100; 100 s %	strongly foliated.
HFM10	48		200; Dark 0;	ی ن	Green 8; Medium to coarse grained	:0			ne-grained (<1	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase		50; Pyrite	16; Epidote		0; 100	strongly foliated.
HFM10	- 49	- 50		20; Reddish 5; Green	reen 8; Medium to coarse grained	ó	-	9; Black 9; 5	edium-grained (1- (1	101058; Granite, metamorphic, aplitic	101054; Tonalite to granodiorite,	49; Plagioclase		36; Quartz 1	10; Biotite 50	50; Pyrite 7	70; 70/30 a	amphibole. 101054 or amphibolite???
HFM10	- 20	- 51 0;	:0	2; G	5; Green 8; Medium to coarse	ó	10; Pinkish 9	9; Black 2;	2; Fine-grained (<1	101054; Tonalite to gramodiorite metamorphic	metamorphic 101058; Granite, metamorphic anlitic	49; Plagioclase	3; Amnhihola	32; Potash 36; Quartz Feldenar	16; Quartz 10	10; Biotite 9	90; 90/10 1	90; 90/10 101054 strongly foliated pyrite.
HFM10	51.00 -	- 52.00 0;	;;	5; Gr	Green 8; Medium to coarse	:0	20; Reddish 9	9; Black 2;	ne-grained (<1		101058; Granite,	49; Plagioclase		32; Potash	i6; Quartz 10	10; Biotite 9	90; 90/10 p	90; 90/10 pyrite. Uncertain amphibolite.
HFM10	52.00 -	- 53.00 0;		80; Greyish 5; Gr	5; Green 8; Medium to coarse	;ô	20; Reddish 9	9; Black 2;				49; Plagioclase		32; Potash 3 Ealdenar		10; Biotite 1		calcite, pyrite.
HFM10	53.00 -	- 54.00 20	54.00 200; Dark 0;	5; G	5; Green 8; Medium to coarse	:0		9; Black 2;	ne-grained (<1	101054; Tonalite to		49; Plagioclase	3; Amobibolo	32; Potash 36; Quartz	i6; Quartz 10	10; Biotite 1	0; 100	epidote, pyrite. Foliated.
HFM10	54.00 -	- 55.00 0;	ö	2: G	Green 8; Medium to coarse	:0	40; 40;	9; Black 2;		101054; Tonalite to		49; Plagioclase	Ampriloue 10; Biotite	32; Potash	2; Potash 36	36; Quartz	700; 100 E	Brittle ductile shear zone. Bands of X1, mostly
HFM10	55.00 -	- 56.00 0;		50; 9; Black Greenish	lack 8; Medium to coarse	ó		9; Black 2;	2; Fine-grained (<1	granodionie, metamorphic 101054; Tonalite to granodiorite metamorphic		49; Plagioclase	10; Biotite	7 Feldspar 7 Feldspar 32; Potash 36; Quartz 3 Feldsnar	eluspar 6; Quartz 3;	3; Amphibole 1	700; 100 s %	atactastic: cardie (also purpre cardie). some oxidized surfaces.
HFM10	- 00.95	- 57.00 0;			5; Green 8; Medium to coarse arained	:0	6	9; Black 2; m	ne-grained (<1	101054; Tonalite to aranodiorite, metamorphic		49; Plagioclase	10; Biotite	32; Potash 36; Quartz Feldspar	i6; Quartz 3;	3; Amphibole 1	100; 100 %	
HFM10	57.00 -	- 58.00 0;		50; 9; Bla Greenish	ack 8; Medium to coarse arained	:ô	:0	NE	ne-grained (<1	101054; Tonalite to tranodiorite, metamorphic		49; Plagioclase		3; Amphibole		50; Pyrite 1	100; 100 p %	probably mostly plagioclase as light mineral.
HFM10	58.00 -	- 59.00 2		ίά	Green 8; Medium to coarse grained	ö	6 :0			101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite		32; Potash 36 Feldspar	36; Quartz 1	100; 100 F %	Red, strongly oxidized possible fracture surfaces.
HFM10	- 20.00	- 60.00 20	60.00 200; Dark 0;	<u>ی</u> ک	Green 8; Medium to coarse grained	ó	10; Pinkish 9	9; Black 2; m	2; Fine-grained (<1 mm)		101057; Granite to granodiorite, metamorphic, medium orained	49; Plagioclase	10; Biotite	3; 32; Potas Amphibole Feldspar	4,	36; Quartz 7	70; 70/30 V	Vein has biotite, not leucocratic, fine to medium grained. Traces of pyrite.
HFM10	- 00.09	- 61.00 20	61.00 200; Dark 0;	ي: G	Green 8; Medium to coarse grained	:0	20; Reddish 9; Black		2; Fine-grained (<1 ) mm)		2		3; Amphibole				100	also quartz, biotite and potassium feldspar???
HFM10	61.00 -	- 62.00 20	62.00 200; Dark 0;	ت ئ	Green 8; Medium to coarse grained	ö	20; Reddish 9; Black		ne-grained (<1	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz 33		0; 100	Epidote, pyrite
HFM10		- 63.00 20	0; Dark	5: G	Green 8; Medium to coarse grained	:0		NF	ne-grained (<1	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole				0; 100	epidote in banded aggregate. Possibly traces of aplitic vein.
HFM10	63.00 -	- 64.00 0;	<u>ö</u>	ق ن	Green 8; Medium to coarse grained	<u>ö</u>	10; Pinkish 9	9; Black 3; Black	2; Fine-grained (<1 ) mm)		101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz 33		70; 70/30 v	vein not leucocratic but quite poor in biotite. Bands of epidote and X1 (not much), Calcite wich strongly oxidized wallrock.
HFM10	64.00 -	- 65.00 0;	: <b>0</b>	<u>ی</u> ک	Green 8: Medium to coarse grained	ó	ö	9; Black 2; m	2; Fine-grained (<1 )	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz 32	32; Potash Feldspar	90; 90/10 o	or only 5 % leucocratic vein. Epidote-chlorite. Vein fine to medium grained, probably leucocratic (appr. 5%).
HFM10		- 66.00 0;		50; 9; Bli Greenish	Black 8; Medium to coarse 0; grained	:0	ö	N E	2; Fine-grained (<1 ) mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	16; Epidote	~		100; 100 tr %	traces of possibly tonalitic vein, fine-grained, red. Some strongly red possible fracture surfaces.
HFM10	- 00.99	- 67.00 0;		enish 8; Gr	Grey 9; Medium-grained (1	1- 0;	20; Reddish	άE ×	ne-grained (<1	101054; Tonalite to jranodiorite, metamorphic		49; Plagioclase	3; Amphibole	32; Potash 36; Quartz Feldspar	6; Quartz		100; 100 %	-
HFM10	- 00.79	- 68.00 0;		Reddish 4; Brown	rown 9; Medium-grained ( 5 mm)	1- 200; Dark	:0	2; Red 2; m	ne-grained (<1	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase		32; Potash 3 Feldspar	6; Quartz	10; Biotite 1	100; 100 S %	Strongly oxidized. With deformation bands of chlorite and epidote (?).
HFM10		- 69.00 0;		50; 8; Gr Greenish	Grey 8; Medium to coarse grained	ó	20; Reddish	Black		101054; Tonalite to jranodiorite, metamorphic		49; Plagioclase					100	oxidized possible fracture surfaces, epidote bands. Traces of calcite.
HFM10	- 00.69	- 70.00 0;		ີ່ດໍ	Black 8; Medium to coarse grained	<u>;;</u>	20; Reddish 9	9; Black 2; m	2; Fine-grained (<1 ) mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	N	16; Epidote 30	30; Calcite 1	100; 100 p % %	possibly some granitic material as well (but with amph, dark). Oxidized surfaces usually associated with calcite.
			-	-														

Drill c	Drill cuttings		Date: 2003-10-14	Sign.: Christ	Christin Nordman							
	Ş	Untreated drill cuttings sample		d a	ved drill	cuttings sample			c cim	c ciM	Min E	Normanatas
HFM10	70.00 - 71.00	200; Dark 0;	edium to coarse red	:0	9; Black	ack 2; Fine-grained (<1 mm)	101054; Tone granodiorite, r	111058; Granite, fine to medium grained	49; Plagioclase 3; Amphibole		h 30; Calcite	9
HFM10	71.00 - 72.00	72.00 200; Dark 0;		; 0	6 6	Black 2; Fine-grained ( mm)		102017; Amphibolite	49; Plagioclase 3; Amphibole	32; Potash 36; Quartz	z 50; Pyrite	-
HFM10	72.00 - 73.00	73.00 200; Dark 0;	5; Green 8; Medium to coarse C grained	0; 20; Reddish	ö.	Black 2; Fine-grained (<1 mm)	<1 101054; Tonalite to granodiorite, metamorphic		49; Plagioclase 3; Amphibole		h 50; Pyrite	100; 100 somewhat richer in felsic minerals. Some larger qz- grains probably from fracture filling. Rich in oxidized surfaces
HFM10	73.00 - 74.00	ö		0; 20; Reddish	ő	Black 2; Fine-grained (<1 mm)	1		49; Plagioclase 3; Amphibole	16; Epidote 30; Calcite	ω	100; 100 Feldspar strongly oxidized. Amphibole seems pure. % Only traces of ep and cc.
HFM10	74.00 - 75.00 0;	ö	8; Grey 8; Medium to coarse 0 grained	0; 20; Reddish	ddish 9; Black				49; Plagioclase 3; Amphibole	36; Quartz 50; Pyrite		0; 100
HFM10	75.00 - 76.00 0;	:0		0: 0	8 6	Black 2; Fine-grained (<1 mm)			49; Plagioclase 3; Amphibole	36; Quartz 50; Pyrite		100
HFM10	- 77.00	0;	8; Medium to coarse grained		ő	άE	< 1 101054; Tonalite to granodiorite, metamorphic			36; Quartz		
HFM10	77.00 - 78.00	78.00 200; Dark 0;		100; Light 80; Greyish		Black 2; Fine-grained (<1 mm)		m	49; Plagioclase 3; Amphibole	36; Quartz 32; Potash le Feldspar	h 10; Biotite	70; 70/30 Traces of pyrite and very thin bands of epidote.
HFM10	78.00 - 79.00	79.00 200; Dark 0;	5; Green 8; Medium to coarse C grained	:0	0 0	Black 2; Fine-grained (<1 mm)	<1 101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium drained	49; Plagioclase 3; Amphibole	36; Quartz 32; Potash Ie Feldspar	£	90; 90/10 probably dark tonalite. Traces of epidote, amphibolite.
HFM10	79.00 - 80.00 0;	50; Greenish		:0	6 6	Black 2; Fine-grained (<1 mm)			49; Plagioclase 3; Amphibole	36; Quartz 50; Pyrite		100; 100 Foliated. %
HFM10	80.00 - 81.00			0:	а ;;	Black 2; Fine-grained ( mm)			49; Plagioclase 3; Amphibole	36; Quartz 50; Pyrite		100; 100 or amphibolite?
HFM10	81.00 - 82.00	82.00 200; Dark 0;		:0	8 6	Black 2; Fine-grained (<1 mm)	< 1 101054; Tonalite to aranodiorite, metamorphic		49; Plagioclase 3; Amphibole	10; Biotite 36; Quartz	z 32; Potash Feldspar	100; 100 foliated. Traces of pyrite.
HFM10	$\mathcal{F}_{\mathrm{ext}}$	200; Dark 0;	8; Medium to coarse grained			Black 2; Fine-grained ( mm)				36; Quartz		0; 100
HFM10	1	;0	8; Medium to coarse grained	:0 :0	8 6				., .	36; Quartz		100; 100   only traces of pyrite.
HFM10	84.00 - 85.00	85.00 200; Dark 0;	5; Green 8; Medium to coarse 0 grained	°: 0	6 6	Black 2; Fine-grained (<1 mm)	<1 102017; Amphibolite	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase 3; Amphibole	36; Quartz 50; Pyrite		90; 90/10 frough rock type estimation. Traces of thin epidote veins (one grain looks mylonitic)
HFM10	85.00 - 86.00	ö	5; Green 8; Medium to coarse C grained	:0	8 .6	Black 2; Fine-grained (<1 mm)	<1 102017; Amphibolite	alite to	49; Plagioclase 3; Amphibole	36; Quartz		50; 50/50 rough rock type estimation. Traces of epidote. Strong foliation.
HFM10	86.00 - 87.00	87.00 200; Dark 0;	5; Green 9; Medium-grained (1- 0 5 mm)	0:	6 6	Black 2; Fine-grained (<1 mm)			49; Plagioclase 3; Amphibole	36; Quartz	h 50; Pyrite	100; 100 Itaces of epidote and pyrite.
HFM10	87.00 - 88.00 0;	50; Greenish	9; Black 8; Medium to coarse C arained	0:	6 6	Black 2; Fine-grained (<1 mm)			49; Plagioclase 3; Amphibole	36; Quartz	h 50; Pyrite	90, 90/10 rock type estimation uncertain. Foliated. Traces of epidote and ovrite.
HFM10	88.00 - 89.00 0;	50; Greenish	9; Black 8; Medium to coarse 0 grained	0;	8 6	Black 2; Fine-grained (<1 mm)				36; Quartz	h 16; Epidote	
HFM10	89.00 - 90.00 0;	ö	Green 8; Medium to coarse grained	00; Light 80;	Greyish 5; G			102017; Amphibolite		36; Quartz 32; Potash	E	60/50
HFM10	1.1	:0	5; Green 6; Fine-to medium C	:0	6: 6	Black 2; Fine-grained ( mm)	<1 102017; Amphibolite		49; Plagioclase 3; Amphibole	50; Pyrite		100; 100 aphanitic to very fine grained. Could also be skam? %
HFM10	1.1	ô	5; Green 9; Medium-grained (1- 0 5 mm)	0; 0	9; 9				49; Plagioclase 3; Amphibole	16; Epidote		100; 100 traces of felsic material.
HFM10	92.00 - 93.00	93.00 200; Dark 0;	<u>-</u>	0; 50; Greenish	6	Black 2: Fine-grained (<1 mm)	<1 103076; Felsic to intermediate volcanic rock, metamorphic	102017; Amphibolite	49, Plagioclase 3; Amphibole	16; Epidote 36; Quartz	z 32; Potash Feldspar	; 50/50
HFM10	93.00 - 94.00	94.00 200; Dark 0;		0; 10; Pinkish	σ,	Black 2: Fine-grained (<1 mm)		101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase 3; Amphibole	36; Quartz 32; Potash le Feldspar	h 16; Epidote	90, 90/10 Foliated. Traces of pyrite. Relatively rich in epidote - skam?
HFM10	94.00 - 95.00	:0 0		0; 10; Pinkish	ő	Black 2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase 3; Amphibole	16; Epidote 36; Quart	Z	100; 100 foliated (strongly), possible traces of skarn. White bands of almost aphantitic quartz or feldspar - segregation due to deformation?
HFM10	1.1	:0		0:	6 8	Black 2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	111058; Granite, fine to 4 medium grained	49; Plagioclase 3; Amphibole	16; Epidote 36; Quart	z 32; Potash Feldspar	90; 90/10 traces of pyrite. Follated.
HFM10	1.1	:0	Green 8; Medium to coarse grained	0; 0;		Black 2; Fine-grained ( mm)	101054; Tonalite to granodiorite, metamorphic	111058; Granite, fine to medium grained	9; Plagioclase	16; Epidote 36; Quart	z 32; Potash Feldspar	0/10
HFM10	- 98.00	; 0;	Green 8; Medium to coarse grained	<u> </u>	ő	Black 2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase 3; Amphibole	16; Epidote		
HFM10	- 99.00	;; 0	Green 8; Medium to coarse grained		ை ம	Black 2; Fine-grained (<1 mm)			49; Plagioclase 3; Amphibole	50; Pyrite	32; Potash Feldspar	100
	.0 ######## - 00.88	<u>5</u>		u; zu; Kedaisn	<u>ה</u>	black z, Fine-grained ( mm)	<1 102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plaglociase 3; Amphibole	36; Quartz 34; Potasn Feldspar	10; Blottle	bu; bu/bu granmond greysh redorown, me gramed with biotite.Both foliated. Some epidde and traces of pyrite.

Drill c	<b>Drill cuttings</b>	s			Date: 2003-10-14	Sign.:	Christin Nordman	man								
Pole	from	ţ	Untreated drill cuttings sample	cuttings se	ample Grainsize	Washed ar	Washed and sieved drill cuttings sample	drill cuttings Hue Gra		Rock type A	Rock type B	Min-1	Min-2	Min-3 Min-4	1 Min-5	Distr. Kommentar
HFM10	100.00	****	40; Brownish	sh 5; Gree	Green 8; Medium to coarse grained			a isi	e-grained (<1	e to stamorphic,	; Tonalite to orite,	gioclase	ole	Ę	tash 10; Biotite ar	6
HFM10	- 101.00	- ######	ö	5; Green	een 8; Medium to coarse grained	:0	:6 :0	Black 2; m	e-grained (<1	to tamorphic	ite to , medium	49; Plagioclase	3; Amphibole	36; Quartz 32; Potash Feldspar	tash 10; Biotite kar	70: 70/30 foliated, as above, traces of epidote and pyrite.
HFM10	102.00	- ##### 200; Dark	Dark 0;	5; Green	sen 8; Medium to coarse grained	ö	0	Black 2; mr	e-grained (<1	101054; Tonalite to granodiorite, metamorphic r	Granite to orite, rphic, medium	49; Plagioclase	3; Amphibole	36; Quartz 32; Potash Feldspar	tash 10; Biotite ar	90, 90/10 follated. Granitic rock not as strongly foliated as amphibolite epidote. Traces of chlorite on possible fracture surface.
HFM10	103.00	103.00 - ##### 200; Dark	Dark 0;	5; Green	een 8; Medium to coarse grained	ö	:6 :0	Black 2; mr	e-grained (<1	101054; Tonalite to granodiorite, metamorphic r	Granite to rite, phic, medium	49; Plagioclase	3; Amphibole	36; Quartz 32; Potash Feldspar	tash 10; Biotite ar	90, 90/10 foliated. Traces of epidote, catcle, pyrite.
HFM10	104.00 -	- ##### 200; Dark	Dark 0;	5; Green	een 8; Medium to coarse grained	ö	.6 .0	Black 2; mr	e-grained (<1	101054; Tonalite to granodiorite, metamorphic n	Ę	49; Plagioclase	3; Amphibole	36; Quartz 32; Potash Feldspar	tash 10; Biotite ar	90; 90/10 foliated. Traces of epidote and pyrite. Strong oxidation on possible fracture surface. One white grain of feldspar and quarts, fine grained.
HFM10	105.00 -	- ###### 200; Dark	Dark 0;	5; Green	een 8; Medium to coarse grained	ö	20; Reddish 9;	Black 2; m	e-grained (<1	101054; Tonalite to 1 granodiorite, metamorphic p	101061; Pegmatite, pegmatite	49; Plagioclase	3; Amphibole	36; Quartz 32; Potash Feldspar	tash 10; Biotite ar	90; 90/10 pegmatite pinkish white, medium grained. Tonalite strongly foliated. Traces of pyrite and almost aphantitic epidote-chlorite mkture (?)
HFM10	106.00 -	- ##### 200; Dark	Dark 10; Pinkish	kish 5; Green	en 8; Medium to coarse grained	ö	20; Reddish 9;	Black 8; gr	m to coarse	101061; Pegmatite, 1 pegmatitic granite g	101054; Tonalite to granodiorite, metamorohic	49; Plagioclase	36; Quartz 3; Fi	32; Potash 3; Feldspar Amphibole	10; Biotite bole	50; 50/50 both rock types deformed and foliated. Pegmatite nonequigranular, pink Also slightly greenish quartz
HFM10	107.00 -	- ##### 200; Dark	Dark 10; Pinkish	kish 5; Green	een 8; Medium to coarse	ö	20; Reddish 9; Black	i i	ie-grained (<1			49; Plagioclase	3; Amnhihole	36; Quartz 32; Potash Feldsnar	tash 10; Biotite ar	50; 50/50 50% amph/tonalite, 25% peg, 25% granitoid, fine crained light greated All foliated
HFM10	108.00 -	- ##### 200; Dark	Dark 10; Pinkish	kish 5; Green	en 8; Medium to coarse grained	ó	20; Reddish 9;	Black 2:	ie-grained (<1	granodiorite, metamorphic 1 granodiorite, metamorphic 1 r	programme gramme 101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase		36; Quartz 32; Potash Feldspar	tash 10; Biotite	60, 60/40 and some pegmatte. Foliated. Some epidote alteration.
HFM10	109.00 -		Dark 0;	5; Green		ö	:0	Blac		Fonalite to ite, metamorphic		e e	3; Amphibole	36; Quartz 32; Potash Feldspar	tash 10; Biotite ar	100; 100 Ionalite or fine grained granitoid? With amph but % more sparsely than in amphibolite. Some pegmatite. Traces of epidote, calcite and pyrite.
HFM10	110.00 -		50; Greenish		ck 6; Fine-to medium grained			Blac		101054; Tonalite to granodiorite, metamorphic		-	49; 31 Plagioclase	36; Quartz 16; Epidote	idote	100
HFM10	111.00 -		50; Greenis		ck 9; Medium-grained (1-0 5 mm)		; 0;	Blac	k 2; Fine-grained (<1 1) mm) g	101054; Tonalite to granodiorite, metamorphic		3; Amphibole		36; Quartz		100; 100 water in sample (and downwards). Quartz grains % probably from fracture filling. Foliated.
HFM10	112.00		50; Greenish	ő	ck 6; Fine-to medium grained		0;	Blac	-	101054; Tonalite to granodiorite, metamorphic		3; Amphibole		36; Quartz 32; Potash Feldspar	tash 10; Biotite ar	100; 100 Foliated. Traces of greyish red, fine grained granitoid %
HFM10	113.00		40; Brownish	ີດັ	ck 6; Fine-to medium grained		0; 0;	Black 2; m	ie-grained (<1	101054; Tonalite to granodiorite, metamorphic		3; Amphibole		16; Epidote		100; 100 Foliated. Traces of granitoid or only oxidized % amphibolite?
HFM10	114.00		40; Brownish	ö				Black 2; m	e-grained (<1						idote 50; Pyrite	
HFM10	115.00 -		10; Pinkish	ό Γ		- 0;	10; Pinkish 9;	Black 2; mr	e-grained (<1	Fonalite to ite, metamorphic	101061; Pegmatite, pegmatitic granite	е	49; 34 Plagioclase	36; Quartz 32; Potash Feldspar	tash 10; Biotite ar	0/40
HFM10	116.00 -	- #####	50; Greenish	9; Black		200; Dark	0;	Green 2; m	e-grained (<1			33; Chlorite	3; Amphibole P	49; 30; Calcite Plagioclase	lcite	100; 100 Chlorite attered amphibolite / Skarn. Strongly foliated % Probable zone of movement.
HFM10	117.00 -	- ######	50; Greenish	9; Black	ck 9; Medium-grained (1- 0; 5 mm)		50; Greenish	Black 2;	ie-grained (<1	101054; Tonalite to granodiorite, metamorphic		3; Amphibole	49; Plagioclase	33; Chlorite 36; Quartz	lartz	80; 80/20 Felsic rock type uncertain. Probably rich in quartz. Transparent to dark (with amphibole) . Chlorite altered / skam?
HFM10	118.00	- #####	50; Greenis	9; Black	ck 8; Medium to coarse arained		50; 9; Greenish	Black 2;	ie-grained (<1		108019; Calc-silicate (	3; Amphibole	49; Plagioclase	33; Chlorite		80; 80/20 with crenulation cleavage? Foliated.
HFM10	119.00 -		50; Greenish	ö	ck 8; Medium to coarse 2 grained	00; Dark	50; 8; Greenish	άĒ	e-grained (<1	101054; Tonalite to aranodiorite, metamorphic in		3; Amphibole	-	33; Chlorite 30; Calcite	lcite	80; 80/20 also some aplite? Foliated, chlorite altered. Skam?
HFM10	120.00				ck 9; Medium-grained (1 5 mm)			Ξi	e-grained (<1				igioclase	36; Quartz 32; Potash Feldspar	tash 30; Calcite ar	100; 100 %
HFM10	121.00		Dark 0;	9; Black	ck 6; Fine-to medium grained		:6 :0	Black 2; m	ie-grained (<1	orphic	102017; Amphibolite		49; 34 Plagioclase		tash ar	
HFM10	122.00		ó	9; Black	ck 9; Medium-grained (1- 0 5 mm)		0; 0;	Black		02017; Amphibolite		3; Amphibole		30; Calcite 33; Chlorite	lorite	100; 100 traces of skam? Foliated.
HFM10	123.00 -	- #####	ó	9; Black	ck 6; Fine-to medium grained		;0 ;0	Black	2; Fine-grained (<1 1) mm)	102017; Amphibolite 2 9	101054; Tonalite to granodiorite, metamorphic	3; Amphibole		36; Quartz		80; 80/20 foliated. Altered surfaces, probably from open fracture.
HFM10	124.00				ck 6; Fine-to medium grained	ö	0;	Black		102017; Amphibolite		3; Amphibole	49; Plagioclase			100; 100 foliated. %
HFM10	125.00	- ##### 100; Light			ck 6; Fine-to medium grained	100; Light		Pink	e-to medium ed					36; Quartz 10; Biotite		
HFM10	126.00 -	- ##### 100; Light	Light 80; Greyish	yish 9; Black	ck 6; Fine-to medium grained	:0	10; Pinkish 9;	Black			101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	32; Potash 34 Feldspar	36; Quartz 3; Amphibole	bole 10; Biotite	60; 60/40 Foliated.
HFM10	127.00	1.0	:0	9; Black	ck 6; Fine-to medium grained	:0	0; 0;	Black 2; mr	ne-grained (<1	1 1		49; Plagioclase	3; Amphibole	36; Quartz		100; 100 Foliated.
HFM10	128.00	- ##### 200;	Dark 0;	8; Grey		:0		Black 2; m	e-grained (<1	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase			idote	
HFM10	129.00	- #####	ó	9; Black		:0	0;	9; Black 2; Fin mm)	e-grained (<1	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase		36; Quartz 16; Epidote	idote 10; Biotite	100; 100 Foliated. Traces of pyrite. Probably also some % amphibolite.

Drill	Drill cuttings				Date	Date: 2003-10-14 S	Sign.: 0	<b>Christin Nordman</b>	Iman								
	2		Untreated drill cuttings sample	L cutting	s sample		Vashed an	d sieved d	rill cuttin	Washed and sieved drill cuttings sample							
Hole	from	from to Lightn.	htn. Chrom.	om. Hu	Hue Gra	ainsize	Lightn.	Chrom.	Hue C	Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3 Min-4 M	Min-5 Distr.	tr. Kommentar
HFM10	130.00 -				Black 6; Fine- grained				9; Black	9; Black 2; Fine-grained (<1 mm)	to tamorphic			3; Amphibole	36; Quartz	100;	100; 100 foliated. %
HFM10	131.00 -	131.00 - ##### 0;	ö	ດ້	Black 6; Fine- grained	to medium	ö	ő	9; Black	9; Black 2; Fine-grained (<1 mm)	102017; Amphibolite	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	3; Amphibole	36; Quartz	:06	90/10 Foliated.
HFM10	132.00 -	132.00 - ##### 0;	ö	." Ծ	9; Black 6; Fine- arained	6; Fine-to medium 0; arained		;0	9; Black 2; m	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole		100;	100; 100 foliated. Possibly traces of tonalite.
HFM10	133.00 -	133.00 - ##### 0;	ö	ő	9; Black 9; Mer	9; Medium-grained (1- 0; 5 mm)		:0	9; Black 2	2; Fine-grained (<1 mm)	102017; Amphibolite			3; Amphibole		100;	100; 100 Foliated. As above.
HFM10	134.00 -	134.00 - ##### 100; Light		80; Greyish 9;	9; Black 6; Fine- grained	6; Fine-to medium 0; grained		:0		2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	36; Quartz	100;	100; 100 Foliated. Quartz probably as fracture mineral. %
HFM10	135.00 -	135.00 - ##### 0;	ö	ő	9; Black 6; Fine- grained	to medium	;0	10; Pinkish 5	9; Black 2 n	2; Fine-grained (<1 mm)	102017; Amphibolite	101058; Granite, metamorphic, aplitic	49; Plagioclase	3; Amphibole	36; Quartz 32; Potash Feldspar	20;	50; 50/50 colour actually whitish black. Vein probably also fine grained, white, Qz-dominated.
HFM10	136.00 -	136.00 - ##### 0;	ö	. <del>6</del>	9; Black 9; Mec 5 mm)	9; Medium-grained (1- 0; 5 mm)				2; Fine-grained (<1 mm)		101058; Granite, metamorphic, aplitic		3; Amphibole	32; Potash Feldspar	16; Epidote 70;	70; 70/30 colour actually whitish black. Amphibolite strongly foliated. Traces of epidote and chlorite.
HFM10	137.00 -	137.00 - ##### 0;	;ô	ô		6; Fine-to medium 0; grained		10; Pinkish 5	9; Black 2			101058; Granite, metamorphic, aplitic	49; Plagioclase	3; Amphibole	36; Quartz 32; Potash Feldspar		90; 90/10 colour actually whitish black. Amphibolite strongly foliated.
HFM10	138.00 -	138.00 - ##### 0;	:0	. <del>6</del>	9; Black 6; Fine-te grained	6; Fine-to medium 0; grained					6	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	3; Amphibole	36; Quartz 33; Chlorite 16; Epidote		80; 80/20 rough rock type estimation. Strongly foliated. Probably movement along some planes (->chlorite, smooth surfaces).
HFM10	139.00 -	139.00 - ##### 0;	ö	ô	Black	6; Fine-to medium 0; grained		:0	9; Black 2 n	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	3; Amphibole	36; Quartz		Rock type ratio very uncertain. Both fine grained and dark. Traces of ep, cc, biotite.
HFM10	- 140.00	140.00 - ##### 0;	ö	ð		6; Fine-to medium 0; grained			9; Black 2	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic			3; Amphibole	30; Calcite	16; Epidote 100; %	100 foliated. Traces of pegmatite. Possibly also some tonalite?
HFM10	- 141.00	141.00 - ##### 0;	:0	ő		6; Fine-to medium 0; grained		0 <sup>:</sup>		2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic			3; Amphibole	16; Epidote	100;	100; 100 Foliated. %
HFM10	142.00 -	142.00 - ##### 0;	;0		9; Black 6; Fine- grained		0;			2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic			3; Amphibole			100; 100 Foliated. Qz from fracture?
HFM10	143.00 -	143.00 - ##### 0;	10; 7	10; Pinkish 9;	Black 6; Fine-t grained	9; Black 6; Fine-to medium 0; grained		10; Pinkish g	9; Black 2; mr	2; Fine-grained (<1 mm)		101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	36; Quartz 32; Potash 50 Feldspar	50; Pyrite 50;	50/50 white mtrl overrepresented in washed sample. actually white and black. Traces of epidote and pyrite.
HFM10	144.00 -	144.00 - ##### 0;	40; Brownish			io medium	:0	20; Reddish 9; Black		2; Fine-grained (<1 mm)	102017; Amphibolite	101058; Granite, metamorphic, aplitic	49; Plagioclase	3; Amphibole			50; 50/50 brown mtrl overrepresented in washed sample. Aplite or granitoid? Has very fine grained biotite. Traces of epidote. Both rocks follated.
HFM10	145.00 -	145.00 - ##### 0;	20; F	20; Reddish 9; Black		6; Fine-to medium 0; grained		20; Reddish 9; Black			101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz 32; Potash 10 Feldspar	10; Biotite 100; %	100 red mtrl overrepresented in washed sample. Two rock types ? If so - both deformed. Probably tonalite or granitoid. Epidote.
HFM10	146.00 -	146.00 - ##### 0;	:0	ô	~	6; Fine-to medium 0; grained		:0	9; Black 2	2; Fine-grained (<1 mm)	102017; Amphibolite	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	3; Amphibole	36; Quartz 50; Pyrite		Rock type ratio very uncertain. Both fine grained and dark. Tonalite or granitoid? Or only amphibolite?
HFM10	147.00 -	147.00 - ##### 200; Dark		80; Greyish 2;		6; Fine-to medium 0; grained		20; Reddish   9; Black		6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	36; Quartz	32; Potash 3; Feldspar Amphibole	100;	100 Istronigy foliated.Any biotite? Dark minerals very fine grained. Traces of X1/prehnite bands.
HFM10	148.00 -	148.00 - ##### 0;	40; Brownish	3		6; Fine-to medium 0; grained				2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		32; Potash 3; Feldspar Amphibole	100;	100 Stronlgy foliated.
HFM10	149.00 -	149.00 - ##### 0;	80; 0	80; Greyish 2;	2; Red 6; Fine-t grained	6; Fine-to medium 0; grained		80; Greyish	2; Red 6	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 36; Quartz		32; Potash 3; Feldspar Amphibole	100; %	100; 100 Stronlgy foliated. %

Drill cuttings	Hinge				Date: 2003-10-03	Sign.: 0	<b>Christin Nordman</b>	dman										
	chilling	Untrea	Untreated drill cuttings sample	ngs samp		ned al	id sieved c	drill cutt	ings sample								F	
Hole	from to		Chrom. Hue	Hue	ainsize	Lightn. (	Chrom. Hu	9	Grainsize	Rock type A	type B	Min-1	Min-2			Min-5 Di	Distr. K	Kommentar
	•			 0 0	o, weaturn to coarse			n ey	z, rine-grained (~ i mm)		granodiorite, metamorphic, medium arained	49, Flaglociase	o, Amphibole		52, rotasi Feldspar		, ou zu ca su de	catute, races of eproue, reu miner at on macure surface. Traces of pegmatite. Sample from 2.8 m depth.
	3 . 4	200; Dark	:0	5; Green	8; Medium to coarse grained	200; Dark 5	50; Greenish	~	2; Fine-grained (<1 mm)	102017; Amphibolite	b		-					rusty possible fracture surface.
	4 - 5	ö	20; Reddish	4; Brown		:0		2; Red		101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz 10			100; 100 tra %	races of amphibolite.
HFM11	- 6	:ó	20; Reddish	4; Brown		:0	80; Greyish	2; Red		101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz 10; Biotite		50; Pyrite 10 %	0; 100	traces of calcite on possible fracture plane.
	6 - 7	200; Dark	40; Brownish		ě	200; Dark 0		~		102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase		36; Quartz 32 Fe		10; Biotite 90;		traces of pyrite.
	7 - 8	ö	40; Brownish	2; Red		:0		2; Red		101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase		36; Quartz 10		3; Amphibole 90; 90/10		traces of pyrite, epidote, and red sealed fracture.
	8	ö	ö	4; Brown 6	6; Fine-to medium grained		80; Greyish	2; Red	o medium	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10	10; Biotite	10 %	100; 100 %	
		0 200; Dark	ó	5; Green 9	9; Medium-grained (1- 5 mm)	00; Dark		~	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; 10 Amphibole		Φ			strong oxidation along possible fracture planes. Traces of 101051.
		ö		Brown	6; Fine-to medium grained			Red		101057; Granite to granodiorite, metamorphic, medium grained			.,		10; Biotite 50;		0; 100	iess than 10% amphibolite, traces of prehnite?
		<del></del>		4; Brown 6		ö	80; Greyish		o medium	101057; Granite to granodiorite, metamorphic, medium grained							100	Both amph and biotite? Traces of pyrite
HFM11	12 - 13	:0	40; Brownish	2; Red	9; Medium-grained (1- 0 5 mm)	:0	ö	2; Red	o medium	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10	10; Biotite 33;	33; Chlorite 10 %	100; 100 CF %	Chlorite on possible fracture plane. Floury sample.
HFM11			20; Reddish	4; Brown 9	9; Medium-grained (1- 200; Dark 5 mm)				rained (<1	102017; Amphibolite								epidote veins banded - movement along the plane?
		5 200; Dark	80; Greyish	4; Brown 8	8; Medium to coarse 0 grained			Red		101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			36; Quartz 10				pyrite, epidote, also red surfaces (oxidized walls?)
		.: 0	ç	4; Brown	4; Brown 9; Medium-grained (1- 0 5 mm)		Reddish	Grey	o medium	101057; Granite to granodiorite, metamorphic, medium grained							100	traces of pyrite.
HFM11	16 - 17	:0	50; Greenish	8; Grey 9	9; Medium-grained (1- 200; Dark 5 mm)		20; Reddish	8; Grey	o medium	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz 10	10; Biotite 3; /	3; Amphibole 10 %		traces of pyrite. Oxidized possible fracture plane.
HFM11	17 - 18	:0	ö	8; Grey	9; Medium-grained (1- 0; 5 mm)		80; Greyish	2; Red		101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz 10	10; Biotite 33;	33; Chlorite 10 %	100; 100 ch %	chlorite on possible fracture plane. Traces of pyrite.
	18 - 19	:ó	ö	8; Grey		200; Dark 2	20; Reddish a	8; Grey		101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz 10	10; Biotite 3; /	3; Amphibole 10 %	0; 100	traces of pyrite, epidote. Calcite on possible fracture plane.
		: <del>;</del>				0;			o medium	101057; Granite to granodiorite, metamorphic, medium grained							-	only traces of pyrite. Biotite rich aggregates.
	•	ö	20; Reddish	Grey	9; Medium-grained (1- 0 5 mm)			Red									100	traces of amphibolite, and biotite rich aggregates.
		;ć	20; Reddish 8;	Grey	9; Medium-grained (1-0; 5 mm)		Greyish	2; Red		101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz 10	10; Biotite 50;		100; 100 ep %	epidote.
	22 - 23	0: 0	20; Reddish	4; Brown 9	9; Medium-grained (1- 5 mm)	6;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10	10; Biotite 50;	50; Pyrite 10 %	0; 100	traces of chlorite, epidote, rusty mineral
	'	.; ;		Red	9; Medium-grained (1- 0 5 mm)	ö		Red	Fine-to medium ained	101057; Granite to granodiorite, metamorphic, medium grained							100	relatively poor in dark minerals.
	24 - 25	:0	20; Reddish	8; Grey G		.°	80; Greyish	2; Red		101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz 10	10; Biotite 30;	30; Calcite 10 %	0; 100	pyrite. Several large euhedral calcite crystals (grown in open space). Calcite and imrost black (sightly reddish) crystals on fracture plane (crystal is rectangular if crosscutted, sample).
	'	<u>;</u>					ö		o medium	101057; Granite to granodiorite, metamorphic, medium grained						۵		quite poor in dark minerals. Traces of pyrite.
			80; Greyish	2; Red	-1-			Red						36; Quartz 10		50; Pyrite 10 %		chlorite on possible fracture plane. Calcite, aggregates rich in biotite.
HFM11	27 - 28	ö	20; Reddish	8; Grey	6; Fine-to medium 0 grained	0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10	10; Biotite 3; /	3; Amphibole 60	60; 60/40 po	possibly also pegmatite. Amphibolite partly epidote altered. Traces of pyrite.

	Drill cuttings	uttings				Date: 2003-10-03	Sign.: C	Christin Nordman	man										
No.         Control         Co				ated drill c	uttings se		Washed and	d sieved dr	rill cuttir										
3         1         0	HFM11				dish 8; Gre	5 mm)		0; Greyish 2;		e-grained (<1		HOCK TYPE B 101057; Granite to granodiorite, metamorphic, medium	49; Plagioclase	ele	H			50; 50/50 1	Nommentar races of pyrite. 5-10 mm big milky quartz grains.
3         1         1         0	HFM11			50; Greenis	άΰ			20; Reddish 8;	Grey	e-grained (<1		grained 101057; Granite to granodiorite, metamorphic, medium	49; Plagioclase	3; Amphibole Fe	; Potash 36 Idspar			50/50	epidote, calcite, 5mm big miky quartz grains.
	HFM11	•		ö				Reddish	Grey	o medium		grained 102017; Amphibolite	Plagioclase	2		ľ		70/30	spidote, pyrite, strongly oxidized, red, surfaces.
3         30000         600	HFM11	•		50; Greenis	άĵ			20; Reddish 8;	Grey	e-grained (<1		101057; Granite to granodiorite, metamorphic, medium orained			; Quartz 32			90/10	yrite, red fracture surfaces, larger quartz-grains (from vein?), traces of calcite.
1         1         1         0	HFM11	•			ά			20; Reddish 8;	Grey	e-grained (<1		5	49; Plagioclase		; Chlorite 50	; Pyrite		100	chlorite on possible fracture surfaces. Calcite vein with red borders (aphanitic, strongly oxidized). Traces of enidote
1         1         0	HFM11			ó	5; Gre	en 9; Medium-grained (1- 5 mm)			Grey	ne-grained (<1		101061; Pegmatite, pegmatitic granite			; Quartz 32			80/20	overtie, biotite. Relatively rich in epidote. Amphibolite foliated or lineated.
1         0	HFM11	•		:0		en 9; Medium-grained (1- 5 mm)				m to coarse	a,	102017; Amphibolite			; Quartz 3; Ar			60/40	epidote, traces of pyrite.
3         3         3         3         6         Peroperio 2         6         Peroperio 3         5         9	HFM11	•	30	50; Greenis		<ul> <li>9; Medium-grained (1-</li> <li>5 mm)</li> </ul>		20; Reddish 8;		o medium	101057; Granite to tranodiorite, metamorphic, redium grained	102017; Amphibolite					; Biotite 7	-	also some pegmatite. Traces of calcite, ppidote,pyrite, red fracture surfaces, possible orehnite.
1         1         0         067040         2         0         07400         2         0         07400         0         040040         2         0	HFM11	•		80; Gre		9; Medium-grained (1- 5 mm)	ö		Red	o medium	101057; Granite to tranodiorite, metamorphic, redium grained								races of amphibolite, epidote, prehnite, chlorite, syrite, calcite (calcite, chlorite, red oxidation together n one sealed fracture)
3         3         0         0         06         04         0         06         04         0         06         04         0         04         0         04	HFM11	•		80; Gre	ŝ		ö		Red	o medium	101057; Granite to tranodiorite, metamorphic, redium grained								only traces of pyrite.
3         -10         0         0.0001         2.66         0.0001         2.69         0.0001         2.69         0.0001         2.69         0.0001         2.40         0.0001         0.0001         0.0001         0.0001         0.0001         0.0001         0.0001         0.0001         0.0001         0.0001         0.0001 </td <td>HFM11</td> <td>•</td> <td></td> <td>80; Gre</td> <td></td> <td></td> <td>0: 0</td> <td></td> <td>Red</td> <td>o medium</td> <th>101057; Granite to tranodiorite, metamorphic, redium grained</th> <td>102017; Amphibolite</td> <td></td> <td></td> <td></td> <td></td> <td>Amphibole 9</td> <td>90/10</td> <td>Water in sample. Epidote, larger quartz grains, pyrite,</td>	HFM11	•		80; Gre			0: 0		Red	o medium	101057; Granite to tranodiorite, metamorphic, redium grained	102017; Amphibolite					Amphibole 9	90/10	Water in sample. Epidote, larger quartz grains, pyrite,
0         1         0         0         2         Ned         0.0001         Annalose         20         0.0001         Annalose         20         0.0001         Annalose         20         0.0001         Annalose         0.0001         Annalose         0.0001         Annalose         0.0001         0.0001         0.0001         0.0001         0.0001         Annalose         0.0001 <td>HFM11</td> <td>•</td> <td></td> <td>80; Gre</td> <td>Ň</td> <td>9; Medium-grained (1- 5 mm)</td> <td>;o</td> <td>30; Greyish 2;</td> <td></td> <td>o medium</td> <th>101057; Granite to Iranodiorite, metamorphic, adiium grained</th> <td>102017; Amphibolite</td> <td></td> <td></td> <td></td> <td></td> <td>Amphibole 5</td> <td>90/10</td> <td>races of pyrite, calcite, epidote, larger quartz grains (from vein?), red possible fracture surfaces.</td>	HFM11	•		80; Gre	Ň	9; Medium-grained (1- 5 mm)	;o	30; Greyish 2;		o medium	101057; Granite to Iranodiorite, metamorphic, adiium grained	102017; Amphibolite					Amphibole 5	90/10	races of pyrite, calcite, epidote, larger quartz grains (from vein?), red possible fracture surfaces.
1         - 10         00         000000000000000000000000000000000000	HFM11			:t	2; Rec		:ů		Red	o medium	101057; Granite to Iranodiorite, metamorphic, Jedium grained	102017; Amphibolite					Amphibole 9	90/10	races of pyrite, calcite, chlorite, epidote.
2         -1.3         0.         0.         2. Red         9. Medung-grande(1: 0.         00. Greent)         2. Red         6. Fineto medun         7000076, Grante D         0.0.0.         0.0.	HFM11			80; Gre			ö	Greyish	Red	to medium	101057; Granite to tranodiorite, metamorphic, redium grained	102017; Amphibolite					Amphibole 9	90/10	races of epidote, calcite, pyrite.
1         1         0         0         0         2         Red         6         1         0         0         6         Playotote         2         Playotote         7         Playotote         2         Playotote         2 </td <td>HFM11</td> <td></td> <td></td> <td>ö</td> <td>2; Rec</td> <td>9; Medium-grained (1- 5 mm)</td> <td>ó</td> <td>Greyish</td> <td>Red</td> <td>o medium</td> <th>101057; Granite to tranodiorite, metamorphic, redium grained</th> <td></td> <td></td> <td></td> <td></td> <td></td> <td>Amphibole 1</td> <td></td> <td>traces of pyrite, biotite slightly chlorite altered? Traces of amphibolite.</td>	HFM11			ö	2; Rec	9; Medium-grained (1- 5 mm)	ó	Greyish	Red	o medium	101057; Granite to tranodiorite, metamorphic, redium grained						Amphibole 1		traces of pyrite, biotite slightly chlorite altered? Traces of amphibolite.
44         -14	HFM11	•		ö	2; Rec	9; Medium-grained (1- 5 mm)	:0		Red		101057; Granite to tranodiorite, metamorphic, redium grained							100	races of amphibolite.
45         - 46         0:         2: Red         8. Medium-grained (1-0;         80: Grayish 2: Red         8: Finate non-philo,         910357, Graine in particular medianorphil,         49: Plagocidaes         32: Prasin         96: Cuart:         10: Blott         16: Epidole         90: 0: 100           47         1         48         -         49: Plagocidaes         32: Prasin         9: Clargist         10: Blott         10: Blott <t< td=""><td>HFM11</td><td></td><td></td><td>ó</td><td>2; Rec</td><td>9; Medium-grained (1- 5 mm)</td><td>ö</td><td></td><td></td><td></td><th>101057; Granite to tranodiorite, metamorphic, redium grained</th><td></td><td></td><td></td><td></td><td></td><td></td><td>100</td><td>races of epidote.</td></t<>	HFM11			ó	2; Rec	9; Medium-grained (1- 5 mm)	ö				101057; Granite to tranodiorite, metamorphic, redium grained							100	races of epidote.
46         -17         0.         0.0. Greych 2, Red         0. Medium-grained (1- 0); medium grained         0.00000ic metaneophic, medium grained         0.00000ic metaneophic, grandolo metaneophic, medium grained         0.00000ic metaneophic, grandolo metaneophic, medium grained         0.00000ic metaneophic, grandolo metaneophic, medium grained         0.00000ic metaneophic, grandolo metaneophi	HFM11			.ú	2; Rec	9; Medium-grained (1- 5 mm)	:0			o medium	101057; Granite to tranodiorite, metamorphic, nedium grained								races of epidote, one larger quartz grain possibly from fracture filling.
47         - 48         0:         40:         2. Red         9. Medum-grained (1- 0: 5 mm)         80: Greysh (2: Fine-to medum grandonick metanophic, prained         7. 48         10:         40:         2. Red         9. Medum-grained (1- 0: 6 mm)         80: Greysh (2: Fine-to medum grandonick metanophic, grained         7. 48         10: Greysh (2: Fine-to medum grandonick metanophic, grained         49: Plagioclase (2: Proper) (2: Pedopa Fedopar         10: Borne (1: 0: Dotte)         16: Epidore (0: 100         100: 100           49         -50         -10:         20: Greysh (2: Fine-to medum grandonick metanophic, berownish         -48: Plagioclase (2: Proper) (2: Pedopar         20: Dotte (1: 0: Borne (1: 0: Dotte)         16: Epidore (100: 7)         100: 100           49         -50         -71: -20: Reddish 4: Brown (5: Fine-to medum grandonick metanophic, berownish         -48: Plagioclase (2: Podose) (2: Dotte (2: 0)         90: 000         90: 000           50         -51         0:         20: Reddish 4: Brown (5: Fine-to medum grandonick metanophic, grained         -48: Plagioclase (2: Podose) (2: Obtte (2: Podose) (2:	HFM11			80; Gre	e.	9; Medium-grained (1- 5 mm)	ö		Red	o medium	101057; Granite to granodiorite, metamorphic, nedium grained							100; 100 %	races of epidote and pyrite
43         43         0.         80: Greyish         2: Red         6: Fine-to medium         10: Stanted         36: Ouartz         10: Biotite         16: Fine-to medium         90: Ouartz         10: Biotite         50: Printe         90: Ou1O           50         -51         0:         20: Reddish         4. Brown 6: Fine-to medium         01057: Gamite         10: 10: 10: 17: Gamite         49: Plagiodase         32: Ouartz         10: Biotite         50: Printe         90: Ouartz         10: Biotite         90: Ouartz         10: Biotite <t< td=""><td>HFM11</td><td>•</td><td></td><td>40; Brownis</td><td>Ń</td><td>9; Medium-grained (1- 5 mm)</td><td>ö</td><td></td><td>Red</td><td>o medium</td><th>101057; Granite to tranodiorite, metamorphic, redium grained</th><td></td><td></td><td></td><td></td><td></td><td></td><td>100; 100 1 %</td><td>races pf epidote and pyrite.</td></t<>	HFM11	•		40; Brownis	Ń	9; Medium-grained (1- 5 mm)	ö		Red	o medium	101057; Granite to tranodiorite, metamorphic, redium grained							100; 100 1 %	races pf epidote and pyrite.
49         50         0:         40:         80:         Garded         6: Fine-to medium         100:         70:         40:         70:         10:	HFM11	•		80; Gre	Ń			30; Greyish 2;		o medium	101057; Granite to tranodiorite, metamorphic, redium grained								races of epidote and pyrite. Larger grains of quartz (from pegmatite or qz-vein?)
0         51         0:         20: Reddish         4: Brown (6; Fine-to medium         0:         80: Greysh         2: Red         6; Fine-to medium         101057: Granite         40: Plagiodase         35: Ouartz         10: Bottie         50: Pyrte         90: 90: 00           51         - 52         0:         40: Plagiodase         35: Ouartz         10: Bottie         50: Pyrte         90: 90: 00           51         - 52         0:         40: Plagiodase         35: Ouartz         10: Bottie         50: Pyrte         90: 90: 00           51         - 52         0:         40: Plagiodase         35: Ouartz         10: Bottie         30: Ouartz         10: Bottie         90: 90: 00           51         - 52         0:         40: Plagiodase         35: Ouartz         10: Bottie         30: Ouartz         10: Bottie         90: 90: 00           52         - 53         0:         40: Plagiodase         35: Ouartz         10: Bottie         50: Pyrte         90: 90: 00           53         - 54         9: Medium-grained (1- 0;         80: Greyish         2: Red         8: Medium-grained         90: 90: 00         90: 90: 00           6         Fine-to mediu         01057: Grainte         10: 0051: Pegmattic         49: Plagiodase         32: Potash </td <td>HFM11</td> <td>•</td> <td></td> <td>40; Brownis</td> <td></td> <td></td> <td></td> <td></td> <td>Red</td> <td></td> <th>101057; Granite to tranodiorite, metamorphic, redium grained</th> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>races of pyrite. Some grains (20%) relatively rich in oiotite, some grains possibly from pegmatite.</td>	HFM11	•		40; Brownis					Red		101057; Granite to tranodiorite, metamorphic, redium grained								races of pyrite. Some grains (20%) relatively rich in oiotite, some grains possibly from pegmatite.
51         52         0.         40:         2: Red         9. Medium-grained (1-0:)         80: Greysh 2; Red         6: Fine-to medium         101057; Canile to grandotick; melanorphic, pegmattic granite         49: Plaglociase         35: Ouartz         10: Bitti 3; Amphibole         90: 90: 90: 90: 90: 90: 90: 90: 90: 90:	HFM11	•		20; Red			ö		Red	o medium		101061; Pegmatite, pegmatitic granite						90/10	races of pyrite and epidote. Some grains (20%) elatively rich in biotite
52         53         0;         40;         2; Red         9; Medium-grained (1-0;         80; Grayish         2; Red         6; Fine-to medium         101057; Granite to medium         101061; Pegmatite, medium         43; Plagiodase         35; Ouartz         10; Biotite         50; Dyrite         80; S020           53         - 54         0;         40;         2; Red         9; Medium-grained (1-0;         80; Grayish         2; Red         9; Medium-grained (1-0;         80; Grayish         2; Red         9; Medium-grained (1-0;         80; Grayish         2; Red         9; Medium         2; Potariz         10; Biotite         50; Dyrite         80; Go040           53         - 54         0;         40;         2; Red         8; Medium to coarse         101057; Granite to grained         49; Plagiodase         32; Potarizh         10; Biotite         50; Pyrite         60; 6040           60; 6040         grained         pegmatitic granite         101057; Granite to grandothe.         49; Plagiodase         32; Potarizh         10; Biotite         50; Pyrite         60; 6040           60         60%         Granite         101057; Granite to grandothe.         49; Plagiodase         32; Potarizh         10; Biotite         50; Pyrite         60; 6040	HFM11	•		40; Brownis			ö		Red	o medium	io amorphic,	101061; Pegmatite, pegmatitic granite					Amphibole 9	90/10	races of pyrite, epidote.
53         - 54         0;         40;         2; Red         9; Medium-grained (1- 0;         80; Greyish         2; Red         8; Medium to coarse         101057; Granite (0         43; Plagioclase         33; Potash         36; Ouartz         10; Biotite         50; Dyrite         60; 6040           Prownish         5: min)         9         9         Pegmattic granite         9	HFM11	•		40; Brownis		9; Medium-grained (1- 5 mm)	:0	Greyish	Red	o medium	o amorphic,	101061; Pegmatite, pegmatitic granite						80/20	Relatively rich in biotite also biotite rich aggregates (amphibolite?). Traces of calcite,
	HFM11			40; Brownis			ö	Greyish	Red	Medium to coarse ained	nî.	101057; Granite to granodiorite, metamorphic, medium grained						60/40	also biotite attered amphibolite? Biotite rich grains, probably with feldspar and qz. Traces of epidote and pyrite.

<b>Drill cuttings</b>	ttings				Date: 2003-10-03	Sign.: 0	<b>Christin Nordman</b>	dman									
			ĕ	ings san		la	nd sieved c	Irill cutt	gs sample	-						i	
Hole HEM11	from to	o <mark>Lightn.</mark>		4. Brown	Chrom. Hue Grainsize	<b>Lightn.</b>	Chrom. I IRO: Grevish [3	Hue Red	Fine-to medium	Rock type A Rocl 101057: Granite to 10106	Rock type B 101061: Permatite 40	Min-1 N 49: Planioclase 13:	Min-2 Min-3 32: Potach [36: Oue	Min-3 Min-4 36: Ouartz 110: Biotite		Min-5 Distr. 3: Amnhihola 60: 60/40	
		<u>5</u>	60000- 004	ŕ		ō	12600 000	2	ained	norphic,				2		- 	101061 and 20% 102017.
HFM11	55 - 56	;; ;;	20; Reddish	1 4; Browr	4; Brown 9; Medium-grained (1- 5 mm)	ö	80; Greyish	2; Red	6; Fine-to medium grained	o amorphic,		49; Plagioclase 3:	32; Potash 36; Quartz Feldspar	artz 10; Biotite	te 50; Pyrite	80; 80/20	20 traces of epidote. Possibly some amphibolite.
	'	:0	20; Reddish		9; Medium-grained (1- 5 mm)	:0			Fine-to medium ained	to tamorphic,	101061; Pegmatite, 49 pegmatitic granite			artz 10; Biotite			
		io m	40; Brownish	8; Grey	9; Medium-grained (1- 5 mm)	:ô		Red	Fine-to medium ained	101057; Granite to granodiorite, metamorphic, medium grained	45			36; Quartz 10; Biotite		100; %	
HFM11	58 - 59	<u>;;</u>	20; Reddish	1 4; Browr	1	ö	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	46	49; Plagioclase 3.	32; Potash 36; Quartz Feldspar	artz 10; Biotite	te 16; Epidote	te 100; 100 %	
HFM11	59 - 60	<u>ë</u>	20; Reddish	1 4; Browr	4; Brown 8; Medium to coarse grained	:0	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	46	49; Plagioclase 3:	32; Potash 36; Quartz Feldspar	artz 10; Biotite		100; 100 %	0 biotite rich aggregates with pyrite, epidote and white feldspar. Traces of pyrite and epidote.
	60 - 61	<u>;;</u>	20; Reddish	a; Grey	9; Medium-grained (1- 5 mm)	ö	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	46	49; Plagioclase 3;	32; Potash 36; Quartz Feldspar	artz 10; Biotite	te 33; Chlorite	te 100; 100 %	0 Chlorite on possible fracture plane. Traces of pyrite and epidote.
		: <del>;</del>	20; Reddish	ά	9; Medium-grained (1- 5 mm)	ó			Fine-to medium ained	101057; Granite to granodiorite, metamorphic, medium grained	49:						
HFM11	62 - 63	ö	80; Greyish	2; Red	9; Medium-grained (1- 5 mm)	ö	80; Greyish	2; Red		101057; Granite to granodiorite, metamorphic, medium grained	46	49; Plagioclase 3.	32; Potash 36; Quartz Feldspar	artz 10; Biotite	te 33; Chlorite	te 100; 100 %	
	63 - 64	4 	ö	2; Red	9; Medium-grained (1- 5 mm)	ö			Fine-to medium ained	1orphic,		ase		36; Quartz 10; Biotite			
	64 - 65	;; ;	ö		9; Medium-grained (1- 5 mm)		80; Greyish			tite,	Granite to orite, rphic, medium	32; Potash 44 Feldspar P	49; 36; Quartz Plagioclase	artz 10; Biotite	te 16; Epidote	te 80; 80/20	
HFM11	65 - 66	:0	ö		9; Medium-grained (1- 5 mm)	:0			Medium to coarse ained	101061; Pegmatite, peqmatitic granite	32 Fe	32; Potash 4 Feldspar P	9; 36; Quartz Nagioclase	artz 10; Biotite	te 16; Epidote		
HFM11	66 - 67	:0	80; Greyish	2; Red	9; Medium-grained (1- 0 5 mm)		80; Greyish	2; Red	o medium	101057; Granite to granodiorite, metamorphic, medium grained	49	; Plagioclase 3	e 32; Potash 36; Quartz Feldspar	artz 10; Biotite	te 16; Epidote	te 100; 100 %	
HFM11	67 - 68	ö	80; Greyish	2; Red	9; Medium-grained (1- 5 mm)	ö	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	49	49; Plagioclase 3;	32; Potash 36; Qua Feldspar	36; Quartz 10; Biotite	te 50; Pyrite		0 also traces of same mineral as HFM11 m 25. traces of calcite and epidote.
HFM11	69 - 69	ö	ö	2; Red	É	;0	80; Greyish	2; Red		101057; Granite to granodiorite, metamorphic, medium grained	49	49; Plagioclase 3;		36; Quartz 10; Biotite	te 50; Pyrite		-
HFM11	69 - 70	ö	20; Reddish	8; Grey		:0	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	46	49; Plagioclase 3.	32; Potash 36; Quartz Feldspar	artz 10; Biotite	te 50; Pyrite	100; 100 %	
	'	ö	80; Greyish	3	9; Medium-grained (1- 5 mm)	ö			Fine-to medium ained	101057; Granite to granodiorite, metamorphic, medium grained	49;			artz 10; Biotite		100; %	1
HFM11		: <del>;</del>	80; Greyish		9; Medium-grained (1- 5 mm)	ö			Fine-to medium ained	101057; Granite to granodiorite, metamorphic, medium grained	45						
		: <del>;</del>	80; Greyish		9; Medium-grained (1- 5 mm)	0;			Fine-to medium ained		45			artz 10; Biotite			
	73 - 74	4 	80; Greyish	ŝ	9; Medium-grained (1- 5 mm)	:0		2; Red	Fine-to medium ained	101057; Granite to granodiorite, metamorphic, medium grained	45			artz 10; Biotite	te 50; Pyrite	100; 100 %	
HFM11	74 - 75	. <del>.</del>	ö	2; Red	9; Medium-grained (1- 5 mm)	:0	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	46	49; Plagioclase 3.	32; Potash 36; Quartz Feldspar	artz 10; Biotite	te 50; Pyrite	100; 100 %	<ul> <li>0 loxidized, red possible fracture planes. Traces of epidote.</li> </ul>
HFM11		<u>;;</u>	80; Greyish		ş	ö			Fine-to medium ained	101057; Granite to granodiorite, metamorphic, medium grained	46			artz 10; Biotite		100; %	
HFM11	76 - 77	:0 2	80; Greyish	2; Red	6; Fine-to medium grained	:0	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	45	49; Plagioclase 3;	32; Potash 36; Quartz Feldspar	artz 10; Biotite	te 50; Pyrite	100; 100 %	0 sealed red fracture.
HFM11	77 - 78	ö	80; Greyish	2; Red	9; Medium-grained (1- 5 mm)	ö	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	49	49; Plagioclase 3;	32; Potash 36; Qua Feldspar	36; Quartz 10; Biotite	te 50; Pyrite	100; 100 %	0 traces of epidote.
	•	ö	80; Greyish	ŝ	9; Medium-grained (1- 5 mm)	;0		Red	Fine-to medium ained	101057; Granite to granodiorite, metamorphic, medium grained	45	49; Plagioclase 3;		artz 10; Biotite			
HFM11	79 - 80	<u>;;</u>	ö	2; Red	9; Medium-grained (1- 5 mm)	;;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	46	49; Plagioclase 3;	32; Potash 36; Quartz Feldspar	artz 10; Biotite	te 50; Pyrite	100; 100 %	0 chlorite on possible fracture planes. Quartz sealed fractures. Traces of pyrite.

Drill cu	Drill cuttings				Date: 2003-10-03	Sign.: 0	Christin Nordman	lman										
Hole			ed drill cutti Chrom.	ngs san Hue	nple Grainsize	Washed an Lightn.	Washed and sieved drill cuttin Lightn. Chrom. Hue G	Irill cutti Hue	ngs sample Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM11	80 - 8	81 0;	ö	2; Red	9; Medium-grained (1- 0 5 mm)	ő	80; Greyish 2; Red	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		gioclase	32; Potash Feldspar	臣	10; Biotite	30; Calcite	100; 100 %	larger calcite grains, probably from sealed fracture.
HFM11			:0	2; Red	6; Fine-to medium grained	:0		1 1		101057; Granite to granodiorite, metamorphic, medium grained			32; Potash Feldspar		10; Biotite	16; Epidote	100; 100 %	black aphanitic possible fracture filling. Traces of epidote (in sealed fracture). Possible prehnite.
HFM11		3 200; Dark	:0	2; Red	9; Medium-grained (1- 5 mm)	ö			6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained			32; Potash Feldspar	36; Quartz	10; Biotite	30; Calcite	100; 100 %	water in sample. Quartz and calcite sealed fractures, sometimes with chlorite. Some biotite rich aggregates.
HFM11	83 - 84	4 .;	80; Greyish	2; Red	9; Medium-grained (1- 5 mm)	:0	80; Greyish 2	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	70; 70/30	red possible fracture surfaces, epidote and calcite veins. Probably some deformation (epidote usually slightly banded). Amphibolite slightly skarn-altered?
HFM11	84 - 85	<u>ې</u>	40; Brownish	2; Red	6; Fine-to medium grained	200; Dark 2	20; Reddish 8	8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	50; 50/50	larger quartz grains, probably from sealed fracture. Traces of epidote (sealed fractures) and calcite.
HFM11	85 - 86	:: 9	50; Greenish	4; Brown	6; Fine-to medium grained	200; Dark 2	20; Reddish 8	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	80; 80/20	epidote rich bands/veins, some larger quartz grains probabity fracture filing, some red possible fracture surfaces.
HFM11	86 - 87	0;	80; Greyish	2; Red	9; Medium-grained (1- 200; Dark 5 mm)		80; Greyish 2	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	60; 60/40	epidote rich veins. Some larger quartz grains, probably fracture filling.
HFM11	87 - 88	: <u>0</u>	80; Greyish	4; Brown	6; Fine-to medium grained	200; Dark 2	20; Reddish 8	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	80; 80/20	with epidote veins. Some 101057 grains seem to be deformed (grain size reduction, banding)
HFM11	88 - 89	: <u>;</u>	ö	4; Brown	6; Fine-to medium grained		80; Greyish 2	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	traces of amphibolite. Traces of epidote, and larger quartz-grains.
HFM11	- 90	:: 0	80; Greyish	4; Brown	9; Medium-grained (1- 200; Dark 5 mm)			8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	50; 50/50	some epidote and quartz (sealed fractures) traces of larger calcite grains. Red possible fracture surfaces.
HFM11	90 - 91	<del></del>	80; Greyish	4; Brown	9; Medium-grained (1- 200; Dark 5 mm)		80; Greyish 2	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	60; 60/40	some larger quartz and calcite grains (probably fracture filling), epidote veins.
HFM11	91 - 92	; 2	80; Greyish	4; Brown	1 6; Fine-to medium grained		80; Greyish 2		6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	possible chlorite fracture filling (green, not so dark, soft. One calcite crystal (3mm), some larger quartz grains.Traces of epidote.
HFM11	92 - 93	<u>;</u>	80; Greyish	4; Brown			80; Greyish 2	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	traces of epidote altered amphibolite. Nice calcite cleavage planes (cc as fracture mineral).
HFM11	93 - 94	5 5	80; Greyish	2; Red	9; Medium-grained (1- 200; Dark 5 mm)			2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	traces of epidote and calcite.
HFM11	94 - 95	0: 0		ii i	9; Medium-grained (1- 0; 5 mm)	:0			6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	X1 (fine grained to aphanitic light grey/green mass, brittle ductite zone?), calcite and quariz grains from for the form the control of the control of the cutting scale)
HFM11		:: 9	20; Reddish	4	9; Medium-grained (1- 5 mm)	:0		Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained			32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote		X1 (fine grained to aphanitic light grey/green mass, with deformed fragements - brittle ductile zone), calcite. 101057 seems quite pure.
HFM11		:0	80; Greyish	4; Brown	6; Fine-to medium grained				2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	101004; Ultramafic rock, 49; Plagioclase metamorphic	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole		skam? Mafic volcanite? Fine grained to aphanitic, dark green. Or very fine grained, altered amphibolite? Pyrite, calcite, X1,
HFM11	•		80; Greyish	4; Brown			80; Greyish 2	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	101004; Ultramafic rock, 49; Plagioclase metamorphic	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	:02	
HFM11	96 - 99	9 200; Dark	40; Brownish	8; Grey	9; Medium-grained (1- 200; Dark 5 mm)		20; Reddish 8	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	70; 70/30	epidote, X1, traces of calcite
HFM11	- 10	100 0;	80; Greyish	2; Red	9; Medium-grained (1- 5 mm)	ö		2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole		
HFM11		0;	40; Brownish	2; Red	9; Medium-grained (1- 5 mm)	ö		2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	X1, thin quartz vein cross cuts brittle ductile deformation in almost 90 degrees angle. Calcite and quartz grains, epidote.
HFM11	101 - 102	02 0;	:0	2; Red	9; Medium-grained (1- 5 mm)		80; Greyish 2	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	30; Calcite	90; 90/10	
HFM11	102 - 103	03 200; Dark	80; Greyish	2; Red	9; Medium-grained (1- 200; Dark 5 mm)		20; Reddish 8	8; Grey	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	60; 60/40	perhaps also marble 5% (or calcite vein). Amph very fine grained, X1, epidote, pyrite crystals seem to come from fractures.
HFM11			80; Greyish	2; Red	9; Medium-grained (1- 200; Dark 5 mm)		80; Greyish 2		2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	70; 70/30	calcite, quartz (probably from fractures), traces of epidote, X1, pyrite (in sealed? fractures)
HFM11	104 - 105	05 200; Dark	80; Greyish	2; Red	9; Medium-grained (1- 200; Dark 5 mm)		80; Greyish 2	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	calcite.dark red possible fracture surface. Quartz probably also as fracture mineral. 101057 possibly strongy foilated?

Drill ci	Drill cuttings				Date: 2003-10-03	0-03 Sign.:	Christin Nordman	dman										
	4111193		Untreated drill cuttings sample	cuttings	sample	Washed	Washed and sieved drill cuttin	Irill cutti	ngs sample									
Hole	from	to Lig	Lightn. Chrom.	om. Hue	Grainsize		Chrom. Hue	Hue				Γ	n-2	Min-3 M	-		tr.	Kommentar
	•		u, Dark 40; Brownish	nish o; orey	5 mm) 5 mm				z, rine-graineu (< i mm)		granodiorite, metamorphic, medium orained		Plagioclase F	52, Fotasri 50 Feldspar			07/00	ampmounte myromine and anered. Dark red possible fracture surfaces.calcite.
HFM11	106	107 200;	200; Dark 40; Brownish	άΰ	Grey 9; Medium-gra	9; Medium-grained (1- 200; Dark 5 mm)	80; Greyish	2; Red	2; Fine-grained (<1 mm)	norphic,	Amphibolite	49; Plagioclase 3	32; Potash 3 Feldspar	36; Quartz 10	10; Biotite 3; /	3; Amphibole 50; 50/50		very fine grained to aphanitic, some grains mylonitic. Larger quartz and calcite grains.
HFM11	107	108 0;	50; Greenish	4	Brown 9; Medium-grained (1- 5 mm)	ained (1- 0;	50; Greenish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 3	32; Potash 3 Feldspar	36; Quartz 10	10; Biotite 3; /	3; Amphibole 100; %	100	brittle ductile shear zone. 30% almost aphanitic, light grey/green mass, a cataclastite? Catcite, larger quartz grain. Traces of pyrite and purer amphibolite.
HFM11	108	109 0;		4	E	dium 0;		2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz 10		3; Amphibole 100; %	100	brittle ductile shear zone. 70% almost aphanitic, light grey/green mass, a cataclastitie? Langer quartz and catche grains, traces of pyrite and amphilobite.
HFM11	109	110 0;	50; Greenish	nish 2; 72	Red 6; Fine-to medium grained	dium 0;		Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	-	49; Plagioclase 3	32; Potash Feldspar	36; Quartz 10	10; Biotite 3; /	3; Amphibole 100; %	100	brittle ductile shear zone. 60% almost aphanitic, light grey/green mass, a cataclastitie? Traces of amphibolite. Qzvein intruded into cataclastite (?)- catote.
HFM11	- 110	111	200; Dark 20; R	20; Reddish 5; Green	ireen 9; Medium-gr 5 mm)	9; Medium-grained (1- 200; Dark 5 mm)	20; Reddish 5;	Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	-	49; Plagioclase 3	32; Potash Feldspar	36; Quartz 10	10; Biotite	,100 %	100	100%? Cataclastite? Traces of pyrite, larger qz- grains, probably from fracture filling.
HFM11	11	112	200; Dark 20; R	20; Reddish 5; G	Green 9; Medium-gra 5 mm)	9; Medium-grained (1- 200; Dark 5 mm)	20; Reddish	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 3	32; Potash Feldspar	36; Quartz 10	10; Biotite	100; %	100	100%? Cataclastite? Possibly also deformed amphibilite. Very thin sealed fracture, obviously younger than cataclastic deformation. Traces of pyrite and calcite.
HFM11	112	113	200; Dark 20; R	20; Reddish 5; G	Green 9; Medium-grained (1- 5 mm)	ained (1- 0;	20; Reddish 8		2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase 3; A		10; Biotite 32 Fe	32; Potash 36; Feldspar	36; Quartz 70;	70/30	amphibolite altered? 101057 very fine grained to aphantite, some grains seem mylonitic. Very fine grained calcite - skam??? A few larger qz grains.
HFM11	113	114 0;	20; R	20; Reddish 5; Green		ained (1- 0;	ö	8; Grey	2; Fine-grained (<1 mm)		: Amphibolite	49; Plagioclase 3	32; Potash 3 Feldspar	36; Quartz 10	10; Biotite 3; /	3; Amphibole 70;	70/30	70/30777 Strongly attered, cataclastic to mylonitic. Brittle ductile shear zone Qz with pyrite, probably fracture filling.
HFM11		115 0;	20; R	ίú	Green 9; Medium-grained (1- 5 mm)	ained (1- 0;	20; Reddish 8		2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained						3; Amphibole 50;	50/50	50/50??? Strongly altered, cataclastic to mylonitic. Brittle ductile shear zone.
HFM11	'	116	20; R	с; с	c.	ained (1- 0;	Reddish		2; Fine-grained (<1 mm)	olite	ε				10; Biotite 3; /	3; Amphibole 70;	70/30	70/307?? Strongly altered, cataclastic to mytonitic.Brittle ductile shear zone. Amphibolite seem to be mostly altered.
HFM11	- 116	117 0;	50; Greenish	Ń	Red 9; Medium-grained (1- 0; 5 mm)	ained (1- 0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic	Amphibolite	49; Plagioclase 3	32; Potash Feldspar	36; Quartz 3; An	3; Amphibole	80;	80/20	or 101057?, almost aphanitic, no dark minerals (aplite?), Amphibolite strongly altered - cataclastic? Brittle ductile shear zone.
HFM11	- 117	118 0;	50; Greenish	<i></i>	Red 9; Medium-grained (1- 5 mm)	ained (1- 0;	ö	2; Red	2; Fine-grained (<1 mm)			49; Plagioclase 3		36; Quartz 3; An	3; Amphibole	.'06	90/10	or 101057? poor in dark minerals, almost aphanitic (aplite?). calcite crystal with same mineral as in HF11 m.25.
HFM11	- 118	119 0;	50; Greenish	ί,	Red 9; Medium-grained (1- 5 mm)	ained (1- 0;	40; Brownish	2; Red	2; Fine-grained (<1 mm)		101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase 3		36; Quartz 10	10; Biotite	20;	70/30	rough estimation of rock type ratio. Or only 101057? poor in dark minerals, almost aphanitic (aplife?). Traces of amphibolite. Brittle ductile shear zone.
HFM11		120 0;	80; G	5 4	Red 9; Medium-grained (1- 5 mm)	ained (1- 0;			2; Fine-grained (<1 mm)	Granite to brite, metamorphic, grained	Amphibolite						70/30	Brittle ductile shear zone. Some grains seem undisturbed, other are aphanitic, cataclastic, to mylonitic. Amph less deformed than 1010157.
HFM11	120	121 0;	50; Greenish	4	Brown 9; Medium-grained (1- 0; 5 mm)	ained (1- 0;	40; Brownish	8; Grey	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite 4	49; Plagioclase 3	32; Potash Feldspar	36; Quartz 10	10; Biotite 3; /	3; Amphibole 70;	70/30	brittle ductile shear zone. Less deformed than former sample. Grain size reduction, bands of X1 (aphanitic mass, slightly greenish, with deformed fragments).
HFM11	•	122 0;	80; G	4	Brown 9; Medium-grained (1- 5 mm)	ained (1- 0;			2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	-		<u>د</u>			0	; 100	brittle ductile shear zone. Strongly deformed. Traces of calcite and green fluorite? Also pyrite.
HFM11	- 122	123 0;	20; R	sh 4;	Brown 6; Fine-to medium grained	dium 0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	tic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase 3	32; Potash 3 Feldspar	36; Quartz 10	10; Biotite 110	11091; X1 80;	80/20	brittle ductitie shear zone. Very fine grained to aphanitic. Some grains leucocratic. X1. Calcite and quartz probably from fracture filling.
HFM11	123	124 0;	40; Brownish	Ň	Red 9; Medium-grained (1- 0; 5 mm)	ained (1- 0;	80; Greyish	2: Red	2; Fine-grained (<1 mm)					36; Quartz 11	11091; X1 30;	30; Calcite 100; %	100	brittle ductile shear zone. Very fine grained to aphanitic, leucocratic (mylonitic?) with bands of X1. Traces of pyrite.
HFM11	•	125 0;	40; Brownish	i,	Red 9; Medium-grained (1- 5 mm)	ained (1- 0;	80; Greyish	2; Red 2	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase 3		36; Quartz 11			100; 100 brii % apl	brittle ductile shear zone. Very fine grained to aphanitic, leucocratic (mylonitic?) with bands of X1. bigger qz-grains.
HFM11	125 -	126 0;	40; Brownish	Ň	Red 9; Medium-grained (1- 5 mm)	ained (1- 0;	ö	2; Red	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic		49; Plagioclase 3	32; Potash 3 Feldspar	36; Quartz 11	11091; X1 10;	10; Biotite 100; %	100	small sample. Or pegmatite.Leucocratic.Less deformed than samples above. Traces of epidote, calcite.
HFM11	•	127 0;	40; Brownish	ŝ		ained (1- 0;		Red	9; Medium-grained (1- 5 mm)	101061; Pegmatite, pegmatitic granite							100	small sample. Leucocratic.
HFM11 HFM11	127 - 128	128 0; 0;	.: 40 .:	in in	Red 9; Medium-grained (1- 0) 5 mm) Red 6; Fine-to medium 0)	ained (1- 0; dium 0;	<u>;;</u> ;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;;	2; Red 2; Red 2; Red	9; Medium-grained (1- 5 mm) 6; Fine-to medium		<u> </u>	49; Plagioclase 3 F 49; Plagioclase 3	32; Potash 3 Feldspar 32; Potash 3	36; Quartz 10 36; Quartz 10	10; Biotite 110 10; Biotite 110	11091; X1 100 11091; X1 100 11091; X1 100	100; 100 X1 % 100 100 X1 100; 100 sm	X1 with angular fragments- cataclastic. Traces of 101057? small sample. Traces of pyrite, epidote, violet fluorite
			Brownish							granodiorite, metamorphic, medium grained								d 101057.

Drill cutting	Ittings				Date: 2003-10-03 Sig	Sign.: (	<b>Christin Nordman</b>	dman									
-			ĕ	tings san		ashed an	Washed and sieved drill cutting	Irill cutti	gs sample					N M			
HFM11	129 - 10	130 0;		2; Red	9; Medium-grained (1- 5 mm)		;; ;;	2; Red	Fine-to medium	to tamorphic,	KUCK LYPE D	49; Plagioclase 32; Potash Feldspar	otash 36; Quartz	10; Biotite	11091; X1	100; 100 o	or deformed pegmatite? traces of pyrite, calcite
HFM11	130 - 131	31 0;	ö	2; Red	9; Medium-grained (1- 0; 5 mm)		:0	2; Red	2; Fine-grained (<1 2 mm)	medium grained 101057; Granite to granodiorite, metamorphic,		49; Plagioclase 32; Potash Feldspar	otash 36; Quartz bar	: 10; Biotite	11091; X1	100; 100 tr	traces of calcite, epidote, X1,.
HFM11	131 - 132	32 0;	ö	4; Brown	n 6; Fine-to medium 0; grained		80; Greyish	2; Red	2; Fine-grained (<1	1101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase 32; Pc Felds	32; Potash 36; Quartz Feldspar	: 3; Amphibole	10; Biotite	70; 70/30 b	bands of X1 -otherwise it does not seem deformed.
HFM11	132 - 10	133 0;	80; Greyish	2; Red	6; Fine-to medium 0; grained			2; Red	2; Fine-grained (<1 ) mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase 32; Potash Feldspar	otash 36; Quartz oar	: 3; Amphibole	10; Biotite	60; 60/40 b	bands of X1 -otherwise it does not seem deformed.
HFM11	133 - 134	34 200; Dark	ark 80; Greyish	2; Red	9; Medium-grained (1- 0; 5 mm)		80; Greyish 2	2; Red	2; Fine-grained (<1 2; mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase 32; Potash Feldspar	otash 36; Quartz oar	: 3; Amphibole	10; Biotite	70; 70/30 b	bands of X1 with deformed rock fragments -otherwise it does not seem deformed.
HFM11	134 - 135	35 0;	50; Greenish	4; Brown	n 9; Medium-grained (1- 0; 5 mm)		50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 32; Pc Felds	32; Potash 36; Quartz Feldspar	: 10; Biotite	11091; X1	100; 100 si % d	small sample. Brittle ductile shear zone. Ductile deformation adjacent to greenish bands. Seems otherwise undeformed
HFM11	135 - 136	36 0;	50; Greenish	2; Red	9; Medium-grained (1- 0; 5 mm)		50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 32; Pc Felds	32; Potash 36; Quartz Feldspar	: 10; Biotite	11091; X1	100; 100 b % d	brittle ductine shear zone. Relatively strong deformation. Traces of calcite and pyrite. Sealed qz- vein
HFM11	136 - 10	137 0;	80; Greyish		9; Medium-grained (1- 0; 5 mm)		50; Greenish	2; Red	2; Fine-grained (<1 ) mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase 32; Potash Feldspar	otash 36; Quartz oar	: 10; Biotite	11091; X1	90; 90/10 b	brittle ductile shear zone. Strongly deformed - also mylonitic and/or aphanitic. With cutting qz-vein. Rock twoe ratio uncertain.
HFM11	137 - 138	38	20; Reddish		4; Brown 6; Fine-to medium 0; grained		50; Greenish	2; Red	2; Fine-grained (<1 2; mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 32; Potash Feldspar	otash 36; Quartz oar	: 10; Biotite	11091; X1	100; 100 si % o	small sample. Slightly deformed by X1 bands. Traces of amphibolite, calcite
HFM11	138 - 10	139 0;	40; Brownish	2; Red	9; Medium-grained (1- 0; 5 mm)		50; Greenish	2; Red	o medium	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase 32; Potash Feldspar	otash 36; Quartz oar	: 10; Biotite	11091; X1	90; 90/10 b	brittle ductile shear zone. Amphibole, X1.
HFM11	139 - 14	140 0;	40; Brownish	2; Red	9; Medium-grained (1- 0; 5 mm)		80; Greyish 2	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase 32; Potash Feldspar	otash 36; Quartz oar	: 10; Biotite	11091; X1	90; 90/10 b	brittle ductile shear zone, probably weak. X1, chlorite attered amphibolite?
HFM11	140 - 141	41 0;	40; Brownish	2; Red	6; Fine-to medium 200 grained	200; Dark	20; Reddish 5	5; Green	2; Fine-grained (<1	to tamorphic,	101057; Granite to granodiorite, metamorphic, medium	49; Plagioclase 32; Potash Feldspar	otash 36; Quartz oar	: 10; Biotite		90; 90/10 fi	90; 90/10 finegrained to aphanitic. Mytonitic?
HFM11	141 - 142	42 0;	40; Brownish	2; Red	6; Fine-to medium 200 grained	200; Dark	20; Reddish 5;	Green	2; Fine-grained (<1 2; mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase 32; Pc Felds	32; Potash 36; Quartz Feldspar	10; Biotite	3; Amphibole	80; 80/20	small sample. Brittle ductile shear zone. X1, deformed fragments, epidote, with very thin quartz sealed fractures.
HFM11		43 200; Dark			5 mm) 5 mm)		h	ç,		101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite					90/10	Brittle ductile shear zone. Traces of aplite. Elongated grains.
HFM11	143 - 14	144 ;	20; Reddish		4; Brown 9; Medium-grained (1- 200; Dark 5 mm)		50; Greenish	2; Red	2; Fine-grained (<1 2 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 32; Potash Feldspar	otash 36; Quartz oar	: 10; Biotite	11091; X1	100; 100 si % b.	small sample. Brittle ductile shear zone. X1, also banded.
HFM11	144 - 145	45 0;	20; Reddish		4; Brown 9; Medium-grained (1- 0; 5 mm)		50; Greenish	2; Red		101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 32; Pc Felds	32; Potash 36; Quartz Feldspar	: 10; Biotite	11091; X1	100; 100 b % %	brittle ductile shear zone. Not only cataclastic - also some deformed fragments.
HFM11	145 - 14	146 0;	50; Greenish		9; Medium-grained (1- 5 mm)				e-grained (<1	101057; Granite to granodiorite, metamorphic, medium grained			<u>c</u>		11091; X1		brittle ductile shear zone. Thin calcite sealed fracture, traces of pyrite
HFM11		47 0;	20; Reddish		9; Medium-grained (1- 5 mm)			Green	Fine-grained (<1 m)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite				11091; X1		brittle ductile shear zone.Amphibole. 2mm Calcite with clear cleavage.Traces of pyrite. Epidote,
HFM11	147 - 14	148 0;	50; Greenish	4; Browi	4; Brown 8; Medium to coarse 200 grained	200; Dark	hs	L.	Fine-grained (<1 m)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			10; Biotite	11091; X1	50; 50/50	brittle ductile shear zone. Amphibole, calcite, traces of pyrite.
HFM11	148 - 14	149 0;	50; Greenish	2; Red	9; Medium-grained (1- 0; 5 mm)		50; Greenish	2; Red	2; Fine-grained (<1 2; mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase 32; Potash Feldspar	otash 36; Quartz oar	10; Biotite	3; Amphibole	90; 90/10	brittle ductile shear zone. Calcite probably from fracture material. Traces of same mineral as at m. 25.
HFM11	149 - 150	50	ö	4; Browr	4; Brown 6; Fine-to medium 0; grained		50; Greenish	2; Red	2; Fine-grained (<1 2; mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase 32; Pc Felds	32; Potash 36; Quartz Feldspar	10; Biotite	3; Amphibole	70; 70/30	small sample. Brittle ductile shear zone. X1. Traces of pyrite, epidote, calcite. 101057 seems leucocratic.
HFM11	_	51 0;	20; Reddish				50; Greenish	2; Red	o medium	101061; Pegmatite, pegmatitic granite	102017; Amphibolite		Potash 36; Quartz dspar	: 10; Biotite		90; 90/10	small sample. Brittle ductile shear zone. X1, grain size reduction. Mostly brittle, little evidence of ductility. Also some 101057.Traces of epidote
HFM11	151 - 152	52 0;	40; Brownish	2; Red	9; Medium-grained (1- 0; 5 mm)		:0	2; Red	o medium	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	49; Plagioclase 32; Potash Feldspar	otash 36; Quartz oar	: 10; Biotite	3; Amphibole	90; 90/10	small sample. Brittle ductile shear zone X1. Brittle component seem to dominate. Amph slightly chlorite altered?
HFM11	•	153 <u>0;</u>	20; Reddish	4; Browr	-		50; Greenish		o medium	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	e e	32; Potash 36; Quartz Feldspar	10; Biotite	8	80; 80/20	very small sample. Rough rock type estimation. X1, amph chlorite attered. Brittle ductile shear zone.
HFM11 HFM11	153 - 154 154 - 155	55 <sup>54</sup> 0; 0;	20; Keddish 80; Grevish	2: Red	n 5; Green 6; Fine-to medium 0; grained 1 2: Red 6: Fine-to medium 200	0; 200; Dark	h	Creen C	2; Fine-grained (<1 mm) 6; Fine-to medium		101061; Pegmatte, pegmatitic granite 102017; Amphibolite	3; Ampnibole 49; Plagic 49; Plaqioclase 32; Pc	49; 32; Potash Plagioclase Feldspar 32: Potash 36; Quartz	36; Quartz 10; Biotite	10; Biotite 3; Amphibole	60; 60/40 50; 50/50	very small sample. X1, amph. Chlorite altered. Brittle ductile shear zone. small sample. Grain size reduced pegmatite or
										pegmatitic granite	-	Felds	Feldspar				aplite? Amph. Chlorite and epidote altered. Traces of calcite. Weaker deformation?

Drill c	Drill cuttings				Dê	e: 2003-10-03	Sign.: 0	Christin Nordman	man										
- 1- 1			Intreated	Untreated drill cuttings sample	Is sample		Vashed an	Washed and sieved drill cutting	rill cuttin	s sample			Mi- 4	0.11					
HFM11	155	- 156 0;	ö.	20; Reddish 8; Grey	Grey Gr	6; Fine-to medium 0 grained		20; Reddish 5; Green 2; m	Green 2	ine-grained (<1	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	libole	49; Plagioclase	32; Potash Feldspar	Ę	10; Biotite 60	60; 60/40 sr	small sample. Amphibolite chlorite altered.
HFM11	156	- 157 20	200; Dark 2	20; Reddish 5;	5; Green 9; 1 5 n	9; Medium-grained (1- 0 5 mm)		20; Reddish 5;	Green	ine-grained (<1	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	3; Amphibole	49; Plagioclase	32; Potash Feldspar	36; Quartz 33	33; Chlorite 80	80; 80/20 br	brittle ductile shear zone. Strong alteration: amph-> cht. Felsic rock type uncertain but has some biotite. Epidote.
HFM11		- 158 0;		20; Reddish 4;	S	6; Fine-to medium 0 grained		20; Reddish 5;	Green	ie-grained (<1	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	3; Amphibole	e	32; Potash 34 Feldspar	ê			small sample. Brittle ductile shear zone. Felsic rock type uncertain - very deformed. Seem Neucocratic, but with X (biotchl?).Epidote, qz grains. Seems mostly cataclastic.
HFM11	158	- 159 0;		50; Greenish	Red	6; Fine-to medium 0 grained		50; Greenish 2;	Red	2; Fine-grained (<1 1 mm) g	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz 11	10; Biotite 3;	Amphibole	90; 90/10 sr se fir	small sample. Brittle ductile shear zone (strong). X1, seems mostly cataclastic. One undisturbet light grey fine grained grain of possibly 101051?-
HFM11		-		ά.	Red				Red		101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			36; Quartz 11		3; Amphibole 70	70/30	Brittle ductile shear zone Probalby 101057 some biotite visible but mostly X1 - cataclastic bands. Amphibolite chlorite altered.
HFM11				Ń	Red					Jrained (<1	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			Quartz			80/20	brittle ductile shear zone. X1, mostly cataclastic? Amphibolite foliated? Calcite on possible fracture surface.
HFM11	161	- 162 0;		ά.	Red			80; Greyish 2;	Red	ine-to medium ned	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase				3; Amphibole 80	80; 80/20 ve Bi	very small sample (fine).Rough rock type estimation. Britle ductile shear zone. In places mylonitic (very local). Also pegmatite (more than 101057?)
HFM11	- 162	- 163		80; Greyish 2;	Red	6; Fine-to medium 2 grained	200; Dark 8	80; Greyish 2;	Red	2; Fine-grained (<1 1 mm) g	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz 10	10; Biotite 3;	3; Amphibole 70	70; 70/30 Bi	Brittle ductile shear zone. Fine grained to aphanitic. Some grains <i>mytonitic</i> . Little X1.
HFM11	163	- 164 0;		80; Greyish 2;	Red			80; Greyish 2;	Red	ine-grained (<1	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase		36; Quartz 11		3; Amphibole 80	80; 80/20 Bi	Brittle ductile shear zone. Some grains <i>mylontic</i> . Possibly also pegmatite 10% Jittle X1.
HFM11				ί,	Red			80; Greyish 2;	Red		101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz 10				Weak brittle ductile shear zone. Few mylonitic grains. Many grains look fresh. Traces of epidote and amphibolite.
HFM11	165	- 166 0;		80; Greyish 2;	Red			50; Greenish	Red	ine-grained (<1	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase				3; Amphibole 90	90; 90/10 Bi	Brittle ductile shear zone: Bands of X1, epidote. Amphibolite partly chlorite altered. Traces of calcite.
HFM11				; Greyish 2;	Red				Red	-	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			36; Quartz 10		3; Amphibole 80	80; 80/20 Bi	Brittle ductile shear zone, probably weak. Epidote sealed veins. Little X1. Amphibolite chl-altered.
HFM11	- 167	- 168 20	200; Dark 0	0: 0	Green	2; Fine-grained (<1 2 mm)	200; Dark 2	20; Reddish 8;	Grey	6; Fine-to medium 1 grained 2 n	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz 10; Biotite		3; Amphibole 60; 60/40	0; 60/40 s	small sample. Epidote.
HFM11	168	- 169 20		20; Reddish 5;	Green		200; Dark 2	20; Reddish 8;	Grey	6; Fine-to medium 1 grained g	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase		36; Quartz 11	10; Biotite 3;	3; Amphibole 70	0/30	small sample. Epidote, calcite, oxidices possible fracture surfaces.
HFM11				ί.	Green			0; 8;	Grey	Irained (<1	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz 1		16; Epidote 10 %	100; 100 sr % ar	small sample. Biotite rich. Traces of epidote, amphibolite. Thin quartz vein.
HFM11				2: sh	Green	_		20; Reddish 8;	Grey		101057; Granite to granodiorite, metamorphic, medium grained								small sample Rich in biotite. Brittle ductile shear zone, X1. Probably weak - most fragments seem undisturbed.
HFM11			200; Dark 5 0	50; Greenish	Red			20; Reddish 8;	Grey	ine-to medium 1ed	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz 11		16; Epidote 10 %	100; 100 sr % ep	small sample. Fine grain size dominates. Traces of epidote in sealed fractures.
HFM11				4	Brown			20; Reddish 8;	Grey	ine-grained (<1	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite		32; Potash Feldspar	36; Quartz 1		3; Amphibole 90; 90/10		small sample. Epidote in sealed fractures. (movement?). Host rock rich in biotite.
HFM11		-		); Reddish 4;	Brown	_		20; Reddish 8;	Grey	ine-grained (<1	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite							small sample. Brittle ductile shear zone. Probably also some pegmatite (leucocratic, larger grains)X1, epidote. Host rock rich in biotite.
HFM11	174 -			0;	Brown			20; Reddish 8;		ine-grained (<1	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite					3; Amphibole 90		small sample. Traces of X1. amphibolite chlorite attered, 101057 relatively rich in biotite.
HFM11	175 -	- 176 0;		0; .;	Brown			20; Reddish 8;	Grey	2; Fine-grained (<1 1 mm) g	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite					3; Amphibole 90; 90/10		small sample. Traces of amphibolite, X1. 101057 very dark. (or more amphibolite grains, but many seem to have qz as well).
HFM11				4	c .			20; Reddish 8;	Grey	ine-grained (<1	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite					3; Amphibole 60		small sample. One larger qz grain. Some amph. Chlorite attered.
HFM11				20; Reddish 8;	Grey			20; Reddish 8;	Grey	ine-grained (<1	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	se	32; Potash Feldspar	N		ole	80/20	small sample. Qz-vein.Red possible fracture surface. Not as rich in biotite as earlier.
HFM11					C			20; Reddish 8;	Grey	ne-grained (<1	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained			ų.		10; Biotite 50	50/50	traces of X1, epidole, larger qz-grain (possibly from fracture material).
HFM11	- 179	- 180 20	200; Dark 2	20; Reddish 8; Grey		2; Fine-grained (<1 2 mm)	200; Dark	20; Reddish 8;	Grey	2; Fine-grained (<1 1 mm) 9	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz 1	10; Biotite 3;	3; Amphibole 70	70; 70/30 sr	small sample. NOT TREATED (only small grains).

Drill c	utting	S				Date: 2003-10-03 Sign.: Christin Nordman	Sign.:	Christin Nordmar	-										
			Untreated	Untreated drill cuttings sample	ngs sam	ple	Washed a	Vashed and sieved drill cutting	cuttings sample	nple									
Hole	from	9	Lightn.	from to Lightn. Chrom. Hue Grainsize	Hue	Grainsize	Lightn.	-ightn. Chrom. Hue		ze F		Rock type B Min-1 Min-2 Min-3 Min-4 Min-5 Distr. Kommentar	Min-1	Min-2	Vin-3 N	lin-4 N	'in-5 Di	istr. Kon	nmentar
HFM11	180	- 181	200; Dark	20; Reddish	8; Grey	IFM11 180 - 181 [200; Dark [20; Reddish]8; Grey [2; Fine-grained (<1 [200; Dark [20; Reddish]8; Grey [2;	200; Dark	20; Reddish 8; Gr	rey 2; Fine-gra	ained (<1 1	2; Fine-grained (<1  101057; Granite to	102017; Amphibolite [49; Plagioclase [32; Potash [36; Quartz ] 10; Biotite [3; Amphibole [70; 70/30 ] small sample	19; Plagioclase	32; Potash	36; Quartz 1	7; Biotite 3,	Amphibole 70;	n; 70/30 smai	sample
						(um			(mm	5	granodiorite, metamorphic,		_	Feldspar					
						1			-	4	medium grained								
HFM11	181	- 182	200; Dark	80; Greyish	2; Red	181 - 182 [200; Dark  80; Greyish  2; Red  2; Fine-grained (<1  200; Dark  20; Reddish  8; Grey	200; Dark	20; Reddish 8; Gr	2	ained (<1 1	; Fine-grained (<1  101057; Granite to	102017; Amphibolite	19; Plagioclase	32; Potash	36; Quartz 1.	<ol> <li>Biotite 3,</li> </ol>	Amphibole 90;	h; 90/10 smai	(02017; Amphibolite   49; Plagioclase   32; Potash   36; Quartz   10; Biotite   3; Amphibole   90; 90/10   small sample. Traces of epidote.
						mm)			(mm)	<u></u>	granodiorite, metamorphic,			Feldspar					
											reurum granneu								

<b>Drill cuttings</b>	Ittings				Date: 2003-09-29	Sign.: (	<b>Christin Nordman</b>	rdman										
			Untreated drill cuttings sample	ttings sa	imple	Washed and sieved drill cutting	nd sieved	drill cutt	ings sample	-								
Hole HEM12	from to	r to	Lightn. Chrom.	Chrom. Hue	Grainsize	Lightn.	Chrom.	Hue 2: Pad	Grainsize		Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar water in semula. Traces of chorits and enidote
N E	•			0 0 0	mm)	ô	ĵ	7, 150	vieuluii-graineu 1m)	granodiorite, metamorphic, medium grained			Feldspar	Plagioclase	10, 210116			אמנכו ווו אמוווףופי. וומכפא טו טוטוופ מווט כףוטטנכי.
HFM12	5 - 6	0: 9	20; Reddish	sh 7; White	te 8; Medium to coarse grained	:0	20; Reddish	7; White	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite		36; Quartz	32; Potash Feldspar	49; Plagioclase	10; Biotite 1	16; Epidote	100; 100 %	traces of epidote, chlorite, X1
HFM12	6 - 7		100; Light 0;	2; Red	8; Medium to coarse grained	:0	ö	2; Red	9; Medium-grained (1- 5 mm)	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	36; Quartz	32; Potash Feldspar	49; Plagioclase	10; Biotite		90; 90/10	traces of iron hydroxide.
HFM12	7 - 8		80; Greyish	sh 2; Red	9; Medium-grained (1- 0; 5 mm)		80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	101058; Granite, metamorphic, aplitic	49; Plagioclase	10; Biotite	36; Quartz	32; Potash 3 Feldspar	30; Calcite	50; 50/50	traces of calcite, pyrite and radioactive mineral.101058 or only bleached and fine grained variety of 101057 (but rich in biotile)?
HFM12		-	80; Greyish				80; Greyish	2; Red	2; Fine-grained (<1 mm)	102017; Amphibolite		lase	3; Amphibole	36; Quartz	107; Prehnite		100; 100 %	. (annota in tanta and tao tao tao tao
HFM12	9 - 10		200; Dark 0;	2; Red	9; Medium-grained (1- 0 5 mm)	ä	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	Ð	50; Pyrite		traces of pyrite, calcite,epidote
HFM12	10 - 11	11 20	200; Dark 0;	2; Red	9; Medium-grained (1- 5 mm)	:0	ö	2; Red	8; Medium to coarse grained	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite 3	30; Calcite	70; 70/30	traces of iron hydroxide, calcite, epidote.Uncertain proportion of rock types.biotite very slightly chlorite altered.
HFM12	11 - 12		200; Dark 20; Reddish			ö	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	36; Quartz	30; Calcite 1	16; Epidote	100; 100 %	traces of yellow semitransparent aphanitic mineral.
HFM12	•		200; Dark 0;	2; Red		ó	80; Greyish	i,	e-grained (<1	101057; Granite to granodiorite, metamorphic, medium grained			32; Potash Feldspar				100; 100 %	chlorite as alteration product from biotite, traces of X1, calcite, iron hydroxide.
HFM12	13 - 14	4	200; Dark 0;	2; Red	6; Fine-to medium grained	ö	ö	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite 3	3; Amphibole	100; 100 %	traces of calcite
HFM12	14 - 15	15	200; Dark 0;	2; Red		200; Dark (	ö	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz	10; Biotite 3	3; Amphibole	100; 100 %	possibly both biotite and amphibole. Dark minerals extremely fine grained. Relatively poor in quartz.
HFM12	15 - 16	16 0;	:°	2; Red	8; Medium to coarse grained	:0	ö	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole		100; 100 %	Relatively poor in quartz and dark minerals.
HFM12	16 - 17	17 0;	ö	2; Red	6; Fine-to medium grained	:0	ö	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	1091; X1	100; 100 %	more orange coloured.Relatively poor in quartz and dark minerals. Traces of pyrite and calcite. Amphibole and/or biotite?
HFM12	17 - 18	18	ö	2; Red	6; Fine-to medium arained	:0	ö	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorohic. aplitic		49; Plagioclase	32; Potash Feldsnar	36; Quartz	· ·	10; Biotite	100; 100 %	wery fine grained mafic minerals. Probably both biotife and ambribole. Traces of ovrite.
HFM12	18 - 19	-	100; Light 0;	2; Red		:0	:0	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic. aplitic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		90; 90/10	traces of very fine grained almost black rock, probably amohibolite.
HFM12	19 - 20	20	100; Light 0;	2; Red	6; Fine-to medium grained	:0	ö	2; Red	2; Fine-grained (<1	101058; Granite, metamornhic, anlitic	0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	49; Plagioclase	32; Potash Feldsnar	36; Quartz	10; Biotite 5	50; Pyrite	100; 100 %	floury section is light grey biotite or amphibole? Very fine arrained matic minerals
	•	<u>r</u>	100; Light 20; Reddish	ö		:0	:0	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite 5	50; Pyrite	0; 100	beige coloured floury material probably biotite as mafic mineral.
HFM12	•	52	100; Light 0;	2; Red		:0	ó	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	traces of amphibolite.
HFM12	22 - 23	23 10	100; Light 0;	2; Red	2; Fine-grained (<1 mm)	:0	ö	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	floury, traces of dark grey aphanitic fracture mineral. So called X1 seems to be an aggregate of very fine granded to aphanitic bluish green mineral (X1 green) and morite immeanation
HFM12	23 - 24	24 10	100; Light 20; Reddish		y 2; Fine-grained (<1 mm)	:0	80; Greyish		2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	floury
HFM12	24 - 25	25	100; Light 0;	2; Red		:0	:0	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	
	•	26	100; Light 0;	2; Red		0;	ó	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic			32; Potash Feldspar	36; Quartz	-	1091; X1		X1 with pyrite impregnation.
HFM12	26 - 27	27	100; Light 0;	2; Red	6; Fine-to medium grained	ö	ö	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100	beige coloured floury section, red coloured grains. Probably also quartz as fracture mineral.
HFM12	27 - 28	0: 78	80; Greyish	sh 2; Red	6; Fine-to medium grained		80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite 1	11091; X1	100; 100 %	somewhat floury. Pyrite impregnated X1 veins.
HFM12	28 - 29	29 0;	ö	2; Red	6; Fine-to medium grained	:0	:°	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite 1	11091; X1	100; 100 %	
HFM12	29 - 30	0: 30	ö	2; Red	6; Fine-to medium grained	:0	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite 1	11091; X1	100; 100 %	traces of calcite.
HFM12	30 - 31	31 0;	ö	2; Red	6; Fine-to medium grained	ö	ö	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite 1	11091; X1	100; 100 %	traces of concrete or cataclastite (rock fragments in bluish dark grey mass).
	•	32		2; Red				2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic			32; Potash Feldspar		10; Biotite		100	uncertain 101058. traces of quartz in sealed fracture.
	•	ŝ	100; Light 0;	2; Red			ö	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic			32; Potash Feldspar	36; Quartz				uncertain 101058.
HFM12	33 - 34	34 0.	<u></u>	2; Red	6; Fine-to medium grained	ö	ö	2; Red	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	umertain 101088, possible X1. On fracture plane slightly bluish grey aphanitic material (contains several minerals. Some fragments are more rich in mafic minerals- very fine graihed.

Drill ct	<b>Drill cuttings</b>				Date: 2003-09-29 Si	Sign.: Christin Nordman	Nordman										
Hole		to	Untreated drill cuttings sample Lightn. Chrom. Hue Gr	ttings sa Hue	ainsize	Washed and sieved drill cuttin Lightn. Chrom. Hue G	ed drill c Hue	uttings sample Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM12	34 - 3	35		2; Red	9; Medium-grained (1- 5 mm)	; 80; Greyish	sh 2; Red				gioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	very thin slightly greenish fracture material (sealed). Some fragments are more rich in mafic minerals- very fine grained.
HFM12	35 - 3	0: 39	80; Greyish	h 2; Red	9; Medium-grained (1- 0; 5 mm)	; 80; Greyish	sh 2; Red	d 2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		90; 90/10	Some fragments are more rich in mafic minerals and greenish dark grey- very fine grained to aphanitic
HFM12	36 - 3	37 0;	:0	2; Red	9; Medium-grained (1- 0; 5 mm)	:0	2; Red		101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite			36; Quartz	10; Biotite	11091; X1	70; 70/30	
HFM12	37 - 3	:0: 38	:*	2; Red		:* 0	2; Red	ώ B	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	50; 50/50	chlorite and calcite on possible fracture plane.
HFM12	38 - 3		:0	2; Red	6; Fine-to medium 0; grained	:0	ŝ	0, 4,	1		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	11091; X1	100; 100 %	traces of 101057.
HFM12	39 - 4	- 40 200	200; Dark 80; Greyish	h 2; Red		; 20; Reddish	ish 8; Grey		102017; Amphibolite	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	10; Biotite	36; Quartz		70; 70/30	<ul> <li>no amphibole? traces of yellow/orange coloured iron hydroxide.</li> </ul>
HFM12			200; Dark 20; Reddish	sh 8; Grey	6; Fine-to medium grained		άĵ		102017; Amphibolite	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	10; Biotite		3; Amphibole		
HFM12	4 - 4	- 42 200	200; Dark 20; Reddish	sh 8; Grey	8; Medium to coarse grained	200; Dark 20; Reddish	ish 8; Grey		102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	90; 90/10	
HFM12	42 - 4	43 200	200; Dark 80; Greyish	Ň		; 80; Greyish	sh 2; Red		101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase		36; Quartz	3; Amphibole	10; Biotite	80; 80/20	
HFM12	43 - 44		200; Dark 80; Greyish		9; Medium-grained (1- 0; 5 mm)		sh 2; Red	Ξ	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	60; 60/40	
HFM12	44 -	- 45 0;	:0	4; Brow			ά	ë P	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite		32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	60; 60/40	dark beige coloured untreated. Traces of epidote.
HFM12	45 - 4	- 46 0;	:0	4; Brown			άΰ	άĒ	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			36; Quartz	3; Amphibole	10; Biotite	80; 80/20	
HFM12		- 47 0;	:0			80;	i,	Ξ 'n	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			36; Quartz	3; Amphibole	10; Biotite	80; 80/20	
HFM12	47 - 4	- 48 0;	20; Reddish	sh 4; Brown			sh 2; Red		101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase		36; Quartz	3; Amphibole	10; Biotite	80; 80/20	Iraces of epidote, X1, possible 101058 (leucocatic granite, fine grained).
HFM12	•	- 49 0;	:0		n 6; Fine-to medium 0; grained		,	Ξ, Έ	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			36; Quartz	3; Amphibole	10; Biotite	80; 80/20	
HFM12		50	20; Reddish	4	6; Fine-to medium grained	80:	Ń	Ξ̈́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́́	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			36; Quartz	3; Amphibole	10; Biotite	90; 90/10	
HFM12	•		20; Reddish		8; Medium to coarse grained	80;	Ń	άĒ	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			36; Quartz	3; Amphibole	10; Biotite	90; 90/10	
HFM12	- 5	52 0;	20; Reddish	4	6; Fine-to medium grained	200; Dark 20; Reddish	ώ		101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	50; 50/50	fraces of epidote, rusty surface (probable open fracture), calcite
HFM12		53		ъ 4:	n 6; Fine-to medium grained		ô	<u> </u>	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar		90; 90/10	
HFM12	53 - 5	200	200; Dark 40; Brownish	2; Red		.00; Dark 20; Reddish	ish 8; Grey	ey 2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase		36; Quartz	32; Potash Feldspar	10; Biotite	90; 90/10	humid sample. Or 101058 instead of 101057. Traces of pyrite and epidote, dark orange coloured possible fracture planes (oxidized?)
HFM12	'		20; Reddish			80;	Ń	ë i	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			36; Quartz	10; Biotite	3; Amphibole		
HFM12	•		:0	4,		; 80; Greyish	Ń.	an G	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			36; Quartz	10; Biotite	3; Amphibole	e 70; 70/30	
HFM12	•		40; Brownish		6; Fine-to medium 0; grained	:0	2; Red		101058; Granite, metamorphic, aplitic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar		10; Biotite	3; Amphibole	e 90; 90/10	<ul> <li>uncertain 101058. very thin coating of calcite on possible fracture plane (with biotite?)</li> </ul>
HFM12	1	<u> </u>	100; Light 0;		2; Fine-grained (<1 mm)		ŝ	9 gr	101058; Granite, metamorphic, aplitic	102017; Amphibolite	Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole		
HFM12	•		80; Greyish	h 4; Brown	6; Fine-to medium grained	0; Dark	ώ	άĒ.	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz		10; Biotite	80; 80/20	traces of epidote.
HFM12	- 6	0;	20; Reddish 4; Brown	sh 4; Brow	n 6; Fine-to medium 0; grained	; 80; Greyish	sh 2; Red	d 6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	e 90; 90/10	slightly humid sample.traces of X17, pegmatite, epidote.

<b>Drill cuttings</b>	Ittings			Date: 2003-09-29	-09-29 Sign.:	Christin Nordman	ordman										
сіо П			Untreated drill cuttings sample	gs sample Ino Graineize		d and sieved	I drill cut	Washed and sieved drill cuttings sample	Pock time A	Dock time B	Min-1	0 uim	Min_2		Min-6	Dietr	Kommontsr
HFM12	60 - 61		ght 0; 4	4; Brown 6; Fine-to medium grained		80; Greyish	2; Red	6; Fine-to medium grained	norphic,		gioclase	۲. E	Ę	10; Biotite 3	ibole	8	traces of amphibolite. Probably both biotite and amphibole. Traces of epidote.
HFM12	61 - 62	0: 5	;;	4; Brown 6; Fine-to medium grained	nedium 0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz		ole	100; 100 p	probably both amphibole and biotite. Traces of epidote and larger quartz grains.
HFM12	62 - 63	;; ;;		4; Brown 9; Medium-grained (1- 5 mm)	grained (1- 0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)		101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz		10; Biotite		traces of epidote (also on possible fracture plane)
HFM12	63 - 64	4	20; Reddish 4;	Brown	to coarse 0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite 3	3; Amphibole	50; 50/50 t	the floury section causes the colour of the untreated sample Rough estimatin of rock type proportion. Traces of calcite and laumonitie on possible fracture planes.
HFM12	64 - 65	ي: 0:	<u>_</u>	4; Brown 6; Fine-to medium grained	hedium 200; Dark	+ 20; Reddish	h 8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash 1 Feldspar	10; Biotite	80; 80/20	laumontite and calote on possible fracture plane.
HFM12	65 - 66	: 9	40; Brownish 2;	2; Red 6; Fine-to medium grained	nedium 0;	80; Greyish		6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	100; 100 t %	traces of amphibolite, laumontite.
HFM12		7 100; Light	0 <sup>;</sup>	2; Red 6; Fine-to m grained			÷	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite								traces of calcite, epidote, amphibolite. Leucocratic.
HFM12	•	:°	20; Reddish 4,	4; Brown 8; Medium to coarse grained			h 8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	oclase		36; Quartz		3; Amphibole	0/10	traces of X1, epidote and laumontite.
HFM12	69 - 69	<u>්</u>	20; Reddish 4	4; Brown 6; Fine-to medium grained	redium 200; Dark	k 80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz	10; Biotite		100; 100 %	traces of pyrite, epidote and laumontite. Calcite on possible fracture plane.
HFM12	69 - 70		20; Reddish	4; Brown 6; Fine-to medium grained	nedium 0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz	10; Biotite		100	humid sample.
HFM12		1 100; Light	20; Reddish	4; Brown 6; Fine-to medium grained			ŝ	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained						16; Epidote	100	floury sample.
HFM12			0;	4; Brown 6; Fine-to medium grained			ά	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained					10; Biotite		100	traces of laumontite.
HFM12		; ;	20; Reddish 4; Brown				2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz	10; Biotite		100	foliated or lineated.
HFM12			20; Reddish 4;				Ń	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained					10; Biotite		100; 100 %	
HFM12	74 - 75	0: 2	20; Reddish 4;	4; Brown 6; Fine-to medium grained	nedium 0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz	10; Biotite			
HFM12			20; Reddish 4;	4; Brown 6; Fine-to medium grained	nedium 0;	80; Greyish	ŝ	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained							100	traces of X1, epidote. Larger grain of quartz.
HFM12	76 - 77	20; 20	0;	4; Brown 2; Fine-grained (<1 mm)	ned (<1 0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz	10; Biotite 3	3; Amphibole	100	traces of epidote.
HFM12	- 78			; Brown 6; Fine-to medium grained	nedium 0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase						only traces of epidote.
HFM12	•	9 100; Light	10; Pinkish	4; Brown 6; Fine-to medium grained	nedium 0;	:0	і,	8; Medium to coarse grained		101057; Granite to granodiorite, metamorphic, medium grained							only traces of epidote. Possible laumontite.
HFM12	79 - 80	<u>;</u>	;0	4; Brown 6; Fine-to medium grained	nedium 0;	80; Greyish	Ň	6; Fine-to medium grained	io amorphic,	101061; Pegmatite, pegmatitic granite						0/10	traces of epidote.
HFM12	•		0;	4; Brown 6; Fine-to medium grained	nedium 0;	80; Greyish	Ń	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained								relatively rich in epidote. Seems to occur in sealed fractures with possible movement (appears banded)- Possibly traces of amphibolite.
HFM12	•		Reddish	4; Brown 6; Fine-to medium grained		:°	2; Red	9; Medium-grained (1- 5 mm)	101061; Pegmatite, pegmatitic granite	101057; Granite to granodiorite, metamorphic, medium grained						0/10	traces of epidote.
HFM12	82 - 83	;; ;;	20; Reddish 4,	4; Brown 6; Fine-to medium grained	nedium 200; Dark	;; ;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz	10; Biotite 1	16; Epidote	100	traces of epidote (one grain)
HFM12	•		20; Reddish 4		9; Medium-grained (1- 200; Dark 5 mm)		ŝ	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar				100	traces of epidote and pegmatite.
HFM12	84 - 85	0 2	20; Reddish 4.	4; Brown 9; Medium-{ 5 mm)	9; Medium-grained (1- 200; Dark 5 mm)	k 80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 t %	traces of pyrite, pegmatite.

<b>Drill cuttings</b>	ttings				e: 2003-09-29	Sign.: C	Christin Nordman	dman									
			ŧ	gs samp		a	id sieved c	Irill cutt	ings sample								
HEM12	110m 10 85 - 86	i:	Chrom. 0; 4: 4: 4: 4: 4: 4: 4: 4: 4: 4:	4; Brown 6;	Hue Grainsize 4; Brown 6; Fine-to medium	200; Dark 8	Chrom. Hue 80; Greyish 2; Red		o medium	KOCK type A 101057; Granite to	KOCK TYPE B	MIN-1 49; Plagioclase	ч	MIN-3 MIN-4 36; Quartz 10; Biotite	-4 MIN-5 siotite 16; Epidote		UIST. Kommentar 100; 100 Wet sample? Traces of X1?
				5						granodiorite, metamorphic, medium grained							
	•		80; Greyish 2;	Red	9; Medium-grained (1- 0; 5 mm)		80; Greyish	Red	o medium	101057; Granite to granodiorite, metamorphic, medium grained							
	87 - 88				9; Medium-grained (1- 200; Dark 5 mm)			2; Red	o medium	101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz 10; B	10; Biotite 30; Calcite		100, 100 almost no fine fraction.Calche on possible fracture plane. Epidote, only traces.
HFM12	88 - 89	200; Dark	80; Greyish 2;	2; Red 5	9; Medium-grained (1- 200; Dark 5 mm)		80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10; B	10; Biotite 16; Epidote		100; 100 one grain seems mylonitic (almost aphanitic % X1/epidote? Elongated quartz?)
HFM12	89 - 90	:0	40; Brownish	Red	9; Medium-grained (1- 200; Dark 5 mm)		80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10; B	10; Biotite 30; Calcite		100;         100         calcite on possible fracture plane. Epidote in sealed           %         fracture.
	1	100; Light		; Brown 6; gr			6		o medium	111058; Granite, fine to medium grained		49; Plagioclase					100; 100 calcite on possible fracture plane. Epidote in sealeld % fracture. Leucocratic - almost no dark minerals.
HFM12	91 - 92	ö	10; Pinkish 4;	4; Brown 6; gr	n 6; Fine-to medium grained	100; Light 8	80; Greyish	2; Red	9; Medium-grained (1- 5 mm)	ite, e	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	ч	36; Quartz 10; B	10; Biotite		90; 90/10 Sealed fracture with epicote and elongated (7) quartz
HFM12	92 - 93	ö	80; Greyish 4;	Brown	6; Fine-to medium grained	ö	80; Greyish	4; Brown	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10; B	10; Biotite 16; Epidote		100; 100 partly mylonitic? Becomes very fine grained to aphanitic, slightly banded.Or a volcanite, felsic to intermediate?7?
HFM12	93 - 94	ó	50; 8; Greenish			200; Dark 2	20; Reddish	5; Green	ne-grained (<1	101004; Ultramafic rock, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; 16 Amphibole	16; Epidote 36; Quartz	Quartz	:06	90; 90/10 aphanitic green, hard. A volcanite or mylonitic rock? Traces of calcite. but no altered amphibolite.
HFM12	94 - 95	ö	0;	4; Brown 6; ar	6; Fine-to medium		20; Reddish {	5; Green	2; Fine-grained (<1 mm)	101004; Ultramafic rock, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	Ľ	16; Epidote 36; Quartz			90; 90/10 pegmattle as contamination? Seems like deformed amphibolite. rich in epidote sealed veins.
	95 - 96	ö	50; Greenish		9; Medium-grained (1- 200; Dark 5 mm)		20; Reddish	5; Green	2; Fine-grained (<1 mm)	101004; Ultramafic rock, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	ľ.	16; Epidote 36; Quartz	tuartz 32; Potash Feldspar		80; 80/20 deformed. Lots of thin epidote veins.
	•	:0	50; Greenish		8; Medium to coarse grained	:00; Dark	20; Reddish		2; Fine-grained (<1 mm)	101004; Ultramafic rock, metamorphic		49; Plagioclase	<u> </u>	16; Epidote			100; 100 %
HFM12	97 - 98	:ô	50; 8, Greenish	8; Grey 6; ar	; Fine-to medium rained		80; Greyish	2; Red	2; Fine-grained (<1 mm)	101004; Ultramafic rock, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase		36; Quartz 32; Pota: Feldspar	32; Potash 10; Biotite Feldspar	50;	50/50 traces of epidote.
HFM12	- 99	ö	80; Greyish 2	2; Red	9; Medium-grained (1- 0 5 mm)		80; Greyish	4; Brown	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	0 0	49; Plagioclase		36; Quartz 10; Biotite	liotite	100; %	100; 100 traces of X1. %
HFM12	99 - 100	<u>;;</u>	80; Greyish 2;	Red	9; Medium-grained (1- 0 5 mm)	ö	20; Reddish	4; Brown	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10; Biotite	siotite	100; %	; 100
HFM12	100 - 101		80; Greyish 2;	2; Red 9; 5		о; 4 ш	40; Brownish		6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10; Biotite	liotite	100; %	100; 100 %
HFM12	101 - 102	;; 0;	80; Greyish 2;	Red		о; 4 ш	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz 10; B	10; Biotite 30; Calcite	licite 100; %	100
HFM12	102 - 103	:0 :0	0;	Red	9; Medium-grained (1- ( 5 mm)	0 :0			6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz 10; B	10; Biotite 11091; X1		
HFM12	103 - 104	4 	0;	2; Red 9;			50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10; B	10; Biotite	100; %	100; 100 fine fraction beige coloured (flour). Possible thin cataclastites (light grey, with fragments, somewhat banded).
HFM12	104 - 105	5 200; Dark	ö:	Red	9; Medium-grained (1- 1 5 mm)	;; 4 Ш	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10; Biotite	siotite	100; %	100
HFM12	105 - 106		40; Brownish 2;	Red	9; Medium-grained (1- 0 5 mm)			4; Brown		101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz 10; B	10; Biotite 30; Calcite		<ol> <li>100 with micro breccia/cataclastite, sealed calcite vein, sealed quartz vein. X1 with disseminated pyrite.</li> </ol>
HFM12	106 - 107		50; Greenish	Grey	9; Medium-grained (1- 1 5 mm)		ų.	5; Green	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10; B	10; Biotite 3; Am	3; Amphibole 50;	50; 50/50
HFM12	107 - 108	8 200; Dark	20; Reddish 8;	8; Grey 9;	9; Medium-grained (1- 200; Dark 5 mm)		50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase		36; Quartz 10; B	10; Biotite 3; Am	3; Amphibole 80; 80/20	80/20 traces of epidote.
HFM12	108 - 109	9 200; Dark	80; Greyish 2;	Red	9; Medium-grained (1- 200; Dark 5 mm)		50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase		36; Quartz 10; Biotite		phibole 80;	3. Amphibole 80: 80/20 traces of epidote.
			20; Reddish 8;	Grey	(1-		ų,		e-to medium sd	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite		-		ά	Amphibole 90;	
	110 - 111		50; Greenish	Red				2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz 10; Biotite	liotite	100; %	
	111 - 112	2 200; Dark		2; Red 6; 91			20; Reddish	5; Green	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz 10; Biotite	iotite 11091; X1		100; 100 brecciated / cataclastitle. Matrix is light grey to greenish, aphanitic.
HFM12	112 - 113	ю.	50; Greenish	: Brown 6; gr	16; Fine-to medium grained	200; Dark 2	20; Reddish	5; Green	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash 36 Feldspar	36; Quartz 10; B	10; Biotite 3; Am	3; Amphibole 50;	50: 50/50 frock type proportion uncertain. Amph? Slightly deformed. Also some bands of aphantitc light grey to green mtr like in m. 111-112.

Drill cuttings	tinge				Date: 2003-09-29	Sign.: 0	<b>Christin Nordman</b>	lman										
	2		ted drill cuttin	ngs sam		Washed an	id sieved d	'rill cutti	ngs sample									
Hole HFM12	from to 113 - 114		Lightn. Chrom. Hue Gra 200; Dark 20; Reddish 8; Grey 6; F	Hue 8; Grey	ainsize ine-to medium	200; Dark	Chrom. 1 20; Reddish 5	Hue 5; Green	Lightn. Chrom. Hue Grainsize 200; Dark 20; Reddish 5; Green 6; Fine-to medium	Rock type A 102017; Amphibolite	Rock type B	Min-1 49; Plagioclase	-	Min-3 11091; X1	Min-4	Min-5	<mark>istr.</mark> 0; 100	Kommentar seems strongly altered. X1= light grey to greenish
HFM12	114 - 115	5 200; Dark	ö	8; Grey	grained 6; Fine-to medium grained	200; Dark C	0;	5; Green	grained 2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	Ampnibole 3; Amphibole	1091; X1	36; Quartz	16; Epidote	% apnanuc ma 100; 100 seems stron % fracture plan	aptiantitic material, ontitie ouctile strear zone rrr seems strongly altered. relatively rich in red possible fracture planes. Quartz as larger individual grains.
HFM12	115 - 116	6 200; Dark	:0	8; Grey	6; Fine-to medium grained	200; Dark C	0;	5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	1091; X2			100; 100 seems stron % (brecciated)	seems strongly altered both by ductile and brittle (brecciated) deformation. Aphanitic light grey to reneated mass
HFM12	116 - 117	7 200; Dark		4; Brown		200; Dark 2	20; Reddish 4	4; Brown	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	80; 80/20	bittle ducitie shar zone? Seems altered. Aphanitic mass like in 115-116 m.
	117 - 118	8 100; Light		4; Brown		0; E 4	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite			36; Quartz	10; Biotite	3; Amphibole 90; 90/10		slight signs of deformation (X1, aphanitic light grey to slightly greenish mass).
HFM12	118 - 119	:0 0		2; Red		200; Dark 5	50; Greenish	2; Red	ie-to medium ed	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase		36; Quartz		3; Amphibole 90;	90/10	amph. Seems strongly foliated.traces of X1, and pyrite.
HFM12	119 - 120	:0	20; Reddish 8	8; Grey		200; Dark 5	50; Greenish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase		36; Quartz	10; Biotite	3; Amphibole	60; 60/40	seems altered. X1. Possible laumontite on fracture plane.
HFM12	120 - 121	1 200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	200; Dark 2	20; Reddish 5	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz		3; Amphibole 50; 50/50		seems attered. X1. breccia. Bright red fracture planes (laumontite?), possible amphibole attered to greenish mineral (white streak).
			80; Greyish		6; Fine-to medium	00; Dark	80; Greyish 2		2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic	102017; Amphibolite		32; Potash Feldspar	36; Quartz		3; Amphibole 60; 60/40		seems alterd (any amph.left?) X1. Leucocratic 101058.
HFM12	122 - 123	3 200; Dark	20; Reddish	8; Grey		00; Dark	20; Reddish 5	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	50; 50/50 any amphibo aphanitic to Cataclastite?	any amphibole left? Strongly altered and becomes aphanitic to very fine grained grey to greenish grey. Cataclastite?
HFM12	123 - 124		20; Reddish	8; Grey		200; Dark 2	20; Reddish 5	5; Green	2; Fine-grained (<1 mm)		101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase		36; Quartz	32; Potash Feldspar	11091; X1	70; 70/30 biotite.calcite fluorite,	biotite.calcite crystal (2.5 mm long), traces of pyrite, fluorite,
HFM12	124 - 125	5 200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	ö	20; Reddish 5	5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	30; Calcite	10; Biotite	60; 60/40 violet fluorite	violet fluorite.Traces of pyrite.
HFM12	125 - 126	6 200; Dark	ö	2; Red		200; Dark 4	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	30; Calcite	3; Amphibole	90; 90/10 traces of violet fluorite	let fluorite.
HFM12	126 - 127	7 200; Dark	ó	2; Red	6; Fine-to medium grained	200; Dark C	ö	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	30; Calcite	10; Biotite	90; 90/10	
	127 - 128		ö						6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz	10; Biotite		100	traces of altered rock, possibly amphibolite.
HFM12	128 - 129	9 200; Dark	:°			200; Dark E	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase		36; Quartz	10; Biotite	11091; X1	100; 100 traces of alte % calcite	traces of altered rock, possibly amphibolite, pyrite, calcite
			ö	Red					6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz	10; Biotite	11091; X1	100	traces of altered rock, possibly amphibolite, calcite
HFM12	130 - 131		ö	2; Red				2: Red	6; Fine-to medium grained	to tamorphic,		49; Plagioclase		36; Quartz	10; Biotite	11091; X1	100; 100 traces of calcite.	cite.
HFM12	131 - 132	2 200; Dark	80; Greyish	2; Red		200; Dark 2	20; Reddish 5	5; Green	2; Fine-grained (<1 mm)	olite	101057; Granite to granodiorite, metamorphic, medium grained			36; Quartz	3; Amphibole	10; Biotite	80; 80/20 X1, possible grains seem	X1, possible laumontite on fracture plane. Some grains seem slightly mylonitic.
HFM12	132 - 133	3 200; Dark	50; Greenish	2; Red	6; Fine-to medium grained	200; Dark C		5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	16; Epidote	70; 70/30 in places stro deformation)	in places strong hematite pigmentation.X1 (probable deformation)
	•	4 200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	200; Dark	0:	с,	2; Fine-grained (<1 mm)	to tamorphic,	102017; Amphibolite			36; Quartz	10; Biotite	16; Epidote	90/10	traces of attered amphibolite. X1 - probably still somewhat deformed.
HFM12	134 - 135	0: 2	ö	2; Red	1	:0	ö		2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite		32; Potash Feldspar	36; Quartz		11091; X1	70; 70/30 Some grains banded (stro	Some grains extremely fine grained and seem banded (strong deformation), epidote.
		0; 9					50; Greenish				101061; Pegmatite, pegmatitic granite		3; Amphibole		~	10; Biotite	50/50	50% amph, 25% peg, 25% fine grained 101057.X1, epidote
	136 - 137		80; Greyish		6; Fine-to medium grained	200; Dark 2	20; Reddish 5	5; Green	2; Fine-grained (<1 mm)	fe	101061; Pegmatite, pegmatitic granite				32; Potash Feldspar			(slightly altered amphibolitey?), possible 1057 grains.
	•		ou; Greenish	real to			Zu; Kedalsn ;	dreen	z; rine-grained (s i mm)	granodiorite, metamorphic, medium grained		lase	54; Fotasn Feldspar		10; blotte	10; Epidote		very smain sample. A i. Ked macure planes, brittle ductile shear zone.
HFM12	138 - 139	: <u>;</u>	20; Reddish	4; Browr.	4; Brown 6; Fine-to medium grained	200; Dark	20; Reddish 5	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		30; Calcite	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 very small se % Pyrite. Brittle	very small sample prabably also pure amphibolite. Pyrite. Brittle ductile shear zone.

<b>Drill cuttings</b>	ttings				e: 2003-09-29	Sign.: 0	Christin Nordman											
Hole	from to		8	Igs sam Hue	ainsize	Washed an -ightn.	Washed and sieved drill cuttin Lightn. Chrom. Hue C		gs sample Brainsize	Rock type A	Rock type B	Min-1	Min-2 M	Min-3 Mi		Min-5 D	Distr.	Kommentar
HFM12	139 - 140			4; Brown	20; Reddish 4; Brown 6; Fine-to medium 2 grained	200; Dark	20; Reddish 5;		; Fine-grained (<1 m)	orphic,	oolite	cite	чя г	36; Quartz 10;	10; Biotite 11	11091; X1 60	40	traces of pyrite.brittle ductile shear zone.
HFM12	140 - 141	1 200; Dark	20; Reddish 5;	Green	6; Fine-to medium 2 grained	200; Dark 2	20; Reddish 5;	Green 2; m	Fine-grained (<1 m)	102017; Amphibolite	101058; Granite, metamorphic, aplitic	30; Calcite	11091; X1 32 Fe	32; Potash 36; Feldspar	36; Quartz 10	10; Biotite 60	60; 60/40 s P	some grains are strongly ductily deformed. Traces of pyrite. (altered amphibolite mineralogy uncertain). 101058 uncertain. Fine grained, red, leucocratic.
HFM12	141 - 142	2 200; Dark	20; Reddish 5;	Green			50; Greenish 2;	Red 6;	6; Fine-to medium grained			36; Quartz 3		49; 3; Plagioclase Amphibole	ľ	11091; X1 70	70; 70/30 s	small sample.101058 or pegmatite? Traces of calcite
HFM12	142 - 143	;; ;;	80; Greyish 2;	2; Red (	6; Fine-to medium 2 grained	200; Dark 5	50; Greenish 2;	Red 6;	; Fine-to medium	101058; Granite, metamorphic, aplitic	102017; Amphibolite	36; Quartz 3	32; Potash 49 Feldspar Pli	49; 3; Plagioclase Am	3; Amphibole	1091; X1 80	80; 80/20 le	leucocratic. Calcite.
HFM12	•		80; Greyish	Red		0:	50; Greenish	Red 6;		101057; Granite to granodiorite, metamorphic, medium grained				49; 3; Plagioclase Amphibole	,		90; 90/10 le	leucocratic.
HFM12	144 - 145	5 200; Dark	80; Greyish			:0	80; Greyish 2;	Red 6; 9r		101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	36; Quartz 3		gioclase /			0/10	small sample. X1, traces of calcite.
HFM12	145 - 146	;i 9	0: 0			200; Dark 0	;; ;;	Red		101057; Granite to granodiorite, metamorphic, medium grained		36; Quartz 3		gioclase	10; Biotite 11	11091; X1 10		traces of amphibolite
HFM12	146 - 147	7 200; Dark	80; Greyish	2; Red	6; Fine-to medium 2 grained	200; Dark 5	50; Greenish 2;	Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 3	32; Potash 36 Feldspar	36; Quartz 10;	10; Biotite 11	11091; X1 10	100; 100 re %	red fracture surfaces.
HFM12	147 - 148		80; Greyish	4; Brown			50; Greenish 2;	Red 6;		101057; Granite to granodiorite, metamorphic, medium grained							60; 60/40 S	Some grains show brittle-ductile deformation.
HFM12	148 - 149		80; Greyish	4; Brown		200; Dark 5	50; Greenish 2;	Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase 3		36; Quartz 10;	10; Biotite 3;	3; Amphibole 70	70; 70/30 X	X1.
HFM12	149 - 150		80; Greyish	4; Brown (			50; Greenish 2;	Red		101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 3		36; Quartz 10;	10; Biotite 11		90; 90/10 e g u	extremely thin quartz veins occur in light red very fine grained 101057. attered amphibolite minerals uncertain partly aphanitic.
HFM12	150 - 151		80; Greyish	4; Brown	6; Fine-to medium 2 grained		50; Greenish	Red 6;		101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase 3	32; Potash 36 Feldspar	36; Quartz 10;	10; Biotite 11	11091; X1 90	90; 90/11 a	as above.
HFM12			ó		9; Medium-grained (1-1 5 mm)	100; Light 0	0;	Grey 9; 5	5			30; Calcite				10 %	0; 100	small sample. Traces of 101057 and altered amphibolite.
HFM12	152 - 153	3 200; Dark	80; Greyish	é	Ę	200; Dark 5	50; Greenish 2;	Red	-to medium	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 3		36; Quartz 10;	10; Biotite 11	11091; X1 10	100; 100 v % s	very small sample (a few grains). Orange coloured sulphide (altered pyrite?)- Calcite
HFM12	153 - 154	4 ;;				:0	50; Greenish	Red 6; 9r		101057; Granite to granodiorite, metamorphic, medium grained				36; Quartz 10;				small sample. Calcite, light green grains.
HFM12	154 - 155	<u>ن</u>	50; Greenish 2;			:0	50; Greenish 2;			101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 3		36; Quartz 10;			100; 100 s %	small sample. Calcite. As above.
HFM12	1	:: 9	0:					Red	Fine-to medium ained	101057; Granite to granodiorite, metamorphic, medium grained						11091; X1 80		small sample. As above.
HFM12	156 - 157	:0 2		2; Red			20; Reddish 5;	Green 6; gr	Fine-to medium ained	norphic,				36; Quartz 10;	10; Biotite	8	0/20	very small sample (a few grains). Also light green grains. Mineralogy?
HFM12		-	20; Reddish	4; Brown (			20; Reddish 5;	Green		Granite to orite, metamorphic, grained						30; Calcite 10 %		small sample. white larger grains of probably feldspar - do not react with hydrochloric acid.
HFM12	158 - 159	9 100; Light	ö	4; Brown		200; Dark 0	<u>ئن</u> ن	Green		Granite to brite, metamorphic, grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase 3		36; Quartz 10;	10; Biotite	<u>8</u>	0/10	small sample. After washing only a few grains left. Rock type proportion uncertain.
HFM12	159 - 160	0 100; Light	:0	4; Brown	_		50; Greenish	Red		101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 3			10; Biotite 16	16; Epidote 10 %	100; 100 v %	very small sample.
HFM12			20; Reddish	ς.	6; Fine-to medium 2 grained		20; Reddish 8;	Grey		101057; Granite to granodiorite, metamorphic, medium grained						16; Epidote 10 %		very small sample.
HFM12	161 - 162	2 200; Dark	80; Greyish		9; Medium-grained (1- 2 5 mm)		80; Greyish 2;	Red 6; 9r		lorphic,	101061; Pegmatite, pegmatitic granite	49; Plagioclase 3		36; Quartz 10;	10; Biotite		90; 90/10 tr	traces of calcite. Some grains foliated.
HFM12	162 - 163		80; Greyish		9; Medium-grained (1- 200; Dark 5 mm)		50; Greenish	2 20	; Medium-grained (1- mm)	101061; Pegmatite, pegmatitic granite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase 3		36; Quartz 10;	10; Biotite 11	11091; X1 60	60; 60/40 tr	traces of calcite, violet fluorite
HFM12			80; Greyish	Red	9; Medium-grained (1- 200; Dark 5 mm)		50; Greenish	Red										traces of epidote, calcite.
HFM12	164 - 165	5 200; Dark	80; Greyish	2; Red	9; Medium-grained (1- 200; Dark 5 mm)		50; Greenish	Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase 3	32; Potash 36 Feldspar	36; Quartz 10;	10; Biotite 16	16; Epidote 10 %	100; 100 q % b	quartz, calcite, epidote and red sealed veins (4 types).

<b>Drill cuttings</b>	ttings				Date: 2003-09-29	Sign.: (	<b>Christin Nordman</b>	dman										
Hole			drill cuttir Chrom.	ngs sampl Hue G	ainsize	Washed ar Lightn.	nd sieved d Chrom.	trill cutti Hue	Washed and sieved drill cuttings sample Lightn. Chrom. Hue Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM12	165 - 166	6 200; Dark	80; Greyish	σ	9; Medium-grained (1- 2 5 mm)	200; Dark	20; Reddish 5	5; Green	6; Fine-to medium grained	io amorphic,		49; Plagioclase	32; Potash Feldspar	Ð	e	16; Epidote	100; 100 %	calcite,
HFM12	166 - 167			Red		ö		5; Green	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz		11091; X1		brownish red purer variety and strongly oxidized variety. The latter poor in dark minerals and some grains have elongated quartz. Same rock type?
	•		80; Greyish	Brown		:0	ЧS	5; Green		101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar			30; Calcite	70; 70/30	rough estimation of rock type ratio. Fluorite and pyrite associated with calcite. Some brownish aphanitic grains. Probably also amphibole.
HFM12	168 - 169	ö	20; Reddish 8;	Grey	9; Medium-grained (1- 5 mm)	ö	40; Brownish	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz		3; Amphibole	90; 90/10	aphanitic, strongly banded small brownish grains - mylonite or volcanite? pyrite
HFM12	169 - 170		20; Reddish 4;	Brown		ó	20; Reddish 5	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	traces of calcite, amphibolite. Like above.
HFM12	170 - 171	1 200; Dark	: 20; Reddish 5;	Green	9; Medium-grained (1 5 mm)	200; Dark (	:0	5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	3; Amphibole	11091; X1	30; Calcite	36; Quartz	32; Potash Feldspar	50; 50/50	plagioclase, biotite. Chlorite altered amphibolite? Calcite also as medium grained crystals.
HFM12	171 - 172	2 200; Dark	: 50; Greenish 8;	Grey	9; Medium-grained (1- 200; Dark 5 mm)	200; Dark	÷,		2; Fine-grained (<1 mm)	۵	; Granite to iorite, orphic, medium	3; Amphibole		16; Epidote 30; Calcite		11091; X1	80; 80/20	rough estimation of rock type ratio pyrite, some grains strongly foliated and have elongated quartz.
HFM12	172 - 173	3 0:	80; Greyish 2;	Red	; Medium-grained (1- mm)		80; Greyish 2	2; Red	9; Medium-grained (1- 5 mm)	101061; Pegmatite, pegmatitic granite	Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	70; 70/30	amph. Very fine grained to aphanitic, slightly altered amphibolite. Epidote. X1. calcite.
HFM12	173 - 174	4 ;;	80; Greyish 2;	2; Red 9;	9; Medium-grained (1- 0 5 mm)		80; Greyish 2	2; Red	9; Medium-grained (1- 5 mm)		102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	70; 70/30	as above, but amph. More altered amphibolite altered.
HFM12	174 - 175	2 O;	80; Greyish 2;	Red	; Medium-grained (1- mm)		80; Greyish 2	2; Red	9; Medium-grained (1- 5 mm)	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	as above.
HFM12		; 0;	l; Greyish		6; Fine-to medium grained		0;	Red	9; Medium-grained (1- 5 mm)	101061; Pegmatite, pegmatitic granite		49; Plagioclase	32; Potash Feldspar		10; Biotite		100; 100 %	traces of altered amphibolite. Epidote.
HFM12	176 - 177	:0				0;	;0;		9; Medium-grained (1- 5 mm)	101061; Pegmatite, pegmatitic granite		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	traces of altered amphibolite, calcite, X1 (with fragments)
HFM12	177 - 178	ö	80; Greyish 2;	2; Red 6; 91	6; Fine-to medium grained	ö	80; Greyish 2	2; Red	9; Medium-grained (1- 5 mm)		102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	80; 80/20	fine fraction red - dark material over represented in washed sample amp almost aphanitic, aftered amphibolite altered. Calcite crystals.
	•	ö	80; Greyish 2;	Red		0; Dark		Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar			3; Amphibole	70; 70/30	fine fraction red - dark material over represented in washed sample. Calcite, epidote, some grains strongly foliated/banded.
	•	ö	80; Greyish 2;	Red			<u>ب</u>		6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz		3; Amphibole	80; 80/20	calcite, epidote.
HFM12		- ;	80; Greyish 2;	Red		0; 10			6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar			30; Calcite		
HFM12	181 - 182	ö	5	Red		:0	40; Brownish	2: Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		100; 100 %	traces of altered amphibolite, epidote.
HFM12	182 - 183	ii S	80; Greyish 2;	Red	9; Medium-grained (1- 5 mm)	ö	80; Greyish 2	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	3; Amphibole	70; 70/30	epidote, calcite
HFM12	183 - 184	4 ;;				ö	20; Reddish 4;	Brown	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic	102017; Amphibolite	32; Potash Feldspar		36; Quartz	10; Biotite		0/10	quite leucocratic with very small biotite.
	184 - 185	; 0	40; Brownish 2;	2; Red 6; gr	o medium	ö	20; Reddish 4	4; Brown	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		100; 100 %	small sample. Traces of altered amphibolite.
HFM12	•		5: 0:	Red	9; Medium-grained (1- 5 mm)	:0		Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar				30; Calcite	100	traces of calcite.
HFM12	•	; 2	40; Brownish 2;	Red	9; Medium-grained (1- 5 mm)	;ô	;;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	11091; X1	100; 100 %	some deformed aphanitic grains (attered amphibolite or just grain reduction -probably the latter).
HFM12	187 - 188	:0 8	0;	Red	9; Medium-grained (1- 5 mm)	:0	:0	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	11091; X1	100; 100 %	some grains are strongly foliated. Brittle ductile shear zone?
HFM12	•	:0 6	50; 2; Greenish	Red	9; Medium-grained (1- 5 mm)	:0	80; Greyish 2	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	some grains esp. Amphibolite are strongly foliated. Brittle ductile shear zone?
HFM12	189 - 190	ö	80; Greyish 2;	Red	9; Medium-grained (1- 5 mm)	ö	80; Greyish 2	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	some grains are strongly foliated. Brittle ductile shear zone? Amphibolite is altered.
HFM12	190 - 191	;; ;;	40; Brownish 2;	Red		.: :0	80; Greyish 2	2; Red		101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	11091; X1	80; 80/20	some grains are strongly foliated - seem mylonitic. Attered amphibolite also strongly foliated.
	•							Red	o medium	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	32; Potash Feldspar				11091; X1		some grains are strongly foliated. Brittle ductile shear zone? Amphibolite is altered.
HFM12	192 - 193	сі Ю	80; Greyish 2;	2; Red 9;	9; Medium-grained (1- 5 mm)	ö	80; Greyish 2	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	11091; X1	80; 80/20	some grains are strongly foliated. Brittle ductile shear zone?

Masting and and seved drill cuttings sample         Monthand         Min-1         Min-1         Min-3         Min-							Date: 2003-09-29	Sian.:	Christin Nordman	nar										
		Summe																		
TronLeftn.Chron.HuHuChron.Hu<				Untreated	d drill cutti	ings san	ple	Washed a	nd sieved dri	ill cuttings			_							
10         10         0000         2         Refere ormetum         0000         2         Refere ormetum         00000         2         Refere ormetum         00000         2         Refere         Person         Refere         Person         Person     <	Hole		9		Chrom.	Hue	Grainsize						Rock type B	Min-1		Min-3			Distr.	Kommentar
104         105         00. 0000000000000000000000000000000000	HFM12		- 194	ö	40; Brownish	2; Red	6; Fine-to medium grained	ö				101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	32; Potash Feldspar		36; Quartz			90; 90/10	90; 90/10 some grains are strongly foliated and elongated mineral grains.
16         1.16         0.         2. Red         Predung-parter(1-         00101, 20000, 00000, 000000000, 0000000, 000000, 0000000, 00000000, 000	HFM12		- 195	:0	80; Greyish	2; Red	6; Fine-to medium grained		20; Reddish 8;			101057; Granite to granodiorite, metamorphic,		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		100; 100 %	Seems fresh. Traces of attered amphibolite.
15         100000         0         000000         0         000000         00000000         0000000         0000000	HFM12		- 196	ö	ó	2; Red	9; Medium-grained (1-		20; Reddish 8;	6	to medium	101057; Granite to		32; Potash	49; Discission	36; Quartz	10; Biotite		100; 100 0′	
10         11         0.         21. Notations         1. Structural            1. Structural					-		(UUU G					granodiorite, metamorphic, nedium grained		relaspar	Plagloclase				%	
107108000. Growin 12Red unsyarated (10.20. Reddath 8. Grow 1Fireb needing10037. Grante to modulo methonophic.22. Peads 165. Guart10. Biol 10. Biol 1020. Guart10. Biol 100. Gia 100. Gia 1020. Guart10. Biol 100. Gia 1020. Guart10. Biol 1020. Guart20. Biol 1020. Biol 1020. Biol 1020. Biol 1020. Bio	HFM12				20; Reddish	4; Browr	6; Fine-to medium grained		20; Reddish 8;			101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	ioclase	36; Quartz	10; Biotite		100; 100 %	
1         1         0         0         0         2.7 Polan         0.0077. <i>Sumits</i> to chand.         0.0017. Sumits to chand.         0.0017. Sum	HFM12				80; Greyish	2; Red	9; Medium-grained (1- 5 mm)	ö	20; Reddish 8;			101057; Granite to granodiorite, metamorphic, wedium creined		32; Potash Feldspar	gioclase	36; Quartz	10; Biotite		100; 100 %	
10         2.0. Raddish 4. Brown 6. Fine-to medium         0.         0. Greysh 2. Red         6. Fine-to medium         0. Greysh 2. Red         6. Fine-to medium         0.00         2. Potent         8. Dount         10. Biolide         9. Dount         10. Dount         10. Dount         2. Potent         9. Dount         10. Dount         9. Dount         10. Dount         9. Dount         10. Dount         9. Dount         10. Dount         9. Dount         9. Dount         10. Dount         10. Dount         2. Potent         9. Dount         10. Dount         10. Dount         2. Potent         9. Dount         10. Dount <th>HFM12</th> <td></td> <td></td> <td></td> <td>ö</td> <td>2; Red</td> <td>9; Medium-grained (1- 5 mm)</td> <td></td> <td>20; Reddish 8;</td> <td>gre gre</td> <td>ine-to medium ned</td> <td>101057; Granite to granodiorite, metamorphic,</td> <td></td> <td>32; Potash Feldspar</td> <td>ioclase</td> <td>36; Quartz</td> <td>10; Biotite</td> <td>30; Calcite</td> <td>100; 100 %</td> <td>only traces of calcite.</td>	HFM12				ö	2; Red	9; Medium-grained (1- 5 mm)		20; Reddish 8;	gre gre	ine-to medium ned	101057; Granite to granodiorite, metamorphic,		32; Potash Feldspar	ioclase	36; Quartz	10; Biotite	30; Calcite	100; 100 %	only traces of calcite.
200         2.01         0;         4.0;         5; Red         6; Fine-to medium         0;         5; Red         6; Fine-to medium         0;         32; Patash         49;         36; Oustr1         10; Diolete         30; Calcite           201         2.02         0;         2; Red         6; Fine-to medium         0;         2; Red         6; Fine-to medium         10; 05; Ganite to         70; Calcite         70; Calcite <t< th=""><th>HFM12</th><td></td><td></td><td>:0</td><td>20; Reddish</td><td>4; Browr</td><td>6; Fine-to medium grained</td><td>:0</td><td></td><td>gra gra</td><td>ine-to medium ned</td><td>101057; Granite to granodiorite, metamorphic, nedium grained</td><td></td><td>32; Potash Feldspar</td><td>gioclase</td><td>36; Quartz</td><td>10; Biotite</td><td></td><td>100; 100 %</td><td></td></t<>	HFM12			:0	20; Reddish	4; Browr	6; Fine-to medium grained	:0		gra gra	ine-to medium ned	101057; Granite to granodiorite, metamorphic, nedium grained		32; Potash Feldspar	gioclase	36; Quartz	10; Biotite		100; 100 %	
201         2.02         0:         2: Red         6; Fine-to medum         0:         2: Red         6; Fine-to medum         101057; Gantle to grandontic, metamorphic,         32: Potash         49;         36; Cuartz         10: Biolicae         36; Cuartz         10: B	HFM12	200	- 201	ö		2; Red	6; Fine-to medium grained	ó	80; Greyish 2;	gr.	o medium	101057; Granite to granodiorite, metamorphic, nedium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz		30; Calcite	100; 100 %	only traces of calcite.
202         2.03         0:         0:         8:: Greytsh         2: Red         6: Fine-to medum         101057. Gantle to granedum         3:: Potesh         48::         36: Cuartz         10: Biolocae         36: Cuartz	HFM12		- 202	ö		2; Red	6; Fine-to medium grained					101057; Granite to granodiorite, metamorphic, nedium grained		32; Potash Feldspar		36; Quartz		30; Calcite	100; 100 %	only traces of calcite. Traces of brittle-ductile deformation (?).
203         2.04         0°. Greyish         2. Red Gum-grained (1-0)         20; Reddish         8; Guart         10:05; Gamite bu         22; Potash         48;         36; Quart2         10; Bioldte         10:01; Amp/holite         32; Potash         48;         36; Quart2         10; Bioldte         10:01; Amp/holite         32; Potash         48;         36; Quart2         10; Bioldte         10:01; Amp/holite         32; Potash         49;         36; Quart2         10; Bioldte         10:01; Amp/holite         32; Potash         49;         36; Quart2         10; Bioldte         10:01; Amp/holite         22; Potash         49;         36; Quart2         10; Bioldte         10:01; Amp/holite         22; Potash         49;         36; Quart2         10; Bioldte         10:01; Amp/holite         32; Potash         49;         36; Quart2         10; Bioldte         10:01; Amp/holite         36; Quart2         10; Diol; Pioldte         10:01; Amp/holite         36; Quart2         10; Diol; Piol	HFM12		- 203	:0	ó	2; Red	6; Fine-to medium grained	:0		gre gre	ine-to medium ined	101057; Granite to granodiorite, metamorphic, nedium grained		32; Potash Feldspar	gioclase	36; Quartz	10; Biotite		100; 100 %	
204         205         0:         80: Greyish         2: Red         8: Medium-grained (1-0;         20: Free dum         101057: Grante to grained         101057: Grante to grained         101057: Grante to grained         101057: Grante to grained         102017; Amphbolite         32: Potash         48;         36: Quartz         10: Biolite         33: Quartz         10: Biolite         35: Cuartz         10: Biolite         36: Quartz         10: Biolite         10: Biolite         32: Potash         49:         36: Quartz         10: Biolite         10: Biolite         32: Potash         49:         36: Quartz         10: Biolite         10: Biolite         32: Potash         49:         36: Quartz         10: Biolite         22: Potash         49:         36: Quartz         10: Biolite         10: Biolite	HFM12			ö	80; Greyish		9; Medium-grained (1- 5 mm)	:0	20; Reddish 8;			101057; Granite to granodiorite, metamorphic, nedium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		100; 100 %	slightly deformed?
205         2.06         0;         80; Greyish         2; Red         8; Medium-grained (1-0;         80; Greyish         2; Red         8; Medium to coarse         101061; Fegnatie,         102017; Amphbolite         32; Potash         49;         36; Caurtz         11091; X1         30; Cacidia           206         207         0;         40;         2; Red         8; Medium to coarse         101061; Fegnatie,         102017; Amphbolite         22; Potash         49;         36; Cuartz         11091; X1         36; Caridia           206         207         0;         40;         2; Red         8; Medium to coarse         101061; Fegnatie,         102017; Amphbolite         22; Potash         49;         36; Cuartz         11091; X1         50; Pyrite           207         2.08         0; Greyish         2; Red         8; Medium coarse         101061; Fegnatie,         102017; Amphbolite         22; Potash         49;         36; Cuartz         11091; X1         50; Pyrite           207         2.08         0; Greyish         2; Red         8; Medium-grained (1-101061; Fegnatie,         102017; Amphbolite         72; Potash         49;         36; Cuartz         1091; X1         50; Pyrite           207         2.08         6; Fine-to medium         0;         2; Red         8; Medium-	HFM12		- 205	ö	80; Greyish	2; Red	9; Medium-grained (1- 5 mm)		20; Reddish 8;	gre gre	-ine-to medium ined	101057; Granite to granodiorite, metamorphic, medium orained	102017; Amphibolite	32; Potash Feldspar	gioclase	36; Quartz	10; Biotite	11091; X1	70; 70/30	70; 70/30 Strong deformation - becomes aphanitic and banded. 1cm big calcite crystal.
206         207         0:         40:         2: Red         8: Medium to coarse         101051; Fegmate,         102017; Amphbolite         32: Potash         49:         36: Cuartz         10391; X1         50; Mrian           206         2.20         0:         Brownish         0:         0:         2: Red         8: Medium to coarse         101051; Fegmate,         102017; Amphbolite         32: Potash         49:         36: Cuartz         10391; X1         50: Mrian           207         2.08         0:         0:         2: Red         9: Medium grained (1-101061; Fegmate,         36: Cuartz         10: Biota         11091; X1           207         2.08         0:         0:         2: Red         5: mmi         0: 2: Red         9: Medium-grained (1-101061; Fegmate,         35: Cuartz         10: Biota         11091; X1           208         2.0         0:         2: Red         6: Fine-for medium         0:         2: Red         9: Medium-grained (1-101061; Fegmate,         35: Cuartz         10: Biota         11091; X1           208         0:         0:         2: Red         6: Medium-grained (1-101061; Fegmate,         35: Cuartz         10: Biota         10: Biota           208         0:         0:         0:         2: Red         6: M	HFM12			ö	80; Greyish	2; Red	9; Medium-grained (1- 5 mm)	:0	80; Greyish 2;			101061; Pegmatite, pegmatitic granite	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz	11091; X1		80; 80/20	
207         208         0;         80; Greyish         2; Red         6; Fine-to medium         0;         2; Red         9; Medium-grained (1-101061; Pegmatte,         32; Potash         48;         36; Quartz         10; Biotte         11091; X1           208         2:0         0;         2; Red         6; Fine-to medium         0;         2; Red         9; Medium-grained (1-101061; Pegmatte,         32; Potash         48;         36; Quartz         10; Biotte         11091; X1           208         2:0         0;         2; Red         5; Fine-to medium         0;         2; Red         9; Guartz         10; Biotte         11091; X1           208         2:0         0;         2; Red         0;         2; Red         0;         2; Red         9; Guartz         10; Biotte         11091; X1           208         2:0         0;         2; Red         0;         2; Red         9; Guartz         10; Biotte         11091; X1           208         2:0         0;         2; Red         0;         2; Red         0;         2; Red         9; Guartz         10; Biotte         11091; X1	HFM12	206	- 207	:0		2; Red	6; Fine-to medium grained				n to coarse	101061; Pegmatite, begmatitic granite	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz		50; Pyrite	90; 90/10	
208         2.09         0;         2; Red         6; Fine-to medium         0;         2; Red         9: Medium-grained (1-101061; Pegmatte,         32; Potash         49;         36; Quartz         10; Biotae           208         - 209         0;         2; Red         5; Fine-to medium         0;         2; Field         36; Quartz         10; Biotae	HFM12				80; Greyish		6; Fine-to medium grained				Medium-grained (1- im)	101061; Pegmatite, begmatitic granite		32; Potash Feldspar	49; Plagioclase	36; Quartz		11091; X1	100; 100 %	100; 100 traces of altered amphibolite.
	HFM12	208	- 209	:0	0;	2; Red	6; Fine-to medium grained				Medium-grained (1- im)	101061; Pegmatite, pegmatitic granite		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		100; 100 %	100; 100 traces of altered amphibolite. %