General information

Wellbore name	15/6-9 S
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORTH SEA
Field	GINA KROG
Discovery	15/5-1 Gina Krog
Well name	15/6-9
Seismic location	ST04M01 & inline 2886 & crossline 5000
Production licence	303
Drilling operator	Statoil ASA (old)
Drill permit	1135-L
Drilling facility	WEST EPSILON
Drilling days	60
Entered date	29.03.2007
Completed date	27.05.2007
Release date	27.05.2009
Publication date	27.05.2009
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	MIOCENE
1st level with HC, formation	UTSIRA FM
2nd level with HC, age	MIDDLE JURASSIC
2nd level with HC, formation	HUGIN FM
Kelly bushing elevation [m]	48.0
Water depth [m]	113.0
Total depth (MD) [m RKB]	3940.0
Final vertical depth (TVD) [m RKB]	3910.0
Maximum inclination [°]	14.1
Bottom hole temperature [°C]	125
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	SKAGERRAK FM
Geodetic datum	ED50
NS degrees	58° 35' 13.71'' N

EW degrees	1° 44' 34.87'' E
NS UTM [m]	6494914.51
EW UTM [m]	426920.01
UTM zone	31
NPDID wellbore	5494

Wellbore history

General

Well 15/6-9 S was drilled on the Ermintrude prospect east of the Dagny discovery and north of the Sleipner Vest field. The prospect is located in the South Viking Graben on the northernmost extension of the Sleipner Terrace, with the Utsira High immediately to the east. The primary objective was to prove hydrocarbons in the Hugin Formation and to acquire data to understand the reservoir characteristics and fluid distribution, and how the Ermintrude structure is connected to the Dagny discovery. Potential targets in the Sleipner and Skagerrak Formation were also investigated by this drilling.

Operations and results

Well 15/6-9 S was spudded with the jack-up installation West Epsilon on 29 March 2007 and drilled to TD at 3940 m in the Late Triassic Skagerrak Formation. The well was drilled vertical down to 1050 m and continued in a slightly deviated S-shaped trajectory towards TD. The well was drilled with seawater and hi-vis sweeps down to 277 m, with seawater and CMC EHV sweeps from 277 to 762 m, with a KCl/glycol/polymer mud from 762 to 2797 m, and with low-sulphate KCl/glycol/polymer mud from 2797 m to TD. No shallow gas was observed while drilling the 36" hole, 12 1/4" pilot hole or in the 24" hole opening run. However, 6.3% gas (98% Methane) was observed at top Utsira Formation, 39 m below the 20" casing shoe. MDT pressures and sampling confirmed a normally pressured gas accumulation.

The well penetrated rocks of Quaternary, Tertiary, Cretaceous, Jurassic, and Triassic age. The well penetrated the Hugin reservoir at 3741 m, slightly shallower than prognosed. Pressure points and fluid samples were taken with the MDT and a hydrocarbon discovery was proven in the Hugin Formation. The MDT results and wire line logs proved this to be light oil in an oil-down-to situation at ca 3790 m (3714 m TVD MSL). There were no shows or other hydrocarbon indications below 3790 m.

One conventional core was cut at 3761.3 - 3811 m in the Hugin Formation. Shows on the core verified the oil-down-to contact at 3793 m. A total of 26 sidewall cores were drilled with the MSCT in Draupne, Heather, Hugin, Sleipner and Skagerrak Formation. High quality oil samples were acquired in the Hugin Formation at 3763 m and 3791 m. A water sample was taken at 3804 m in the Sleipner Formation. The quality of the water sample was low with 40% mud contamination measured at the rig site. In the Utsira Formation, gas samples were taken by dual packer MDT at 793 m.

Well 15/6-9 S was plugged back to 2838 m in the 8 1/2" section on 26 May 2007. The well is classified as a gas and oil appraisal well. The geologic sidetrack 15/6-9 A was kicked off on the same day to prove communication with the Dagny discovery and to appraise gas above the oil-leg in the Hugin Formation.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
280.00	3940.00

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	3761.3	3810.7	[m]

Total core sample length [m]	49.4
Cores available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
161	NORDLAND GP
792	UTSIRA FM
1025	HORDALAND GP
1169	SKADE FM
1189	NO FORMAL NAME
1857	GRID FM
2020	NO FORMAL NAME
2226	ROGALAND GP
2226	BALDER FM
2268	SELE FM
2321	LISTA FM
2352	HEIMDAL FM
2735	VÅLE FM
2798	SHETLAND GP
2798	EKOFISK FM
2850	TOR FM
3123	HOD FM
3367	CROMER KNOLL GP
3367	RØDBY FM

3511	VIKING GP
3511	DRAUPNE FM
3616	HEATHER FM
3741	VESTLAND GP
3741	HUGIN FM
3794	SLEIPNER FM
3872	NO GROUP DEFINED
3872	SKAGERRAK FM

Logs

Log type	Log top depth [m]	Log bottom depth [m]
MDT	3758	3851
MDT	3761	3791
MDT	3763	3804
MSCT	2899	3940
MWD - ARC VISION	768	2797
MWD - DIR	161	2775
MWD - GEO VISION SEISMIC	2797	3940
PEX HRLA DSI ACTS ECRD	2786	3940
VSP VSI-4	800	3940

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	268.0	36	275.0	0.00	LOT
SURF.COND.	20	753.0	24	768.0	1.59	LOT
INTERM.	13 3/8	2786.0	17 1/2	2797.0	1.60	LOT
OPEN HOLE		3940.0	8 1/2	3940.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
320	1.05			SPUD MUD	
610	1.09			SPUD MUD	
768	1.12	4.0		KILL FLUID-SW/BENTONITE	

771	1.12	5.0		KILL FLUID-SW/BENTONITE	
1158	1.35	17.0		KCL/POLYMER/GLYCOL	
1725	1.35	18.0		KCL/POLYMER/GLYCOL	
2744	1.35	21.0		KCL/POLYMER/GLYCOL	
2797	1.35	22.0		KCL/POLYMER/GLYCOL	
2883	1.46	13.0		KCL/POLYMER/GLYCOL	
3139	1.46	31.0		KCL/POLYMER/GLYCOL	
3489	1.46	30.0		KCL/POLYMER/GLYCOL	
3761	1.46	27.0		KCL/POLYMER/GLYCOL	
3763	1.46	35.0		KCL/POLYMER/GLYCOL	
3811	1.46	33.0		KCL/POLYMER/GLYCOL	
3940	1.46	32.0		KCL/POLYMER/GLYCOL	

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]
5494_Formation_pressure_(Formasjonstrykk)	PDF	0.22