General information

Wellbore name	2/1-11
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Discovery	2/1-11
Well name	2/1-11
Seismic location	BPN 9111- INLINE 425 & CROSSLINE 1107
Production licence	019 B
Drilling operator	BP Norway Limited U.A.
Drill permit	877-L
Drilling facility	MÆRSK JUTLANDER
Drilling days	114
Entered date	14.01.1997
Completed date	07.05.1997
Plugged and abondon date	21.02.2014
Release date	07.05.1999
Publication date	01.04.2010
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL
Discovery wellbore	YES
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	BRYNE FM
Kelly bushing elevation [m]	23.0
Water depth [m]	68.2
Total depth (MD) [m RKB]	4725.0
Final vertical depth (TVD) [m RKB]	4697.0
Maximum inclination [°]	30
Bottom hole temperature [°C]	167
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	SMITH BANK FM
Geodetic datum	ED50
NS degrees	56° 47' 35.28'' N
EW degrees	3° 3' 58.16'' E
NS UTM [m]	6294501.41

EW UTM [m]	504041.28
UTM zone	31
NPDID wellbore	2699

Wellbore history

General

Well 2/1-11 is located on the Hidra High in the Central Graben of the North Sea. It was drilled to investigate the possibility of commercial quantities of hydrocarbons in the Jurassic J60/J70 sandstones (Ula Formation). A secondary objective was to assess the reservoir potential of the older J50 Jurassic sandstone sequence.

Operations and results

Wildcat well 2/1-11 was spudded with the semi-submersible installation Mærsk Jutlander on 14 January 1997 and drilled to TD at 4725 m (4697 m TVD) in the Late Triassic Smith Bank Formation. At a depth of 724 m, while drilling riserless, the well was observed by the ROV to be flowing. Evidence of this flow was observed in the moon pool - a patch of light coloured water being apparent. The well was circulated with seawater while additional kill mud was built. A pilot hole was then drilled to the section TD of 1151 m with further flows being observed at 736 m, 802 m, 900 m, 939 m, 1112 m and 1121 m. Most likely the gas in all instances came from an interval between 650 and 724 m, which after drilling was correlated to a shallow biogenic gas warning at 638 identified in the site survey. The shallow gas problems led to a delay in installing a new cuttings handling system on the rig, required because of a late decision to use oil based mud in the 12 1/4" hole. No serious harm was done by the shallow gas but considerable rig time was spent. The well was planned vertical but a slight deviation is seen in the deviation survey, starting at ca 3600 m (3 deg deviation). At 4350 m the deviation had reached 10 deg, and at TD it was 30 deg. As a result MD is more than 5 m larger than TVD below 4450 m, and the difference is as much as 28 m at TD. The well was drilled with seawater and hi-vis sweeps down to 1162 m and with ENVIROMUL oil based mud from 1162 m to TD.

All principal seismic horizons were penetrated within their error bars. A poorly developed Forties Formation Equivalent sand encountered at 3139.5 m had minor associated gas shows. Top Vidar Formation was 67 m shallow to prognosis, Ekofisk Formation 19 m shallow and the Cromer Knoll Group on prognosis. There were no shows in the Vidar and Ekofisk Chalk Formations. The Base Cretaceous pick, identified as the Farsund Formation, was 10 m shallow to prognosis. The Mandal Formation (Late Jurassic, J73 - J71) was absent as prognosed. No significant J70 - J60 (Ula Formation) sandstones were encountered, but minor sandstones were present. Hydrocarbon shows were limited to gas peaks with compositions up to C5. A sidewall core at 4316m had oil staining and fluorescence. Biostratigraphic data suggested a J50 sequence boundary at 4483 m at the base of the Haugesund Formation, 69 m shallow to prognosis, but was seen only as a condensed sequence. The interval 4500 - 4535 m, within the J40 - J20 Bryne Formation, was oil bearing with fluorescence in cuttings samples and drilled gas with the compositional range of Cl - C5. The Triassic was picked at 4617 m, 92 m high to prognosis. There were no hydrocarbon shows in the Triassic.

No cores were cut and no wire line fluid samples were taken.

The well was plugged and suspended on 7 May 1997 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]
1170.00	4125.00

Cuttings available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
91	NORDLAND GP
3076	ROGALAND GP
3076	BALDER FM
3104	SELE FM
3111	LISTA FM
3140	FORTIES FM
3142	LISTA FM
3177	VIDAR FM
3252	LISTA FM
3293	VÅLE FM
3310	SHETLAND GP
3310	EKOFISK FM
3421	TOR FM
3850	HOD FM
4052	BLODØKS FM
4055	HIDRA FM
4097	CROMER KNOLL GP
4097	RØDBY FM
4143	SOLA FM
4155	TUXEN FM
4173	TYNE GP
4173	FARSUND FM
4323	HAUGESUND FM
4506	VESTLAND GP
4506	BRYNE FM
4617	NO GROUP DEFINED
4617	SMITH BANK FM

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

Document name	Document format	Document size [MB]
2699_2_1_11_COMPLETION_LOG	pdf	3.53
2699_2_1_11_COMPLETION_REPORT	pdf	26.07

Logs

Log type	Log top depth [m]	Log bottom depth [m]
AS GR AMS	1125	3888
AS GR AMS	3250	4210
CST GR	4225	4642
CST GR	4225	4500
CST GR	4250	4678
LDS APS HNGS IPL	4214	4730
MDT	4315	4701
PI GR DSI	4214	4729
VSP	1100	4725

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	188.0	36	189.0	0.00	LOT
PILOT HOLE		650.0	9 7/8	650.0	0.00	LOT
SURF.COND.	20	1157.0	26	1162.0	1.95	LOT
INTERM.	9 5/8	3886.0	12 1/4	3892.0	2.08	LOT
LINER	7	4210.0	8 3/8	4210.0	2.03	LOT
OPEN HOLE		4725.0	6	4725.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
189	1.05			seawater	
650	1.05			seawater	
724	1.05			seawater	
1151	1.05			seawater	
3892	1.61			obm	
4210	1.83			obm	
4725	2.06			obm	

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]
2699_Formation_pressure_(Formasjonstrykk)	pdf	0.21