General information

Wellbore name	15/6-10
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORTH SEA
Discovery	15/6-10 (Freke)
Well name	15/6-10
Seismic location	ILN 3481-XLN 3740
Production licence	029 B
Drilling operator	ExxonMobil Exploration and Production Norway AS
Drill permit	1224-L
Drilling facility	BREDFORD DOLPHIN
Drilling days	59
Entered date	07.02.2009
Completed date	06.04.2009
Release date	06.04.2011
Publication date	06.04.2011
Purpose - planned	WILDCAT
Reentry	NO
Content	GAS/CONDENSATE
Discovery wellbore	YES
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	SLEIPNER FM
Kelly bushing elevation [m]	25.0
Water depth [m]	111.3
Total depth (MD) [m RKB]	3700.0
Final vertical depth (TVD) [m RKB]	3693.0
Maximum inclination [°]	8
Bottom hole temperature [°C]	119
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	SKAGERRAK FM
Geodetic datum	ED50
NS degrees	58° 40' 55.75'' N
EW degrees	1° 50' 15.24'' E
NS UTM [m]	6505393.84

EW UTM [m]	432599.85
UTM zone	31
NPDID wellbore	6030

Wellbore history

General

Well 15/6-10 was drilled on the Gudrun Terrace in the South Viking Graben of the North Sea. The main objectives of the well were to test the hydrocarbon and reservoir potential in the Hugin and Sleipner sandstones of the Freke prospect. The main target was the Hugin Formation, prognosed at 3495 m TVD RKB, and the secondary target was the Sleipner Formation.

Operations and results

Wildcat well 15/6-10 was spudded with the semi-submersible installation Bredford Dolphin on 7 February 2009 and drilled to TD at 3700 m in the Late Triassic Skagerrak Formation. The well experienced some deviation difficulties in the 17 1/2" and 12 1/4" sections. The 17 1/2" section started out well but with fairly high torque and stick-slip levels. When entering the Skade Fm the assembly started to build angle. Despite attempts to reduce the building tendency, the angle kept building 0.5- 0.7 degrees per stand drilled. When drilling at 1838 m, the 17 1/2" assembly twisted off in an extension sub just below the bottom stabilizer, approximately 18 m above the bit. The fish was retrieved at first attempt. The 17 1/2" were finished on a motor run to correct the well path. In 12 1/4" section, steering commenced in order to correct the well path back towards the target centre. Initially steering proved to be relatively easy but turned impossible once entering chalk due to very poor toolface control. The well was drilled with spud mud down to 696 m, with KCl/GEM water based mud from 696 m to 2109 m, and with Performadril water based mud from 2109 m to TD.

The well penetrated several Tertiary sands (Utsira, Skade, and Heimdal Formations), all water-filled. The primary target Hugin Formation was not encountered although an equivalent age Heather Formation shale prone lithology was encountered at 3497 m. Top Sleipner Formation was encountered at 3510 m and contained gas/condensate down to ca 3567 m (3536 m TVD SS), however the actual hydrocarbon/water contact could not be established from any well data. The Sleipner Formation reservoir sands were silty, with interbedded coals, claystone and thin limestones. Net/gross ratio of the total reservoir was limited to ca 0.3. Oil shows were observed in the Shetland Group (3260-3270 m and 3340-3370 m), in the Vestland Group (3497 - 3584 m) and in the Hegre Group (3620 - 3659 m).

No cores were taken because massive sands with shows were not identified. No sidewall cores were obtained due to tool failure. MDT hydrocarbon samples were taken at 3545.5 and 3563.8 m and an MDT water sample was taken at 3628 m. Compositional analysis of the hydrocarbon samples showed a condensate with ca 23 % C2+ hydrocarbons.

The well was permanently abandoned on 6 April 2009 as a gas/condensate discovery.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
700.00	3697.00

Cuttings available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
136	NORDLAND GP
764	UTSIRA FM
955	HORDALAND GP
1040	NO FORMAL NAME
1056	NO FORMAL NAME
1162	SKADE FM
1174	NO FORMAL NAME
1265	SKADE FM
1284	NO FORMAL NAME
1746	GRID FM
2059	NO FORMAL NAME
2222	ROGALAND GP
2222	BALDER FM
2280	SELE FM
2343	LISTA FM
2404	HEIMDAL FM
2574	LISTA FM
2613	VÅLE FM
2711	SHETLAND GP
2711	EKOFISK FM
2753	TOR FM
2976	HOD FM
3277	TRYGGVASON FM
3327	BLODØKS FM
3330	SVARTE FM
3404	CROMER KNOLL GP
3404	RØDBY FM
3461	VIKING GP

3461	DRAUPNE FM
3497	HEATHER FM
3510	VESTLAND GP
3510	SLEIPNER FM
3613	NO GROUP DEFINED
3613	SKAGERRAK FM

Geochemical information

Document name	Document format	Document size [MB]
6030_01_15_6_10_gch_transfer_1	txt	0.00
6030_02_15_6_10_gch_results_1	txt	0.10

Logs

Log type	Log top depth [m]	Log bottom depth [m]
MDT	3537	3657
MDT	3544	3664
MSCT	3629	3669
MWD - DIR	136	201
MWD - GR EWR PWD DIR	201	3697
PEX150 HRLA DSI GPIT	3389	3697
VSP	1000	3690

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	200.0	36	201.0	0.00	LOT
SURF.COND.	20	685.0	26	696.0	0.00	LOT
INTERM.	13 3/8	2103.0	17 1/2	2109.0	2.15	LOT
INTERM.	9 5/8	3389.0	12 1/4	3395.0	1.84	LOT
OPEN HOLE		3700.0	8 1/2	3700.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
160	1.02			Seawater	
185	1.06			Bentonite mud	
205	1.06			Bentonite mud	
272	1.06			Bentonite mud	
489	1.25			Bentonite mud	
700	1.20	12.0		KCL / GEM	
884	1.20	12.0		KCL / GEM	
978	1.22	17.0		KCL / GEM	
1058	1.21	16.0		KCL / GEM	
1756	1.20	12.0		KCL / GEM	
1874	1.21	17.0		KCL / GEM	
1945	1.45	31.0		PERFORMADRIL	
1984	1.20	15.0		KCL / GEM	
2127	1.34	20.0		Performadril	
2687	1.35	28.0		Performadril	
3050	1.45	31.0		PERFORMADRIL	
3092	1.35	43.0		Performadril	
3202	1.39	48.0		Performadril	
3277	1.39	41.0		Performadril	
3395	1.45	53.0		Performadril	
3697	1.50	53.0		PERFORMADRIL	
3697	1.51	53.0		Performadril	

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]
6030_Formation_pressure_(Formasjonstrykk)	pdf	0.23