General information

Wellbore name	31/6-6
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	TROLL
Discovery	31/6-1 (Troll Øst)
Well name	31/6-6
Seismic location	NH 8007-129 SP. 156
Production licence	085
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	416-L
Drilling facility	DEEPSEA BERGEN
Drilling days	69
Entered date	22.05.1984
Completed date	29.07.1984
Release date	29.07.1986
Publication date	23.05.2006
Purpose - planned	APPRAISAL
Reentry	NO
Content	GAS
Discovery wellbore	NO
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	INTRA HEATHER FM SS
2nd level with HC, age	LATE JURASSIC
2nd level with HC, formation	SOGNEFJORD FM
Kelly bushing elevation [m]	23.0
Water depth [m]	313.0
Total depth (MD) [m RKB]	2293.0
Final vertical depth (TVD) [m RKB]	2291.0
Bottom hole temperature [°C]	67
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	HEGRE GP
Geodetic datum	ED50
NS degrees	60° 41' 57.08'' N
EW degrees	3° 56' 4.61'' E
NS UTM [m]	6729804.22

EW UTM [m]	551028.07
UTM zone	31
NPDID wellbore	127

Wellbore history

General

Well 31/6-6 was drilled in the Troll East gas province. It was designed to test possible gas accumulations in the Late to Middle Jurassic sandstones and to test the quality of a reservoir siltstone in the Heather Formation.

Operations and results

Well 31/6-6 was spudded with the semi-submersible installation Deepsea Bergen on 22 May 1984 and drilled to TD 2293 m in the Late Triassic Hegre Group. No significant problem was encountered in the operations. The well was drilled with spud mud down to 716 m, with KCl/polymer mud from 716 m to 1771.5 m, and with pre-hydrated bentonite/CMC mud from 1771.5 m to TD.

The well encountered gas from top Heather reservoir at 1516 m to a GWC at 1568.5 m, 7.5 m into the Sognefjord Formation. No oil shows were reported from the well. Nine conventional cores were cut in the interval 1525 m to 1771.5 m in the Middle to Late Jurassic. FMT samples were taken at 1571.8 m and 1576.5 m in the Sognefjord Formation. Both contained formation water and mud filtrate.

The well was completed on 29 July 1984 as a gas appraisal.

Testing

Two drill stem tests were performed in the well. DST 1A tested 1562 m to 1567.5 m in the Sognefjord Formation sandstone. It produced maximum 779 x 10 Sm3 gas /day on a 64/64" choke. DST 2 from 1523 m to 1536 m in the Heather Formation siltstone showed a very low production rate, 10.7 x 10 Sm3/day. The reservoir temperature was 62.5 deg. C in DST 1A and 58 deg. C in DST 2.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
440.00	2290.00

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	1525.0	1544.9	[m]
2	1552.0	1575.9	[m]

3	1579.5	1607.4	[m]
4	1607.0	1633.5	[m]
5	1634.5	1662.3	[m]
6	1662.3	1689.4	[m]
7	1689.4	1716.4	[m]
8	1716.4	1744.6	[m]
9	1744.6	1772.6	[m]

Total core sample length [m]	236.2
Cores available for sampling?	YES

Core photos


1525-1530m


1530-1535m


1535-1540m


1540-1544m


1552-1557m


1557-1562m


1562-1567m


1567-1572m


1572-1575m


1579-1584m


1584-1589m


1589-1594m


1594-1599m


1599-1604m


1604-1607m


1607-1612m


1612-1617m


1617-1622m


1622-1627m


1627-1632m


1632-1633m


1634-1639m


1639-1644m


1644-1649m


1649-1654m


1654-1659m


1659-1662m


1662-1667m


1667-1672m


1672-1677m


1677-1682m


1682-1687m


1687-1689m


1689-1694m


1694-1699m


1699-1704m


1704-1709m


1709-1714m


1714-1716m


1716-1721m


1721-1726m


1726-1731m


1731-1736m


1736-1741m


1741-1744m


1744-1749m


1749-1754m


1754-1759m


1759-1764m


1764-1769m


1769-1772m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
837.0	[m]	SWC	LAP
1015.0	[m]	SWC	LAP
1242.0	[m]	SWC	LAP
1395.0	[m]	SWC	LAP
1410.0	[m]	SWC	LAP
1425.0	[m]	SWC	LAP
1447.0	[m]	SWC	STAT
1450.0	[m]	SWC	LAP
1455.0	[m]	SWC	STATO
1460.0	[m]	SWC	STATO
1471.0	[m]	SWC	LAP
1481.0	[m]	SWC	STATO
1485.5	[m]	SWC	STATO
1495.0	[m]	SWC	STATO
1498.5	[m]	SWC	LAP
1505.5	[m]	SWC	STATO
1510.0	[m]	SWC	LAP
1513.0	[m]	SWC	STATO
1516.0	[m]	SWC	STAT
1522.0	[m]	SWC	STATO
1525.1	[m]	C	OD
1526.5	[m]	C	OD
1529.5	[m]	C	OD
1532.8	[m]	C	OD
1536.0	[m]	C	OD
1537.7	[m]	C	OD
1544.0	[m]	C	OD
1547.0	[m]	SWC	LAP
1547.0	[m]	SWC	STAT

1552.0	[m]	C	OD
1552.1	[m]	C	OD
1555.6	[m]	C	OD
1556.5	[m]	C	OD
1558.5	[m]	C	OD
1560.5	[m]	C	OD
1561.7	[m]	C	OD
1562.2	[m]	C	OD
1562.5	[m]	C	OD
1562.9	[m]	C	OD
1563.5	[m]	C	OD
1564.0	[m]	C	OD
1566.1	[m]	C	OD
1567.5	[m]	C	OD
1571.1	[m]	C	OD
1572.8	[m]	C	OD
1575.9	[m]	C	OD
1577.0	[m]	SWC	LAP
1577.0	[m]	SWC	STAT
1579.5	[m]	C	OD
1580.0	[m]	C	OD
1582.6	[m]	C	OD
1583.1	[m]	C	OD
1585.0	[m]	C	OD
1585.6	[m]	C	OD
1589.6	[m]	C	OD
1591.2	[m]	C	OD
1595.6	[m]	C	OD
1596.1	[m]	C	OD
1596.5	[m]	C	OD
1602.5	[m]	C	OD
1604.5	[m]	C	OD
1605.5	[m]	C	OD
1607.0	[m]	C	OD
1607.5	[m]	C	OD
1612.4	[m]	C	OD
1613.2	[m]	C	OD
1613.3	[m]	C	OD
1615.5	[m]	C	OD
1618.3	[m]	C	OD

1620.1	[m]	C	OD
1621.7	[m]	C	OD
1624.0	[m]	C	OD
1624.5	[m]	C	OD
1624.6	[m]	C	OD
1627.0	[m]	C	OD
1631.4	[m]	C	OD
1636.0	[m]	C	OD
1636.5	[m]	C	OD
1643.6	[m]	C	OD
1644.5	[m]	C	OD
1647.1	[m]	C	OD
1650.5	[m]	C	OD
1654.5	[m]	C	OD
1654.6	[m]	C	OD
1655.0	[m]	C	OD
1658.8	[m]	C	OD
1658.9	[m]	C	OD
1662.9	[m]	C	OD
1669.3	[m]	C	OD
1669.5	[m]	C	OD
1672.6	[m]	C	OD
1672.8	[m]	C	OD
1675.4	[m]	C	OD
1680.2	[m]	C	OD
1684.5	[m]	C	OD
1687.8	[m]	C	OD
1694.9	[m]	C	OD
1698.0	[m]	C	OD
1706.4	[m]	C	OD
1707.6	[m]	C	OD
1711.0	[m]	C	OD
1713.8	[m]	C	OD
1718.4	[m]	C	OD
1725.4	[m]	C	OD
1727.4	[m]	C	OD
1734.4	[m]	C	OD
1735.4	[m]	C	OD
1738.0	[m]	C	OD
1741.4	[m]	C	OD

1745.8	[m]	C	OD
1753.7	[m]	C	OD
1754.0	[m]	C	OD
1762.9	[m]	C	OD
1763.6	[m]	C	OD
1767.8	[m]	C	OD
1768.6	[m]	C	OD
1775.0	[m]	SWC	LAP
1780.0	[m]	SWC	STAT
1795.0	[m]	SWC	STAT
1805.0	[m]	SWC	STAT
1810.0	[m]	SWC	LAP
1820.0	[m]	SWC	STAT
1835.0	[m]	SWC	STAT
1840.0	[m]	SWC	LAP
1850.0	[m]	SWC	STAT
1860.0	[m]	SWC	STAT
1870.0	[m]	SWC	LAP
1880.0	[m]	SWC	STAT
1890.0	[m]	SWC	STAT
1900.0	[m]	SWC	STAT
1900.0	[m]	SWC	LAP
1910.0	[m]	SWC	STAT
1925.0	[m]	SWC	STAT
1935.0	[m]	SWC	LAP
1995.0	[m]	SWC	LAP
2020.0	[m]	SWC	LAP
2035.0	[m]	SWC	LAP
2056.0	[m]	SWC	LAP
2111.8	[m]	SWC	LAP
2134.2	[m]	SWC	LAP
2184.0	[m]	SWC	LAP
2221.9	[m]	SWC	LAP
2241.0	[m]	SWC	LAP

Oil samples at the Norwegian Offshore Directorate

Test type	Bottle number	Top depth MD [m]	Bottom depth MD [m]	Fluid type	Test time	Samples available
DST	DST1A	0.00	0.00		15.07.1984 - 00:00	YES
PROD	TEST1A	0.00	0.00	CONDENSATE	15.07.1984 - 03:00	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
336	NORDLAND GP
531	HORDALAND GP
650	ROGALAND GP
650	BALDER FM
798	SELE FM
949	LISTA FM
1018	SHETLAND GP
1018	HARDRÅDE FM
1025	UNDIFFERENTIATED
1204	CROMER KNOLL GP
1204	RØDBY FM
1340	ÅSGARD FM
1392	VIKING GP
1392	DRAUPNE FM
1515	HEATHER FM
1561	SOGNEFJORD FM
1706	HEATHER FM
1719	FENSFJORD FM
1947	KROSSFJORD FM
1976	HEATHER FM
2008	BRENT GP
2045	DUNLIN GP
2045	DRAKE FM
2122	JOHANSEN FM
2193	AMUNDSEN FM
2225	STATFJORD GP
2277	HEGRE GP

Composite logs

Document name	Document format	Document size [MB]
127	pdf	0.36

Geochemical information

Document name	Document format	Document size [MB]
127_1	pdf	1.19
127_2	pdf	0.26
127_3	pdf	4.73

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

Document name	Document format	Document size [MB]
127_01_WDSS_General_Information	pdf	0.24
127_02_WDSS_completion_log	pdf	0.25

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

Document name	Document format	Document size [MB]
127_01_31_6_6_Completion_Report_and_Completion_log	pdf	23.66
127_03_31_6_6_Biostratigraphy_Kerogen_Analysis	pdf	8.01
127_03_31_6_6_Formation_Resistivity_Factor	pdf	0.39
127_03_31_6_6_Petrofysisk_evaluering	pdf	3.77
127_03_31_6_6_Reservoir_gas_geochemistry	pdf	0.34
127_04_31_6_6_Grain_Size_Distributation_Analysis	pdf	1.14
127_04_31_6_6_Routine_core_analyses	pdf	3.82
127_05_31_6_6_Compositional_Analysis_DST2	pdf	0.16
127_05_31_6_6_Pressure_Survey_Report_Test-1	pdf	6.33
127_05_31_6_6_Pressure_Survey_Report_Test-1A	pdf	12.62

127_05_31_6_6_Pressure_Survey_Report_Test-2_Run-1	pdf	11.08
127_05_31_6_6_Pressure_Temperature_Measurement	pdf	13.55
127_05_31_6_6_SDP_Pressure_Temperature_Survey-Test_2	pdf	5.05
127_05_31_6_6_The_Composition_of_Statoil_Gas_Well	pdf	1.33
127_03_31_6_6_En_Petrografisk_Undersokelse_av_Bronn	pdf	55.71

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	1563	1567	25.4
2.0	1520	1533	12.5

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				62
2.0		44.000	11.000	62

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0		7790			
2.0		107			

Logs

Log type	Log top depth [m]	Log bottom depth [m]
ACBL VDL GR	333	1440
ACBL VDL GR	1100	1750
CDL CNL GR CAL	1439	2286
CDL GR CAL	695	1455
DIFL BHC AC GR SP CAL	330	2286
DIPLOG	1443	2286
DLL MLL GR	1439	1768
FMT	1523	1601
VELOCITY	510	2275

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	423.0	36	425.0	0.00	LOT
SURF.COND.	20	699.0	26	723.0	1.53	LOT
INTERM.	13 3/8	1443.0	17 1/2	1460.0	1.55	LOT
INTERM.	9 5/8	1755.0	12 1/4	1771.5	1.49	LOT
OPEN HOLE		2290.0	8 1/2	2290.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
336	1.03	120.0		WATER BASED	24.05.1984
417	1.03	120.0		WATER BASED	24.05.1984
425	1.03	120.0		WATER BASED	24.05.1984
425	1.03	120.0		WATER BASED	25.05.1984
430	1.03	46.0		WATER BASED	28.05.1984
723	1.06	40.0		WATER BASED	28.05.1984
726	1.22	39.0		WATER BASED	01.06.1984
821	1.22	44.0		WATER BASED	01.06.1984
1099	1.23	46.0		WATER BASED	04.06.1984
1253	1.23	46.0		WATER BASED	04.06.1984
1372	1.23	48.0	19.0	WATER BASED	04.06.1984
1460	1.23	50.0	19.0	WATER BASED	05.06.1984
1460	1.23	51.0	18.0	WATER BASED	06.06.1984
1460	1.23	54.0	18.0	WATER BASED	07.06.1984
1460	1.23	52.0	19.0	WATER BASED	08.06.1984
1460	1.23	50.0	18.0	WATER BASED	12.06.1984
1460	1.23	50.0	19.0	WATER BASED	05.06.1984
1460	1.23	51.0	18.0	WATER BASED	06.06.1984
1460	1.23	54.0	18.0	WATER BASED	07.06.1984
1460	1.23	52.0	19.0	WATER BASED	08.06.1984
1460	1.23	50.0	18.0	WATER BASED	12.06.1984
1525	1.21	49.0	20.0	WATER BASED	12.06.1984
1552	1.21	52.0	17.0	WATER BASED	12.06.1984
1586	1.21	51.0	17.0	WATER BASED	12.06.1984

1627	1.21	52.0	16.0	WATER BASED	13.06.1984
1666	1.21	49.0	17.0	WATER BASED	14.06.1984
1712	1.21	49.0	17.0	WATER BASED	15.06.1984
1746	1.21	49.0	9.0	WATER BASED	18.06.1984
1755	1.10	53.0	7.0	WATER BASED	20.06.1984
1772	1.21	49.0	8.0	WATER BASED	18.06.1984
1897	1.10	49.0	8.0	WATER BASED	20.06.1984
2105	1.10	50.0	7.0	WATER BASED	22.06.1984
2229	1.10	48.0	13.0	WATER BASED	22.06.1984
2290	1.10	43.0	12.0	WATER BASED	25.06.1984
2290	1.10	41.0	11.0	WATER BASED	25.06.1984

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
0.00	[m]
1637.00	[m]
1568.00	[m]
1517.50	[m]
1513.80	[m]
1505.60	[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]
127_Formation_pressure_(Formasjonstrykk)	pdf	0.22