General information

Wellbore name	25/4-1
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	HEIMDAL
Discovery	25/4-1 Heimdal
Well name	25/4-1
Seismic location	LINE 681 203.
Production licence	036
Drilling operator	Elf Petroleum Norge AS
Drill permit	69-L
Drilling facility	NEPTUNE 7
Drilling days	162
Entered date	01.07.1972
Completed date	09.12.1972
Release date	09.12.1974
Publication date	15.02.2006
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL/GAS
Discovery wellbore	YES
1st level with HC, age	PALEOCENE
1st level with HC, formation	HEIMDAL FM
2nd level with HC, age	MIDDLE JURASSIC
2nd level with HC, formation	VESTLAND GP
3rd level with HC, age	EARLY JURASSIC
3rd level with HC, formation	STATFJORD GP
Kelly bushing elevation [m]	23.0
Water depth [m]	122.0
Total depth (MD) [m RKB]	4060.0
Maximum inclination [°]	5
Bottom hole temperature [°C]	130
Oldest penetrated age	TRIASSIC
Oldest penetrated formation	SMITH BANK FM
Geodetic datum	ED50
NS degrees	59° 34' 27.3'' N

EW degrees	2° 13' 22.6'' E
NS UTM [m]	6604408.11
EW UTM [m]	456100.43
UTM zone	31
NPDID wellbore	359

Wellbore history

General

Well 25/4-1 is the discovery well on the Heimdal Field. The primary objective was Paleocene sand development (which was confirmed by the well), while Jurassic sands were regarded as a secondary objective. Planned depth was 3500 m.

The well is Type Well for the Heimdal Formation.

Operations and results

Wildcat well 25/4-1 was spudded with the semi-submersible installation Neptune 7 on 1 July 1972 and drilled to TD at 4060 m in the Triassic Smith Bank Formation. From 2600 m to 3580 m the well built some angle (maximum 5 deg), resulting in a 3 m deviation between measured and true vertical depth at 3580 m. In addition, logger's depth is 6 m deeper than driller's depth from seabed to 3525 m. Below 3525 m driller's depth is equal to logger's depth. This history quotes logger’s depth if not otherwise stated. While drilling at 3178 m the well started to flow and a lost circulation situation followed. The situation was adequately dealt with. The well was drilled water based all through.

The well penetrated a 356 m thick Heimdal Formation from 2067 m to 2423 m. The reservoir was composed of more or less unconsolidated sands with interbedded shales and carbonates. The formation was gas filled down to a gas/oil contact at 2173 and contained oil in a thin zone down to a shale at 2177 m. The OWC could not be seen in the well. The upper Cenomanian rested unconformably on a 14 m thick Oxfordian/Callovian Draupne Formation sequence, which in turn rested unconformably on the Middle Jurassic Vestland Group at 3185 m. Several permeable reservoirs were penetrated from 3185 m to 3512.5 m (3179 m to 3506.5 m drillers depth) in the Middle Jurassic to Late Triassic. Four of these were hydrocarbon bearing, with separate fluid contacts. Oil was found from 3185 m to an OWC at 3195 m in the Hugin and Sleipner formations. The Statfjord Formation held gas from 3292.5 m to a GOC at 3297 m with oil from 3297 m to an OWC at 3303.5 m. In addition, a thin gas zone was found further down in the Statfjord Formation, from 3508 m to 3512.5 m. No contact was seen here. Finally the Late Triassic Smith Bank Formation had gas in a thin zone from 3532 m down to a GWC at 3533.5 m.

An extensive coring programme was carried out with 18 cores and a total of 254 m core recovered. Cores were cut in the Balder Formation (core 1), Heimdal Formation (cores 2, 3, and 4), Tryggvason Formation (core 5), and the Sleipner and Statfjord formations (cores 6 to 18).

Four drill stem tests were conducted. DST 1/Statfjord flowed from the interval 3307 m to 3321 m (3301 m to 3315 m drillers depth) in the Statfjord Formation and produced only 50 Sm3 water. The DST temperature was 112 °C. DST 2 in Sleipner produced only water and filtrate without any hydrocarbons. DST 3 flowed from the interval 3185 m to 3190 m (3179 m to 3184 m drillers depth) near top Sleipner Formation and produced 190000 Sm3 gas, 74 Sm3 oil and 384 Sm3 water pr day through a 1" choke. The DST temperature was 104 °C. DST 4 (called DST 1/Heimdal in well reports) flowed from the interval 2115 m to 2128 m in the Heimdal Formation and produced 952000 Sm3 gas and 85 Sm3 condensate pr day through a 1" choke. The temperature in this test, measured at 2099 m, was 71 °C.

choke. DST 1/Statfjord flowed from the interval 3307 m to 3321 m (3301 m to 3315 m drillers depth) in the Statfjord Formation and produced only 50 Sm3 water.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
450.00	4060.00

Cuttings available for sampling?	NO

Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	1936.0	1944.0	[m]
2	2078.0	2095.3	[m]
3	2096.0	2114.0	[m]
4	2409.4	2413.5	[m]
5	3088.0	3092.5	[m]
6	3188.0	3195.0	[m]
7	3195.0	3204.0	[m]
8	3204.0	3222.4	[m]
9	3222.4	3234.8	[m]
10	3288.0	3306.0	[m]
11	3306.0	3316.0	[m]
12	3316.0	3333.9	[m]
13	3334.0	3352.0	[m]
14	3370.0	3388.0	[m]
15	3388.0	3406.0	[m]
16	3407.3	3418.0	[m]
17	3418.0	3436.0	[m]
18	3436.0	3454.2	[m]

Total core sample length [m]	245.5
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1610.0	[m]	DC	OD
1620.0	[m]	DC	OD
1640.0	[m]	DC	OD
1660.0	[m]	DC	OD
1680.0	[m]	DC	OD

1690.0	[m]	DC	OD
1720.0	[m]	DC	OD
1740.0	[m]	DC	OD
1760.0	[m]	DC	OD
1780.0	[m]	DC	OD
1800.0	[m]	DC	OD
1820.0	[m]	DC	OD
1840.0	[m]	DC	OD
1860.0	[m]	DC	OD
1880.0	[m]	DC	OD
1900.0	[m]	DC	OD
1920.0	[m]	DC	OD
1945.0	[m]	DC	OD
1960.0	[m]	DC	OD
1980.0	[m]	DC	OD
2000.0	[m]	DC	OD
2020.0	[m]	DC	OD
2040.0	[m]	DC	OD
2060.0	[m]	DC	OD
2075.0	[m]	DC	OD
2088.0	[m]	DC	OD
2115.0	[m]	DC	OD
2120.0	[m]	DC	OD
2140.0	[m]	DC	OD
2160.0	[m]	DC	OD
2180.0	[m]	DC	OD
2200.0	[m]	DC	OD
2220.0	[m]	DC	OD
2245.0	[m]	DC	OD
2260.0	[m]	DC	OD
2280.0	[m]	DC	OD
2300.0	[m]	DC	OD
2320.0	[m]	DC	OD
2340.0	[m]	DC	OD
2360.0	[m]	DC	OD
2380.0	[m]	DC	OD
2400.0	[m]	DC	OD
2420.0	[m]	DC	OD
2440.0	[m]	DC	OD
2460.0	[m]	DC	OD

2480.0	[m]	DC	OD
2500.0	[m]	DC	OD
2515.0	[m]	DC	OD
2540.0	[m]	DC	OD
2560.0	[m]	DC	OD
2570.0	[m]	DC	OD
2600.0	[m]	DC	OD
3705.0	[m]	DC	
3725.0	[m]	DC	
3745.0	[m]	DC	
3765.0	[m]	DC	
3785.0	[m]	DC	
3805.0	[m]	DC	
3825.0	[m]	DC	
3845.0	[m]	DC	
3865.0	[m]	DC	
3885.0	[m]	DC	
3905.0	[m]	DC	
3925.0	[m]	DC	
3945.0	[m]	DC	
3965.0	[m]	DC	
3985.0	[m]	DC	
4005.0	[m]	DC	
4025.0	[m]	DC	
4035.0	[m]	DC	
4055.0	[m]	DC	

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		0.00	0.00	WATER		YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
145	NORDLAND GP

381	UTSIRA FM
423	NO FORMAL NAME
826	HORDALAND GP
1000	SKADE FM
1080	NO FORMAL NAME
1317	GRID FM
1330	NO FORMAL NAME
1926	ROGALAND GP
1926	BALDER FM
1972	SELE FM
2027	LISTA FM
2067	HEIMDAL FM
2423	LISTA FM
2570	VÅLE FM
2620	SHETLAND GP
2620	JORSALFARE FM
2721	KYRRE FM
3062	TRYGGVASON FM
3154	BLODØKS FM
3171	VIKING GP
3171	DRAUPNE FM
3185	VESTLAND GP
3185	HUGIN FM
3190	SLEIPNER FM
3292	STATFJORD GP
3513	NO GROUP DEFINED
3513	SMITH BANK FM

Composite logs

Document name	Document format	Document size [MB]
359	pdf	0.51

Geochemical information

Document name	Document format	Document size [MB]
359_1	pdf	0.07

359_2	pdf	1.14
359_3	pdf	1.58

Documents - older Norwegian Offshore Directorate WDSS reports and other related documents

Document name	Document format	Document size [MB]
359_01_WDSS_General_Information	pdf	0.40

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

Document name	Document format	Document size [MB]
359_01_25_4_1_Geological_report	pdf	20.98
359_02_25_4_1_Completion_log	pdf	1.89

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3300	3314	0.0
2.0	3208	3213	0.0
3.0	3179	3184	25.4

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				
2.0				
3.0		29.000		

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					
2.0					
3.0	74	180000		0.797	2432

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL	1850	2946
CNT FDC	2946	3527
FDC CNT GR	1922	2626
GR	120	1915
GR CBL CCL	2877	3523
GR SL	1922	2626
GR SL	2946	3173
GR SL	3150	3423
GR SL	3150	3525
GR SL	3525	4055
HDT	1922	2626
HDT	2946	3485
IES	441	1915
IES	1922	2626
IES	2590	2950
IES	2946	3173
IES	2946	3528
IES	3150	3423
IES	3525	4061
LL9	1922	2626
LL9	2946	3520
ML MLL	1922	2626
ML MLL	2946	3530
ML MLL	3526	4060
SL	441	1915
SL GR	2590	2950

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	181.0	36	182.0	0.00	LOT
SURF.COND.	20	442.0	26	450.0	0.00	LOT
INTERM.	13 3/8	1917.0	17 1/2	1920.0	0.00	LOT
INTERM.	9 5/8	2942.0	12 1/4	2950.0	0.00	LOT
LINER	7	3524.0	8 1/2	3524.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
170	1.05			seawater	
450	1.15			seawater	
1800	1.25	50.0		seawater	
2800	1.25	50.0		seawater	
3500	2.10			seawater	

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
2104.00	[m]
2412.00	[m]
3222.00	[m]
3229.00	[m]
3229.00	[m]
3230.00	[m]
3295.00	[m]
3224.00	[m]
3296.00	[m]
3380.00	[m]
3298.00	[m]
3298.00	[m]
3324.00	[m]

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]
359_Formation_pressure_(Formasjonstrykk)	pdf	0.23