General information

Wellbore name	24/9-9 S
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORTH SEA
Field	BØYLA
Discovery	24/9-9 S Bøyla
Well name	24/9-9
Seismic location	MN DG 043 & 032A
Production licence	340
Drilling operator	Marathon Petroleum Norge AS
Drill permit	1277-L
Drilling facility	SONGA DEE
Drilling days	26
Entered date	12.09.2009
Completed date	07.10.2009
Release date	07.10.2011
Publication date	07.10.2011
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL
Discovery wellbore	YES
1st level with HC, age	PALEOCENE
1st level with HC, formation	HERMOD FM
Kelly bushing elevation [m]	25.0
Water depth [m]	120.0
Total depth (MD) [m RKB]	2402.0
Final vertical depth (TVD) [m RKB]	2226.7
Maximum inclination [°]	37.6
Oldest penetrated age	PALEOCENE
Oldest penetrated formation	HEIMDAL FM
Geodetic datum	ED50
NS degrees	59° 19' 40.49'' N
EW degrees	1° 50' 17.27'' E
NS UTM [m]	6577295.29
EW UTM [m]	433882.57

UTM zone	31
NPDID wellbore	6222

Wellbore history

General

Well 24/9-9 S is located in the Vana Sub-basin ca 6 km east of the UK border in the North Sea. The primary objective of the well was to establish the presence of hydrocarbons within the Hermod Formation of the Marihøne A prospect. Given success, an optional sidetrack (24/9-9 A) would be drilled to test the A2 segment of the same Hermod Formation. The surface location was placed so as to enable both segments to be tested from the same wellhead location. Further unplanned sidetracks would be contingent on results of the first wells.

Operations and results

Wildcat well 24/9-9 S was spudded with the semi-submersible installation Songa Dee on 12 September 2009 and drilled to TD at 2402 m in the Paleocoene Heimdal Formation. No significant technical problem occurred in the operations. The well was drilled with seawater and hi-vis sweeps down to 144 m, with Glydril mud from 144 m to 1033m, and with Versatec oil based mud from 1033 m to TD.

The target Hermod Formation was encountered at 2202 m (2041.8 m TVD MSL) and proved to be oil bearing. Logging showed a 29.1 m TVD oil leg with OWC at 2238.5m (2070.9m TVD MSL). Average porosity of the oil bearing zone was 27% with an average Sw of 25%. The gross thickness of the reservoir was 52.5 m TVD. The Heimdal Formation sands were water bearing. The only true oil shows recorded were on the cores taken in the reservoir. These extended through the oil-bearing zone and down to the end of the cored interval at 2261 m. The oil based mud used produced a background weak dull yellow direct fluorescence and faint cut fluorescence, which effectively masked any mineral oil show. Additionally the solvent properties of the mud, combined with the structure destroying effect of the PDC bits and the flushing effect due to the overbalanced mud weight may have removed virtually all trace of shows from disaggregated sand grains and minimised or removed shows from sandstone aggregates.

Two cores were cut 2207 to 2261 m in the Hermod Formation. A wire line programme was run comprising 4 runs: 1A Quad combo, 1B MDT, 1C VSP and 1D MDT. The first MDT run proved Oil and Water gradients in addition to sampling the Oil zone at 2221 m. The second MDT run provided additional oil samples from the same oil horizon. Maximum temperature recorded in the first run was 103 deg C, corresponding to a rather high temperature gradient: 47.6 deg C/km with 4 deg C at sea floor. This was the only BHT reported from the well.

The well was plugged back for sidetracking on 7 October 2009 as an oil discovery.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1050.00	2400.00

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	2207.0	2233.8	[m]
2	2234.0	2260.9	[m]

Total core sample length [m]	53.7
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1050.0	[m]	DC	CGG
1110.0	[m]	DC	CGG
1140.0	[m]	DC	CGG
1170.0	[m]	DC	CGG
1200.0	[m]	DC	CGG
1290.0	[m]	DC	CGG
1320.0	[m]	DC	CGG
1350.0	[m]	DC	CGG
1410.0	[m]	DC	CGG
1440.0	[m]	DC	CGG
1500.0	[m]	DC	CGG
1530.0	[m]	DC	CGG
1590.0	[m]	DC	CGG
1620.0	[m]	DC	CGG
1650.0	[m]	DC	CGG
1680.0	[m]	DC	CGG
1710.0	[m]	DC	CGG
1740.0	[m]	DC	CGG
1770.0	[m]	DC	CGG
1830.0	[m]	DC	CGG
1880.0	[m]	DC	CGG
1920.0	[m]	DC	CGG

1950.0	[m]	DC	CGG
2000.0	[m]	DC	CGG
2040.0	[m]	DC	CGG
2070.0	[m]	DC	CGG
2100.0	[m]	DC	CGG
2110.0	[m]	DC	CGG
2120.0	[m]	DC	CGG
2130.0	[m]	DC	CGG
2140.0	[m]	DC	CGG
2150.0	[m]	DC	CGG
2170.0	[m]	DC	CGG
2180.0	[m]	DC	CGG
2190.0	[m]	DC	CGG
2200.0	[m]	DC	CGG
2207.2	[m]	C	CGG
2208.0	[m]	C	CGG
2211.2	[m]	C	CGG
2214.4	[m]	C	CGG
2216.7	[m]	C	CGG
2217.7	[m]	C	CGG
2224.1	[m]	C	CGG
2225.5	[m]	C	CGG
2228.9	[m]	C	CGG
2236.6	[m]	C	CGG
2239.2	[m]	C	CGG
2244.7	[m]	C	CGG
2245.8	[m]	C	CGG
2250.6	[m]	C	CGG
2251.7	[m]	C	CGG
2256.6	[m]	C	CGG
2259.8	[m]	C	CGG
2270.0	[m]	DC	CGG
2280.0	[m]	DC	CGG
2290.0	[m]	DC	CGG
2300.0	[m]	DC	CGG
2310.0	[m]	DC	CGG
2330.0	[m]	DC	CGG
2340.0	[m]	DC	CGG
2350.0	[m]	DC	CGG
2360.0	[m]	DC	CGG

2370.0	[m]	DC	CGG
2390.0	[m]	DC	CGG

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
145	NORDLAND GP
403	UTSIRA FM
934	NO FORMAL NAME
1117	HORDALAND GP
1117	GRID FM
1382	NO FORMAL NAME
2068	ROGALAND GP
2068	BALDER FM
2157	SELE FM
2202	HERMOD FM
2268	SELE FM
2304	LISTA FM
2351	NO FORMAL NAME
2368	HEIMDAL FM

Logs

Log type	Log top depth [m]	Log bottom depth [m]
AIT GPIT PPC DSI	144	2390
MDT GR	253	2267
MDT GR	2221	2221
MWD - GR RES POE DEN PWD DI	2204	2390
MWD - GR RES POR DEN PWD DI RES	1033	2204
MWD - GR RES PWD DI	185	1020

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	192.0	36	194.0	0.00	LOT
SURF.COND.	13 3/8	1022.0	17 1/2	1033.0	0.00	LOT

OPEN HOLE		2402.0	12 1/4	2402.0	1.55	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
920	1.40	38.0		wvjobreportmudchk.com	
1335	1.35	35.0		wvjobreportmudchk.com	
2385	1.39	31.0		Added lime and paravis to active	
2402	1.39	32.0		wvjobreportmudchk.com	
2402	1.39	33.0		wvjobreportmudchk.com	
2402	1.39	33.0		wvjobreportmudchk.com	
2402	1.39	31.0		wvjobreportmudchk.com	
2402	1.39	33.0		wvjobreportmudchk.com	
2402	1.39	33.0		Backloaded 117m3 OBM, 78m3 WBM	

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]
6222_Formation_pressure_(Formasjonstrykk)	pdf	0.22