

Supplementary Table S5: Sample location, well reference and depth. Burial estimates are included to give an approximate sense for the maximum potential burial depth of samples.

Well number	Depth (m)	Burial estimate (Baig et al., 2016)		Time interval	FA	Location	Latitude	Longitude	Sample#
		Estimate (m)	Potential max burial						
7324/8-1	677.05	2000	2677.05	Toarcian	3	Hoop Fault Complex	73° 27' 6.18" N	24° 24' 15.42" E	D
7324/7-2	729.65	2000	2729.65	Toarcian	3	Hoop Fault Complex	73° 29' 27.09" N	24° 14' 2.56" E	B
7321/8-1	1444.5	1625	3069.5	Bajocian	2	Fingerdjupet Sub Basin	73° 20' 11.99" N	21° 24' 57.27" E	F
7321/8-1	1452.15	1625	3077.15	Toarcian	2	Fingerdjupet Sub Basin			H
7227/8-U-1	33.55	1250	1283.55	Toarcian	6	Nordkapp Basin	72° 19' 8.9" N	27° 33' 21.34" E	L
7227/8-U-1	34.6	1250	1284.6	Toarcian	6	Nordkapp Basin			M
7224/7-1	900.8	1400	2300.8	Aalenian	3	Samson Dome	72° 17' 6.34" N	24° 18' 2.98" E	I
7220/8-1	1294	1000	2294	Aalenian	2	Bjørnøyrenna Fault Complex	72° 29' 28.92" N	20° 20' 2.25" E	A
7220/8-1	1354.8	1000	2354.8	Toarcian	6	Bjørnøyrenna Fault Complex			C
7220/7-1	1793.5	900	2693.5	Aalenian	3	Bjørnøyrenna Fault Complex	72° 27' 37.53" N	20° 9' 8.59" E	E
7220/7-1	1851	900	2751	Toarcian	4	Bjørnøyrenna Fault Complex			G
7122/6-1	2025	1150	3175	Toarcian	2	Hammerfest Basin	71° 38' 19.32" N	22° 48' 42.8" E	J
7122/6-1	2030.5	1150	3180.5	Toarcian	3	Hammerfest Basin			K

Reference for burial estimates: BAIG, I., FALEIDE, J.I., JAHREN, J. and MONDOL, N.H., 2016, Cenozoic exhumation on the southwestern Barents Shelf: Estimates and uncertainties constrained from compaction and thermal maturity analyses: *Marine and Petroleum Geology*, v. 73, p.105-130.