

**General information**

Wellbore name	31/2-18
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	31/2-18
Seismic location	NH 9101- REKKE 1446 & KOLONNE 2042
Production licence	054
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	741-L
Drilling facility	TREASURE SAGA
Drilling days	23
Entered date	15.09.1992
Completed date	07.10.1992
Release date	07.10.1994
Publication date	28.05.2003
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	PALEOCENE
1st level with HC, formation	NO FORMAL NAME
2nd level with HC, age	LATE JURASSIC
2nd level with HC, formation	SOGNEFJORD FM
Kelly bushing elevation [m]	26.0
Water depth [m]	340.0
Total depth (MD) [m RKB]	1711.0
Final vertical depth (TVD) [m RKB]	1711.0
Maximum inclination [°]	1.6
Bottom hole temperature [°C]	71
Oldest penetrated age	MIDDLE JURASSIC
Oldest penetrated formation	FENSFJORD FM
Geodetic datum	ED50
NS degrees	60° 54' 10.49" N
EW degrees	3° 34' 41.79" E



NS UTM [m]	6752271.73
EW UTM [m]	531373.19
UTM zone	31
NPDID wellbore	1988

Wellbore history

**General**

The purpose of well 31/2-18 was to appraise the structure and oil bearing potential of a fault block in the northern part of the Troll West Gas province (TWGP). The objectives for drilling well 31/2-18 were to evaluate the structure for future development of oil producing wells in the TWGP-North area, and to determine the degree of development required to efficiently develop the oil reservoir in the TWGP-North area. Well 31/2-18A was drilled as a pre-planned sidetrack to Well 31/2-18 in order to evaluate the hydrocarbon potential of the Krossfjord Formation. The primary objective of the sidetrack was to evaluate a seismic anomaly, or "flat spot" which had been identified in the Krossfjord Formation. The location of the anomaly was situated 240 m to the northeast in an up thrown block, adjacent to the original well.

Operations

Appraisal well 31/2-18 was spudded with the semi-submersible installation "Treasure Saga" on 15 September 1992, and drilled to a total depth of 1711 m in the Middle Jurassic Fensfjord Formation. The well was drilled with seawater and hi-vis pills down to 940 m and with KCl/Polymer mud from 940 m to TD.

Palaeocene sand was encountered below base Våle Formation, from 1519.9 m to 1528.8 m. This sand is in direct contact with the underlying Late Jurassic Sognefjord Formation, which was encountered over the interval 1528.8 m - 1642.7 m. Gas was proven all through these sands from top of the Palaeocene sand down to 1571.2 m in the Sognefjord Formation. A thin oil leg was identified, with an oil-water contact at 1582.0 m. Sixteen good RFT pressure measurements, including segregated samples at 1575 m and 1582 m, were taken in one run over the interval 1522 m & 1689.5 m. The interval from 1498 m to 1678.5 m (Lower Rogaland Group including the Palaeocene sand, Sognefjord Formation, and Heather Formation) was cored in twelve cores with 86 100 % recovery.

After running wire line logs, well 31/2-18 A was sidetracked with "Treasure Saga" from the original well on 7 October 1992. The sidetrack was initiated at 1470 m, just below the 9-5/8" casing shoe, and reached a total depth of 2005 m in the Krossfjord Formation. The sidetrack was drilled with KCl/Polymer mud.

Equivalent to the primary well bore the Våle Formation occurred from 1497 m to 1520 m, on top of a 9.6 m thick Paleocene sand. This sand was found gas bearing and in communication with the underlying Sognefjord Formation. The Sognefjord Formation was encountered between 1529.6 m and 1654.5 m and proved to be gas bearing down to 1572.9 m MD (1570.8 m TVD RKB). A thin oil zone was identified between 1572.9 m and 1584.5 m, (1570.8 - 1581.9 m TVD RKB). The Krossfjord Formation was encountered at 1915.5 m, and was found to be oil bearing from 1915.5 m to 1925.1 m, (1828.5 - 1835.0 m TVD RKB). Two segregated samples at 1919.3 m and 1584 m and a total of 20 pressure measurements and were taken in two RFT runs. No conventional cores were cut in the sidetrack.

After running wire line logs, the well was plugged back, without testing, to the 9-5/8" casing shoe on 13 October 1992. Wellbore 31/2-18 was subsequently permanently plugged and abandoned as an oil and gas appraisal well on 17 October 1992.

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	1710.00

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	1498.0	1516.0	[m]
2	1516.0	1533.5	[m]
3	1534.0	1551.8	[m]
4	1552.0	1570.0	[m]
5	1570.0	1588.0	[m]
6	1588.0	1599.0	[m]
7	1599.0	1608.9	[m]
8	1610.5	1627.1	[m]
9	1628.5	1638.1	[m]
10	1638.5	1653.4	[m]
11	1654.0	1666.5	[m]
12	1666.5	1678.5	[m]

Total core sample length [m]	175.8
Cores available for sampling?	YES

Core photos



1498-1503m



1503-1508m



1508-1513m



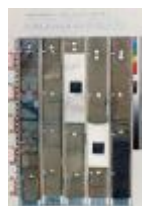
1513-1516m



1516-1521m



1521-1526m



1526-1531m



1531-1534m



1534-1539m



1539-1544m



1544-1549m



1549-1552m



1552-1557m



1557-1562m



1562-1567m



1567-1570m



1570-1575m



1575-1580m



1580-1585m



1585-1588m



1588-1593m



1593-1598m



1598-1599m



1599-1604m



1604-1607m



1610-1615m



1615-1620m



1620-1625m



1625-1627m



1628-1633m



1633-1638m



1638-1638m



1638-1643m



1643-1648m



1648-1653m



1653-1654m



1654-1659m



1659-1664m



1664-1667m



1667-1671m



1671-1676m



1676-1679m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1524.0	[m]	C	RRI

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
366	NORDLAND GP
670	HORDALAND GP
1220	ROGALAND GP
1220	BALDER FM
1266	SELE FM
1337	LISTA FM
1497	VÅLE FM
1519	NO FORMAL NAME
1529	VIKING GP
1529	SOGNEFJORD FM
1643	HEATHER FM
1688	FENSFJORD FM

Composite logs

Document name	Document format	Document size [MB]
1988	pdf	0.22

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





Document name	Document format	Document size [MB]
1988 01 WDSS General Information	pdf	0.45
1988 02 WDSS completion log	pdf	0.13

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

Document name	Document format	Document size [MB]
1988 31 2 18 COMPLETION REPORT AND LOG	pdf	20.94

Logs

Log type	Log top depth [m]	Log bottom depth [m]
DLL MSFL DSI SP GR	1450	1706
FMI GR	1510	1704
LDL CNL AIL NGL	1450	1708
LSS LDL CAL AMS GR	365	938
LSS LDL CAL AMS GR	921	1450
MWD - YGR RES DIR	372	1498
RFT HP GR	1522	1589
RFT HP GR	1575	1575
RFT HP GR	1582	1582
RFT HP GR	1582	1582
VSP	1000	1700

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	453.0	36	453.0	0.00	LOT
INTERM.	18 5/8	921.0	24	940.0	1.73	LOT
INTERM.	9 5/8	1450.0	12 1/4	1465.0	1.64	LOT
OPEN HOLE		1711.0	8 1/2	1711.0	0.00	LOT

Drilling mud





Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
453	1.05			WATER BASED	
518	1.05			WATER BASED	
940	1.20			WATER BASED	
1344	1.35			WATER BASED	
1350	1.17	28.0		WATER BASED	
1435	1.35	25.0		WATER BASED	
1465	1.17	13.0		WATER BASED	
1503	1.17	27.0		WATER BASED	
1534	1.17	28.0		WATER BASED	
1570	1.17	27.0		WATER BASED	
1610	1.17	27.0		WATER BASED	
1639	1.17	28.0		WATER BASED	
1678	1.17	27.0		WATER BASED	
1711	1.17	29.0		WATER BASED	

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
1500.50	[m]
1501.50	[m]
1515.10	[m]

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]
1988 Formation pressure (Formasjonstrykk)	pdf	0.14

