DANMARKS OG GRØNLANDS GEOLOGISKE UNDERSØGELSE RAPPORT 2018/13

Conventional Core Analysis and Core Gamma Log, Jurakløft-2 Borehole, Wollaston Forland, Northeast Greenland

Contribution to Petroleum Geological Studies, Servicesand Data in East and Northeast Greenland

Dan Olsen, John Boserup, Ditte Kiel-Dühring, Carsten Guvad, Kathrine Hedegaard, Jussi Hovikoski, Hans Jørgen Lorentzen, Meysam Nourani, Charlotte Olsen, Gunver K. Pedersen & Annette Ryge

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GEOLOGICAL SURVEY OF DENMARK AND GREENLAND
DANISH MINISTRY OF ENERGY, UTILITIES AND CLIMATE

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Contents

LIST OF TABLES

LIST OF FIGURES

1. Introduction

This report is part of the GEUS – Industry collaboration "Petroleum Geological Studies, Services and Data in East and Northeast Greenland" that was initiated by GEUS and carried out by GEUS in the period 2017 to 2018. In short, the collaboration is referred to as the NEG-2017 Project. The report presents results from spectral core gamma logging, conventional core analysis (CCAL), and XRF analysis of sample material from the **Jurakløft-2** well. The well was drilled in July 2017 on Wollaston Forland, Northeast Greenland to a depth of 72.5m. The well was cored from 4.7 m to 72.5 m and yielded a total of 66.1 m of core with a recovery of 97.5%. The nominal core diameter was 42 mm. Details of the well are given in the well completion report (Pedersen & Bojesen-Koefoed, 2018).

The cores were received in core boxes that each contained 7 compartments for core sections of length approximately 1 meter. In this report, the 1 meter core sections are identified as core traces, to distinguish them from the core boxes.

The following analytical programme was carried out on the core material:

- Core photography
- Spectral core gamma logging and bulk density logging
- Plugging and trimming
- Porosity, permeability, and grain density measurements of plug samples
- XRF analysis of plug samples

The core photography was carried out in another part of the NEG-2017 Project, but for convenience, the photographs are included in the present report.

2. Sampling and analytical procedure

2.1 Depth assignment.

With a spacing that ranged from 0.45 m to 3.30 m the well driller placed depth markers in the core boxes that indicated the depth of the position. These depth markers are used throughout this report to assign depth to the spectral core gamma measurements and the plug related measurements, the latter consisting of the conventional core analysis data and the XRF data.

The depth values are measured relative to a reference 2.8 m above the terrain surface (229 m above sea level) at the well site.

The depth assignment operation was carried out in two steps. First, the depth markers were used to calculate depth values for top and bottom of every core trace of the well. The gamma measurements and the core plugs then received depth assignments relative to the top of the trace that contained the relevant core segment. If the actual length of core between two depth markers differed from the length indicated by the depth markers a correction procedure was applied. In case the appearance of the core indicated missing core material, the depth assignment was corrected according to the stratigraphical log. In case missing core was not indicated, the assigned depth values were scaled by linear stretching or compression to match the depths at the bounding depth markers.

2.1 Spectral core gamma log and density log.

The natural gamma radiation of the core was recorded within an energy window of 0.5-3.0 MeV, using Tl activated NaI detectors connected to a multi-channel analyser.

The core was passed through a lead shielded tunnel at constant speed of 1 cm/min with a data read-out interval of 1 minute. The measured total intensity corrected for background is reported in counts per minute (cpm) as a function of depth.

Radiation from decay of potassium and the uranium and thorium decay series isotopes was recorded in separate energy windows. The scanning was calibrated using artificial standards of concrete doped with known amounts of K, U, and Th. The U- and Th-doping of the standards comes from naturally occurring minerals where the decay series are in equilibrium. Concentrations of K, U and Th are reported as elemental concentrations, i.e. % K, ppm U, and ppm Th.

The bulk density of the core was determined from the attenuation of the gamma-ray signal from a ^{137}Cs source. The bulk density analysis was calibrated by measurements on an aluminium core with a diameter of 5 cm.

The depth values assigned to the gamma measurements and density measurements were based on the depth markers positioned in the core boxes. In case the appearance of the core indicated missing core material, the depth assignment was corrected according to the stratigraphical log. Because the actual length of core between two depth markers sometimes differs from the length indicated by the depth markers, a depth conversion procedure was applied, where the assigned depth values were scaled by linear stretching or compression to match the depths at the bounding depth markers.

2.2 Plugging and trimming

The cores were plugged following a scheme with four 1” plugs per meter, comprising one vertical and three horizontals plugs. Ideally, the three horizontal plugs were taken respectively at 10 cm, 40 cm and 70 cm below the top of each core trace, and the vertical plug was taken at the bottom of the core trace. A total of 278 plugs were taken, of which 211 were horizontal and 67 were vertical plugs. All plugs were standard 1” core plugs. They were trimmed to right cylinders suitable for conventional core analysis.

The plugs covered the depth interval 5.05 to 72.33 m measured depth (m MD) in the Jurakløft-2 well.

2.3 Conventional core analysis

The first batch of plug samples that were drilled, approximately 30 plugs, were placed in a Soxhlet extractor with methanol, and the eluent was checked for salt. No salt was detected, which agrees with the wellhead being situated 229 m above mean sea level. Many samples were in a state where Soxhlet cleaning would have damaged the samples. Therefore, cleaning for salt was not performed on most of the samples.

All samples were dried at 60 °C for 40 hours before porosity and permeability measurements. When not being handled for measurements, the samples resided in a closed cabinet containing a drying agent.

Conventional core analysis (CCAL) comprising He-porosity, grain density, and gas permeability was performed. The permeability was measured using a sleeve pressure of 400 psi. A number of plugs that were poorly consolidated and/or had a rough surface could only be measured for gas permeability after being wrapped in Teflon tape. In the data listing, these analyses are flagged by the comment “Wrapped in Teflon tape at perm meas.”. For sample 216 and 217 the comment is abbreviated to “Wrapped in Teflon” to enable the comment to fit in the column of comments.

A number of the plugs were poorly consolidated and experienced loss of grains during the He-porosity/grain density analysis. The loss of grains caused the measured grain density being too low. These analyses are flagged by the comment “Biased by grain loss”. For sample 216 and 217 the comment is abbreviated to “Grain loss” to enable the comment to fit in the column of comments.

2.4 XRF analysis of plug samples

XRF analyses were acquired with a Niton XL3t XRF instrument on the core plugs that was also used for conventional core analysis. It is emphasized that the XRF analyses from the Niton XL3t instrument are only semi-quantitative, because the calibration of the instrument covers a very large energy interval with a very large number of spectral lines. Therefore, the calibration cannot correct for all possible interferences, and consequently erroneous analytical results may occur.

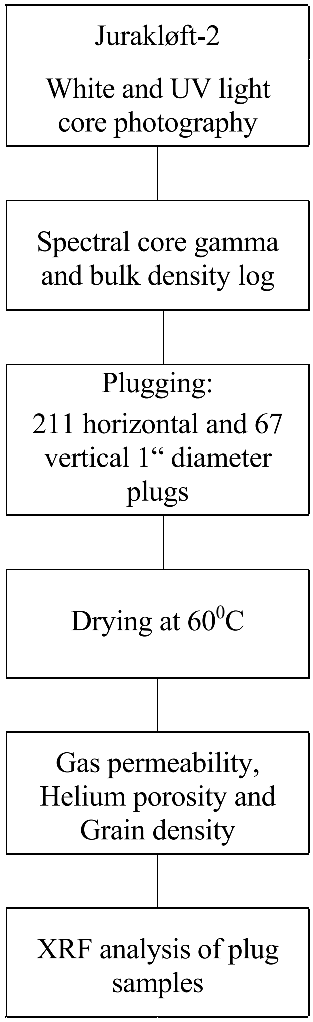
The XRF analyses were performed on one of the planar end faces of each core plug, to avoid curvature problems, which would arise if the measurements were done on the curving surfaces of the plugs. The Niton XL3t instrument analyses for a total of 43 elements, but 19 of these are unreliable at the concentration levels of the Jurakløft-2 cores. The precision and accuracy of the XRF analyses were evaluated by repeated analyses of the international standard NIST 2709a. The results of measurements on standard NIST 2709a are summarized in Table 1. 24 elements were sufficiently accurate to be included into the present report. For 18 of the 24 elements, the Niton instrument reproduced the concentrations of the international standard to within +40% or -30%, which is considered acceptable, and the results for these elements are included in the report. For 3 elements, Rb, Al, and Mg, the Niton instrument failed to meet the +40%/-30% criterion, but because the elements show good and scientifically sensible correlations with other elements they have been included in the report. For two elements, S and Nb, no standard values exist for the NIST 2709a standard. However, because S and Nb show good and scientifically sensible correlations with other elements they have been included in the report. For Co the concentration in the NIST 2709a standard is below the detection limit of the Niton XL3t instrument. However, 8 measurements in the Jurakløft-2 samples show good correlation with S, which is geochemically sensible, and therefore Co is also reported.

A summary of the Jurakløft-2 XRF analyses are given in Table 12.

Table 1. Results of 13 measurements of international standard NIST 2709a. Results below the detection limits are marked "<LOD".

Element	NIST 2709a Standard conc. (ppm)	Niton measured conc. (ppm)	Niton reproducibility = std.dev. of conc. (ppm)	Ratio Niton meas. conc. / NIST std conc.	Reproduces NIST conc. +40%/-30%
Zr	195	167	8	0.86	Yes
Sr	239	211	3	0.88	Yes
Rb	99	47	1	0.48	No
Th	10.9	11	2	0.98	Yes
Pb	17.3	16	3	0.95	Yes
As	10.5	9	2	0.89	Yes
Zn	103	86	8	0.83	Yes
Cu	33.9	38	9	1.11	Yes
Ni	85	62	12	0.73	Yes
Co	12.8	<LOD	<LOD		No
Fe	33600	33201	425	0.99	Yes
Mn	529	458	26	0.87	Yes
Cr	130	138	33	1.06	Yes
V	110	121	19	1.10	Yes
Ti	3360	3511	115	1.04	Yes
Ca	19100	21146	266	1.11	Yes
K	21100	15922	228	0.75	Yes
S		1229	80		No
Ba	979	974	46	1.00	Yes
Nb		7	2		No
Al	73700	45502	1671	0.62	No
P	688	549	101	0.80	Yes
Si	303000	241506	5419	0.80	Yes
Mg	14600	6343	1494	0.43	No

3. Flow chart of the analytical procedure



4. Analytical methods

The following is a short description of the methods used by the GEUS Core Analysis Laboratory. For a more detailed description of methods, instrumentation and principles of calculation the reader is referred to API recommended practice for core analysis procedure (API RP 40, 1998).

4.1 Gas permeability

Before running permeability measurements, the plugs are dried at 60 °C for 40 hours. Each plug is mounted in a Hassler core holder, and a confining pressure of 400 psi is applied to the sleeve. The specific permeability to gas is measured by flowing nitrogen gas through the plug at differential pressures between 0.0 and 0.6 bar. No back pressure is applied. Knowing the dimensions of the plug and the viscosity of the nitrogen gas the permeability to gas is calculated. The readings of the digital gas permeameter are checked regularly by measurement of permeable steel reference plugs. The flowmeters of the gas permeameter are calibrated against soap film flowmeters.

4.2 He-porosity and grain density

The porosity is measured on cleaned and dried samples. The Helium injection technique, which employs Boyle's Law, is used for grain volume determination, using a double chambered Helium porosimeter with digital readout. The bulk volume of the sample is measured by submerging the sample in a mercury bath on a balance, and using Archimedes principle. The porosity is then determined as the difference between the measured grain volume and the measured bulk volume. Grain density is calculated from the grain volume determination and the weight of the cleaned and dried sample.

4.3 Precision of analytical data

The table below gives the precision (= reproducibility) at the 68% level of confidence (+/- 1 standard deviation) for routine core analysis measurements performed at the GEUS Core Analysis Laboratory.

Table 2. Reproducibility at the 68% level of confidence for CCAL

Measurement	Range, mD	Precision
Grain density		0.003 g/cc
Porosity		0.1 porosity-%
Gas Permeability	0.001-0.01 0.01-0.1 > 0.1	25% 15% 4%

5. Results

Results are presented as follows:

- Section 5.1 presents Spectral Core Gamma results.
  The underlying data resides at the NEG-2017 Project web-site
  in the CSV-file:
  NEG-2017_Jurakløft-2_SpectralCoreGammaLog_v1.csv

- Section 5.2 presents Conventional Core Analysis results of 1" core plugs: Porosity, grain density and gas permeability. The underlying data resides at the NEG-2017 web-site
  in the Excel file:
  NEG-2017_Jurakløft-2_CCAL_v1.xlsx

- Section 5.3 presents White and UV core photographs.

- Section 5.4 presents XRF elemental analysis of core plugs. The underlying data resides at the NEG-2017 web-site in the Excel file:
  NEG-2017_Jurakløft-2_XRF_v1.xlsx

- The present report resides at the NEG-2017 web-site in the pdf-file:
  NEG-2017_Jurakløft-2_GEUS2018-13.pdf

5.1 Spectral Core Gamma Log

The table below gives the accuracy of the spectral core gamma log data as calculated from counting statistics. Please notice that the reported accuracies for the spectral core gamma log are calculated from the counting statistics at the time of scanner calibration, which takes place at the start of every scanning run. During the scanning of the Juraklöft-2 cores, the scanner was more unstable than usual, and actual reproducibility and accuracy of the Juraklöft-2 scanning was probably inferior to the data given in Table 3.

Table 3. Accuracy of spectral core gamma log data.

Spectral Core Gamma log	K (%)	U (ppm)	Th (ppm)
Reproducibility, 2σ level	0.33	4.0	4.5
Accuracy, cf. Note 1	0.33	4.0	4.5
Bulk density log	Bulk density (g/ml)		
Reproducibility, cf. Note 2	0.007		
Accuracy, cf. Note 3	0.080		

Note 1: The accuracy calculated from counting statistics was lower than the reproducibility. Because this cannot be true, the accuracy is reported to be equal to the reproducibility.

Note 2: The reported reproducibility of bulk density measurements is the standard deviation of repeated measurements of the aluminum density standard.

Note 3: The accuracy is calculated from measurements of core pieces from the Juraklöft-2 well where bulk density was also independently determined by weighing the core pieces and determining their volumes.

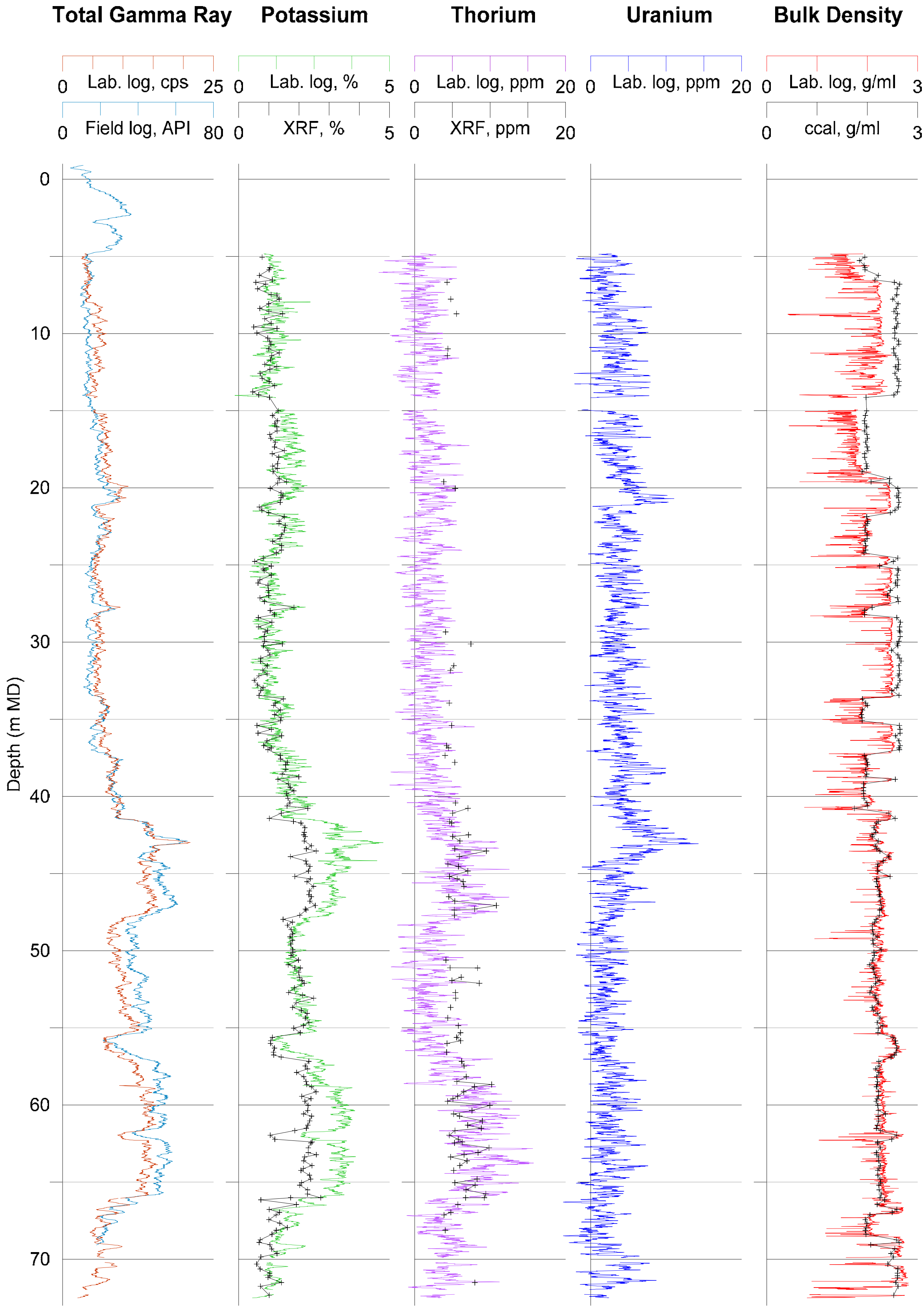


Figure 1. Spectral Core Gamma log, Field Gamma log, log of CCAL bulk density, XRF K and Th. Jurakløft-2 well.

5.2 Conventional core analysis data

Missing results are indicated with the label " #N/A ".

Table 4. Results of porosity, permeability and grain density of plug samples 1 to 56

Plug id.	Depth (m)	Orient.	Gas perm (mD)	Porosity (%)	Gr. dens. (g/ml)	Comment
1	5.05	Horiz.	4828.963	25.75	2.626	
2	5.27	Horiz.	#N/A	28.11	2.565	Perm not possible. Biased by grain loss
3	5.58	Horiz.	#N/A	24.88	2.578	Perm not possible. Biased by grain loss
4V	5.73	Vert.	2374.589	25.47	2.624	
5	5.86	Horiz.	3355.597	25.23	2.615	
6	6.23	Horiz.	123.519	16.25	2.653	
7	6.53	Horiz.	0.970	19.57	2.674	
8V	6.68	Vert.	0.144	4.93	2.670	
9	6.80	Horiz.	0.079	1.23	2.677	
10	7.10	Horiz.	0.058	2.98	2.672	
11	7.48	Horiz.	41.050	3.00	2.668	Plug fractured
12V	7.50	Vert.	0.487	3.31	2.671	
13	7.77	Horiz.	0.584	5.88	2.661	
14	8.07	Horiz.	0.055	1.90	2.663	
15	8.37	Horiz.	0.082	3.56	2.670	
16V	8.57	Vert.	0.096	5.18	2.664	
17	8.72	Horiz.	0.060	2.41	2.663	
18	9.04	Horiz.	0.053	4.02	2.674	
19	9.34	Horiz.	0.061	2.26	2.671	
20V	9.57	Vert.	0.101	3.33	2.668	
21	9.67	Horiz.	0.065	4.85	2.672	
22	9.96	Horiz.	0.079	4.47	2.669	
23	10.29	Horiz.	0.112	4.79	2.667	
24V	10.49	Vert.	0.069	1.16	2.652	
25	10.69	Horiz.	0.056	1.26	2.661	
26	10.99	Horiz.	0.113	5.53	2.669	
27	11.26	Horiz.	0.083	5.03	2.662	
28	11.43	Horiz.	0.117	3.96	2.668	
29	11.70	Horiz.	0.056	2.03	2.667	
30	12.00	Horiz.	0.059	1.41	2.660	
31V	12.15	Vert.	0.287	4.44	2.676	
32	12.31	Horiz.	0.048	1.94	2.668	
33	12.58	Horiz.	0.031	4.72	2.674	
34	12.91	Horiz.	0.037	3.27	2.681	
35V	13.10	Vert.	0.082	0.78	2.651	
36	13.38	Horiz.	0.049	0.89	2.648	
37	13.78	Horiz.	0.034	2.20	2.658	
38	13.98	Horiz.	0.065	5.18	2.666	
39V	14.14	Vert.	2426.373	25.82	2.663	
40	15.01	Horiz.	1786.139	24.47	2.631	
41	15.31	Horiz.	1559.956	25.75	2.642	
42	15.65	Horiz.	2378.991	26.31	2.633	
43V	15.83	Vert.	1666.629	26.08	2.636	
44	16.05	Horiz.	1091.114	24.51	2.635	
45	16.31	Horiz.	1382.645	26.25	2.632	
46	16.54	Horiz.	1144.900	24.70	2.646	
47	16.79	Horiz.	844.806	24.32	2.647	
48	17.04	Horiz.	1713.199	25.50	2.641	
49	17.35	Horiz.	967.331	24.31	2.638	
50V	17.59	Vert.	190.522	23.71	2.640	
51	17.79	Horiz.	1933.506	26.53	2.646	
52	18.02	Horiz.	1523.663	26.22	2.639	
53	18.43	Horiz.	1001.023	26.54	2.691	
54V	18.59	Vert.	504.817	25.26	2.674	
55	18.74	Horiz.	1121.600	24.83	2.641	
56	18.94	Horiz.	1106.053	28.01	2.633	

Table 5. Results of porosity, permeability and grain density of plug samples 57 to 112

Plug id.	Depth (m)	Orient.	Gas perm (mD)	Porosity (%)	Gr. dens. (g/ml)	Comment
57	19.41	Horiz.	0.314	8.85	2.683	
58V	19.61	Vert.	6.498	19.93	2.591	Biased by grain loss
59	19.68	Horiz.	0.256	8.96	2.678	
60	20.04	Horiz.	0.042	2.57	2.675	
61	20.33	Horiz.	0.046	1.06	2.656	
62V	20.52	Vert.	0.059	2.87	2.660	
63	20.64	Horiz.	0.035	0.88	2.641	
64	20.94	Horiz.	0.049	1.15	2.662	
65	21.24	Horiz.	0.053	2.00	2.669	
66V	21.45	Vert.	0.077	4.51	2.670	
67	21.61	Horiz.	0.251	7.59	2.659	
68	21.87	Horiz.	765.182	24.60	2.638	
69	22.17	Horiz.	787.657	23.64	2.637	
70V	22.32	Vert.	316.417	24.07	2.634	
71	22.44	Horiz.	1052.431	25.37	2.640	
72	22.74	Horiz.	1236.435	26.01	2.639	
73	23.04	Horiz.	922.193	24.58	2.645	
74V	23.29	Vert.	186.083	24.43	2.645	
75	23.47	Horiz.	3008.447	26.52	2.659	
76	23.75	Horiz.	1373.510	25.64	2.648	
77	24.03	Horiz.	1904.862	25.60	2.646	
78V	24.22	Vert.	#N/A	26.89	2.646	Perm not possible
79	24.55	Horiz.	#N/A	2.51	2.673	Perm not possible
80	24.77	Horiz.	0.090	5.73	2.671	
81	25.07	Horiz.	9.990	16.01	2.673	
82V	25.26	Vert.	0.044	2.14	2.664	
83	25.36	Horiz.	0.054	1.66	2.665	
84	25.66	Horiz.	0.050	2.90	2.669	
85	25.96	Horiz.	0.060	2.25	2.667	
86V	26.17	Vert.	0.079	4.30	2.673	
87	26.32	Horiz.	0.033	2.91	2.677	
88	26.65	Horiz.	0.158	7.45	2.655	
89	26.97	Horiz.	0.215	9.95	2.666	
90V	27.13	Vert.	0.050	2.85	2.675	
91	27.37	Horiz.	0.048	1.95	2.669	
92	27.75	Horiz.	48.135	20.66	2.642	
93	27.95	Horiz.	2891.509	25.92	2.627	
94V	28.21	Vert.	1152.460	26.10	2.634	
95	28.41	Horiz.	2.164	3.09	2.669	Inhomogeneous sample
96	28.71	Horiz.	0.042	-0.09	2.657	
97	29.01	Horiz.	0.042	0.46	2.655	
98V	29.26	Vert.	0.045	1.16	2.667	
99	29.34	Horiz.	0.045	0.78	2.673	
100	29.64	Horiz.	0.041	0.16	2.659	
101	29.94	Horiz.	0.046	0.63	2.645	
102V	30.12	Vert.	0.026	2.48	2.659	
103	30.23	Horiz.	0.046	2.10	2.664	
104	30.53	Horiz.	0.068	7.10	2.671	
105	30.83	Horiz.	0.042	1.71	2.655	
106V	31.04	Vert.	8.465	1.19	2.673	Inhomogeneous sample
107	31.23	Horiz.	0.044	0.16	2.679	
108	31.53	Horiz.	0.033	1.62	2.673	
109	31.83	Horiz.	0.037	0.52	2.653	
110V	32.06	Vert.	0.048	1.64	2.679	
111	32.18	Horiz.	0.060	2.29	2.672	
112	32.48	Horiz.	0.054	0.42	2.662	

Table 6. Results of porosity, permeability and grain density of plug samples 113 to 168

Plug id.	Depth (m)	Orient.	Gas perm (mD)	Porosity (%)	Gr. dens. (g/ml)	Comment
113	32.78	Horiz.	0.062	2.07	2.661	
114V	32.96	Vert.	0.051	2.92	2.662	
115	33.15	Horiz.	0.112	6.70	2.667	
116	33.45	Horiz.	0.056	1.49	2.671	
117	33.68	Horiz.	1453.043	27.87	2.639	
118V	33.95	Vert.	788.279	25.15	2.631	
119	34.10	Horiz.	378.143	23.89	2.634	
120	34.40	Horiz.	1805.978	27.59	2.630	
121	34.70	Horiz.	1936.492	28.87	2.646	
122V	34.90	Vert.	312.044	27.61	2.625	
123	35.10	Horiz.	1264.965	28.03	2.637	
124	35.40	Horiz.	0.055	1.47	2.677	
125	35.65	Horiz.	0.050	0.46	2.662	
126V	35.90	Vert.	0.048	0.29	2.659	
127	36.07	Horiz.	0.058	2.05	2.613	
128	36.40	Horiz.	0.040	1.13	2.659	
129	36.71	Horiz.	0.054	0.65	2.671	
130V	36.86	Vert.	0.036	1.73	2.675	
131	36.97	Horiz.	0.053	1.73	2.687	
132	37.35	Horiz.	1200.487	27.00	2.660	
133	37.58	Horiz.	825.406	25.29	2.644	
134V	37.79	Vert.	428.813	24.58	2.647	
135	37.95	Horiz.	599.296	24.35	2.652	
136	38.25	Horiz.	638.682	26.17	2.659	
137	38.55	Horiz.	578.664	25.25	2.663	
138V	38.73	Vert.	126.912	25.67	2.652	
139	38.89	Horiz.	0.459	4.47	2.677	
140	39.19	Horiz.	838.077	27.25	2.646	
141	39.43	Horiz.	735.684	27.30	2.650	
142V	39.64	Vert.	536.215	27.29	2.644	
143	39.82	Horiz.	666.303	26.89	2.635	
144	40.12	Horiz.	387.945	26.66	2.637	
145	40.42	Horiz.	228.902	24.74	2.646	
146V	40.62	Vert.	74.745	23.73	2.633	
147	40.77	Horiz.	39.035	31.89	2.559	Biased by grain loss
148	41.09	Horiz.	1.671	9.28	2.674	
149	41.43	Horiz.	0.103	4.55	2.676	
150V	41.62	Vert.	1.643	15.79	2.635	
151	41.73	Horiz.	7.301	16.90	2.629	
152	42.03	Horiz.	10.722	19.40	2.646	
153	42.33	Horiz.	7.423	18.12	2.649	
154V	42.49	Vert.	15.362	20.72	2.641	
155	42.60	Horiz.	15.321	20.72	2.648	
156	42.89	Horiz.	1.145	16.78	2.666	
157	43.20	Horiz.	4.442	19.33	2.671	
158V	43.40	Vert.	4.283	17.48	2.651	
159	43.54	Horiz.	1.894	14.18	2.622	
160	43.90	Horiz.	1.148	9.02	2.672	
161	44.19	Horiz.	3.048	12.93	2.662	
162V	44.38	Vert.	1.795	16.57	2.652	
163	44.54	Horiz.	5.096	16.98	2.652	
164	44.84	Horiz.	2.879	16.87	2.658	
165	45.19	Horiz.	0.276	8.43	2.679	
166V	45.34	Vert.	1.614	17.37	2.650	
167	45.53	Horiz.	4.297	17.68	2.646	
168	45.83	Horiz.	4.700	16.79	2.648	

Table 7. Results of porosity, permeability and grain density of plug samples 169 to 224

Plug id.	Depth (m)	Orient.	Gas perm (mD)	Porosity (%)	Gr. dens. (g/ml)	Comment
169	46.13	Horiz.	1.477	15.70	2.653	
170V	46.37	Vert.	0.457	16.08	2.665	
171	46.50	Horiz.	0.733	14.55	2.640	
172	46.79	Horiz.	0.442	14.29	2.633	
173	47.07	Horiz.	0.271	13.33	2.627	
174V	47.30	Vert.	0.183	13.48	2.634	
175	47.36	Horiz.	1.191	14.59	2.631	
176	47.70	Horiz.	1.112	15.07	2.640	
177	47.97	Horiz.	10.415	17.43	2.636	
178V	48.15	Vert.	3.301	18.48	2.634	
179	48.35	Horiz.	22.812	19.87	2.619	
180	48.63	Horiz.	36.644	20.57	2.646	
181	48.91	Horiz.	15.265	19.85	2.640	
182V	49.10	Vert.	1.720	16.94	2.647	
183	49.33	Horiz.	35.570	20.38	2.649	
184	49.57	Horiz.	18.322	19.74	2.639	
185	49.93	Horiz.	3.076	14.60	2.668	
186V	50.10	Vert.	5.430	19.05	2.634	
187	50.31	Horiz.	10.021	18.49	2.628	
188	50.61	Horiz.	25.613	19.63	2.624	
189	50.91	Horiz.	162.267	22.68	2.640	
190V	51.11	Vert.	4.736	18.85	2.627	
191	51.12	Horiz.	18.491	19.50	2.619	
192	51.39	Horiz.	91.971	19.35	2.648	
193	51.72	Horiz.	5.117	18.10	2.643	
194V	51.93	Vert.	0.621	15.69	2.659	
195	52.11	Horiz.	6.683	17.61	2.629	
196	52.41	Horiz.	100.441	21.03	2.637	
197	52.71	Horiz.	57.024	21.63	2.618	
198V	52.88	Vert.	1.705	18.19	2.628	
199	53.08	Horiz.	89.322	17.94	2.646	
200	53.38	Horiz.	3.705	15.67	2.628	
201	53.68	Horiz.	38.120	20.81	2.648	
202V	53.86	Vert.	3.149	19.35	2.630	
203	54.06	Horiz.	3.007	16.24	2.633	
204	54.36	Horiz.	0.919	13.99	2.623	
205	54.66	Horiz.	4.250	16.51	2.630	
206V	54.86	Vert.	0.156	11.86	2.617	
207	55.02	Horiz.	1.579	15.95	2.640	
208	55.32	Horiz.	4.065	16.14	2.638	
209	55.62	Horiz.	0.071	4.49	2.628	
210V	55.84	Vert.	0.071	3.19	2.642	
211	56.01	Horiz.	0.055	1.76	2.613	
212	56.31	Horiz.	0.052	1.93	2.640	
213	56.58	Horiz.	0.086	3.62	2.672	
214V	56.76	Vert.	0.093	4.56	2.657	
215	56.89	Horiz.	0.301	7.52	2.672	
216	57.17	Horiz.	6.762	15.02	2.623	
217	57.47	Horiz.	1.951	15.03	2.629	
218V	57.66	Vert.	3.386	17.83	2.635	
219	57.89	Horiz.	3.894	15.27	2.635	
220	58.17	Horiz.	9.639	16.95	2.633	
221	58.48	Horiz.	5.078	15.80	2.620	
222V	58.67	Vert.	1.437	15.64	2.602	
223	58.82	Horiz.	11.267	16.26	2.604	
224	59.15	Horiz.	14.289	14.16	2.594	

Table 8. Results of porosity, permeability and grain density of plug samples 225 to 278

Plug id.	Depth (m)	Orient.	Gas perm (mD)	Porosity (%)	Gr. dens. (g/ml)	Comment
225	59.44	Horiz.	4.825	14.92	2.613	
226V	59.59	Vert.	1.512	15.60	2.602	
227	59.76	Horiz.	20.037	16.57	2.609	
228	60.03	Horiz.	16.125	14.81	2.595	
229	60.36	Horiz.	8.547	14.54	2.596	
230V	60.58	Vert.	0.256	10.48	2.636	
231	60.72	Horiz.	10.499	15.39	2.617	
232	61.03	Horiz.	2.495	14.35	2.600	
233	61.31	Horiz.	10.382	15.80	2.610	
234V	61.51	Vert.	1.163	16.37	2.608	
235	61.66	Horiz.	3.070	14.12	2.629	
236	61.96	Horiz.	0.057	1.68	2.628	
237	62.22	Horiz.	0.073	4.92	2.614	
238V	62.40	Vert.	0.265	14.66	2.588	
239	62.46	Horiz.	4.631	14.80	2.585	
240	62.78	Horiz.	0.280	12.86	2.595	
241	63.09	Horiz.	12.245	16.05	2.596	
242V	63.22	Vert.	0.437	15.89	2.597	
243	63.37	Horiz.	4.675	15.14	2.624	
244	63.62	Horiz.	0.740	14.19	2.594	
245	63.93	Horiz.	0.853	13.21	2.608	
246V	64.12	Vert.	0.179	13.53	2.581	
247	64.24	Horiz.	9.124	15.20	2.600	
248	64.55	Horiz.	9.030	15.22	2.603	
249	64.80	Horiz.	2.110	13.15	2.597	
250V	65.04	Vert.	0.122	12.38	2.586	
251	65.20	Horiz.	2.584	14.55	2.609	
252	65.50	Horiz.	5.555	14.24	2.605	
253	65.77	Horiz.	0.499	11.76	2.581	
254V	66.01	Vert.	0.105	12.96	2.589	Inhomogeneous sample, two lithologies
255	66.15	Horiz.	38.806	11.16	2.640	
256	66.45	Horiz.	27.092	16.65	2.634	
257	66.77	Horiz.	5.858	2.76	2.662	Inhomogeneous sample
258V	66.96	Vert.	0.070	6.32	2.662	
259	67.13	Horiz.	364.409	22.09	2.635	
260	67.43	Horiz.	4294.668	25.62	2.633	
261	67.66	Horiz.	2302.770	25.00	2.659	
262V	67.95	Vert.	2033.327	25.04	2.638	
263	68.12	Horiz.	1606.781	25.80	2.640	
264	68.38	Horiz.	2142.061	25.10	2.633	
265	68.74	Horiz.	0.051	2.36	2.639	
266V	68.91	Vert.	0.056	0.85	2.657	
267	69.06	Horiz.	5.070	21.49	2.634	
268	69.33	Horiz.	0.082	4.13	2.657	
269	69.63	Horiz.	0.163	7.20	2.660	
270V	69.85	Vert.	0.063	5.45	2.666	
271	70.31	Horiz.	#N/A	9.48	2.660	Perm not possible - irregular plug
272	70.63	Horiz.	0.065	1.39	2.646	
273	70.90	Horiz.	0.059	2.27	2.660	
274V	71.06	Vert.	0.055	2.49	2.665	
275	71.17	Horiz.	0.066	1.46	2.641	
276	71.51	Horiz.	0.076	1.56	2.607	
277	71.75	Horiz.	0.062	1.76	2.659	
278	72.33	Horiz.	0.085	5.24	2.665	

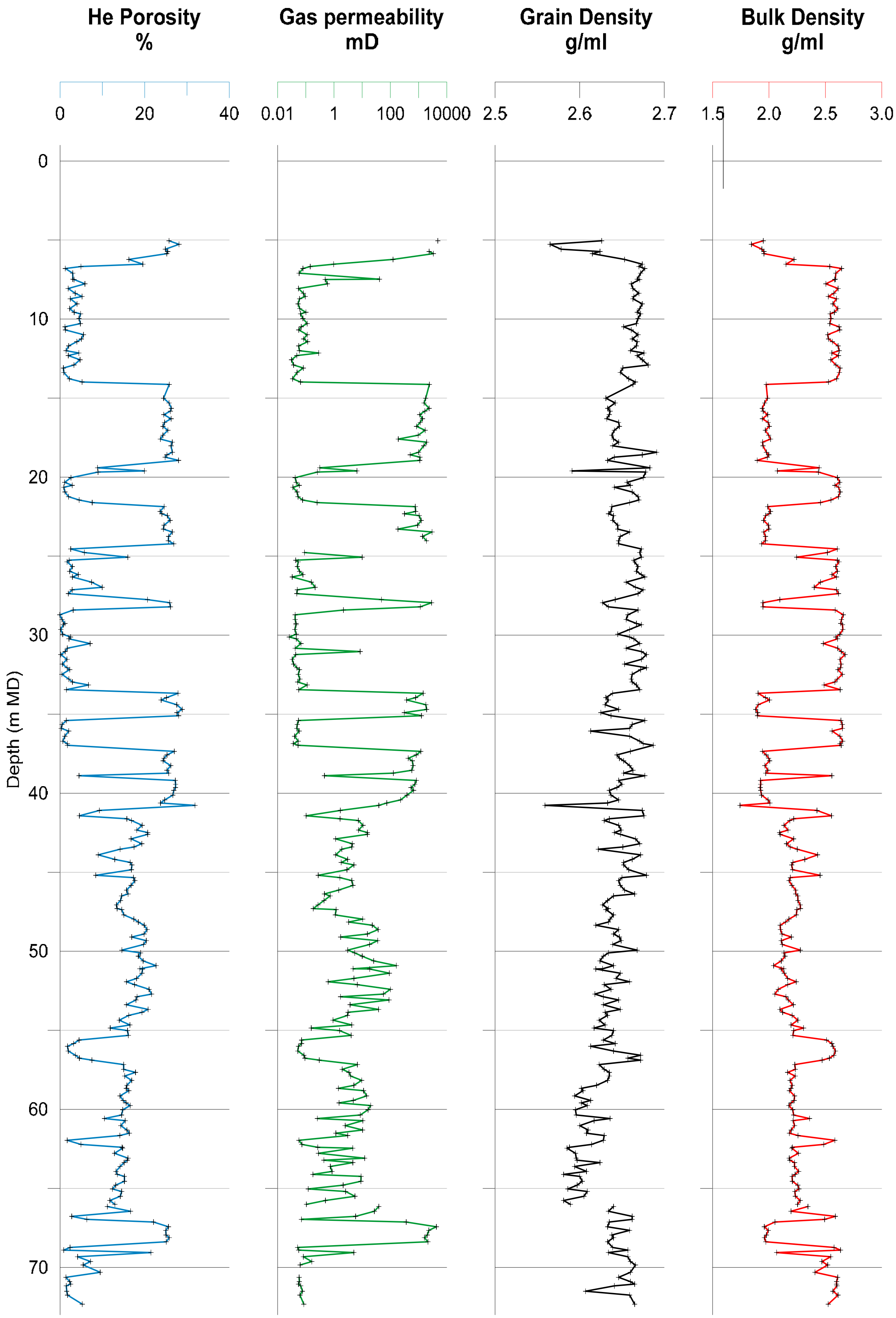


Figure 2. Log of Conventional Core Analysis results. Jurakløft-2 well.

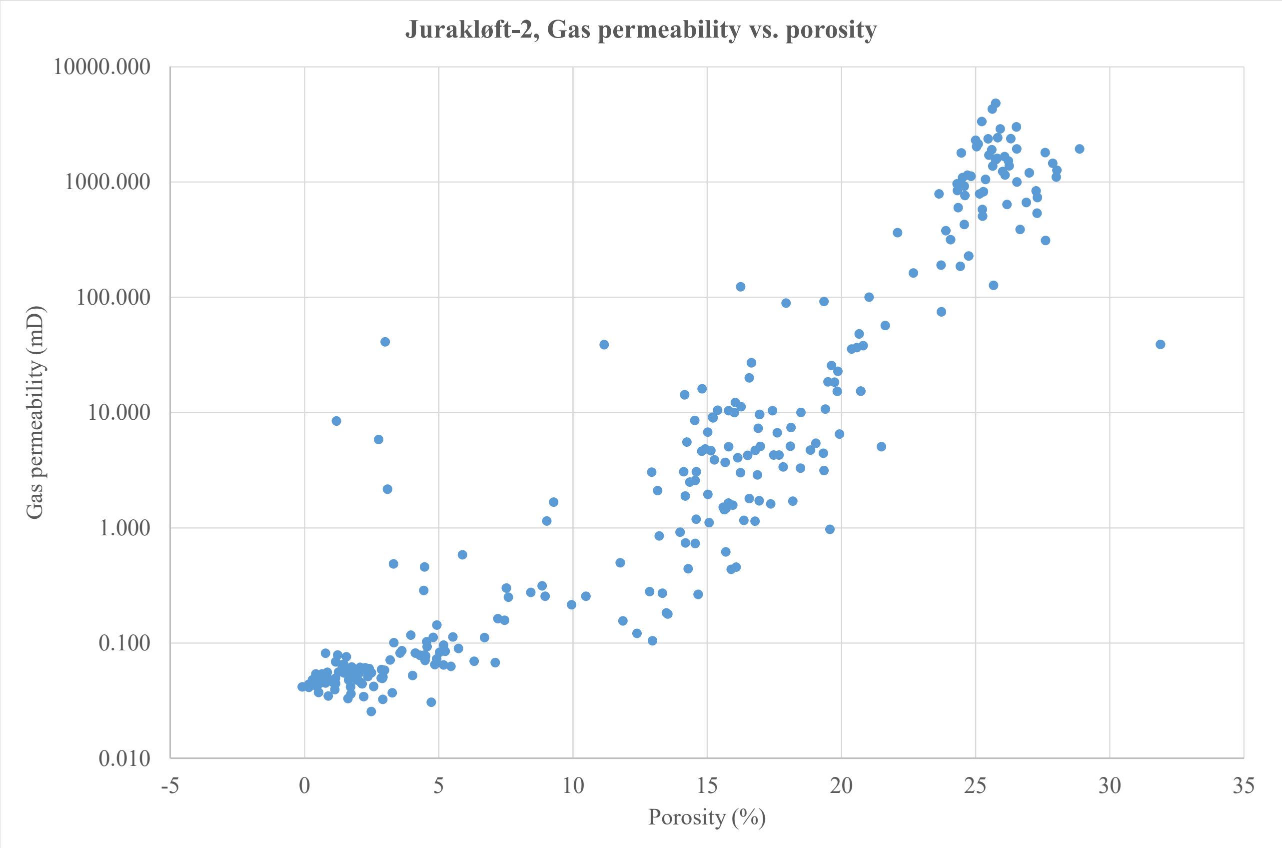


Figure 3. Permeability versus Porosity

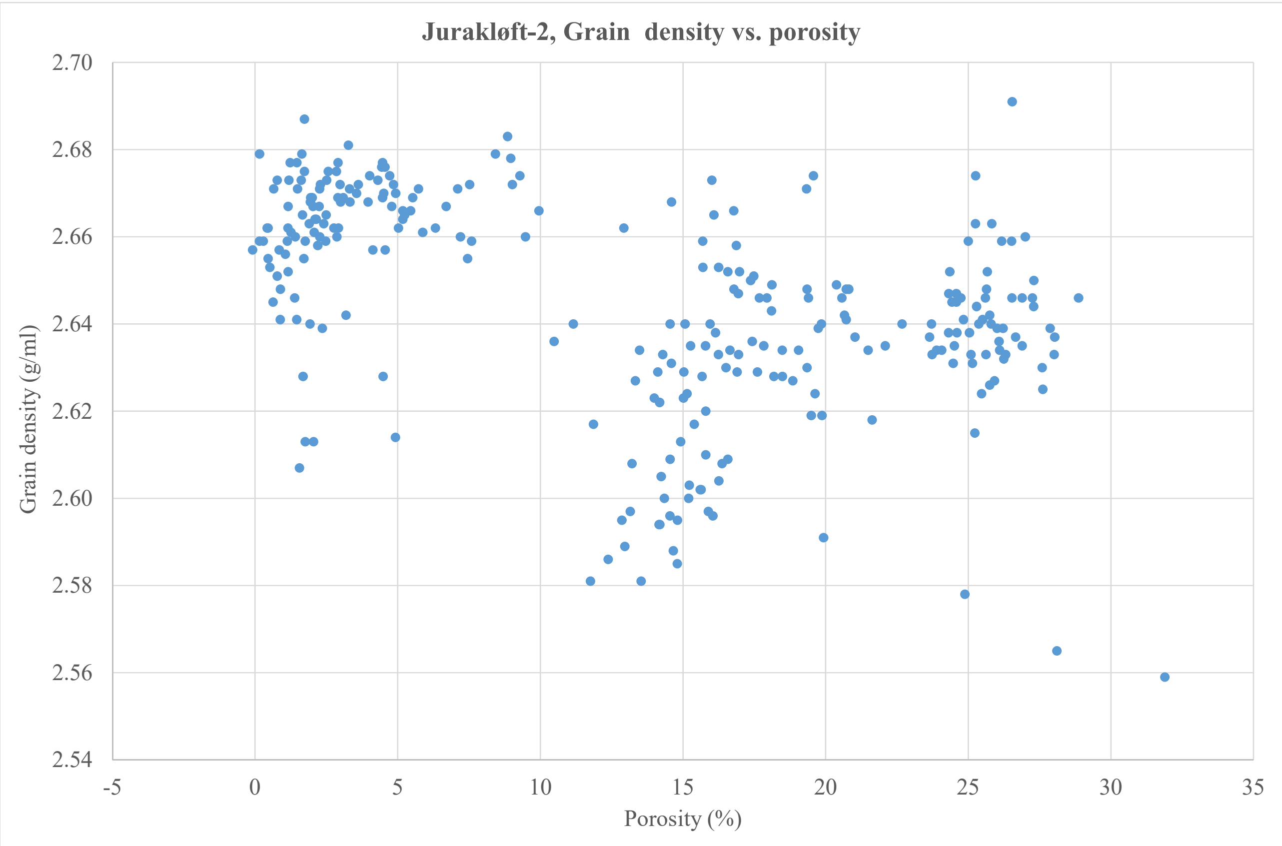


Figure 4. Grain density versus Porosity

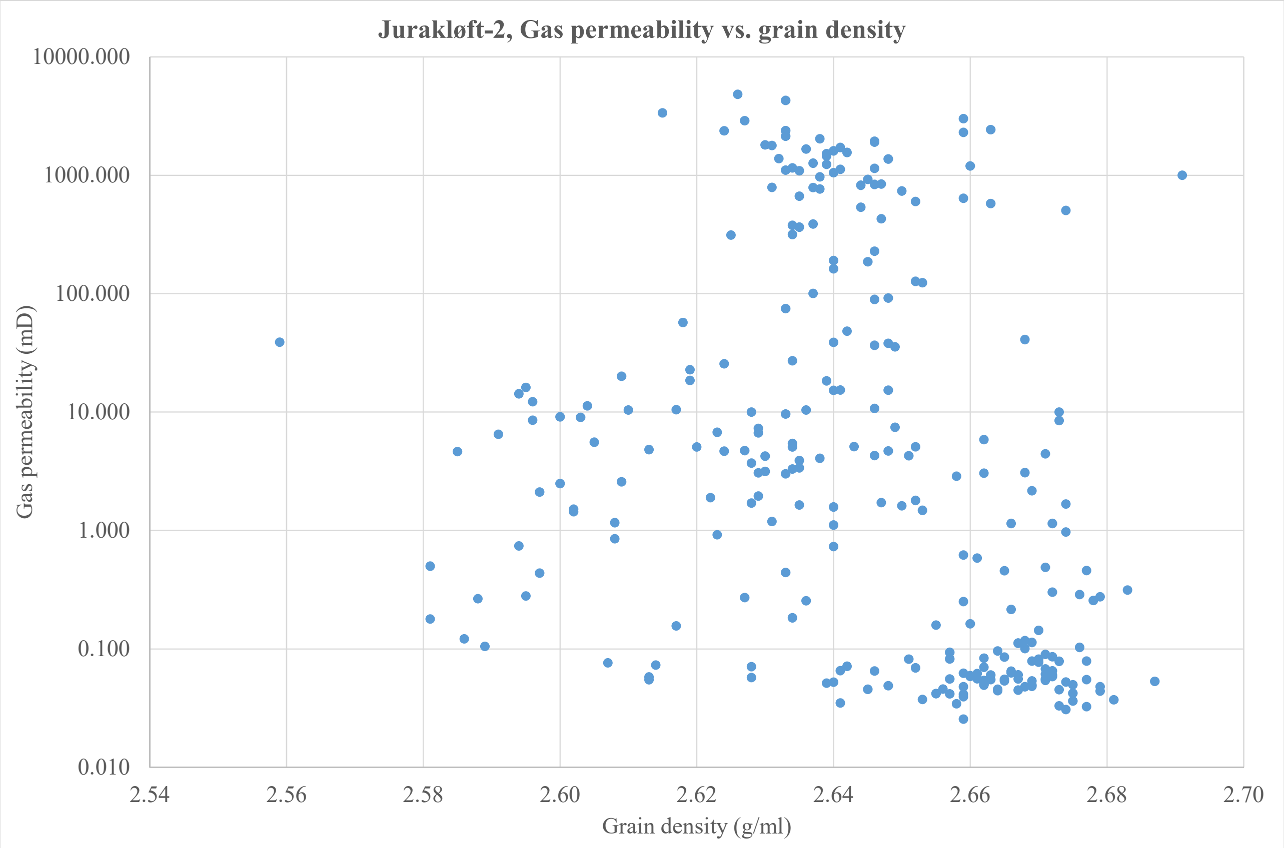


Figure 5. Permeability versus Grain density

5.3 White and UV core photos

Please notice that the depth labels at the bottom of the photographs reports depths values that were revised after the photography session. Therefore, the depth labels of the photographs should not be used for reference. Instead, use the depth values given in figure text.

Figure 6. Photo of box 1, white light, depth interval 4.83 – 11.30 m MD

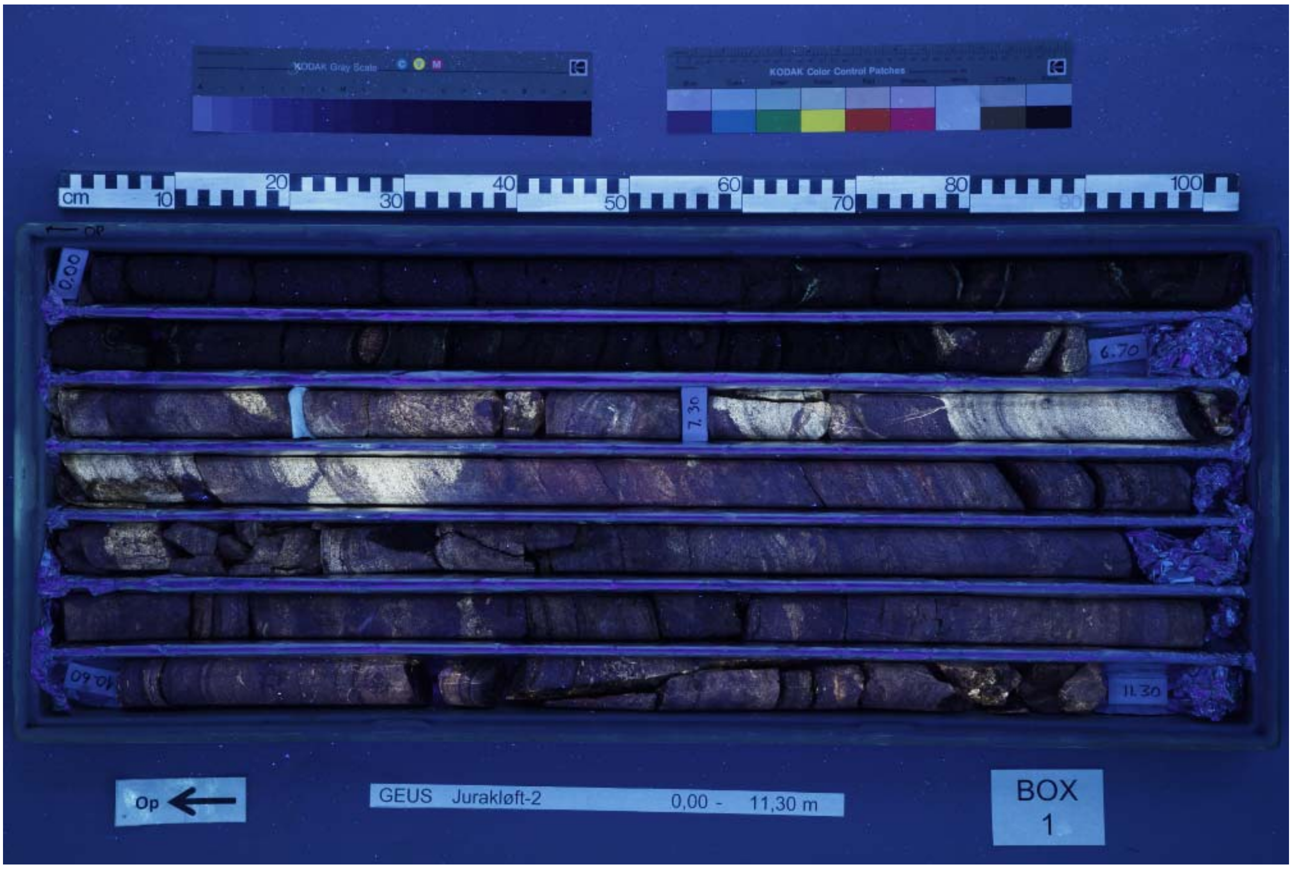


Figure 7. Photo of box 1, UV light, depth interval 4.83 – 11.30 m MD

Figure 8. Photo of box 2, white light, depth interval 11.30 – 18.63 m MD

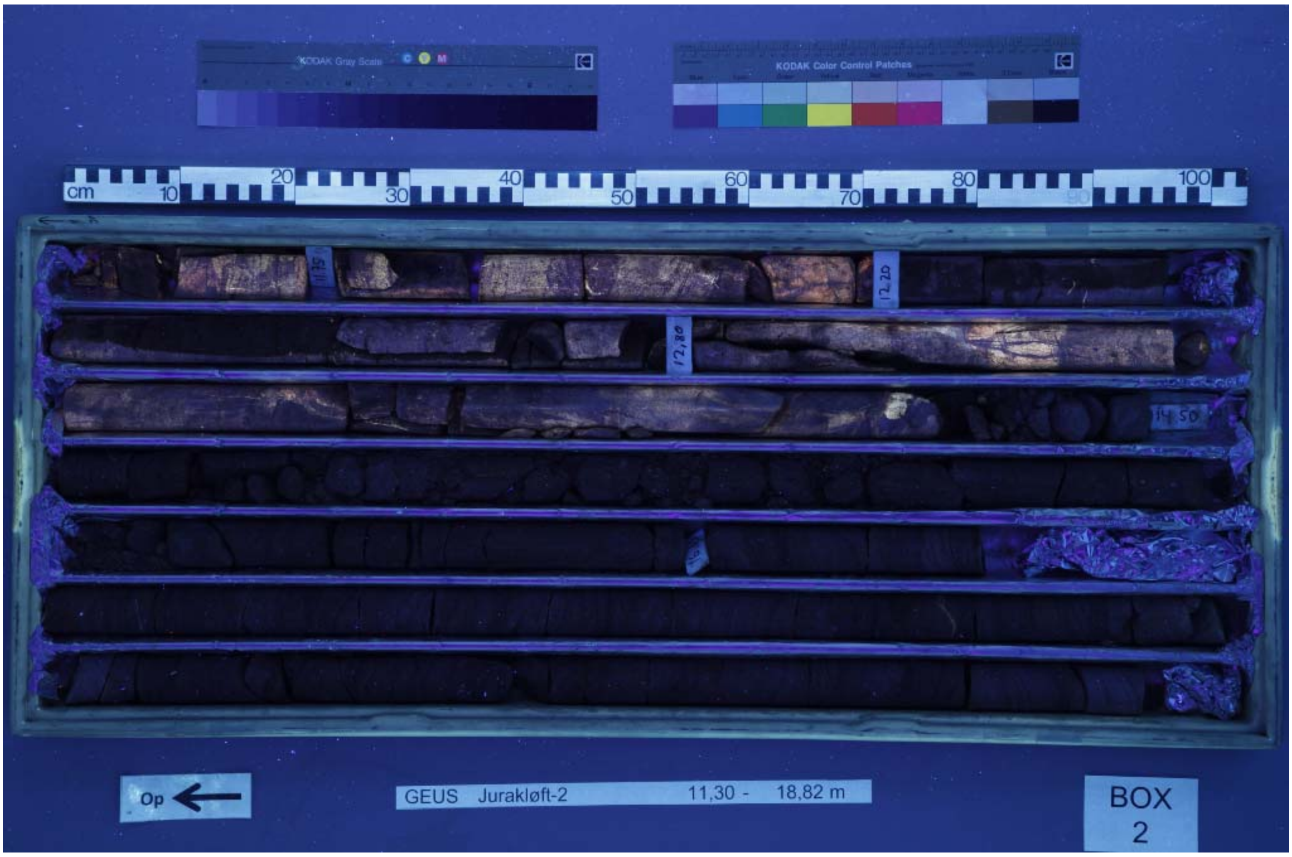


Figure 9. Photo of box 2, UV light, depth interval 11.30 – 18.63 m MD

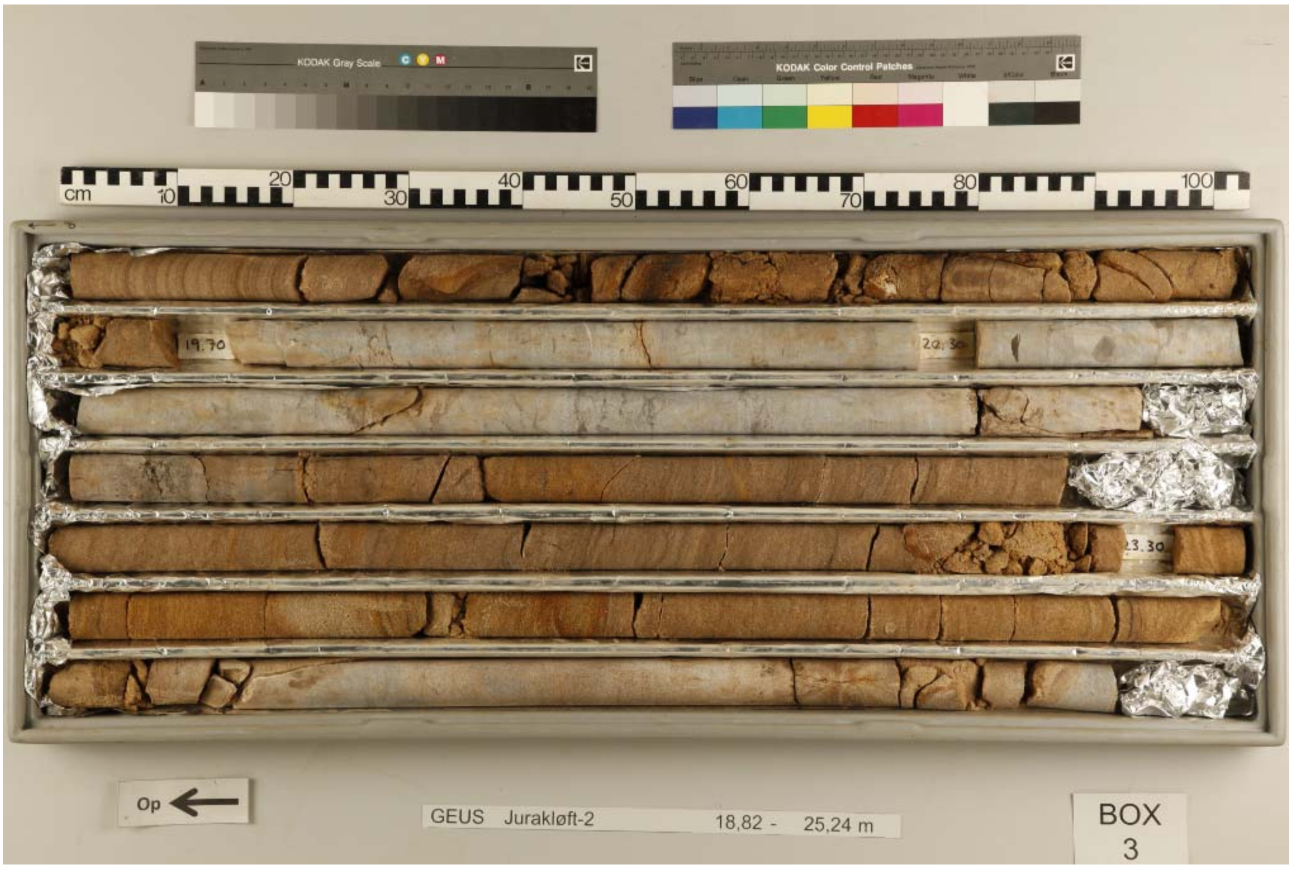


Figure 10. Photo of box 3, white light, depth interval 18.63 – 25.29 m MD

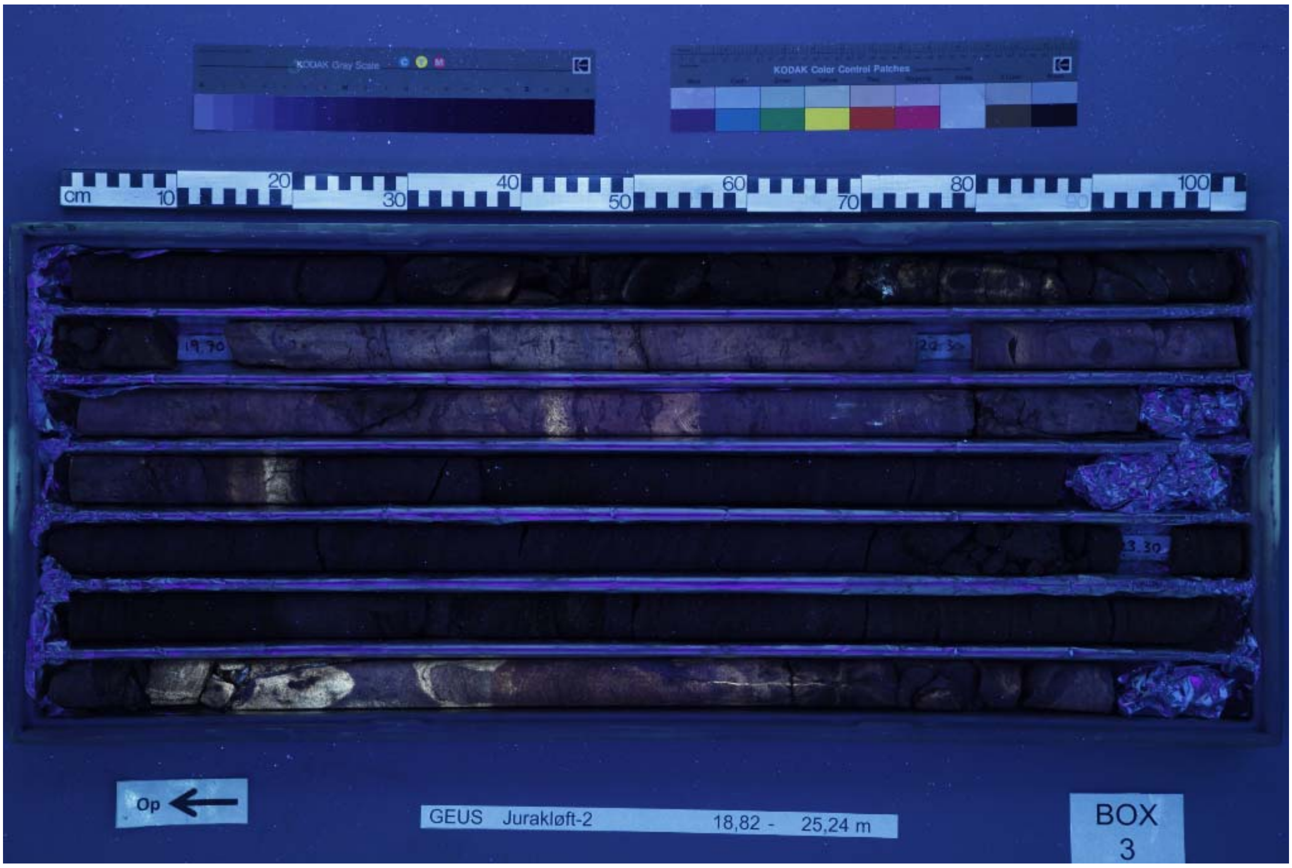


Figure 11. Photo of box 3, UV light, depth interval 18.63 – 25.29 m MD

Figure 12. Photo of box 4, white light, depth interval 25.29 – 32.08 m MD

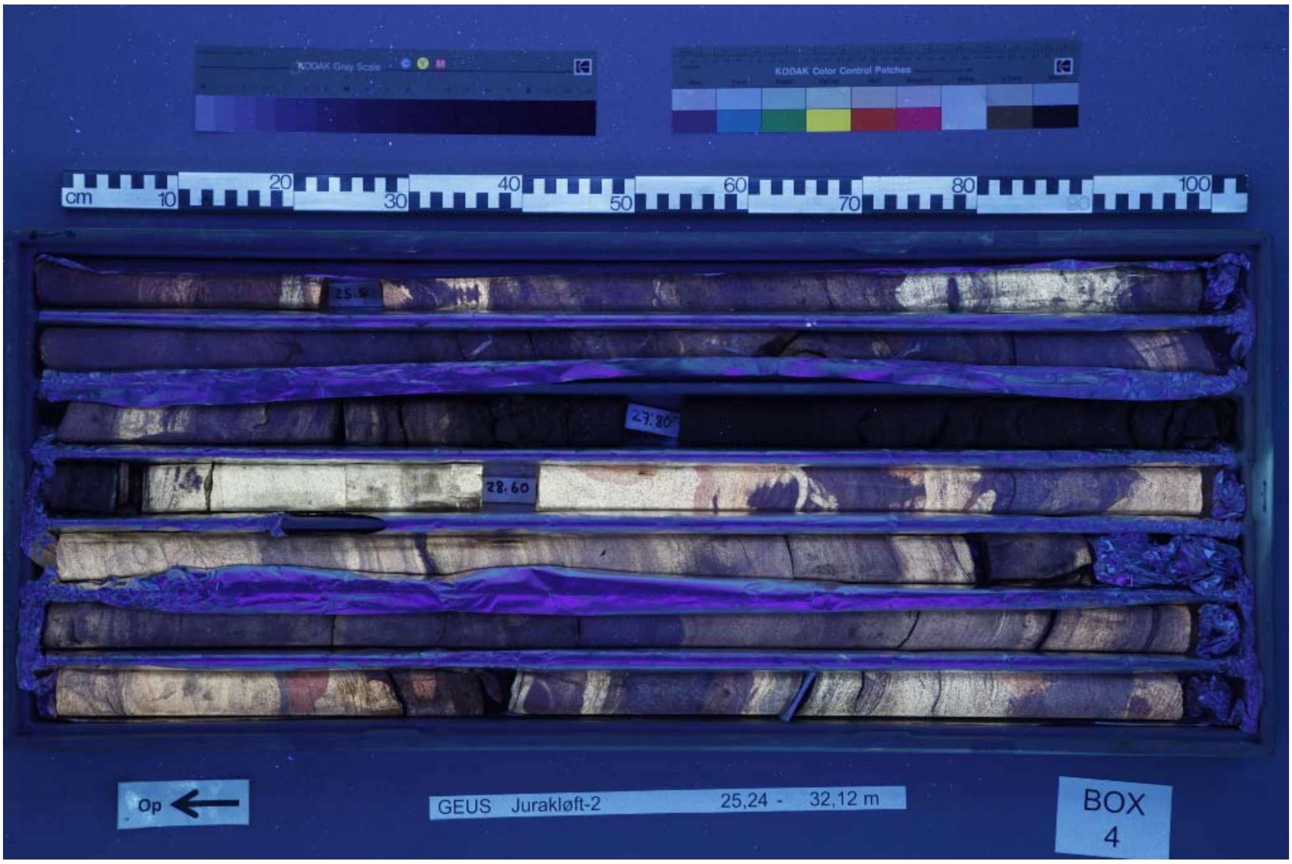


Figure 13. Photo of box 4, UV light, depth interval 25.29 – 32.08 m MD

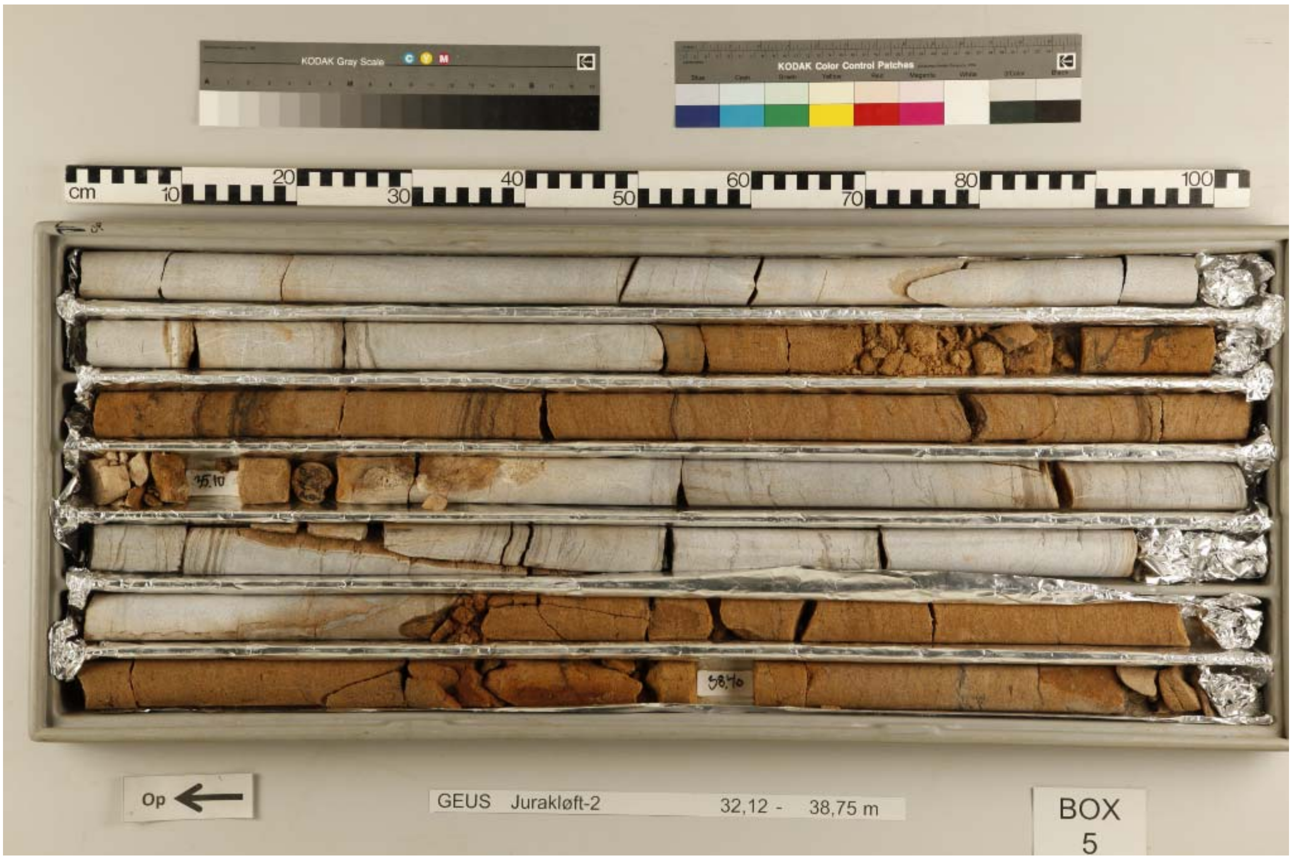


Figure 14. Photo of box 5, white light, depth interval 32.08 – 38.79 m MD

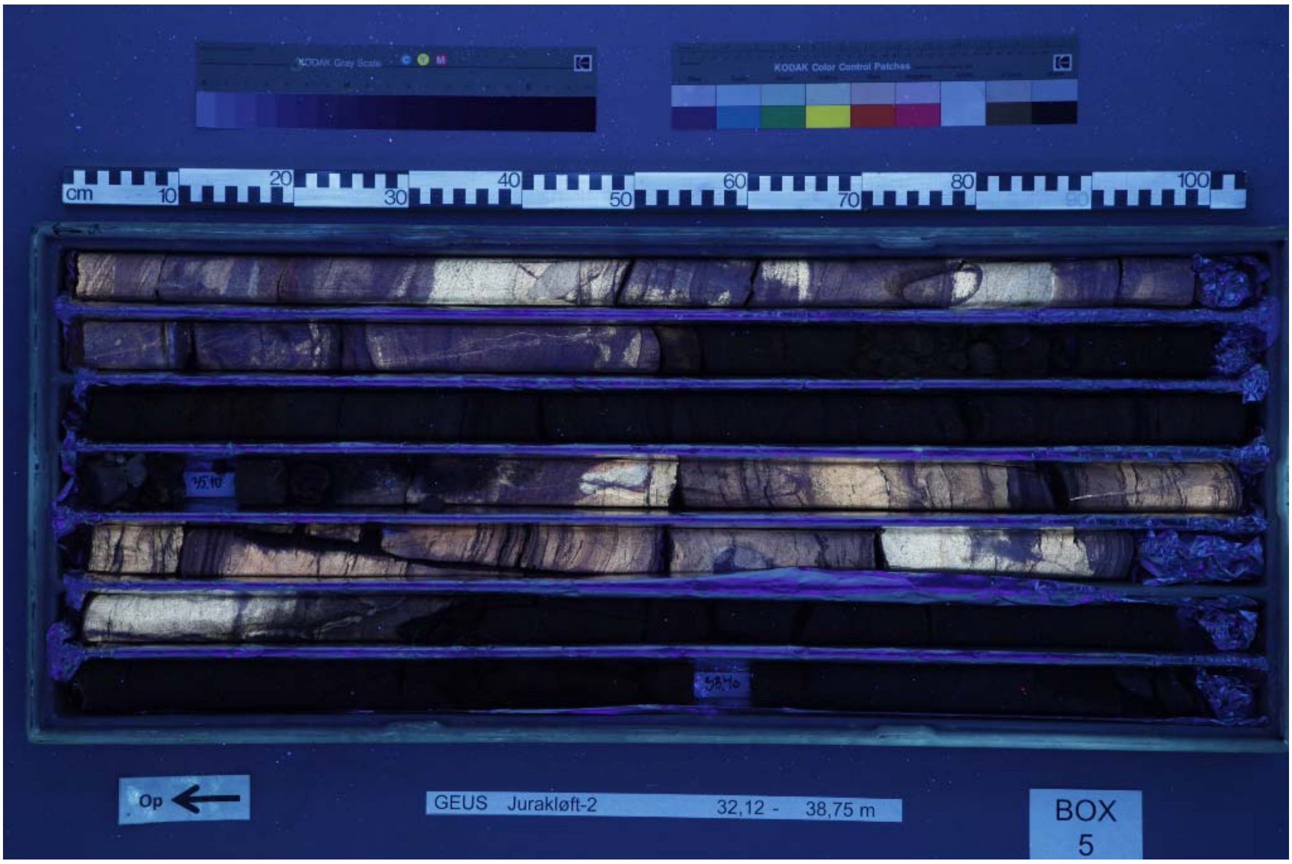


Figure 15. Photo of box 5, UV light, depth interval 32.08 – 38.79 m MD

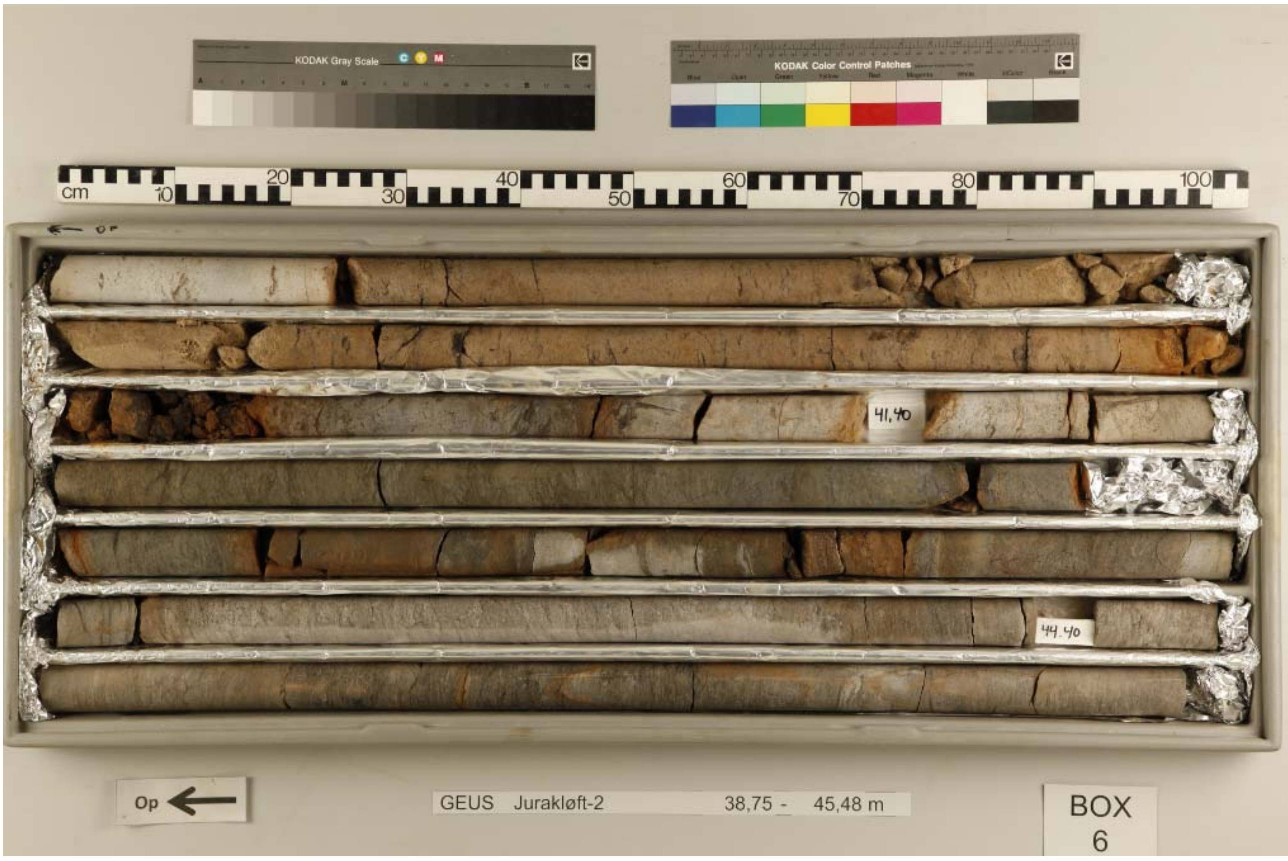


Figure 16. Photo of box 6, white light, depth interval 38.79 – 45.43 m MD

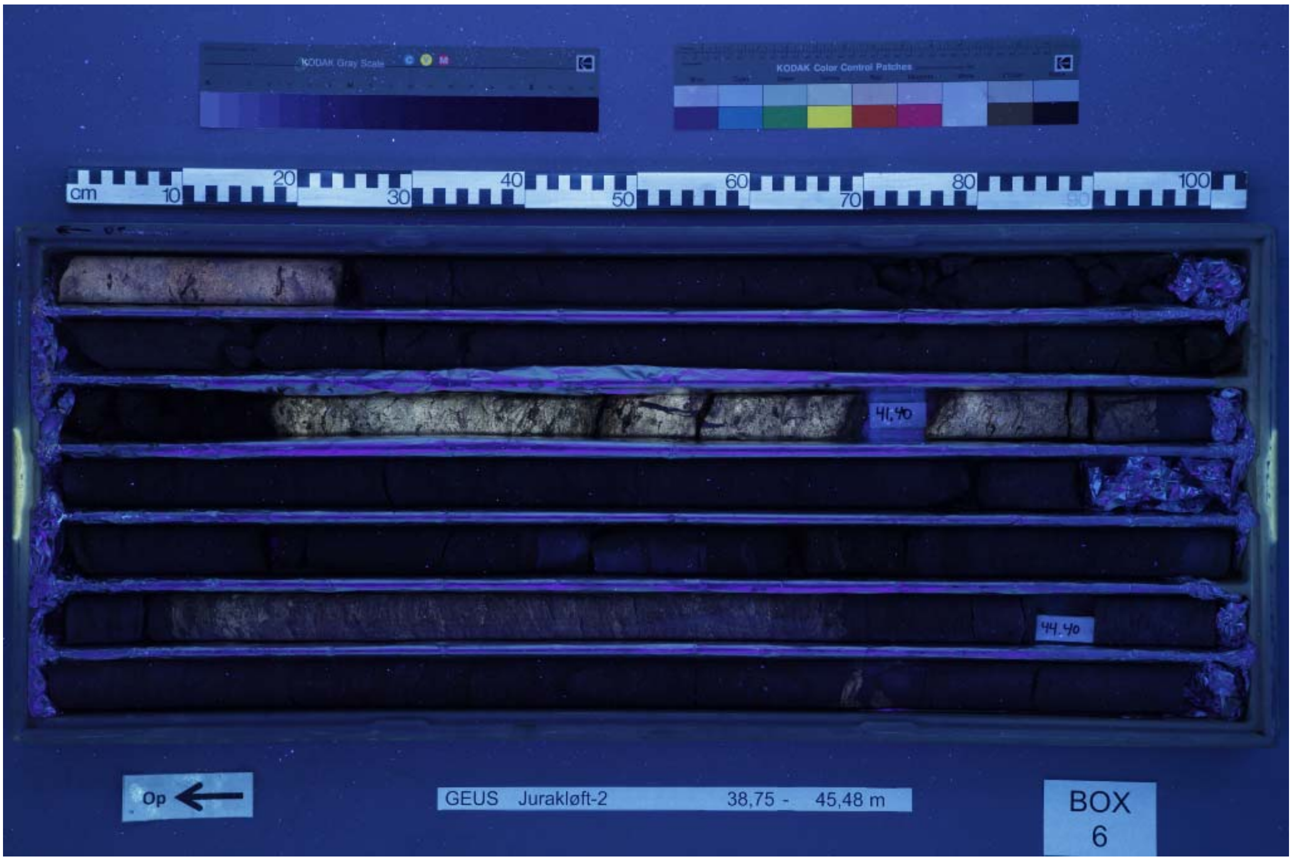


Figure 17. Photo of box 6, UV light, depth interval 38.79 – 45.43 m MD

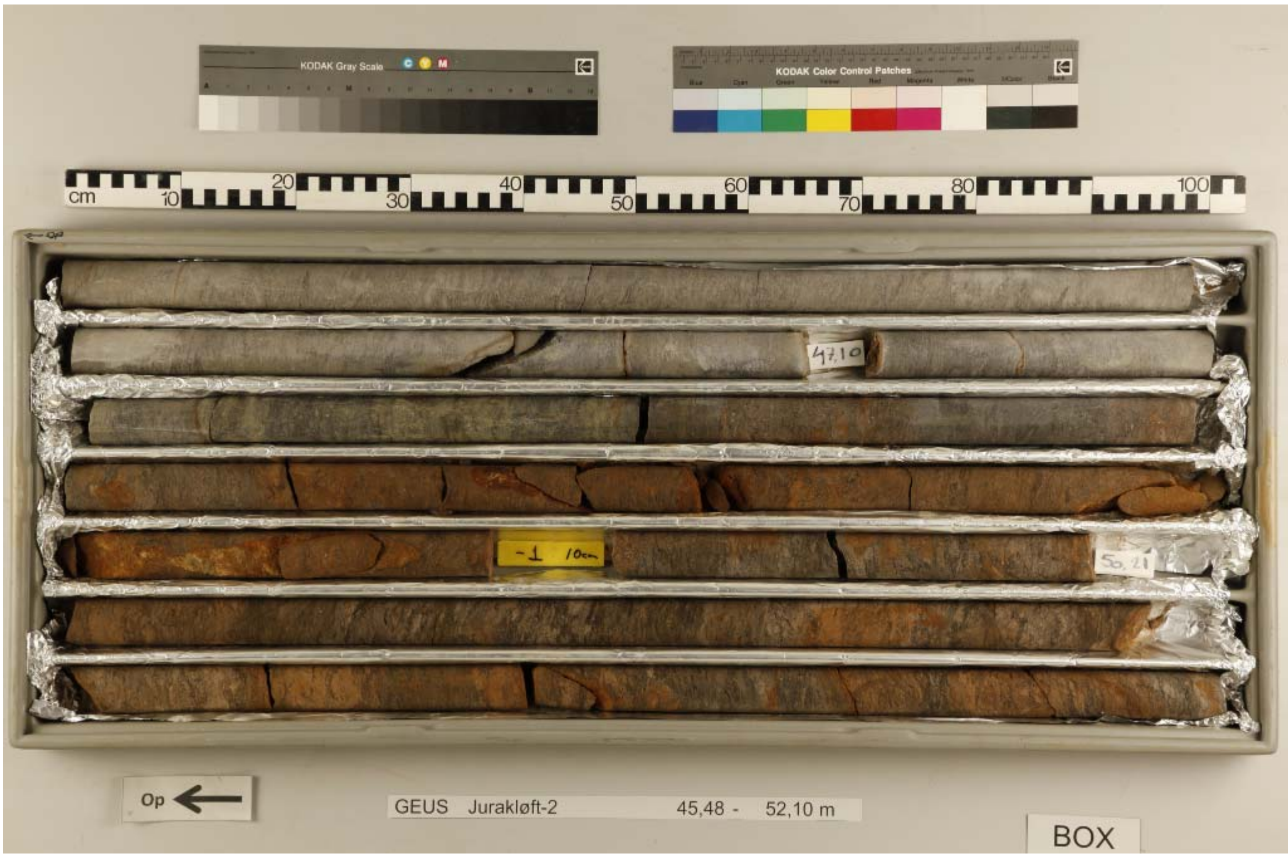


Figure 18. Photo of box 7, white light, depth interval 45.43 – 52.01 m MD

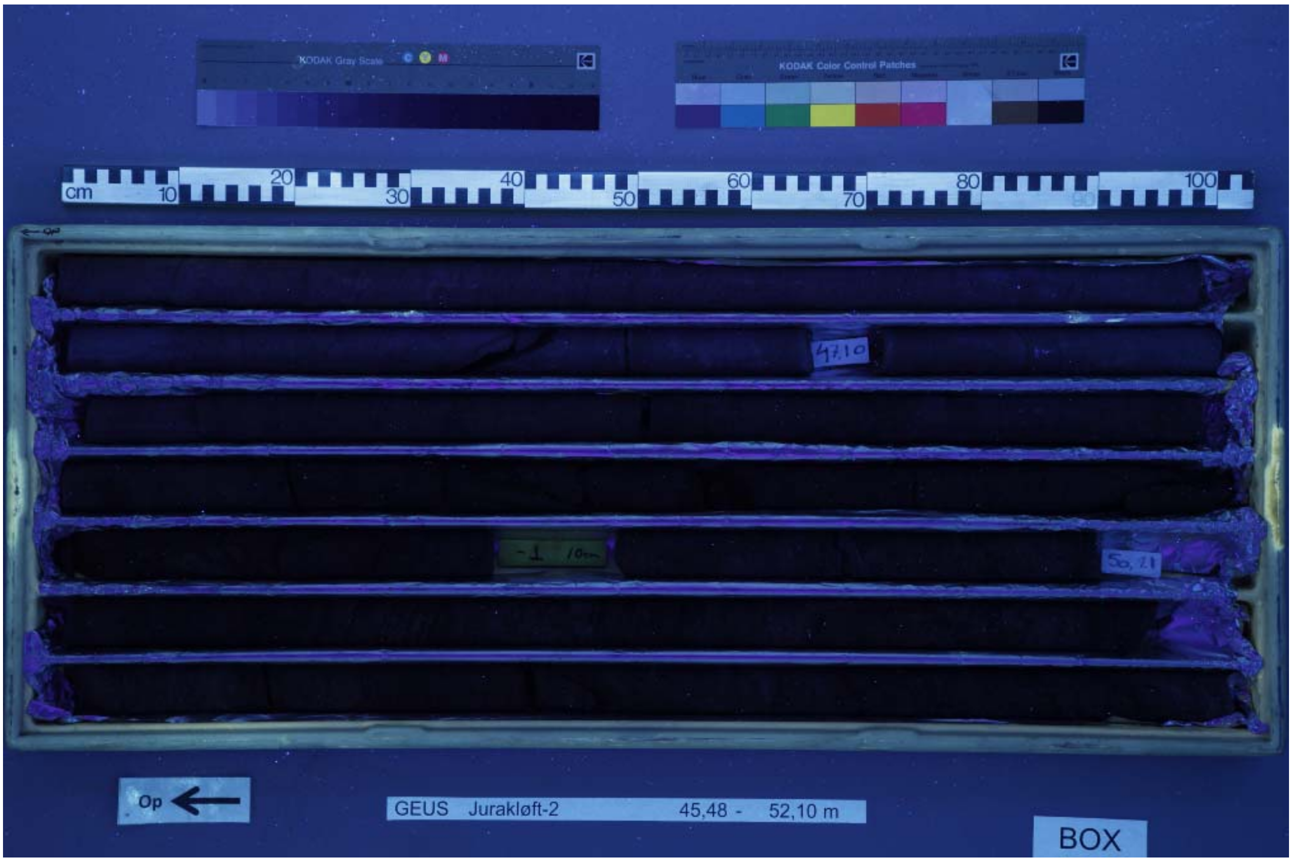


Figure 19. Photo of box 7, UV light, depth interval 45.43 – 52.01 m MD

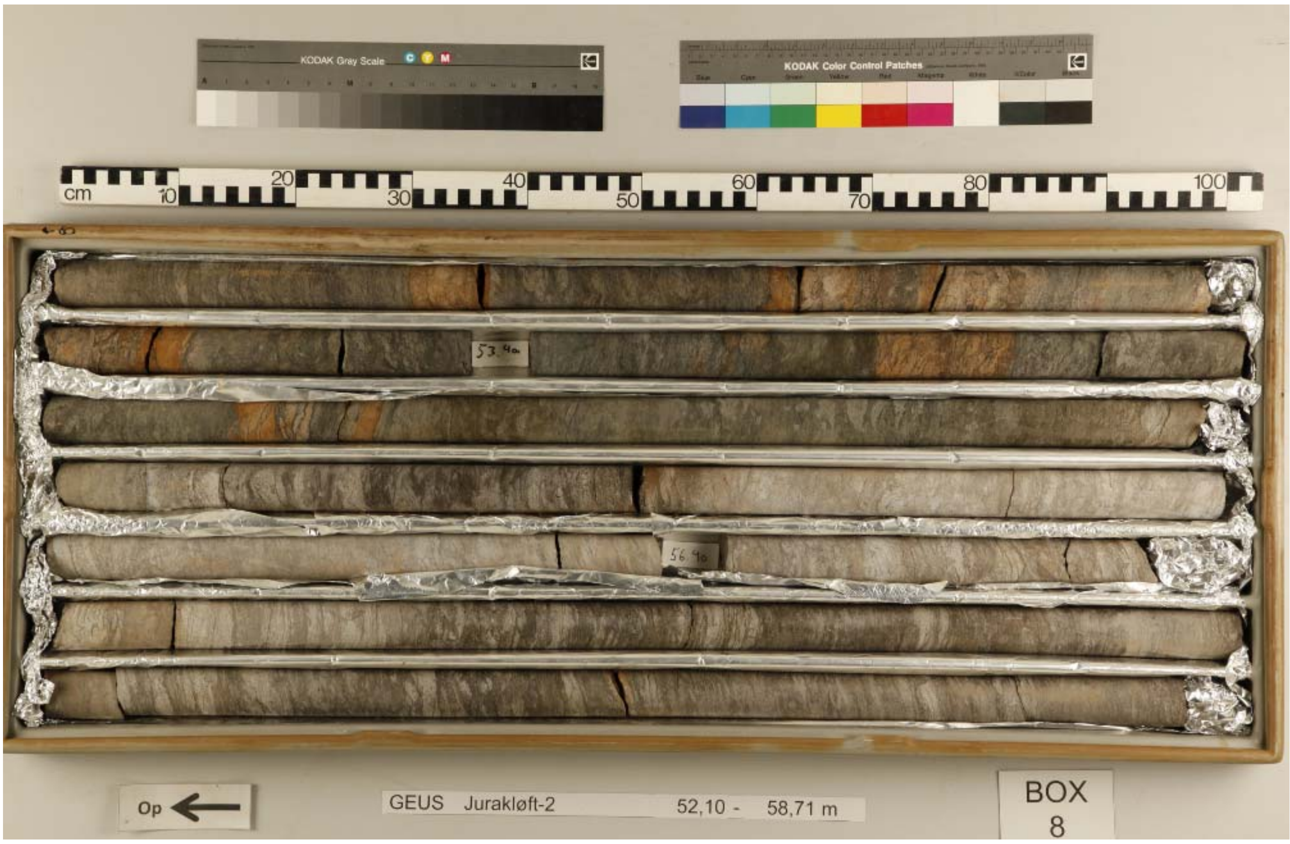


Figure 20. Photo of box 8, white light, depth interval 52.01 – 58.72 m MD

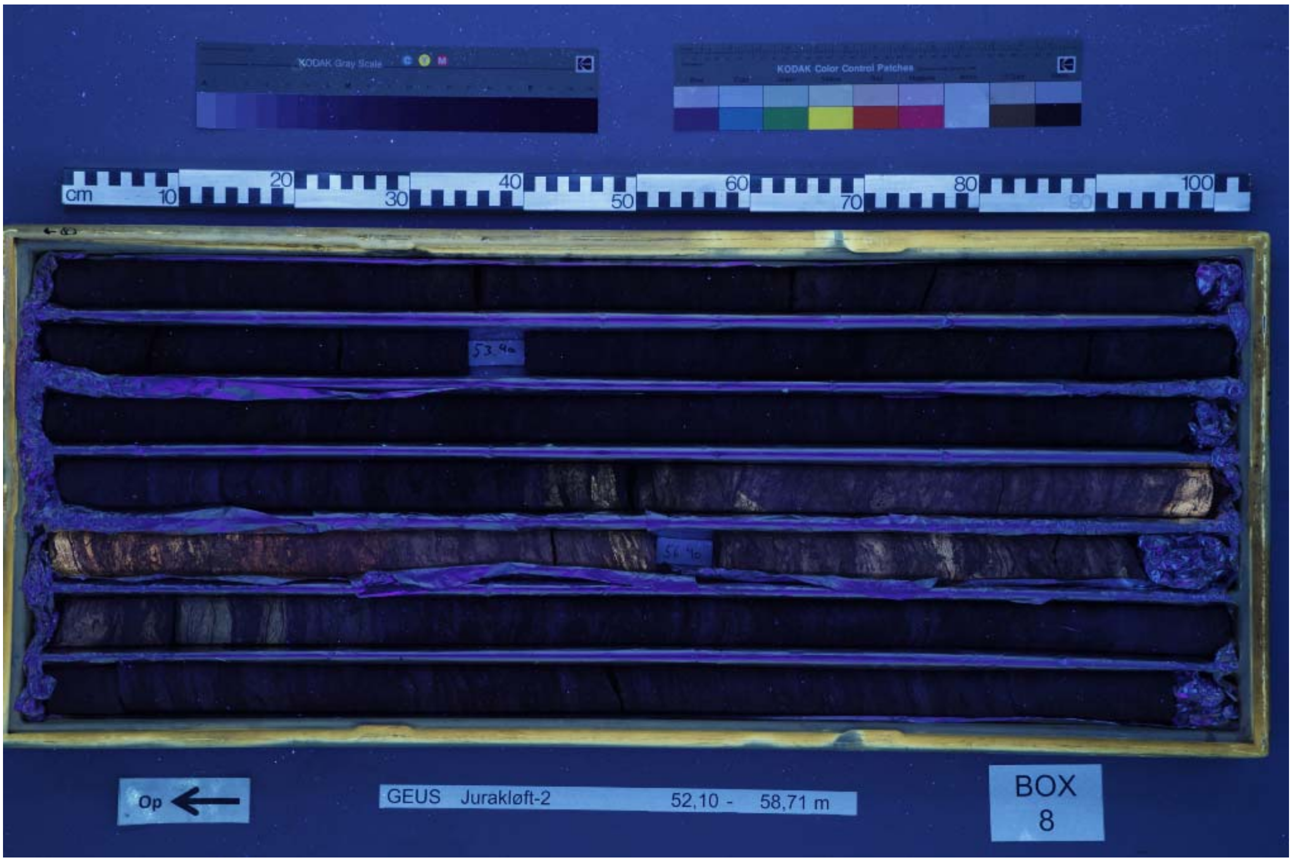


Figure 21. Photo of box 8, UV light, depth interval 52.01 – 58.72 m MD

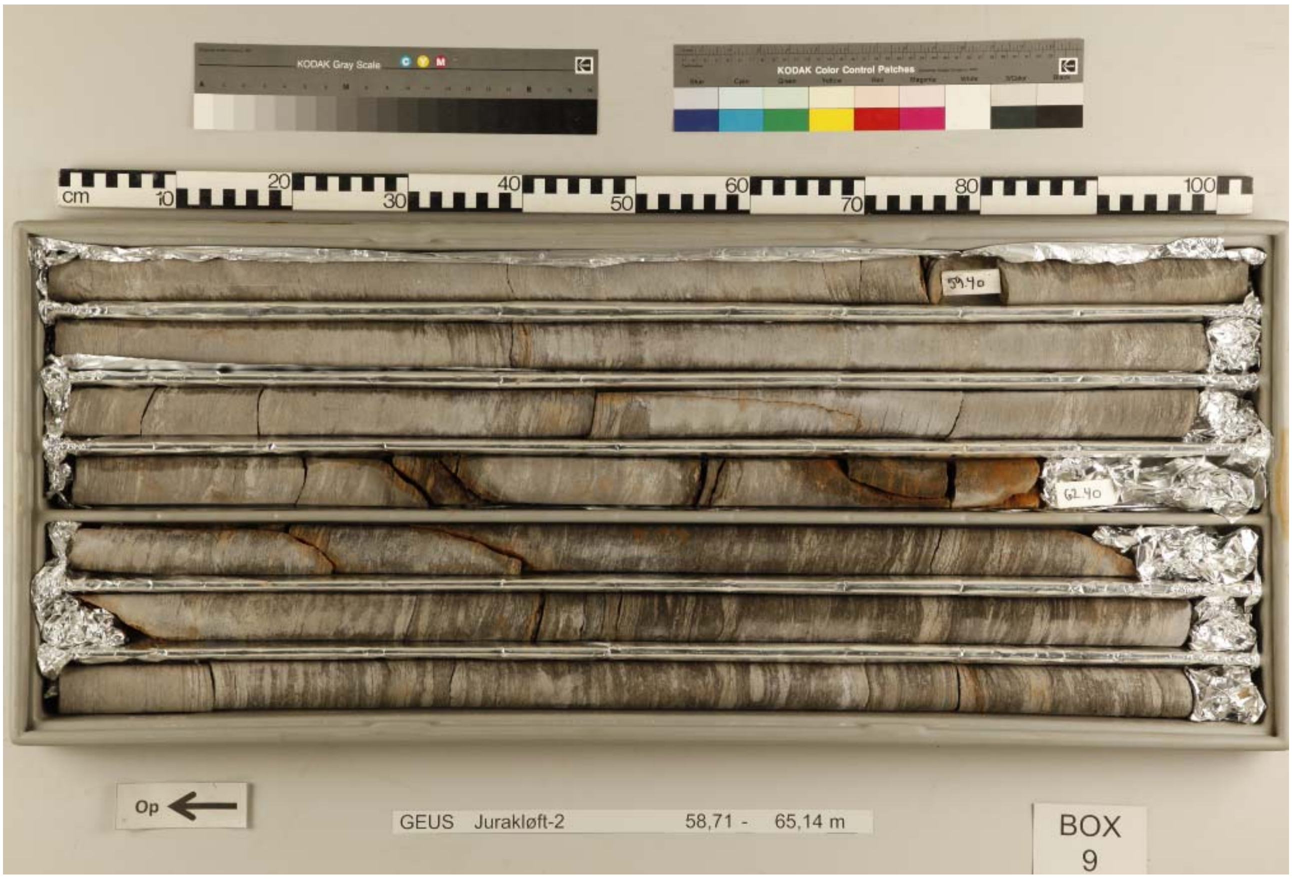


Figure 22. Photo of box 9, white light, depth interval 58.72 – 65.10 m MD

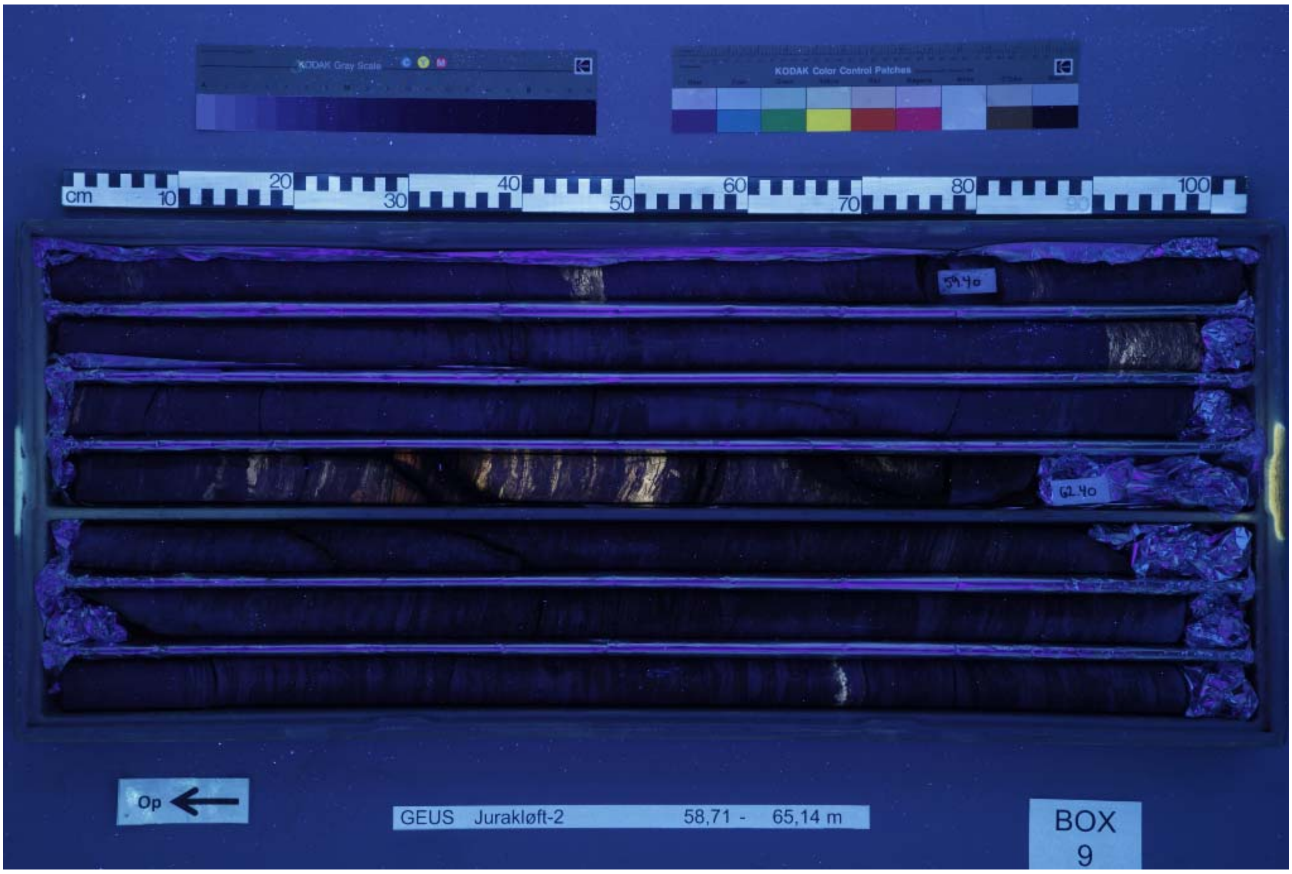


Figure 23. Photo of box 9, UV light, depth interval 58.72 – 65.10 m MD

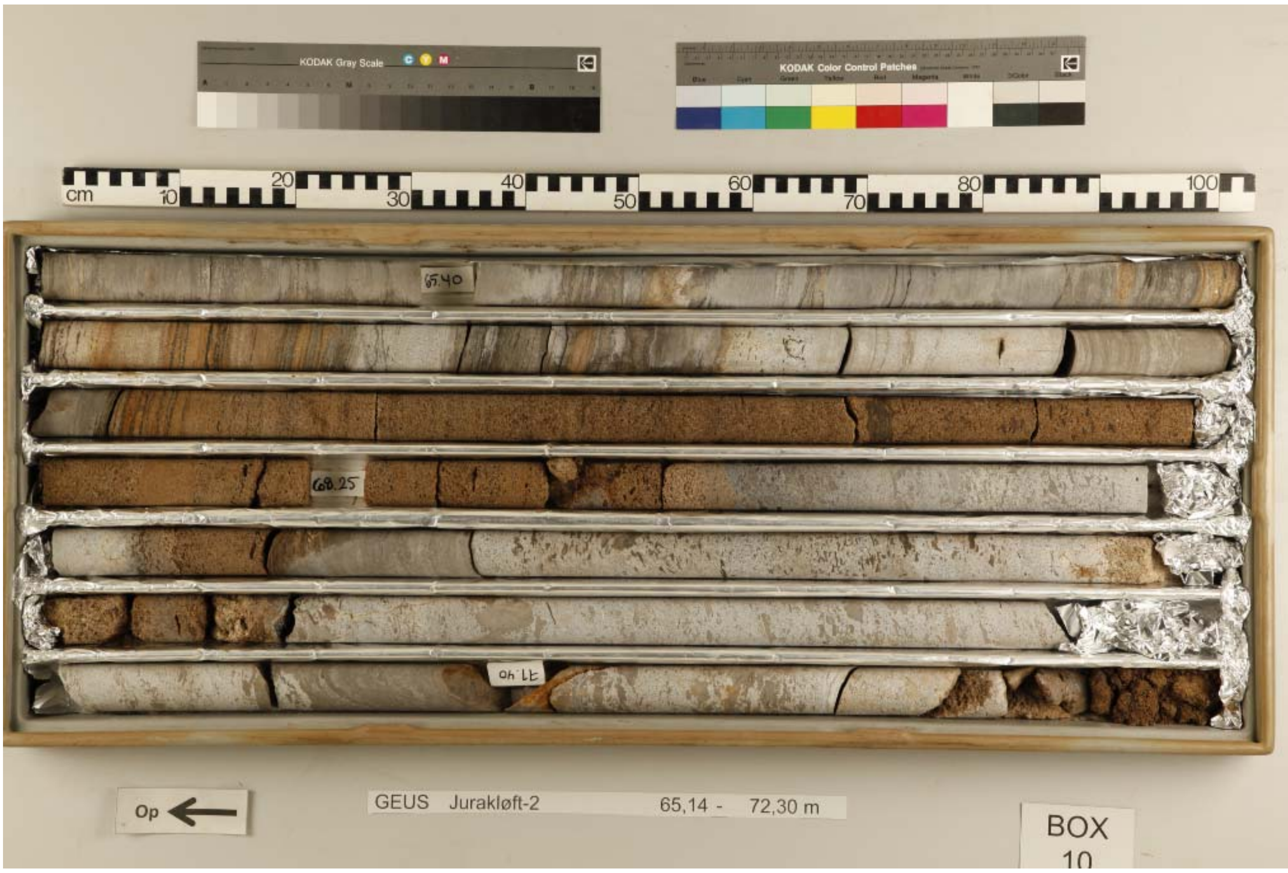


Figure 24. Photo of box 10, white light, depth interval 65.10 – 71.98 m MD

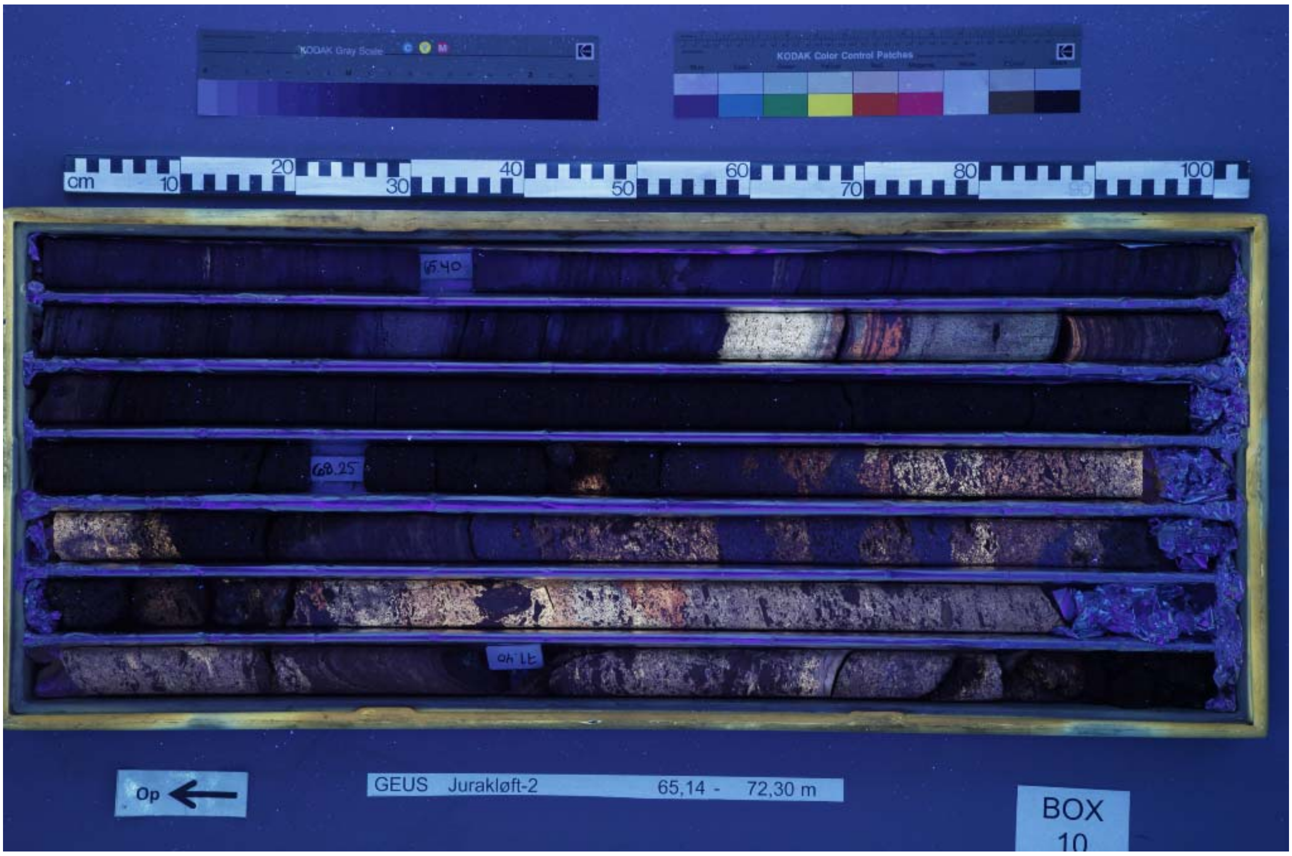


Figure 25. Photo of box 10, UV light, depth interval 65.10 – 71.98 m MD

Figure 26. Photo of box 11, white light, depth interval 71.98 – 72.50 m MD

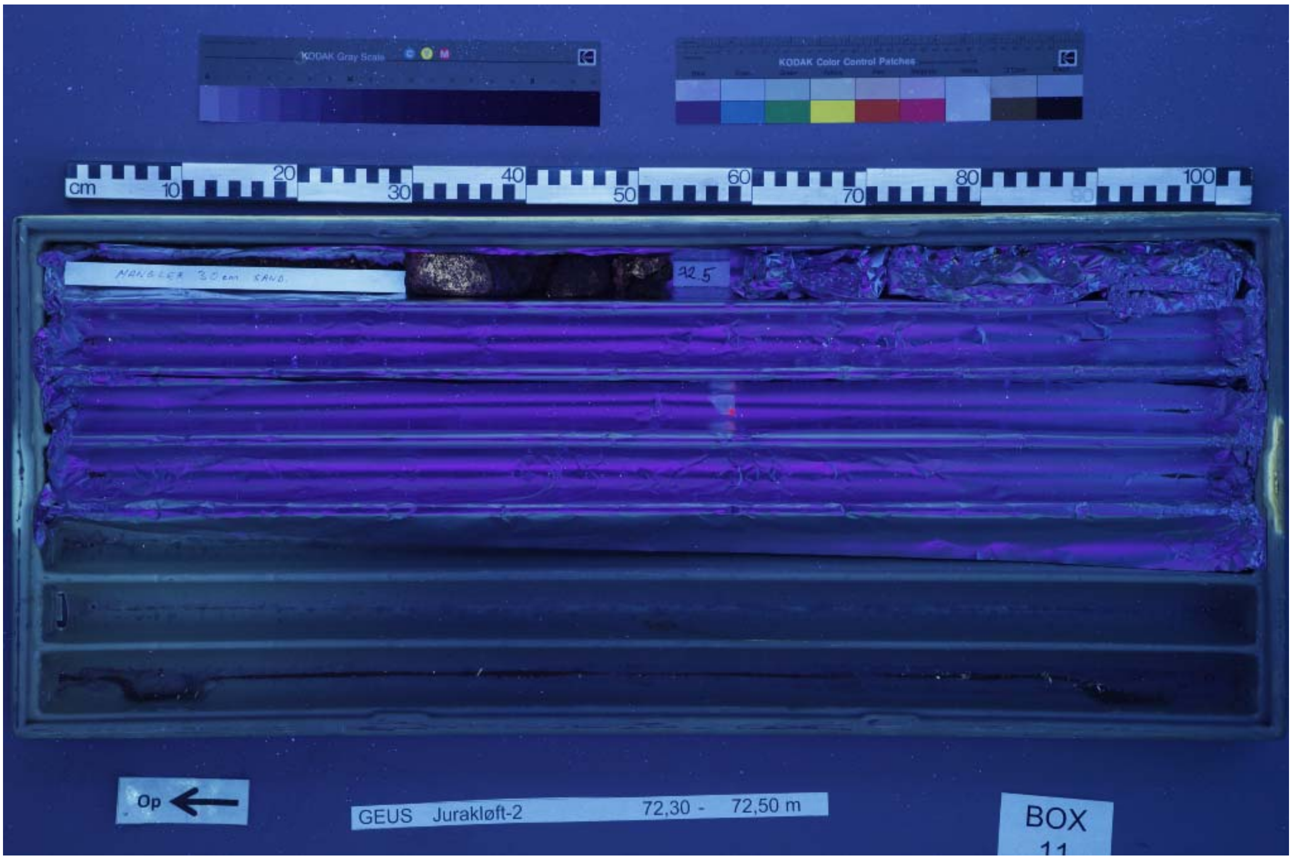


Figure 27. Photo of box 11, UV light, depth interval 71.98 – 72.50 m MD

5.4 XRF elemental analysis data

XRF results below lower limit of detection are indicated with “<LOD”.

The table below summarizes the number of samples where the analysed elements were detected and the mean statistical error of the detection at 2σ level (95% confidence). In addition, the table gives the mean crustal abundance of the elements according to a Wikipedia.org reference to Jefferson Lab (retrieved May 1st, 2018). Finally, the table gives a qualitative description of correlations between the various elements.

Table 9. Summary of XRF analyses from the Juraklø ft-2 well.

Element	Detected nos.samples	Mean error from counting statistics (ppm)	Mean crustal abundance (ppm), Jefferson Lab (Wikipedia.org)	Comment
Zr	277	4.5	165	Good corr. with Ti, weak corr. with Th
Sr	277	3.2	370	Corr. with Ca, Ba
Rb	277	1.6	90	Good corr. with K
Th	98	3.5	9.6	Weak corr. with Zr, Ti
Pb	40	5.6	14	No corr. with S
As	2	4.5	1.8	Few analyses
Zn	156	8.4	70	Weak corr. with S
Cu	100	15.6	60	No correlations
Ni	248	18.3	84	Weak corr. with Fe, Mg
Co	8	84.3	25	Few analyses, good corr. with S
Fe	277	168.4	56300	Bi-modal corr. with Mn and S, good corr. Ti
Mn	268	55.7	950	Bi-modal corr. with Fe
Cr	110	16.7	102	Weak corr. with V, Nb
V	164	18.5	120	Corr. with Ti, Cr
Ti	277	64.4	5600	Corr. with V, Zr, Th, Nb, Fe
Ca	277	756.9	41500	Corr. with Sr, negative bimodal corr. with Si
K	277	314.2	20900	Good corr. with Rb, Al
S	268	184.6	350	Good corr. with Fe, Co, weak corr. Zn
Ba	277	44.4	425	Corr. with Sr
Nb	115	2.2	20	Moderate corr. with Ti, weak corr. with Cr
Al	277	955.5	82300	Corr. with K, negative bimodal corr. with Si
P	29	287.5	1050	Few analyses, no correlations
Si	277	1814.8	282000	Negative corr. with Ca, Al, Mg
Mg	87	2890.6	23300	Negative corr. with Si, weak corr. Ni

Tables 10 to 14 gives results for Zr, Sr, Rb, Th, Pb, As, Zn, Cu, Ni, Co, Fe, and Mn.
Tables 15 to 19 gives results for Cr, V, Ti, Ca, K, S, Ba, Nb, Al, P, Si, and Mg.
All concentrations are reported as ppm.

Table 10. XRF results (Zr, Sr, Rb, Th, Pb, As, Zn, Cu, Ni, Co, Fe, Mn) of plug samples 1 to 58V.

Plug id.	Depth (m)	Zr (ppm)	Sr (ppm)	Rb (ppm)	Th (ppm)	Pb (ppm)	As (ppm)	Zn (ppm)	Cu (ppm)	Ni (ppm)	Co (ppm)	Fe (ppm)	Mn (ppm)
1	5.05	41.9	14.4	10.9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	696	59
4V	5.73	115.7	41.2	10.8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	3826	84
5	5.86	43.2	25.6	12.8	<LOD	<LOD	<LOD	<LOD	<LOD	24.2	<LOD	1746	123
6	6.23	38.1	61.7	7.5	<LOD	<LOD	<LOD	22.9	<LOD	42.7	<LOD	4145	545
7	6.53	42.1	53.8	13.7	<LOD	<LOD	<LOD	193.0	<LOD	63.1	<LOD	21978	3622
8V	6.68	24.2	64.7	8.3	4.3	<LOD	<LOD	11.6	<LOD	71.0	55.7	2472	548
9	6.80	27.3	75.0	9.8	<LOD	<LOD	<LOD	<LOD	20.7	45.8	<LOD	3647	659
10	7.10	30.2	87.3	8.4	<LOD	<LOD	<LOD	<LOD	<LOD	43.1	<LOD	2147	484
11	7.48	20.5	76.3	11.4	<LOD	<LOD	<LOD	<LOD	18.8	39.6	<LOD	1969	592
12V	7.50	31.3	77.8	12.2	<LOD	<LOD	<LOD	<LOD	<LOD	57.1	<LOD	2377	642
13	7.77	28.5	75.1	24.5	4.8	<LOD	<LOD	<LOD	20.1	53.2	<LOD	2922	612
14	8.07	41.1	99.7	10.0	<LOD	<LOD	<LOD	<LOD	<LOD	48.1	<LOD	2308	498
15	8.37	24.6	111.5	8.9	<LOD	<LOD	<LOD	13.8	<LOD	49.1	<LOD	1855	552
16V	8.57	30.6	100.1	17.8	<LOD	<LOD	<LOD	<LOD	<LOD	49.7	<LOD	2005	653
17	8.72	19.1	94.9	26.2	5.5	<LOD	<LOD	<LOD	<LOD	45.5	<LOD	2168	530
18	9.04	67.1	77.7	9.3	<LOD	<LOD	<LOD	<LOD	<LOD	38.2	<LOD	3814	828
19	9.34	40.5	100.5	12.1	<LOD	<LOD	<LOD	<LOD	<LOD	42.7	<LOD	2018	909
20V	9.57	17.3	86.0	8.5	<LOD	<LOD	<LOD	<LOD	<LOD	59.2	<LOD	1960	475
21	9.67	27.7	135.6	21.5	<LOD	10.9	<LOD	21.3	<LOD	37.3	<LOD	6003	671
22	9.96	27.6	117.6	6.2	<LOD	<LOD	<LOD	<LOD	<LOD	54.1	<LOD	3260	1463
23	10.29	31.2	103.6	11.9	<LOD	<LOD	<LOD	<LOD	<LOD	59.6	<LOD	3372	507
24V	10.49	19.5	122.6	10.2	<LOD	<LOD	<LOD	<LOD	17.8	49.0	<LOD	2423	364
25	10.69	30.9	161.2	20.5	<LOD	<LOD	<LOD	<LOD	<LOD	51.1	<LOD	2365	448
26	10.99	34.0	107.0	11.5	4.4	<LOD	<LOD	<LOD	25.3	47.2	<LOD	2302	571
27	11.26	64.1	128.2	18.0	<LOD	<LOD	<LOD	<LOD	<LOD	72.4	<LOD	4545	648
28	11.43	51.0	121.9	22.9	4.3	<LOD	<LOD	12.0	<LOD	47.1	<LOD	5761	677
29	11.70	78.5	114.5	11.7	<LOD	<LOD	<LOD	<LOD	<LOD	46.4	<LOD	2268	508
30	12.00	19.7	112.2	12.9	<LOD	<LOD	<LOD	<LOD	<LOD	54.0	<LOD	2083	879
31V	12.15	39.5	148.5	16.2	<LOD	<LOD	<LOD	15.5	<LOD	47.8	<LOD	2906	789
32	12.31	36.8	109.6	12.2	<LOD	<LOD	<LOD	<LOD	<LOD	54.2	<LOD	2072	734
33	12.58	73.7	87.4	8.8	<LOD	<LOD	<LOD	<LOD	<LOD	54.7	<LOD	2504	434
34	12.91	20.7	70.9	12.2	<LOD	<LOD	<LOD	<LOD	24.4	42.2	<LOD	2523	843
35V	13.10	51.6	123.1	11.1	<LOD	<LOD	<LOD	<LOD	<LOD	51.6	<LOD	1838	298
36	13.38	26.5	134.1	13.4	<LOD	<LOD	<LOD	<LOD	<LOD	57.4	<LOD	2421	443
37	13.78	20.9	112.9	5.8	<LOD	<LOD	<LOD	<LOD	<LOD	47.8	<LOD	1707	318
38	13.98	34.6	105.1	6.3	<LOD	<LOD	<LOD	10.7	<LOD	46.2	<LOD	2079	367
39V	14.14	35.3	19.5	9.3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	4701	90
40	15.01	78.6	24.2	17.3	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	4132	107
41	15.31	86.4	25.4	15.4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	2039	92
42	15.65	80.0	26.8	21.1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	3479	<LOD
43V	15.83	55.0	23.1	15.9	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	2142	<LOD
44	16.05	65.9	27.1	18.5	<LOD	<LOD	<LOD	<LOD	<LOD	43.1	<LOD	3480	114
45	16.31	78.3	27.1	17.2	<LOD	<LOD	<LOD	<LOD	<LOD	34.9	<LOD	3242	86
46	16.54	468.2	24.9	15.2	<LOD	<LOD	<LOD	<LOD	19.3	40.8	<LOD	6835	177
47	16.79	253.3	23.1	13.6	<LOD	<LOD	<LOD	12.4	<LOD	<LOD	<LOD	11661	174
48	17.04	254.2	27.3	16.0	<LOD	<LOD	<LOD	<LOD	<LOD	25.1	<LOD	2692	69
49	17.35	52.3	25.8	16.2	<LOD	<LOD	<LOD	<LOD	<LOD	38.7	<LOD	2706	88
50V	17.59	481.3	27.3	18.5	<LOD	<LOD	<LOD	<LOD	109.5	38.6	<LOD	14387	187
51	17.79	85.1	27.0	17.0	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	3623	<LOD
52	18.02	36.6	24.8	19.2	<LOD	<LOD	<LOD	<LOD	<LOD	24.3	<LOD	2274	68
53	18.43	173.4	19.8	15.1	<LOD	<LOD	<LOD	9.8	19.4	37.9	<LOD	13468	242
54V	18.59	218.7	20.7	12.4	<LOD	<LOD	<LOD	10.3	<LOD	35.3	<LOD	11735	177
55	18.74	203.8	20.9	16.9	<LOD	<LOD	<LOD	<LOD	<LOD	25.1	<LOD	3703	124
56	18.94	117.0	23.3	16.4	<LOD	<LOD	<LOD	31.6	<LOD	52.4	<LOD	17306	220
57	19.41	169.4	72.1	15.2	<LOD	<LOD	<LOD	29.5	19.8	55.6	<LOD	11982	686
58V	19.61	64.8	29.0	22.6	3.9	<LOD	<LOD	19.3	<LOD	<LOD	<LOD	3449	90

Table 11. XRF results (Zr, Sr, Rb, Th, Pb, As, Zn, Cu, Ni, Co, Fe, Mn) of plug samples 59 to 114V.

Plug id.	Depth (m)	Zr (ppm)	Sr (ppm)	Rb (ppm)	Th (ppm)	Pb (ppm)	As (ppm)	Zn (ppm)	Cu (ppm)	Ni (ppm)	Co (ppm)	Fe (ppm)	Mn (ppm)
59	19.68	127.9	76.5	13.7	<LOD	<LOD	<LOD	31.8	22.3	68.8	<LOD	6912	856
60	20.04	264.9	125.8	17.5	5.4	<LOD	<LOD	14.6	<LOD	79.4	<LOD	4964	777
61	20.33	75.3	185.2	15.2	<LOD	<LOD	<LOD	16.4	<LOD	55.1	<LOD	3454	580
62V	20.52	63.5	148.9	18.4	<LOD	<LOD	<LOD	14.1	<LOD	62.6	<LOD	5416	570
63	20.64	98.9	195.1	18.5	<LOD	<LOD	<LOD	17.1	<LOD	55.5	<LOD	4788	994
64	20.94	293.6	136.0	24.6	<LOD	<LOD	<LOD	<LOD	20.0	51.2	<LOD	4457	485
65	21.24	290.3	123.1	8.5	<LOD	<LOD	<LOD	<LOD	<LOD	47.1	73.1	2663	326
66V	21.45	499.5	102.0	8.1	<LOD	<LOD	<LOD	<LOD	<LOD	59.1	<LOD	4531	705
67	21.61	31.0	108.7	12.2	<LOD	<LOD	<LOD	12.4	<LOD	41.2	<LOD	2780	748
68	21.87	58.4	21.7	17.0	<LOD	<LOD	<LOD	15.9	<LOD	25.0	<LOD	5597	79
69	22.17	58.8	24.0	14.4	<LOD	<LOD	<LOD	13.1	<LOD	26.1	<LOD	4673	92
70V	22.32	112.0	23.5	16.6	<LOD	<LOD	<LOD	<LOD	<LOD	24.8	<LOD	4516	115
71	22.44	93.8	25.0	17.2	<LOD	<LOD	<LOD	11.0	<LOD	30.6	<LOD	4885	93
72	22.74	119.0	27.1	18.1	<LOD	<LOD	<LOD	9.3	28.4	<LOD	<LOD	4644	<LOD
73	23.04	135.9	24.0	18.0	<LOD	<LOD	<LOD	13.6	<LOD	36.1	<LOD	5222	98
74V	23.29	65.9	21.3	15.9	<LOD	<LOD	<LOD	11.9	25.1	31.7	<LOD	5190	99
75	23.47	122.3	23.0	13.0	<LOD	<LOD	<LOD	<LOD	<LOD	32.1	<LOD	12045	71
76	23.75	56.3	39.8	19.6	<LOD	17.9	<LOD	<LOD	<LOD	36.0	<LOD	4229	96
77	24.03	166.1	19.1	18.5	<LOD	<LOD	<LOD	12.3	71.8	28.4	<LOD	4468	94
78V	24.22	188.7	25.0	19.0	<LOD	<LOD	<LOD	15.5	<LOD	<LOD	<LOD	4447	83
79	24.55	109.8	66.1	11.4	<LOD	<LOD	<LOD	<LOD	<LOD	35.5	<LOD	2490	644
80	24.77	30.9	101.0	8.4	<LOD	<LOD	<LOD	15.3	<LOD	54.3	<LOD	2580	593
81	25.07	44.4	75.6	13.4	<LOD	<LOD	<LOD	35.7	<LOD	51.5	<LOD	4311	915
82V	25.26	112.7	120.8	8.9	<LOD	<LOD	<LOD	<LOD	24.6	49.5	<LOD	2207	625
83	25.36	29.8	133.7	9.8	<LOD	<LOD	<LOD	<LOD	<LOD	56.5	<LOD	2171	655
84	25.66	24.0	105.4	13.2	<LOD	<LOD	<LOD	<LOD	<LOD	65.8	<LOD	2099	585
85	25.96	57.9	127.5	9.7	<LOD	<LOD	<LOD	<LOD	<LOD	56.0	<LOD	2501	616
86V	26.17	62.2	151.6	6.3	<LOD	<LOD	<LOD	17.6	<LOD	56.6	<LOD	2095	714
87	26.32	49.6	130.0	9.7	<LOD	<LOD	<LOD	<LOD	<LOD	54.1	<LOD	2445	830
88	26.65	35.4	145.4	12.2	<LOD	<LOD	<LOD	17.0	<LOD	50.4	<LOD	2475	482
89	26.97	95.1	161.6	13.1	<LOD	<LOD	<LOD	11.6	<LOD	63.9	<LOD	3529	462
90V	27.13	103.5	161.0	9.1	<LOD	<LOD	<LOD	<LOD	<LOD	53.1	<LOD	2505	727
91	27.37	25.9	85.8	8.9	<LOD	<LOD	<LOD	<LOD	<LOD	58.2	72.6	2337	609
92	27.75	64.3	23.7	24.1	<LOD	<LOD	<LOD	12.8	<LOD	32.7	<LOD	4974	88
93	27.95	97.2	17.5	12.4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	2553	105
94V	28.21	54.7	24.9	11.8	<LOD	<LOD	<LOD	<LOD	<LOD	28.0	<LOD	2236	<LOD
95	28.41	23.2	114.2	8.2	<LOD	<LOD	<LOD	<LOD	<LOD	32.6	<LOD	2569	712
96	28.71	49.4	165.1	11.4	<LOD	<LOD	<LOD	<LOD	<LOD	57.9	<LOD	1675	578
97	29.01	61.2	150.1	7.9	<LOD	<LOD	<LOD	<LOD	<LOD	57.0	<LOD	2417	605
98V	29.26	26.0	155.6	11.0	<LOD	<LOD	<LOD	14.2	<LOD	57.5	49.3	1901	668
99	29.34	102.7	155.5	10.8	4.1	<LOD	<LOD	9.9	<LOD	51.2	<LOD	2038	515
100	29.64	27.9	163.3	11.7	<LOD	<LOD	<LOD	<LOD	18.7	41.9	<LOD	2618	348
101	29.94	61.4	140.9	10.5	<LOD	<LOD	<LOD	13.3	19.6	44.5	<LOD	1958	677
102V	30.12	511.7	154.2	14.6	7.5	<LOD	<LOD	16.6	23.6	57.9	<LOD	5938	790
103	30.23	42.2	167.3	8.8	<LOD	<LOD	<LOD	<LOD	<LOD	35.7	<LOD	2412	291
104	30.53	37.8	128.9	9.9	<LOD	<LOD	<LOD	<LOD	30.9	46.1	<LOD	2734	493
105	30.83	24.1	164.6	11.2	<LOD	<LOD	<LOD	12.1	<LOD	59.4	<LOD	1834	392
106V	31.04	28.1	141.6	9.9	<LOD	<LOD	<LOD	<LOD	<LOD	50.1	<LOD	2566	332
107	31.23	296.9	197.4	7.5	<LOD	<LOD	<LOD	<LOD	<LOD	51.1	<LOD	2995	422
108	31.53	35.1	125.2	8.2	5.2	<LOD	<LOD	<LOD	<LOD	57.1	<LOD	2495	447
109	31.83	41.6	152.2	9.3	4.7	<LOD	<LOD	<LOD	<LOD	46.5	<LOD	2477	565
110V	32.06	103.8	119.1	8.7	<LOD	<LOD	<LOD	<LOD	<LOD	54.7	64.0	2522	569
111	32.18	20.0	100.1	9.7	<LOD	<LOD	<LOD	<LOD	<LOD	50.4	<LOD	2585	585
112	32.48	37.4	123.6	8.3	<LOD	<LOD	<LOD	<LOD	<LOD	50.7	<LOD	2006	487
113	32.78	30.1	100.8	8.3	<LOD	<LOD	<LOD	11.4	<LOD	<LOD	<LOD	2419	623
114V	32.96	36.1	189.1	9.3	<LOD	<LOD	<LOD	<LOD	<LOD	72.3	<LOD	2354	489

Table 12. XRF results (Zr, Sr, Rb, Th, Pb, As, Zn, Cu, Ni, Co, Fe, Mn) of plug samples 115 to 170V.

Plug id.	Depth (m)	Zr (ppm)	Sr (ppm)	Rb (ppm)	Th (ppm)	Pb (ppm)	As (ppm)	Zn (ppm)	Cu (ppm)	Ni (ppm)	Co (ppm)	Fe (ppm)	Mn (ppm)
115	33.15	43.4	112.7	8.7	<LOD	<LOD	<LOD	<LOD	<LOD	48.2	<LOD	2577	596
116	33.45	76.8	104.2	7.2	<LOD	<LOD	<LOD	<LOD	20.8	47.6	<LOD	2070	690
117	33.68	64.6	20.1	17.0	<LOD	<LOD	<LOD	12.2	<LOD	<LOD	<LOD	5087	132
118V	33.95	100.0	33.4	14.1	4.6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	4678	118
119	34.10	132.6	74.9	14.2	<LOD	<LOD	<LOD	<LOD	18.1	27.7	<LOD	4762	105
120	34.40	85.7	19.8	15.1	<LOD	<LOD	<LOD	14.5	31.3	25.2	<LOD	6033	107
121	34.70	92.0	20.3	14.2	<LOD	<LOD	<LOD	10.8	<LOD	25.6	<LOD	12233	174
122V	34.90	118.6	25.9	17.9	<LOD	<LOD	<LOD	10.5	<LOD	32.7	<LOD	3838	85
123	35.10	66.3	29.3	17.6	<LOD	<LOD	<LOD	23.8	<LOD	36.3	<LOD	4960	141
124	35.40	31.4	161.5	7.6	4.9	<LOD	<LOD	<LOD	<LOD	71.9	<LOD	2146	675
125	35.65	50.0	170.5	14.5	<LOD	<LOD	<LOD	10.2	<LOD	47.8	<LOD	3389	717
126V	35.90	113.8	193.1	8.0	<LOD	<LOD	<LOD	<LOD	<LOD	48.5	<LOD	2737	496
127	36.07	155.0	200.6	20.5	<LOD	<LOD	<LOD	27.1	<LOD	62.5	<LOD	15105	1342
128	36.40	72.4	174.2	11.4	<LOD	<LOD	<LOD	10.8	<LOD	<LOD	<LOD	2491	392
129	36.71	207.7	140.4	10.3	4.2	<LOD	<LOD	<LOD	19.2	68.9	<LOD	2236	666
130V	36.86	75.0	117.6	18.3	4.5	<LOD	<LOD	19.9	<LOD	59.1	<LOD	5674	743
131	36.97	111.1	109.6	11.0	<LOD	<LOD	<LOD	<LOD	<LOD	50.0	<LOD	3013	652
132	37.35	183.7	32.7	15.1	4.0	<LOD	<LOD	18.7	16.9	38.6	<LOD	10291	146
133	37.58	141.4	23.8	16.6	<LOD	<LOD	<LOD	15.4	27.6	32.5	<LOD	5926	139
134V	37.79	511.3	21.3	20.7	5.3	<LOD	<LOD	16.1	<LOD	46.7	<LOD	14581	209
135	37.95	93.3	23.5	19.6	<LOD	<LOD	<LOD	12.3	<LOD	40.0	<LOD	12718	167
136	38.25	243.5	31.8	17.9	<LOD	<LOD	<LOD	<LOD	26.4	30.6	<LOD	11701	147
137	38.55	169.1	29.1	21.0	<LOD	<LOD	<LOD	<LOD	<LOD	35.4	<LOD	11231	93
138V	38.73	138.4	38.6	20.8	<LOD	<LOD	<LOD	<LOD	16.6	24.9	<LOD	5185	121
139	38.89	176.0	52.8	13.7	<LOD	<LOD	<LOD	<LOD	<LOD	37.9	<LOD	3691	1239
140	39.19	97.2	38.4	17.6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	2411	89
141	39.43	174.3	35.4	18.6	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	3683	111
142V	39.64	123.5	41.2	21.6	<LOD	<LOD	<LOD	<LOD	18.3	29.2	<LOD	4192	118
143	39.82	110.0	40.3	19.7	<LOD	<LOD	<LOD	<LOD	<LOD	31.5	<LOD	3637	68
144	40.12	328.4	35.9	19.7	<LOD	<LOD	<LOD	<LOD	18.8	<LOD	<LOD	5294	67
145	40.42	150.5	44.9	23.3	5.4	<LOD	<LOD	<LOD	27.4	31.6	<LOD	5326	96
146V	40.62	83.3	66.2	22.0	<LOD	<LOD	<LOD	<LOD	<LOD	25.5	<LOD	5404	114
147	40.77	182.4	163.5	39.9	7.1	14.3	<LOD	<LOD	<LOD	32.0	<LOD	15242	137
148	41.09	69.6	88.1	19.4	5.0	<LOD	<LOD	13.5	36.2	56.9	<LOD	5915	879
149	41.43	116.0	72.8	16.9	<LOD	<LOD	<LOD	12.3	<LOD	42.6	<LOD	5401	883
150V	41.62	226.7	28.5	29.4	4.6	<LOD	<LOD	154.8	18.8	67.0	<LOD	17424	419
151	41.73	153.8	31.1	35.5	4.9	<LOD	<LOD	66.7	<LOD	60.1	<LOD	20148	219
152	42.03	163.7	29.7	38.1	<LOD	<LOD	<LOD	41.1	19.0	51.6	<LOD	15941	115
153	42.33	208.3	39.3	40.3	<LOD	<LOD	<LOD	60.0	24.7	64.3	<LOD	18213	196
154V	42.49	182.7	31.0	34.1	7.1	<LOD	<LOD	52.0	<LOD	46.7	<LOD	14302	154
155	42.60	207.7	39.7	40.8	5.0	13.7	<LOD	39.0	28.3	57.6	<LOD	16622	199
156	42.89	293.9	35.9	37.9	6.0	<LOD	<LOD	37.0	24.7	50.1	<LOD	17380	112
157	43.20	177.9	31.7	43.7	<LOD	11.7	<LOD	71.6	26.1	58.6	<LOD	41217	293
158V	43.40	227.3	41.5	39.7	5.3	<LOD	<LOD	37.5	18.7	42.9	<LOD	18083	273
159	43.54	242.7	33.4	45.1	9.5	14.7	<LOD	14.5	29.2	50.1	150.1	23098	177
160	43.90	223.7	70.8	34.4	5.9	<LOD	<LOD	16.4	25.6	54.5	<LOD	14196	443
161	44.19	194.6	41.8	45.9	<LOD	<LOD	<LOD	44.4	<LOD	72.0	<LOD	19644	230
162V	44.38	202.2	48.9	41.8	4.4	<LOD	<LOD	47.3	18.9	48.0	<LOD	17531	298
163	44.54	274.2	44.3	42.7	5.8	11.0	<LOD	47.1	25.0	44.7	<LOD	18494	294
164	44.84	182.1	44.9	44.3	7.1	12.6	<LOD	67.8	33.3	54.7	<LOD	19813	284
165	45.19	212.6	75.7	35.4	4.6	<LOD	<LOD	13.1	<LOD	60.6	<LOD	15439	358
166V	45.34	227.4	34.8	44.3	5.6	11.1	<LOD	43.5	<LOD	59.1	<LOD	18835	251
167	45.53	201.1	37.9	37.9	6.4	<LOD	<LOD	29.1	<LOD	30.7	<LOD	15585	247
168	45.83	283.2	41.4	47.9	6.5	14.8	<LOD	33.7	<LOD	59.3	<LOD	23315	241
169	46.13	217.8	33.0	45.2	<LOD	<LOD	<LOD	67.8	18.4	41.8	<LOD	21686	264
170V	46.37	314.0	32.0	38.6	<LOD	<LOD	<LOD	48.2	<LOD	52.8	<LOD	16940	195

Table 13. XRF results (Zr, Sr, Rb, Th, Pb, As, Zn, Cu, Ni, Co, Fe, Mn) of plug samples 171 to 226V.

Plug id.	Depth (m)	Zr (ppm)	Sr (ppm)	Rb (ppm)	Th (ppm)	Pb (ppm)	As (ppm)	Zn (ppm)	Cu (ppm)	Ni (ppm)	Co (ppm)	Fe (ppm)	Mn (ppm)
171	46.50	285.0	33.5	45.6	4.5	<LOD	<LOD	37.4	23.5	50.8	<LOD	18614	182
172	46.79	267.4	31.8	46.8	5.3	<LOD	<LOD	42.5	<LOD	66.1	<LOD	22719	215
173	47.07	281.7	35.2	51.1	10.8	<LOD	<LOD	45.9	<LOD	56.2	<LOD	23959	221
174V	47.30	318.7	31.1	40.4	8.0	<LOD	<LOD	53.1	<LOD	43.2	<LOD	19337	195
175	47.36	317.5	30.0	38.6	5.3	<LOD	<LOD	30.6	<LOD	55.8	<LOD	16785	158
176	47.70	224.5	28.4	35.9	5.3	<LOD	<LOD	31.6	28.1	40.6	<LOD	17295	206
177	47.97	167.8	21.8	23.3	<LOD	<LOD	<LOD	<LOD	<LOD	28.3	<LOD	27813	95
178V	48.15	155.8	26.8	27.9	<LOD	<LOD	<LOD	<LOD	<LOD	36.2	<LOD	11336	166
179	48.35	185.4	24.2	27.5	<LOD	<LOD	<LOD	<LOD	<LOD	27.8	<LOD	2598	<LOD
180	48.63	154.4	26.4	30.2	<LOD	<LOD	<LOD	17.5	<LOD	45.8	<LOD	21096	109
181	48.91	200.5	23.4	26.2	<LOD	<LOD	<LOD	11.8	19.3	49.2	<LOD	11732	74
182V	49.10	188.2	29.7	28.0	<LOD	<LOD	<LOD	32.0	<LOD	44.5	<LOD	16293	89
183	49.33	152.0	27.7	29.0	<LOD	<LOD	<LOD	<LOD	<LOD	47.7	<LOD	6138	95
184	49.57	213.1	25.7	26.7	<LOD	<LOD	<LOD	9.9	<LOD	<LOD	<LOD	11175	103
185	49.93	286.0	32.7	32.8	<LOD	<LOD	<LOD	<LOD	<LOD	44.5	<LOD	27611	86
186V	50.10	193.4	28.3	30.8	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	4069	101
187	50.31	148.3	29.7	28.7	<LOD	<LOD	<LOD	<LOD	20.0	37.4	<LOD	13260	92
188	50.61	260.4	29.7	30.1	4.2	<LOD	<LOD	<LOD	<LOD	33.8	<LOD	3391	<LOD
189	50.91	127.2	23.3	24.4	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	3087	<LOD
190V	51.11	157.2	24.0	30.3	4.7	<LOD	<LOD	<LOD	<LOD	30.7	<LOD	5189	71
191	51.12	236.2	31.1	29.4	8.3	<LOD	<LOD	<LOD	<LOD	27.4	<LOD	1853	81
192	51.39	169.1	28.5	35.6	<LOD	<LOD	<LOD	22.3	<LOD	36.8	<LOD	20012	128
193	51.72	193.4	27.2	35.9	6.2	<LOD	<LOD	13.9	18.1	<LOD	<LOD	18428	79
194V	51.93	169.0	29.4	35.5	4.9	<LOD	<LOD	17.7	<LOD	44.9	<LOD	14264	76
195	52.11	220.3	36.7	40.5	8.6	<LOD	<LOD	10.7	22.4	44.2	<LOD	14172	127
196	52.41	126.8	26.4	33.1	<LOD	<LOD	<LOD	11.5	<LOD	50.2	<LOD	11572	177
197	52.71	156.0	24.1	26.6	5.4	<LOD	<LOD	9.4	<LOD	29.1	<LOD	1449	69
198V	52.88	133.2	43.0	57.5	<LOD	<LOD	<LOD	<LOD	<LOD	57.9	<LOD	25118	<LOD
199	53.08	202.4	36.5	47.1	5.4	11.4	<LOD	11.3	17.9	47.7	<LOD	13268	107
200	53.38	140.9	30.4	35.4	<LOD	<LOD	<LOD	30.1	21.8	62.8	<LOD	14397	193
201	53.68	134.7	24.5	31.3	4.8	<LOD	<LOD	33.9	<LOD	42.9	<LOD	12038	84
202V	53.86	191.8	30.0	37.1	<LOD	<LOD	<LOD	21.9	22.8	36.8	<LOD	12584	119
203	54.06	156.1	33.9	43.9	<LOD	17.5	<LOD	20.0	<LOD	48.6	<LOD	18505	169
204	54.36	185.0	31.8	43.3	4.4	15.4	<LOD	42.1	<LOD	47.9	<LOD	17402	191
205	54.66	199.2	31.6	42.2	<LOD	17.4	<LOD	47.5	22.0	39.7	<LOD	19441	208
206V	54.86	140.2	34.5	43.6	5.8	11.1	<LOD	52.9	<LOD	61.0	<LOD	17644	165
207	55.02	126.5	35.8	34.7	<LOD	<LOD	<LOD	26.1	<LOD	51.9	<LOD	13603	206
208	55.32	140.9	33.6	39.4	6.1	<LOD	<LOD	28.2	<LOD	56.8	<LOD	16251	338
209	55.62	111.6	132.5	23.1	5.6	<LOD	<LOD	18.5	21.5	46.7	<LOD	7258	1020
210V	55.84	107.5	131.0	21.2	6.1	<LOD	<LOD	28.0	<LOD	58.9	<LOD	10775	1119
211	56.01	92.4	154.8	22.7	4.3	<LOD	<LOD	21.1	<LOD	48.4	<LOD	5995	734
212	56.31	97.1	129.6	27.2	<LOD	<LOD	<LOD	15.1	<LOD	71.5	<LOD	11302	806
213	56.58	68.5	142.7	23.1	4.2	<LOD	<LOD	12.5	<LOD	64.8	<LOD	7268	796
214V	56.76	85.9	138.8	24.2	<LOD	<LOD	<LOD	17.2	<LOD	65.8	<LOD	6762	910
215	56.89	52.4	96.8	25.9	<LOD	<LOD	<LOD	17.2	<LOD	60.7	<LOD	6487	532
216	57.17	206.5	43.5	49.5	6.2	15.2	<LOD	41.2	18.6	48.5	<LOD	22762	235
217	57.47	196.8	39.0	43.3	6.5	<LOD	<LOD	19.3	20.9	54.2	<LOD	19885	246
218V	57.66	181.4	38.7	50.6	<LOD	<LOD	<LOD	33.0	24.4	46.5	<LOD	23086	196
219	57.89	115.9	46.3	35.5	<LOD	<LOD	<LOD	40.4	25.0	46.3	<LOD	14388	238
220	58.17	173.0	37.1	46.7	6.8	12.4	<LOD	33.2	18.4	51.5	<LOD	20485	232
221	58.48	188.1	34.3	46.8	5.6	11.5	<LOD	30.2	20.9	57.1	<LOD	19928	269
222V	58.67	172.0	43.3	47.5	10.2	12.0	<LOD	53.7	26.0	49.7	<LOD	24501	303
223	58.82	212.7	40.9	50.9	7.9	16.3	<LOD	41.9	<LOD	65.4	<LOD	25049	238
224	59.15	270.6	45.6	56.2	6.5	18.1	<LOD	55.2	29.2	63.1	<LOD	29327	346
225	59.44	197.2	42.4	45.4	5.7	<LOD	<LOD	41.7	21.7	49.8	<LOD	21707	278
226V	59.59	240.9	44.4	52.1	5.1	10.8	<LOD	114.5	<LOD	61.4	<LOD	24545	246

Table 14. XRF results (Zr, Sr, Rb, Th, Pb, As, Zn, Cu, Ni, Co, Fe, Mn) of plug samples 227 to 278.

Plug id.	Depth (m)	Zr (ppm)	Sr (ppm)	Rb (ppm)	Th (ppm)	Pb (ppm)	As (ppm)	Zn (ppm)	Cu (ppm)	Ni (ppm)	Co (ppm)	Fe (ppm)	Mn (ppm)
227	59.76	127.6	40.5	45.2	4.4	<LOD	<LOD	32.7	<LOD	54.9	<LOD	21889	236
228	60.03	201.5	39.4	50.3	10.0	15.8	<LOD	49.5	<LOD	58.7	<LOD	25731	263
229	60.36	229.9	40.6	47.0	7.6	10.8	<LOD	28.4	<LOD	56.2	<LOD	20671	230
230V	60.58	214.3	41.7	44.9	5.2	11.9	<LOD	40.0	20.7	53.4	<LOD	22955	215
231	60.72	251.5	44.3	51.3	6.0	15.3	<LOD	40.7	32.7	49.6	<LOD	23146	164
232	61.03	236.9	40.2	51.4	9.0	<LOD	5.8	41.8	24.7	74.6	<LOD	26554	236
233	61.31	266.0	45.0	53.1	7.0	16.5	<LOD	32.3	30.9	45.8	<LOD	29562	264
234V	61.51	227.9	45.1	49.6	8.8	10.8	<LOD	45.4	26.3	51.7	<LOD	25352	237
235	61.66	142.5	61.0	38.9	5.3	<LOD	<LOD	34.1	20.8	27.1	<LOD	18810	293
236	61.96	86.0	196.8	23.9	4.6	<LOD	<LOD	11.4	<LOD	53.4	<LOD	10819	706
237	62.22	125.1	115.7	24.7	5.8	<LOD	<LOD	17.7	28.1	62.1	<LOD	12216	730
238V	62.40	208.3	41.3	53.1	6.3	16.8	<LOD	35.5	21.1	48.3	<LOD	24662	191
239	62.46	246.1	39.9	52.1	5.3	10.4	<LOD	80.2	19.8	43.9	<LOD	22158	253
240	62.78	232.1	38.7	50.8	9.9	14.6	<LOD	40.4	<LOD	55.8	<LOD	24163	204
241	63.09	180.2	38.9	45.5	8.4	<LOD	<LOD	40.2	33.3	38.9	<LOD	22758	246
242V	63.22	238.7	39.1	55.9	6.5	14.8	<LOD	30.3	<LOD	71.6	<LOD	27070	251
243	63.37	151.3	38.9	44.9	4.8	<LOD	<LOD	43.1	21.3	39.0	<LOD	22285	286
244	63.62	191.2	37.0	49.4	6.9	<LOD	<LOD	23.5	<LOD	41.6	<LOD	20505	184
245	63.93	199.9	43.6	51.9	6.0	<LOD	<LOD	46.8	23.5	73.7	<LOD	24714	220
246V	64.12	138.4	38.4	46.4	<LOD	9.9	<LOD	29.7	<LOD	60.6	<LOD	19487	205
247	64.24	152.0	39.2	45.6	5.2	<LOD	<LOD	42.1	28.3	49.8	<LOD	22188	211
248	64.55	220.9	42.7	49.0	<LOD	12.5	<LOD	38.3	<LOD	58.3	<LOD	20454	196
249	64.80	238.1	39.5	49.7	8.3	18.1	<LOD	43.5	23.3	63.8	<LOD	26042	318
250V	65.04	224.9	35.0	47.9	5.3	<LOD	<LOD	30.7	23.8	74.6	<LOD	22173	190
251	65.20	194.9	35.8	41.9	8.0	<LOD	<LOD	20.2	<LOD	45.4	<LOD	18561	204
252	65.50	226.7	41.2	48.6	6.8	15.8	<LOD	24.1	20.5	64.9	<LOD	21886	205
253	65.77	221.4	36.5	48.7	9.4	<LOD	<LOD	36.4	20.5	60.9	<LOD	21894	233
254V-A	66.01	305.4	44.7	60.1	9.2	16.5	<LOD	41.7	41.0	75.7	<LOD	31239	266
254V-B	66.01	201.5	24.2	30.1	6.8	<LOD	<LOD	11.3	<LOD	37.4	<LOD	13974	123
255	66.15	59.1	67.6	9.3	<LOD	<LOD	<LOD	<LOD	<LOD	25.3	<LOD	2708	204
256	66.45	180.5	36.7	39.0	5.7	15.0	<LOD	22.9	25.5	53.2	<LOD	16012	339
257	66.77	77.8	163.6	13.2	<LOD	<LOD	<LOD	<LOD	<LOD	51.8	<LOD	2937	526
258V	66.96	123.5	199.3	23.1	4.8	<LOD	5.1	26.8	21.0	70.7	<LOD	13623	930
259	67.13	91.3	19.7	17.4	3.9	<LOD	<LOD	<LOD	<LOD	37.2	<LOD	6385	141
260	67.43	81.2	24.3	24.5	<LOD	11.0	<LOD	10.1	50.5	25.0	<LOD	10160	88
261	67.66	130.9	22.1	29.2	<LOD	12.4	<LOD	<LOD	237.3	<LOD	<LOD	4453	122
262V	67.95	91.5	40.8	27.0	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	3212	102
263	68.12	105.1	25.9	17.3	4.1	<LOD	<LOD	<LOD	64.9	39.9	<LOD	4117	82
264	68.38	170.2	15.8	16.1	<LOD	<LOD	<LOD	9.5	27.2	<LOD	<LOD	4969	115
265	68.74	69.7	179.7	12.6	<LOD	<LOD	<LOD	<LOD	20.9	50.5	<LOD	3479	573
266V	68.91	38.8	122.0	7.9	<LOD	<LOD	<LOD	<LOD	18.9	32.0	<LOD	2848	690
267	69.06	107.5	26.0	21.4	<LOD	<LOD	<LOD	<LOD	57.2	53.0	<LOD	16517	156
268	69.33	51.5	61.9	19.6	<LOD	<LOD	<LOD	<LOD	<LOD	44.6	<LOD	3338	591
269	69.63	33.7	131.7	26.9	<LOD	<LOD	<LOD	15.6	18.0	66.2	<LOD	4021	760
270V	69.85	171.6	120.8	17.1	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	<LOD	1845	445
271	70.31	56.8	141.9	12.6	<LOD	<LOD	<LOD	<LOD	26.0	<LOD	<LOD	2897	539
272	70.63	53.0	135.0	13.1	<LOD	<LOD	<LOD	<LOD	18.5	34.4	<LOD	2543	509
273	70.90	78.5	158.7	11.8	<LOD	<LOD	<LOD	<LOD	20.3	57.6	<LOD	2755	488
274V	71.06	54.0	130.7	14.4	<LOD	<LOD	<LOD	<LOD	25.0	51.9	<LOD	2052	416
275	71.17	67.7	118.0	13.4	<LOD	<LOD	<LOD	<LOD	<LOD	55.5	63.7	2726	402
276	71.51	140.6	139.6	22.4	8.0	<LOD	<LOD	17.7	29.5	57.1	127.4	11452	1038
277	71.75	46.1	141.2	15.6	<LOD	<LOD	<LOD	16.3	29.9	47.6	<LOD	2177	915
278	72.33	39.3	141.0	12.0	<LOD	<LOD	<LOD	<LOD	25.9	77.9	<LOD	3769	1109

Table 15. XRF results (Cr, V, Ti, Ca, K, S, Ba, Nb, Al, P, Si, Mg) of plug samples 1 to 58V.

Plug id.	Depth (m)	Cr (ppm)	V (ppm)	Ti (ppm)	Ca (ppm)	K (ppm)	S (ppm)	Ba (ppm)	Nb (ppm)	Al (ppm)	P (ppm)	Si (ppm)	Mg (ppm)
1	5.05	<LOD	15	552	456	7773	<LOD	410	<LOD	11423	<LOD	376911	<LOD
4V	5.73	<LOD	<LOD	851	899	10400	151	468	<LOD	22009	841	362998	<LOD
5	5.86	<LOD	<LOD	386	530	10086	<LOD	492	<LOD	15802	<LOD	355984	<LOD
6	6.23	<LOD	<LOD	160	166456	6868	1222	512	<LOD	7288	<LOD	301847	<LOD
7	6.53	<LOD	<LOD	261	129424	11140	1933	581	<LOD	8903	<LOD	315894	<LOD
8V	6.68	<LOD	<LOD	86	193888	5678	4933	606	<LOD	5327	<LOD	298525	<LOD
9	6.80	<LOD	<LOD	246	165369	8941	10046	640	<LOD	8217	<LOD	303184	5430
10	7.10	<LOD	<LOD	143	171941	6246	5510	562	<LOD	6041	<LOD	309719	<LOD
11	7.48	<LOD	<LOD	332	175645	10755	5789	619	<LOD	10747	<LOD	305254	<LOD
12V	7.50	<LOD	<LOD	302	191473	12664	6560	624	<LOD	11721	<LOD	285588	<LOD
13	7.77	<LOD	<LOD	166	206796	13434	3092	649	<LOD	10476	<LOD	260082	<LOD
14	8.07	<LOD	<LOD	241	192384	9969	5644	565	<LOD	12116	<LOD	288910	4940
15	8.37	<LOD	19	267	183154	7016	2769	566	<LOD	7070	<LOD	312134	<LOD
16V	8.57	<LOD	18	143	196119	10019	2643	515	<LOD	7929	<LOD	300846	<LOD
17	8.72	<LOD	<LOD	175	175583	14556	6553	615	<LOD	10738	<LOD	310449	<LOD
18	9.04	<LOD	<LOD	556	175574	8613	10168	619	<LOD	10869	<LOD	286828	<LOD
19	9.34	<LOD	<LOD	185	201517	10781	5518	727	<LOD	9722	<LOD	283066	<LOD
20V	9.57	<LOD	<LOD	146	211125	4988	3254	548	<LOD	5439	<LOD	288033	<LOD
21	9.67	<LOD	<LOD	471	211166	12713	10884	707	<LOD	16971	<LOD	245644	<LOD
22	9.96	<LOD	<LOD	215	232392	6020	6346	632	<LOD	8230	<LOD	203511	18268
23	10.29	<LOD	<LOD	285	187327	9624	856	670	<LOD	10653	<LOD	291192	5848
24V	10.49	<LOD	25	205	185280	10271	5078	618	<LOD	8194	<LOD	291324	<LOD
25	10.69	<LOD	<LOD	329	204426	10744	6621	703	<LOD	10815	<LOD	291313	<LOD
26	10.99	<LOD	19	404	193414	9937	945	633	<LOD	10251	<LOD	284911	<LOD
27	11.26	<LOD	<LOD	745	198498	13455	1793	706	<LOD	16994	<LOD	263452	<LOD
28	11.43	<LOD	<LOD	734	185412	10969	1260	642	<LOD	20978	<LOD	266321	<LOD
29	11.70	<LOD	<LOD	558	190177	10583	3208	592	<LOD	13136	<LOD	280837	4946
30	12.00	<LOD	<LOD	389	192454	8612	3547	645	<LOD	10602	<LOD	294176	<LOD
31V	12.15	<LOD	<LOD	690	217005	12643	1414	700	<LOD	14243	<LOD	255551	<LOD
32	12.31	<LOD	<LOD	899	193762	10360	3342	739	<LOD	12660	<LOD	281253	<LOD
33	12.58	<LOD	<LOD	642	180040	7101	<LOD	575	<LOD	8896	<LOD	303656	<LOD
34	12.91	<LOD	<LOD	448	202773	7796	386	469	<LOD	7376	<LOD	287731	<LOD
35V	13.10	<LOD	<LOD	567	178986	10091	2663	613	<LOD	10364	<LOD	298589	<LOD
36	13.38	<LOD	<LOD	315	183746	11915	5715	733	<LOD	11563	<LOD	293366	<LOD
37	13.78	<LOD	<LOD	268	196293	4672	1790	526	<LOD	6201	<LOD	294952	<LOD
38	13.98	<LOD	17	474	190343	6646	784	579	<LOD	8479	<LOD	297082	<LOD
39V	14.14	<LOD	<LOD	957	781	10194	447	452	<LOD	16887	<LOD	367017	<LOD
40	15.01	<LOD	<LOD	881	1515	13116	457	557	<LOD	24830	<LOD	353560	<LOD
41	15.31	<LOD	<LOD	713	562	11193	668	488	<LOD	19739	<LOD	362645	<LOD
42	15.65	<LOD	<LOD	640	1660	12898	611	529	<LOD	21368	<LOD	350898	<LOD
43V	15.83	<LOD	<LOD	1026	879	11980	605	482	<LOD	19853	<LOD	362132	<LOD
44	16.05	<LOD	17	1159	1487	12648	546	504	<LOD	23139	<LOD	355908	2357
45	16.31	<LOD	25	1244	3443	12734	667	539	<LOD	28347	254	347205	<LOD
46	16.54	<LOD	30	2596	2226	10267	572	440	<LOD	20711	358	350905	3064
47	16.79	<LOD	<LOD	2766	3827	10670	757	464	3.1	27437	428	344793	<LOD
48	17.04	<LOD	<LOD	1127	3327	12149	659	545	<LOD	21108	<LOD	352259	<LOD
49	17.35	<LOD	26	860	3546	11864	369	503	<LOD	22488	<LOD	354818	<LOD
50V	17.59	47	35	3833	3103	15146	666	594	4.7	31009	384	352286	<LOD
51	17.79	<LOD	17	763	2862	11122	465	431	<LOD	20018	<LOD	361177	<LOD
52	18.02	<LOD	20	1383	2870	13288	295	591	<LOD	24805	<LOD	354011	<LOD
53	18.43	43	26	2488	3487	12932	<LOD	434	<LOD	28783	498	338285	3812
54V	18.59	<LOD	26	3024	7432	11231	556	417	<LOD	24922	413	341411	2046
55	18.74	<LOD	18	1216	3549	12868	255	468	<LOD	27579	<LOD	356019	<LOD
56	18.94	<LOD	30	1256	5786	11381	<LOD	480	<LOD	28029	440	296631	<LOD
57	19.41	<LOD	<LOD	1446	158611	13445	1032	633	<LOD	17929	<LOD	289264	7701
58V	19.61	<LOD	28	961	11475	15876	350	507	<LOD	34844	<LOD	340044	1971

Table 16. XRF results (Cr, V, Ti, Ca, K, S, Ba, Nb, Al, P, Si, Mg) of plug samples 59 to 114V.

Plug id.	Depth (m)	Cr (ppm)	V (ppm)	Ti (ppm)	Ca (ppm)	K (ppm)	S (ppm)	Ba (ppm)	Nb (ppm)	Al (ppm)	P (ppm)	Si (ppm)	Mg (ppm)
59	19.68	<LOD	<LOD	900	180893	12889	884	648	3.6	16952	<LOD	289617	<LOD
60	20.04	<LOD	<LOD	1035	186583	10461	9941	1115	3.6	20069	<LOD	278402	4846
61	20.33	<LOD	<LOD	901	194335	14047	5935	729	<LOD	17120	<LOD	268579	<LOD
62V	20.52	<LOD	<LOD	1087	208390	14677	8839	807	2.9	22879	<LOD	249397	<LOD
63	20.64	<LOD	<LOD	1113	207645	14034	7450	778	<LOD	21363	<LOD	251592	<LOD
64	20.94	<LOD	<LOD	1256	171508	13772	7309	668	4.1	17665	<LOD	295055	<LOD
65	21.24	<LOD	<LOD	719	186616	6833	5238	652	4.1	10982	<LOD	298460	<LOD
66V	21.45	<LOD	23	1450	167597	7695	4211	554	<LOD	13808	<LOD	314718	<LOD
67	21.61	<LOD	<LOD	424	162095	9930	828	559	<LOD	14545	<LOD	304771	<LOD
68	21.87	<LOD	45	1286	3311	15116	<LOD	499	<LOD	30319	<LOD	324284	<LOD
69	22.17	31	23	1604	3054	13378	<LOD	511	<LOD	29848	<LOD	325317	<LOD
70V	22.32	<LOD	<LOD	1177	1961	13345	253	440	<LOD	30199	277	350781	<LOD
71	22.44	<LOD	38	1337	2515	15435	1374	518	<LOD	35975	<LOD	322646	2063
72	22.74	<LOD	32	1402	2424	15187	315	502	<LOD	30006	<LOD	338891	<LOD
73	23.04	49	31	1412	3325	14286	802	483	<LOD	28002	<LOD	332562	<LOD
74V	23.29	27	27	843	2533	13705	854	457	<LOD	25701	<LOD	344412	2159
75	23.47	<LOD	<LOD	991	2489	11252	249	404	<LOD	25056	419	324415	<LOD
76	23.75	<LOD	24	1616	2813	14241	2298	519	<LOD	30305	439	323350	<LOD
77	24.03	<LOD	24	1968	2711	14173	1249	428	<LOD	29998	358	332454	<LOD
78V	24.22	<LOD	<LOD	1051	591	12476	320	377	<LOD	24812	<LOD	352397	<LOD
79	24.55	<LOD	18	263	168417	8172	1775	586	<LOD	8063	<LOD	321269	<LOD
80	24.77	<LOD	20	558	173220	5293	1735	587	<LOD	7660	<LOD	313284	<LOD
81	25.07	<LOD	<LOD	444	172677	10827	614	664	<LOD	14079	<LOD	269160	<LOD
82V	25.26	<LOD	<LOD	298	188272	8133	3256	628	<LOD	9009	<LOD	310304	<LOD
83	25.36	<LOD	<LOD	473	192788	8480	4792	655	<LOD	10445	<LOD	290977	<LOD
84	25.66	<LOD	<LOD	594	188375	10830	3988	657	<LOD	12822	<LOD	291019	4813
85	25.96	<LOD	<LOD	695	188695	7044	5806	613	<LOD	10193	<LOD	294320	<LOD
86V	26.17	<LOD	<LOD	788	248923	6414	6869	698	<LOD	9305	<LOD	228373	<LOD
87	26.32	<LOD	19	519	196871	9723	4719	621	<LOD	11613	<LOD	283829	<LOD
88	26.65	<LOD	<LOD	580	198532	9874	555	695	<LOD	12808	<LOD	269325	<LOD
89	26.97	<LOD	<LOD	822	203664	9969	1851	678	<LOD	13813	<LOD	261352	<LOD
90V	27.13	<LOD	<LOD	679	198768	7068	5188	628	<LOD	9322	<LOD	289048	<LOD
91	27.37	<LOD	<LOD	414	198433	8532	4695	615	<LOD	11434	<LOD	284717	<LOD
92	27.75	<LOD	34	1636	4989	18319	2361	577	<LOD	38864	656	329087	3077
93	27.95	<LOD	27	1454	2207	10441	516	380	<LOD	18386	<LOD	354695	<LOD
94V	28.21	<LOD	20	1561	2185	11865	1208	459	<LOD	24595	716	343315	<LOD
95	28.41	<LOD	<LOD	595	178651	6517	3316	568	<LOD	7746	<LOD	306014	<LOD
96	28.71	<LOD	<LOD	560	195296	10997	3090	708	<LOD	13674	<LOD	279341	6283
97	29.01	<LOD	<LOD	789	189496	6595	4114	583	<LOD	9628	<LOD	297346	8903
98V	29.26	<LOD	<LOD	444	198743	9607	3648	607	<LOD	10395	<LOD	281704	<LOD
99	29.34	<LOD	<LOD	1096	190775	8722	5418	1183	<LOD	10361	<LOD	293581	<LOD
100	29.64	<LOD	<LOD	547	191071	8467	4088	730	<LOD	11681	<LOD	284909	8809
101	29.94	<LOD	<LOD	275	183553	8563	4048	675	<LOD	10244	<LOD	286104	4059
102V	30.12	<LOD	43	1988	197397	14511	4054	712	3.7	16002	727	236551	<LOD
103	30.23	<LOD	<LOD	442	189252	8180	3768	658	<LOD	9927	<LOD	281888	<LOD
104	30.53	<LOD	<LOD	706	210512	9686	1329	600	<LOD	8831	<LOD	254016	<LOD
105	30.83	<LOD	<LOD	476	195812	10375	2296	626	<LOD	12422	<LOD	275197	<LOD
106V	31.04	<LOD	<LOD	517	187191	7317	3379	542	<LOD	9363	<LOD	288234	<LOD
107	31.23	<LOD	<LOD	1217	179162	7256	6491	508	<LOD	8535	<LOD	293781	<LOD
108	31.53	<LOD	<LOD	378	196800	9501	3945	580	<LOD	10789	<LOD	279831	<LOD
109	31.83	<LOD	<LOD	348	191194	7991	4035	663	<LOD	9871	<LOD	287065	<LOD
110V	32.06	<LOD	<LOD	381	190214	9458	5033	613	<LOD	11599	<LOD	286107	<LOD
111	32.18	<LOD	<LOD	337	200823	6724	3893	544	<LOD	9507	<LOD	277176	<LOD
112	32.48	<LOD	<LOD	331	192101	5157	4731	576	<LOD	7162	<LOD	286261	<LOD
113	32.78	<LOD	<LOD	607	192563	6276	3940	619	<LOD	8072	<LOD	285799	<LOD
114V	32.96	<LOD	<LOD	455	185867	8108	5549	729	<LOD	12113	<LOD	278490	<LOD

Table 17. XRF results (Cr, V, Ti, Ca, K, S, Ba, Nb, Al, P, Si, Mg) of plug samples 115 to 170V.

Plug id.	Depth (m)	Cr (ppm)	V (ppm)	Ti (ppm)	Ca (ppm)	K (ppm)	S (ppm)	Ba (ppm)	Nb (ppm)	Al (ppm)	P (ppm)	Si (ppm)	Mg (ppm)
115	33.15	<LOD	<LOD	410	188590	7338	1541	589	<LOD	9763	<LOD	278302	6120
116	33.45	<LOD	<LOD	305	203368	6743	4480	646	<LOD	9333	<LOD	275169	8175
117	33.68	<LOD	25	1669	3310	14787	<LOD	483	<LOD	33631	<LOD	315898	<LOD
118V	33.95	<LOD	27	2376	4658	12147	645	432	3.1	31714	4816	317552	<LOD
119	34.10	60	39	1536	18098	11571	1402	501	9.4	30319	10938	318345	<LOD
120	34.40	38	27	2844	3524	13854	<LOD	454	<LOD	35049	377	327182	<LOD
121	34.70	<LOD	25	2805	2159	11929	734	466	<LOD	25364	452	321583	<LOD
122V	34.90	<LOD	22	1247	947	14092	538	478	<LOD	25491	<LOD	350054	1889
123	35.10	<LOD	35	1289	3581	13860	366	496	<LOD	35639	579	314407	<LOD
124	35.40	<LOD	<LOD	657	205215	6061	4954	637	<LOD	9257	<LOD	272258	5790
125	35.65	<LOD	<LOD	420	199134	10847	6743	643	<LOD	15295	<LOD	258716	<LOD
126V	35.90	<LOD	<LOD	683	195633	6418	5334	557	<LOD	9977	<LOD	274970	5584
127	36.07	63	37	1171	284745	14234	8717	613	4.8	22302	<LOD	130269	<LOD
128	36.40	<LOD	<LOD	607	194397	9419	4333	608	<LOD	12839	<LOD	270843	<LOD
129	36.71	<LOD	<LOD	553	183121	8315	5511	596	<LOD	9489	<LOD	296765	<LOD
130V	36.86	<LOD	<LOD	1303	184298	10812	9645	732	3.0	21850	<LOD	257786	<LOD
131	36.97	<LOD	<LOD	831	176416	9688	7444	657	<LOD	11725	<LOD	289742	<LOD
132	37.35	<LOD	<LOD	2476	2419	13770	1884	466	<LOD	33116	<LOD	324202	<LOD
133	37.58	<LOD	23	2577	1920	13936	595	464	<LOD	34196	<LOD	335421	2097
134V	37.79	59	45	4546	2410	16174	1226	527	5.9	39692	<LOD	326879	2400
135	37.95	32	37	2691	1859	15569	1812	538	2.9	32364	<LOD	333380	<LOD
136	38.25	34	29	2584	3274	15622	6101	538	<LOD	28847	491	321020	<LOD
137	38.55	<LOD	34	1858	1351	14409	6601	541	<LOD	28393	<LOD	343232	<LOD
138V	38.73	<LOD	29	3140	3018	19946	11767	510	<LOD	36525	<LOD	310684	<LOD
139	38.89	<LOD	<LOD	976	162993	13025	4886	671	<LOD	15871	<LOD	297106	<LOD
140	39.19	31	26	2914	5002	16449	4260	447	<LOD	33518	<LOD	328963	<LOD
141	39.43	49	29	3589	2697	17076	2864	488	<LOD	32846	<LOD	335610	<LOD
142V	39.64	55	34	2064	3704	18312	9100	490	<LOD	35581	<LOD	323104	<LOD
143	39.82	34	30	2657	1948	15884	7398	471	<LOD	30491	<LOD	337866	<LOD
144	40.12	<LOD	26	3256	1983	16330	5555	487	3.0	36218	<LOD	327033	<LOD
145	40.42	35	<LOD	2455	2374	17020	8364	512	2.9	36853	272	332686	<LOD
146V	40.62	39	29	2109	1623	16060	10122	537	<LOD	33630	<LOD	335760	1865
147	40.77	67	95	3991	5703	22930	25251	611	7.2	61812	737	239679	4091
148	41.09	60	<LOD	900	175261	14103	15869	666	<LOD	22415	<LOD	258929	<LOD
149	41.43	<LOD	<LOD	744	171979	10155	11629	714	<LOD	18408	<LOD	276892	<LOD
150V	41.62	61	37	2091	2630	18161	28260	626	5.9	50309	<LOD	330440	<LOD
151	41.73	<LOD	61	2840	1561	20643	30257	721	5.3	53081	<LOD	329076	2353
152	42.03	51	64	2948	2359	21947	30809	670	5.3	59945	<LOD	308128	<LOD
153	42.33	74	42	3430	2399	21757	31875	760	6.2	51028	<LOD	325085	<LOD
154V	42.49	52	46	3032	1940	21544	26899	784	4.5	59129	446	296778	<LOD
155	42.60	66	46	3408	2521	22064	28990	710	6.1	55302	<LOD	308937	2681
156	42.89	<LOD	44	3439	1171	21750	5521	736	5.0	53734	<LOD	336152	<LOD
157	43.20	89	56	3263	2637	24121	5855	786	7.0	48768	<LOD	311321	<LOD
158V	43.40	34	57	3365	16398	22424	39310	716	6.4	54766	<LOD	296992	<LOD
159	43.54	56	81	4278	3724	25706	46436	777	8.2	55663	<LOD	319074	<LOD
160	43.90	<LOD	39	2176	130258	17157	23962	780	3.7	36829	<LOD	267757	6060
161	44.19	56	56	3610	22945	22287	38549	740	7.4	53553	<LOD	287870	<LOD
162V	44.38	83	54	3508	31553	22487	33073	729	6.9	56318	<LOD	282388	4293
163	44.54	51	54	3521	27548	23648	35859	745	6.5	55129	<LOD	284023	<LOD
164	44.84	73	66	3532	28003	23134	35573	830	7.2	53196	<LOD	291879	<LOD
165	45.19	31	37	2010	119420	18593	23934	748	5.1	37787	<LOD	277973	<LOD
166V	45.34	90	49	3742	15761	23751	39264	799	7.6	55449	<LOD	289940	3368
167	45.53	47	33	2613	17678	22612	30829	816	6.6	51692	<LOD	303184	3157
168	45.83	86	65	4370	7169	24848	45745	821	9.2	54525	<LOD	277242	<LOD
169	46.13	44	56	3493	6139	23449	41706	801	8.1	50771	<LOD	289552	<LOD
170V	46.37	34	41	2939	5693	23267	31694	728	5.9	51535	<LOD	312517	3759

Table 18. XRF results (Cr, V, Ti, Ca, K, S, Ba, Nb, Al, P, Si, Mg) of plug samples 171 to 226V.

Plug id.	Depth (m)	Cr (ppm)	V (ppm)	Ti (ppm)	Ca (ppm)	K (ppm)	S (ppm)	Ba (ppm)	Nb (ppm)	Al (ppm)	P (ppm)	Si (ppm)	Mg (ppm)
171	46.50	39	48	3408	3484	24087	31116	780	6.3	51361	<LOD	317792	<LOD
172	46.79	87	68	3528	2246	23620	44881	826	7.2	53540	<LOD	288432	<LOD
173	47.07	54	85	4539	2045	25380	45543	848	8.9	53078	<LOD	291498	<LOD
174V	47.30	33	64	3415	2538	22089	36261	771	5.2	47523	<LOD	316426	3559
175	47.36	47	65	3740	1272	22372	31619	741	6.5	46888	<LOD	324285	3403
176	47.70	28	49	2892	933	20249	30550	682	5.5	43406	<LOD	344742	2863
177	47.97	59	70	1938	2422	14729	8644	676	<LOD	25330	285	358521	<LOD
178V	48.15	<LOD	49	2479	1729	17844	30176	723	<LOD	38222	<LOD	349362	2708
179	48.35	41	35	2237	5658	16175	12089	586	<LOD	31705	<LOD	362843	<LOD
180	48.63	25	36	2322	947	17400	5559	655	<LOD	37235	<LOD	346039	<LOD
181	48.91	30	41	2491	851	17922	3263	595	<LOD	36417	<LOD	350015	<LOD
182V	49.10	73	48	2837	766	17013	8806	570	4.3	34503	<LOD	354422	<LOD
183	49.33	28	48	3033	1190	17886	4866	619	3.0	34686	<LOD	359551	2553
184	49.57	<LOD	43	2269	1033	17243	6484	600	2.9	33186	<LOD	359658	<LOD
185	49.93	50	57	2364	1253	17922	16270	601	5.1	29166	<LOD	356379	<LOD
186V	50.10	27	42	2629	1840	17989	9555	606	2.8	37704	<LOD	352209	<LOD
187	50.31	97	53	2490	2142	17328	7648	615	<LOD	35468	<LOD	347477	<LOD
188	50.61	<LOD	51	3107	1154	19803	8512	623	4.3	39874	<LOD	351200	<LOD
189	50.91	<LOD	45	2873	1023	16430	6690	519	<LOD	32879	<LOD	359950	<LOD
190V	51.11	<LOD	41	2624	641	18650	12722	584	3.7	34399	<LOD	356251	<LOD
191	51.12	27	49	3470	798	20445	5896	624	3.9	40128	<LOD	358659	<LOD
192	51.39	36	50	3062	739	19896	13018	741	5.0	36189	<LOD	340648	<LOD
193	51.72	59	50	3004	794	20116	11840	652	5.2	39560	282	336687	<LOD
194V	51.93	72	33	2968	1072	21001	7734	629	4.7	39627	<LOD	342180	<LOD
195	52.11	53	71	3137	960	21759	28178	702	5.5	41506	<LOD	346279	<LOD
196	52.41	36	46	2581	1200	18468	23829	608	3.2	39896	<LOD	341545	<LOD
197	52.71	<LOD	40	2400	1097	16541	6119	523	<LOD	38598	<LOD	350018	<LOD
198V	52.88	83	47	1873	935	21189	27429	796	<LOD	32243	697	344537	<LOD
199	53.08	43	63	4453	783	24846	21219	737	9.7	42741	<LOD	330697	<LOD
200	53.38	<LOD	51	2513	494	19063	33442	632	3.0	40898	<LOD	342161	<LOD
201	53.68	54	44	1958	1442	17821	4728	618	<LOD	39218	<LOD	341609	<LOD
202V	53.86	38	32	2509	786	20760	24001	692	4.0	40987	<LOD	358599	<LOD
203	54.06	35	48	3353	1089	22723	32710	771	5.6	46919	<LOD	335401	2869
204	54.36	65	62	3454	1175	22085	32412	760	6.7	49556	358	323763	3262
205	54.66	80	54	3299	1365	23289	29849	800	7.9	47150	<LOD	329925	<LOD
206V	54.86	34	59	2993	4071	21460	41901	801	8.0	45120	<LOD	328991	3178
207	55.02	44	45	2128	21960	18261	23976	646	6.3	41468	<LOD	321707	3436
208	55.32	66	41	2701	19384	20402	28424	748	6.0	49148	<LOD	290563	2893
209	55.62	<LOD	<LOD	1556	186887	11187	15017	755	4.7	24322	<LOD	243041	5376
210V	55.84	<LOD	28	1248	211339	10621	16367	746	3.6	26058	<LOD	204519	4882
211	56.01	<LOD	<LOD	1069	186550	10543	11455	715	6.2	20995	<LOD	254119	<LOD
212	56.31	44	<LOD	1381	196836	11880	16152	816	5.1	28424	<LOD	226207	7004
213	56.58	<LOD	<LOD	1148	178635	11536	12197	774	4.5	23433	<LOD	254789	<LOD
214V	56.76	<LOD	<LOD	1505	172979	11597	13310	688	6.2	22587	<LOD	258267	<LOD
215	56.89	<LOD	40	1414	95793	14082	10547	664	<LOD	28682	<LOD	311050	<LOD
216	57.17	101	78	4223	11846	23277	41354	802	8.0	52633	<LOD	281254	3669
217	57.47	74	78	3333	13145	22040	30795	843	7.6	51726	<LOD	305745	3633
218V	57.66	62	71	4037	6957	22863	34345	808	8.8	59378	<LOD	289400	4394
219	57.89	50	42	2683	39911	19188	25658	692	4.3	35685	<LOD	309180	3789
220	58.17	56	55	3559	13848	21553	32719	699	7.4	51704	<LOD	297758	3047
221	58.48	69	65	3576	7785	22338	32983	805	5.6	52666	<LOD	298250	<LOD
222V	58.67	71	84	3882	7537	22568	48699	853	7.7	54057	<LOD	288742	3745
223	58.82	96	85	4297	8516	24123	41268	830	9.6	52988	<LOD	291986	2705
224	59.15	108	93	4816	6391	25666	49282	845	10.5	55015	<LOD	290276	4971
225	59.44	68	63	3325	11305	20910	34613	802	7.2	46516	<LOD	312406	4448
226V	59.59	99	79	4336	7066	23968	48128	861	11.2	54311	<LOD	275939	3056

Table 19. XRF results (Cr, V, Ti, Ca, K, S, Ba, Nb, Al, P, Si, Mg) of plug samples 227 to 278.

Plug id.	Depth (m)	Cr (ppm)	V (ppm)	Ti (ppm)	Ca (ppm)	K (ppm)	S (ppm)	Ba (ppm)	Nb (ppm)	Al (ppm)	P (ppm)	Si (ppm)	Mg (ppm)
227	59.76	65	64	3115	11178	21921	34123	717	7.2	54106	<LOD	293032	3245
228	60.03	89	77	3813	4982	22984	37511	822	9.5	52214	<LOD	313470	4603
229	60.36	45	66	3368	6162	22891	33715	769	8.3	50965	<LOD	320004	<LOD
230V	60.58	79	76	3932	10067	21517	36956	795	8.9	52181	<LOD	297158	3095
231	60.72	62	91	4338	8267	24192	38006	822	7.5	50122	<LOD	304630	<LOD
232	61.03	46	83	3937	4559	23547	41090	780	6.3	51587	<LOD	317502	5152
233	61.31	114	69	4520	10656	22916	49042	870	8.0	56501	<LOD	262199	7144
234V	61.51	82	63	4074	15825	22421	45501	783	9.3	56019	<LOD	280310	<LOD
235	61.66	45	57	2811	38441	18588	33713	762	6.3	45433	<LOD	299877	<LOD
236	61.96	<LOD	<LOD	1303	219567	10478	14461	762	4.7	25904	<LOD	204242	<LOD
237	62.22	68	<LOD	1428	163535	12000	14975	707	4.9	25479	<LOD	261215	5176
238V	62.40	86	69	4385	1850	24349	36175	758	8.8	57966	<LOD	305158	3759
239	62.46	70	96	4392	1979	23956	34290	748	9.4	53459	<LOD	318411	3872
240	62.78	88	88	3849	1766	23090	34087	812	8.8	52913	<LOD	321226	<LOD
241	63.09	50	55	3669	8356	23064	34107	853	7.2	52806	<LOD	296786	5431
242V	63.22	84	103	4374	1288	25719	45559	807	10.0	55815	<LOD	298790	5192
243	63.37	86	75	3380	10559	21877	32313	760	8.1	51304	<LOD	311296	4434
244	63.62	25	76	3413	1267	21571	30175	769	5.8	48771	<LOD	331972	<LOD
245	63.93	53	86	3876	5616	24297	32949	794	7.2	57027	<LOD	311752	<LOD
246V	64.12	38	56	3054	4799	21450	25056	742	4.9	52085	<LOD	313526	7672
247	64.24	73	62	3531	12645	20661	34820	794	5.7	48321	630	304706	3637
248	64.55	50	72	3756	3765	23474	29706	767	6.6	52963	<LOD	312470	3382
249	64.80	86	91	4455	3269	23866	42329	791	8.3	54397	<LOD	282290	5962
250V	65.04	95	62	3638	2575	20837	32428	687	8.3	50918	<LOD	331589	7135
251	65.20	34	69	3148	4450	20229	31069	713	6.0	44103	<LOD	328783	<LOD
252	65.50	47	63	4175	3385	22841	32919	830	9.5	47861	<LOD	326661	2652
253	65.77	40	78	3646	1839	22807	30225	752	5.7	50081	<LOD	335420	5120
254V-A	66.01	60	120	6069	1198	27200	54057	904	11.7	53421	<LOD	279581	5689
254V-B	66.01	<LOD	55	2338	5069	17215	30520	565	4.1	36894	<LOD	349072	<LOD
255	66.15	<LOD	26	507	68192	7374	6190	448	<LOD	9136	<LOD	389408	<LOD
256	66.45	<LOD	58	3357	15580	19112	27037	717	6.3	37900	<LOD	327339	<LOD
257	66.77	<LOD	<LOD	457	189818	10121	5928	621	<LOD	12913	<LOD	278566	5756
258V	66.96	<LOD	<LOD	1386	249879	13551	24531	669	3.3	24996	<LOD	158199	6127
259	67.13	43	39	1379	7211	12399	4312	518	<LOD	23264	<LOD	364199	<LOD
260	67.43	<LOD	<LOD	682	1290	10015	1604	483	<LOD	15446	<LOD	354998	<LOD
261	67.66	<LOD	20	822	1501	13619	3345	439	<LOD	21702	<LOD	356836	<LOD
262V	67.95	<LOD	39	660	1275	16138	749	531	<LOD	18917	<LOD	374327	2414
263	68.12	<LOD	39	1517	2326	12463	1315	439	<LOD	21603	<LOD	379674	2808
264	68.38	<LOD	21	2102	2984	11053	1678	373	<LOD	18348	<LOD	356888	<LOD
265	68.74	<LOD	<LOD	366	204980	7175	9010	557	<LOD	8893	<LOD	268688	<LOD
266V	68.91	<LOD	<LOD	337	186509	6798	7370	560	<LOD	9277	<LOD	276333	<LOD
267	69.06	60	32	868	6218	10351	2660	639	<LOD	21343	<LOD	350163	<LOD
268	69.33	<LOD	44	322	97713	10948	7643	486	<LOD	11278	<LOD	354384	3136
269	69.63	<LOD	<LOD	488	183337	12705	9697	532	<LOD	12472	<LOD	268618	4967
270V	69.85	<LOD	<LOD	370	148073	7358	6250	492	<LOD	7175	<LOD	323090	<LOD
271	70.31	<LOD	<LOD	203	179690	5970	2245	483	<LOD	6769	<LOD	294584	<LOD
272	70.63	<LOD	<LOD	328	182840	7114	5427	623	<LOD	8118	<LOD	292408	<LOD
273	70.90	<LOD	<LOD	593	208309	10282	7486	530	<LOD	11485	<LOD	241279	<LOD
274V	71.06	<LOD	<LOD	633	191915	10367	4912	518	<LOD	14730	<LOD	271067	<LOD
275	71.17	<LOD	<LOD	339	190116	9713	8055	598	<LOD	10454	<LOD	252892	4957
276	71.51	<LOD	33	1400	236257	14206	16957	626	4.0	21303	<LOD	171619	8918
277	71.75	47	<LOD	240	235772	7213	5501	460	<LOD	8654	<LOD	244375	5617
278	72.33	<LOD	<LOD	295	230361	10136	9398	587	<LOD	9079	<LOD	237171	<LOD

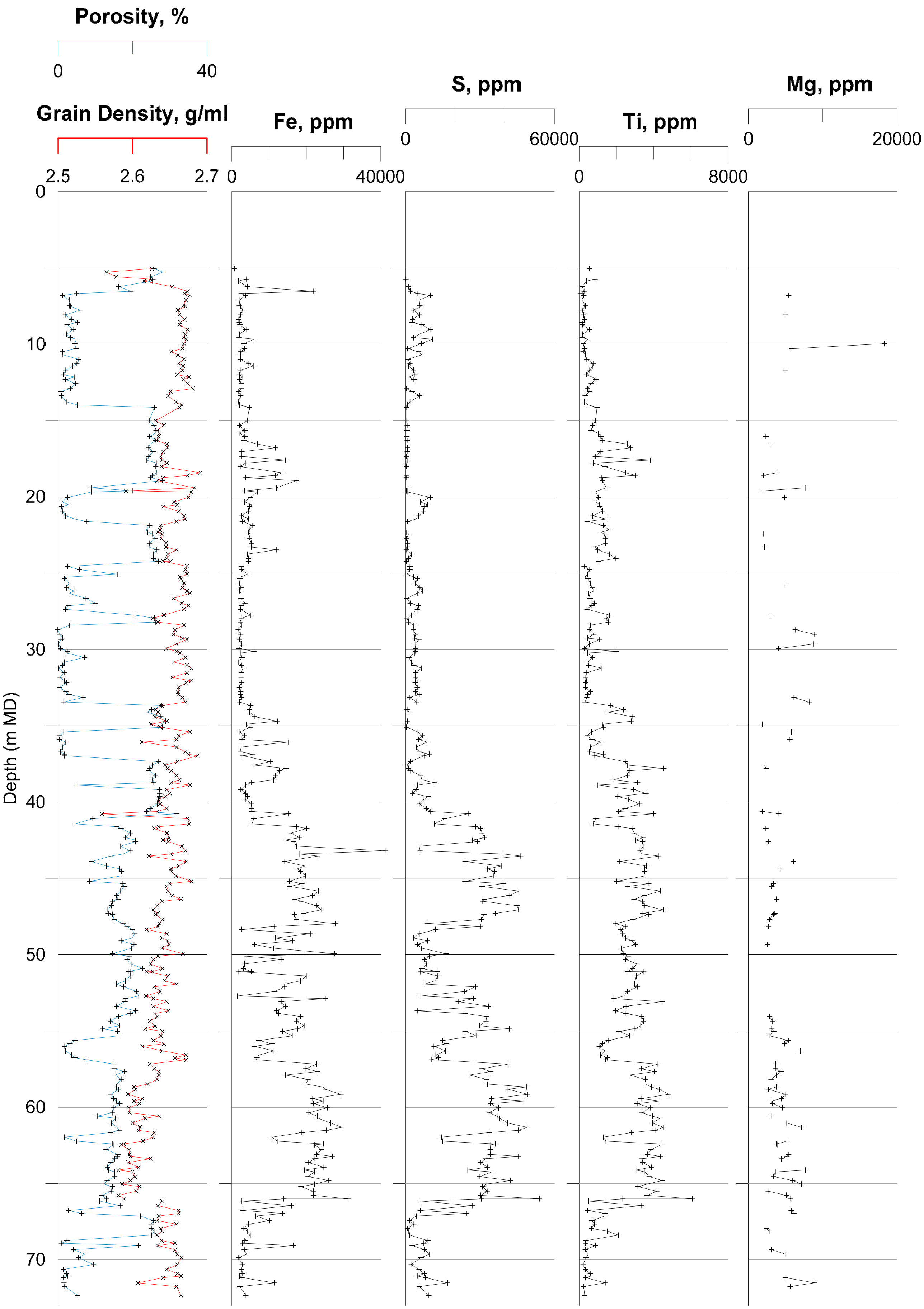


Figure 28. Log of XRF data: Fe, S, Ti, Mg vs. depth.

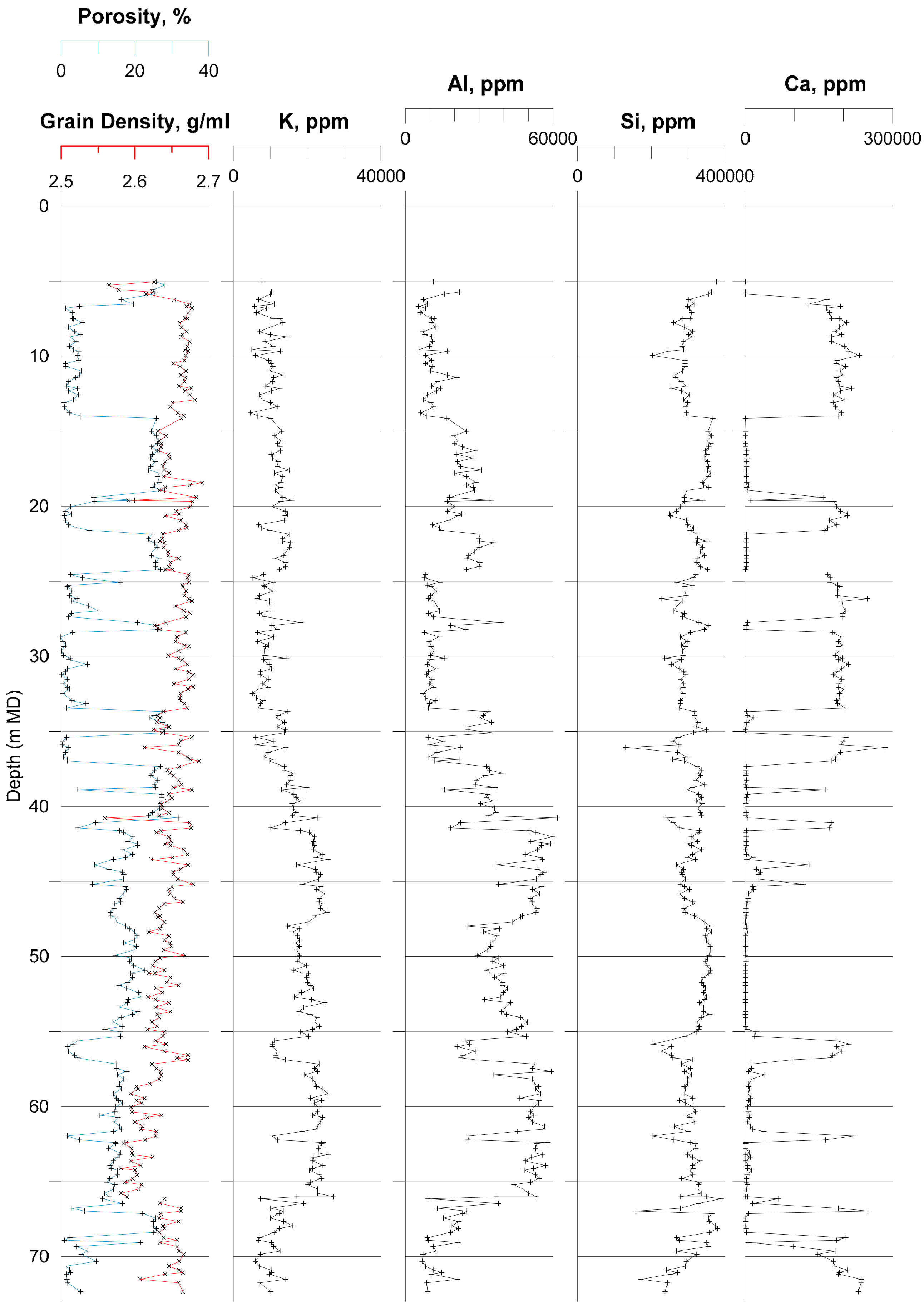


Figure 29. Log of XRF data: K, Al, Si, Ca vs. depth.

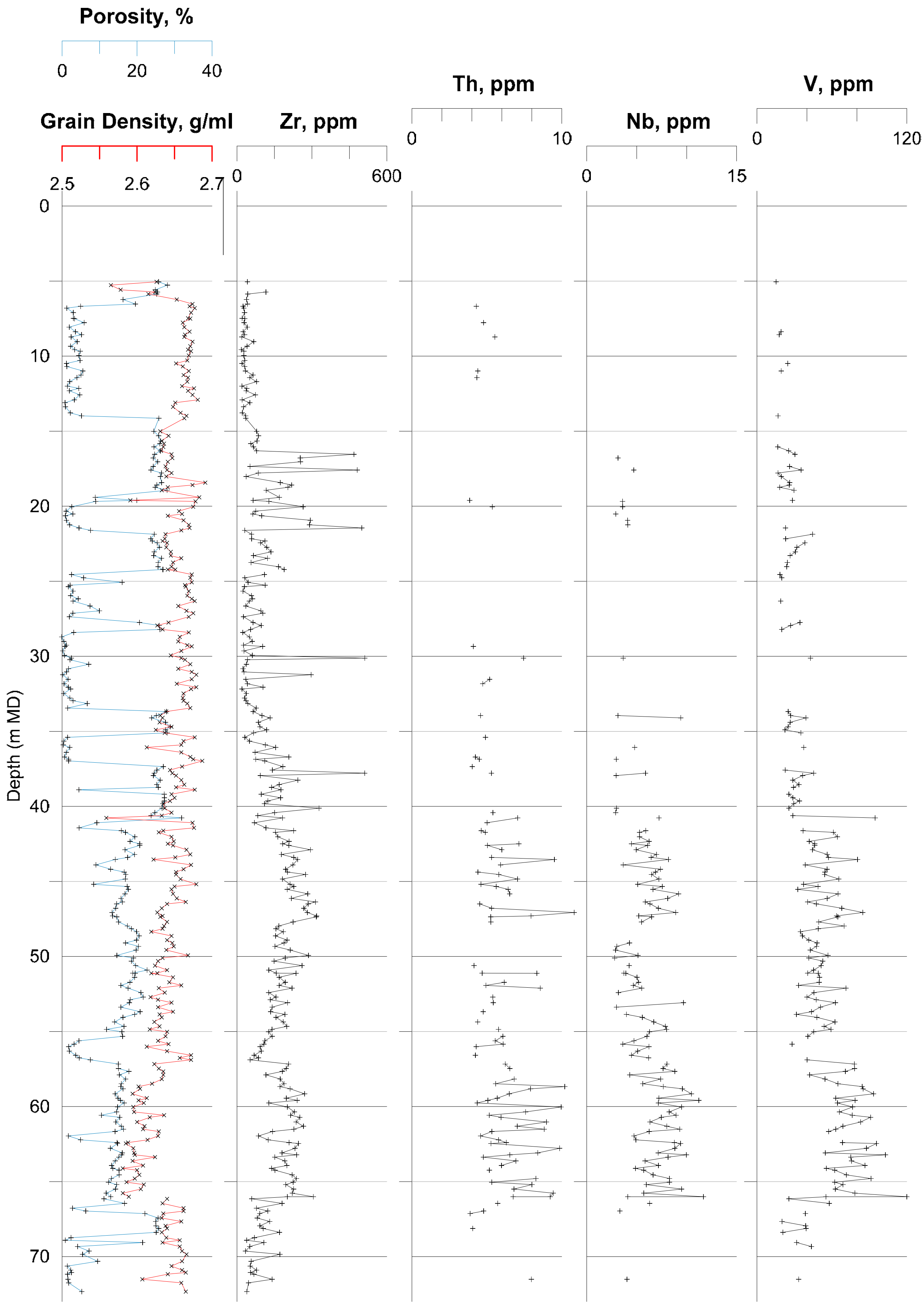


Figure 30. Log of XRF data: Zr, Th, Nb, V vs. depth.

6. References

API: Recommended practices for core analysis, RP 40, 2nd ed. *API Publications, Washington D.C., February 1998.*

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