

**General information**

|                                    |                                       |
|------------------------------------|---------------------------------------|
| Wellbore name                      | 15/9-23                               |
| Type                               | EXPLORATION                           |
| Purpose                            | WILDCAT                               |
| Status                             | P&A                                   |
| Press release                      | <a href="#">link to press release</a> |
| Factmaps in new window             | <a href="#">link to map</a>           |
| Main area                          | NORTH SEA                             |
| Well name                          | 15/9-23                               |
| Seismic location                   | PR07M01 xline:10216 & inline 1486     |
| Production licence                 | <a href="#">408</a>                   |
| Drilling operator                  | Det norske oljeselskap ASA (old)      |
| Drill permit                       | 1267-L                                |
| Drilling facility                  | <a href="#">BREDFORD DOLPHIN</a>      |
| Drilling days                      | 47                                    |
| Entered date                       | 18.11.2009                            |
| Completed date                     | 03.01.2010                            |
| Release date                       | 31.12.2010                            |
| Publication date                   | 15.06.2011                            |
| Purpose - planned                  | WILDCAT                               |
| Reentry                            | NO                                    |
| Content                            | DRY                                   |
| Discovery wellbore                 | NO                                    |
| Kelly bushing elevation [m]        | 25.0                                  |
| Water depth [m]                    | 84.0                                  |
| Total depth (MD) [m RKB]           | 3225.0                                |
| Final vertical depth (TVD) [m RKB] | 3225.0                                |
| Maximum inclination [°]            | 2.3                                   |
| Oldest penetrated age              | LATE TRIASSIC                         |
| Oldest penetrated formation        | SKAGERRAK FM                          |
| Geodetic datum                     | ED50                                  |
| NS degrees                         | 58° 16' 29.1" N                       |
| EW degrees                         | 1° 52' 23.2" E                        |
| NS UTM [m]                         | 6459999.91                            |
| EW UTM [m]                         | 433900.09                             |
| UTM zone                           | 31                                    |
| NPDID wellbore                     | 6186                                  |



## Wellbore history

### General

Well 15/9-23 was drilled in the southern Viking Graben, south of the Sleipner East Field in the North Sea. The primary objective was to test the Middle Jurassic Hugin and Sleipner formations and the Triassic Skagerrak formation within the Skardkollen prospect. The Early Paleocene Ty Formation was secondary objective.

### Operations and results

Wildcat well 15/9-23 was spudded with the semi-submersible installation Bredford Dolphin on 18 November 2009 and drilled to TD at 3225 m in late Triassic sediments of the Skagerrak Formation. A 9 7/8" pilot hole was drilled from the 36" section to 714 m and a shallow gas zone was encountered at 674 to 678 m. The hole was opened to 26" down to 556 m, and 20" casing was set at 550 m. The well was drilled with seawater and hi-vis sweeps down to 556 m, with KCl/Glycol mud from 556 to 1520 m, and with XP-07oil based mud from 1520 m to TD.

The top of the first Frigg Formation sand was penetrated at 2092 m. The secondary target, the Ty Formation of the lowermost Rogaland Group was penetrated at 2524 m. The Ty Formation constituted excellent reservoir sandstones with a gross thickness of 24 m. GeoTap pressure measurements detected a pore pressure depletion of 105 bar compared to a normal hydrostatic gradient, most likely related to production at the nearby Sleipner East Field within the same stratigraphical unit. The primary reservoir target, the Middle-Jurassic Vestland Group, was penetrated at 3087.5 m, 45.5m deeper than anticipated. The Hugin Formation was absent, and the top of the Vestland Group consisted of the coal-bearing Sleipner Formation. Firm identification of red-brown Triassic mudstones of the Skagerrak Formation was penetrated at 3169 m, 5.5m shallower than prognosed. GeoTap pressure measurements through the Sleipner- and Skagerrak Formations also detected higher overpressures (65-73-89 bar) than measured in the nearby, analogue wells. The high and vertically varying overpressures, in combination with the low N/G and inferred poor/non-effective sand-to-sand connectivity, may explain the failure of hydrocarbons migrating into the Skardkollen structure.

All reservoirs were water-wet. The only show recorded in the well was a very weak show on cuttings in the Sleipner Formation. Lack of supportive from logs and gas levels suggested that the show could be caused by the drilling fluid.

No cores were cut. No logs were run on wire line, all logs are from LWD. No fluid samples were taken.

The well was permanently abandoned on 3 January 2010 as a dry well.

### Testing

No drill stem test was performed.

## Cuttings at the Norwegian Offshore Directorate

| Cutting sample, top depth [m] | Cutting samples, bottom depth [m] |
|-------------------------------|-----------------------------------|
| 640.00                        | 3225.00                           |

|                                  |     |
|----------------------------------|-----|
| Cuttings available for sampling? | YES |
|----------------------------------|-----|

**Lithostratigraphy**

| Top depth<br>[mMD RKB] | Lithostrat. unit                 |
|------------------------|----------------------------------|
| 110                    | <a href="#">NORDLAND GP</a>      |
| 891                    | <a href="#">UTSIRA FM</a>        |
| 1133                   | <a href="#">HORDALAND GP</a>     |
| 1271                   | <a href="#">SKADE FM</a>         |
| 1285                   | <a href="#">NO FORMAL NAME</a>   |
| 2092                   | <a href="#">FRIGG FM</a>         |
| 2110                   | <a href="#">NO FORMAL NAME</a>   |
| 2137                   | <a href="#">FRIGG FM</a>         |
| 2161                   | <a href="#">NO FORMAL NAME</a>   |
| 2323                   | <a href="#">ROGALAND GP</a>      |
| 2323                   | <a href="#">BALDER FM</a>        |
| 2345                   | <a href="#">SELE FM</a>          |
| 2417                   | <a href="#">LISTA FM</a>         |
| 2524                   | <a href="#">TY FM</a>            |
| 2548                   | <a href="#">SHETLAND GP</a>      |
| 2548                   | <a href="#">EKOFISK FM</a>       |
| 2551                   | <a href="#">TOR FM</a>           |
| 2730                   | <a href="#">HOD FM</a>           |
| 2811                   | <a href="#">BLODØKS FM</a>       |
| 2858                   | <a href="#">HIDRA FM</a>         |
| 2889                   | <a href="#">CROMER KNOLL GP</a>  |
| 2889                   | <a href="#">RØDBY FM</a>         |
| 2898                   | <a href="#">SOLA FM</a>          |
| 2917                   | <a href="#">TUXEN FM</a>         |
| 2929                   | <a href="#">ÅSGARD FM</a>        |
| 2938                   | <a href="#">VIKING GP</a>        |
| 2938                   | <a href="#">DRAUPNE FM</a>       |
| 3038                   | <a href="#">HEATHER FM</a>       |
| 3087                   | <a href="#">VESTLAND GP</a>      |
| 3087                   | <a href="#">SLEIPNER FM</a>      |
| 3169                   | <a href="#">NO GROUP DEFINED</a> |
| 3169                   | <a href="#">SKAGERRAK FM</a>     |

**Logs**



| Log type                         | Log top depth [m] | Log bottom depth [m] |
|----------------------------------|-------------------|----------------------|
| MWD LWD - DIR                    | 109               | 178                  |
| MWD LWD - EWR GR PWD ALD CAL CNT | 3004              | 3225                 |
| MWD LWD - GR RES ALD CTN BAT GEO | 1525              | 3004                 |
| MWD LWD - GR RES PWD DIR         | 178               | 1523                 |

**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                  | 175.0            | 36                | 178.0          | 0.00                     | LOT                 |
| SURF.COND.  | 20                  | 550.0            | 26                | 713.0          | 1.65                     | LOT                 |
| INTERM.     | 13 3/8              | 1519.0           | 17 1/2            | 1525.0         | 1.95                     | LOT                 |
| INTERM.     | 9 5/8               | 2998.0           | 12 1/4            | 3005.0         | 2.10                     | LOT                 |
| OPEN HOLE   |                     | 3225.0           | 8 1/2             | 3225.0         | 0.00                     | LOT                 |

**Drilling mud**

| Depth MD [m] | Mud weight [g/cm3] | Visc. [mPa.s] | Yield point [Pa] | Mud type | Date measured |
|--------------|--------------------|---------------|------------------|----------|---------------|
| 109          | 1.04               |               |                  | Spud mud |               |
| 178          | 1.04               |               |                  | Spud mud |               |
| 199          | 1.30               |               |                  | Seawater |               |
| 502          | 1.04               |               |                  | Spud mud |               |
| 547          | 1.20               | 11.0          |                  | KCl/GEM  |               |
| 714          | 1.25               |               |                  | Spud mud |               |
| 1145         | 1.22               | 23.0          |                  | KCl/GEM  |               |
| 1380         | 1.20               | 22.0          |                  | KCl/GEM  |               |
| 2589         | 1.25               | 20.0          |                  | XP-07    |               |
| 3004         | 1.35               | 22.0          |                  | XP-07    |               |
| 3225         | 1.36               | 21.0          |                  | XP-07    |               |