## General information

| | |
|---|---|
| Wellbore name | 31/5-2 |
| 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 | 31/5-2 |
| Seismic location | ST 8007 - 132  SP 884 |
| Production licence | 085 |
| Drilling operator | Saga Petroleum ASA |
| Drill permit | 391-L |
| Drilling facility | TREASURE SAGA |
| Drilling days | 38 |
| Entered date | 05.10.1983 |
| Completed date | 11.11.1983 |
| Release date | 11.11.1985 |
| Publication date | 18.12.2008 |
| 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] | 26.0 |
| Water depth [m] | 316.0 |
| Total depth (MD) [m RKB] | 2500.0 |
| Final vertical depth (TVD) [m RKB] | 2500.0 |
| Maximum inclination [°] | 2 |
| Bottom hole temperature [°C] | 87 |
| Oldest penetrated age | TRIASSIC |
| Oldest penetrated formation | HEGRE GP |
| Geodetic datum | ED50 |
| NS degrees | 60° 43' 33.29'' N |
| EW degrees | 3° 32' 52.74'' E |
| NS UTM [m] | 6732542.72 |
| EW UTM [m] | 529894.43 |

| | |
|---|---|
| UTM zone | 31 |
| NPDID wellbore | 32 |

## Wellbore history

### General

Well 31/5-2 is a replacement well for well 3/5-1 in the southern part of the Troll West Field. Well 31/5-1 was terminated at 860 m and junked due to an incident where the BOP and riser was lost. Due to this, the rig left the location and went to Bergen for repairs. It returned to the location five days later for drilling 31/5-2. The purpose of the well was to test the reservoir qualities, the oil/gas columns, and the hydrocarbon/water contact in the area.

### Operations and results

Appraisal well 31/5-2 was spudded with the semi-submersible installation Treasure Saga on 5 October 1983 and was drilled to TD at 2500 m in the Late Triassic Hegre Group. A total of 5 days were lost on setting the 18 3/4" x 9 5/8" seal-assembly, otherwise no significant technical problems occurred in the operations. The well was drilled with seawater and hi-vis pills down to 860 m and with KCl/polymer mud from 860 m to TD.

Well 31/5-2 penetrated top reservoir at 1521 m. The interval 1521 - 1569 m was gas bearing with 30% porosity and 15% water saturation. The interval from 1569 - 1582 m was oil bearing with 27% porosity and 30% water saturations. These intervals were the only hydrocarbon bearing intervals in the well. Between 1569 and 1582 m there were good shows in the cores. They showed brown oil stain, golden-yellow fluorescence and instant cloudy, milky, white cut. There was strong hydrocarbon odour.

A total of six cores were taken in the interval 1505.0 -1599.9 m, covering the basal 16 m of the Draupne Formation and the upper 78 m of the Sognefjord Formation. The core recovery was 81%. FMT segregated fluid samples were taken at 1563 m (gas), 1575 m (oil at 135 bar), and 1581 (oil at 90 bar).

After surveying, logging and sidewall coring, the well was plugged back to 1902 m and suspended on 11 November 1984. The well was to be re-entered at a later stage for testing.

### Testing

No drill stem test was performed

## Cuttings at the Norwegian Offshore Directorate

| Cutting sample, top depth [m] | Cutting samples, bottom depth [m] |
|---|---|
| 870.00 | 2500.00 |

| | |
|---|---|
| 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 | 1505.0 | 1505.5 | [m ] |
| 2 | 1506.8 | 1521.9 | [m ] |
| 3 | 1524.8 | 1542.5 | [m ] |
| 4 | 1543.2 | 1570.4 | [m ] |
| 5 | 1570.5 | 1588.3 | [m ] |
| 6 | 1589.0 | 1601.4 | [m ] |

| | |
|---|---|
| Total core sample length [m] | 90.8 |
| Cores available for sampling? | YES |

## Core photos


1505-1506m


1506-1510m


1511-1515m


1516-1520m


1521-1522m


1524-1529m


1529-1534m


1534-1539m


1539-1542m


1543-1547m


1548-1553m


1553-1558m


1558-1563m


1563-1568m


1568-1570m











1570-1575m 1575-1580m 1580-1585m 1585-1588m 1589-1594m


1594-1599m


1599-1601m

**Palynological slides at the Norwegian Offshore Directorate**

| Sample depth | Depth unit | Sample type | Laboratory |
|---|---|---|---|
| 965.0 | [m] | SWC | IKU |
| 1182.0 | [m] | SWC | IKU |
| 1220.0 | [m] | SWC | IKU |
| 1250.0 | [m] | SWC | IKU |
| 1280.0 | [m] | SWC | IKU |
| 1290.0 | [m] | SWC | IKU |
| 1307.5 | [m] | SWC | IKU |
| 1421.5 | [m] | SWC | IKU |
| 1438.0 | [m] | SWC | IKU |
| 1465.0 | [m] | SWC | IKU |
| 1480.0 | [m] | SWC | IKU |
| 1485.0 | [m] | SWC | IKU |
| 1492.0 | [m] | SWC | IKU |
| 1499.0 | [m] | SWC | IKU |
| 1502.0 | [m] | SWC | IKU |
| 1604.0 | [m] | SWC | IKU |
| 1615.0 | [m] | SWC | IKU |
| 1633.0 | [m] | SWC | IKU |
| 1637.0 | [m] | SWC | IKU |
| 1645.0 | [m] | SWC | IKU |
| 1653.0 | [m] | SWC | IKU |
| 1665.0 | [m] | SWC | IKU |
| 1673.0 | [m] | SWC | IKU |
| 1682.0 | [m] | SWC | IKU |
| 1687.0 | [m] | SWC | IKU |
| 1693.0 | [m] | SWC | IKU |
| 1708.0 | [m] | SWC | IKU |

| | | | |
|---|---|---|---|
| 1717.0 | [m] | SWC | IKU |
| 1727.0 | [m] | SWC | IKU |
| 1737.0 | [m] | SWC | IKU |
| 1748.0 | [m] | SWC | IKU |
| 1753.0 | [m] | SWC | IKU |
| 1763.0 | [m] | SWC | IKU |
| 1774.0 | [m] | SWC | IKU |
| 1795.0 | [m] | SWC | IKU |
| 1806.0 | [m] | SWC | IKU |
| 1822.0 | [m] | SWC | IKU |
| 1825.0 | [m] | SWC | IKU |
| 1838.0 | [m] | SWC | IKU |
| 1853.0 | [m] | SWC | IKU |
| 1869.0 | [m] | SWC | IKU |
| 1874.0 | [m] | SWC | IKU |
| 1910.0 | [m] | SWC | IKU |
| 1917.0 | [m] | SWC | IKU |
| 1920.0 | [m] | SWC | IKU |
| 1935.0 | [m] | SWC | IKU |
| 1940.0 | [m] | SWC | IKU |
| 1948.0 | [m] | SWC | IKU |
| 1977.0 | [m] | SWC | IKU |
| 1982.0 | [m] | SWC | IKU |
| 1986.5 | [m] | SWC | IKU |
| 2011.0 | [m] | SWC | IKU |
| 2039.0 | [m] | SWC | IKU |
| 2053.0 | [m] | SWC | IKU |
| 2107.0 | [m] | SWC | IKU |
| 2115.0 | [m] | SWC | IKU |
| 2126.0 | [m] | SWC | IKU |
| 2135.0 | [m] | SWC | IKU |
| 2144.0 | [m] | SWC | IKU |
| 2153.0 | [m] | SWC | IKU |
| 2163.0 | [m] | SWC | IKU |
| 2171.0 | [m] | SWC | IKU |
| 2175.0 | [m] | SWC | IKU |
| 2186.0 | [m] | SWC | IKU |
| 2197.0 | [m] | SWC | IKU |
| 2205.0 | [m] | SWC | IKU |
| 2230.0 | [m] | SWC | IKU |

| | | | |
|---|---|---|---|
| 2333.0 | [m] | SWC | IKU |
| 2340.0 | [m] | SWC | IKU |
| 2358.0 | [m] | SWC | IKU |
| 2369.0 | [m] | SWC | IKU |

## Lithostratigraphy

| Top depth [mMD RKB] | Lithostrat. unit |
|---|---|
| 342 | NORDLAND GP |
| 670 | HORDALAND GP |
| 1210 | ROGALAND GP |
| 1210 | BALDER FM |
| 1286 | SELE FM |
| 1382 | LISTA FM |
| 1432 | SHETLAND GP |
| 1432 | HARDRÅDE FM |
| 1441 | UNDIFFERENTIATED |
| 1450 | CROMER KNOLL GP |
| 1450 | RØDBY FM |
| 1465 | ÅSGARD FM |
| 1475 | VIKING GP |
| 1475 | DRAUPNE FM |
| 1516 | INTRA DRAUPNE FM SS |
| 1521 | SOGNEFJORD FM |
| 1642 | HEATHER FM |
| 1674 | FENSFJORD FM |
| 1826 | KROSSFJORD FM |
| 1908 | HEATHER FM |
| 1957 | BRENT GP |
| 2036 | DUNLIN GP |
| 2036 | DRAKE FM |
| 2176 | COOK FM |
| 2194 | AMUNDSEN FM |
| 2225 | JOHANSEN FM |
| 2323 | AMUNDSEN FM |
| 2336 | STATFJORD GP |
| 2393 | HEGRE GP |

## Geochemical information

| Document name | Document format | Document size [MB] |
|---|---|---|
| 32_1 | pdf | 0.58 |
| 32_2 | pdf | 0.33 |
| 32_3 | pdf | 3.50 |

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

| Document name | Document format | Document size [MB] |
|---|---|---|
| 32_01_31_5_2_Completion_Report_and_Completionlog | pdf | 17.02 |
| 32_02_31_5_2_Test_report | pdf | 3.90 |

## Logs

| Log type | Log top depth [m] | Log bottom depth [m] |
|---|---|---|
| ACBL | 793 | 1428 |
| ACBL | 1250 | 1965 |
| CDL CNL GR CAL | 848 | 2492 |
| DIFL BHC LSBHC ACL GR | 848 | 2495 |
| DLL MLL GR | 1415 | 1962 |
| FMT | 1415 | 1964 |
| FMT | 1952 | 2498 |
| HRD | 1415 | 2488 |
| SPECTRALOG | 1415 | 1955 |
| TEMP | 821 | 1382 |

## 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 | 415.0 | 36 | 418.0 | 0.00 | LOT |
| SURF.COND. | 20 | 848.0 | 26 | 860.0 | 1.53 | LOT |
| INTERM. | 13 3/8 | 1415.0 | 17 1/2 | 1430.0 | 1.63 | LOT |
| INTERM. | 9 5/8 | 1952.0 | 12 1/4 | 1965.0 | 1.63 | LOT |
| OPEN HOLE | | 2500.0 | 8 1/2 | 2500.0 | 0.00 | LOT |

## Drilling mud

| Depth MD [m] | Mud weight [g/cm3] | Visc. [mPa.s] | Yield point [Pa] | Mud type | Date measured |
|---|---|---|---|---|---|
| 894 | 1.10 | 17.0 | 19.0 | WATER BASED | |
| 1277 | 1.34 | 20.0 | 20.0 | WATER BASED | |
| 1435 | 1.27 | 16.0 | 19.0 | WATER BASED | |
| 2008 | 1.23 | 13.0 | 16.0 | WATER BASED | |
| 2088 | 1.21 | 14.0 | 16.0 | WATER BASED | |
| 2350 | 1.17 | 13.0 | 16.0 | WATER BASED | |
| 2467 | 1.20 | 11.0 | 11.0 | 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] |
|---|---|---|
| 32_Formation_pressure_(Formasjonstrykk) | pdf | 0.22 |