## General information

| | |
|---|---|
| Wellbore name | 35/9-1 |
| Type | EXPLORATION |
| Purpose | WILDCAT |
| Status | SUSPENDED |
| Factmaps in new window | link to map |
| Main area | NORTH SEA |
| Field | GJØA |
| Discovery | 35/9-1 Gjøa |
| Well name | 35/9-1 |
| Seismic location | DGM 1-86-0473 3D CDP 1850 |
| Production licence | 153 |
| Drilling operator | Norsk Hydro Produksjon AS |
| Drill permit | 603-L |
| Drilling facility | POLAR PIONEER |
| Drilling days | 37 |
| Entered date | 01.04.1989 |
| Completed date | 07.05.1989 |
| Release date | 07.05.1991 |
| Publication date | 15.12.2006 |
| Purpose - planned | WILDCAT |
| Reentry | NO |
| Content | OIL/GAS |
| Discovery wellbore | YES |
| 1st level with HC, age | LATE JURASSIC |
| 1st level with HC, formation | VIKING GP |
| 2nd level with HC, age | MIDDLE JURASSIC |
| 2nd level with HC, formation | BRENT GP |
| 3rd level with HC, age | EARLY JURASSIC |
| 3rd level with HC, formation | DUNLIN GP |
| Kelly bushing elevation [m] | 23.0 |
| Water depth [m] | 361.0 |
| Total depth (MD) [m RKB] | 2350.0 |
| Final vertical depth (TVD) [m RKB] | 2348.0 |
| Maximum inclination [°] | 5.5 |
| Bottom hole temperature [°C] | 60 |
| Oldest penetrated age | PRE-DEVONIAN |
| Oldest penetrated formation | BASEMENT |
| Geodetic datum | ED50 |

| | |
|---|---|
| NS degrees | 61° 23' 7.95'' N |
| EW degrees | 3° 59' 3.72'' E |
| NS UTM [m] | 6806290.80 |
| EW UTM [m] | 552595.04 |
| UTM zone | 31 |
| NPDID wellbore | 1375 |

## Wellbore history

### General

Well 35/9-1 was drilled on the M ål øy Slope north of the Horda Platform. The drilled "A-structure" is an asymmetric horst with the larger fault to the east, antithetic to the Øygarden fault zone. The primary objective of well 35/9-1 was to test the hydrocarbon potential and reservoir quality in Middle Jurassic sandstones of the Brent Group. Secondary objective was to test the hydrocarbon potential and reservoir quality in the Dunlin Group and Statfjord Formation. A third objective was to test the prospectivity in Cretaceous fans, building out from the southeast. The well would also test the cap rock properties as well as the possibility of any reservoir rocks in the Late Jurassic. The commitment was to drill to 4000 m, or into Triassic rocks whatever came first. No shallow gas was predicted at the well location.

### Operations and results

Wildcat well 35/9-1 was spudded with the semi-submersible installation Polar Pioneer on 1 April 1989 and drilled to TD at 2350 m in crystalline basement rock. In the 17 1/2" section the mud system became heavily contaminated from cement after the 13 3/8" casing had parted between 1067 m and 1083 m. To cure this the 9 5/8" casing was run and cemented inside the 13 3/8" casing. Otherwise no significant problems were encountered in the operations. The well was drilled with seawater and hi-vis pills down to 815 m and with KCl/polymer mud from 815 m to TD.

No sands were encountered within the Early Cretaceous sequence. The Jurassic was found gas bearing from 2036.5 m in the Viking Group, through the Brent Group, and with a somewhat uncertain gas/oil contact at 2282 m in the Early Jurassic Dunlin Group. An oil-down-to contact was found at 2301 m in the Dunlin Group. The reservoir in the Viking Group consisted of interbedded shales and sandstones of the Fensfjord, Krossfjord,and Heather Formations. RFT tests showed that there is no pressure communication between the Brent Group and the Viking Group. No Triassic succession was present at the well location; the Dunlin Group (Pliensbachian age sediments) rested directly on metamorphic basement.

Four conventional cores were cut in the Viking Group and another four in the Brent and Dunlin Groups and ca 2 m into the basement. A segregated RFT sample was taken at 2282.5 m. It recovered 5 litres of oil in the 2 3/4 Gallon chamber and 2.3 litres of oil in the 1 Gallon chamber, in addition to some gas and water/filtrate.

The well was prepared for testing. It was suspended as an oil and gas discovery on 7 May 1989, and the rig headed for Stavanger for TOGI Fjordtest. Well testing was postponed for a re-entry after the TOGI assignment.

### Testing

No drill stem test was performed

### Cuttings at the Norwegian Offshore Directorate

| Cutting sample, top depth [m] | Cutting samples, bottom depth [m] |
|---|---|
| 820.00 | 2350.00 |

| | |
|---|---|
| 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 | 2040.0 | 2065.6 | [m ] |
| 2 | 2094.0 | 2102.0 | [m ] |
| 3 | 2107.0 | 2137.7 | [m ] |
| 4 | 2138.0 | 2150.0 | [m ] |
| 5 | 2225.0 | 2238.0 | [m ] |
| 6 | 2242.0 | 2270.4 | [m ] |
| 7 | 2270.4 | 2305.0 | [m ] |
| 8 | 2305.0 | 2316.5 | [m ] |

| | |
|---|---|
| Total core sample length [m] | 163.8 |
| Cores available for sampling? | YES |

### Core photos


2040-2045m


2045-2050m


2050-2055m


2055-2060m


2060-2065m


2065-2066m


2094-2099m


2099-2102m


2102-2107m


2107-2112m


2112-2117m


2117-2122m


2122-2127m


2127-2132m


2132-2137m


2137-2138m


2138-2143m


2143-2148m


2148-2150m


2225-2230m


2230-2235m


2235-2238m


2242-2247m


2247-2252m


2252-2257m


2257-2262m


2262-2267m


2267-2270m


2270-2275m


2275-2280m


2280-2285m


2285-2290m


2290-2295m


2295-2300m


2300-2305m


2305-2306m


2305-2310m


2310-2315m


2315-2316m

**Palynological slides at the Norwegian Offshore Directorate**

| Sample depth | Depth unit | Sample type | Laboratory |
|---|---|---|---|
| 837.0 | [m] | SWC | HYDRO |
| 979.5 | [m] | SWC | HYDRO |
| 1116.5 | [m] | SWC | HYDRO |
| 1227.5 | [m] | SWC | HYDRO |
| 1238.0 | [m] | SWC | HYDRO |
| 1244.0 | [m] | SWC | HYDRO |
| 1258.0 | [m] | SWC | HYDRO |
| 1300.0 | [m] | SWC | HYDRO |
| 1404.5 | [m] | SWC | HYDRO |
| 1513.0 | [m] | SWC | HYDRO |
| 1702.0 | [m] | SWC | HYDRO |
| 1719.0 | [m] | SWC | HYDRO |
| 1737.0 | [m] | SWC | HYDRO |
| 1757.0 | [m] | SWC | HYDRO |
| 1787.5 | [m] | SWC | HYDRO |
| 1800.0 | [m] | SWC | HYDRO |
| 1812.5 | [m] | SWC | HYDRO |
| 1831.5 | [m] | SWC | HYDRO |
| 1842.0 | [m] | SWC | HYDRO |
| 1864.0 | [m] | SWC | HYDRO |
| 1876.0 | [m] | SWC | HYDRO |
| 1896.0 | [m] | SWC | HYDRO |
| 1920.0 | [m] | SWC | HYDRO |
| 1955.0 | [m] | SWC | HYDRO |
| 1965.0 | [m] | SWC | HYDRO |
| 1977.0 | [m] | SWC | HYDRO |
| 1983.0 | [m] | SWC | HYDRO |
| 1987.5 | [m] | SWC | HYDRO |
| 1992.0 | [m] | SWC | HYDRO |
| 2001.0 | [m] | SWC | HYDRO |
| 2006.0 | [m] | SWC | HYDRO |
| 2015.0 | [m] | SWC | HYDRO |
| 2019.5 | [m] | SWC | HYDRO |
| 2024.0 | [m] | SWC | HYDRO |
| 2027.0 | [m] | SWC | HYDRO |
| 2032.5 | [m] | SWC | HYDRO |

| | | | |
|---|---|---|---|
| 2037.5 | [m] | SWC | HYDRO |
| 2040.0 | [m] | SWC | HYDRO |
| 2040.0 | [m] | C | HYDRO |
| 2041.4 | [m] | C | HYDRO |
| 2042.4 | [m] | C | HYDRO |
| 2043.6 | [m] | C | HYDRO |
| 2044.1 | [m] | C | HYDRO |
| 2045.5 | [m] | C | C RO |
| 2046.1 | [m] | C | HYDRO |
| 2046.6 | [m] | C | HYDRO |
| 2049.7 | [m] | C | HYDRO |
| 2052.4 | [m] | C | HYDRO |
| 2053.9 | [m] | C | HYDRO |
| 2054.5 | [m] | C | HYDRO |
| 2055.5 | [m] | C | HYDRO |
| 2056.1 | [m] | C | HYDRO |
| 2058.7 | [m] | C | HYDRO |
| 2060.5 | [m] | C | HYDRO |
| 2065.6 | [m] | C | HYDRO |
| 2073.0 | [m] | SWC | HYDRO |
| 2081.0 | [m] | SWC | HYDRO |
| 2086.0 | [m] | SWC | HYDRO |
| 2092.0 | [m] | SWC | HYDRO |
| 2094.2 | [m] | C | HYDRO |
| 2096.6 | [m] | C | HYDRO |
| 2108.3 | [m] | C | HYDRO |
| 2126.4 | [m] | C | HYDRO |
| 2132.2 | [m] | C | HYDRO |
| 2137.1 | [m] | C | HYDRO |
| 2140.2 | [m] | C | HYDRO |
| 2146.8 | [m] | C | HYDRO |
| 2150.6 | [m] | C | HYDRO |
| 2157.5 | [m] | SWC | HYDRO |
| 2167.5 | [m] | SWC | HYDRO |
| 2177.0 | [m] | SWC | HYDRO |
| 2187.0 | [m] | SWC | HYDRO |
| 2194.5 | [m] | SWC | HYDRO |
| 2200.0 | [m] | SWC | HYDRO |
| 2212.5 | [m] | SWC | HYDRO |
| 2219.0 | [m] | SWC | HYDRO |

| | | | |
|---|---|---|---|
| 2224.5 | [m] | SWC | HYDRO |
| 2230.9 | [m] | C | HYDRO |
| 2247.0 | [m] | C | HYDRO |
| 2248.4 | [m] | C | HYDRO |
| 2249.1 | [m] | C | HYDRO |
| 2250.2 | [m] | C | HYDRO |
| 2251.4 | [m] | C | HYDRO |
| 2252.4 | [m] | C | HYDRO |
| 2254.4 | [m] | C | HYDRO |
| 2259.0 | [m] | C | HYDRO |
| 2263.4 | [m] | C | HYDRO |
| 2268.9 | [m] | C | HYDRO |
| 2272.6 | [m] | C | HYDRO |
| 2274.8 | [m] | C | HYDRO |
| 2283.1 | [m] | C | HYDRO |
| 2290.0 | [m] | C | HYDRO |
| 2292.9 | [m] | C | HYDRO |
| 2293.9 | [m] | C | HYDRO |
| 2297.5 | [m] | C | HYDRO |
| 2303.6 | [m] | C | HYDRO |
| 2308.6 | [m] | C | HYDRO |
| 2310.0 | [m] | C | HYDRO |
| 2310.9 | [m] | C | HYDRO |

**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 | TEST1 | 2285.00 | 2291.80 | | 12.07.1989 - 00:00 | YES |
| DST | DST1 | 0.00 | 0.00 | | 12.07.1989 - 00:00 | YES |
| DST | | 2225.40 | 2249.40 | | | YES |
| DST | DST2 | 0.00 | 0.00 | CONDENSATE | 15.07.1989 - 00:00 | YES |
| DST | | 2100.30 | 2138.30 | | | YES |
| DST | TEST3 | 0.00 | 0.00 | CONDENSATE | 20.07.1989 - 00:00 | YES |

## Lithostratigraphy

| Top depth [mMD RKB] | Lithostrat. unit |
|---|---|
| 384 | NORDLAND GP |
| 588 | ROGALAND GP |
| 588 | BALDER FM |
| 620 | SELE FM |
| 658 | LISTA FM |
| 823 | NO FORMAL NAME |
| 863 | LISTA FM |
| 1211 | VÅLE FM |
| 1229 | SHETLAND GP |
| 1229 | JORSALFARE FM |
| 1280 | KYRRE FM |
| 1940 | SVARTE FM |
| 1967 | CROMER KNOLL GP |
| 1967 | RØDBY FM |
| 2013 | ÅSGARD FM |
| 2037 | VIKING GP |
| 2037 | FENSFJORD FM |
| 2099 | KROSSFJORD FM |
| 2140 | HEATHER FM |
| 2225 | BRENT GP |
| 2225 | NESS FM |
| 2250 | RANNOCH FM |
| 2267 | DUNLIN GP |
| 2312 | STATFJORD GP |
| 2314 | BASEMENT |

## Geochemical information

| Document name | Document format | Document size [MB] |
|---|---|---|
| 1375_1 | pdf | 1.00 |

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

| Document name | Document format | Document size [MB] |
|---|---|---|
| 1375_01_WDSS_General_Information | pdf | 0.39 |
| 1375_02_WDSS_completion_log | pdf | 0.15 |

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

| Document name | Document format | Document size [MB] |
|---|---|---|
| 1375_35_9_1_COMPLETION_REPORT_AND_LOG | pdf | 20.44 |

**Logs**

| Log type | Log top depth [m] | Log bottom depth [m] |
|---|---|---|
| CBL VDL GR | 700 | 2312 |
| CBL VDL GR | 1750 | 2314 |
| CST | 837 | 1920 |
| CST | 1955 | 2224 |
| DIL BHC GR SP | 800 | 1924 |
| DIL LSS GR SP | 1940 | 2349 |
| DLL MSFL | 1940 | 2348 |
| LSS GR CAL | 800 | 1703 |
| MWD - GR RES DIR | 411 | 2225 |
| MWD - GR RES DIR | 2303 | 2350 |
| NGL CNL LDL | 1940 | 2351 |
| RFT AMS | 2038 | 2300 |
| SHDT | 1940 | 2352 |
| VSP | 800 | 2300 |

**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 | 436.0 | 36 | 456.0 | 0.00 | LOT |
| INTERM. | 20 | 799.0 | 26 | 815.0 | 1.33 | LOT |
| INTERM. | 9 5/8 | 1917.0 | 12 1/4 | 1942.0 | 1.79 | LOT |
| INTERM. | 13 3/8 | 1924.0 | 17 1/2 | 1942.0 | 0.00 | LOT |
| LINER | 7 | 2348.0 | 8 1/2 | 2350.0 | 0.00 | LOT |

**Drilling mud**

| Depth MD [m] | Mud weight [g/cm3] | Visc. [mPa.s] | Yield point [Pa] | Mud type | Date measured |
|---|---|---|---|---|---|
| 437 | 1.25 | 18.0 | 15.0 | WATER BASED | 26.07.1989 |
| 456 | 1.05 | | | WATER BASED | 03.04.1989 |
| 466 | 1.05 | | | WATER BASED | 03.04.1989 |
| 693 | 1.05 | | | WATER BASED | 04.04.1989 |
| 815 | 1.08 | 21.0 | 8.0 | WATER BASED | 06.04.1989 |
| 815 | 1.05 | | | WATER BASED | 05.04.1989 |
| 815 | 1.08 | 21.0 | 8.0 | WATER BASED | 10.04.1989 |
| 815 | 1.08 | 21.0 | 8.0 | WATER BASED | 07.04.1989 |
| 886 | 1.10 | 13.0 | 5.0 | WATER BASED | 10.04.1989 |
| 1335 | 1.20 | 18.0 | 7.0 | WATER BASED | 10.04.1989 |
| 1605 | 1.20 | 17.0 | 8.0 | WATER BASED | 12.04.1989 |
| 1715 | 1.25 | 18.0 | 15.0 | WATER BASED | 26.07.1989 |
| 1739 | 1.20 | 16.0 | 7.0 | WATER BASED | 12.04.1989 |
| 1767 | 1.25 | 10.0 | 5.0 | WATER BASED | 05.07.1989 |
| 1850 | 1.22 | 17.0 | 8.0 | WATER BASED | 13.04.1989 |
| 1942 | 1.25 | 17.0 | 8.0 | WATER BASED | 14.04.1989 |
| 1942 | 1.25 | 16.0 | 7.0 | WATER BASED | 17.04.1989 |
| 1942 | 1.25 | 13.0 | 5.0 | WATER BASED | 17.04.1989 |
| 1942 | 1.25 | 17.0 | 8.0 | WATER BASED | 17.04.1989 |
| 1942 | 1.25 | 13.0 | 5.0 | WATER BASED | 17.04.1989 |
| 1942 | 1.25 | 17.0 | 8.0 | WATER BASED | 17.04.1989 |
| 1942 | 1.25 | 16.0 | 7.0 | WATER BASED | 17.04.1989 |
| 1942 | 1.25 | 13.0 | 5.0 | WATER BASED | 17.04.1989 |
| 1942 | 1.25 | 15.0 | 6.0 | WATER BASED | 18.04.1989 |
| 1942 | 1.25 | 14.0 | 6.0 | WATER BASED | 19.04.1989 |
| 1942 | 1.25 | 17.0 | 8.0 | WATER BASED | 17.04.1989 |
| 1942 | 1.25 | 16.0 | 7.0 | WATER BASED | 17.04.1989 |
| 1945 | 1.25 | 12.0 | 6.0 | WATER BASED | 20.04.1989 |
| 1945 | 1.25 | 12.0 | 6.0 | WATER BASED | 21.04.1989 |
| 1948 | 1.25 | 14.0 | 6.0 | WATER BASED | 24.04.1989 |
| 2040 | 1.25 | 24.0 | 6.0 | WATER BASED | 24.04.1989 |
| 2081 | 1.25 | 22.0 | 9.0 | WATER BASED | 24.04.1989 |
| 2120 | 1.28 | 23.0 | 8.0 | WATER BASED | 26.04.1989 |
| 2144 | 1.28 | 20.0 | 6.0 | WATER BASED | 26.04.1989 |

| | | | | | |
|---|---|---|---|---|---|
| 2218 | 1.28 | 23.0 | 8.0 | WATER BASED | 27.04.1989 |
| 2224 | 1.25 | 19.0 | 18.0 | WATER BASED | 19.07.1989 |
| 2224 | 1.25 | 18.0 | 17.0 | WATER BASED | 21.07.1989 |
| 2224 | 1.25 | 18.0 | 18.0 | WATER BASED | 24.07.1989 |
| 2224 | 1.25 | 18.0 | 15.0 | WATER BASED | 24.07.1989 |
| 2224 | 1.25 | 18.0 | 17.0 | WATER BASED | 20.07.1989 |
| 2224 | 1.25 | 18.0 | 18.0 | WATER BASED | 24.07.1989 |
| 2241 | 1.28 | 21.0 | 7.0 | WATER BASED | 28.04.1989 |
| 2269 | 1.28 | 24.0 | 8.0 | WATER BASED | 02.05.1989 |
| 2280 | 1.25 | 18.0 | 16.0 | WATER BASED | 14.07.1989 |
| 2280 | 1.25 | 18.0 | 16.0 | WATER BASED | 17.07.1989 |
| 2280 | 1.25 | 19.0 | 16.0 | WATER BASED | 17.07.1989 |
| 2280 | 1.25 | 19.0 | 16.0 | WATER BASED | 17.07.1989 |
| 2280 | 1.25 | 18.0 | 15.0 | WATER BASED | 18.07.1989 |
| 2306 | 1.28 | 24.0 | 7.0 | WATER BASED | 02.05.1989 |
| 2308 | 1.25 | 15.0 | 10.0 | WATER BASED | 10.07.1989 |
| 2308 | 1.25 | 15.0 | 10.0 | WATER BASED | 10.07.1989 |
| 2308 | 1.26 | | | WATER BASED | 10.07.1989 |
| 2308 | 1.26 | | | WATER BASED | 11.07.1989 |
| 2308 | 1.25 | 18.0 | 9.0 | WATER BASED | 12.07.1989 |
| 2308 | 1.25 | 16.0 | 8.0 | WATER BASED | 13.07.1989 |
| 2308 | 1.25 | 15.0 | 10.0 | WATER BASED | 07.07.1989 |
| 2313 | 1.28 | 25.0 | 11.0 | WATER BASED | 08.05.1989 |
| 2316 | 1.28 | 22.0 | 6.0 | WATER BASED | 02.05.1989 |
| 2319 | 1.28 | 23.0 | 8.0 | WATER BASED | 08.05.1989 |
| 2350 | 1.28 | 24.0 | 8.0 | WATER BASED | 03.05.1989 |
| 2350 | 1.28 | 24.0 | 8.0 | WATER BASED | 02.05.1989 |
| 2350 | 1.28 | 23.0 | 8.0 | WATER BASED | 05.05.1989 |
| 2350 | 1.28 | 24.0 | 9.0 | WATER BASED | 05.05.1989 |

**Thin sections at the Norwegian Offshore Directorate**

| Depth | Unit |
|---|---|
| 2136.21 | [m ] |
| 2134.10 | [m ] |
| 2126.75 | [m ] |
| 2123.46 | [m ] |
| 2118.76 | [m ] |
| 2115.45 | [m ] |
| 2112.00 | [m ] |

| | |
|---|---|
| 2108.71 | [m ] |
| 2102.12 | [m ] |
| 2100.50 | [m ] |
| 2053.50 | [m ] |
| 2266.50 | [m ] |
| 2269.75 | [m ] |
| 2280.50 | [m ] |
| 2288.50 | [m ] |
| 2289.22 | [m ] |
| 2280.73 | [m ] |
| 2270.57 | [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] |
|---|---|---|
| 1375_Formation_pressure_(Formasjonstrykk) | pdf | 0.21 |