General information

Wellbore name	1/3-9 S
Type	EXPLORATION
Purpose	APPRAISAL
Status	RE-CLASS TO DEV
Factmaps in new window	link to map
Main area	NORTH SEA
Field	TAMBAR
Discovery	1/3-3 Tambar
Well name	1/3-9
Seismic location	BPNHR97-13 X-OVER BPNHR97-22
Production licence	065
Drilling operator	BP Norway Limited U.A.
Drill permit	928-L
Drilling facility	MÆRSK JUTLANDER
Drilling days	85
Entered date	08.05.1998
Completed date	31.07.1998
Release date	31.07.2000
Publication date	30.04.2010
Purpose - planned	APPRAISAL
Reclassified to wellbore	1/3-K-1
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	ULA FM
Kelly bushing elevation [m]	23.0
Water depth [m]	68.0
Total depth (MD) [m RKB]	4516.0
Final vertical depth (TVD) [m RKB]	4359.0
Maximum inclination [°]	25.9
Bottom hole temperature [°C]	168
Oldest penetrated age	LATE JURASSIC
Oldest penetrated formation	ULA FM
Geodetic datum	ED50
NS degrees	56° 58' 57.93'' N
EW degrees	2° 57' 31.44'' E
NS UTM [m]	6315608.87

EW UTM [m]	497491.85
UTM zone	31
NPDID wellbore	3362

Wellbore history

General

Well 1/3-9 S is located on the Tambar Field on the Cod Terrace in the North Sea. The objective was to appraise the possibility of commercial quantities of hydrocarbons in the Ula Formation sandstones of the JU8 prospect (the Ula Formation is sometimes referred to as the "Gyda Sandstone Member" in this part of the North Sea). The well was planned deviated to avoid shallow gas anomalies and to fully appraise the target sand.

Operations and results

Well 1/3-9 S was spudded with the semi-submersible installation Mærsk Jutlander on 8 May 1998 and drilled to 3100 m where hole problems led to plug-back and a sidetrack (1/3-9 S T2) with kick-off at 1836 m. Final TD of the well was set at 4516 m in the Late Jurassic Ula Formation. The well was drilled with seawater and hi-vis pills down to 1050 m, with Barasilc WBM from 1050 m to 3185 m, and with Enviromul OBM from 3185 m to TD. Total Non-Productive time for the well was 40%, most of which was due to contamination of the mud system, the side-track of the well and the TD logging performance. The 12 1/4" Section was notably different from plan, after an unexpected water kick was taken at 2535 m. This not only reduced the mud systems ability to accept contaminants, with a required MW increase up to 1.7sg, but also severely reduced the ROP, due to high overbalance drilling, later in the section. This also resulted in setting the 9 5/8" casing high, leaving reactive shales open whilst drilling the 8 1/2" section.

The Palaeocene Forties sands of the 1/3-6 and 1/3-7 wells were not encountered.The target Ula Formation sandstone was encountered at 4266.3 m, 33.7 m high to prognosis. It was oil-bearing with an estimated OWC at ca 4375 m. Oil shows, both fluorescence in cuttings samples and drilled gas with the compositional range of C1 - C5, were observed through the interval 4273 - 4377 m, within this unit. No other shows were recorded in the well. Analysis of MDT pressure revealed a 550 psi difference compared to well 1/3-3 and Gyda well 2/1-6. This is interpreted as being a result of depletion from Gyda oil production, and suggests there is significant communication through the aquifer between the JU8 structure and the Gyda Field.

A total of 105 m of core was cut in two cores in the Ula Formation. A total recovery of 99.7% was obtained, representing the two longest core recoveries in the area. MDT oil samples were taken at 4279.5 m, 4304.98 m, and at 4346.49 m. Following extensive logging of the well, a 7" liner was run in preparation for future development. The well was temporarily suspended on 31 July 1998, with a combined trawl guard and corrosion cap left on top. In June 2001 it was re-entered and reclassified to development well on the Tambar and Tambar Øst Fields.

Well 1/3-9 S is classified as an appraisal of the 1/3-3 Tambar Discovery.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1070.00	3100.00

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	4273.0	4322.7	[m]
2	4323.0	4378.1	[m]

Total core sample length [m]	104.8
Cores available for sampling?	YES

Core photos


4273-4278m


4278-4283m


4283-4288m


4288-4293m


4293-4298m


4298-4303m


4303-4308m


4308-4313m


4313-4318m


4318-4322m


4323-4328m


4328-4333m


4333-4338m


4338-4343m


4343-4348m


4348-4353m


4353-4358m


4358-4363m


4368-4373m


4373-4378m


4378-4378m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
4274.2	[m]	C	APT
4274.4	[m]	C	APT
4275.4	[m]	C	APT
4277.5	[m]	C	APT
4287.3	[m]	C	APT
4289.4	[m]	C	APT
4289.5	[m]	C	APT
4309.7	[m]	C	APT
4322.8	[m]	C	APT
4325.7	[m]	C	APT
4328.0	[m]	C	APT
4331.5	[m]	C	APT
4334.9	[m]	C	APT
4338.6	[m]	C	APT
4375.0	[m]	C	APT
4376.0	[m]	C	APT
4376.0	[m]	C	APT
4378.0	[m]	C	APT
4378.0	[m]	C	APT

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
3103	ROGALAND GP
3103	BALDER FM
3125	SELE FM
3155	LISTA FM
3254	VIDAR FM
3259	LISTA FM
3292	VÅLE FM
3319	SHETLAND GP
3319	EKOFISK FM
3409	TOR FM
3758	HOD FM
3895	BLODØKS FM
3898	HIDRA FM
3900	CROMER KNOLL GP
3900	RØDBY FM
3933	SOLA FM
3935	TUXEN FM
3942	ÅSGARD FM
4119	TYNE GP
4119	MANDAL FM
4135	FARSUND FM
4266	VESTLAND GP
4266	ULA FM
4414	NO FORMAL NAME
4431	ULA FM

Geochemical information

Document name	Document format	Document size [MB]
3362_1	pdf	0.44
3362_2	pdf	2.49
3362_3	pdf	0.12

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

Document name	Document format	Document size [MB]
3362_1_3_9_S_COMPLETION_LOG	.pdf	2.39
3362_1_3_9_S_COMPLETION_REPORT	.pdf	31.90

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CSAT GR	1050	4518
CSAT GR	3106	4518
DSI IPL	3157	4518
MDT GR	4266	4308
MDT GR	4266	4396
MDT GR	4278	4395
PI GR	3150	4518

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	159.0	36	165.0	0.00	LOT
SURF.COND.	13 3/8	1042.0	17 1/2	1050.0	1.98	LOT
PILOT HOLE		1050.0	9 7/8	0.0	0.00	LOT
INTERM.	9 5/8	3180.0	12 1/4	3185.0	1.90	LOT
LINER	7	4514.0	8 1/2	4516.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
160	1.03	1.0		WATERBASED	
501	1.03	1.0		WATERBASED	
1050	1.25	1.0		WATER BASED MUD	
1658	1.30	16.0		WATER BASED MUD	
1920	1.70	25.0		WATER BASED MUD	
2180	1.70	26.0		WATER BASED MUD	

2293	1.70	26.0		WATER BASED MUD	
2348	1.70	26.0		WATER BASED MUD	
2515	1.70	24.0		WATER BASED MUD	
2932	1.67	45.0		WATER BASED MUD	
2935	1.70	26.0		WATER BASED MUD	
3087	1.70	30.0		WATER BASED MUD	
3100	1.67	36.0		WATER BASED MUD	
3185	1.70	27.0		WATER BASED MUD	
3185	1.70	27.0		WATER BASED MUD	
3466	1.54	29.0		OIL BASED MUD	
3573	1.54	28.0		OIL BASED MUD	
4042	1.54	30.0		OIL BASED MUD	
4100	1.54	29.0		OIL BASED MUD	
4253	1.54	32.0		OIL BASED MUD	
4323	1.54	26.0		OIL BASED MUD	
4377	1.54	30.0		OIL BASED MUD	
4493	1.54	31.0		OIL BASED MUD	
4516	1.54	30.0		OIL BASED MUD	

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]
3362__Formation_pressure_(Formasjonstrykk)	pdf	0.21