

**General information**

Wellbore name	34/7-22
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	TORDIS
Discovery	34/7-22 Tordis Øst
Well name	34/7-22
Seismic location	SG 8431 RP -row 0279 & column 0815
Production licence	089
Drilling operator	Saga Petroleum ASA
Drill permit	766-L
Drilling facility	WEST DELTA
Drilling days	48
Entered date	15.08.1993
Completed date	01.10.1993
Release date	01.10.1995
Publication date	28.02.2008
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL
Discovery wellbore	YES
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	TARBERT FM
Kelly bushing elevation [m]	29.0
Water depth [m]	226.0
Total depth (MD) [m RKB]	2507.0
Final vertical depth (TVD) [m RKB]	2507.0
Maximum inclination [°]	1.6
Bottom hole temperature [°C]	92
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	DRAKE FM
Geodetic datum	ED50
NS degrees	61° 16' 42.37" N
EW degrees	2° 10' 18.72" E
NS UTM [m]	6794244.54
EW UTM [m]	455600.91



UTM zone	31
NPDID wellbore	2167

Wellbore history

**General**

Well 34/7-22 is located between the Gullfaks and Snorre fields on Tampen Spur in the Northern North Sea. The main objective was to prove hydrocarbons and reservoir quality of a Brent Group prospect named the STWB prospect, defined by structural closure towards east and north, dip closure towards south, combined with fault seal against the Main Tordis Fault (MTF) towards west. Sands within Paleocene, Cretaceous, and Late Jurassic were secondary objectives.

Operations and results

Wildcat well 34/7-22 was spudded with the semi-submersible installation West Delta on 15 August 1993 and drilled to TD at 2507 m in the Early Jurassic Drake Formation. Since possible shallow gas levels had been predicted, a 9 7/8" pilot hole was drilled. The Nordland Group consisted mainly of claystone except for the sandy Utsira Formation, which came in at 907 m. On the seismic, top Hordaland was interpreted to coincide with a structural high which was considered to be a clay diapir. The "clay diapir" consisted, however, almost entirely of sandstone which partly belongs to the Utsira Formation and the upper part of the Hordaland Group. The unexpected large amounts of sand caused operational problems due to instability and the drill string got stuck at 1086 m, on 17 August. The string was backed off and the well was re-spudded on 18 August. The casing program was re-designed to penetrate and stabilize the sandy Utsira Formation and Hordaland Group with a weighted mud system. After re-spud, drilling commenced as planned. The well was drilled with spud mud down to 1329 m, and with KCl mud with glycol from 1329 m to TD.

No sand or hydrocarbons were found within the Paleocene and Cretaceous (Campanian) intervals, but at 2178.5 m, a water wet Intra-Draupne Formation sand was penetrated. At 2184 m the Heather Formation was encountered with a thickness of 40 m, 31m thicker than prognosed. Top reservoir, corresponding to Top Tarbert Formation, Brent Group, was encountered at 2224 m and was proven oil bearing down to 2249.5 m, with good to excellent reservoir quality as proven by cores, electrical logs and the test. FMT pressure points showed that the Tarbert Formation reservoir was in a separate pressure regime from the underlying Ness-Etve-Rannoch Formations, and also from the above Intra Draupne Sandstone.

Apart from the live oil in the Tarbert Formation reservoir there were weak shows in claystones in the interval 2080 - 2176 in the Shetland Group. Similar shows were observed in the Late Jurassic Intra Draupne Formation sand and in the Heather Formation. Below the OWC in the Tarbert reservoir shows continued down to 2256 m. There were no shows below 2256 m.

A total of 7 cores were cut in the interval 2226 - 2331.5 m in Tarbert and Ness Formations. Segregated samples of oil and gas were obtained at 2228.5 m and 2246.3 m in the Tarbert Formation.

The well was permanently abandoned on 1 October 1993 as an oil discovery.

Testing

One well test was performed in the Tarbert Formation in the interval 2236 - 2242 m. In the final stage of the main flow period the well flowed 1154 Sm³ oil/day through a 14.3 mm choke. The oil had a GOR of 47 Sm³/Sm³, a dead oil density of 0.85 g/cm³ and the gas gravity was 0.695 (air = 1). The maximum recorded temperature in the test was 84.5 deg C.

Cuttings at the Norwegian Offshore Directorate



Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
820.00	2506.00

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	2226.0	2234.3	[m]
2	2235.0	2254.3	[m]
3	2255.0	2271.4	[m]
4	2272.0	2281.0	[m]
5	2284.0	2289.0	[m]
6	2291.0	2302.7	[m]
7	2303.0	2331.5	[m]

Total core sample length [m]	98.2
Cores available for sampling?	YES

Core photos



2226-2231m



2231-2234m



2235-2240m



2240-2245m



2245-2250m



2250-2254m



2256-2260m



2260-2265m



2265-2270m



2270-2271m





2272-2277m

2277-2281m

2284-2289m

2291-2296m

2296-2301m



2301-2302m



2303-2308m



2308-2313m



2313-2318m



2318-2323m



2323-2328m



2328-2331m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
860.0	[m]	DC	SPT
900.0	[m]	DC	SPT
920.0	[m]	DC	SPT
940.0	[m]	DC	SPT
960.0	[m]	DC	SPT
980.0	[m]	DC	SPT
1000.0	[m]	DC	SPT
1020.0	[m]	DC	SPT
1040.0	[m]	DC	SPT
1060.0	[m]	DC	SPT
1080.0	[m]	DC	SPT
1100.0	[m]	DC	SPT
1120.0	[m]	DC	SPT
1140.0	[m]	DC	SPT
1160.0	[m]	DC	SPT
1180.0	[m]	DC	SPT
1200.0	[m]	DC	SPT
1220.0	[m]	DC	SPT
1240.0	[m]	DC	SPT
1260.0	[m]	DC	SPT
1280.0	[m]	DC	SPT



1300.0 [m]	DC	SPT
1320.0 [m]	DC	SPT
1340.0 [m]	DC	SPT
1370.0 [m]	DC	SPT
1390.0 [m]	DC	SPT
1430.0 [m]	DC	SPT
1450.0 [m]	DC	SPT
1470.0 [m]	DC	SPT
1490.0 [m]	DC	SPT
1510.0 [m]	DC	SPT
1530.0 [m]	DC	SPT
1550.0 [m]	DC	SPT
1580.0 [m]	DC	SPT
1600.0 [m]	DC	SPT
1620.0 [m]	DC	SPT
1640.0 [m]	DC	SPT
1650.0 [m]	DC	SPT
1660.0 [m]	DC	SPT
1690.0 [m]	DC	SPT
1730.0 [m]	DC	SPT
1750.0 [m]	DC	SPT
1770.0 [m]	DC	SPT
1790.0 [m]	DC	SPT
1800.0 [m]	DC	SPT
1840.0 [m]	DC	SPT
1860.0 [m]	DC	SPT
1880.0 [m]	DC	SPT
1920.0 [m]	DC	SPT
1940.0 [m]	DC	SPT
1960.0 [m]	DC	SPT
1980.0 [m]	DC	SPT
2000.0 [m]	DC	SPT
2020.0 [m]	DC	SPT
2060.0 [m]	DC	SPT
2080.0 [m]	DC	SPT
2100.0 [m]	DC	SPT
2120.0 [m]	DC	SPT
2140.0 [m]	DC	SPT
2160.0 [m]	DC	SPT
2175.0 [m]	DC	SPT



2180.0	[m]	DC	SPT
2184.0	[m]	DC	SPT
2187.0	[m]	DC	SPT
2190.0	[m]	DC	SPT
2195.0	[m]	DC	SPT
2204.0	[m]	DC	SPT
2225.0	[m]	DC	SPT
2264.0	[m]	C	SPT
2285.0	[m]	C	SPT
2297.0	[m]	C	SPT
2305.0	[m]	C	SPT
2326.0	[m]	C	SPT
2351.0	[m]	DC	SPT
2360.0	[m]	DC	SPT
2370.0	[m]	DC	SPT
2390.0	[m]	DC	SPT
2410.0	[m]	DC	SPT
2430.0	[m]	DC	SPT
2450.0	[m]	DC	SPT
2470.0	[m]	DC	SPT
2479.0	[m]	DC	SPT
2485.0	[m]	DC	SPT
2497.0	[m]	DC	SPT
2506.0	[m]	DC	SPT

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
255	NORDLAND GP
977	UTSIRA FM
1075	HORDALAND GP
1108	NO FORMAL NAME
1136	NO FORMAL NAME
1200	NO FORMAL NAME
1308	NO FORMAL NAME
1647	ROGALAND GP
1647	BALDER FM
1673	LISTA FM
1810	SHETLAND GP



1810	JORSALFARE FM
1974	KYRRE FM
2168	CROMER KNOLL GP
2168	RØDBY FM
2176	MIME FM
2179	VIKING GP
2179	INTRA DRAUPNE FM SS
2184	HEATHER FM
2224	BRENT GP
2224	TARBERT FM
2266	NESS FM
2356	ETIVE FM
2375	RANNOCH FM
2456	BROOM FM
2460	DUNLIN GP
2460	DRAKE FM

Geochemical information

Document name	Document format	Document size [MB]
2167_1	pdf	0.53
2167_2	pdf	2.55
2167_3	pdf	0.25

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

Document name	Document format	Document size [MB]
2167_34_7_22_COMPLETION_REPORT_AND_LOG	pdf	23.25

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	2236	2242	14.3





Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0	15.000		33.000	84

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	1154		0.840	0.690	67

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBIL GR	2102	2465
DIFL ACL ZDL GR	1315	2106
DLL MLL GR	2210	2285
DPIL MAC ZDL CN DSL	2102	2507
FMT GR	2179	2323
FMT GR	2246	2340
HDIP GR	2102	2480
MWD DPR - GR RES DIR	255	2507
SWC GR	1355	2085
SWC GR	2145	2490
VELOCITY	1100	2490

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	352.0	36	352.0	0.00	LOT
INTERM.	18 5/8	803.0	26	803.0	1.62	LOT
INTERM.	13 3/8	1317.0	17 1/2	1317.0	1.65	LOT
INTERM.	9 5/8	2102.0	12 1/4	2102.0	1.93	LOT
LINER	7	2506.0	8 1/2	2506.0	0.00	LOT

Drilling mud



Factpages

Wellbore / Exploration

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Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
302	1.20			WATER BASED	20.08.1993
358	1.06	10.0	70.0	WATER BASED	23.08.1993
358	1.20	11.5	5.0	WATER BASED	20.08.1993
588	1.06	11.0	72.0	WATER BASED	23.08.1993
591	1.20	4.0	13.0	WATER BASED	16.08.1993
766	1.06	11.0	72.0	WATER BASED	23.08.1993
812	1.20	6.0	13.0	WATER BASED	24.08.1993
812	1.12	13.5	15.0	WATER BASED	25.08.1993
812	1.12	14.0	16.0	WATER BASED	26.08.1993
1068	1.20	5.0	14.0	WATER BASED	18.08.1993
1086	1.20	4.0	14.0	WATER BASED	19.08.1993
1113	1.16	4.0	22.0	WATER BASED	27.08.1993
1329	1.22	6.0	21.0	WATER BASED	01.09.1993
1329	1.20	5.0	24.0	WATER BASED	01.09.1993
1332	1.29	27.5	15.0	DUMMY	01.09.1993
1657	1.40	24.0	22.0	DUMMY	31.08.1993
2049	1.56	34.0	26.0	DUMMY	01.09.1993
2112	1.59	61.0	32.0	DUMMY	02.09.1993
2117	1.59	34.0	22.0	DUMMY	06.09.1993
2117	1.59	35.0	25.0	DUMMY	06.09.1993
2117	1.59	34.0	27.0	DUMMY	06.09.1993
2226	1.63	32.0	18.0	DUMMY	06.09.1993
2255	1.63	32.0	16.0	DUMMY	07.09.1993
2284	1.63	33.0	15.0	DUMMY	08.09.1993
2303	1.63	34.0	17.0	DUMMY	09.09.1993
2345	1.63	35.0	16.0	DUMMY	13.09.1993
2507	1.63	34.0	21.0	DUMMY	13.09.1993
2507	1.63	34.0	21.0	DUMMY	13.09.1993
2507	1.66	35.0	24.0	DUMMY	14.09.1993
2507	1.66	40.0	26.0	DUMMY	15.09.1993
2507	1.66	53.0	50.0	DUMMY	16.09.1993
2507	1.66	48.0	44.0	DUMMY	17.09.1993
2507	1.66	38.0	35.0	DUMMY	23.09.1993
2507	1.66	38.0	35.0	DUMMY	23.09.1993
2507	1.66	38.0	35.0	DUMMY	23.09.1993
2507	1.66	65.0	45.0	DUMMY	24.09.1993
2507	1.66	38.0	39.0	DUMMY	20.09.1993



2507	1.66	44.0	40.0	DUMMY	20.09.1993
2507	1.66	43.0	42.0	DUMMY	20.09.1993
2507	1.66	39.0	35.0	DUMMY	22.09.1993
2507	1.66	36.0	32.0	DUMMY	28.09.1993
2507	1.66	39.0	35.0	DUMMY	28.09.1993
2507	1.66	39.0	35.0	DUMMY	28.09.1993
2507	1.66	35.0	33.0	DUMMY	29.09.1993
2507	1.46	24.0	29.0	DUMMY	30.09.1993
2507	1.66	35.0	24.0	DUMMY	14.09.1994
2507	1.66	40.0	23.0	DUMMY	13.09.1993
2507	1.66	38.0	36.0	DUMMY	22.09.1993
2507	1.66	38.0	35.0	DUMMY	23.09.1993
2507	1.66	65.0	45.0	DUMMY	24.09.1993

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]
2167_Formation_pressure_(Formasjonstrykk)	pdf	0.21

