General information

Wellbore name	15/5-5
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	GLITNE
Discovery	15/5-5 Glitne
Well name	15/5-5
Seismic location	NH 9302 ROW 1376 - COL. 1777
Production licence	048
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	820-L
Drilling facility	TREASURE SAGA
Drilling days	36
Entered date	31.08.1995
Completed date	05.10.1995
Release date	05.10.1997
Publication date	19.12.2007
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL
Discovery wellbore	YES
1st level with HC, age	PALEOCENE
1st level with HC, formation	HEIMDAL FM
Kelly bushing elevation [m]	26.0
Water depth [m]	109.0
Total depth (MD) [m RKB]	2645.0
Final vertical depth (TVD) [m RKB]	2636.0
Maximum inclination [°]	3.9
Bottom hole temperature [°C]	90
Oldest penetrated age	PALEOCENE
Oldest penetrated formation	EKOFISK FM
Geodetic datum	ED50
NS degrees	58° 43' 3.4'' N
EW degrees	1° 38' 39.41'' E
NS UTM [m]	6509552.03
EW UTM [m]	421473.46

UTM zone	31
NPDID wellbore	2635

Wellbore history

General

Well 15/5-5 is located in the Northern North Sea, ca 15 km north of the Sleipner Field. The primary objective of the well was to prove commercial volumes of oil in a prospect in the Late Paleocene Heimdal Formation. The well location was chosen so as to test the prospect in a position with as little up dip reserves as possible.

Operations and results

Wildcat well 15/5-5 was spudded with the semi-submersible installation Treasure Saga on 31 August 1995 and drilled to TD at 2645 m in the Early Paleocene Ekofisk Formation. Boulders were experienced in the interval 155 -170 m MD and some time was spent to correct the inclination. Otherwise operations went without problems and the well was completed well within schedule. The well was drilled with spud mud down to 1000 m and with KCl/polymer mud from 1000 m to TD.

The well penetrated water bearing Grid Formation sands from 1479 m to 1807 m. The Heimdal Formation was encountered at 2154 m with 27.4 m of net pay hydrocarbon-bearing reservoir sand down to the OWC at 2187m. The average porosity was calculated to 30.6 % and the average horizontal core permeability was 1.9 Darcy. The OWC was based on formation pressure measurements (MDT) and logs. The average oil saturation over the interval was estimated to 67.4 %. The MDT data indicated a Free Water Level at 2189.2 m. Oil shows and low saturation of migrated hydrocarbons were observed in selected intervals below the OWC down to 2191 m. The Heimdal Formation from top to 2191 was the only interval in the well that had reported oil shows. An 82 m thick water bearing sandstones of the Ty Formation was encountered at 2501 m.

The interval 2157 - 2200 m was cored in 3 cores using equipment especially developed for soft sediment coring. The original core depths are 4 m shallow relative to wire line log curves. The cores covered most of the oil zone and extended into the water leg. MDT fluid samples were taken at 2157.5 m (mud filtrate and oil), 2177 m (oil), 2186.5 m (oil), and at 2193.5 m (water).

The well was permanently abandoned on 5 October 1995 as an oil discovery.

Testing

One production test was conducted in the Heimdal Formation over the perforated interval 2154 - 2183.5 m. The test produced 575 Sm3 oil and 36000 Sm3 gas /day through a 60/64" choke. The GOR was 63 Sm3/Sm3, the oil density was 0.864 g/cm3, and the gas gravity was 0.868 (air = 1). The gas contained maximum 0.3% CO2 and no H2S. Maximum bottom hole temperature in the test was 79.7 deg C.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1010.00	2645.00

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	2157.0	2175.5	[m]
2	2175.5	2177.9	[m]
3	2181.5	2198.2	[m]

Total core sample length [m]	37.6
Cores available for sampling?	YES

Core photos


2157-2162m


2162-2167m


2167-2172m


2172-2175m


2175-2177m


2181-2186m


2186-2191m


2191-2196m


2196-2198m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1010.0	[m]	DC	RRI
1020.0	[m]	DC	RRI
1032.0	[m]	SWC	RRI
1050.0	[m]	DC	RRI
1070.0	[m]	DC	RRI
1080.0	[m]	DC	RRI
1100.0	[m]	DC	RRI

1110.0	[m]	DC	RRI
1130.0	[m]	DC	RRI
1140.0	[m]	DC	RRI
1158.0	[m]	SWC	RRI
1170.0	[m]	DC	RRI
1190.0	[m]	DC	RRI
1200.0	[m]	DC	RRI
1220.0	[m]	DC	RRI
1230.0	[m]	DC	RRI
1250.0	[m]	DC	RRI
1266.0	[m]	SWC	RRI
1280.0	[m]	DC	RRI
1300.0	[m]	DC	RRI
1310.0	[m]	DC	RRI
1330.0	[m]	DC	RRI
1340.0	[m]	DC	RRI
1360.0	[m]	DC	RRI
1370.0	[m]	DC	RRI
1390.0	[m]	DC	RRI
1415.0	[m]	DC	RRI
1430.0	[m]	DC	RRI
1442.0	[m]	SWC	RRI
1460.0	[m]	DC	RRI
1470.0	[m]	DC	RRI
1485.0	[m]	DC	RRI
1505.0	[m]	DC	RRI
1520.0	[m]	DC	RRI
1535.0	[m]	DC	RRI
1555.0	[m]	DC	RRI
1572.0	[m]	SWC	RRI
1585.0	[m]	DC	RRI
1595.0	[m]	DC	RRI
1620.0	[m]	DC	RRI
1630.0	[m]	DC	RRI
1650.0	[m]	DC	RRI
1660.0	[m]	DC	RRI
1680.0	[m]	DC	RRI
1690.0	[m]	DC	RRI
1710.0	[m]	DC	RRI
1720.0	[m]	DC	RRI

1740.0	[m]	DC	RRI
1750.0	[m]	DC	RRI
1770.0	[m]	DC	RRI
1780.0	[m]	DC	RRI
1800.0	[m]	DC	RRI
1810.0	[m]	DC	RRI
1830.0	[m]	DC	RRI
1840.0	[m]	DC	RRI
1860.0	[m]	DC	RRI
1870.0	[m]	SWC	RRI
1890.0	[m]	DC	RRI
1900.0	[m]	DC	RRI
1920.0	[m]	DC	RRI
1930.0	[m]	DC	RRI
1950.0	[m]	DC	RRI
1960.0	[m]	DC	RRI
1980.0	[m]	DC	RRI
1997.0	[m]	SWC	RRI
2010.0	[m]	DC	RRI
2022.0	[m]	SWC	RRI
2027.0	[m]	SWC	RRI
2040.0	[m]	DC	RRI
2050.0	[m]	DC	RRI
2056.0	[m]	SWC	RRI
2079.0	[m]	SWC	RRI
2083.0	[m]	SWC	RRI
2090.0	[m]	DC	RRI
2100.0	[m]	DC	RRI
2107.0	[m]	SWC	RRI
2110.0	[m]	DC	RRI
2118.0	[m]	SWC	RRI
2120.0	[m]	DC	RRI
2124.0	[m]	SWC	RRI
2130.0	[m]	DC	RRI
2133.0	[m]	SWC	RRI
2140.0	[m]	SWC	RRI
2148.0	[m]	SWC	RRI
2150.0	[m]	DC	RRI
2162.0	[m]	C	RRI
2163.0	[m]	C	RRI

2176.0	[m]	C	RRI
2182.0	[m]	C	RRI
2184.0	[m]	C	RRI
2186.0	[m]	C	RRI
2187.0	[m]	C	RRI
2188.0	[m]	C	RRI
2191.0	[m]	C	RRI
2193.0	[m]	C	RRI
2195.0	[m]	C	RRI
2198.0	[m]	C	RRI
2200.0	[m]	DC	RRI
2210.0	[m]	DC	RRI
2212.0	[m]	SWC	RRI
2220.0	[m]	DC	RRI
2234.0	[m]	SWC	RRI
2240.0	[m]	SWC	RRI
2245.0	[m]	DC	RRI
2255.0	[m]	DC	RRI
2260.0	[m]	DC	RRI
2262.0	[m]	SWC	RRI
2270.0	[m]	DC	RRI
2280.0	[m]	DC	RRI
2290.0	[m]	DC	RRI
2300.0	[m]	DC	RRI
2303.0	[m]	SWC	RRI
2310.0	[m]	DC	RRI
2320.0	[m]	DC	RRI
2330.0	[m]	DC	RRI
2341.0	[m]	SWC	RRI
2370.0	[m]	DC	RRI
2380.0	[m]	DC	RRI
2390.0	[m]	DC	RRI
2400.0	[m]	DC	RRI
2410.0	[m]	DC	RRI
2420.0	[m]	DC	RRI
2450.0	[m]	DC	RRI
2460.0	[m]	DC	RRI
2470.0	[m]	DC	RRI
2480.0	[m]	DC	RRI
2488.0	[m]	SWC	RRI

2500.0	[m]	DC	RRI
2510.0	[m]	DC	RRI
2520.0	[m]	DC	RRI
2530.0	[m]	DC	RRI
2550.0	[m]	DC	RRI
2560.0	[m]	DC	RRI
2570.0	[m]	DC	RRI
2580.0	[m]	DC	RRI
2590.0	[m]	DC	RRI
2610.0	[m]	DC	RRI
2620.0	[m]	DC	RRI
2630.0	[m]	DC	RRI
2640.0	[m]	DC	RRI

Oil samples at the Norwegian Offshore Directorate

Test type	Bottle number	Top depth MD [m]	Bottom depth MD [m]	Fluid type	Test time	Samples available
DST	TEST1	2183.50	2154.00		25.09.1995 - 09:25	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
137	NORDLAND GP
718	UTSIRA FM
864	UNDIFFERENTIATED
893	HORDALAND GP
1479	GRID FM
1807	NO FORMAL NAME
2027	ROGALAND GP
2027	BALDER FM
2076	SELE FM
2127	LISTA FM
2154	HEIMDAL FM
2458	LISTA FM
2491	VÅLE FM
2501	TY FM

2583	VÅLE FM
2598	SHETLAND GP
2598	EKOFISK FM

Geochemical information

Document name	Document format	Document size [MB]
2635_1	pdf	0.65
2635_2	pdf	0.27
2635_3	pdf	2.33

Documents - reported by the production licence (period for duty of secrecy expired)

Document name	Document format	Document size [MB]
2635_15_5_5_COMPLETION_REPORT	pdf	19.06

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	2154	2183	23.8

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0			18.000	79

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	575	36000	0.864	0.868	63

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CST GR	1032	2588

DLL MSFL DSI LDL CNL GR SP AMS	989	2636
FMS GR AMS	1700	2620
MDT GR AMS	2155	2305
MRIL GR	2130	2225
MWD DPR	136	2642
USIT CBL VDL GR AMS	1755	2225
VSP	400	2610

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	210.0	36	210.0	0.00	LOT
SURF.COND.	13 3/8	990.0	17 1/2	1000.0	0.00	LOT
INTERM.	9 5/8	1545.0	12 1/4	1549.0	0.00	LOT
LINER	7	2593.0	8 1/2	2645.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
210	1.08			WATER BASED	
826	1.05			WATER BASED	
1166	1.25	21.0		WATER BASED	
2157	1.25	24.0		WATER BASED	
2218	1.20	13.0		WATER BASED	
2593	1.20	14.0		WATER BASED	
2645	1.25	24.0		WATER BASED	

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]
2635_Formation_pressure_(Formasjonstrykk)	pdf	0.22