

**General information**

Wellbore name	6406/12-1 S
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Well name	6406/12-1
Seismic location	ST9096-513 & SP 1613
Production licence	157
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	662-L
Drilling facility	ROSS RIG (2)
Drilling days	76
Entered date	15.12.1990
Completed date	28.02.1991
Release date	28.02.1993
Publication date	02.03.2004
Purpose - planned	WILDCAT
Reentry	NO
Content	DRY
Discovery wellbore	NO
Kelly bushing elevation [m]	23.0
Water depth [m]	329.0
Total depth (MD) [m RKB]	3965.0
Final vertical depth (TVD) [m RKB]	3891.0
Maximum inclination [°]	26.8
Bottom hole temperature [°C]	147
Oldest penetrated age	MIDDLE JURASSIC
Oldest penetrated formation	MELKE FM
Geodetic datum	ED50
NS degrees	64° 4' 11.14" N
EW degrees	6° 43' 56.91" E
NS UTM [m]	7106932.34
EW UTM [m]	389379.24
UTM zone	32
NPDID wellbore	1711



Wellbore history

General

Well 6406/12-1 S was designed to drill the Kappa Prospect, which is located west of the Vingleia fault complex and northwest of the Frøya High in the southeastern part of block 6406/12. Structurally the block is situated in the southern part of the Halten Terrace. The prospect was one of several prospective sequences in a Late Jurassic fan complex mapped in the area. The prospect was a stratigraphic trap with no structural closure. The primary objective of the well was to test the hydrocarbon potential of Late Jurassic sandstones in the Kappa prospect. Possible other sands in the Cretaceous or Late Jurassic were secondary targets. The well was also designed to test the geophysical and stratigraphic interpretation of the area and improve the geological, palaeontological and geochemical understanding. No shallow gas warnings were given for this well. Large boulders present in the glacial deposits in the area might cause drilling problems in the 36" and 26" hole section. The pore pressure estimates for the Late Jurassic were uncertain as one of the correlation wells (6406/8-1) penetrated highly over-pressured formations and had serious drilling problems. The other correlation well (6407/10-2) did not penetrate any highly over-pressured formation and had no such problems.

Operations and results

Due to shallow gas from site survey the well was moved 350 m away from target and drilled deviated. Wildcat well 6406/12-1 S was spudded with the semi-submersible rig Ross Rig 15 December 1990. A pilot hole was first drilled to 992 m where gas started to flow into the well bore. The well was killed with heavy mud and plugged. The well was re-spudded 2 January 1991. No major problems occurred while drilling the well after re-spudding. The pore pressure was 1.55 g/Cm³ and gas values were generally low and decreasing down hole. It was drilled to a total depth of 3965 m in the Middle Jurassic Melke Formation. The well was drilled with seawater and hi-vis pills down to 965 m and with Gyp/PAC mud from 965 m to TD

No significant sand development was seen in the Cretaceous section. Top reservoir (Rogn Formation) was encountered at 3600 m, which was 45 m lower than prognosed. It consisted of sandstone as prognosed, but proved to be water bearing. Shows were however observed on conventional and sidewall cores from the Rogn Formation. A total of 120 sidewall cores were attempted and 61 were recovered. A total of 3 conventional cores were cut in this well within the intervals 3603 m to 3640 m in the Rogn Formation and 3816 m to 3818 m in the Melke Formation. An RFT fluid sample was taken at 3610 m. It contained water and mud filtrate. The well was permanently abandoned on 1 March 1991 at 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]
970.00	3964.00

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	3603.0	3630.3	[m]
2	3630.3	3638.0	[m]
3	3816.0	3817.6	[m]

Total core sample length [m]	36.6
Cores available for sampling?	YES

Core photos


3603-3608m



3608-3613m



3613-3618m



3618-3623m



3623-3628m



3628-3630m



3630-3635m



3635-3638m



3636-3638m



3816-3817m



3816-3818m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1460.0	[m]	DC	STRAT
1480.0	[m]	DC	STRAT



1500.0	[m]	DC	STRAT
1510.0	[m]	DC	STRAT
1530.0	[m]	DC	STRAT
1540.0	[m]	DC	STRAT
1560.0	[m]	DC	STRAT
1570.0	[m]	DC	STRAT
1580.0	[m]	DC	STRAT
1600.0	[m]	DC	STRAT
1620.0	[m]	DC	STRAT
1630.0	[m]	DC	STRAT
1650.0	[m]	DC	STRAT
1660.0	[m]	DC	STRAT
1670.0	[m]	DC	STRAT
1690.0	[m]	DC	STRAT
1700.0	[m]	DC	STRAT
1720.0	[m]	DC	STRAT
1740.0	[m]	DC	STRAT
1750.0	[m]	DC	STRAT
1770.0	[m]	DC	STRAT
1790.0	[m]	DC	STRAT
1800.0	[m]	DC	STRAT
1820.0	[m]	DC	STRAT
1830.0	[m]	DC	STRAT
1850.0	[m]	DC	STRAT
1860.0	[m]	DC	STRAT
1870.0	[m]	DC	STRAT
1880.0	[m]	DC	STRAT
1890.0	[m]	DC	STRAT
1900.0	[m]	DC	STRAT
1910.0	[m]	DC	STRAT
1930.0	[m]	DC	STRAT
1950.0	[m]	DC	STRAT
1960.0	[m]	DC	STRAT
1980.0	[m]	DC	STRAT
2000.0	[m]	DC	STRAT
2010.0	[m]	DC	STRAT
2030.0	[m]	DC	STRAT
2040.0	[m]	DC	STRAT
2050.0	[m]	DC	STRAT
2060.0	[m]	DC	STRAT



2070.0	[m]	DC	STRAT
2080.0	[m]	DC	STRAT
2100.0	[m]	DC	STRAT
2120.0	[m]	DC	STRAT
2140.0	[m]	DC	STRAT
2160.0	[m]	DC	STRAT
2170.0	[m]	DC	STRAT
2190.0	[m]	DC	STRAT
2210.0	[m]	DC	STRAT
2220.0	[m]	DC	STRAT
2240.0	[m]	DC	STRAT
2250.0	[m]	DC	STRAT
2270.0	[m]	DC	STRAT
2280.0	[m]	DC	STRAT
2300.0	[m]	DC	STRAT
2320.0	[m]	DC	STRAT
2330.0	[m]	DC	STRAT
2340.0	[m]	DC	STRAT
2360.0	[m]	DC	STRAT
2380.0	[m]	DC	STRAT
2400.0	[m]	DC	STRAT
2410.0	[m]	DC	STRAT
2430.0	[m]	DC	STRAT
2440.0	[m]	DC	STRAT
2460.0	[m]	DC	STRAT
2480.0	[m]	DC	STRAT
2490.0	[m]	DC	STRAT
2500.0	[m]	DC	STRAT
2520.0	[m]	DC	STRAT
2530.0	[m]	DC	STRAT
2550.0	[m]	DC	STRAT
2565.0	[m]	SWC	STATO
2580.0	[m]	DC	STRAT
2590.0	[m]	DC	STRAT
2610.0	[m]	DC	STRAT
2620.0	[m]	DC	STRAT
2640.0	[m]	DC	STRAT
2650.0	[m]	DC	STRAT
2670.0	[m]	SWC	STATO
2680.0	[m]	DC	STRAT



2694.0	[m]	SWC	STATO
2719.0	[m]	SWC	STATO
2730.0	[m]	DC	STRAT
2750.0	[m]	DC	STRAT
2760.0	[m]	DC	STRAT
2780.0	[m]	DC	STRAT
2790.0	[m]	DC	STRAT
2815.0	[m]	SWC	STATO
2830.0	[m]	SWC	STATO
2840.0	[m]	DC	STRAT
2861.5	[m]	SWC	STATO
2890.0	[m]	DC	STRAT
2910.0	[m]	DC	STRAT
2930.0	[m]	DC	STRAT
2950.0	[m]	DC	STRAT
2960.0	[m]	DC	STRAT
2980.0	[m]	DC	STRAT
3000.0	[m]	DC	STRAT
3020.0	[m]	DC	STRAT
3035.0	[m]	SWC	STATO
3039.0	[m]	SWC	STATO
3050.0	[m]	DC	STRAT
3070.0	[m]	DC	STRAT
3080.0	[m]	DC	STRAT
3100.0	[m]	DC	STRAT
3120.0	[m]	DC	STRAT
3140.0	[m]	SWC	STATO
3150.0	[m]	SWC	STATO
3165.0	[m]	SWC	STATO
3180.0	[m]	DC	STRAT
3200.0	[m]	DC	STRAT
3210.0	[m]	DC	STRAT
3230.0	[m]	DC	STRAT
3240.0	[m]	DC	STRAT
3260.0	[m]	DC	STRAT
3270.0	[m]	DC	STRAT
3290.0	[m]	DC	STRAT
3306.0	[m]	DC	STRAT
3318.0	[m]	DC	STRAT
3330.0	[m]	DC	STRAT



3345.0 [m]	DC	STRAT
3360.0 [m]	DC	STRAT
3387.0 [m]	SWC	STATO
3397.0 [m]	SWC	STATO
3415.0 [m]	SWC	STATO
3432.0 [m]	DC	STRAT
3441.0 [m]	DC	STRAT
3450.0 [m]	DC	STRAT
3465.0 [m]	SWC	STATO
3480.0 [m]	SWC	STATO
3490.0 [m]	SWC	STATO
3510.0 [m]	SWC	STATO
3531.0 [m]	DC	STRAT
3543.0 [m]	DC	STRAT
3550.0 [m]	SWC	STATO
3561.0 [m]	DC	STRAT
3561.0 [m]	SWC	STATO
3589.5 [m]	SWC	STATO
3596.0 [m]	SWC	STATO
3607.6 [m]	C	STATO
3615.3 [m]	C	STATO
3625.6 [m]	C	STATO
3629.4 [m]	C	STATO
3632.2 [m]	C	STATO
3634.6 [m]	C	STATO
3636.0 [m]	C	STATO
3636.6 [m]	C	STATO
3637.7 [m]	C	STATO
3643.8 [m]	SWC	STATO
3648.0 [m]	SWC	STATO
3656.0 [m]	SWC	STATO
3665.0 [m]	SWC	STATO
3675.0 [m]	SWC	STATO
3682.0 [m]	SWC	STATO
3687.0 [m]	SWC	STATO
3694.0 [m]	SWC	STATO
3703.0 [m]	SWC	STATO
3714.0 [m]	SWC	STATO
3721.0 [m]	SWC	STATO
3721.0 [m]	DC	STRAT



3727.0	[m]	SWC	STATO
3736.0	[m]	SWC	STATO
3736.0	[m]	DC	STRAT
3741.0	[m]	SWC	STATO
3745.0	[m]	SWC	STATO
3751.4	[m]	SWC	STATO
3756.0	[m]	SWC	STATO
3760.0	[m]	SWC	STATO
3766.0	[m]	DC	STRAT
3779.0	[m]	SWC	STATO
3790.0	[m]	C	STATO
3790.0	[m]	DC	STRAT
3802.0	[m]	C	STATO
3807.0	[m]	DC	STRAT
3811.0	[m]	SWC	STATO
3816.0	[m]	C	STATO
3816.5	[m]	C	STATO
3817.0	[m]	C	STATO
3825.0	[m]	DC	OD
3841.0	[m]	DC	STRAT
3850.0	[m]	DC	STRAT
3859.0	[m]	DC	STRAT
3872.0	[m]	SWC	STATO
3875.0	[m]	DC	OD
3878.0	[m]	SWC	STATO
3886.0	[m]	DC	STRAT
3896.6	[m]	SWC	STATO
3907.3	[m]	SWC	STATO
3914.0	[m]	SWC	STATO
3923.0	[m]	SWC	STATO
3925.0	[m]	DC	OD
3930.0	[m]	SWC	STATO
3937.0	[m]	SWC	STATO
3952.0	[m]	DC	STRAT
3965.0	[m]	DC	STATO
3965.0	[m]	DC	OD

Lithostratigraphy



Top depth [mMD RKB]	Lithostrat. unit
352	NORDLAND GP
352	NAUST FM
1167	KAI FM
1752	HORDALAND GP
1752	BRYGGE FM
2047	ROGALAND GP
2047	TARE FM
2137	TANG FM
2323	SHETLAND GP
2323	SPRINGAR FM
2854	NISE FM
3095	KVITNOS FM
3478	CROMER KNOLL GP
3478	LANGE FM
3577	LYR FM
3600	VIKING GP
3600	ROGN FM
3625	SPEKK FM
3727	MELKE FM

Composite logs

Document name	Document format	Document size [MB]
1711	pdf	0.63

Geochemical information

Document name	Document format	Document size [MB]
1711_1	pdf	2.44

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





Document name	Document format	Document size [MB]
1711_01_WDSS_General_Information	pdf	0.53
1711_02_WDSS_completion_log	pdf	0.22

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

Document name	Document format	Document size [MB]
1711_6406_12_1_S_COMPLETION_REPORT_AND_LOG	pdf	36.07

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL GR	750	2532
CST	2565	3940
CST	2667	3940
DIL LSS GR CAL	415	963
DIL LSS GR CAL	951	2545
LDL CNL GR	2375	3813
LDL GR	415	963
LDL GR	951	2545
LDL GR	3592	3957
MWD - DPR	415	883
MWD - DPR	423	2547
MWD - RGD	2546	3965
PI LSS GR CAL	3592	3957
PI LSS MSFL GR CAL	2375	3813
RFT GR	3602	3627
RFT GR	3610	3610
VSP-NI	1550	3930
VSP-WAW	1550	415
VSP-WAW	2960	3100

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	415.0	36	417.0	0.00	LOT
INTERM.	20	951.0	26	955.0	1.72	LOT
INTERM.	13 3/8	2532.0	17 1/2	2534.0	1.82	LOT
OPEN HOLE		3965.0	12 1/4	3965.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
492	0.00			WATER BASED	18.12.1990
512	0.00			WATER BASED	18.12.1990
594	1.58	12.0	5.5	WATER BASED	27.02.1991
625	0.00			WATER BASED	18.12.1990
924	1.03			WATER BASED	07.01.1991
965	1.03			WATER BASED	09.01.1991
965	0.00			WATER BASED	09.01.1991
965	1.03	24.0	8.0	WATER BASED	14.01.1991
965	0.00	24.0	8.0	WATER BASED	14.01.1991
965	1.03	24.0	5.0	WATER BASED	14.01.1991
965	0.00			WATER BASED	11.01.1991
988	0.00	19.0	6.5	WATER BASED	27.12.1990
988	0.00			WATER BASED	28.12.1990
988	0.00	20.0	6.0	WATER BASED	02.01.1991
988	0.00	28.0	7.5	WATER BASED	02.01.1991
988	0.00	28.0	19.0	WATER BASED	21.12.1990
988	0.00	19.0	5.5	WATER BASED	27.12.1990
988	0.00	10.0	10.0	WATER BASED	27.12.1990
988	0.00	13.0	7.0	WATER BASED	28.12.1990
988	0.00	23.0	6.0	WATER BASED	02.01.1991
988	0.00	28.0	7.5	WATER BASED	02.01.1991
988	0.00	28.0	7.5	WATER BASED	02.01.1991
1321	1.25	25.0	5.0	WATER BASED	15.01.1991
1356	1.25	25.0	5.0	WATER BASED	15.01.1991
1516	1.35	23.0	5.0	WATER BASED	17.01.1991
1579	1.35	23.0	5.0	WATER BASED	17.01.1991
1781	1.45	21.0	6.5	WATER BASED	18.01.1991
1815	1.55	21.0	6.5	WATER BASED	18.01.1991



2015	1.60	33.0	8.5	WATER BASED	21.01.1991
2026	1.60	33.0	8.5	WATER BASED	21.01.1991
2093	1.60	29.0	7.5	WATER BASED	21.01.1991
2156	1.60	29.0	7.5	WATER BASED	21.01.1991
2200	1.60	30.0	10.5	WATER BASED	25.01.1991
2317	1.58	20.0	6.0	WATER BASED	26.02.1991
2330	1.60	34.0	8.0	WATER BASED	21.01.1991
2330	1.60	29.0	7.0	WATER BASED	21.01.1991
2339	1.60	29.0	7.0	WATER BASED	21.01.1991
2339	1.60	31.0	6.5	WATER BASED	22.01.1991
2339	1.60	31.0	6.5	WATER BASED	25.01.1991
2339	1.60	30.0	6.0	WATER BASED	24.01.1991
2524	1.60	31.0	6.5	WATER BASED	22.01.1991
2525	1.60	31.0	6.5	WATER BASED	22.01.1991
2543	1.60	30.0	6.0	WATER BASED	24.01.1991
2546	1.50	20.0	4.5	WATER BASED	28.01.1991
2546	1.60	31.0	6.5	WATER BASED	25.01.1991
2546	1.60	30.0	10.5	WATER BASED	25.01.1991
2546	1.60	16.0	7.5	WATER BASED	28.01.1991
2546	1.60	16.0	8.0	WATER BASED	28.01.1991
2546	1.60	30.0	6.0	WATER BASED	24.01.1991
2546	1.50	19.0	5.0	WATER BASED	30.01.1991
2546	1.50	26.0	6.0	WATER BASED	13.02.1991
2546	1.50	21.0	5.5	WATER BASED	31.01.1991
2546	1.50	19.0	5.5	WATER BASED	04.02.1991
2546	1.50	17.0	4.5	WATER BASED	30.01.1991
2546	1.50	21.0	5.0	WATER BASED	04.02.1991
2546	1.50	21.0	5.5	WATER BASED	05.02.1991
2546	1.50	22.0	5.0	WATER BASED	07.02.1991
2546	1.50	24.0	7.0	WATER BASED	14.02.1991
2546	1.50	21.0	4.5	WATER BASED	15.02.1991
2546	1.50	18.0	4.0	WATER BASED	04.02.1991
2546	1.50	22.0	5.5	WATER BASED	07.02.1991
2546	1.50	24.0	5.0	WATER BASED	11.02.1991
2549	1.50	16.0	8.0	WATER BASED	28.01.1991
2827	1.50	20.0	4.5	WATER BASED	28.01.1991
2918	1.50	19.0	5.0	WATER BASED	30.01.1991
3000	1.50	17.0	4.5	WATER BASED	30.01.1991
3049	1.50	21.0	5.5	WATER BASED	31.01.1991
3053	1.50	19.0	5.5	WATER BASED	04.02.1991



3074	1.50	18.0	4.0	WATER BASED	04.02.1991
3154	1.50	21.0	5.0	WATER BASED	04.02.1991
3252	1.50	21.0	5.5	WATER BASED	05.02.1991
3419	1.50	22.0	5.5	WATER BASED	07.02.1991
3502	1.50	22.0	5.0	WATER BASED	07.02.1991
3504	1.50	24.0	5.0	WATER BASED	11.02.1991
3627	1.58	25.0	7.0	WATER BASED	21.02.1991
3760	1.55	26.0	6.0	WATER BASED	13.02.1991
3816	1.55	24.0	7.0	WATER BASED	14.02.1991
3818	1.55	21.0	4.5	WATER BASED	15.02.1991
3965	1.50	21.0	6.5	WATER BASED	19.02.1991
3965	1.58	26.0	6.5	WATER BASED	20.02.1991
3965	1.58	24.0	6.5	WATER BASED	22.02.1991
3965	1.58	24.0	6.5	WATER BASED	26.02.1991
3965	1.58	24.0	6.5	WATER BASED	26.02.1991

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]
1711 Formation pressure (Formasjonstrykk)	pdf	0.28

