

**General information**

Wellbore name	34/4-1
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	SNORRE
Discovery	34/4-1 Snorre
Well name	34/4-1
Seismic location	
Production licence	057
Drilling operator	Saga Petroleum ASA
Drill permit	217-L
Drilling facility	BYFORD DOLPHIN
Drilling days	159
Entered date	11.07.1979
Completed date	16.12.1979
Release date	16.12.1981
Publication date	26.05.2009
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL
Discovery wellbore	YES
1st level with HC, age	LATE TRIASSIC
1st level with HC, formation	LUNDE FM
Kelly bushing elevation [m]	25.0
Water depth [m]	377.0
Total depth (MD) [m RKB]	2916.0
Final vertical depth (TVD) [m RKB]	2912.0
Maximum inclination [°]	8.8
Bottom hole temperature [°C]	103
Oldest penetrated age	MIDDLE TRIASSIC
Oldest penetrated formation	TEIST FM (INFORMAL)
Geodetic datum	ED50
NS degrees	61° 32' 49.23" N
EW degrees	2° 16' 23.66" E
NS UTM [m]	6824096.50
EW UTM [m]	461368.88



UTM zone	31
NPDID wellbore	422

Wellbore history

General

Wildcat well 34/4-1 was drilled on the rotated fault block systems on the Tampen Spur area of the Northern North Sea. The objective of the well was to test the stratigraphic sequence below the Base Cretaceous Unconformity. The primary target was the Intra Triassic "Carnian Sandstone", which was known from two wells in block 33/12 where it constitutes more than 100 m silty, argillaceous, partly calcareous cemented sandstone. The secondary targets were possible reworked Late Jurassic sandstones immediately below the Unconformity, and by possible sands associated with stratigraphically undefined seismic reflectors between Base Cretaceous and Carnian level.

Operations and results

Well 34/4-1 was spudded with the semi-submersible installation Byford Dolphin on 11 July 1979. The well was first drilled to 2961 m. When pulling out of hole to change bit it got stuck. The bit could not be worked free and the drill string was eventually backed off and left in the hole. A sidetrack was made from 2484 m and drilled to final TD at 2916 m in the Triassic Teist Formation. The well was drilled with seawater and viscosity slugs down to 844 m, with Drispac/Unical/gypsum mud from 844 m to 1988 m, and with Drispac/Unical mud from 1988 m to TD, including sidetrack.

The well penetrated Tertiary, Cretaceous and Triassic rocks with a hiatus ranging from Late Triassic to Early Cretaceous

Secondary target for the well was reworked Late Jurassic sediments immediately below Base Cretaceous. Such deposits were not established. The Triassic sandstones (Lunde Formation) were encountered at 2508 m and contained oil over a column of more than 100 m. No definite OWC was seen, but it could be estimated to be at 2618 m. Numerous shows on sandstone stringers were observed in the Cretaceous from ca 2025 m (top Kyrre Formation) and down to top of the Triassic reservoir. No shows were observed below 2622 m.

Eleven cores were cut in the Lunde Formation. Cores 1 and 2 were cut in the primary well bore, and the first of these was a mis-run. The remaining nine cores were cut in the side track. Two RFT segregated fluid samples were taken. The first, at 2541 m, recovered oil, gas and mud filtrate. The second, at 2639.5 m, recovered formation water and mud filtrate.

The well was permanently abandoned on 16 December 1979 as an oil discovery.

Testing

Two drill stem tests were performed in the Lunde Formation.

DST 1 tested the interval 2608 - 2613 m. It produced a total of 1.65 m³ salt water at a rate of approximately 11 m³ /day (79 bbls/day). The BHT in the test was 94.4 deg C

DST 2 tested the interval 2510 - 2536 m. The average rate in the final flow in this test was 238 m³/day of oil through a 1/4" choke. Average GOR was 120 m³/m³, oil Gravity was 0.82 g/cm³ (41.7 deg API) and the gas gravity was 0.712 (air = 1). The BHT in the test was 90.6 deg C.



Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
530.00	2910.00

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
2	2509.2	2510.5	[m]
3	2516.0	2531.8	[m]
4	2531.8	2539.9	[m]
5	2541.4	2544.1	[m]
6	2557.0	2563.5	[m]
7	2570.8	2589.8	[m]
8	2589.8	2608.9	[m]
9	2608.8	2614.7	[m]
10	2615.3	2617.3	[m]
11	2665.0	2674.6	[m]

Total core sample length [m]	90.0
Cores available for sampling?	YES

Core photos



2509-2510m



2516-2518m



2518-2521m



2521-2524m



2524-2526m





2526-2529m



2529-2531m



2531-2534m



2534-2537m



2537-2539m



2541-2544m



2557-2559m



2559-2562m



2562-2563m



2570-2573m



2573-2576m



2576-2578m



2578-2581m



2581-2584m



2584-2587m



2587-2589m



2589-2592m



2592-2595m



2595-2597m



2597-2600m



2600-2603m



2603-2606m



2606-2608m



2608-2609m



2608-2611m



2611-2614m



2614-2614m



2615-2617m



2665-2667m



2670-2673m





2673-2674m 2667-2670m

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
402	NORDLAND GP
1190	UTSIRA FM
1211	HORDALAND GP
1685	ROGALAND GP
1685	BALDER FM
1715	LISTA FM
1788	SHETLAND GP
1788	JORSALFARE FM
2025	KYRRE FM
2490	CROMER KNOLL GP
2490	RØDBY FM
2494	MIME FM
2508	HEGRE GP
2508	LUNDE FM
2834	LOMVI FM
2894	TEIST FM

Geochemical information

Document name	Document format	Document size [MB]
422_1	pdf	0.15
422_2	pdf	0.38
422_3	pdf	1.26

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

Document name	Document format	Document size [MB]
422_01_WDSS_General_Information	pdf	0.13
422_02_WDSS_completion_log	pdf	0.18



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

Document name	Document format	Document size [MB]
422 00 34 4 1 Completion Log	pdf	1.60
422 00 34 4 1 Completion Report	pdf	3.05

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	2608	2613	0.0
2.0	2510	2536	6.3

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				
2.0	38.100	35.000		94

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					
2.0	238	28560	0.820	0.712	120

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL	403	1975
CBL	1950	2499
CST	2480	2521
CST	2677	2915
DLL	2499	2911
FDC CNL GR	2390	2915
HDT	1976	2899
ISF SONIC GR	521	2515
ISF SONIC MSFL SP GR CAL	2499	2914
MSFL	2400	2518
NGT	2499	2915
RFT	2512	2516





RFT	2541	2640
VELOCITY	524	2914

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	521.0	36	521.0	0.00	LOT
SURF.COND.	20	830.0	26	845.0	1.68	LOT
INTERM.	13 3/8	1975.0	17 1/2	1991.0	1.94	LOT
INTERM.	9 5/8	2499.0	12 1/4	2515.0	1.84	LOT
LINER	7	2703.0	8 1/2	2916.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
860	1.15	42.0		waterbased	
1275	1.27	40.0		waterbased	
1810	1.48	49.0		waterbased	
2080	1.77	46.0		waterbased	
2370	1.78	50.0		waterbased	
2565	1.77	52.0		waterbased	
2900	1.77	59.0		waterbased	

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]
422 Formation pressure (Formasjonstrykk)	pdf	0.21

