

**General information**

Wellbore name	35/2-2
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Press release	link to press release
Factmaps in new window	link to map
Main area	NORTH SEA
Discovery	35/2-1 (Peon)
Well name	35/2-2
Seismic location	NH06M04-inline 5004-xline 4340
Production licence	318
Drilling operator	StatoilHydro Petroleum AS
Drill permit	1238-L
Drilling facility	TRANSOCEAN WINNER
Drilling days	55
Entered date	02.06.2009
Completed date	26.07.2009
Release date	26.07.2011
Publication date	26.07.2011
Purpose - planned	APPRAISAL
Reentry	NO
Content	GAS
Discovery wellbore	NO
1st level with HC, age	PLEISTOCENE
1st level with HC, formation	NAUST FM
Kelly bushing elevation [m]	26.0
Water depth [m]	372.0
Total depth (MD) [m RKB]	640.0
Final vertical depth (TVD) [m RKB]	640.0
Maximum inclination [°]	1.8
Bottom hole temperature [°C]	15
Oldest penetrated age	PLIOCENE
Oldest penetrated formation	NAUST FM
Geodetic datum	ED50
NS degrees	61° 52' 36.2" N
EW degrees	3° 24' 51" E
NS UTM [m]	6860681.03
EW UTM [m]	521781.52



UTM zone	31
NPDID wellbore	6084

Wellbore history

General

Well 35/2-2 was drilled to appraise the Peon discovery on the Tampen Spur about one block west of the Agat discovery in the northern North Sea. The objectives were to establish reservoir properties and test the hydrocarbon potential of the Peon structure, verify Sandaband as a barrier for the production wells, and test gravel pack as completion design for future production wells. Other objectives for the well were to get further information about stress in the overburden, reservoir and underburden, acquire sonic and density data from the overburden 40m over the reservoir, and collect water samples.

Operations and results

Appraisal well 35/2-2 was spudded with the semi-submersible installation Transocean Winner on 2 June 2009 and drilled to TD at 640 m in Pliocene sediments of the Naust Formation. The seabed temperature was measured by two seabed memory gauges provided by Oceaneering. The seabed temperature oscillated between 5.8 to 6.7 deg C. An average of 6.3 deg C was taken as the seabed temperature. The well was drilled with seawater down to 429 m, with Sildril mud from 429 m to 571 m, and with Glydril Mud from 571 m to TD.

The geological model of Peon was confirmed by the well 35/2-2 and its technical sidetrack. Gas was encountered as expected from 580 down to a gas-water contact at 594 m in the Naust Formation "Peon sand". The gas is 99.98% methane with a carbon isotopic composition proving a biogenic origin. No oil shows were observed. A full set of wire line logs was acquired over the reservoir section; including sampling of a good quality water sample at 601 m. Sonic data was acquired in the overburden; however shear data is only available in the 8-1/2" section. Stress tests and extended leak-off tests were not done after careful consideration during risk assessments. Gravel pack as completion solution worked as expected. Unfortunately, Sandaband could not be pumped in the well and could therefore not be tested as a barrier

A core in the upper part of the reservoir was planned with the Full Closure Core Catcher", but not taken as the equipment did not work according to specifications.

The well was permanently abandoned on 26 July as a gas appraisal well.

Testing

The gas reservoir was tested with a full scale DST. The test was performed from a technical sidetrack (35/2-2 T2) drilled down to 592 m, 2 m above the gas-water contact. The test produced as expected a gas rate of 1200000 Sm³/day on a 120/64" choke size. At top reservoir the formation pressure was measured to 59.7 bars at 581m TVD RKB. The temperature recorded in the DST was 11.8 deg C, but is believed to be lower than the formation temperature due to gas expansion effects. Based also on temperatures from the MDT measurements a temperature of 12.5 deg C is taken as the Formation temperature at the top of the reservoir, 581 m.

**Cuttings at the Norwegian Offshore Directorate**

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
543.00	640.00

Cuttings available for sampling?	YES
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Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
543.0	[m]	DC	FUGRO
549.0	[m]	DC	FUGRO
552.0	[m]	DC	FUGRO
555.0	[m]	DC	FUGRO
558.0	[m]	DC	FUGRO
561.0	[m]	DC	FUGRO
564.0	[m]	DC	FUGRO
567.0	[m]	DC	FUGRO
570.0	[m]	DC	FUGRO
573.0	[m]	DC	FUGRO
576.0	[m]	DC	FUGRO
579.0	[m]	DC	FUGRO
582.0	[m]	DC	FUGRO
585.0	[m]	DC	FUGRO
588.0	[m]	DC	FUGRO
591.0	[m]	DC	FUGRO
592.0	[m]	DC	FUGRO
594.0	[m]	DC	FUGRO
597.0	[m]	DC	FUGRO
600.0	[m]	DC	FUGRO
603.0	[m]	DC	FUGRO
606.0	[m]	DC	FUGRO
609.0	[m]	DC	FUGRO
612.0	[m]	DC	FUGRO
615.0	[m]	DC	FUGRO
618.0	[m]	DC	FUGRO
621.0	[m]	DC	FUGRO
624.0	[m]	DC	FUGRO
627.0	[m]	DC	FUGRO
630.0	[m]	DC	FUGRO
633.0	[m]	DC	FUGRO



636.0	[m]	DC	FUGRO
639.0	[m]	DC	FUGRO
640.0	[m]	DC	FUGRO

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
398	NORDLAND GP
398	NAUST FM

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	581	600	48.0

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0	3.800		5.300	12

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0		1200000			

Logs

Log type	Log top depth [m]	Log bottom depth [m]
ECS TLD	398	543
EMS	370	500
EMS	405	568
EMS	405	569
FMI	564	592
FMI	654	637
IBC	390	418
IBC CBL	400	503
IBC CBL	400	539
IBC CBL	400	565



IBC CBL	445	542
MDT	581	607
MDT	601	602
MDT	601	601
MFC-60	375	530
MWD LWD - PP ARC RES9	429	640
PEX	443	568
PEX	564	592
PEX HRLA	564	637
PPC GPIT MSIP	564	637

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	429.0	36	429.0	0.00	LOT
SURF.COND.	13 3/8	539.0	17 1/2	543.0	1.20	LOT
INTERM.	9 5/8	564.0	12 1/4	571.0	1.22	LOT
OPEN HOLE		640.0	8 1/2	640.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
429	1.50	20.0		SILDRILL	
543	1.12	10.0		SILDRILL	
563	1.13	19.0		Glydril	
571	1.13	15.0		Glydril	
640	1.13	16.0		Glydril	
640	1.13	16.0		Glydril	