General information

Wellbore name	35/3-7 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
Discovery	35/3-7 S
Well name	35/3-7
Seismic location	survey GP3DR07.inline 370 & crossline 1781
Production licence	270
Drilling operator	VNG Norge (Operations) AS
Drill permit	1260-L
Drilling facility	BREDFORD DOLPHIN
Drilling days	96
Entered date	28.06.2009
Completed date	01.10.2009
Release date	01.10.2011
Publication date	01.10.2011
Purpose - planned	WILDCAT
Reentry	NO
Content	GAS
Discovery wellbore	YES
1st level with HC, age	EARLY CRETACEOUS
1st level with HC, formation	AGAT FM
Kelly bushing elevation [m]	25.0
Water depth [m]	257.0
Total depth (MD) [m RKB]	4051.0
Final vertical depth (TVD) [m RKB]	3971.0
Maximum inclination [°]	25
Bottom hole temperature [°C]	124
Oldest penetrated age	MIDDLE JURASSIC
Oldest penetrated formation	HEATHER FM
Geodetic datum	ED50
NS degrees	61° 50' 7.24'' N
EW degrees	3° 49' 31.83'' E
NS UTM [m]	6856278.07

EW UTM [m]	543472.41
UTM zone	31
NPDID wellbore	6154

Wellbore history

General

Well 35/3-7 S was drilled on the Cyclops prospect close to the Agat Discovery on the Måløy Slope in the Northern North Sea. The objective was to prove hydrocarbons in the Agat Formation (Agat 70 and Agat 80 sandstone units).

Operations and results

Wildcat well 35/3-7 S was spudded with the semi-submersible installation Bredford Dolphin on 28 June 2009 and drilled to TD at 4051 m in the Late Jurassic Heather Formation. A 9 5/8" pilot hole was drilled from 550 m down to 836 m. A water flow incident happened at 745 m. This was expected from previous wells in the area and a Riserless Mud Recovery system (RMR) was utilized to use weighted mud from seabed. By this the water flow was taken care of in a controlled manner. When setting the 9 5/8" liner the liner was lost in the well, but it was finally cemented and successfully tested 2.0 sg EMW. Due to a stuck pipe incident on a wiper trip between wire line logging runs a technical sidetrack had to be drilled to fulfil the formation evaluation program. The sidetrack was kicked off at 3248 m, below the 9 5/8" casing shoe, and reached TD at 3777 m, ca 110 m south of the primary well bore. The well took 95.8 days vs. 61.2 days planned. The additional days were mainly caused by the lost 9 5/8" liner, the stuck pipe incident including sidetrack and 10.2 days waiting on weather before pulling anchors. The entire main well bore was drilled with KCl/GEM water based mud (WBM) and the sidetrack was drilled with Performadril WBM.

The combined results of the main bore and the sidetrack was a gas discovery in the Agat formation in the Lower Cretaceous as proven by pressure data and gas samples. The pressure data combined define a GWC at 3652 m (3573 m TVD RKB, 3548 m TVD MSL) in main bore. The sidetrack hit the reservoir below the GWC. Moderate visible oil shows were primarily related to the core chips from the gas-bearing reservoir in the well 35/3-7 S. Weak oil shows on cuttings persisted below the GWC at 3652.8 m, throughout the Agat 70 Unit and down to top Agat 60 unit at 3738 m. Otherwise, weak oils shows were recorded above the reservoir in the Agat 110 unit at 3432 to 3443 m, and below the reservoir in the Agat 50 unit at 3790 to 3795 m and the Åsgard Formation at 3981 to 4003 m.

In the well 35/3-7 S, two cores were drilled out within the members Agat 80 and top of Agat 70. No core was taken in the sidetrack. The MDT tool was run to take pressure and fluid samples. In the main well bore 14 stable pressure points over the Agat 70-780 unit and a water sample from 3713 m were obtained. In the sidetrack an MDT water and mud filtrate was recovered in a sample from 3662 m. After that a dual packer mini-DST was carried out and gas samples were taken from 3646.9 m, while samples from 3646.8 and 3675.3 m only retrieved mud filtrate.

Preliminary estimates indicate that the size of the discovery in 35/3-7 S, together with previously proven gas discoveries in the licence (35/3-2 and 35/3-4, collectively called Agat, proven in 1980), is between three and eight billion standard cubic metres of recoverable gas.

The well was permanently abandoned on 1 October 2009 as a gas discovery.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
560.00	4051.70

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	3620.0	3643.0	[m]
2	3643.0	3671.0	[m]

Total core sample length [m]	51.0
Cores available for sampling?	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
282	NORDLAND GP
655	HORDALAND GP
655	SKADE FM
821	NO FORMAL NAME
909	GRID FM
1038	NO FORMAL NAME
1232	ROGALAND GP
1232	BALDER FM
1273	SELE FM
1300	LISTA FM
1420	VÅLE FM
1520	SHETLAND GP
1520	JORSALFARE FM
1643	KYRRE FM
2847	TRYGGVASON FM
3234	BLODØKS FM
3237	SVARTE FM
3305	CROMER KNOLL GP
3305	RØDBY FM

3596	AGAT FM
3998	ÅSGARD FM
4029	VIKING GP
4029	HEATHER FM

Geochemical information

Document name	Document format	Document size [MB]
6154_01_35_3_7S_gch_transfer_1	txt	0.00
6154_02_35_3_7S_gch_results_1	txt	0.00

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CMR HRLA PEX ECS	3219	4049
FMI DSI HNGS	3212	4042
MDT	3614	3904
MDT CMR	3596	3747
MDT SAMPLE	3713	3800
MWD - DGR EWR	277	838
MWD - DGR EWR QBAT	792	3224
MWD - DGR EWR QBAT LAD CTN GEOTA	3211	4049

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	435.0	36	440.0	0.00	LOT
SURF.COND.	20	836.0	24	842.0	1.47	LOT
PILOT HOLE		842.0	9 7/8	842.0	0.00	LOT
INTERM.	13 3/8	1520.0	17 1/2	1526.0	1.76	LOT
INTERM.	9 5/8	3248.0	12 1/4	3250.0	2.00	LOT
OPEN HOLE		4051.0	8 1/2	4051.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
335	1.03			Bentonite Spud mud	
438	1.27	45.0		KCl/GEM	
528	1.03			Bentonite Spud mud	
829	1.24	43.0		KCl/GEM	
922	1.22	32.0		KCl/GEM	
1250	1.30	43.0		KCl/GEM	
1500	1.35	27.0		KCl/GEM	
2011	1.30	46.0		KCl/GEM	
2412	1.35	28.0		KCl/GEM	
2732	1.30	37.0		KCl/GEM	
3164	1.37	48.0		KCl/GEM	
3246	1.39	53.0		KCl/GEM	
3305	1.30	31.0		Performadril	
3738	1.39	29.0		KCl/GEM	
3769	1.30	37.0		Performadril	
4051	1.39	43.0		KCl/GEM	