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## **Oskarshamn site investigation**

### **Boremap mapping of telescopic drilled borehole KLX17A**

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Geosigma AB

December 2007

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*Keywords:* KLX17A, Geology, Drill core mapping, Boremap, Fractures, BIPS, Laxemar.

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

Data in SKB's database can be changed for different reasons. Minor changes in SKB's database will not necessarily result in a revised report. Data revisions may also be presented as supplements, available at [www.skb.se](http://www.skb.se).

A pdf version of this document can be downloaded from [www.skb.se](http://www.skb.se).

## Abstract

This report presents the Boremap mapping of KLX17A, which is a c 701 m long core drilled borehole and was drilled with the orientation 011/–61°. The mapping was conducted between 2006-12-05 and 2007-01-30.

The documentation of geological structures and lithologies intersecting borehole KLX17A was made using the drill core and BIPS-images. Geological structures are correctly oriented in space along the borehole with the Boremap system.

The lithology in KLX17A is dominated by Ävrö granite (501044). Subordinate rock types are diorite/gabbro (501033), fine-grained diorite-gabbro (505102) and fine-grained granite (511058).

Seven sections have been highlighted due to increased fracture frequencies, alterations and structural features. These sections cover the following intervals: 90–112 m, 189–225 m, 350–357 m, 423–432 m, 502–515 m, 528–552 m och 662–674 m.

## Sammanfattning

Denna rapport presenterar boremapkarteringen av KLX17A, som är ett ca 701 meter långt teleskopborrat kärnborrhål. Borrhålet borrades med orienteringen 011/–61° och karterades mellan 2006-12-05 och 2007-01-30.

Dokumentationen av geologiska strukturer och litologi som genomskär borrhål KLX17A, har utförts med borkärna och BIPS-bilder. Geologiska strukturer, har orienterats i rummet längs med borrhålet med Boremap systemet.

KLX17A domineras av Ävrögranit (501044). Underordnade bergarter utgörs av diorit/gabbro (501033), finkornig diorit-gabbro (505102) och finkornig granit (511058).

Sju sektioner utmärker sig i varierande grad genom förhöjd sprickfrekvens, bergets omvandlingar och geologiska strukturer. Sektionerna är 90–112 m, 189–225 m, 350–357 m, 423–432 m, 502–515 m, 528–552 m och 662–674 m.

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# 1 Introduction

This report gives a brief presentation of the data gained from the mapping of KLX17A in the Laxemar area, which is one of the activities performed within the site investigation at Oskarshamn. The work was carried out in accordance with activity plan AP PS 400-06-148. In Table 1-1 controlling documents for performing this activity are listed. Both activity plan and method descriptions are SKB's internal controlling documents. Rock type nomenclature that has been used is shown in Table 1-2.

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

<b>Activity Plan</b>	<b>Number</b>	<b>Version</b>
Boremapkartering av KLX17A	AP PS 400-06-148	1.0
<b>Method descriptions</b>	<b>Number</b>	<b>Version</b>
Nomenklatur vid Boremapkartering	SKB MD 143.008	2.0
Method Description for Boremap mapping	SKB MD 143.006	2.0
Mätsystembeskrivning för Boremap	SKB MD 146.005	1.0
Instruktion: Regler för bergarters benämningar vid platsundersökning I Oskarshamn	SKB MD 132.004	1.0
Instruktion för längdkalibrering vid undersökningar i kärnborrhål	SKB MD 620.010	2.0

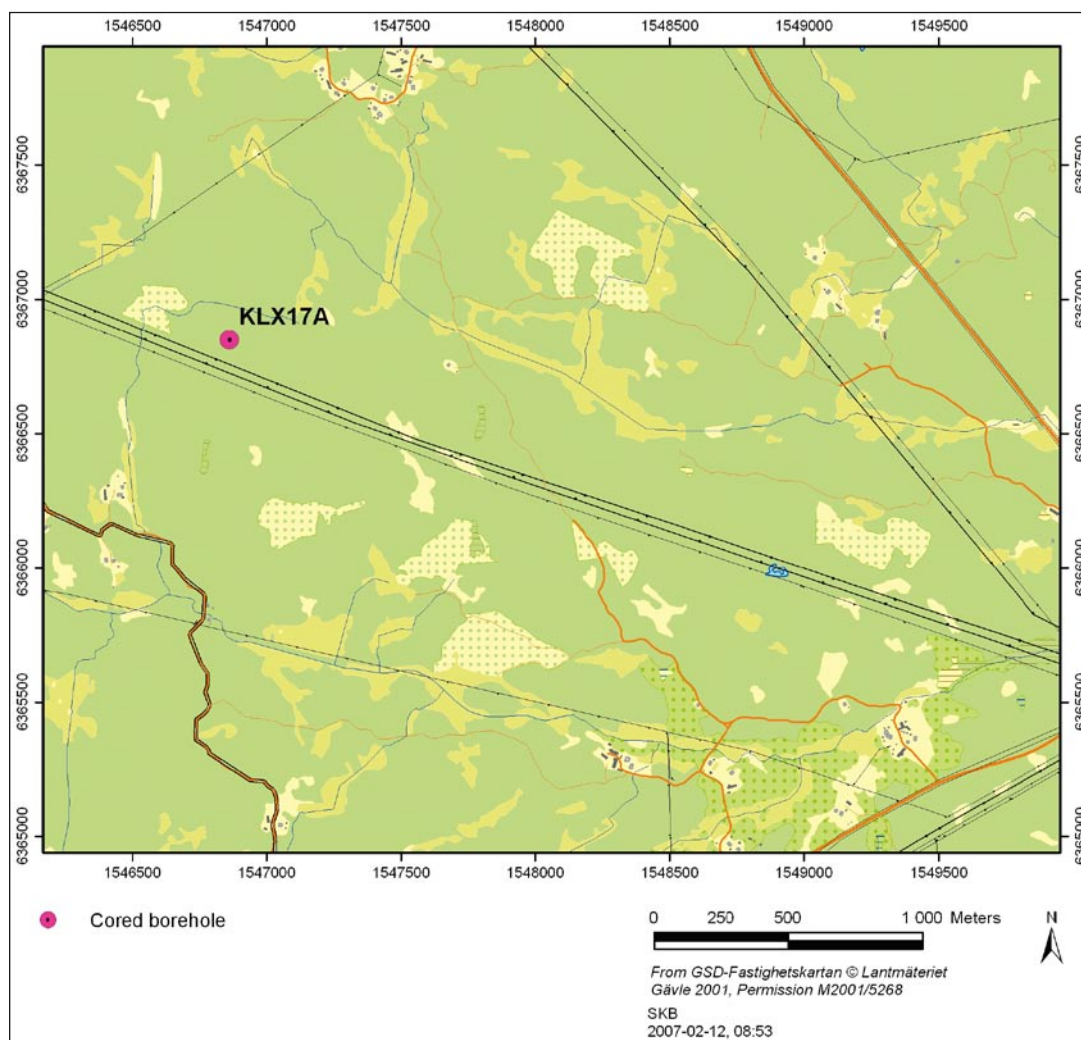
**Table 1-2. Rock type nomenclature for the site investigation at Oskarshamn.**

<b>Rock type</b>	<b>Rock code</b>	<b>Rock description</b>
Dolerite	501027	Dolerite
Fine-grained Götemar granite	531058	Granite, fine- to medium-grained, ("Götemar granite")
Coarse-grained Götemar granite	521058	Granite, coarse-grained, ("Götemar granite")
Fine-grained granite	511058	Granite, fine- to medium-grained
Pegmatite	501061	Pegmatite
Granite	501058	Granite, medium- to coarse-grained
Ävrö granite	501044	Granite to quartz monzodiorite, generally porphyritic
Quartz monzodiorite	501036	Quartz monzonite to monzodiorite, equigranular to weakly porphyritic
Diorite/gabbro	501033	Diorite to gabbro
Fine-grained dioritoid	501030	Intermediate magmatic rock
Fine-grained diorite-gabbro	505102	Mafic rock, fine-grained
Sulphide mineralization	509010	Sulphide mineralization
Sandstone	506007	Sandstone

SKB investigates two potential sites for a deep repository for 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 1,000 m at these sites, SKB has initiated a drilling program using core drilled boreholes. Every borehole usually starts with a percussion drilled part the first 100 m, where only drill cuttings are examined together with BIPS, followed by core drilling.

Borehole KLX17A is situated within the Laxemar area (Figure 1-1). KLX17A is a c 701 m long core drilled borehole with the orientation 011/–61. Mapping of the borehole was performed between 2006-12-05 and 2007-01-30.

Detailed mapping of the drill cores is essential for a three dimensional modelling of the geology at depth. The mapping is based on the use of BIPS-image (Borehole Image Processing System) of the borehole wall and by the study of the drill core itself. The BIPS-image enables the study of orientations, since the Boremap software calculates strike and dip of planar features such as foliations, rock contacts and fractures.



**Figure 1-1.** Location of the core drilled borehole KLX17A.

## **2 Objective and scope**

The principal aim of the mapping activities presented in this report is to obtain a documentation of geological structures and lithologies intersecting borehole KLX17A. Geological structures will be correctly orientated in space along the borehole with the Boremap system. The result 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**

Software used for the mapping of KLX17A was Boremap v. 3.8, with bedrock and mineral standards of SKB. The data presentation was made using WellCad v. 4, Microsoft Access and Microsoft Excel. Boremap is the software that unites orthodox core mapping with modern video mapping, where Boremap shows the 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 is used to facilitate the core mapping: folding rule, pen, diluted hydrochloric acid, knife, water-filled atomiser and hand lens.

### **3.3 BIPS-image video film sequences**

The BIPS-image of KLX17A covers the interval 66.00–696.724 m.

### **3.4 BIPS-image video film quality**

The visibility of thin fractures in BIPS depends on image resolution, image contrast and image quality.

#### **3.4.1 BIPS-image resolution**

Resolution of the BIPS-image is perhaps the principal reason why very thin fractures as well as very thin apertures are not visible in the BIPS-image and the resolution depends on the BIPS video camera pixel size and illumination angle.

#### **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 contrast between the fracture and the wall rock. A bright fracture in a dark rock is clearly visible in the BIPS-image. But a bright coloured fracture in a light coloured 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 very rare cases 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.

### 3.4.3 BIPS-image quality

BIPS-image quality is sometimes limited due to:

- 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 high 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.

Vertical bleached bands and blackish coatings are usually the main disturbances in the BIPS-image quality.

The image quality is classified into four levels; good, acceptable, bad and very bad. Good quality means a more or less clear image which is easy to interpret. If the quality is acceptable it means that the image is not good, but that the mapping can be performed without any problems. An image of bad quality is somewhat difficult to interpret while an image of very bad quality cannot be interpreted except from very obvious and outstanding features. When the BIPS-image quality is so bad that fractures and structures cannot be identified, they can still be oriented using the *guide-line method* (section 4.3.3). The BIPS-image quality for KLX17A is presented in Table 3-1.

**Table 3-1. BIPS-image quality in KLX17A.**

From (m)	To (m)	Quality
66.000	696.724	Good

## 4 Execution

### 4.1 General

Mapping of the drill core of the telescopic drilled borehole was performed and documented according to activity plan AP PS 400-06-140 (SKB, internal document) referring to the *Method Description for Boremap mapping* (SKB MD 143.006, v. 2.0), *Nomenklatur vid Boremapkartering* (SKB MD 143.008, v. 2.0), *Instruktion: Regler för bergarters benämningar vid platsundersökningen i Oskarshamn* (SKB MD 132.004, v. 1.0) and *Instruktion för längdkalibrering vid undersökningar i kärnbrorrhål* (SKB MD 620.010, v. 2.0), all of them SKB internal documents.

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

The term *oxidation* has been used as an alteration type until the mapping of KLX05. However, research has shown that the red colour of the bedrock is actually not only a result of oxidation. Since April 2005 the term *red staining* is used instead of the term *oxidation*.

The mapping was performed by Karl-Johan Mattsson, Peter Dahlin and Anna-Maria Olsson (Geosigma AB) and Jan Ehrenborg (Mírab Mineral Resurser AB).

### 4.2 Preparations

Any depth registered in the BIPS-image deviates from the true depth in the borehole, a deviation which increases with depth, with approximately 0.4 m/100 m. This problem is eliminated by adjusting the depth of the BIPS-image to reference slots cut into the borehole walls every fiftieth metre (Appendix 7). The level for each slot is measured in the BIPS-images and then adjusted to the correct level using the correct depth value from the SICADA database.

Necessary in data for length adjustment and orientation in space are borehole diameter, reference marks, length and deviation; both collected from SICADA database (Appendices 6–8).

### 4.3 Execution of measurements

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

#### 4.3.1 Fracture definitions

Definitions of different fracture types and aperture, crush zones and sealed fracture network are found in *Nomenklatur vid Boremapkartering* (SKB MD 143.008, v. 2.0), SKB internal document.

Two types of fractures are mapped in Boremap; broken and unbroken. Broken are fractures that split the core while unbroken fractures do not split the core. All fractures are described with their fracture minerals and other characteristics, e.g. width, aperture and roughness. Visible apertures are measured down to 1 mm in the BIPS-image. Smaller apertures, which are impossible to detect in the BIPS-image, are denoted a value of 0.5 mm. If the core pieces don't fit well, the aperture is considered "probable". If the core pieces do fit well, but the fracture surfaces are dull or altered, the aperture is considered "possible".

All fractures with apertures > 0 mm are treated as open in the SICADA database. Only few broken fractures are given the aperture = 0 mm. Unbroken fractures usually have apertures = 0 mm. Unbroken fractures that have apertures > 0 mm are interpreted as partly open and are included in the open-category. Open and sealed fractures are finally frequency calculated and shown in Appendix 1.

#### 4.3.2 Fracture alteration and joint alteration number

Joint alteration number is principally related to the thickness of, and the clay content in a fracture. Thick fractures rich in clay minerals are given joint alteration numbers between 2 and 3. The majority of the broken fractures are very thin to extremely thin and seldom contain clay minerals. These fractures receive 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 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 is considered as fresh. The joint alteration number is thus set to 1.

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

**Joint alteration number equal to 1.5:** Epidote, prehnite, hematite, chlorite and/or clay minerals are regarded as fracture minerals most likely resulting from altered wall rock. 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 thick and contain a few mm of clay minerals, often together with epidote and chlorite, the joint alteration number is set to 2. In rare cases, when a fracture contains 5–10 mm thick clay, together with chlorite, the joint alteration number is set to 3 or higher.

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 is 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:

- Amplitude (measured along the drill core) which is the interval between fracture extremes 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.
- Absolute depth.

Orientation of fractures and other structures with the *guide-line method* is done in the following way: The first step is to calculate the amplitude of the fracture trace in the BIPS-image (with 76 mm diameter) from the measured fracture amplitude in the drill core (with 50 mm diameter). 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 trace is then put at the correct depth according to the depth measured on the drill core.

The *guide-line method* can be used to orientate any feature that is not 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 feature as the personnel delineating the trace in the BIPS-image, especially in intervals rich in fractures.

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. Accordingly, the *guide-line method* is so far considered better than mapping lots of non-oriented fractures. 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.

#### **4.3.4 Definition of veins and dikes**

Rock occurrence is the way Boremap handles the occurrence of lithology up to 1 metre wide. Chiefly two different rock occurrences are mapped: veins and dikes. These two are separated by their respectively length in the drill core; veins are set to 0–20 cm and dikes are set to 20–100 cm. Rock occurrences that covers more than 100 cm of the drill core 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:

X1 Gypsum.

X5 Bleached fracture walls.

X7 Fractures with a fresh appearance and no detectable mineral.

X8 Fractures with epidotized and/or saussuritized walls.

X9 Weathered appearance.

### **4.4 Data handling**

Mapping of the drill core 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. Regular quality controls are performed. Every working day a Summary report (from Boremap) and a WellCad plot are printed in order to find possible misprints. The mapping is also 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 and only these data are later used for interpretation and modelling.

## 4.5 Geological summary table, general description

A Geological Summary table (Appendix 1) is an overview of the features mapped with the Boremap software. It also facilitates comparisons between Boremap information collected from different boreholes and is more objective than a pure descriptive borehole summary. All information is taken directly from the Boremap database using simple and well defined search paths for each geological parameter (Appendix 2).

The Geological summary table consists of 23 columns, each one representing a specific geological parameter, presented as either intervals or frequencies (see section 4.5.1 for column description). Intervals are calculated for parameters with a width  $\geq 1$  m and frequencies for parameters with a width  $< 1$  m. Frequency information is treated as treated as point observations. It should be noted that parameters with a thickness of only 1 mm get 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 – red staining*.
- No *unbroken fractures* are mapped in intervals of *sealed fracture network*.
- No *broken fractures* are mapped in intervals with *crush*.
- Hybrid rock and composite dikes generally include a large amount of fine to medium grained granite veins. These veins are not mapped and the frequency presented for veins + dikes in column 6 (Appendix 1) are lower than the true frequency in composite dike 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/Type*, interval column. No frequency column is presented for alteration/ type. The alteration/ type column are 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 + Dikes < 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.

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

**Column 12:** *Structure/Foliated < 1 m wide* is a frequency column. Sections with foliation < 1 m wide are mapped as rock occurrence/structure in Boremap.

**Column 13:** *Structure/Foliated ≥ 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 as well as broken 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 and > 0.5*, frequency column. This column includes fractures that certainly 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.

## 4.6 Nonconformities

The section at 66–112 m was mapped with BIPS-image and core, the section at 112–134 m only with BIPS-image, the section at 134–696 m with BIPS-image and core and finally the section at 696–701 m only with core.

## 5 Results

### 5.1 General

Borehole KLX17A has the orientation 011/–61°. The drill core covers the interval 66–112 m and 134–701 m and the BIPS-image covers the interval 66–696.6 m.

All results from the mapping are principally found in the appendices. Information from the SICADA database is shown in the Geological Summary table in Appendix 1 and a search path to Geological Summary table is presented in Appendix 2. The BIPS-image is presented in Appendix 3, the WellCad diagram in Appendix 4 and In-data, such as borehole length, reference marks, deviation data and diameter are presented in Appendices 6–8.

Original data from the reported activity are stored in the primary database SICADA. Data are traceable in SICADA by the Activity Plan number (AP PS 400-06-148). Only data in databases are accepted for further interpretation and modelling. The data presented in this report are regarded as copies of the original data. Data in the databases may be revised, if needed. Such revisions will not necessarily result in a revision of the P-report, although the normal procedure is that major revisions entail a revision of the P-report. Minor revisions are normally presented as supplements, available at [www.skb.se](http://www.skb.se).

### 5.2 Lithology and structures

The lithology in KLX17A (Table 5-1) is dominated by Ävrö granite (501044). Subordinate rock types comprise diorite/gabbro (501033), fine-grained diorite-gabbro (505102) and fine-grained granite (511058).

Following sections are highlighted due to increased frequency of fractures (both open and sealed), alterations and structural features (such as cataclasite, ductile/brittle-ductile shear zones and breccias).

#### ***Section interval characteristics***

1. 90–112 m; open fractures, red staining and sealed network. A total of nine crush zones occur in this section.
2. 189–225 m; open fractures, red staining, sealed network, ductile and brittle-ductile shear zones, breccias and cataclasites.
3. 350–357 m; consists of a strongly deformed fine-grained diorite-gabbro (505102) and a slight increase in open fractures and sealed network.
4. 423–432 m; consists of a strongly deformed fine-grained diorite-gabbro (505102) and a slight increase in open fractures and sealed network.
5. 502–515 m; nine ductile to brittle-ductile shear zones occurs in this section and they are aligned in the orientation 155/55, some sealed network and red staining.
6. 528–552 m; long section with varying degree of red staining, 11 ductile to brittle-ductile shear zones and sealed network occurs randomly.
7. 662–674 m; strong red staining, lot of sealed network, brittle-ductile shear zones and cataclasites.



**Table 5-1. Lithology distribution in KLX17A.**

Rock types	%
Ävrö granite (501044)	88.4
Diorite to gabbro (501033)	6.9
Fine-grained diorite-gabbro (505102)	3.6
Fine-grained granite (511058)	1.1

### 5.3 Fracture mineralogy

Tables 5-3 and 5-4 show the frequency of minerals and rock wall alteration in sealed fractures and open fractures respectively. Minerals less than 0.1% are not accounted for. For X-mineral classification, see section 4.3.5.

Calcite and chlorite are the most frequently occurring minerals in open fractures. Subordinate minerals are pyrite, clay minerals, epidote and oxidized walls. In sealed fractures the dominating mineral is calcite. Subordinate minerals and rock wall alteration are chlorite, oxidized walls, epidote, quartz and prehnite. Worth to notice is the occurrence of gypsum (X1) and/or apophyllite.

**Table 5-3. Frequency of minerals and rock wall alteration in open fractures.**

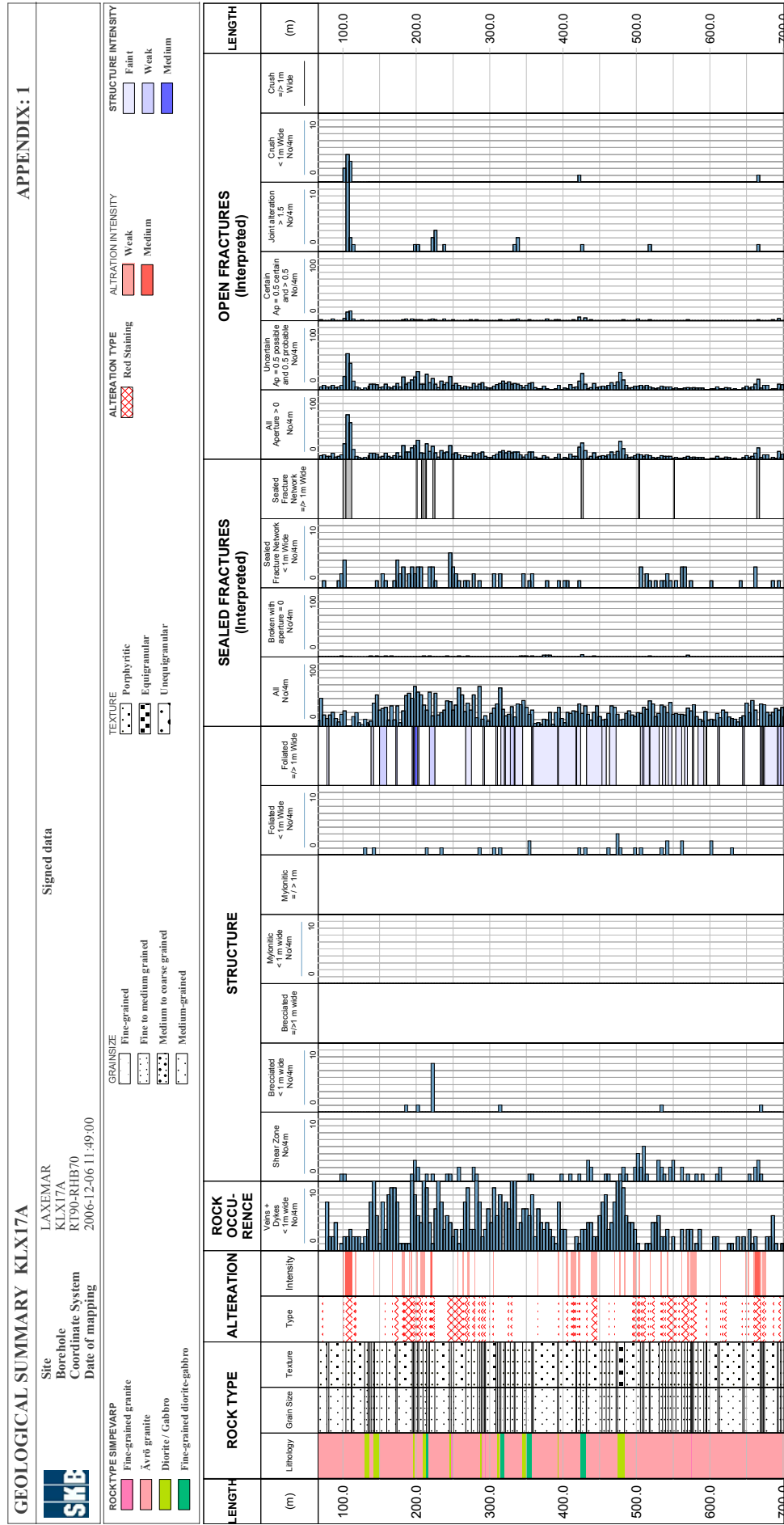
Mineral	%
Adularia	1.4
Calcite	82.0
Chalcopyrite	0.3
Chlorite	72.5
Clay Minerals	23.6
Epidote	21.1
Hematite	12.4
Laumontite	0.2
Oxidized Walls	19.9
Prehnite	5.5
Pyrite	25.9
Quartz	2.4
Red Feldspar	0.3
Unknown Mineral	2.1
White Feldspar	0.1
X1	2.0
X5	0.2
X7	1.3
X8	0.5
Zeolite	0.2

**Table 5-4. Frequency of minerals and rock wall alteration in sealed fractures.**

<b>Mineral</b>	<b>%</b>
Adularia	3.9
Calcite	43.2
Chlorite	26.0
Clay Minerals	0.4
Epidote	15.1
Fluorite	0.2
Hematite	0.5
Oxidized Walls	20.4
Prehnite	8.5
Pyrite	4.6
Quartz	11.6
Red Feldspar	1.0
White Feldspar	2.9
X1	0.1
X5	2.3
X7	0.2
X8	5.0

# Appendix 1

## Geological summary table for KLX17A



## Appendix 2

**Search paths for the geological summary table**

<b>TABLE HEAD LINES</b>		<b>INFORMATION SOURCE</b>		<b>PRESENTATION</b>
<b>Head lines</b>	<b>Sub head lines</b>	<b>Varcode</b>	<b>First suborder</b>	<b>Second suborder</b>
<b>Rock type</b>	Lithology	5	Sub 1	
	Grain size	5	Sub 5	
	Texture	5	Sub 6	
	Type	7	Sub 1 = 700	
	Intensity	7	Sub 1 = 700	Sub 2
	Vein + dyke		31	Sub 1 = 2 and 18
<b>Rock occurrence Structure</b>	Shear zone, < 1m wide	31	Sub 4 = 41 and 42	
	Brecciated, < 1m wide	31	Sub 4 = 7	
	Brecciated, >/= 1m wide	5	Sub 3 = 7	Sub 4; 101 and 102 = 102
		5	Sub 3 = 7	Sub 4; 103 and 104 = 104
	Mylonite, < 1 m wide	31	Sub 4 = 34	
	Mylonite, >/= 1 m wide	5	Sub 3 = 34	Sub 4; 101 and 102 = 102
<b>Sealed fracture</b>	Foliated, < 1 m wide	31	Sub 4 = 81	Sub 4; 103 and 104 = 104
	Foliated, >/= 1 m wide	5	Sub 3 = 81	
		5	Sub 3 = 81	Sub 4; 101 and 102 = 102
		3		Sub 4; 103 and 104 = 104
	All unbroken fractures and broken fractures	2	SNUM 11= 0	
	Broken fractures, Aperture = 0	2	SNUM 11 = 0	
<b>Open fractures</b>	Sealed fracture network < 1 m wide	32		
	Sealed fracture network >/= 1 m wide	32		
	All, Aperture > 0	2 and 3	SNUM 11>0	
	Uncertain, Aperture = 0.5 possible and 0.5 probable	2 and 3	SNUM 11>0	Sub 12 = 3
	Certain, Aperture = 0.5 and >0.5	2 and 3	SNUM 11>0	Sub 12 = 2
	Joint alteration > 1.5	2	SNUM 16 > 1.5	Sub 12 = 1
Crush < 1 m wide		4		
	Crush >/= 1 m wide	4		

**BIPS-image for KLX17A**

**Borehole Image Report**

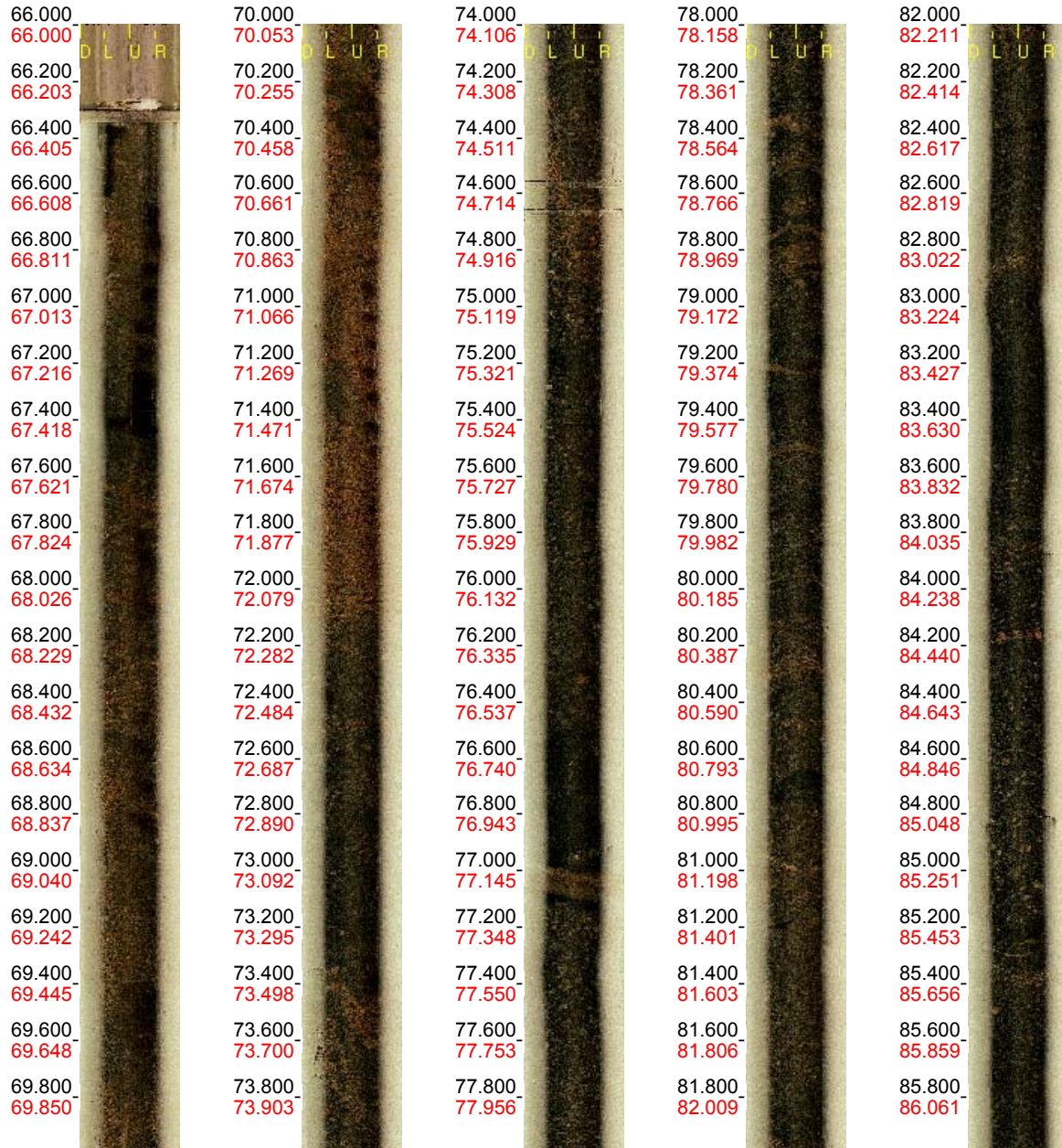
Borehole Name: KLX17A  
Mapping Name: KLX17A\_134-701mGeos1  
Mapping Range: 66.000 - 696.724 m  
Diameter: 76.0 mm  
Printed Range: 66.000 - 696.784  
Pages: 33

**Image File Information:**

File: G:\skb\bips\oskarshamn\KLX17A\Used\KLX17A\_66-697m\_20070109.BIP  
Date/Time: 2006-11-28 12:46:00  
Start Depth: 66.000 m  
End Depth: 696.784 m  
Resolution: 1.00 mm/pixel (depth)  
Orientation: Gravmetric  
Image height: 630784 pixels  
Image width: 360 pixels  
BIP Version: BIP-III  
Locality: LAXEMAR  
Borehole: KLX17A  
Scan Direction: Down  
Color adjust: 0 0 0 (RGB)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 66.000 - 86.000 m  
Azimuth: 10.4  
Inclination: -60.8



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

2 (33)

Borehole: KLX17A  
 Mapping: KLX17A\_134-701mGeos1

Depth range: 86.000 - 106.000 m  
 Azimuth: 11.4  
 Inclination: -60.8



Printed: 2007-01-31 09:07:14

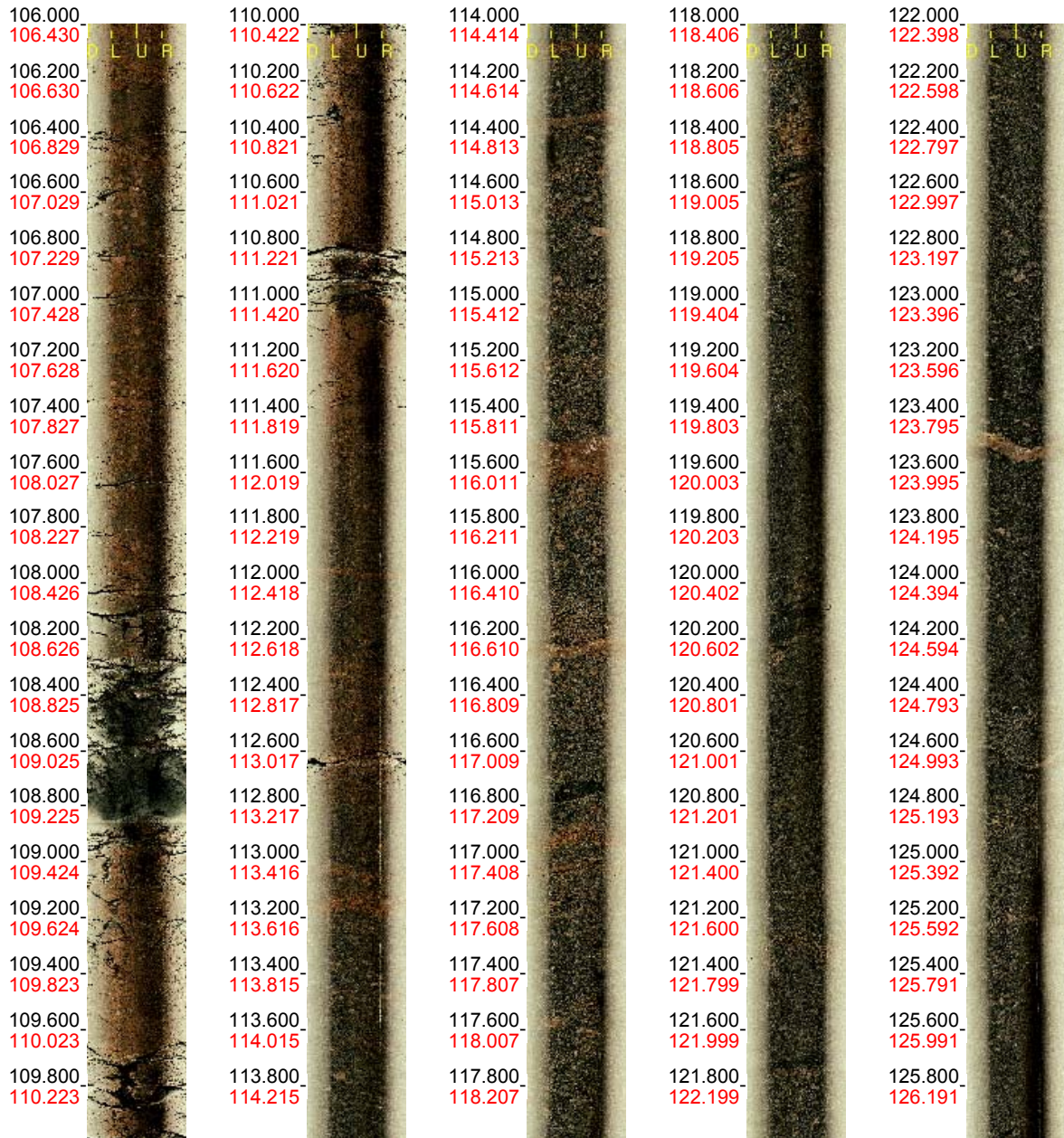
Scale: 1 : 20

Aspect: 150 %

3 (33)

Borehole: KLX17A  
 Mapping: KLX17A\_134-701mGeos1

Depth range: 106.000 - 126.000 m  
 Azimuth: 12.6  
 Inclination: -60.8



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

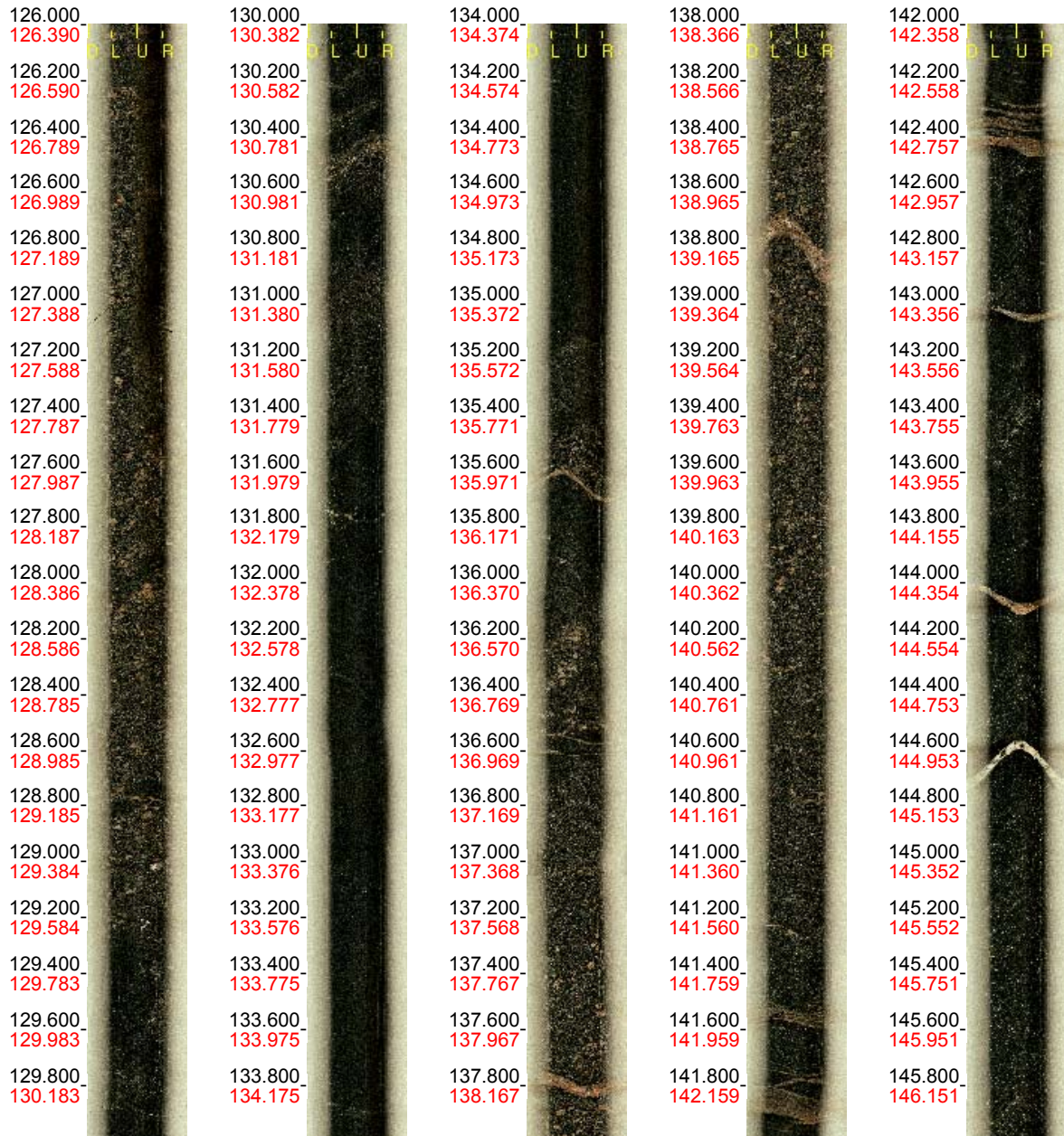
Aspect: 150 %

4 (33)



Borehole: KLX17A  
 Mapping: KLX17A\_134-701mGeos1

Depth range: 126.000 - 146.000 m  
 Azimuth: 13.9  
 Inclination: -60.8



Printed: 2007-01-31 09:07:14

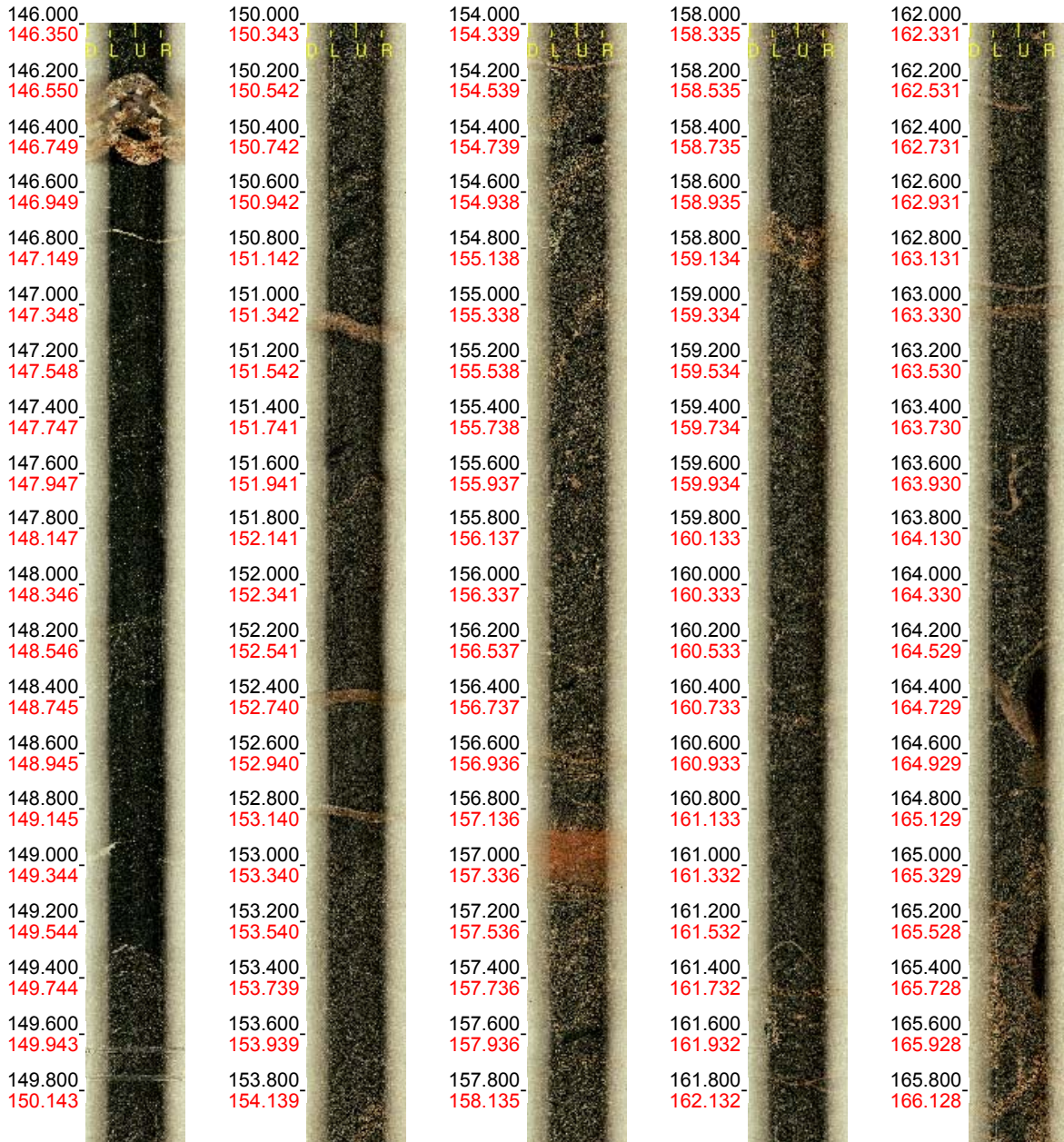
Scale: 1 : 20

Aspect: 150 %

5 (33)

Borehole: KLX17A  
 Mapping: KLX17A\_134-701mGeos1

Depth range: 146.000 - 166.000 m  
 Azimuth: 15.1  
 Inclination: -60.7



Printed: 2007-01-31 09:07:14

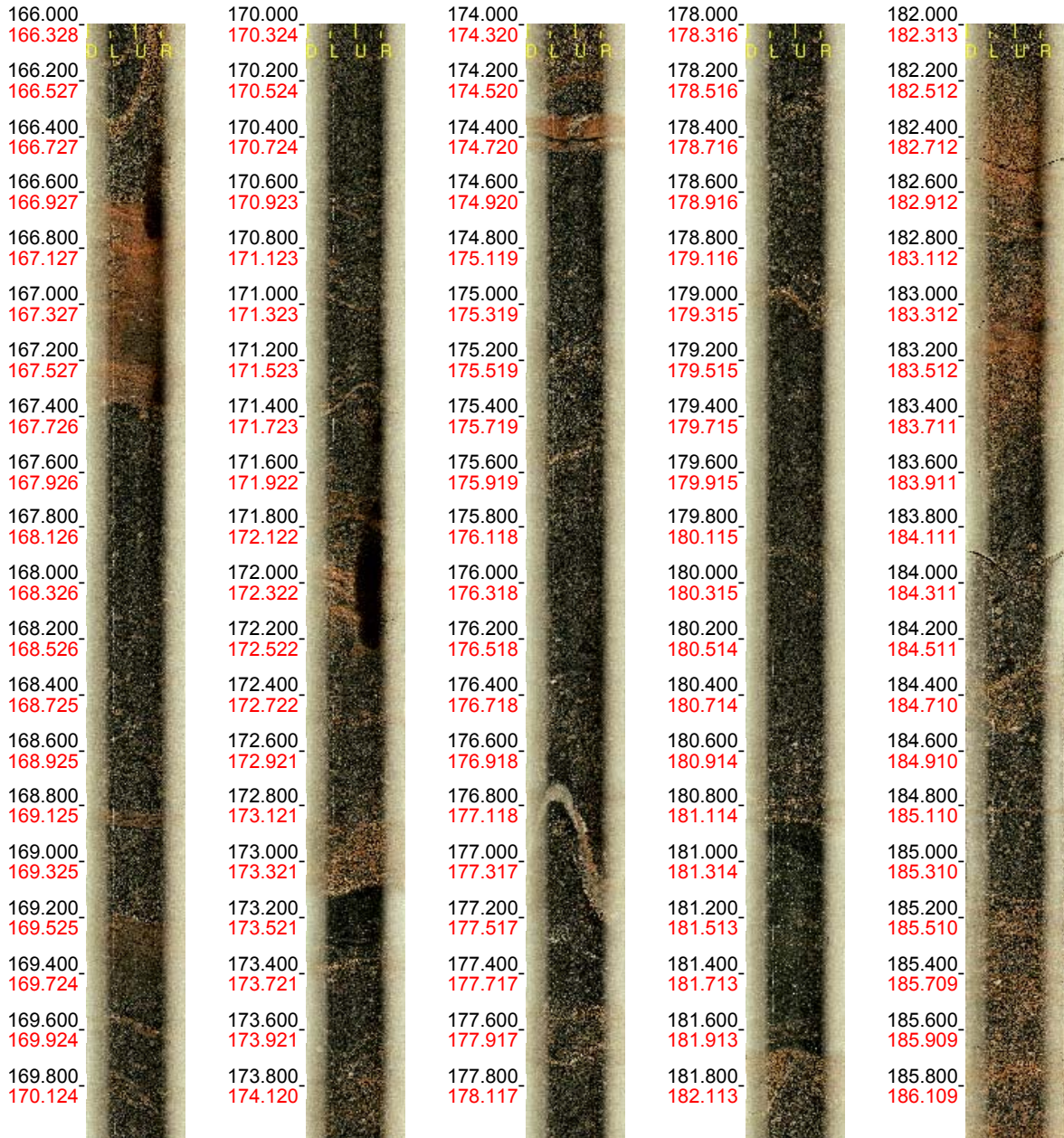
Scale: 1 : 20

Aspect: 150 %

6 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 166.000 - 186.000 m  
Azimuth: 16.7  
Inclination: -60.6



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

7 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 186.000 - 206.000 m  
Azimuth: 18.2  
Inclination: -60.5



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

8 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 206.000 - 226.000 m  
Azimuth: 18.5  
Inclination: -60.4



Printed: 2007-01-31 09:07:14

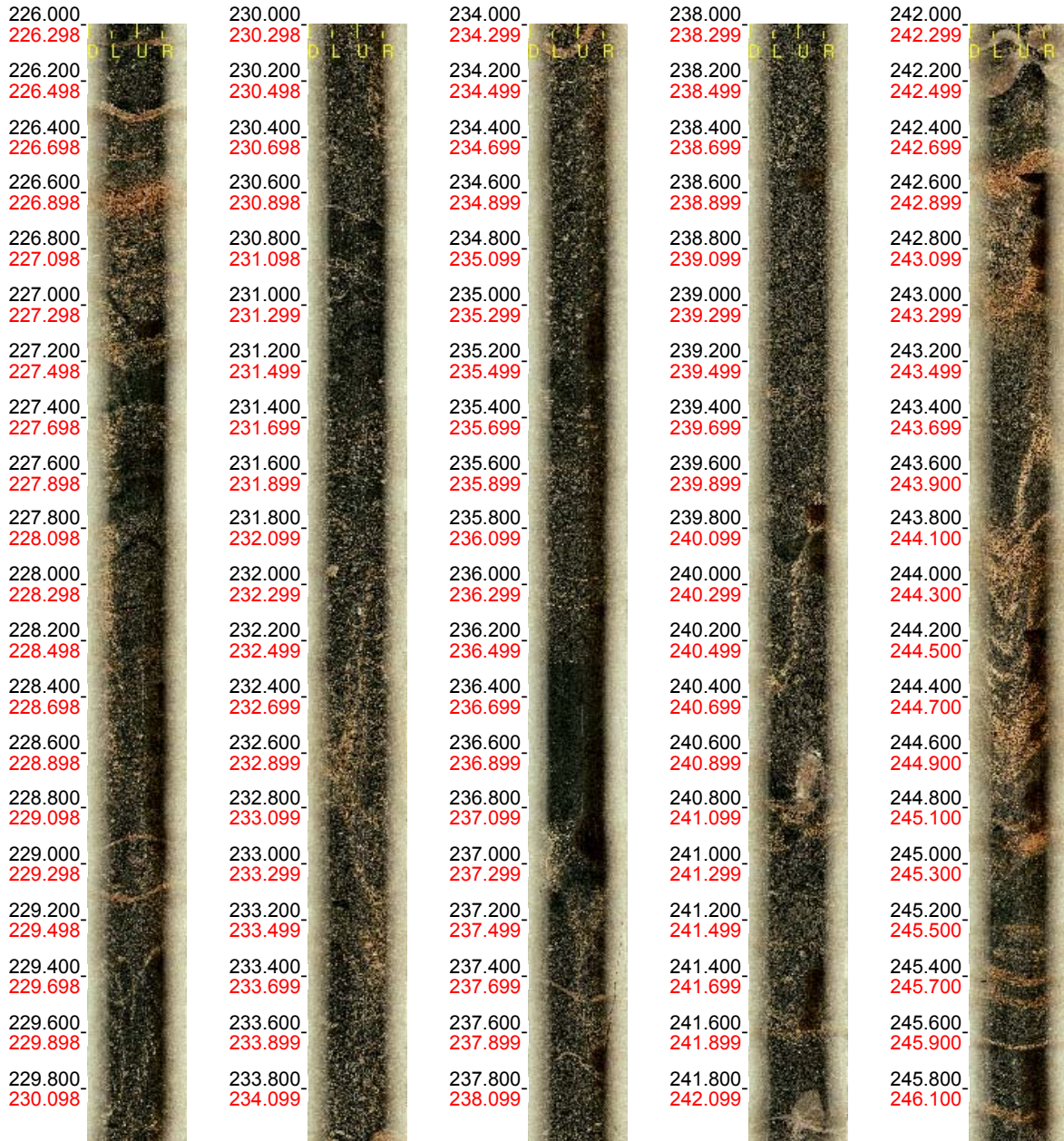
Scale: 1 : 20

Aspect: 150 %

9 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 226.000 - 246.000 m  
Azimuth: 18.7  
Inclination: -60.4



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

10 (33)

Borehole: KLX17A  
 Mapping: KLX17A\_134-701mGeos1

Depth range: 246.000 - 266.000 m  
 Azimuth: 18.7  
 Inclination: -60.1



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

11 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 266.000 - 286.000 m  
Azimuth: 18.6  
Inclination: -59.8



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

12 (33)



Borehole: KLX17A  
 Mapping: KLX17A\_134-701mGeos1

Depth range: 286.000 - 306.000 m  
 Azimuth: 18.5  
 Inclination: -59.7



Printed: 2007-01-31 09:07:14

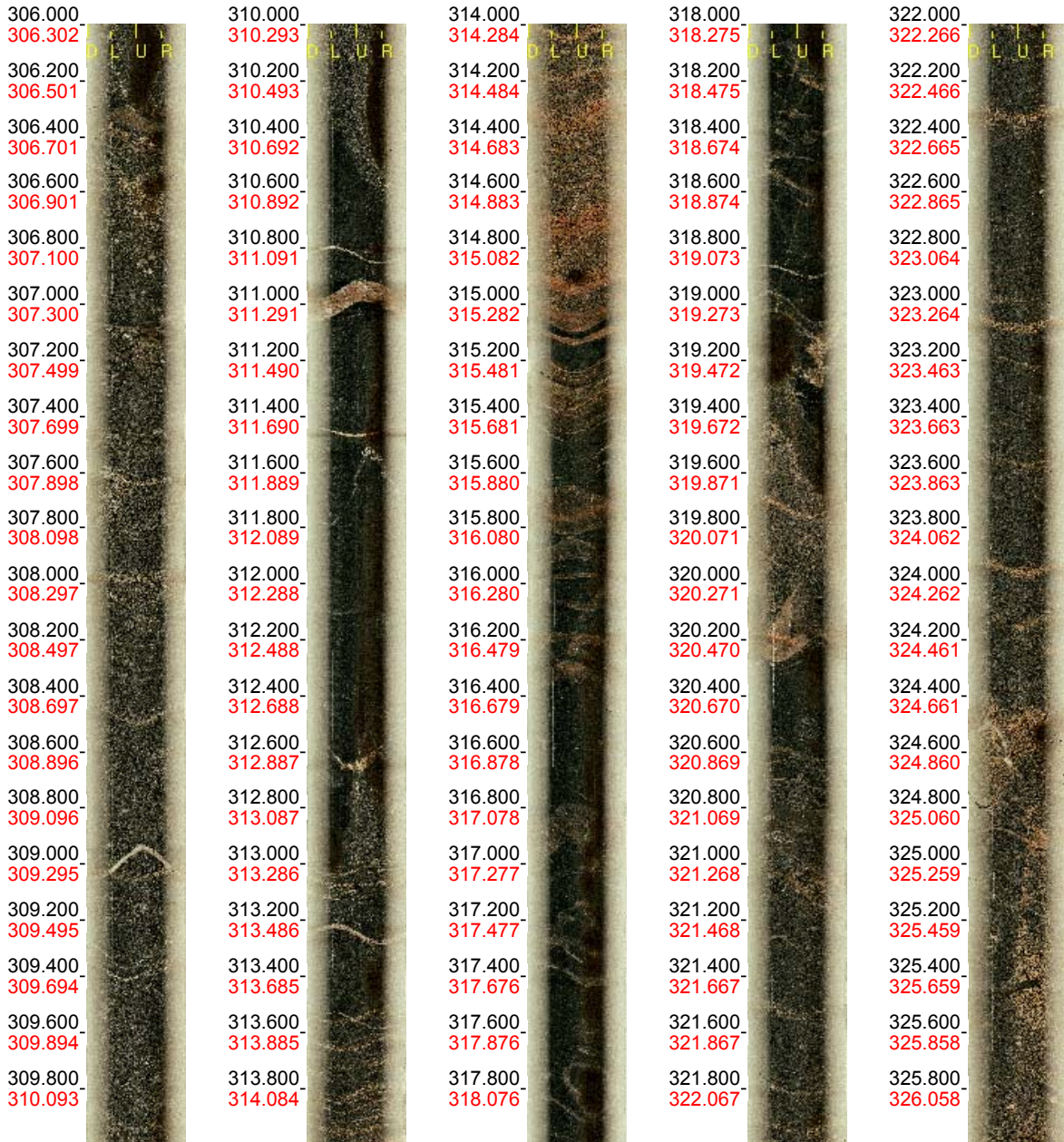
Scale: 1 : 20

Aspect: 150 %

13 (33)

Borehole: KLX17A  
 Mapping: KLX17A\_134-701mGeos1

Depth range: 306.000 - 326.000 m  
 Azimuth: 18.4  
 Inclination: -59.5



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

14 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 326.000 - 346.000 m  
Azimuth: 18.2  
Inclination: -59.4



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

15 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 346.000 - 366.000 m  
Azimuth: 17.9  
Inclination: -59.1



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

16 (33)

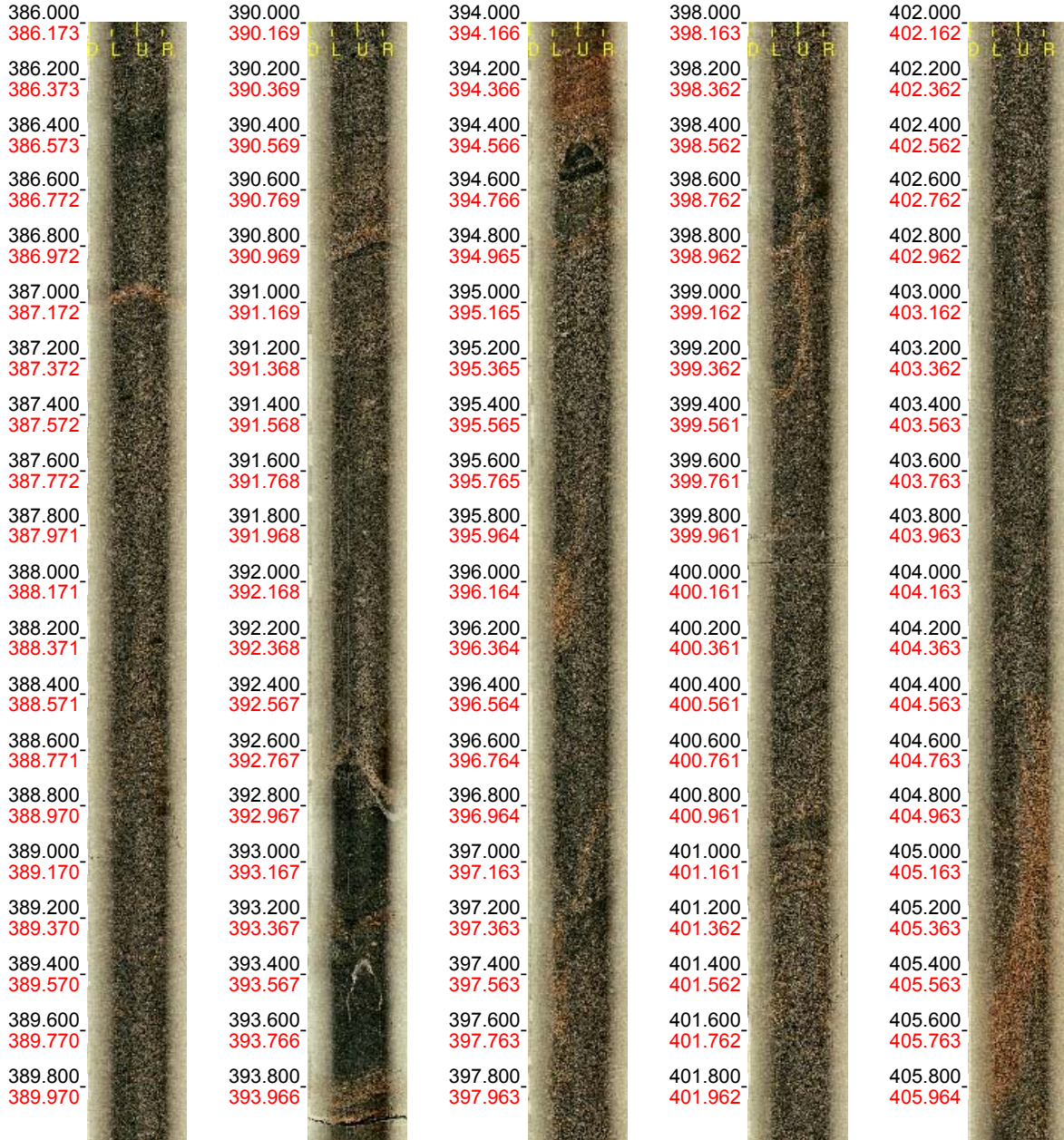
Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 366.000 - 386.000 m  
Azimuth: 17.8  
Inclination: -58.9



Borehole: KLX17A  
 Mapping: KLX17A\_134-701mGeos1

Depth range: 386.000 - 406.000 m  
 Azimuth: 17.7  
 Inclination: -58.8



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

18 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 406.000 - 426.000 m  
Azimuth: 17.5  
Inclination: -58.7



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

19 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 426.000 - 446.000 m  
Azimuth: 17.4  
Inclination: -58.6



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

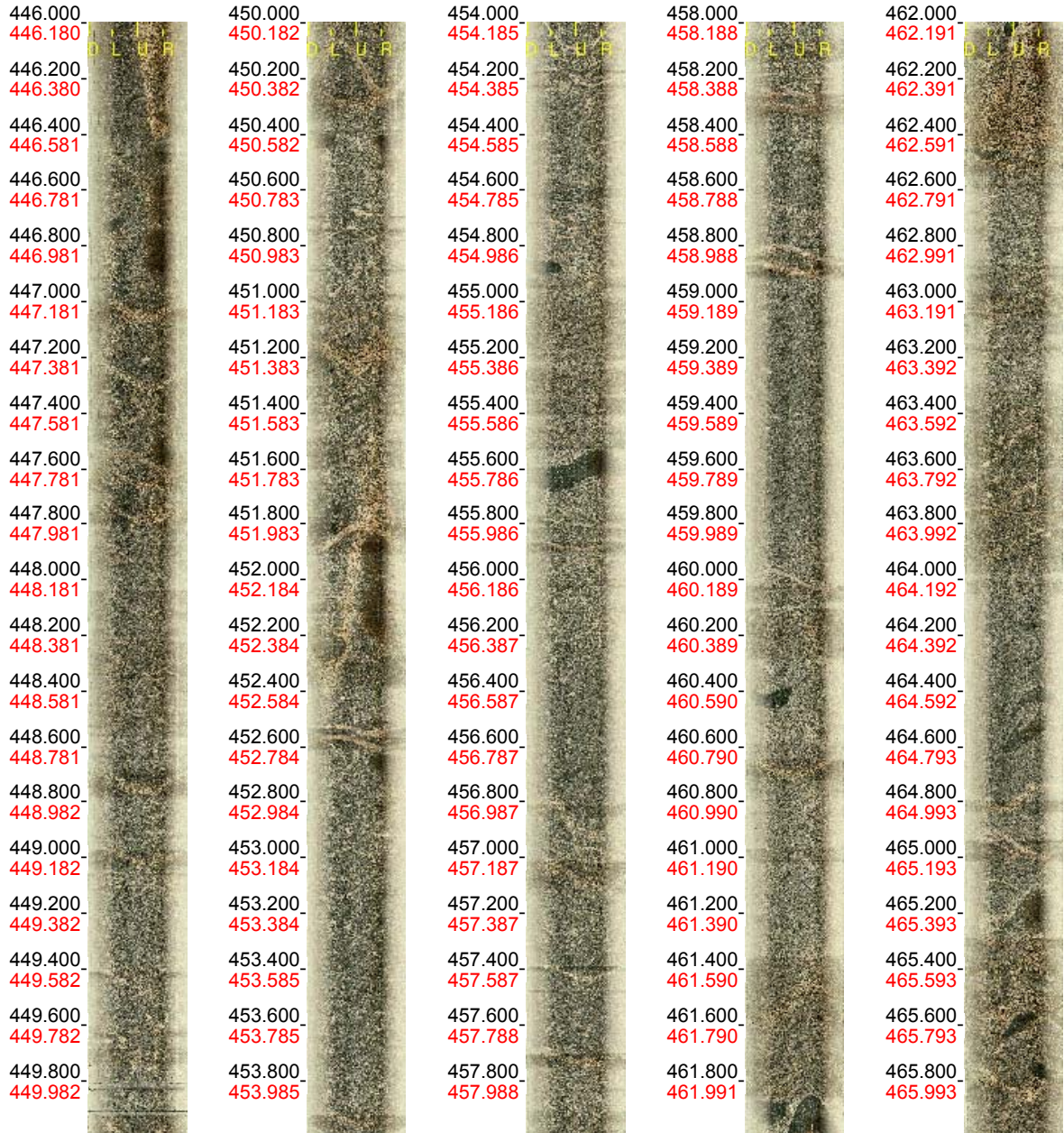
Aspect: 150 %

20 (33)



Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 446.000 - 466.000 m  
Azimuth: 17.3  
Inclination: -58.5



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

21 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 466.000 - 486.000 m  
Azimuth: 17.3  
Inclination: -58.3



Printed: 2007-01-31 09:07:14

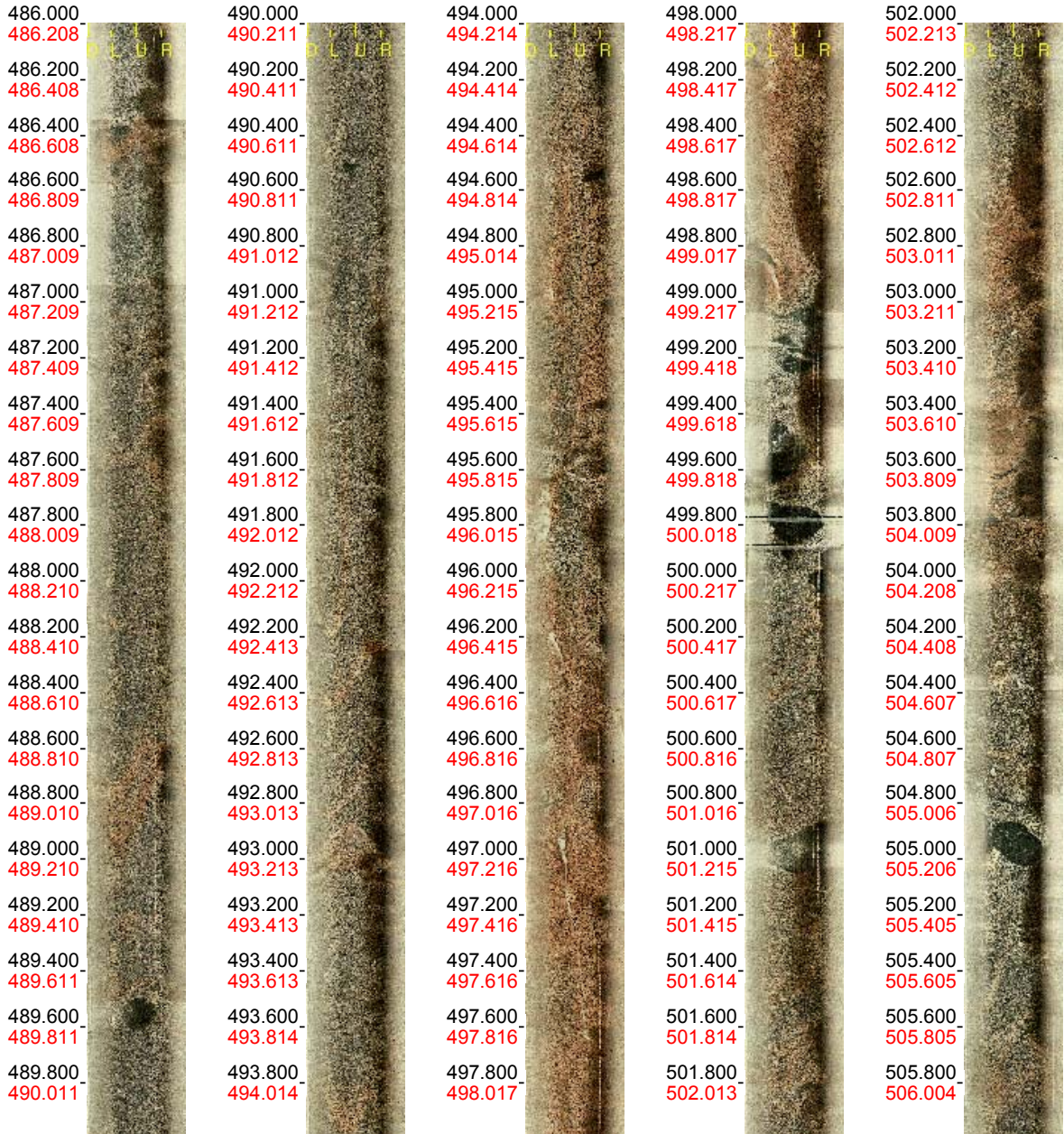
Scale: 1 : 20

Aspect: 150 %

22 (33)

Borehole: K LX17A  
Mapping: K LX17A\_134-701mGeos1

Depth range: 486.000 - 506.000 m  
Azimuth: 17.1  
Inclination: -58.1



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

23 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 506.000 - 526.000 m  
Azimuth: 16.9  
Inclination: -57.8



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

24 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 526.000 - 546.000 m  
Azimuth: 16.6  
Inclination: -57.2



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

25 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 546.000 - 566.000 m  
Azimuth: 16.4  
Inclination: -56.8



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

26 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 566.000 - 586.000 m  
Azimuth: 16.5  
Inclination: -56.7



Printed: 2007-01-31 09:07:14

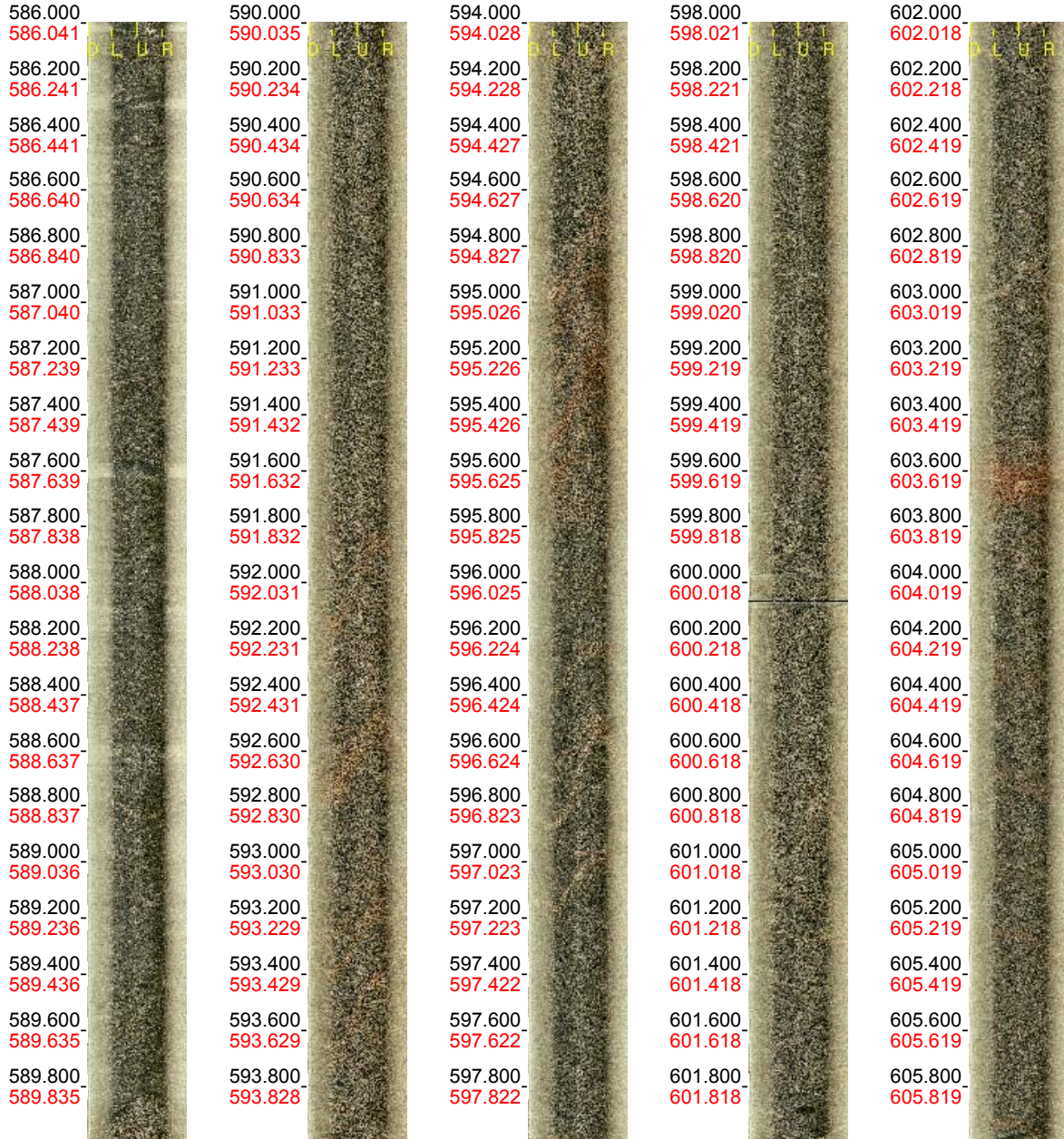
Scale: 1 : 20

Aspect: 150 %

27 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 586.000 - 606.000 m  
Azimuth: 16.3  
Inclination: -56.6



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

28 (33)



Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 606.000 - 626.000 m  
Azimuth: 15.9  
Inclination: -56.4



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

29 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 626.000 - 646.000 m  
Azimuth: 15.7  
Inclination: -56.3



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

30 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 646.000 - 666.000 m  
Azimuth: 15.5  
Inclination: -56.3



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

31 (33)

Borehole: KLX17A  
 Mapping: KLX17A\_134-701mGeos1

Depth range: 666.000 - 686.000 m  
 Azimuth: 15.4  
 Inclination: -56.1



Printed: 2007-01-31 09:07:14

Scale: 1 : 20

Aspect: 150 %

32 (33)

Borehole: KLX17A  
Mapping: KLX17A\_134-701mGeos1

Depth range: 686.000 - 696.784 m  
Azimuth: 15.1  
Inclination: -56.0



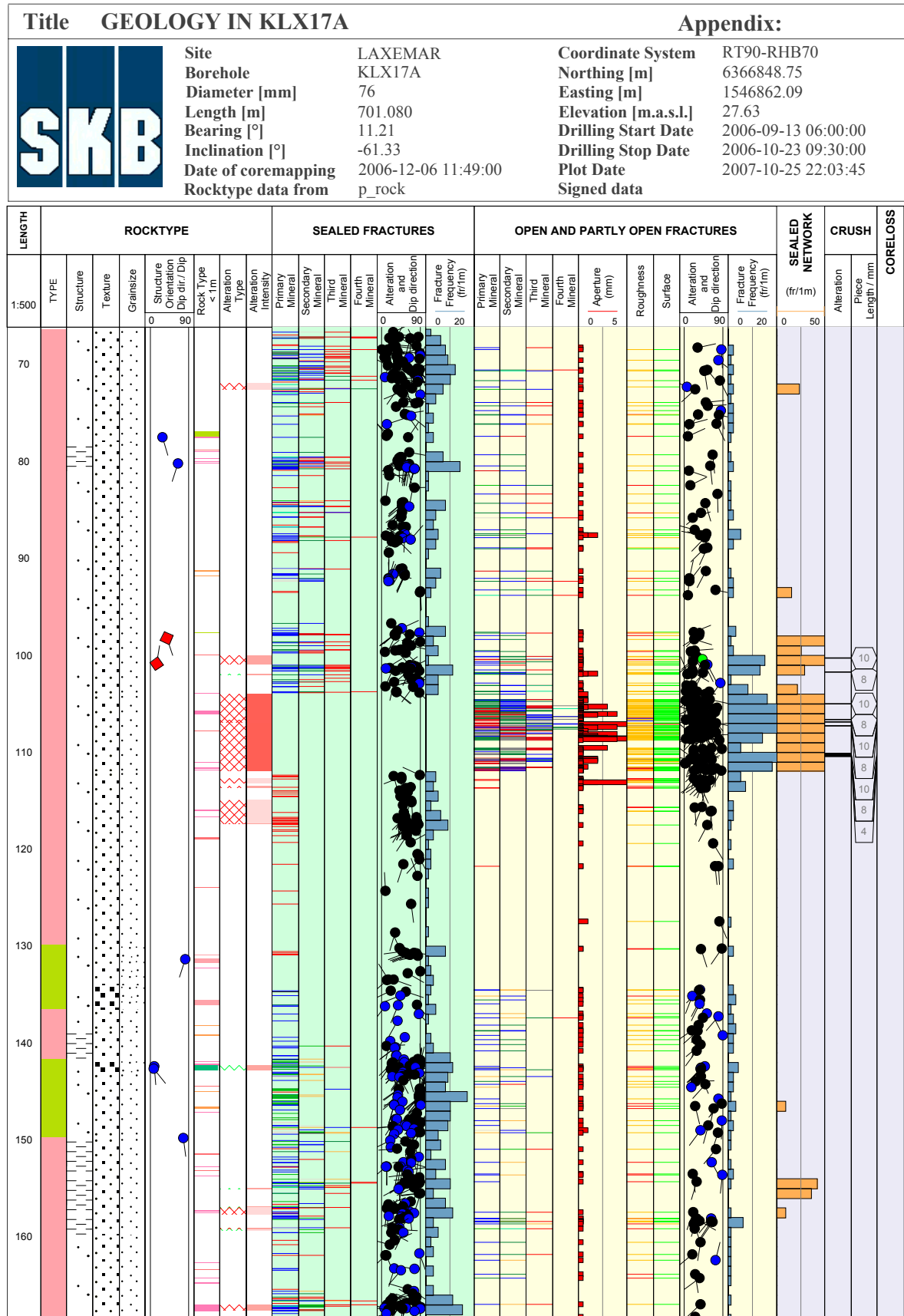
Printed: 2007-01-31 09:07:14

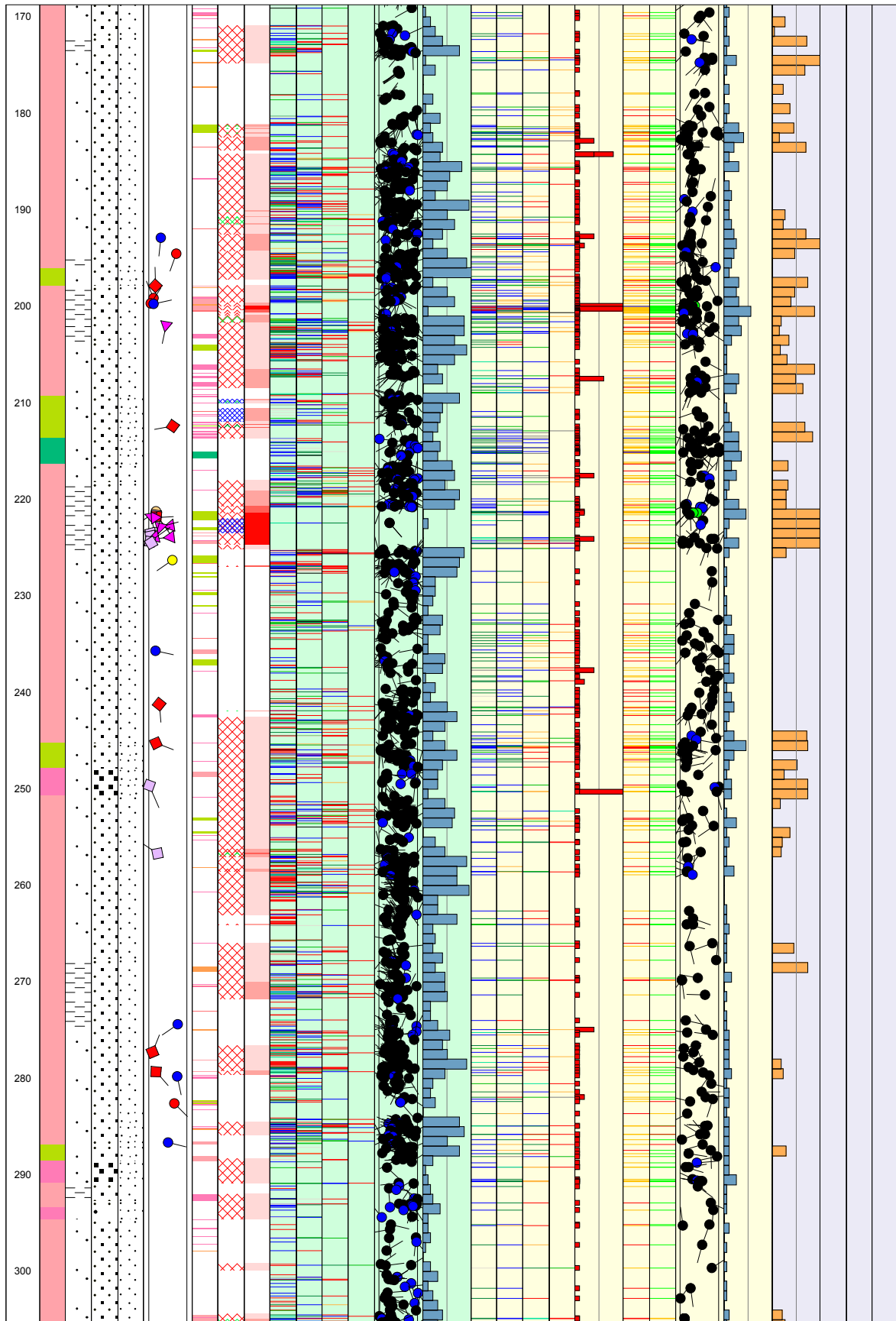
Scale: 1 : 20

Aspect: 150 %

33 (33)

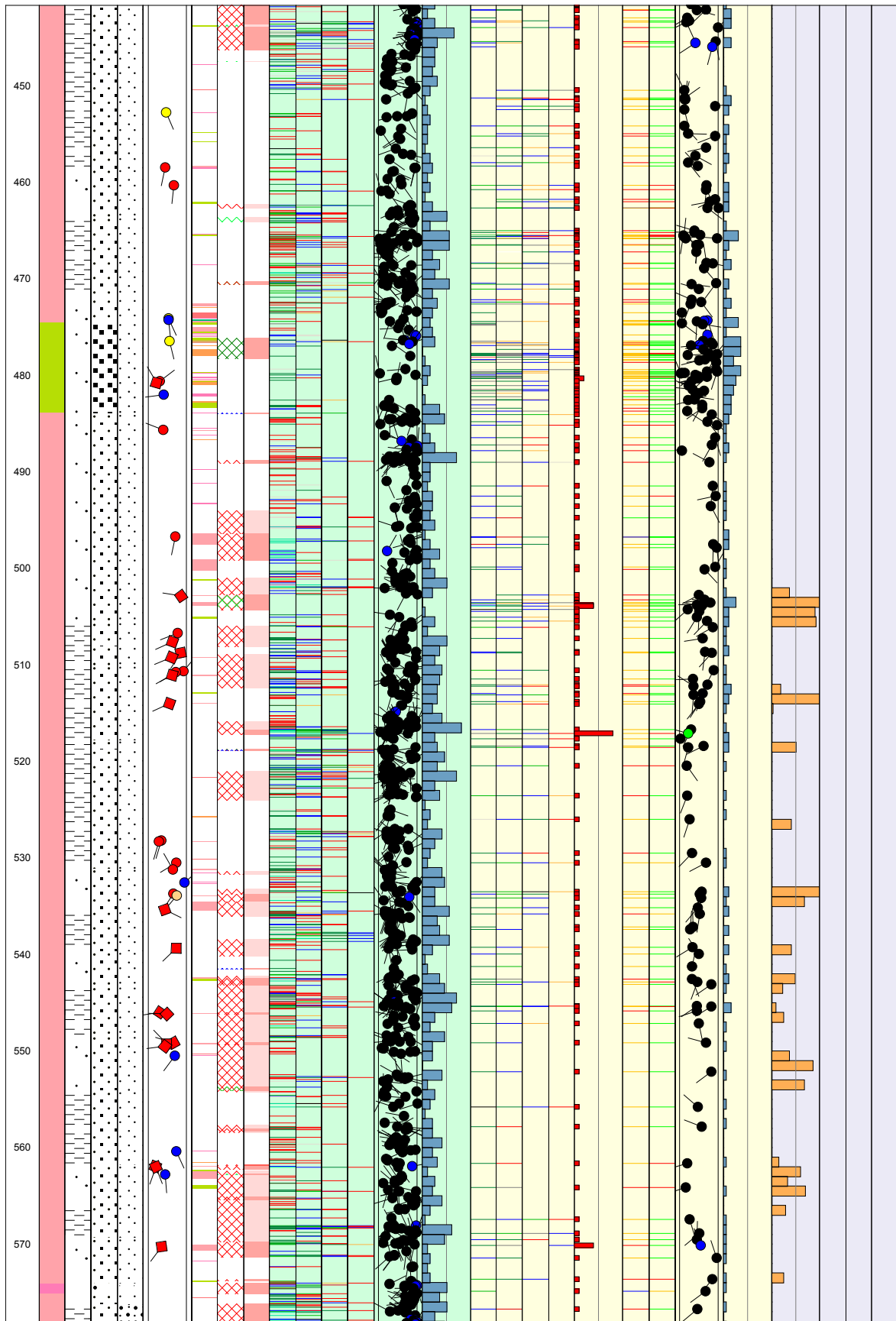
WellCad diagram for KLX17A

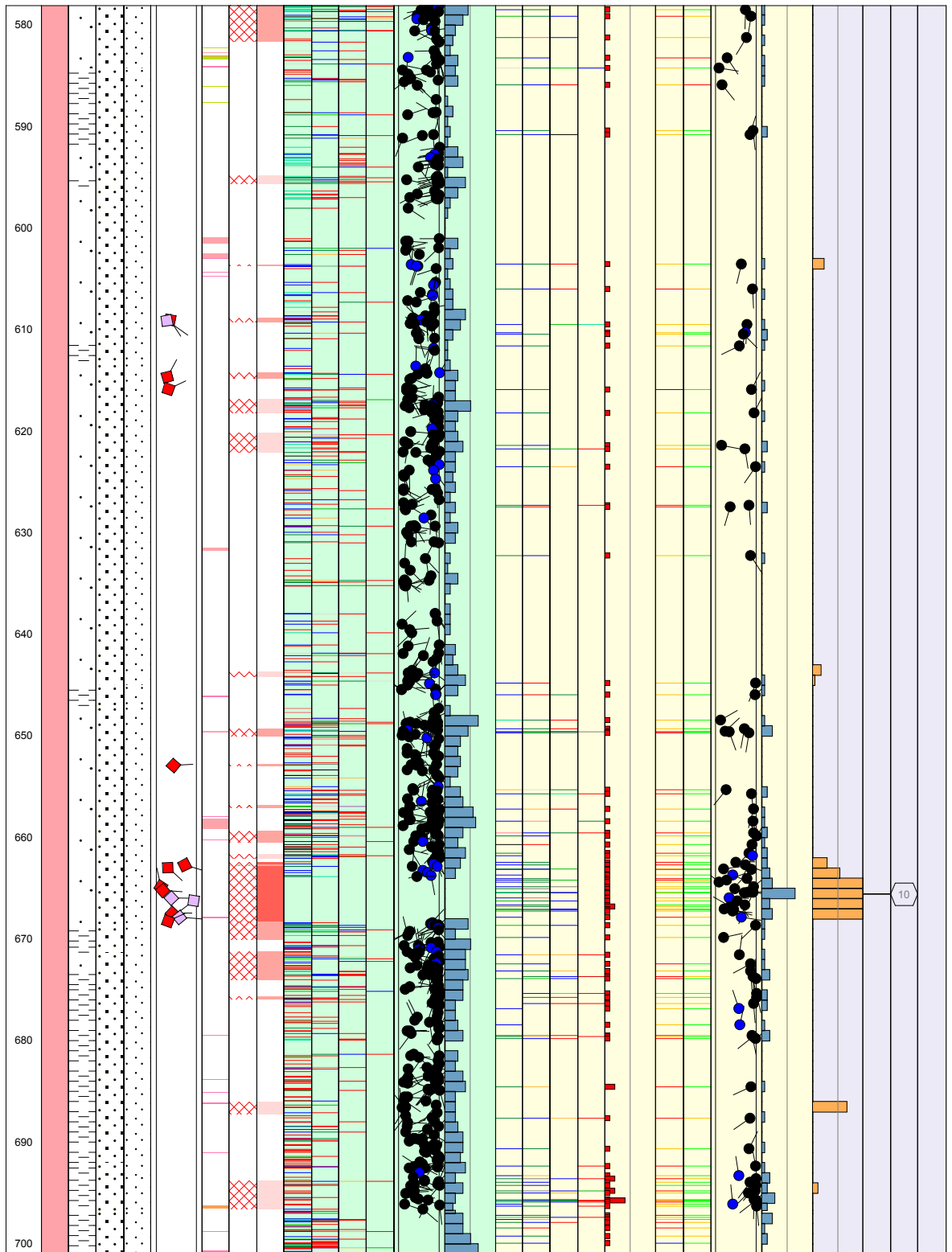












Legend to WellCad diagram for KLX17A

Title		LEGEND FOR LAXEMAR	KLX17A
		Site	LAXEMAR
		Borehole	KLX17A
		Plot Date	2007-10-25 22:03:45
		Signed data	
<p><b>ROCKTYPE LAXEMAR</b></p> <ul style="list-style-type: none"> <li> Äspö Diorite</li> <li> Dolerite</li> <li> Fine-grained Götemargranite</li> <li> Coarse-grained Götemargranite</li> <li> Fine-grained granite</li> <li> Pegmatite</li> <li> Granite</li> <li> Ävrö granite</li> <li> Quartz monzodiorite</li> <li> Diorite / Gabbro</li> <li> Fine-grained dioritoid</li> <li> Fine-grained diorite-gabbro</li> <li> Sulphide mineralization</li> <li> Sandstone</li> <li> Soil</li> <li> Ävrö quartz monzodiorite</li> <li> Ävrö granodiorite</li> </ul>			
<p><b>ROCK ALTERATION TYPE</b></p> <ul style="list-style-type: none"> <li> Oxidized</li> <li> Chloritised</li> <li> Epidotised</li> <li> Weathered</li> <li> Tectonized</li> <li> Sericitized</li> <li> Quartz dissolution</li> <li> Silicification</li> <li> Argillization</li> <li> Albitization</li> <li> Carbonatization</li> <li> Saussuritization</li> <li> Steatitization</li> <li> Uralitization</li> <li> Laumontitization</li> <li> Fract zone alteration</li> </ul>			
<p><b>MINERAL</b></p> <ul style="list-style-type: none"> <li> Epidote</li> <li> White Feldspar</li> <li> Hematite</li> <li> Calcite</li> <li> Chlorite</li> <li> Quartz</li> <li> Red Feldspar</li> <li> Unknown</li> <li> Pyrite</li> <li> Clay Minerals</li> <li> Laumontite</li> <li> Zeolite</li> <li> Prehnite</li> <li> Oxidized Walls</li> </ul>			
<p><b>STRUCTURE</b></p> <ul style="list-style-type: none"> <li> Cataclastic</li> <li> Schistose</li> <li> Gneissic</li> <li> Mylonitic</li> <li> Ductile Shear Zone</li> <li> Brittle-Ductile Zone</li> <li> Veined</li> <li> Banded</li> <li> Massive</li> <li> Foliated</li> <li> Brecciated</li> <li> Lineated</li> </ul>			
<p><b>STRUCTURE ORIENTATION</b></p> <ul style="list-style-type: none"> <li> Cataclastic</li> <li> Bedded</li> <li> Gneissic</li> <li> Schistose</li> <li> Brittle-Ductile Shear Zone</li> <li> Ductile Shear Zone</li> <li> Lineated</li> <li> Banded</li> <li> Veined</li> <li> Brecciated</li> <li> Foliated</li> <li> Mylonitic</li> </ul>			
<p><b>ROCK ALTERATION INTENSITY</b></p> <ul style="list-style-type: none"> <li> No intensity</li> <li> Faint</li> <li> Weak</li> <li> Medium</li> <li> Strong</li> </ul>			
<p><b>ROUGHNESS</b></p> <ul style="list-style-type: none"> <li> Planar</li> <li> Undulating</li> <li> Stepped</li> <li> Irregular</li> </ul>			
<p><b>SURFACE</b></p> <ul style="list-style-type: none"> <li> Rough</li> <li> Smooth</li> <li> Slickensided</li> </ul>			
<p><b>CRUSH ALTERATION</b></p> <ul style="list-style-type: none"> <li> Slightly Altered</li> <li> Moderately Altered</li> <li> Highly Altered</li> <li> Completely Altered</li> <li> Gouge</li> <li> Fresh</li> </ul>			
<p><b>FRACTURE ALTERATION</b></p> <ul style="list-style-type: none"> <li> Slightly Altered</li> <li> Moderately Altered</li> <li> Highly Altered</li> <li> Completely Altered</li> <li> Gouge</li> <li> Fresh</li> </ul>			
<p><b>GRAINSIZE</b></p> <ul style="list-style-type: none"> <li> Aphanitic</li> <li> Fine-grained</li> <li> Fine to medium grained</li> <li> Medium to coarse grained</li> <li> Coarse-grained</li> <li> Medium-grained</li> </ul>			
<p><b>FRACTURE DIRECTION</b></p> <p><b>STRUCTURE ORIENTATION</b></p> <p>Dip Direction 0 - 360° 0/360°</p>  <p>Dip 0 - 90°</p>			

**In-data: Borehole length and diameter for KLX17A**

**Hole Diam T - Drilling: Borehole diameter**

**KLX17A, 2006-09-13 06:00:00 - 2006-10-23 09:30:00 (65.420 - 701.080 m)**

<b>Sub Secup (m)</b>	<b>Sub Seclow (m)</b>	<b>Hole Diam (m)</b>	<b>Comment</b>
65.420	66.760	0.0860	T-86 rymning 65,85- 66,76
66.760	701.080	0.0758	Corac N3

Printout from SICADA 2007-01-31 09:01:15.

## Appendix 7

### In-data: Reference marks for length adjustments for KLX17A Reference Mark T - Reference mark in drillhole

KLX17A, 2006-10-26 07:00:00 - 2006-10-26 14:00:00 (75.000 - 680.000 m)

Bhlen (m)	Rotation Speed (rpm)	Start Flow (l/h)	Stop Flow (l/h)	Stop Pressure (bar)	Cutter Time (s)	Trace Detectable	Cutter Diameter (mm)	Comment
75.00	400.00	200	1000	35.0	67	Yes		
100.00	400.00	200	1000	32.0	60	Yes		
150.00	400.00	200	1000	32.0	67	Yes		
200.00	400.00	200	1000	32.0	61	Yes		
250.00	400.00	200	1000	32.0	68	Yes		
300.00	400.00	250	1000	32.0	75	Yes		
350.00	400.00	300	1000	32.0	71	Yes		
400.00	400.00	300	1000	32.0	68	Yes		
450.00	400.00	300	1000	35.0	70	Yes		
500.00	400.00	300	1000	32.0	73	Yes		
550.00	400.00	300	1000	35.0	69	Yes		
600.00	400.00	300	1000	35.0	76	Yes		
650.00	400.00	350	1000	35.0	75	Yes		
680.00	400.00	350	1000	35.0	73	Yes		Släppte kulan 13:01

Printout from SICADA 2007-01-31 08:59:55.

# Appendix 8

## In-data: Borehole deviation data for KLX17A

### SICADA - object\_location

Idcode	Coord System	Northing (m)	Eastng (m)	Elevation (m.a.s.l.)	Length (m)	Vertical Depth (m)	Inclination (degrees)	Bearing (degrees)	Inclination Uncert (degrees)	Bearing Uncert (degrees)	Radius Uncert (m)	Origin	Indat
KLX17A	RT90-RHB70	6366848.75	1546862.09	27.63	0.00	0.00	-61.34	11.21	1.800	4.900	0.00	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366850.16	1546862.37	25.00	3.00	2.63	-61.34	11.21	1.800	4.900	0.12	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366851.58	1546862.65	22.37	6.00	5.26	-61.25	11.18	1.800	4.900	0.25	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366852.99	1546862.93	19.74	9.00	7.89	-61.20	11.08	1.800	4.900	0.37	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366854.41	1546863.20	17.11	12.00	10.52	-61.20	10.99	1.800	4.900	0.49	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366855.83	1546863.48	14.48	15.00	13.15	-61.20	10.98	1.800	4.900	0.62	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366857.25	1546863.75	11.85	18.00	15.78	-61.22	10.94	1.800	4.900	0.74	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366858.67	1546864.03	9.22	21.00	18.41	-61.22	10.88	1.800	4.900	0.86	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366860.08	1546864.30	6.59	24.00	21.04	-61.25	10.84	1.800	4.900	0.99	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366861.50	1546864.57	3.96	27.00	23.67	-61.25	10.85	1.800	4.900	1.11	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366862.92	1546864.84	1.33	30.00	26.30	-61.24	10.85	1.800	4.900	1.23	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366864.34	1546865.11	-1.30	33.00	28.93	-61.24	10.86	1.800	4.900	1.36	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366865.75	1546865.39	-3.93	36.00	31.56	-61.24	10.84	1.800	4.900	1.48	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366867.17	1546865.66	-6.56	39.00	34.19	-61.22	10.82	1.800	4.900	1.60	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366868.59	1546865.93	-9.19	42.00	36.82	-61.15	10.82	1.800	4.900	1.73	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366870.02	1546866.20	-11.81	45.00	39.44	-61.11	10.80	1.800	4.900	1.85	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366872.86	1546866.74	-17.07	48.00	42.07	-61.11	10.79	1.800	4.900	1.97	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366874.29	1546867.01	-19.69	51.00	44.70	-61.10	10.69	1.800	4.900	2.10	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366875.72	1546867.28	-22.32	54.00	47.32	-61.03	10.67	1.800	4.900	2.22	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366877.15	1546867.54	-24.94	57.00	49.95	-60.97	10.54	1.800	4.900	2.35	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366878.59	1546867.81	-27.56	60.00	52.57	-60.87	10.45	1.800	4.900	2.47	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366880.03	1546868.07	-30.18	63.00	55.19	-60.84	10.39	1.800	4.900	2.60	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366881.47	1546868.34	-32.80	66.00	57.81	-60.82	10.39	1.800	4.900	2.72	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366882.91	1546868.61	-35.42	69.00	60.43	-60.81	10.57	1.800	4.900	2.85	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366884.34	1546868.88	-38.04	72.00	63.05	-60.80	10.73	1.800	4.900	2.97	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366885.78	1546869.16	-40.65	75.00	65.67	-60.81	10.90	1.800	4.900	3.10	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366887.21	1546869.44	-43.27	78.00	68.28	-60.83	11.09	1.800	4.900	3.22	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366888.65	1546869.73	-45.89	81.00	70.90	-60.84	11.27	1.800	4.900	3.35	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366890.08	1546870.02	-48.51	84.00	73.52	-60.84	11.44	1.800	4.900	3.47	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366891.51	1546870.32	-51.13	87.00	76.14	-60.86	11.65	1.800	4.900	3.60	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366892.94	1546870.63	-53.76	90.00	78.76	-60.87	11.87	1.800	4.900	3.72	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366894.37	1546870.93	-56.38	93.00	81.39	-60.86	12.06	1.800	4.900	3.85	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366895.79	1546871.24	-59.00	96.00	84.01	-60.86	12.18	1.800	4.900	3.97	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366897.22	1546871.56	-61.61	99.00	86.63	-60.84	12.32	1.800	4.900	4.09	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366898.64	1546871.87	-64.23	102.00	89.24	-60.83	12.52	1.800	4.900	4.22	Measured	2007-02-06 08:32

KLX17A	RT90-RHB70	6366898.65	1546871.87	-64.23	105.00	91.86	-60.81	12.64	1.800	4.900	4.34	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366900.08	1546872.20	-66.85	108.00	94.48	-60.81	12.72	1.800	4.900	4.47	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366901.50	1546872.52	-69.47	111.00	97.10	-60.80	12.80	1.800	4.900	4.59	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366902.93	1546872.84	-72.09	114.00	99.72	-60.78	12.97	1.800	4.900	4.72	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366904.36	1546873.18	-74.71	117.00	102.34	-60.78	13.20	1.800	4.900	4.84	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366905.78	1546873.51	-77.33	120.00	104.96	-60.77	13.46	1.800	4.900	4.97	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366907.21	1546873.86	-79.95	123.00	107.58	-60.77	13.71	1.800	4.900	5.10	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366908.63	1546874.21	-82.56	126.00	110.19	-60.75	13.89	1.800	4.900	5.22	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366910.05	1546874.56	-85.18	129.00	112.81	-60.72	14.08	1.800	4.900	5.35	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366911.47	1546874.92	-87.80	132.00	115.43	-60.72	14.28	1.800	4.900	5.47	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366912.90	1546875.29	-90.41	135.00	118.04	-60.72	14.50	1.800	4.900	5.60	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366914.32	1546875.66	-93.03	138.00	120.66	-60.73	14.73	1.800	4.900	5.72	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366915.73	1546876.03	-95.65	141.00	123.28	-60.75	14.93	1.800	4.900	5.85	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366917.15	1546876.41	-98.26	144.00	125.89	-60.73	15.15	1.800	4.900	5.97	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366918.56	1546876.80	-100.88	147.00	128.51	-60.73	15.40	1.800	4.900	6.10	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366919.98	1546877.19	-103.50	150.00	131.13	-60.71	15.66	1.800	4.900	6.22	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366921.39	1546877.59	-106.11	153.00	133.74	-60.68	15.89	1.800	4.900	6.35	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366922.80	1546878.00	-108.73	156.00	136.36	-60.65	16.11	1.800	4.900	6.47	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366924.22	1546878.41	-111.34	159.00	138.97	-60.61	16.31	1.800	4.900	6.60	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366925.63	1546878.82	-113.96	162.00	141.59	-60.58	16.52	1.800	4.900	6.73	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366927.04	1546879.24	-116.57	165.00	144.20	-60.55	16.70	1.800	4.900	6.85	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366928.45	1546879.67	-119.18	168.00	146.81	-60.53	16.91	1.800	4.900	6.98	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366929.87	1546880.10	-121.79	171.00	149.42	-60.52	17.14	1.800	4.900	7.10	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366931.28	1546880.54	-124.41	174.00	152.04	-60.50	17.33	1.800	4.900	7.23	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366932.69	1546880.98	-127.02	177.00	154.65	-60.49	17.52	1.800	4.900	7.36	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366934.09	1546881.43	-129.63	180.00	157.26	-60.48	17.75	1.800	4.900	7.48	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366935.50	1546881.88	-132.24	183.00	159.87	-60.47	17.98	1.800	4.900	7.61	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366936.91	1546882.34	-134.85	186.00	162.48	-60.47	18.16	1.800	4.900	7.73	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366938.31	1546882.80	-137.46	189.00	165.09	-60.46	18.22	1.800	4.900	7.86	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366939.72	1546883.27	-140.07	192.00	167.70	-60.47	18.23	1.800	4.900	7.99	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366941.12	1546883.73	-142.68	195.00	170.31	-60.45	18.20	1.800	4.900	8.11	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366942.53	1546884.19	-145.29	198.00	172.92	-60.44	18.24	1.800	4.900	8.24	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366943.93	1546884.66	-147.90	201.00	175.53	-60.43	18.31	1.800	4.900	8.37	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366945.34	1546885.12	-150.51	204.00	178.14	-60.42	18.55	1.800	4.900	8.49	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366946.74	1546885.60	-153.12	207.00	180.75	-60.42	18.61	1.800	4.900	8.62	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366948.15	1546886.07	-155.72	210.00	183.35	-60.41	18.63	1.800	4.900	8.75	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366949.55	1546886.54	-158.33	213.00	185.96	-60.36	18.59	1.800	4.900	8.87	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366950.96	1546887.02	-160.94	216.00	188.57	-60.34	18.59	1.800	4.900	9.00	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366952.36	1546887.49	-163.55	219.00	191.18	-60.34	18.62	1.800	4.900	9.13	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366953.77	1546887.96	-166.15	222.00	193.78	-60.36	18.65	1.800	4.900	9.25	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366955.18	1546888.44	-168.76	225.00	196.39	-60.36	18.66	1.800	4.900	9.38	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366956.58	1546888.91	-171.37	228.00	199.00	-60.34	18.69	1.800	4.900	9.51	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366957.99	1546889.39	-173.97	231.00	201.60	-60.31	18.67	1.800	4.900	9.63	Measured	2007-02-06 08:32

KLX17A	RT90-RHB70	6366959.40	1546889.86	-176.58	234.00	204.21	-60.28	18.66	1.800	4.900	9.76	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366960.81	1546890.34	-179.19	237.00	206.82	-60.27	18.66	1.800	4.900	9.89	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366962.22	1546890.82	-181.79	240.00	209.42	-60.22	18.68	1.800	4.900	10.02	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366963.63	1546891.29	-184.39	243.00	212.02	-60.17	18.68	1.800	4.900	10.14	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366965.05	1546891.77	-187.00	246.00	214.63	-60.13	18.66	1.800	4.900	10.27	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366966.46	1546892.25	-189.60	249.00	217.23	-60.09	18.64	1.800	4.900	10.40	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366967.88	1546892.73	-192.20	252.00	219.83	-60.03	18.63	1.800	4.900	10.53	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366969.30	1546893.21	-194.79	255.00	222.42	-59.98	18.62	1.800	4.900	10.65	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366970.73	1546893.69	-197.39	258.00	225.02	-59.93	18.65	1.800	4.900	10.78	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366972.15	1546894.17	-199.99	261.00	227.62	-59.88	18.62	1.800	4.900	10.91	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366973.58	1546894.65	-202.58	264.00	230.21	-59.83	18.59	1.800	4.900	11.04	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366975.01	1546895.13	-205.17	267.00	232.80	-59.78	18.55	1.800	4.900	11.17	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366976.44	1546895.61	-207.77	270.00	235.40	-59.77	18.51	1.800	4.900	11.30	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366977.88	1546896.09	-210.36	273.00	237.99	-59.73	18.47	1.800	4.900	11.43	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366979.31	1546896.57	-212.95	276.00	240.58	-59.72	18.48	1.800	4.900	11.56	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366980.74	1546897.05	-215.54	279.00	243.17	-59.70	18.52	1.800	4.900	11.69	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366982.18	1546897.53	-218.13	282.00	245.76	-59.70	18.52	1.800	4.900	11.81	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366983.62	1546898.01	-220.72	285.00	248.35	-59.68	18.51	1.800	4.900	11.94	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366985.05	1546898.49	-223.31	288.00	250.94	-59.64	18.51	1.800	4.900	12.07	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366986.49	1546898.97	-225.90	291.00	253.53	-59.60	18.49	1.800	4.900	12.20	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366987.93	1546899.45	-228.48	294.00	256.11	-59.56	18.51	1.800	4.900	12.33	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366989.37	1546899.94	-231.07	297.00	258.70	-59.54	18.51	1.800	4.900	12.46	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366990.82	1546900.42	-233.65	300.00	261.28	-59.50	18.48	1.800	4.900	12.59	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366992.26	1546900.90	-236.24	303.00	263.87	-59.48	18.47	1.800	4.900	12.72	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366993.71	1546901.38	-238.82	306.00	266.45	-59.47	18.41	1.800	4.900	12.85	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366995.15	1546901.86	-241.41	309.00	269.04	-59.46	18.32	1.800	4.900	12.98	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366996.60	1546902.34	-243.99	312.00	271.62	-59.45	18.22	1.800	4.900	13.11	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366998.05	1546902.82	-246.57	315.00	274.20	-59.45	18.14	1.800	4.900	13.24	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6366999.50	1546903.29	-249.16	318.00	276.79	-59.44	18.14	1.800	4.900	13.37	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367000.95	1546903.77	-251.74	321.00	279.37	-59.42	18.15	1.800	4.900	13.50	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367002.40	1546904.24	-254.32	324.00	281.95	-59.39	18.18	1.800	4.900	13.64	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367003.85	1546904.72	-256.91	327.00	284.54	-59.35	18.17	1.800	4.900	13.77	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367005.31	1546905.20	-259.49	330.00	287.12	-59.31	18.12	1.800	4.900	13.90	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367006.76	1546905.67	-262.06	333.00	289.69	-59.25	18.05	1.800	4.900	14.03	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367008.22	1546906.15	-264.64	336.00	292.27	-59.20	17.98	1.800	4.900	14.16	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367009.68	1546906.62	-267.22	339.00	294.85	-59.17	17.97	1.800	4.900	14.29	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367011.15	1546907.10	-269.79	342.00	297.42	-59.13	17.91	1.800	4.900	14.42	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367012.61	1546907.57	-272.37	345.00	300.00	-59.09	17.88	1.800	4.900	14.55	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367014.08	1546908.04	-274.94	348.00	302.57	-59.06	17.88	1.800	4.900	14.69	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367015.55	1546908.52	-277.52	351.00	305.15	-59.05	17.87	1.800	4.900	14.82	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367017.02	1546908.99	-280.09	354.00	307.72	-59.04	17.87	1.800	4.900	14.95	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367018.49	1546909.46	-282.66	357.00	310.29	-59.02	17.86	1.800	4.900	15.08	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367019.96	1546909.94	-285.23	360.00	312.86	-58.97	17.84	1.800	4.900	15.21	Measured	2007-02-06 08:32



KLX17A	RT90-RHB70	6367021.43	1546910.41	-287.80	363.00	315.43	-58.94	17.83	1.800	4.900	15.35	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367022.90	1546910.88	-290.37	366.00	318.00	-58.92	17.81	1.800	4.900	15.48	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367024.38	1546911.36	-292.94	369.00	320.57	-58.90	17.80	1.800	4.900	15.61	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367025.85	1546911.83	-295.51	372.00	323.14	-58.90	17.79	1.800	4.900	15.74	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367027.33	1546912.30	-298.08	375.00	325.71	-58.89	17.78	1.800	4.900	15.87	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367028.81	1546912.78	-300.65	378.00	328.28	-58.87	17.77	1.800	4.900	16.01	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367030.28	1546913.25	-303.21	381.00	330.84	-58.86	17.73	1.800	4.900	16.14	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367031.76	1546913.72	-305.78	384.00	333.41	-58.84	17.73	1.800	4.900	16.27	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367033.24	1546914.20	-308.35	387.00	335.98	-58.83	17.72	1.800	4.900	16.40	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367034.72	1546914.67	-310.92	390.00	338.55	-58.80	17.68	1.800	4.900	16.54	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367036.20	1546915.14	-313.48	393.00	341.11	-58.77	17.65	1.800	4.900	16.67	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367037.68	1546915.61	-316.05	396.00	343.68	-58.75	17.62	1.800	4.900	16.80	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367039.17	1546916.08	-318.61	399.00	346.24	-58.73	17.59	1.800	4.900	16.94	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367040.65	1546916.55	-321.17	402.00	348.80	-58.72	17.58	1.800	4.900	17.07	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367042.14	1546917.02	-323.74	405.00	351.37	-58.70	17.55	1.800	4.900	17.20	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367043.63	1546917.49	-326.30	408.00	353.93	-58.69	17.51	1.800	4.900	17.34	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367045.11	1546917.96	-328.86	411.00	356.49	-58.68	17.48	1.800	4.900	17.47	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367046.60	1546918.43	-331.43	414.00	359.06	-58.66	17.48	1.800	4.900	17.60	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367048.09	1546918.90	-333.99	417.00	361.62	-58.64	17.48	1.800	4.900	17.74	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367049.58	1546919.37	-336.55	420.00	364.18	-58.64	17.48	1.800	4.900	17.87	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367051.07	1546919.84	-339.11	423.00	366.74	-58.64	17.46	1.800	4.900	18.00	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367052.56	1546920.30	-341.67	426.00	369.30	-58.64	17.42	1.800	4.900	18.14	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367054.05	1546920.77	-344.24	429.00	371.87	-58.63	17.42	1.800	4.900	18.27	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367055.54	1546921.24	-346.80	432.00	374.43	-58.60	17.42	1.800	4.900	18.40	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367057.03	1546921.71	-349.36	435.00	376.99	-58.58	17.42	1.800	4.900	18.54	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367058.52	1546922.18	-351.92	438.00	379.55	-58.56	17.41	1.800	4.900	18.67	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367060.02	1546922.64	-354.48	441.00	382.11	-58.53	17.37	1.800	4.900	18.80	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367061.51	1546923.11	-357.03	444.00	384.66	-58.49	17.34	1.800	4.900	18.94	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367063.01	1546923.58	-359.59	447.00	387.22	-58.47	17.34	1.800	4.900	19.07	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367064.51	1546924.05	-362.15	450.00	389.78	-58.44	17.34	1.800	4.900	19.21	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367066.01	1546924.51	-364.70	453.00	392.33	-58.42	17.32	1.800	4.900	19.34	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367067.51	1546924.98	-367.26	456.00	394.89	-58.39	17.30	1.800	4.900	19.47	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367069.01	1546925.45	-369.81	459.00	397.44	-58.37	17.27	1.800	4.900	19.61	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367070.51	1546925.92	-372.37	462.00	400.00	-58.35	17.30	1.800	4.900	19.74	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367072.02	1546926.39	-374.92	465.00	402.55	-58.33	17.31	1.800	4.900	19.88	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367073.52	1546926.85	-377.47	468.00	405.10	-58.31	17.33	1.800	4.900	20.01	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367075.02	1546927.32	-380.03	471.00	407.66	-58.31	17.28	1.800	4.900	20.15	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367076.53	1546927.79	-382.58	474.00	410.21	-58.28	17.23	1.800	4.900	20.28	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367078.04	1546928.26	-385.13	477.00	412.76	-58.22	17.18	1.800	4.900	20.42	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367079.55	1546928.72	-387.68	480.00	415.31	-58.17	17.16	1.800	4.900	20.55	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367081.06	1546929.19	-390.23	483.00	417.86	-58.12	17.17	1.800	4.900	20.69	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367082.58	1546929.66	-392.77	486.00	420.40	-58.07	17.13	1.800	4.900	20.82	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367084.09	1546930.13	-395.32	489.00	422.95	-58.03	17.11	1.800	4.900	20.96	Measured	2007-02-06 08:32

KLX17A	RT90-RHB70	6367085.61	1546930.59	-397.87	492.00	425.50	-58.00	17.09	1.800	4.900	21.09	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367087.13	1546931.06	-400.41	495.00	428.04	-57.95	17.08	1.800	4.900	21.23	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367088.66	1546931.53	-402.95	498.00	430.58	-57.89	17.05	1.800	4.900	21.37	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367090.18	1546932.00	-405.49	501.00	433.12	-57.83	16.99	1.800	4.900	21.50	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367091.71	1546932.46	-408.03	504.00	435.66	-57.77	16.93	1.800	4.900	21.64	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367093.24	1546932.93	-410.57	507.00	438.20	-57.72	16.88	1.800	4.900	21.78	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367094.78	1546933.39	-413.10	510.00	440.73	-57.66	16.82	1.800	4.900	21.91	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367096.32	1546933.86	-415.64	513.00	443.27	-57.59	16.80	1.800	4.900	22.05	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367097.86	1546934.32	-418.17	516.00	445.80	-57.50	16.75	1.800	4.900	22.19	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367099.40	1546934.79	-420.70	519.00	448.33	-57.38	16.70	1.800	4.900	22.33	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367100.95	1546935.25	-423.22	522.00	450.85	-57.27	16.66	1.800	4.900	22.46	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367102.51	1546935.72	-425.74	525.00	453.37	-57.19	16.64	1.800	4.900	22.60	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367104.07	1546936.18	-428.26	528.00	455.89	-57.11	16.63	1.800	4.900	22.74	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367105.63	1546936.65	-430.78	531.00	458.41	-57.06	16.60	1.800	4.900	22.88	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367107.20	1546937.11	-433.30	534.00	460.93	-56.99	16.54	1.800	4.900	23.02	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367108.76	1546937.58	-435.81	537.00	463.44	-56.95	16.48	1.800	4.900	23.16	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367110.33	1546938.04	-438.33	540.00	465.96	-56.92	16.45	1.800	4.900	23.30	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367111.90	1546938.51	-440.84	543.00	468.47	-56.88	16.43	1.800	4.900	23.44	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367113.48	1546938.97	-443.35	546.00	470.98	-56.84	16.43	1.800	4.900	23.58	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367115.05	1546939.43	-445.86	549.00	473.49	-56.82	16.41	1.800	4.900	23.72	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367116.63	1546939.90	-448.38	552.00	476.01	-56.80	16.42	1.800	4.900	23.86	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367118.20	1546940.36	-450.89	555.00	478.52	-56.77	16.44	1.800	4.900	24.00	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367119.78	1546940.83	-453.39	558.00	481.02	-56.74	16.45	1.800	4.900	24.14	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367121.36	1546941.29	-455.90	561.00	483.53	-56.72	16.45	1.800	4.900	24.28	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367122.94	1546941.76	-458.41	564.00	486.04	-56.69	16.47	1.800	4.900	24.42	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367124.52	1546942.23	-460.92	567.00	488.55	-56.67	16.45	1.800	4.900	24.57	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367126.10	1546942.69	-463.42	570.00	491.05	-56.66	16.43	1.800	4.900	24.71	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367127.68	1546943.16	-465.93	573.00	493.56	-56.65	16.41	1.800	4.900	24.85	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367129.26	1546943.63	-468.44	576.00	496.07	-56.63	16.39	1.800	4.900	24.99	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367130.85	1546944.09	-470.94	579.00	498.57	-56.61	16.36	1.800	4.900	25.13	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367132.43	1546944.56	-473.44	582.00	501.07	-56.59	16.31	1.800	4.900	25.27	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367134.02	1546945.02	-475.95	585.00	503.58	-56.58	16.28	1.800	4.900	25.41	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367135.61	1546945.48	-478.45	588.00	506.08	-56.55	16.20	1.800	4.900	25.55	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367137.19	1546945.94	-480.96	591.00	508.59	-56.53	16.15	1.800	4.900	25.69	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367138.78	1546946.40	-483.46	594.00	511.09	-56.50	16.09	1.800	4.900	25.84	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367140.38	1546946.86	-485.96	597.00	513.59	-56.48	16.05	1.800	4.900	25.98	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367141.97	1546947.32	-488.46	600.00	516.09	-56.47	16.02	1.800	4.900	26.12	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367143.56	1546947.78	-490.96	603.00	518.59	-56.46	15.98	1.800	4.900	26.26	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367145.15	1546948.23	-493.46	606.00	521.09	-56.44	15.93	1.800	4.900	26.40	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367146.75	1546948.69	-495.96	609.00	523.59	-56.42	15.91	1.800	4.900	26.54	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367148.35	1546949.14	-498.46	612.00	526.09	-56.40	15.88	1.800	4.900	26.68	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367149.94	1546949.59	-500.96	615.00	528.59	-56.39	15.84	1.800	4.900	26.83	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367151.54	1546950.05	-503.46	618.00	531.09	-56.39	15.77	1.800	4.900	26.97	Measured	2007-02-06 08:32

KLX17A	RT90-RHB70	6367153.14	1546950.50	-505.95	621.00	533.58	-56.37	15.71	1.800	4.900	27.11	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367154.74	1546950.95	-508.45	624.00	536.08	-56.34	15.69	1.800	4.900	27.25	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367156.34	1546951.40	-510.95	627.00	538.58	-56.32	15.65	1.800	4.900	27.39	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367157.94	1546951.84	-513.45	630.00	541.08	-56.30	15.63	1.800	4.900	27.54	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367159.55	1546952.29	-515.94	633.00	543.57	-56.28	15.62	1.800	4.900	27.68	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367161.15	1546952.74	-518.44	636.00	546.07	-56.28	15.60	1.800	4.900	27.82	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367162.76	1546953.19	-520.93	639.00	548.56	-56.28	15.58	1.800	4.900	27.96	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367164.36	1546953.64	-523.43	642.00	551.06	-56.28	15.54	1.800	4.900	28.11	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367165.97	1546954.08	-525.92	645.00	553.55	-56.27	15.51	1.800	4.900	28.25	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367167.57	1546954.53	-528.42	648.00	556.05	-56.25	15.50	1.800	4.900	28.39	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367169.18	1546954.97	-530.91	651.00	558.54	-56.22	15.50	1.800	4.900	28.53	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367170.79	1546955.42	-533.40	654.00	561.03	-56.22	15.49	1.800	4.900	28.68	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367172.39	1546955.86	-535.90	657.00	563.53	-56.20	15.48	1.800	4.900	28.82	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367174.00	1546956.31	-538.39	660.00	566.02	-56.16	15.45	1.800	4.900	28.96	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367175.61	1546956.75	-540.88	663.00	568.51	-56.14	15.41	1.800	4.900	29.10	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367177.23	1546957.20	-543.37	666.00	571.00	-56.13	15.41	1.800	4.900	29.25	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367178.84	1546957.64	-545.86	669.00	573.49	-56.11	15.39	1.800	4.900	29.39	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367180.45	1546958.09	-548.35	672.00	575.98	-56.09	15.36	1.800	4.900	29.53	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367182.07	1546958.53	-550.84	675.00	578.47	-56.08	15.31	1.800	4.900	29.68	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367183.68	1546958.97	-553.33	678.00	580.96	-56.06	15.22	1.800	4.900	29.82	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367185.30	1546959.41	-555.82	681.00	583.45	-56.05	15.15	1.800	4.900	29.96	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367186.92	1546959.84	-558.31	684.00	585.94	-56.03	15.09	1.800	4.900	30.10	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367188.53	1546960.28	-560.80	687.00	588.43	-56.03	15.03	1.800	4.900	30.25	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367190.15	1546960.71	-563.28	690.00	590.91	-56.03	15.02	1.800	4.900	30.39	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367191.77	1546961.15	-565.77	693.00	593.40	-56.02	14.94	1.800	4.900	30.53	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367193.39	1546961.58	-568.26	696.00	595.89	-56.00	14.90	1.800	4.900	30.68	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367195.01	1546962.01	-570.75	699.00	598.38	-56.00	14.90	1.800	4.900	30.82	Measured	2007-02-06 08:32
KLX17A	RT90-RHB70	6367196.14	1546962.31	-572.47	701.08	600.10	-56.00	14.90	1.800	4.900	30.92	Measured	2007-02-06 08:32

Number of rows: 235.  
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