

**General information**

Wellbore name	31/6-2
Type	EXPLORATION
Purpose	APPRAISAL
Status	SUSPENDED
Factmaps in new window	link to map
Main area	NORTH SEA
Field	TROLL
Discovery	31/6-1 (Troll Øst)
Well name	31/6-2
Seismic location	ST 8007 - 351 SP 1647
Production licence	085
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	393-L
Drilling facility	DEEPSEA BERGEN
Drilling days	55
Entered date	18.10.1983
Completed date	11.12.1983
Release date	11.12.1985
Publication date	06.06.2006
Purpose - planned	APPRAISAL
Reentry	NO
Content	GAS
Discovery wellbore	NO
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	SOGNEFJORD FM
Kelly bushing elevation [m]	23.0
Water depth [m]	303.0
Total depth (MD) [m RKB]	2020.0
Final vertical depth (TVD) [m RKB]	2020.0
Maximum inclination [°]	1
Bottom hole temperature [°C]	65
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	DRAKE FM
Geodetic datum	ED50
NS degrees	60° 34' 58.24" N
EW degrees	3° 54' 55.76" E
NS UTM [m]	6716831.54
EW UTM [m]	550164.40



UTM zone	31
NPDID wellbore	34

Wellbore history

General

Appraisal well 31/6-2 was drilled on a location on the south-east periphery on the Troll East gas province. The main objective was to test the gas and oil accumulations in sandstones of Late to Middle Jurassic age. The planned TD was about 200 m into rocks of Triassic age to an estimated total depth of 2400 m RKB.

The well is Reference well for the Hardråde Formation and for the undifferentiated Shetland Group in the Troll area.

Operations and results

Well 31/6-2 was spudded with the semi-submersible installation Deepsea Bergen on 18 October 1983 and drilled to TD at 2020 m in the Early Jurassic Drake Formation. Because of problems with a leak in 20" casing and lost circulation problems in a major fault, both 13 3/8" and 9 5/8" casing had to be set high. The well was drilled with sea water and hi-vis pills down to 412 m, with AQUAGEL/seawater spud mud from 412 m to 801 m, with KCl polymer mud from 801 m to TD. At 984 m Lost Circulation Material -pills were added to cure lost circulation problems.

No reservoir sections were developed above the Jurassic. The well encountered 113 m of Draupne shale with top at 1322 m, overlying a 25 m thick Heather Formation sequence. The Sognefjord Formation sandstone reservoir was encountered at 1460 m with a gas column of approximately 110 m. No oil leg could be detected from electric logs or FMT's. Oil shows were recorded on sidewall core sandstone in the interval from 1831 m to 1988 m in the Middle to Early Jurassic. Nine cores were cut from 1435 m to 1619 m in the Heather and Sognefjord Formations. FMT sampling in the Sognefjord Formation recovered small amounts of gas from 1475 m and 1572 m. A sample from 1577 m gave mud filtrate.

The well was suspended on 11 December 1983 as a gas appraisal.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
420.00	2235.00

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	1435.0	1453.3	[m]
2	1453.0	1471.4	[m]
3	1471.6	1483.6	[m]
4	1483.6	1497.1	[m]
5	1497.1	1515.9	[m]
6	1515.7	1543.4	[m]
7	1543.6	1571.5	[m]
8	1571.5	1589.0	[m]
9	1591.0	1618.3	[m]

Total core sample length [m]	181.4
Cores available for sampling?	YES

Core photos



1435-1441m



1441-1447m



1447-1453m



1453-1453m



1453-1459m



1459-1465m



1465-1471m



1471-1472m



1471-1477m



1477-1483m



1483-1489m



1489-1495m



1495-1497m



1497-1503m



1509-1515m



1503-1509m



1515-1516m



1515-1521m



1521-1527m



1527-1533m



1533-1539m



1539-1543m



1543-1549m



1549-1555m



1555-1561m



1561-1567m



1567-1571m



1571-1577m



1577-1583m



1583-1589m



1591-1597m



1597-1603m



1603-1609m



1609-1615m



1615-1618m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
995.0	[m]	SWC	IKU
1050.0	[m]	SWC	IKU
1250.0	[m]	SWC	IKU
1294.0	[m]	SWC	IKU
1326.5	[m]	SWC	IKU
1344.5	[m]	SWC	IKU
1360.0	[m]	SWC	IKU
1380.0	[m]	SWC	IKU
1399.0	[m]	SWC	IKU



1411.0	[m]	SWC	IKU
1426.0	[m]	SWC	IKU
1630.0	[m]	SWC	IKU
1660.0	[m]	SWC	IKU
1686.0	[m]	SWC	IKU
1710.0	[m]	SWC	IKU
1726.0	[m]	SWC	IKU
1745.0	[m]	SWC	IKU
1783.0	[m]	SWC	IKU
1800.0	[m]	SWC	IKU
1831.0	[m]	SWC	IKU
1855.0	[m]	SWC	IKU
1902.0	[m]	SWC	IKU
1915.5	[m]	SWC	IKU
1927.0	[m]	SWC	IKU
1937.0	[m]	SWC	IKU
1988.5	[m]	SWC	IKU

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
326	NORDLAND GP
505	HORDALAND GP
626	ROGALAND GP
626	BALDER FM
776	SELE FM
885	LISTA FM
968	SHETLAND GP
968	HARDRÅDE FM
978	UNDIFFERENTIATED
1128	CROMER KNOLL GP
1128	RØDBY FM
1223	ÅSGARD FM
1322	VIKING GP
1322	DRAUPNE FM
1435	HEATHER FM
1460	SOGNEFJORD FM
1625	HEATHER FM
1642	FENSEFJORD FM



1875	KROSSFJORD FM
1910	HEATHER FM
1931	BRENT GP
1975	DUNLIN GP
1975	DRAKE FM

Geochemical information

Document name	Document format	Document size [MB]
34_1	pdf	0.56
34_2	pdf	0.48

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

Document name	Document format	Document size [MB]
34_01_WDSS_General_Information	pdf	0.30
34_02_WDSS_completion_log	pdf	0.23

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

Document name	Document format	Document size [MB]
34_01_31_6_2_Completion_Report	pdf	18.98
34_02_31_6_2_Completion_log	pdf	1.29
34_03_31_6_2_Biostratigraphy	pdf	7.28
34_03_31_6_2_Biostratigraphy_Kerogen_Analysis	pdf	0.88
34_03_31_6_2_Formation_resistivity_factor	pdf	0.46
34_03_31_6_2_Mud_Reservoired_and_Headspace_gas_Geochemistry	pdf	0.66
34_03_31_6_2_Palynofacies_and_Palynostratigraphy_interval_1332-1846m	pdf	13.96
34_03_31_6_2_Source_rock_evaluation_of_well	pdf	6.31
34_04_31_6_2_Grain_size_distribution	pdf	6.12
34_04_31_6_2_Grain_size_distribution_analyses_2	pdf	2.46
34_04_31_6_2_Hydrocarbon_evaluation_of_core_samples	pdf	0.85





34 04 31 6 2 Routine Core Analysis	pdf	2.60
34 05 31 6 2 Completion Fluid Monitoring	pdf	9.45
34 05 31 6 2 Gauge performance report	pdf	0.17
34 05 31 6 2 Otis	pdf	25.98
34 05 31 6 2 Pressure Survey Report-Clean Up Flows	pdf	5.83
34 05 31 6 2 Pressure Survey Report-Gauge No.0063	pdf	8.92
34 05 31 6 2 Pressure Survey Report-Gauge No.0248-0063	pdf	5.38
34 05 31 6 2 Pressure Survey Report-Pre Gravel-Pack Test	pdf	6.17
34 05 31 6 2 Pressure Survey Report D.S. T No 1-PartII	pdf	6.40
34 05 31 6 2 Pressure temperature measurements CRG 82818	pdf	3.19
34 05 31 6 2 Pressure temperature measurements CRG 82819	pdf	3.03
34 05 31 6 2 SDP bottom hole pressure and temperature	pdf	17.60
34 05 31 6 2 SDP bottom hole survey	pdf	2.77
34 05 31 6 2 Troll Completion Fluids	pdf	6.41
34 05 31 6 2 Analyse av vannprover	pdf	1.07

Logs

Log type	Log top depth [m]	Log bottom depth [m]
ACBL VDL GR	326	902
ACBL VDL GR	515	1390
CDL CNL GR CAL	800	2020
CDL GR CAL	412	816
DIFL BHC AC GR SP	412	2020
DLL MLL GR	1390	2020
FMT	1390	2020
HR DIP	903	1400
HR DIP	1390	2020
SPECTRALOG	1390	2020
VSP	895	2020

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	412.0	36	412.0	0.00	LOT
SURF.COND.	20	801.0	26	818.0	1.56	LOT
INTERM.	13 3/8	902.0	17 1/2	920.0	1.76	LOT
INTERM.	9 5/8	1391.0	12 1/4	1400.0	1.61	LOT
LINER	7	2004.0	8 1/2	2020.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
410	1.04	45.0		WATER BASED	
480	1.08	41.0		WATER BASED	
900	1.30	47.0		WATER BASED	
1010	1.20	44.0		WATER BASED	
1470	1.25	46.0		WATER BASED	
2005	1.10	52.0	4.8	WATER BASED	07.08.1984
2075	1.10	63.0	6.2	WATER BASED	07.08.1984
2235	1.11	56.0	5.8	WATER BASED	07.08.1984
2235	1.11	57.0	4.8	WATER BASED	07.08.1984

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]
34 Formation pressure (Formasjonstrykk)	pdf	0.16

