

**General information**

Wellbore name	6507/7-6
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Field	HEIDRUN
Discovery	6507/7-2 Heidrun
Well name	6507/7-6
Seismic location	CN 8502-608 & SP.268
Production licence	095
Drilling operator	Conoco Norway Inc.
Drill permit	524-L
Drilling facility	NORTRYM
Drilling days	46
Entered date	23.07.1986
Completed date	06.09.1986
Release date	06.09.1988
Publication date	17.09.2007
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	FANGST GP
2nd level with HC, age	EARLY JURASSIC
2nd level with HC, formation	BÅT GP
Kelly bushing elevation [m]	25.0
Water depth [m]	350.0
Total depth (MD) [m RKB]	2525.0
Final vertical depth (TVD) [m RKB]	2470.0
Maximum inclination [°]	2.7
Bottom hole temperature [°C]	84
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	ÅRE FM
Geodetic datum	ED50
NS degrees	65° 21' 30.03" N
EW degrees	7° 19' 10.35" E



NS UTM [m]	7249616.27
EW UTM [m]	421821.65
UTM zone	32
NPDID wellbore	922

Wellbore history



Well 6507/7 6 is an appraisal well on the crest of the Heidrun field structure on Haltenbanken off shore Mid Norway. The structure is a fault wedge. The main objectives of the well were to establish the T11je gas/oil contact, to define Tilje and Åre oil properties, and to investigate the Åre oil/water contact. In addition, the well was expected to prove Fangst erosion and established lateral continuity of Tilje reservoir properties.

Operations and results

Appraisal well 6507/7 6 was spudded with the semi-submersible installation Nortrym on 23 July 1986 and drilled to TD at 2525 m in Early Jurassic sediments of the Åre Formation. At 419 m the drill string torqued up and spun out five joints below the kelly, dropping the string to the seabed. The well was re-spudded after being moved approximately 8 m, and this time drilling proceeded without significant problems. The well was drilled with seawater and pre-hydrated gel sweeps down to 1030 m and with KCl/polymer mud from 1030 m to TD.

Oil shows were recorded in 3 m thick sandstone at 2096 m in the Cretaceous. A marked unconformity separates the Middle Jurassic from the overlying Late Cretaceous sequence. The total hiatus was from Aalenian-Bajocian to Campanian-Santonian. Top Middle Jurassic Fangst Group, Ile Formation was encountered at 2144.5 m and was gas bearing. From good quality RFT pressure data, cores, and electric logs a gas/oil contact was established at 2339 m in the Tilje Formation and the oil/water contact at 2440 m in the Åre Formation. Shows continued down to 2445. Below this depth no shows were reported.

A total of 191 m core was recovered from the well. Two cores were cut from the Early Cretaceous through the Fangst Group and into the top Båt Group (2129 - 2185 m), and eight cores were cut from the gas zone in the lower part of the Tilje Formation, through the OWC and into the Åre Formation (2305 - 2462 m). One RFT run was made in the 12 1/4" hole. A water sample was attempted at 2457m without any recovery. The gas gradient was 0.073 psi/ft (0.169 g/cc). Two oil gradients were found. To 2390 m the gradient was 0.327 psi/ft (0.754 g/cc). Passing through the upper Åre Formation siltstone/claystone bed a pressure increase was encountered and the oil column down to the oil/water contact exhibited a higher oil gradient of 0.362 psi/ft (0.834 g/cc). The water gradient was 0.446 psi/ft (1.028 g/cc).

The well was permanently abandoned on 6 September 1986 as a gas and oil appraisal.

Testing

Two DST's were performed in this well.

DST 1 tested the combined intervals 2411.5 ? 2415 and 2421 ? 2424 m in the Åre Formation. Maximum flow was 782 Sm³ oil and 46100 Sm³ gas /day through a 90.5/64" choke. The GOR was 59 Sm³/Sm³, the oil gravity was 23 deg API, and the gas gravity was 0.627 with 3 % CO₂ and no detectable H₂S.

DST 2 tested the interval 2348.5 ? 2365 m in the Tilje Formation. The well flowed at maximum rates 628 Sm³ oil and 61450 Sm³ gas /day through a 132/64" choke. The GOR was 98 Sm³/Sm³, the oil gravity was 27 deg API, and the gas gravity was 0.614 with 1.7 % CO₂ and no detectable H₂S. Large amounts of sand were also produced in DST 2, leading to a pre-mature end of the flow period. The recorded down-hole temperatures were 83.3 and 78.9 deg C in DST 1 and DST 2 respectively.

Cuttings at the Norwegian Offshore Directorate



Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1040.00	2524.00

Cuttings available for sampling?	YES
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Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	2129.0	2156.7	[m]
2	2157.9	2184.4	[m]
3	2305.0	2306.6	[m]
4	2315.0	2341.9	[m]
5	2344.0	2363.3	[m]
6	2364.5	2390.4	[m]
7	2392.5	2404.7	[m]
8	2405.0	2419.8	[m]
9	2424.0	2441.0	[m]
10	2442.0	2460.3	[m]

Total core sample length [m]	190.2
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
2129.0	[m]	C	OD
2130.1	[m]	C	OD
2131.2	[m]	C	OD
2133.4	[m]	C	OD
2134.5	[m]	C	OD
2135.5	[m]	C	OD
2136.4	[m]	C	OD
2137.4	[m]	C	OD
2138.5	[m]	C	OD
2139.6	[m]	C	OD
2140.5	[m]	C	OD
2141.5	[m]	C	OD
2142.5	[m]	C	OD
2142.9	[m]	C	OD



2143.6	[m]	C	OD
2144.5	[m]	C	OD
2145.5	[m]	C	OD
2148.8	[m]	C	OD
2156.5	[m]	C	OD
2171.8	[m]	C	OD
2175.7	[m]	C	OD
2180.9	[m]	C	OD

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	DST1	2411.50	2424.00		24.08.1986 - 00:00	YES
DST	DST2	2348.50	2365.00		30.08.1984 - 00:00	YES
DST	TEST2	0.00	0.00		30.08.1986 - 00:00	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
375	NORDLAND GP
375	NAUST FM
1495	KAI FM
1852	HORDALAND GP
1852	BRYGGE FM
1935	ROGALAND GP
1935	TARE FM
1967	TANG FM
2016	SHETLAND GP
2145	FANGST GP
2159	BÅT GP
2190	TILJE FM
2369	ÅRE FM

Composite logs





Document name	Document format	Document size [MB]
922_6507_7_6	pdf	0.26

Geochemical information

Document name	Document format	Document size [MB]
922_1	pdf	0.67
922_2	pdf	0.14

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

Document name	Document format	Document size [MB]
922_01_WDSS_General_Information	pdf	0.26
922_02_WDSS_completion_log	pdf	0.20

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

Document name	Document format	Document size [MB]
922_02_Completion_log	pdf	1.56
922_03_Test_Report	pdf	11.24
922_Completion_Report	pdf	7.86

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	2424	2412	35.9
2.0	2349	2365	52.4

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0		4.000	24.000	
2.0		2.000	22.000	





Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	782	46100	0.918	0.617	59
2.0	628	61450	0.895	0.617	98

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL GR CCL	496	2045
CBL VDL GR CCL	1700	2478
DIL SLS GR SP	2079	2524
DLL MSFL GR	2079	2521
LDL CNL NGL	2079	2525
MSD	2085	2523
MWD - GR RES DIR	472	2525
RFT HP	2149	2504
RFT SG	2149	2504
SHDT FAST CHANNELS	2079	2524
SHDT GEOMETRY	2079	2524
VSP SAT	1800	2475

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	473.0	36	474.0	0.00	LOT
SURF.COND.	20	1024.0	26	1030.0	1.52	LOT
INTERM.	13 3/8	2080.0	17 1/2	2087.0	1.66	LOT
INTERM.	9 5/8	2510.0	12 1/4	2525.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
419	1.03			WATERBASED	23.07.1986
1030	1.14	20.0	12.9	WATERBASED	31.07.1986
1303	1.16	17.0	8.6	WATERBASED	04.08.1986
1769	1.38	24.0	9.1	WATERBASED	04.08.1986



1836	1.39	30.0	9.6	WATERBASED	04.08.1986
2050	1.42	27.0	8.1	WATERBASED	05.08.1986
2080	1.26			WATERBASED	08.08.1986
2087	1.44	28.0	8.6	WATERBASED	06.08.1986
2087	0.00	28.0	8.6	WATERBASED	07.08.1986
2305	1.27			WATERBASED	11.08.1986
2305	0.00			WATERBASED	12.08.1986
2525	1.26			WATERBASED	18.08.1986
2525	0.00			WATERBASED	21.08.1986
2525	0.00			WATERBASED	19.08.1986

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]
922 Formation pressure (Formasjonstrykk)	pdf	0.27

