General information

Wellbore name	31/2-8
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Well name	31/2-8
Seismic location	8007-158 X-OVER 8100-406.
Production licence	054
Drilling operator	A/S Norske Shell
Drill permit	334-L
Drilling facility	BORGNY DOLPHIN
Drilling days	64
Entered date	16.06.1982
Completed date	18.08.1982
Release date	18.08.1984
Publication date	23.05.2006
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL SHOWS
Discovery wellbore	NO
Kelly bushing elevation [m]	25.0
Water depth [m]	345.5
Total depth (MD) [m RKB]	3375.0
Final vertical depth (TVD) [m RKB]	3373.0
Maximum inclination [°]	5
Bottom hole temperature [°C]	91
Oldest penetrated age	TRIASSIC
Oldest penetrated formation	HEGRE GP
Geodetic datum	ED50
NS degrees	60° 57' 33.02'' N
EW degrees	3° 29' 49.84'' E
NS UTM [m]	6758502.04
EW UTM [m]	526925.96
UTM zone	31
NPDID wellbore	78

Wellbore history

General

Well 31/2-8 was drilled in the northern part of block 31/2, some 3 km NW of the Troll Field boundary, to test a downthrown Jurassic fault-block outside the Troll Field. The primary objective was the Late Jurassic, shallow marine sands of the Viking Group, especially the Sognefjord Formation. The Early Jurassic was secondary objective and would be evaluated by drilling into Triassic sediments.

Operations and results

Wildcat well 31/2-8 was spudded with the semi-submersible installation Borgny Dolphin on 16 June 1982 and drilled to TD at 3375 m in the Triassic Hegre Group. A gas zone (confirmed by logs) between 510 - 530 m did not cause any problems during drilling of the 14 3/4" pilot hole. Maximum gas reading through this zone was 10 %. The hole was drilled to 840 m and under-reamed to 26" without incident. The 17 1/2" section was drilled first by an 8 1/2" pilot hole down to 1063 m to provide better control when drilling through a potential gas charged fault plane. No indications of gas were seen. 3 cores were taken in the 12 1/4" section. Two washouts occurred when drilling the 8 1/2" hole below 3317 m. The well was drilled with seawater gel down to 840 m, with KCl/polymer from 840 m to 1745 m, with seawater and Drispac from 1745 m to 2743 m and wit Drispac/lignosulphonate from 2743 m to TD.

Only 13 m of Shetland Group chalk was found on top of the Kimmerian unconformity at 1821 m. The Viking Group contained a 15.5 m thick Draupne shale on top of a 680 m thick sequence of sandstone units interbedded in the Heather Formation. The Middle to Early Jurassic was also well developed. Shows occurred sporadically in limestones, siltstone, and claystones through the Early Tertiary and Late Cretaceous. When entering into the Late Jurassic reservoir sands at 1836.5 m (Sognefjord Formation) ditch gas readings went up to more than 4% from a background lower than 1%, but without oil indications in the uppermost section. On the cores taken, very good oil shows were observed in the coarser grained, clean sands between 1841.8 m and 1854.8 m. In the carbonate-cemented band down to 1856.6 m, direct fluorescence became patchy. In the deeper, very fine to fine, micaceous sands the quality of the shows deteriorated further until they disappeared completely around 1872 m. Below the Sognefjord Formation, the only shows encountered was in a sidewall sample at 3050.5 m (at the top of the Statfjord Formation). From log analysis the Jurassic sands were interpreted to be oil bearing from 1836.5 m to ca. 1868 m; below this depth no hydrocarbons were seen.

Three conventional cores were cut in the interval 1841.8 m to 1888.5 m in the Late Jurassic. One RFT sample at 1849 m recovered 1800 ml mud contaminated formation water and 100 ml of emulsified hydrocarbons.

The well was completed on 18 August 1982 as a well with shows.

Testing

Oil shows on cores and preliminary log interpretation led to a DST in the interval 1843 m to 1848 m in Late Jurassic sandstone. After some technical problems the well was flowed for 2 minutes followed by a one-hour build-up. The well was then flowed until it died after having produced approximately 33 barrels of formation fluid with a trace of oil. A wire line sandballer found 22 m of sand on top of the bridge plug.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
500.00	3375.00

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	1841.8	1851.5	[m]
2	1852.5	1869.7	[m]
3	1870.0	1888.9	[m]

Total core sample length [m]	45.8
Cores available for sampling?	YES

Core photos


1841-1847m


1847-1851m


1852-1857m


1857-1863m


1863-1868m


1868-1869m


1870-1875m


1875-1880m


1880-1886m


1886-1888m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1821.7	[m]	SWC	SHELL
1826.0	[m]	SWC	SHELL
1830.5	[m]	SWC	SHELL

1832.8	[m]	SWC	SHELL
1836.0	[m]	SWC	SHELL
1837.2	[m]	SWC	SHELL
1839.5	[m]	SWC	SHELL
1857.5	[m]	C	SHELL
1858.4	[m]	C	SHELL
1860.7	[m]	C	SHELL
1863.4	[m]	C	SHELL
1864.3	[m]	C	SHELL
1868.8	[m]	C	SHELL
1870.9	[m]	C	SHELL
1873.6	[m]	C	SHELL
1878.1	[m]	C	SHELL
1880.8	[m]	C	SHELL
1881.7	[m]	C	SHELL
1937.5	[m]	SWC	SHELL
1941.5	[m]	SWC	SHELL
1964.5	[m]	SWC	SHELL
1965.5	[m]	SWC	SHELL
1969.8	[m]	SWC	SHELL
1979.7	[m]	SWC	SHELL
1989.5	[m]	SWC	SHELL
2003.0	[m]	SWC	SHELL
2015.5	[m]	SWC	SHELL
2032.0	[m]	SWC	SHELL
2043.5	[m]	SWC	SHELL
2055.0	[m]	SWC	SHELL
2068.5	[m]	SWC	SHELL
2082.6	[m]	SWC	SHELL
2093.0	[m]	SWC	SHELL
2107.5	[m]	SWC	SHELL
2120.0	[m]	SWC	SHELL
2133.8	[m]	SWC	SHELL
2145.2	[m]	SWC	SHELL
2160.5	[m]	SWC	SHELL
2168.5	[m]	SWC	SHELL
2181.5	[m]	SWC	SHELL
2198.5	[m]	SWC	SHELL
2217.5	[m]	SWC	SHELL
2250.5	[m]	SWC	SHELL

2267.1	[m]	SWC	SHELL
2285.2	[m]	SWC	SHELL
2314.5	[m]	SWC	SHELL
2330.5	[m]	SWC	SHELL
2349.5	[m]	SWC	SHELL
2355.6	[m]	SWC	SHELL
2368.0	[m]	SWC	SHELL
2385.8	[m]	SWC	SHELL
2398.5	[m]	SWC	SHELL
2407.1	[m]	SWC	SHELL
2424.5	[m]	SWC	SHELL
2436.0	[m]	SWC	SHELL
2452.0	[m]	SWC	SHELL
2473.5	[m]	SWC	SHELL
2491.5	[m]	SWC	SHELL
2497.0	[m]	SWC	SHELL
2516.0	[m]	SWC	SHELL
2532.5	[m]	SWC	SHELL
2548.0	[m]	SWC	SHELL
2565.9	[m]	SWC	SHELL
2575.0	[m]	SWC	SHELL
2578.0	[m]	SWC	SHELL
2581.5	[m]	SWC	SHELL
2595.5	[m]	SWC	SHELL
2612.0	[m]	SWC	SHELL
2618.0	[m]	SWC	SHELL
2632.5	[m]	SWC	SHELL
2642.5	[m]	SWC	SHELL
2665.5	[m]	SWC	SHELL
2672.5	[m]	SWC	SHELL
2687.0	[m]	SWC	SHELL
2709.3	[m]	SWC	SHELL
2722.3	[m]	SWC	SHELL
2725.0	[m]	SWC	SHELL
2773.9	[m]	SWC	SHELL
2778.0	[m]	SWC	SHELL
2784.2	[m]	SWC	SHELL
2792.3	[m]	SWC	SHELL
2815.0	[m]	SWC	SHELL
2840.9	[m]	SWC	SHELL

2867.5	[m]	SWC	SHELL
2892.4	[m]	SWC	SHELL
2920.9	[m]	SWC	SHELL
2943.8	[m]	SWC	SHELL
2968.8	[m]	SWC	SHELL
2977.7	[m]	SWC	SHELL
3035.5	[m]	SWC	SHELL
3046.5	[m]	SWC	SHELL
3056.8	[m]	SWC	SHELL
3065.8	[m]	SWC	SHELL
3228.0	[m]	SWC	SHELL

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
371	NORDLAND GP
772	HORDALAND GP
1428	ROGALAND GP
1428	BALDER FM
1472	SELE FM
1514	LISTA FM
1808	SHETLAND GP
1821	VIKING GP
1821	DRAUPNE FM
1837	SOGNEFJORD FM
1999	HEATHER FM
2189	FENSFJORD FM
2254	KROSSFJORD FM
2266	HEATHER FM
2517	BRENT GP
2720	DUNLIN GP
2720	DRAKE FM
2825	COOK FM
2896	AMUNDSEN FM
2967	JOHANSEN FM
3035	AMUNDSEN FM
3048	STATFJORD GP
3274	HEGRE GP

Composite logs

Document name	Document format	Document size [MB]
78	pdf	0.64

Geochemical information

Document name	Document format	Document size [MB]
78_1	pdf	3.22
78_2	pdf	1.09
78_3	pdf	0.78

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

Document name	Document format	Document size [MB]
78_01_WDSS_General_Information	pdf	0.19
78_02_WDSS_completion_log	pdf	0.24

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

Document name	Document format	Document size [MB]
78_01_31_2_8_Completion_Report	PDF	11.09
78_02_31_2_8_Completion_log	pdf	1.07
78_02_31_2_8_Drilling programme	pdf	1.22
78_02_31_2_8_Drilling_programme_encl_1	pdf	2.28
78_02_31_2_8_Drilling_programme_encl_2	pdf	2.91
78_02_31_2_8_Drilling_programme_encl_3	pdf	0.17
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78_06_31_2_8_Routine_core_analysis_by_Geco	pdf	3.34
78_06_31_2_8_Special_core_analysis_by_Geco	pdf	1.61
78_07_31_2_8_Palynofacies_invest_in_the_jura_by_Shell	pdf	1.45
78_08_31_2_8_Well_summary_by_Anchor	pdf	1.83

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	1843	1848	0.0

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

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL	469	1735
CBL VDL	792	2725
CST	1577	1601
CST	1751	2725
CST	2732	3373
DLL MSFL CAL	1735	2729
FDC CNL GR	2732	3379

FDC CNL GR CAL	469	834
FDC CNL GR CAL	777	1742
FDC CNL GR CAL	1735	2740
HDT	1735	2740
HDT	2732	3379
ISF BHC GR	370	833
ISF BHC GR	775	1741
ISF BHC GR	1735	2738
ISF BHC GR	2732	3378
LDT CNL NGT	2732	3379
LDT NGT	1735	2729
RFT	0	0
RFT	1	3
WST	575	3370

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	469.5	36	480.0	0.00	LOT
SURF.COND.	20	826.0	26	840.0	1.80	LOT
INTERM.	13 3/8	1734.0	17 1/2	1745.0	1.61	LOT
INTERM.	9 5/8	2732.0	12 1/4	2743.0	1.89	LOT
OPEN HOLE		3375.0	8 1/2	3375.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
485	1.07	52.0		waterbased	
845	1.27	51.0		waterbased	
1745	1.36	55.0		waterbased	
1870	1.21	49.0		waterbased	
2743	1.23	50.0		waterbased	
3375	1.24	50.0		waterbased	

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]
78_Formation_pressure_(Formasjonstrykk)	pdf	0.24