General information

Wellbore name	6407/6-5
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Field	MIKKEL
Discovery	6407/6-3 Mikkel
Well name	6407/6-5
Seismic location	INLINE 1656-XLINE 1726 ST 98M10
Production licence	092
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	967-L
Drilling facility	BYFORD DOLPHIN
Drilling days	43
Entered date	15.11.1999
Completed date	27.12.1999
Release date	27.12.2001
Publication date	18.12.2002
Purpose - planned	APPRAISAL
Reentry	NO
Content	GAS
Discovery wellbore	NO
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	FANGST GP
2nd level with HC, age	EARLY JURASSIC
2nd level with HC, formation	TOFTE FM
Kelly bushing elevation [m]	25.0
Water depth [m]	225.0
Total depth (MD) [m RKB]	2759.0
Final vertical depth (TVD) [m RKB]	2757.5
Maximum inclination [°]	5.1
Bottom hole temperature [°C]	111
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	TILJE FM
Geodetic datum	ED50
NS degrees	64° 38' 34.79'' N
EW degrees	7° 40' 3.87'' E

NS UTM [m]	7169515.60
EW UTM [m]	436338.31
UTM zone	32
NPDID wellbore	3921

Wellbore history

General

The main objective of well 6407/6-5 was to appraise hydrocarbons in the Fangst Group and to enhance the understanding of the hydrocarbon characteristics, contact and distribution within the Mikkel structure. Block 6407/6 is situated in the fault zone separating the Trøndelag Platform and the Halten Terrace. The fault zone where the structural element Mikkel is situated is called the Bremstein Fault Complex. Secondary targets were to investigate the degree of communication with the gas proven in well 6407/6-3, and to investigate the presence of hydrocarbons in the Tofte and Tilje Formations of the Båt Group.

Operations and results

Appraisal well 6407/6-5 was spudded with the semi-submersible installation "Byford Dolphin" on 15 November 1999 and drilled without major problems to a total depth of 2759 m in the Early Jurassic Tilje Formation. The well was drilled with seawater and bentonite down to 423 m, with KCl/PAC mud from 423 m to 1202 m, and with oil based mud ("Versavert") from 1202 m to TD. Oil and gas were encountered in the Fangst Group. The GOC was defined at 2543 m TVD MSL and an OWC was found at 2563 m TVD MSL, based on pressure gradients. This coincided with the hydrocarbon contacts proven in well 6407/6-3. MDT sampling gave gas samples from the Garn Formation (2382 m), oil from the Tofte Formation (2581 m), and water from the Tofte Formation (2626 m). Two cores were cut in the Ile, Ror, and Tofte Formations in the interval 2490 m to 2598 m. Recovery was 100 %. The well was permanently abandoned as a gas appraisal well on 27 December 1999.

Testing

No drill stem test was performed

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
600.00	2760.00

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	2490.0	2544.8	[m]

2	2545.0	2597.5	[m]

Total core sample length [m]	107.3
Cores available for sampling?	YES

Core photos


2490-2495m


2495-2500m


2500-2505m


2505-2510m


2510-2525m


2515-2520m


2520-2525m


2525-2530m


2530-2535m


2535-2540m


2540-2544m


2545-2550m


2555-2560m


2560-2565m


2565-2570m


2570-2575m


2575-2580m


2580-2585m


2585-2590m


2590-2595m


2595-2598m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1200.0	[m]	DC	ICHRON
1210.0	[m]	DC	ICHRON
1220.0	[m]	DC	ICHRON
1240.0	[m]	DC	ICHRON
1250.0	[m]	DC	ICHRON
1260.0	[m]	DC	ICHRON
1270.0	[m]	DC	ICHRON
1280.0	[m]	DC	ICHRON
1290.0	[m]	DC	ICHRON
1300.0	[m]	DC	ICHRON
1310.0	[m]	DC	ICHRON
1320.0	[m]	DC	ICHRON
1330.0	[m]	DC	ICHRON
1340.0	[m]	DC	ICHRON
1350.0	[m]	DC	ICHRON
1360.0	[m]	DC	ICHRON
1370.0	[m]	DC	ICHRON
1380.0	[m]	DC	ICHRON
1390.0	[m]	DC	ICHRON
1400.0	[m]	DC	ICHRON
1410.0	[m]	DC	ICHRON
1420.0	[m]	DC	ICHRON
1430.0	[m]	DC	ICHRON
1440.0	[m]	DC	ICHRON
1450.0	[m]	DC	ICHRON
1470.0	[m]	DC	ICHRON
1480.0	[m]	DC	ICHRON
1490.0	[m]	DC	ICHRON
1500.0	[m]	DC	ICHRON
1510.0	[m]	DC	ICHRON
1520.0	[m]	DC	ICHRON
1530.0	[m]	DC	ICHRON
1540.0	[m]	DC	ICHRON
1550.0	[m]	DC	ICHRON
1560.0	[m]	DC	ICHRON

1570.0	[m]	DC	ICHRON
1580.0	[m]	DC	ICHRON
1590.0	[m]	DC	ICHRON
1600.0	[m]	DC	ICHRON
1610.0	[m]	DC	ICHRON
1620.0	[m]	DC	ICHRON
1630.0	[m]	DC	ICHRON
1640.0	[m]	DC	ICHRON
1650.0	[m]	DC	ICHRON
1660.0	[m]	DC	ICHRON
1670.0	[m]	DC	ICHRON
1680.0	[m]	DC	ICHRON
1690.0	[m]	DC	ICHRON
1700.0	[m]	DC	ICHRON
1710.0	[m]	DC	ICHRON
1720.0	[m]	DC	ICHRON
1730.0	[m]	DC	ICHRON
1740.0	[m]	DC	ICHRON
1750.0	[m]	DC	ICHRON
1760.0	[m]	DC	ICHRON
1770.0	[m]	DC	ICHRON
1780.0	[m]	DC	ICHRON
1790.0	[m]	DC	ICHRON
1810.0	[m]	DC	ICHRON
1820.0	[m]	DC	ICHRON
1830.0	[m]	DC	ICHRON
1840.0	[m]	DC	ICHRON
1850.0	[m]	DC	ICHRON
1860.0	[m]	DC	ICHRON
1870.0	[m]	DC	ICHRON
1880.0	[m]	DC	ICHRON
1890.0	[m]	DC	ICHRON
1900.0	[m]	DC	ICHRON
1910.0	[m]	DC	ICHRON
1920.0	[m]	DC	ICHRON
1930.0	[m]	DC	ICHRON
1940.0	[m]	DC	ICHRON
1950.0	[m]	DC	ICHRON
1960.0	[m]	DC	ICHRON
1970.0	[m]	DC	ICHRON

1980.0	[m]	DC	ICHRON
1990.0	[m]	DC	ICHRON
2000.0	[m]	DC	ICHRON
2010.0	[m]	DC	ICHRON
2020.0	[m]	DC	ICHRON
2030.0	[m]	DC	ICHRON
2040.0	[m]	DC	ICHRON
2050.0	[m]	DC	ICHRON
2060.0	[m]	DC	ICHRON
2070.0	[m]	DC	ICHRON
2080.0	[m]	DC	ICHRON
2090.0	[m]	DC	ICHRON
2100.0	[m]	DC	ICHRON
2110.0	[m]	DC	ICHRON
2120.0	[m]	DC	ICHRON
2130.0	[m]	DC	ICHRON
2140.0	[m]	DC	ICHRON
2150.0	[m]	DC	ICHRON
2160.0	[m]	DC	ICHRON
2170.0	[m]	DC	ICHRON
2180.0	[m]	DC	ICHRON
2190.0	[m]	DC	ICHRON
2200.0	[m]	DC	ICHRON
2210.0	[m]	DC	ICHRON
2220.0	[m]	DC	ICHRON
2230.0	[m]	DC	ICHRON
2240.0	[m]	DC	ICHRON
2250.0	[m]	DC	ICHRON
2260.0	[m]	DC	ICHRON
2270.0	[m]	DC	ICHRON
2280.0	[m]	DC	ICHRON
2290.0	[m]	DC	ICHRON
2300.0	[m]	DC	ICHRON
2310.0	[m]	DC	ICHRON
2320.0	[m]	DC	ICHRON
2330.0	[m]	DC	ICHRON
2340.0	[m]	DC	ICHRON
2350.0	[m]	DC	ICHRON
2360.0	[m]	DC	ICHRON
2370.0	[m]	DC	ICHRON

2375.0	[m]	DC	ICHRON
2380.0	[m]	DC	ICHRON
2383.0	[m]	DC	ICHRON
2386.0	[m]	DC	ICHRON
2389.0	[m]	DC	ICHRON
2392.0	[m]	DC	ICHRON
2395.0	[m]	DC	ICHRON
2398.0	[m]	DC	ICHRON
2401.0	[m]	DC	ICHRON
2403.0	[m]	DC	ICHRON
2406.0	[m]	DC	ICHRON
2409.0	[m]	DC	ICHRON
2412.0	[m]	DC	ICHRON
2418.0	[m]	DC	ICHRON
2421.0	[m]	DC	ICHRON
2424.0	[m]	DC	ICHRON
2427.0	[m]	DC	ICHRON
2430.0	[m]	DC	ICHRON
2433.0	[m]	DC	ICHRON
2436.0	[m]	DC	ICHRON
2442.0	[m]	DC	ICHRON
2445.0	[m]	DC	ICHRON
2448.0	[m]	DC	ICHRON
2451.0	[m]	DC	ICHRON
2454.0	[m]	DC	ICHRON
2457.0	[m]	DC	ICHRON
2460.0	[m]	DC	ICHRON
2463.0	[m]	DC	ICHRON
2466.0	[m]	DC	ICHRON
2469.0	[m]	DC	ICHRON
2472.0	[m]	DC	ICHRON
2478.0	[m]	DC	ICHRON
2481.0	[m]	DC	ICHRON
2484.0	[m]	DC	ICHRON
2487.0	[m]	DC	ICHRON
2490.0	[m]	DC	ICHRON
2490.4	[m]	C	ICHRON
2491.2	[m]	C	ICHRON
2514.5	[m]	C	ICHRON
2517.3	[m]	C	ICHRON

2520.5	[m]	C	ICHRON
2523.5	[m]	C	ICHRON
2526.8	[m]	C	ICHRON
2534.7	[m]	C	ICHRON
2549.2	[m]	C	ICHRON
2558.9	[m]	C	ICHRON
2561.6	[m]	C	ICHRON
2564.5	[m]	C	ICHRON
2570.7	[m]	C	ICHRON
2573.5	[m]	C	ICHRON
2577.5	[m]	C	ICHRON
2589.4	[m]	C	ICHRON
2591.6	[m]	C	ICHRON
2594.6	[m]	C	ICHRON
2601.0	[m]	DC	ICHRON
2604.0	[m]	DC	ICHRON
2607.0	[m]	DC	ICHRON
2613.0	[m]	DC	ICHRON
2616.0	[m]	DC	ICHRON
2619.0	[m]	DC	ICHRON
2622.0	[m]	DC	ICHRON
2625.0	[m]	DC	ICHRON
2631.0	[m]	DC	ICHRON
2634.0	[m]	DC	ICHRON
2637.0	[m]	DC	ICHRON
2640.0	[m]	DC	ICHRON
2643.0	[m]	DC	ICHRON
2646.0	[m]	DC	ICHRON
2649.0	[m]	DC	ICHRON
2652.0	[m]	DC	ICHRON
2658.0	[m]	DC	ICHRON
2661.0	[m]	DC	ICHRON
2664.0	[m]	DC	ICHRON
2667.0	[m]	DC	ICHRON
2670.0	[m]	DC	ICHRON
2673.0	[m]	DC	ICHRON
2676.0	[m]	DC	ICHRON
2679.0	[m]	DC	ICHRON
2682.0	[m]	DC	ICHRON
2685.0	[m]	DC	ICHRON

2688.0	[m]	DC	ICHRON
2691.0	[m]	DC	ICHRON
2694.0	[m]	DC	ICHRON
2697.0	[m]	DC	ICHRON
2700.0	[m]	DC	ICHRON
2703.0	[m]	DC	ICHRON
2706.0	[m]	DC	ICHRON
2709.0	[m]	DC	ICHRON
2712.0	[m]	DC	ICHRON
2715.0	[m]	DC	ICHRON
2718.0	[m]	DC	ICHRON
2721.0	[m]	DC	ICHRON
2724.0	[m]	DC	ICHRON
2727.0	[m]	DC	ICHRON
2730.0	[m]	DC	ICHRON
2733.0	[m]	DC	ICHRON
2739.0	[m]	DC	ICHRON
2742.0	[m]	DC	ICHRON
2745.0	[m]	DC	ICHRON
2748.0	[m]	DC	ICHRON
2751.0	[m]	DC	ICHRON
2757.0	[m]	DC	ICHRON
2760.0	[m]	DC	ICHRON

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
250	NORDLAND GP
250	NAUST FM
1161	KAI FM
1362	HORDALAND GP
1362	BRYGGE FM
1861	ROGALAND GP
1861	TARE FM
1924	TANG FM
2023	SHETLAND GP
2343	CROMER KNOLL GP
2359	VIKING GP
2359	SPEKK FM

2377	MELKE FM
2381	FANGST GP
2381	GARN FM
2444	NOT FM
2485	ILE FM
2558	BÅT GP
2558	ROR FM
2581	TOFTE FM
2628	ROR FM
2661	TOFTE FM
2672	ROR FM
2709	TILJE FM

Composite logs

Document name	Document format	Document size [MB]
3921	pdf	0.37

Geochemical information

Document name	Document format	Document size [MB]
3921_1	pdf	1.94
3921_2	pdf	1.79
3921_3	pdf	0.39

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

Document name	Document format	Document size [MB]
3921_6407_6_5_COMPLETION_LOG	.pdf	2.41
3921_6407_6_5_COMPLETION_REPORT	.pdf	41.92

Logs

Log type	Log top depth [m]	Log bottom depth [m]
LWD	2350	2759

MDT GR	2383	2629
MWD	314	2759
PEX AIT DSI GR	1193	2393
VSP	1000	2629

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	310.0	36	311.0	0.00	LOT
INTERM.	13 3/8	421.0	17 1/2	422.0	1.28	LOT
INTERM.	9 5/8	1193.0	12 1/4	1193.0	1.63	LOT
OPEN HOLE		2759.0	8 1/2	2759.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
423	1.25	38.0		BENTONITE/FW	
426	1.20	15.0		CMC/BENTONITE	
520	1.22	11.0		KCL/PAC/XANVIS	
548	1.20			DUMMY	
1203	1.22	12.0		KCL/PAC/XANVIS	
1206	1.51	26.0		KCL/PAC/XANVIS	
1850	1.56	32.0		VERSAVERT	
2315	1.56	32.0		VERSAVERT	
2490	1.56	27.0		VERSAVERT	
2545	1.56	30.0		VERSAVERT	
2599	1.56	35.0		VERSAVERT	
2614	1.56	31.0		VERSAVERT	
2759	1.56	37.0		VERSAVERT	

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]
3921_Formation_pressure_(Formasjonstrykk)	pdf	0.27