



## Generell informasjon

|                                          |                                     |
|------------------------------------------|-------------------------------------|
| Brønnbane navn                           | 30/5-2                              |
| Type                                     | EXPLORATION                         |
| Formål                                   | APPRAISAL                           |
| Status                                   | P&A                                 |
| Faktakart i nytt vindu                   | <a href="#">lenke til kart</a>      |
| Hovedområde                              | NORTH SEA                           |
| Felt                                     | <a href="#">TUNE</a>                |
| Funn                                     | <a href="#">30/8-1 S Tune</a>       |
| Brønn navn                               | 30/5-2                              |
| Seismisk lokalisering                    | SH 9106- INLINE 445 & CROSSLINE 177 |
| Utvinningstillatelse                     | <a href="#">034</a>                 |
| Boreoperatør                             | Norsk Hydro Produksjon AS           |
| Boretillatelse                           | 861-L                               |
| Boreinnretning                           | <a href="#">TREASURE SAGA</a>       |
| Boredager                                | 79                                  |
| Borestart                                | 04.10.1996                          |
| Boreslutt                                | 21.12.1996                          |
| Frigitt dato                             | 21.12.1998                          |
| Publiseringsdato                         | 18.12.2008                          |
| Opprinnelig formål                       | APPRAISAL                           |
| Gjenåpnet                                | NO                                  |
| Innhold                                  | OIL/GAS                             |
| Funnbrønnbane                            | NO                                  |
| 1. nivå med hydrokarboner, alder         | MIDDLE JURASSIC                     |
| 1. nivå med hydrokarboner, formasjon.    | BRENT GP                            |
| Avstand, boredekk - midlere havflate [m] | 26.0                                |
| Vanndybde ved midlere havflate [m]       | 92.0                                |
| Totalt målt dybde (MD) [m RKB]           | 4076.0                              |
| Totalt vertikalt dybde (TVD) [m RKB]     | 4075.0                              |
| Maks inklinasjon [°]                     | 3                                   |
| Temperatur ved bunn av brønnbanen [°C]   | 139                                 |
| Eldste penetrerte alder                  | EARLY JURASSIC                      |
| Eldste penetrerte formasjon              | DRAKE FM                            |
| Geodetisk datum                          | ED50                                |
| NS grader                                | 60° 30' 16.3" N                     |



|                      |                 |
|----------------------|-----------------|
| ØV grader            | 2° 38' 12.71" E |
| NS UTM [m]           | 6707814.40      |
| ØV UTM [m]           | 480053.38       |
| UTM sone             | 31              |
| NPDID for brønnbanen | 2886            |

## Brønnhistorie



Well 30/5-2 is located a few km west of the Oseberg Field in the Northern North Sea. It was drilled on the northern and down dip extension of the hydrocarbon accumulation discovered by well 30/8-1 S. The main target was the Brent deltaic sands of the Tarbert Formations. The primary objectives were to prove filling level and hydrocarbon types in a down dip (northern) direction, and to prove pressure communication and continuity with the reservoirs in 30/8-1 S. Planned TD was 50 m into the Dunlin Group.

### Operations and results

Appraisal well 30/5-2 was spudded with the semi-submersible installation Treasure Saga on 4 October 1996 and drilled to TD at 4076 m in the Early Jurassic Drake Formation. The total duration of the well was some 20 days behind schedule. The main contribution to this was time spent to cure a shallow gas source, corrective measures in conjunction with a 13 3/8" casing hanger sitting high and a stuck MDT tool. The well was drilled with spud mud and bentonite down to 1558 m, with KCl/polymer mud from 1558 m to TD.

The main reservoir interval consisted of the Tarbert Formation, but the Ness and ORE Formations were also encountered. Gas and oil pay was interpreted below 3528.5 m in the "Tarbert 2" reservoir, approximately 58 m and 10 m respectively. The well interpretation concludes with a GDT (gas down to) situation at 3591.5 m in the Tarbert 2 reservoir and with an OUT (oil up to) at 3602 m. An OWC is indicated at 3614 m with a FWL (free water level) at about 3616.5 m. In the Ness Formation a total of 16 m pay was interpreted in channel sands. The assumed fluid in these sands is gas, but this was not conclusively proven. The ORE (Oseberg - Rannoch - Etive) Formation had 1.4 m pay interpreted, but this may be an optimistic result as it was equally likely that this could represent so-called residual hydrocarbons. The reservoir properties are considered fairly modest with porosities generally below 20 % and with core permeabilities generally in the range 1 to 100 mD. The best properties, based on MDT mobility, were found in the Tarbert 2 gas reservoir and in the water bearing Ness sand at 3720 - 3740 m.

Three cores were cut in the Tarbert Formation from 3531 to 3632.35 m.

The well was permanently abandoned on 21 December 1996 as an oil and gas appraisal well.

### Testing

Three drill stem tests were performed. DST IA tested the water zone in the interval 3623.3 - 3627.8 m. It produced water at a rate of 30 m<sup>3</sup>/day. DST IB tested the intervals 3623.3 - 3627.8 m + 3601.3 - 3621.3 m. In the main flow, using a 32/64" choke, it produced 250 m<sup>3</sup> water, 135 Sm<sup>3</sup> oil, and 63000 Sm<sup>3</sup> gas/day. The GOR was 470 Sm<sup>3</sup>/Sm<sup>3</sup>, the oil density was 0.88 g/cm<sup>3</sup> and the gas gravity was 0.79 - 0.82 (air = 1). The initial reservoir temperature measured in this flow was 131.1 deg C. DST II tested the gas zone in the interval 3529.1 - 3591.1 m. At maximum rates in the main flow, using a 72/64" choke, this test produced 980000 Sm<sup>3</sup> gas and 510 Sm<sup>3</sup> oil/day. No water was produced. The GOR was 1920 Sm<sup>3</sup>/Sm<sup>3</sup>, the oil density was 0.83 g/cm<sup>3</sup>, and the gas gravity was 0.69 (air = 1). The initial reservoir temperature measured in this flow was 127.4 deg C.

### Borekaks i Sokkeldirektoratet

| Borekaksprøve, topp dybde [m] | Borekaksprøve, bunn dybde [m] |
|-------------------------------|-------------------------------|
| 350.00                        | 4075.00                       |

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



### Borekjerne i Sokkeldirektoratet

| Kjerneprøve nummer | Kjerneprøve - topp dybde | Kjerneprøve - bunn dybde | Kjerneprøve dybde - enhet |
|--------------------|--------------------------|--------------------------|---------------------------|
| 1                  | 3531.0                   | 3558.3                   | [m ]                      |
| 2                  | 3558.5                   | 3595.4                   | [m ]                      |
| 3                  | 3595.5                   | 3632.4                   | [m ]                      |

|                                       |       |
|---------------------------------------|-------|
| Total kjerneprøve lengde [m]          | 101.0 |
| Kjerner tilgjengelig for prøvetaking? | YES   |

### Kjernebilder



3531-3536m



3536-3541m



3541-3546m



3546-3551m



3551-3556m



3556-3558m



3558-3563m



3563-3568m



3568-3573m



3573-3578m



3578-3583m



3583-3588m



3588-3593m



3593-3595m



3595-3600m



3600-3605m



3605-3610m



3610-3615m



3615-3620m



3620-3625m



3625-3620m



3630-3632m

### Oljeprøver i Sokkeldirektoratet

| Test type | Flaske nummer | Topp dyp MD [m] | Bunn dyp MD [m] | Væske type | Test tidspunkt     | Prøver tilgjengelig |
|-----------|---------------|-----------------|-----------------|------------|--------------------|---------------------|
| DST       | DST1B         | 3601.30         | 3627.80         |            | 04.12.1996 - 04:00 | YES                 |
| DST       | DST2          | 3529.00         | 3591.00         |            | 10.12.1996 - 22:12 | YES                 |

### Litostratigrafi

| Topp Dyb [mMD RKB] | Litostrat. enhet                 |
|--------------------|----------------------------------|
| 118                | <a href="#">NORDLAND GP</a>      |
| 680                | <a href="#">UTSIRA FM</a>        |
| 760                | <a href="#">UNDIFFERENTIATED</a> |
| 917                | <a href="#">HORDALAND GP</a>     |
| 993                | <a href="#">SKADE FM</a>         |
| 1045               | <a href="#">NO FORMAL NAME</a>   |
| 1487               | <a href="#">GRID FM</a>          |
| 1632               | <a href="#">NO FORMAL NAME</a>   |
| 2091               | <a href="#">ROGALAND GP</a>      |
| 2091               | <a href="#">BALDER FM</a>        |
| 2169               | <a href="#">SELE FM</a>          |
| 2271               | <a href="#">LISTA FM</a>         |
| 2430               | <a href="#">VÅLE FM</a>          |
| 2449               | <a href="#">SHETLAND GP</a>      |
| 2449               | <a href="#">HARDRÅDE FM</a>      |
| 2470               | <a href="#">JORSALFARE FM</a>    |
| 2702               | <a href="#">KYRRE FM</a>         |
| 3167               | <a href="#">TRYGGVASON FM</a>    |



|      |                                  |
|------|----------------------------------|
| 3288 | <a href="#">BLODØKS FM</a>       |
| 3292 | <a href="#">SVARTE FM</a>        |
| 3468 | <a href="#">VIKING GP</a>        |
| 3468 | <a href="#">HEATHER FM</a>       |
| 3472 | <a href="#">BRENT GP</a>         |
| 3472 | <a href="#">TARBERT FM</a>       |
| 3710 | <a href="#">NESS FM</a>          |
| 4005 | <a href="#">UNDIFFERENTIATED</a> |
| 4041 | <a href="#">DUNLIN GP</a>        |
| 4041 | <a href="#">DRAKE FM</a>         |

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

| Dokument navn                                                    | Dokument format | Dokument størrelse [KB] |
|------------------------------------------------------------------|-----------------|-------------------------|
| <a href="#">2886_30_5_2_COMPLETION_REPORT_AND_COMPLETION_LOG</a> | pdf             | 17.61                   |

**Borestrengtester (DST)**

| Test nummer | Fra dybde MD [m] | Til dybde MD [m] | Reduksjonsven til størrelse [mm] |
|-------------|------------------|------------------|----------------------------------|
| 1.0         | 3611             | 3624             | 12.5                             |
| 2.0         | 3566             | 3590             | 11.0                             |

| Test nummer | Endelig avstengningstrykk [MPa] | Endelig strømningstrykk [MPa] | Bunnhullstrykk [MPa] | Borehullstemperatur [°C] |
|-------------|---------------------------------|-------------------------------|----------------------|--------------------------|
| 1.0         | 7.000                           |                               | 24.000               | 130                      |
| 2.0         | 36.000                          |                               |                      | 127                      |

| Test nummer | Olje produksjon [Sm3/dag] | Gass produksjon [Sm3/dag] | Oljetetthet [g/cm3] | Gasstyngde rel. luft | GOR [m3/m3] |
|-------------|---------------------------|---------------------------|---------------------|----------------------|-------------|
| 1.0         | 135                       | 63000                     | 0.880               | 0.710                | 470         |
| 2.0         | 140                       | 300000                    | 0.830               | 0.690                | 2140        |

**Logger**





| Type logg               | Topp dyp<br>for logg [m] | Bunn dyp for<br>logg [m] |
|-------------------------|--------------------------|--------------------------|
| DLL MSFL DSI GR SP ACTS | 3676                     | 4075                     |
| FMI GR ACTS             | 3476                     | 4063                     |
| LDL CNL CMR NGT ACTS    | 3476                     | 4075                     |
| MDT GR ACTS             | 3529                     | 3766                     |
| MDT GR AMS              | 3566                     | 3621                     |
| MRIL GR                 | 3510                     | 3660                     |
| MWD - GR RES DIR        | 118                      | 4076                     |
| VSP GR                  | 3000                     | 4010                     |

### 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                            | 190.0                    | 36                             | 192.0                   | 0.00                            | LOT                    |
| SURF.COND.    | 13 3/8                        | 1544.0                   | 17 1/2                         | 1558.0                  | 0.00                            | LOT                    |
| INTERM.       | 9 5/8                         | 3476.0                   | 12 1/4                         | 3477.0                  | 0.00                            | LOT                    |
| LINER         | 7                             | 4070.0                   | 8 1/2                          | 4076.0                  | 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 |
|-----------------|------------------------------|--------------------------------|---------------------|-------------|--------------|
| 150             | 1.14                         |                                |                     | WATER BASED |              |
| 250             | 1.20                         |                                |                     | WATER BASED |              |
| 263             | 1.64                         | 40.0                           |                     | WATER BASED |              |
| 300             | 1.20                         | 11.0                           |                     | WATER BASED |              |
| 1558            | 1.20                         | 18.0                           |                     | WATER BASED |              |
| 2513            | 1.41                         | 24.0                           |                     | WATER BASED |              |
| 3478            | 1.41                         | 23.0                           |                     | WATER BASED |              |
| 3828            | 1.64                         | 34.0                           |                     | WATER BASED |              |
| 4076            | 1.64                         | 39.0                           |                     | WATER BASED |              |
| 4078            | 1.64                         | 37.0                           |                     | WATER BASED |              |

### 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="#">2886 Formation pressure (Formasjonstrykk)</a> | pdf             | 0.23                    |

