

Rødby-1 core photos

Jesper Arvedlund Hollensen, Julie Christina Steen &
Niels Hemmingsen Schovsbo

Rødby-1 core photos

Jesper Arvedlund Hollensen, Julie Christina Steen &
Niels Hemmingsen Schovsbo

TABLE OF CONTENT

1	Introduction	4
2	Core information	9
3	Core imaging	11
4	Post-Processing	13
5	Appendix A	18

With renewed interest in the Rødby-1 well and cores due to its relevance for potential CO₂ storage in the Bunter Sandstone Formation in the Rødby Structure, this report presents newly acquired white-light photographs of all available cores from the well. The imaging is part of a larger effort at GEUS aimed at photographic recording of key cored sections relevant for geothermal and/or carbon storage project evaluations. Previously the Gassum-1 well (GEUS report 2025/30) has been photographic recorded in a similar manner.

The Rødby-1 well represents a key stratigraphic section for evaluating overburden, seals, and reservoir intervals in the Danish part of the North German Basin (Figures 1, 2). In the well, 74 cores were cut (Table 1), covering the stratigraphic successions from the Lower Cretaceous and to the Bunter Shale Formation (Figure 3). At present, the cores are divided into 190 core boxes and stored at the GEUS core store in Tåstrup, Denmark.

The Rødby-1 well was drilled in 1952, and the cores current state of preservation is poor and insufficiently documented. Earlier photographic documentation of selected cores exists in Abramowitz et al. (2024). The images presented here each covers all cores with each image representing a single core box section of 1.2 m in length and document the current condition of the cores “as-is”. The cores are dry, and no washing of surface or restoration of drill core pieces to the original shape have carried out.

Images were obtained using a Canon EOS R5 (macro setup) with a newly developed photo station at GEUS. Core numbers and depth intervals are clearly indicated on each core section image. Photographs were taken at optimized resolution under natural lighting, supplemented by controlled flash settings. Plastic wrapping, old labels, and other covering materials were removed or minimized prior to imaging to maximize visibility.

As part of the post-processing, composite views of up to five core boxes have been prepared to represent full core sections.

The dataset consists of a report “Rødby_1_core_photos.pdf” printed within the GEUS report Serie (GEUS report 2026/3). The report includes a text volume, Appendix A and digital files:

- 190 JPG images (processed, cropped, and light- and colour-optimized) of each core box, labelled with a unique GEUS storage number (pkv-number). These are included in zip-folder “GEUS2026_3_core_box_jpg”. Naming is PKV00X.XXX.jpg. First image is PKV000.877.jpg Last image is PKV001.066.jpg
- 69 PDF-mounted core sections (up to five boxes combined), including metadata and labelled with the core number. These are included in zip folder “GEUS2026_3_core_pdf”. Naming is Rødby_1_Core X b1_X.jpg. First image is Rødby_1_Core 1 b1.pdf; last image is Rødby_1_Core 74 b1_2.pdf
- Overview of core depth, pk- number and stratigraphy (Table 1 of this report) as excel file “Table_1_Rødby_1_core_data.xlsx”.

In the printed report the complete photographic record of Rødby-1 is included in Appendix A, where all PDF-mounted core sections are presented in low resolution to allow for easy sharing and overview of the core material.

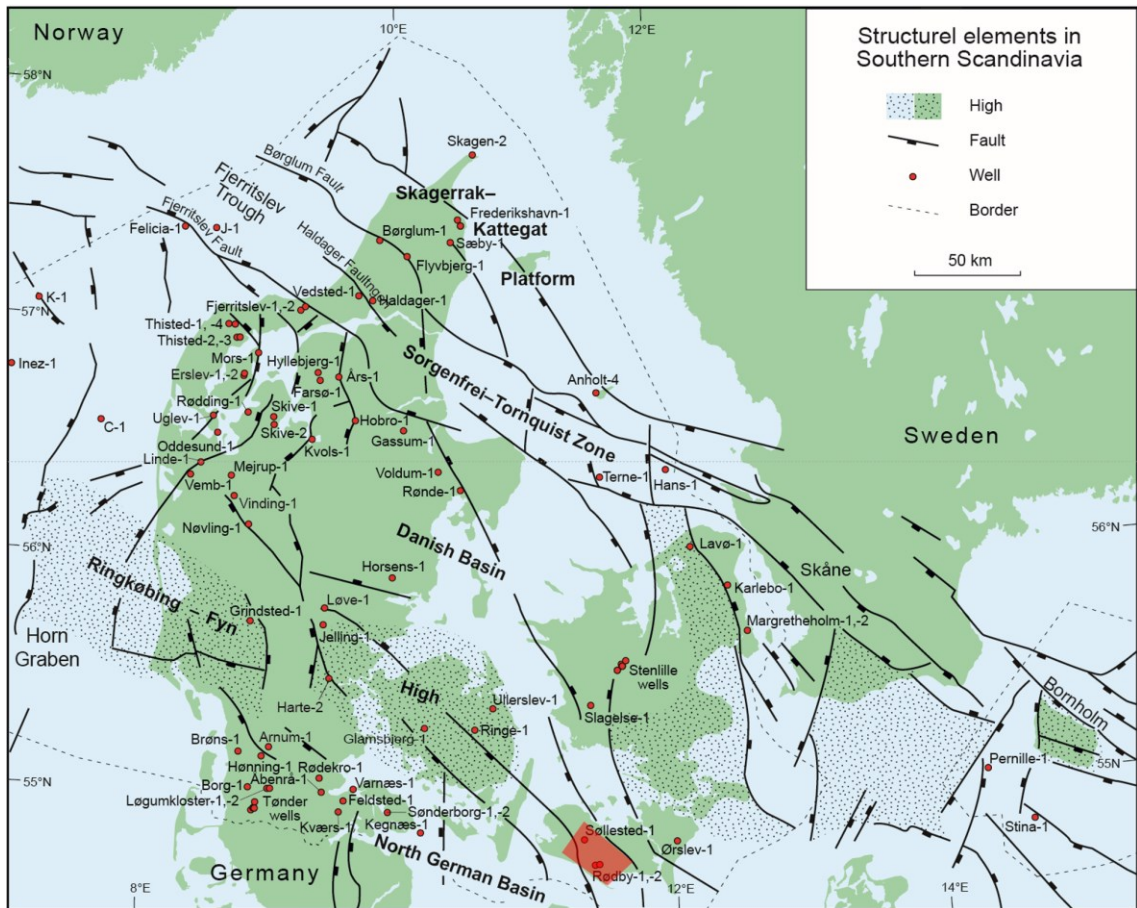


Figure 1 Location of the Rødby-1 well and the Rødby structure and the main structural elements including highs, basins, and main faults onshore and offshore Denmark. Modified from Nielsen (2003).

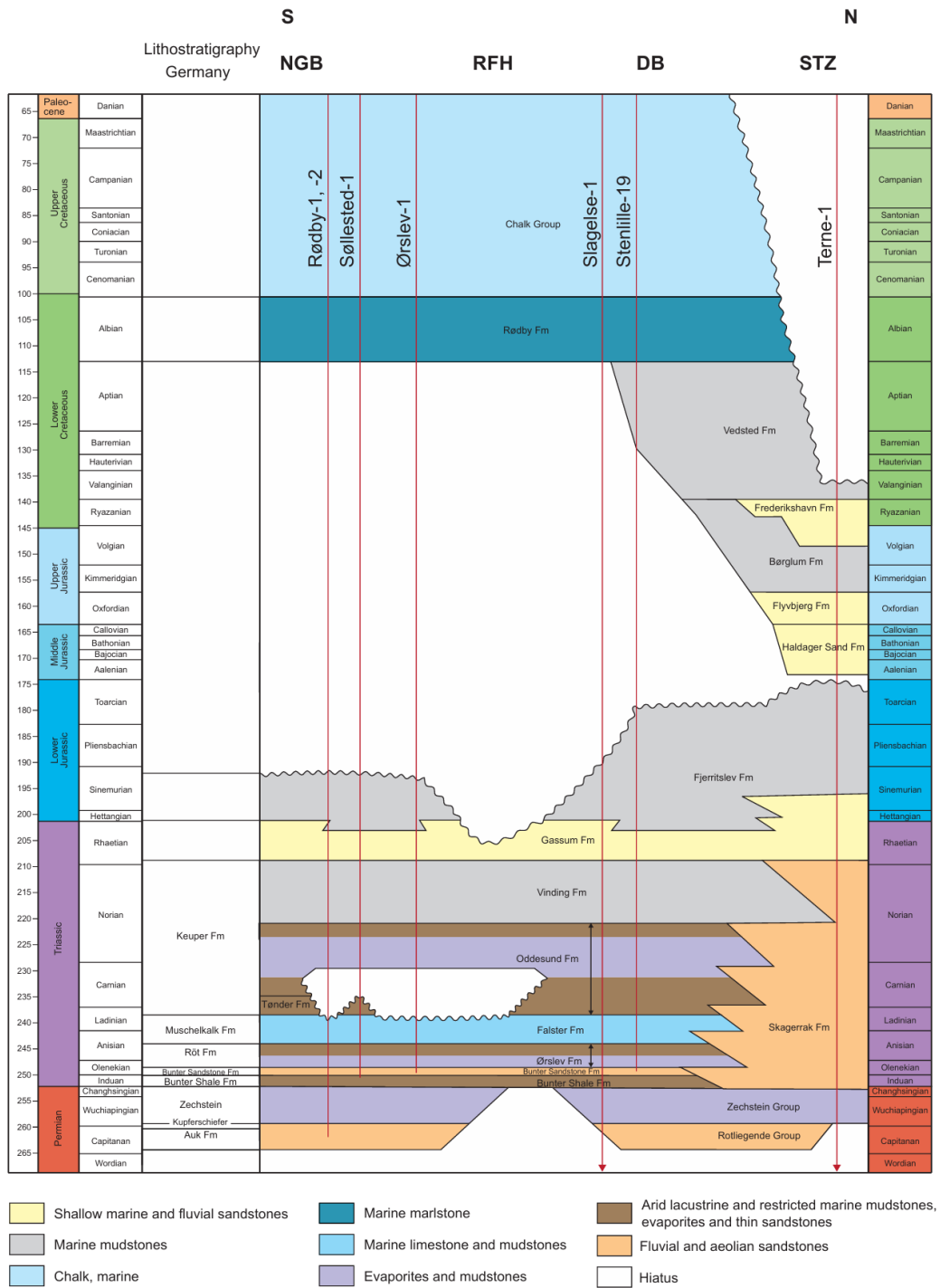


Figure 2 Generalized stratigraphy of North German Basin and the Rødby-1-2 wells (note that the Rødby-1 terminates in the Bunter Shale Formation). From Abramowitz et al. (2024).

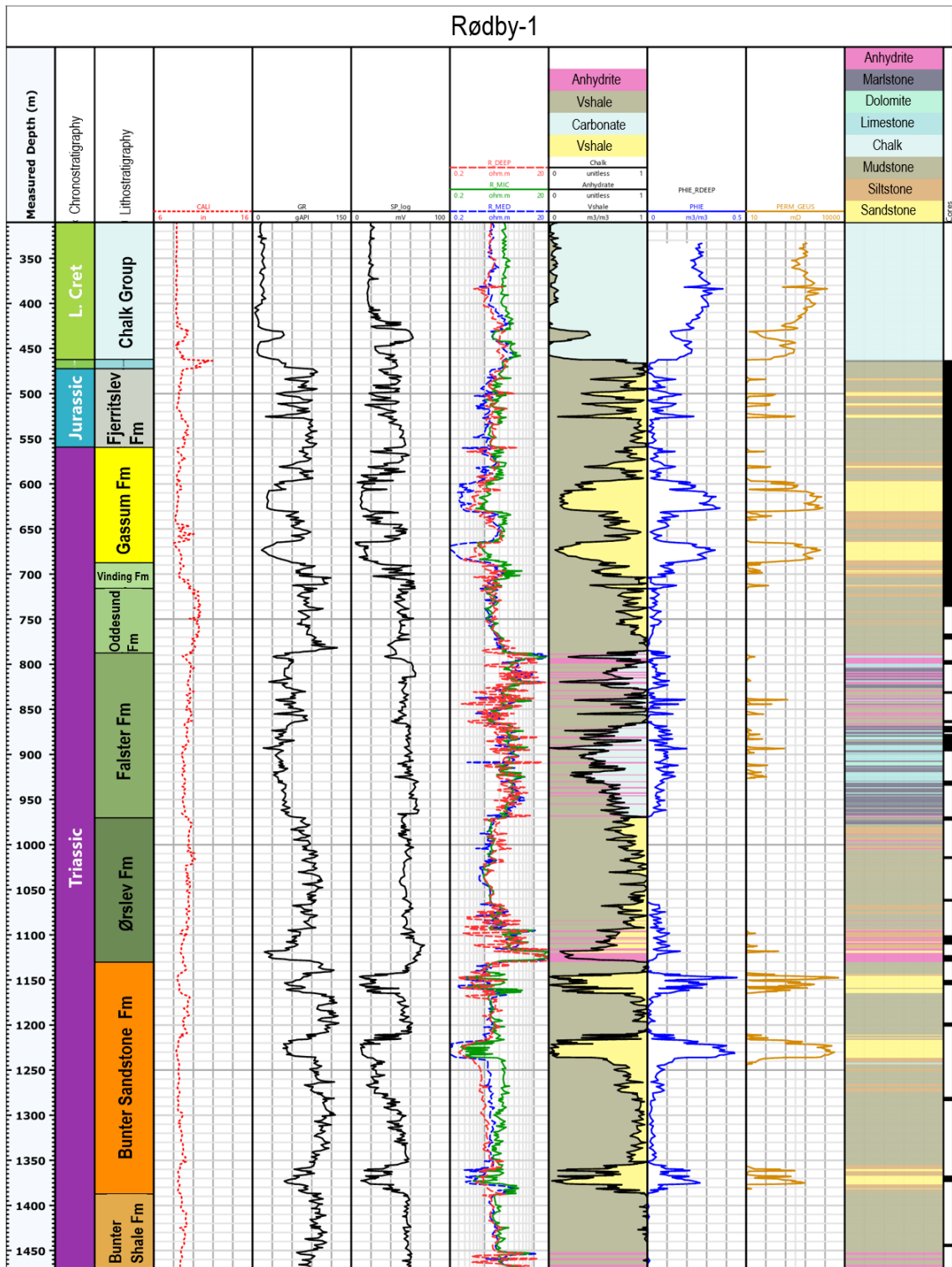


Figure 3 Lithostratigraphic subdivision of the Rødby-1 well with indication of the 74 core intervals. From Abramowitz et al. (2024).

2 CORE INFORMATION

The Rødby-1 well was drilled in 1952, and according to the well report, a total of 74 cores were cut (Danish American Prospecting, 1952). Since recovery, the core material has been re-packed.

Data for the cores are stored in the GEUS Samba archive, where each core box section is assigned a unique storage number (pkv-number) used for identification (Table 1). The Samba records include the core number, top and base depths in feet of each cored interval and the number of boxes into which each core is divided. A single core represents up to 6.1 m of recovered section, and each box typically contains up to 1.2 m of core. Box 1 corresponds to the topmost part of the core, while subsequent numbers represent progressively deeper intervals (e.g., up to box 5).

The core depths were originally reported in feet below rotary table (Table 1). Conversion of feet to m have been made using $1 \text{ m} = 0.3048 \text{ feet}$.

The original Completion Report was consulted (Danish American Prospecting, 1952) to compare the reported recovery with the present-day condition of the cores. However, the current state of preservation makes it impossible to measure the actual length of core still present. In some intervals, it is evident that the recovery reported in the Completion Report exceeds the material currently present in the boxes.

Inconsistencies were identified in the GEUS register:

- Core 8: Not present in the GEUS core archive
- Core 40: Not present in the GEUS core archive. The core had no recovery
- In some boxes a note was left indicating that the core pieces are incorrectly placed due to core handling issues. A full account of these boxes is not available.

3 CORE IMAGING

In September 2025, the core boxes were photographed at the GEUS Core Store, Tåstrup, Denmark (Figures 4 and 5).

The base of the core box is labelled in the GEUS archive with a core box label that indicate well name, core interval, box number and the unique pkv-number. This label is placed at lower end of the core box. During photographing the orientation of the box were such that the ruler was placed on the right side when the core base is oriented down – towards the camera mount. At the top end of the core box the pkv-number was written to uniquely identify the core box on the photo (Figure 5).

The camera was mounted about 1.2 m above the central part of the core box. A Canon EOS R5 camera was used in manual mode using fixed aperture f/8 and a shutter speed of 1/60. Iso was selected as auto. Recording of full frame “RAW” was used.

In each photo a colour chart was imaged to allow for colour correction (Figure 5).



Figure 4 Photo setup of the GEUS Core Store mobile photo rig. During imaging, the windows are covered to minimize interference from outside light



Figure 5 Example of photo acquisition. Note the yellow label at the top right (top of core box) with the pkv-number, used to uniquely identify the imaged box. The ruler is placed in the right side when the core box oriented with the core top upwards.

4 POST-PROCESSING

As part of the post-processing all images were imported into Adobe Lightroom and processed as follows:

- Metadata and keyword tagging
- Cropping to box dimensions
- Adjustment of lighting, colour, and contrast
- Export to high-quality JPG file image (longest edge = 7500 pixels)
- Formats Delivered:
 - JPEG images (processed)
 - PDF report with mounted images, including metadata:
 - Core depth (m)
 - Nominal core length (m)
 - Recovery %
 - Digital scale bar (0-122 cm)

Tabulated core data are presented in Table 1.

Table 1 Core and Box information (pkv-number) for the Rødby-1 well.

Well	PKV Storage No	Core No	Box No	Top core/box (m)	Bottom core/box (m)	core length	Core recovery (m)	Recovery %	Top core feet	Bottom core feet	Core recovery (feet)	Recovery %	End of Core
RØDBY-1	877	1	1	463,6	469,4	5,8	1,2	21	1521	1540	4	21	b
RØDBY-1	878	2	1	469,4		6,1	2,4	40	1540		8	40	
RØDBY-1	879	2	2		475,5					1560			b
RØDBY-1	880	3	1	475,5		6,1	4,9	80	1560		16	80	
RØDBY-1	881	3	2										
RØDBY-1	882	3	3										
RØDBY-1	883	3	4		481,6					1580			b
RØDBY-1	884	4	1	481,6	484,0	2,4	0,6	24	1580	1588	2	24	b
RØDBY-1	885	5	1	484,0		4,6	3,8	83	1588		13	83	
RØDBY-1	886	5	2										
RØDBY-1	887	5	3		488,6					1603			b
RØDBY-1	888	6	1	488,6	494,7	6,1	1,1	18	1603	1623	4	18	b
RØDBY-1	889	7	1	494,7		6,1	4,1	68	1623		14	68	
RØDBY-1	890	7	2										
RØDBY-1	891	7	3										
RØDBY-1	892	7	4		500,8					1643			b
RØDBY-1	no core	8	none	500,8	502,9	2,1			1643	1650	1	10	
RØDBY-1	893	9	1	502,9		6,1	2,1	35	1650		7	35	
RØDBY-1	894	9	2		509,0					1670			b
RØDBY-1	895	10	1	509,0		6,1	5,5	90	1670		18	90	
RØDBY-1	896	10	2										
RØDBY-1	897	10	3										
RØDBY-1	898	10	4		515,1					1690			b
RØDBY-1	899	11	1	515,1		6,1	4,9	80	1690		16	80	
RØDBY-1	900	11	2										
RØDBY-1	901	11	3										
RØDBY-1	902	11	4		521,2					1710			b
RØDBY-1	903	12	1	521,2		2,7	2,7	100	1710		9	130	(caved)
RØDBY-1	904	12	2		524,0					1719			b
RØDBY-1	905	13	1	524,0		5,5	4,3	78	1719		14	70	
RØDBY-1	906	13	2										
RØDBY-1	907	13	3		529,4					1737			b
RØDBY-1	908	14	1	529,4		4,9	4,3	87	1737		14	70	
RØDBY-1	909	14	2										
RØDBY-1	910	14	3		534,3					1753			b
RØDBY-1	911	15	1	534,3		6,1	5,5	90	1753		18	90	
RØDBY-1	912	15	2										
RØDBY-1	913	15	3										
RØDBY-1	914	15	4		540,4					1773			b
RØDBY-1	915	16	1	540,4		5,5	4,7	86	1773		16	28	
RØDBY-1	916	16	2										
RØDBY-1	917	16	3										
RØDBY-1	918	16	4		545,9					1791			b
RØDBY-1	919	17	1	545,9		3,4	3,0	91	1791		10	90	
RØDBY-1	920	17	2		549,2					1802			b
RØDBY-1	921	18	1	549,2	550,8	1,5	1,5	100	1802	1807	5	100	b
RØDBY-1	922	19	1	550,8		6,1	6,1	100	1807		20	100	
RØDBY-1	923	19	2										
RØDBY-1	924	19	3										
RØDBY-1	925	19	4		556,9					1827			b
RØDBY-1	926	20	1	556,9		3,7	3,7	100	1827		12	100	
RØDBY-1	927	20	2										
RØDBY-1	928	20	3		560,5					1839			b
RØDBY-1	929	21	1	560,5		6,1	4,6	75	1839		15	75	
RØDBY-1	930	21	2										
RØDBY-1	931	21	3										
RØDBY-1	932	21	4		566,6					1859			b
RØDBY-1	933	22	1	566,6		6,1	5,7	93	1859		19	93	
RØDBY-1	934	22	2										
RØDBY-1	935	22	3										
RØDBY-1	936	22	4		572,7					1879			b
RØDBY-1	937	23	1	572,7		6,1	4,9	80	1879		16	80	
RØDBY-1	938	23	2										
RØDBY-1	939	23	3										
RØDBY-1	940	23	4		578,8					1899			b
RØDBY-1	941	24	1	578,8		6,1	3,4	55	1899		11	55	
RØDBY-1	942	24	2										
RØDBY-1	943	24	3		584,9					1919			b
RØDBY-1	944	25	1	584,9		6,1	4,8	78	1919		16	78	
RØDBY-1	945	25	2										
RØDBY-1	946	25	3										
RØDBY-1	947	25	4		591,0					1939			b

Table 1 Continued

SEGMENT_ NAME	PKV Storage No	Core No	Box No	Top core (m)	Bottom core (m)	core length	Core recovery (m)	Recovery %	Top core feet	Bottom core feet	Core recovery (feet)	Recovery %	End of Core	
RØDBY-1	948	26	1	591,0		6,1	2,0	34	1939		7	35		
RØDBY-1	949	26	2		597,1					1959			b	
RØDBY-1	950	27	1	597,1	603,2	6,1	1,5	25	1959	1979	5	40	b	
RØDBY-1	951	28	1	603,2	609,3	6,1	0,9	15	1979	1999	3	15	b	
RØDBY-1	952	32	1	627,6	633,1	5,5	0,3	6	2059	2077	1	5	b	
RØDBY-1	953	33	1	633,1	3,8	6,1	1,9	32	2077	13	6	1		
RØDBY-1	954	33	2											
RØDBY-1	955	33	3		639,2					2097			b	
RØDBY-1	956	34	1	639,2		6,1	10,4	170	2097		34	18		
RØDBY-1	957	34	2											
RØDBY-1	958	34	3											
RØDBY-1	959	34	4		645,3					2117			b	
RØDBY-1	960	35	1	645,3		6,1	4,3	70	2117		14	70		
RØDBY-1	961	35	2											
RØDBY-1	962	35	3		651,4					2137			b	
RØDBY-1	963	36	1	651,4		6,1	4,6	75	2137		15	75		
RØDBY-1	964	36	2											
RØDBY-1	965	36	3		657,5					2157			b	
RØDBY-1	966	37	1	657,5		6,1	6,1	100	2157		20	100		
RØDBY-1	967	37	2											
RØDBY-1	968	37	3											
RØDBY-1	969	37	4											
RØDBY-1	970	37	5		663,5					2177			b	
RØDBY-1	971	38	1	663,5		6,1	4,3	70	2177		14	70		
RØDBY-1	972	38	2											
RØDBY-1	973	38	3		669,6					2197			b	
RØDBY-1	974	39	1	669,6	675,7	6,1	1,2	20	2197	2217	4	20	b	
RØDBY-1	no recovery	40	none	675,7	681,8	6,1				2217	2237	0	0	
RØDBY-1	975	41	1	681,8	687,9	6,1	1,2	20	2237	2257	4	20	b	
RØDBY-1	976	42	1	687,9	691,9	4,0	1,5	38	2257	2270	5	38	b	
RØDBY-1	977	43	1	691,9	692,8	0,9	0,6	67	2270	2273	2	67	b	
RØDBY-1	978	44	1	692,8		4,6	3,7	80	2273		12	80		
RØDBY-1	979	44	2											
RØDBY-1	980	44	3		697,4					2288			b	
RØDBY-1	981	45	1	697,4		4,0	2,7	69	2288		9	70		
RØDBY-1	982	45	2		701,3					2301			b	
RØDBY-1	983	46	1	701,3		4,0	3,4	85	2301		11	85		
RØDBY-1	984	46	2		705,3					2314			b	
RØDBY-1	985	47	1	705,3		3,7	2,7	75	2314		9	70		
RØDBY-1	986	47	2		709,0					2326			b	
RØDBY-1	987	48	1	709,0	710,2	1,2	1,2	100	2326	2330	4	100	b	
RØDBY-1	988	49	1	710,2		3,7	3,4	92	2330		11	92		
RØDBY-1	989	49	2											
RØDBY-1	990	49	3		713,8					2342			b	
RØDBY-1	991	50	1	713,8		6,1	4,9	80	2342		16	80		
RØDBY-1	992	50	2											
RØDBY-1	993	50	3											
RØDBY-1	994	50	4		719,9					2362			b	

Table 1 Continued

SEGMENT_ NAME	PKV Storage No	Core No	Box No	Top core (m)	Bottom core (m)	core length	Core recovery (m)	Recovery %	Top core feet	Bottom core feet	Core recovery (feet)	Recovery %	End of Core
RØDBY-1	995	51	1	719,9		6,1	3,0	50	2362		10	50	
RØDBY-1	996	51	2		726,0					2382			b
RØDBY-1	997	52	1	726,0		3,7	4,9	133	2382		16	133	(caved)
RØDBY-1	998	52	2										
RØDBY-1	999	52	3										
RØDBY-1	1000	52	4		729,7					2394			b
RØDBY-1	1001	53	1	729,7		6,1	5,5	90	2394		18	90	
RØDBY-1	1002	53	2										
RØDBY-1	1003	53	3										
RØDBY-1	1004	53	4										
RØDBY-1	1005	53	5		735,8					2414			b
RØDBY-1	1006	54	1	766,6		6,1	4,9	80	2515		16	90	
RØDBY-1	1007	54	2										
RØDBY-1	1008	54	3										
RØDBY-1	1009	54	4		772,7					2535			b
RØDBY-1	1010	55	1	795,5		4,3	4,1	96	2610		14	97	
RØDBY-1	1011	55	2										
RØDBY-1	1012	55	3		799,8					2624			b
RØDBY-1	1013	56	1	830,6	833,6	3,0	1,5	50	2725	2735	5	100	b
RØDBY-1	1014	57	1	862,6	864,7	2,1	1,5	71	2830	2837	5	70	b
RØDBY-1	1015	58	1	869,0		6,1	5,6	93	2851		19	93	
RØDBY-1	1016	58	2										
RØDBY-1	1017	58	3										
RØDBY-1	1018	58	4										
RØDBY-1	1019	58	5		875,1					2871			b
RØDBY-1	1020	59	1	877,8		6,1	5,0	83	2880		17	82	
RØDBY-1	1021	59	2										
RØDBY-1	1022	59	3										
RØDBY-1	1023	59	4		883,9					2900			b
RØDBY-1	1024	60	1	883,9		6,1	6,4	105	2900		21	105	(caved)
RØDBY-1	1025	60	2										
RØDBY-1	1026	60	3										
RØDBY-1	1027	60	4										
RØDBY-1	1028	60	5		890,0					2920			b
RØDBY-1	1029	61	1	890,0		6,1	5,6	93	2920		19	93	
RØDBY-1	1030	61	2										
RØDBY-1	1031	61	3										
RØDBY-1	1032	61	4		896,1					2940			b
RØDBY-1	1033	62	1	929,6		4,6	4,0	87	3050		13	87	
RØDBY-1	1034	62	2										
RØDBY-1	1035	62	3		934,2					3065			b
RØDBY-1	1036	63	1	969,3		3,7	3,4	92	3180		11	92	
RØDBY-1	1037	63	2										
RØDBY-1	1038	63	3		972,9					3192			b
RØDBY-1	1039	64	1	1013,5	1015,3	1,8	1,2	67	3325	3331	4	75	b
RØDBY-1	1040	65	1	1060,7		1,5	1,2	80	3480		4	75	
RØDBY-1	1041	65	2		1062,2					3485			b
RØDBY-1	1042	66	1	1098,8	1100,9	2,1	0,5	21	3605	3612	2	20	b
RØDBY-1	1043	67	1	1100,9		4,9	5,5	113	3612		18	112	(caved)
RØDBY-1	1044	67	2										
RØDBY-1	1045	67	3										
RØDBY-1	1046	67	4										
RØDBY-1	1047	67	5		1105,8					3628			b
RØDBY-1	1048	68	1	1104,6		5,5	4,0	72	3624		13	93	
RØDBY-1	1049	68	2										
RØDBY-1	1050	68	3		1110,1					3642			
RØDBY-1	1051	69	1	1123,2		6,1	6,1	100	3685		20	100	
RØDBY-1	1052	69	2										
RØDBY-1	1053	69	3										
RØDBY-1	1054	69	4										
RØDBY-1	1055	69	5		1129,3					3705			b
RØDBY-1	1056	70	1	1150,6		4,6	1,8	40	3775		6	40	
RØDBY-1	1057	70	2		1155,2					3790			b
RØDBY-1	1058	71	1	1197,9		3,4	2,8	85	3930		9	85	
RØDBY-1	1059	71	2		1201,2					3941			b
RØDBY-1	1060	72	1	1280,2		3,7	3,0	83	4200		10	80	
RØDBY-1	1061	72	2										
RØDBY-1	1062	72	3		1283,8					4212			b
RØDBY-1	1063	73	1	1367,3		6,1	2,1	35	4486		7	35	
RØDBY-1	1064	73	2		1373,4					4506			b
RØDBY-1	1065	74	1	1442,9		2,4	2,3	94	4734		8	94	
RØDBY-1	1066	74	2		1445,4					4742			b

Acknowledgments

The core photo setup was developed in collaboration with Henrik Spanggård, and the photo acquisition was supported by Jesper Dewet Nielsen both at GEUS. Funding was provided by the Subsurface Laboratory at GEUS under the new facilities program.

References

Abramowitz, T., Vosgerau, H., Gregersen, U., Smit, F.W.H., Bjerager, M., Jusri, T.A., Mathiesen, A., Mørk, F., Schovsbo, N.H., Petersen, H.I., Nielsen, L.H., Laghari, S., Rasmussen, L.M., Keiding, M., 2024. The Rødby structure. Seismic data and interpretation to mature potential geological storage of CO₂. Danmarks og Grønlands Geologiske Undersøgelse Rapport 2024/18. <https://doi.org/10.22008/gpub/34739>

Danish American Prospecting, 1952: Rødby-1 completion report. GEUS Report File **8773**, 156 pp.

Nielsen, L.H. 2003: Late Triassic–Jurassic development of the Danish Basin and Fennoscandian Border Zone, Southern Scandinavia. GEUS Bulletin **1**, 459–526. <https://doi.org/10.34194/geusb.v1.4681>

