General information

Wellbore name	34/4-9 S
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	34/4-9
Seismic location	SG 8420-67 IDP 835-SG 8420-67 IDP 819.
Production licence	057
Drilling operator	Saga Petroleum ASA
Drill permit	865-L
Drilling facility	SCARABEO 5
Drilling days	39
Entered date	08.01.1997
Completed date	15.02.1997
Release date	15.02.1999
Publication date	03.01.2012
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	LATE TRIASSIC
1st level with HC, formation	LUNDE FM
Kelly bushing elevation [m]	25.0
Water depth [m]	334.0
Total depth (MD) [m RKB]	3440.0
Final vertical depth (TVD) [m RKB]	3388.3
Maximum inclination [°]	29.6
Bottom hole temperature [°C]	106
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	LUNDE FM
Geodetic datum	ED50
NS degrees	61° 30' 44.75'' N
EW degrees	2° 10' 18.12'' E
NS UTM [m]	6820309.22

EW UTM [m]	455922.81
UTM zone	31
NPDID wellbore	2931

Wellbore history

General

Well 34/4-9 S was drilled on the northern part of the Western Central Fault Block (WCFB) on the Snorre Field in the northern North Sea. This is an appraisal well and the main objectives were to contribute to the technical basis for Snorre North PDO and to reduce the uncertainties in reservoir quality. The reservoir level in this part of Snorre is the Late Triassic Lunde Formation.

Operations and results

Appraisal well 34/4-9 S was spudded with the semi-submersible installation Scarabeo 5 on 8 January 1997 and drilled to TD at 3440 m (3388 m TVD) in the Late Triassic Lunde Formation. The well was drilled vertical down to 2700 m, from where it built angle up to 24.9 deg at TD with maximum 29.6 deg at 3370 m. The well was drilled with spud mud down to 1235 m, with KCl mud from 1235 m to 1866 m, and with Ancovert oil based mud from 1866 m to TD.

Top of the reservoir (L01) was encountered at 2512.5 m, 12.5 m deeper than prognosed. The conventional core indicated oil down to 2621.5 m (2596 m TVD MSL) (oil stained sandstones), and the interpretation of pressure gradients (MDT data) indicate an OWC at 2619 m (2594 m TVD MSL). However, the wire line logs indicate high water saturation in the sandstone from 2616.5 - 2622 m (2590.5 - 2597 m TVD MSL) with deepest oil down to 2608 m (2583m TVD MSL). The oil-water contact is therefore set to 2616 m (2590 m TVD MSL).

Three cores were cut consecutively over a 209 m long section from 2515 m to 2724 m in the upper part of the Lunde formation with a total recovery of 99.7 %. The core-to-log shifts were -0.61 m for core 1, -1.11 m for core 2, and -0.36 m for core 3. A 2 3/4 gal fluid sample was obtained at 2583 m. Laboratory measurements indicated that the fluid sample was contaminated by 18-22% base oil.

The well was permanently abandoned on 15 February 1997 as an oil appraisal well.

Testing

No drill stem test was performed.

Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	2515.0	2597.5	[m]
2	2598.0	2658.8	[m]
3	2659.0	2723.5	[m]

Total core sample length [m]	207.8
Cores available for sampling?	YES

Core photos


2515-2520m


2520-2525m

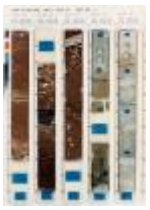

2525-2530m


2530-2535m


2535-2540m


2540-2545m


2545-2550m


2550-2555m


2555-2560m


2560-2565m


2565-2570m


2570-2575m


2575-2580m


2580-2585m


2585-2590m


2590-2595m


2595-2597m


2598-2603m


2603-2608m


2608-2613m


2613-2618m


2618-2623m


2623-2628m


2628-2633m


2633-2638m


2638-2643m


2643-2648m


2648-2653m


2653-2658m


2658-2659m

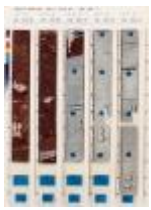

2659-2664m


2664-2669m


2664-2669m


2669-2674m


2674-2679m


2679-2684m


2684-2689m


2689-2694m

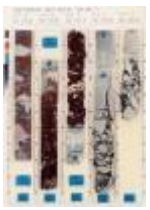

2694-2699m


2699-2704m


2704-2709m


2709-2714m


2714-2719m


2719-2723m

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
359	NORDLAND GP
1680	ROGALAND GP

1680	BALDER FM
1720	SELE FM
1850	SHETLAND GP
2474	CROMER KNOLL GP
2474	RØDBY FM
2495	MIME FM
2513	HEGRE GP
2513	LUNDE FM

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

Document name	Document format	Document size [MB]
2931_34_4_9_S_COMPLETION_LOG	pdf	0.90
2931_34_4_9_S_COMPLETION_REPORT	pdf	12.75

Logs

Log type	Log top depth [m]	Log bottom depth [m]
ACBL GR	2070	2449
ACL GR	2449	3523
COREGUN	2895	3149
DIFL ACL ZDL CN GR SP CHT	330	1271
DISFL ACL SP GR CAL CHT	1344	2466
DLL MLL ACL ZDL CN GR SP	2487	3274
DLL MLL CAL GR SP CHT	1862	3509
FMT GR	2921	3190
FMT GR	2926	0
FMT GR	2926	2973
FMT GR CHT	2921	3290
FMT GR CHT	2931	3486
HEXDIP GR	2449	3506
MWD - GR RES DIR	330	3530
VSP	480	2440
VSP	1360	3520
ZDL CNC GR CHT	2449	3531

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	397.0	36	411.0	0.00	LOT
SURF.COND.	18 5/8	507.0	26	514.0	0.00	LOT
PILOT HOLE		520.0	9 7/8	520.0	0.00	LOT
INTERM.	13 3/8	1228.0	17 1/2	1235.0	1.86	LOT
INTERM.	9 5/8	1858.0	12 1/4	1866.0	2.21	LOT
OPEN HOLE		3440.0	8 1/2	3440.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
520	1.12	8.0	29.0	spud mud	
1235	1.19	21.0	23.0	spud mud	
1866	1.48	29.0	36.0	KCL mud	
2013	1.48	29.0	33.0	oil based	
2500	1.60	38.0	19.0	oil based	

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]
2931_Formation_pressure_(Formasjonstrykk)	pdf	0.22