

**General information**

Wellbore name	16/4-2
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Well name	16/4-2
Seismic location	NH (SHELL) 8806 - 242 SP 650
Production licence	087
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	639-L
Drilling facility	VILDKAT EXPLORER
Drilling days	31
Entered date	29.06.1990
Completed date	29.07.1990
Release date	29.07.1992
Publication date	27.02.2004
Purpose - planned	WILDCAT
Reentry	NO
Content	DRY
Discovery wellbore	NO
Kelly bushing elevation [m]	25.0
Water depth [m]	93.0
Total depth (MD) [m RKB]	3117.0
Final vertical depth (TVD) [m RKB]	3117.0
Maximum inclination [°]	2.6
Bottom hole temperature [°C]	115
Oldest penetrated age	LATE JURASSIC
Oldest penetrated formation	INTRA DRAUPNE FM SS
Geodetic datum	ED50
NS degrees	58° 35' 47.17" N
EW degrees	2° 1' 48.03" E
NS UTM [m]	6495672.61
EW UTM [m]	443619.47
UTM zone	31
NPDID wellbore	1560



Wellbore history

General

Well 16/4-2 was the second well on the block and last commitment well for license 087. The well is located in a central position on the structure, close to the western border of the block. The main target was sands of Middle Eocene age supposed to be present within a mounded seismic sequence that constitutes the eastern part of the Alpha prospect in the Sleipner Field. The primary objective of the well was to prove oil in the Eocene sandstones. Secondary objectives were to confirm the seismic interpretation and the geological model for the Eocene sand; to test a possible small closure at top Heimdal Formation level; to obtain additional information on migration paths in the area; to confirm the seismic interpretation of the basal Cretaceous/ Late Jurassic sequence; and to test the hydrocarbon potential of possible Late Jurassic sand accumulations. Shallow gas could be expected at 537 m. This corresponds to the level of the blowout in well 16/4-1. A possible shallow gas content could occur in a thin sand layer at 685 m, which was correlated from well 16/4-1.

Operations and results

Wildcat well 16/4-2 was spudded with the semi-submersible installation Vildkat Explorer 29 June 1990 and drilled to 3117 m in Intra Draupne Formation sandstones. No shallow gas was encountered in the well; the gas zones were drilled with riser and mud weight 1.22 rd to control the gas. The well was drilled with seawater and hi-vis pills down to 1710 m and with KCl Polymer mud from 1710 m to TD. Drilling went without any significant problems apart from the 13 3/8" casing getting stuck at 1450 m. To resolve this problem diesel EZ pills were used in the well bore. This affected gas readings throughout the well below 1710 m and gave some spuriously high readings. The 13 3/8" casing shoe was finally set at 1683 m, and the casing cemented. The Eocene Grid formation sandstone came in at 1913 m, approximately 88 m deeper than prognosed. No hydrocarbons were recorded. The Heimdal formation sandstone came in at 2415 m, approximately 110 m deeper than prognosed. No hydrocarbons were recorded. Late Jurassic sands (Intra Draupne Formation) were also developed, but no hydrocarbons were recorded. The only hydrocarbons observed were some weak shows in claystones of the Draupne Formation. One core was cut in the interval from 1920 to 1927 m in the Grid Formation with 88.6 % recovery. A total of 60 sidewall cores were attempted in one run from 1750 to 3113 m, whereof 50 were recovered. No fluid samples were taken. The well was permanently plugged and abandoned 29 July 1990 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]
490.00	3117.00

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	1920.0	1926.2	[m]

Total core sample length [m]	6.2
Cores available for sampling?	YES

Core photos

1920-1924m



1924-1926m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1200.0	[m]	DC	RRI
1230.0	[m]	DC	RRI
1260.0	[m]	DC	RRI
1290.0	[m]	DC	RRI
1320.0	[m]	DC	RRI
1350.0	[m]	DC	RRI
1380.0	[m]	DC	RRI
1410.0	[m]	DC	RRI
1500.0	[m]	DC	RRI
1530.0	[m]	DC	RRI
1560.0	[m]	DC	RRI
1590.0	[m]	DC	RRI
1620.0	[m]	DC	RRI
1680.0	[m]	DC	RRI
1710.0	[m]	DC	RRI
1715.0	[m]	SWC	HYDRO
1735.0	[m]	SWC	HYDRO
1750.0	[m]	DC	RRI



1760.0 [m]	DC	RRI
1770.0 [m]	DC	RRI
1814.0 [m]	SWC	HYDRO
1820.0 [m]	DC	RRI
1850.0 [m]	SWC	HYDRO
1860.0 [m]	SWC	HYDRO
1870.0 [m]	SWC	HYDRO
1880.0 [m]	DC	RRI
1890.0 [m]	DC	RRI
1910.0 [m]	SWC	HYDRO
1920.1 [m]	C	HYDRO
1922.5 [m]	C	HYDRO
1924.7 [m]	C	HYDRO
1925.7 [m]	C	HYDRO
1926.2 [m]	C	HYDRO
1930.0 [m]	SWC	HYDRO
1962.0 [m]	DC	RRI
1975.0 [m]	DC	RRI
1988.0 [m]	SWC	HYDRO
2005.0 [m]	SWC	HYDRO
2070.0 [m]	SWC	HYDRO
2100.0 [m]	SWC	HYDRO
2122.0 [m]	DC	RRI
2152.0 [m]	DC	RRI
2210.0 [m]	SWC	HYDRO
2230.0 [m]	DC	RRI
2275.0 [m]	SWC	HYDRO
2295.0 [m]	SWC	HYDRO
2320.0 [m]	DC	RRI
2350.0 [m]	DC	RRI
2380.0 [m]	DC	RRI
2403.0 [m]	SWC	HYDRO
2412.0 [m]	SWC	HYDRO
2455.0 [m]	SWC	HYDRO
2531.0 [m]	SWC	HYDRO
2562.0 [m]	SWC	HYDRO
2580.0 [m]	SWC	HYDRO
2584.0 [m]	SWC	HYDRO
2603.0 [m]	SWC	HYDRO
2633.0 [m]	SWC	HYDRO



2804.0 [m]	SWC	HYDRO
2851.0 [m]	SWC	HYDRO
2880.0 [m]	SWC	HYDRO
2891.0 [m]	SWC	HYDRO
2930.0 [m]	SWC	HYDRO
2965.0 [m]	SWC	HYDRO
2975.0 [m]	SWC	HYDRO
2990.0 [m]	SWC	HYDRO
3030.0 [m]	SWC	HYDRO
3050.0 [m]	SWC	HYDRO
3060.0 [m]	SWC	HYDRO
3068.0 [m]	SWC	HYDRO
3080.0 [m]	SWC	HYDRO
3100.0 [m]	SWC	HYDRO
3110.0 [m]	DC	RRI
3112.0 [m]	SWC	HYDRO
3113.0 [m]	SWC	HYDRO
3117.0 [m]	DC	RRI

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
119	NORDLAND GP
778	UTSIRA FM
1068	HORDALAND GP
1190	SKADE FM
1202	NO FORMAL NAME
1913	GRID FM
2001	NO FORMAL NAME
2199	ROGALAND GP
2199	BALDER FM
2270	SELE FM
2341	LISTA FM
2415	HEIMDAL FM
2585	SHETLAND GP
2585	EKOFISK FM
2629	TOR FM
2739	HOD FM
2793	CROMER KNOLL GP



2793	SOLA FM
2838	ÅSGARD FM
2961	VIKING GP
2961	DRAUPNE FM
3113	INTRA DRAUPNE FM SS

Composite logs

Document name	Document format	Document size [MB]
1560	pdf	0.51

Geochemical information

Document name	Document format	Document size [MB]
1560_1	pdf	0.48

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

Document name	Document format	Document size [MB]
1560_01_WDSS_General_Information	pdf	0.20
1560_02_WDSS_completion_log	pdf	0.20

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

Document name	Document format	Document size [MB]
1560_16_4_2_COMPLETION_LOG	pdf	1.74
1560_16_4_2_COMPLETION_REPORT	pdf	11.13

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL GR	963	1680
CST GR	1715	3113





DIL LSS LDL CNL NGT SP AMS	1685	3112
DIL LSS LDL SP GR AMS	478	1708
MWD - GR RES DIR	118	3117
RFT GR	1920	3111
SHDT GR	1685	3114
VSP	1000	3110

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	205.0	36	206.0	0.00	LOT
INTERM.	18 5/8	479.0	24	485.0	1.86	LOT
INTERM.	13 3/8	1683.0	17 1/2	1710.0	1.90	LOT
OPEN HOLE		3117.0	12 1/4	3117.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
160	1.00	1.0	1.0	WATER BASED	30.07.1990
191	1.20			WATER BASED	02.07.1990
206	1.20			WATER BASED	02.07.1990
485	1.20			WATER BASED	02.07.1990
485	1.20			WATER BASED	03.07.1990
485	1.20			WATER BASED	04.07.1990
514	1.24	13.0	6.0	WATER BASED	05.07.1990
914	1.22	11.0	10.0	WATER BASED	09.07.1990
1286	1.21	15.0	12.0	WATER BASED	09.07.1990
1446	1.20	15.0	9.0	WATER BASED	09.07.1990
1557	1.30			WATER BASED	26.07.1990
1557	1.30			WATER BASED	27.07.1990
1583	1.23	17.0	10.0	WATER BASED	09.07.1990
1710	1.25	19.0	9.0	WATER BASED	10.07.1990
1710	1.33	18.0	10.0	WATER BASED	11.07.1990
1710	1.31	14.0	6.0	WATER BASED	12.07.1990
1710	1.18	5.0	5.0	WATER BASED	13.07.1990
1710	1.18	6.0	5.0	WATER BASED	16.07.1990
1800	1.31			WATER BASED	25.07.1990



1927	1.27	17.0	8.0	WATER BASED	16.07.1990
2234	1.27	15.0	10.0	WATER BASED	17.07.1990
2445	1.28	18.0	9.0	WATER BASED	18.07.1990
2600	1.28	17.0	8.0	WATER BASED	19.07.1990
2826	1.31	14.0	8.0	WATER BASED	20.07.1990
3015	1.30	16.0	8.0	WATER BASED	23.07.1990
3073	1.31	20.0	10.0	WATER BASED	23.07.1990
3117	1.31	16.0	10.0	WATER BASED	23.07.1990
3117	1.31	16.0	10.0	WATER BASED	24.07.1990

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]
1560 Formation pressure (Formasjonstrykk)	pdf	0.22

