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Forsmark site investigation

Boremap mapping of percussion boreholes HFM09-12

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April 2004

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Contents

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.

Table 4-1. Borehole data for HFM09–HFM12 (values from starting point).

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 ~135°/80° (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°/80° and 050°/15°. Three sets of sealed fractures occur with the orientations 005°/10°, 235°/85° and 125°/80°. 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°–55°.

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 ~130°/75°, whereas the orientation of foliation is ~200°/75–90°.

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°/10°, 130°/75° and 230°/85°. Also three sets of sealed fractures were observed; 230°/85°, 225°/05° and 130°/75°, showing similar trends as the open fractures. Fracture orientations are shown in Appendix 9.

One densely fractured section striking ~240°/90° 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°/60°, whereas the foliation is inferred to be 150°/80–90° (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°/65–70°, 180°/70° and 105°/65°.

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°/50°, 305°/80°, 215°/80° and 130°/35°. 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°/80°, whereas the foliation is inferred to be 110°/90° (one observation).

Brittle-ductile shear zones strike ~125°/80–90° (also overturned), two observed breccias strike ~135°/80° and a possible mylonite that strikes 140°/35°. Also the upper contacts of deformed rock sections are orientated almost parallel with the observed brittle-ductile shear zones, namely in 125°/85° (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°/90°. A subordinate set of open fractures has the orientation 325°/35°. 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°/45° and ~290°/25°. One dominating set of sealed fractures is observed and it is parallel to the dominating set of open fractures, having the orientation 125°/85°. 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.

/2/ Stephens M B, Bergman T, Andersson J, Hermansson T, Petersson J. Zetterström E L, Nordman C, Albrecht L, Ekström M, 2004. Forsmark site investigation. Bedrock mapping – Stage 2 (2003) – Bedrock data from outcrops and the basal parts of trenches and shallow boreholes through the Quaternary cover. SKB P-04-91. Svensk Kärnbränslehantering AB.

Appendix 1

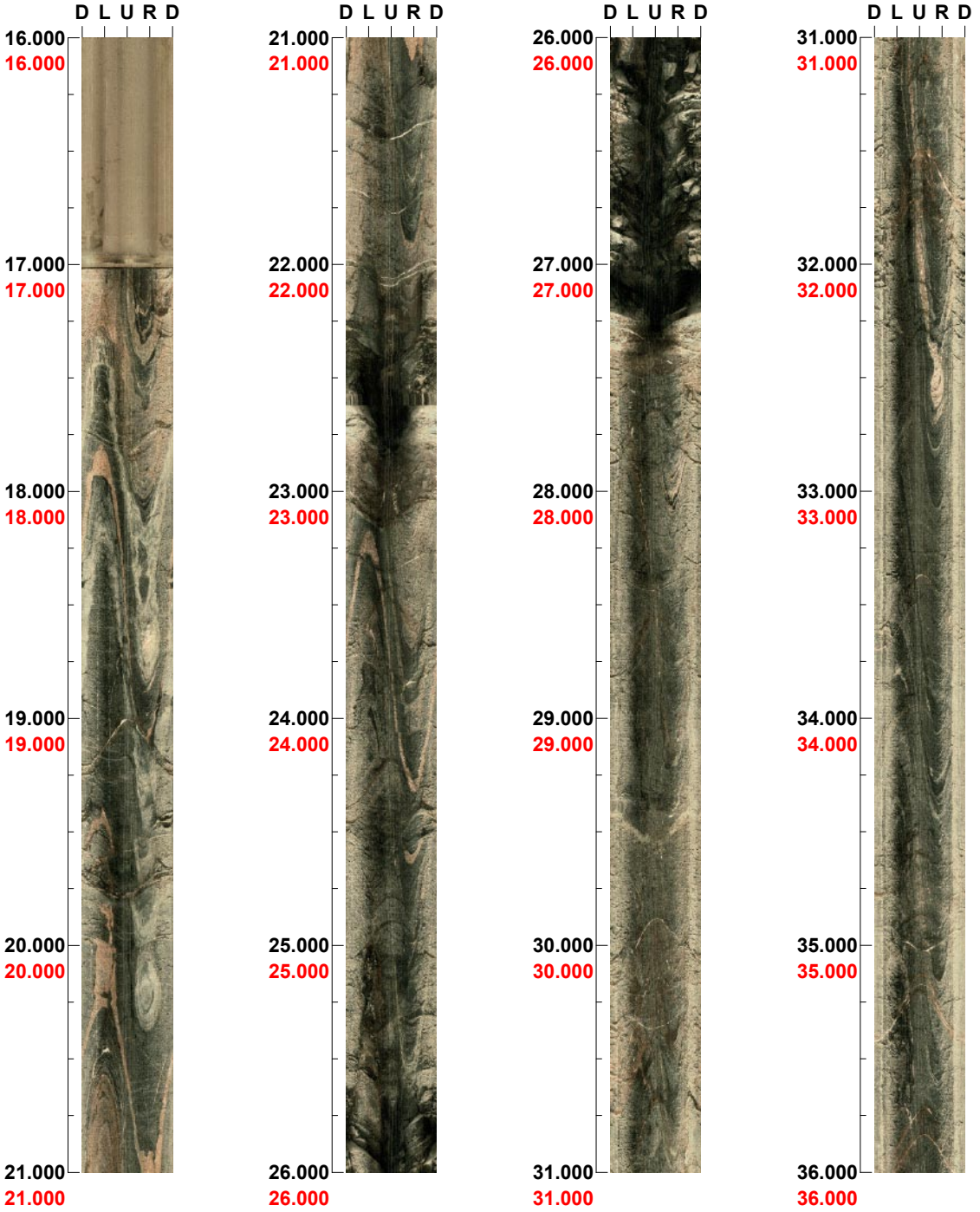
BIPS-images of HFM09

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	**:**  **+0 +0 +0**

Project name: Forsmark
Bore hole No.: HFM09 **Azimuth: 141** **Inclination: -68**

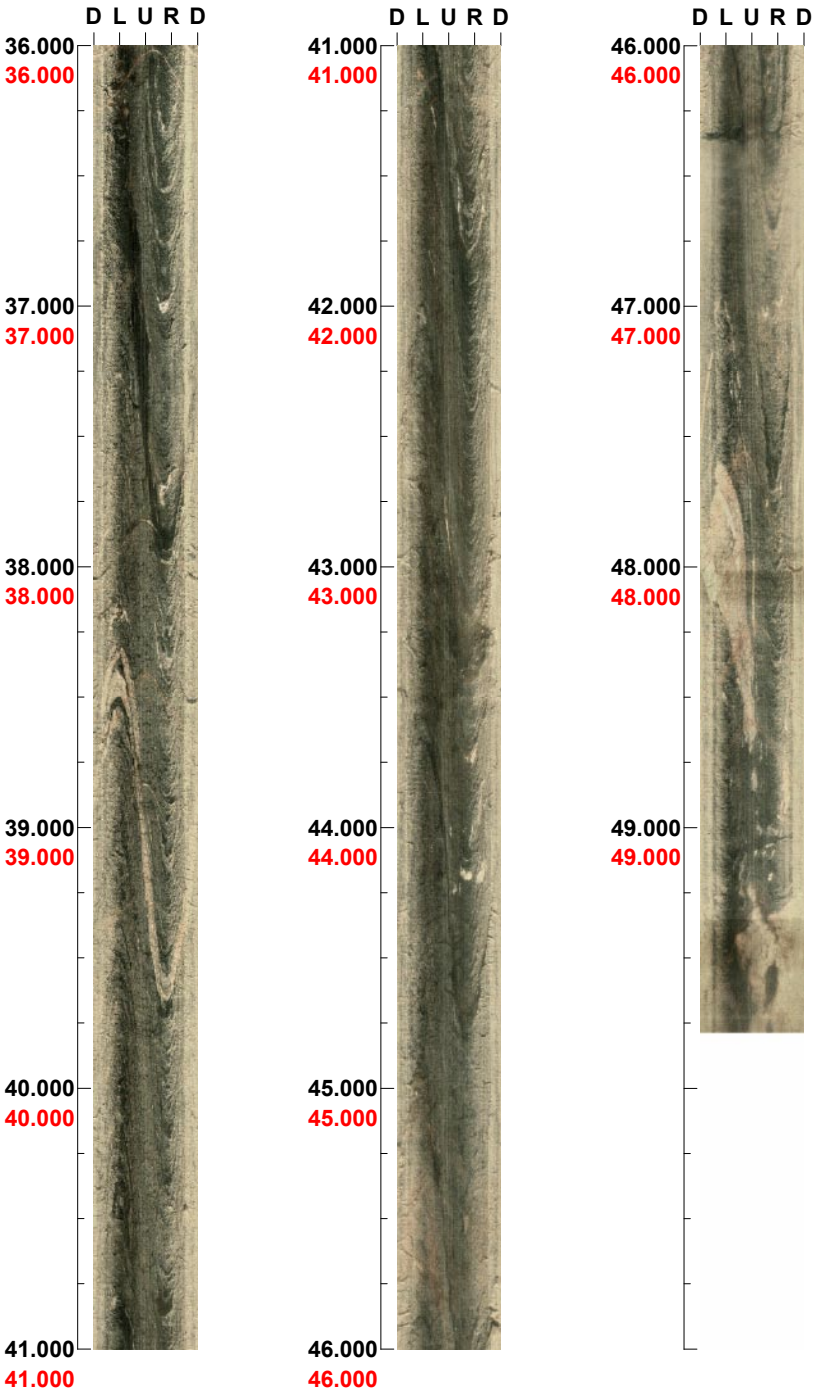
Depth range: 16.000 - 36.000 m



(1 / 2) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM09 **Azimuth: 140** **Inclination: -67**

Depth range: 36.000 - 49.786 m



(2 / 2) **Scale: 1/25** **Aspect ratio: 90 %**

Appendix 2

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	**: +0 +0 +0**

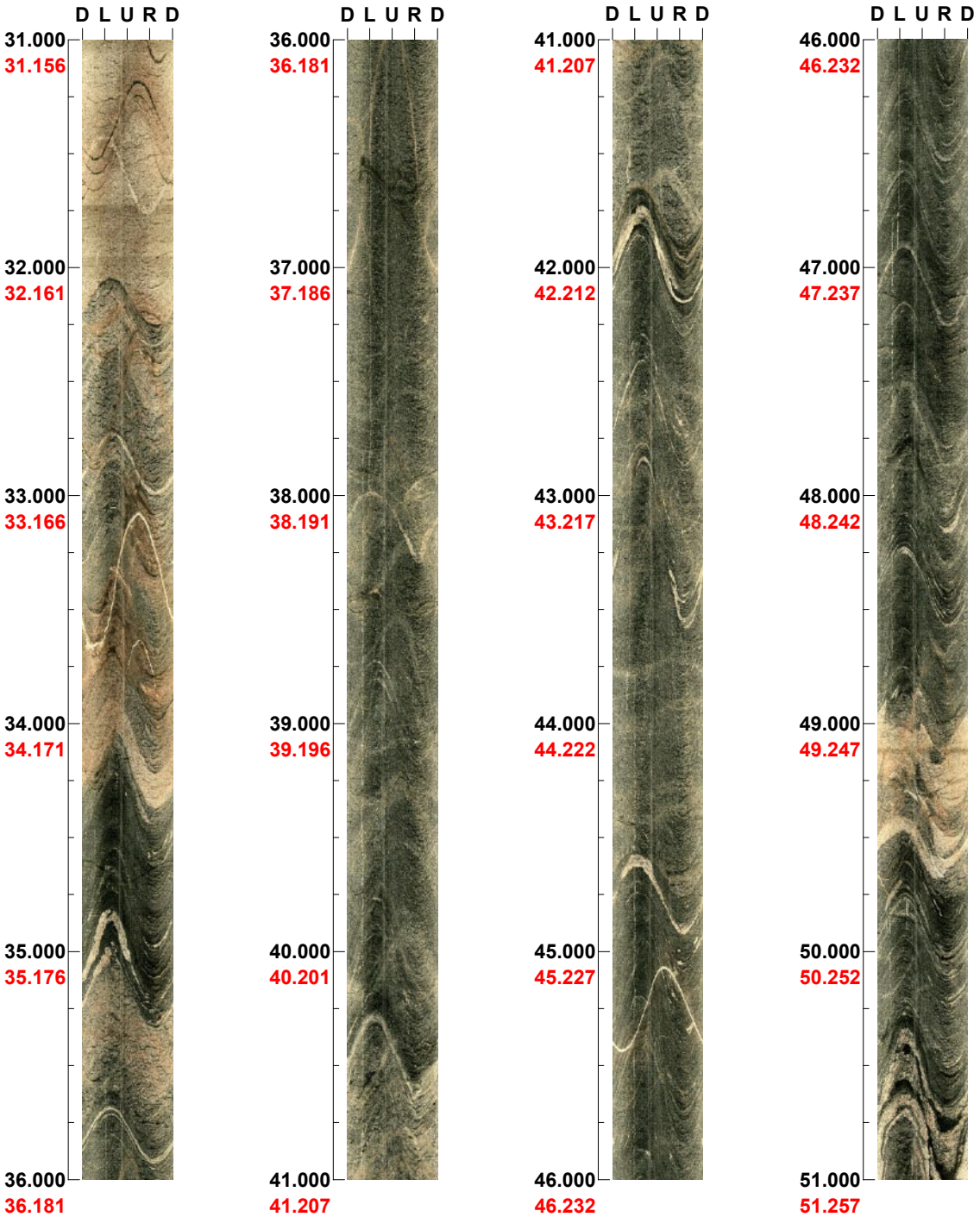
Project name: Forsmark
Bore hole No.: HFM10 **Azimuth: 96** **Inclination: -70**

Depth range: 11.000 - 31.000 m

(1 / 7) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM10 **Azimuth: 100** **Inclination: -70**

Depth range: 31.000 - 51.000 m



(2 / 7) **Scale: 1/25** **Aspect ratio: 90 %**

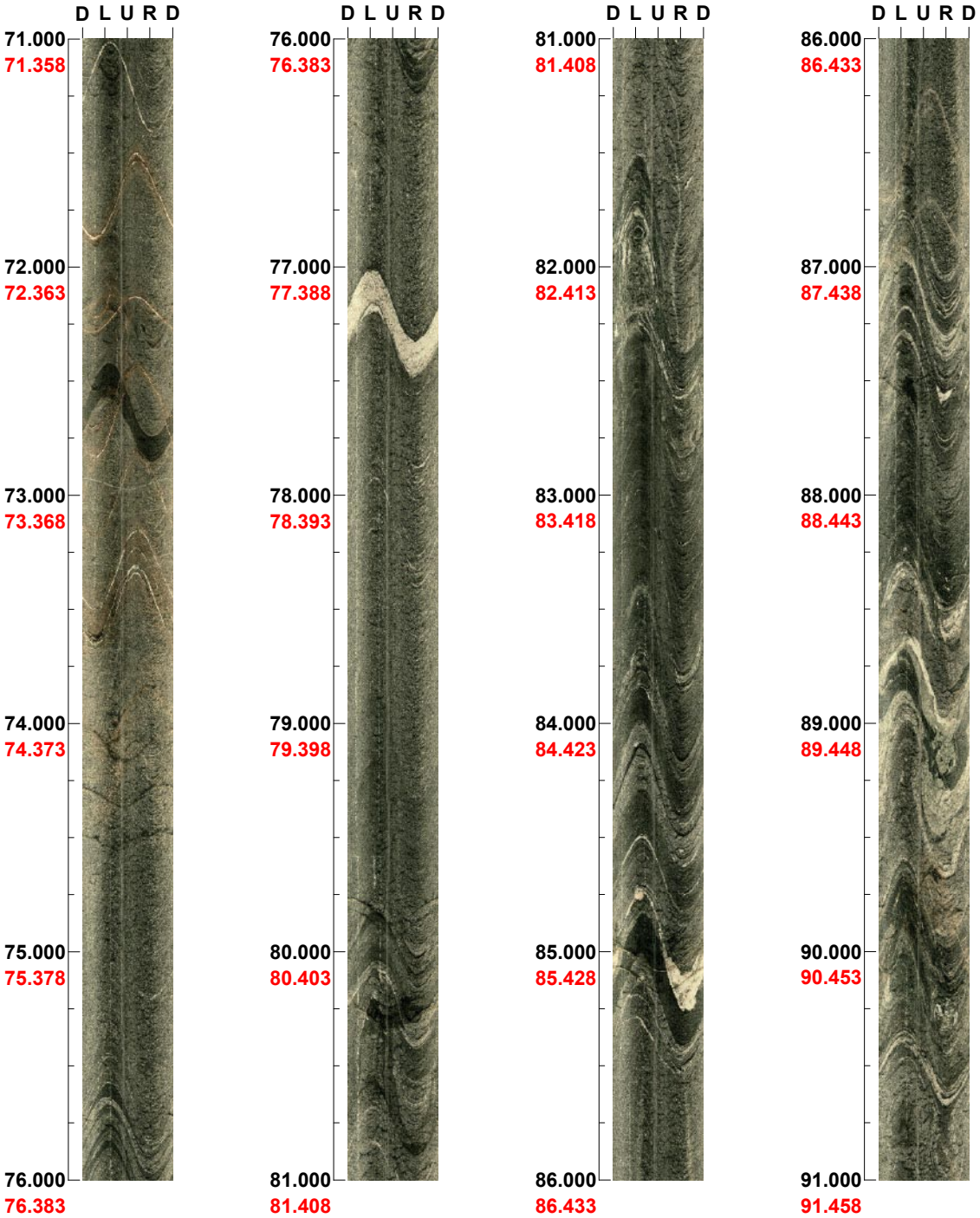
Project name: Forsmark
Bore hole No.: HFM10 **Azimuth: 110** **Inclination: -69**

Depth range: 51.000 - 71.000 m

(3 / 7) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM10 **Azimuth: 115** **Inclination: -69**

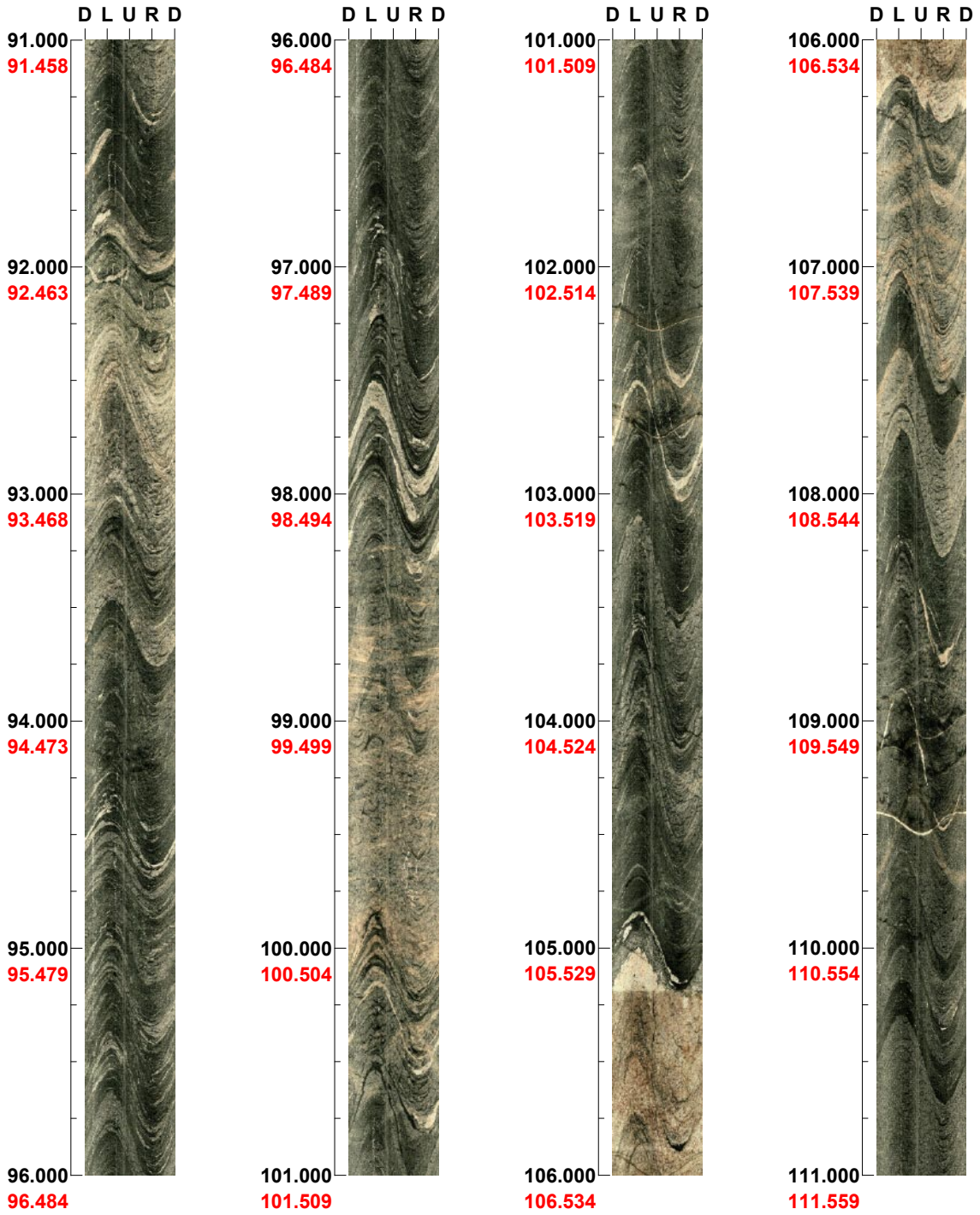
Depth range: 71.000 - 91.000 m



(4 / 7) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM10 **Azimuth: 118** **Inclination: -67**

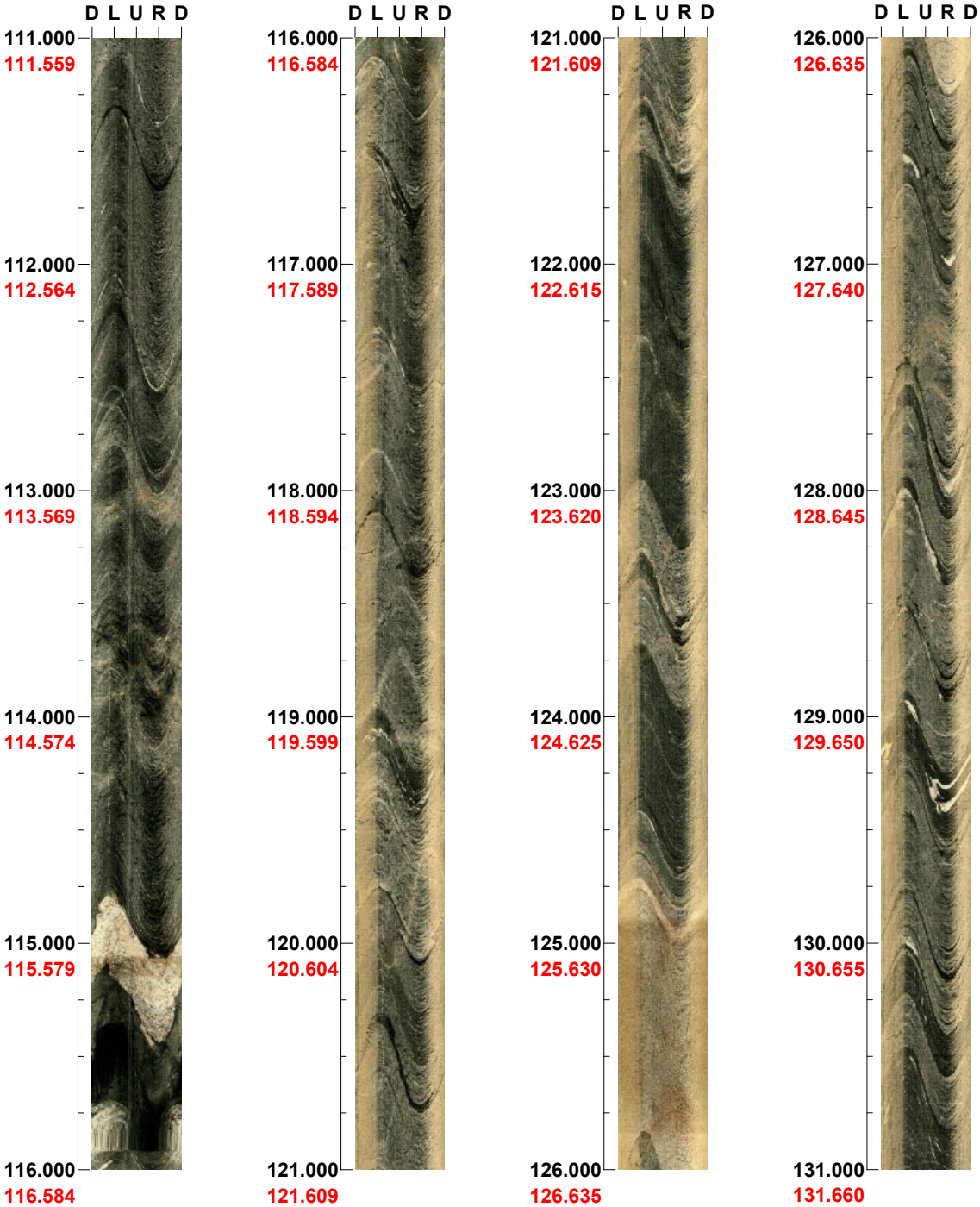
Depth range: 91.000 - 111.000 m



(5 / 7) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM10 **Azimuth: 123** **Inclination: -66**

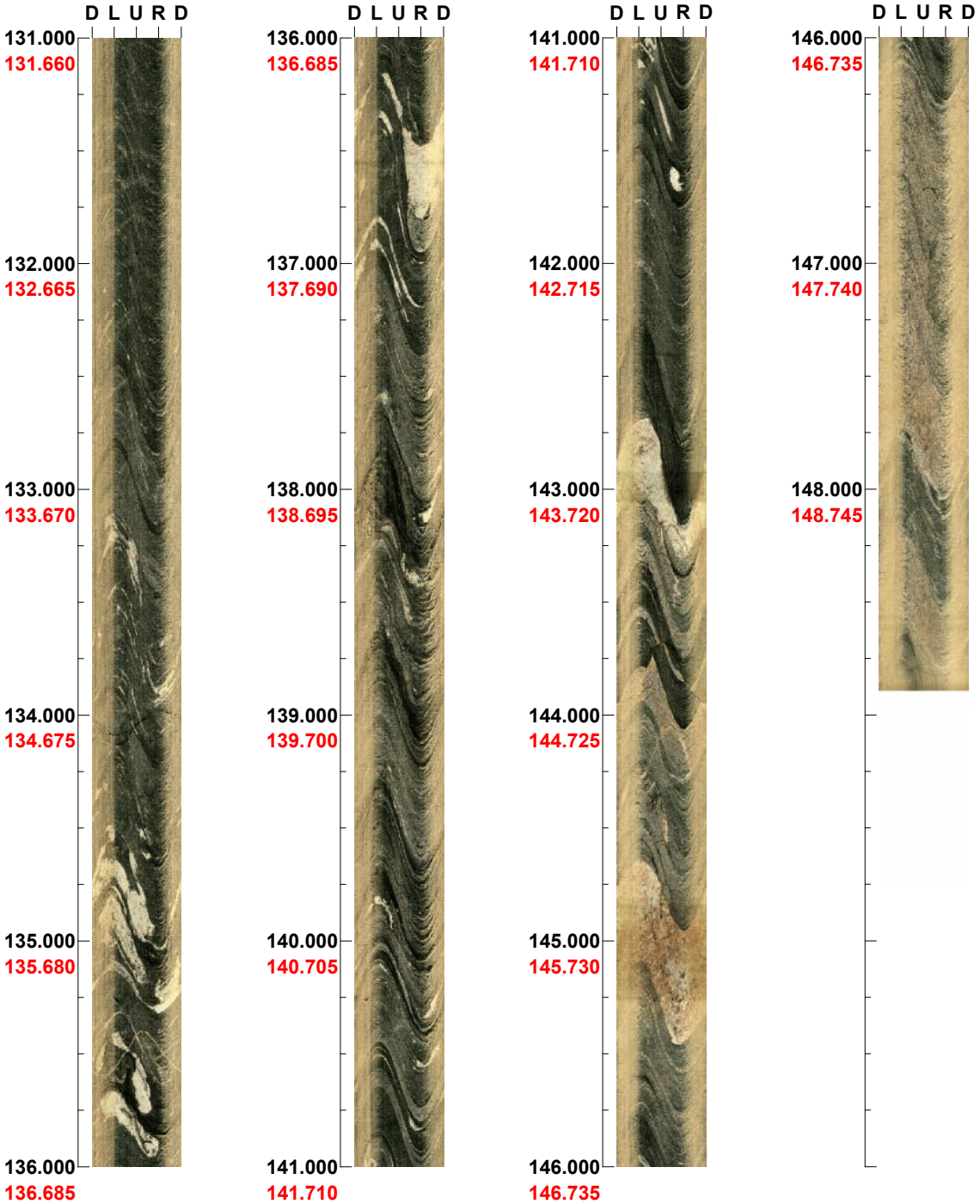
Depth range: 111.000 - 131.000 m



(6 / 7) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM10 **Azimuth: 128** **Inclination: -66**

Depth range: 131.000 - 148.890 m



(7 / 7) **Scale: 1/25** **Aspect ratio: 90 %**

Appendix 3

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	**: +0 +0 +0**

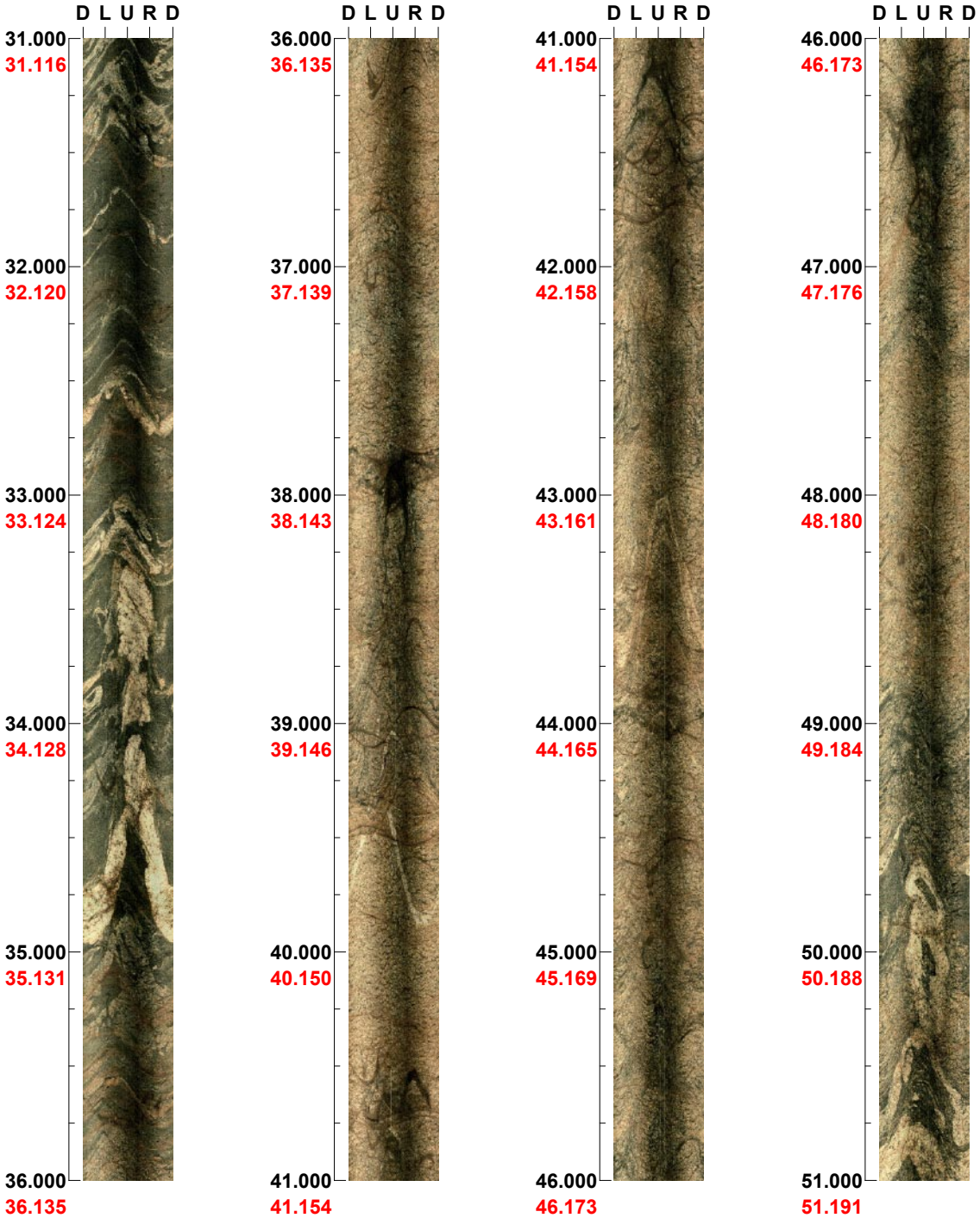
Project name: Forsmark
Bore hole No.: HFM11 **Azimuth: 64** **Inclination: -48**

Depth range: 11.000 - 31.000 m

(1 / 9) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM11 **Azimuth: 65** **Inclination: -48**

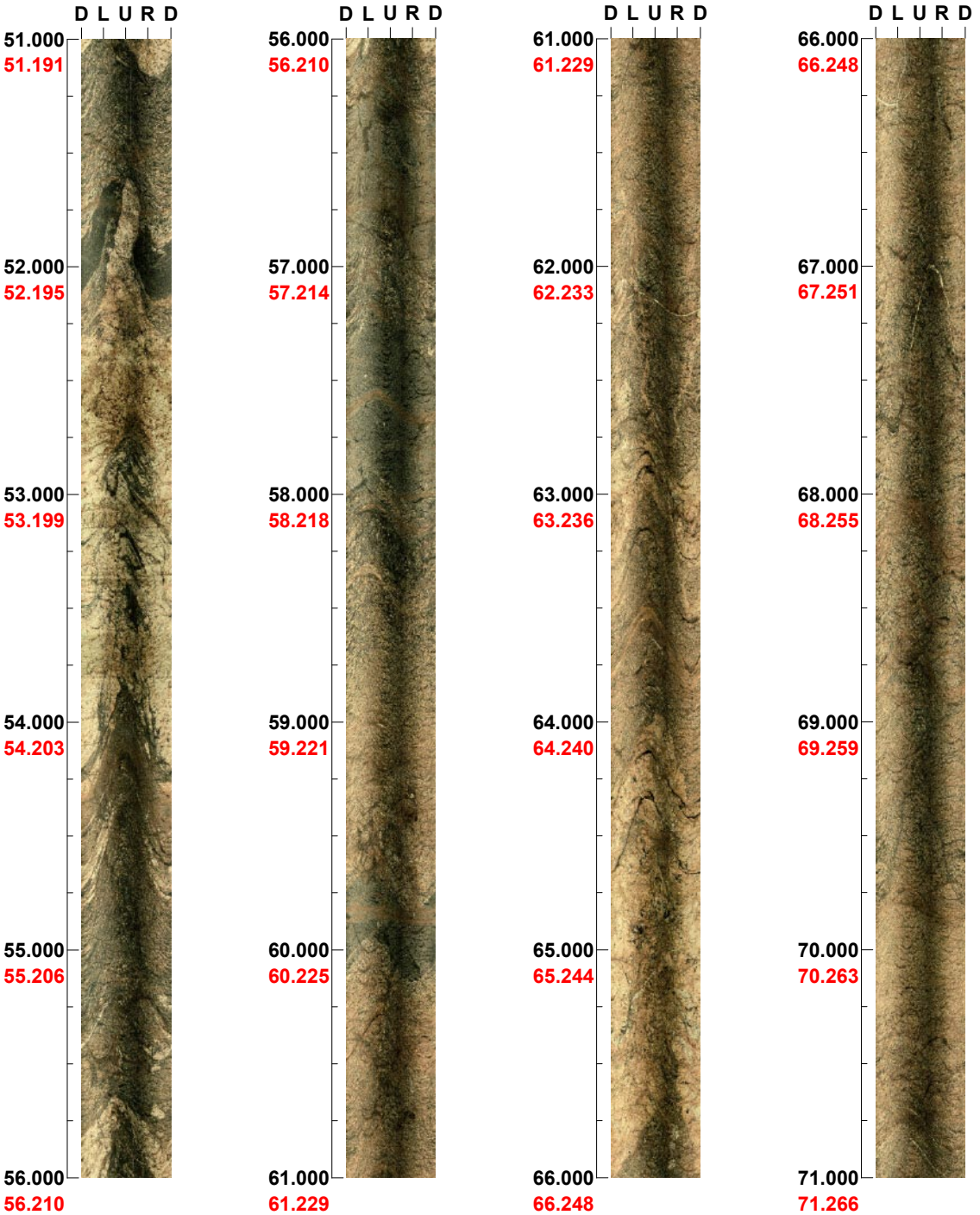
Depth range: 31.000 - 51.000 m



(2 / 9) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM11 **Azimuth: 68** **Inclination: -47**

Depth range: 51.000 - 71.000 m



(3 / 9) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM11 **Azimuth: 69** **Inclination: -46**

Depth range: 71.000 - 91.000 m

(4 / 9) **Scale: 1/25** **Aspect ratio: 90 %**

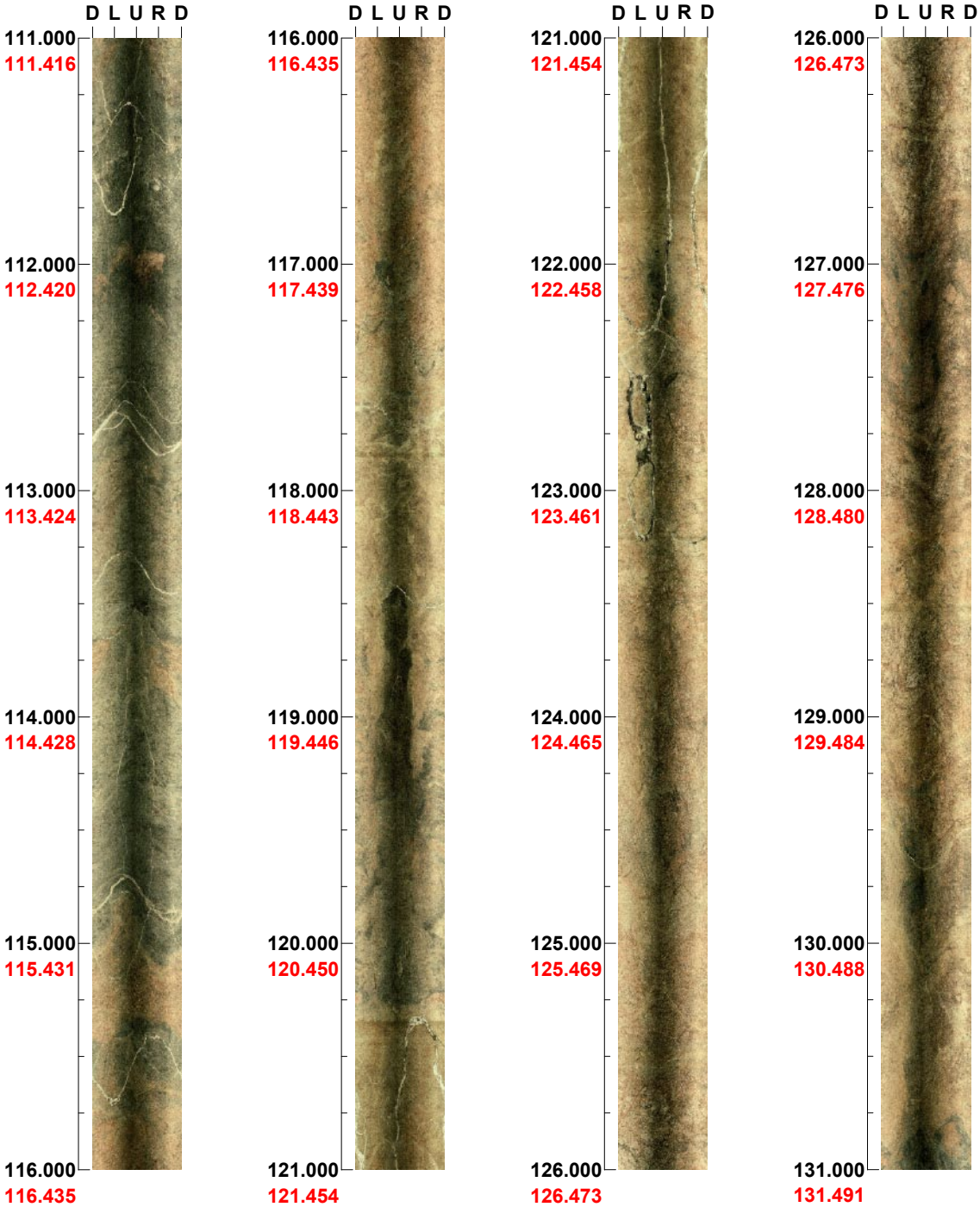
Project name: Forsmark
Bore hole No.: HFM11 **Azimuth: 69** **Inclination: -44**

Depth range: 91.000 - 111.000 m

(5 / 9) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM11 **Azimuth: 71** **Inclination: -43**

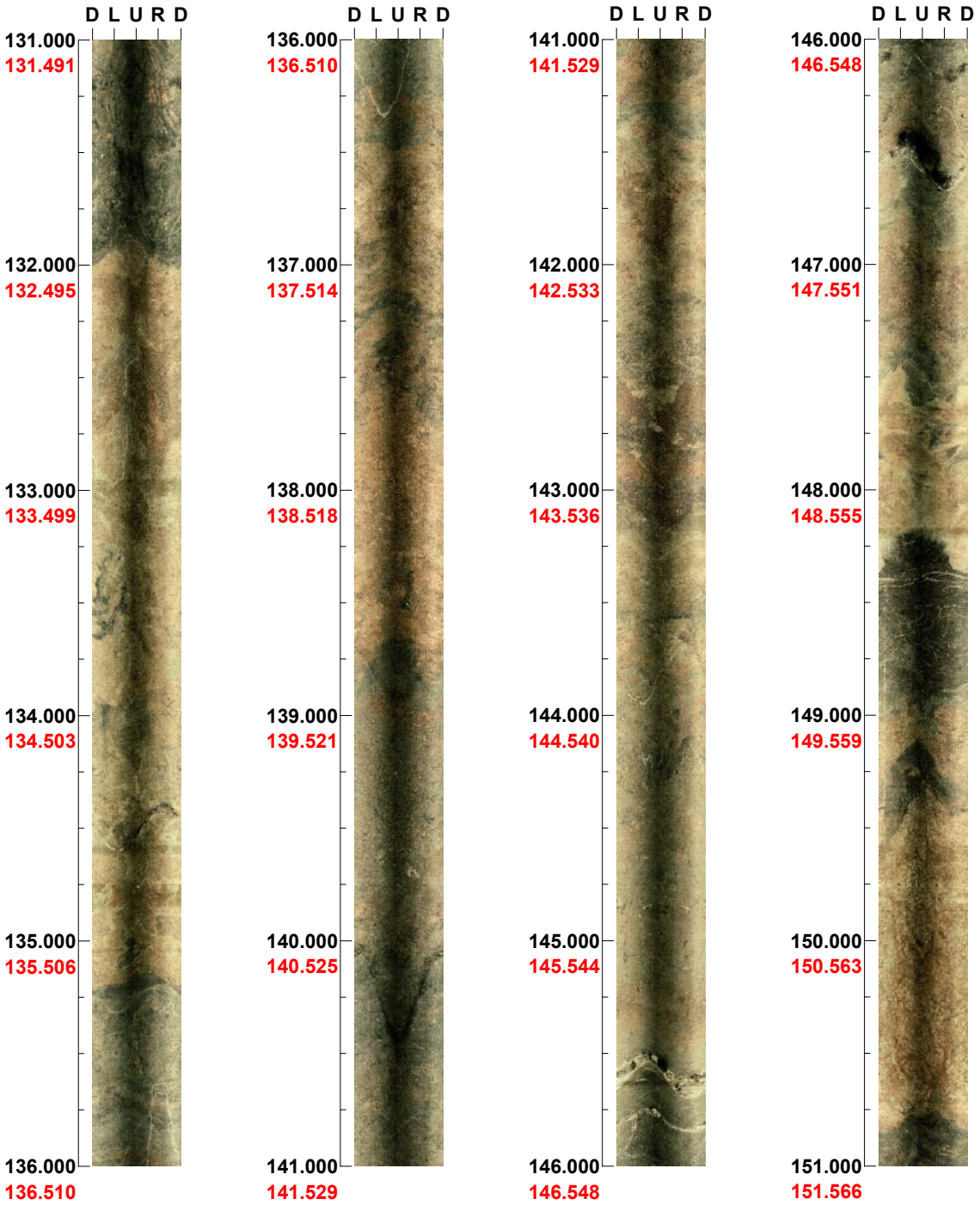
Depth range: 111.000 - 131.000 m



(6 / 9) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM11 **Azimuth: 70** **Inclination: -42**

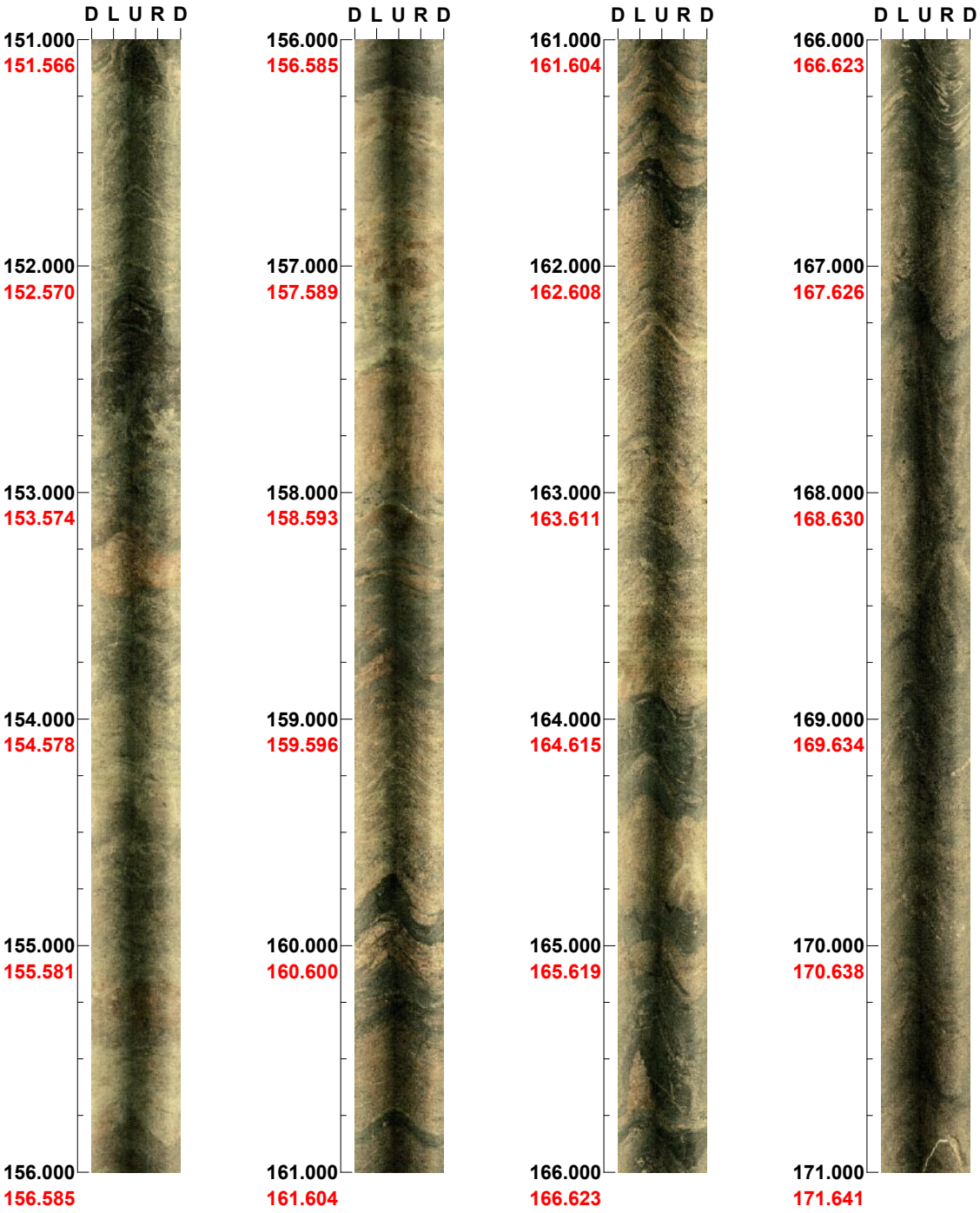
Depth range: 131.000 - 151.000 m



(7 / 9) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM11 **Azimuth: 69** **Inclination: -38**

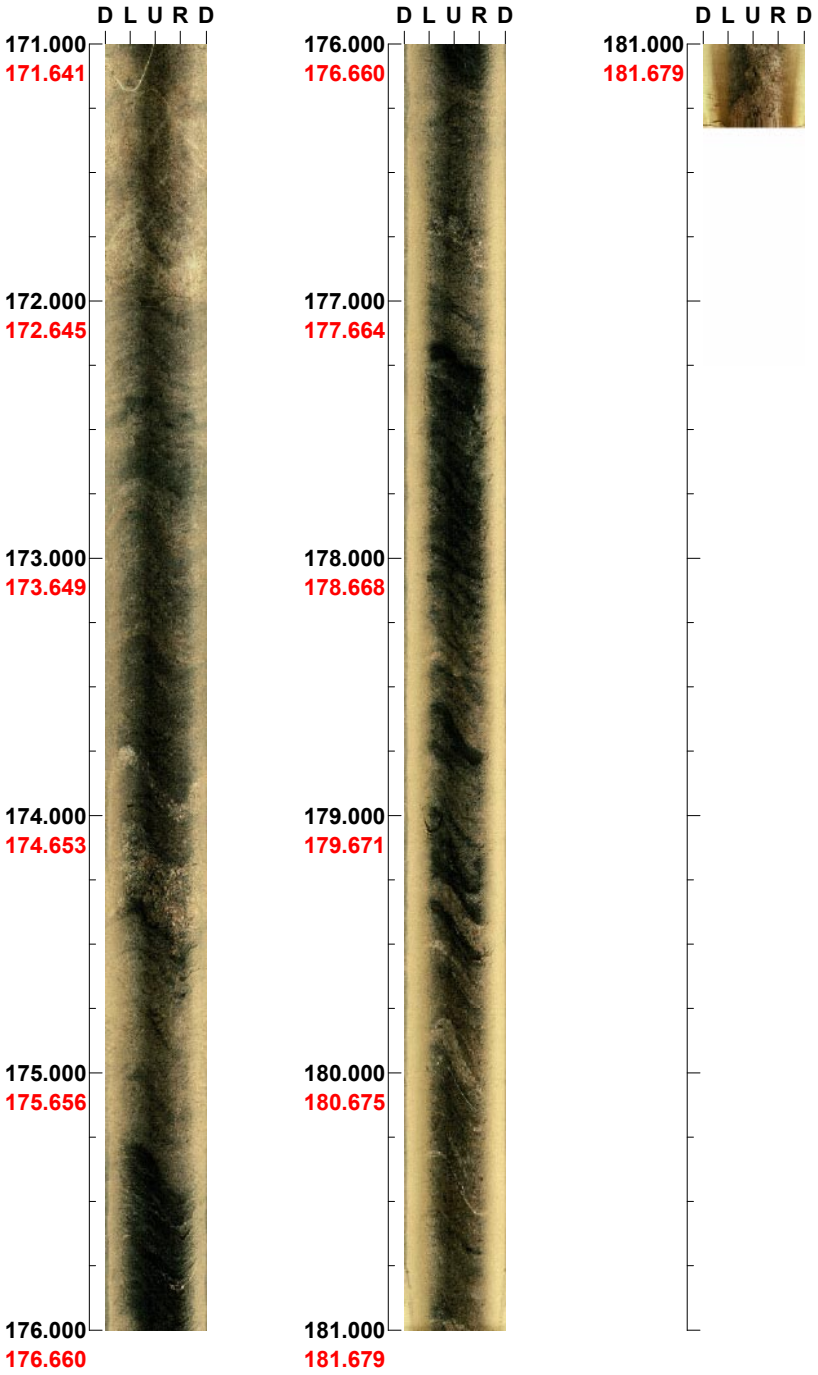
Depth range: 151.000 - 171.000 m



(8 / 9) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM11 **Azimuth: 69** **Inclination: -36**

Depth range: 171.000 - 181.323 m



(9 / 9) **Scale: 1/25** **Aspect ratio: 90 %**

Appendix 4

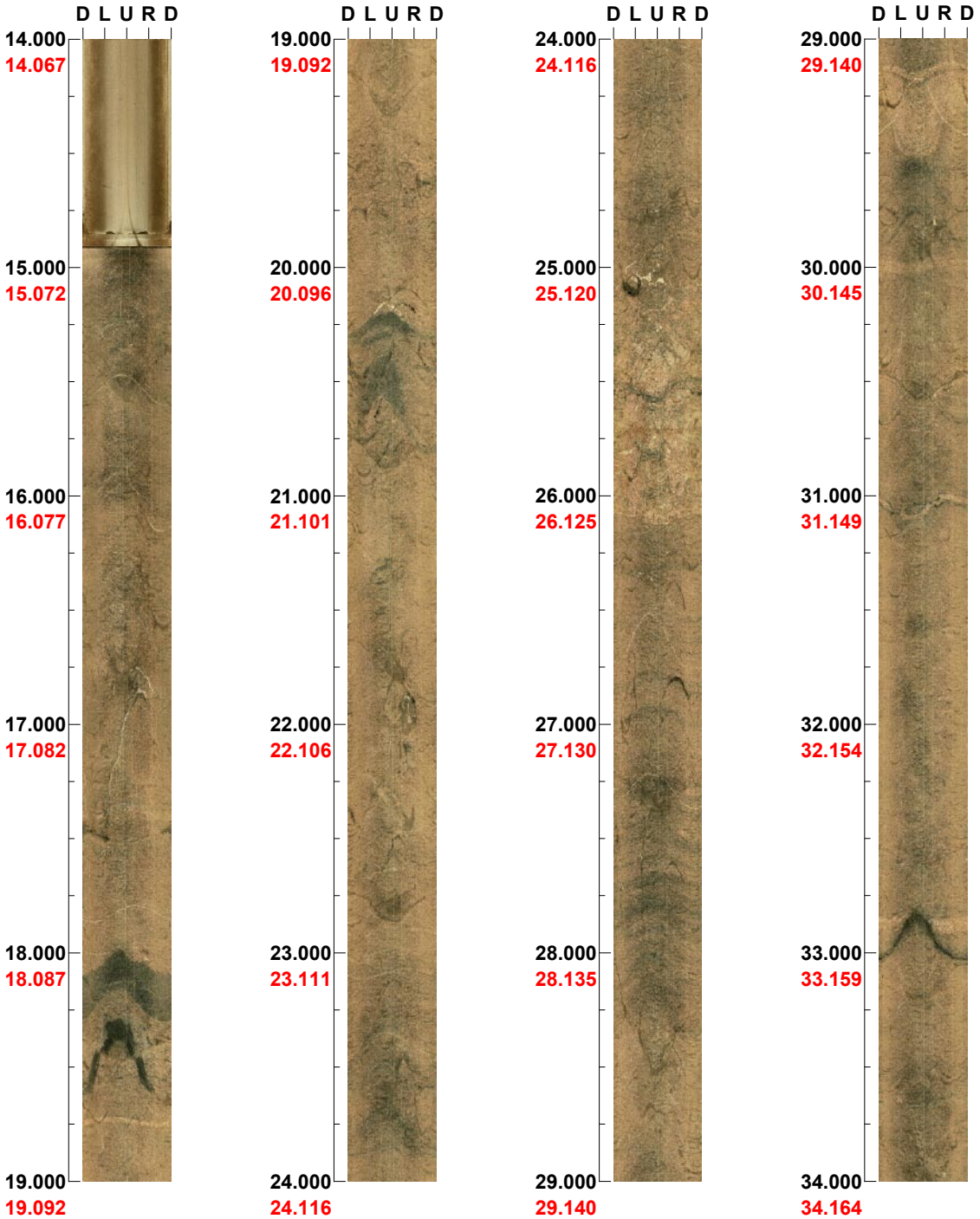
BIPS-images of HFM12

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	**:**  **+0 +0 +0**

Project name: Forsmark
Bore hole No.: HFM12 **Azimuth: 244** **Inclination: -49**

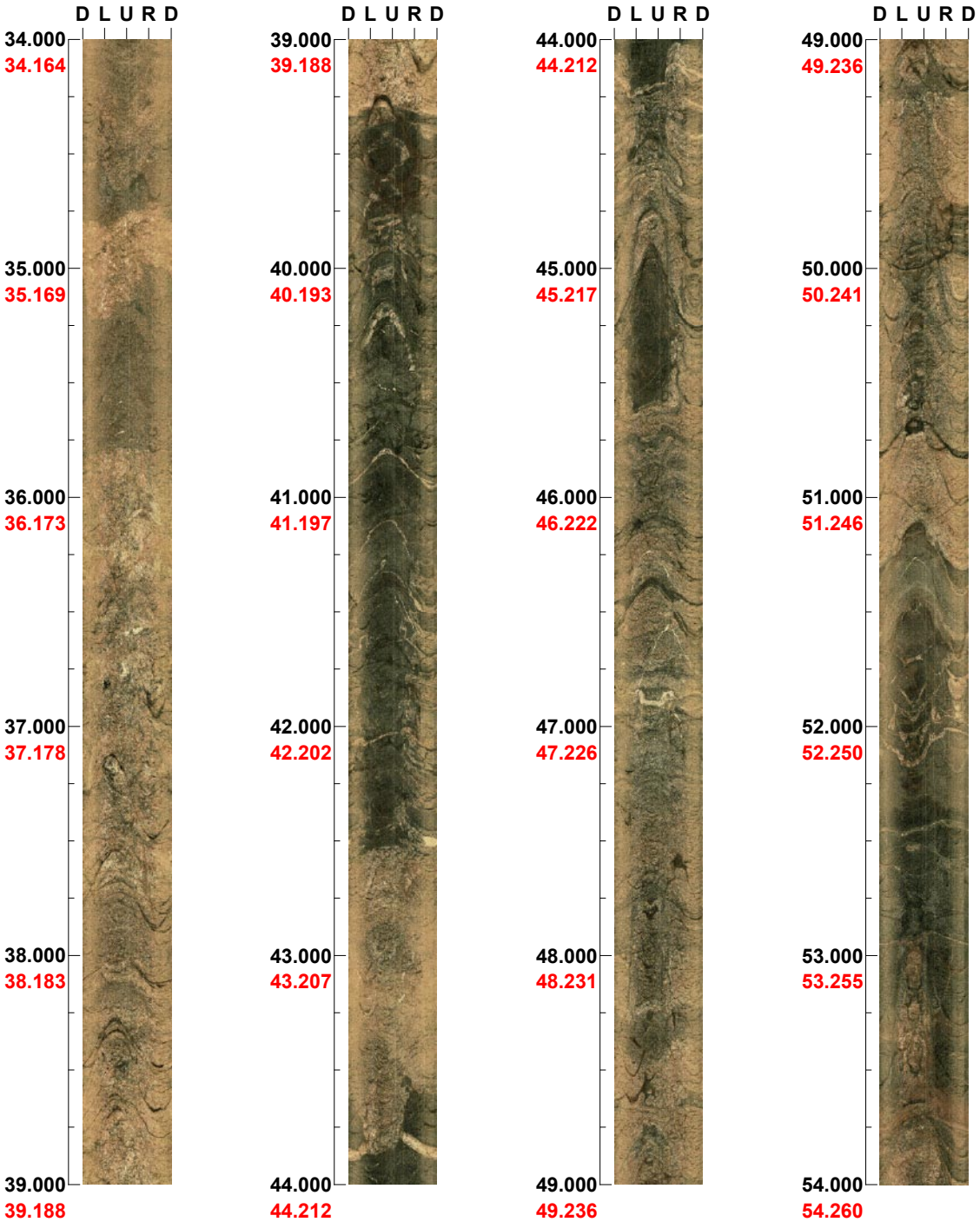
Depth range: 14.000 - 34.000 m



(1 / 10) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM12 **Azimuth: 244** **Inclination: -48**

Depth range: 34.000 - 54.000 m



(2 / 10) **Scale: 1/25** **Aspect ratio: 90 %**

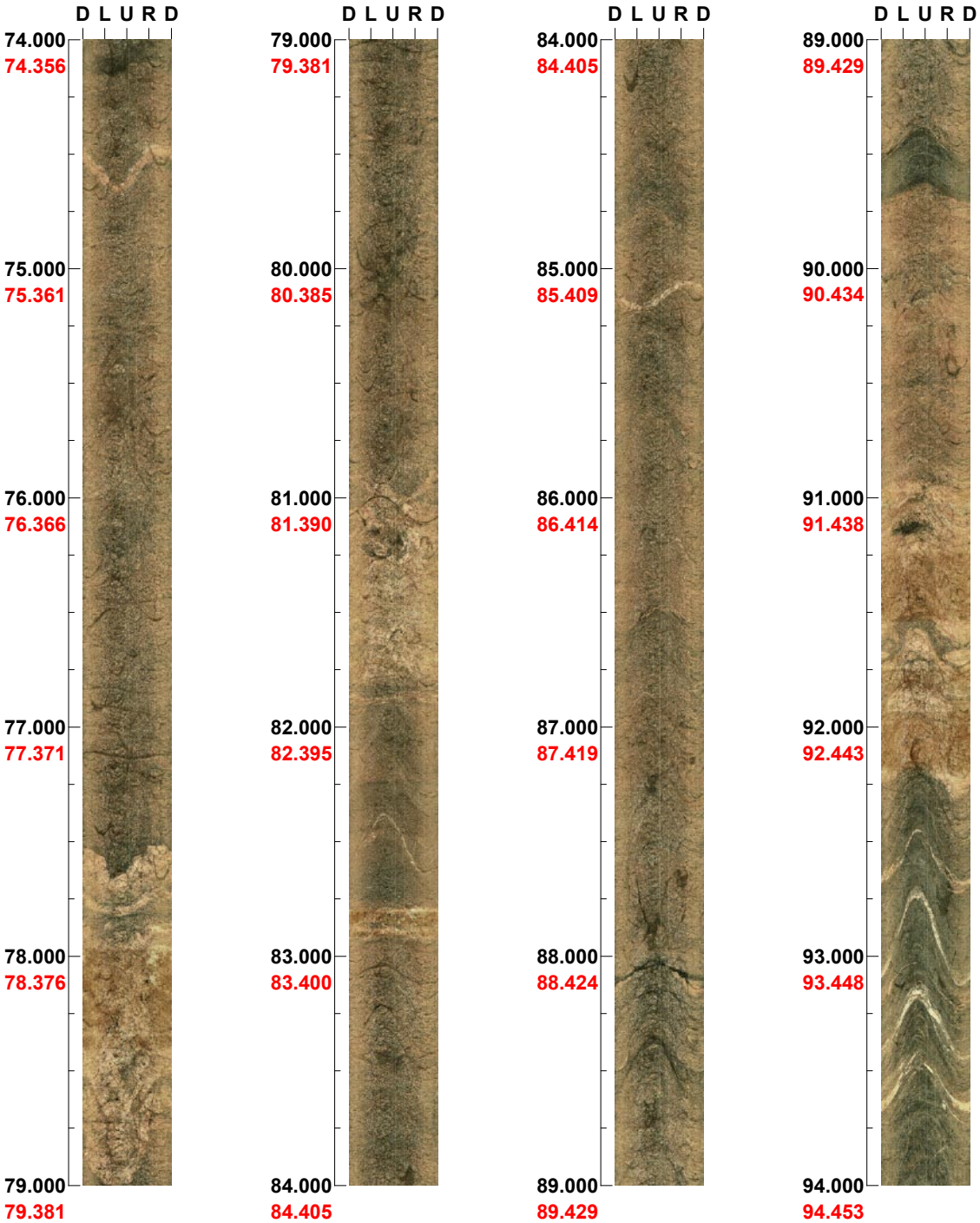
Project name: Forsmark
Bore hole No.: HFM12 **Azimuth: 244** **Inclination: -46**

Depth range: 54.000 - 74.000 m

(3 / 10) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM12 **Azimuth: 245** **Inclination: -45**

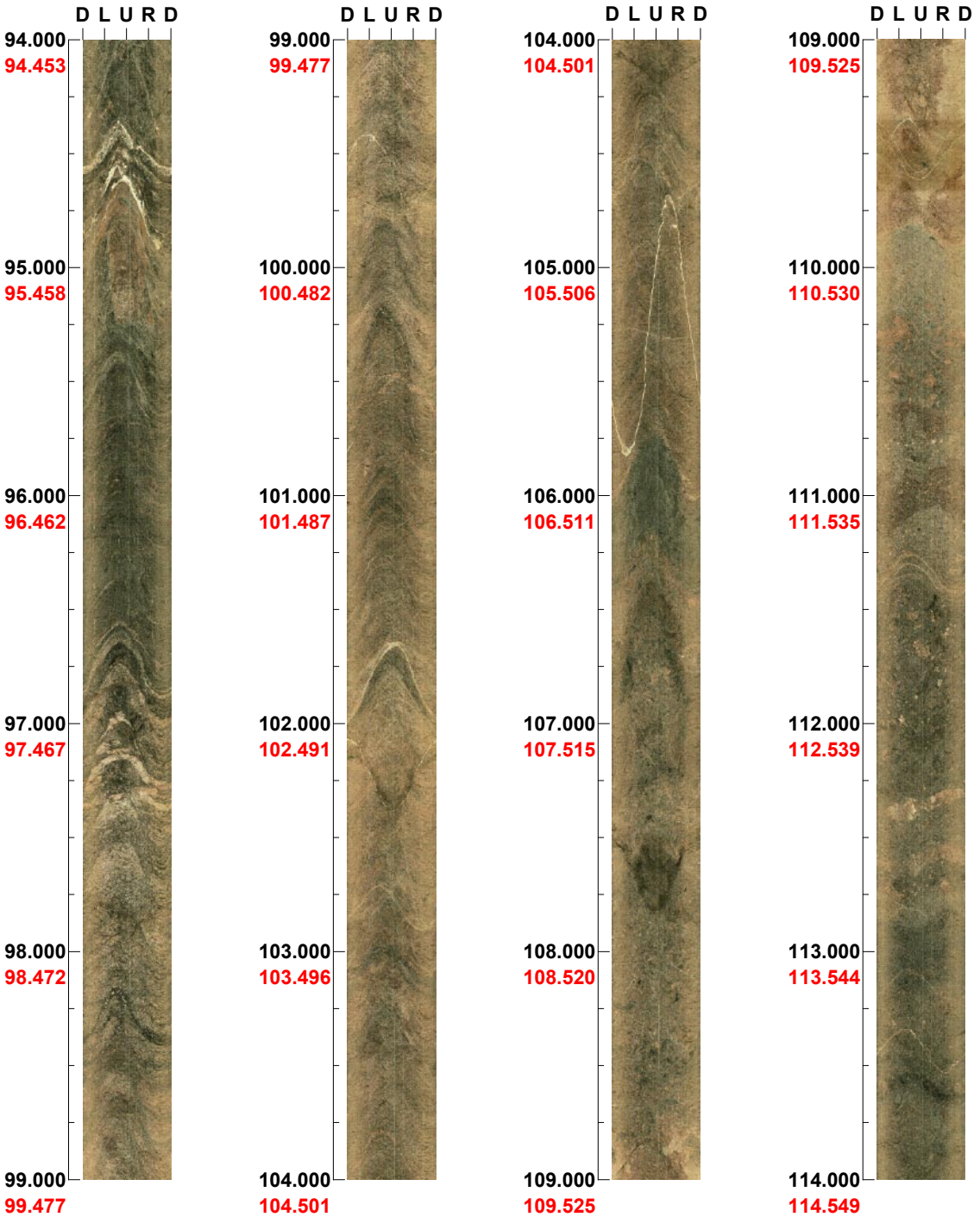
Depth range: 74.000 - 94.000 m



(4 / 10) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM12 **Azimuth: 244** **Inclination: -45**

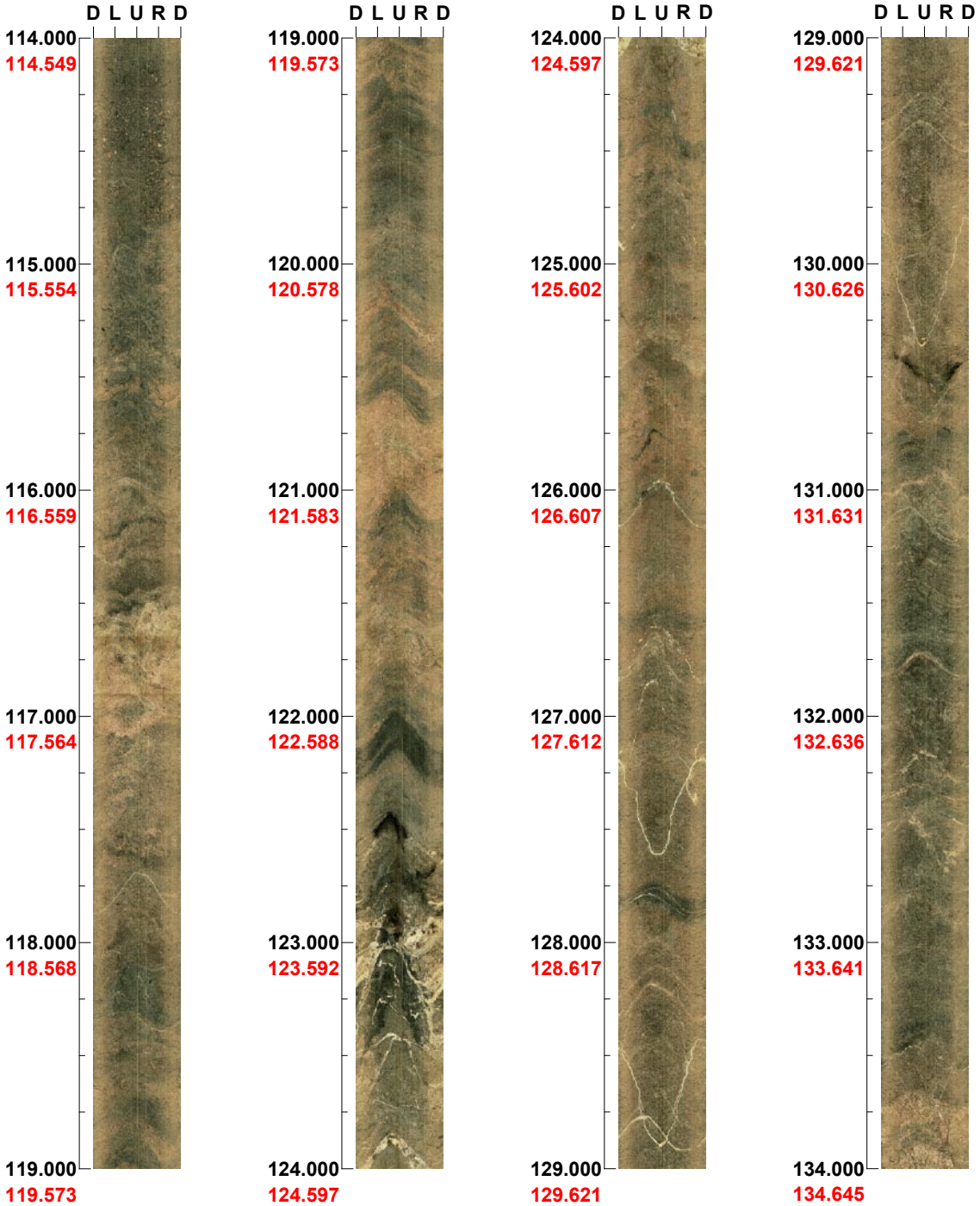
Depth range: 94.000 - 114.000 m



(5 / 10) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM12 **Azimuth: 244** **Inclination: -43**

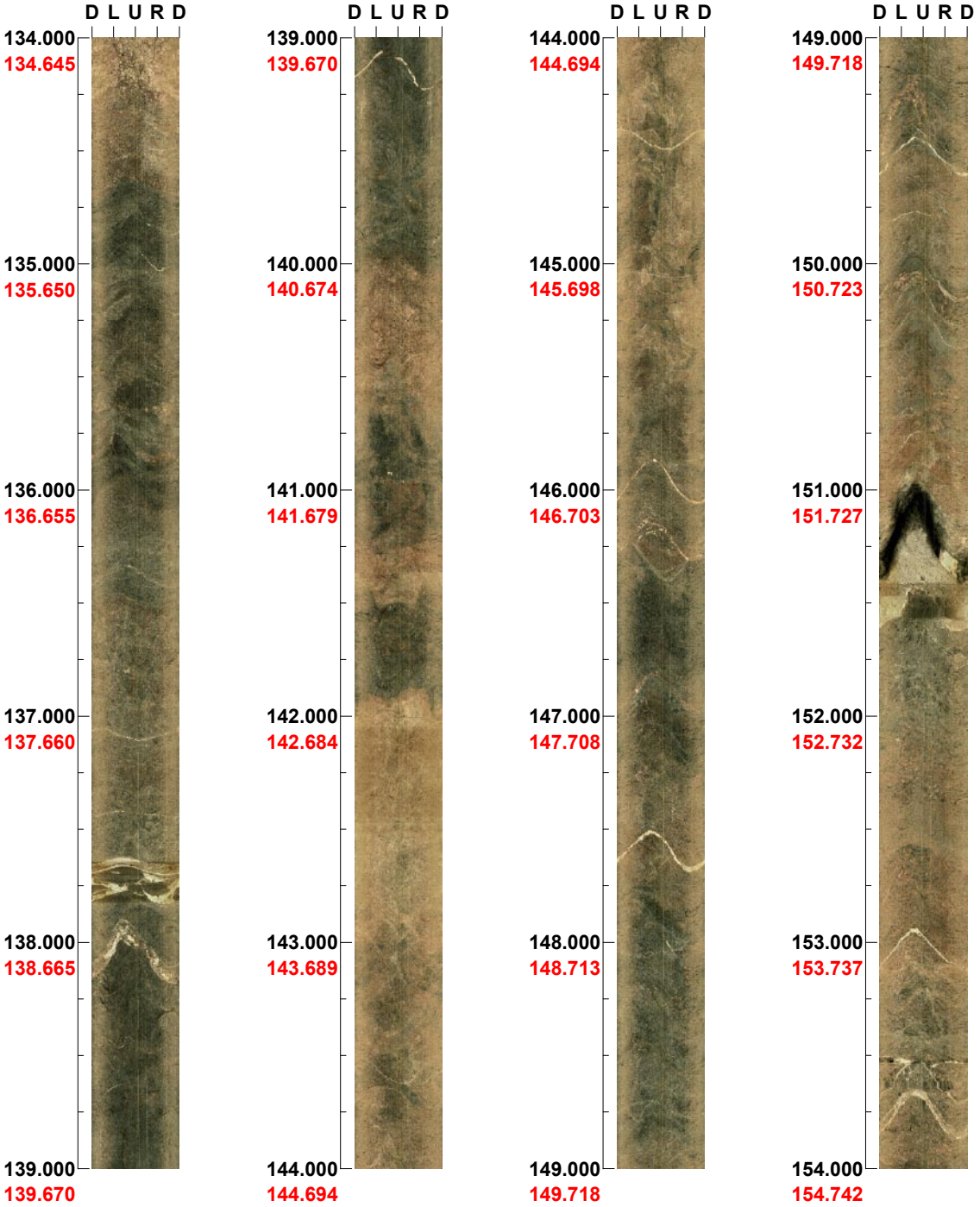
Depth range: 114.000 - 134.000 m



(6 / 10) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM12 **Azimuth: 245** **Inclination: -42**

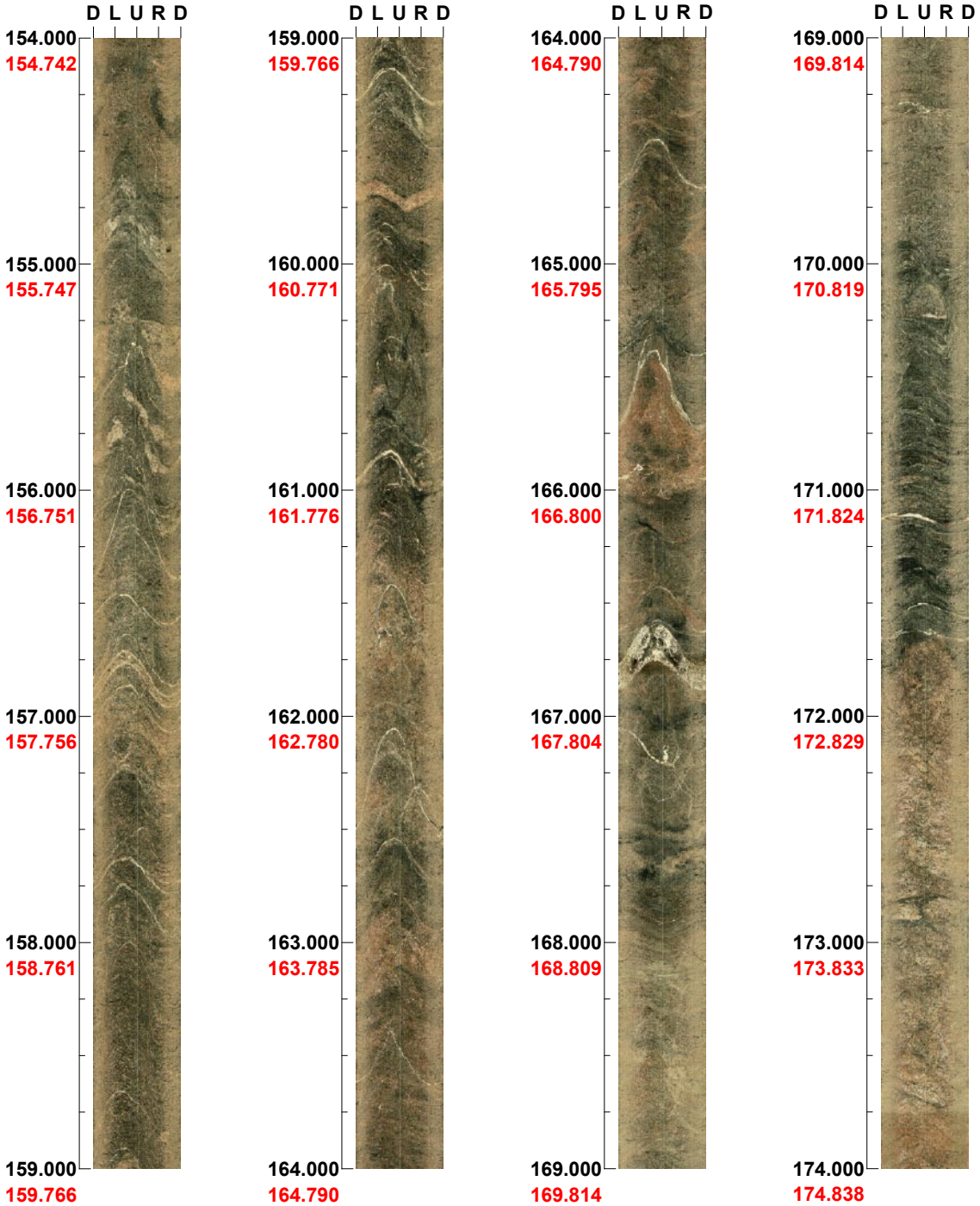
Depth range: 134.000 - 154.000 m



(7 / 10) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM12 **Azimuth: 244** **Inclination: -40**

Depth range: 154.000 - 174.000 m



(8 / 10) **Scale: 1/25** **Aspect ratio: 90 %**

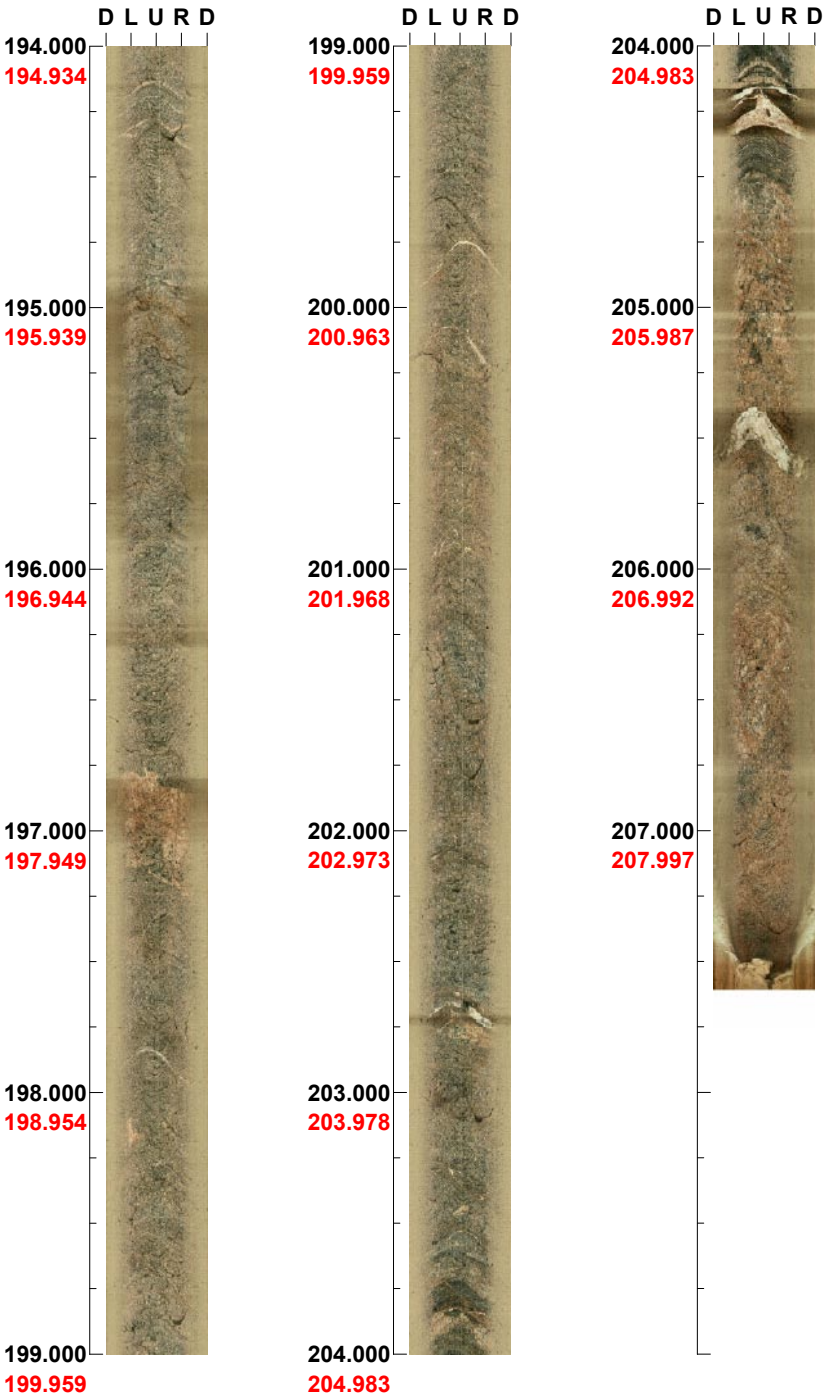
Project name: Forsmark
Bore hole No.: HFM12 **Azimuth: 244** **Inclination: -38**

Depth range: 174.000 - 194.000 m

(9 / 10) **Scale: 1/25** **Aspect ratio: 90 %**

Project name: Forsmark
Bore hole No.: HFM12 **Azimuth: 244** **Inclination: -37**

Depth range: 194.000 - 207.604 m



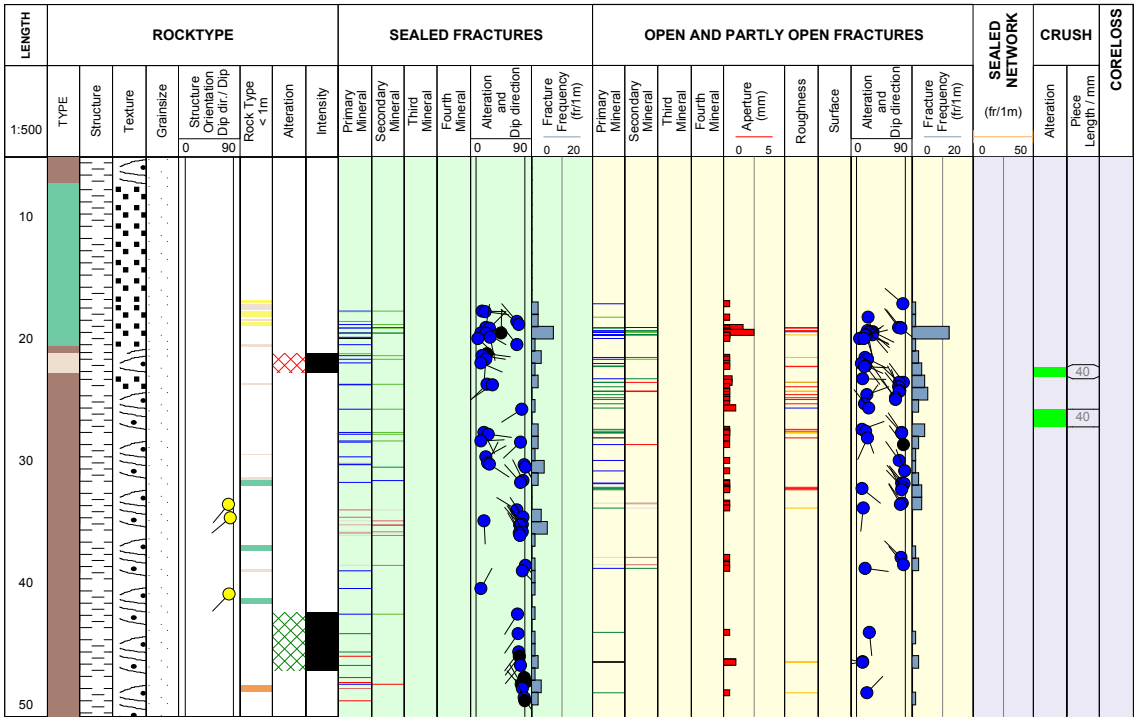
(10 / 10) **Scale: 1/25** **Aspect ratio: 90 %**

Appendix 5

WellCad diagram of HFM09

Title Geological mapping of the percussion drilled borehole HFM09 at Forsmark

Site	FORSMARK	**Coordinate System**	RT90-RHB70
Borehole	HFM09	**Northing [m]**	6699064.65
Diameter [mm]	141	**Easting [m]**	1630869.12
Length [m]	50.250	**Elevation [m.a.s.l.]**	5.15
Bearing [°]	139.36	**Drilling Start Date**	2003-06-18 12:30:00
Inclination [°]	-68.89	**Drilling Stop Date**	2003-06-30 09:00:00
Date of mapping	2004-06-14 14:18:00	**Plot Date**	2004-06-15 21:05:36
Rocktype data from	p_rock_XXXXX	**Fracture data from**	p_fract_core

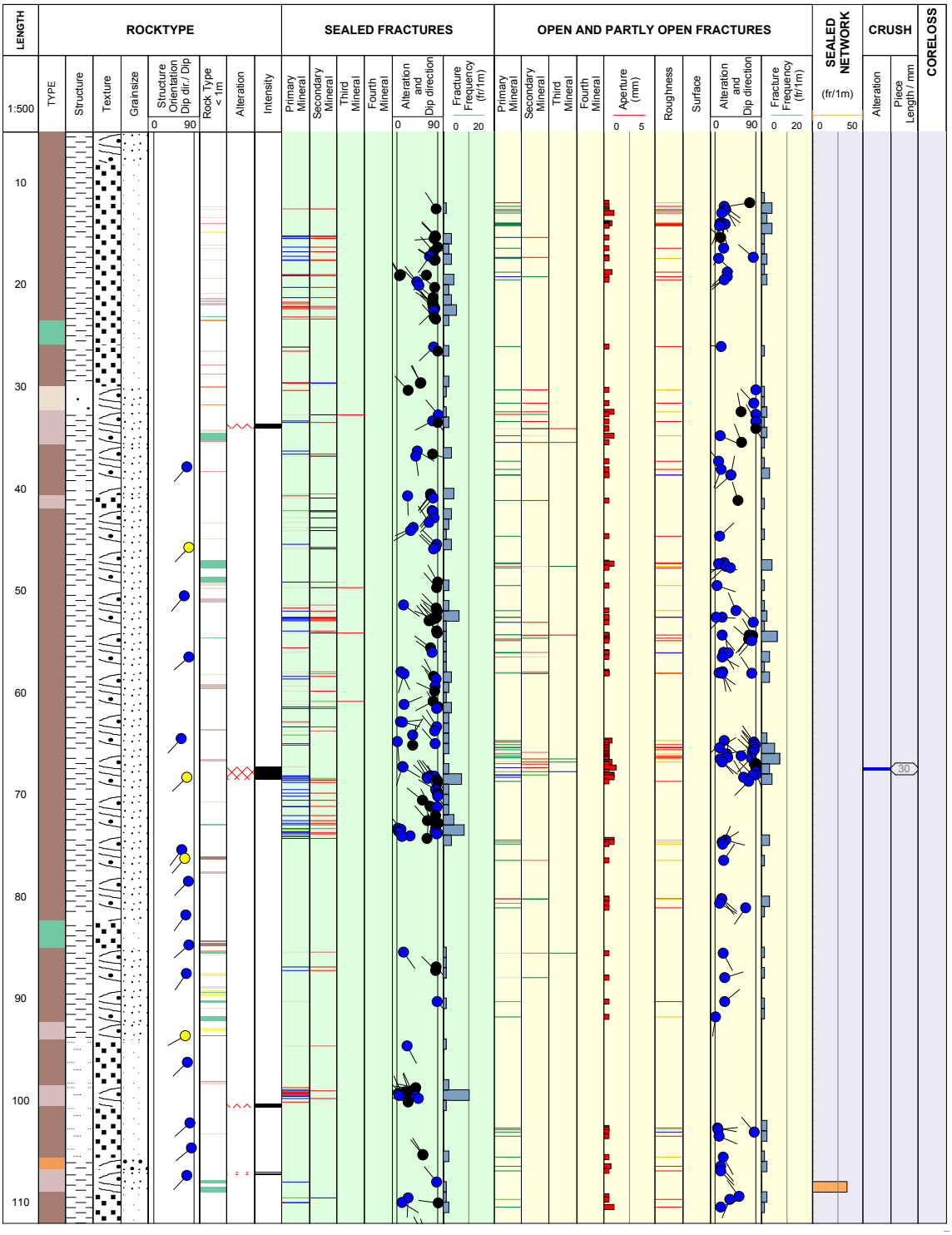


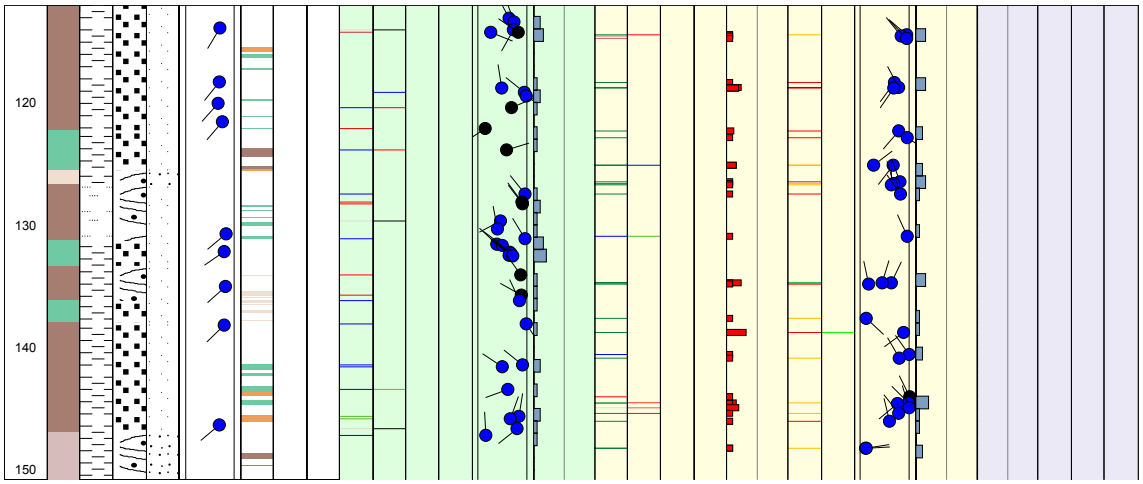
Appendix 6

WellCad diagram of HFM10

Title Geological mapping of the percussion drilled borehole HFM10 at Forsmark

Site	FORSMARK	**Coordinate System**	RT90-RHB70
Borehole	HFM10	**Northing [m]**	6698834.79
Diameter [mm]	139	**Easting [m]**	1631037.19
Length [m]	150.000	**Elevation [m.a.s.l.]**	4.99
Bearing [°]	92.93	**Drilling Start Date**	2003-08-11 09:10:00
Inclination [°]	-68.69	**Drilling Stop Date**	2003-08-19 16:57:00
Date of mapping	2004-06-14 14:19:00	**Plot Date**	2004-06-15 21:05:36
Rocktype data from	p_rock_XXXXX	**Fracture data from**	p_fract_core



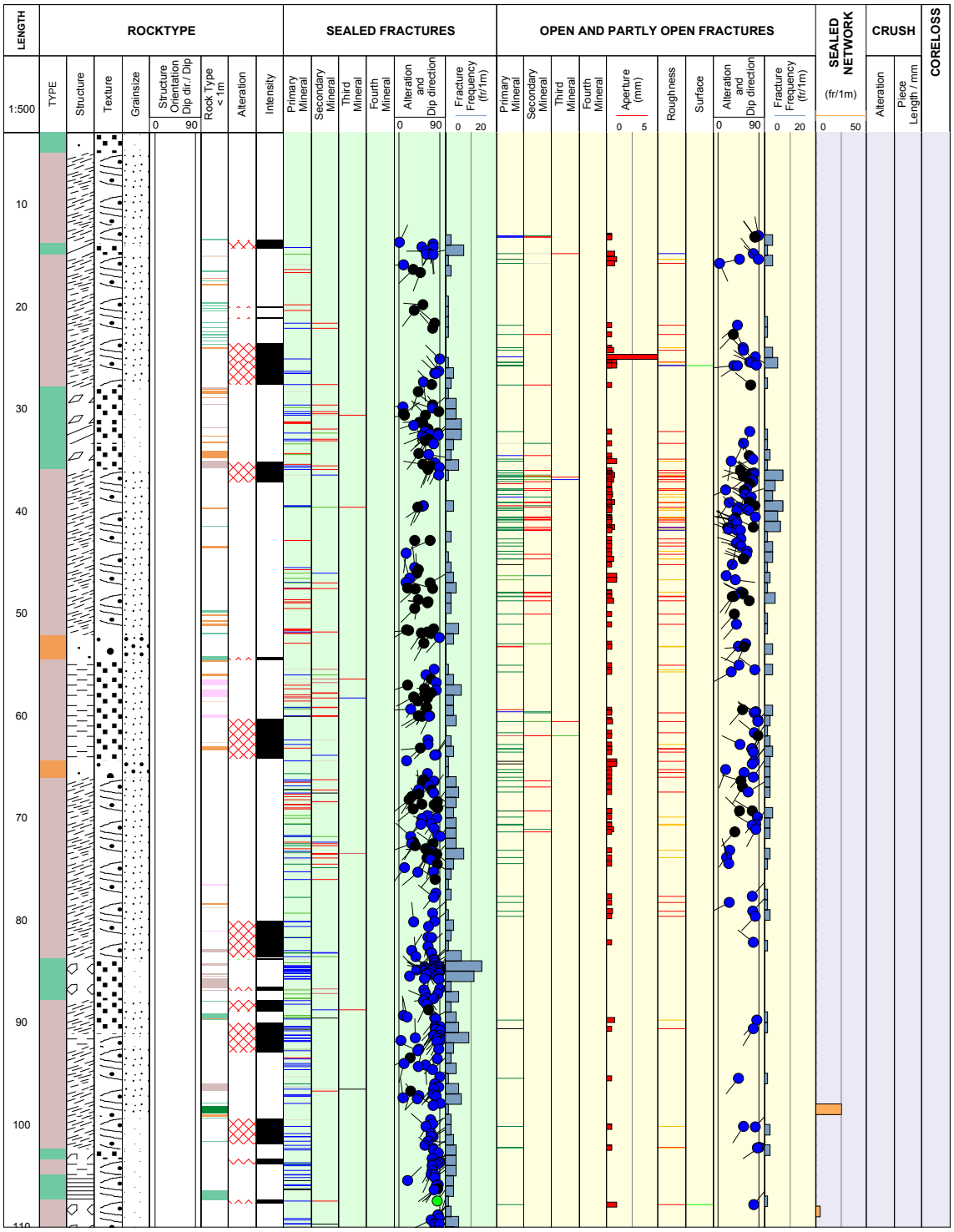

120
130
140
150

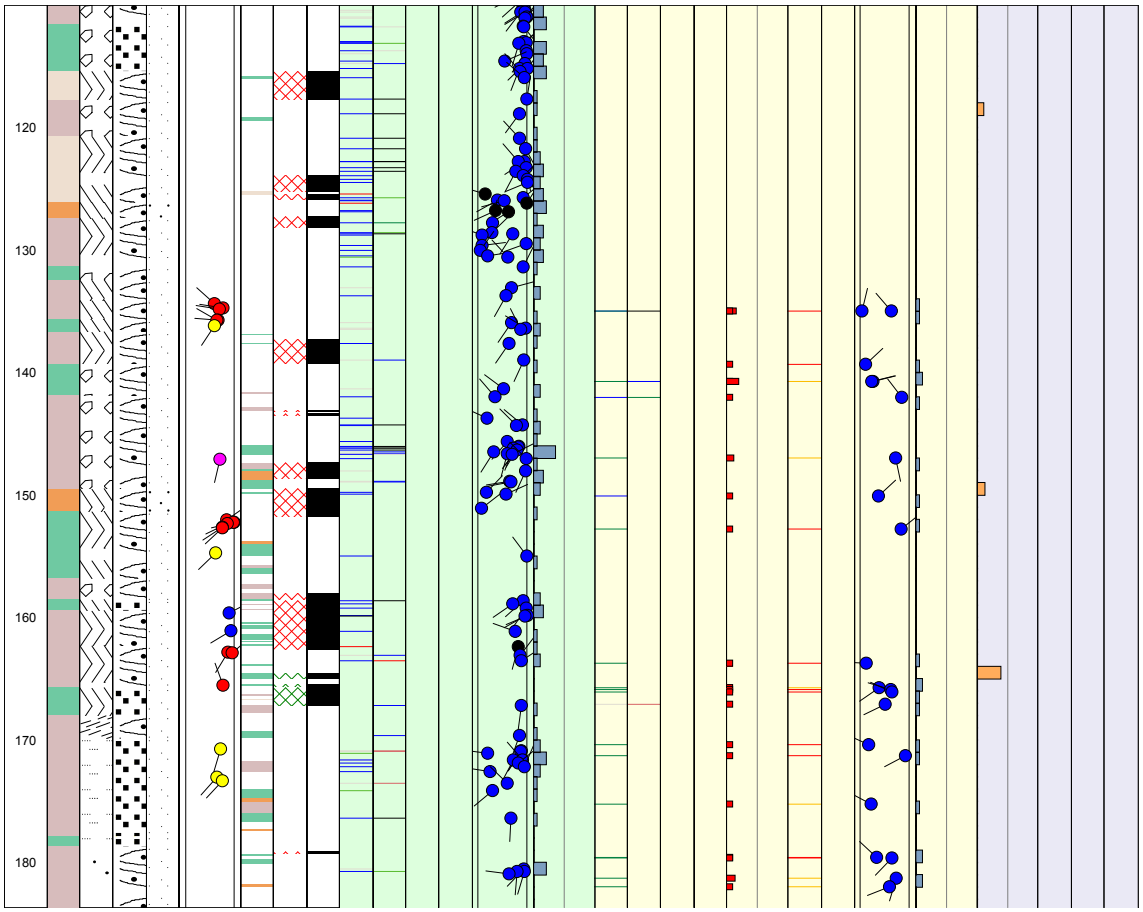
Appendix 7

WellCad diagram of HFM11

Title Geological mapping of the percussion drilled borehole HFM11 at Forsmark

Site	FORSMARK	**Coordinate System**	RT90-RHB70
Borehole	HFM11	**Northing [m]**	6697283.40
Diameter [mm]	139	**Easting [m]**	1631636.33
Length [m]	182.350	**Elevation [m.a.s.l.]**	7.56
Bearing [°]	63.51	**Drilling Start Date**	2003-08-21 12:16:00
Inclination [°]	-49.31	**Drilling Stop Date**	2003-09-01 16:04:00
Date of mapping	2004-06-14 14:20:00	**Plot Date**	2004-06-15 21:05:36
Rocktype data from	p_rock_XXXXX	**Fracture data from**	p_fract_core



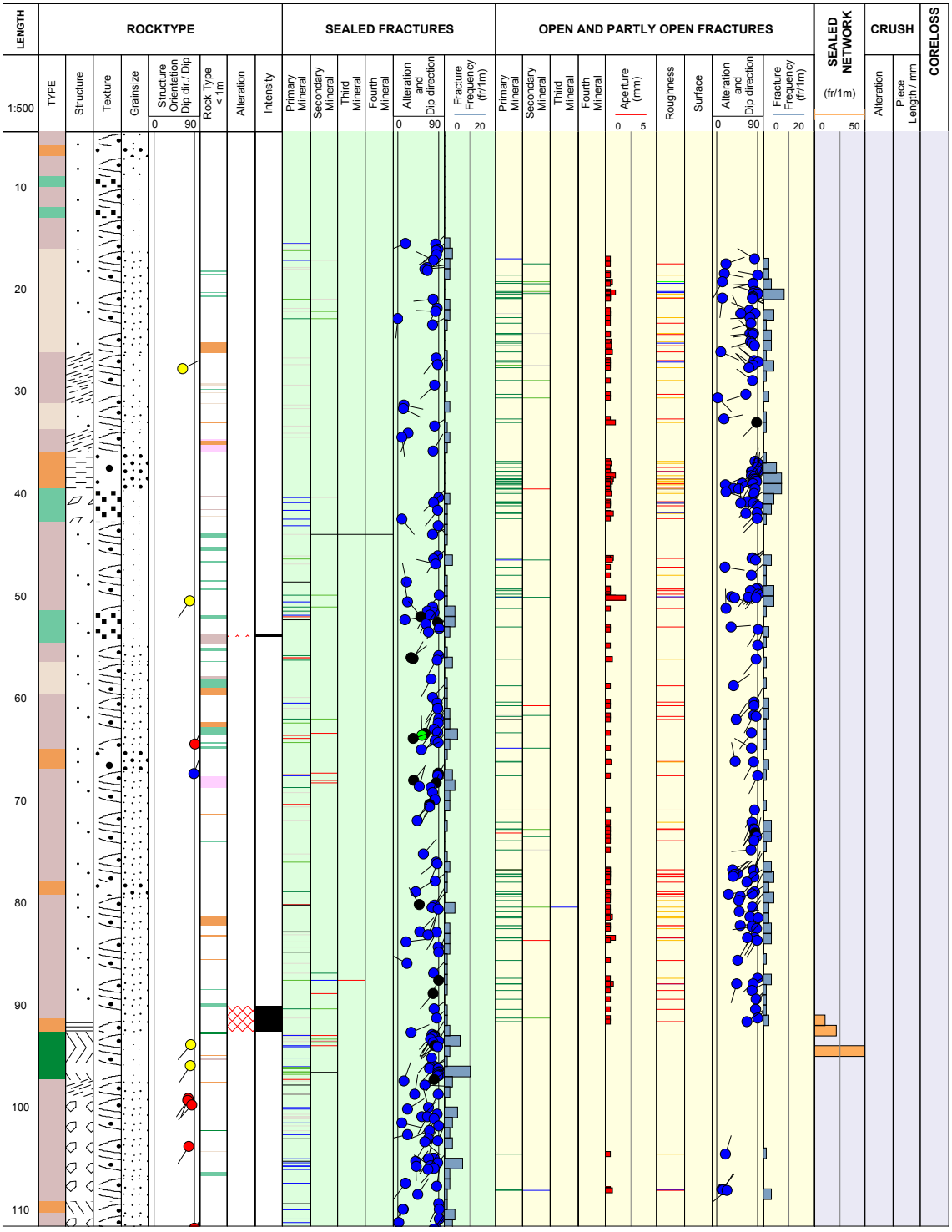

120
130
140
150
160
170
180

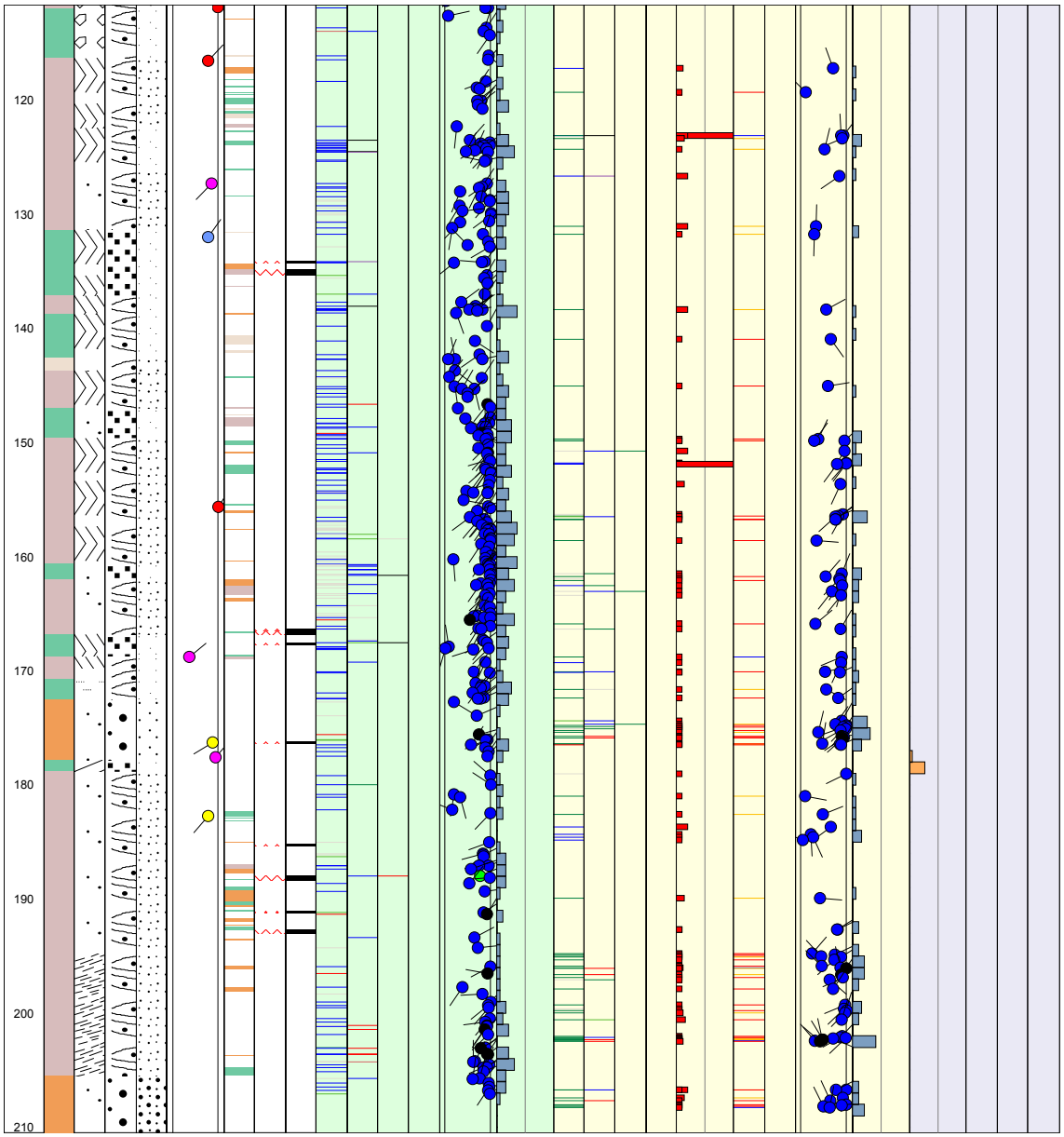
Appendix 8

WellCad diagram of HFM12

Title Geological mapping of the percussion borehole HFM12 at Forsmark

Site	FORSMARK	**Coordinate System**	RT90-RHB70
Borehole	HFM12	**Northing [m]**	6697446.46
Diameter [mm]	135	**Easting [m]**	1631695.67
Length [m]	209.550	**Elevation [m.a.s.l.]**	7.03
Bearing [°]	245.16	**Drilling Start Date**	2003-09-03 13:30:00
Inclination [°]	-49.04	**Drilling Stop Date**	2003-09-17 15:00:00
Date of mapping	2004-06-14 14:23:00	**Plot Date**	2004-06-15 21:05:36
Rocktype data from	p_rock_XXXXX	**Fracture data from**	p_fract_core

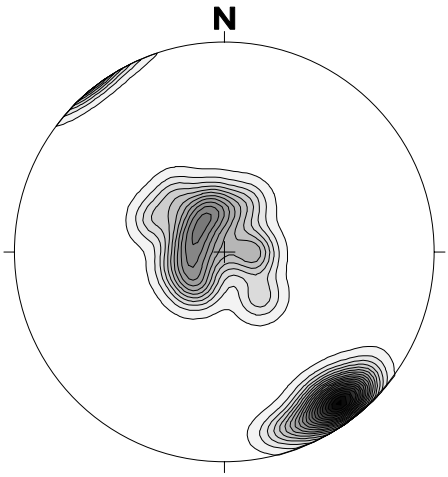



120
130
140
150
160
170
180
190
200
210

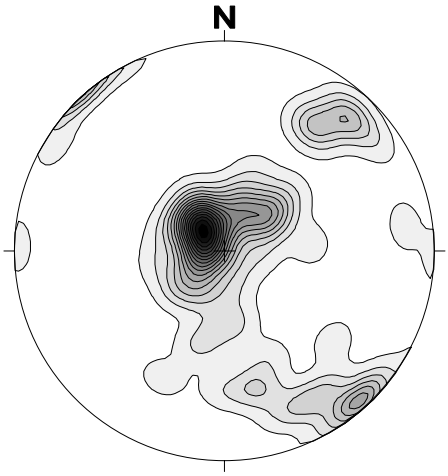
Appendix 9

Stereogram: fractures and other structures, HFM09-12

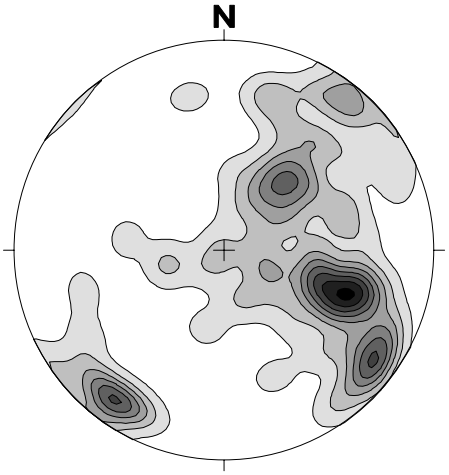
Open fractures



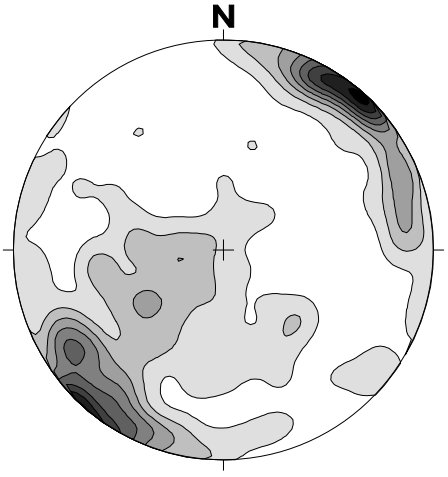
HFM09: Contoured pole to plane stereogram showing open fractures (N=31).



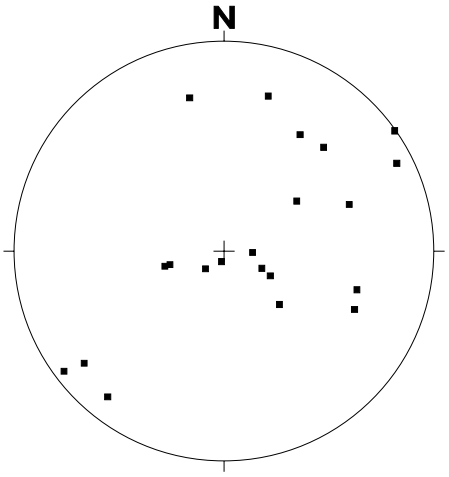
HFM10: Contoured pole to plane stereogram showing open fractures (N=94).



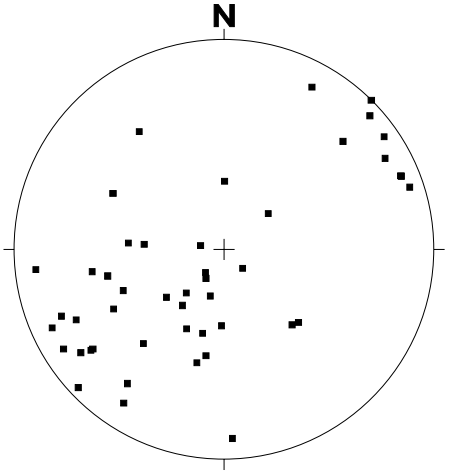
HFM11: Contoured pole to plane stereogram showing open fractures (N108).



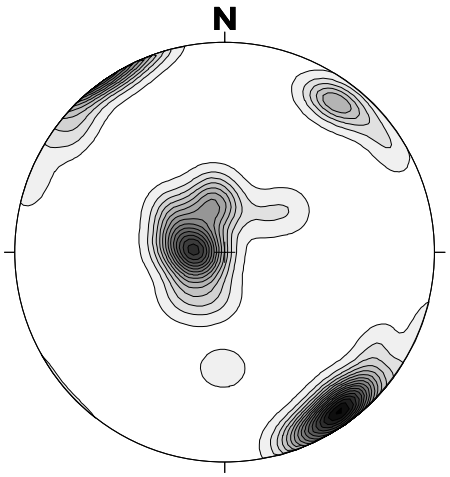
HFM12: Contoured pole to plane stereogram showing open fractures (N= 183).



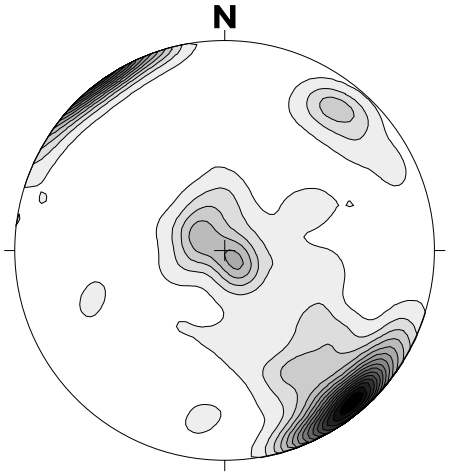
HFM11: Stereogram showing poles to open fracture planes in the Eckarfjärden shear zone, 105-180 m depth (N=21).



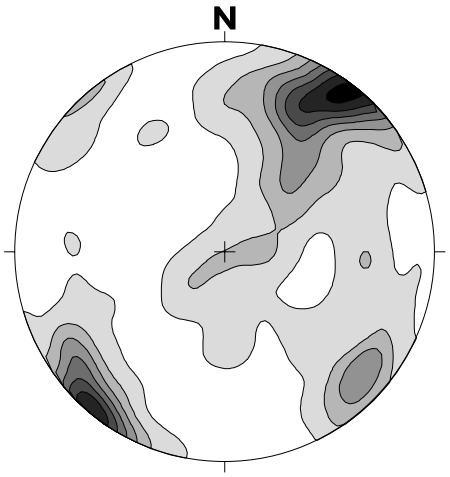
HFM12: Stereogram showing poles to open fracture planes in the Eckarfjärden shear zone, 100-195 m depth (N=47).



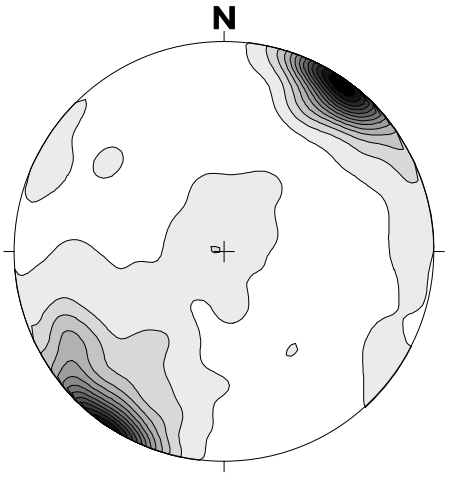
HFM09: Contoured pole to plane stereogram showing sealed fractures (N=77).



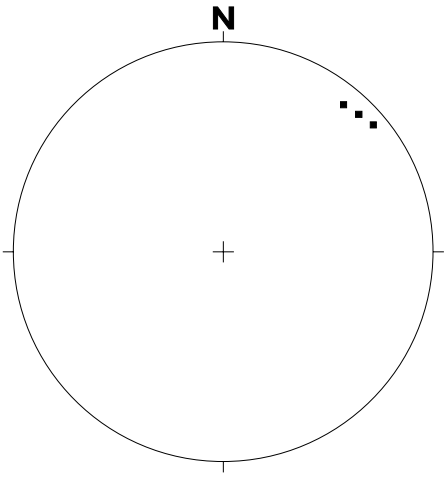
HFM10: Contoured pole to plane stereogram showing sealed fractures (N=202).



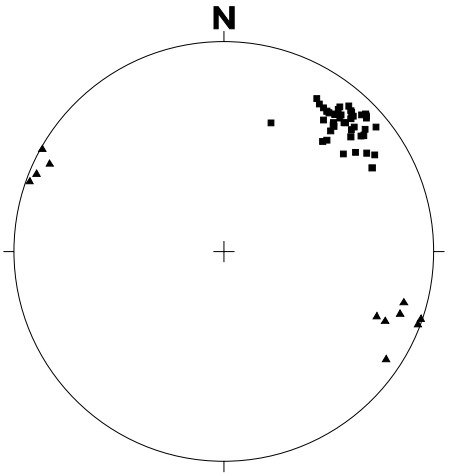
HFM11: Contoured pole to plane stereogram showing sealed fractures (N=404)



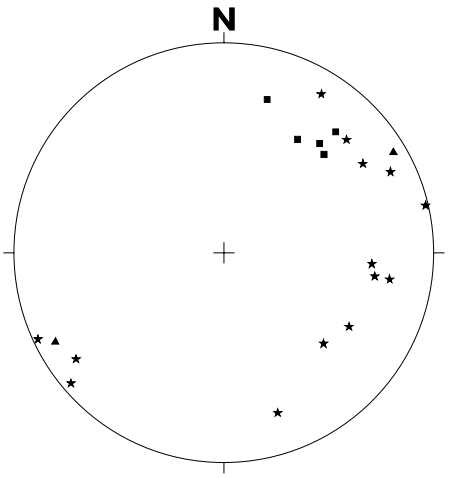
HFM12: Contoured pole to plane stereogram showing sealed fractures (N=447).



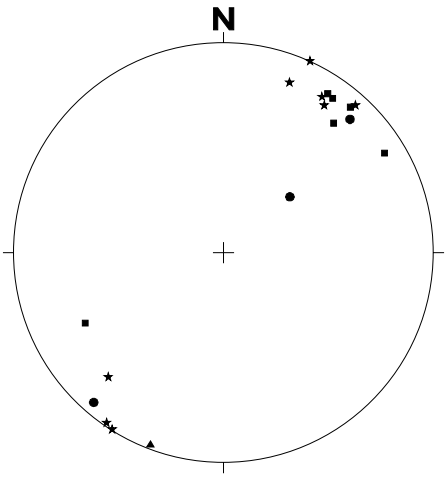
HFM09: Pole to plane stereogram showing structures (■=banding, N= 3)



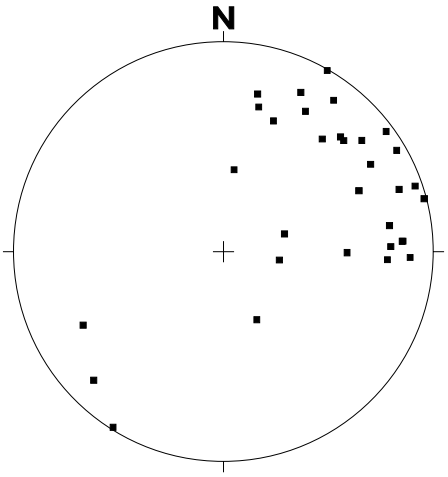
HFM10: Pole to plane stereogram showing structures (■= banding, N=41, ▲ = foliation, N=11).



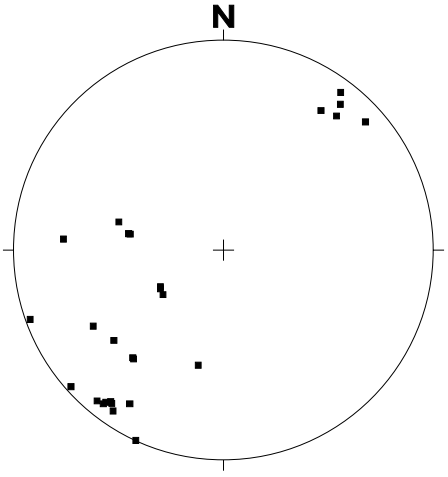
HFM11: Pole to plane stereogram showing structures (■= banding, N=5, ▲= foliation, N=2, ✦= brittle-ductile shear zone, N=14)



HFM12: Pole to plane stereogram over structures (■= banding, N=6, ▲= foliation, N=1, ✦= brittle-ductile shear zone, N=8, ●= breccia, N=2, ●= mylonite, N=1)



HFM11: Pole to plane stereogram over upper contact of deformed rock type sections (N=32)



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

Appendix 10

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 (m)	Sub Seclow (m)	Hole Diam (m)	Comment
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 (m)	Sub Seclow (m)	Hole Diam (m)	Comment
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)

Sub Secup (m)	Sub Seclow (m)	Hole Diam (m)	Comment
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.

Appendix 11

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 (degrees)	Northing (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						
105.00	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	69.3	-43.8						
105.00	68.9	-43.4						
108.00	69.0	-43.4						
111.00	69.5	-43.0						
114.00	68.8	-42.8						
117.00	68.9	-42.7						
120.00	68.4	-42.3						
123.00	68.9	-42.1						
126.00	68.3	-41.6						
129.00	67.9	-41.3						
132.00	68.9	-41.0						
135.00	67.7	-40.6						
138.00	67.6	-40.1						
141.00	67.4	-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)

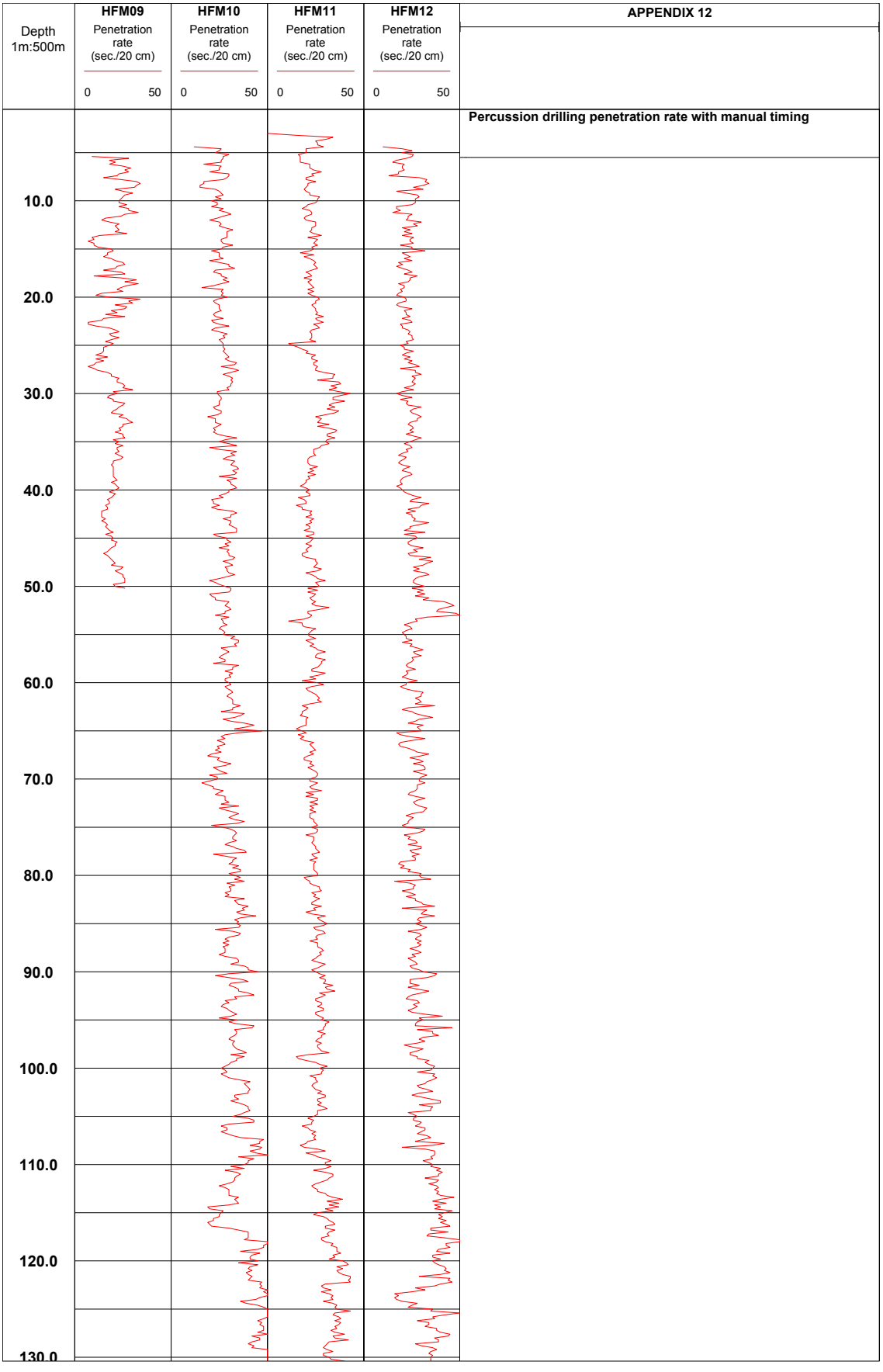
Bhlen (m)	Magnetic Bearing (degrees)	Dip (degrees)	Northing (m)	Easting (m)	Elevation (m)	Locala (m)	Localb (m)	Localc (m)
18.00	244.4	-49.0						
21.00	244.5	-48.8						
24.00	244.3	-48.6						
27.00	244.5	-48.3						
30.00	244.5	-48.0						
33.00	244.6	-47.8						
36.00	244.5	-47.5						
39.00	244.7	-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						
102.00	244.5	-44.6						
105.00	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	244.9	-41.0						
141.00	244.9	-40.8						
144.00	244.7	-40.5						

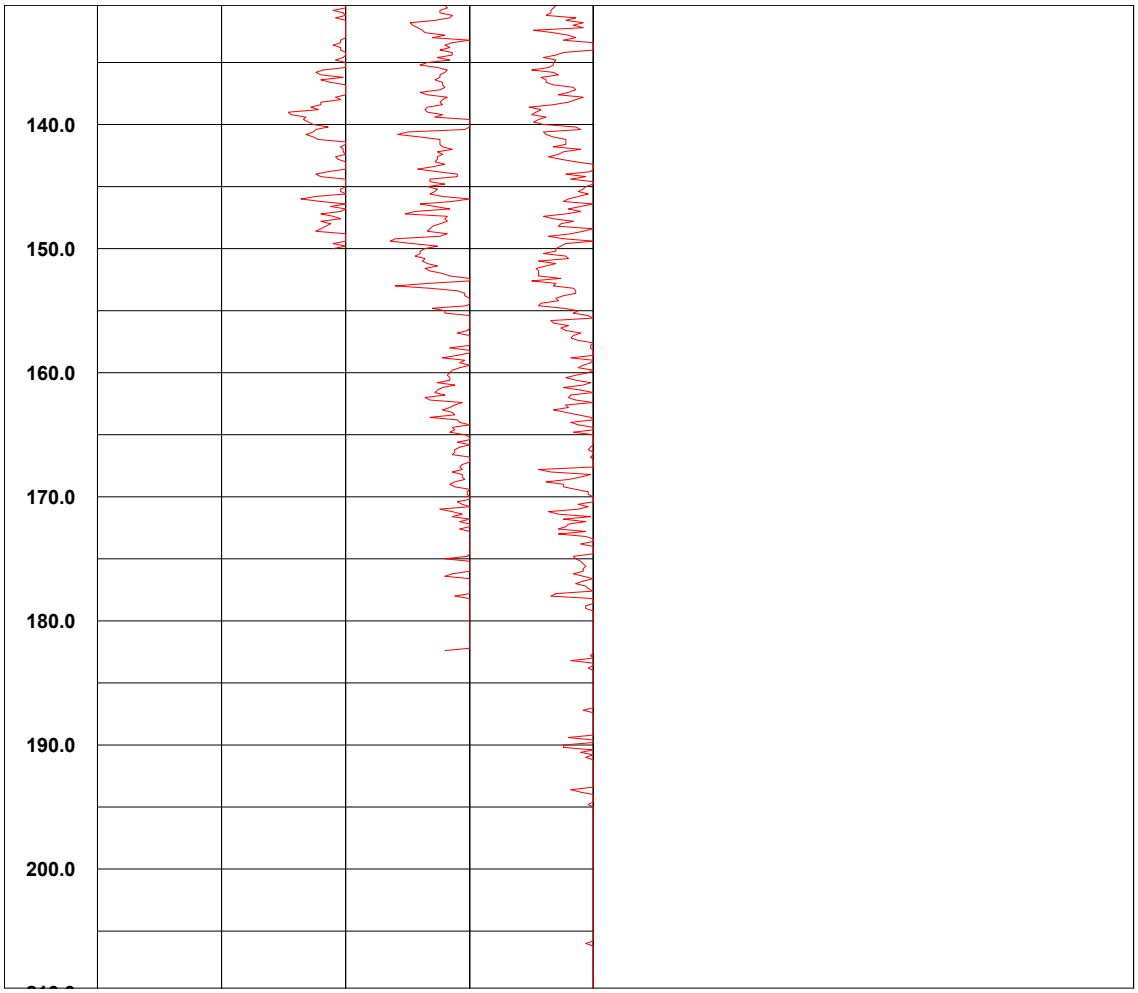
147.00	244.8	-40.4
150.00	244.8	-40.2
153.00	244.6	-40.2
156.00	244.9	-40.2
159.00	244.7	-39.9
162.00	245.1	-39.6
165.00	244.9	-39.3
168.00	244.9	-39.0
171.00	244.5	-38.7
174.00	244.5	-38.5
177.00	244.5	-38.3
180.00	244.4	-38.1
183.00	244.3	-37.9
186.00	244.6	-37.7
189.00	244.6	-37.4
192.00	244.5	-37.3
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

Printout from SICADA 2003-12-01 13:43:23.

Appendix 12

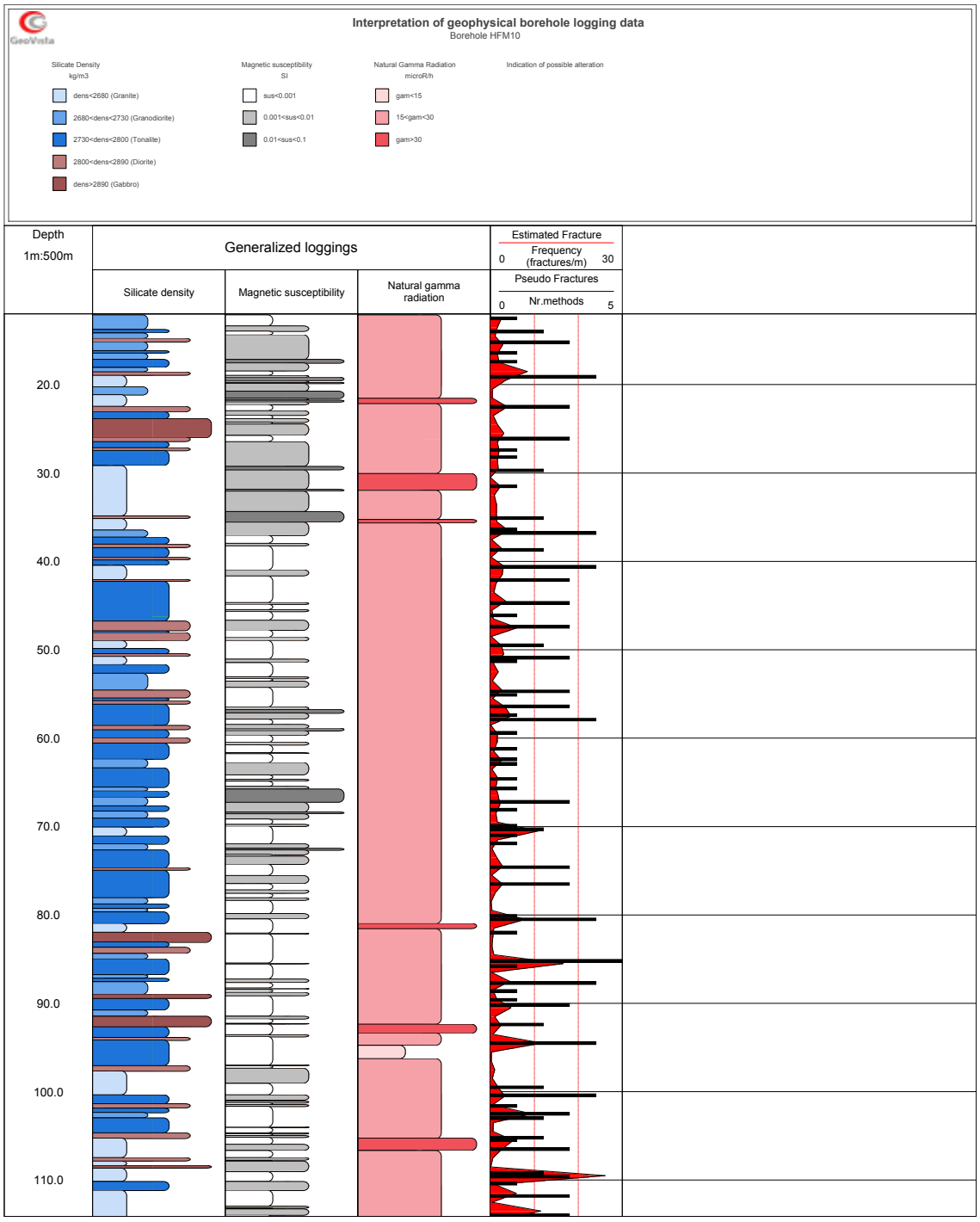
In data: Drilling penetration rate, HFM09-12

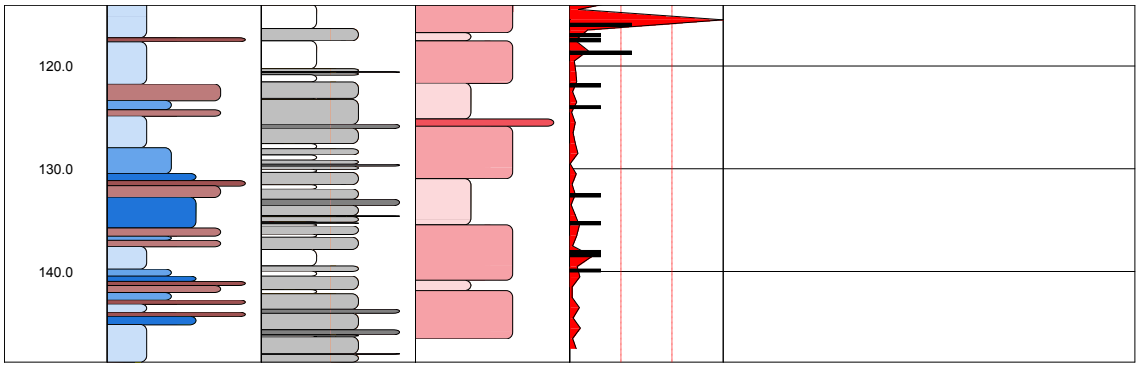


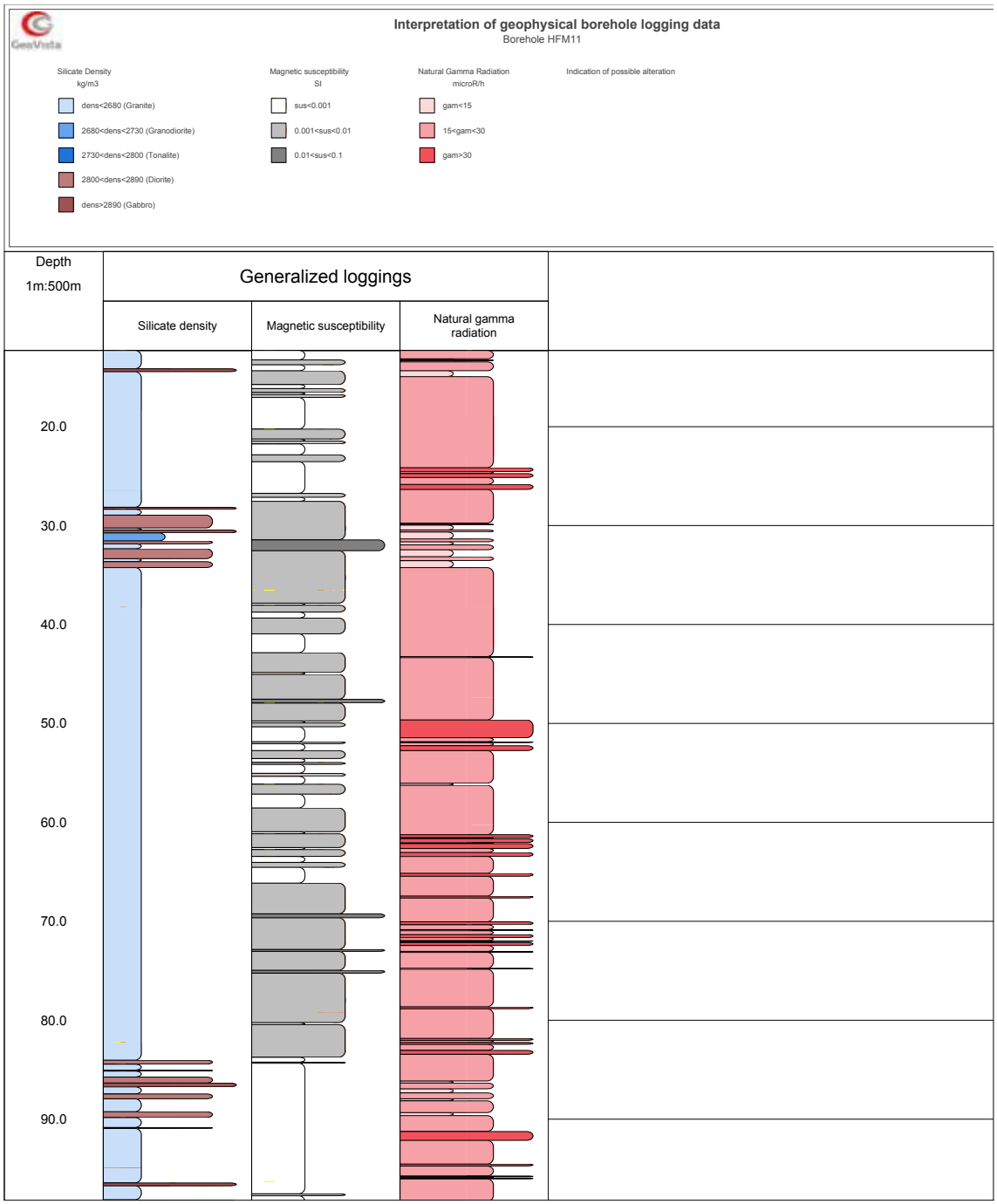

140.0
150.0
160.0
170.0
180.0
190.0
200.0

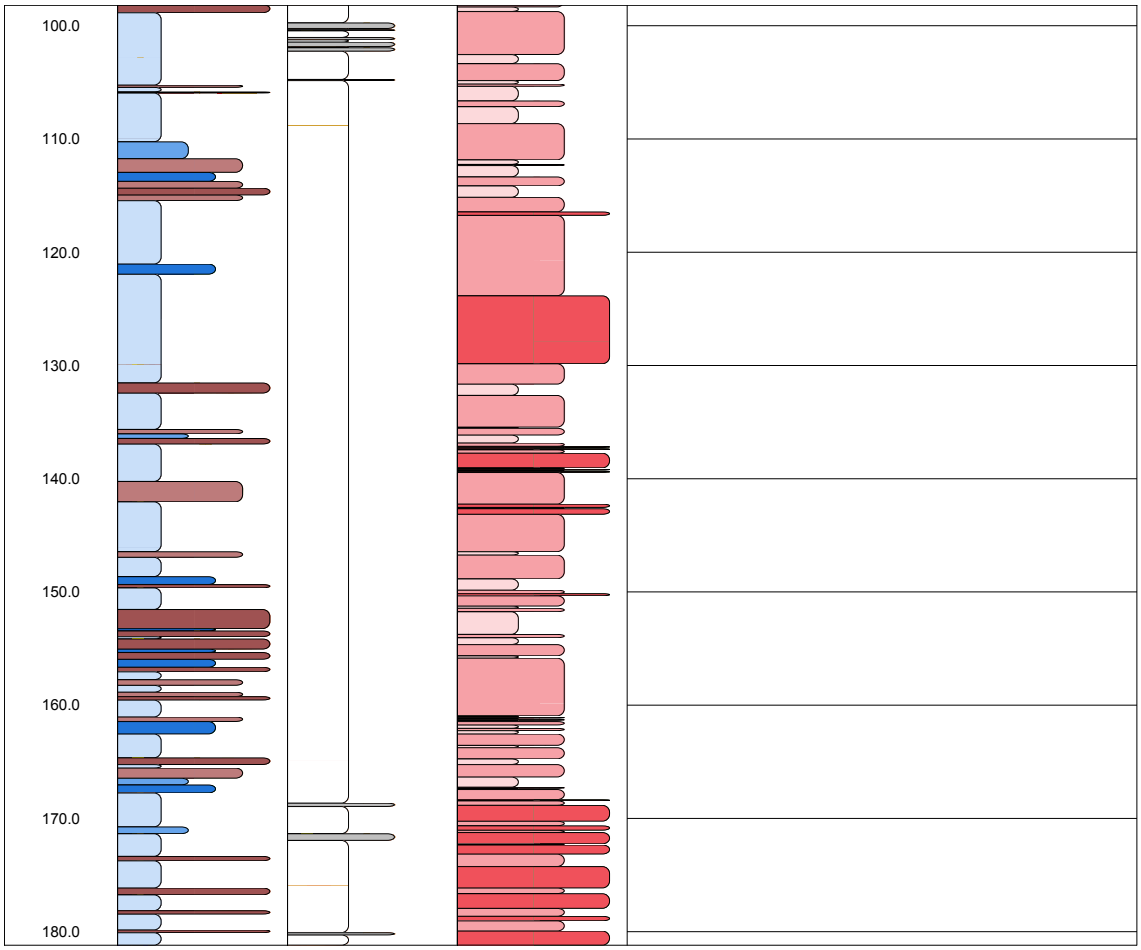
Appendix 13

In data: Geophysical logs, HFM10-12




120.0
130.0
140.0


Interpretation of geophysical borehole logging data
Borehole HFM11
Silicate Density
kg/m3
dens<2680 (Granite)
2680<dens<2730 (Granodiorite)
2730<dens<2800 (Tonalite)
2800<dens<2890 (Diorite)
dens>2890 (Gabbro)
Magnetic susceptibility
SI
sus<0.001
0.001<sus<0.01
0.01<sus<0.1
Natural Gamma Radiation
microR/h
gam<15
15<gam<30
gam>30
Indication of possible alteration
Depth
1m:500m
Generalized loggings
Silicate density
Magnetic susceptibility
Natural gamma radiation
20.0
30.0
40.0
50.0
60.0
70.0
80.0
90.0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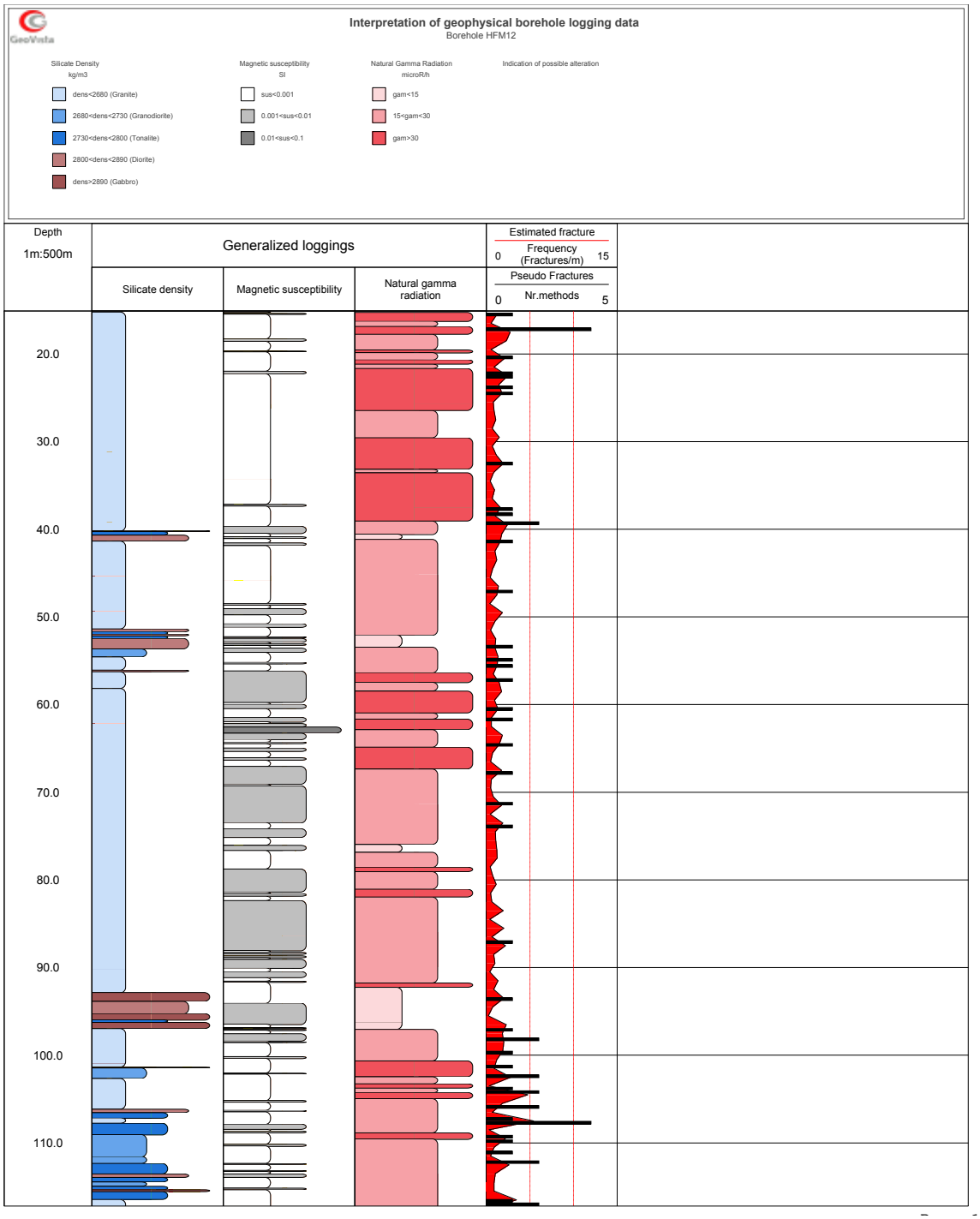
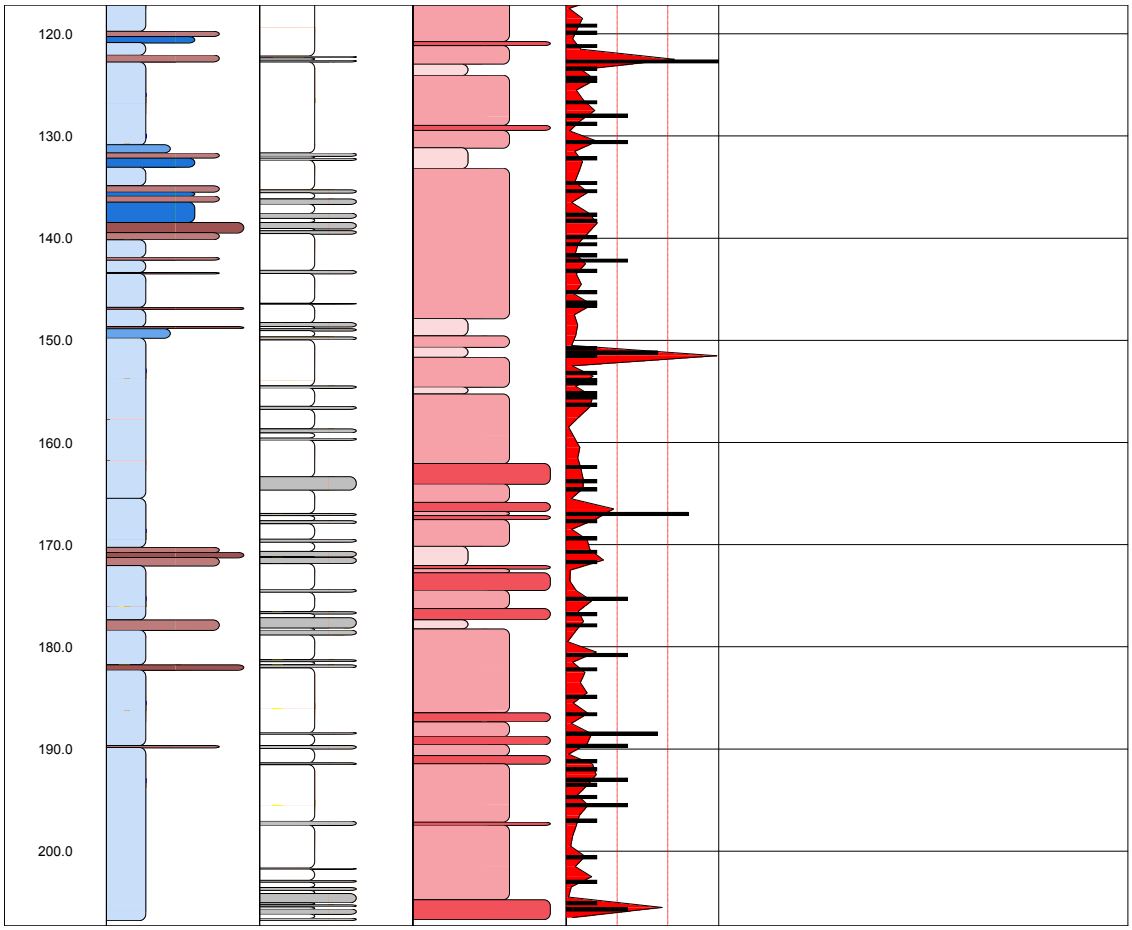
110.0
120.0
130.0
140.0
150.0
160.0
170.0
180.0


Interpretation of geophysical borehole logging data
Borehole HFM12
Silicate Density
kg/m3
dens<2680 (Granite)
2680<dens<2730 (Granodiorite)
2730<dens<2800 (Tonalite)
2800<dens<2890 (Diorite)
dens>2890 (Gabbro)
Magnetic susceptibility
SI
sus<0.001
0.001<sus<0.01
0.01<sus<0.1
Natural Gamma Radiation
microR/h
gam<15
15<gam<30
gam>30
Indication of possible alteration
Depth
1m:500m
Generalized loggings
Silicate density
Magnetic susceptibility
Natural gamma radiation
Estimated fracture
Frequency
(Fractures/m)
0
15
Pseudo Fractures
Nr.methods
0
5
20.0
30.0
40.0
50.0
60.0
70.0
80.0
90.0
100.0
110.0


120.0
130.0
140.0
150.0
160.0
170.0
180.0
190.0
200.0

Investigations of drill cuttings, HFM09-12

Appendix 14

Drill cuttings — Date: 2003-10-15 — Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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
HFM09	**5**	- 5.1	0;	0;	4; Brown	6; Fine-to medium grained	0;	80; Greyish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101058; Granite, metamorphic, aplitic	49; Plagioclase	3; Amphibole	36; Quartz	49; Plagioclase	30; Calcite	90; 90/10	Foliated. Perhaps also some amphibolite? Some calcite grains from overburden (aphanitic dark red or green), Quartz grains from possible fracture.Traces of epidote.
HFM09	5.1	- 5.3	0;	80; Greyish	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	90; 90/10	foliated. Perhaps also amphibolite and pegmatite? Some calcite and granitoid grains (rounded) from overburden.
HFM09	5.3	- 6.3	200; Dark	0;	5; Green	9; Medium-grained (1-5 mm)	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	49; Plagioclase	16; Epidote	100; 100 %	Foliated. Traces of epidote. Quartz also as fracture mineral.
HFM09	6.3	- 7.3	200; Dark	0;	5; Green	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	50; Pyrite	36; Quartz		100; 100 %	Strongly foliated. Similar to tonalite, but poorer in light minerals.
HFM09	7.3	- 8	0;	0;	9; Black	9; Medium-grained (1-5 mm)	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	50; Pyrite	36; Quartz		100; 100 %	Foliated. Rusty surface (open fracture?). Quartz as fracture mineral.
HFM09	8	- 9	200; Dark	0;	5; Green	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	50; Pyrite	36; Quartz		100; 100 %	foliated. Some more felsic bands - segregation?
HFM09	9	- 10	200; Dark	0;	5; Green	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	50; Pyrite			100; 100 %	foliated. Only traces of pyrite.
HFM09	10	- 11	200; Dark	0;	5; Green	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	50; Pyrite	36; Quartz	16; Epidote	100; 100 %	foliated. Only traces of qz, ep, py.
HFM09	11	- 12	200; Dark	20; Reddish	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			100; 100 %	Foliated. In places strongly oxidized (strong red). white and also green calcite. Oxidation probably related to calcite.
HFM09	12	- 13	200; Dark	0;	5; Green	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	36; Quartz			100; 100 %	Foliated. Some more felsic grains, banded, could be segregation. Quartz in veins/felsic bands.
HFM09	13	- 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	100; 100 %	Oxidized and chlorite altered. Calcite light green/dark red. Also epidote and rust. Probable crush zone. Calcite sealed? Pegmatite or qz-vein?
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	100; 100 %	Brittle ductile 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 grained	0;	20; Reddish	9; Black	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	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	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	80; 80/20	foliated. Feldpar ratio? Traces of epidote, quartz from peg or fracture. Epidote together with calcite.
HFM09	17	- 18	0;	50; Greenish	4; Brown	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	50; 50/50	appr 45% amph, 45% volcanite, 10% aplite (stronlgy red, with some biotite).Some calcite
HFM09	18	- 19	200; Dark	20; Reddish	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	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;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	33; Chlorite	16; Epidote	36; Quartz	100; 100 %	foliated, slightly altered. Red possible fracture surfaces (probably only oxidation and no laumontite). Traces of aplite.
HFM09	20	- 21	0;	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101058; Granite, metamorphic, aplitic	49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	60; 60/40	foliated. Traces of epidote.
HFM09	21	- 22	200; Dark	0;	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	Foliated. Calcite. Not as dark as tonalite.
HFM09	22	- 23	0;	0;	4; Brown	4; Coarse-grained (> 5 mm)	200; Dark	0;	2; Red	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101058; Granite, metamorphic, aplitic	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	foliated. Seems weathered. Probable crush zone. Calcite sealed? Traces of amphibolite.
HFM09	23	- 24	0;	20; Reddish	9; Black	4; Coarse-grained (> 5 mm)	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	50; 50/50	and aplite. Foliated. Epidote. Probable fracture surface almost aphanitic, various minerals, light green, also calcite (cataclastic?). Amph. Slightly altered. Probable crush zone.
HFM09	24	- 25	0;	0;	9; Black	9; Medium-grained (1-5 mm)	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	foliated. Traces of aplite and amphibolite.Probably boht biotite and amph (very fine grained. Amp 100%), traces of epidote.
HFM09	25	- 26	200; Dark	40; Brownish	8; Grey	4; Coarse-grained (> 5 mm)	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	strongly foliated to banded. C-type granite?
HFM09	26	- 27	200; Dark	40; Brownish	8; Grey	4; Coarse-grained (> 5 mm)	0;	40; Brownish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	33; Chlorite	3; Amphibole	50; 50/50	uncertain rock type ratio. Altered. Foliated. Probable crush zone or fracture zone. Calcite.
HFM09	27	- 28	200; Dark	40; Brownish	8; Grey	8; Medium to coarse grained	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	33; Chlorite	90; 90/10	Foliated. Some grains slightly chlorite altered.Open fracture? Oxidized surfaces - probably no laumontite.
HFM09	28	- 29	200; Dark	40; Brownish	8; Grey	9; Medium-grained (1-5 mm)	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	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; Brown	4; Coarse-grained (> 5 mm)	0;	40; Brownish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	100; 100 %	Foliated. Epidote bands -thin brittle ductile shear zones? Calcite. Weathered grain - probably from open fracture/crush zone.
HFM09	30	- 31	0;	20; Reddish	9; Black	9; Medium-grained (1-5 mm)	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	80; 80/20	Foliated. Epidote bands -thin brittle ductile shear zones? Quartz-calcite vein.Red possible fracture surfaces.
HFM09	31	- 32	0;	20; Reddish	9; Black	4; Coarse-grained (> 5 mm)	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	70; 70/30	Actually appr. 35% amph, 35% tonalite and 30% aplite. Foliated. Oxidized surfaces. Traces of Epidote. Biotite uncertain.
HFM09	32	- 33	0;	0;	9; Black	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz			100; 100 %	Foliated. Traces of amphibolite.
HFM09	33	- 34	0;	0;	9; Black	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	3; Amphibole	36; Quartz	10; Biotite	32; Potash Feldspar	90; 90/10	foliated. Also traces of aplite (111058). Traces of pyrite, red oxidized surfaces.

Drill cuttings

Date: 2003-10-15 Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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
HFM09	34	- 35	0;	20; Reddish	9; Black	8; Medium to coarse grained	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	10; Biotite	32; Potash Feldspar	80; 80/20	Foliated. Traces of pyrite, epidote and chlorite.111058: red, finegrained.
HFM09	35	- 36	0;	20; Reddish	9; Black	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	10; Biotite	32; Potash Feldspar	90; 90/10	foliated. Traces of epidote, pyrite, red oxidized surfaces.
HFM09	36	- 37	0;	0;	9; Black	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	foliated. Traces of chlorite, some red oxidized surfaces.
HFM09	37	- 38	0;	20; Reddish	9; Black	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	3; Amphibole	33; Chlorite	100; 100 %	foliated. Traces of pyrite, oxidized surfaces with calcite.
HFM09	38	- 39	200; Dark	20; Reddish	8; Grey	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	33; Chlorite	80; 80/20	foliated. Traces of calcite. Any amphibole?
HFM09	39	- 40	200; Dark	40; Brownish	8; Grey	8; Medium to coarse grained	0;	40; Brownish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar		100; 100 %	foliated. Not as dark as earlier - more granodioritic? Also muscovite, calcite
HFM09	40	- 41	200; Dark	40; Brownish	8; Grey	8; Medium to coarse grained	0;	40; Brownish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	50; Pyrite	100; 100 %	Foliated. Possibly more granodioritic.Traces of oxidized surfaces, chlorite and epidote.
HFM09	41	- 42	200; Dark	40; Brownish	8; Grey	8; Medium to coarse grained	0;	40; Brownish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	3; Amphibole	90; 90/10	Foliated. Some chlorite. Red oxidized surfaces.Quartz probably also as fracture material.
HFM09	42	- 43	200; Dark	80; Greyish	4; Brown	9; Medium-grained (1-5 mm)	0;	40; Brownish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	3; Amphibole	80; 80/20	Foliated. Partly chlorite altered, especially the amphibolite. Larger qz grains probably from fracture filling.Some aphanitic red or green grains. Cataclastic?
HFM09	43	- 44	200; Dark	0;	4; Brown	9; Medium-grained (1-5 mm)	0;	40; Brownish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	33; Chlorite	100; 100 %	Foliated. More oxidized and somewhat chlorite altered. Traces of pegmatite and amphibolite? Some oxidized surfaces.
HFM09	44	- 45	0;	0;	9; Black	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar		100; 100 %	Foliated. Same as earlier but only weakly oxidized. Some oxidized surfaces.
HFM09	45	- 46	200; Dark	80; Greyish	2; Red	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	33; Chlorite	100; 100 %	Foliated, Oxidized and somewhat chlorite altered. Strongly red coloured surfaces (hematite in qz or feldspar?), X1, Probably also some stronlgy foliated amphibolite.
HFM09	46	- 47	200; Dark	80; Greyish	2; Red	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	33; Chlorite	100; 100 %	Foliated. Some amphibole. Strongly oxidized surfaces, usually associated with calcite.
HFM09	47	- 48	0;	20; Reddish	9; Black	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101058; Granite, metamorphic, aplitic	49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	3; Amphibole	90; 90/10	Foliated. Some biotite rich aggregates. Oxidized surfaces with some calcite. Probably not laumontite.
HFM09	48	- 49	0;	20; Reddish	9; Black	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar		100; 100 %	Foliated. Many surfaces with red feldspar (?). Thin veins? Also one vein with calcite.
HFM09	49	- 50	0;	80; Greyish	7; White	8; Medium to coarse grained	100; Light	0;	8; Grey	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		80; 80/20	Tonalite very fine grained. Red oxidized surfaces, also as thin sealed fractures.

Drill cuttings

Date: 2003-10-14 Sign.: Christin Nordman

			Untreated drill cuttings sample				Washed and sieved drill cuttings sample												
Hole	from	to	Lightn.	Chrom.	Hue	Grainsize	Lightn.	Chrom.	Hue	Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM10	**4**	- 5	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar		100; 100 %	rich in biotite
HFM10	5	- 6	0;	20; Reddish	9; Black	8; Medium to coarse grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar		100; 100 %	rich in biotite
HFM10	6	- 7	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	3; Amphibole	100; 100 %	rich in biotite. Traces of epidote.
HFM10	7	- 8	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz		100; 100 %	Amphibolite or very dark tonalite?
HFM10	8	- 9	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	111058; Granite, fine to medium grained	49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz		90; 90/10	111058 fine-medium grained, red. Amphibolite or very dark tonalite?
HFM10	9	- 10	0;	50; Greenish	9; Black	9; Medium-grained (1-5 mm)	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz		90; 90/10	foliated or lineated.Traces of epidote, pyrite,
HFM10	10	- 11	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	3; Amphibole	36; Quartz	32; Potash Feldspar	100; 100 %	traces of pyrite. Rich in dark minerals.
HFM10	11	- 12	200; Dark	0;	5; Green	6; Fine-to medium grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz		100; 100 %	traces of calcite and red possible fracture surfaces. Possibly also felsic material (fine to medium grained).
HFM10	12	- 13	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz		100; 100 %	traces of pyrite. Foliated or lineated.
HFM10	13	- 14	200; Dark	0;	5; Green	6; Fine-to medium grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz		100; 100 %	traces of rust on possible fracture surface.
HFM10	14	- 15	200; Dark	0;	5; Green	9; Medium-grained (1-5 mm)	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz	32; Potash Feldspar	60; 60/40	rock type ratio uncertain. Traces of pyrite. Both rock types foliated, relatively strong.
HFM10	15	- 16	0;	50; Greenish	8; Grey	9; Medium-grained (1-5 mm)	0;	20; Reddish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	3; Amphibole	100; 100 %	relatively rich in aggregates of epidote and white mineral (not calcite). Foliated, strongly.
HFM10	16	- 17	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz	50; Pyrite	100; 100 %	some surfaces with calcite and oxidized minerals.
HFM10	17	- 18	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	111058; Granite, fine to medium grained	49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz	50; Pyrite	90; 90/10	only traces of pyrite. Appr 10% felsic material (fine to medium grained, with some biotite)
HFM10	18	- 19	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	111058; Granite, fine to medium grained	49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz	32; Potash Feldspar	90; 90/10	traces of epidote and red surfaces (oxidized).
HFM10	19	- 20	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	10; Biotite	50; Pyrite		100; 100 %	traces of more felsic (granitic?) material(fine-medium grained)
HFM10	20	- 21	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz	32; Potash Feldspar	100; 100 %	Traces of pyrite and epidote
HFM10	21	- 22	200; Dark	0;	8; Grey	9; Medium-grained (1-5 mm)	0;	50; Greenish	9; Black	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	some red surfaces (hematite and feldspar???)
HFM10	22	- 23	200; Dark	0;	5; Green	6; Fine-to medium grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz			larger qz grains- from fractur? Red surfaces as above. Traces of epidote and 101057? Amph folitated.
HFM10	23	- 24	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	50; Pyrite	100; 100 %	larger grains of qz and flsp- from qz-vein or pegmatite? Traces of pyrite and calcite.
HFM10	24	- 25	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	50; Pyrite	36; Quartz		100; 100 %	traces of pyrite. Qz from possible vein.
HFM10	25	- 26	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	50; Pyrite	36; Quartz		100; 100 %	foliated. Traces of granitic/granodioritic material. Fine grained.
HFM10	26	- 27	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	3; Amphibole	36; Quartz	32; Potash Feldspar	100; 100 %	foliated - quite strong. Pyrite. Traces of larger qz-grains.
HFM10	27	- 28	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	3; Amphibole	36; Quartz	32; Potash Feldspar	100; 100 %	Pyrite.appr 10-15% leucocratic grains, fine-med grained, strongly foliated.
HFM10	28	- 29	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	3; Amphibole	36; Quartz	32; Potash Feldspar	100; 100 %	traces of epidote and pyrite.
HFM10	29	- 30	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101058; Granite, metamorphic, aplitic	49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	3; Amphibole	80; 80/20	Relatively leucocratic.Pyrite.
HFM10	30	- 31	200; Dark	10; Pinkish	5; Green	8; Medium to coarse grained	100; Light	10; Pinkish	8; Grey	9; Medium-grained (1-5 mm)	101057; Granite to granodiorite, metamorphic, medium grained, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	traces of pyrite.
HFM10	31	- 32	0;	10; Pinkish	5; Green	9; Medium-grained (1-5 mm)	100; Light	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	101057; Granite to granodiorite, metamorphic, medium grained, medium grained		49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar	50; Pyrite	100; 100 %	traces of 101054,
HFM10	32	- 33	0;	20; Reddish	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	10; Biotite	36; Quartz	32; Potash Feldspar		80; 80/20	rock type ratio very uncertain. Some part oxidized (101054?). Probably foliated/lineated.
HFM10	33	- 34	0;	20; Reddish	5; Green	8; Medium to coarse grained	200; Dark	80; Greyish	2; Red	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote		strongly oxidized ??? Some grains show strong foliation to mylonitic fabric.
HFM10	34	- 35	0;	20; Reddish	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	80; 80/20	Possible 101057 deformed- therefore rock typ uncertain. Some grains show strong foliation.
HFM10	35	- 36	0;	0;	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	50; 50/50	rock type ratio very uncertain. Strongly foliated, probably grain size reduction. Thin bands of epidote. Amphibole. Possibly also some amphibolite.

Drill cuttings

Date: 2003-10-14 Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample				Washed and sieved drill cuttings sample				Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
			Lightn.	Chrom.	Hue	Grainsize	Lightn.	Chrom.	Hue	Grainsize									
HFM10	36	- 37	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	traces of pyrite, calcite (vein). Traces of possible vein; very fine grained, possibly granitic.
HFM10	37	- 38	0;	0;	5; Green	6; Fine-to medium grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	10; Biotite	32; Potash Feldspar	100; 100 %	some grains strongly foliated. Traces of pyrite, epidote.
HFM10	38	- 39	0;	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	10; Biotite	32; Potash Feldspar	100; 100 %	traces of more granitic material. Strongly foliated/lineated. Traces of pyrite, epidote.
HFM10	39	- 40	200; Dark	80; Greyish	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	10; Biotite	32; Potash Feldspar	100; 100 %	
HFM10	40	- 41	0;	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	10; Biotite	32; Potash Feldspar	100; 100 %	possibly more granodioritic relative to former samples? Some grains are mylonitic. Traces of calcite, epidote and X1(?). Not as rich in dark minerals as earlier.
HFM10	41	- 42	0;	0;	8; Grey	9; Medium-grained (1-5 mm)	0;	20; Reddish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic	111058; Granite, fine to medium grained	49; Plagioclase	3; Amphibole	36; Quartz	10; Biotite	32; Potash Feldspar	90; 90/10	111058??? Not so rich in dark minerals as 101054. Traces of pyrite. Some grains show deformation(fine grained, strongly foliated/lineated).
HFM10	42	- 43	0;	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	10; Biotite	32; Potash Feldspar	100; 100 %	almost black grains and lighter grains. Slightly banded? Some grains show strong foliation/lineation.
HFM10	43	- 44	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	6; Fine-to medium grained	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	10; Biotite	32; Potash Feldspar	100; 100 %	epidote. Rich in dark minerals.
HFM10	44	- 45	0;	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	36; Quartz	10; Biotite	32; Potash Feldspar	90; 90/10	epidote altered. Probably strong deformation. Appr 5% of Pegmatite/qz.
HFM10	45	- 46	0;	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	16; Epidote			100; 100 %	strongly foliated/lineated. Amphibole rich. Qz vein. Traces of epidote.
HFM10	46	- 47	0;	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole				100; 100 %	strongly foliated. Traces of granitic/granodioritic fine grained material
HFM10	47	- 48	0;	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	50; Pyrite	16; Epidote		100; 100 %	strongly foliated.
HFM10	48	- 49	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	50; Pyrite	16; Epidote		100; 100 %	strongly foliated.
HFM10	49	- 50	0;	20; Reddish	5; Green	8; Medium to coarse grained	0;	10; Pinkish	9; Black	9; Medium-grained (1-5 mm)	101058; Granite, metamorphic, aplitic	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	70; 70/30	amphibole. 101054 or amphibolite???
HFM10	50	- 51	0;	0;	5; Green	8; Medium to coarse grained	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101058; Granite, metamorphic, aplitic	49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	90; 90/10	101054 strongly foliated.pyrite.
HFM10	51.00	- 52.00	0;	0;	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101058; Granite, metamorphic, aplitic	49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	90; 90/10	pyrite. Uncertain amphibolite.
HFM10	52.00	- 53.00	0;	80; Greyish	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	100; 100 %	calcite, pyrite.
HFM10	53.00	- 54.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	100; 100 %	epidote, pyrite. Foliated.
HFM10	54.00	- 55.00	0;	0;	5; Green	8; Medium to coarse grained	0;	40; Brownish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	32; Potash Feldspar	32; Potash Feldspar	36; Quartz	100; 100 %	Brittle ductile shear zone. Bands of X1, mostly cataclastic. Calcite (also purple calcite).
HFM10	55.00	- 56.00	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	32; Potash Feldspar	36; Quartz	3; Amphibole	100; 100 %	some oxidized surfaces.
HFM10	56.00	- 57.00	0;	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	32; Potash Feldspar	36; Quartz	3; Amphibole	100; 100 %	
HFM10	57.00	- 58.00	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	3; Amphibole	16; Epidote	50; Pyrite	100; 100 %	probably mostly plagioclase as light mineral.
HFM10	58.00	- 59.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	10; Biotite	3; Amphibole	32; Potash Feldspar	36; Quartz	100; 100 %	Red, strongly oxidized possible fracture surfaces.
HFM10	59.00	- 60.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	10; Biotite	3; Amphibole	32; Potash Feldspar	36; Quartz	70; 70/30	Vein has biotite, not leucocratic, fine to medium grained. Traces of pyrite.
HFM10	60.00	- 61.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	30; Calcite	16; Epidote	50; Pyrite	100; 100 %	also quartz, biotite and potassium feldspar???
HFM10	61.00	- 62.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz	32; Potash Feldspar	100; 100 %	Epidote, pyrite
HFM10	62.00	- 63.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	50; Pyrite	16; Epidote	100; 100 %	epidote in banded aggregate. Possibly traces of aplitic vein.
HFM10	63.00	- 64.00	0;	0;	5; Green	8; Medium to coarse grained	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz	32; Potash Feldspar	70; 70/30	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;	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz	32; Potash Feldspar	90; 90/10	or only 5 % leucocratic vein. Epidote-chlorite. Vein fine to medium grained, probably leucocratic (appr. 5%).'
HFM10	65.00	- 66.00	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	16; Epidote	36; Quartz	50; Pyrite	100; 100 %	traces of possibly tonalitic vein, fine-grained, red. Some strongly red possible fracture surfaces.
HFM10	66.00	- 67.00	0;	50; Greenish	8; Grey	9; Medium-grained (1-5 mm)	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	100; 100 %	
HFM10	67.00	- 68.00	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	200; Dark	0;	2; Red	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	100; 100 %	Strongly oxidized. With deformation bands of chlorite and epidote (?).
HFM10	68.00	- 69.00	0;	50; Greenish	8; Grey	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	10; Biotite	100; 100 %	oxidized possible fracture surfaces, epidote bands. Traces of calcite.
HFM10	69.00	- 70.00	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	16; Epidote	30; Calcite	100; 100 %	possibly some granitic material as well (but with amph, dark). Oxidized surfaces usually associated with calcite.

Drill cuttings

Date: 2003-10-14 Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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
HFM10	70.00	71.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	111058; Granite, fine to medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	30; Calcite	90; 90/10	up to 1 cm large calcite grains with cleavage surfaces. Also green aphanitic aggregates with pyrite dissemination (prehnite?). Also same mineral as in HFM11, m.25.
HFM10	71.00	72.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	3; Amphibole	32; Potash Feldspar	36; Quartz	50; Pyrite	100; 100 %	
HFM10	72.00	73.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	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	0;	0;	8; Grey	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	16; Epidote	30; Calcite		100; 100 %	Feldspar strongly oxidized. Amphibole seems pure. Only traces of ep and cc.
HFM10	74.00	75.00	0;	0;	8; Grey	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	50; Pyrite		100; 100 %	Relatively rich in felsic minerals, probably mostly plagioclase. Foliated.only traces of pyrite. Some strongly oxidized surfaces.
HFM10	75.00	76.00	0;	0;	8; Grey	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	50; Pyrite		100; 100 %	5mm grain of pyrite.
HFM10	76.00	77.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	50; Pyrite	16; Epidote	100; 100 %	Only traces of pyrite and epidote,
HFM10	77.00	78.00	200; Dark	0;	5; Green	8; Medium to coarse grained	100; Light	80; Greyish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	70; 70/30	Traces of pyrite and very thin bands of epidote.
HFM10	78.00	79.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar		90; 90/10	probably dark tonalite. Traces of epidote, amphibolite.
HFM10	79.00	80.00	0;	50; Greenish	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	50; Pyrite		100; 100 %	Foliated.
HFM10	80.00	81.00	200; Dark	0;	8; Grey	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	50; Pyrite		100; 100 %	or amphibolite?
HFM10	81.00	82.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	10; Biotite	36; Quartz	32; Potash Feldspar	100; 100 %	foliated. Traces of pyrite.
HFM10	82.00	83.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	36; Quartz	50; Pyrite		100; 100 %	or also tonalite?Grains with feldspar rich white bands.
HFM10	83.00	84.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	36; Quartz	50; Pyrite		100; 100 %	only traces of pyrite.
HFM10	84.00	85.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	3; Amphibole	36; Quartz	50; Pyrite		90; 90/10	rough rock type estimation. Traces of thin epidote veins (one grain looks mylonitic)
HFM10	85.00	86.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	3; Amphibole	36; Quartz			50; 50/50	rough rock type estimation. Traces of epidote. Strong foliation.
HFM10	86.00	87.00	200; Dark	0;	5; Green	9; Medium-grained (1-5 mm)	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	50; Pyrite	100; 100 %	traces of epidote and pyrite.
HFM10	87.00	88.00	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	50; Pyrite	90; 90/10	rock type estimation uncertain. Foliated. Traces of epidote and pyrite.
HFM10	88.00	89.00	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	16; Epidote	90; 90/10	rock type estimation uncertain. Foliated. Traces of epidote
HFM10	89.00	90.00	0;	0;	5; Green	8; Medium to coarse grained	100; Light	80; Greyish	5; Green	1; Aphanitic (grains not visible with naked eye)	103076; Felsic to intermediate volcanic rock, metamorphic	102017; Amphibolite	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar		50; 50/50	skarn/volcanic rock or totally deformed tonalite/amphibolite. Aphanitic to very fine grained (black minerals can be observed), green in colour.
HFM10	90.00	91.00	0;	0;	5; Green	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	50; Pyrite			100; 100 %	aphanitic to very fine grained. Could also be skarn?
HFM10	91.00	92.00	200; Dark	0;	5; Green	9; Medium-grained (1-5 mm)	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	16; Epidote			100; 100 %	traces of felsic material.
HFM10	92.00	93.00	200; Dark	0;	5; Green	9; Medium-grained (1-5 mm)	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	103076; Felsic to intermediate volcanic rock, metamorphic	102017; Amphibolite	49; Plagioclase	3; Amphibole	16; Epidote	36; Quartz	32; Potash Feldspar	50; 50/50	skarn/volcanic rock or totally deformed tonalite/amphibolite. Aphanitic to very fine grained (black minerals can be observed), green in colour. 3 mm grains of quartz (from pegmatite or quartz vein?)
HFM10	93.00	94.00	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	16; Epidote	90; 90/10	Foliated. Traces of pyrite. Relatively rich in epidote - skarn?
HFM10	94.00	95.00	0;	0;	5; Green	8; Medium to coarse grained	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	16; Epidote	36; Quartz		100; 100 %	foliated (strongly), possible traces of skarn. White bands of almost aphanitic quartz or feldspar - segregation due to deformation?
HFM10	95.00	96.00	0;	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	111058; Granite, fine to medium grained	49; Plagioclase	3; Amphibole	16; Epidote	36; Quartz	32; Potash Feldspar	90; 90/10	traces of pyrite. Foliated.
HFM10	96.00	97.00	0;	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	111058; Granite, fine to medium grained	49; Plagioclase	3; Amphibole	16; Epidote	36; Quartz	32; Potash Feldspar	90; 90/10	foliated.
HFM10	97.00	98.00	0;	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	16; Epidote	36; Quartz	32; Potash Feldspar	100; 100 %	strongly foliated. Traces of felsic material and epidote.
HFM10	98.00	99.00	0;	0;	5; Green	8; Medium to coarse grained	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	50; Pyrite	36; Quartz	32; Potash Feldspar	100; 100 %	stronlgy foliated. Traces of white aplite (?)
HFM10	99.00	#####	0;	0;	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	50; 50/50	granitoid greyish red/brown, fine grained with biotite.Both foliated. Some epidote and traces of pyrite.

Drill cuttings

Date: 2003-10-14 Sign.: Christin Nordman

			Untreated drill cuttings sample				Washed and sieved drill cuttings sample												
Hole	from	to	Lightn.	Chrom.	Hue	Grainsize	Lightn.	Chrom.	Hue	Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM10	100.00	#####	0;	40; Brownish	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	60; 60/40	as above. Some epidote
HFM10	101.00	#####	0;	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	70; 70/30	foliated, as above, traces of epidote and pyrite.
HFM10	102.00	#####	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	90; 90/10	foliated. Granitic rock not as strongly foliated as amphibolite. epidote. Traces of chlorite on possible fracture surface.
HFM10	103.00	#####	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	90; 90/10	foliated. Traces of epidote, calcite, pyrite.
HFM10	104.00	#####	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	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	0;	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	90; 90/10	pegmatite pinkish white, medium grained. Tonalite strongly foliated. Traces of pyrite and almost aphanitic epidote-chlorite mixture (?)
HFM10	106.00	#####	200; Dark	10; Pinkish	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	36; Quartz	32; Potash Feldspar	3; Amphibole	10; Biotite	50; 50/50	both rock types deformed and foliated. Pegmatite nonequigranular, pink.Also slightly greenish quartz
HFM10	107.00	#####	200; Dark	10; Pinkish	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	50; 50/50	50% amph/tonalite, 25% peg, 25% granitoid, fine grained, light greyish red. All foliated.
HFM10	108.00	#####	200; Dark	10; Pinkish	5; Green	8; Medium to coarse grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	60; 60/40	and some pegmatite. Foliated. Some epidote alteration.
HFM10	109.00	#####	200; Dark	0;	5; Green	8; Medium to coarse grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	100; 100 %	tonalite or fine grained granitoid? With amph but more sparsely than in amphibolite. Some pegmatite. Traces of epidote, calcite and pyrite.
HFM10	110.00	#####	0;	50; Greenish	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		3; Amphibole	49; Plagioclase	36; Quartz	16; Epidote		100; 100 %	only traces of quartz and epidote. Foliated.
HFM10	111.00	#####	0;	50; Greenish	9; Black	9; Medium-grained (1-5 mm)	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		3; Amphibole	49; Plagioclase	36; Quartz			100; 100 %	water in sample (and downwards). Quartz grains probably from fracture filling. Foliated.
HFM10	112.00	#####	0;	50; Greenish	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		3; Amphibole	49; Plagioclase	36; Quartz	32; Potash Feldspar	10; Biotite	100; 100 %	Foliated. Traces of greyish red, fine grained granitoid (?).
HFM10	113.00	#####	0;	40; Brownish	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		3; Amphibole	49; Plagioclase	16; Epidote			100; 100 %	Foliated. Traces of granitoid or only oxidized amphibolite?
HFM10	114.00	#####	0;	40; Brownish	9; Black	9; Medium-grained (1-5 mm)	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		3; Amphibole	49; Plagioclase	36; Quartz	16; Epidote	50; Pyrite	100; 100 %	Foliated. Some leucocratic material, fine grained, red. Only traces of epidote and pyrite. Traces of oxidized surfaces, possibly fracture surface.
HFM10	115.00	#####	0;	10; Pinkish	9; Black	9; Medium-grained (1-5 mm)	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	101061; Pegmatite, pegmatitic granite	3; Amphibole	49; Plagioclase	36; Quartz	32; Potash Feldspar	10; Biotite	60; 60/40	Pegmatite leucocratic, pink/white (salmon red). Traces of pyrite. Foliated amph.
HFM10	116.00	#####	0;	50; Greenish	9; Black	8; Medium to coarse grained	200; Dark	0;	5; Green	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		33; Chlorite	3; Amphibole	49; Plagioclase	30; Calcite		100; 100 %	Chlorite altered amphibolite / Skarn. Strongly foliated. Probable zone of movement.
HFM10	117.00	#####	0;	50; Greenish	9; Black	9; Medium-grained (1-5 mm)	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	3; Amphibole	49; Plagioclase	33; Chlorite	36; Quartz		80; 80/20	Felsic rock type uncertain. Probably rich in quartz.Transparent to dark (with amphibole) . Chlorite altered / skarn?
HFM10	118.00	#####	0;	50; Greenish	9; Black	8; Medium to coarse grained	0;	50; Greenish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	108019; Calc-silicate rock (skarn)	3; Amphibole	49; Plagioclase	33; Chlorite			80; 80/20	with crenulation cleavage? Foliated.
HFM10	119.00	#####	0;	50; Greenish	9; Black	8; Medium to coarse grained	200; Dark	50; Greenish	8; Grey	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	108019; Calc-silicate rock (skarn)	3; Amphibole	49; Plagioclase	33; Chlorite	30; Calcite		80; 80/20	also some aplite? Foliated, chlorite altered. Skarn?
HFM10	120.00	#####	0;	0;	9; Black	9; Medium-grained (1-5 mm)	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		3; Amphibole	49; Plagioclase	36; Quartz	32; Potash Feldspar	30; Calcite	100; 100 %	foliated. Tonalite? Fine grained, more leucocratic, qz and flsp + amph. Grey to red.
HFM10	121.00	#####	200; Dark	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic	102017; Amphibolite	3; Amphibole	49; Plagioclase	36; Quartz	32; Potash Feldspar			Rock type ratio uncertain. Foliated. Tonalite or granitoid?
HFM10	122.00	#####	0;	0;	9; Black	9; Medium-grained (1-5 mm)	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		3; Amphibole	49; Plagioclase	30; Calcite	33; Chlorite		100; 100 %	traces of skarn? Foliated.
HFM10	123.00	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101054; Tonalite to granodiorite, metamorphic	3; Amphibole	49; Plagioclase	36; Quartz			80; 80/20	foliated. Altered surfaces, probably from open fracture.
HFM10	124.00	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		3; Amphibole	49; Plagioclase				100; 100 %	foliated.
HFM10	125.00	#####	100; Light	10; Pinkish	9; Black	6; Fine-to medium grained	100; Light	0;	1; Pink	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	traces of amphibolite. Strongly foliated. Feldspar ratio uncertain.
HFM10	126.00	#####	100; Light	80; Greyish	9; Black	6; Fine-to medium grained	0;	10; Pinkish	9; Black	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	60; 60/40	Foliated.
HFM10	127.00	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz			100; 100 %	Foliated.
HFM10	128.00	#####	200; Dark	0;	8; Grey	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	16; Epidote		100; 100 %	Foliated. Only traces of epidote.
HFM10	129.00	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	16; Epidote	10; Biotite	100; 100 %	Foliated. Traces of pyrite. Probably also some amphibolite.

Drill cuttings

Date: 2003-10-14 Sign.: Christin Nordman

			Untreated drill cuttings sample				Washed and sieved drill cuttings sample												
Hole	from	to	Lightn.	Chrom.	Hue	Grainsize	Lightn.	Chrom.	Hue	Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM10	130.00	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz			100; 100 %	foliated.
HFM10	131.00	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101054; Tonalite to granodiorite, metamorphic	49; Plagioclase	3; Amphibole	36; Quartz			90; 90/10	Foliated.
HFM10	132.00	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole				100; 100 %	foliated. Possibly traces of tonalite.
HFM10	133.00	#####	0;	0;	9; Black	9; Medium-grained (1-5 mm)	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole				100; 100 %	Foliated. As above.
HFM10	134.00	#####	100; Light	80; Greyish	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	36; Quartz			100; 100 %	Foliated. Quartz probably as fracture mineral.
HFM10	135.00	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101058; Granite, metamorphic, aplitic	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar		50; 50/50	colour actually whitish black. Vein probably also fine grained, white, Qz-dominated.
HFM10	136.00	#####	0;	0;	9; Black	9; Medium-grained (1-5 mm)	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101058; Granite, metamorphic, aplitic	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	16; Epidote	70; 70/30	colour actually whitish black. Amphibolite strongly foliated. Traces of epidote and chlorite.
HFM10	137.00	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	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	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	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	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	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	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	30; Calcite	16; Epidote	100; 100 %	foliated. Traces of pegmatite. Possibly also some tonalite?
HFM10	141.00	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	16; Epidote			100; 100 %	Foliated.
HFM10	142.00	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz			100; 100 %	Foliated. Qz from fracture?
HFM10	143.00	#####	0;	10; Pinkish	9; Black	6; Fine-to medium grained	0;	10; Pinkish	9; Black	2; Fine-grained (<1 mm)	102017; Amphibolite	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	50; Pyrite	50; 50/50	white mtrl overrepresented in washed sample.actually white and black.Traces of epidote and pyrite.
HFM10	144.00	#####	0;	40; Brownish	9; Black	6; Fine-to medium grained	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	50; 50/50	brown mtrl overrepresented in washed sample. Aplite or granitoid? Has very fine grained biotite. Traces of epidote. Both rocks foliated.
HFM10	145.00	#####	0;	20; Reddish	9; Black	6; Fine-to medium grained	0;	20; Reddish	9; Black	2; Fine-grained (<1 mm)	101054; Tonalite to granodiorite, metamorphic		49; Plagioclase	3; Amphibole	36; Quartz	32; Potash 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	#####	0;	0;	9; Black	6; Fine-to medium grained	0;	0;	9; Black	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	#####	200; Dark	80; Greyish	2; Red	6; Fine-to medium grained	0;	20; Reddish	9; Black	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	36; Quartz	32; Potash Feldspar	3; Amphibole		100; 100 %	stronlgy foliated.Any biotite? Dark minerals very fine grained. Traces of X1/prehnite bands.
HFM10	148.00	#####	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	0;	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	36; Quartz	32; Potash Feldspar	3; Amphibole		100; 100 %	Stronlgy foliated.
HFM10	149.00	#####	0;	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		49; Plagioclase	36; Quartz	32; Potash Feldspar	3; Amphibole		100; 100 %	Stronlgy foliated.

Drill cuttings

Date: 2003-10-03 Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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
HFM11	**2.8**	- 3	200; Dark	20; Reddish	8; Grey	8; Medium to coarse grained	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	80; 80/20	calcite, traces of epidote, red mineral on fracture surface. Traces of pegmatite. Sample from 2.8 m depth.
HFM11	**3**	- 4	200; Dark	0;	5; Green	8; Medium to coarse grained	200; Dark	50; Greenish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	16; Epidote			100; 100 %	rusty possible fracture surface.
HFM11	4	- 5	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	traces of amphibolite.
HFM11	5	- 6	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	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	50; Pyrite	100; 100 %	traces of calcite on possible fracture plane.
HFM11	6	- 7	200; Dark	40; Brownish	8; Grey	8; Medium to coarse grained	200; Dark	0;	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	90; 90/10	traces of pyrite.
HFM11	7	- 8	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	80; Greyish	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	90; 90/10	traces of pyrite, epidote, and red sealed fracture.
HFM11	8	- 9	0;	0;	4; Brown	6; Fine-to medium grained	0;	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		100; 100 %	
HFM11	9	- 10	200; Dark	0;	5; Green	9; Medium-grained (1-5 mm)	200; Dark	0;	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	10; Biotite	16; Epidote		100; 100 %	strong oxidation along possible fracture planes. Traces of 101051.
HFM11	10	- 11	0;	0;	4; Brown	6; Fine-to medium grained	0;	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	50; Pyrite	100; 100 %	less than 10% amphibolite, traces of prehnite?
HFM11	11	- 12	0;	0;	4; Brown	6; Fine-to medium grained	0;	80; Greyish	2; Red	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 %	Both amph and biotite? Traces of pyrite
HFM11	12	- 13	0;	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	33; Chlorite	100; 100 %	Chlorite on possible fracture plane. Floury sample.
HFM11	13	- 14	200; Dark	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	200; Dark	80; Greyish	2; Red	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	16; Epidote	33; Chlorite		100; 100 %	epidote veins banded - movement along the plane?
HFM11	14	- 15	200; Dark	80; Greyish	4; Brown	8; Medium to coarse grained	0;	80; Greyish	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	90; 90/10	pyrite, epidote, also red surfaces (oxidized walls?)
HFM11	15	- 16	0;	80; Greyish	4; Brown	9; Medium-grained (1-5 mm)	0;	20; Reddish	8; Grey	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 pyrite.
HFM11	16	- 17	0;	50; Greenish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	8; Grey	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 pyrite. Oxidized possible fracture plane.
HFM11	17	- 18	0;	0;	8; Grey	9; Medium-grained (1-5 mm)	0;	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	33; Chlorite	100; 100 %	chlorite on possible fracture plane. Traces of pyrite.
HFM11	18	- 19	0;	0;	8; Grey	8; Medium to coarse grained	200; Dark	20; Reddish	8; Grey	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 pyrite, epidote. Calcite on possible fracture plane.
HFM11	19	- 20	0;	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	0;	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	50; Pyrite	100; 100 %	only traces of pyrite. Biotite rich aggregates.
HFM11	20	- 21	0;	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	0;	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	50; Pyrite	100; 100 %	traces of amphibolite, and biotite rich aggregates.
HFM11	21	- 22	0;	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	0;	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	50; Pyrite	100; 100 %	epidote.
HFM11	22	- 23	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	0;	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	50; Pyrite	100; 100 %	traces of chlorite, epidote, rusty mineral
HFM11	23	- 24	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	relatively poor in dark minerals.
HFM11	24	- 25	0;	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	0;	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	30; Calcite	100; 100 %	pyrite. Several large euhedral calcite crystals (grown in open space). Calcite and almost black (slightly reddish) crystals on fracture plane (crystal is rectangular if crosscutted, sample).
HFM11	25	- 26	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	30; Calcite	100; 100 %	quite poor in dark minerals.Traces of pyrite.
HFM11	26	- 27	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	chlorite on possible fracture plane. Calcite, aggregates rich in biotite.
HFM11	27	- 28	0;	20; Reddish	8; Grey	6; Fine-to medium grained	0;	80; Greyish	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	possibly also pegmatite. Amphibolite partly epidote altered. Traces of pyrite.

Drill cuttings

Date: 2003-10-03 Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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
HFM11	28	- 29	0;	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	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	traces of pyrite. 5-10 mm big milky quartz grains.
HFM11	29	- 30	0;	50; Greenish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	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	epidote, calcite, 5mm big milky quartz grains.
HFM11	30	- 31	0;	0;	8; Grey	6; Fine-to medium grained	200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	70; 70/30	epidote, pyrite, strongly oxidized, red, surfaces.
HFM11	31	- 32	0;	50; Greenish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	90; 90/10	pyrite, red fracture surfaces, larger quartz-grains (from vein?), traces of calcite.
HFM11	32	- 33	200; Dark	40; Brownish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	33; Chlorite	50; Pyrite		100; 100 %	chlorite on possible fracture surfaces. Calcite vein with red borders (aphanitic, strongly oxidized). Traces of epidote.
HFM11	33	- 34	0;	0;	5; Green	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	16; Epidote	80; 80/20	pyrite, biotite. Relatively rich in epidote. Amphibolite foliated or lineated.
HFM11	34	- 35	0;	0;	5; Green	9; Medium-grained (1-5 mm)	200; Dark	10; Pinkish	8; Grey	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	60; 60/40	epidote, traces of pyrite.
HFM11	35	- 36	0;	50; Greenish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	70; 70/30	also some pegmatite. Traces of calcite, epidote,pyrite, red fracture surfaces, possible prehnite.
HFM11	36	- 37	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	traces of amphibolite, epidote, prehnite, chlorite, pyrite, calcite (calcite, chlorite, red oxidation together in one sealed fracture)
HFM11	37	- 38	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	only traces of pyrite.
HFM11	38	- 39	0;	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	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	Water in sample. Epidote, larger quartz grains, pyrite,
HFM11	39	- 40	0;	80; Greyish	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	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	traces of pyrite, calcite, epidote, larger quartz grains (from vein?), red possible fracture surfaces.
HFM11	40	- 41	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	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	90; 90/10	traces of pyrite, calcite, chlorite, epidote.
HFM11	41	- 42	0;	80; Greyish	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	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	traces of epidote, calcite, pyrite.
HFM11	42	- 43	0;	0;	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	traces of pyrite, biotite slightly chlorite altered? Traces of amphibolite.
HFM11	43	- 44	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	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.
HFM11	44	- 45	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	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.
HFM11	45	- 46	0;	0;	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	traces of epidote, one larger quartz grain possibly from fracture filling.
HFM11	46	- 47	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	traces of epidote and pyrite
HFM11	47	- 48	0;	40; Brownish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	traces pf epidote and pyrite.
HFM11	48	- 49	0;	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	traces of epidote and pyrite. Larger grains of quartz (from pegmatite or qz-vein?)
HFM11	49	- 50	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	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	50; Pyrite	100; 100 %	traces of pyrite. Some grains (20%) relatively rich in biotite, some grains possibly from pegmatite.
HFM11	50	- 51	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	90; 90/10	traces of pyrite and epidote. Some grains (20%) relatively rich in biotite
HFM11	51	- 52	0;	40; Brownish	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	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	traces of pyrite, epidote.
HFM11	52	- 53	0;	40; Brownish	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	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	80; 80/20	Relatively rich in biotite also biotite rich aggregates (amphibolite?). Traces of calcite,
HFM11	53	- 54	0;	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	60; 60/40	also biotite altered amphibolite? Biotite rich grains, probably with feldspar and qz. Traces of epidote and pyrite.

Drill cuttings

Date: 2003-10-03 Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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
HFM11	54	- 55	0;	20; Reddish	4; Brown	8; Medium to coarse grained	0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	60; 60/40	traces of epidote and pyrite. Ca 50% 101057, 30 % 101061 and 20% 102017.
HFM11	55	- 56	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	80; 80/20	traces of epidote. Possibly some amphibolite.
HFM11	56	- 57	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		90; 90/10	foliated. Traces of pyrite and epidote. Red possible fracture surface (strong oxidation).
HFM11	57	- 58	0;	40; Brownish	8; Grey	9; Medium-grained (1-5 mm)	0;	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	50; Pyrite	100; 100 %	traces of pyrite. Some larger qz-grains.
HFM11	58	- 59	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	0;	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 %	traces of epidote, pyrite. Some larger qz-grains.
HFM11	59	- 60	0;	20; Reddish	4; Brown	8; Medium to coarse grained	0;	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	50; Pyrite	100; 100 %	biotite rich aggregates with pyrite, epidote and white feldspar. Traces of pyrite and epidote.
HFM11	60	- 61	0;	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	0;	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	33; Chlorite	100; 100 %	chlorite on possible fracture plane. Traces of pyrite and epidote.
HFM11	61	- 62	0;	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	0;	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	33; Chlorite	100; 100 %	traces of epidote, chlorite and calcite on possible fracture planes.
HFM11	62	- 63	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	33; Chlorite	100; 100 %	chlorite on possible fracture plane.
HFM11	63	- 64	0;	0;	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	to aphanitic or very fine grained. Epidote and prehnite or (X1?) bands.Some grains show clear foliation.
HFM11	64	- 65	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite	101057; Granite to granodiorite, metamorphic, medium grained	32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	16; Epidote	80; 80/20	Some grains are clearly deformed, with aphanitic bands, other seem pure.
HFM11	65	- 66	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	16; Epidote	100; 100 %	seems relatively pure.
HFM11	66	- 67	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	calcite and ? on possible fracture plane (light greyish in colour). Pyrite
HFM11	67	- 68	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	also traces of same mineral as HFM11 m 25. traces of calcite and epidote.
HFM11	68	- 69	0;	0;	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	red, oxidized possible fracture planes (sample). Possible fracture surface with chlorite and red mineral (as in sample).Traces of epidote..
HFM11	69	- 70	0;	20; Reddish	8; Grey	6; Fine-to medium grained	0;	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	50; Pyrite	100; 100 %	traces of chlorite and epidote.
HFM11	70	- 71	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	chlorite on possible fracture planes. Traces of epidote.
HFM11	71	- 72	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	with calcite veins.
HFM11	72	- 73	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	chlorite on possible fracture plane. Red oxidized possible fracture planes.
HFM11	73	- 74	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	foliated, calcite sealed fractures.Possibly also amphibole.
HFM11	74	- 75	0;	0;	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	oxidized, red possible fracture planes.Traces of epidote.
HFM11	75	- 76	0;	80; Greyish	2; Red	8; Medium to coarse grained	0;	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	50; Pyrite	100; 100 %	oxidized, red possible fracture planes.Traces of epidote and white/light grey aphanitic mineral(s) in sealed fracture
HFM11	76	- 77	0;	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	sealed red fracture.
HFM11	77	- 78	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	traces of epidote.
HFM11	78	- 79	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	chlorite on possible fracture surfaces. Epidote sealed fractures. Larger quartz grains, possibly from sealed fracture.
HFM11	79	- 80	0;	0;	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	chlorite on possible fracture planes. Quartz sealed fractures. Traces of pyrite.

Drill cuttings

Date: 2003-10-03 Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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
HFM11	80	- 81	0;	0;	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	30; Calcite	100; 100 %	larger calcite grains, probably from sealed fracture.
HFM11	81	- 82	0;	0;	2; Red	6; Fine-to medium grained	0;	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 %	black aphanitic possible fracture filling. Traces of epidote (in sealed fracture). Possible prehnite.
HFM11	82	- 83	200; Dark	0;	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		49; Plagioclase	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	0;	80; Greyish	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	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	0;	40; Brownish	2; Red	6; Fine-to medium grained	200; Dark	20; Reddish	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	0;	50; Greenish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	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 probably fracture filling, some red possible fracture surfaces.
HFM11	86	- 87	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	80; Greyish	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	0;	80; Greyish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	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	0;	0;	4; Brown	6; Fine-to medium grained	0;	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	3; Amphibole	100; 100 %	traces of amphibolite. Traces of epidote, and larger quartz-grains.
HFM11	89	- 90	0;	80; Greyish	4; Brown	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	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	0;	80; Greyish	4; Brown	9; Medium-grained (1-5 mm)	200; Dark	80; Greyish	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	0;	80; Greyish	4; Brown	6; Fine-to medium grained	0;	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	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	0;	80; Greyish	4; Brown	9; Medium-grained (1-5 mm)	0;	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	3; Amphibole	100; 100 %	traces of epidote altered amphibolite. Nice calcite cleavage planes (cc as fracture mineral).
HFM11	93	- 94	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	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 %	traces of epidote and calcite.
HFM11	94	- 95	0;	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	X1 (fine grained to aphanitic light grey/green mass, brittle ductile zone?), calcite and quartz grains from fractures. 101057 foliated (not obvious in drill cutting scale)
HFM11	95	- 96	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	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	16; Epidote	100; 100 %	X1 (fine grained to aphanitic light grey/green mass, with deformed fragements - brittle ductile zone), calcite. 101057 seems quite pure.
HFM11	96	- 97	0;	80; Greyish	4; Brown	6; Fine-to medium grained	200; Dark	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	101004; Ultramafic rock, metamorphic	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	50; 50/50	skarn? Mafic volcanite? Fine grained to aphanitic, dark green. Or very fine grained, altered amphibolite? Pyrite, calcite, X1,
HFM11	97	- 98	0;	80; Greyish	4; Brown	9; Medium-grained (1-5 mm)	200; Dark	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	101004; Ultramafic rock, metamorphic	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	70; 70/30	pyrite, X1, epidote, calcite.Possible amphibole? As above.
HFM11	98	- 99	200; Dark	40; Brownish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	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	99	- 100	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	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, signs of ductile deformation, epidote, quartzgrains from fracture? Traces of calcite.
HFM11	100	- 101	0;	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	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	0;	0;	2; Red	9; Medium-grained (1-5 mm)	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	30; Calcite	90; 90/10	10% calcite. Seems to have gone through deformation. Quartz probably also as fracture mineral. Traces of X1, epidote.
HFM11	102	- 103	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	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	103	- 104	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	80; Greyish	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	70; 70/30	calcite, quartz (probably from fractures), traces of epidote, X1, pyrite (in sealed? fractures)
HFM11	104	- 105	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	80; Greyish	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 stronlgy foliated?

Drill cuttings

Date: 2003-10-03 Sign.: Christin Nordman

			Untreated drill cuttings sample				Washed and sieved drill cuttings sample												
Hole	from	to	Lightn.	Chrom.	Hue	Grainsize	Lightn.	Chrom.	Hue	Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM11	105	106	200; Dark	40; Brownish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	3; Amphibole	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	80; 80/20	amphibolite mylonitic and altered. Dark red possible fracture surfaces.calcite.
HFM11	106	107	200; Dark	40; Brownish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	80; Greyish	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	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)	0;	50; Greenish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	brittle ductile shear zone. 30% almost aphanitic, light grey/green mass, a cataclastite? Calcite, larger quartz grain. Traces of pyrite and purer amphibolite.
HFM11	108	109	0;	0;	4; Brown	6; Fine-to medium grained	0;	50; Greenish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	brittle ductile shear zone. 70% almost aphanitic, light grey/green mass, a cataclastite? Larger quartz and calcite grains, traces of pyrite and amphibolite..
HFM11	109	110	0;	50; Greenish	2; Red	6; Fine-to medium grained	0;	20; Reddish	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	brittle ductile shear zone. 60% almost aphanitic, light grey/green mass, a cataclastite? Traces of amphibolite. Qz-vein intruded into cataclastite (?)-calcite.
HFM11	110	111	200; Dark	20; Reddish	5; Green	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	100%? Cataclastite? Traces of pyrite, larger qz-grains, probably from fracture filling.
HFM11	111	112	200; Dark	20; Reddish	5; Green	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	100%? Cataclastite? Possibly also deformed amphibolite. Very thin sealed fracture, obviously younger than cataclastic deformation.Traces of pyrite and calcite..
HFM11	112	113	200; Dark	20; Reddish	5; Green	9; Medium-grained (1-5 mm)	0;	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	10; Biotite	32; Potash Feldspar	36; Quartz	70; 70/30	amphibolite altered? 101057 very fine grained to aphanitic, some grains seem mylonitic. Very fine grained calcite - skarn??? A few larger qz grains.
HFM11	113	114	0;	20; Reddish	5; Green	9; Medium-grained (1-5 mm)	0;	0;	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	70; 70/30	70/30??? Strongly altered, cataclastic to mylonitic. Brittle ductile shear zone-. Qz with pyrite, probably fracture filling.
HFM11	114	115	0;	20; Reddish	5; Green	9; Medium-grained (1-5 mm)	0;	20; Reddish	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	50; 50/50	50/50??? Strongly altered, cataclastic to mylonitic. Brittle ductile shear zone.
HFM11	115	116	0;	20; Reddish	5; Green	9; Medium-grained (1-5 mm)	0;	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	70; 70/30	70/30??? Strongly altered, cataclastic to mylonitic.Brittle ductile shear zone. Amphibolite seem to be mostly altered.
HFM11	116	117	0;	50; Greenish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	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	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole		90; 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	2; Red	9; Medium-grained (1-5 mm)	0;	40; Brownish	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		70; 70/30	rough estimation of rock type ratio.Or only 101057? poor in dark minerals, almost aphanitic (aplite?). Traces of amphibolite. Brittle ductile shear zone.
HFM11	119	120	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	40; Brownish	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	70; 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 (1-5 mm)	0;	40; Brownish	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	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	121	122	0;	80; Greyish	4; Brown	9; Medium-grained (1-5 mm)	0;	0;	8; Grey	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	30; Calcite	100; 100 %	brittle ductile shear zone. Strongly deformed. Traces of calcite and green fluorite? Also pyrite.
HFM11	122	123	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	80; 80/20	brittle ductile shear zone. Very fine grained to aphanitic. Some grains leucocratic. X1. Calcite and quartz probably from fracture filling.
HFM11	123	124	0;	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	11091; X1	30; Calcite	100; 100 %	brittle ductile shear zone. Very fine grained to aphanitic, leucocratic (mylonitic?) with bands of X1. Traces of pyrite.
HFM11	124	125	0;	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	11091; X1		100; 100 %	brittle ductile shear zone. Very fine grained to aphanitic, leucocratic (mylonitic?) with bands of X1. bigger qz-grains.
HFM11	125	126	0;	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	11091; X1	10; Biotite	100; 100 %	small sample. Or pegmatite.Leucocratic.Less deformed than samples above. Traces of epidote, calcite.
HFM11	126	127	0;	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	9; Medium-grained (1-5 mm)	101061; Pegmatite, pegmatitic granite		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	small sample. Leucocratic.
HFM11	127	128	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	9; Medium-grained (1-5 mm)	101061; Pegmatite, pegmatitic granite		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	X1 with angular fragments- cataclastic. Traces of 101057?
HFM11	128	129	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	small sample. Traces of pyrite, epidote, violet fluorite and 101057.

Drill cuttings

Date: 2003-10-03 Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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
HFM11	129	130	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	or deformed pegmatite? traces of pyrite, calcite
HFM11	130	131	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	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, epidote, X1,.
HFM11	131	132	0;	0;	4; Brown	6; Fine-to medium grained	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	70; 70/30	bands of X1 -otherwise it does not seem deformed.
HFM11	132	133	0;	80; Greyish	2; Red	6; Fine-to medium grained	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	60; 60/40	bands of X1 -otherwise it does not seem deformed.
HFM11	133	134	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	70; 70/30	bands of X1 with deformed rock fragments -otherwise it does not seem deformed.
HFM11	134	135	0;	50; Greenish	4; Brown	9; Medium-grained (1-5 mm)	0;	50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	small sample. Brittle ductile shear zone. Ductile deformation adjacent to greenish bands. Seems otherwise undeformed.
HFM11	135	136	0;	50; Greenish	2; Red	9; Medium-grained (1-5 mm)	0;	50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	brittle ductile shear zone. Relatively strong deformation. Traces of calcite and pyrite. Sealed qz-vein.
HFM11	136	137	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	50; Greenish	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	11091; X1	90; 90/10	brittle ductile shear zone. Strongly deformed - also mylonitic and/or aphanitic. With cutting qz-vein. Rock type ratio uncertain.
HFM11	137	138	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	50; Greenish	2; Red	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 %	small sample. Slightly deformed by X1 bands. Traces of amphibolite, calcite
HFM11	138	139	0;	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	0;	50; Greenish	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	11091; X1	90; 90/10	brittle ductile shear zone. Amphibole, X1.
HFM11	139	140	0;	40; Brownish	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	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	90; 90/10	brittle ductile shear zone, probably weak. X1, chlorite altered amphibolite?
HFM11	140	141	0;	40; Brownish	2; Red	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		90; 90/10	finegrained to aphanitic. Mylonitic?
HFM11	141	142	0;	40; Brownish	2; Red	6; Fine-to medium grained	200; Dark	20; Reddish	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	3; Amphibole	80; 80/20	small sample. Brittle ductile shear zone. X1, deformed fragments, epidote, with very thin quartz sealed fractures.
HFM11	142	143	200; Dark	0;	4; Brown	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	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	90; 90/10	Brittle ductile shear zone. Traces of aplite. Elongated grains.
HFM11	143	144	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	200; Dark	50; Greenish	2; Red	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 %	small sample. Brittle ductile shear zone. X1, also banded.
HFM11	144	145	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	0;	50; Greenish	2; Red	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 %	brittle ductile shear zone. Not only cataclastic - also some deformed fragments.
HFM11	145	146	0;	50; Greenish	2; Red	9; Medium-grained (1-5 mm)	0;	50; Greenish	2; Red	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 %	brittle ductile shear zone. Thin calcite sealed fracture, traces of pyrite
HFM11	146	147	0;	20; Reddish	5; Green	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	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	brittle ductile shear zone.Amphibole. 2mm Calcite with clear cleavage.Traces of pyrite. Epidote,
HFM11	147	148	0;	50; Greenish	4; Brown	8; Medium to coarse grained	200; Dark	20; Reddish	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	brittle ductile shear zone. Amphibole, calcite, traces of pyrite.
HFM11	148	149	0;	50; Greenish	2; Red	9; Medium-grained (1-5 mm)	0;	50; Greenish	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	brittle ductile shear zone. Calcite probably from fracture material. Traces of same mineral as at m. 25.
HFM11	149	150	0;	0;	4; Brown	6; Fine-to medium grained	0;	50; Greenish	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	70; 70/30	small sample.Brittle ductile shear zone. X1. Traces of pyrite, epidote, calcite.101057 seems leucocratic.
HFM11	150	151	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	0;	50; Greenish	2; Red	6; Fine-to medium grained	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	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	0;	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	6; Fine-to medium grained	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	small sample. Brittle ductile shear zone.X1. Brittle component seem to dominate. Amph slightly chlorite altered?
HFM11	152	153	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	50; Greenish	2; Red	6; Fine-to medium grained	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	80; 80/20	very small sample. Rough rock type estimation. X1, amph chlorite altered. Brittle ductile shear zone.
HFM11	153	154	0;	20; Reddish	5; Green	6; Fine-to medium grained	0;	50; Greenish	2; Red	2; Fine-grained (<1 mm)	102017; Amphibolite	101061; Pegmatite, pegmatitic granite	3; Amphibole	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	60; 60/40	very small sample.X1, amph. Chlorite altered. Brittle ductile shear zone.
HFM11	154	155	0;	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	50; 50/50	small sample. Grain size reduced pegmatite or aplite? Amph. Chlorite and epidote altered. Traces of calcite. Weaker deformation?

Drill cuttings

Date: 2003-10-03 Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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
HFM11	155	- 156	0;	20; Reddish	8; Grey	6; Fine-to medium grained	0;	20; Reddish	5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	3; Amphibole	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	60; 60/40	small sample. Amphibolite chlorite altered.
HFM11	156	- 157	200; Dark	20; Reddish	5; Green	9; Medium-grained (1-5 mm)	0;	20; Reddish	5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	3; Amphibole	49; Plagioclase	32; Potash Feldspar	36; Quartz	33; Chlorite	80; 80/20	brittle ductile shear zone. Strong alteration: amph-> chl. Felsic rock type uncertain but has some biotite. Epidote.
HFM11	157	- 158	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	20; Reddish	5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	3; Amphibole	49; Plagioclase	32; Potash Feldspar	36; Quartz	33; Chlorite	70; 70/30	small sample. Brittle ductile shear zone. Felsic rock type uncertain - very deformed. Seem leucocratic, but with X (biot->chl?).Epidote, qz grains. Seems mostly cataclastic.
HFM11	158	- 159	0;	50; Greenish	2; Red	6; Fine-to medium grained	0;	50; Greenish	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	small sample. Brittle ductile shear zone (strong). X1, seems mostly cataclastic. One undisturbet light grey fine grained grain of possibly 101051?-
HFM11	159	- 160	0;	50; Greenish	2; Red	6; Fine-to medium grained	0;	50; Greenish	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	70; 70/30	Brittle ductile shear zone.. Probalby 101057 some biotite visible but mostly X1 - cataclastic bands. Amphibolite chlorite altered.
HFM11	160	- 161	0;	50; Greenish	2; Red	6; Fine-to medium grained	200; Dark	50; Greenish	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	80; 80/20	brittle ductile shear zone. X1, mostly cataclastic? Amphibolite foliated? Calcite on possible fracture surface.
HFM11	161	- 162	0;	50; Greenish	2; Red	6; Fine-to medium grained	200; Dark	80; Greyish	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	80; 80/20	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	0;	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	80; Greyish	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	70; 70/30	Brittle ductile shear zone. Fine grained to aphanitic. Some grains *mylonitic.* Little X1.
HFM11	163	- 164	0;	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	80; Greyish	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	80; 80/20	Brittle ductile shear zone. Some grains *mylontic*. Possibly also pegmatite 10%.little X1.
HFM11	164	- 165	0;	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	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	16; Epidote	100; 100 %	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	6; Fine-to medium grained	200; Dark	50; Greenish	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	Brittle ductile shear zone: Bands of X1, epidote. Amphibolite partly chlorite altered. Traces of calcite.
HFM11	166	- 167	0;	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	50; Greenish	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	80; 80/20	Brittle ductile shear zone, probably weak. Epidote sealed veins. Little X1. Amphibolite chl-altered.
HFM11	167	- 168	200; Dark	0;	5; Green	2; Fine-grained (<1 mm)	200; Dark	20; Reddish	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	60; 60/40	small sample. Epidote.
HFM11	168	- 169	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	200; Dark	20; Reddish	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	70; 70/30	small sample. Epidote, calcite, oxidices possible fracture surfaces.
HFM11	169	- 170	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	200; Dark	0;	8; Grey	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	small sample. Biotite rich. Traces of epidote, amphibolite.Thin quartz vein.
HFM11	170	- 171	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	200; Dark	20; Reddish	8; Grey	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 %	small sample Rich in biotite. Brittle ductile shear zone, X1. Probably weak - most fragments seem undisturbed.
HFM11	171	- 172	200; Dark	50; Greenish	2; Red	6; Fine-to medium grained	200; Dark	20; Reddish	8; Grey	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 %	small sample. Fine grain size dominates. Traces of epidote in sealed fractures.
HFM11	172	- 173	0;	0;	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	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	90; 90/10	small sample. Epidote in sealed fractures. (movement?). Host rock rich in biotite.
HFM11	173	- 174	0;	20; Reddish	4; Brown	2; Fine-grained (<1 mm)	200; Dark	20; Reddish	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	90; 90/10	small sample. Brittle ductile shear zone. Probably also some pegmatite (leucocratic, larger grains)X1, epidote. Host rock rich in biotite.
HFM11	174	- 175	0;	0;	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	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	90; 90/10	small sample. Traces of X1. amphibolite chlorite altered, 101057 relatively rich in biotite.
HFM11	175	- 176	0;	0;	4; Brown	2; Fine-grained (<1 mm)	200; Dark	20; Reddish	8; Grey	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	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	176	- 177	0;	0;	4; Brown	2; Fine-grained (<1 mm)	200; Dark	20; Reddish	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	small sample. One larger qz grain. Some amph. Chlorite altered.
HFM11	177	- 178	200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	200; Dark	20; Reddish	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	80; 80/20	small sample. Qz-vein.Red possible fracture surface. Not as rich in biotite as earlier.
HFM11	178	- 179	200; Dark	0;	4; Brown	2; Fine-grained (<1 mm)	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	3; Amphibole	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; 50/50	traces of X1, epidote, larger qz-grain (possibly from fracture material).
HFM11	179	- 180	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	200; Dark	20; Reddish	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	70; 70/30	small sample. NOT TREATED (only small grains).

Drill cuttings

Date: 2003-10-03 Sign.: Christin Nordman

Hole	from		to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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
HFM11	180	-	181	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	200; Dark	20; Reddish	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	70; 70/30	small sample
HFM11	181	-	182	200; Dark	80; Greyish	2; Red	2; Fine-grained (<1 mm)	200; Dark	20; Reddish	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	90; 90/10	small sample. Traces of epidote.

Drill cuttings

Date: 2003-09-29 Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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	**4**	- 5	100; Light	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	0;	0;	2; Red	9; Medium-grained (1-5 mm)	101057; Granite to granodiorite, metamorphic, medium grained		36; Quartz	32; Potash Feldspar	49; Plagioclase	10; Biotite	16; Epidote	100; 100 %	water in sample. Traces of chorite and epidote.
HFM12	5	- 6	0;	20; Reddish	7; White	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	16; Epidote	100; 100 %	traces of epidote, chlorite, X1
HFM12	6	- 7	100; Light	0;	2; Red	8; Medium to coarse grained	0;	0;	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	0;	80; Greyish	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	101058; Granite, metamorphic, aplitic	49; Plagioclase	10; Biotite	36; Quartz	32; Potash 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 biotite)?
HFM12	8	- 9	0;	80; Greyish	2; Red	8; Medium to coarse grained	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	36; Quartz	107; Prehnite		100; 100 %	
HFM12	9	- 10	200; Dark	0;	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	traces of pyrite, calcite,epidote
HFM12	10	- 11	200; Dark	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	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	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	8; Grey	8; Medium to coarse grained	0;	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	36; Quartz	30; Calcite	16; Epidote	100; 100 %	traces of yellow semitransparent aphanitic mineral.
HFM12	12	- 13	200; Dark	0;	2; Red	8; Medium to coarse 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	3; Amphibole	100; 100 %	chlorite as alteration product from biotite, traces of X1, calcite, iron hydroxide.
HFM12	13	- 14	200; Dark	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	traces of calcite
HFM12	14	- 15	200; Dark	0;	2; Red	8; Medium to coarse grained	200; Dark	0;	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	100; 100 %	possibly both biotite and amphibole. Dark minerals extremely fine grained. Relatively poor in quartz.
HFM12	15	- 16	0;	0;	2; Red	8; Medium to coarse grained	0;	0;	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	0;	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	11091; 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	0;	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	100; 100 %	very fine grained mafic minerals. Probably both biotite and amphibole. Traces of pyrite.
HFM12	18	- 19	100; Light	0;	2; Red	6; Fine-to medium grained	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 amphibolite.
HFM12	19	- 20	100; Light	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	floury section is light grey.biotite or amphibole? Very fine grained mafic minerals.
HFM12	20	- 21	100; Light	20; Reddish	8; Grey	6; Fine-to medium grained	0;	0;	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	50; Pyrite	100; 100 %	beige coloured floury material.probably biotite as mafic mineral.
HFM12	21	- 22	100; Light	0;	2; Red	6; Fine-to medium grained	0;	0;	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	100; Light	0;	2; Red	2; Fine-grained (<1 mm)	0;	0;	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 grained to aphanitic bluish green mineral (X1 green) and pyrite impregnation.
HFM12	23	- 24	100; Light	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	floury
HFM12	24	- 25	100; Light	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	
HFM12	25	- 26	100; Light	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	X1 with pyrite impregnation.
HFM12	26	- 27	100; Light	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	beige coloured floury section, red coloured grains. Probably also quartz as fracture mineral.
HFM12	27	- 28	0;	80; Greyish	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	11091; X1	100; 100 %	somewhat floury. Pyrite impregnated X1 veins.
HFM12	28	- 29	0;	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	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 %	
HFM12	29	- 30	0;	0;	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	11091; X1	100; 100 %	traces of calcite.
HFM12	30	- 31	0;	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	traces of concrete or cataclastite (rock fragments in bluish dark grey mass).
HFM12	31	- 32	100; Light	0;	2; Red	2; Fine-grained (<1 mm)	0;	0;	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	uncertain 101058. traces of quartz in sealed fracture.
HFM12	32	- 33	100; Light	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	uncertain 101058.
HFM12	33	- 34	0;	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	uncertain 101058. possible X1. On fracture plane slightly bluish grey aphanitic material (contains several minerals). Some fragments are more rich in mafic minerals- very fine grained.

Drill cuttings

Date: 2003-09-29 Sign.: Christin Nordman

			Untreated drill cuttings sample				Washed and sieved drill cuttings sample												
Hole	from	to	Lightn.	Chrom.	Hue	Grainsize	Lightn.	Chrom.	Hue	Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM12	34	- 35	0;	0;	2; Red	9; Medium-grained (1-5 mm)	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		100; 100 %	very thin slightly greenish fracture material (sealed). Some fragments are more rich in mafic minerals- very fine grained.
HFM12	35	- 36	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	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	- 37	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	70; 70/30	
HFM12	37	- 38	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	6; Fine-to medium grained	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	- 39	0;	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	9; Medium-grained (1-5 mm)	101061; Pegmatite, pegmatitic granite		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	11091; X1	100; 100 %	traces of 101057.
HFM12	39	- 40	200; Dark	80; Greyish	2; Red	6; Fine-to medium grained	0;	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	10; Biotite	36; Quartz		70; 70/30	no amphibole? traces of yellow/orange coloured iron hydroxide.
HFM12	40	- 41	200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	10; Biotite	36; Quartz	3; Amphibole	70; 70/30	epidote. Plagioclase turned more greenish (epidote altered?)
HFM12	41	- 42	200; Dark	20; Reddish	8; Grey	8; Medium to coarse grained	200; Dark	20; Reddish	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	90; 90/10	traces of epidote. Possible fracture plane with dark red earthy material.
HFM12	42	- 43	200; Dark	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	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	80; 80/20	
HFM12	43	- 44	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	60; 60/40	fracture plane with red cover - probably indicates an open fracture.
HFM12	44	- 45	0;	0;	4; Brown	6; Fine-to medium grained	0;	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	60; 60/40	dark beige coloured untreated. Traces of epidote.
HFM12	45	- 46	0;	0;	4; Brown	9; Medium-grained (1-5 mm)	0;	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	80; 80/20	dark beige coloured. Traces of bigger quartz grains (from vein?).
HFM12	46	- 47	0;	0;	4; Brown	6; Fine-to medium grained	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	80; 80/20	dark beige coloured.
HFM12	47	- 48	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	80; 80/20	traces of epidote, X1, possible 101058 (leucocatic granite, fine grained).
HFM12	48	- 49	0;	0;	4; Brown	6; Fine-to medium grained	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	80; 80/20	traces of epidote, calcite, pyrite, rust.
HFM12	49	- 50	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	90; 90/10	traces of epidote, possibly traces of 101058 or pegmatite.
HFM12	50	- 51	0;	20; Reddish	4; Brown	8; Medium to coarse grained	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	90; 90/10	traces of calcite on possible fracture plane. Traces of epidote. Possible traces of 101058(leucocratic) or 101061.
HFM12	51	- 52	0;	20; Reddish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	3; Amphibole	10; Biotite	50; 50/50	traces of epidote, rusty surface (probable open fracture), calcite
HFM12	52	- 53	0;	80; Greyish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	90; 90/10	humid sample.. Traces of pyrite, epidote.
HFM12	53	- 54	200; Dark	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	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	54	- 55	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	80; Greyish	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	70; 70/30	floury sample.traces of pegmatite.
HFM12	55	- 56	0;	0;	4; Brown	2; Fine-grained (<1 mm)	0;	80; Greyish	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	two possible fracture planes with chlorite and oxidization, respectively. The granitoid seems granitic in composition.
HFM12	56	- 57	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	0;	2; Red	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	uncertain 101058. very thin coating of calcite on possible fracture plane (with biotite?)
HFM12	57	- 58	100; Light	0;	4; Brown	2; Fine-grained (<1 mm)	0;	0;	2; Red	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	90; 90/10	uncertain 101058. floury sample. Seems granitic in composition.
HFM12	58	- 59	0;	80; Greyish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	80; 80/20	traces of epidote.
HFM12	59	- 60	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	80; Greyish	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	90; 90/10	slightly humid sample.traces of X1?, pegmatite, epidote.

Drill cuttings

Date: 2003-09-29 Sign.: Christin Nordman

			Untreated drill cuttings sample				Washed and sieved drill cuttings sample												
Hole	from	to	Lightn.	Chrom.	Hue	Grainsize	Lightn.	Chrom.	Hue	Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM12	60	- 61	100; Light	0;	4; Brown	6; Fine-to medium grained	0;	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	3; Amphibole	100; 100 %	traces of amphibolite. Probably both biotite and amphibole. Traces of epidote.
HFM12	61	- 62	0;	0;	4; Brown	6; Fine-to medium grained	0;	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	3; Amphibole	100; 100 %	probably both amphibole and biotite.Traces of epidote and larger quartz grains.
HFM12	62	- 63	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	90; 90/10	traces of epidote (also on possible fracture plane)
HFM12	63	- 64	0;	20; Reddish	4; Brown	8; Medium to coarse grained	0;	80; Greyish	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	50; 50/50	the floury section causes the colour of the untreated sample Rough estimatin of rock type proportion. Traces of calcite and laumontite on possible fracture planes.
HFM12	64	- 65	0;	80; Greyish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	8; Grey	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	80; 80/20	laumontite and calcite on possible fracture plane.
HFM12	65	- 66	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	80; Greyish	2; Red	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 %	traces of amphibolite, laumontite.
HFM12	66	- 67	100; Light	0;	2; Red	6; Fine-to medium grained	100; Light	0;	1; Pink	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	30; Calcite	100; 100 %	traces of calcite, epidote, amphibolite. Leucocratic.
HFM12	67	- 68	0;	20; Reddish	4; Brown	8; Medium to coarse grained	200; Dark	20; Reddish	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	90; 90/10	traces of X1, epidote and laumontite.
HFM12	68	- 69	0;	20; Reddish	4; Brown	6; Fine-to medium grained	200; Dark	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		100; 100 %	traces of pyrite, epidote and laumontite. Calcite on possible fracture plane.
HFM12	69	- 70	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	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		100; 100 %	humid sample.
HFM12	70	- 71	100; Light	20; Reddish	4; Brown	6; Fine-to medium grained	0;	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 %	floury sample.
HFM12	71	- 72	0;	0;	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	traces of laumontite.
HFM12	72	- 73	0;	20; Reddish	4; Brown	6; Fine-to medium grained	200; Dark	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		100; 100 %	foliated or lineated.
HFM12	73	- 74	0;	20; Reddish	4; Brown	6; Fine-to medium grained	200; Dark	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		100; 100 %	
HFM12	74	- 75	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	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		100; 100 %	
HFM12	75	- 76	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	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	11091; X1	100; 100 %	traces of X1, epidote. Larger grain of quartz.
HFM12	76	- 77	0;	0;	4; Brown	2; Fine-grained (<1 mm)	0;	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	3; Amphibole	100; 100 %	traces of epidote.
HFM12	77	- 78	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	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 %	only traces of epidote.
HFM12	78	- 79	100; Light	10; Pinkish	4; Brown	6; Fine-to medium grained	0;	0;	2; Red	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	90; 90/10	only traces of epidote. Possible laumontite.
HFM12	79	- 80	0;	0;	4; Brown	6; Fine-to medium grained	0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	90; 90/10	traces of epidote.
HFM12	80	- 81	0;	0;	4; Brown	6; Fine-to medium grained	0;	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 %	relatively rich in epidote. Seems to occur in sealed fractures with possible movement (appears banded)- Possibly traces of amphibolite.
HFM12	81	- 82	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	0;	2; Red	9; Medium-grained (1-5 mm)	101061; Pegmatite, pegmatitic granite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	90; 90/10	traces of epidote.
HFM12	82	- 83	0;	20; Reddish	4; Brown	6; Fine-to medium grained	200; Dark	0;	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 (one grain)..
HFM12	83	- 84	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	200; Dark	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 %	traces of epidote and pegmatite.
HFM12	84	- 85	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	200; Dark	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 %	traces of pyrite, pegmatite.

Drill cuttings

Date: 2003-09-29 Sign.: Christin Nordman

			Untreated drill cuttings sample				Washed and sieved drill cuttings sample												
Hole	from	to	Lightn.	Chrom.	Hue	Grainsize	Lightn.	Chrom.	Hue	Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM12	85	86	0;	0;	4; Brown	6; Fine-to medium grained	200; Dark	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 %	Wet sample? Traces of X1?
HFM12	86	87	200; Dark	80; Greyish	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		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	30; Calcite	100; 100 %	almost no fine fraction. Calcite on possible fracture plane. Epidote, large quartz grains, possibly from fracture material.
HFM12	87	88	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	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	30; Calcite	100; 100 %	almost no fine fraction.Calcite on possible fracture plane. Epidote, only traces.
HFM12	88	89	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	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 %	one grain seems mylonitic (almost aphanitic X1/epidote? Elongated quartz?)
HFM12	89	90	0;	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	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	30; Calcite	100; 100 %	calcite on possible fracture plane. Epidote in sealeld fracture.
HFM12	90	91	100; Light	0;	4; Brown	6; Fine-to medium grained	0;	0;	2; Red	6; Fine-to medium grained	111058; Granite, fine to medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	calcite on possible fracture plane. Epidote in sealeld fracture. Leucocratic - almost no dark minerals.
HFM12	91	92	0;	10; Pinkish	4; Brown	6; Fine-to medium grained	100; Light	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	101061; Pegmatite, pegmatitic granite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	90; 90/10	Sealed fracture with epidote and elongated (?) quartz.
HFM12	92	93	0;	80; Greyish	4; Brown	6; Fine-to medium grained	0;	80; Greyish	4; Brown	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	partly mylonitic? Becomes very fine grained to aphanitic, slightly banded.Or a volcanite, felsic to intermediate???
HFM12	93	94	0;	50; Greenish	8; Grey	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	101004; Ultramafic rock, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	16; Epidote	36; Quartz		90; 90/10	aphanitic green, hard. A volcanite or mylonitic rock? Traces of calcite, but no altered amphibolite.
HFM12	94	95	0;	0;	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	101004; Ultramafic rock, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	16; Epidote	36; Quartz	32; Potash Feldspar	90; 90/10	pegmatite as contamination? Seems like deformed amphibolite, rich in epidote sealed veins.
HFM12	95	96	0;	50; Greenish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	101004; Ultramafic rock, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	16; Epidote	36; Quartz	32; Potash Feldspar	80; 80/20	deformed. Lots of thin epidote veins.
HFM12	96	97	0;	50; Greenish	8; Grey	8; Medium to coarse grained	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	101004; Ultramafic rock, metamorphic		49; Plagioclase	3; Amphibole	16; Epidote			100; 100 %	
HFM12	97	98	0;	50; Greenish	8; Grey	6; Fine-to medium grained	0;	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101004; Ultramafic rock, metamorphic	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	50; 50/50	traces of epidote.
HFM12	98	99	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	4; Brown	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	traces of X1.
HFM12	99	100	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	20; Reddish	4; Brown	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	
HFM12	100	101	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	
HFM12	101	102	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	30; Calcite	100; 100 %	traces of calcite on possible fracture plane.
HFM12	102	103	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	fine fraction beige coloured (flour). X1? Light grey, aphanitic, with some fragments. Could it be a cataclastite?
HFM12	103	104	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	fine fraction beige coloured (flour). Possible thin cataclastites (light grey, with fragments, somewhat banded).
HFM12	104	105	200; Dark	0;	2; Red	9; Medium-grained (1-5 mm)	0;	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	traces of thin cataclastites/breccias sealed with ? Light grey, hard mass nonsoluble in 10% hydrochloric acid.
HFM12	105	106	200; Dark	40; Brownish	2; Red	9; Medium-grained (1-5 mm)	0;	20; Reddish	4; Brown	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	30; Calcite	100; 100 %	with micro breccia/cataclastite, sealed calcite vein, sealed quartz vein. X1 with disseminated pyrite.
HFM12	106	107	200; Dark	50; Greenish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	5; Green	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	
HFM12	107	108	200; Dark	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	50; Greenish	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	80; 80/20	traces of epidote.
HFM12	108	109	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	50; Greenish	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	80; 80/20	traces of epidote.
HFM12	109	110	0;	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	80; Greyish	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	90; 90/10	possible microbreccia with X1-like matrix.
HFM12	110	111	200; Dark	50; Greenish	2; Red	6; Fine-to medium grained	200; Dark	50; Greenish	2; Red	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	11091; X1	36; Quartz	10; Biotite		100; 100 %	*Water in the sample -> end of borehole.* Strongly altered. Seems brecciated (light bluish green to grey matrix). Traces of calcite
HFM12	111	112	200; Dark	50; Greenish	2; Red	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	brecciated / cataclastite. Matrix is light grey to greenish, aphanitic.
HFM12	112	113	0;	50; Greenish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	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	rock type proportion uncertain. Amph? Slightly deformed. Also some bands of aphanitic light grey to green mtr like in m. 111-112.

Drill cuttings

Date: 2003-09-29 Sign.: Christin Nordman

Hole	from	to	Untreated drill cuttings sample Lightn.	Chrom.	Hue	Grainsize	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	113	- 114	200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	102017; Amphibolite		49; Plagioclase	3; Amphibole	11091; X1			100; 100 %	seems strongly altered. X1= light grey to greenish aphanitic material, brittle ductile shear zone???
HFM12	114	- 115	200; Dark	0;	8; Grey	6; Fine-to medium grained	200; Dark	0;	5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	11091; X1	36; Quartz	16; Epidote	100; 100 %	seems strongly altered. relatively rich in red possible fracture planes.Quartz as larger individual grains.
HFM12	115	- 116	200; Dark	0;	8; Grey	6; Fine-to medium grained	200; Dark	0;	5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite		49; Plagioclase	3; Amphibole	11091; X2			100; 100 %	seems strongly altered both by ductile and brittle (brecciated) deformation. Aphanitic light grey to greenish mass.
HFM12	116	- 117	200; Dark	50; Greenish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	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	brittle ductile shear zone? Seems altered. Aphanitic mass like in 115-116 m.
HFM12	117	- 118	100; Light	20; Reddish	4; Brown	6; Fine-to medium grained	0;	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	10; Biotite	3; Amphibole	90; 90/10	slight signs of deformation (X1, aphanitic light grey to slightly greenish mass).
HFM12	118	- 119	0;	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	50; Greenish	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	90; 90/10	amph. Seems strongly foliated.traces of X1, and pyrite.
HFM12	119	- 120	0;	20; Reddish	8; Grey	6; Fine-to medium grained	200; Dark	50; Greenish	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	60; 60/40	seems altered. X1. Possible laumontite on fracture plane.
HFM12	120	- 121	200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	200; Dark	20; Reddish	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	3; Amphibole	50; 50/50	seems altered. X1. breccia. Bright red fracture planes (laumontite?), possible amphibole altered to greenish mineral (white streak).
HFM12	121	- 122	0;	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	80; Greyish	2; Red	2; Fine-grained (<1 mm)	101058; Granite, metamorphic, aplitic	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	60; 60/40	seems alterd (any amph.left?) X1. Leucocratic 101058.
HFM12	122	- 123	200; Dark	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	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 amphibole left? Strongly altered and becomes aphanitic to very fine grained grey to greenish grey. Cataclastite?
HFM12	123	- 124	200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	11091; X1	70; 70/30	biotite.calcite crystal (2.5 mm long), traces of pyrite, fluorite,
HFM12	124	- 125	200; Dark	20; Reddish	8; Grey	6; Fine-to medium grained	0;	20; Reddish	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.Traces of pyrite.
HFM12	125	- 126	200; Dark	0;	2; Red	6; Fine-to medium grained	200; Dark	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.
HFM12	126	- 127	200; Dark	0;	2; Red	6; Fine-to medium grained	200; Dark	0;	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	
HFM12	127	- 128	200; Dark	0;	2; Red	6; Fine-to medium grained	200; Dark	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		100; 100 %	traces of altered rock, possibly amphibolite.
HFM12	128	- 129	200; Dark	0;	2; Red	6; Fine-to medium grained	200; Dark	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	traces of altered rock, possibly amphibolite, pyrite, calcite
HFM12	129	- 130	200; Dark	0;	2; Red	6; Fine-to medium grained	200; Dark	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	traces of altered rock, possibly amphibolite, calcite
HFM12	130	- 131	200; Dark	0;	2; Red	6; Fine-to medium grained	200; Dark	40; Brownish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	traces of calcite.
HFM12	131	- 132	200; Dark	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	20; Reddish	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	10; Biotite	80; 80/20	X1, possible laumontite on fracture plane. Some grains seem slightly mylonitic.
HFM12	132	- 133	200; Dark	50; Greenish	2; Red	6; Fine-to medium grained	200; Dark	0;	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 strong hematite pigmentation.X1 (probable deformation)
HFM12	133	- 134	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	200; Dark	0;	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	16; Epidote	90; 90/10	traces of altered amphibolite. X1 - probably still somewhat deformed.
HFM12	134	- 135	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	0;	2; Red	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	11091; X1	70; 70/30	Some grains extremely fine grained and seem banded (strong deformation), epidote.
HFM12	135	- 136	0;	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	50; Greenish	2; Red	2; Fine-grained (<1 mm)	102017; Amphibolite	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	50; 50/50	50% amph, 25% peg, 25% fine grained 101057.X1, epidote
HFM12	136	- 137	0;	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite	101061; Pegmatite, pegmatitic granite	49; Plagioclase	3; Amphibole	36; Quartz	32; Potash Feldspar	10; Biotite	90; 90/10	epidote, X1 (slightly altered amphibolitey?), possible also som 101057 grains.
HFM12	137	- 138	200; Dark	50; Greenish	2; Red	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	16; Epidote	100; 100 %	very small sample.X1.Red fracture planes. Brittle ductile shear zone.
HFM12	138	- 139	0;	20; Reddish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	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 sample.prabably also pure amphibolite. Pyrite. Brittle ductile shear zone.

Drill cuttings							Date: 2003-09-29			Sign.:	Christin Nordman									
			Untreated drill cuttings sample				Washed and sieved drill cuttings sample													
Hole	from	to	Lightn.	Chrom.	Hue	Grainsize	Lightn.	Chrom.	Hue	Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar	
HFM12	139	- 140	0;	20; Reddish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	30; Calcite	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	60; 60/40	traces of pyrite.brittle ductile shear zone.	
HFM12	140	- 141	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	2; Fine-grained (<1 mm)	102017; Amphibolite	101058; Granite, metamorphic, aplitic	30; Calcite	11091; X1	32; Potash Feldspar	36; Quartz	10; Biotite	60; 60/40	some grains are strongly ductily deformed. Traces of pyrite. (altered amphibolite mineralogy uncertain). 101058 uncertain. Fine grained, red, leucocratic.	
HFM12	141	- 142	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	200; Dark	50; Greenish	2; Red	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic	102017; Amphibolite	36; Quartz	32; Potash Feldspar	49; Plagioclase	3; Amphibole	11091; X1	70; 70/30	small sample.101058 or pegmatite? Traces of calcite	
HFM12	142	- 143	0;	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	50; Greenish	2; Red	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic	102017; Amphibolite	36; Quartz	32; Potash Feldspar	49; Plagioclase	3; Amphibole	11091; X1	80; 80/20	leucocratic. Calcite.	
HFM12	143	- 144	200; Dark	80; Greyish	2; Red	6; Fine-to medium grained	0;	50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	36; Quartz	32; Potash Feldspar	49; Plagioclase	3; Amphibole	10; Biotite	90; 90/10	leucocratic.	
HFM12	144	- 145	200; Dark	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	102017; Amphibolite	36; Quartz	32; Potash Feldspar	49; Plagioclase	3; Amphibole	10; Biotite	90; 90/10	small sample.X1, traces of calcite.	
HFM12	145	- 146	0;	0;	2; Red	6; Fine-to medium grained	200; Dark	0;	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		36; Quartz	32; Potash Feldspar	49; Plagioclase	10; Biotite	11091; X1	100; 100 %	traces of amphibolite	
HFM12	146	- 147	200; Dark	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	red fracture surfaces.	
HFM12	147	- 148	200; Dark	80; Greyish	4; Brown	6; Fine-to medium grained	200; Dark	50; Greenish	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	11091; X1	60; 60/40	Some grains show brittle-ductile deformation.	
HFM12	148	- 149	200; Dark	80; Greyish	4; Brown	6; Fine-to medium grained	200; Dark	50; Greenish	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	X1.	
HFM12	149	- 150	200; Dark	80; Greyish	4; Brown	6; Fine-to medium grained	200; Dark	50; Greenish	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	11091; X1	90; 90/10	extremely thin quartz veins occur in light red very fine grained 101057. altered amphibolite minerals uncertain partly aphanitic.	
HFM12	150	- 151	200; Dark	80; Greyish	4; Brown	6; Fine-to medium grained	200; Dark	50; Greenish	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	11091; X1	90; 90/11	as above.	
HFM12	151	- 152	100; Light	0;	8; Grey	9; Medium-grained (1-5 mm)	100; Light	0;	8; Grey	9; Medium-grained (1-5 mm)			30; Calcite					100; 100 %	small sample. Traces of 101057 and altered amphibolite.	
HFM12	152	- 153	200; Dark	80; Greyish	4; Brown	9; Medium-grained (1-5 mm)	200; Dark	50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	very small sample (a few grains). Orange coloured sulphide (altered pyrite?)- Calcite	
HFM12	153	- 154	0;	50; Greenish	2; Red	6; Fine-to medium grained	0;	50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	small sample.Calcite, light green grains.	
HFM12	154	- 155	0;	50; Greenish	2; Red	6; Fine-to medium grained	0;	50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	small sample. Calcite. As above.	
HFM12	155	- 156	0;	0;	2; Red	6; Fine-to medium grained	0;	50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	80; 80/20	small sample. As above.	
HFM12	156	- 157	0;	0;	2; Red	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		80; 80/20	very small sample (a few grains). Also light green grains. Mineralogy?	
HFM12	157	- 158	0;	20; Reddish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	5; Green	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	30; Calcite	100; 100 %	small sample.white larger grains of probably feldspar - do not react with hydrochloric acid.	
HFM12	158	- 159	100; Light	0;	4; Brown	2; Fine-grained (<1 mm)	200; Dark	0;	5; Green	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		90; 90/10	small sample. After washing only a few grains left. Rock type proportion uncertain.	
HFM12	159	- 160	100; Light	0;	4; Brown	2; Fine-grained (<1 mm)	200; Dark	50; Greenish	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 %	very small sample.	
HFM12	160	- 161	0;	20; Reddish	4; Brown	6; Fine-to medium grained	200; Dark	20; Reddish	8; Grey	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 %	very small sample.	
HFM12	161	- 162	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	101061; Pegmatite, pegmatitic granite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite		90; 90/10	traces of calcite. Some grains foliated.	
HFM12	162	- 163	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	50; Greenish	2; Red	9; Medium-grained (1-5 mm)	101061; Pegmatite, pegmatitic granite	101057; Granite to granodiorite, metamorphic, medium grained	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	60; 60/40	traces of calcite, violet fluorite	
HFM12	163	- 164	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	50; Greenish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	traces of epidote, calcite.	
HFM12	164	- 165	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	50; Greenish	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 %	quartz, calcite, epidote and red sealed veins (4 types).	

Drill cuttings

Date: 2003-09-29 Sign.: Christin Nordman

			Untreated drill cuttings sample				Washed and sieved drill cuttings sample												
Hole	from	to	Lightn.	Chrom.	Hue	Grainsize	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	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	200; Dark	20; Reddish	5; Green	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 %	calcite,
HFM12	166	167	200; Dark	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	20; Reddish	5; Green	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	11091; X1	100; 100 %	brownish red purer variety and strongly oxidized variety. The latter poor in dark minerals and some grains have elongated quartz. Same rock type?
HFM12	167	168	200; Dark	80; Greyish	4; Brown	9; Medium-grained (1-5 mm)	0;	20; Reddish	5; Green	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	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	0;	20; Reddish	8; Grey	9; Medium-grained (1-5 mm)	0;	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	10; Biotite	3; Amphibole	90; 90/10	aphanitic, strongly banded small brownish grains - mylonite or volcanite? pyrite
HFM12	169	170	0;	20; Reddish	4; Brown	9; Medium-grained (1-5 mm)	0;	20; Reddish	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	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	200; Dark	50; Greenish	8; Grey	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	49; Plagioclase	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	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	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	70; 70/30	amph. Very fine grained to aphanitic, slightly altered amphibolite. Epidote, X1, calcite.
HFM12	173	174	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	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	70; 70/30	as above, but amph. More altered amphibolite altered.
HFM12	174	175	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	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	175	176	0;	80; Greyish	2; Red	6; Fine-to medium grained	0;	0;	2; Red	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. Epidote.
HFM12	176	177	0;	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	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	0;	80; Greyish	2; Red	6; Fine-to medium grained	0;	80; Greyish	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	80; 80/20	fine fraction red - dark material overrepresented in washed sample.amp.almost aphanitic, altered amphibolite altered.Calcite crystals.
HFM12	178	179	0;	80; Greyish	2; Red	6; Fine-to medium grained	200; Dark	80; Greyish	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	fine fraction red - dark material overrepresented in washed sample. Calcite, epidote, some grains strongly foliated/banded.
HFM12	179	180	0;	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	102017; Amphibolite	49; Plagioclase	32; Potash Feldspar	36; Quartz	10; Biotite	3; Amphibole	80; 80/20	calcite,epidote.
HFM12	180	181	0;	80; Greyish	2; Red	6; Fine-to medium grained	0;	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	10; Biotite	30; Calcite	90; 90/10	
HFM12	181	182	0;	0;	2; Red	6; Fine-to medium grained	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	0;	80; Greyish	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	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	3; Amphibole	70; 70/30	epidote, calcite
HFM12	183	184	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	20; Reddish	4; Brown	6; Fine-to medium grained	101058; Granite, metamorphic, aplitic	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		90; 90/10	quite leucocratic with very small biotite.
HFM12	184	185	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	20; Reddish	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	185	186	0;	0;	2; 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	30; Calcite	100; 100 %	traces of calcite.
HFM12	186	187	0;	40; Brownish	2; 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 deformed aphanitic grains (altered amphibolite or just grain reduction -probably the latter).
HFM12	187	188	0;	0;	2; 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	188	189	0;	50; Greenish	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	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	0;	80; Greyish	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	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	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	80; Greyish	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 - seem mylonitic. Altered amphibolite also strongly foliated.
HFM12	191	192	0;	80; Greyish	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	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	11091; X1	90; 90/10	some grains are strongly foliated. Brittle ductile shear zone? Amphibolite is altered.
HFM12	192	193	0;	80; Greyish	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	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?

Drill cuttings

Date: 2003-09-29 Sign.: Christin Nordman

			Untreated drill cuttings sample				Washed and sieved drill cuttings sample												
Hole	from	to	Lightn.	Chrom.	Hue	Grainsize	Lightn.	Chrom.	Hue	Grainsize	Rock type A	Rock type B	Min-1	Min-2	Min-3	Min-4	Min-5	Distr.	Kommentar
HFM12	193	194	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	0;	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	30; Calcite	90; 90/10	some grains are strongly foliated and elongated mineral grains.
HFM12	194	195	0;	80; Greyish	2; Red	6; Fine-to medium grained	100; Light	20; Reddish	8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		100; 100 %	Seems fresh. Traces of altered amphibolite.
HFM12	195	196	0;	0;	2; Red	9; Medium-grained (1-5 mm)	100; Light	20; Reddish	8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		100; 100 %	
HFM12	196	197	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	20; Reddish	8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		100; 100 %	
HFM12	197	198	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	20; Reddish	8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		100; 100 %	
HFM12	198	199	0;	0;	2; Red	9; Medium-grained (1-5 mm)	0;	20; Reddish	8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	30; Calcite	100; 100 %	only traces of calcite.
HFM12	199	200	0;	20; Reddish	4; Brown	6; Fine-to medium grained	0;	80; Greyish	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 %	
HFM12	200	201	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	80; Greyish	2; Red	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	30; Calcite	100; 100 %	only traces of calcite.
HFM12	201	202	0;	0;	2; Red	6; Fine-to medium grained	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	30; Calcite	100; 100 %	only traces of calcite. Traces of brittle-ductile deformation (?).
HFM12	202	203	0;	0;	2; Red	6; Fine-to medium grained	0;	80; Greyish	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 %	
HFM12	203	204	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	20; Reddish	8; Grey	6; Fine-to medium grained	101057; Granite to granodiorite, metamorphic, medium grained		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		100; 100 %	slightly deformed?
HFM12	204	205	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	20; Reddish	8; Grey	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	70; 70/30	Strong deformation - becomes aphanitic and banded. 1cm big calcite crystal.
HFM12	205	206	0;	80; Greyish	2; Red	9; Medium-grained (1-5 mm)	0;	80; Greyish	2; Red	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz	11091; X1	30; Calcite	80; 80/20	
HFM12	206	207	0;	40; Brownish	2; Red	6; Fine-to medium grained	0;	0;	2; Red	8; Medium to coarse grained	101061; Pegmatite, pegmatitic granite	102017; Amphibolite	32; Potash Feldspar	49; Plagioclase	36; Quartz	11091; X1	50; Pyrite	90; 90/10	
HFM12	207	208	0;	80; Greyish	2; Red	6; Fine-to medium grained	0;	0;	2; Red	9; Medium-grained (1-5 mm)	101061; Pegmatite, pegmatitic granite		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite	11091; X1	100; 100 %	traces of altered amphibolite.
HFM12	208	209	0;	0;	2; Red	6; Fine-to medium grained	0;	0;	2; Red	9; Medium-grained (1-5 mm)	101061; Pegmatite, pegmatitic granite		32; Potash Feldspar	49; Plagioclase	36; Quartz	10; Biotite		100; 100 %	traces of altered amphibolite.