

**General information**

Wellbore name	31/5-5
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	31/5-5
Seismic location	NH 9101- ROW 694& COLUMN 542
Production licence	085
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	751-L
Drilling facility	WEST DELTA
Drilling days	44
Entered date	30.12.1992
Completed date	11.02.1993
Release date	11.02.1995
Publication date	29.06.2004
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]	29.0
Water depth [m]	319.0
Total depth (MD) [m RKB]	1930.0
Final vertical depth (TVD) [m RKB]	1930.0
Maximum inclination [°]	1.2
Bottom hole temperature [°C]	60
Oldest penetrated age	MIDDLE JURASSIC
Oldest penetrated formation	KROSSFJORD FM
Geodetic datum	ED50
NS degrees	60° 41' 49.66" N
EW degrees	3° 29' 8.74" E
NS UTM [m]	6729309.74
EW UTM [m]	526523.74



UTM zone	31
NPDID wellbore	2059

Wellbore history

General

The well was drilled as part of the appraisal programme initiated for the southern part of the Troll West Gas province (TWGP-S). The objectives of the well were to provide geological, geophysical and petrophysical data for evaluation of the potential for a group of oil producers in TWGP-S; and to provide data on the Fensfjord and Krossfjord Formations to improve aquifer modelling. The well was further planned for later re-entry, either for sidetracking and completion as a horizontal producer, or for vertical recompletion for Sognefjord Formation reservoir monitoring.

Operations and results

Well 31/5-5 was spudded with the semi-submersible installation West Delta on 30 December 1992 and drilled to a total depth at 1930 m in the Middle Jurassic Krossfjord Formation. The well was drilled with spud mud to 940 m and with KCl/brine from 940 m to TD.

The Sognefjord Formation was encountered from 1572 m to 1725 m, and was hydrocarbon bearing. Strong oil shows were recorded from 1573 m to 1587.5 m, weaker oil shows were recorded below this depth down to 1650 m. The gas-oil contact was identified at 1573.5, and the oil-water contact was identified at 1585.5 m. From FMT pressure tests a gas gradient of 0.152 g/cc, an oil gradient of 0.825 g/cc, and a water gradient of 1.02 g/cc was defined. Twelve conventional cores were cut. The first ten were from 1555 m in the top of the Sognefjord Formation to 1726 m, one meter into the Fensfjord Formation. Cores 11 and 12 were cut from 1835 m in the Fensfjord Formation to 1888 m in the Krossfjord Formation. FMT fluid samples were taken at 1583 m (two samples, both contained oil and gas), 1576.5 m (oil and gas), and at 1571 m (gas).

The well was temporarily plugged at 1450 m and 450 m using two 9 5/8" Baker type N1 bridge plugs and suspended as an oil and gas appraisal well on 11 February 1993.

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	1930.00

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	1555.0	1571.5	[m]
2	1571.5	1583.0	[m]
3	1585.5	1601.0	[m]
4	1603.5	1622.0	[m]
5	1622.7	1640.0	[m]
6	1640.0	1658.0	[m]
7	1658.0	1674.7	[m]
8	1675.0	1693.0	[m]
9	1693.0	1710.5	[m]
10	1710.5	1736.0	[m]
11	1835.0	1860.0	[m]
12	1861.0	1888.9	[m]

Total core sample length [m]	227.9
Cores available for sampling?	YES

Core photos



1555-1560m



1560-1565m



1565-1570m



1570-1571m



1571-1576m



1576-1581m



1581-1583m



1585-1590m



1590-1595m



1595-1600m



1600-1602m



1603-1608m



1608-1613m



1613-1618m



1618-1622m



1622-1627m



1627-1632m



1632-1637m



1637-1640m



1640-1645m



1645-1650m



1650-1655m



1655-1658m



1658-1663m



1663-1668m



1668-1673m



1673-1674m



1675-1680m



1680-1685m



1685-1690m



1690-1693m



1693-1698m



1698-1703m



1703-1708m



1708-1710m



1710-1715m



1715-1720m



1720-1725m



1725-1730m



1730-1735m



1735-1736m



1835-1840m



1840-1845m



1845-1850m



1850-1855m



1855-1860m



1860-1861m



1861-1866m



1866-1871m



1871-1876m



1876-1881m



1881-1886m



1886-1888m

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
348	NORDLAND GP
741	HORDALAND GP
1295	ROGALAND GP
1295	BALDER FM
1375	SELE FM
1404	LISTA FM
1529	SHETLAND GP
1554	CROMER KNOLL GP
1572	VIKING GP
1572	SOGNEFJORD FM
1660	HEATHER FM
1725	FENSFJORD FM
1855	KROSSFJORD FM

Composite logs

Document name	Document format	Document size [MB]
2059	pdf	0.26



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

Document name	Document format	Document size [MB]
2059_31_5_5_COMPLETION_REPORT_AND_LOG	pdf	16.77

Logs

Log type	Log top depth [m]	Log bottom depth [m]
ACL SDL GR	347	910
ACL SDL GR	870	1412
ACL SDL GR	1350	1500
CST GR	1583	1925
DCBIL HDIP GR	1537	1923
DLL MLL AC ZDL CN SP GR	1461	1927
FMT VPC FQPG GR	1537	1923
FMT VPC FQPG GR	1572	1572
FMT VPC FQPG GR	1577	1577
FMT VPC FQPG GR	1583	1583
MAC SL	1474	1928
MWD - GR DPR DIR	1560	1930
MWD - GR RES DIR	347	1555
VSP	960	1920

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	432.0	36	432.0	0.00	LOT
INTERM.	18 5/8	926.0	24	940.0	1.58	LOT
INTERM.	9 5/8	1515.0	12 1/4	1530.0	1.54	LOT
OPEN HOLE		1930.0	8 1/2	1930.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
400	1.34	7.0		WATER BASED	





456	1.34	9.0		WATER BASED	
940	1.20			WATER BASED	
1255	1.34	7.0		WATER BASED	
1466	1.34	11.0		WATER BASED	
1530	1.34	22.0		WATER BASED	
1571	1.17	23.0		WATER BASED	
1640	1.17	19.0		WATER BASED	
1737	1.17	19.0		WATER BASED	
1930	1.17			WATER 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]
2059 Formation pressure (Formasjonstrykk)	pdf	0.17

