

**General information**

Wellbore name	31/5-4 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	31/5-4
Seismic location	NH 9056 - 209& SP. 95
Production licence	085
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	650-L
Drilling facility	TRANSOCEAN 8
Drilling days	28
Entered date	13.09.1990
Completed date	10.10.1990
Release date	10.10.1992
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]	1909.0
Final vertical depth (TVD) [m RKB]	1706.0
Maximum inclination [°]	53
Bottom hole temperature [°C]	57
Oldest penetrated age	MIDDLE JURASSIC
Oldest penetrated formation	FENSFJORD 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	1669

Wellbore history

General

Well 31/5-4 S was drilled in a southern, down flank compartment of the Troll West Gas province, 1000 m north west of well 31/5-2. The Troll West Province is an easterly rotated fault block where the southern part is approximately 10 x 15 km with a general dip of 1 to 2 degrees at reservoir level. The primary objective was to provide a penetration hole for a later test production in a horizontal side track hole in the 13 m oil layer in the Sognefjord Formation. The test production should confirm 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 31/5-4 S was spudded with the semi-submersible installation Transocean 8 on 13 September 1990 and drilled to TD at 1909 m in the Middle Jurassic Fensfjord Formation. No shallow gas was encountered, as prognosed. The well was drilled vertical down to 1040 m from where angle was built up to 53 deg at 1571 m. Tight hole problems were experienced at several depths, and at 1360 m the hole packed off and mud return was temporary lost. The well was drilled with seawater and hi-vis pills down to 940 m and with KCl/polymer polyacrylamide mud from 940 m to TD.

The Sognefjord Formation was penetrated from 1619 m (1535.4 m TVD RKB) to 1830 m (1660 m TVD RB). The formation was gas filled down to 1670 m (1535.4 m TVD RKB) and oil filled from there down to 1692.3 m (1567.2 m TVD RKB).

The well bore was plugged back to 1496 m for sidetracking. It was permanently abandoned on 10 October 1990 as a gas and oil appraisal well.

Testing

No drill stem test was performed

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
950.00	1905.00

Cuttings available for sampling?	YES
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Cores at the Norwegian Offshore Directorate



Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	1647.5	1647.8	[m]
2	1649.5	1649.7	[m]
3	1650.0	1667.5	[m]
4	1667.0	1672.4	[m]
5	1674.9	1685.0	[m]
6	1685.0	1703.0	[m]
7	1703.0	1708.6	[m]
8	1716.4	1731.2	[m]
9	1731.2	1747.3	[m]

Total core sample length [m]	88.0
Cores available for sampling?	YES

Core photos

1647-1649m



1650-1655m



1655-1660m



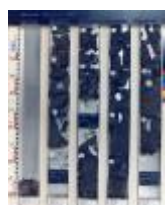
1660-1665m



1665-1668m



1668-1672m



1647-1679m



1679-1684m



1684-1685m



1685-1690m



1690-1695m



1695-1700m



1700-1703m



1703-1708m



1708-1719m



1719-1724m



1724-1729m



1729-1731m



1731-1736m



1736-1741m



1741-1746m



1746-1747m

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
1619	SOGNEFJORD FM
1830	HEATHER FM
1879	FENSFJORD FM

Composite logs





Document name	Document format	Document size [MB]
1669	pdf	0.17

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

Document name	Document format	Document size [MB]
1669_01_WDSS_General_Information	pdf	0.20
1669_02_WDSS_completion_log	pdf	0.14

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL GR CCL	1248	1565
DLL MSFL SDT GR	1567	1904
GCT CCL	339	1557
LDL CNL GR CAL	1567	1879
MWD - CDR CDN GR DIR	1567	1900
MWD - CDR GR RES	432	1900
SHDT	1567	1881
VSP	1250	1870

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	424.0	36	425.0	0.00	LOT
INTERM.	18 5/8	924.0	24	926.0	1.45	LOT
INTERM.	13 3/8	1567.0	17 1/2	1570.0	1.40	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
376	1.05	20.0	19.0	WATER BASED	14.09.1990
425	1.05	20.0	19.0	WATER BASED	17.09.1990
425	1.05	20.0	19.0	WATER BASED	17.09.1990





710	1.05	20.0	19.0	WATER BASED	17.09.1990
943	1.05	20.0	19.0	WATER BASED	18.09.1990
943	1.30			WATER BASED	19.09.1990
943	1.05			WATER BASED	20.09.1990
943	1.05			WATER BASED	21.09.1990
943	1.35	18.0	13.0	WATER BASED	24.09.1990
943	1.31	19.0	13.0	WATER BASED	24.09.1990
1005	1.31	14.0	12.0	WATER BASED	24.09.1990
1261	1.32	17.0	11.0	WATER BASED	25.09.1990
1440	1.32	19.0	12.0	WATER BASED	26.09.1990
1508	1.25	17.0	12.0	WATER BASED	02.10.1990
1529	1.32	20.0	14.0	WATER BASED	27.09.1990
1569	1.24	31.0	14.0	OIL BASED	12.10.1990
1571	1.32	20.0	14.0	WATER BASED	28.09.1990
1571	1.26	17.0	12.0	WATER BASED	02.10.1990
1575	1.26	29.0	12.0	OIL BASED	15.10.1990
1648	1.25	20.0	14.0	WATER BASED	02.10.1990
1659	1.25	29.0	11.0	OIL BASED	15.10.1990
1728	1.25	28.0	12.0	OIL BASED	15.10.1990
1803	1.25	31.0	12.0	OIL BASED	22.10.1990
1803	1.25	32.0	15.0	OIL BASED	16.10.1990
1803	1.25	31.0	12.0	OIL BASED	18.10.1990
1803	1.25	31.0	12.0	OIL BASED	18.10.1990
1803	1.25	32.0	10.0	OIL BASED	22.10.1990
1803	1.26	34.0	10.0	OIL BASED	22.10.1990
1803	1.15	9.0	8.0	WATER BASED	22.10.1990
1805	1.25	11.0	11.0	WATER BASED	23.10.1990
1805	1.25	9.0	10.0	WATER BASED	24.10.1990
1805	1.25	10.0	10.0	WATER BASED	25.10.1990
1809	1.25	10.0	11.0	WATER BASED	29.10.1990
1811	1.25	10.0	11.0	WATER BASED	26.10.1990
1865	1.25	20.0	13.0	WATER BASED	09.10.1990
1879	1.25	20.0	15.0	WATER BASED	09.10.1990
1908	1.24	19.0	15.0	WATER BASED	09.10.1990
1908	1.25	20.0	15.0	WATER BASED	10.10.1990
1959	1.25	11.0	13.0	WATER BASED	29.10.1990
2025	1.25	11.0	13.0	WATER BASED	29.10.1990
2089	1.25	13.0	14.0	WATER BASED	30.10.1990
2133	1.25	13.0	13.0	WATER BASED	31.10.1990
2227	1.25	14.0	15.0	WATER BASED	01.11.1990



2366	1.25	13.0	15.0	WATER BASED	02.11.1990
2518	1.25	14.0	15.0	WATER BASED	05.11.1990
2585	1.20	2.0		WATER BASED	22.11.1990
2601	1.25	11.0	11.0	WATER BASED	13.11.1990
2601	1.20	2.0		WATER BASED	19.11.1990
2601	1.20	2.0		WATER BASED	20.11.1990
2601	1.25	13.0	13.0	WATER BASED	08.11.1990
2601	1.25	11.0	11.0	WATER BASED	09.11.1990
2601	1.20			WATER BASED	13.11.1990
2601	1.20	2.0		WATER BASED	13.11.1990
2601	1.19	2.0		WATER BASED	16.11.1990
2601	1.20	2.0		WATER BASED	19.11.1990
2601	1.20	2.0		WATER BASED	19.11.1990
2601	1.20	2.0		WATER BASED	21.11.1990
2603	1.25	14.0	15.0	WATER BASED	05.11.1990
2603	1.25	13.0	15.0	WATER BASED	05.11.1990
2603	1.25	13.0	14.0	WATER BASED	06.11.1990
2603	1.25	13.0	14.0	WATER BASED	08.11.1990
2603	1.25	10.0	6.0	WATER BASED	10.07.1991
2603	1.25	10.0	8.0	WATER BASED	15.07.1991
2603	1.25	10.0	8.0	WATER BASED	16.07.1991
2603	1.25	10.0	8.0	WATER BASED	16.07.1991
2603	1.25	10.0	8.0	WATER BASED	16.07.1991
2603	1.25	10.0	8.0	WATER BASED	17.07.1991
2603	1.25	10.0	8.0	WATER BASED	18.07.1991