



## Generell informasjon

|                                          |                                       |
|------------------------------------------|---------------------------------------|
| Brønnbane navn                           | 24/9-6                                |
| Type                                     | EXPLORATION                           |
| Formål                                   | APPRAISAL                             |
| Status                                   | P&A                                   |
| Faktakart i nytt vindu                   | <a href="#">lenke til kart</a>        |
| Hovedområde                              | NORTH SEA                             |
| Felt                                     | <a href="#">VOLUND</a>                |
| Funn                                     | <a href="#">24/9-5 Volund</a>         |
| Brønn navn                               | 24/9-6                                |
| Seismisk lokalisering                    | FI 89-3D-INLINE 1098 & CROSSLINE 2830 |
| Utvinningstillatelse                     | <a href="#">150</a>                   |
| Boreoperatør                             | Fina Production Licenses AS           |
| Boretillatelse                           | 782-L                                 |
| Boreinnretning                           | <a href="#">WEST DELTA</a>            |
| Boredager                                | 35                                    |
| Borestart                                | 01.02.1994                            |
| Boreslutt                                | 07.03.1994                            |
| Frigitt dato                             | 07.03.1996                            |
| Publiseringsdato                         | 15.02.2006                            |
| Opprinnelig formål                       | APPRAISAL                             |
| Gjenåpnet                                | NO                                    |
| Innhold                                  | OIL                                   |
| Funnbrønnbane                            | NO                                    |
| 1. nivå med hydrokarboner, alder         | EOCENE                                |
| 1. nivå med hydrokarboner, formasjon.    | INTRA BALDER FM SS                    |
| Avstand, boredekk - midlere havflate [m] | 29.0                                  |
| Vanndybde ved midlere havflate [m]       | 123.5                                 |
| Totalt målt dybde (MD) [m RKB]           | 2255.0                                |
| Totalt vertikalt dybde (TVD) [m RKB]     | 2255.0                                |
| Maks inklinasjon [°]                     | 3.7                                   |
| Temperatur ved bunn av brønnbanen [°C]   | 60                                    |
| Eldste penetrerte alder                  | PALEOCENE                             |
| Eldste penetrerte formasjon              | HEIMDAL FM                            |
| Geodetisk datum                          | ED50                                  |
| NS grader                                | 59° 29' 1.5" N                        |



|                      |                 |
|----------------------|-----------------|
| ØV grader            | 1° 57' 27.14" E |
| NS UTM [m]           | 6594535.74      |
| ØV UTM [m]           | 440949.06       |
| UTM sone             | 31              |
| NPDID for brønnbanen | 2288            |

## Brønnhistorie

### General

Well 24/9-6 was drilled to appraise the 24/9-5 discovery and is located 2.2 km to the east of the 24/9-5 well location. Well 24/9-5 encountered a thin, 5.9 m net Balder Sandstone reservoir. It was considered not to be optimally placed for the Balder Formation objective and no production tests were made. Instead well 24/9-6 was drilled as an immediate appraisal in an optimum location. Mapping indicated that sandstone presence within the Balder Formation could be identified by gross Balder Formation thickening and by an associated seismic amplitude anomaly, believed to be a direct hydrocarbon indicator. Well 24/9-6 was located close to the centre of the Balder Formation interval thickening in a position where the seismic amplitude anomaly was best developed

### Operations and results

Appraisal well 24/9-6 was spudded with the semi-submersible installation West Delta on 1 February 1994 and drilled to TD at 2255 m in the Paleocene Heimdal Formation. No significant technical problems were reported from the operations. The well was drilled with seawater down to 1279 m, with KCl/polymer/glycol from 1279 m to 1957 m, and with KCl/polymer mud from 1957 m to TD.

The Balder Formation was encountered at 1917 m with two massive Intra Balder Formation sandstone sequences with a total net thickness of 49.5 m (prognosis 25 m). The first Intra Balder Formation sandstone was encountered at 2010.5 m, the second at 2034 m. A thin (0.5 m) oil-bearing sandstone was encountered at 2004.0 m just above the upper massive sandstone. The upper massive sandstone was hydrocarbon bearing all through down to the base at 2022 m, without any OWC seen. The lower massive sandstone proved to be water bearing. Thin sandstones in the interval 2029.0-2033.0 m had good shows on core. The highest known water was observed at 2034.0 m.

Analysis of a PVT sample from 2012.0 m showed the oil gravity to be 32 deg API with a gas/oil ratio (GOR) of 105 Sm<sup>3</sup>/Sm<sup>3</sup>. PVT pressure data indicated the fluid system to be saturated or near saturation at reservoir conditions. However no indications of the presence of a gas cap were seen. Three conventional cores were cut from 2015 m to 2046 m in the Balder Formation. Core recovered in core no. 1 (2015 m to 2024 m) is believed to be from the bottom of the cored interval. The inner liner of core no. 3 sheared and it is believed that up to 0.9 m may have been lost at 2035.5 m. One FMT fluid sample was taken at 2012 m. It contained 32 deg API oil.

The accumulation was concluded to be of sub-commercial size and the well was plugged and abandoned without production testing. The well was permanently abandoned on 7 March 1994 as an oil appraisal.

### Testing

No drill stem test was performed in the well.



### Borekaks i Sokkeldirektoratet

|                               |                               |
|-------------------------------|-------------------------------|
| Borekaksprøve, topp dybde [m] | Borekaksprøve, bunn dybde [m] |
| 1287.00                       | 2283.00                       |

|                                        |     |
|----------------------------------------|-----|
| Borekaks tilgjengelig for prøvetaking? | YES |
|----------------------------------------|-----|

### Borekjerne i Sokkeldirektoratet

| Kjerneprøve nummer | Kjerneprøve - topp dybde | Kjerneprøve - bunn dybde | Kjerneprøve dybde - enhet |
|--------------------|--------------------------|--------------------------|---------------------------|
| 1                  | 2022.1                   | 2024.0                   | [m ]                      |
| 2                  | 2024.0                   | 2032.2                   | [m ]                      |
| 3                  | 2032.5                   | 2045.1                   | [m ]                      |

|                                       |      |
|---------------------------------------|------|
| Total kjerneprøve lengde [m]          | 22.7 |
| Kjerner tilgjengelig for prøvetaking? | YES  |

### Kjernebilder



2022-2024m



2024-2029m



2029-2032m



2032-2037m



2037-2042m



2042-2045m

### Litostratigrafi

|                    |                             |
|--------------------|-----------------------------|
| Topp Dyb [mMD RKB] | Litostrat. enhet            |
| 153                | <a href="#">NORDLAND GP</a> |



|      |                                    |
|------|------------------------------------|
| 335  | <a href="#">UNDIFFERENTIATED</a>   |
| 389  | <a href="#">UTSIRA FM</a>          |
| 658  | <a href="#">HORDALAND GP</a>       |
| 670  | <a href="#">SKADE FM</a>           |
| 860  | <a href="#">NO FORMAL NAME</a>     |
| 1158 | <a href="#">GRID FM</a>            |
| 1271 | <a href="#">NO FORMAL NAME</a>     |
| 1323 | <a href="#">GRID FM</a>            |
| 1350 | <a href="#">NO FORMAL NAME</a>     |
| 1917 | <a href="#">ROGALAND GP</a>        |
| 1917 | <a href="#">BALDER FM</a>          |
| 2011 | <a href="#">INTRA BALDER FM SS</a> |
| 2022 | <a href="#">BALDER FM</a>          |
| 2034 | <a href="#">INTRA BALDER FM SS</a> |
| 2072 | <a href="#">BALDER FM</a>          |
| 2088 | <a href="#">SELE FM</a>            |
| 2119 | <a href="#">HERMOD FM</a>          |
| 2137 | <a href="#">SELE FM</a>            |
| 2154 | <a href="#">LISTA FM</a>           |
| 2210 | <a href="#">HEIMDAL FM</a>         |

### Spleisede logger

| Dokument navn        | Dokument format | Dokument størrelse [KB] |
|----------------------|-----------------|-------------------------|
| <a href="#">2288</a> | pdf             | 0.20                    |

### Geokjemisk informasjon

| Dokument navn          | Dokument format | Dokument størrelse [KB] |
|------------------------|-----------------|-------------------------|
| <a href="#">2288_1</a> | pdf             | 2.78                    |

### Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

| Dokument navn                                         | Dokument format | Dokument størrelse [KB] |
|-------------------------------------------------------|-----------------|-------------------------|
| <a href="#">2288_24_9_6_COMPLETION_REPORT_AND_LOG</a> | pdf             | 14.58                   |





Logger

| Type logg                    | Topp dyp<br>for logg [m] | Bunn dyp for<br>logg [m] |
|------------------------------|--------------------------|--------------------------|
| BP BST CCL                   | 1878                     | 1878                     |
| CBIL CGR TTRM                | 1955                     | 2253                     |
| DAC DGR TTRM                 | 130                      | 1278                     |
| DAC DGR TTRM                 | 1278                     | 4000                     |
| DLL MLL GR CHT               | 1955                     | 2253                     |
| DPIL SP DAC DGR XDL CAL TTRM | 1278                     | 1946                     |
| DPIL SP MAC DGR TTRM         | 2955                     | 2253                     |
| HEXDIP GR CHT                | 1955                     | 2253                     |
| MAC DGR TTRM                 | 0                        | 0                        |
| MWD - GR DPR                 | 158                      | 2254                     |
| SWC                          | 2004                     | 2241                     |
| VPC FMT GR                   | 2004                     | 2119                     |
| VSP                          | 0                        | 0                        |
| ZDL CN DSL TTRM              | 1955                     | 2253                     |

Foringsrør og formasjonsstyrketester

| Type utforing | Utforing<br>diam.<br>[tommer] | Utforing<br>dybde<br>[m] | Brønnbane<br>diam.<br>[tommer] | Brønnbane<br>dyp<br>[m] | LOT/FIT slam<br>eqv.<br>[g/cm3] | Type<br>formasjonstest |
|---------------|-------------------------------|--------------------------|--------------------------------|-------------------------|---------------------------------|------------------------|
| CONDUCTOR     | 30                            | 249.0                    | 36                             | 254.0                   | 0.00                            | LOT                    |
| SURF.COND.    | 13 3/8                        | 1279.0                   | 17 1/2                         | 1286.0                  | 0.00                            | LOT                    |
| INTERM.       | 9 5/8                         | 1957.0                   | 12 1/4                         | 1963.0                  | 0.00                            | LOT                    |
| OPEN HOLE     |                               | 2255.0                   | 8 1/2                          | 2255.0                  | 0.00                            | LOT                    |

Boreslam

| Dybde<br>MD [m] | Egenvekt,<br>slam<br>[g/cm3] | Viskositet,<br>slam<br>[mPa.s] | Flytegrense<br>[Pa] | Type slam   | Dato, måling |
|-----------------|------------------------------|--------------------------------|---------------------|-------------|--------------|
| 190             | 1.06                         |                                |                     | WATER BASED | 04.02.1994   |
| 254             | 1.06                         |                                |                     | WATER BASED | 07.02.1994   |
| 254             | 1.06                         |                                |                     | WATER BASED | 07.02.1994   |
| 254             | 1.06                         |                                |                     | WATER BASED | 07.02.1994   |
| 254             | 1.06                         |                                |                     | WATER BASED | 08.02.1994   |
| 254             | 1.06                         |                                |                     | WATER BASED | 09.02.1994   |





|      |      |      |      |             |            |
|------|------|------|------|-------------|------------|
| 254  | 1.01 |      |      | WATER BASED | 10.02.1994 |
| 390  | 1.06 |      |      | WATER BASED | 02.02.1994 |
| 614  | 1.06 |      |      | WATER BASED | 03.02.1994 |
| 741  | 1.01 |      |      | WATER BASED | 11.02.1994 |
| 1206 | 1.03 | 24.0 | 19.0 | WATER BASED | 14.02.1994 |
| 1286 | 1.13 | 39.0 | 18.0 | WATER BASED | 16.02.1994 |
| 1286 | 1.25 | 20.0 | 10.0 | WATER BASED | 14.02.1994 |
| 1286 | 1.13 | 39.0 | 18.0 | WATER BASED | 15.02.1994 |
| 1286 | 1.40 | 34.0 | 11.0 | WATER BASED | 17.02.1994 |
| 1286 | 1.41 | 34.0 | 11.0 | WATER BASED | 18.02.1994 |
| 1355 | 1.40 | 53.0 | 12.0 |             | 21.02.1994 |
| 1711 | 1.50 | 57.0 | 13.0 | DUMMY       | 21.02.1994 |
| 1948 | 1.50 | 34.0 | 14.0 | DUMMY       | 21.02.1994 |
| 1963 | 1.50 | 45.0 | 12.0 | DUMMY       | 22.02.1994 |
| 1963 | 1.55 | 39.0 | 24.0 | DUMMY       | 23.02.1994 |
| 1963 | 1.40 | 27.0 | 11.0 | DUMMY       | 24.02.1994 |
| 1963 | 1.15 | 17.0 | 7.0  | DUMMY       | 25.02.1994 |
| 2015 | 1.16 | 19.0 | 10.0 |             | 28.02.1994 |
| 2033 | 1.16 | 18.0 | 12.0 | DUMMY       | 28.02.1994 |
| 2087 | 1.16 | 20.0 | 13.0 | DUMMY       | 01.03.1994 |
| 2255 | 1.17 | 22.0 | 15.0 | DUMMY       | 01.03.1994 |
| 2255 | 1.17 | 22.0 | 13.0 | DUMMY       | 02.03.1994 |
| 2255 | 1.18 | 22.0 | 15.0 | DUMMY       | 03.03.1994 |
| 2255 | 1.18 | 21.0 | 15.0 | DUMMY       | 04.03.1994 |

## Trykkplott

Porertrykksdataene kommer fra logging i brønnen hvis ingen annen kilde er oppgitt. I noen brønner der trykk ikke er logget, er det brukt informasjon fra formasjonstester eller brønnspark. Trykkdataene er rapportert inn til Oljedirektoratet og videre prosessert og kvalitetssikret av IHS Markit.

| Dokument navn                                             | Dokument format | Dokument størrelse [KB] |
|-----------------------------------------------------------|-----------------|-------------------------|
| <a href="#">2288_Formation_pressure_(Formasjonstrykk)</a> | pdf             | 0.22                    |

