General information

Wellbore name	34/7-6
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	SNORRE
Discovery	34/4-1 Snorre
Well name	34/7-6
Seismic location	G/E - 106 SP. 420
Production licence	089
Drilling operator	Saga Petroleum ASA
Drill permit	457-L
Drilling facility	TREASURE SAGA
Drilling days	75
Entered date	17.03.1985
Completed date	30.05.1985
Release date	30.05.1987
Publication date	12.01.2015
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	EARLY JURASSIC
1st level with HC, formation	STATFJORD GP
2nd level with HC, age	LATE TRIASSIC
2nd level with HC, formation	LUNDE FM
Kelly bushing elevation [m]	26.0
Water depth [m]	307.0
Total depth (MD) [m RKB]	3685.0
Final vertical depth (TVD) [m RKB]	3683.0
Maximum inclination [°]	3.5
Bottom hole temperature [°C]	125
Oldest penetrated age	MIDDLE TRIASSIC
Oldest penetrated formation	TEIST FM (INFORMAL)
Geodetic datum	ED50
NS degrees	61° 27' 10.85'' N
EW degrees	2° 8' 17.26'' E

NS UTM [m]	6813713.92
EW UTM [m]	454048.88
UTM zone	31
NPDID wellbore	465

Wellbore history

General

Well 34/7-6 was drilled centrally on the Snorre Field in the Tampen Spur area of the North Sea. The objectives were to test the reservoir quality of the Statfjord Formation and the extent of the low GOR oil encountered in the 34/7-3 and 34/7-4 wells. Further objectives were to test the proposed subdivision and reservoir characteristics of the Triassic Lunde and Lomvi formations.

Operations and results

Appraisal well 34/7-6 was spudded with the semi-submersible installation Treasure Saga on 17 March and drilled to TD at 3685 m in the Triassic Teist Formation. No significant problem was encountered in the drilling phase. After DST 1 parts of the test string stuck, leaving a fish with top at 2533 m in the hole. The fish was pushed down 12 m to give space for further testing. The well was drilled with spud mud down to 965 m, with gypsum/polymer mud from 965 m to 3015 m, and with Drispac/Ligcon mud from 3015 m to TD.

Apart from the sandy Utsira Formation of Late Oligocene - Pliocene age, and sandstone units of Early Oligocene age (1215 - 1280 m) and Middle - Late Eocene age (1370 - 1420 m) within the Hordaland Group, the upper section down to the Jurassic proved mainly claystones. The Jurassic consists of a silty Dunlin Group and a sandy Statfjord Group. The Triassic had sandstones alternating and interbedded with claystones down to TD.

Silty laminae in the Shetland Group had traces of shows from about 2110 m. These were described as gold yellow fluorescence with no cut. From 2155 m and down to 2500 m silt and sandstone show golden yellow fluorescence and slow streaming cloudy yellow fluorescence cut. Occasionally light brown staining and weak odour are observed from 2500 m. Hydrocarbons were encountered from top Statfjord Group at 2510 m down to an oil-water contact at 2610 m in the uppermost part of the Upper Lunde Formation. The contact lie in a shaley interval and is set from pressure gradient measurements. There were no shows below the OWC.

A total of 151 m core was recovered in 13 cores. Ten cores were cut (recovered 93.6 m, 86.7%) in the Statfjord Group and across the stratigraphic border zone into the Upper Lunde Formation of the Hegre Group. Cores 11 and 12 were cut further down in Upper Lunde Formation (recovered 38.5 m, 96.3%). Core 13 was cut in the Lomvi Formation (recovered 18.5 m, 100%).The core - log depth shifts for the individual cores varied from -1.3 m to -5.0 m. FMT segregated fluid samples were taken at 2561.4 m, 2584.4 m, and 2595.4 m.

The well was permanently abandoned on 30 May 1985 as an oil appraisal well.

Testing

Four DST's were carried out in the Statfjord Group and Lunde Formation.

DST 1 tested the Upper Lunde at 2679 - 2687 m. The test produced water at a final rate of 225 m3 /day. The bottom hole temperature was 93.7 °C.

DST 2 tested the Eiriksson Formation from perforations at 2549.5 - 2552.0 m, 2555.0 - 2563.0 m, and 2568.0 - 2572.5 m. The flow rate was 519 Sm3 oil/day through a 7.9 mm choke. The GOR was 66 Sm3/Sm3 at separator conditions (11.7 bar, 29.4 °C). The oil density was 0.834 g/cm3. The bottom hole temperature was 90.9 °C.

DST 3A tested the Nansen Formation at 2518.5 - 2522.5 m. The flow rate was 393 Sm3 oil/day through a 6.4 mm choke. The GOR was 52 Sm3/Sm3 at separator conditions (15 bar, 16.7 °C). The oil density was 0.837 g/cm3. The bottom hole temperature was 90.2 °C.

DST 3B tested both Eiriksson and Nansen formations from perforations at 2518.5 - 2522.5 m and 2526.5 - 2536.5 m. The flow rate was 1729 Sm3 oil/day through a 14.3 mm choke. The GOR was 49 Sm3/Sm3 at separator conditions (36.2 bar, 52.8 °C); at stock tank conditions, the GOR was 85 Sm3/Sm3. The oil density was 0.8389 g/cm3. The bottom hole temperature was 89.9 °C.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
470.00	3685.00

Cuttings available for sampling?	YES

Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	2516.0	2524.6	[m]
2	2527.6	2542.6	[m]
5	2549.0	2556.8	[m]
6	2557.1	2568.7	[m]
7	2568.7	2582.0	[m]
8	2582.0	2594.5	[m]
9	2598.5	2612.0	[m]
10	2612.5	2624.0	[m]
11	2913.0	2925.5	[m]
12	2927.0	2953.2	[m]
13	3560.0	3578.5	[m]

Total core sample length [m]	151.0
Cores available for sampling?	YES

Core photos


2516-2520m


2520-2524m


2524-2530m


2530-2534m


2534-2538m


2538-2541m


2542-2550m


2550-2554m


2554-2558m


2558-2562m


2562-2566m


2566-2569m


2569-2573m


2573-2577m


2577-2580m


2581-2584m


2585-2589m


2589-2593m


2593-2600m


2600-2604m


2604-2608m


2608-2612m


2612-2616m


2616-2620m


2620-2624m


2913-2917m


2917-2921m


2921-2925m


2925-2930m


2930-2934m


2934-2938m


2938-2942m


2942-2946m


2946-2950m


2950-2953m


3560-3564m


3564-3568m


3568-3572m


3572-3576m


3576-3578m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1100.0	[m]	DC	RRI
1120.0	[m]	DC	RRI
1140.0	[m]	DC	RRI
1160.0	[m]	DC	RRI
1200.0	[m]	DC	RRI
1220.0	[m]	DC	RRI
1230.0	[m]	DC	RRI
1280.0	[m]	DC	RRI
1300.0	[m]	DC	RRI
1320.0	[m]	DC	RRI
1340.0	[m]	DC	RRI
1360.0	[m]	DC	RRI
3275.0	[m]	DC	RRI
3380.0	[m]	DC	RRI
3389.0	[m]	DC	RRI
3534.0	[m]	DC	RRI
3546.0	[m]	DC	RRI
3621.0	[m]	DC	RRI
3633.0	[m]	DC	RRI

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	DST2	2572.00	2549.00	OIL	16.05.1985 - 00:00	YES
DST	TEST3,2	2518.50	2522.50	OIL	26.05.1985 - 00:00	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
333	NORDLAND GP
1036	UTSIRA FM
1072	HORDALAND GP
1072	NO FORMAL NAME
1676	ROGALAND GP
1676	BALDER FM
1705	SELE FM
1764	LISTA FM
1846	SHETLAND GP
1846	JORSALFARE FM
2120	KYRRE FM
2437	CROMER KNOLL GP
2437	UNDIFFERENTIATED
2447	DUNLIN GP
2447	AMUNDSEN FM
2510	STATFJORD GP
2510	NANSEN FM
2527	EIRIKSSON FM
2586	RAUDE FM
2654	HEGRE GP
2654	LUNDE FM
3539	LOMVI FM
3632	TEIST FM

Geochemical information

Document name	Document format	Document size [MB]
465_GCH_1	pdf	0.48

465_GCH_2	pdf	1.28
465_GCH_3	pdf	1.77
465_GCH_4	pdf	3.74
465_GCH_5	pdf	0.12

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

Document name	Document format	Document size [MB]
465_01_WDSS_General_Information	pdf	0.32
465_02_WDSS_completion_log	pdf	0.26

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

Document name	Document format	Document size [MB]
465_34_7_6_Completion_log	pdf	4.13
465_34_7_6_Completion_report	pdf	20.72

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	2687	2679	12.7
1.1	2687	2679	12.0
2.0	2550	2573	7.9
3.0	2519	2523	6.3
3.1	2527	2537	14.3

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				
1.1		560.000	31.000	
2.0			36.000	
3.0		18.000	35.000	
3.1		15.000	37.000	

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					
1.1					1
2.0	522	3000	0.834	0.862	63
3.0	391		0.837		
3.1	1725	83000	0.836	0.745	48

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CDL CNL	1878	3011
CDL GR	935	1876
DIFL LS BHC GR	935	3676
DIP	1878	3008
DIP	2999	3676
DLL MLL GR	2452	3011
FMT	3084	3642
MWD	470	3685
SL	2450	3011
VSP	935	3676

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	455.0	36	556.0	0.00	LOT
SURF.COND.	20	935.0	26	965.0	1.55	LOT
INTERM.	13 3/8	1876.0	17 1/2	1895.0	1.91	LOT
INTERM.	9 5/8	3000.0	12 1/4	3017.0	2.01	LOT
OPEN HOLE		3685.0	8 1/2	3685.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
556	1.08			WATER BASED	25.03.1985
759	1.10	8.0	47.0	WATER BASED	25.03.1985

965	1.11	8.0	47.0	WATER BASED	25.03.1985
970	1.10	47.0	16.0	WATER BASED	27.03.1985
1268	1.10	51.0	17.0	WATER BASED	28.03.1985
1551	1.20	51.0	25.0	WATER BASED	29.03.1985
1878	1.46	53.0	21.0	WATER BASED	01.04.1985
1895	1.50	59.0	25.0	WATER BASED	01.04.1985
2076	1.58	60.0	30.0	WATER BASED	03.04.1985
2287	1.68	25.0	17.0	WATER BASED	09.04.1985
2445	1.72	22.0	20.0	WATER BASED	09.04.1985
2514	1.70	17.0	19.0	WATER BASED	07.05.1985
2516	1.72	22.0	20.0	WATER BASED	09.04.1985
2600	1.72	60.0	14.0	WATER BASED	11.04.1985
2823	1.70	50.0	14.0	WATER BASED	15.04.1985
2940	1.70	53.0	15.0	WATER BASED	17.04.1985
3015	1.70	53.0	15.0	WATER BASED	19.04.1985
3017	1.64	53.0	15.0	WATER BASED	24.04.1985
3070	1.55	60.0	14.0	WATER BASED	25.04.1985
3149	1.55	59.0	15.0	WATER BASED	26.04.1985
3290	1.55	60.0	16.0	WATER BASED	29.04.1985
3394	1.55	59.0	14.0	WATER BASED	29.04.1985

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
2605.75	[m]
2587.25	[m]
2572.50	[m]
2564.25	[m]
2561.00	[m]
2555.00	[m]
2541.00	[m]
2537.75	[m]
2524.50	[m]
2521.25	[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]
465_Formation_pressure_(Formasjonstrykk)	pdf	0.22