General information

Wellbore name	1/3-4
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Well name	1/3-4
Seismic location	8186 - 208 AND 8186 - 421 crossing of lines
Production licence	065
Drilling operator	Elf Petroleum Norge AS
Drill permit	361-L
Drilling facility	DYVI ALPHA
Drilling days	83
Entered date	15.02.1983
Completed date	08.05.1983
Release date	08.05.1985
Publication date	30.04.2010
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL SHOWS
Discovery wellbore	NO
Kelly bushing elevation [m]	25.0
Water depth [m]	72.0
Total depth (MD) [m RKB]	3198.0
Final vertical depth (TVD) [m RKB]	3198.0
Bottom hole temperature [°C]	144
Oldest penetrated age	LATE PERMIAN
Oldest penetrated formation	ZECHSTEIN GP
Geodetic datum	ED50
NS degrees	56° 56' 39.21'' N
EW degrees	2° 43' 0.23'' E
NS UTM [m]	6311354.32
EW UTM [m]	482765.43
UTM zone	31
NPDID wellbore	2

Wellbore history

General

Wildcat well 1/3-4 was drilled on the northern part of the Hidra High in the North Sea. The objective was to test the hydrocarbon potential of the Danian and late Cretaceous Chalk, on a domal structure induced by halokinesis.

Operations and results

Well 1/3-4 was spudded with the semi-submersible installation Dyvi Alpha on 15 February 1983 and drilled to TD at 3198 m in the Late Permian Zechstein Group. While drilling through Middle Miocene claystones, the average background gas increased rapidly from 5% to 80% between 1580 m and 1595 m and, at this depth, the mud weight had to be increased gradually from 1.37 to 1.50 - 1.53 to lower the gas content. Furthermore, to stop the gas leakage and to isolate the weak zone, it was decided to set the 13 3/8" casing. Logs were run (ISF/BHC and LDT/CNL) and the casing was set with shoe at 1557 m. While circulating after the logging a gain of 1 m3 with gas and more than 100 litres of oil occurred. To stabilize the well, 2 cement plugs and 4 barite plugs were set, in order to stop the gas leaking from the formation. In total, twenty days were spent on circulating, logging (ISF/BHC and LDT/CNL), setting the 13 3/8" casing, and plugging before drilling of the 12 1/4" section commenced. While drilling the 12 1/4" hole, the background gas varied between 32 and 84% down to 1695 m where the mud-weight was raised to 1.60. The background gas then decreased between 10 and 25% and drilling continued normally. Logs performed at the end of the 12 1/4" phase and covering the zone of interest are strongly affected by large cavings and by barite squeezed into the formation. Side wall core recovery was very poor from the caved zone. The well was drilled water based.

The first evidence of hydrocarbons in the well was the gas and oil kick at 1595 m in the base of the Middle Miocene, The oil in the mud was a 34 deg API gravity oil and geochemical analysis suggested that the organic matter rich Mandal Formation of Late Jurassic age was the source rock. However, according to the lithology and log information, there was no evidence of a reservoir at this level. The oil was probably trapped in a fault that acted as a drain. The Ekofisk Formation (Danian limestone) was encountered at 2754 m, and the Tor Formation (Maastrichtian) at 2797 m. Most of RFT measurements and core analysis showed that both formations were virtually tight and water bearing, but some residual hydrocarbons (60 - 80% water saturation) was seen on Cyberlook computation 2754 to 2780 in the upper Ekofisk Formation. Shows on cuttings and cores were as follows: Bright yellow direct fluorescence at1580 - 1600 m; direct bright yellow fluorescence with pale yellow cut on sand grains at 2244 m; direct yellow fluorescence in limestones with whitish to pale yellow cut at 2678 - 2687 m; pale yellow direct fluorescence on a few particles at 2753 - 2765 m; a gain of 8m3 of salt water (85 g/1) with trace of hydrocarbons was observed at 2884 m.

Two cores were cut in the Chalk. Core 1 was cut at 2780 - 2789 m with 95% recovery, and core 2 at 2817 - 2830 m with 8% recovery. Due to tight formation no fluid samples were taken on the RFT, but oil samples were taken from the oil in the mud at 1595 m.

The well was permanently abandoned on 8 May 1983 as a dry well with strong oil shows.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
170.00	3190.00

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	2780.0	2788.8	[m]
2	2817.0	2818.1	[m]

Total core sample length [m]	9.9
Cores available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
97	NORDLAND GP
1580	HORDALAND GP
2617	ROGALAND GP
2617	BALDER FM
2629	SELE FM
2647	LISTA FM
2676	VIDAR FM
2688	LISTA FM
2724	VÅLE FM
2754	SHETLAND GP
2754	EKOFISK FM
2797	TOR FM
3123	HOD FM
3160	ZECHSTEIN GP

Geochemical information

Document name	Document format	Document size [MB]
2_1	pdf	0.79

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

Document name	Document format	Document size [MB]
2_01_WDSS_General_Information	pdf	0.18
2_02_WDSS_completion_log	pdf	0.25

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

Document name	Document format	Document size [MB]
2_01_1_3_4_Completion_log	pdf	1.25
2_01_1_3_4_Completion_Report	pdf	5.77
2_01_1_3_4_Study_of_Calcareous_nannofossils	pdf	1.58

Logs

Log type	Log top depth [m]	Log bottom depth [m]
BGS	760	1550
BGS	1559	2626
CBL VDL	400	1559
CBL VDL	750	2603
CST GR	1561	2625
CST GR	2761	3168
CYBERLOOK	2670	2875
DLL MSFL GR	2603	3196
HDT	1559	3200
ISF LSS GR	157	770
ISF LSS GR	2603	3200
ISF LSS MSL GR	760	2884
RFT	1674	2256
RFT	2608	3168
RFT	2628	2995
VELOCITY	600	3160

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	158.0	36	158.0	0.00	LOT
SURF.COND.	20	761.0	26	773.0	1.72	LOT
INTERM.	13 3/8	1557.0	17 1/2	1595.0	1.94	LOT
INTERM.	9 5/8	2600.0	12 1/4	2624.0	1.93	LOT
OPEN HOLE		3198.0	8 1/2	3198.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
820	1.15	60.0		waterbased	
1195	1.30			waterbased	
1470	1.35	50.0		waterbased	
1610	1.58	36.0		waterbased	
1970	1.59	32.0		waterbased	
2340	1.83	40.0		waterbased	
2920	1.62	40.0		waterbased	
3010	1.63	40.0		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]
2_Formation_pressure_(Formasjonstrykk)	pdf	0.21