General information

Wellbore name	31/5-4 A
Type	EXPLORATION
Purpose	APPRAISAL
Status	SUSPENDED
Factmaps in new window	link to map
Main area	NORTH SEA
Field	TROLL
Discovery	31/2-1 (Troll Vest)
Well name	31/5-4
Seismic location	NH 9056-209 & SP.95
Production licence	085
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	656-L
Drilling facility	TRANSOCEAN 8
Drilling days	65
Entered date	10.10.1990
Completed date	13.12.1990
Release date	13.12.1992
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
Kelly bushing elevation [m]	24.0
Water depth [m]	316.0
Total depth (MD) [m RKB]	2603.0
Final vertical depth (TVD) [m RKB]	1579.2
Maximum inclination [°]	93
Bottom hole temperature [°C]	66
Oldest penetrated age	LATE JURASSIC
Oldest penetrated formation	SOGNEFJORD FM
Geodetic datum	ED50
NS degrees	60° 43' 16.19'' N
EW degrees	3° 33' 43.06'' E
NS UTM [m]	6732020.10
EW UTM [m]	530661.48

UTM zone	31
NPDID wellbore	1689

Wellbore history

General

Well 31/5-4 A was drilled as a horizontal side track to well 31/5-4 S in the Troll West oil and gas province. The well objective was test production from the 13 m oil layer in the Sognefjord Formation. The test production should evaluate the oil production potential from the Troll West Gas Province, obtain dynamic data from a potential development type well, and obtain static reservoir and geological data to provide proper understanding of well behaviour.

Operations and results

Well bore 31/5-4 A was kicked off from 31/5-4 S at 1569 m on 10 October 1990, using the semi-submersible installation Transocean 8. Due to difficulties in building sufficient angle, the well was plugged back and technically sidetracked from 1604 m. The 9 5/8" casing was set horizontally at 1803 m, and the well drilled horizontally for another 800 m to TD at 2603 m in the Late Jurassic Sognefjord Formation. The well was drilled with Carbotec oil based mud from kick-off to TD. The horizontal section was drilled in the oil bearing part, approximately 1 meter above the oil-water contact. No cores were cut and no fluid samples taken. The well was completed with a prepacked screen in the horizontal section. A clean-up test and a production logging test was conducted with the Transocean 8 before the well was suspended on 13 Dcember 1990 and connected to the vessel Petrojarl I for a long-term production test. Well 31/5-4 A is classified as an oil and gas appraisal well.

Testing

The well was tested from the horizontal interval in the Sognefjord Formation beyond the 9 5/8" casing shoe , i.e. 1801-2603 m RKB / 1578.5 m TVD RKB +/- 0.3 m. The measured test data from the end of the second and final production logging period, with the production logging tool (PLT) at 1825 m / 1578.5 m TVD RKB, were reported as follows: Oil rate = 217 Sm3/day, gas rate = 11869 Sm3/day, water rate = 318 Sm3/day, GOR = 55 Sm3/Sm3, CO2 content = 1%, oil density = 0.893 g/cm3, relative gas density = 0.64 (air = 1), flowing bottom hole pressure (FBHP) = 158.85 bar, and flowing bottom hole temperature (FBHT) = 69.5 deg. C.

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
340	NORDLAND GP
654	HORDALAND GP
1205	ROGALAND GP
1205	BALDER FM
1292	SELE FM
1393	LISTA FM

1449	SHETLAND GP
1449	HARDRÅDE FM
1461	UNDIFFERENTIATED
1470	CROMER KNOLL GP
1470	RØDBY FM
1507	ÅSGARD FM
1515	VIKING GP
1515	DRAUPNE FM
1621	SOGNEFJORD FM

Composite logs

Document name	Document format	Document size [MB]
1689	pdf	0.18

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

Document name	Document format	Document size [MB]
1689_01_WDSS_General_Information	pdf	0.16
1689_02_WDSS_completion_log	pdf	0.15

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

Document name	Document format	Document size [MB]
1689_31_5_4_A_COMPLETION_REPORT_AND_LOG	pdf	26.27

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL CCL GR	1391	1792
DIT-E DSI GR	1550	1800
DLL MSFL CAL GR	1803	2595
GR CCL	1433	1800
HYRO CCL	1395	1798

LDL CNL GR CAL	1567	1723
LDL CNL GR CAL	1567	1799
MWD - CDR CDN GR	1803	2285
MWD - CDR GR DIR	432	2585

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
INTERM.	13 3/8	1567.0	17 1/2	1570.0	1.40	LOT
INTERM.	9 5/8	1803.0	12 1/4	1806.0	1.40	LOT
OPEN HOLE		2603.0	8 1/2	2603.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
1571	1.25	21.0	21.0	WATER BASED	
1803	1.25	31.0	12.0	WATER BASED	
2089	1.25	13.0	14.0	WATER BASED	
2227	1.25	14.0	15.0	WATER BASED	
2601	1.20	11.0	11.0	WATER BASED	