General information

Wellbore name	34/7-4
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	34/7-4
Seismic location	G/E-035 SP. 430
Production licence	089
Drilling operator	Saga Petroleum ASA
Drill permit	445-L
Drilling facility	TREASURE SAGA
Drilling days	59
Entered date	19.11.1984
Completed date	16.01.1985
Release date	16.01.1987
Publication date	01.04.2012
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	EARLY JURASSIC
1st level with HC, formation	STATFJORD GP
Kelly bushing elevation [m]	26.0
Water depth [m]	319.0
Total depth (MD) [m RKB]	3115.0
Final vertical depth (TVD) [m RKB]	3114.0
Maximum inclination [°]	3.8
Bottom hole temperature [°C]	75
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	LUNDE FM
Geodetic datum	ED50
NS degrees	61° 29' 4.44'' N
EW degrees	2° 8' 0.26'' E
NS UTM [m]	6817231.93
EW UTM [m]	453843.83

UTM zone	31
NPDID wellbore	455

Wellbore history

General

Well 34/7-4 was drilled on the Snorre E structure in the northern part of block 34/7. The primary objectives were to further appraise the reservoir potential of the Statfjord Formation in the E-structure extension of the Snorre Discovery, to test the oil/water contact found in wells 34/7-1, and to test the reservoir quality in this area. A secondary objective was to test the reservoir potential in the upper Lunde Formation, which contain oil in an up-dip location.

Operations and results

Appraisal well 34/7-4 was spudded with the semi-submersible installation Treasure Saga on 19 November 1984 and drilled to TD at 3115 m in the Late Triassic Lunde Formation. No significant problems occurred during drilling of the well. The well was drilled with spud mud down to 963 m, with gypsum/polymer mud from 963 m to 2759 m, and with lignosulphonate mud from 2759 m to TD.

Except for the sandy Utsira Formation (Late Miocene/Pliocene) and an Early Eocene sandstone unit (1625-1664 m) in the lower part of the Hordaland Group, the well proved mainly claystones down to the Early Jurassic Statfjord Formation at 2535.5 m. The Statfjord Formation was 92 m thick and was oil bearing down to claystones in top Lunde Formation at 2627.5 m. No definite oil-water contact was seen. The N/G ratio in the Statfjord Formation was 0.26. The average porosity was 20 % and the average water saturation was 44%. The Lunde Formation proved mainly a claystone/siltstone sequence in the upper part, while the lowermost 265 m proved a sequence of alternating sandstones and claystones with limestone stringers. Of this sequence some 123 m can be considered as net. The Lunde Formation reservoir was water bearing.

Three cores totalling 24.6 m (recovered 22.3 m. 91% recovery) were cut in the Statfjord Formation from 2533 m to 2557.5 m. Core depths were from 2.0 to 4.0 m short of logger's depth. Another two cores were attempted at 2558.5 m and 2559 m, but these gave no recovery. Two FMT-chambers containing reservoir fluid were collected in the Statfjord Formation at 2537 m and 2555 m. These samples proved not to be representative, since the bubble point pressures were too low.

The well was permanently abandoned on 16 January 1985 as an oil appraisal.

Testing

One drill stem test was carried out in the interval 2547.0 - 2563.0 m in the Statfjord Formation. The zone produced clean oil at a rate of 865 Sm3 /day through a 9.5 mm choke with a wellhead pressure of 130 bar. The reservoir pressure was 386.5 bar and the temperature 91deg C at 2555.0 m. The formation permeability was estimated to 1330 mD and no heterogeneities were observed during the test.

The separator GOR was 34 Sm3/Sm3 and the dead oil density was 0.843 g/cc with a Formation Volume Factor of 1.27.

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Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
490.00	3116.00

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	2533.0	2536.7	[m]
2	2537.5	2552.5	[m]
3	2552.5	2557.6	[m]

Total core sample length [m]	23.8
Cores available for sampling?	YES

Core photos


2533-2536m

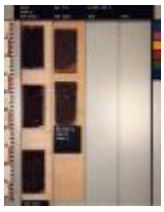

2537-2541m


2541-2545m


2545-2549m


2549-2552m


2552-2556m


2556-2557m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1190.0	[m]	DC	RRI
1210.0	[m]	DC	RRI
1220.0	[m]	DC	RRI

1240.0	[m]	DC	RRI
1260.0	[m]	DC	RRI
1270.0	[m]	DC	RRI
1280.0	[m]	DC	RRI
1290.0	[m]	DC	RRI
1310.0	[m]	DC	RRI
1330.0	[m]	DC	RRI
1850.0	[m]	DC	RRI
1865.0	[m]	DC	RRI
1880.0	[m]	DC	RRI
1895.0	[m]	DC	RRI
1910.0	[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		2563.00	2547.00			YES
DST	DST1	0.00	0.00			YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
345	NORDLAND GP
1118	UTSIRA FM
1187	HORDALAND GP
1625	NO FORMAL NAME
1675	NO FORMAL NAME
1685	ROGALAND GP
1685	BALDER FM
1712	LISTA FM
1848	SHETLAND GP
1848	JORSALFARE FM
1998	KYRRE FM
2496	CROMER KNOLL GP
2496	SOLA FM
2504	MIME FM

2517	DUNLIN GP
2517	AMUNDSEN FM
2536	STATFJORD GP
2628	HEGRE GP
2628	LUNDE FM

Geochemical information

Document name	Document format	Document size [MB]
455_1	pdf	0.61
455_2	pdf	5.16
455_3	pdf	0.93
455_4	pdf	0.38

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

Document name	Document format	Document size [MB]
455_01_WDSS_General_Information	pdf	0.29
455_02_WDSS_completion_log	pdf	0.25

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

Document name	Document format	Document size [MB]
455_34_7_4_Completion_log	pdf	1.78
455_34_7_4_Completion_report	pdf	37.52

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	2547	2563	9.5

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0	192.000	131.000	385.000	

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	865	35000	0.833	0.740	33

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CALIPER	953	1229
CDL CN GR	1915	2755
CDL CN GR	2744	3073
COREGUN	0	0
COREGUN	0	0
DIELECTRIC	2450	2748
DIFL LSBHC	953	1930
DIFL LSBHC GR	469	970
DIFL LSBHC GR	1915	2758
DIFL LSBHC GR	2744	3118
DIPLOG	1915	2750
DIPLOG	2744	3117
DLL MLL GR	2450	2757
FMT	1915	2750
FMT	2744	3117
GR	120	473
SPECTRALOG	1915	2750
SPECTRALOG	2744	3068
VSP	318	3118

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	469.0	36	473.0	0.00	LOT
SURF.COND.	20	953.0	26	971.0	1.51	LOT
INTERM.	13 3/8	1015.0	17 1/2	1930.0	1.78	LOT
INTERM.	13 3/8	1915.0	17 1/2	1930.0	1.90	LOT
INTERM.	13 3/8	1915.0	17 1/2	1930.0	1.78	LOT
INTERM.	9 5/8	2745.0	12 1/4	2756.0	1.90	LOT
INTERM.	9 5/8	2745.0	12 1/4	2756.0	0.00	LOT

OPEN HOLE		3115.0	8 1/2	3115.0	0.00	LOT
OPEN HOLE		3115.0	8 1/2	3115.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
408	1.03	100.0		WATER BASED	21.11.1984
473	1.03	100.0		WATER BASED	21.11.1984
702	1.10	62.0	57.0	WATER BASED	23.11.1984
971	1.15	56.0	49.0	WATER BASED	26.11.1984
971	1.22	56.0	56.0	WATER BASED	26.11.1984
971	1.22	59.0	56.0	WATER BASED	26.11.1984
971	1.22	53.0	50.0	WATER BASED	27.11.1984
971	1.22	52.0	48.0	WATER BASED	27.11.1984
971	1.07	54.0	16.0	WATER BASED	30.11.1984
971	1.07	54.0	16.0	WATER BASED	03.12.1984
971	1.22	56.0	56.0	WATER BASED	26.11.1984
971	1.22	59.0	56.0	WATER BASED	26.11.1984
971	1.22	53.0	50.0	WATER BASED	27.11.1984
971	1.22	52.0	48.0	WATER BASED	27.11.1984
971	1.07	54.0	16.0	WATER BASED	30.11.1984
971	1.07	54.0	16.0	WATER BASED	03.12.1984
1117	1.14	48.0	18.0	WATER BASED	11.12.1984
1552	1.27	48.0	18.0	WATER BASED	11.12.1984
1652	1.32	48.0	18.0	WATER BASED	11.12.1984
1903	1.37	48.0	18.0	WATER BASED	12.12.1984
1930	1.44	26.0	19.0	WATER BASED	13.12.1984
1930	1.44	22.0	20.0	WATER BASED	17.12.1984
1930	1.44	22.0	20.0	WATER BASED	17.12.1984
2072	1.44	33.0	17.0	WATER BASED	17.12.1984
2286	1.56	22.0	15.0	WATER BASED	17.12.1984
2381	1.60	24.0	18.0	WATER BASED	18.12.1984
2498	1.69	50.0	18.0	WATER BASED	20.12.1984
2537	1.69	50.0	16.0	WATER BASED	20.12.1984
2559	1.69	47.0	13.0	WATER BASED	27.12.1984
2559	1.69	49.0	14.0	WATER BASED	27.12.1984
2559	1.69	49.0	14.0	WATER BASED	27.12.1984
2583	1.69	51.0	15.0	WATER BASED	06.01.1985

2630	1.69	48.0	14.0	WATER BASED	27.12.1984
2688	1.69	49.0	15.0	WATER BASED	27.12.1984
2749	1.69	50.0	16.0	WATER BASED	27.12.1984
2810	1.60	50.0	18.0	WATER BASED	01.01.1985
2997	1.60	50.0	18.0	WATER BASED	01.01.1985
3115	1.60	48.0	13.0	WATER BASED	06.01.1985
3115	1.60	49.0	18.0	WATER BASED	01.01.1985
3115	1.60	48.0	13.0	WATER BASED	06.01.1985

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]
455_Formation_pressure_(Formasjonstrykk)	pdf	0.21