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Abstract

Borehole KLX06 was drilled during 2004 and the borehole covers the interval 100–1,000 m.

Rock types, alterations, fractures and other structures were studied using the drill core and BIPS-images and the information was documented in the software Boremap. These data will later be used in further interpretation of the bedrock conditions in the area down to a depth of, approximately 1,000 m.

KLX06 is to 50% dominated by Ävrö granite (501044) often intercalated with 1–30 m thick intervals of granite (501058), fine-grained diorite-gabbro (505102) and the interval 910–945 m is made up of fine-grained granite (511058). KLX06 is lithologically heterogeneous. Principal lithologies were not of much help for the subdivision of the borehole in sections. Alternation between different lithologies is less common in the intervals 100–365 m and 590–965 m and more common in the interval 365–590 m. Lithologies, oxidation intensities, foliation, fracture intensities, alterations other than oxidation and mineralogy were used to subdivide KLX06 in the following six sections: section I (100–200 m), section II (200–365 m), section III (365–420 m), section IV (420–590 m), section V (590–845 m) and section VI (845–965 m).

The most outstanding feature in KLX06 is a broad maximum in the frequency of open fractures (interpreted) in the interval 300–420 m. The section is, except for the high frequency of open fractures (interpreted) in the interval 370–400 m characterized by sealed fracture network, strong foliation, high joint alteration numbers, clay alteration and laumontite alteration. The Ävrö granite (501044) is strongly laumontite altered in the interval 388–397 m.

Fracture minerals such as cm-sized pyrite grains/masses, chalcopyrite, fluorite and muscovite as well as quartz veins surrounded by sericite and saussurite alteration only occur below 400 m. These altered sections are probably identical with the "greisen veins" /2/ related to the 1,351 Ma Götemar granite /1/.

Sammanfattning

Borrhål KLX06 borrades under 2004 och borrhålet utgörs av en cirka 900 m lång kärna, 100–1 000 m djup.

Bergarter, omvandlingar, sprickor och andra strukturer karterades med borrkärna och BIPS-bild som underlag. Datalagringen gjordes i programmet Boremap. Dessa data kommer att användas som underlag i kommande tolkningar och modellering av bergmassan i området ner till 1 000 m djup.

KLX06 utgörs till cirka 50 % av Ävrögranit (501044) som oftast är växellagrad med finkornigare varianter av granit (501058) och finkornig diorit-gabbro (505102). På 910 m djup utgörs kärnan av ett 35 m mäktig finkornig granit (511058). De snabba förändringarna i bergartsammansättning gör litologin heterogen i KLX06, dock är vissa partier mer homogena, såsom 100–365 m och 590–965 m. Utifrån litologi, oxidation, foliation, sprickfrekvens och annan omvandling har KLX06 blivit indelad följande sex sektioner: I (100–200 m), II (200–365 m), III (365–420 m), IV (420–590 m), V (590–845 m) och VI (845–965 m).

Det tydligaste kännetecknet i KLX06 är en sektion vilken definieras av en utsträckt topp av öppna sprickor (tolkade) (se Appendix 1) i djupintervallet 300–420 m. Sektionen är även karakteriserad av ”läkt spricknätverk”, stark foliation, höga omvandlingstal (alteration number) på sprickytorna, omvandlingar till både lera och laumontit. Ävrögraniten (501044) i intervallet 388–397 m är starkt laumontitomvandlad.

Sprickmineral som cm-stora pyritkorn, kopparkis, flusspat och muskovit, men också kvartsådror som omges av omvandlingar av typerna sericit och saussurit förekommer endast nedanför 400 m borrhålslängd. Dessa omvandlingar är förmodligen identiska med ”greisen veins” /2/ och relaterade med Götemar-granitens intrusion, för 1 351 Ma /1/.

Contents

1 Introduction

This document reports the data gained by Boremap mapping of the borehole within the Laxemar investigation area, which is one of the activities performed within the site investigations at Oskarshamn. The work was carried out in accordance with activity plan AP PS 400-04-125. In Table 1-1 controlling documents for performing this activity are listed. Both activity plan and method descriptions are SKB's internal controlling documents.

Since 2002, SKB investigates two potential sites for a deep deposition of nuclear waste in the Swedish Precambrian basement at approximately 500 m depth. These places are Forsmark in northern Uppland and Oskarshamn in eastern Småland. In order to make a preliminary evaluation of the rock mass down to a depth of about 1 km at these sites, SKB has initiated a drilling program using core drilled boreholes.

The borehole KLX06 was drilled in 2004 and the borehole is situated within the Laxemar area (Figure 1-1). KLX06 is telescopic, which means that the uppermost 100 m was drilled by percussion drilling followed by core drilling (100–1,000 m). Therefore no drill core exists for the uppermost 100 m.

Detailed mapping of the drill core is essential for a three dimensional understanding of the geology at depth. The mapping is based on the use of so called BIPS-images of the borehole wall and by the study of the drill core itself. The BIPS-images enables the study of orientations, since the Boremap software calculates strike and dip of planar structures such as foliations, rock contacts and fractures. Also the fracture apertures in the rock can be estimated.

Table 1-1. Controlling documents for the performance of the activity.

Activity plan	Number	Version
Boremapkartering av KLX06	AP PS 400-04-125	1.0
Method descriptions	**Number**	**Version**
Nomenklatur vid Boremapkartering	PM internal document	2004-02-05
Method Description for Boremap mapping	SKB MD 143.006	1.0

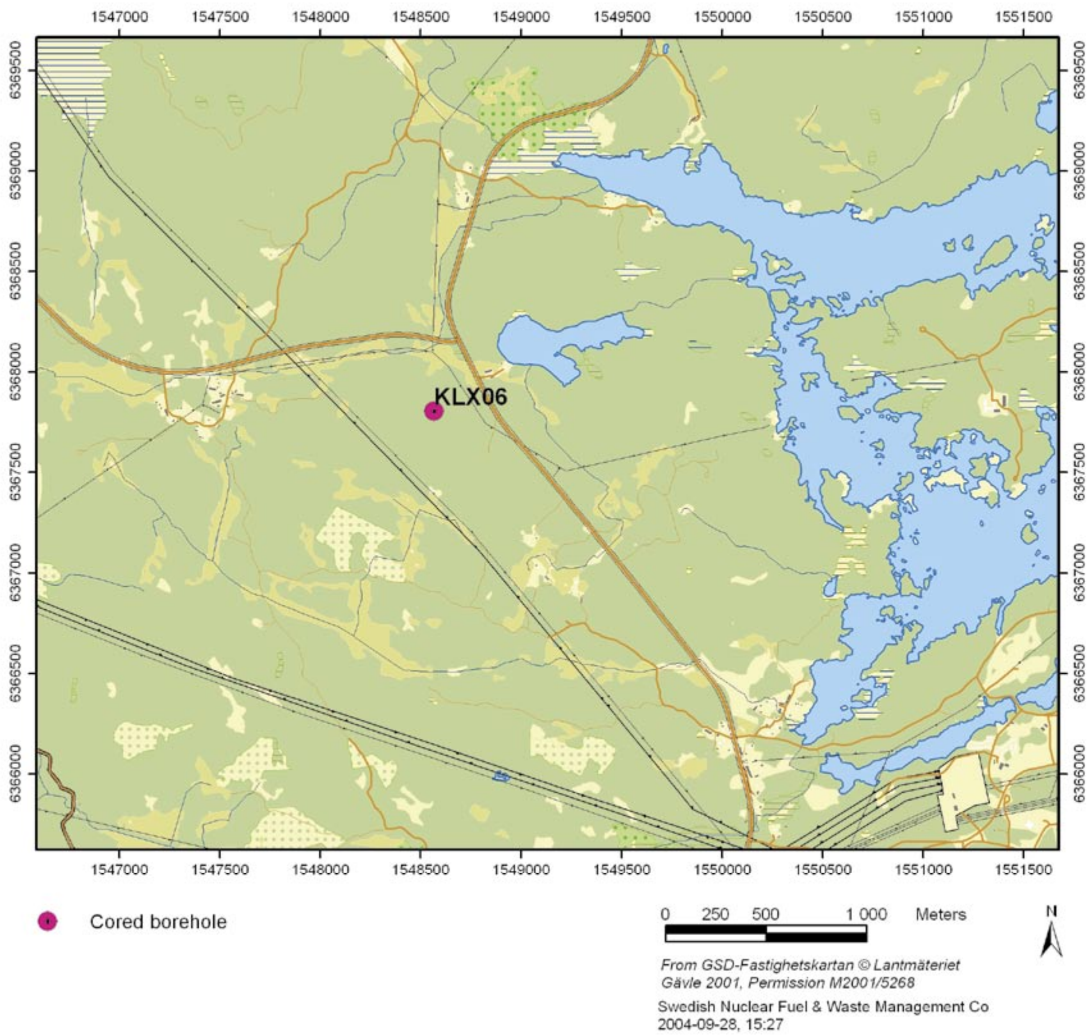


Figure 1-1. *Location of the core drilled borehole KLX06.*

2 Objective and scope

The principal aim of the mapping activities presented in this report is to obtain a detailed documentation of geological structures and lithologies intersected by the borehole KLX06. Geological structures will be correctly orientated in space along the borehole. The results will serve as a platform for forthcoming investigations of the drill core, as well as various site descriptive modelling.

3 Equipment

3.1 Description of software

The mapping was performed in Boremap v. 3.5, with bedrock and mineral standards of SKB. The final data presentation was made using StereoNet, WellCad v. 4, and BIPS Image Print.

Boremap is the software that unite orthodox core mapping with modern video mapping. The software deals with the mapping data as well as the internal communication between programs. Boremap shows the video image from BIPS (Borehole Image Processing System) and extracts the geometrical parameters: length, width, strike and dip from the image.

3.2 Other equipment

The following equipment was used to facilitate the core mapping: folding rule and pen, hydrochloric acid, knife, water-filled atomizer and hand lens.

3.3 BIPS-image video film sequences

The BIPS video film of KLX06 covers the interval 101.512–965.521 m.

3.4 BIPS-image video film quality

The main reasons why thinner fractures are visible or not in the BIPS-image are image resolution, image contrast and image quality.

3.4.1 BIPS-image resolution

The BIPS-image resolution is perhaps the principal reason why very thin fractures as well as very thin apertures are not visible in the BIPS-image. The theoretical resolution depends on the BIPS video camera pixel size and illumination angle. In this case one pixel represents 0.66 mm × 1.0 mm (width × length).

3.4.2 BIPS-image contrast

Thick fractures are always visible in both drill core and the BIPS-image. However, the visibility of thin fractures depends strongly on the colour contrast between the fracture and the wall rock.

A light fracture in a dark rock is clearly visible in the BIPS-image. A light fracture in a light rock might, however, be clearly visible in the drill core but not visible in the BIPS-image, especially if the fracture and wall rock have the same colour. The opposite is true for dark fractures.

In the rare case when the BIPS-image contrast between a very thin fracture and the wall rock is very strong, the fracture might be visible in the BIPS-image even if it is not visible in the drill core. Such fractures were given the mineral code X9 in first mineral fill.

3.4.3 BIPS-image quality

The BIPS-image quality is sometimes limited by disturbances such as:

1) blackish coatings probably related to the drilling equipment,
2) vertical bleached bands from the clayey mixture of drill cuttings and water,
3) light and dark bands at right angle to the drill hole related to the automatic aperture of the video camera,
4) vertical enlargements of pixels due to stick-slip movement of the camera probe.

Problems related to the video camera aperture and the enlargement of pixels are can be neglected in KLX06.

The main disturbances for the BIPS-image quality in KLX06 are vertical bleached bands but also blackish coatings.

The image quality is classified into four classes; good, acceptable, bad and very bad. With good quality means a more or less clear, easy to interpret the image. With acceptable quality means that the image is not really good, but that the mapping can be performed without problems. An image with bad quality is somewhat difficult to interpret and an image with very bad quality cannot be interpreted and only very obvious and outstanding features can be mapped. It should be remembered that even if only 10–20% of the image is visible this is often enough for an acceptable interpretation. When the BIPS-image quality is so bad that fractures and structures can not be identified in the BIPS-image, they can still be oriented using the *guide-line method* (chapter 4.3.3). Better cleaning of the borehole could increase the mapping quality drastically.

The BIPS-image quality in KLX06 is presented in Table 3-1.

Table 3-1. BIPS-image quality.

Sec Up (m)	Sec Low (m)	Interval (m)	Quality
101	136	35	Good
136	179	33	Acceptable
179	190	11	Good
190	205	15	Acceptable
205	226	21	Good
226	242	16	Acceptable
242	303	61	Good
303	660	357	Acceptable
660	965	305	Bad-Very Bad

4 Execution

4.1 General

The Boremap-mapping of the telescopic drilled borehole KLX06 was performed and documented according to activity plan AP PS 400-04-125 (SKB, internal document) referring to the Method Description for Boremap mapping (SKB MD 143.006, v. 1.0, SKB, internal controlling document).

The first 100 m of KLX06 was drilled by percussion drilling and therefore no drill core was received. The core to borehole KLX06 covers the interval 101.29–999.94 m.

The whole drill core was displayed on inclined roller tables in its entire length and mapped with the Boremap system at the Simpevarp core mapping facility. The core mapping was carried out without any detailed geological knowledge of the area but with access to reference rock samples and geophysical logs.

The mapping was performed by Jan Ehrenborg (Mírab) and Peter Dahlin (GEOSIGMA).

4.2 Preparations

Any depth registered in the BIPS-image deviates from the true depth in the borehole, a deviation which increases with depth. This problem was eliminated by adjusting the depth according to reference slots cut into the borehole every fiftieth meter (Appendix 8). The level for each slot was measured in the BIPS-images and then adjusted to the correct level using the correct depth value from the SICADA database.

All observations were adjusted to true space. Data necessary for this adjustment were borehole diameter and borehole orientation; both collected from SICADA database (Appendices 6 and 7).

4.3 Execution of measurements

Concepts used during the mapping the core, are defined in this chapter.

4.3.1 Fracture definitions

Definition of different fracture types, also crush and sealed fracture network, are found in a PM “Nomenklatur vid Boremapkartering” (internal SKB document). Apertures for broken fractures have been mapped in accordance with the definitions in this PM.

In the mapping phase, fractures that split the core are mapped as BROKEN and fractures that have not parted the core are mapped as UNBROKEN. All fractures are described with their fracture minerals and other characteristics, such as width, aperture and roughness. Visible apertures are measured down to 1 mm in the BIPS-image. Smaller apertures, which are impossible to measure in the BIPS-image, are denoted a value of 0.5 mm. Core pieces with bad fit are characterized as "probable aperture" and fractures with a dull or altered surface as "possible aperture".

All fractures that possess apertures > 0 mm, are in SICADA database interpreted as OPEN. Only few BROKEN fractures are given the aperture = 0 mm. UNBROKEN fractures usually have apertures = 0 mm. If UNBROKEN fractures possess apertures > 0 mm, they are interpreted as partly open and included in the OPEN-category. OPEN and SEALED fractures are finally frequency calculated and shown in (Appendices 1 and 5).

4.3.2 Fracture alteration and joint alteration number

The joint alteration number is principally related to the thickness of, and the clay content in, a fracture. Thicker fractures rich in clay minerals therefore get joint alteration numbers 2–3. The majority of fractures in KLX06, however, are very thin to extremely thin and seldom contain clay minerals and therefore receive a joint alteration numbers between 1 and 2.

A subdivision of fractures with joint alteration numbers between 1 and 2 was introduced to facilitate both the evaluation process for fracture alterations and the possibility to compare the alterations between different fractures in the boreholes. The subdivision is based on fracture mineralogy and was as follows:

a) fracture wall alterations,

b) fracture mineral fillings assumed to have been deposited from circulating water-rich solutions,

c) fracture mineral fillings most likely resulting from altered wall rock material.

Joint alteration number equal to 1

Fractures with or without wall rock alteration, e.g. oxidation or epidotization, and without mineral fillings were considered as fresh. The joint alteration number is thus set to 1.

The minerals calcite, quartz, fluorite, zeolites, such as laumontite, and sulphides are regarded as deposited by circulating water-rich solutions in broken fractures and not as true fracture alteration minerals. The joint alteration number is thus set to 1 also for these minerals.

Joint alteration number equal to 1.5

Minerals as epidote, prehnite, hematite, chlorite and/or clay minerals is regarded as fracture minerals most likely resulting from altered wall rock material. A weak alteration is thus assumed and the joint alteration number was set to 1.5. Extra considerations have been given to clay minerals since the occurrence of these minerals often resulted in a higher joint alteration number.

Joint alteration numbers higher than 1.5

When the mineral fillings is thicker and contain a few mm thick bands of clay minerals, often together with minerals like epidote and chlorite, the joint alteration number is set to 2. In rare cases, when a fracture contains 5–10 mm thick clayey bands, together with chlorite, the joint alteration number is set to 3.

When the alteration of a fracture is too thick (and/or intense) to give the fracture the joint alteration number 1.5 and too thin and/or weak to give it a 2, 1.7 and 1.8 were used.

4.3.3 Mapping of fractures not visible in the BIPS-image

Not all fractures are visible in the BIPS-images, and these fractures are orientated by using the *guide-line method*, based on the following data:

- Absolute depth.
- Amplitude (measured along the drill core). The amplitude is the interval along a drill core which is cut by a fracture, i.e. from upper to lower extremes of a fracture along the drill core.
- The relation between the orientations of the fracture trace, measured on the drill core and a well defined structure visible in the BIPS-image.

The error of orientating fractures using the *guide-line method* is not known but experience and an estimation using stereographic plots indicated that the error is most likely insignificant. Anyhow, the *guide-line method* is so far considered better than only marking fractures that are non-visible in the BIPS-images as planes perpendicular to the borehole. The fractures in question are mapped as "non-visible in BIPS" and can therefore be separated from fractures visible in BIPS which probably have a more accurate orientation.

When using the *guide-line method* the difference between the 50 mm drill core diameter and the 76 mm borehole diameter must be considered. This difference result in displacements of the structures seen in the drill core compared with the structures seen in the BIPS-image which represents the borehole walls. This displacement is zero for structures that cut the drill core at right angle and successively becomes larger as the orientation of the structure approximates the direction of the drill core axis. This displacement always has to be corrected for, since displacements of a few cm are common even if they seldom reach 10 cm.

Orientation of fractures and other structures with the *guide-line method* is done in the following way: The first step in the guide-line method is to correct the amplitude of the fracture trace in the BIPS-image to the higher amplitude value. The second step is the correction of strike and dip. This is done by rotating the fracture trace in the BIPS-image relative to a feature with known orientation. The fracture is then located at the correct depth according to the depth measured on the drill core.

The *guide-line method* can be used to orientate any fracture/structure that is not visible or visible in the BIPS-image. It is also a valuable tool to control that the personnel working with the drill core is observing the same fracture/structure as the personnel delineating the fracture trace in the BIPS-image, especially in intervals rich in fractures.

4.3.4 Definition of veins and dikes

Veins and dykes are differentiated by their respectively width. Veins are set to 0–20 cm wide and dykes are set to 20–100 cm wide. Since the maximum width of *rock occurrence* is 100 cm wider dykes are mapped under the feature *rock type*.

4.3.5 Mineral codes

In the case where properties and/or minerals are not represented in the mineral list, following mineral codes have been used:

X5 whitish, bleached feldspar.

X6 the drill core is broken at right angle to the drill core and the broken surfaces have a polished appearance. This is believed to indicate that a sealed fracture broke up during drilling and where the two drill core parts have rotated against each other wearing away the mineral fill.

X7 broken fracture with a fresh appearance and no mineral fill.

X8 fractures with epidotized walls.

X9 sealed fractures visible in the BIPS-image but not in the drill core.

4.4 Data handling

The mapping is performed on-line on the SKB network, in order to obtain the best possible data security. Before every break (> 15 minutes) a back-up is saved on the local disk.

The mapping is quality checked by a routine in Boremap before it is exported to and archived in SICADA database. Personnel from SKB also perform spot test controls and regular quality revisions.

All primary data is stored in SKB's database SICADA. Only these data are to be used for further interpretation and modelling.

4.5 Geological Summary table, general description

The Geological Summary table (Appendix 1) is an overview of the geological parameters mapped with the Boremap system. It also facilitates comparisons between Boremap information collected from different boreholes and is more objective than a pure descriptive borehole summary.

The Geological Summary table is the result of cooperation between Jan Ehrenborg from the mapping personnel at Simpevarp core mapping facility and Pär Kinnbom from PO (site investigation, Oskarshamn). The aim was to make a standard form in handy A4-size, where all information is taken directly from the SICADA database by using simple and well defined search paths for each geological parameter (Appendix 2).

The search paths are, however, yet not automatic and the geological information therefore has to be extracted from the SICADA database before it is reworked on separate Excel-files and finally presented in the Geological Summary table. At the moment it is only possible to extract the Rock Type and Alteration parameters directly from the SICADA database.

The main reason why the information in the SICADA database cannot be extracted automatically is the lack of a mathematical formula for calculation of frequencies for different parameters. Such a formula will be added.

The Geological Summary table is made up of 23 columns, each one representing a specific geological parameter. The geological parameters are presented as either intervals or frequencies. Intervals are calculated for parameters with a width ≥ 1 m and frequencies for parameters with a width < 1 m. Frequency information is treated as if it does not have any extension along the borehole axis. They are treated as point observations. It should be noted that parameters with a thickness of only 1 mm therefore has the same "value" as a similar parameter with a thickness of 999 mm since both are treated as point observations and used for frequency calculations.

Parameters are sometimes related in such a way that the mapping of one parameter cause a decrease in the frequency of another parameter. This type of intimate relationship between parameters has been noted for the following cases;

- There is a decrease in the frequency of *unbroken fractures* with oxidized walls and without mineral fillings in intervals mapped with *Alteration-oxidation*.
- No *unbroken fractures* are mapped in intervals of *sealed fracture network*.
- No *broken fractures* are mapped in intervals with *crush*.
- Composite dykes generally include a large amount of fine- to medium-grained granite veins. These veins are not mapped and the frequency presented for veins + dykes in column 6 (Appendix 1) are lower than the true frequency in composite dyke intervals.

4.5.1 Columns in the Geological Summary table

The Geological Summary table includes the following 23 columns:

Column 1: *Rock Type / Lithology*, interval column. Only lithologies longer than 1 m are presented here. Shorter lithologies are presented in column 6. This column is identical with the ordinary WellCad presentation.

Column 2: *Rock Type / Grain size*, interval column. Interval limits follows column 1. This column is identical with the ordinary WellCad presentation.

Column 3: *Rock Type / Texture*, interval column. Interval limits follows column 1. This column is identical with the ordinary WellCad presentation.

Column 4: *Alteration / Oxidation*, interval column. No frequency column is presented for alteration/oxidation. The alteration/oxidation column is identical with the ordinary WellCad presentation.

Column 5: *Alteration / Intensity*, interval column. This column is identical with the ordinary WellCad presentation.

Column 6: *Rock Occurrence / Veins + Dykes < 1 m wide*, frequency column. This rock type column can be seen as the frequency complement to the rock type/lithology interval column. Only rock type sections that are thinner than 1 m can be described as rock occurrences in Boremap. Thicker rock type sections are mapped as rock type.

Column 7: *Structure / Shear Zone < 1 m wide*, frequency column. This column includes ductile shear structures as well as brittle-ductile shear structures and these are mapped as rock occurrences in Boremap. Ductile sections in mm-cm scale are mapped as shear structures and in dm-m scale as sections with foliation.

Column 8: *Structure / Brecciated < 1 m wide*, frequency column. Breccias < 1 m wide are mapped as rock occurrence in Boremap. Very thin micro breccias along sealed/natural fracture planes are generally not considered.

Column 9: *Structure / Brecciated ≥ 1 m wide*, interval column. Breccias > 1 m wide are mapped as rock type/structure in Boremap.

Column 10: *Structure / Mylonite < 1 m wide*, frequency column. Mylonites < 1 m wide are mapped as rock occurrence/structure in Boremap.

Column 11: S*tructure / Mylonite ≥ 1 m wide* is an interval column. Mylonites > 1 m wide are mapped as rock type/structure in Boremap.

Column 12: *Structure / Foliation < 1 m wide* is a frequency column. Sections with foliation < 1 m wide are mapped as rock occurrence/structure in Boremap. Very thin sections with foliation are called ductile shear structures and presented in column 7.

Column 13: *Structure / Foliation ≥ 1 m wide* is an interval column. Sections with foliation > 1 m wide are mapped as rock type/structure in Boremap.

Column 14: *Sealed fractures / All*, frequency column. This column includes all fractures mapped as unbroken in the Boremap system and this includes unbroken fractures where the drill core is not broken as well as unbroken fractures interpreted to have broken up artificially during/after drilling.

Column 15: *Sealed fractures / Broken fractures with aperture = 0*, frequency column. This column includes unbroken fractures interpreted to have broken up artificially during/after drilling.

Column 16: *Sealed fractures / Sealed Fracture Network < 1 m wide*, frequency column. The sealed fracture network parameter is the only parameter that is generally evaluated directly from observations of the drill core. These types of sealed fractures can only in rare cases be observed in the BIPS-image.

Column 17: *Sealed fractures / Sealed Fracture Network ≥ 1 m wide*, interval column.

Column 18: *Open fractures / All Apertures > 0*, frequency column. This column includes all broken fractures, both fractures that with certainty were open before drilling and fractures that probably or possibly were open before drilling.

Column 19: *Open fractures / Uncertain, Aperture = 0.5 probable + 0.5 possible*, frequency column. This column includes fractures that probably or possibly open before drilling.

Column 20: *Open fractures / Certain Aperture = 0.5 certain and > 0.5*, frequency column. This column includes fractures that with certainty were open before drilling.

Column 21: *Open fractures / Joint alteration > 1.5*, frequency column. This column show fractures with stronger joint alteration than normal. This parameter is generally correlated with the location of lithologies with a more weathered appearance.

Column 22: *Open fractures / Crush < 1 m wide*, frequency column. This column includes shorter sections with crush.

Column 23: *Open fractures / Crush ≥ 1 m wide*, interval column. This column includes longer sections with crush.

5 Results

The result of the Boremap mapping of KLX06 is principally found in the appendices. The information in from Boremap database has been compressed to the size of an A4-sheet in the Geological Summary table, Appendix 1. The search paths for the Geological Summary table are presented in Appendix 2. Stereographic diagrams of the orientation of open fractures are presented in Appendix 3. The BIPS-images of KLX06 are shown in Appendix 4 and the corresponding WellCad diagrams in Appendix 5. In-data, like borehole length, diameter, deviation data and length calibration are presented in Appendices 6, 7 and 8.

5.1 Geological Summary table, KLX06

All length information in this chapter is taken from the Geological Summary table (Appendix 1) and therefore it may have an error of 5–10 m.

The Geological Summary table for KLX06 is presented in Appendix 1.

Rock types mapped in KLX06 are shown in Table 5-1.

KLX06 is to 50% dominated by Ävrö granite (501044) often intercalated with granite (501058) and fine-grained diorite-gabbro (5051029), ranging from 1 to 30 m wide. Fine-grained granite (511058) occurs in the interval 910–945 m.

The Ävrö granite (501044) clearly dominates in the interval 100–320 m, and it is frequently intercalated with different rock types in the interval 320–965 m. The most rapid alternations between rock types occur in the intervals 320–590 m and 844–965 m.

Oxidation begins at 150 m depth and continues all through KLX06 with frequent changes in intensity. The interval 200–395 m shows the strongest oxidation, followed by less intense oxidation in the depth 650–750 m. Intervals 150–200 m, 395–650 m and 750–965 m shows faint (and weak) oxidation and between 475 and 525 m the core almost lack oxidation.

Veins and dykes are common throughout KLX06 and show a frequency increase from 400 m. This increase continues from 400 m to the end of KLX06.

Shear structures occur all through KLX06. No breccias were found below 725 m, and almost all breccias occur within depth 150–600 m where they are evenly distributed. Out of 45 registered thin breccias, 20 occur in the interval 300–420 m. No breccias > 1 m wide were found in KLX06.

Table 5-1. Rock types in KLX06.

%	Rock Type
57.8	501044 Ävrö granite
18.8	501058 Granite
18.7	505102 Fine-grained diorite-gabbro
4.6	511058 Fine-grained granite

Mylonites are few and thin. Out of 14 thin mylonites three are part of the interval with strongest deformation within the fractured section (370–420 m) and seven thin mylonites occurred in the 2–3 m thin weakness zone at 625 m depth.

Foliation is common in the intervals 110–210 m, 340–450 m and 540–760 m and no foliation structures were found in the intervals 210–340 m and 450–540 m. Foliation structure frequencies are very low in the interval 760–965 m.

A broad maximum for sealed fractures (interpreted) can be seen in the interval 250–420 m with a peak at 340 m and a narrower maximum 150–180 m with a peak at 160 m.

Sealed fracture network occur all through KLX06 and are rather homogeneously distributed. Several rather long sections occur from 200 m to 435 m with the longest one stretching from 350 m to 400 m.

Open fractures (interpreted) show low frequencies in the intervals 100–200 m and 450–965 m. The interval 210–420 m is a broad frequency maximum with a smaller peak between 210–275 m and broader and stronger peak in the interval 300–450 m.

High joint alteration numbers are concentrated to the interval 370–410 m.

Crush zones are rather frequent between 150–420 m.

There is a strong uncertainty whether broken fractures were open before or during/after drilling. This is shown by columns 19 (Open fractures interpreted, uncertain) and 20 (Open fractures interpreted, certain). The reason for the uncertainty is that the core has a tendency to break up along existing sealed fractures. This problem is probably related to the geology and handling of the drill core and not a general problem for the Boremap mapping system.

The core has been divided into six sections based on the occurrence of different rock type, alteration intensities, foliation zones and mineralogies.

Section I (100–200 m): is dominated by Ävrö granite (501044) and 1/3 is made up of fine-grained diorite-gabbro (505102). The oxidation intensity is low, and the upper part of section I shows no oxidation while thin bands of faint oxidation occur in the lower part. Vein frequencies are low. The section is rather homogeneous with few structures (shear zones, breccias and mylonites) except for various thin foliations. Sealed fractures (interpreted) show rather high frequencies while only one sealed fracture network wider than 1 m occur in the section and open fractures (interpreted) show low frequencies. Thin crush zones occur in the lower part of section I.

Section II (200–365 m): is lithologically homogeneous and made up of Ävrö granite (501044) and a 30 m wide interval of granite (501058). The section has the strongest oxidation in KLX06 and shows low vein frequencies and low foliation frequencies. However, other structures and different fracture types show the highest frequencies in KLX06. Such high frequencies are found for shear zones, breccias, sealed fractures (interpreted), open fractures (interpreted), high joint alteration numbers and crush.

Section III (365–420 m): is made up of a sequence of rapidly alternating 1–10 m thick sections of Ävrö granite (501044), granite (501058) and fine-grained diorite-gabbro (505102). The rather strong oxidation intensity in section II continues in section III. Structures have the same intensity as in section II except for foliation which shows the highest frequencies in KLX06 with, for example, strong foliation in the interval 370–385 m. Sealed fracture (interpreted) frequencies are as high as in sections I and II and almost all of section III is covered with a sealed fracture network. Section III has the highest frequencies of open fractures (interpreted) in KLX06 and the highest frequencies of high joint alteration numbers.

Section IV (420–590 m): is lithologically very heterogeneous and made up of 1–30 m thick intervals of Ävrö granite (501044), granite (501058) and fine-grained diorite-gabbro (505102). Frequencies of different structures are very low in section IV except for foliations that show a steady increase with depth all through KLX06 from 365 m (beginning of section II). The frequencies for open fractures (interpreted), high joint alteration numbers and crush zones are low from 420 m. These low frequency levels are maintained downwards all through KLX06 and the structural disturbance mapped in sections II and III can not be traced below 420 m.

Section V (590–845 m): is lithologically more homogeneous than section IV and is made up of broader sections of Ävrö granite (502044) intercalated with few 1–20 m thick bands of fine-grained diorite-gabbro (505102). Section V shows the same frequencies as section IV with respect to oxidation intensity, structures, sealed fractures (interpreted) and open fractures (interpreted). The frequency and length of foliation zones are, however, higher in section V than in section IV. In the interval 620–625 m seven thin mylonites makes up a minor plastic deformation zone.

Section VI (845–965 m): is lithologically very heterogeneous and made up of 1–35 m thick intervals of Ävrö granite (501044), granite (501058), fine-grained granite (511058) and fine-grained diorite-gabbro (505102). This is the only thicker occurrence of fine-grained granite (511058) in KLX06. The low frequencies of structures, sealed fractures (interpreted) and open fractures (interpreted) in section V continue in section VI.

5.2 Orientation of broken fractures

Broken fractures are presented in stereograms for each 100 m interval in KLX06 (see Appendix 3). The stereographic information is from plane to pole plot data. Fracture orientation values are strike/dip values using the right hand rule.

The orientation for borehole KLX06 at ground level is 329°/-65°.

Broken fractures not visible in the BIPS-image were oriented according to the *guide-line method* (see chapter 4.3.3), thus not drawn as lines at right angle to the drill core in BIPS.

There is a general strong overrepresentation of broken fractures cutting the borehole at high angles compared to fractures cutting the borehole at low angles. This results in artificially high anomaly values for fractures cutting the borehole at high angles and in semi circular distortion of anomaly shapes in the stereographic plots. These effects are stronger the longer the plotted depth interval. It is therefore not recommended to plot intervals longer than 100 m in the same stereogram.

A sub horizontal fracture set (2–6° and 17° dip) show strong variation in strike and it occurs in the interval 0–900 m and shows a general strike in NW and NE. It is the strongest fracture set in the interval 0–400 m from where it gradually diminishes to 900 m where it seems to disappear.

Another dominating fracture set with steep dips (70–85°) strike W-WNW. This fracture set show strong anomalies from 0 m to 900 m depth.

An ENE-WSW fracture set occurs in the interval 200–500 m. It is missing in the interval 500–600 m and show an E-W strike when it turns up again in the interval 600–965 m (the BIPS-image ends at 965 m). The dip of this fracture set increases continuously from 17° in the interval 200–300 m to 32° in the interval 400–500 m and from 37° in the interval 600–700 m to 50° in the interval 900–965 m.

There is a fourth fracture set with steep dip (65–82°) and a strike of NE-SW (rarely NNE-SSW). It occurs in the interval 400–965 m as weaker anomalies than the above mentioned fracture sets except for the interval 700–900 m where this fracture set shows strong anomalies.

The anomaly picture for broken fractures in KLX06 is rather simple. The sub horizontal (2–6° and 17° dip) and the W-WNW (70–85° dip) fracture sets clearly dominate from the surface to 600 m and the W-WNW (70–85° dip) fracture set together with the E-W (37–50° dip) dominate from 600 m to 965 m.

5.3 Fracture mineralogies

Percentages of sealed fractures minerals are shown in Table 5-2 and percentages of open fractures minerals are shown in Table 5-3.

The total amount of open fractures is 1,037 (average: 1.154 open fractures/m). 2/3 of all fracture minerals detected in open fractures are chlorite, calcite and quartz. Minerals that constitute less than 1%: unknown mineral, X5, red feldspar, white feldspar, chalcopyrite, prehnite, sericite, zeolite, biotite and tourmaline.

The total amount of sealed fracture is 4,184, (average: 4.655 sealed fractures/m). Three different minerals dominate open fractures in KLX06; chlorite, calcite and clay mineral, and with pyrite and hematite 8/10 of the minerals are covered.

Minerals that constitute less than 1%: muscovite, X8 (epidotized walls), chalcopyrite, sericite, tourmaline and zeolite.

Table 5-2. Percentages of fracture minerals in sealed fractures, KLX06.

%	Mineral
23.8	Chlorite
19.8	Calcite
16.9	Quartz
11.9	Oxidized Walls
4.8	Pyrite
4.6	Hematite
4.3	Clay Minerals
3.3	Epidote
1.8	Muscovite
1.6	Adularia
1.5	X7 (no visible mineral fill and fresh fracture surfaces)
1.4	Fluorite
1.2	X8 (epidotized walls)
1.2	Laumontite

Table 5-3. Percentages of mineral fillings in open fractures in KLX06.

%	Mineral
30.7	Chlorite
24.5	Calcite
13.8	Clay Minerals
8.0	Pyrite
6.1	Hematite
2.7	Quartz
2.1	X7 (no visible mineral fill and fresh fracture surfaces)
1.9	Laumontite
1.9	Adularia
1.7	Unknown Mineral
1.7	Oxidized Walls
1.4	Fluorite
1.0	Epidote

6 Discussion

The broad frequency maximum for open fractures (interpreted) in the interval 210–420 m includes a weaker and shorter peak at 210–275 m and a stronger and higher peak at 300–420 m.

The Boremap mapping show strong differences in many geological parameters above, within and below the fractured section between 300–420 m. The sealed fracture network in the interval 330–435 m and especially in the interval 350–400 m, the strong foliation in the interval 370–385, the high frequency of high joint alteration numbers in the interval 385–400 m, the clay alteration in the interval 385–395 and the laumontite alteration in the interval 388–397 (–410) m are parameters that show strong spatial relation with the fractured section.

Geological parameters found above, and within, the fractured section between 300–420 m are strong oxidation in the interval 200–395 m and laumontite as fracture mineral fill in the interval 200–420 m. Geological parameters found below the fractured section between 300–420 m are large and common masses/crystals of pyrite in the interval 410–600 m, fluorite in the interval 400–965 m and muscovite in the interval 410–965 m. Quartz veins surrounded by a few centimetres of sericitization and saussuritization in the interval 540–965 m are probably identical with "greisen veins" /2, 3, 4/. It is also noteworthy that almost all intervals with granite (501058) occur below the fractured section between 300–420 m and the vein and dyke frequency is higher below.

Veins and dykes below 420 m frequently contain fluorite, muscovite and large masses/crystals of pyrite (occasionally with chalcopyrite). This kind of mineralogy is likely to be deposited from hydrothermal solutions related to a local granite intrusion. The veins and dykes of granite and pegmatite where the mentioned minerals occur are believed to be related to that granite.

It is also noticeable that a WNW-W and a subhorizontal open fracture set (interpreted) dominate KLX06 down to 400 m. From 400 m to the end of KLX06 the dominating fracture sets are WNW-W and NE (-NNE). The subhorizontal fracture set can be traced at least to 700 m depth.

7 Refereneces

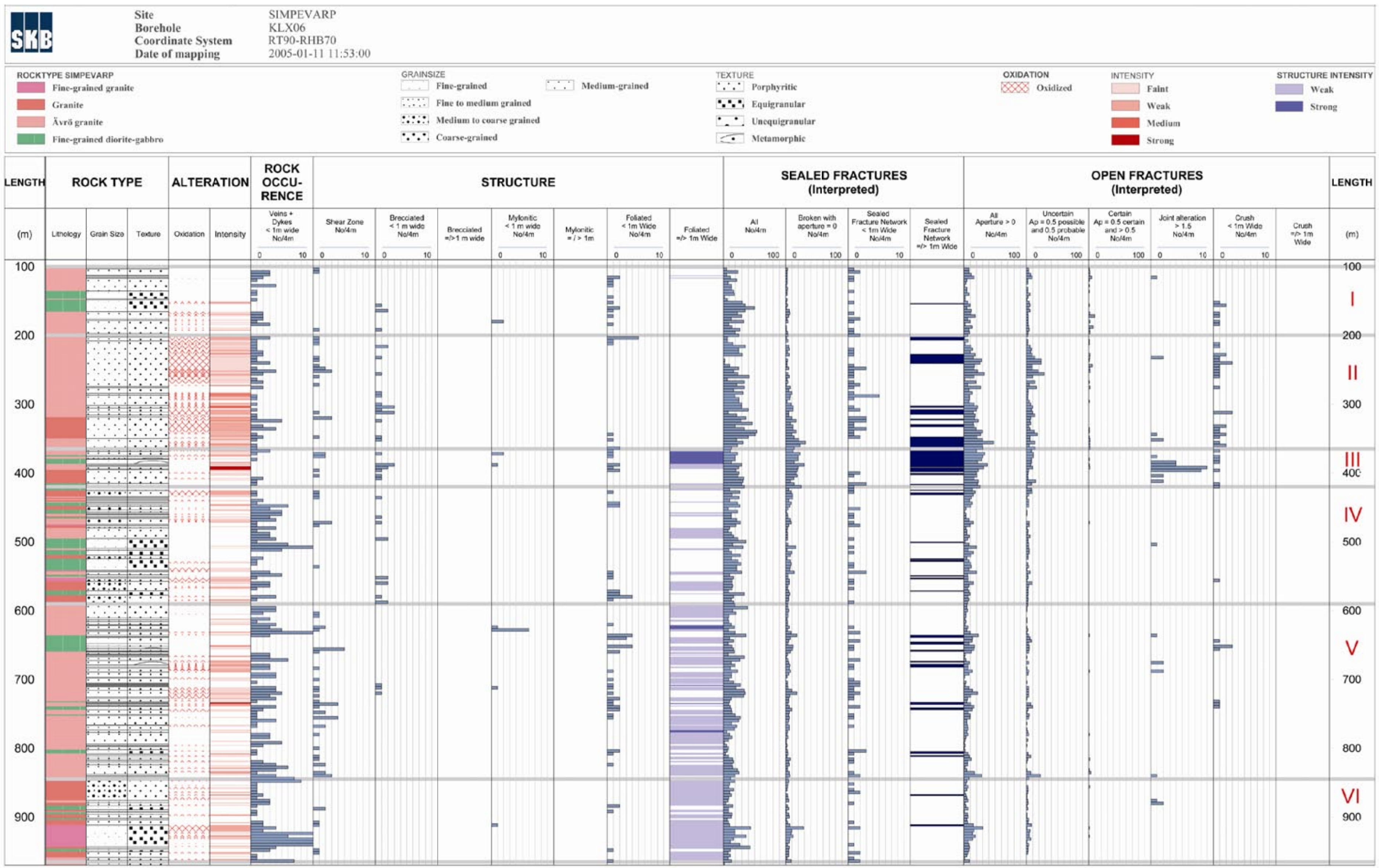
/1/ **Åberg G, 1978.** Precambrian geochronology of southeastern Sweden. Geologiska Föreningens i Stockholm Förhandlingar, vol 100, pp 101–102.

/2/ **Lindroos H, 2004.** The potential for ore, industrial minerals and commercial stones in the Simpevarp area. Mirab.

/3/ **Bergman T, Johansson R, Lindén A H, Lindgren J, Rudmark L, Wahlgren C-H, Isaksson H, Lindroos H, 1998.** Förstudie Oskarshamn, jordarter, bergarter och deformationszoner. SKB R-98-56, Svensk Kärnbränslehantering AB.

/4/ **Kresten P, Chyssler J, 1976.** The Götemar massif in the south-eastern Sweden: a reconnoaissance survey. GFF, pp 155–161.

Geological Summary table, KLX06



Appendix 2

Search paths for the Geological Summary table

TABLE HEAD LINES		INFORMATION SOURCE			PRESENTATION
Head lines	**Sub head lines**	**Varcode**	**First suborder**	**Second suborder**	**Interval / frequence**
Rock type	Lithology	5	Sub 1		Interval
	Grain size	5	Sub 5		Interval
	Texture	5	Sub 6		Interval
Alteration	Oxidation	7	Sub 1 = 700		Interval
	Oxidation intensity	7	Sub 1 = 700	Sub 2	Interval
Rock occurrence	Vein + dyke	31	Sub 1 = 2 or 18		Frequence
Structure	Shear zone	31	Sub 4 = 41 or 42		Frequence
	Brecciated, < 1m wide	31	Sub 4 = 7		Frequence
	Brecciated, >/= 1m wide	5 5	Sub 3 = 7 Sub 3 = 7	Sub 4; 101 or 102 = 102 Sub 4; 103 or 104 = 104	Interval
	Mylonite, < 1 m wide	31	Sub 4 = 34		Frequence
	Mylonite, >/= 1 m wide	5 5	Sub 3 = 34 Sub 3 = 34	Sub 4; 101 or 102 = 102 Sub 4; 103 or 104 = 104	Interval
	Foliation zone, < 1 m wide	31	Sub 4 = 81		Frequence
	Foliation zone, >/= 1 m wide	5 5	Sub 3 = 81 Sub 3 = 81	Sub 4; 101 or 102 = 102 Sub 4; 103 or 104 = 104	Interval
Sealed fracture	All unbroken fractures and broken fractures	3 2	 SNUM 11= 0		Frequence
	Broken fractures, Aperture = 0	2	SNum 11 = 0		Frequence
	Sealed fracture network < 1 m wide	32			Frequence
	Sealed fracture network>/= 1 m wide	32			Interval
Open fractures	All, Aperture > 0	2 and 3	SNum 11>0		Frequence
	Uncertain, Aperture = 0.5 possible and 0.5 probable	2 and 3 2 and 3	SNum 11>0 SNum 11>0	Sub 12 = 3 Sub 12 = 2	Frequence
	Certain, Aperture = 0.5 certain	2 and 3	SNum 11>0	Sub 12 = 1	Frequence
	Joint alteration > 1.5	2	SNum16 > 1.5		Frequence
	Crush < 1 m wide	4			Frequence
	Crush >/= 1 m wide	4			Interval

Stereographic projections of broken fractures, KLX06

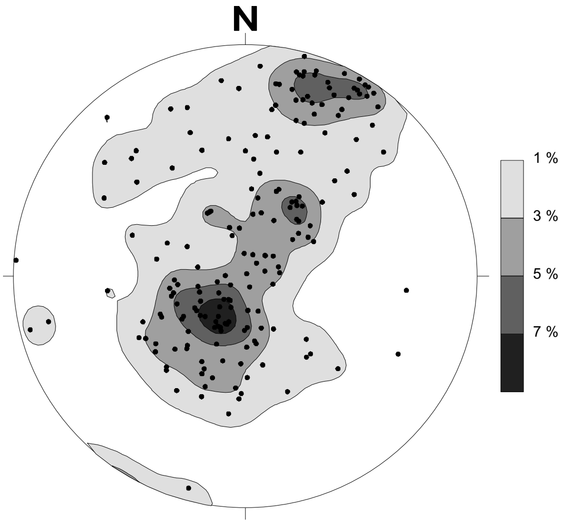


Figure 1: Broken fractures 101-200m (n=196)

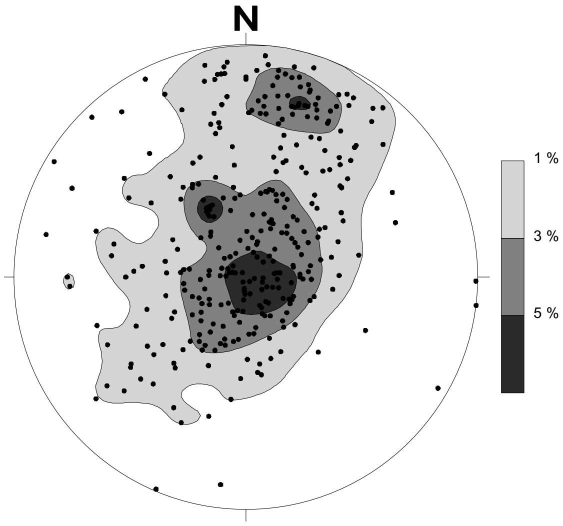


Figure 2: Broken fractures 200-300m (n=356)

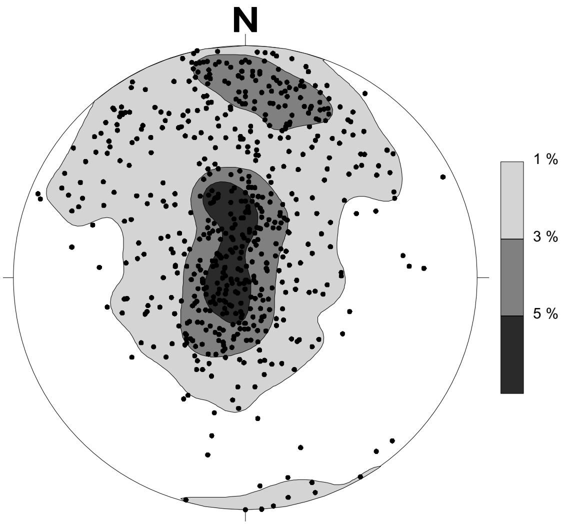


Figure 3: Broken fractures 300-400m (n=631)

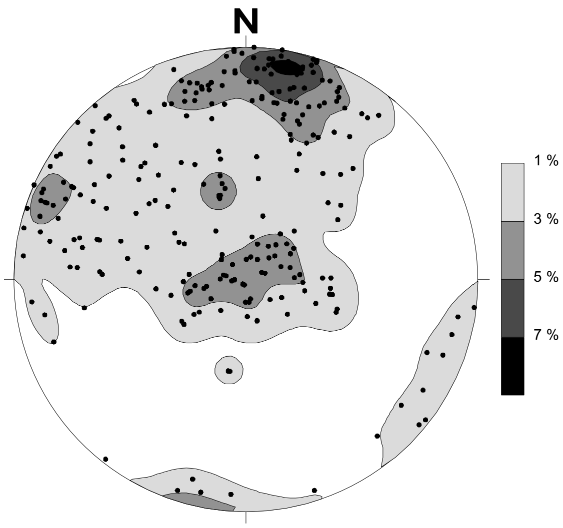


Figure 4: Broken fractures 400-500m (n=278)

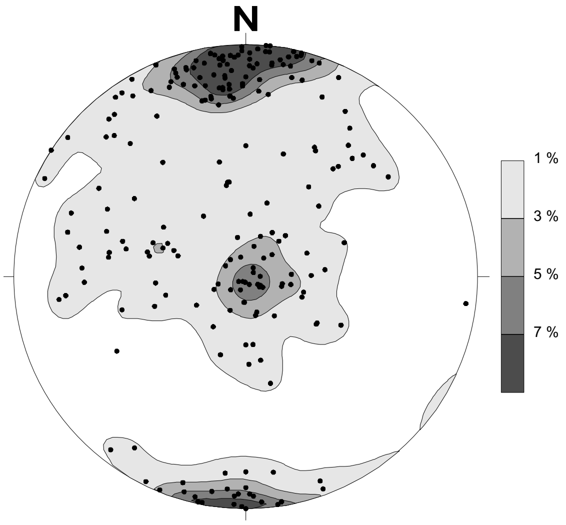


Figure 5: Broken fractures 500-600m (n=229)

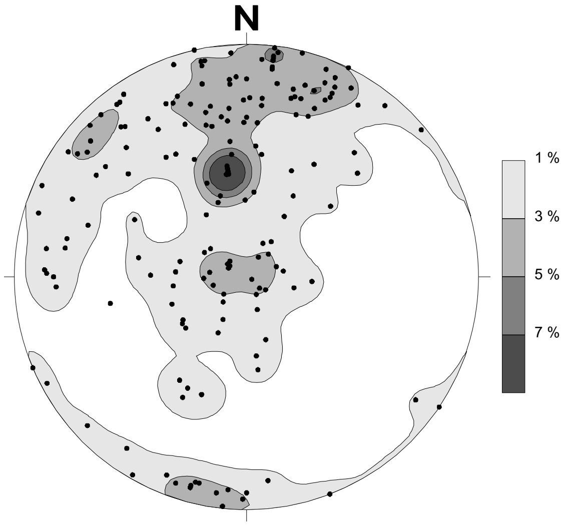


Figure 6: Broken fractures 600-700m (n=198)

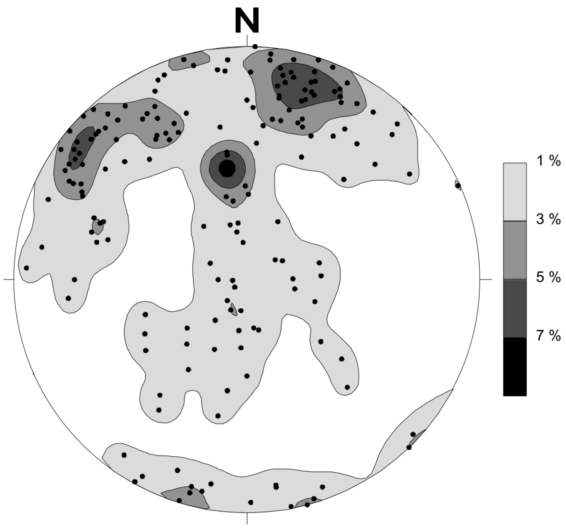


Figure 7: Broken fractures 700-800 (n=187)

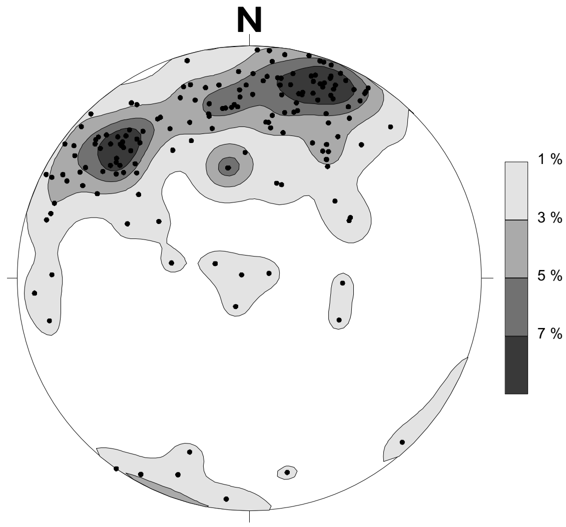


Figure 8: Broken fractures 800-900m (n=172)

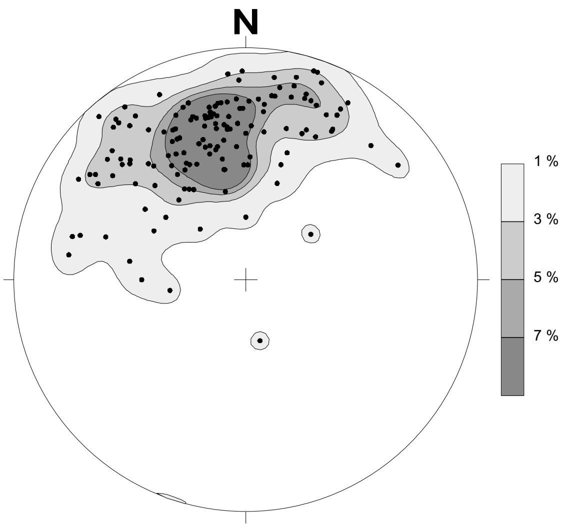


Figure 9: Broken fractures 900-966m (n=165)

Appendix 4

BIPS-images of KLX06

Borehole Image Report

Borehole Name:	KLX06
Mapping Name:	KLX06_Geosigma_JEPD1
Mapping Range:	101.000 - 994.940 m
Diameter:	76.0 mm
Printed Range:	101.000 - 961.032
Pages:	36

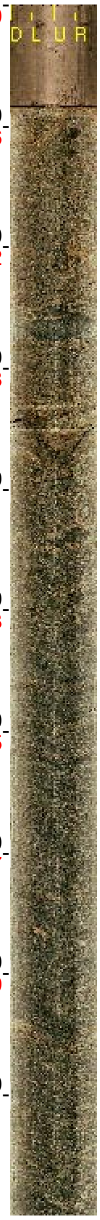
Image File Information:

File:	C:\PROGRAM\Boremap\KLX06\KLX06_101_961m.BIP
Date/Time:	2004-12-28 07:51:00
Start Depth:	101.000 m
End Depth:	961.032 m
Resolution:	1.00 mm/pixel (depth)
Orientation:	Gravmetric
Image height:	860032 pixels
Image width:	360 pixels
BIP Version:	BIP-III
Locality:	LAXEMAR
Borehole:	KLX06
Scan Direction:	Down
Color adjust:	0 0 0 (RGB)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 101.000 - 126.000 m
Azimuth: 329.3
Inclination: -64.1

101.000 / 101.000
101.500 / 101.606
102.000 / 102.212
102.500 / 102.818
103.000 / 103.351
103.500 / 103.853
104.000 / 104.355
104.500 / 104.857
105.000 / 105.359
105.500 / 105.861



106.000 / 106.363
106.500 / 106.865
107.000 / 107.367
107.500 / 107.869
108.000 / 108.371
108.500 / 108.873
109.000 / 109.375
109.500 / 109.877
110.000 / 110.379
110.500 / 110.881

111.000 / 111.383
111.500 / 111.885
112.000 / 112.387
112.500 / 112.889
113.000 / 113.391
113.500 / 113.893
114.000 / 114.395
114.500 / 114.897
115.000 / 115.399
115.500 / 115.901

116.000 / 116.402
116.500 / 116.904
117.000 / 117.406
117.500 / 117.908
118.000 / 118.410
118.500 / 118.912
119.000 / 119.414
119.500 / 119.916
120.000 / 120.418
120.500 / 120.920

121.000 / 121.422
121.500 / 121.924
122.000 / 122.426
122.500 / 122.928
123.000 / 123.430
123.500 / 123.932
124.000 / 124.434
124.500 / 124.936
125.000 / 125.438
125.500 / 125.940

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 2 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 126.000 - 151.000 m
Azimuth: 331.5
Inclination: -63.9

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 3 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 151.000 - 176.000 m
Azimuth: 333.8
Inclination: -64.0

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 4 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 176.000 - 201.000 m
Azimuth: 332.3
Inclination: -64.1

176.000 176.656
176.500 177.159
177.000 177.661
177.500 178.163
178.000 178.666
178.500 179.168
179.000 179.670
179.500 180.173
180.000 180.675
180.500 181.177

181.000 181.680
181.500 182.182
182.000 182.684
182.500 183.186
183.000 183.689
183.500 184.191
184.000 184.693
184.500 185.196
185.000 185.698
185.500 186.200

186.000 186.703
186.500 187.205
187.000 187.707
187.500 188.210
188.000 188.712
188.500 189.214
189.000 189.717
189.500 190.219
190.000 190.721
190.500 191.224

191.000 191.726
191.500 192.228
192.000 192.730
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193.000 193.735
193.500 194.237
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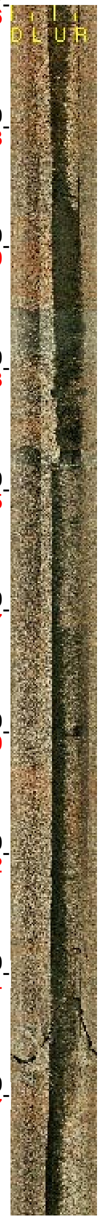
194.500 195.242
195.000 195.744
195.500 196.247



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196.500 197.251
197.000 197.754
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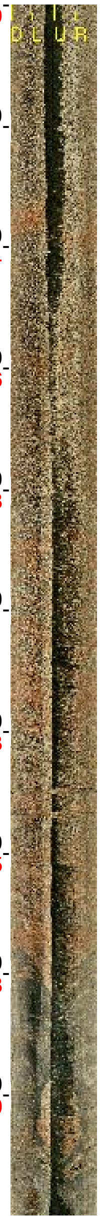
200.000 200.768
200.500 201.270



Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 5 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 201.000 - 226.000 m
Azimuth: 329.6
Inclination: -63.8

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 6 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 226.000 - 251.000 m
Azimuth: 329.4
Inclination: -63.5

226.000
226.895
226.500
227.398
227.000
227.900
227.500
228.403
228.000
228.905
228.500
229.408
229.000
229.910
229.500
230.412
230.000
230.915
230.500
231.417

231.000
231.920
231.500
232.422
232.000
232.925
232.500
233.427
233.000
233.930
233.500
234.432
234.000
234.934
234.500
235.437
235.000
235.939
235.500
236.442

236.000
236.944
236.500
237.447
237.000
237.949
237.500
238.452
238.000
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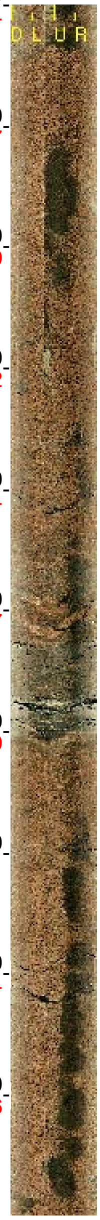
241.466



241.000
241.969
241.500
242.471
242.000
242.974
242.500
243.476
243.000
243.979
243.500
244.481
244.000
244.984
244.500
245.486
245.000
245.988
245.500
246.491

246.000
246.993
246.500
247.496
247.000
247.998
247.500
248.501
248.000
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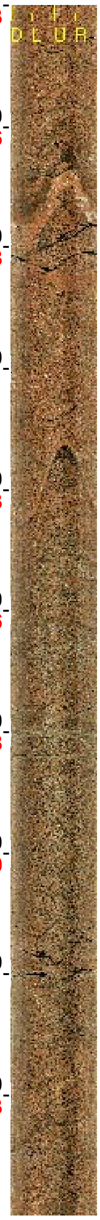
251.011
250.500
251.513



Printed: 2005-03-07 17:00:44   Scale: 1 : 25   Aspect: 150 %   7 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 251.000 - 276.000 m
Azimuth: 330.8
Inclination: -63.2

251.000 / 252.015		256.000 / 257.032		261.000 / 262.050		266.000 / 267.067		271.000 / 272.084	
251.500 / 252.517		256.500 / 257.534		261.500 / 262.551		266.500 / 267.569		271.500 / 272.586	
252.000 / 253.018		257.000 / 258.036		262.000 / 263.053		267.000 / 268.071		272.000 / 273.088	
252.500 / 253.520		257.500 / 258.538		262.500 / 263.555		267.500 / 268.572		272.500 / 273.590	
253.000 / 254.022		258.000 / 259.039		263.000 / 264.057		268.000 / 269.074		273.000 / 274.091	
253.500 / 254.524		258.500 / 259.541		263.500 / 264.558		268.500 / 269.576		273.500 / 274.593	
254.000 / 255.025		259.000 / 260.043		264.000 / 265.060		269.000 / 270.077		274.000 / 275.095	
254.500 / 255.527		259.500 / 260.544		264.500 / 265.562		269.500 / 270.579		274.500 / 275.597	
255.000 / 256.029		260.000 / 261.046		265.000 / 266.064		270.000 / 271.081		275.000 / 276.098	
255.500 / 256.531		260.500 / 261.548		265.500 / 266.565		270.500 / 271.583		275.500 / 276.600	

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 8 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 276.000 - 301.000 m
Azimuth: 333.3
Inclination: -62.2

276.000
277.102
276.500
277.604
277.000
278.105
277.500
278.607
278.000
279.109
278.500
279.610
279.000
280.112
279.500
280.614
280.000
281.116
280.500
281.617

281.000
282.119
281.500
282.621
282.000
283.123
282.500
283.624
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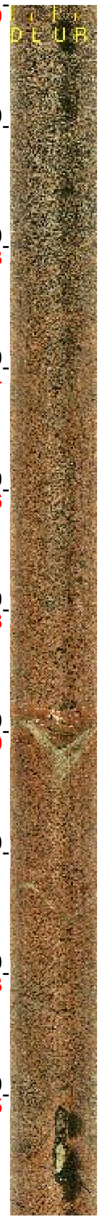
285.500
286.635



286.000
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287.000
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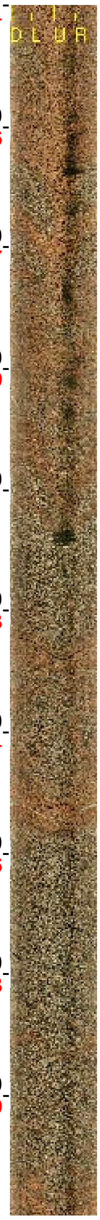
287.500
288.642
288.000
289.143
288.500
289.645
289.000
290.147
289.500
290.649
290.000
291.150
290.500
291.652

291.000
292.154
291.500
292.656
292.000
293.157
292.500
293.659
293.000
294.161
293.500
294.663
294.000
295.164
294.500
295.666
295.000
296.168
295.500
296.669



296.000
297.171
296.500
297.673
297.000
298.175
297.500
298.676
298.000
299.178
298.500
299.680
299.000
300.182
299.500
300.684
300.000
301.186
300.500
301.688

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 9 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 301.000 - 326.000 m
Azimuth: 335.2
Inclination: -61.5

Printed: 2005-03-07 17:00:44   Scale: 1 : 25   Aspect: 150 %   10 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 326.000 - 351.000 m
Azimuth: 336.6
Inclination: -60.9

326.000 327.295
326.500 327.797
327.000 328.299
327.500 328.801
328.000 329.303
328.500 329.805
329.000 330.307
329.500 330.809
330.000 331.311
330.500 331.813

331.000 332.315
331.500 332.818
332.000 333.320
332.500 333.822
333.000 334.324
333.500 334.826
334.000 335.328
334.500 335.830
335.000 336.332
335.500 336.834

336.000 337.336
336.500 337.838
337.000 338.341
337.500 338.843
338.000 339.345
338.500 339.847
339.000 340.349
339.500 340.851
340.000 341.353
340.500 341.855

341.000 342.357
341.500 342.859
342.000 343.361
342.500 343.863
343.000 344.366
343.500 344.868
344.000 345.370
344.500 345.872
345.000 346.374
345.500 346.876

346.000 347.378
346.500 347.880
347.000 348.382
347.500 348.884
348.000 349.386
348.500 349.889
349.000 350.391
349.500 350.893
350.000 351.395
350.500 351.897

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 11 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

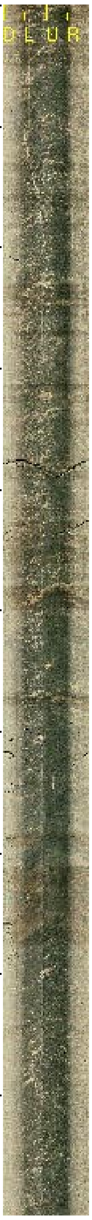
Depth range: 351.000 - 376.000 m
Azimuth: 337.9
Inclination: -60.2

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 12 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

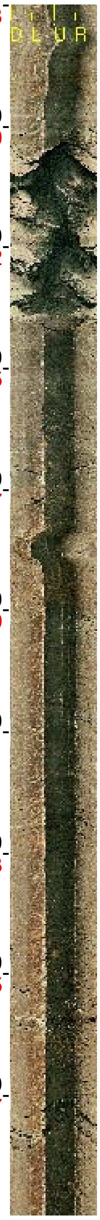
Depth range: 376.000 - 401.000 m
Azimuth: 339.9
Inclination: -59.7

376.000 / 377.506
376.500 / 378.008
377.000 / 378.510
377.500 / 379.012
378.000 / 379.514
378.500 / 380.016
379.000 / 380.518
379.500 / 381.021
380.000 / 381.523
380.500 / 382.025

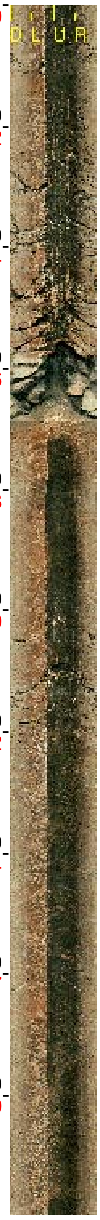


381.000 / 382.527
381.500 / 383.029
382.000 / 383.531
382.500 / 384.033
383.000 / 384.535
383.500 / 385.038
384.000 / 385.540
384.500 / 386.042
385.000 / 386.544
385.500 / 387.046

386.000 / 387.548
386.500 / 388.050
387.000 / 388.552
387.500 / 389.055
388.000 / 389.557
388.500 / 390.059
389.000 / 390.561
389.500 / 391.063
390.000 / 391.565
390.500 / 392.067



391.000 / 392.570
391.500 / 393.072
392.000 / 393.574
392.500 / 394.076
393.000 / 394.578
393.500 / 395.080
394.000 / 395.582
394.500 / 396.084
395.000 / 396.587
395.500 / 397.089



396.000 / 397.591
396.500 / 398.093
397.000 / 398.595
397.500 / 399.097
398.000 / 399.599
398.500 / 400.102
399.000 / 400.604
399.500 / 401.106
400.000 / 401.609
400.500 / 402.111

Printed: 2005-03-07 17:00:44   Scale: 1 : 25   Aspect: 150 %   13 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

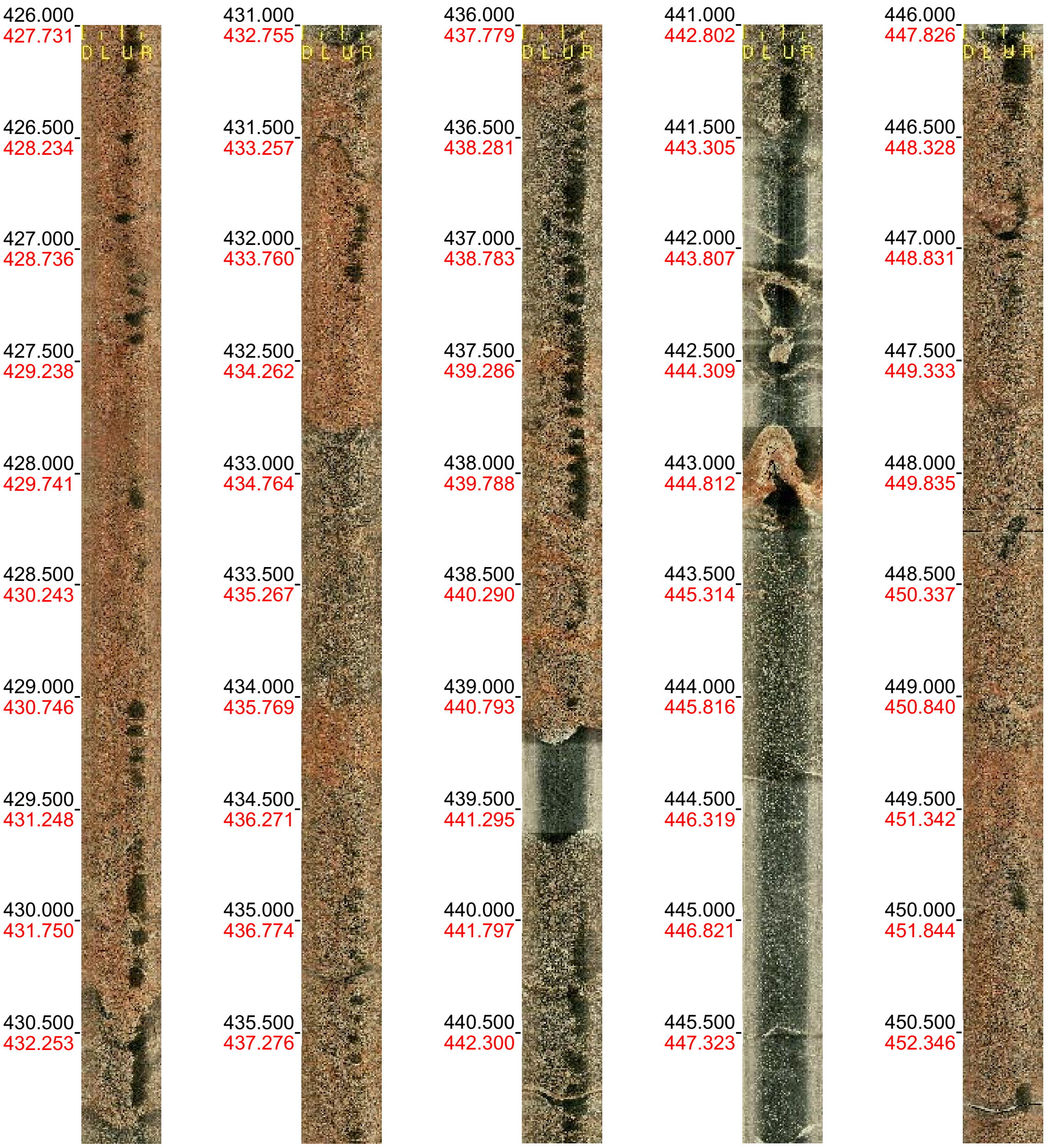
Depth range: 401.000 - 426.000 m
Azimuth: 341.3
Inclination: -60.0

401.000	402.613	406.000	407.637	411.000	412.661	416.000	417.684	421.000	422.708
401.500	403.116	406.500	408.139	411.500	413.163	416.500	418.186	421.500	423.210
402.000	403.618	407.000	408.642	412.000	413.665	417.000	418.689	422.000	423.712
402.500	404.120	407.500	409.144	412.500	414.168	417.500	419.191	422.500	424.215
403.000	404.623	408.000	409.646	413.000	414.670	418.000	419.694	423.000	424.717
403.500	405.125	408.500	410.149	413.500	415.172	418.500	420.196	423.500	425.220
404.000	405.627	409.000	410.651	414.000	415.675	419.000	420.698	424.000	425.722
404.500	406.130	409.500	411.153	414.500	416.177	419.500	421.201	424.500	426.224
405.000	406.632	410.000	411.656	415.000	416.679	420.000	421.703	425.000	426.727
405.500	407.135	410.500	412.158	415.500	417.182	420.500	422.205	425.500	427.229

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 14 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 426.000 - 451.000 m
Azimuth: 342.2
Inclination: -59.3



Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 15 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 451.000 - 476.000 m
Azimuth: 343.9
Inclination: -58.8

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 16 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 476.000 - 501.000 m
Azimuth: 345.8
Inclination: -58.0

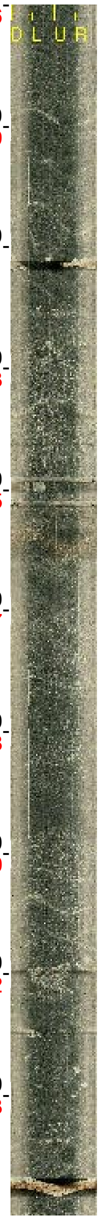
476.000 477.958
476.500 478.461
477.000 478.963
477.500 479.465
478.000 479.967
478.500 480.469
479.000 480.972
479.500 481.474
480.000 481.976
480.500 482.478

481.000 482.980
481.500 483.483
482.000 483.985
482.500 484.487
483.000 484.989
483.500 485.491
484.000 485.994
484.500 486.496
485.000 486.998
485.500 487.500

486.000 488.002
486.500 488.505
487.000 489.007
487.500 489.509
488.000 490.011
488.500 490.513
489.000 491.016
489.500 491.518
490.000 492.020
490.500 492.522

491.000 493.024
491.500 493.527
492.000 494.029
492.500 494.531
493.000 495.033
493.500 495.535
494.000 496.038
494.500 496.540
495.000 497.042
495.500 497.544

496.000 498.046
496.500 498.549
497.000 499.051
497.500 499.553
498.000 500.055
498.500 500.557
499.000 501.058
499.500 501.560
500.000 502.062
500.500 502.563

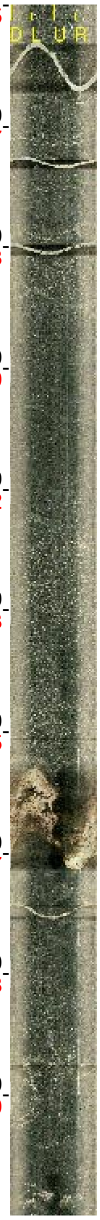


Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 17 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

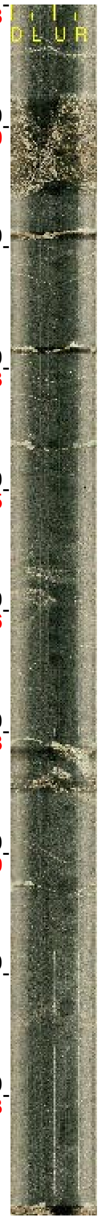
Depth range: 501.000 - 526.000 m
Azimuth: 348.3
Inclination: -56.9

501.000 503.065
501.500 503.567
502.000 504.068
502.500 504.570
503.000 505.072
503.500 505.573
504.000 506.075
504.500 506.577
505.000 507.078
505.500 507.580



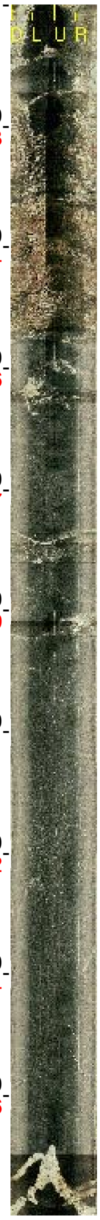
506.000 508.082
506.500 508.583
507.000 509.085
507.500 509.586
508.000 510.088
508.500 510.590
509.000 511.091
509.500 511.593
510.000 512.095
510.500 512.596

511.000 513.098
511.500 513.600
512.000 514.101
512.500 514.603
513.000 515.105
513.500 515.606
514.000 516.108
514.500 516.609
515.000 517.111
515.500 517.613



516.000 518.114
516.500 518.616
517.000 519.118
517.500 519.619
518.000 520.121
518.500 520.623
519.000 521.124
519.500 521.626
520.000 522.128
520.500 522.629

521.000 523.131
521.500 523.633
522.000 524.134
522.500 524.636
523.000 525.137
523.500 525.639
524.000 526.141
524.500 526.642
525.000 527.144
525.500 527.646

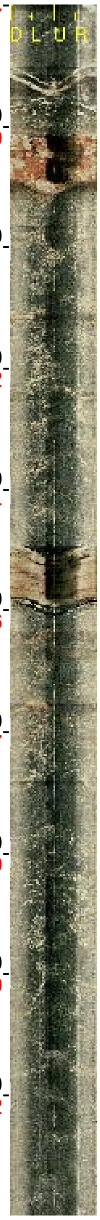


Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 18 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 526.000 - 551.000 m
Azimuth: 349.3
Inclination: -56.2

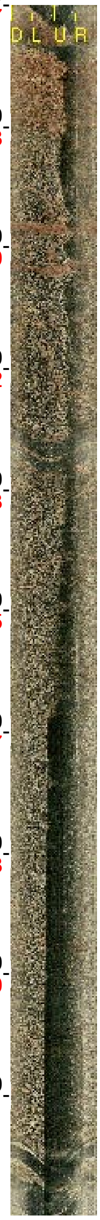
526.000 528.147
526.500 528.649
527.000 529.151
527.500 529.652
528.000 530.154
528.500 530.656
529.000 531.157
529.500 531.659
530.000 532.160
530.500 532.662



531.000 533.164
531.500 533.665
532.000 534.167
532.500 534.669
533.000 535.170
533.500 535.672
534.000 536.174
534.500 536.675
535.000 537.177
535.500 537.679

536.000 538.180
536.500 538.682
537.000 539.184
537.500 539.685
538.000 540.187
538.500 540.688
539.000 541.190
539.500 541.692
540.000 542.193
540.500 542.695

541.000 543.197
541.500 543.698
542.000 544.200
542.500 544.702
543.000 545.203
543.500 545.705
544.000 546.207
544.500 546.708
545.000 547.210
545.500 547.711



546.000 548.213
546.500 548.715
547.000 549.216
547.500 549.718
548.000 550.220
548.500 550.721
549.000 551.223
549.500 551.724
550.000 552.226
550.500 552.727

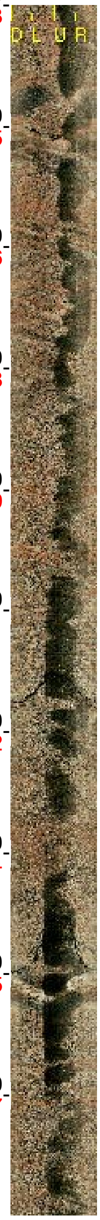
Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 19 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

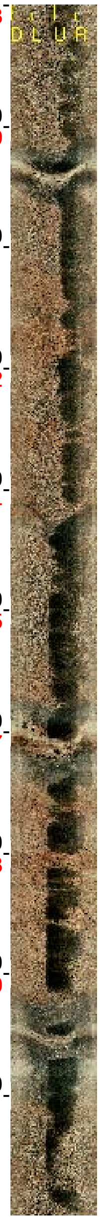
Depth range: 551.000 - 576.000 m
Azimuth: 349.4
Inclination: -55.6

551.000 553.229
551.500 553.730
552.000 554.231
552.500 554.733
553.000 555.234
553.500 555.736
554.000 556.237
554.500 556.739
555.000 557.240
555.500 557.742

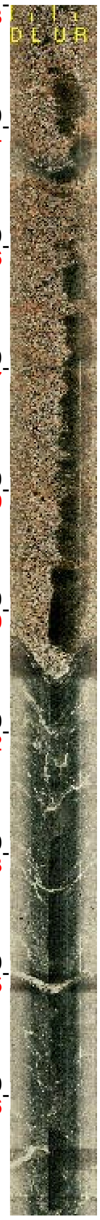
556.000 558.243
556.500 558.745
557.000 559.246
557.500 559.748
558.000 560.249
558.500 560.751
559.000 561.252
559.500 561.754
560.000 562.255
560.500 562.757



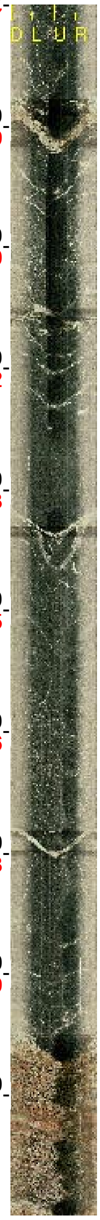
561.000 563.258
561.500 563.759
562.000 564.261
562.500 564.762
563.000 565.264
563.500 565.765
564.000 566.267
564.500 566.768
565.000 567.270
565.500 567.771



566.000 568.273
566.500 568.774
567.000 569.276
567.500 569.777
568.000 570.279
568.500 570.780
569.000 571.282
569.500 571.783
570.000 572.285
570.500 572.786



571.000 573.287
571.500 573.789
572.000 574.290
572.500 574.792
573.000 575.293
573.500 575.795
574.000 576.296
574.500 576.798
575.000 577.299
575.500 577.801

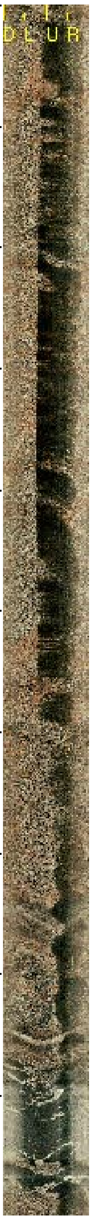


Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 20 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 576.000 - 601.000 m
Azimuth: 349.3
Inclination: -54.8

576.000	578.302
576.500	578.804
577.000	579.305
577.500	579.807
578.000	580.308
578.500	580.810
579.000	581.311
579.500	581.813
580.000	582.314
580.500	582.815

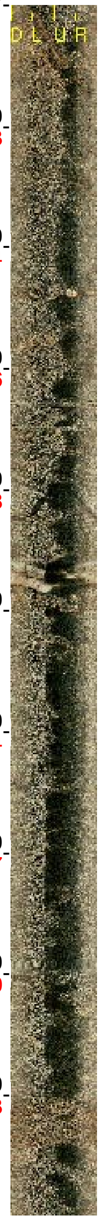


581.000	583.317
581.500	583.818
582.000	584.320
582.500	584.821
583.000	585.323
583.500	585.824
584.000	586.326
584.500	586.827
585.000	587.329
585.500	587.830

586.000	588.332
586.500	588.833
587.000	589.335
587.500	589.836
588.000	590.338
588.500	590.839
589.000	591.341
589.500	591.842
590.000	592.344
590.500	592.845

591.000	593.346
591.500	593.848
592.000	594.349
592.500	594.851
593.000	595.352
593.500	595.854
594.000	596.355
594.500	596.857
595.000	597.358
595.500	597.860

596.000	598.361
596.500	598.863
597.000	599.364
597.500	599.866
598.000	600.368
598.500	600.871
599.000	601.374
599.500	601.877
600.000	602.380
600.500	602.883

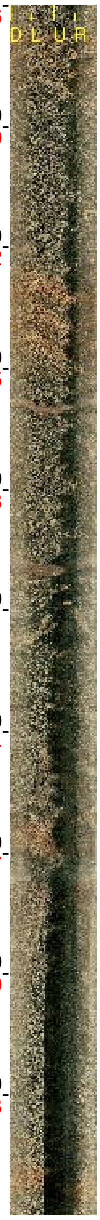


Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 21 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 601.000 - 626.000 m
Azimuth: 348.9
Inclination: -53.9

601.000
603.386
601.500
603.889
602.000
604.392
602.500
604.895
603.000
605.398
603.500
605.901
604.000
606.404
604.500
606.907
605.000
607.410
605.500
607.913

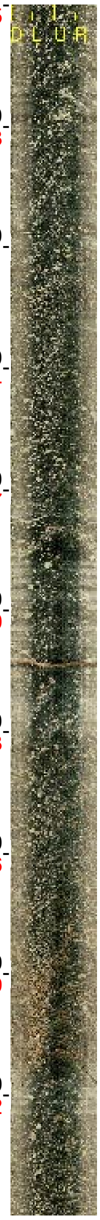


606.000
608.416
606.500
608.919
607.000
609.422
607.500
609.925
608.000
610.428
608.500
610.931
609.000
611.434
609.500
611.937
610.000
612.440
610.500
612.943

611.000
613.446
611.500
613.949
612.000
614.452
612.500
614.955
613.000
615.458
613.500
615.961
614.000
616.464
614.500
616.966
615.000
617.469
615.500
617.972

616.000
618.475
616.500
618.978
617.000
619.481
617.500
619.984
618.000
620.487
618.500
620.990
619.000
621.493
619.500
621.996
620.000
622.499
620.500
623.002

621.000
623.505
621.500
624.008
622.000
624.511
622.500
625.014
623.000
625.517
623.500
626.020
624.000
626.523
624.500
627.026
625.000
627.529
625.500
628.032



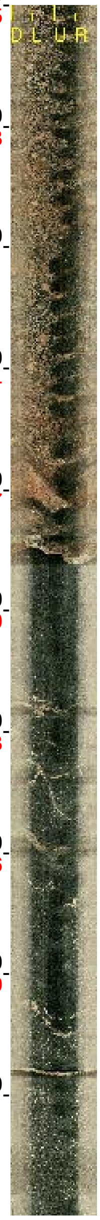
Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 22 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 626.000 - 651.000 m
Azimuth: 349.1
Inclination: -53.4

626.000
628.535
626.500
629.038
627.000
629.541
627.500
630.044
628.000
630.547
628.500
631.050
629.000
631.553
629.500
632.056
630.000
632.559
630.500
633.062

631.000
633.565
631.500
634.068
632.000
634.571
632.500
635.074
633.000
635.577
633.500
636.080
634.000
636.583
634.500
637.086
635.000
637.589
635.500
638.091



636.000
638.594
636.500
639.097
637.000
639.600
637.500
640.103
638.000
640.606
638.500
641.109
639.000
641.612
639.500
642.115
640.000
642.618
640.500
643.121

641.000
643.624
641.500
644.127
642.000
644.630
642.500
645.133
643.000
645.636
643.500
646.139
644.000
646.642
644.500
647.145
645.000
647.648
645.500
648.151

646.000
648.654
646.500
649.157
647.000
649.660
647.500
650.163
648.000
650.665
648.500
651.167
649.000
651.669
649.500
652.172
650.000
652.674
650.500
653.176

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 23 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 651.000 - 676.000 m
Azimuth: 349.3
Inclination: -52.4

651.000
653.678
651.500
654.180
652.000
654.683
652.500
655.185
653.000
655.687
653.500
656.189
654.000
656.692
654.500
657.194
655.000
657.696
655.500
658.198

656.000
658.700
656.500
659.203
657.000
659.705
657.500
660.207
658.000
660.709
658.500
661.212
659.000
661.714
659.500
662.216
660.000
662.718
660.500
663.220

661.000
663.723
661.500
664.225
662.000
664.727
662.500
665.229
663.000
665.732
663.500
666.234
664.000
666.736
664.500
667.238
665.000
667.740
665.500
668.243

666.000
668.745
666.500
669.247
667.000
669.749
667.500
670.252
668.000
670.754
668.500
671.256
669.000
671.758
669.500
672.260
670.000
672.763
670.500
673.265

671.000
673.767
671.500
674.269
672.000
674.771
672.500
675.274
673.000
675.776
673.500
676.278
674.000
676.780
674.500
677.283
675.000
677.785
675.500
678.287

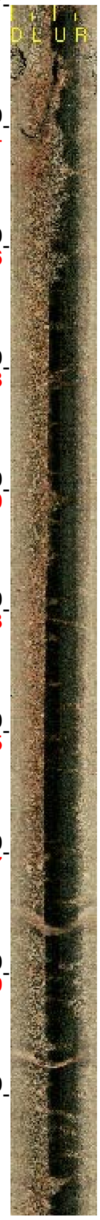
Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 24 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 676.000 - 701.000 m
Azimuth: 349.8
Inclination: -51.6

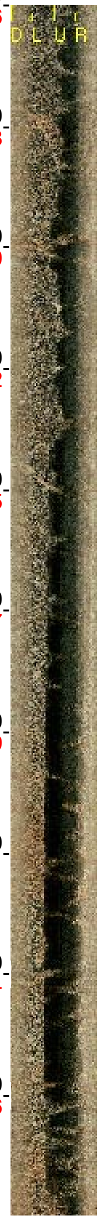
676.000 678.789
676.500 679.291
677.000 679.794
677.500 680.296
678.000 680.798
678.500 681.300
679.000 681.803
679.500 682.305
680.000 682.807
680.500 683.309

681.000 683.811
681.500 684.314
682.000 684.816
682.500 685.318
683.000 685.820
683.500 686.323
684.000 686.825
684.500 687.327
685.000 687.829
685.500 688.331



686.000 688.834
686.500 689.336
687.000 689.838
687.500 690.340
688.000 690.843
688.500 691.345
689.000 691.847
689.500 692.349
690.000 692.851
690.500 693.354

691.000 693.856
691.500 694.358
692.000 694.860
692.500 695.362
693.000 695.865
693.500 696.367
694.000 696.869
694.500 697.371
695.000 697.874
695.500 698.376



696.000 698.878
696.500 699.380
697.000 699.882
697.500 700.385
698.000 700.887
698.500 701.389
699.000 701.891
699.500 702.393
700.000 702.896
700.500 703.398

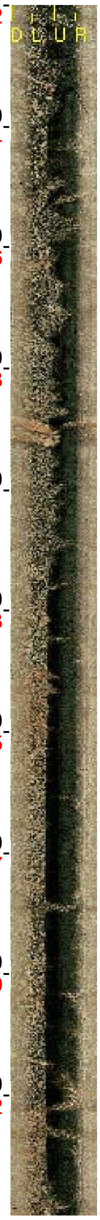
Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 25 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

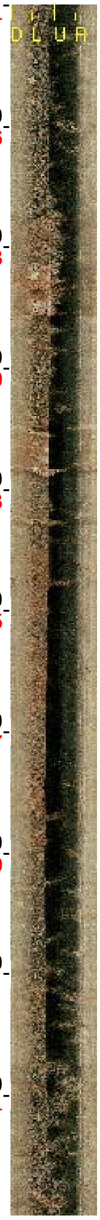
Depth range: 701.000 - 726.000 m
Azimuth: 349.7
Inclination: -50.7

701.000
703.900
701.500
704.402
702.000
704.904
702.500
705.407
703.000
705.909
703.500
706.411
704.000
706.913
704.500
707.415
705.000
707.918
705.500
708.420

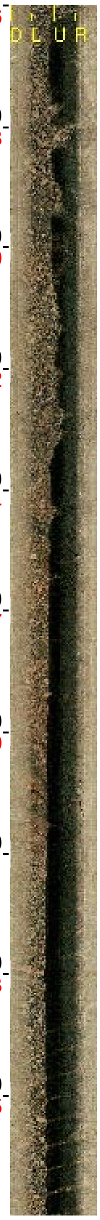
706.000
708.922
706.500
709.424
707.000
709.926
707.500
710.428
708.000
710.931
708.500
711.433
709.000
711.935
709.500
712.437
710.000
712.939
710.500
713.442



711.000
713.944
711.500
714.446
712.000
714.948
712.500
715.450
713.000
715.953
713.500
716.455
714.000
716.957
714.500
717.459
715.000
717.961
715.500
718.464



716.000
718.966
716.500
719.468
717.000
719.970
717.500
720.472
718.000
720.974
718.500
721.477
719.000
721.979
719.500
722.481
720.000
722.983
720.500
723.485



721.000
723.988
721.500
724.490
722.000
724.992
722.500
725.494
723.000
725.996
723.500
726.499
724.000
727.001
724.500
727.503
725.000
728.005
725.500
728.507

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 26 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 726.000 - 751.000 m
Azimuth: 349.3
Inclination: -49.8

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 27 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 751.000 - 776.000 m
Azimuth: 349.3
Inclination: -49.7

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 28 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 776.000 - 801.000 m
Azimuth: 349.3
Inclination: -49.7

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 29 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 801.000 - 826.000 m
Azimuth: 349.3
Inclination: -49.7

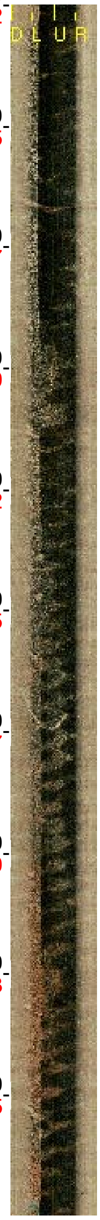
801.000
804.382
801.500
804.884
802.000
805.387
802.500
805.889
803.000
806.392
803.500
806.894
804.000
807.397
804.500
807.899
805.000
808.402
805.500
808.904

806.000
809.407
806.500
809.910
807.000
810.412
807.500
810.915
808.000
811.417
808.500
811.920
809.000
812.422
809.500
812.925
810.000
813.427
810.500
813.930

811.000
814.432
811.500
814.935
812.000
815.437
812.500
815.940
813.000
816.442
813.500
816.945
814.000
817.447
814.500
817.950
815.000
818.452
815.500
818.955

816.000
819.457
816.500
819.960
817.000
820.462
817.500
820.965
818.000
821.467
818.500
821.970
819.000
822.472
819.500
822.975
820.000
823.477
820.500
823.980

821.000
824.482
821.500
824.985
822.000
825.487
822.500
825.990
823.000
826.492
823.500
826.995
824.000
827.497
824.500
828.000
825.000
828.503
825.500
829.005



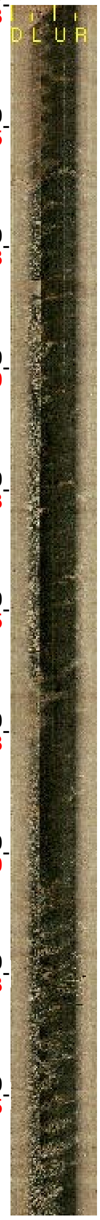
Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 30 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

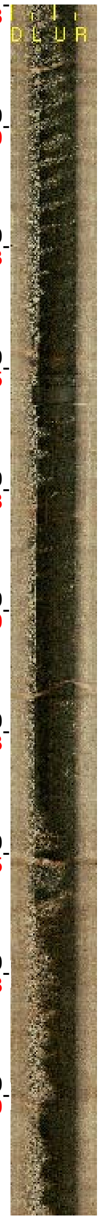
Depth range: 826.000 - 851.000 m
Azimuth: 349.3
Inclination: -49.7

826.000
829.508
826.500
830.010
827.000
830.513
827.500
831.015
828.000
831.518
828.500
832.020
829.000
832.523
829.500
833.025
830.000
833.528
830.500
834.030

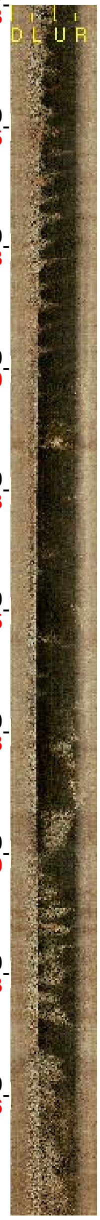
831.000
834.533
831.500
835.035
832.000
835.538
832.500
836.040
833.000
836.543
833.500
837.045
834.000
837.548
834.500
838.050
835.000
838.553
835.500
839.055



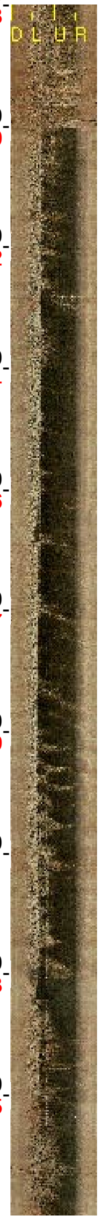
836.000
839.558
836.500
840.060
837.000
840.563
837.500
841.065
838.000
841.568
838.500
842.070
839.000
842.573
839.500
843.075
840.000
843.578
840.500
844.080



841.000
844.583
841.500
845.085
842.000
845.588
842.500
846.090
843.000
846.593
843.500
847.095
844.000
847.598
844.500
848.100
845.000
848.603
845.500
849.106



846.000
849.608
846.500
850.110
847.000
850.612
847.500
851.114
848.000
851.616
848.500
852.117
849.000
852.619
849.500
853.121
850.000
853.623
850.500
854.125



Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 31 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 851.000 - 876.000 m
Azimuth: 349.3
Inclination: -49.7

851.000
854.626
851.500
855.128
852.000
855.630
852.500
856.132
853.000
856.633
853.500
857.135
854.000
857.637
854.500
858.139
855.000
858.641
855.500
859.142

856.000
859.644
856.500
860.146
857.000
860.648
857.500
861.149
858.000
861.651
858.500
862.153
859.000
862.655
859.500
863.157
860.000
863.658
860.500
864.160

861.000
864.662
861.500
865.164
862.000
865.665
862.500
866.167
863.000
866.669
863.500
867.171
864.000
867.673
864.500
868.174
865.000
868.676
865.500
869.178

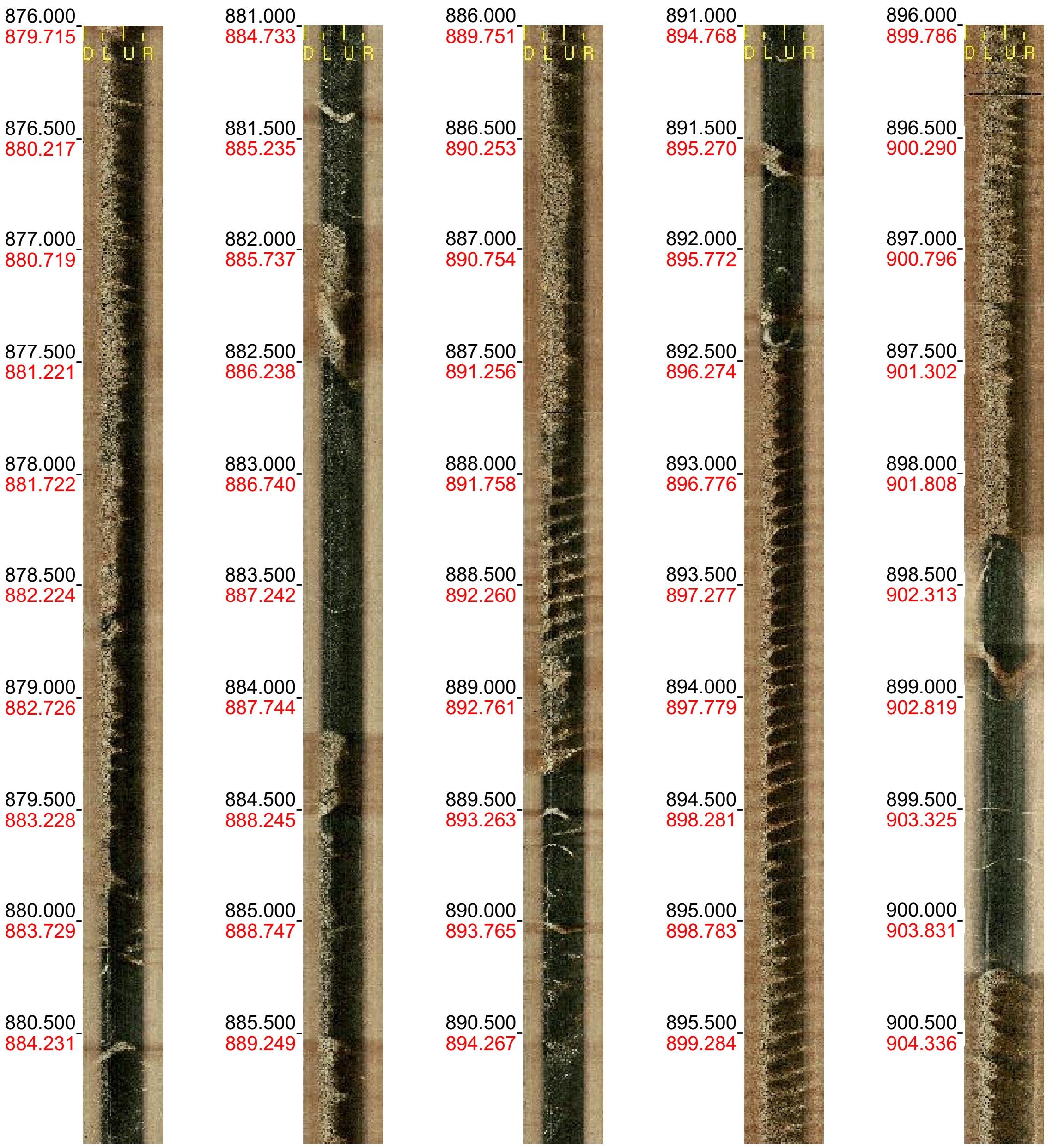
866.000
869.680
866.500
870.181
867.000
870.683
867.500
871.185
868.000
871.687
868.500
872.189
869.000
872.690
869.500
873.192
870.000
873.694
870.500
874.196

871.000
874.697
871.500
875.199
872.000
875.701
872.500
876.203
873.000
876.705
873.500
877.206
874.000
877.708
874.500
878.210
875.000
878.712
875.500
879.213

Printed: 2005-03-07 17:00:44   Scale: 1 : 25   Aspect: 150 %   32 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 876.000 - 901.000 m
Azimuth: 349.3
Inclination: -49.7



Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 33 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 901.000 - 926.000 m
Azimuth: 349.3
Inclination: -49.7

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 34 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 926.000 - 951.000 m
Azimuth: 349.3
Inclination: -49.7

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 35 (36)

Borehole: KLX06
Mapping: KLX06_Geosigma_JEPD1

Depth range: 951.000 - 961.032 m
Azimuth: 349.3
Inclination: -49.7

951.000
955.418

951.500
955.923

952.000
956.429

952.500
956.935

953.000
957.441

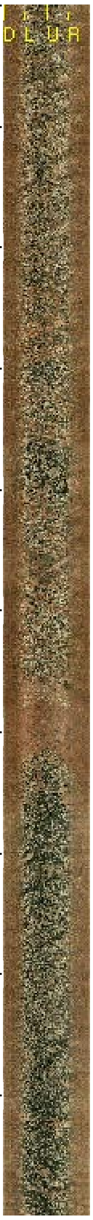
953.500
957.946

954.000
958.452

954.500
958.958

955.000
959.464

955.500
959.969



956.000
960.475

956.500
960.981

957.000
961.487

957.500
961.992

958.000
962.498

958.500
963.004

959.000
963.510

959.500
964.016

960.000
964.521

960.500
965.027

961.000
965.533

D L U R

961.500
966.039

962.000
966.544

962.500
967.050

963.000
967.556

963.500
968.062

964.000
968.567

964.500
969.073

965.000
969.579

965.500
970.085

Printed: 2005-03-07 17:00:44 Scale: 1 : 25 Aspect: 150 % 36 (36)

WellCad diagram of KLX06

Title	LEGEND FOR LAXEMAR	KLX06
Site	LAXEMAR	
Borehole	KLX06	
Plot Date	2005-03-01 22:18:42	

ROCKTYPE LAXEMAR
- Dolerite / Diabas
- Fine-grained Götemargranite
- Coarse-grained Götemargranite
- Fine-grained granite
- Pegmatite
- Granite
- Ävrö granite
- Quartz monzodiorite
- Diorite / Gabbro
- Fine-grained dioritoid
- Fine-grained diorite-gabbro
- Sulphide mineralization
- Sandstone
- Soil

ROCK ALTERATION
- Oxidized
- Chloritisized
- Epidotisized
- Weathered
- Tectonized
- Sericitisized
- Quartz dissolution
- Silicification
- Argillization
- Albitization
- Carbonatization
- Saussuritization
- Steatitization
- Uralitization
- Laumontitization

MINERAL
- Epidote
- Flourite
- Hematite
- Calcite
- Chlorite
- Quartz
- Muscovite
- Unknown
- Pyrite
- Clay Minerals
- Laumontite
- Zeolite
- Oxidized Walls

STRUCTURE
- Cataclastic
- Schistose
- Gneissic
- Mylonitic
- Ductile Shear Zone
- Brittle-Ductile Zone
- Veined
- Banded
- Massive
- Foliated
- Brecciated
- Lineated

TEXTURE
- Hornfelsed
- Porphyritic
- Ophitic
- Equigranular
- Augen-Bearing
- Unequigranular
- Metamorphic

GRAINSIZE
- Aphanitic
- Fine-grained
- Fine to medium grained
- Medium to coarse grained
- Coarse-grained
- Medium-grained

STRUCTURE ORIENTATION
- Cataclastic
- Bedded
- Gneissic
- Schistose
- Brittle-Ductile Shear Zone
- Ductile Shear Zone
- Lineated
- Banded
- Veined
- Brecciated
- Foliated
- Mylonitic

ROCK ALTERATION INTENSITY
- No intensity
- Faint
- Weak
- Medium
- Strong

ROUGHNESS
- Planar
- Undulating
- Stepped
- Irregular

SURFACE
- Rough
- Smooth
- Slickensided

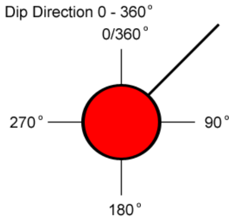
CRUSH ALTERATION
- Slightly Altered
- Moderately Altered
- Highly Altered
- Completley Altered
- Gouge
- Fresh

FRACTURE ALTERATION
- Fresh
- Gouge
- Completely Altered
- Highly Altered
- Moderately Altered
- Slightly Altered

FRACTURE DIRECTION

STRUKTURE ORIENTATION

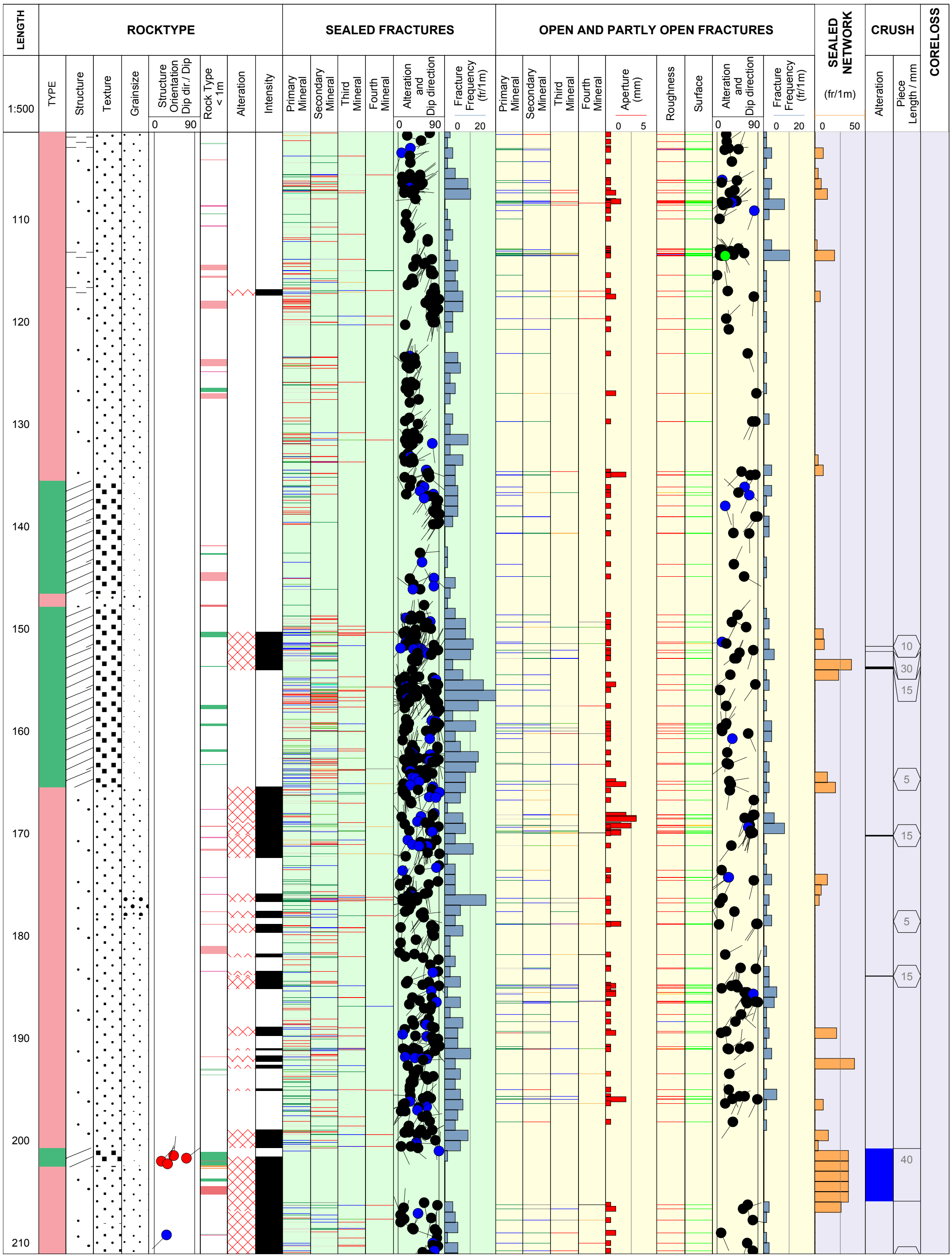
Dip Direction 0 - 360°

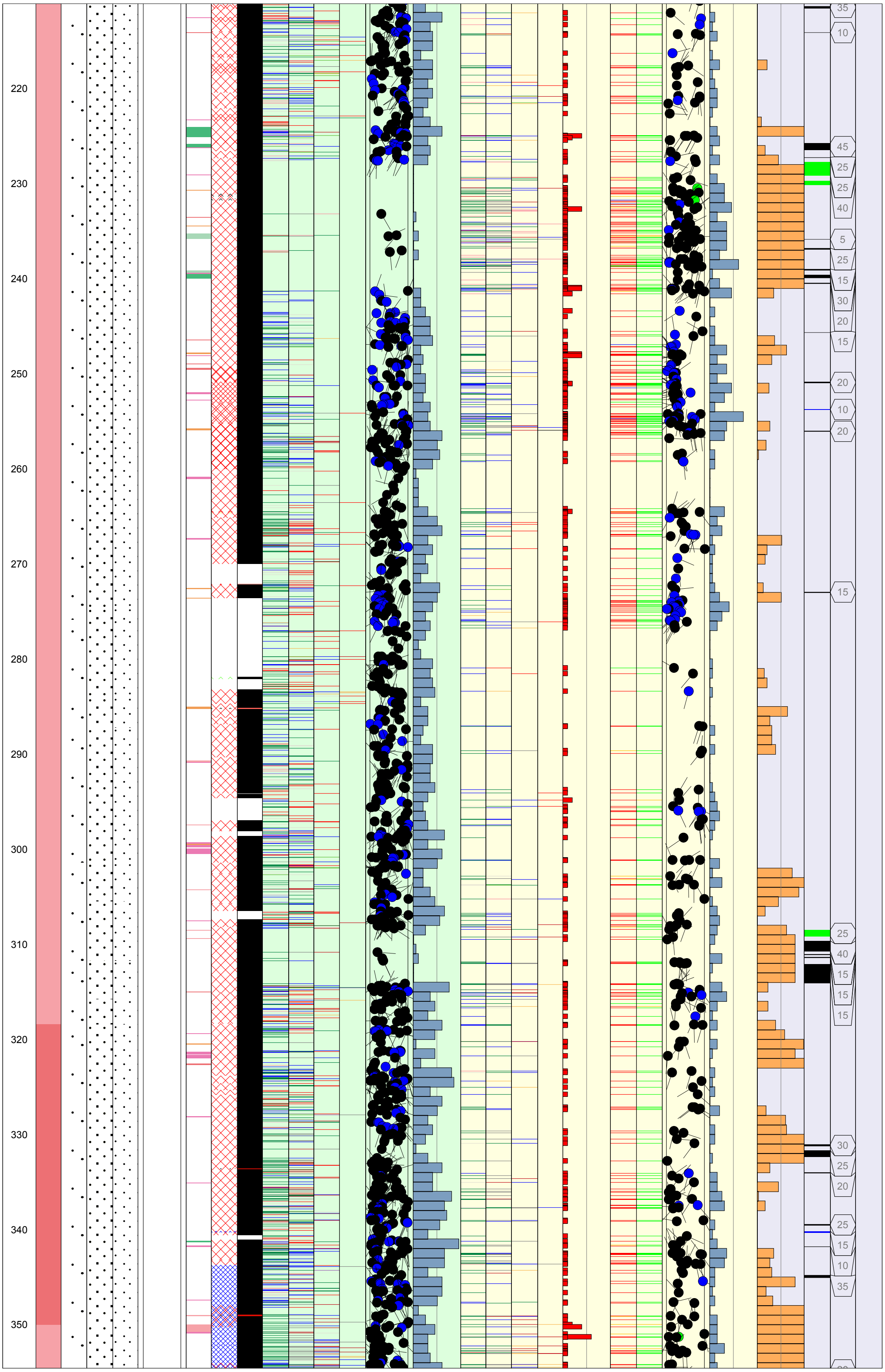


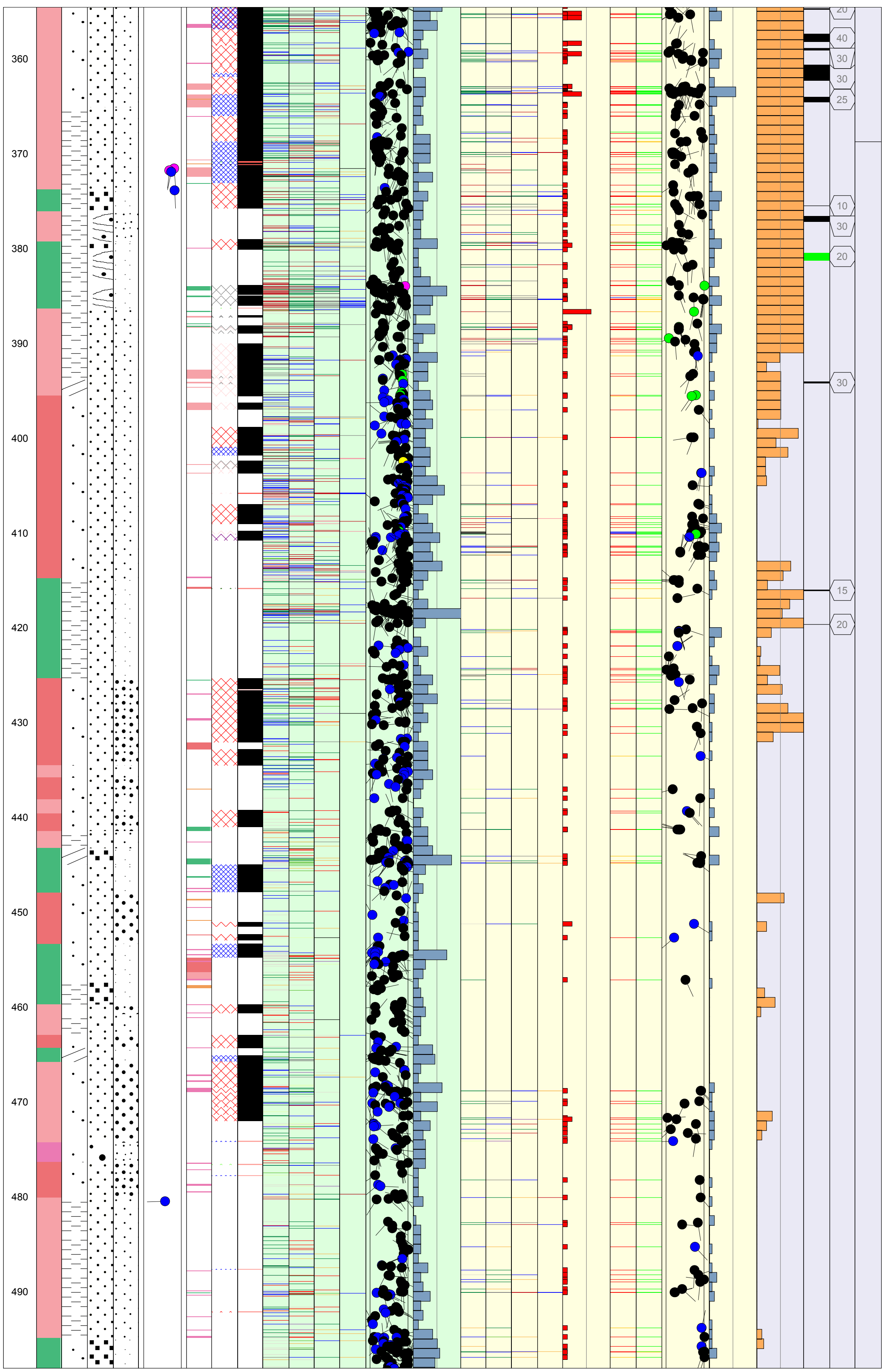
Dip 0 - 90°

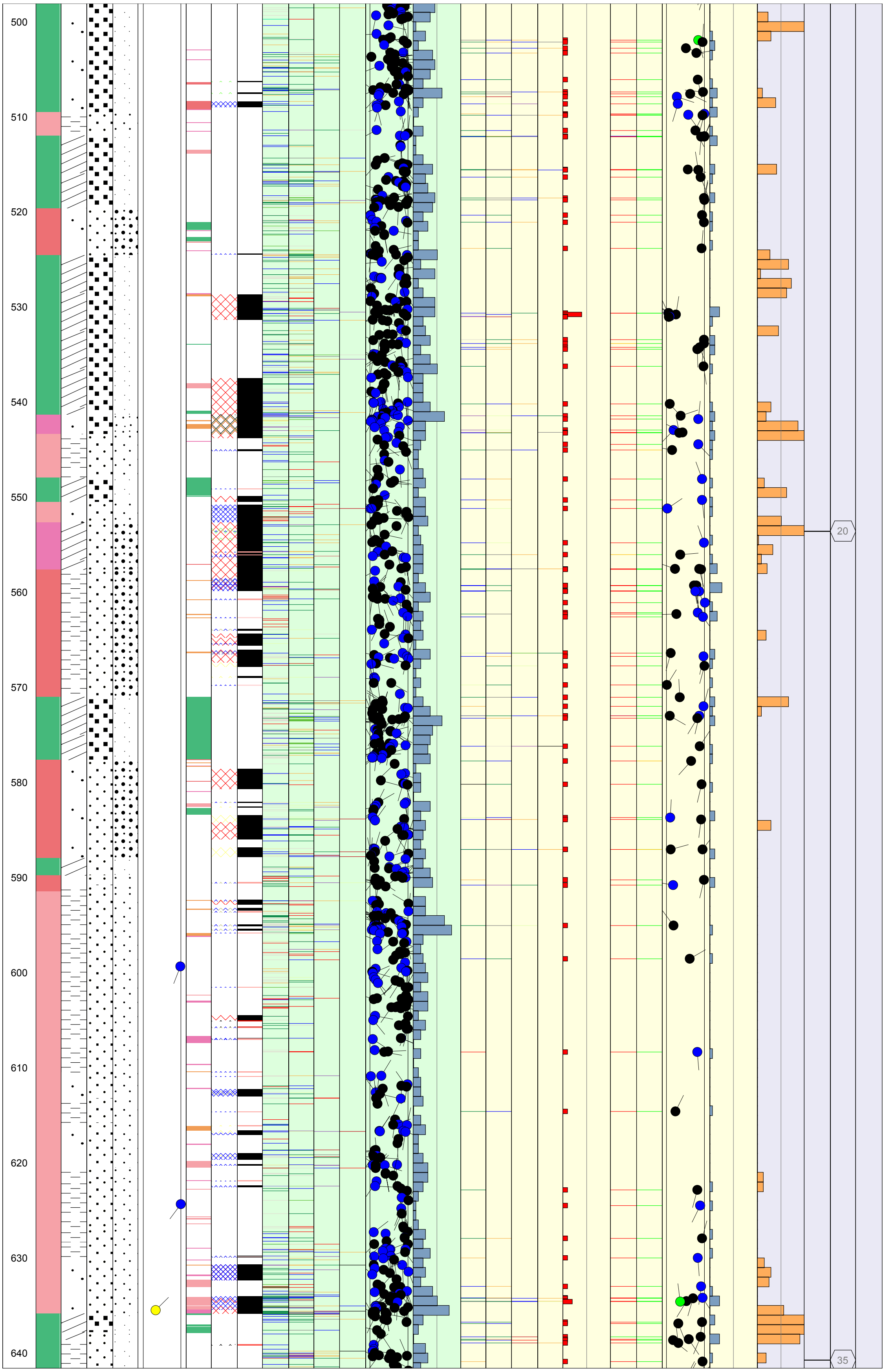
Title GEOLOGY IN KLX06 **Appendix: 5**

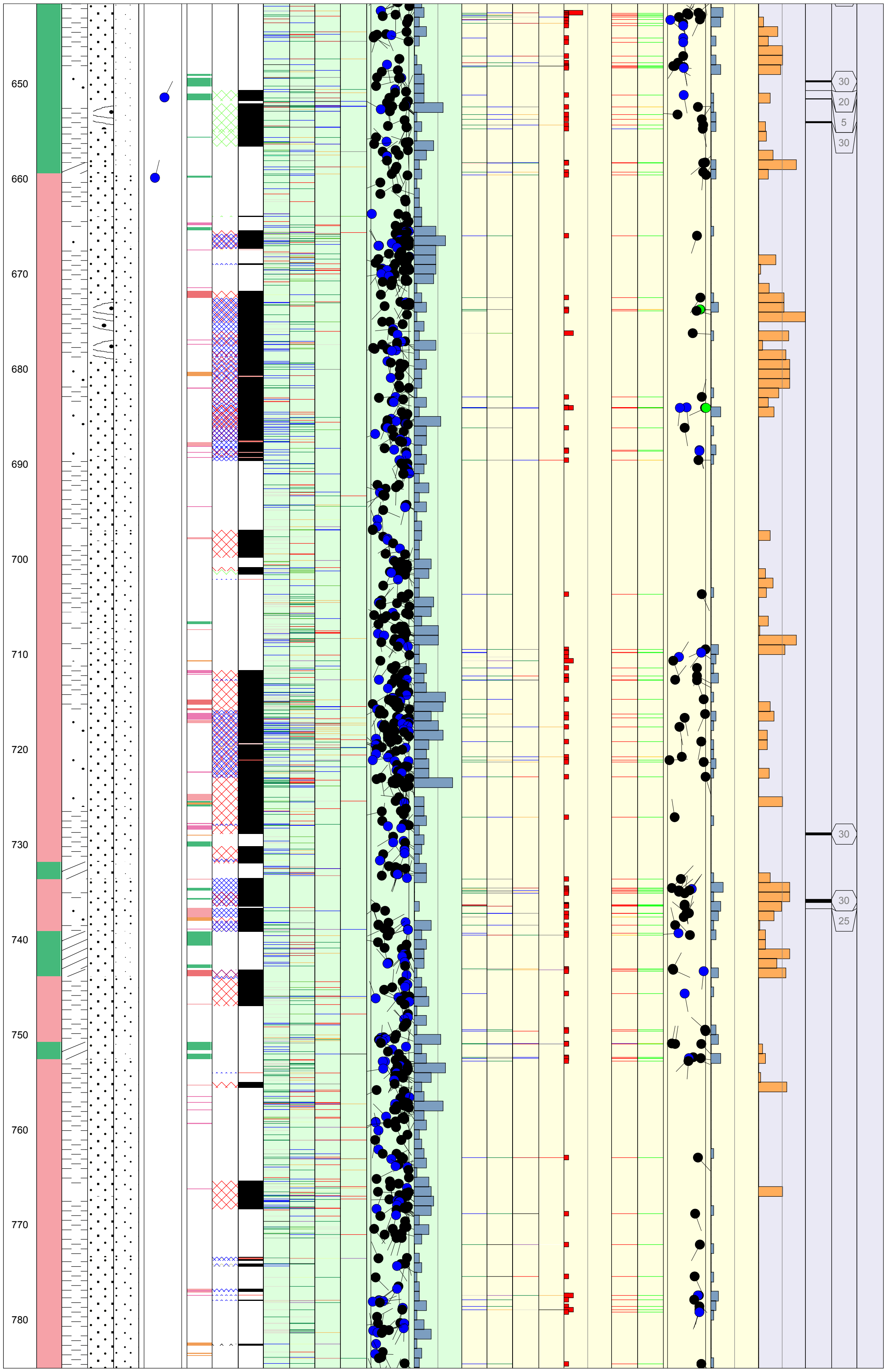
Site	LAXEMAR	**Coordinate System**	RT90-RHB70
Borehole	KLX06	**Northing [m]**	6367805.82
Diameter [mm]	76	**Easting [m]**	1548566.93
Length [m]	994.940	**Elevation [m.a.s.l.]**	17.61
Bearing [°]	328.81	**Drilling Start Date**	2004-08-03 10:30:00
Inclination [°]	-65.22	**Drilling Stop Date**	2004-11-25 11:30:00
Date of mapping	2005-01-11 11:53:00	**Plot Date**	2005-02-28 22:17:59
Rocktype data from	p_rock_XXXXX	**Fracture data from**	p_fract_core

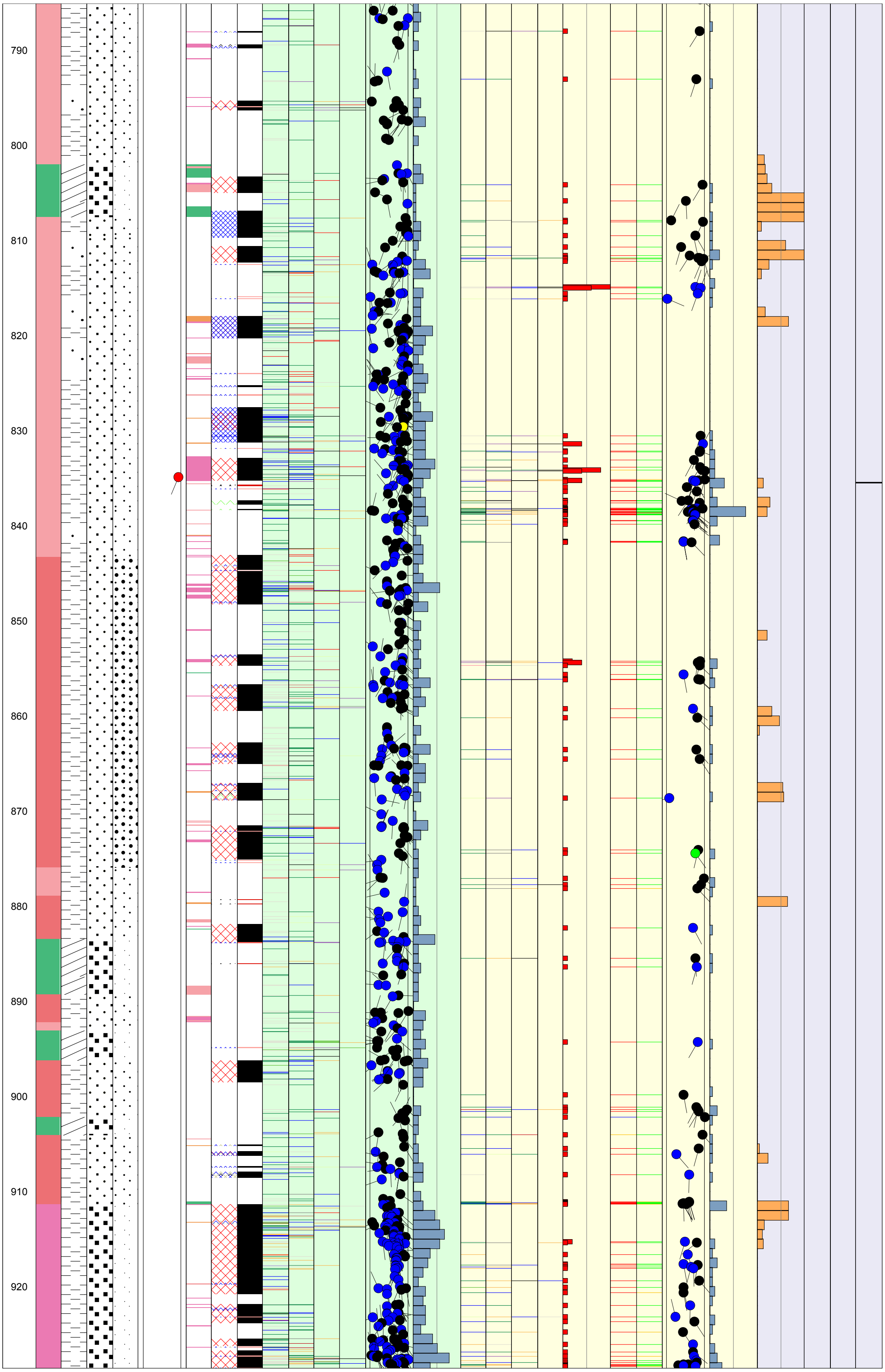


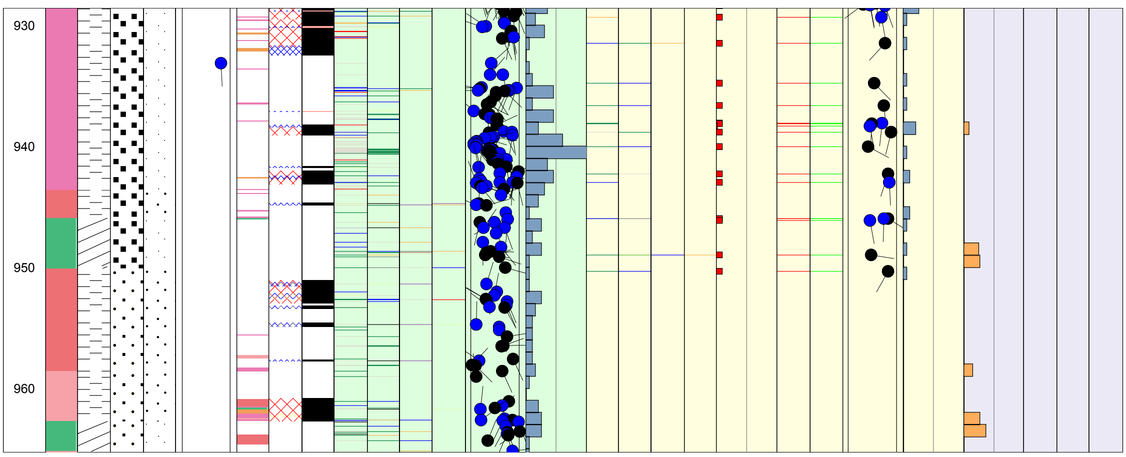

220
230
240
250
260
270
280
290
300
310
320
330
340
350
35
10
45
25
25
40
5
25
15
30
20
15
20
10
20
15
25
40
15
15
15
30
25
20
25
15
10
35


360
370
380
390
400
410
420
430
440
450
460
470
480
490
20
40
30
30
25
10
30
20
30
15
20


500
510
520
530
540
550
560
570
580
590
600
610
620
630
640
20
35


650
660
670
680
690
700
710
720
730
740
750
760
770
780
30
20
5
30
30
30
25


790
800
810
820
830
840
850
860
870
880
890
900
910
920


930
940
950
960

Appendix 6

In-data: Borehole length and diameter for KLX06

Hole Diam T - Drilling: Borehole diameter

KLX06, 2004-08-25 17:00:00 - 2004-11-25 11:30:00 (0.000 - 994.940 m)

Sub Secup (m)	Sub Seclow (m)	Hole Diam (m)	Comment
100.290	101.880	0.086	T-86 (rymning 101.69-101.88)
101.880	994.940	0.076	Corac N/3

Printout from SICADA 2005-02-01 16:59:26.

Appendix 7

In-data: Borehole orientation data for KLX06

Maxibor T - Borehole deviation: Maxibor

KLX06, 2004-10-24 00:00:00 (0.000 - 735.000 m)

Length (m)	Northing (m)	Easting (m)	Elevation (m)	Coord System	Inclination (degrees)	Bearing (degrees)	Local A (m)	Local B (m)	Local C (m)	Extrapol Flag
0.00	6367806.64	1548566.88	-17.68	RT90-RHB70	-65.23	328.81	0.0000	0.0000	0.0000	
3.00	6367807.72	1548566.23	-14.96	RT90-RHB70	-65.12	329.10	1.2600	0.0000	0.0000	
6.00	6367808.80	1548565.58	-12.23	RT90-RHB70	-65.02	329.32	2.5200	0.0100	0.0100	
9.00	6367809.89	1548564.93	-9.52	RT90-RHB70	-64.88	329.48	3.7900	0.0200	0.0200	
12.00	6367810.99	1548564.29	-6.80	RT90-RHB70	-64.80	329.57	5.0600	0.0300	0.0400	
15.00	6367812.09	1548563.64	-4.08	RT90-RHB70	-64.72	329.59	6.3400	0.0500	0.0600	
18.00	6367813.19	1548562.99	-1.37	RT90-RHB70	-64.73	329.63	7.6200	0.0700	0.0800	
21.00	6367814.30	1548562.34	1.34	RT90-RHB70	-64.74	329.63	8.9000	0.0900	0.1100	
24.00	6367815.40	1548561.70	4.05	RT90-RHB70	-64.69	329.58	10.1800	0.1000	0.1400	
27.00	6367816.51	1548561.05	6.77	RT90-RHB70	-64.58	329.53	11.4600	0.1200	0.1600	
30.00	6367817.62	1548560.40	9.48	RT90-RHB70	-64.57	329.51	12.7500	0.1400	0.2000	
33.00	6367818.73	1548559.74	12.19	RT90-RHB70	-64.62	329.58	14.0400	0.1500	0.2300	
36.00	6367819.84	1548559.09	14.90	RT90-RHB70	-64.63	329.64	15.3200	0.1700	0.2600	
39.00	6367820.94	1548558.44	17.61	RT90-RHB70	-64.67	329.69	16.6100	0.1900	0.3000	
42.00	6367822.05	1548557.79	20.32	RT90-RHB70	-64.63	329.79	17.8900	0.2100	0.3200	
45.00	6367823.16	1548557.15	23.03	RT90-RHB70	-64.54	329.93	19.1800	0.2300	0.3600	
48.00	6367824.28	1548556.50	25.74	RT90-RHB70	-64.48	330.00	20.4700	0.2600	0.3900	
51.00	6367825.40	1548555.85	28.44	RT90-RHB70	-64.44	330.02	21.7600	0.2800	0.4300	
54.00	6367826.52	1548555.21	31.15	RT90-RHB70	-64.41	330.07	23.0500	0.3100	0.4700	
57.00	6367827.64	1548554.56	33.86	RT90-RHB70	-64.41	330.05	24.3500	0.3400	0.5100	
60.00	6367828.77	1548553.91	36.56	RT90-RHB70	-64.43	329.94	25.6400	0.3700	0.5600	
63.00	6367829.89	1548553.27	39.27	RT90-RHB70	-64.43	329.85	26.9400	0.3900	0.6000	
66.00	6367831.01	1548552.61	41.97	RT90-RHB70	-64.42	329.77	28.2300	0.4200	0.6400	
69.00	6367832.13	1548551.96	44.68	RT90-RHB70	-64.40	329.67	29.5300	0.4400	0.6800	
72.00	6367833.24	1548551.31	47.39	RT90-RHB70	-64.38	329.60	30.8200	0.4600	0.7300	
75.00	6367834.36	1548550.65	50.09	RT90-RHB70	-64.37	329.54	32.1200	0.4700	0.7700	
78.00	6367835.48	1548549.99	52.80	RT90-RHB70	-64.36	329.51	33.4200	0.4900	0.8200	
81.00	6367836.60	1548549.34	55.50	RT90-RHB70	-64.30	329.52	34.7200	0.5100	0.8600	
84.00	6367837.72	1548548.68	58.20	RT90-RHB70	-64.23	329.59	36.0200	0.5200	0.9100	
87.00	6367838.85	1548548.02	60.91	RT90-RHB70	-64.22	329.67	37.3200	0.5400	0.9600	
90.00	6367839.97	1548547.36	63.61	RT90-RHB70	-64.23	329.68	38.6300	0.5600	1.0100	
93.00	6367841.10	1548546.70	66.31	RT90-RHB70	-64.17	329.64	39.9300	0.5800	1.0700	
96.00	6367842.23	1548546.04	69.01	RT90-RHB70	-64.09	329.52	41.2400	0.6000	1.1200	
99.00	6367843.36	1548545.37	71.71	RT90-RHB70	-64.05	329.54	42.5500	0.6200	1.1800	
102.00	6367844.49	1548544.71	74.40	RT90-RHB70	-64.05	329.73	43.8600	0.6300	1.2400	
105.00	6367845.62	1548544.04	77.10	RT90-RHB70	-64.03	329.93	45.1700	0.6500	1.3000	

108.00	6367846.76	1548543.39	79.80	RT90-RHB70	-64.02	330.22	46.4900	0.6800	1.3700
111.00	6367847.90	1548542.73	82.50	RT90-RHB70	-64.00	330.52	47.8000	0.7100	1.4300
114.00	6367849.04	1548542.09	85.19	RT90-RHB70	-63.98	330.79	49.1100	0.7500	1.4900
117.00	6367850.19	1548541.44	87.89	RT90-RHB70	-63.99	331.02	50.4300	0.8000	1.5600
120.00	6367851.34	1548540.81	90.58	RT90-RHB70	-64.00	331.28	51.7400	0.8500	1.6200
123.00	6367852.50	1548540.17	93.28	RT90-RHB70	-64.01	331.51	53.0600	0.9000	1.6900
126.00	6367853.65	1548539.55	95.98	RT90-RHB70	-64.02	331.70	54.3700	0.9700	1.7500
129.00	6367854.81	1548538.92	98.67	RT90-RHB70	-64.01	331.93	55.6800	1.0300	1.8100
132.00	6367855.97	1548538.31	101.37	RT90-RHB70	-64.02	332.23	57.0000	1.1000	1.8700
135.00	6367857.13	1548537.69	104.07	RT90-RHB70	-64.02	332.51	58.3100	1.1800	1.9300
138.00	6367858.30	1548537.09	106.77	RT90-RHB70	-64.01	332.79	59.6200	1.2700	1.9900
141.00	6367859.47	1548536.49	109.46	RT90-RHB70	-64.02	333.02	60.9300	1.3600	2.0600
144.00	6367860.64	1548535.89	112.16	RT90-RHB70	-64.04	333.20	62.2400	1.4500	2.1200
147.00	6367861.81	1548535.30	114.86	RT90-RHB70	-64.04	333.39	63.5500	1.5500	2.1800
150.00	6367862.98	1548534.71	117.55	RT90-RHB70	-64.05	333.73	64.8600	1.6600	2.2300
153.00	6367864.16	1548534.13	120.25	RT90-RHB70	-64.06	333.98	66.1700	1.7700	2.2900
156.00	6367865.34	1548533.55	122.95	RT90-RHB70	-64.05	334.21	67.4800	1.8900	2.3500
159.00	6367866.52	1548532.98	125.65	RT90-RHB70	-64.07	334.46	68.7800	2.0100	2.4000
162.00	6367867.71	1548532.42	128.34	RT90-RHB70	-64.03	334.53	70.0900	2.1400	2.4600
165.00	6367868.89	1548531.85	131.04	RT90-RHB70	-64.00	334.08	71.3900	2.2700	2.5200
168.00	6367870.08	1548531.28	133.74	RT90-RHB70	-64.03	333.27	72.7000	2.3900	2.5700
171.00	6367871.25	1548530.69	136.43	RT90-RHB70	-64.08	332.57	74.0100	2.5000	2.6300
174.00	6367872.41	1548530.08	139.13	RT90-RHB70	-64.13	331.92	75.3200	2.5800	2.6900
177.00	6367873.57	1548529.47	141.83	RT90-RHB70	-64.11	331.50	76.6300	2.6500	2.7500
180.00	6367874.72	1548528.84	144.53	RT90-RHB70	-64.00	331.53	77.9400	2.7100	2.8000
183.00	6367875.87	1548528.21	147.23	RT90-RHB70	-63.91	331.68	79.2500	2.7800	2.8700
186.00	6367877.04	1548527.59	149.92	RT90-RHB70	-63.82	331.93	80.5700	2.8400	2.9400
189.00	6367878.20	1548526.96	152.61	RT90-RHB70	-63.73	332.09	81.8900	2.9200	3.0100
192.00	6367879.38	1548526.34	155.30	RT90-RHB70	-63.74	331.74	83.2200	2.9900	3.0800
195.00	6367880.55	1548525.71	157.99	RT90-RHB70	-63.84	330.94	84.5400	3.0600	3.1600
198.00	6367881.70	1548525.07	160.69	RT90-RHB70	-63.87	330.15	85.8600	3.1100	3.2300
201.00	6367882.85	1548524.41	163.38	RT90-RHB70	-63.87	329.51	87.1800	3.1400	3.3000
204.00	6367883.99	1548523.74	166.07	RT90-RHB70	-63.78	329.32	88.5100	3.1500	3.3700
207.00	6367885.13	1548523.07	168.77	RT90-RHB70	-63.69	329.27	89.8300	3.1700	3.4500
210.00	6367886.27	1548522.39	171.45	RT90-RHB70	-63.64	329.06	91.1600	3.1800	3.5300
213.00	6367887.41	1548521.70	174.14	RT90-RHB70	-63.59	329.01	92.4900	3.1800	3.6100
216.00	6367888.56	1548521.02	176.83	RT90-RHB70	-63.56	329.14	93.8300	3.1900	3.7000
219.00	6367889.70	1548520.33	179.52	RT90-RHB70	-63.52	329.27	95.1600	3.2000	3.7900
222.00	6367890.85	1548519.65	182.20	RT90-RHB70	-63.50	329.49	96.5000	3.2100	3.8800
225.00	6367892.01	1548518.97	184.89	RT90-RHB70	-63.49	329.76	97.8400	3.2200	3.9700
228.00	6367893.16	1548518.29	187.57	RT90-RHB70	-63.45	329.99	99.1800	3.2400	4.0600
231.00	6367894.32	1548517.62	190.25	RT90-RHB70	-63.36	330.21	100.5200	3.2700	4.1500
234.00	6367895.49	1548516.95	192.94	RT90-RHB70	-63.31	330.44	101.8600	3.3000	4.2500

237.00	6367896.66	1548516.29	195.62	RT90-RHB70	-63.25	330.69	103.2100	3.3400	4.3500
240.00	6367897.84	1548515.63	198.30	RT90-RHB70	-63.18	330.70	104.5600	3.3900	4.4500
243.00	6367899.02	1548514.97	200.97	RT90-RHB70	-63.15	330.71	105.9100	3.4300	4.5600
246.00	6367900.20	1548514.30	203.65	RT90-RHB70	-63.12	330.77	107.2700	3.4800	4.6700
249.00	6367901.39	1548513.64	206.32	RT90-RHB70	-63.09	330.92	108.6200	3.5200	4.7800
252.00	6367902.57	1548512.98	209.00	RT90-RHB70	-63.02	331.14	109.9800	3.5700	4.8900
255.00	6367903.76	1548512.32	211.67	RT90-RHB70	-62.98	331.38	111.3400	3.6300	5.0000
258.00	6367904.96	1548511.67	214.35	RT90-RHB70	-62.93	331.66	112.7000	3.6900	5.1200
261.00	6367906.16	1548511.02	217.02	RT90-RHB70	-62.84	331.97	114.0600	3.7600	5.2400
264.00	6367907.37	1548510.38	219.69	RT90-RHB70	-62.74	332.16	115.4300	3.8300	5.3600
267.00	6367908.59	1548509.74	222.35	RT90-RHB70	-62.66	332.38	116.8000	3.9100	5.4900
270.00	6367909.81	1548509.10	225.02	RT90-RHB70	-62.54	332.65	118.1800	4.0000	5.6200
273.00	6367911.04	1548508.46	227.68	RT90-RHB70	-62.41	332.87	119.5600	4.0900	5.7600
276.00	6367912.27	1548507.83	230.34	RT90-RHB70	-62.32	333.13	120.9400	4.1900	5.9000
279.00	6367913.52	1548507.20	233.00	RT90-RHB70	-62.19	333.35	122.3300	4.3000	6.0500
282.00	6367914.77	1548506.57	235.65	RT90-RHB70	-62.10	333.60	123.7300	4.4100	6.2100
285.00	6367916.02	1548505.95	238.30	RT90-RHB70	-62.02	333.90	125.1300	4.5200	6.3700
288.00	6367917.29	1548505.33	240.95	RT90-RHB70	-61.94	334.17	126.5300	4.6500	6.5300
291.00	6367918.56	1548504.71	243.60	RT90-RHB70	-61.80	334.45	127.9300	4.7800	6.7000
294.00	6367919.84	1548504.10	246.24	RT90-RHB70	-61.67	334.65	129.3500	4.9200	6.8700
297.00	6367921.12	1548503.49	248.88	RT90-RHB70	-61.57	334.71	130.7600	5.0600	7.0500
300.00	6367922.41	1548502.88	251.52	RT90-RHB70	-61.45	334.88	132.1800	5.2100	7.2300
303.00	6367923.71	1548502.28	254.16	RT90-RHB70	-61.37	335.03	133.6100	5.3600	7.4200
306.00	6367925.02	1548501.67	256.79	RT90-RHB70	-61.24	335.16	135.0400	5.5200	7.6200
309.00	6367926.33	1548501.06	259.42	RT90-RHB70	-61.17	335.29	136.4700	5.6800	7.8200
312.00	6367927.64	1548500.46	262.05	RT90-RHB70	-61.08	335.55	137.9100	5.8400	8.0200
315.00	6367928.96	1548499.86	264.67	RT90-RHB70	-61.00	335.87	139.3500	6.0100	8.2300
318.00	6367930.29	1548499.26	267.30	RT90-RHB70	-60.97	336.11	140.7900	6.1900	8.4400
321.00	6367931.62	1548498.67	269.92	RT90-RHB70	-60.95	336.21	142.2400	6.3800	8.6500
324.00	6367932.95	1548498.08	272.54	RT90-RHB70	-60.92	336.34	143.6800	6.5600	8.8700
327.00	6367934.29	1548497.50	275.16	RT90-RHB70	-60.85	336.53	145.1300	6.7500	9.0800
330.00	6367935.63	1548496.92	277.78	RT90-RHB70	-60.78	336.65	146.5800	6.9500	9.3000
333.00	6367936.97	1548496.34	280.40	RT90-RHB70	-60.68	336.89	148.0300	7.1500	9.5200
336.00	6367938.32	1548495.76	283.02	RT90-RHB70	-60.61	337.07	149.4800	7.3600	9.7400
339.00	6367939.68	1548495.19	285.63	RT90-RHB70	-60.55	337.17	150.9400	7.5700	9.9700
342.00	6367941.04	1548494.61	288.24	RT90-RHB70	-60.47	337.43	152.4000	7.7800	10.2000
345.00	6367942.40	1548494.05	290.85	RT90-RHB70	-60.39	337.74	153.8600	8.0000	10.4300
348.00	6367943.78	1548493.49	293.46	RT90-RHB70	-60.31	337.93	155.3200	8.2300	10.6700
351.00	6367945.15	1548492.93	296.07	RT90-RHB70	-60.29	338.13	156.7900	8.4700	10.9100
354.00	6367946.53	1548492.37	298.67	RT90-RHB70	-60.24	338.30	158.2600	8.7100	11.1500
357.00	6367947.92	1548491.82	301.28	RT90-RHB70	-60.19	338.46	159.7300	8.9600	11.3900
360.00	6367949.30	1548491.28	303.88	RT90-RHB70	-60.12	338.66	161.2000	9.2100	11.6400
363.00	6367950.70	1548490.73	306.48	RT90-RHB70	-60.04	338.97	162.6700	9.4600	11.8900

366.00	6367952.09	1548490.19	309.08	RT90-RHB70	-59.99	339.20	164.1400	9.7300	12.1400
369.00	6367953.50	1548489.66	311.68	RT90-RHB70	-59.91	339.45	165.6200	10.0000	12.3900
372.00	6367954.91	1548489.13	314.28	RT90-RHB70	-59.82	339.68	167.1000	10.2700	12.6400
375.00	6367956.32	1548488.61	316.87	RT90-RHB70	-59.81	340.01	168.5800	10.5600	12.9000
378.00	6367957.74	1548488.09	319.46	RT90-RHB70	-59.84	340.29	170.0600	10.8500	13.1600
381.00	6367959.16	1548487.59	322.06	RT90-RHB70	-59.86	340.46	171.5400	11.1500	13.4100
384.00	6367960.58	1548487.08	324.65	RT90-RHB70	-59.92	340.57	173.0100	11.4600	13.6600
387.00	6367961.99	1548486.58	327.25	RT90-RHB70	-59.95	340.69	174.4800	11.7600	13.9100
390.00	6367963.41	1548486.08	329.84	RT90-RHB70	-59.93	340.82	175.9500	12.0700	14.1600
393.00	6367964.83	1548485.59	332.44	RT90-RHB70	-59.92	340.95	177.4200	12.3800	14.4100
396.00	6367966.25	1548485.10	335.04	RT90-RHB70	-59.90	341.07	178.8900	12.7000	14.6600
399.00	6367967.68	1548484.61	337.63	RT90-RHB70	-59.86	341.22	180.3600	13.0200	14.9000
402.00	6367969.10	1548484.13	340.23	RT90-RHB70	-59.81	341.45	181.8300	13.3400	15.1500
405.00	6367970.53	1548483.65	342.82	RT90-RHB70	-59.72	341.62	183.3100	13.6700	15.4000
408.00	6367971.97	1548483.17	345.41	RT90-RHB70	-59.63	341.67	184.7800	14.0100	15.6600
411.00	6367973.41	1548482.69	348.00	RT90-RHB70	-59.59	341.64	186.2600	14.3500	15.9100
414.00	6367974.85	1548482.21	350.58	RT90-RHB70	-59.58	341.70	187.7400	14.6800	16.1700
417.00	6367976.29	1548481.74	353.17	RT90-RHB70	-59.54	341.83	189.2200	15.0200	16.4300
420.00	6367977.74	1548481.26	355.76	RT90-RHB70	-59.51	341.92	190.7000	15.3700	16.7000
423.00	6367979.18	1548480.79	358.34	RT90-RHB70	-59.45	342.07	192.1900	15.7100	16.9600
426.00	6367980.63	1548480.32	360.93	RT90-RHB70	-59.38	342.21	193.6700	16.0600	17.2200
429.00	6367982.09	1548479.85	363.51	RT90-RHB70	-59.29	342.39	195.1600	16.4100	17.4900
432.00	6367983.55	1548479.39	366.09	RT90-RHB70	-59.20	342.59	196.6500	16.7700	17.7600
435.00	6367985.01	1548478.93	368.66	RT90-RHB70	-59.10	342.84	198.1400	17.1400	18.0400
438.00	6367986.49	1548478.48	371.24	RT90-RHB70	-59.03	343.08	199.6300	17.5100	18.3200
441.00	6367987.96	1548478.03	373.81	RT90-RHB70	-58.98	343.30	201.1300	17.8900	18.6000
444.00	6367989.44	1548477.58	376.38	RT90-RHB70	-58.92	343.48	202.6300	18.2800	18.8800
447.00	6367990.93	1548477.14	378.95	RT90-RHB70	-58.85	343.71	204.1200	18.6700	19.1600
450.00	6367992.42	1548476.71	381.52	RT90-RHB70	-58.79	343.93	205.6200	19.0700	19.4500
453.00	6367993.91	1548476.28	384.08	RT90-RHB70	-58.71	344.18	207.1200	19.4800	19.7400
456.00	6367995.41	1548475.85	386.65	RT90-RHB70	-58.62	344.49	208.6300	19.8900	20.0300
459.00	6367996.92	1548475.43	389.21	RT90-RHB70	-58.50	344.81	210.1300	20.3100	20.3200
462.00	6367998.43	1548475.02	391.77	RT90-RHB70	-58.38	345.08	211.6400	20.7400	20.6200
465.00	6367999.95	1548474.62	394.32	RT90-RHB70	-58.25	345.26	213.1500	21.1900	20.9200
468.00	6368001.48	1548474.22	396.87	RT90-RHB70	-58.11	345.45	214.6600	21.6300	21.2200
471.00	6368003.01	1548473.82	399.42	RT90-RHB70	-58.04	345.69	216.1800	22.0900	21.5400
474.00	6368004.55	1548473.43	401.97	RT90-RHB70	-57.92	345.99	217.7000	22.5500	21.8500
477.00	6368006.09	1548473.04	404.51	RT90-RHB70	-57.79	346.23	219.2200	23.0200	22.1700
480.00	6368007.65	1548472.66	407.05	RT90-RHB70	-57.66	346.55	220.7500	23.5000	22.4900
483.00	6368009.21	1548472.29	409.58	RT90-RHB70	-57.53	346.80	222.2800	23.9900	22.8100
486.00	6368010.78	1548471.92	412.11	RT90-RHB70	-57.38	347.03	223.8100	24.4800	23.1400
489.00	6368012.35	1548471.56	414.64	RT90-RHB70	-57.28	347.29	225.3400	24.9900	23.4800
492.00	6368013.93	1548471.20	417.16	RT90-RHB70	-57.17	347.57	226.8800	25.5000	23.8200

495.00	6368015.52	1548470.85	419.68	RT90-RHB70	-57.07	347.80	228.4200	26.0300	24.1600
498.00	6368017.12	1548470.50	422.20	RT90-RHB70	-56.99	347.96	229.9600	26.5600	24.5100
501.00	6368018.72	1548470.16	424.72	RT90-RHB70	-56.90	348.13	231.5100	27.0900	24.8600
504.00	6368020.32	1548469.83	427.23	RT90-RHB70	-56.82	348.32	233.0500	27.6300	25.2100
507.00	6368021.93	1548469.49	429.74	RT90-RHB70	-56.73	348.51	234.6000	28.1800	25.5600
510.00	6368023.54	1548469.17	432.25	RT90-RHB70	-56.65	348.64	236.1500	28.7400	25.9100
513.00	6368025.16	1548468.84	434.75	RT90-RHB70	-56.55	348.77	237.7000	29.3000	26.2700
516.00	6368026.78	1548468.52	437.26	RT90-RHB70	-56.45	348.85	239.2600	29.8600	26.6400
519.00	6368028.40	1548468.20	439.76	RT90-RHB70	-56.35	349.04	240.8100	30.4300	27.0000
522.00	6368030.04	1548467.88	442.26	RT90-RHB70	-56.30	349.16	242.3700	31.0000	27.3700
525.00	6368031.67	1548467.57	444.75	RT90-RHB70	-56.20	349.29	243.9300	31.5800	27.7400
528.00	6368033.31	1548467.26	447.24	RT90-RHB70	-56.07	349.42	245.5000	32.1700	28.1200
531.00	6368034.96	1548466.95	449.73	RT90-RHB70	-56.03	349.49	247.0700	32.7600	28.5000
534.00	6368036.61	1548466.65	452.22	RT90-RHB70	-56.00	349.55	248.6300	33.3500	28.8800
537.00	6368038.26	1548466.34	454.71	RT90-RHB70	-55.92	349.60	250.2000	33.9400	29.2600
540.00	6368039.91	1548466.04	457.19	RT90-RHB70	-55.86	349.64	251.7700	34.5400	29.6500
543.00	6368041.56	1548465.74	459.68	RT90-RHB70	-55.80	349.58	253.3500	35.1400	30.0400
546.00	6368043.22	1548465.43	462.16	RT90-RHB70	-55.68	349.59	254.9200	35.7400	30.4300
549.00	6368044.89	1548465.13	464.64	RT90-RHB70	-55.60	349.57	256.5000	36.3400	30.8300
552.00	6368046.55	1548464.82	467.11	RT90-RHB70	-55.51	349.48	258.0900	36.9400	31.2300
555.00	6368048.22	1548464.51	469.58	RT90-RHB70	-55.42	349.40	259.6800	37.5400	31.6400
558.00	6368049.90	1548464.20	472.05	RT90-RHB70	-55.33	349.39	261.2700	38.1400	32.0500
561.00	6368051.57	1548463.88	474.52	RT90-RHB70	-55.24	349.36	262.8700	38.7400	32.4700
564.00	6368053.26	1548463.57	476.99	RT90-RHB70	-55.17	349.27	264.4700	39.3400	32.8900
567.00	6368054.94	1548463.25	479.45	RT90-RHB70	-55.08	349.30	266.0800	39.9400	33.3100
570.00	6368056.63	1548462.93	481.91	RT90-RHB70	-54.99	349.32	267.6900	40.5400	33.7400
573.00	6368058.32	1548462.61	484.37	RT90-RHB70	-54.90	349.35	269.3000	41.1400	34.1800
576.00	6368060.01	1548462.29	486.82	RT90-RHB70	-54.81	349.36	270.9100	41.7400	34.6200
579.00	6368061.71	1548461.97	489.27	RT90-RHB70	-54.73	349.34	272.5300	42.3500	35.0600
582.00	6368063.41	1548461.65	491.72	RT90-RHB70	-54.65	349.28	274.1500	42.9600	35.5000
585.00	6368065.12	1548461.33	494.17	RT90-RHB70	-54.56	349.24	275.7800	43.5700	35.9600
588.00	6368066.83	1548461.00	496.61	RT90-RHB70	-54.47	349.23	277.4100	44.1700	36.4100
591.00	6368068.54	1548460.68	499.05	RT90-RHB70	-54.35	349.19	279.0400	44.7800	36.8700
594.00	6368070.26	1548460.35	501.49	RT90-RHB70	-54.22	349.12	280.6800	45.3900	37.3400
597.00	6368071.98	1548460.02	503.93	RT90-RHB70	-54.12	349.06	282.3300	46.0000	37.8100
600.00	6368073.71	1548459.69	506.36	RT90-RHB70	-53.99	348.99	283.9800	46.6100	38.2900
603.00	6368075.44	1548459.35	508.78	RT90-RHB70	-53.87	348.91	285.6300	47.2200	38.7800
606.00	6368077.17	1548459.01	511.21	RT90-RHB70	-53.75	348.85	287.2900	47.8200	39.2700
609.00	6368078.91	1548458.67	513.63	RT90-RHB70	-53.66	348.85	288.9600	48.4300	39.7700
612.00	6368080.66	1548458.32	516.04	RT90-RHB70	-53.60	348.92	290.6300	49.0400	40.2700
615.00	6368082.41	1548457.98	518.46	RT90-RHB70	-53.53	349.00	292.3000	49.6500	40.7800
618.00	6368084.16	1548457.64	520.87	RT90-RHB70	-53.43	349.12	293.9800	50.2700	41.2900
621.00	6368085.91	1548457.30	523.28	RT90-RHB70	-53.34	349.21	295.6500	50.8900	41.8000

624.00	6368087.67	1548456.97	525.68	RT90-RHB70	-53.28	349.27	297.3300	51.5100	42.3200
627.00	6368089.43	1548456.63	528.09	RT90-RHB70	-53.20	349.32	299.0100	52.1400	42.8400
630.00	6368091.20	1548456.30	530.49	RT90-RHB70	-53.10	349.39	300.7000	52.7700	43.3600
633.00	6368092.97	1548455.97	532.89	RT90-RHB70	-53.00	349.41	302.3800	53.4000	43.8900
636.00	6368094.74	1548455.64	535.29	RT90-RHB70	-52.90	349.44	304.0700	54.0400	44.4200
639.00	6368096.52	1548455.30	537.68	RT90-RHB70	-52.80	349.36	305.7600	54.6800	44.9500
642.00	6368098.31	1548454.97	540.07	RT90-RHB70	-52.72	349.32	307.4600	55.3100	45.4900
645.00	6368100.09	1548454.63	542.46	RT90-RHB70	-52.64	349.32	309.1700	55.9500	46.0400
648.00	6368101.88	1548454.30	544.84	RT90-RHB70	-52.56	349.35	310.8700	56.5900	46.5900
651.00	6368103.67	1548453.96	547.22	RT90-RHB70	-52.47	349.45	312.5800	57.2300	47.1400
654.00	6368105.47	1548453.62	549.60	RT90-RHB70	-52.37	349.59	314.2900	57.8700	47.7000
657.00	6368107.27	1548453.29	551.98	RT90-RHB70	-52.26	349.74	316.0000	58.5200	48.2500
660.00	6368109.08	1548452.97	554.35	RT90-RHB70	-52.19	349.81	317.7200	59.1800	48.8200
663.00	6368110.89	1548452.64	556.72	RT90-RHB70	-52.11	349.78	319.4300	59.8400	49.3800
666.00	6368112.70	1548452.31	559.09	RT90-RHB70	-51.99	349.74	321.1500	60.5000	49.9500
669.00	6368114.52	1548451.98	561.45	RT90-RHB70	-51.90	349.75	322.8800	61.1600	50.5300
672.00	6368116.34	1548451.65	563.81	RT90-RHB70	-51.79	349.71	324.6100	61.8200	51.1100
675.00	6368118.17	1548451.32	566.17	RT90-RHB70	-51.67	349.72	326.3400	62.4800	51.7000
678.00	6368120.00	1548450.99	568.52	RT90-RHB70	-51.56	349.75	328.0800	63.1400	52.2900
681.00	6368121.83	1548450.66	570.87	RT90-RHB70	-51.45	349.72	329.8200	63.8100	52.8900
684.00	6368123.67	1548450.33	573.22	RT90-RHB70	-51.34	349.75	331.5700	64.4800	53.4900
687.00	6368125.52	1548449.99	575.56	RT90-RHB70	-51.25	349.75	333.3200	65.1500	54.1000
690.00	6368127.36	1548449.66	577.90	RT90-RHB70	-51.14	349.73	335.0700	65.8200	54.7100
693.00	6368129.22	1548449.32	580.24	RT90-RHB70	-51.04	349.64	336.8300	66.4900	55.3300
696.00	6368131.07	1548448.98	582.57	RT90-RHB70	-50.93	349.57	338.5900	67.1600	55.9500
699.00	6368132.93	1548448.64	584.90	RT90-RHB70	-50.82	349.57	340.3600	67.8300	56.5800
702.00	6368134.80	1548448.30	587.22	RT90-RHB70	-50.71	349.52	342.1300	68.5000	57.2200
705.00	6368136.66	1548447.95	589.55	RT90-RHB70	-50.58	349.49	343.9100	69.1700	57.8600
708.00	6368138.54	1548447.60	591.86	RT90-RHB70	-50.47	349.44	345.6900	69.8500	58.5000
711.00	6368140.41	1548447.25	594.18	RT90-RHB70	-50.36	349.42	347.4800	70.5200	59.1600
714.00	6368142.29	1548446.90	596.49	RT90-RHB70	-50.25	349.39	349.2700	71.1900	59.8100
717.00	6368144.18	1548446.55	598.79	RT90-RHB70	-50.15	349.33	351.0700	71.8700	60.4800
720.00	6368146.07	1548446.19	601.10	RT90-RHB70	-50.02	349.32	352.8700	72.5400	61.1500
723.00	6368147.96	1548445.84	603.40	RT90-RHB70	-49.92	349.31	354.6700	73.2200	61.8300
726.00	6368149.86	1548445.48	605.69	RT90-RHB70	-49.80	349.30	356.4800	73.8900	62.5100
729.00	6368151.76	1548445.12	607.98	RT90-RHB70	-49.74	349.29	358.3000	74.5700	63.1900
735.00	6368155.58	1548444.40	612.56	RT90-RHB70	-49.64	349.32	361.9300	75.9300	64.5800

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Appendix 8

In-data: Reference marks for length adjustments for KLX06

Reference Mark T - Reference mark in drillhole

KLX06, 2004-11-28 07:00:00 - 2004-11-28 19:30:00 (0.000 - 980.000 m)

Bhlen (m)	Rotation Speed (rpm)	Start Flow (l/min)	Stop Flow (l/min)	Stop Pressure (bar)	Cutter Time (s)	Trace Detectable	Cutter Diameter (mm)	Comment
103.00	400.00	240	1000	28.0	34	JA		
151.00	400.00	260	1000	28.0	26	JA		
200.00	400.00	240	1000	28.0	28	JA		
250.00	400.00	250	1000	28.0	27	JA		
300.00	400.00	260	1000	29.0	32	JA		
350.00	400.00	280	1000	29.0	33	JA		
400.00	400.00	270	1000	29.0	60	JA		
450.00	400.00	260	1000	29.0	60	JA		
500.00	400.00	280	1000	28.0	33	JA		
550.00	400.00	270	1000	28.0	34	JA		
600.00	400.00	270	1000	29.0	64	JA		
650.00	400.00	270	1000	29.0	32	JA		
700.00	400.00	300	1000	31.0	60	JA		
750.00	400.00	290	1000	30.0	66	JA		
800.00	400.00	300	1000	32.0	76	JA		
850.00	400.00	280	1000	32.0	123	JA		
900.00	400.00	280	1000	36.0	128	JA		
980.00	400.00	300	1000	37.0	134	JA		

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