General information

Wellbore name	31/2-17 S
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	TROLL
Discovery	31/2-1 (Troll Vest)
Well name	31/2-17
Seismic location	NH-8901- LINJE 794 & SP. 1404
Production licence	054
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	709-L
Drilling facility	TRANSOCEAN 8
Drilling days	24
Entered date	28.12.1991
Completed date	20.01.1992
Release date	20.01.1994
Publication date	06.06.2006
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	SOGNEFJORD FM
2nd level with HC, age	MIDDLE JURASSIC
2nd level with HC, formation	FENSFJORD FM
Kelly bushing elevation [m]	24.0
Water depth [m]	341.0
Total depth (MD) [m RKB]	2220.0
Final vertical depth (TVD) [m RKB]	1705.0
Maximum inclination [°]	55.8
Bottom hole temperature [°C]	80
Oldest penetrated age	MIDDLE JURASSIC
Oldest penetrated formation	FENSFJORD FM
Geodetic datum	ED50
NS degrees	60° 52' 57.08'' N
EW degrees	3° 27' 5.79'' E

NS UTM [m]	6749946.42
EW UTM [m]	524516.87
UTM zone	31
NPDID wellbore	1885

Wellbore history

General

Well bores 31/2-17 S, -A, and -B were drilled on the north-western periphery of the Troll West gas and oil discovery. The objective was to obtain the thickness of the oil zone and reservoir properties in the "Intermediate Area". Well bores 31/2-17 S and 31/2-17 A are located on each side of a fault subdividing the Intermediate Area into two main compartments. Well 31/2-17 S is located on the eastern side of the fault. The side track 31/2-17 A was turned 180 degrees and landed on the western side of the fault. Well 31/2 -17 B was side-tracked from well 31/2-17 A and drilled horizontally to a position about 5 m above the oil water contact.

Operations and results

All three well bores were drilled with the semi-submersible installation Transocean 8 from the same wellhead location. Operations commenced with spud of 31/2-17 S on 28 December 1991 and ended with temporary abandonment of 31/2-17 B on 14 February 1992.

Well 31/2-17 S was drilled to TD at 2220 m in the Middle Jurassic Fensfjord Formation. No significant technical problem occurred in the well bore. The well bore was drilled with sea water and hi-vis pills down to 921 m and with KCl/brine/PHPA mud from 921 m to TD. One and a half m of Draupne Formation was penetrated at 1870 m. The Sognefjord Formation reservoir was encountered with gas at 1871.5 m. The Gas-Oil-Contact was penetrated at 1972 m (1544.2 m TVD MSL) and the Oil-Water-Contact was penetrated at 2011 m (1565.8 m TVD MSL), both contacts in the Heather Formation. Six cores were taken. Core one and two and the upper part of core three were cut in the Sognefjord Formation. The rest of the cores were cut in the Heather B Formation. No fluid sample was taken.

Well 31/2-17 A was kicked of from 31/2-17 S at 909 m and drilled to TD at 1924 m in the Middle Jurassic Fensfjord Formation. No significant technical problem occurred. The well bore was drilled with KCl/brine/PHPA mud from kick-off to 1012 m and with oil based mud from 1012 m to TD. Seven m of Draupne Formation was penetrated at 1681.5 m. The Sognefjord Formation reservoir was encountered with gas at 1688.5 m. The Gas-Oil-Contact was penetrated at 1725.4 m (1543.0 m TVD MSL) in the Sognefjord Formation. The Oil-Water-Contact was penetrated at 1746.5 m (1558.1 m TVD MSL) also in the Sognefjord Formation. Five cores were taken. Core one, two, three and the upper part of core four were cut in the Sognefjord Formation. Core no five was cut in the Heater Formation. No fluid sample was taken.

Well 31/2-17 B was kicked off from 31/2-17 A at 1645 m. The well angle was built up to approximately 90 degrees and was drilled to TD at 1838 m after 147 m nearly horizontal drilling in the Sognefjord Formation gas zone. The junk bonnet from the 9 5/8" liner running was accidentally left in the hole and 2 days were spent fishing for it, otherwise no significant technical problem occurred in this hole. The well bore was drilled with oil-based mud from kick-off to TD. Five m of Draupne Formation was penetrated at 1686 m. The Sognefjord Formation reservoir was encountered with gas at 1691 m. As expected no GOC was encountered, but the GOC is assumed to be the same as in well bore 31/2-17 A. One horizontal core (2.8 m) was taken at TD. Only MWD logs were run. No fluid sample was taken.

31/2-17 S and 31/2-17A were permanently abandoned, while well 31/2-17 B was temporary plugged and suspended for later re-entry. The wells were classified as oil and gas appraisals.

Testing

No drill stem test was performed in the well bores.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
930.00	2220.00

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	1877.0	1912.0	[m]
2	1912.0	1946.8	[m]
3	1947.0	1977.8	[m]
4	1977.8	1984.7	[m]
5	1993.0	2012.0	[m]
6	2016.0	2022.3	[m]

Total core sample length [m]	132.8
Cores available for sampling?	YES

Core photos


1877-1882m


1882-1887m


1887-1892m


1892-1897m


1897-1902m


1902-1907m


1907-1912m


1912-1817m


1817-1922m


1922-1927m


1932-1937m


1937-1942m


1942-1946m


1947-1952m


1952-1957m


1957-1962m


1962-1967m


1967-1972m


1972-1977m


1977-1981m


1981-1994m


1994-1999m


1999-2004m


2004-2009m


2009-2017m


2017-2022m


2022-2023m

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
365	NORDLAND GP
803	HORDALAND GP
921	NO FORMAL NAME
1028	NO FORMAL NAME
1540	ROGALAND GP
1540	BALDER FM
1603	SELE FM
1676	LISTA FM
1856	VÅLE FM

1870	VIKING GP
1870	DRAUPNE FM
1872	SOGNEFJORD FM
1957	HEATHER FM
2180	FENSFJORD FM

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

Document name	Document format	Document size [MB]
1885_01_WDSS_General_Information	pdf	0.40
1885_02_WDSS_completion_log	pdf	0.14

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

Document name	Document format	Document size [MB]
1885_31_2_17_S_COMPLETION_REPORT_AND_LOG	pdf	22.76

Logs

Log type	Log top depth [m]	Log bottom depth [m]
DLL MSFL DSI SP GR AMS	1828	2021
FMI GR	1838	2190
GYRO AMS	1000	2200
LDL CNL GR AMS	364	2222
MDT GR AMS	1907	2047
MWD - GR CDR DIR	451	525
MWD - GR CDR DIR	1841	2220
MWD - GR RES S/N DIR	364	452
MWD - GR RES S/N DIR	528	1825
VSP 1ST	900	1100
VSP 4ST	1100	1810

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	451.5	36	452.0	0.00	LOT
INTERM.	18 5/8	906.0	24	921.0	1.54	LOT
INTERM.	9 5/8	1827.0	12 1/4	1830.0	1.41	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
365	1.20	19.0		WATER BASED	
453	1.20	19.0		WATER BASED	
454	1.20	19.0		WATER BASED	
495	1.07	13.0		WATER BASED	
604	1.20	20.0		WATER BASED	
843	1.50	14.0		WATER BASED	
850	1.34	25.0		WATER BASED	
921	1.30	19.0		WATER BASED	
1070	1.30	24.0		WATER BASED	
1514	1.36	23.0		WATER BASED	
1775	1.34	25.0		WATER BASED	
1841	1.36	23.0		WATER BASED	
1912	1.25	22.0		WATER BASED	
1978	1.25	20.0		WATER BASED	
2016	1.25	21.0		WATER BASED	
2117	1.25	22.0		WATER BASED	
2220	1.26	24.0		WATER BASED	