



General information

Wellbore name	34/12-1
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	34/12-1 (Afrodite)
Well name	34/12-1
Seismic location	PSDM en 04m01-line 2770 & trace 6120
Production licence	293
Drilling operator	Eni Norge AS
Drill permit	1162-L
Drilling facility	TRANSOCEAN LEADER
Drilling days	180
Entered date	03.11.2007
Completed date	30.04.2008
Release date	30.04.2010
Publication date	30.04.2010
Purpose - planned	WILDCAT
Reentry	NO
Content	GAS/CONDENSATE
Discovery wellbore	YES
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	BRENT GP
Kelly bushing elevation [m]	23.0
Water depth [m]	373.0
Total depth (MD) [m RKB]	4713.0
Final vertical depth (TVD) [m RKB]	4711.0
Maximum inclination [°]	5.6
Bottom hole temperature [°C]	168
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	COOK FM
Geodetic datum	ED50
NS degrees	61° 13' 19.88" N
EW degrees	2° 59' 55.62" E
NS UTM [m]	6787697.57
EW UTM [m]	499934.65



UTM zone	31
NPDID wellbore	5684

Wellbore history

General

The 34/12-1 Afrodite well was drilled in the northern Viking Graben in the North Sea. The Afrodite structure is a horst block of Jurassic age bounded by north-south trending faults. The main purpose was to test the Middle Jurassic Brent Group and Cook sandstone of the Dunlin Group for hydrocarbons. The primary target was the Brent Group sandstones with the Cook sandstone as the secondary target. The well was classified as high temperature/high pressure (HTHP).

Operations and results

Well 34/12-1 was spudded with the semi-submersible installation Transocean Leader on 30 April 2008 and drilled to TD at 4713 m in the Early Jurassic Cook Formation. A pilot hole was drilled prior to drilling the 26" hole to check for shallow gas. No shallow gas was encountered. The well was accidentally sidetracked at 1391m when drilling out a cement plug. The plug had been set as a barrier in the well to allow the BOP to be pulled for repair. The well was drilled with spud mud down to 1261 m, with Ultradril mud from 1261 m to 3210 m, and with Paratherm oil based mud from 3210 m to TD.

The primary target Brent Group was encountered at 4320.8 m. The Brent Group comprised 52 m of net pay gas condensate bearing sandstones of 13% average porosity. No HC water contact was found. The secondary target Cook sandstones encountered at 4740 m were water wet. High background gas and gas peaks were observed when drilling through the Brent Group. Shows on cuttings and side wall cores from the Brent Group and Cook Formation were very weak and indistinguishable from the cut due to oil based mud. The average permeability in the Brent Group reservoir was low with an average below 0.1 mD. The low permeability was mainly caused by the presence of illite.

No cores were cut in the well due to technical problems. MDT Pressure points showed that reservoir pressure is more than 30 bar higher in the Dunlin Group than in the Brent Group reservoir pressure, proving that there is no communication between the Brent Group and the Dunlin Sandstones. No fluid samples were taken on MDT.

The well was permanently abandoned on 30 April 2008 as a gas/condensate discovery.

Testing

The Brent Group was perforated on the intervals 4321- 4330 m and 4346 - 4356 m. The total amount of fluids recovered at surface was 21.5 Sm³ of condensate, and the gas rate was in the range of 210000 - 230000 Sm³/day with a maximum reading of 293000 Sm³/day on a 40/64" choke. The GOR was 6600 Sm³/Sm³ and the oil density was 0.78 g/cm³. The reservoir temperature interpreted from the test was 150 deg C.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1270.00	4713.00



Cuttings available for sampling?	YES
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Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
396	NORDLAND GP
943	UTSIRA FM
973	HORDALAND GP
1815	ROGALAND GP
1815	BALDER FM
1876	SELE FM
1885	LISTA FM
1995	VÅLE FM
2007	SHETLAND GP
2007	JORSALFARE FM
2280	KYRRE FM
3497	TRYGGVASON FM
3705	BLODØKS FM
3748	SVARTE FM
3922	CROMER KNOLL GP
3922	RØDBY FM
4070	SOLA FM
4100	ÅSGARD FM
4172	VIKING GP
4172	DRAUPNE FM
4218	HEATHER FM
4321	BRENT GP
4321	TARBERT FM
4331	NESS FM
4447	ETIVE FM
4457	RANNOCH FM
4499	DUNLIN GP
4499	DRAKE FM
4607	COOK FM

Geochemical information





Document name	Document format	Document size [MB]
5684_1	pdf	0.67
5684_2	pdf	1.14

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	4321	4356	15.9

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

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	33	216000	0.780		6600

Logs

Log type	Log top depth [m]	Log bottom depth [m]
AIT MSIP	4125	4529
AIT MSIP HNGS	3663	4524
AIT PEX IS PPC MSIP GR ACTS ECRD	2040	4110
APS LDS AIT	4519	4708
CMR XPT	4321	4456
IPLT OBMI ECS GR	4100	4529
LWD - GR APWD	396	1260
LWD - GR RES SONIC	396	1260
LWD - GR RES SONIC APWD	1260	4110
MDT GR	4321	4453
MDT GR	4572	4684
MSCT GR	3250	4050
MSCT GR	4422	4459
MSCT GR	4535	4678
MWD - GR RES APWD	4110	4520
VSP GR	1815	4713



**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	445.0	36	448.0	1.80	LOT
SURF.COND.	20	1246.0	26	1260.0	1.79	LOT
INTERM.	13 3/8	3185.0	17 1/2	3210.0	2.08	LOT
INTERM.	9 5/8	4098.0	12 1/4	4110.0	2.02	LOT
LINER	7	4519.0	8 3/8	4520.0	0.00	LOT
OPEN HOLE		4713.0	6 1/2	4713.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
400	1.03			Seawater	
450	1.05			SPUD MUD	
1101	1.54	21.0		WBM (Sildril)	
1147	1.05			SPUD MUD	
1205	1.54	21.0		WBM (Sildril)	
1260	1.38	23.0		ULTRADRIL DW	
1390	1.37	24.0		ULTRADRIL DW	
1394	1.89	47.0		OBM (Paratherm)	
1396	1.89	47.0		OBM (Paratherm)	
1841	1.37	25.0		ULTRADRIL DW	
2050	1.50	31.0		ULTRADRIL DW	
2210	1.50	32.0		ULTRADRIL DW	
2452	1.52	31.0		ULTRADRIL DW	
2452	1.52	34.0		ULTRADRIL DW	
2500	1.52	33.0		ULTRADRIL DW	
2672	1.52	32.0		ULTRADRIL DW	
2781	1.52	29.0		ULTRADRIL DW	
3075	1.52	38.0		ULTRADRIL DW	
3200	1.37	23.0		ULTRADRIL DW	
3210	1.37	23.0		ULTRADRIL DW	
3656	1.59	38.0		OBM (PARATHERM)	
4110	1.74	44.0		OBM (PARATHERM)	
4115	1.95	47.0		OBM (PARATHERM)	



4180	1.95	43.0		OBM (PARATHERM)	
4300	1.95	43.0		OBM (PARATHERM)	
4489	1.45	26.0		OBM (Paratherm)	
4520	1.89	42.0		OBM (Paratherm)	
4524	1.89	42.0		OBM (Paratherm)	
4588	1.89	43.0		OBM (Paratherm)	
4610	1.89	43.0		OBM (Paratherm)	
4671	1.89	43.0		OBM (Paratherm)	
4713	1.89	42.0		OBM (Paratherm)	