

**General information**

Wellbore name	34/10-38 S
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	GULLFAKS SØR
Discovery	34/10-17 Rimfaks
Well name	34/10-38
Seismic location	ST 9207 rekke 1520 & kolonne 920
Production licence	050
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	805-L
Drilling facility	DEEPSEA BERGEN
Drilling days	55
Entered date	05.04.1995
Completed date	29.05.1995
Release date	29.05.1997
Publication date	06.01.2014
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	BRENT GP
2nd level with HC, age	EARLY JURASSIC
2nd level with HC, formation	COOK FM
3rd level with HC, age	EARLY JURASSIC
3rd level with HC, formation	STATFJORD GP
Kelly bushing elevation [m]	23.0
Water depth [m]	137.0
Total depth (MD) [m RKB]	3940.0
Final vertical depth (TVD) [m RKB]	3393.0
Maximum inclination [°]	58.2
Bottom hole temperature [°C]	124
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	LUNDE FM
Geodetic datum	ED50



NS degrees	61° 4' 23.27" N
EW degrees	2° 1' 37.18" E
NS UTM [m]	6771483.91
EW UTM [m]	447493.92
UTM zone	31
NPDID wellbore	2517

Wellbore history

**General**

Well 34/10-38 S was drilled to appraise the 34/10-17 Rimfaks Discovery south-west of the Gullfaks field in the North Sea. The primary objective was to test the hydrocarbon potential of the Middle Jurassic Brent Group in Segment 1 of the structure. Secondary objective was to test the hydrocarbon potential of the Early Jurassic Statfjord Group in Segment 2.

Operations and results

Appraisal well 34/10-38 S was spudded with the semi-submersible installation Deepsea Bergen on 5 April 1995 and drilled to TD at 3940 m (3393 m TVD) in the Late Triassic Lunde Formation. Drilling went forth without significant problem. Lost time was mostly related to logging problems in the 8 1/2" section. The well was drilled with bentonite and CMC/EHV down to 670 m, with ANCO 2000 mud from 670 m to 2075 m and with oil based Safemul PE/SE mud from 2075 m to TD.

The results of the well differed from the geological prognosis. The Viking Group and most of the Brent Group in segment 2 was eroded and the remaining of the Brent Group was heavily faulted and fractured. Top Brent Group came in at 3021 m (2653.8 m TVD). Top Statfjord Group was penetrated at 3451 m (2995.2 m TVD), about 200 m shallower than prognosed. The Brent Group, the Cook Formation and the Statfjord Group proved to be hydrocarbon bearing. Pressure samples and log analysis proved an oil-water contact at 3585.6 m (3103.5 m TVD) in the Statfjord Group. Shows and log analysis indicated, however, oil with low saturation down to approx. 3658 m.

Nine cores were cut in the well. The first core was cut from 3140 to 3159 m but recovered only a 10 cm piece. Cores 2 to 9 were cut in the Statfjord Group from 3465 m to 3631 m with generally good recovery. The core depths were from 0 to 3 m shallower than the log depths. FMT fluid samples were taken in the Brent Group at 3039.4 m (gas and condensate), and in the Statfjord Group at 3456.5 m (oil and gas), 3567.5 m (oil and gas), 3643 m (oil and water), and 3812 m (water). The oil in the sample from 3643 is believed to be residual oil mobilised by the oil base in the mud.

The well was permanently abandoned on 29 May 1995 as an oil and gas appraisal well.

Testing

Two intervals were tested in a comingled drill stem test from below and above the OWC in the Statfjord Group.

The main objective for DST1 A from 3637 to 3646 m was to test the type of moveable fluid below the OWC where shows, a low hydrocarbon saturation and oil in an FMT sample indicated presence of oil. The result of the test was water at a rate of 23 Sm³/day through a 64/64" choke. Only traces of oil were produced. The flowing bottom hole temperature was 113.2 deg C.

DST1 B tested the interval 3561 to 3570 m in the oil zone in addition to 3637 to 3646 m. DST1 B produced 858 Sm³ oil and 199056 Sm³ gas /day through a 36/64" choke. No water was produced. The GOR was 232 Sm³/Sm³, the oil density was 0.846 g/cm³, and the gas gravity was 0.807 (air = 1). The flowing bottom hole temperature was 115.4 deg C.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
680.00	3940.00



Cuttings available for sampling?	YES
----------------------------------	-----

Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	3140.0	3140.1	[m]
2	3465.0	3482.4	[m]
3	3482.4	3484.1	[m]
4	3485.0	3513.2	[m]
5	3513.4	3535.4	[m]
6	3537.0	3565.5	[m]
7	3565.5	3595.8	[m]
8	3598.0	3611.8	[m]
9	3613.0	3631.3	[m]

Total core sample length [m]	160.2
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
960.0	[m]	DC	GEOSTR
980.0	[m]	DC	GEOSTR
1010.0	[m]	DC	GEOSTR
1040.0	[m]	DC	GEOSTR
1070.0	[m]	DC	GEOSTR
1100.0	[m]	DC	GEOSTR
1130.0	[m]	DC	GEOSTR
1160.0	[m]	DC	GEOSTR
1180.0	[m]	DC	GEOSTR
1220.0	[m]	DC	GEOSTR
1250.0	[m]	DC	GEOSTR
1280.0	[m]	DC	GEOSTR
1310.0	[m]	DC	GEOSTR
1340.0	[m]	DC	GEOSTR
1370.0	[m]	DC	GEOSTR
1400.0	[m]	DC	GEOSTR
1420.0	[m]	DC	GEOSTR



1470.0 [m]	DC	GEOSTR
1490.0 [m]	DC	GEOSTR
1520.0 [m]	DC	GEOSTR
1550.0 [m]	DC	GEOSTR
1580.0 [m]	DC	GEOSTR
1610.0 [m]	DC	GEOSTR
1640.0 [m]	DC	GEOSTR
1670.0 [m]	DC	GEOSTR
1700.0 [m]	DC	GEOSTR
1730.0 [m]	DC	GEOSTR
1760.0 [m]	DC	GEOSTR
1780.0 [m]	DC	GEOSTR
1790.0 [m]	DC	GEOSTR
1820.0 [m]	DC	GEOSTR
1850.0 [m]	DC	GEOSTR
1880.0 [m]	DC	GEOSTR
1910.0 [m]	DC	GEOSTR
1940.0 [m]	DC	GEOSTR
1970.0 [m]	DC	GEOSTR
1980.0 [m]	DC	GEOSTR
1990.0 [m]	DC	GEOSTR
2000.0 [m]	DC	GEOSTR
2030.0 [m]	DC	GEOSTR
2060.0 [m]	DC	GEOSTR
2090.0 [m]	DC	GEOSTR
2120.0 [m]	DC	GEOSTR
2150.0 [m]	DC	GEOSTR
2180.0 [m]	DC	GEOSTR
2210.0 [m]	DC	GEOSTR
2240.0 [m]	DC	GEOSTR
2270.0 [m]	DC	GEOSTR
2300.0 [m]	DC	GEOSTR
2330.0 [m]	DC	GEOSTR
2360.0 [m]	DC	GEOSTR
2390.0 [m]	DC	GEOSTR
2420.0 [m]	DC	GEOSTR
2450.0 [m]	DC	GEOSTR
2480.0 [m]	DC	GEOSTR
2500.0 [m]	DC	GEOSTR
2540.0 [m]	DC	GEOSTR



2570.0	[m]	DC	GEOSTR
2600.0	[m]	DC	GEOSTR
2630.0	[m]	DC	GEOSTR
2660.0	[m]	DC	GEOSTR
2696.0	[m]	DC	GEOSTR
2720.0	[m]	DC	GEOSTR
2750.0	[m]	DC	GEOSTR
2780.0	[m]	DC	GEOSTR
2810.0	[m]	DC	GEOSTR
2840.0	[m]	DC	GEOSTR
2870.0	[m]	DC	GEOSTR
2900.0	[m]	DC	GEOSTR
2930.0	[m]	DC	GEOSTR
2961.0	[m]	DC	GEOSTR
2991.0	[m]	DC	GEOSTR
3000.0	[m]	DC	GEOSTR
3010.0	[m]	SWC	WESTL
3012.0	[m]	DC	GEOSTR
3017.0	[m]	SWC	WESTL
3021.0	[m]	DC	GEOSTR
3022.0	[m]	SWC	WESTL
3030.0	[m]	SWC	WESTL
3045.0	[m]	SWC	WESTL
3048.0	[m]	SWC	WESTL
3053.0	[m]	SWC	WESTL
3062.0	[m]	SWC	WESTL
3072.0	[m]	DC	GEOSTR
3081.0	[m]	DC	GEOSTR
3090.0	[m]	DC	GEOSTR
3099.0	[m]	DC	GEOSTR
3107.0	[m]	SWC	WESTL
3113.0	[m]	SWC	WESTL
3121.0	[m]	SWC	WESTL
3129.0	[m]	DC	GEOSTR
3134.0	[m]	SWC	WESTL
3140.0	[m]	C	WESTL
3141.0	[m]	SWC	WESTL
3146.0	[m]	SWC	WESTL
3155.0	[m]	SWC	WESTL
3165.0	[m]	DC	GEOSTR



3173.0 [m]	SWC	WESTL
3186.0 [m]	DC	GEOSTR
3198.0 [m]	DC	GEOSTR
3212.0 [m]	SWC	WESTL
3222.0 [m]	DC	GEOSTR
3234.0 [m]	DC	GEOSTR
3249.0 [m]	DC	GEOSTR
3263.0 [m]	SWC	WESTL
3267.0 [m]	DC	GEOSTR
3270.0 [m]	SWC	WESTL
3285.0 [m]	DC	GEOSTR
3297.0 [m]	DC	GEOSTR
3312.0 [m]	DC	GEOSTR
3327.0 [m]	DC	GEOSTR
3342.0 [m]	DC	GEOSTR
3356.0 [m]	SWC	WESTL
3366.0 [m]	DC	GEOSTR
3381.0 [m]	DC	GEOSTR
3387.0 [m]	DC	GEOSTR
3396.0 [m]	DC	GEOSTR
3402.0 [m]	DC	GEOSTR
3408.0 [m]	DC	GEOSTR
3417.0 [m]	DC	GEOSTR
3423.0 [m]	DC	GEOSTR
3430.0 [m]	SWC	WESTL
3438.0 [m]	DC	GEOSTR
3444.0 [m]	DC	GEOSTR
3450.0 [m]	DC	GEOSTR
3450.0 [m]	SWC	WESTL
3483.0 [m]	C	WESTL
3489.0 [m]	C	WESTL
3494.0 [m]	C	WESTL
3499.0 [m]	C	WESTL
3501.0 [m]	C	WESTL
3513.0 [m]	C	WESTL
3517.0 [m]	C	WESTL
3521.0 [m]	C	WESTL
3526.0 [m]	C	WESTL
3537.0 [m]	C	WESTL
3543.0 [m]	C	WESTL



3549.0	[m]	C	WESTL
3557.0	[m]	C	WESTL
3569.0	[m]	C	WESTL
3573.0	[m]	C	WESTL
3579.0	[m]	C	WESTL
3583.0	[m]	C	WESTL
3588.0	[m]	C	WESTL
3594.0	[m]	C	WESTL
3600.0	[m]	C	WESTL
3609.0	[m]	C	WESTL
3613.0	[m]	C	WESTL
3620.0	[m]	C	WESTL
3646.0	[m]	DC	GEOSTR
3655.0	[m]	DC	GEOSTR
3676.0	[m]	DC	GEOSTR
3694.0	[m]	DC	GEOSTR
3715.0	[m]	DC	GEOSTR
3721.0	[m]	DC	GEOSTR
3733.0	[m]	DC	GEOSTR
3745.0	[m]	DC	GEOSTR
3757.0	[m]	DC	GEOSTR
3772.0	[m]	DC	GEOSTR
3784.0	[m]	DC	GEOSTR
3796.0	[m]	DC	GEOSTR
3808.0	[m]	DC	GEOSTR
3820.0	[m]	DC	GEOSTR
3832.0	[m]	DC	GEOSTR
3844.0	[m]	DC	GEOSTR
3850.0	[m]	DC	GEOSTR
3862.0	[m]	DC	GEOSTR
3874.0	[m]	DC	GEOSTR
3883.0	[m]	DC	GEOSTR
3904.0	[m]	DC	GEOSTR
3916.0	[m]	DC	GEOSTR
3928.0	[m]	DC	GEOSTR
3940.0	[m]	DC	GEOSTR

Oil samples at the Norwegian Offshore Directorate



Test type	Bottle number	Top depth MD [m]	Bottom depth MD [m]	Fluid type	Test time	Samples available
DST	TEST1B	0.00	0.00		23.05.1995 - 02:35	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
160	NORDLAND GP
880	UTSIRA FM
963	HORDALAND GP
1822	ROGALAND GP
1822	BALDER FM
1907	LISTA FM
2030	SHETLAND GP
3021	BRENT GP
3021	NESS FM
3036	RANNOCH FM
3045	BROOM FM
3052	DUNLIN GP
3052	DRAKE FM
3112	COOK FM
3211	BURTON FM
3267	AMUNDSEN FM
3451	STATFJORD GP
3844	HEGRE GP
3844	LUNDE FM

Geochemical information

Document name	Document format	Document size [MB]
2517_1	pdf	0.41
2517_2	pdf	11.10

Documents - reported by the production licence (period for duty of secrecy expired)





Document name	Document format	Document size [MB]
2517_34_10_38_S_COMPLETION_REPORT_AND_LOG	pdf	16.94

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3637	3646	25.4
2.0	3561	3570	14.3

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				
2.0				

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	1		0.875		
2.0	858	199056	0.846	0.807	232

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CIBL GR TTRM	2989	3160
DIPL MAC CN ZDL DSL TTRM	2060	3847
FMT QDYNE GR CHR	3039	3039
FMT QDYNE GR CHT	3022	3864
FMT QDYNE GR CHT	3113	3465
FMT QDYNE GR CHT	3567	3567
FMT QDYNE GR CHT	3643	3643
FMT QDYNE GR CHT	3812	3812
HRDIP GR	2965	3940
MWD - DPR	2075	3940
MWD - RGD	222	2075
SWC GR	3009	3720
SWC GR	3863	3927
VSP	1805	3930



**Casing and leak-off tests**

Casing type	Casing diam. [inch]	Casing depth [m]	Hole diam. [inch]	Hole depth [m]	LOT/FIT mud eqv. [g/cm3]	Formation test type
CONDUCTOR	30	219.0	36	224.0	0.00	LOT
SURF.COND.	20	659.0	26	670.0	1.57	LOT
INTERM.	13 3/8	2064.0	17 1/2	2075.0	2.07	LOT
INTERM.	7	3720.0	8 1/2	3940.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
224	1.03			water based	
1295	1.26	20.0		water based	
2075	1.25			water based	
2673	1.60	42.0		oil based	
3021	1.60	54.0		oil based	
3030	1.60	55.0		oil based	
3159	1.60	50.0		oil based	
3374	1.60	57.0		oil based	
3565	1.43	51.0		oil based	
3613	1.60	54.0		oil based	
3726	1.60	56.0		oil based	
3886	1.60	52.0		oil based	
3940	1.60	52.0		oil based	

Pressure plots

The pore pressure data is sourced from well logs if no other source is specified. In some wells where pore pressure logs do not exist, information from Drill stem tests and kicks have been used. The data has been reported to the NPD, and further processed and quality controlled by IHS Markit.

Document name	Document format	Document size [MB]
2517 Formation pressure (Formasjonstrykk)	pdf	0.23

