

**General information**

Wellbore name	6407/9-1
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Field	DRAUGEN
Discovery	6407/9-1 Draugen
Well name	6407/9-1
Seismic location	729 - 408 SP. 390
Production licence	093
Drilling operator	A/S Norske Shell
Drill permit	422-L
Drilling facility	BORGNY DOLPHIN
Drilling days	74
Entered date	26.06.1984
Completed date	07.09.1984
Release date	07.09.1986
Publication date	07.11.2005
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL
Discovery wellbore	YES
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	ROGN FM
Kelly bushing elevation [m]	25.0
Water depth [m]	248.0
Total depth (MD) [m RKB]	2500.0
Final vertical depth (TVD) [m RKB]	2500.0
Maximum inclination [°]	2
Bottom hole temperature [°C]	99
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	RED BEDS (INFORMAL)
Geodetic datum	ED50
NS degrees	64° 21' 56.14" N
EW degrees	7° 47' 20.86" E
NS UTM [m]	7138488.30
EW UTM [m]	441548.41



UTM zone	32
NPDID wellbore	133

Wellbore history

General

Wildcat well 6407/9-1 was drilled in the Froan Basin offshore Mid Norway. The primary objective of the well was evaluation of possible reservoirs of Early to Middle Jurassic age. Secondary objectives were evaluation of deeper reservoirs of Early Jurassic to Upper Triassic age.

The well is Type Well for the Rogn Formation. It is Reference well for the Viking Group and Spekk Formation

Operations and results

Wildcat well 6407/9-1 was spudded with the semi-submersible installation Borgny Dolphin on 26 June 1984 and drilled to TD at 2500 m in the Late Triassic Red Beds. Due to high deviation in the 36" hole section, the well was re-spudded. Junk was fished out of the hole before and after performing a leak off test below the 20" casing shoe. Gas bubbles were observed around the BOP stack, the 20" casing was perforated and several cement squeeze jobs were performed. The 13 3/8" casing was run just below the 20" casing. Some technical problems occurred while drilling the 12 1/4" hole. Some tight spots occurred in the two lowermost hole sections. The bottom hole assembly got stuck at 2027 m, but was successfully freed. The well was drilled with seawater and bentonite down to 809 m and with KCl/Polymer mud from 809 m to TD.

The well encountered a Late Jurassic intra-Spekk Formation sandstone unit which was previously unknown in the Haltenbanken area. It has later formally been named the Rogn Formation. It was oil filled from the top at 1621 m down to an OWC at 1660 m. Tests showed light oil with a low content of gas and condensate. The underlying reservoir sandstones of Middle/Early Jurassic to Late Triassic age were all water bearing, nor were oil shows reported in any other porous section in the well. Five cores were cut from the Late Jurassic into the Middle Jurassic. The three first were cut in the Rogn Formation while the two last recovered an underlying Spekk sequence and upper part of the Garn Formation. RFT oil and water samples were successfully recovered from 1635 m and 1703 m, respectively.

The well was permanently abandoned on 7 September 1984 as an oil discovery.

Testing

One production test was carried out in the interval 1632 m to 1638 m in the Rogn Formation. A maximum flow rate of 1351 Sm³/day (8500 BOPD) through a 2" choke was sustained for two days. The GOR was 38 Sm²/Sm³ (211 scf/STB), oil gravity was 40 deg API, and separator gas gravity was 0.89 (air = 1). The CO₂ content was 1%, no H₂S was detected. Bottom hole temperature recorded during the test was 68.3 deg C (155 deg F).

Cuttings at the Norwegian Offshore Directorate



Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
410.00	2500.00

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	1631.0	1643.2	[m]
2	1645.0	1661.4	[m]
3	1663.0	1670.0	[m]
4	1670.0	1673.9	[m]
5	1674.0	1683.0	[m]

Total core sample length [m]	48.5
Cores available for sampling?	YES

Core photos



1631-1637m



1637-1643m



1643-1644m



1645-1651m



1651-1657m



1657-1661m



1663-1669m



1669-1670m



1670-1674m



1674-1680m



1680-1683m

**Palynological slides at the Norwegian Offshore Directorate**

Sample depth	Depth unit	Sample type	Laboratory
750.0	[m]	DC	OD
760.0	[m]	DC	OD
770.0	[m]	DC	OD
780.0	[m]	DC	OD
790.0	[m]	DC	OD
820.0	[m]	DC	OD
830.0	[m]	DC	OD
840.0	[m]	DC	OD
850.0	[m]	DC	OD
1666.8	[m]	C	
1670.0	[m]	C	
1671.7	[m]	C	
1674.3	[m]	C	
1675.0	[m]	C	
1676.3	[m]	C	
1756.0	[m]	DC	OD
1762.0	[m]	DC	OD
1777.0	[m]	DC	OD
1792.0	[m]	DC	OD
1807.0	[m]	DC	OD
1822.0	[m]	DC	OD
1837.0	[m]	DC	OD
1852.0	[m]	DC	OD
1867.0	[m]	DC	OD
1882.0	[m]	DC	OD
1897.0	[m]	DC	OD
1912.0	[m]	DC	OD
1927.0	[m]	DC	OD
1942.0	[m]	DC	OD
1957.0	[m]	DC	OD
1972.0	[m]	DC	OD
1987.0	[m]	DC	OD
2002.0	[m]	DC	OD
2017.0	[m]	DC	OD
2032.0	[m]	DC	OD
2047.0	[m]	DC	OD



2062.0	[m]	DC	OD
2077.0	[m]	DC	OD
2092.0	[m]	DC	OD
2107.0	[m]	DC	OD
2122.0	[m]	DC	OD
2137.0	[m]	DC	OD
2152.0	[m]	DC	OD
2167.0	[m]	DC	OD
2182.0	[m]	DC	OD
2197.0	[m]	DC	OD
2212.0	[m]	DC	OD
2227.0	[m]	DC	OD
2242.0	[m]	DC	OD
2257.0	[m]	DC	OD
2272.0	[m]	DC	OD
2287.0	[m]	DC	OD
2305.0	[m]	DC	OD
2320.0	[m]	DC	OD
2335.0	[m]	DC	OD
2350.0	[m]	DC	OD
2362.0	[m]	DC	OD
2377.0	[m]	DC	OD
2395.0	[m]	DC	OD
2410.0	[m]	DC	OD
2425.0	[m]	DC	OD
2440.0	[m]	DC	OD
2455.0	[m]	DC	OD
2470.0	[m]	DC	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	1638.00	1632.00		29.08.1984 - 15:00	YES
DST	TEST1	1632.00	1638.00		29.08.1984 - 15:00	YES

Lithostratigraphy



Top depth [mMD RKB]	Lithostrat. unit
273	NORDLAND GP
273	NAUST FM
762	MOLO FM
825	HORDALAND GP
825	BRYGGE FM
1340	ROGALAND GP
1340	TARE FM
1377	TANG FM
1533	SHETLAND GP
1533	SPRINGAR FM
1563	CROMER KNOLL GP
1563	LANGE FM
1583	LYR FM
1591	VIKING GP
1591	SPEKK FM
1621	ROGN FM
1670	SPEKK FM
1673	FANGST GP
1673	GARN FM
1746	NOT FM
1783	BÅT GP
1783	ROR FM
1839	TOFTE FM
1900	ROR FM
1968	TILJE FM
2073	ÅRE FM
2357	RED BEDS (INFORMAL)

Composite logs

Document name	Document format	Document size [MB]
133	pdf	0.49

Geochemical information





Document name	Document format	Document size [MB]
133 1	pdf	0.81
133 2	pdf	1.15
133 3	pdf	0.85
133 4	pdf	0.41

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

Document name	Document format	Document size [MB]
133 01 WDSS General Information	pdf	0.24
133 02 WDSS completion log	pdf	0.23

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

Document name	Document format	Document size [MB]
133 01 Completion Report	pdf	11.09
133 02 Completion log	pdf	1.23
133 03 Well Testing Report	pdf	26.94
133 04 Biostratigraphy of the tertiarycretaceous interval	pdf	2.94
133 05 Grain size distribution	pdf	0.44
133 06 Palynological results	pdf	4.20
133 07 Reservoir fluid study 1	pdf	1.09
133 08 Reservoir fluid study 2	pdf	1.14
133 09 Water analysis and compositional analysis of suspended solids	pdf	0.33
133 10 Water analysis and compositional analysis of suspended solids	pdf	0.33

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	1632	1638	48.0





Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				68

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	1351	51338	0.820	0.890	38

Logs

Log type	Log top depth [m]	Log bottom depth [m]
DLL MSFL GR	1612	1800
HDT	1612	2485
ISF LSS GR	273	807
ISF LSS GR	827	1597
ISF LSS GR	1597	1611
ISF LSS GR	1613	2487
LDL CNL GR	382	809
LDL CNL GR	830	1611
LDL CNL NGT	1613	2489
RFT	1599	2373
SWS	840	2500
VELOCITY	675	2485

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	383.0	36	395.0	0.00	LOT
SURF.COND.	20	799.0	26	811.0	1.39	LOT
INTERM.	13 3/8	830.0	17 1/2	840.0	1.42	LOT
INTERM.	9 5/8	1616.0	12 1/4	1630.0	1.64	LOT
LINER	7	2484.0	8 1/2	2500.0	0.00	LOT

Drilling mud



Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
811	1.03			WATER BASED	06.07.1984
818	1.02	19.0	26.0	WATER BASED	10.07.1984
818	1.03			WATER BASED	11.07.1984
818	1.03			WATER BASED	12.07.1984
818	1.03			WATER BASED	16.07.1984
818	1.03			WATER BASED	11.07.1984
818	1.03			WATER BASED	12.07.1984
818	1.03			WATER BASED	13.07.1984
818	1.03			WATER BASED	16.07.1984
818	1.03			WATER BASED	13.07.1984
840	1.11	15.0	17.0	WATER BASED	16.07.1984
840	1.11	15.0	17.0	WATER BASED	16.07.1984
840	1.10	18.0	20.0	WATER BASED	16.07.1984
980	1.25	17.0	18.0	WATER BASED	17.07.1984
1360	1.30	20.0	20.0	WATER BASED	18.07.1984
1560	1.31	20.0	17.0	WATER BASED	20.07.1984
1630	1.33	23.0	21.0	WATER BASED	23.07.1984
1630	1.31	24.0	20.0	WATER BASED	25.07.1984
1630	1.34	22.0	19.0	WATER BASED	27.07.1984
1630	1.35	23.0	22.0	WATER BASED	20.07.1984
1630	1.35	23.0	22.0	WATER BASED	23.07.1984
1630	1.33	24.0	23.0	WATER BASED	23.07.1984
1630	1.33	23.0	21.0	WATER BASED	23.07.1984
1630	1.33	22.0	19.0	WATER BASED	24.07.1984
1630	1.31	24.0	20.0	WATER BASED	25.07.1984
1630	1.34	20.0	18.0	WATER BASED	26.07.1984
1630	1.34	22.0	19.0	WATER BASED	27.07.1984
1630	1.35	23.0	22.0	WATER BASED	23.07.1984
1630	1.33	24.0	23.0	WATER BASED	23.07.1984
1630	1.33	22.0	19.0	WATER BASED	24.07.1984
1630	1.34	20.0	18.0	WATER BASED	26.07.1984
1632	1.12			WATER BASED	21.08.1984
1632	1.12			WATER BASED	23.08.1984
1632	1.12			WATER BASED	27.08.1984
1632	1.12			WATER BASED	28.08.1984
1632	1.12			WATER BASED	30.08.1984
1632	1.12			WATER BASED	03.09.1984



1632	1.12			WATER BASED	23.08.1984
1632	1.12			WATER BASED	27.08.1984
1632	1.12			WATER BASED	28.08.1984
1632	1.12			WATER BASED	30.08.1984
1632	1.12			WATER BASED	31.08.1984
1632	1.12			WATER BASED	03.09.1984
1632	1.12			WATER BASED	31.08.1984
1747	1.33	21.0	20.0	WATER BASED	30.07.1984
1831	1.33	21.0	20.0	WATER BASED	30.07.1984
1956	1.33	21.0	18.0	WATER BASED	30.07.1984
2069	1.33	21.0	20.0	WATER BASED	30.07.1984
2125	1.33	23.0	21.0	WATER BASED	01.08.1984
2256	1.33	22.0	21.0	WATER BASED	01.08.1984
2367	1.34	22.0	22.0	WATER BASED	03.08.1984
2465	1.33	20.0	22.0	WATER BASED	06.08.1984
2500	1.33	20.0	21.0	WATER BASED	06.08.1984
2500	1.33	21.0	20.0	WATER BASED	07.08.1984
2500	1.33	25.0	20.0	WATER BASED	08.08.1984
2500	1.33	20.0	21.0	WATER BASED	06.08.1984
2500	1.33	21.0	20.0	WATER BASED	07.08.1984
2500	1.33	25.0	20.0	WATER BASED	08.08.1984
2500	1.33	20.0	21.0	WATER BASED	06.08.1984

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]
133 Formation pressure (Formasjonstrykk)	pdf	0.29

