



General information

Wellbore name	6405/10-1
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Discovery	6405/10-1 (Midnattsol)
Well name	6405/10-1
Seismic location	ST04M01 & inline 2913 & crossline 2838
Production licence	281
Drilling operator	Statoil ASA (old)
Drill permit	1145-L
Drilling facility	TRANSOCEAN LEADER
Drilling days	65
Entered date	05.07.2007
Completed date	07.09.2007
Release date	07.09.2009
Publication date	06.09.2009
Purpose - planned	WILDCAT
Reentry	NO
Content	GAS
Discovery wellbore	YES
1st level with HC, age	LATE CRETACEOUS
1st level with HC, formation	NISE FM
Kelly bushing elevation [m]	23.5
Water depth [m]	928.0
Total depth (MD) [m RKB]	3182.0
Final vertical depth (TVD) [m RKB]	3182.0
Maximum inclination [°]	1.2
Bottom hole temperature [°C]	94
Oldest penetrated age	LATE CRETACEOUS
Oldest penetrated formation	NISE FM
Geodetic datum	ED50
NS degrees	64° 0' 49.1" N
EW degrees	5° 16' 45.8" E
NS UTM [m]	7100701.88
EW UTM [m]	611423.07



UTM zone	31
NPDID wellbore	5565

Wellbore history

General

Block 6405/10 is located along the Jan-Mayen Lineament in the Norwegian Sea, in the transition zone between the Møre Basin in the south and the Vøring Basin in the north. Well 6405/10-1 is located half-way between the Ormen Lange and the Ellida discoveries. The primary well objective was to prove the presence of reservoir quality sandstone and hydrocarbons in the Midnattsol prospect. The primary target was deep marine sandstones of Campanian age in the Late Cretaceous Nise Formation. In addition, understanding the origin of the associated seismic flat event was an important objective for this well.

Operations and results

Wildcat well 6405/10-1 was spudded with the semi-submersible installation Transocean Leader on 5 July 2007 and drilled vertically through Quaternary, Tertiary and Late Cretaceous Formations to TD at 3182 m in the Late Cretaceous Nise Formation. A 9 7/8" pilot hole, designated 6405/10-U-1, was drilled to a total depth of 1850 prior to drilling the main hole. The objective of the pilot hole was to detect shallow water flows in the Naust Formation, in addition to acquiring good quality logging data of the upper section. Well 6405/10-1 was spudded 50 m from the pilot hole location in 928 m water depth. No significant technical problems were encountered during the operations. The well was drilled with seawater and sweeps down to 1760 m, with PERFORMADRIL water based mud from 1760 to 2442 m, and with INNOVERT paraffin/mineral oil based mud from 2442 m to TD. The oil base was analysed to be composed of hydrocarbons in the C11 to C16 range.

The Nise Formation was penetrated at 2937 m and consisted of bioturbated deep marine sandstones, siltstones and shales. The Nise Formation held a hydrocarbon column of approximately 60 m, but the reservoir properties were poor. The hydrocarbon column corresponded with the structural closure, but lied appreciably shallower than the mapped flat event, which suggested a hydrocarbon column of 140 m. The well results did not resolve whether the flat event is related to fluids (residual gas saturation) or to diagenetic changes. No oil shows were recorded in the well, or from post-well organic geochemical analyses. Very high levels of gas were recorded in the interval 2779 - 2808 m (Tang Formation - Egga Informal Formation). The fluid comprised of over 94% C1 (based on average C1 to C4% composition). The mud weight was increase from 1.48 sg to 1.54 sg while circulating this gas out. Significant gas levels were recorded in the interval 2935 to 3004 m containing a similar fluid composition.

Two cores were cut from 3004 to 3035 m. Extensive wire line data acquisition was performed, including MDT pressure testing and sidewall cores. Hydrocarbon gas samples were collected at 2951.5 m and 2994.4 m and a water sample was collected at 3049.2 m.

The well was permanently abandoned on 7 September 2007 as a gas discovery.

Testing

No drill stem test was performed.



Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1770.00	3180.00

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	3004.0	3014.0	[m]
2	3014.0	3035.2	[m]

Total core sample length [m]	31.2
------------------------------	------

Cores available for sampling?	YES
-------------------------------	-----

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
952	NORDLAND GP
952	NAUST FM
1891	HORDALAND GP
1891	BRYGGE FM
2568	ROGALAND GP
2568	TARE FM
2723	TANG FM
2783	EGGA FM (INFORMAL)
2811	SHETLAND GP
2811	SPRINGAR FM
2937	NISE FM

Composite logs

Document name	Document format	Document size [MB]
5565	pdf	0.43





Geochemical information

Document name	Document format	Document size [MB]
5565_1	pdf	0.23
5565_2	pdf	1.01
5565_3	pdf	0.22

Logs

Log type	Log top depth [m]	Log bottom depth [m]
AIT PEX ACTS ECRD	2808	3033
AIT PEX ECS HNGS ACTS ECRD	2808	3185
CMR BFV	2808	3185
DSI HRLA PEX ACTS ECRD	1749	2420
GAUGERUN	952	3049
MDT GR	2808	3033
MDT PA PS	2942	3051
MDT PA PS	2962	3025
MSCT GR	2800	3046
MWD - PP AC T	3004	3182
MWD - PP AV	952	2442
MWD - PP AV SADN8 SV GVR8 SS	2442	2808
MWD - PP ES SS GVR	2808	3004
OBMI MSIP ACTS ECRD	2808	3185
VSP NI VSI4	3884	4104

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	1041.0	36	1045.0	0.00	LOT
SURF.COND.	20	1749.0	26	1760.0	1.39	LOT
INTERM.	13 3/8	2423.0	17 1/4	2442.0	1.56	LOT
INTERM.	9 5/8	2799.0	12 1/4	2808.0	1.63	LOT
OPEN HOLE		3182.0	8 1/2	3182.0	0.00	LOT

Drilling mud





Depth MD [m]	Mud weight [g/cm ³]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
1017	1.03			SEAWATER	
1045	1.35	12.0		SPUD MUD	
1230	1.35	12.0		SPUD MUD	
1760	1.35	12.0		SPUD MUD	
1951	1.12	8.0		HPWBM	
2356	1.29	11.0		HPWBM	
2442	1.34	14.0		HPWBM	
2801	1.55	35.0		OBM-HTHP	
2808	1.53	33.0		OBM-HTHP	

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
3014.13	[m]

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]
5565_Formation_pressure_(Formasjonstrykk)	PDF	0.28

