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Oskarshamn site investigation

Geophysical borehole logging in boreholes KLX13A, KLX14A, KLX22A, KLX22B, KLX23A, KLX23B, KLX24A, KLX25A, KLX26A and KLX26B

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Abstract

Geophysical borehole logging has been performed in boreholes KLX13A, KLX14A, KLX22A, KLX22B, KLX23A, KLX23B, KLX24A, KLX25A, KLX26A and KLX26B all situated in Laxemar in Oskarshamn, Sweden.

The objective of the survey is to determine the physical properties of the rock mass around the borehole, e.g. to determine rock types and quantify the fracture frequency and localise deformation zones in the rock. Geophysical borehole logging was used to measure changes in physical properties in the borehole fluid and the bedrock surrounding the boreholes.

All boreholes were recorded from Top Of Casing (TOC). The logging in KLX13A was recorded to app. 600 m, KLX14A was recorded to app. 175 m, KLX22A was recorded to app. 100 m, KLX22B was recorded to app. 100 m, KLX23A was recorded to app. 100 m, KLX23B was recorded to app. 50 m, KLX24A was recorded to app. 100 m, KLX25A was recorded to app. 50 m, KLX26A was recorded to app. 100 m and KLX26B was recorded to app. 50 m.

The present report comprises a description of the applied equipment and the performed logging program, the fieldwork, data delivery and a presentation and discussion of the results.

Composite sheets of all the processed logs are included in Appendix 1 to 10.

Sammanfattning

Geofysisk borrhålsloggning har genomförts i borrhålen KLX13A, KLX14A, KLX22A, KLX22B, KLX23A, KLX23B, KLX24A, KLX25A, KLX26A och KLX26B i delområde Laxemar, Oskarshamn.

Syftet med geofysisk borrhålsloggning är att bestämma bergets fysikaliska egenskaper för att bestämma bergartsfördelningen i det genomborrade bergpartiet samt att kvantifiera sprickfrekvensen och att lokalisera deformationszoner. Med geofysisk borrhålsloggning mäts bergets och borrhålsvattnets fysikaliska egenskaper i borrhålet och omgivande berg.

Den geofysiska borrhålsloggningen genomfördes i KLX13A från TOC till 600 m, i KLX14A från TOC till 175 m, i KLX22A från TOC till 100 m, i KLX22B från TOC till 100 m, i KLX23A från TOC till 100 m, i KLX23B från TOC till 50 m, i KLX24A från TOC till 100 m, i KLX25A från TOC till 50 m, i KLX26A från TOC till 100 m och i KLX26B från TOC till 50 m.

Rapporten beskriver använd utrustning, genomfört loggningsprogram, fältarbete, leverans av data och en diskussion av resultatet.

Processerade loggar presenteras i Appendix 1 till 10.

Contents

1 Introduction

This document reports the results gained by the geophysical borehole logging in boreholes KLX13A, KLX14A, KLX22A, KLX22B, KLX23A, KLX23B, KLX24A, KLX25A, KLX26A and KLX26B, 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 400-06-082 (SKB internal controlling document). In Table 1-1 controlling documents for performing this activity are listed.

All measurements were conducted by RAMBØLL during the period September 5 to 8 and September 12 and 13, 2006. The boreholes were recorded from Top Of Casing (TOC) to the bottom of the borehole. The technical data from the boreholes are shown in Tables 1-2 to 1-3. The location of the boreholes is shown in Figure 1-1.

The delivered raw and processed data have been inserted in the database of SKB (SICADA) and data are traceable by the activity plan number.

Table 1-1. Controlling documents for the performance of the activity (SKB internal controlling documents).

Activity plan	Number	Version
Geofysisk borrhålsloggning i KLX13A, KLX22A, KLX22B, KLX23A, KLX23B, KLX24A OCH KLX25A	AP PS 400-06-082	1.0
Tillägg till AP PS 400-06-082 med geofysisk borrhålsloggning i KLX14A, KLX26A och KLX26B	AP PS 400-06-082	1.0
Method descriptions	**Number**	**Version**
Metodbeskrivning för geofysisk borrhålsloggning	SKB MD 221.002	2.0

Table 1-2. Technical data for the boreholes.

Borehole parameter	KLX13A	KLX14A	KLX22A	KLX22B
Co-ordinates (RT90)	X: 6367547.14 Y: 1546787.36	X: 6365959.69 Y: 1547146.87	X: 6366548.35 Y: 1546688.59	X: 6366553.13 Y: 1546685.41
Elevation (RHB70)	Z: 24.15	Z: 16.35	Z: 21.97	Z: 21.57
Inclination (from horizontal)	–82.25°	–49.96°	–59.93°	–61.25°
Azimuth	224.48°	111.95°	179.19°	343.975°
Length	595.85 m	176.27 m	100.45 m	100.25 m
Borehole diameter	∅ 341 mm (0.15–6.15 m) ∅ 252 mm (6.15–11.75 m) ∅ 197 mm (11.75–99.76 m) ∅ 160 mm (99.76–99.86 m) ∅ 86 mm (99.86–101.21 m) ∅ 76 mm (101.21–595.85 m)	∅ 116 mm (0.30–3.24 m) ∅ 96 mm (3.24–6.45 m) ∅ 76 mm (6.45–176.27 m)	∅ 96 mm (0.30–2.00 m) ∅ 76 mm (2.00–100.45 m)	∅ 96 mm (0.30–2.00 m) ∅ 76 mm (2.00–100.25 m)
Casing	∅ 323/310 mm (0.15–6.15 m) ∅ 208/200 mm (0.00–11.75 m)	∅ 90/77 mm (0.00–6.45 m)	∅ 89/77 mm (0.00–2.00 m)	∅ 89/77 mm (0.00–2.00 m)
Cleaning level	Level 2	Level 1	Level 1	Level 1

Table 1-3. Technical data for the boreholes.

Borehole parameter	KLX23B	KLX24A	KLX25A	KLX26A	KLX26B
Co-ordinates (RT90)	X: 6366101.90 Y: 1546717.33	X: 6366423.35 Y: 1546853.80	X: 6366274.74 Y: 1546769.66	X: 6365546.49 Y:1549029.90	X: 6365550.66 Y: 1549025.61
Elevation (RHB70)	Z: 22.32	Z: 21.29	Z: 22.84	Z: 15.63	Z: 15.82
Inclination (from horizontal)	–60.54°	–59.15°	–59.46°	–60.45°	–60.01°
Azimuth	121.36°	98.41°	145.73°	93.47°	137.42°
Length	50.27 m	100.17 m	50.24 m	101.14 m	50.37 m
Borehole diameter	∅ 96 mm (0.30–2.30 m) ∅ 76 mm (2.30–50.27 m)	∅ 96 mm (0.3–2.41 m) ∅ 76 mm (2.41–100.17 m)	∅ 96 mm (0.30–2.20 m) ∅ 76 mm (2.20–50.24 m)	∅ 96 mm (0.30–2.64 m) ∅ 76 mm (2.64–101.14 m)	∅ 96 mm (0.30–2.31 m) ∅ 76 mm (2.31–50.37 m)
Casing	∅ 90/77 mm (0.00–2.30 m)	∅ 90/77 mm (0.00–2.41 m)	∅ 90/77 mm (0.00–2.20 m)	∅ 90/77 mm (0.00–2.64 m)	∅ 90/77 mm (0.00–2.31 m)
Cleaning level	Level 1	Level 1	Level 1	Level 1	Level 1

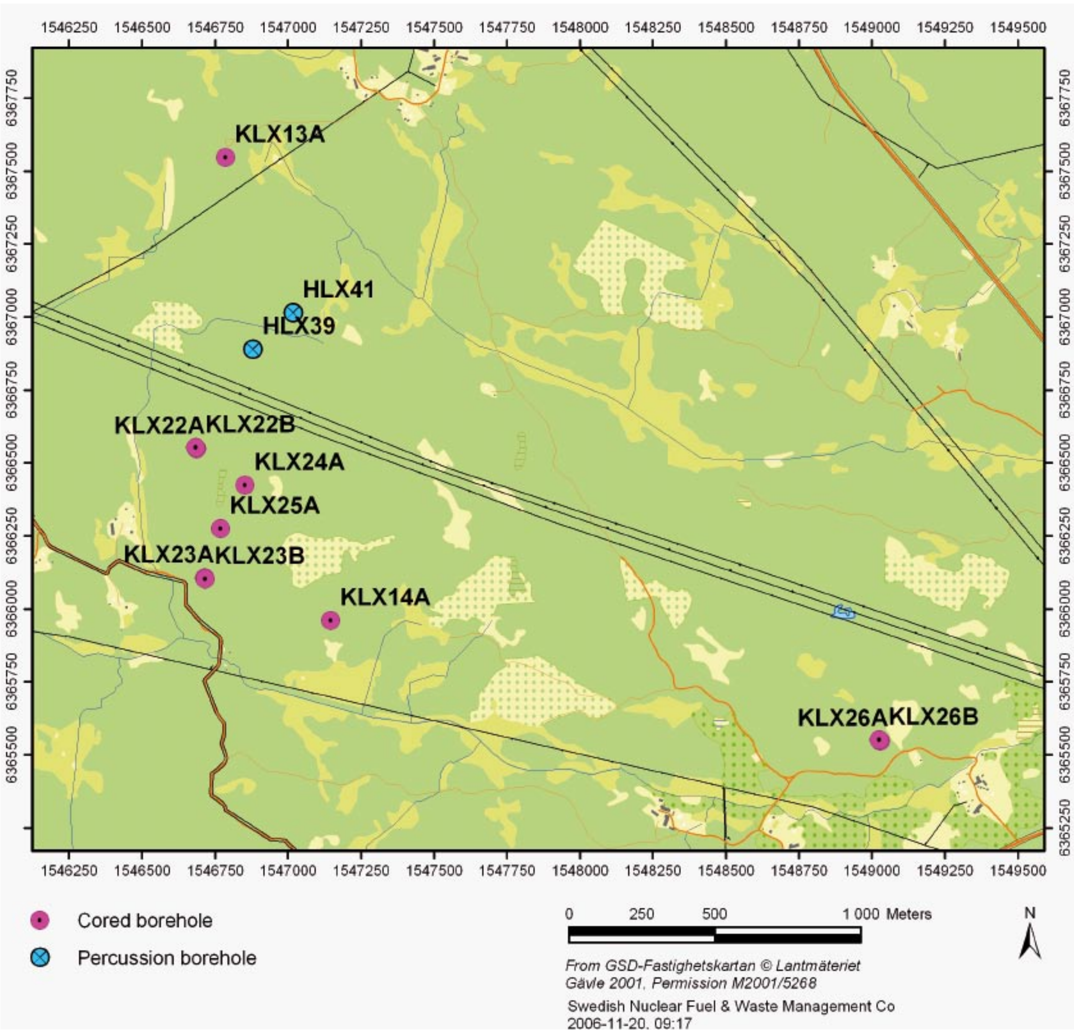

Figure 1-1. *Map of the location of the boreholes KLX13A, KLX14A, KLX22A, KLX22B, KLX23A, KLX23B, KLX24A, KLX25A, KLX26A and KLX26B in the Laxemar subarea, Oskarshamn.*

2 Objective and scope

The objective of the survey is to both receive information of the borehole itself, and from the rock mass around the borehole. Geophysical borehole logging was used to measure changes in physical properties in the borehole fluid and the bedrock surrounding the boreholes. Acoustic televiewer was used for determination of the 360° caliper and to determine the length marks in the boreholes.

This field report describes the equipment used as well as the measurement procedures. Geophysical borehole logging data is presented in graphs as a function of depth on drawings shown in Table 2-1.

Table 2-1. Appendix and drawing no.

Borehole	Drawing no.	Appendix
KLX13A	1.1	1
KLX14A	2.1	2
KLX22A	3.1	3
KLX22B	4.1	4
KLX23A	5.1	5
KLX23B	6.1	6
KLX24A	7.1	7
KLX25A	8.1	8
KLX26A	9.1	9
KLX26B	10.1	10

3 Equipment

The geophysical borehole logging program was performed with up to 7 multi tool probes and resulted in a suite of 18 log types, listed in Table 5-1. The tools and recorded logs are listed in Table 3-1.

Table 3-1. Logging tools and logs recorded.

Tool	Recorded logs	Dimensions	Source detector spacing and type	Tool position in borehole	Tool used in borehole
Century 8144 Normal resistivity	Normal resistivity (16 and 64 inch), single point resistance, self potential and natural gamma.	237×5.3 cm			All boreholes
Century 8622 Magnetic susceptibility.	Magnetic susceptibility, natural gamma.	203×4.1 cm			All boreholes
Century 9042 Fluid temperature and fluid resistivity	Fluid temperature, fluid resistivity and natural gamma.	137×4.1 cm			All boreholes
Century 9072 3 m focused guard.	3 m focused guard log resistivity and natural gamma.	310×6.4 cm			All boreholes
Century 9139 Compensated gamma density.	Compensated gamma density, natural gamma, 140 cm focused guard log resistivity, 1-arm caliper.	280.3×5.6 cm	20.3 cm 200 mCi Cs137	Sidewall. Gamma source focused.	All boreholes
Century 9310 Sonic.	Full wave form travel-time providing P and S-wave velocity picking, compensated P-wave travel-time and natural gamma.	300×6.0 cm	Near 91.4 cm Far 121.9 cm	Centralized.	All boreholes
RG 25 112 000 HiRAT. Acoustic televiewer.	Full waveform acoustic amplitude and travel-time, 360° orientated acoustic image, 360° very high resolution caliper, borehole azimuth and dip and natural gamma.	246×4 cm		Centralized.	All boreholes

4 Execution

4.1 General

In general the measurement procedures follow the SKB method description (MD 221.002, SKB internal controlling document). The logging program was executed in the period September 5 to 8 and September 12 and 13, 2006. All relevant logging events are described in the daily report sheets delivered to SICADA and are traceable by the activity plan number.

The fluid resistivity and temperature logs are recorded in downward direction, as the first log run. All other log types are recorded running the tool in upward direction in the borehole.

The applied logging equipment was calibrated and cleaned before arriving at the site according to SKB cleaning level 2 (SKB internal controlling document SKB MD 600.004). Furthermore, all equipment was wiped with alcohol before it was lowered into the borehole KLX13A.

For control, each log run is normally recorded both in down and in upward direction using the down run as a repeat section. For logging density tool 9139 recording a repeat section in upward direction controls the data. The depth of the probe in the borehole is shown on both the recording computer and the winch. On the winch the tension of the cable is also shown. The winch will automatically stop, if the tension changes rapidly. The tension was recorded on all log runs using Century equipment, except tool 9310.

All data was recorded with max.10 cm sample interval. The speed of the logging for the 9139 tool was 5 m/min, for the 8622 tool 20 m/min and for all other tools 10 m/min.

4.2 Nonconformities

The logging has been performed in accordance with the activity plan AP PS 400-06-082.

5 Results

5.1 Presentation

All relevant logging events were described in the daily report sheets, which were delivered separately.

Logs presented in drawings no. 1.1–10.1 are presented in Table 5-1.

5.2 Orientation, alignment and stretch of logs

5.2.1 Orientation of images

The orientation of the results from the HiRAT Acoustic tool, are processed in the tool while recording, using the magnetometers and accelerometers in the tool.

5.2.2 Overlapping data

If the log data from one probe have been recorded in more than one file, the files are merged using events in both files. Overlapping in data is always used from the topmost-recorded file (overlapping data are never the mean value from two log runs).

Table 5-1. Logs presented in drawings no. 1.1 through. 10.1 in appendices 1 to 10.

Log	Log name short	Unit	Tool	Recorded/calculated in borehole
Fluid temperature	TEMP(FL)	deg C	9042	All
Fluid resistivity	RES(FL)	ohm-m	9042	All
Natural gamma	GAM(NAT)	μR/h	9042	All
Normal resistivity 16 inch	RES(16N)	ohm-m	8144	All
Normal resistivity 64 inch	RES(64N)	ohm-m	8144	All
Lateral resistivity	LATERAL	ohm-m	8144	All
Single point resistance	SPR	Ohm	8144	All
Self potential	SP	V	8144	All
Magnetic susceptibility	MAGSUSCEP	$SI \cdot 10^{-5}$	8622	All
Caliper, 1-arm	CALIPER1	mm	9139	All
Gamma-gamma density	DENSITY	kg/m^3	9139	All
Focused guard log resistivity, 127 cm	RES(SG)	ohm-m	9139	All
Focused guard log resistivity, 300 cm	RES(DG)	ohm-m	9072	All
P-wave velocity	P-VEL	m/s	9310	All
Full wave form, near receiver	AMP(N)	μs	9310	All
Full wave form, far receiver	AMP(F)	μs	9310	All
Caliper, high resolution. 360°	CALIPER 3D	mm	HiRAT	All
High resolution 1D Caliper	CALIPER MEAN	mm	HiRAT	All

5.2.3 Alignment of data

In order to obtain an exact length calibration, the track marks made while drilling are used. In boreholes without track marks, gamma events in the top and the bottom of the borehole are used. The connection between the track marks and the logs is obtained from the HiRAT Acoustic tool. The depths from the track marks and from the HiRAT tool are used to make a new length scale in WellCAD. All log files are shifted using the new length scale.

5.2.4 Stretch of logs

There is a minor difference in the length registration between up- and down runs for the used winch. The size of the defect is about 1.5 m/km. To compensate for this the logs are stretched using another new length scale for each tool. The length scale is made by using gamma events from the tool compared with the same gamma events from the HiRAT tool. The events in both files are matched, and the new length scale is made and added to the log. The bottom of the borehole is considered in stretching the logs in case that no data will occur below the bottom of the borehole.

5.2.5 Removing of data

The processing of the data includes removing of spikes, negative and unrealistic values and data in the casing.

5.2.6 Repicking of sonic log

The sonic velocity is normally calculated using an automatic picking routine in the sonic tool, 9310. In inclined boreholes the routine is often picking the wrong arrivals, due to so-called "road noise". Therefore all sonic logs have been manually repicked in WellCAD using the full wave signal.

5.3 Calculated log curves

The different logs are calculated as described in Table 5-2.

5.4 Borehole KLX13A

In order to obtain an exact length calibration in borehole KLX13A, the reference track marks made while drilling are used. The correlation between the track marks and the logs is obtained from the HiRAT Acoustic tool.

The reference track marks in the borehole and the recorded track marks from the HiRAT are observed in the following depths, Table 5-3.

To compensate for the difference between the reference track marks and the recorded track marks the logs are stretched. The result from the stretching is a new length scale. The new length scale is applied to the HiRAT file. In this way a perfect match between given depths of the reference marks and the recorded data is obtained. By means of alignment of the observed gamma events in KLX13A, between all logruns, the obtained reference mark correlation is transferred to the other logs.

The complete log suite for borehole KLX13A is presented as composite log sheets in drawing 1.1 in Appendix 1. The logs presented in drawing no. 1.1 are listed in Table 5-1.

Table 5-2. Calculated log curves.

Log	Description of log calculation
Caliper, 1-arm	The caliper was converted from [cm] to [mm] units by multiplying [cm] with 10.
Gamma-gamma density	The gamma-gamma was converted from [g/cm^3] to [kg/m^3] units by multiplying with 1,000.
Focused guard log resistivity, 140 cm	–
Natural gamma	The natural gamma log was converted from CPS to μR/h by multiplying the constant 0.077. This constant was computed from the logs previously performed in borehole KLX02 located in Oskarshamn.
Fluid temperature	–
Fluid resistivity	–
Normal resistivity 16 inch	–
Normal resistivity 64 inch	–
Lateral resistivity	–
Single point resistance	–
Self-potential	The SP value was converted from [mV] to [V] by dividing with 1,000.
Focused guard log resistivity, 300 cm	–
P-wave velocity	The P-VEL velocity is calculated using the difference in distance between the far and near receiver divided by the time difference between the first arrival from the far and near signal. (121.9 cm–91.4 cm)/(Time(far)–Time(near)).
Full wave form, near receiver	–
Full wave form, far receiver	–
Magnetic susceptibility	The magnetic susceptibility was converted for CGS units to SI units by multiplying the CGS value by 4π.
Caliper, high resolution. 360° CALIPER 3D	The caliper 3D is calculated using the acoustic travel time and the velocity in the borehole fluid. The velocity in the fluid is calculated using the fluid temperature and fluid conductivity.
High resolution 1D Caliper CALIPER MEAN	The caliper mean is calculated using the mean travel time from the acoustic televiewer, the fluid temperature, fluid velocity and the internal travel time in the acoustic televiewer.

Table 5-3. The reference track marks in the borehole and the recorded track marks form the HiRAT in borehole KLX13A.

Reference mark	HIRAT recorded
110.00	110
150.00	150.121
200.00	200.233
250.00	250.36
300.00	300.52
350.00	350.63
400.00	400.768
450.00	450.92
500.00	501.06
550.00	551.24
581,00	582.34

5.5 Borehole KLX14A

In order to obtain an exact length calibration in borehole KLX14A, the reference track marks made while drilling are used. The correlation between the track marks and the logs is obtained from the HiRAT Acoustic tool.

The reference track marks in the borehole and the recorded track marks from the HiRAT are observed in the following depths, Table 5-4.

To compensate for the difference between the reference track marks and the recorded track marks the logs are stretched. The result from the stretching is a new length scale. The new length scale is applied to the HiRAT file. In this way a perfect match between given depths of the reference marks and the recorded data is obtained. By means of alignment of the observed gamma events in KLX14A, between all logruns, the obtained reference mark correlation is transferred to the other logs.

The complete log suite for borehole KLX14A is presented as composite log sheets in drawing 2.1 in Appendix 2. The logs presented in drawing no. 2.1 are listed in Table 5-1.

5.6 Borehole KLX22A

In order to obtain an exact length calibration in borehole KLX22A, the reference track marks made while drilling are used. The correlation between the track marks and the logs is obtained from the HiRAT Acoustic tool.

The reference track marks in the borehole and the recorded track marks from the HiRAT are observed in the following depths, Table 5-5.

To compensate for the difference between the reference track marks and the recorded track marks the logs are stretched. The result from the stretching is a new length scale. The new length scale is applied to the HiRAT file. In this way a perfect match between given depths of the reference marks and the recorded data is obtained. By means of alignment of the observed gamma events in KLX22A, between all logruns, the obtained reference mark correlation is transferred to the other logs.

The complete log suite for borehole KLX22A is presented as composite log sheets in drawing 3.1 in Appendix 3. The logs presented in drawing no. 3.1 are listed in Table 5-1.

Table 5-4. The reference track marks in the borehole and the recorded track marks form the HiRAT in borehole KLX14A.

Reference mark	HIRAT recorded
50.00	49.911
100.00	100.052

Table 5-5. The reference track marks in the borehole and the recorded track marks form the HiRAT in borehole KLX22A.

Reference mark	HIRAT recorded
50.00	49.879
80.00	79.807

5.7 Borehole KLX22B

In order to obtain an exact length calibration in borehole KLX22B, the reference track marks made while drilling are used. The correlation between the track marks and the logs is obtained from the HiRAT Acoustic tool.

The reference track marks in the borehole and the recorded track marks from the HiRAT are observed in the following depths, Table 5-6.

To compensate for the difference between the reference track marks and the recorded track marks the logs are stretched. The result from the stretching is a new length scale. The new length scale is applied to the HiRAT file. In this way a perfect match between given depths of the reference marks and the recorded data is obtained. By means of alignment of the observed gamma events in KLX22B, between all logruns, the obtained reference mark correlation is transferred to the other logs.

The complete log suite for borehole KLX22B is presented as composite log sheet in drawing no. 4.1 in Appendix 4. The logs presented in drawing no. 4.1 are listed in Table 5-1.

5.8 Borehole KLX23A

In order to obtain an exact length calibration in borehole KLX23A, the reference track marks made while drilling are used. The correlation between the track marks and the logs is obtained from the HiRAT Acoustic tool.

The reference track marks in the borehole and the recorded track marks from the HiRAT are observed in the following depths, Table 5-7.

To compensate for the difference between the reference track marks and the recorded track marks the logs are stretched. The result from the stretching is a new length scale. The new length scale is applied to the HiRAT file. In this way a perfect match between given depths of the reference marks and the recorded data is obtained. By means of alignment of the observed gamma events in KLX23A, between all logruns, the obtained reference mark correlation is transferred to the other logs.

The complete log suite for borehole KLX23A is presented as composite log sheet in drawing no. 5.1 in Appendix 5. The logs presented in drawing no. 5.1 are listed in Table 5-1.

Table 5-6. The reference track marks in the borehole and the recorded track marks form the HiRAT in borehole KLX22B.

Reference mark	HIRAT recorded
50.00	49.76
80.00	79.911

Table 5-7. The reference track marks in the borehole and the recorded track marks form the HiRAT in borehole KLX23A.

Reference mark	HIRAT recorded
50.00	49.677
80.00	79.79

5.9 Borehole KLX23B

Using the natural gamma from the 9042 as reference, the natural gamma logs from the other probes are aligned to the same depth. A new depth scale is added to each log and afterwards the logs are stretched using different gamma events.

The complete log suite for borehole KLX23B is presented as composite log sheet in drawing no. 6.1 in Appendix 6. The logs presented in drawing no. 6.1 are listed in Table 5-1.

5.10 Borehole KLX24A

In order to obtain an exact length calibration in borehole KLX24A, the reference track marks made while drilling are used. The correlation between the track marks and the logs is obtained from the HiRAT Acoustic tool.

The reference track marks in the borehole and the recorded track marks from the HiRAT are observed in the following depths, Table 5-8.

To compensate for the difference between the reference track marks and the recorded track marks the logs are stretched. The result from the stretching is a new length scale. The new length scale is applied to the HiRAT file. In this way a perfect match between given depths of the reference marks and the recorded data is obtained. By means of alignment of the observed gamma events in KLX24A, between all logruns, the obtained reference mark correlation is transferred to the other logs.

The complete log suite for borehole KLX24A is presented as composite log sheet in drawing no. 7.1 in Appendix 7. The logs presented in drawing no. 7.1 are listed in Table 5-1.

5.11 Borehole KLX25A

Using the natural gamma from the 9042 as reference, the natural gamma logs from the other probes are aligned to the same depth. A new depth scale is added to each log and afterwards the logs are stretched using different gamma events.

The complete log suite for borehole KLX25A is presented as composite log sheet in drawing no. 8.1 in Appendix 8. The logs presented in drawing no. 8.1 are listed in Table 5-1.

5.12 Borehole KLX26A

In order to obtain an exact length calibration in borehole KLX26A, the reference track marks made while drilling are used. The correlation between the track marks and the logs is obtained from the HiRAT Acoustic tool.

The reference track marks in the borehole and the recorded track marks from the HiRAT are observed in the following depths, Table 5-9.

Table 5-8. The reference track marks in the borehole and the recorded track marks form the HiRAT in borehole KLX24A.

Reference mark	HIRAT recorded
50.00	49.765
80.00	79.795

Table 5-9. The reference track marks in the borehole and the recorded track marks form the HiRAT in borehole KLX26A.

Reference mark	HIRAT recorded
50.00	49.713
80.00	79.852

To compensate for the difference between the reference track marks and the recorded track marks the logs are stretched. The result from the stretching is a new length scale. The new length scale is applied to the HiRAT file. In this way a perfect match between given depths of the reference marks and the recorded data is obtained. By means of alignment of the observed gamma events in KLX26A, between all logruns, the obtained reference mark correlation is transferred to the other logs.

The complete log suite for borehole KLX26A is presented as composite log sheet in drawing no. 9.1 in Appendix 9. The logs presented in drawing no. 9.1 are listed in Table 5-1.

5.13 Borehole KLX26B

Using the natural gamma from the 9042 as reference, the natural gamma logs from the other probes are aligned to the same depth. A new depth scale is added to each log and afterwards the logs are stretched using different gamma events.

The complete log suite for borehole KLX26B is presented as composite log sheet in drawing no. 10.1 in Appendix 10. The logs presented in drawing no. 10.1 are listed in Table 5-1.

6 Data delivery

Geophysical logging data from the measurements, recorded in Century and Robertson format, were delivered directly after the termination of the field activities. The recorded data files used in the processing have also been delivered in WellCAD format, Table 6-1.

The delivered data have been inserted in the database (SICADA) of SKB and are traceable by the activity plan number.

The processed files shown on the drawings have been delivered in WellCAD, Table 6-2, and as excel files (one for each borehole) in SICADA format, Table 6-3.

Table 6-1. Recorded log files in Century or Robertson format used for processing.

Borehole	Probe	Log direction	WellCAD File	Description
KLX13A	8144	Up	KLX13A_09-07-06_15-22_8144C_.10_ 0.90_599.90_ORIG.log	Start Depth: 599.9 m End Depth: 0.9 m
KLX13A	8622	Up	KLX13A_09-07-06_20-33_8622C_.10_ 1.10_596.70_ORIG.log	Start Depth: 596.7 m End Depth: 1.1 m
KLX13A	9042	Down	KLX13A_09-07-06_13-22_9042C_.10_ 18.80_599.30_ORIG.log	Start Depth: 18.8 m End Depth: 599.3 m
KLX13A	9072	Up	KLX13A_09-08-06_09-57_9072C_.10_ 6.00_599.20_ORIG.log	Start Depth: 599.2 m End Depth: 6 m
KLX13A	9139	Up	KLX13A_09-07-06_18-16_9139A_.10_ 93.70_596.40_ORIG.log	Start Depth: 596.4 m End Depth: 93.7 m
KLX13A	9310	Up	KLX13A_09-08-06_08-34_9310C2_.10_ 3.00_594.00_ORIG.log	Start Depth: 594 m End Depth: 3 m
KLX13A	HiRAT	Up	KLX13A_HIRAT_180pixels_up_run1.HED	Start Depth: 597 m End Depth: 0 m
KLX14A	8144	Up	KLX14A_09-13-06_10-30_8144C_.10_- 0.30_175.60_ORIG.log	Start Depth: 175.6 m End Depth: –0.3 m
KLX14A	8622	Up	KLX14A_09-13-06_10-57_8622C_.10_- 0.30_175.10_ORIG.log	Start Depth: 175.1 m End Depth: –0.3 m
KLX14A	9042	Down	KLX14A_09-13-06_07-57_9042C_.10_ 0.20_175.30_ORIG.log	Start Depth: 0.2 m End Depth: 175.3 m
KLX14A	9072	Up	KLX14A_09-13-06_08-46_9072C_.10_- 0.20_175.20_ORIG.log	Start Depth: 175.2 m End Depth: –0.2 m
KLX14A	9139	Up	KLX14A_09-13-06_09-25_9139A_.10_- 0.10_174.30_ORIG.log	Start Depth: 174.3 m End Depth: –0.1 m
KLX14A	9310	Up	KLX14A_09-13-06_11-29_9310C2_.10_- 0.20_173.70_ORIG.log	Start Depth: 173.7 m End Depth: –0.2 m
KLX14A	9310	Down	KLX14A_09-13-06_11-11_9310C2_.10_ 0.20_173.60_ORIG.log	Start Depth: 0.2 m End Depth: 173.6 m
KLX14A	HiRAT	Down	KLX14A_HIRAT_180pixels_down_run1. HED	Start Depth: 0 m End Depth: 173 m
KLX22A	8144	Up	KLX22A_09-06-06_19-21_8144C_.1_2.50_ 100.10_ORIG.log	Start Depth: 100.1 m End Depth: 2.5 m
KLX22A	8622	Up	KLX22A_09-06-06_20-04_8622C_.1_1.00_ 99.90_ORIG.log	Start Depth: 99.9 m End Depth: 1 m
KLX22A	9042	Down	KLX22A_09-06-06_19-00_9042C_.1_0.20_ 100.40_ORIG.log	Start Depth: 0.2 m End Depth: 100.4 m
KLX22A	9072	Up	KLX22A_09-07-06_11-26_9072C_.10_ 1.30_100.30_ORIG.log	Start Depth: 100.3 m End Depth: 1.3 m

Borehole	Probe	Log direction	WellCAD File	Description
KLX22A	9139	Up	KLX22A_09-07-06_10-02_9139A_.10_ 1.70_100.10_ORIG.log	Start Depth: 100.1 m End Depth: 1.7 m
KLX22A	9310	Up	KLX22A_09-07-06_09-30_9310C2_.10_ 1.60_99.20_ORIG.log	Start Depth: 99.2 m End Depth: 1.6 m
KLX22A	HiRAT	Up	KLX22A_HIRAT_180pixels_up_run1.HED	Start Depth: 100 m End Depth: 0 m
KLX22B	8144	Up	KLX22B_09-06-06_19-38_8144C_.1_0.50_ 99.70_ORIG.log	Start Depth: 99.7 m End Depth: 0.5 m
KLX22B	8622	Up	KLX22B_09-06-06_19-54_8622C_.1_0.60_ 99.90_ORIG.log	Start Depth: 99.9 m End Depth: 0.6 m
KLX22B	9042	Down	KLX22B_09-06-06_18-42_9042C_.1_0.20_ 100.10_ORIG.log	Start Depth: 0.2 m End Depth: 100.1 m
KLX22B	9072	Up	KLX22B_09-07-06_11-10_9072C_.10_ 2.30_99.70_ORIG.log	Start Depth: 99.7 m End Depth: 2.3 m
KLX22B	9139	Up	KLX22B_09-07-06_10-39_9139A_.10_ 1.50_99.60_ORIG.log	Start Depth: 99.6 m End Depth: 1.5 m
KLX22B	9310	Up	KLX22B_09-07-06_09-05_9310C2_.10_ 2.20_98.60_ORIG.log	Start Depth: 98.6 m End Depth: 2.2 m
KLX22B	HiRAT	Up	KLX22B_HIRAT_180pixels_up_run1.HED	Start Depth: 100 m End Depth: 2 m
KLX23A	8144	Up	KLX23A_09-05-06_14-17_8144C_.1_0.20_ 99.80_ORIG.log	Start Depth: 99.8 m End Depth: 0.2 m
KLX23A	8622	Up	KLX23A_09-05-06_15-53_8622C_.10_ 0.00_99.70_ORIG.log	Start Depth: 99.7 m End Depth: 0 m
KLX23A	9042	Down	KLX23A_09-05-06_12-34_9042C_.1_0.20_ 100.20_ORIG.log	Start Depth: 0.2 m End Depth: 100.2 m
KLX23A	9072	Up	KLX23A_09-05-06_13-47_9072C_.1_0.70_ 100.00_ORIG.log	Start Depth: 100 m End Depth: 0.7 m
KLX23A	9139	Up	KLX23A_09-05-06_17-24_9139A_.10_ 8.30_100.00_ORIG.log	Start Depth: 100 m End Depth: 8.3 m
KLX23A	9310	Up	KLX23A_09-05-06_15-30_9310C2_.10_ 3.20_98.40_ORIG.log	Start Depth: 98.4 m End Depth: 3.2 m
KLX23A	HiRAT	Up	KLX23A_HIRAT_180pixels_up_run1.HED	Start Depth: 100 m End Depth: 0 m
KLX23B	8144	Up	KLX23B_09-05-06_14-34_8144C_.1_0.40_ 49.30_ORIG.log	Start Depth: 0.4 m End Depth: 49.3 m
KLX23B	8622	Up	KLX23B_09-05-06_16-15_8622C_.10_ 1.10_49.10_ORIG.log	Start Depth: 49.1 m End Depth: 1.1 m
KLX23B	9042	Down	KLX23B_09-05-06_12-56_9042C_.1_0.20_ 50.50_ORIG.log	Start Depth: 0.2 m End Depth: 50.5 m
KLX23B	9072	Up	KLX23B_09-05-06_13-19_9072C_.1_2.50_ 50.30_ORIG.log	Start Depth: 50.3 m End Depth: 2.5 m
KLX23B	9139	Up	KLX23B_09-05-06_18-15_9139A_.10_ 6.10_49.50_ORIG.log	Start Depth: 49.5 m End Depth: 6.1 m
KLX23B	9310	Up	KLX23B_09-05-06_14-59_9310C2_.10_ 0.30_49.50_ORIG.log	Start Depth: 49.5 m End Depth: 0.3 m
KLX23B	HiRAT	Up	KLX23B_HIRAT_180pixels_up_run1.HED	Start Depth: 50 m End Depth: 0 m
KLX24A	8144	Up	KLX24A_09-06-06_14-17_8144C_.10_ 1.40_99.70_ORIG.log	Start Depth: 99.7 m End Depth: 1.4 m
KLX24A	8622	Up	KLX24A_09-06-06_15-16_8622C_.10_ 0.10_99.70_ORIG.log	Start Depth: 99.7 m End Depth: 0.1 m
KLX24A	9042	Down	KLX24A_09-06-06_13-48_9042C_.10_ 0.20_99.40_ORIG.log	Start Depth: 0.2 m End Depth: 99.4 m
KLX24A	9072	Up	KLX24A_09-06-06_15-31_9072C_.10_ 1.90_99.40_ORIG.log	Start Depth: 99.4 m End Depth: 1.9 m

Borehole	**Probe**	**Log direction**	**WellCAD File**	Description
KLX24A	9139	Up	KLX24A_09-06-06_14-46_9139A_.10_ 1.50_99.80_ORIG.log	Start Depth: 99.8 m End Depth: 1.5 m
KLX24A	9310	Up	KLX24A_09-06-06_15-59_9310C2_.10_ 0.70_99.20_ORIG.log	Start Depth: 99.2 m End Depth: 0.7 m
KLX24A	HiRAT	Up	KLX24A_HiRAT_up_180_1.HED	Start Depth: 100 m End Depth: 0 m
KLX25A	8144	Up	KLX25A_09-06-06_11-22_8144C_.10_ 1.70_49.80_ORIG.log	Start Depth: 49.8 m End Depth: 1.7 m
KLX25A	8622	Up	KLX25A_09-06-06_11-35_8622C_.10_ 3.10_49.30_ORIG.log	Start Depth: 49.3 m End Depth: 3.1 m
KLX25A	9042	Down	KLX25A_09-06-06_10-12_9042C_.10_ 1.80_50.70_ORIG.log	Start Depth: 1.8 m End Depth: 50.7 m
KLX25A	9072	Up	KLX25A_09-06-06_10-39_9072C_.10_ 3.10_50.00_ORIG.log	Start Depth: 50 m End Depth: 3.1 m
KLX25A	9139	Up	KLX25A_09-06-06_11-56_9139A_.10_ 1.50_49.70_ORIG.log	Start Depth: 49.7 m End Depth: 1.5 m
KLX25A	9310	Down	KLX25A_09-06-06_11-03_9310C2_.10_ 1.80_49.30_ORIG.log	Start Depth: 1.8 m End Depth: 49.3 m
KLX25A	HiRAT	Up	KLX25A_HiRAT_up_180_1.HED	Start Depth: 50 m End Depth: 1.76 m
KLX26A	8144	Up	KLX26A_09-12-06_17-02_8144C_.10_ 0.00_100.70_ORIG.log	Start Depth: 100.7 m End Depth: 0 m
KLX26A	8622	Up	KLX26A_09-12-06_17-51_8622C_.10_ 0.00_100.50_ORIG.log	Start Depth: 100.5 m End Depth: 0 m
KLX26A	9042	Down	KLX26A_09-12-06_12-40_9042C_.10_ 0.20_101.20_ORIG.log	Start Depth: 0.2 m End Depth: 101.2 m
KLX26A	9072	Up	KLX26A_09-12-06_13-46_9072C_.10_ 0.10_100.40_ORIG.log	Start Depth: 100.4 m End Depth: 0.1 m
KLX26A	9139	Up	KLX26A_09-12-06_16-25_9139A_.10_ 3.20_100.00_ORIG.log	Start Depth: 100 m End Depth: 3.2 m
KLX26A	9310	Down	KLX26A_09-12-06_18-26_9310C2_.10_ 0.20_99.80_ORIG.log	Start Depth: 0.2 m End Depth: 99.8 m
KLX26A	9310	Up	KLX26A_09-12-06_18-37_9310C2_.10_ 3.20_99.80_ORIG.log	Start Depth: 99.8 m End Depth: 3.2 m
KLX26A	HiRAT	Up	KLX26A_HIRAT_180pixels_up_run1.HED	Start Depth: 99.8 m End Depth: 0 m
KLX26B	8144	Up	KLX26B_09-12-06_17-21_8144C_.10_ 0.00_50.10_ORIG.log	Start Depth: 50.1 m End Depth: 0 m
KLX26B	8622	Up	KLX26B_09-12-06_17-41_8622C_.10_ 0.10_49.70_ORIG.log	Start Depth: 49.7 m End Depth: 0.1 m
KLX26B	9042	Down	KLX26B_09-12-06_12-17_9042C_.10_ 2.30_50.20_ORIG.log	Start Depth: 2.3 m End Depth: 50.2 m
KLX26B	9072	Up	KLX26B_09-12-06_14-14_9072C_.10_ 0.20_50.00_ORIG.log	Start Depth: 50 m End Depth: 0.2 m
KLX26B	9139	Up	KLX26B_09-12-06_15-26_9139A_.10_ 0.80_46.70_ORIG.log	Start Depth: 46.7 m End Depth: 0.8 m
KLX26B	9310	Down	KLX26B_09-12-06_18-11_9310C2_.10_ 0.20_49.30_ORIG.log	Start Depth: 0.2 m End Depth: 49.3 m
KLX26B	9310	Up	KLX26B_09-12-06_18-17_9310C2_.10_ 0.10_49.20_ORIG.log	Start Depth: 49.2 m End Depth: 0.1 m
KLX26B	HiRAT	Up	KLX26B_HIRAT_180pixels_up_run1.HED	Start Depth: 50 m End Depth: 0 m

Table 6-2. Drawing files in WellCad format.

Borehole	Drawing	WellCad file
KLX13A	1.1	KLX13A_Presentation.WCL
KLX14A	2.1	KLX14A_Presentation.WCL
KLX22A	3.1	KLX22A_Presentation.WCL
KLX22B	4.1	KLX22B_Presentation.WCL
KLX23A	5.1	KLX23A_Presentation.WCL
KLX23B	6.1	KLX23B_Presentation.WCL
KLX24A	7.1	KLX24A_Presentation.WCL
KLX25A	8.1	KLX25A_Presentation.WCL
KLX26A	9.1	KLX26A_Presentation.WCL
KLX26B	10.1	KLX26B_Presentation.WCL

Table 6-3. Data files in SICADA format.

Sheet	Comment
"Borehole"_CALIPER1_GP040–Caliper logging.xls	
"Borehole"_CALIPER MEAN_GP041–3-D caliper.xls	
"Borehole"_TEMP(FL)_RES(FL)_GP060–Fluid temperature and resistivity logging.xls	
"Borehole"_DENSITY_GP090 – Density logging.xls	
"Borehole"_MAGSUSCEP_GP110 - Magnetic susceptibility logging.xls	
"Borehole"_GAM(NAT)_GP120–Natural gamma logging.xls	
"Borehole"_SPR_GP150–Single point resistance logging.xls	
"Borehole"_RES(64N)_GP160–Resistivity, normal 1.6 m (64 in).xls	
"Borehole"_RES(MG)_GP161–Resistivity, focused 140 cm.xls	
"Borehole"_RES(DG)_GP162–Resistivity, focused 300 cm.xls	
"Borehole"_LATERAL_GP163–Resistivity, lateral 1.6–0.1 m.xls	
"Borehole"_RES(16N)_GP164–Resistivity, normal 0.4 m (16 in).xls	
"Borehole"_P-VEL_GP175–Fullwave sonic.xls	
"Borehole"_SP_GP180–Self potential logging.xls	

Appendix 1

Borehole KLX13A. Drawing no. 1.1. Borehole logs

Borehole No. KLX13A

Co-ordinates in RT90 2,5 gon V 0:-15

Northing: 6367547.144m Easting: 1546787.363m Elevation: 24.153m, RHB70

Diameter:	76mm
Reaming Diameter:	248mm
Outer Casing:	208mm
Inner Casing:	200mm
Casing Length:	
Borehole Length:	
Cone:	
Inclination at ground surface:	-82.25°
Azimuth:	224.452° GN
Comments:	

Borehole logging programme

Name	Description	Tool	Unit
CALIPER1	Caliper, 1-arm	9139	mm
DENSITY	Gamma-gamma density	9139	kg/m³
RES(SG)	Focused guard log resistivity, 128 cm	9139	ohm-m
GAM(NAT)	Natural gamma	9072	µR/h
TEMP(FL)	Fluid temperature	9042	deg C
RES(FL)	Fluid resistivity	9042	ohm-m
RES(DG)	Focused guard log resistivity, 300cm	9072	ohm-m
P-VEL	P-wave velocity	9310	m/s
AMP(N)	Full wave form, near receiver	9310	µs
AMP(F)	Full wave form, far receiver	9310	µs
MAGSUSCEP	Magnetic susceptibility	8622	SI*10-5
CALIPER 3D	Caliper, high resolution 360 degrees	HiRAT	mm
CALIPER MEAN	High resolution 1D caliper	HiRAT	mm
AZIMUTH MN	Borehole azimuth magnetic north	HiRAT	deg
DIP	Borehole inclination from horizontal	HiRAT	deg
RADIUS	360 degrees orientated acoustic radius	HiRAT	mm
AMPLITUDE	360 degrees orientated acoustic amplitude	HiRAT	-
THORIUM	Spectral gamma, Thorium component	9080	PPM
URANIUM	Spectral gamma, Uranium component	9080	PPM
POTASSIUM	Spectral gamma, Potassium component	9080	percent
RES(16N)	Normal resistivity 16 inch	8144	ohm-m
RES(64N)	Normal resistivity 64 inch	8144	ohm-m
LATERAL	Lateral resistivity	8144	ohm-m
SPR	Single point resistivity	8144	ohm
SP	Self Potential	8144	V

Rev.	Date	Drawn by	Control	Approved
0	2006-10-10	JRI	GA	UTN

Job	Scale
547310A	1:500

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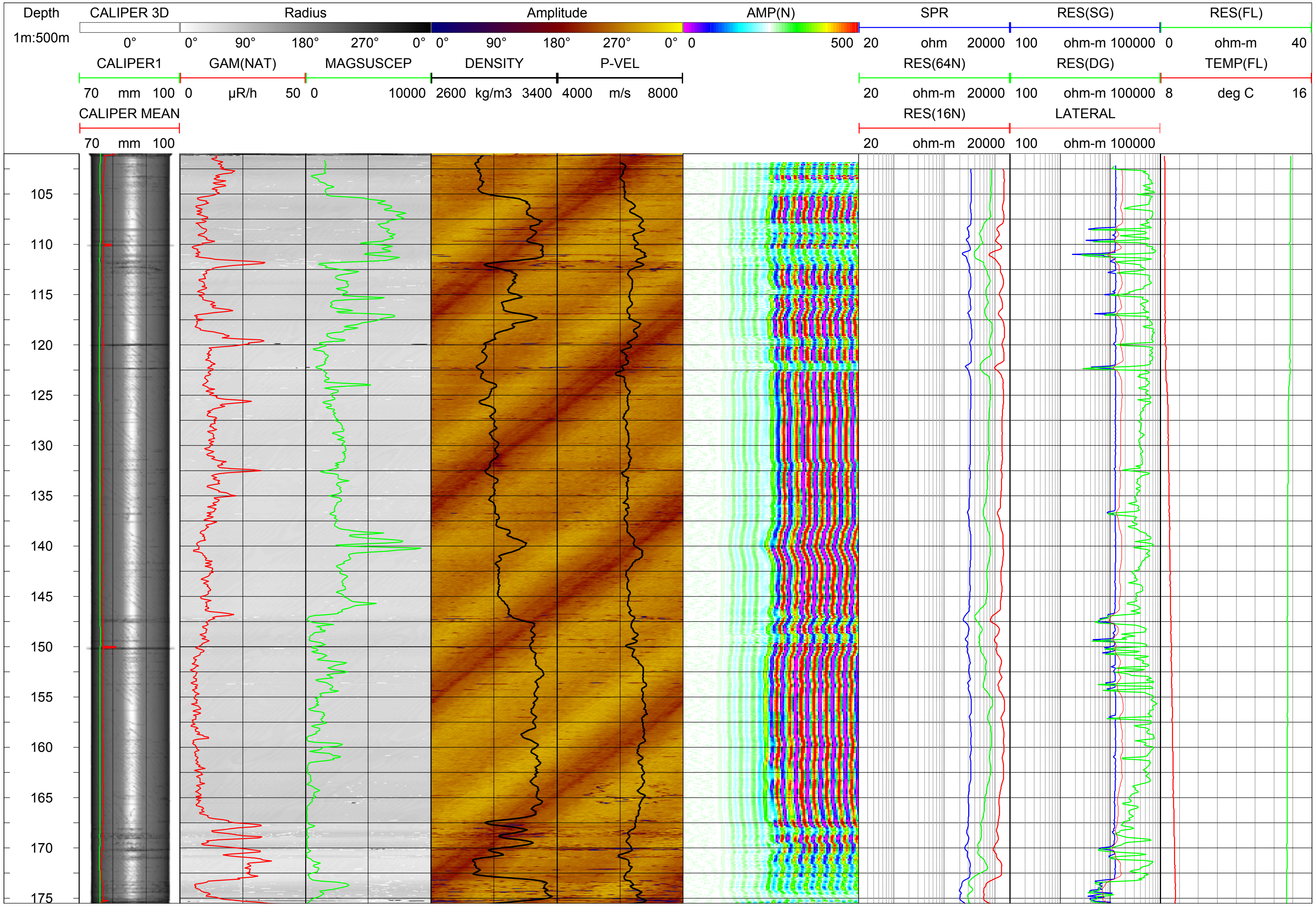
SKB geophysical borehole logging
Borehole KLX13A

Presentation

Filename:
KLX13A_Presentation.wcl

Drawing no.:
1.1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CALIPER1
70 mm 100
CALIPER MEAN
70 mm 100
Radius
0° 90° 180° 270° 0°
GAM(NAT)
0 µR/h 50
MAGSUSCEP
0 10000
Amplitude
0° 90° 180° 270° 0°
DENSITY
2600 kg/m3 3400
P-VEL
4000 m/s 8000
AMP(N)
0 500
SPR
20 ohm 20000
RES(64N)
20 ohm-m 20000
RES(16N)
20 ohm-m 20000
RES(SG)
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
LATERAL
100 ohm-m 100000
RES(FL)
0 ohm-m 40
TEMP(FL)
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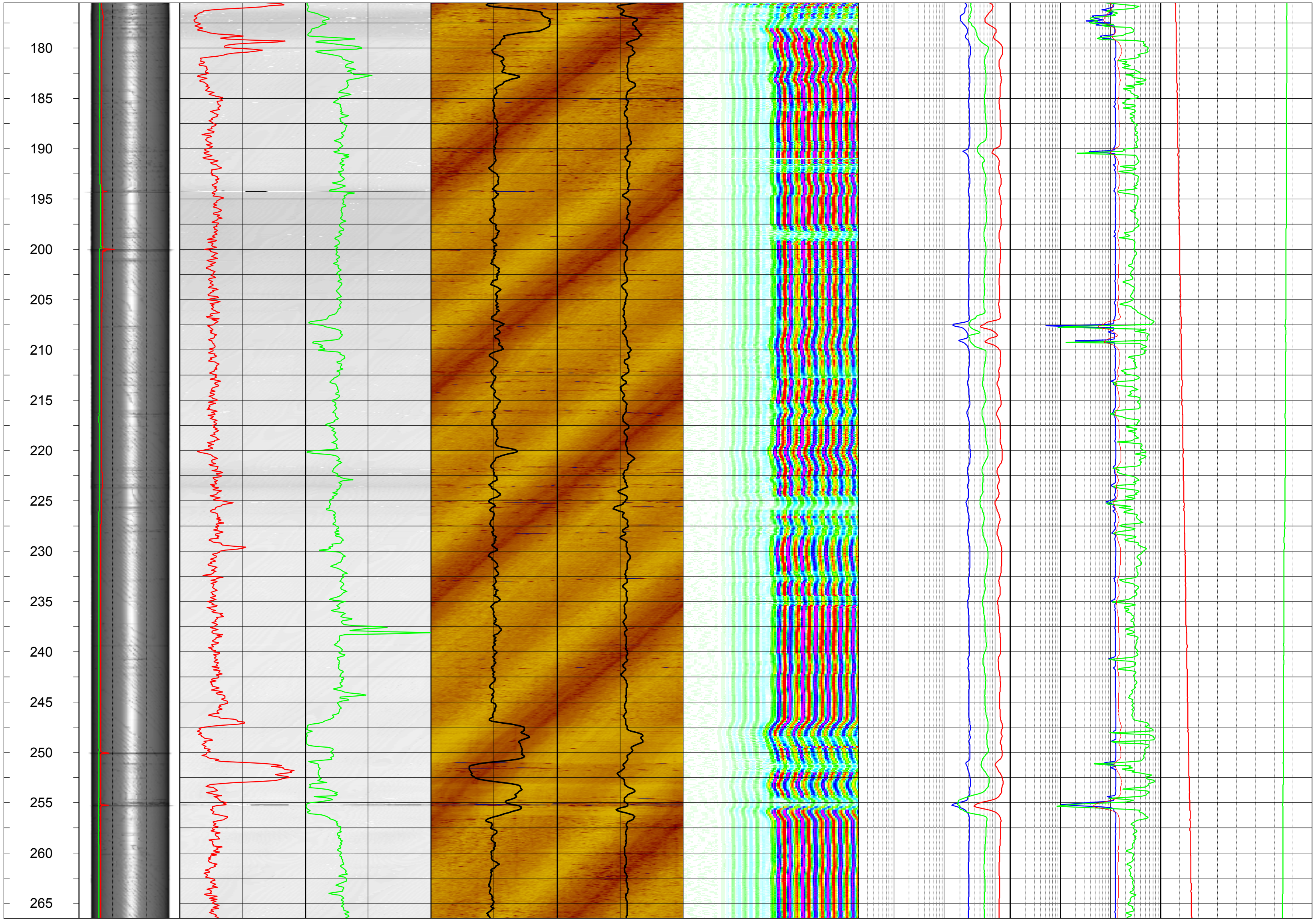
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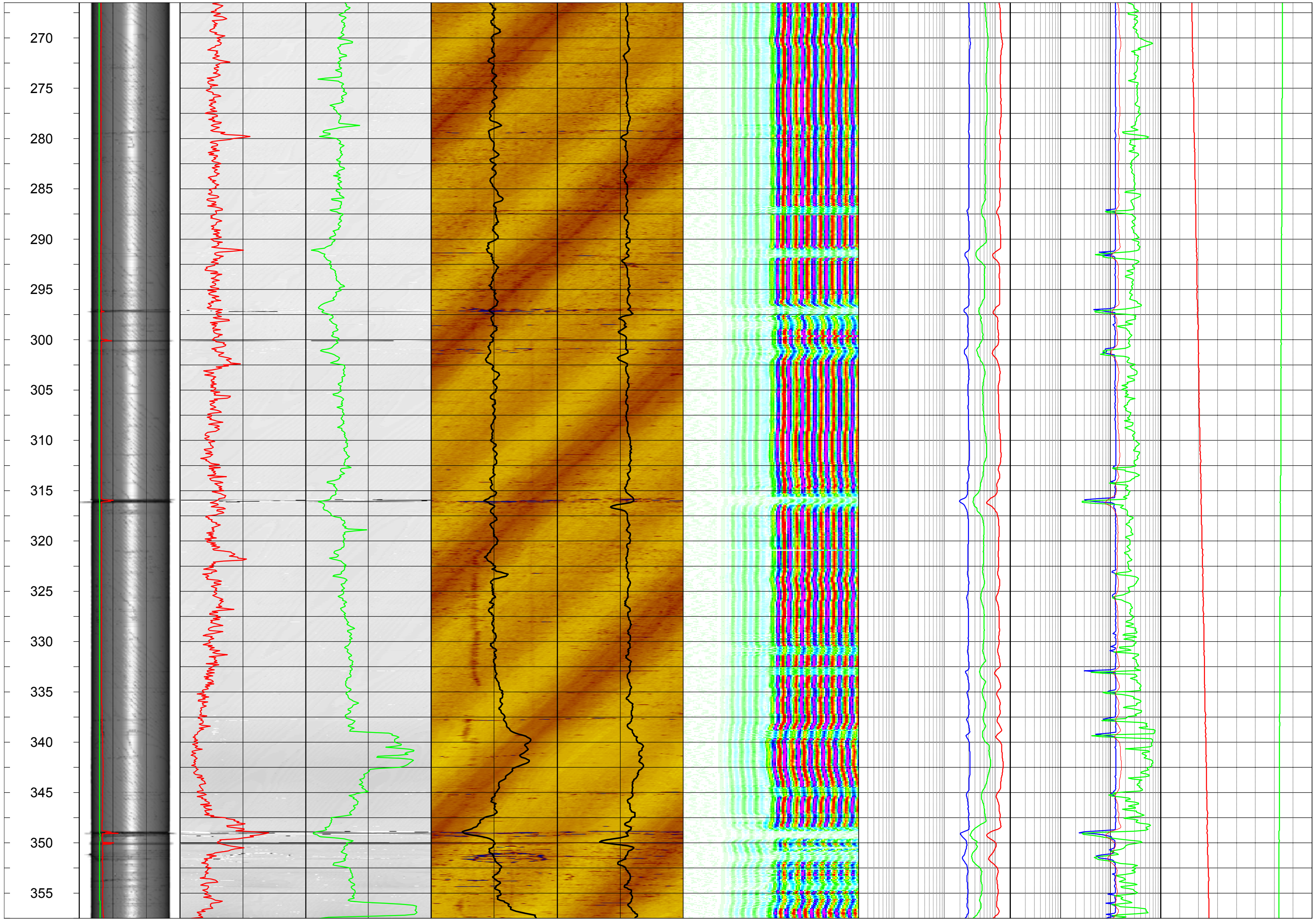
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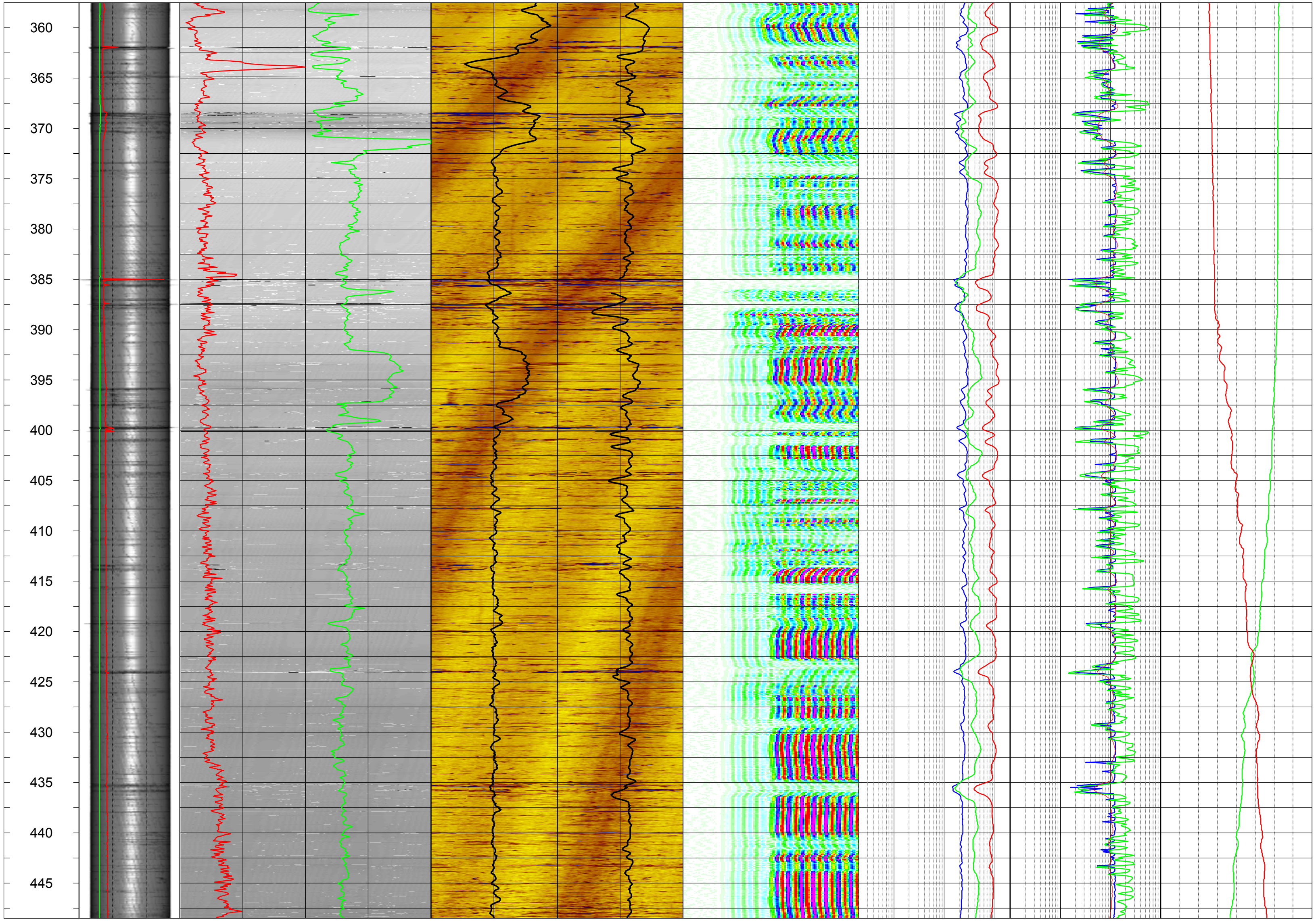
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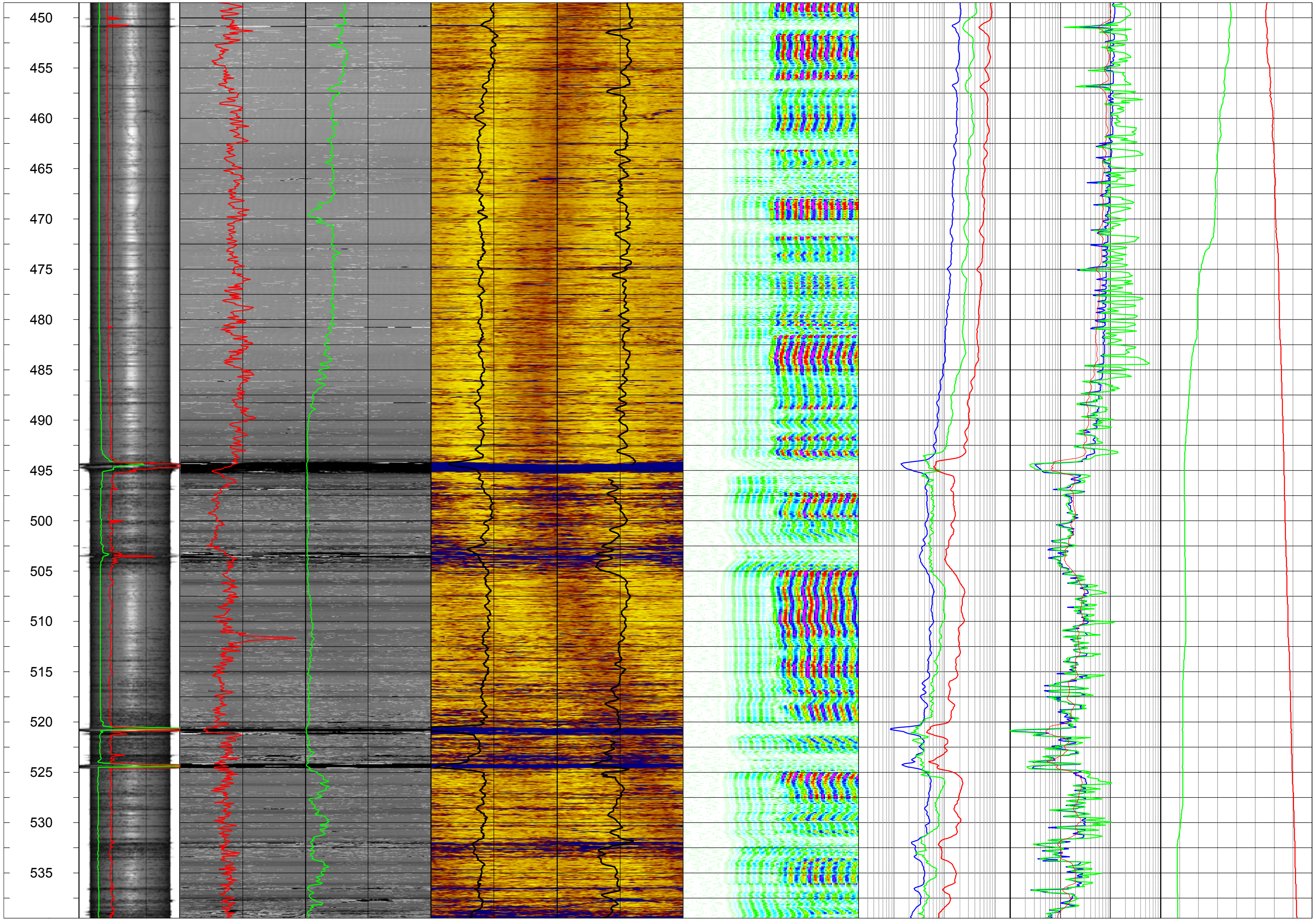
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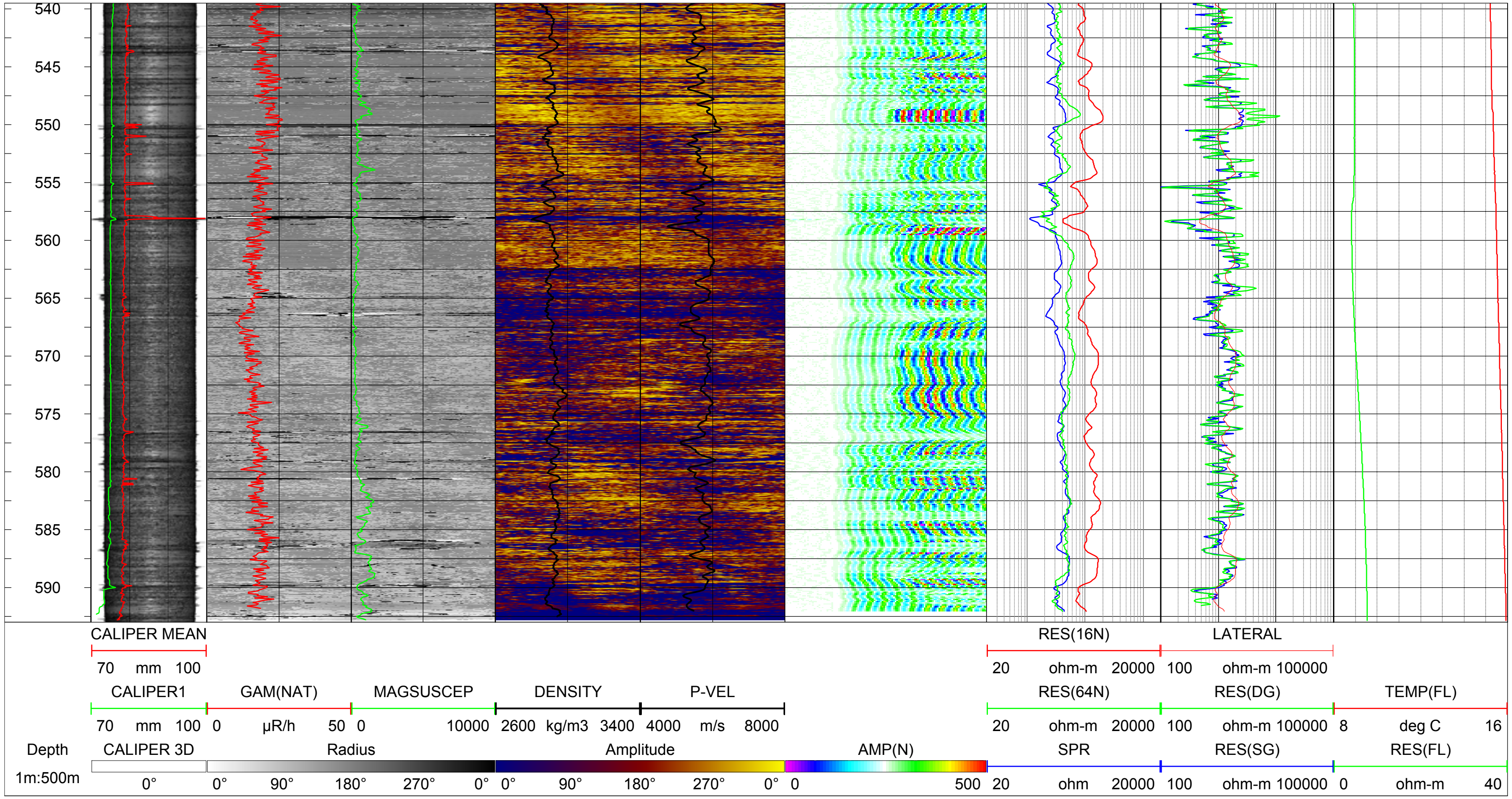
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590
CALIPER MEAN
70 mm 100
CALIPER1
70 mm 100
CALIPER 3D
0°
GAM(NAT)
0 μR/h 50
MAGSUSCEP
0 10000
Radius
0° 90° 180° 270° 0°
DENSITY
2600 kg/m3 3400
P-VEL
4000 m/s 8000
Amplitude
0° 90° 180° 270° 0°
AMP(N)
0 500
RES(16N)
20 ohm-m 20000
RES(64N)
20 ohm-m 20000
SPR
20 ohm 20000
LATERAL
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
RES(SG)
100 ohm-m 100000
TEMP(FL)
8 deg C 16
RES(FL)
0 ohm-m 40
Depth
1m:500m

Borehole KLX14A. Drawing no. 2.1. Borehole logs

Borehole No. KLX14A

Co-ordinates in RT90 2,5 gon V 0:-15

Northing: 6365962m Easting: 1547150m Elevation: ?m, RHB70

Diameter:	76mm
Reaming Diameter:	248mm
Outer Casing:	208mm
Inner Casing:	200mm
Casing Length:	
Borehole Length:	
Cone:	
Inclination at ground surface:	-50°
Azimuth:	110° GN
Comments:	

Borehole logging programme

Name	Description	Tool	Unit
CALIPER1	Caliper, 1-arm	9139	mm
DENSITY	Gamma-gamma density	9139	kg/m³
RES(SG)	Focused guard log resistivity, 128 cm	9139	ohm-m
GAM(NAT)	Natural gamma	9072	μR/h
TEMP(FL)	Fluid temperature	9042	deg C
RES(FL)	Fluid resistivity	9042	ohm-m
RES(DG)	Focused guard log resistivity, 300cm	9072	ohm-m
P-VEL	P-wave velocity	9310	m/s
AMP(N)	Full wave form, near receiver	9310	μs
AMP(F)	Full wave form, far receiver	9310	μs
MAGSUSCEP	Magnetic susceptibility	8622	SI*10-5
CALIPER 3D	Caliper, high resolution 360 degrees	HiRAT	mm
CALIPER MEAN	High resolution 1D caliper	HiRAT	mm
AZIMUTH MN	Borehole azimuth magnetic north	HiRAT	deg
DIP	Borehole inclination from horizontal	HiRAT	deg
RADIUS	360 degrees orientated acoustic radius	HiRAT	mm
AMPLITUDE	360 degrees orientated acoustic amplitude	HiRAT	-
THORIUM	Spectral gamma, Thorium component	9080	PPM
URANIUM	Spectral gamma, Uranium component	9080	PPM
POTASSIUM	Spectral gamma, Potassium component	9080	percent
RES(16N)	Normal resistivity 16 inch	8144	ohm-m
RES(64N)	Normal resistivity 64 inch	8144	ohm-m
LATERAL	Lateral resistivity	8144	ohm-m
SPR	Single point resistivity	8144	ohm
SP	Self Potential	8144	V

Rev.	Date	Drawn by	Control	Approved
0	2006-11-22	UTN	JRI	UTN

Job	Scale
547310A	1:500

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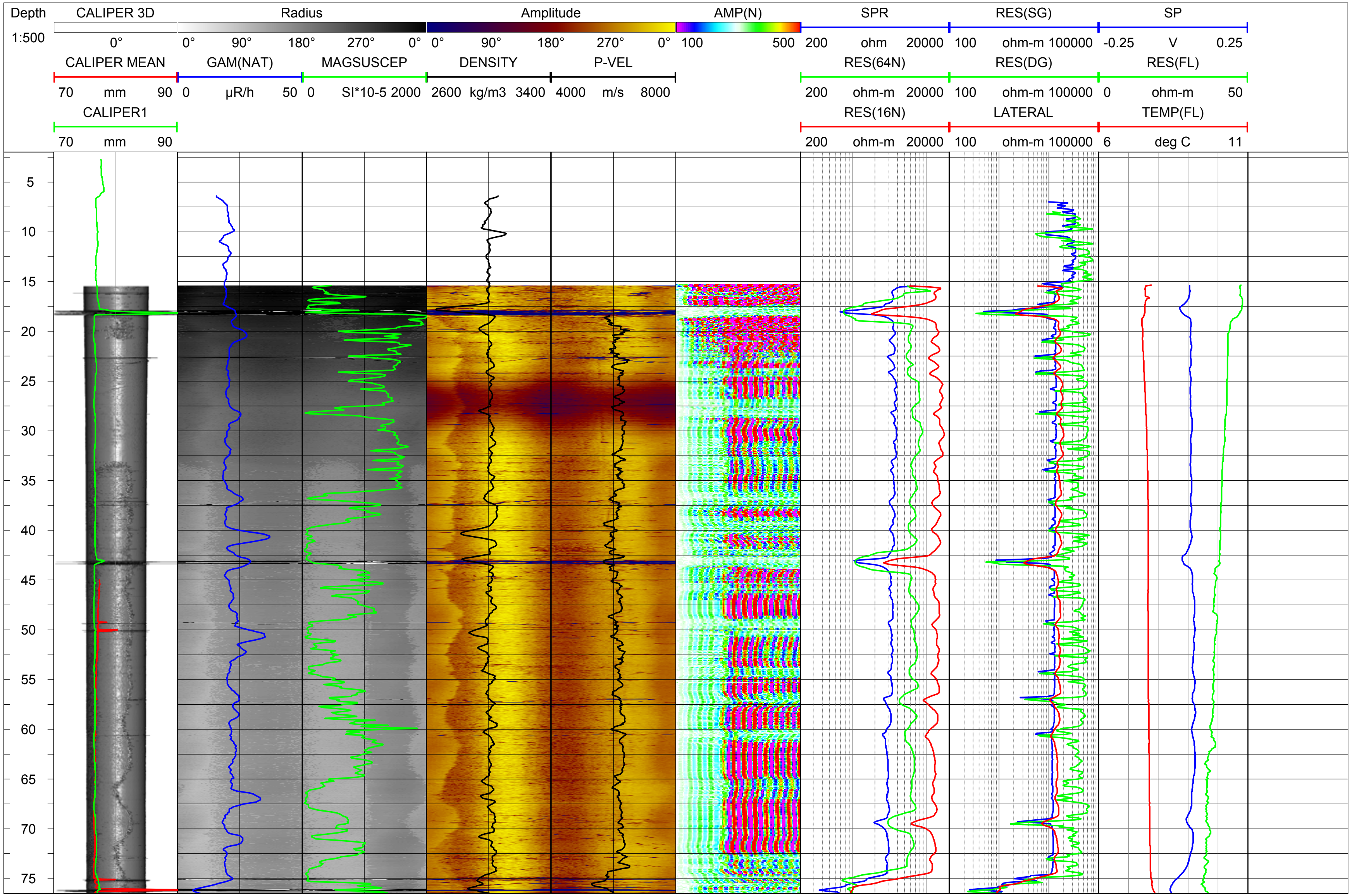
SKB geophysical borehole logging
Borehole KLX14A

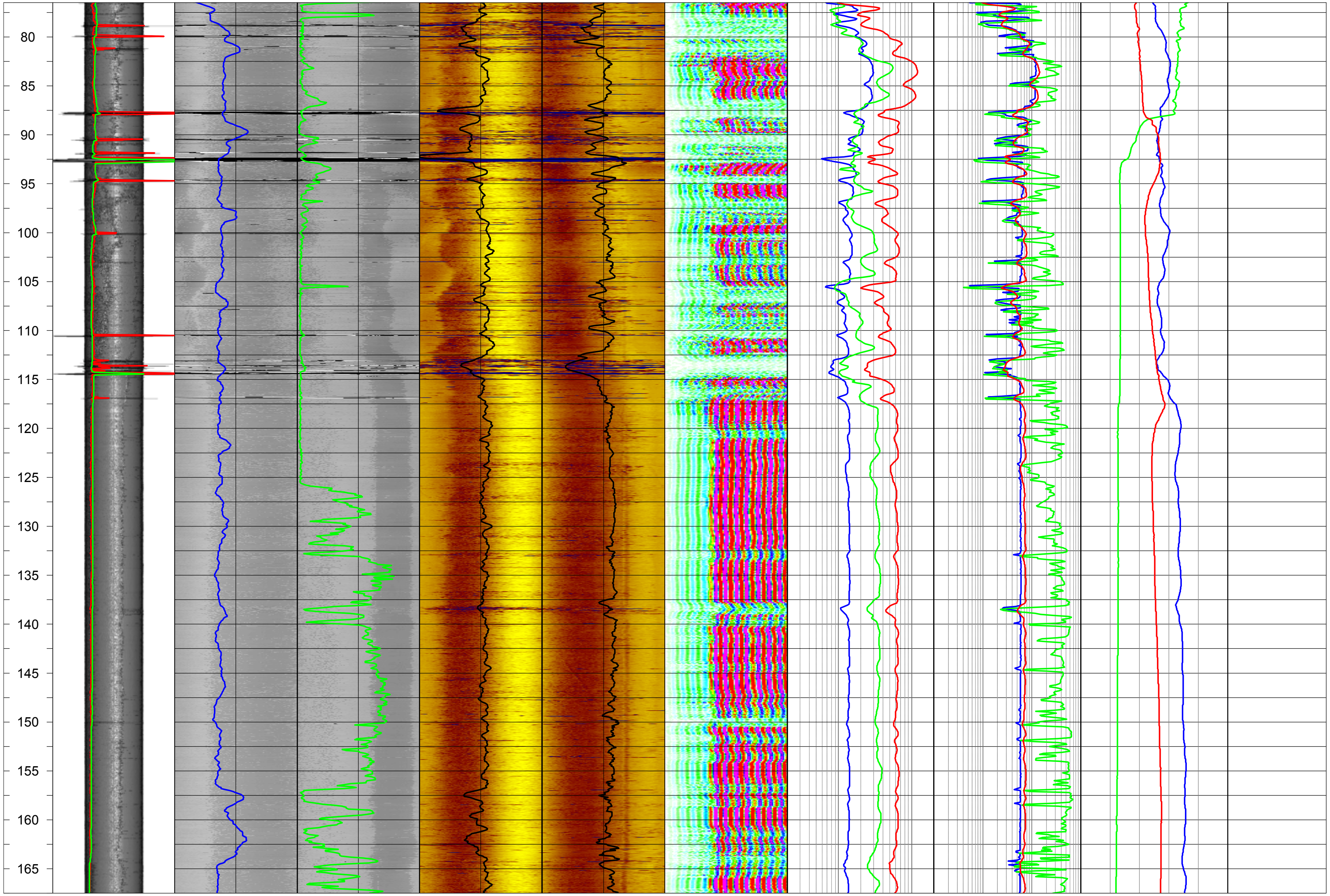
Presentation

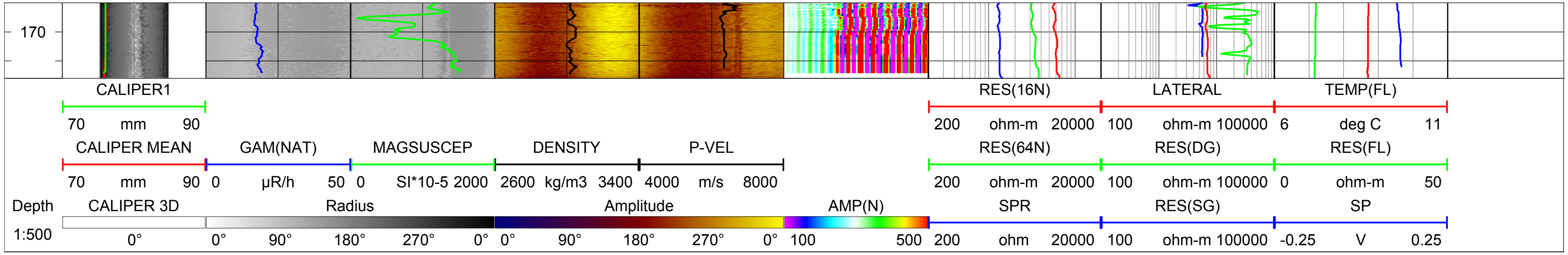
Filename:
KLX14A_Presentation.wcl

Drawing no.:
2.1



Depth
1:500
CALIPER 3D
0°
CALIPER MEAN
70 mm 90
CALIPER1
70 mm 90
Radius
0° 90° 180° 270° 0°
GAM(NAT)
0 μR/h 50
MAGSUSCEP
0 SI*10-5 2000
Amplitude
0° 90° 180° 270° 0°
DENSITY
2600 kg/m3 3400
P-VEL
4000 m/s 8000
AMP(N)
100 500
SPR
200 ohm 20000
RES(64N)
200 ohm-m 20000
RES(16N)
200 ohm-m 20000
RES(SG)
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
LATERAL
100 ohm-m 100000
SP
-0.25 V 0.25
RES(FL)
0 ohm-m 50
TEMP(FL)
6 deg C 11
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75


80
85
90
95
100
105
110
115
120
125
130
135
140
145
150
155
160
165


170
CALIPER1
70 mm 90
RES(16N)
200 ohm-m 20000
LATERAL
100 ohm-m 100000
TEMP(FL)
6 deg C 11
CALIPER MEAN
70 mm 90
GAM(NAT)
0 µR/h 50
MAGSUSCEP
0 SI*10-5 2000
DENSITY
2600 kg/m3 3400
P-VEL
4000 m/s 8000
RES(64N)
200 ohm-m 20000
RES(DG)
100 ohm-m 100000
RES(FL)
0 ohm-m 50
Depth
1:500
CALIPER 3D
0°
Radius
0° 90° 180° 270° 0°
Amplitude
0° 90° 180° 270° 0°
AMP(N)
100 500
SPR
200 ohm 20000
RES(SG)
100 ohm-m 100000
SP
-0.25 V 0.25

Appendix 3

Borehole KLX22A. Drawing no. 3.1. Borehole logs

Borehole No. KLX22A

Co-ordinates in RT90 2,5 gon V 0:-15

Northing: 6366548.348m Easting: 1546688.595 m Elevation: 21.967m, RH70

Diameter:	76mm
Reaming Diameter:	248mm
Outer Casing:	208mm
Inner Casing:	200mm
Casing Length:	
Borehole Length:	
Cone:	
Inclination at ground surface:	-59.931°
Azimuth:	179.191° GN
Comments:	

Borehole logging programme

Name	Description	Tool	Unit
CALIPER1	Caliper, 1-arm	9139	mm
DENSITY	Gamma-gamma density	9139	kg/m³
RES(SG)	Focused guard log resistivity, 128 cm	9139	ohm-m
GAM(NAT)	Natural gamma	9072	μR/h
TEMP(FL)	Fluid temperature	9042	deg C
RES(FL)	Fluid resistivity	9042	ohm-m
RES(DG)	Focused guard log resistivity, 300cm	9072	ohm-m
P-VEL	P-wave velocity	9310	m/s
AMP(N)	Clipped wave form, near receiver	9310	μs
AMP(F)	Full wave form, far receiver	9310	μs
MAGSUSCEP	Magnetic susceptibility	8622	SI*10-5
CALIPER 3D	Caliper, high resolution 360 degrees	HiRAT	mm
CALIPER MEAN	High resolution 1D caliper	HiRAT	mm
AZIMUTH MN	Borehole azimuth magnetic north	HiRAT	deg
DIP	Borehole inclination from horizontal	HiRAT	deg
RADIUS	360 degrees orientated acoustic radius	HiRAT	mm
AMPLITUDE	360 degrees orientated acoustic amplitude	HiRAT	-
THORIUM	Spectral gamma, Thorium component	9080	PPM
URANIUM	Spectral gamma, Uranium component	9080	PPM
POTASSIUM	Spectral gamma, Potassium component	9080	percent
RES(16N)	Normal resistivity 16 inch	8144	ohm-m
RES(64N)	Normal resistivity 64 inch	8144	ohm-m
LATERAL	Lateral resistivity	8144	ohm-m
SPR	Single point resistivity	8144	ohm
SP	Self Potential	8144	V

Rev.	Date	Drawn by	Control	Approved
0	2006-10-25	KLD	UTN	UTN

Job: 547310A

Scale: 1:500

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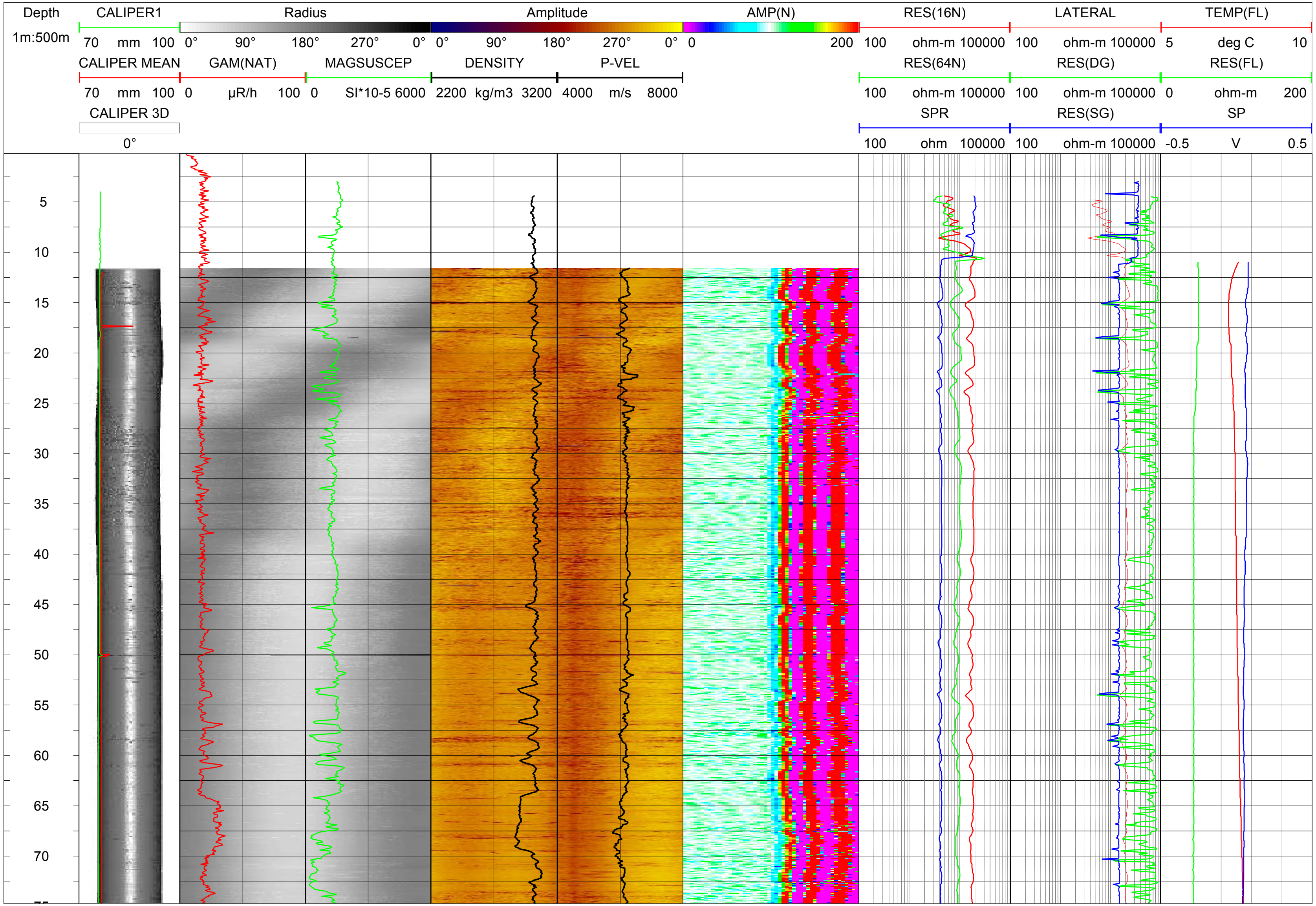
Borehole KLX22A

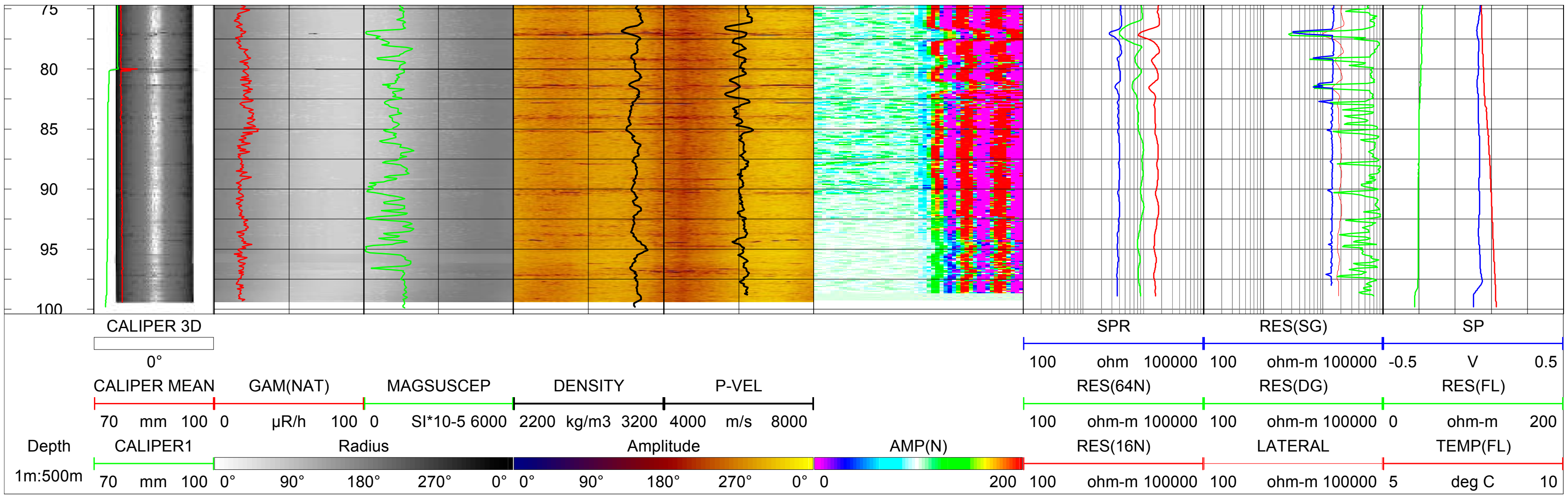
Presentation

Filename:
KLX13A_Presentation.wcl

Drawing no.:
3.1



Depth
1m:500m
CALIPER1
70 mm 100
CALIPER MEAN
70 mm 100
CALIPER 3D
0°
Radius
0° 90° 180° 270° 0°
GAM(NAT)
0 µR/h 100
MAGSUSCEP
0 SI*10-5 6000
Amplitude
0° 90° 180° 270° 0°
DENSITY
2200 kg/m3 3200
P-VEL
4000 m/s 8000
AMP(N)
0 200
RES(16N)
100 ohm-m 100000
RES(64N)
100 ohm-m 100000
SPR
100 ohm 100000
LATERAL
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
RES(SG)
100 ohm-m 100000
TEMP(FL)
5 deg C 10
RES(FL)
0 ohm-m 200
SP
-0.5 V 0.5
5
10
15
20
25
30
35
40
45
50
55
60
65
70


75
80
85
90
95
100
CALIPER 3D
0°
CALIPER MEAN
70 mm 100
GAM(NAT)
0 μR/h 100
MAGSUSCEP
0 SI*10-5 6000
DENSITY
2200 kg/m3 3200
P-VEL
4000 m/s 8000
Depth
1m:500m
CALIPER1
70 mm 100
Radius
0° 90° 180° 270° 0°
Amplitude
0° 90° 180° 270° 0°
AMP(N)
0 200
SPR
100 ohm 100000
RES(64N)
100 ohm-m 100000
RES(16N)
100 ohm-m 100000
RES(SG)
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
LATERAL
100 ohm-m 100000
SP
-0.5 V 0.5
RES(FL)
0 ohm-m 200
TEMP(FL)
5 deg C 10

Borehole KLX22B. Drawing no. 4.1. Borehole logs

Borehole No. KLX22B

Co-ordinates in RT90 2,5 gon V 0:-15

Northing: 6366553.127m Easting: 1546685.405m Elevation: 21.575m, RHB70

Diameter:	76mm
Reaming Diameter:	248mm
Outer Casing:	208mm
Inner Casing:	200mm
Casing Length:	
Borehole Length:	
Cone:	
Inclination at ground surface:	-61.245°
Azimuth:	343.965° GN
Comments:	

Borehole logging programme

Name	Description	Tool	Unit
CALIPER1	Caliper, 1-arm	9139	mm
DENSITY	Gamma-gamma density	9139	kg/m³
RES(SG)	Focused guard log resistivity, 128 cm	9139	ohm-m
GAM(NAT)	Natural gamma	9072	μR/h
TEMP(FL)	Fluid temperature	9042	deg C
RES(FL)	Fluid resistivity	9042	ohm-m
RES(DG)	Focused guard log resistivity, 300cm	9072	ohm-m
P-VEL	P-wave velocity	9310	m/s
AMP(N)	Clipped wave form, near receiver	9310	μs
AMP(F)	Full wave form, far receiver	9310	μs
MAGSUSCEP	Magnetic susceptibility	8622	SI*10-5
CALIPER 3D	Caliper, high resolution 360 degrees	HiRAT	mm
CALIPER MEAN	High resolution 1D caliper	HiRAT	mm
AZIMUTH MN	Borehole azimuth magnetic north	HiRAT	deg
DIP	Borehole inclination from horizontal	HiRAT	deg
RADIUS	360 degrees orientated acoustic radius	HiRAT	mm
AMPLITUDE	360 degrees orientated acoustic amplitude	HiRAT	-
THORIUM	Spectral gamma, Thorium component	9080	PPM
URANIUM	Spectral gamma, Uranium component	9080	PPM
POTASSIUM	Spectral gamma, Potassium component	9080	percent
RES(16N)	Normal resistivity 16 inch	8144	ohm-m
RES(64N)	Normal resistivity 64 inch	8144	ohm-m
LATERAL	Lateral resistivity	8144	ohm-m
SPR	Single point resistivity	8144	ohm
SP	Self Potential	8144	V

Rev.	Date	Drawn by	Control	Approved
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Job: 547310A Scale: 1:500

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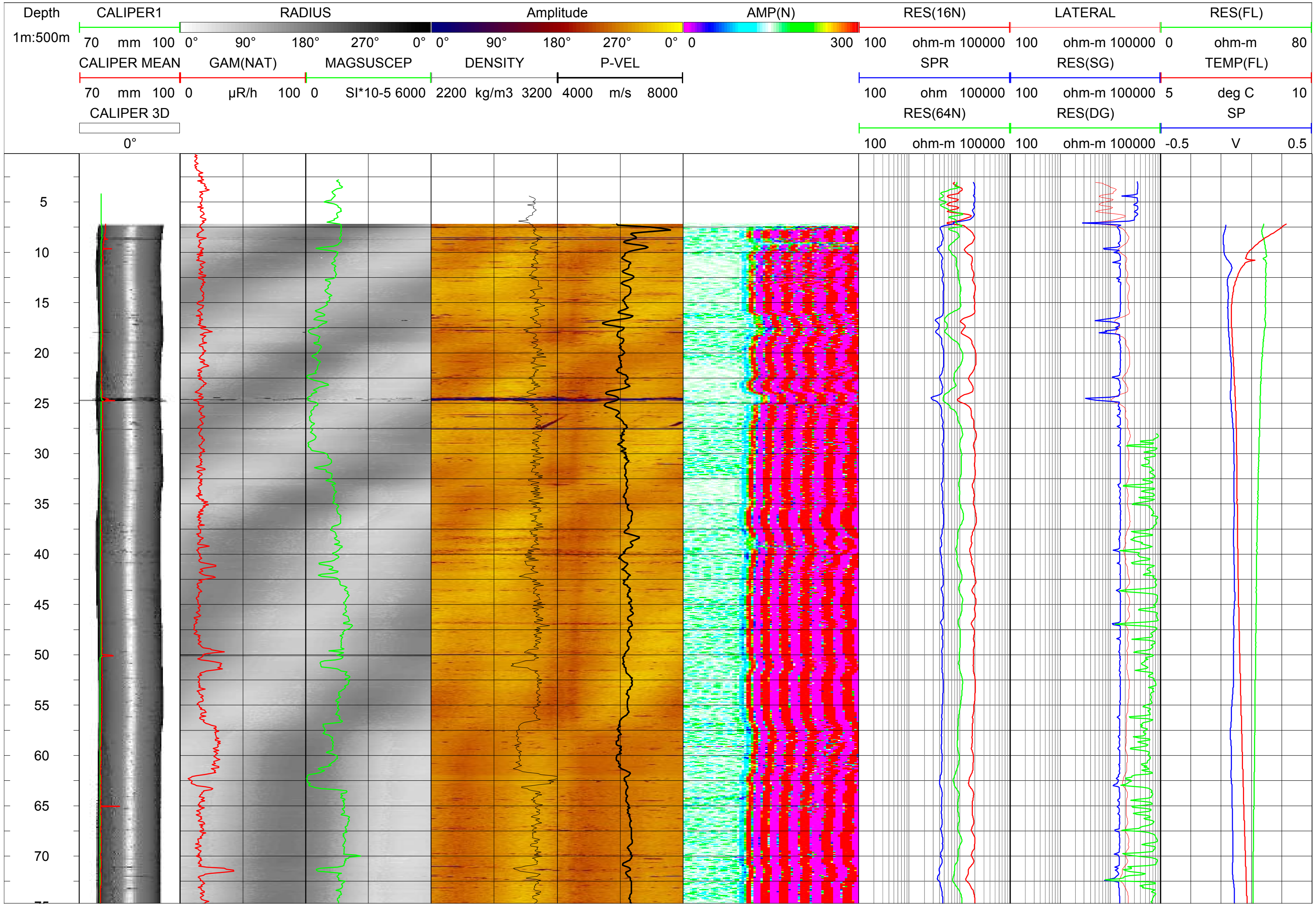
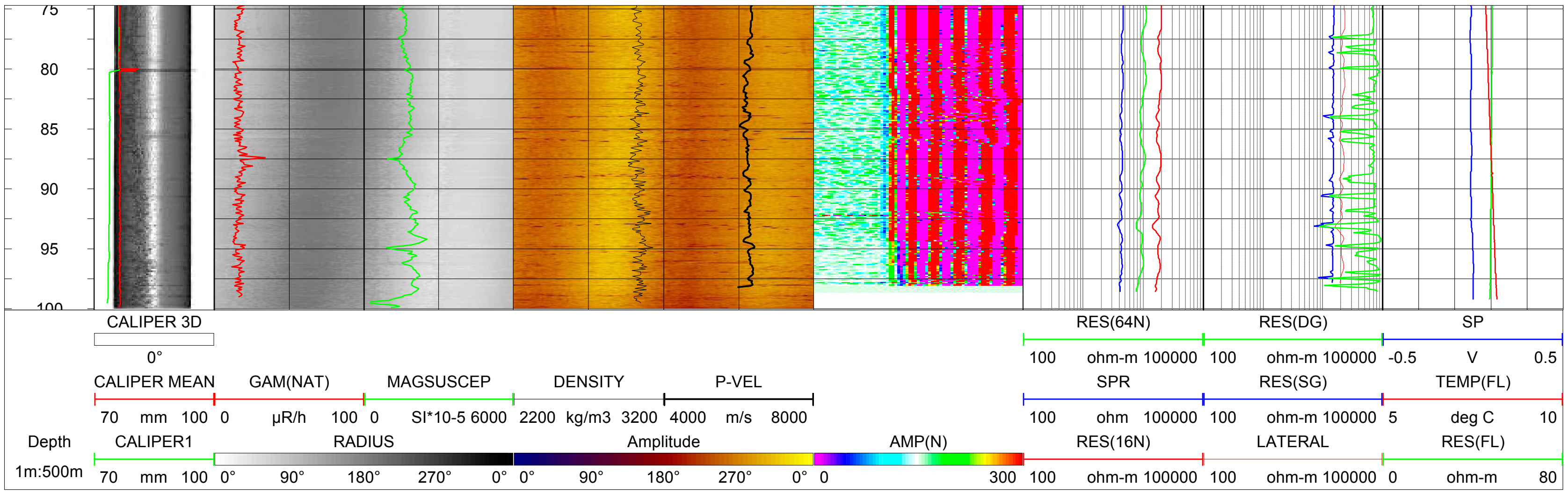
Borehole KLX22B

Presentation

Filename: KLX22B_Presentation.wcl

Drawing no.: 4.1


Depth
1m:500m
CALIPER1
70 mm 100
CALIPER MEAN
70 mm 100
CALIPER 3D
0°
RADIUS
0° 90° 180° 270° 0°
GAM(NAT)
0 μR/h 100
MAGSUSCEP
0 SI*10-5 6000
Amplitude
0° 90° 180° 270° 0°
DENSITY
2200 kg/m3 3200
P-VEL
4000 m/s 8000
AMP(N)
0 300
RES(16N)
100 ohm-m 100000
SPR
100 ohm 100000
RES(64N)
100 ohm-m 100000
LATERAL
100 ohm-m 100000
RES(SG)
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
RES(FL)
0 ohm-m 80
TEMP(FL)
5 deg C 10
SP
-0.5 V 0.5
5
10
15
20
25
30
35
40
45
50
55
60
65
70


75
80
85
90
95
100
CALIPER 3D
0°
RES(64N)
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
SP
-0.5 V 0.5
CALIPER MEAN
70 mm 100
GAM(NAT)
0 µR/h 100
MAGSUSCEP
0 SI*10-5 6000
DENSITY
2200 kg/m3 3200
P-VEL
4000 m/s 8000
SPR
100 ohm 100000
RES(SG)
100 ohm-m 100000
TEMP(FL)
5 deg C 10
Depth
1m:500m
CALIPER1
70 mm 100
RADIUS
0° 90° 180° 270° 0°
Amplitude
0° 90° 180° 270° 0°
AMP(N)
0 300
RES(16N)
100 ohm-m 100000
LATERAL
100 ohm-m 100000
RES(FL)
0 ohm-m 80

Borehole KLX23A. Drawing no. 5.1. Borehole logs

Borehole No. KLX23A

Co-ordinates in RT90 2,5 gon V 0:-15

Northing: 6366106.892m Easting: 1546715.743m Elevation: 22.263m, RHB70

Diameter:	76mm
Reaming Diameter:	248mm
Outer Casing:	208mm
Inner Casing:	200mm
Casing Length:	
Borehole Length:	
Cone:	
Inclination at ground surface:	-81.239°
Azimuth:	28.727° GN
Comments:	

Borehole logging programme

Name	Description	Tool	Unit
CALIPER1	Caliper, 1-arm	9139	mm
DENSITY	Gamma-gamma density	9139	kg/m³
RES(SG)	Focused guard log resistivity, 128 cm	9139	ohm-m
GAM(NAT)	Natural gamma	9072	μR/h
TEMP(FL)	Fluid temperature	9042	deg C
RES(FL)	Fluid resistivity	9042	ohm-m
RES(DG)	Focused guard log resistivity, 300cm	9072	ohm-m
P-VEL	P-wave velocity	9310	m/s
AMP(N)	Clipped wave form, near receiver	9310	μs
AMP(F)	Full wave form, far receiver	9310	μs
MAGSUSCEP	Magnetic susceptibility	8622	SI*10-5
CALIPER 3D	Caliper, high resolution 360 degrees	HiRAT	mm
CALIPER MEAN	High resolution 1D caliper	HiRAT	mm
AZIMUTH MN	Borehole azimuth magnetic north	HiRAT	deg
DIP	Borehole inclination from horizontal	HiRAT	deg
RADIUS	360 degrees orientated acoustic radius	HiRAT	mm
AMPLITUDE	360 degrees orientated acoustic amplitude	HiRAT	-
THORIUM	Spectral gamma, Thorium component	9080	PPM
URANIUM	Spectral gamma, Uranium component	9080	PPM
POTASSIUM	Spectral gamma, Potassium component	9080	percent
RES(16N)	Normal resistivity 16 inch	8144	ohm-m
RES(64N)	Normal resistivity 64 inch	8144	ohm-m
LATERAL	Lateral resistivity	8144	ohm-m
SPR	Single point resistivity	8144	ohm
SP	Self Potential	8144	V

Rev.	Date	Drawn by	Control	Approved
0	2006-10-25	KLD	UTN	UTN

Job 547310A

Scale 1:500

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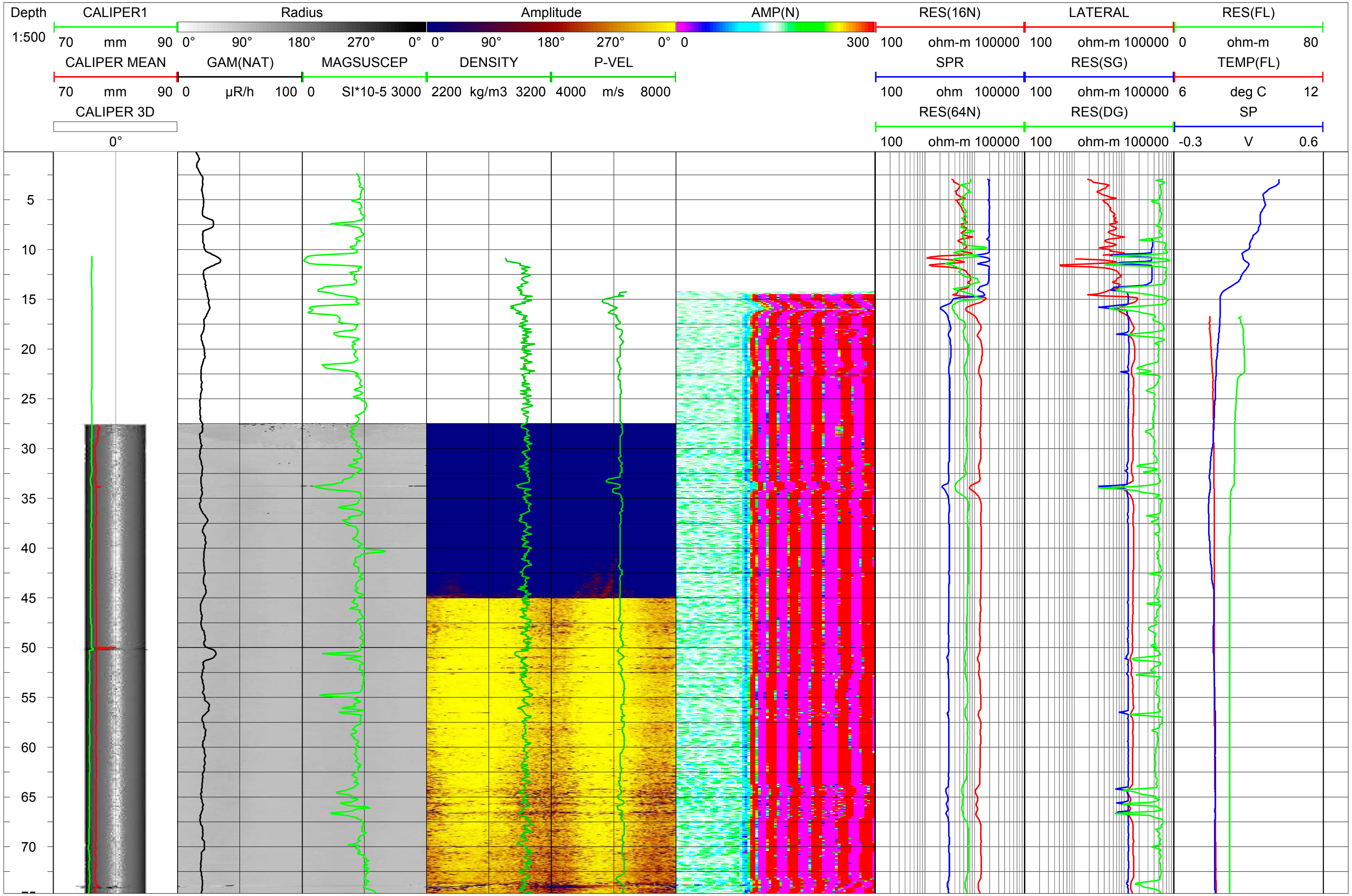
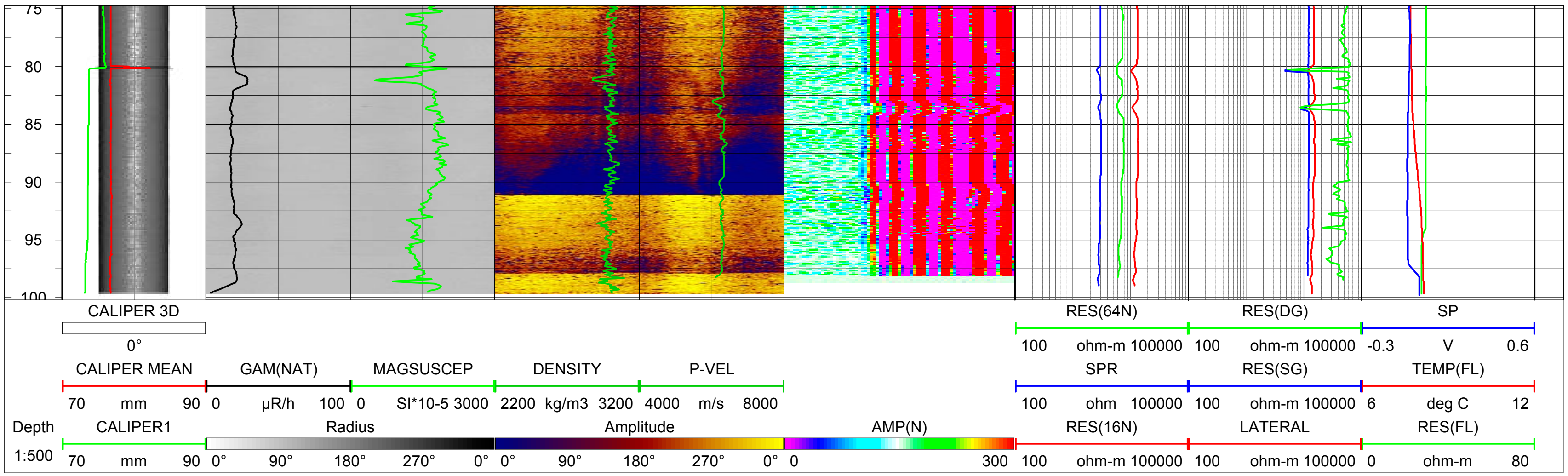
Borehole KLX23A

Presentation

Filename: KLX23A_Presentation.wcl

Drawing no.: **5.1**


Depth
1:500
CALIPER1
70 mm 90
CALIPER MEAN
70 mm 90
CALIPER 3D
0°
Radius
0° 90° 180° 270° 0°
GAM(NAT)
0 μR/h 100
MAGSUSCEP
0 SI*10-5 3000
Amplitude
0° 90° 180° 270° 0°
DENSITY
2200 kg/m3 3200
P-VEL
4000 m/s 8000
AMP(N)
0 300
RES(16N)
100 ohm-m 100000
SPR
100 ohm 100000
RES(64N)
100 ohm-m 100000
LATERAL
100 ohm-m 100000
RES(SG)
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
RES(FL)
0 ohm-m 80
TEMP(FL)
6 deg C 12
SP
-0.3 V 0.6
5
10
15
20
25
30
35
40
45
50
55
60
65
70


75
80
85
90
95
100
CALIPER 3D
0°
CALIPER MEAN
70 mm 90
GAM(NAT)
0 µR/h 100
MAGSUSCEP
0 SI*10-5 3000
DENSITY
2200 kg/m3 3200
P-VEL
4000 m/s 8000
Depth
1:500
CALIPER1
70 mm 90
Radius
0° 90° 180° 270° 0°
Amplitude
0° 90° 180° 270° 0°
AMP(N)
0 300
RES(64N)
100 ohm-m 100000
SPR
100 ohm 100000
RES(16N)
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
RES(SG)
100 ohm-m 100000
LATERAL
100 ohm-m 100000
SP
-0.3 V 0.6
TEMP(FL)
6 deg C 12
RES(FL)
0 ohm-m 80

Appendix 6

Borehole KLX23B. Drawing no. 6.1. Borehole logs

Borehole No. KLX23B

Co-ordinates in RT90 2,5 gon V 0:-15

Northing: 6366101.900m Easting: 1546717.332m Elevation: 22.317m, RHB70

Diameter:	76mm
Reaming Diameter:	248mm
Outer Casing:	208mm
Inner Casing:	200mm
Casing Length:	
Borehole Length:	
Cone:	
Inclination at ground surface:	-60.54°
Azimuth:	121.365° GN
Comments:	

Borehole logging programme

Name	Description	Tool	Unit
CALIPER1	Caliper, 1-arm	9139	mm
DENSITY	Gamma-gamma density	9139	kg/m³
RES(SG)	Focused guard log resistivity, 128 cm	9139	ohm-m
GAM(NAT)	Natural gamma	9072	μR/h
TEMP(FL)	Fluid temperature	9042	deg C
RES(FL)	Fluid resistivity	9042	ohm-m
RES(DG)	Focused guard log resistivity, 300cm	9072	ohm-m
P-VEL	P-wave velocity	9310	m/s
AMP(N)	Clipped wave form, near receiver	9310	μs
AMP(F)	Full wave form, far receiver	9310	μs
MAGSUSCEP	Magnetic susceptibility	8622	SI*10-5
CALIPER 3D	Caliper, high resolution 360 degrees	HiRAT	mm
CALIPER MEAN	High resolution 1D caliper	HiRAT	mm
AZIMUTH MN	Borehole azimuth magnetic north	HiRAT	deg
DIP	Borehole inclination from horizontal	HiRAT	deg
RADIUS	360 degrees orientated acoustic radius	HiRAT	mm
AMPLITUDE	360 degrees orientated acoustic amplitude	HiRAT	-
THORIUM	Spectral gamma, Thorium component	9080	PPM
URANIUM	Spectral gamma, Uranium component	9080	PPM
POTASSIUM	Spectral gamma, Potassium component	9080	percent
RES(16N)	Normal resistivity 16 inch	8144	ohm-m
RES(64N)	Normal resistivity 64 inch	8144	ohm-m
LATERAL	Lateral resistivity	8144	ohm-m
SPR	Single point resistivity	8144	ohm
SP	Self Potential	8144	V

Rev.	Date	Drawn by	Control	Approved
0	2006-10-25	KLD	UTN	UTN

Job 547310A

Scale 1:500

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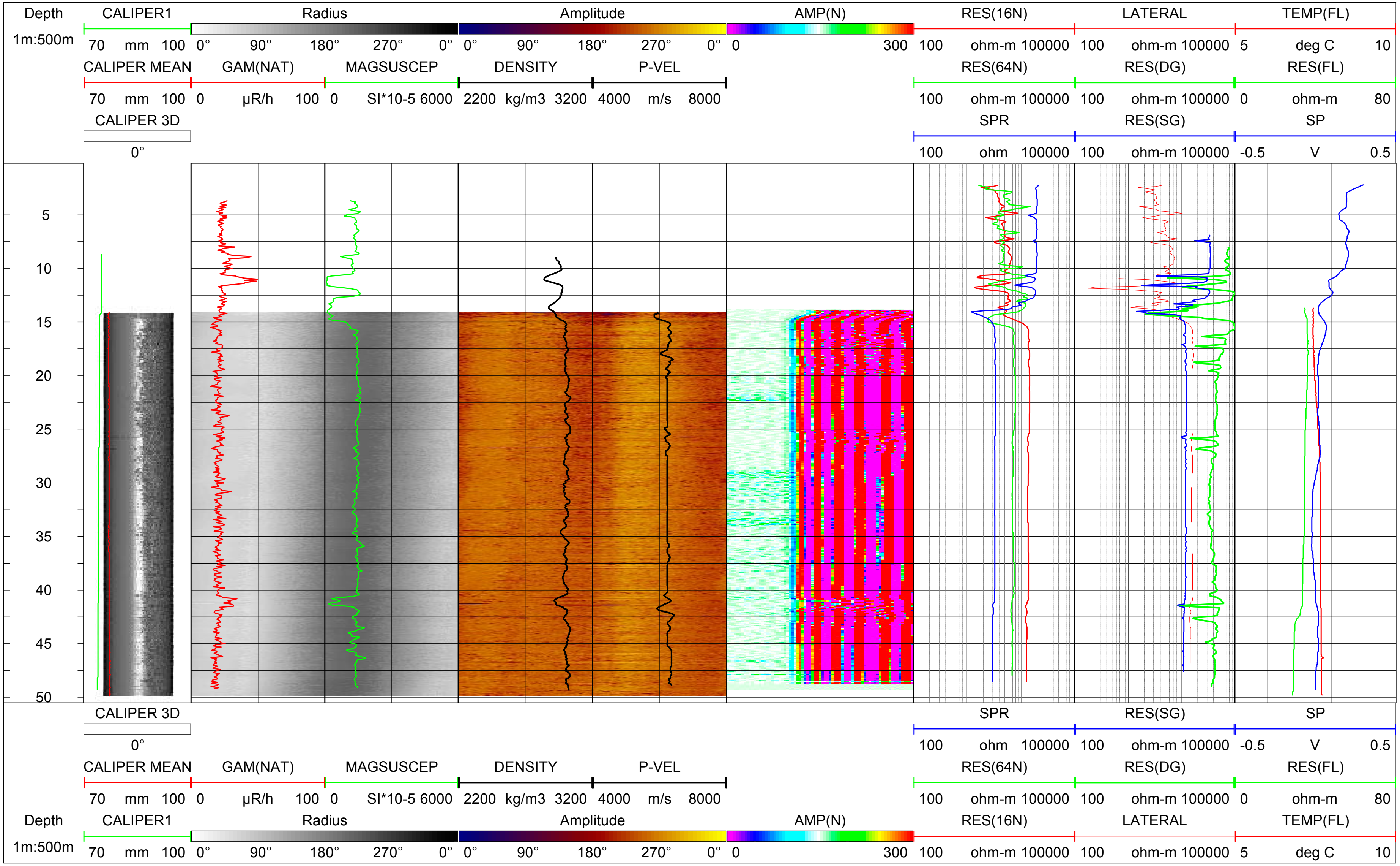
Borehole KLX23B

Presentation

Filename: KLX23B_Presentation.wcl

Drawing no.: **6.1**



Depth
1m:500m
CALIPER1
70 mm 100
Radius
0° 90° 180° 270° 0°
Amplitude
0° 90° 180° 270° 0°
AMP(N)
0 300
RES(16N)
100 ohm-m 100000
LATERAL
100 ohm-m 100000
TEMP(FL)
5 deg C 10
CALIPER MEAN
70 mm 100
GAM(NAT)
0 µR/h 100
MAGSUSCEP
0 SI*10-5 6000
DENSITY
2200 kg/m3 3200
P-VEL
4000 m/s 8000
RES(64N)
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
RES(FL)
0 ohm-m 80
CALIPER 3D
0°
SPR
100 ohm 100000
RES(SG)
100 ohm-m 100000
SP
-0.5 V 0.5
5
10
15
20
25
30
35
40
45
50

Borehole KLX24A. Drawing no. 7.1. Borehole logs

Borehole No. KLX24A

Co-ordinates in RT90 2,5 gon V 0:-15

Northing: 6366423.349m Easting: 1546853.801m Elevation: 21.290m, RHB70

Diameter:	76mm
Reaming Diameter:	248mm
Outer Casing:	208mm
Inner Casing:	200mm
Casing Length:	
Borehole Length:	
Cone:	
Inclination at ground surface:	-59.146°
Azimuth:	98.410° GN
Comments:	

Borehole logging programme

Name	Description	Tool	Unit
CALIPER1	Caliper, 1-arm	9139	mm
DENSITY	Gamma-gamma density	9139	kg/m³
RES(SG)	Focused guard log resistivity, 128 cm	9139	ohm-m
GAM(NAT)	Natural gamma	9072	µR/h
TEMP(FL)	Fluid temperature	9042	deg C
RES(FL)	Fluid resistivity	9042	ohm-m
RES(DG)	Focused guard log resistivity, 300cm	9072	ohm-m
P-VEL	P-wave velocity	9310	m/s
AMP(N)	Clipped wave form, near receiver	9310	µs
AMP(F)	Full wave form, far receiver	9310	µs
MAGSUSCEP	Magnetic susceptibility	8622	SI*10-5
CALIPER 3D	Caliper, high resolution 360 degrees	HiRAT	mm
CALIPER MEAN	High resolution 1D caliper	HiRAT	mm
AZIMUTH MN	Borehole azimuth magnetic north	HiRAT	deg
DIP	Borehole inclination from horizontal	HiRAT	deg
RADIUS	360 degrees orientated acoustic radius	HiRAT	mm
AMPLITUDE	360 degrees orientated acoustic amplitude	HiRAT	-
THORIUM	Spectral gamma, Thorium component	9080	PPM
URANIUM	Spectral gamma, Uranium component	9080	PPM
POTASSIUM	Spectral gamma, Potassium component	9080	percent
RES(16N)	Normal resistivity 16 inch	8144	ohm-m
RES(64N)	Normal resistivity 64 inch	8144	ohm-m
LATERAL	Lateral resistivity	8144	ohm-m
SPR	Single point resistivity	8144	ohm
SP	Self Potential	8144	V

Rev.	Date	Drawn by	Control	Approved
0	2006-10-25	KLD	UTN	UTN

Job	Scale
547310A	1:500

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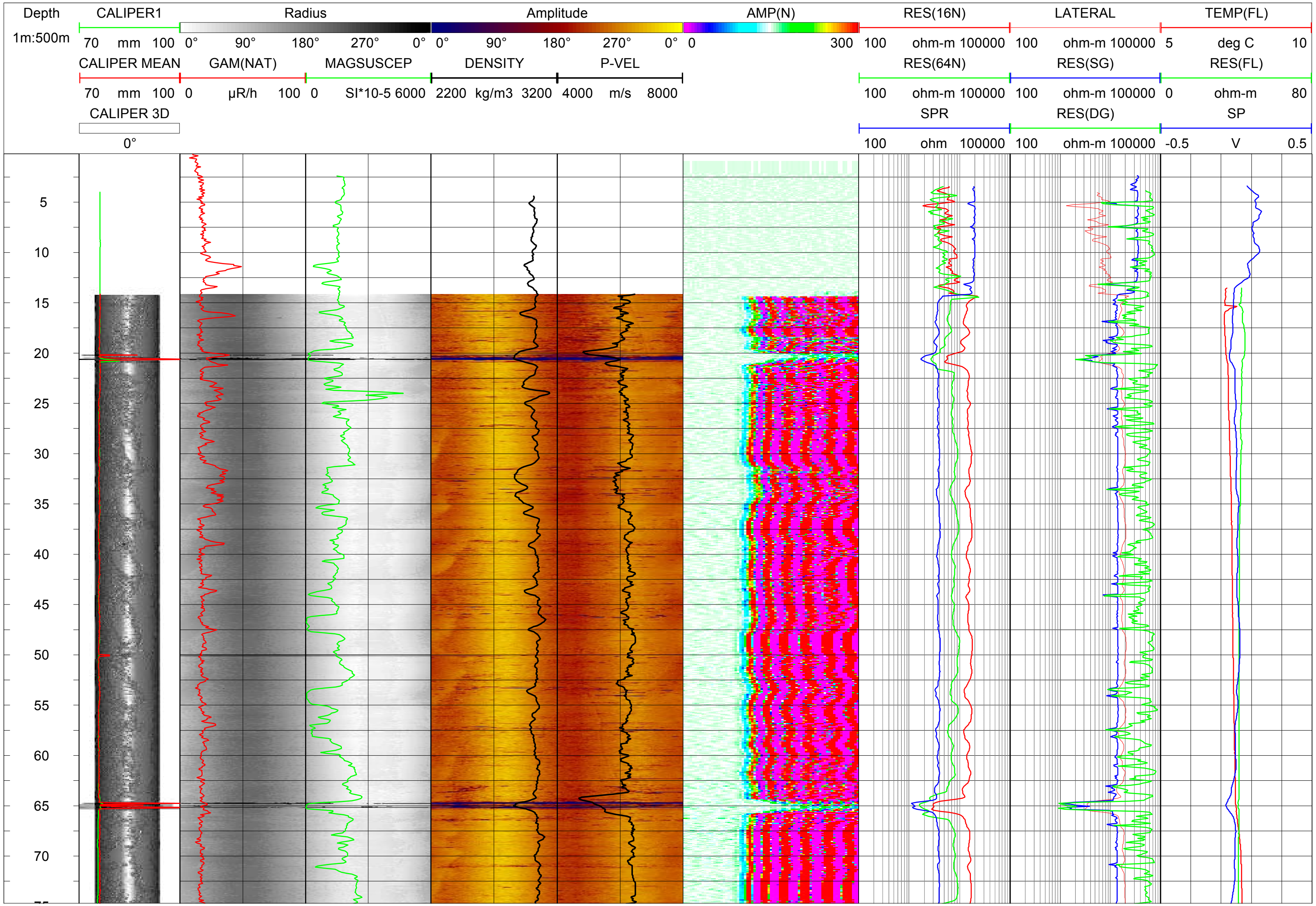
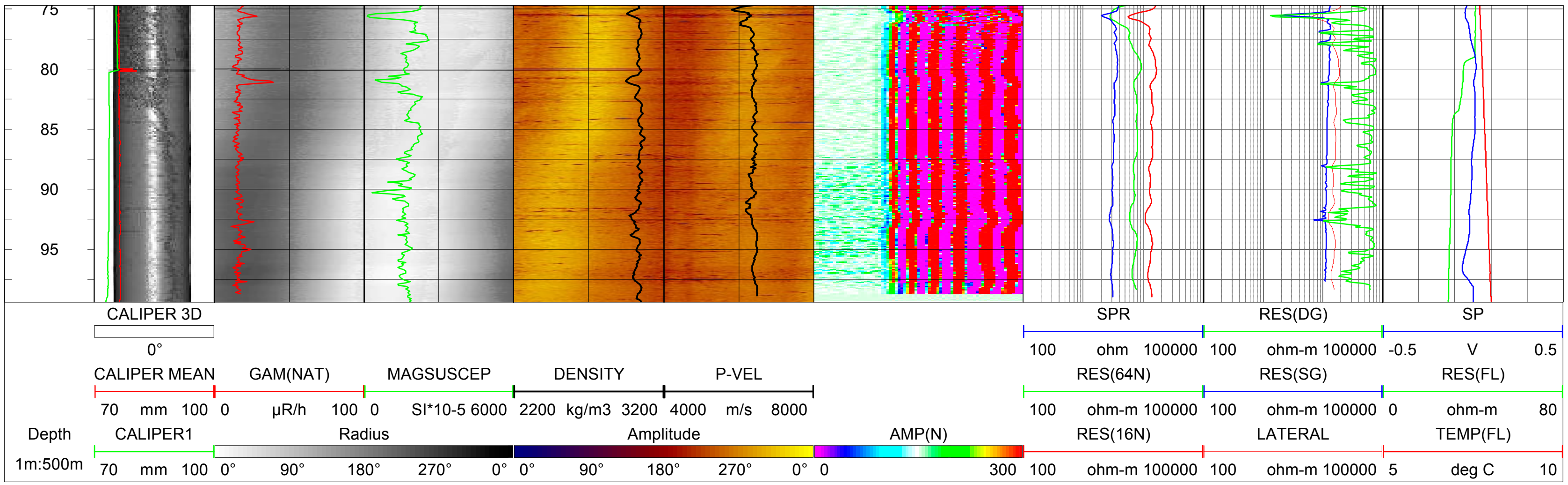
Borehole KLX24A

Presentation

Filename:
KLX24A_Presentation.wcl

Drawing no.:
7.1


Depth
1m:500m
CALIPER1
70 mm 100
CALIPER MEAN
70 mm 100
CALIPER 3D
0°
Radius
0° 90° 180° 270° 0°
GAM(NAT)
0 μR/h 100
MAGSUSCEP
0 SI*10-5 6000
Amplitude
0° 90° 180° 270° 0°
DENSITY
2200 kg/m3 3200
P-VEL
4000 m/s 8000
AMP(N)
0 300
RES(16N)
100 ohm-m 100000
RES(64N)
100 ohm-m 100000
SPR
100 ohm 100000
LATERAL
100 ohm-m 100000
RES(SG)
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
TEMP(FL)
5 deg C 10
RES(FL)
0 ohm-m 80
SP
-0.5 V 0.5
5
10
15
20
25
30
35
40
45
50
55
60
65
70



75
80
85
90
95
CALIPER 3D
0°
SPR
100 ohm 100000
RES(DG)
100 ohm-m 100000
SP
-0.5 V 0.5
CALIPER MEAN
70 mm 100
GAM(NAT)
0 µR/h 100
MAGSUSCEP
0 SI*10-5 6000
DENSITY
2200 kg/m3 3200
P-VEL
4000 m/s 8000
RES(64N)
100 ohm-m 100000
RES(SG)
100 ohm-m 100000
RES(FL)
0 ohm-m 80
Depth
1m:500m
CALIPER1
70 mm 100
Radius
0° 90° 180° 270° 0°
Amplitude
0° 90° 180° 270° 0°
AMP(N)
0 300
RES(16N)
100 ohm-m 100000
LATERAL
100 ohm-m 100000
TEMP(FL)
5 deg C 10

Borehole KLX25A. Drawing no. 8.1. Borehole logs

Borehole No. KLX25A

Co-ordinates in RT90 2,5 gon V 0:-15

Northing: 6366274.740m Easting: 1546769.663m Elevation: 22.839m, RHB70

Diameter:	76mm
Reaming Diameter:	248mm
Outer Casing:	208mm
Inner Casing:	200mm
Casing Length:	
Borehole Length:	
Cone:	
Inclination at ground surface:	-59.463°
Azimuth:	145.726° GN
Comments:	

Borehole logging programme

Name	Description	Tool	Unit
CALIPER1	Caliper, 1-arm	9139	mm
DENSITY	Gamma-gamma density	9139	kg/m³
RES(SG)	Focused guard log resistivity, 128 cm	9139	ohm-m
GAM(NAT)	Natural gamma	9072	µR/h
TEMP(FL)	Fluid temperature	9042	deg C
RES(FL)	Fluid resistivity	9042	ohm-m
RES(DG)	Focused guard log resistivity, 300cm	9072	ohm-m
P-VEL	P-wave velocity	9310	m/s
AMP(N)	Clipped wave form, near receiver	9310	µs
AMP(F)	Full wave form, far receiver	9310	µs
MAGSUSCEP	Magnetic susceptibility	8622	SI*10-5
CALIPER 3D	Caliper, high resolution 360 degrees	HiRAT	mm
CALIPER MEAN	High resolution 1D caliper	HiRAT	mm
AZIMUTH MN	Borehole azimuth magnetic north	HiRAT	deg
DIP	Borehole inclination from horizontal	HiRAT	deg
RADIUS	360 degrees orientated acoustic radius	HiRAT	mm
AMPLITUDE	360 degrees orientated acoustic amplitude	HiRAT	-
THORIUM	Spectral gamma, Thorium component	9080	PPM
URANIUM	Spectral gamma, Uranium component	9080	PPM
POTASSIUM	Spectral gamma, Potassium component	9080	percent
RES(16N)	Normal resistivity 16 inch	8144	ohm-m
RES(64N)	Normal resistivity 64 inch	8144	ohm-m
LATERAL	Lateral resistivity	8144	ohm-m
SPR	Single point resistivity	8144	ohm
SP	Self Potential	8144	V

Rev.	Date	Drawn by	Control	Approved
0	2006-10-25	KLD	UTN	UTN

Job: 547310A

Scale: 1:500

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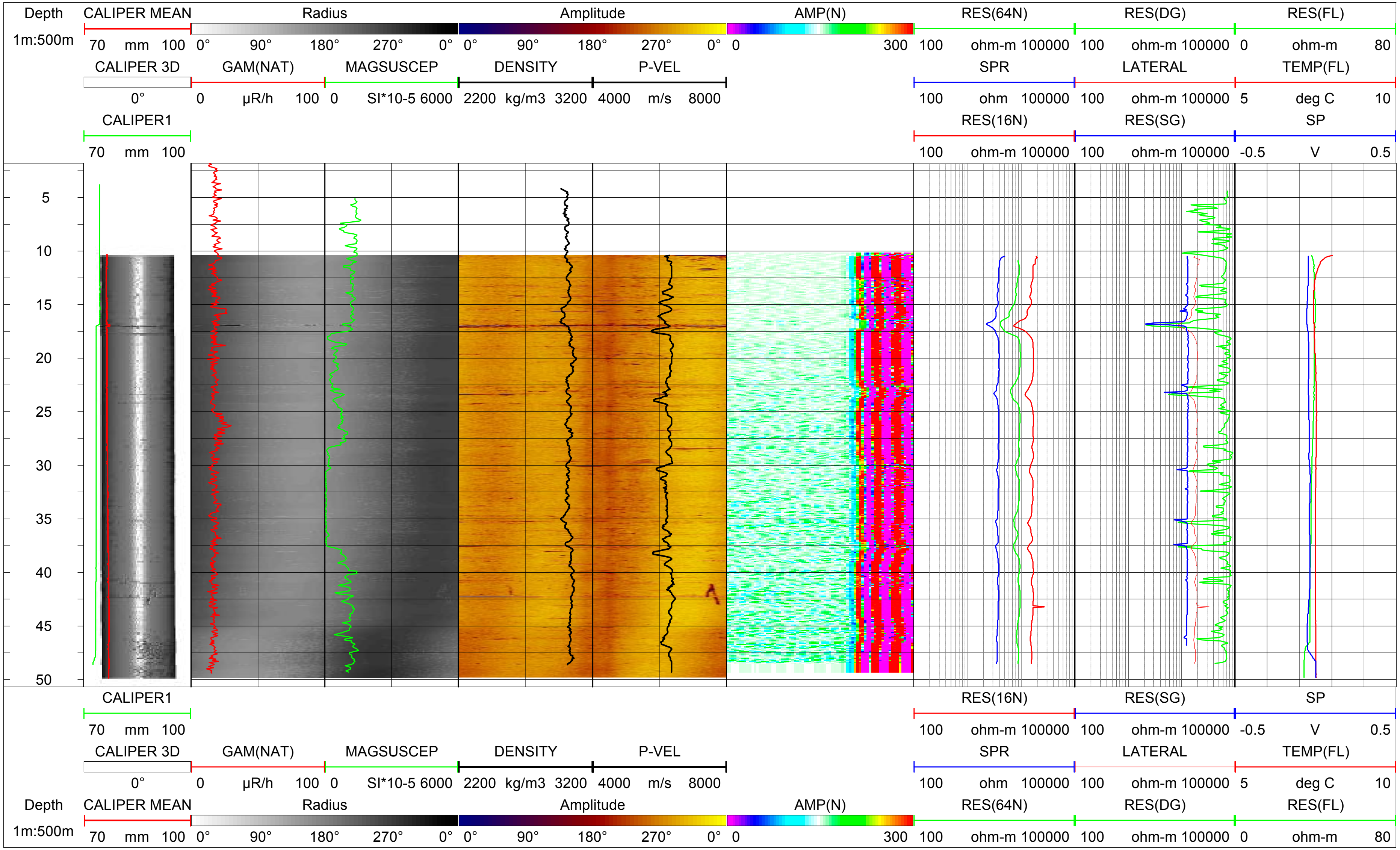
SKB geophysical borehole logging
Borehole KLX25A

Presentation

Filename: KLX25A_Presentation.wcl

Drawing no.: **8.1**


Depth
1m:500m
CALIPER MEAN
70 mm 100
CALIPER 3D
0°
CALIPER1
70 mm 100
Radius
0° 90° 180° 270° 0°
GAM(NAT)
0 μR/h 100
MAGSUSCEP
0 SI*10-5 6000
Amplitude
0° 90° 180° 270° 0°
DENSITY
2200 kg/m3 3200
P-VEL
4000 m/s 8000
AMP(N)
0 300
RES(64N)
100 ohm-m 100000
SPR
100 ohm 100000
RES(16N)
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
LATERAL
100 ohm-m 100000
RES(SG)
100 ohm-m 100000
RES(FL)
0 ohm-m 80
TEMP(FL)
5 deg C 10
SP
-0.5 V 0.5
5
10
15
20
25
30
35
40
45
50

Borehole KLX26A. Drawing no. 9.1. Borehole logs

Borehole No. KLX26A

Co-ordinates in RT90 2,5 gon V 0:-15

Northing: 6365546.492m Easting: 1549029.897m Elevation: 15.629m, RHB70

Diameter:	76mm
Reaming Diameter:	248mm
Outer Casing:	208mm
Inner Casing:	200mm
Casing Length:	
Borehole Length:	
Cone:	
Inclination at ground surface:	-60.449°
Azimuth:	93.467° GN
Comments:	

Borehole logging programme

Name	Description	Tool	Unit
CALIPER1	Caliper, 1-arm	9139	mm
DENSITY	Gamma-gamma density	9139	kg/m³
RES(SG)	Focused guard log resistivity, 128 cm	9139	ohm-m
GAM(NAT)	Natural gamma	9072	µR/h
TEMP(FL)	Fluid temperature	9042	deg C
RES(FL)	Fluid resistivity	9042	ohm-m
RES(DG)	Focused guard log resistivity, 300cm	9072	ohm-m
P-VEL	P-wave velocity	9310	m/s
AMP(N)	Clipped wave form, near receiver	9310	µs
AMP(F)	Full wave form, far receiver	9310	µs
MAGSUSCEP	Magnetic susceptibility	8622	SI*10-5
CALIPER 3D	Caliper, high resolution 360 degrees	HiRAT	mm
CALIPER MEAN	High resolution 1D caliper	HiRAT	mm
AZIMUTH MN	Borehole azimuth magnetic north	HiRAT	deg
DIP	Borehole inclination from horizontal	HiRAT	deg
RADIUS	360 degrees orientated acoustic radius	HiRAT	mm
AMPLITUDE	360 degrees orientated acoustic amplitude	HiRAT	-
THORIUM	Spectral gamma, Thorium component	9080	PPM
URANIUM	Spectral gamma, Uranium component	9080	PPM
POTASSIUM	Spectral gamma, Potassium component	9080	percent
RES(16N)	Normal resistivity 16 inch	8144	ohm-m
RES(64N)	Normal resistivity 64 inch	8144	ohm-m
LATERAL	Lateral resistivity	8144	ohm-m
SPR	Single point resistivity	8144	ohm
SP	Self Potential	8144	V

Rev.	Date	Drawn by	Control	Approved
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Job: 547310A

Scale: 1:500

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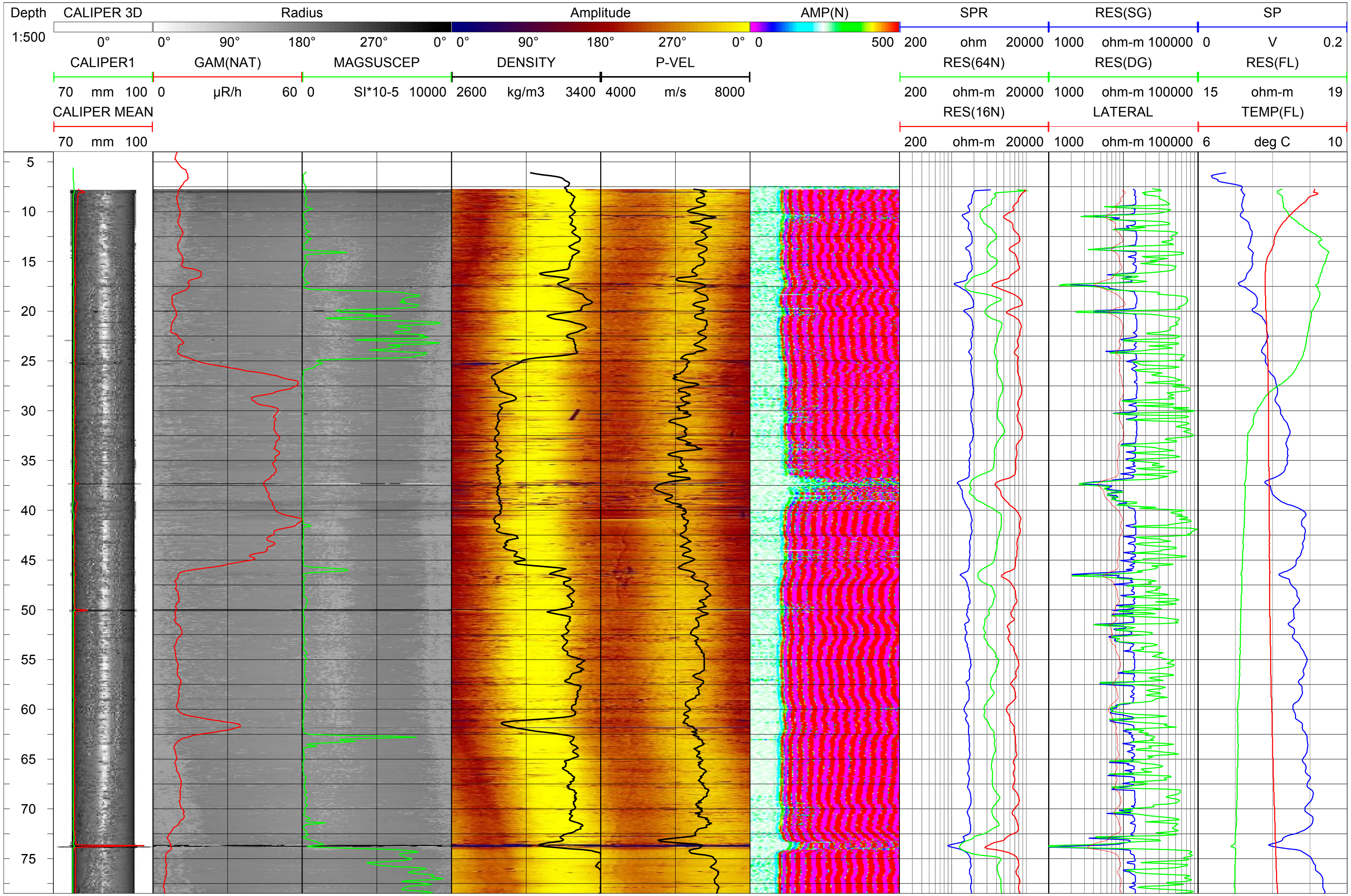
Borehole KLX26A

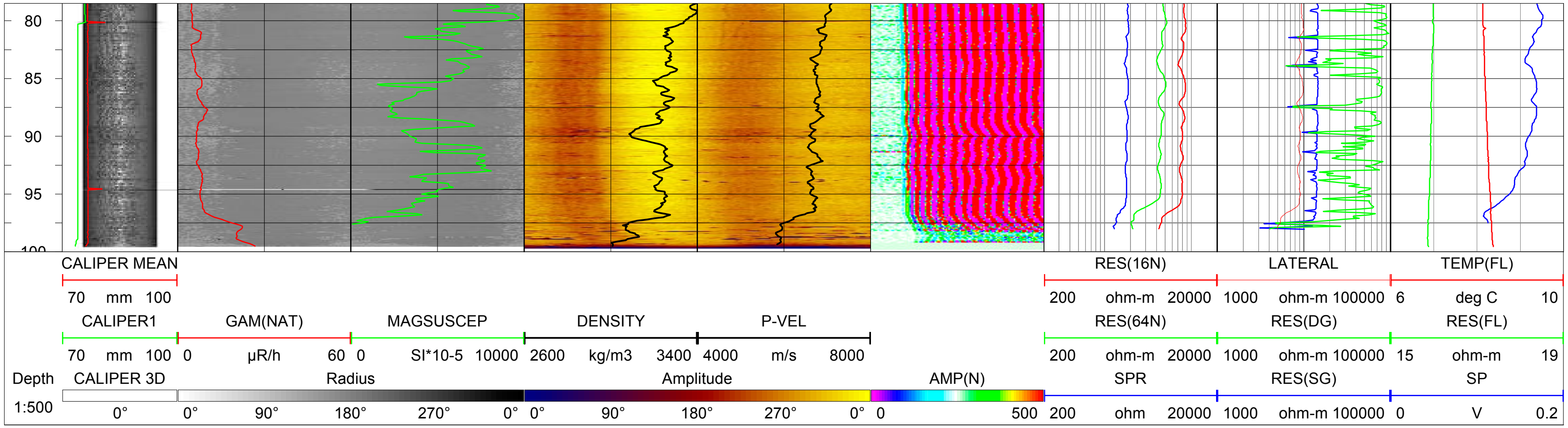
Presentation

Filename: KLX26A_Presentation.wcl

Drawing no.: 9.1



Depth
1:500
CALIPER 3D
0°
CALIPER1
70 mm 100
CALIPER MEAN
70 mm 100
Radius
0° 90° 180° 270° 0°
GAM(NAT)
0 μR/h 60
MAGSUSCEP
0 SI*10-5 10000
Amplitude
0° 90° 180° 270° 0°
DENSITY
2600 kg/m3 3400
P-VEL
4000 m/s 8000
AMP(N)
0 500
SPR
200 ohm 20000
RES(64N)
200 ohm-m 20000
RES(16N)
200 ohm-m 20000
RES(SG)
1000 ohm-m 100000
RES(DG)
1000 ohm-m 100000
LATERAL
1000 ohm-m 100000
SP
0 V 0.2
RES(FL)
15 ohm-m 19
TEMP(FL)
6 deg C 10
5
10
15
20
25
30
35
40
45
50
55
60
65
70
75


80
85
90
95
100
CALIPER MEAN
70 mm 100
CALIPER1
70 mm 100
GAM(NAT)
0 µR/h 60
MAGSUSCEP
0 SI*10-5 10000
DENSITY
2600 kg/m3 3400
P-VEL
4000 m/s 8000
RES(16N)
200 ohm-m 20000
RES(64N)
200 ohm-m 20000
SPR
200 ohm 20000
LATERAL
1000 ohm-m 100000
RES(DG)
1000 ohm-m 100000
RES(SG)
1000 ohm-m 100000
TEMP(FL)
6 deg C 10
RES(FL)
15 ohm-m 19
SP
0 V 0.2
Depth
1:500
CALIPER 3D
0°
Radius
0° 90° 180° 270° 0°
Amplitude
0° 90° 180° 270° 0°
AMP(N)
0 500

Appendix 10

Borehole KLX26B. Drawing no. 10.1. Borehole logs

Borehole No. KLX26B

Co-ordinates in RT90 2,5 gon V 0:-15

Northing: 6365550.659m Easting: 1549025.614m Elevation: 15.822m, RHB70

Diameter:	76mm
Reaming Diameter:	248mm
Outer Casing:	208mm
Inner Casing:	200mm
Casing Length:	
Borehole Length:	
Cone:	
Inclination at ground surface:	-°
Azimuth:	-° GN
Comments:	

Borehole logging programme

Name	Description	Tool	Unit
CALIPER1	Caliper, 1-arm	9139	mm
DENSITY	Gamma-gamma density	9139	kg/m³
RES(SG)	Focused guard log resistivity, 128 cm	9139	ohm-m
GAM(NAT)	Natural gamma	9072	μR/h
TEMP(FL)	Fluid temperature	9042	deg C
RES(FL)	Fluid resistivity	9042	ohm-m
RES(DG)	Focused guard log resistivity, 300cm	9072	ohm-m
P-VEL	P-wave velocity	9310	m/s
AMP(N)	Clipped wave form, near receiver	9310	μs
AMP(F)	Full wave form, far receiver	9310	μs
MAGSUSCEP	Magnetic susceptibility	8622	SI*10-5
CALIPER 3D	Caliper, high resolution 360 degrees	HiRAT	mm
CALIPER MEAN	High resolution 1D caliper	HiRAT	mm
AZIMUTH MN	Borehole azimuth magnetic north	HiRAT	deg
DIP	Borehole inclination from horizontal	HiRAT	deg
RADIUS	360 degrees orientated acoustic radius	HiRAT	mm
AMPLITUDE	360 degrees orientated acoustic amplitude	HiRAT	-
THORIUM	Spectral gamma, Thorium component	9080	PPM
URANIUM	Spectral gamma, Uranium component	9080	PPM
POTASSIUM	Spectral gamma, Potassium component	9080	percent
RES(16N)	Normal resistivity 16 inch	8144	ohm-m
RES(64N)	Normal resistivity 64 inch	8144	ohm-m
LATERAL	Lateral resistivity	8144	ohm-m
SPR	Single point resistivity	8144	ohm
SP	Self Potential	8144	V

Rev.	Date	Drawn by	Control	Approved
0	2006-10-25	KLD	UTN	UTN

Job: 547310A

Scale: 1:500

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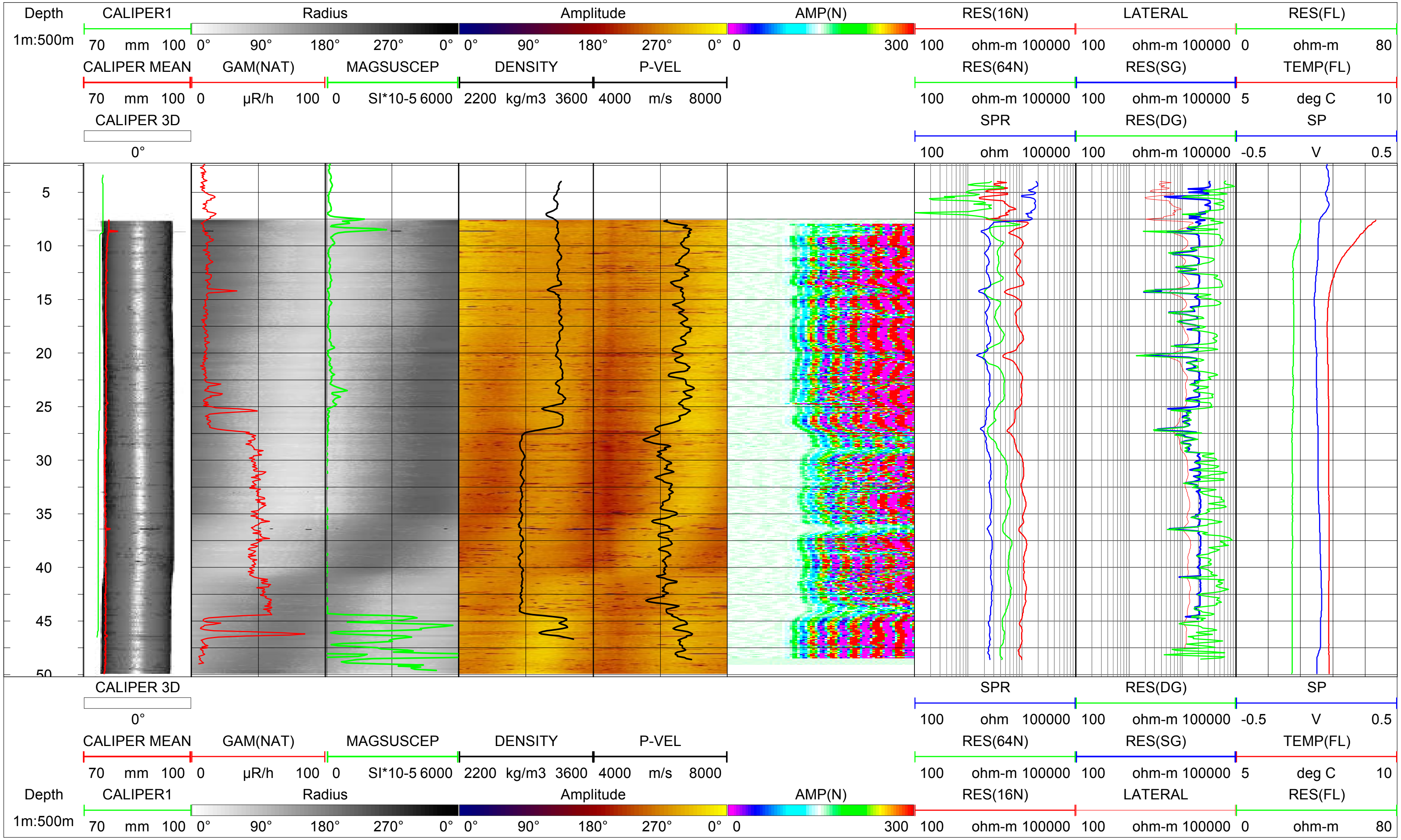
Borehole KLX26B

Presentation

Filename: KLX26B_Presentation.wcl

Drawing no.: 10.1


Depth
1m:500m
CALIPER1
70 mm 100
CALIPER MEAN
70 mm 100
CALIPER 3D
0°
Radius
0° 90° 180° 270° 0°
GAM(NAT)
0 µR/h 100
MAGSUSCEP
0 SI*10-5 6000
Amplitude
0° 90° 180° 270° 0°
DENSITY
2200 kg/m3 3600
P-VEL
4000 m/s 8000
AMP(N)
0 300
RES(16N)
100 ohm-m 100000
RES(64N)
100 ohm-m 100000
SPR
100 ohm 100000
LATERAL
100 ohm-m 100000
RES(SG)
100 ohm-m 100000
RES(DG)
100 ohm-m 100000
RES(FL)
0 ohm-m 80
TEMP(FL)
5 deg C 10
SP
-0.5 V 0.5
5
10
15
20
25
30
35
40
45
50