General information

Wellbore name	35/8-5 S
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORTH SEA
Well name	35/8-5
Seismic location	BPN 9301M00 -inline 1984
Production licence	195
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	1063-L
Drilling facility	DEEPSEA DELTA
Drilling days	50
Entered date	01.06.2003
Completed date	20.07.2003
Release date	20.07.2005
Publication date	01.04.2010
Purpose - planned	WILDCAT
Reentry	NO
Content	SHOWS
Discovery wellbore	NO
Kelly bushing elevation [m]	29.0
Water depth [m]	369.0
Total depth (MD) [m RKB]	4000.0
Final vertical depth (TVD) [m RKB]	3831.8
Maximum inclination [°]	37.1
Bottom hole temperature [°C]	138
Oldest penetrated age	MIDDLE JURASSIC
Oldest penetrated formation	RANNOCH FM
Geodetic datum	ED50
NS degrees	61° 22' 40.5'' N
EW degrees	3° 39' 13.22'' E
NS UTM [m]	6805219.70
EW UTM [m]	534934.95
UTM zone	31
NPDID wellbore	4761

Wellbore history

General

Well 35/8-5 S was drilled on a location ca 15 km west of the Gjøa Field on the western margin of the Måløy Slope in the northern North Sea. The main objective was to test the presence and type of hydrocarbons in Oxfordian turbidites in the J10 Prospect. A secondary objective of the well was to test the hydrocarbon potential of the Brent Group Sandstones. The well was targeted in the W-segment of the prospect, close to the eastern boundary fault, in order to enable a possible sidetrack towards east and into the C-segment. To meet these criteria, the well was designed as a deviation well to follow the dip of the eastern boundary fault plane of the W-segment in a proper distance from the fault. Sidetracking was only to be performed in case of discovery in either the primary or the secondary target.

Operations and results

Wildcat well 35/8-5 S was spudded with the semi-submersible installation Deepsea Delta on June 1 2003 and drilled to TD at 4000 m (3831.8 m TVD) in the Middle Jurassic Rannoch Formation. It was discovered after spud that the spud position of the well was placed 105 m east of the planned spud location. The deviation was adjusted during drilling and the reservoir was penetrated within the planned target tolerance. The resulting well path was vertical down to 2315 m, and then deviated with variable inclination down to ca 3300 m, then keeping a fairly constant inclination of 36 deg throughout the last 700 m to TD. A drilling hazard was given due to possible water flow from over-pressured sand interval in the Skade Formation at 673.5 - 794 m. This sand was considerably thicker than prognosed. There was no overpressure in the interval, but two thinner sands above, at 570 m and 590 m, where water flow occurred, were over-pressured. As a result, the 20" casing was set at 550 m instead of at 1100 m as planned for, and this in turn led to a revision of the casing programme in general. As no commercial discovery was made, no sidetrack of the well into the C-segment was performed and the wire line logging programme was reduced by not including the CMR, MSCT, OBMI-DSI and VSP logs in the 8 1/2" section. There is a large difference (6.5 - 9 m) between drillers (LWD) depth and logger's depth in this well. The LWD depth is used as reference for lithostratigraphic tops. The well was drilled with spud mud down to 412 m, with NaCl Polymer mud from 412 m to 682 m, with KCl mud from 682 m to 1331 m, and with Versavert oil based mud from 1331 m to TD.

Several sand units were penetrated above the Jurassic target reservoirs. Within the Hordaland Group the Skade Formation (673.5 - 845 m), the Grid Formation (845 - 1091 m), and the Frigg Formation (1091 - 1338 m) were encountered. Within the Rogaland Group the Ty sand (1658 -1716.5 m) was encountered. The prognosed Oxfordian reservoir (Intra Heather Formation Sandstone) was encountered at 3326 m, but the reservoir quality was much poorer than expected. An about 20 m thick Callovian intra-Heather Formation turbidite sequence was encountered at 3570 m. This was not prognosed. The Brent Group reservoir was found as prognosed with the better reservoir sands found in the Tarbert (3830 - 3882 m) and Etive (3916 - 3964 m) Formations. The well did not prove any commercial hydrocarbons. The Oxfordian sandstone seemed to be oil filled, but due to tight reservoir it was not considered a discovery. The Brent Group reservoir zones were proven water filled with a clear water gradient from pressure data. Good oil shows were obtained in both the Oxfordian sandstone and in the Tarbert Formation.

There were taken 6 conventional cores, 4 in the Oxfordian sandstone and 2 in the Brent Group sandstone. Cores of the Oxfordian reservoir showed very poor reservoir quality, according to both grain size and cementation. No wire line fluid samples were taken.

The well was permanently abandoned on 20 July 2003 as a dry well.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
700.00	3999.00

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	3381.0	3382.5	[m]
2	3383.5	3401.6	[m]
3	3401.6	3415.0	[m]
4	3415.5	3443.3	[m]
5	3845.0	3856.3	[m]
6	3856.3	3883.5	[m]

Total core sample length [m]	99.2
Cores available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
388	NORDLAND GP
682	HORDALAND GP
682	SKADE FM
854	GRID FM
1100	FRIGG FM
1347	ROGALAND GP
1347	BALDER FM
1394	SELE FM
1409	LISTA FM
1665	TY FM
1725	SHETLAND GP
1725	JORSALFARE FM
1886	KYRRE FM
2847	TRYGGVASON FM

3083	BLODØKS FM
3087	SVARTE FM
3104	CROMER KNOLL GP
3104	RØDBY FM
3158	ÅSGARD FM
3239	VIKING GP
3239	DRAUPNE FM
3334	HEATHER FM
3335	INTRA HEATHER FM SS
3840	BRENT GP
3840	TARBERT FM
3893	NESS FM
3926	ETIVE FM
3975	RANNOCH FM

Composite logs

Document name	Document format	Document size [MB]
4761	pdf	0.52

Geochemical information

Document name	Document format	Document size [MB]
4761_1	pdf	2.71

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

Document name	Document format	Document size [MB]
4761_35_8_5_S_COMPLETION_DRILLING_REPORT	.PDF	2.15
4761_35_8_5_S_COMPLETION_GEOLOGICAL_REPORT	.PDF	3.65
4761_35_8_5_S_COMPLETION_LOG	.pdf	2.42

Logs

Log type	Log top depth [m]	Log bottom depth [m]
IPLT MDT	3258	4000
IPLT MDT	3258	3986
LWD - GR RES DIR SON DEN NEU	3265	4000
MWD - DIR	398	458
MWD - GR RES DIR PRES	458	1326
MWD - GR RES DIR PRES SON	1326	3265

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	458.0	36	458.0	0.00	LOT
SURF.COND.	20	550.0	26	555.0	1.25	LOT
INTERM.	13 3/8	1320.0	17	1326.0	1.58	LOT
INTERM.	9 5/8	3258.0	12 1/4	3265.0	2.05	LOT
OPEN HOLE		4000.0	8 1/2	4000.0	1.80	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
412	1.25			water based	
458	1.25			water based	
629	1.10	11.0		water based	
682	1.30			water based	
946	1.11	14.0		water based	
1285	1.11	17.0		water based	
1331	1.25	26.0		water based	
2773	1.20	23.0		oil based	
2962	1.25	24.0		oil based	
3265	1.27	26.0		oil based	
3443	1.50	38.0		oil based	
3856	1.64	49.0		oil based	
3883	1.65	51.0		oil based	
4000	1.64	47.0		oil based	

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
3420.75	[m]
3419.42	[m]
3410.78	[m]
3410.46	[m]
3409.76	[m]
3395.72	[m]
3394.66	[m]

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]
4761_Formation_pressure_(Formasjonstrykk)	pdf	0.22