



## Generell informasjon

|                                          |                                |
|------------------------------------------|--------------------------------|
| Brønnbane navn                           | 34/7-13                        |
| Type                                     | EXPLORATION                    |
| Formål                                   | APPRAISAL                      |
| Status                                   | P&A                            |
| Faktakart i nytt vindu                   | <a href="#">lenke til kart</a> |
| Hovedområde                              | NORTH SEA                      |
| Felt                                     | <a href="#">VIGDIS</a>         |
| Funn                                     | <a href="#">34/7-8 Vigdis</a>  |
| Brønn navn                               | 34/7-13                        |
| Seismisk lokalisering                    | E 86 (3D) ROW 438 COL. 1410    |
| Utvinningstillatelse                     | <a href="#">089</a>            |
| Boreoperatør                             | Saga Petroleum ASA             |
| Boretillatelse                           | 572-L                          |
| Boreinnretning                           | <a href="#">TREASURE SAGA</a>  |
| Boredager                                | 55                             |
| Borestart                                | 19.02.1988                     |
| Boreslutt                                | 13.04.1988                     |
| Frigitt dato                             | 13.04.1990                     |
| Publiseringsdato                         | 28.02.2008                     |
| Opprinnelig formål                       | WILDCAT                        |
| Gjenåpnet                                | NO                             |
| Innhold                                  | OIL                            |
| Funnbrønnbane                            | NO                             |
| 1. nivå med hydrokarboner, alder         | MIDDLE JURASSIC                |
| 1. nivå med hydrokarboner, formasjon.    | ETIVE FM                       |
| Avstand, boredekk - midlere havflate [m] | 26.0                           |
| Vanndybde ved midlere havflate [m]       | 282.0                          |
| Totalt målt dybde (MD) [m RKB]           | 2994.0                         |
| Maks inklinasjon [°]                     | 21                             |
| Temperatur ved bunn av brønnbanen [°C]   | 103                            |
| Eldste penetrerte alder                  | LATE TRIASSIC                  |
| Eldste penetrerte formasjon              | LUNDE FM                       |
| Geodetisk datum                          | ED50                           |
| NS grader                                | 61° 24' 19.23" N               |
| ØV grader                                | 2° 3' 12.49" E                 |
| NS UTM [m]                               | 6808466.37                     |



|                      |           |
|----------------------|-----------|
| ØV UTM [m]           | 449458.44 |
| UTM sone             | 31        |
| NPDID for brønnbanen | 1233      |

## Brønnhistorie

**General**

Well 34/7-13 was drilled in the north western part of block 34/7 on the Snorre West prospect. The prospect is divided into two main fault segments by a SW NE trending fault with a throw of 60 m. The well was located in the southern part of the two segments. The primary purposes of the well were to explore the Snorre West prospect and to test a possible extension of the Statfjord East Field in a northward direction. The main target of the well was sandstones of the Middle Jurassic Brent Group. Secondary target was sandstones of the Early Jurassic Statfjord Formation.

**Operations and results**

Wildcat well 34/7-13 was spudded with the semi-submersible installation Treasure Saga on 19 February 1988 and drilled to TD at 2994 m in the Late Triassic Lunde Formation. Drilling proceeded without significant problems, but up to 21 deg deviation in the deepest section of the well caused 11 m deviation between MD and TVD at TD. Shallow gas was encountered at 459 m, but it did not cause any technical problems. The well was drilled with spud mud down to 434, with Gel mud from 434 m to 973 m, with KCl mud from 973 m to 2682 m, and with gel mud from 2682 m to TD.

Above the Jurassic the well penetrated mainly claystones with the exception of the Utsira Formation and some sandstone intervals between 1265 and 1325 m in the Hordaland Group. The Jurassic comprised the Middle Jurassic Brent Group, and the Early Jurassic Dunlin Group and Statfjord Formation. The Triassic comprised the Late Triassic upper Lunde Formation. The sandstones of the Brent Group, the Etive Formation, were encountered at 2492.5 m (TVD: 2490 m). The Etive Formation proved oil bearing, and the OWC was calculated to be at 2505.5 m (TVD: 2503 m). This was a thinner oil column than prognosed and the resources for the prospect were thus reduced compared to what was expected.

The sandstones of the Statfjord Formation proved water bearing.

First sign of petroleum hydrocarbons (C2 - C3) were reported at 2260 m. From 2285 m weak oil shows were seen in sand stringers. Over the reservoir and down to approximately 2510 m good oil shows were observed. Below 2510 m oil shows got weaker but traces were seen down to 2590 m.

Five cores were cut in the interval 2496 - 2587.8 m. A total of 5 cores were cut throughout this section with 99 % recovery. A sixth core was cut from 2873 to 2890.5 m in the Statfjord Formation. FMT samples were taken at 2493.4 m (oil), 2494.4 m (oil), and 2503.7 m (water contaminated with mud filtrate). Single stage flash of the sample from 2493.4 m gave a GOR of 84.3 Sm<sup>3</sup>/Sm<sup>3</sup>, an oil density of 0.8392 g/cm<sup>3</sup>, and a gas gravity of 0.925 (air = 1).

The well was permanently abandoned on 13 April 1988. It is classified as an oil appraisal on the Vigdis Discovery.

**Testing**

One DST was performed in the interval 2498.1 - 2501.1 m in the Etive Formation. At the end of a 6.8 hours flow period, "Formation characteristics flow", the well produced 935 Sm<sup>3</sup>/day of oil with a GOR of 49 Sm<sup>3</sup>/Sm<sup>3</sup> through an 11.1 mm choke. In the beginning of the main flow period the maximum recorded oil rate was 1350 Sm<sup>3</sup>/day through a 16 mm choke. The GOR in this flow was 51 Sm<sup>3</sup>/Sm<sup>3</sup> and the oil density was 0.840 g/cm<sup>3</sup>. At the end of the main flow the well produced with 30-35% water cut. Sand production was also observed. Maximum down-hole temperature in the test (measured during main flow) was 90 deg C.

A second DST was omitted due to problems caused by sand production.



### Borekaks i Sokkeldirektoratet

| Borekaksprøve, topp dybde [m] | Borekaksprøve, bunn dybde [m] |
|-------------------------------|-------------------------------|
| 440.00                        | 2994.00                       |

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

### Borekjerper i Sokkeldirektoratet

| Kjerneprøve nummer | Kjerneprøve - topp dybde | Kjerneprøve - bunn dybde | Kjerneprøve dybde - enhet |
|--------------------|--------------------------|--------------------------|---------------------------|
| 1                  | 2496.0                   | 2500.0                   | [m ]                      |
| 2                  | 2500.0                   | 2515.3                   | [m ]                      |
| 3                  | 2515.5                   | 2532.0                   | [m ]                      |
| 4                  | 2532.0                   | 2559.6                   | [m ]                      |
| 5                  | 2560.0                   | 2587.7                   | [m ]                      |
| 6                  | 2873.0                   | 2889.9                   | [m ]                      |

|                                       |       |
|---------------------------------------|-------|
| Total kjerneprøve lengde [m]          | 108.0 |
| Kjerner tilgjengelig for prøvetaking? | YES   |

### Kjernebilder



2496-2500m



2500-2505m



2505-2510m



2510-2515m



2515-2515m



2515-2510m



2520-2525m



2525-2530m



2530-2532m



2532-2537m



2537-2542m



2542-2547m



2547-2552m



2552-2557m



2557-2559m



2560-2565m



2565-2570m



2570-2575m



2575-2580m



2575-2580m



2580-2585m



2585-2587m



2873-2878m



2878-2883m



2883-2888m



2888-2890m

### Palynologiske preparater i Sjøkeldirektoratet

| Prøve dybde | Dybde enhet | Prøve type | Laboratorie |
|-------------|-------------|------------|-------------|
| 2696.3      | [m]         | C          | OD          |
| 2696.5      | [m]         | C          | OD          |

### Oljeprøver i Sjøkeldirektoratet

| Test type | Flaske nummer | Topp dyp MD [m] | Bunn dyp MD [m] | Væske type | Test tidspunkt     | Prøver tilgjengelig |
|-----------|---------------|-----------------|-----------------|------------|--------------------|---------------------|
| DST       | DST1,1        | 2504.00         | 2500.00         |            | 05.04.1988 - 14:50 | YES                 |



Litostratigrafi

| Topp Dyb<br>[mMD RKB] | Litostrat. enhet                |
|-----------------------|---------------------------------|
| 308                   | <a href="#">NORDLAND GP</a>     |
| 1073                  | <a href="#">UTSIRA FM</a>       |
| 1085                  | <a href="#">HORDALAND GP</a>    |
| 1267                  | <a href="#">NO FORMAL NAME</a>  |
| 1323                  | <a href="#">NO FORMAL NAME</a>  |
| 1670                  | <a href="#">ROGALAND GP</a>     |
| 1670                  | <a href="#">BALDER FM</a>       |
| 1724                  | <a href="#">LISTA FM</a>        |
| 1852                  | <a href="#">SHETLAND GP</a>     |
| 1852                  | <a href="#">JORSALFARE FM</a>   |
| 2097                  | <a href="#">KYRRE FM</a>        |
| 2478                  | <a href="#">CROMER KNOLL GP</a> |
| 2478                  | <a href="#">RØDBY FM</a>        |
| 2485                  | <a href="#">MIME FM</a>         |
| 2493                  | <a href="#">BRENT GP</a>        |
| 2493                  | <a href="#">ETIVE FM</a>        |
| 2523                  | <a href="#">RANNOCH FM</a>      |
| 2598                  | <a href="#">BROOM FM</a>        |
| 2600                  | <a href="#">DUNLIN GP</a>       |
| 2600                  | <a href="#">DRAKE FM</a>        |
| 2670                  | <a href="#">COOK FM</a>         |
| 2742                  | <a href="#">BURTON FM</a>       |
| 2758                  | <a href="#">AMUNDSEN FM</a>     |
| 2859                  | <a href="#">STATFJORD GP</a>    |
| 2962                  | <a href="#">HEGRE GP</a>        |
| 2962                  | <a href="#">LUNDE FM</a>        |

Geokjemisk informasjon

| Dokument navn          | Dokument format | Dokument størrelse [KB] |
|------------------------|-----------------|-------------------------|
| <a href="#">1233_1</a> | pdf             | 0.29                    |
| <a href="#">1233_2</a> | pdf             | 1.25                    |





## Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter

| Dokument navn                                    | Dokument format | Dokument størrelse [KB] |
|--------------------------------------------------|-----------------|-------------------------|
| <a href="#">1233_01_WDSS_General_Information</a> | pdf             | 0.24                    |
| <a href="#">1233_02_WDSS_completion_log</a>      | pdf             | 0.23                    |

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

| Dokument navn                                          | Dokument format | Dokument størrelse [KB] |
|--------------------------------------------------------|-----------------|-------------------------|
| <a href="#">1233_34_7_13_COMPLETION_REPORT_AND_LOG</a> | pdf             | 12.67                   |

## Borestrengtester (DST)

| Test nummer | Fra dybde MD [m] | Til dybde MD [m] | Reduksjonsventil størrelse [mm] |
|-------------|------------------|------------------|---------------------------------|
| 1.0         | 2501             | 2504             | 16.0                            |

| Test nummer | Endelig avstengningstrykk [MPa] | Endelig strømningstrykk [MPa] | Bunnhullstrykk [MPa] | Borehullstemperatur [°C] |
|-------------|---------------------------------|-------------------------------|----------------------|--------------------------|
| 1.0         | 34.000                          |                               | 15.000               | 88                       |

| Test nummer | Olje produksjon [Sm3/dag] | Gass produksjon [Sm3/dag] | Oljetetthet [g/cm3] | Gasstyngde rel. luft | GOR [m3/m3] |
|-------------|---------------------------|---------------------------|---------------------|----------------------|-------------|
| 1.0         | 1350                      | 68850                     | 0.840               |                      | 51          |

## Logger

| Type logg  | Topp dyp for logg [m] | Bunn dyp for logg [m] |
|------------|-----------------------|-----------------------|
| CBL VDL GR | 750                   | 1842                  |
| CBL VDL GR | 1000                  | 2664                  |
| CBL VDL GR | 2370                  | 2550                  |
| CNL CDL GR | 1842                  | 2682                  |
| CNL CDL GR | 2664                  | 2992                  |







|                            |      |      |
|----------------------------|------|------|
| COREGUN                    | 0    | 0    |
| COREGUN                    | 2496 | 2587 |
| COREGUN                    | 2873 | 2890 |
| DIFL LS BHC GR             | 957  | 1855 |
| DIFL LS BHC GR             | 1842 | 2681 |
| DIFL LS BHC GR             | 2664 | 2993 |
| DIPLOG                     | 2300 | 2678 |
| DIPLOG                     | 2667 | 2993 |
| DLL GR                     | 2300 | 2600 |
| FMT                        | 2494 | 2563 |
| FMT                        | 2876 | 2960 |
| MWD DLWD - GR RES DIR TEMP | 434  | 2994 |
| VSP                        | 1115 | 2990 |

Foringsrør og formasjonsstyrketester

| Type utforing | Utforing diam.<br>[tommer] | Utforing dybde<br>[m] | Brønnbane diam.<br>[tommer] | Brønnbane dyp<br>[m] | LOT/FIT slam<br>eqv.<br>[g/cm3] | Type formasjonstest |
|---------------|----------------------------|-----------------------|-----------------------------|----------------------|---------------------------------|---------------------|
| CONDUCTOR     | 30                         | 429.0                 | 36                          | 429.0                | 0.00                            | LOT                 |
| SURF.COND.    | 20                         | 957.0                 | 26                          | 973.0                | 1.59                            | LOT                 |
| INTERM.       | 13 3/8                     | 1843.0                | 17 1/2                      | 1875.0               | 1.81                            | LOT                 |
| INTERM.       | 9 5/8                      | 2667.0                | 12 1/4                      | 2682.0               | 2.03                            | LOT                 |
| OPEN HOLE     |                            | 2994.0                | 8 1/2                       | 2994.0               | 0.00                            | LOT                 |

Boreslam

| Dybde MD [m] | Egenvekt, slam<br>[g/cm3] | Viskositet, slam<br>[mPa.s] | Flytegrense [Pa] | Type slam   | Dato, måling |
|--------------|---------------------------|-----------------------------|------------------|-------------|--------------|
| 434          | 1.05                      |                             |                  | WATER BASED | 25.03.1988   |
| 507          | 1.12                      | 5.0                         | 12.0             | WATER BASED | 25.03.1988   |
| 890          | 1.16                      | 4.0                         | 7.7              | WATER BASED | 24.02.1988   |
| 970          | 1.16                      |                             |                  | WATER BASED | 25.03.1988   |
| 970          | 1.16                      | 4.0                         | 7.2              | WATER BASED | 25.02.1988   |
| 973          | 1.12                      | 21.0                        | 13.9             | WATER BASED | 02.03.1988   |
| 973          | 1.14                      | 4.0                         | 6.8              | WATER BASED | 24.02.1988   |
| 1348         | 1.13                      | 20.0                        | 9.6              | WATER BASED | 02.03.1988   |
| 1479         | 1.25                      | 23.0                        | 10.1             | WATER BASED | 02.03.1988   |
| 1681         | 1.45                      | 26.0                        | 11.5             | WATER BASED | 03.03.1988   |
| 1875         | 1.50                      | 33.0                        | 13.5             | WATER BASED | 03.03.1988   |



## Faktasider

### Brønnbane / Leting

Utskriftstidspunkt: 9.5.2024 - 11:28

|      |      |      |      |             |            |
|------|------|------|------|-------------|------------|
| 1875 | 1.50 | 33.0 | 13.5 | WATER BASED | 04.03.1988 |
| 1875 | 1.50 | 32.0 | 11.5 | WATER BASED | 07.03.1988 |
| 1875 | 1.50 | 32.0 | 12.5 | WATER BASED | 07.03.1988 |
| 1875 | 1.50 | 33.0 | 13.5 | WATER BASED | 07.03.1988 |
| 1875 | 1.50 | 31.0 | 12.0 | WATER BASED | 08.03.1988 |
| 1992 | 1.55 | 30.0 | 10.6 | WATER BASED | 14.03.1988 |
| 2100 | 1.61 | 27.0 | 6.3  | WATER BASED | 25.03.1988 |
| 2100 | 1.61 | 27.0 | 6.3  | WATER BASED | 28.03.1988 |
| 2100 | 1.64 | 26.0 | 7.7  | WATER BASED | 16.03.1988 |
| 2100 | 1.61 | 20.0 | 4.8  | WATER BASED | 18.03.1988 |
| 2100 | 1.61 | 25.0 | 6.3  | WATER BASED | 22.03.1988 |
| 2100 | 1.61 | 27.0 | 6.3  | WATER BASED | 24.03.1988 |
| 2100 | 1.61 | 24.0 | 5.8  | WATER BASED | 18.03.1988 |
| 2100 | 1.61 | 20.0 | 6.3  | WATER BASED | 21.03.1988 |
| 2100 | 1.61 | 27.0 | 5.8  | WATER BASED | 25.03.1988 |
| 2106 | 1.60 | 35.0 | 9.1  | WATER BASED | 14.03.1988 |
| 2232 | 1.60 | 33.0 | 8.2  | WATER BASED | 14.03.1988 |
| 2404 | 1.65 | 28.0 | 7.7  | WATER BASED | 15.03.1988 |
| 2470 | 1.50 | 15.0 | 3.9  | WATER BASED | 11.04.1988 |
| 2492 | 1.50 | 16.0 | 4.4  | WATER BASED | 11.04.1988 |
| 2492 | 1.50 | 18.0 | 6.8  | WATER BASED | 11.04.1988 |
| 2492 | 1.50 | 16.0 | 4.4  | WATER BASED | 06.04.1988 |
| 2492 | 1.50 | 16.0 | 4.4  | WATER BASED | 08.04.1988 |
| 2492 | 1.50 | 16.0 | 4.4  | WATER BASED | 05.04.1988 |
| 2492 | 1.50 | 16.0 | 4.4  | WATER BASED | 07.04.1988 |
| 2495 | 1.65 | 25.0 | 6.8  | WATER BASED | 15.03.1988 |
| 2495 | 1.65 | 27.0 | 7.7  | WATER BASED | 15.03.1988 |
| 2532 | 1.65 | 26.0 | 7.7  | WATER BASED | 16.03.1988 |
| 2589 | 1.61 | 19.0 | 6.3  | WATER BASED | 21.03.1988 |
| 2690 | 1.61 | 26.0 | 6.3  | WATER BASED | 28.03.1988 |
| 2777 | 1.61 | 29.0 | 7.7  | WATER BASED | 28.03.1988 |
| 2777 | 1.61 | 29.0 | 7.7  | WATER BASED | 29.03.1988 |
| 2777 | 1.61 | 26.0 | 7.2  | WATER BASED | 30.03.1988 |
| 2777 | 1.61 | 26.0 | 7.2  | WATER BASED | 05.04.1988 |
| 2876 | 1.61 | 26.0 | 7.2  | WATER BASED | 05.04.1988 |

**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="#">1233 Formation pressure (Formasjonstrykk)</a> | pdf             | 0.22                    |

