

**General information**

Wellbore name	33/9-14
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	STATFJORD NORD
Discovery	33/9-8 Statfjord Nord
Well name	33/9-14
Seismic location	E 86 - 457 SP. 716
Production licence	037
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	571-L
Drilling facility	DEEPSEA BERGEN
Drilling days	53
Entered date	17.02.1988
Completed date	09.04.1988
Release date	09.04.1990
Publication date	10.05.2015
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	DRAUPNE FM
Kelly bushing elevation [m]	23.0
Water depth [m]	248.0
Total depth (MD) [m RKB]	2982.0
Final vertical depth (TVD) [m RKB]	2979.0
Maximum inclination [°]	6.1
Bottom hole temperature [°C]	103
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	DRAKE FM
Geodetic datum	ED50
NS degrees	61° 26' 0.26" N
EW degrees	1° 54' 4.48" E
NS UTM [m]	6811719.66
EW UTM [m]	441383.29



UTM zone	31
NPDID wellbore	1226

Wellbore history

General

Well 33/9-14 was drilled on the Statfjord Nord Field on Tampen Spur in the North Sea. The primary objective of the well was to verify the lateral and vertical distribution of sand within a thick Volgian sequence and to prove oil below 2690 m MSL in this sequence (deepest oil in Volgian, well 33/9-8). The Brent Group was a secondary target.

Operations and results

Appraisal well 33/9-14 was spudded with the semi-submersible installation Deepsea Bergen and drilled to TD at 2982 m in the Early Jurassic Drake Formation. There were signs of shallow gas from 408 409 m, but the gas bearing sands created no problems. No significant problem was encountered in the operations. The well was drilled with seawater/gel down to 414 m, with gypsum/polymer mud from 414 m to 2670 m, and with gel/lignosulphonate mud from 2670 m to TD.

The reservoir (interpreted as Kimmeridgian age Intra Draupne Formation Sandstone) came in as prognosed at 2674 m. The oil/water contact was taken from the logs to be at 2747 m, while pressure gradients suggest the contact could be five meter higher up. Intermittent weak shows were described down to 2800 m, else no shows were described in the well. The reservoir properties were very good with porosities up to 30 %. The Brent Group, Ness Formation came in at 2777 m. It was water wet.

Six cores were cut in the Intra Draupne Formation Sandstones and the Brent Group in the interval 2680 to 2879 m. The recovery was generally good except for core 3, for which only 0.5 m was recovered. The core-log depth shift was 3.0 to -3.5 m for all cores. FMT fluid samples were taken at 2757 m and at 2798.4 m.

The well was permanently abandoned on 9 April 1988 as an oil appraisal well.

Testing

Two DST tests were performed in the well.

DST 1 tested the interval 2746.8 - 2759.8 m. It produced 1400 m³ water and 8500 Sm³ gas /day through a 15.9 mm choke. Water production declined to 1287 m³/day at the end of the test. At the end of the test 5%, oil was produced with the water. The DST reservoir temperature was 96 °C.

DST 2.1 tested the interval 2718 - 2732 m. It produced 1370 Sm³ oil and 74670 Sm³ gas /day through a 14.3 mm choke. The oil production declined to 1310 Sm³/day at the end of the test. The GOR varied accordingly from 55 to 57 Sm³/Sm³, while oil density and gas gravity is reported as 0.837 g/cm³ and 0.704 (air = 1), respectively. The DST reservoir temperature was 95 °C.

DST 2.2 teste the interval 2718 - 2738 m + 2675 - 2705 m. It produced 1416 Sm³ oil and 58060 Sm³ gas /day through a 14.3 mm choke. The GOR was 41 Sm³/Sm³, the oil density was 0.837 g/cm³, and the gas gravity was 0.703 (air = 1). The DST reservoir temperature was 95 °C.



Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
420.00	2981.00

Cuttings available for sampling?	YES
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Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	2680.0	2707.7	[m]
2	2707.5	2744.1	[m]
3	2744.0	2744.1	[m]
4	2782.0	2810.7	[m]
5	2810.7	2838.5	[m]
6	2842.0	2879.0	[m]

Total core sample length [m]	157.9
Cores available for sampling?	YES

Core photos



2680-2685m



2685-2690m



2690-2695m



2695-2700m



2700-2705m



2705-2707m



2707-2712m



2712-2717m



2717-2722m



2722-2727m



2727-2732m



2732-2737m



2737-2742m



2742-2744m



2744-2744m



2782-2787m



2787-2792m



2792-2797m



2797-2802m



2802-2807m



2807-2810m



2810-2815m



2815-2810m



2820-2825m



2825-2830m



2830-2835m



2835-2838m



2842-2847m



2847-2852m



2852-2857m



2857-2862m



2862-2867m



2867-2872m



2872-2877m



2877-2879m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
2680.6	[m]	C	OD
2686.3	[m]	C	OD
2689.7	[m]	C	OD



2691.2	[m]	C	OD
2694.5	[m]	C	OD
2698.6	[m]	C	OD
2707.5	[m]	C	OD
2708.1	[m]	C	OD
2713.5	[m]	C	OD
2719.3	[m]	C	OD
2722.7	[m]	C	OD
2723.4	[m]	C	OD
2724.8	[m]	C	OD
2725.9	[m]	C	OD
2728.3	[m]	C	OD
2732.3	[m]	C	OD
2733.5	[m]	C	OD
2738.5	[m]	C	OD
2741.1	[m]	C	OD
2743.0	[m]	C	OD
2782.1	[m]	C	OD
2787.9	[m]	C	OD
2792.5	[m]	C	OD
2796.5	[m]	C	OD
2800.8	[m]	C	OD
2818.3	[m]	C	OD
2842.8	[m]	C	OD
2847.3	[m]	C	OD
2850.2	[m]	C	OD
2871.7	[m]	C	OD

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	TEST1	2746.80	2759.80	OIL	23.03.1988 - 00:00	YES
DST	TEST2,1	2718.00	2732.00	OIL	28.03.1988 - 00:00	YES
DST	TEST2,2	2675.00	2705.00	OIL	31.03.1988 - 14:30	YES

**Lithostratigraphy**

Top depth [mMD RKB]	Lithostrat. unit
271	NORDLAND GP
947	UTSIRA FM
1105	HORDALAND GP
1659	ROGALAND GP
1659	BALDER FM
1735	SELE FM
1890	SHETLAND GP
2669	CROMER KNOLL GP
2674	VIKING GP
2674	DRAUPNE FM
2760	HEATHER FM
2778	BRENT GP
2778	NESS FM
2792	ETIVE FM
2836	RANNOCH FM
2947	BROOM FM
2949	DUNLIN GP
2949	DRAKE FM

Documents - older Norwegian Offshore Directorate WDSS reports and other related documents

Document name	Document format	Document size [MB]
1226 01 WDSS General Information	pdf	0.22
1226 02 WDSS completion log	pdf	0.21

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

Document name	Document format	Document size [MB]
1226 33 9 14 Completion report and log	pdf	20.97
1226 33 9 14 COMPLETION LOG	pdf	2.64
1226 33 9 14 COMPLETION REPORT	pdf	20.97

Drill stem tests (DST)





Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	2745	2758	16.0
2.0	2718	2732	12.7
2.1	2718	2732	12.7

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				
2.0		14.000		
2.1				

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0		8000		0.780	
2.0	1350	75000	0.830	0.720	55
2.1	1164	43000	0.837	0.703	37

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBLV GR	268	2927
CDL CN SL GR	2649	2975
DIFL ACL GR CAL	2649	2975
DIFL BHC GR CAL	1278	2252
DIPLOG	2649	2975
DLL MLL GR	2665	2800
FMT GR	2675	2865
FMT GR	2798	2798
MWD - EWR GR	2666	2879
MWD - SN GR	336	2682
MWD - SN GR	2879	2981
SWC	2740	2966
VELOCITY	1000	2960

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	330.0	36	331.0	0.00	LOT
INTERM.	20	404.0	26	414.0	1.29	LOT
INTERM.	13 3/8	1279.0	17 1/2	1292.0	1.76	LOT
INTERM.	9 5/8	2654.0	12 1/4	2670.0	1.90	LOT
LINER	7	2978.0	8 1/2	2982.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
1295	1.23	5.0	3.5	WATER BASED	29.02.1988
1617	1.35	58.0	5.5	WATER BASED	29.02.1988
1710	1.45	27.0	6.5	WATER BASED	29.02.1988
2050	1.55	27.0	6.5	WATER BASED	29.02.1988
2523	1.55	20.0	11.0	WATER BASED	07.03.1988
2670	1.55	25.0	8.0	WATER BASED	08.03.1988
2673	1.58	23.0	4.0	WATER BASED	10.03.1988
2680	1.58	13.0	8.0	WATER BASED	16.03.1988
2680	1.58	13.0	8.0	WATER BASED	17.03.1988

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]
1226 Formation pressure (Formasjonstrykk)	pdf	0.21

