

**General information**

|                                    |                              |
|------------------------------------|------------------------------|
| Wellbore name                      | 34/8-4 A                     |
| Type                               | EXPLORATION                  |
| Purpose                            | APPRAISAL                    |
| Status                             | P&A                          |
| Factmaps in new window             | <a href="#">link to map</a>  |
| Main area                          | NORTH SEA                    |
| Field                              | <a href="#">VISUND</a>       |
| Discovery                          | <a href="#">34/8-4 S</a>     |
| Well name                          | 34/8-4                       |
| Seismic location                   | NH 9001- REKKE 589 & SP. 698 |
| Production licence                 | <a href="#">120</a>          |
| Drilling operator                  | Norsk Hydro Produksjon AS    |
| Drill permit                       | 711-L                        |
| Drilling facility                  | <a href="#">TRANSOCEAN 8</a> |
| Drilling days                      | 100                          |
| Entered date                       | 18.02.1992                   |
| Completed date                     | 27.05.1992                   |
| Release date                       | 27.05.1994                   |
| Publication date                   | 22.04.2005                   |
| Purpose - planned                  | APPRAISAL                    |
| Reentry                            | NO                           |
| Content                            | OIL                          |
| Discovery wellbore                 | NO                           |
| 1st level with HC, age             | EARLY JURASSIC               |
| 1st level with HC, formation       | STATFJORD GP                 |
| 2nd level with HC, age             | LATE TRIASSIC                |
| 2nd level with HC, formation       | LUNDE FM                     |
| Kelly bushing elevation [m]        | 23.5                         |
| Water depth [m]                    | 309.0                        |
| Total depth (MD) [m RKB]           | 3567.0                       |
| Final vertical depth (TVD) [m RKB] | 3313.0                       |
| Maximum inclination [°]            | 33.3                         |
| Bottom hole temperature [°C]       | 123                          |
| Oldest penetrated age              | LATE TRIASSIC                |
| Oldest penetrated formation        | LUNDE FM                     |
| Geodetic datum                     | ED50                         |
| NS degrees                         | 61° 19' 29.58" N             |
| EW degrees                         | 2° 25' 18.67" E              |



|                |            |
|----------------|------------|
| NS UTM [m]     | 6799274.11 |
| EW UTM [m]     | 469049.02  |
| UTM zone       | 31         |
| NPDID wellbore | 1909       |

## Wellbore history

### General

Well 34/8-4 A on the Visund Field was initiated as a sidetrack to well 34/8-4 S, which had been temporarily plugged and abandoned. The original well had missed the planned Statfjord Formation target due to structural complexities of the area. The sidetrack should reach the target location, Statfjord Formation, approximately 420 m north-northwest of the surface location in an area of good seismic control. The main objective was to test Statfjord Formation hydrocarbon potential, fluid composition and aquifer characteristics. Secondary objectives were to evaluate the Lunde Formation B/C aquifer characteristics, to establish stratigraphic control of the Base Cretaceous - top Statfjord interval, and to determine the mechanism for hydraulic communication with the Brent reservoir in well 34/8-4S through gravity slide Brent segment and/or through Dunlin Group reservoir.

### Operations and results

Well 34/8-4 S was re-entered with the semi submersible installation Transocean 8 on 18 February 1992. The sidetrack 34/8-4 A was kicked off from below the 13 3/8" shoe at 2187 m in the primary well bore and drilled to TD at 3567 m in the late Triassic Lunde Formation. No significant problems were encountered during drilling. The well was drilled with a KCl / polymer mud from kick-off to TD.

A major unconformity was found between the top of the Early Jurassic (Pliensbachian) at 2902.5 m and the overlying Early Cretaceous (Hauterivian). A sandstone member of the Amundsen Formation was encountered from 2942 m to 2989.5 m. One core was taken in this unit and recorded good hydrocarbon shows. Subsequent wire line logs and DST results confirmed that the interval is oil bearing. A gross reservoir thickness of 31.0 m was defined, giving a net pay thickness of 22.38 m. The Statfjord Formation occurred between 3057 m and 3143 m. A total of 7 cores were cut through this interval. Good oil shows were observed throughout. The Lunde Formation was present from 3143 m to TD, at 3567 m and consisted of claystone and distinct interbedded sandstone units. Good shows were recorded in cores in individual sandstone bodies in the upper part of the formation. A total gross reservoir of 205.5 m and a net pay of 115.5 m were defined. An OWC was identified at 3340.5 m.

Altogether sixteen cores were cut from the Dunlin Group and Statfjord and Lunde Formations with a total of 174 m recovered. RFT samples were taken at 3294.5 m (46 °API oil, gas and water/filtrate) and at 3326.5 m (42 °API oil, gas and water/filtrate). The first oil show was recorded at 2909 m at the top of the Jurassic section and the last at 3342 m in the Lunde Formation.

The well was suspended on 27 May 1992 as an oil appraisal.

### Testing

Five DST tests were performed in this well, one in the Lunde Formation, three in the Statfjord Formation, and one in the Dunlin Group. The following flow data are from end of main flow.

DST 1 in the Lunde Formation perforated the interval 3322.9 m to 3340.9 m and flowed



936 Sm<sup>3</sup> oil and 212000 Sm<sup>3</sup> gas / day. The GOR was 226 Sm<sup>3</sup>/Sm<sup>3</sup>, oil density (@15 °C) was 0.815 g/cm<sup>3</sup>, and the gas gravity (air = 1) was 0.77 with 1.4 % CO<sub>2</sub> and <0.1 ppm H<sub>2</sub>S.

DST 2 in the Statfjord Formation perforated the interval 3214.0 m to 3228.0 m and flowed 35 Sm<sup>3</sup> oil and 15700 Sm<sup>3</sup> gas / day. The GOR was 448 Sm<sup>3</sup>/Sm<sup>3</sup>, oil density (@15 °C) was 0.802 g/cm<sup>3</sup>, and the gas gravity (air = 1) was 0.81 with 1.2 % CO<sub>2</sub> and <0.1 ppm H<sub>2</sub>S.

DST 3 in the Statfjord Formation perforated the interval 3160.6 m to 3184.6 m and flowed 821 Sm<sup>3</sup> oil and 171000 Sm<sup>3</sup> gas / day. The GOR was 208 Sm<sup>3</sup>/Sm<sup>3</sup>, oil density (@15 °C) was 0.820 g/cm<sup>3</sup>, and the gas gravity (air = 1) was 0.74 with 1.2 % CO<sub>2</sub> and no H<sub>2</sub>S.

DST 4 in the Statfjord Formation perforated the interval 3056.0 m to 3108.0 m and flowed 831 Sm<sup>3</sup> oil and 181000 Sm<sup>3</sup> gas / day. The GOR was 218 Sm<sup>3</sup>/Sm<sup>3</sup>, oil density (@15 °C) was 0.821 g/cm<sup>3</sup>, and the gas gravity (air = 1) was 0.74 with 1.2 % CO<sub>2</sub> and 0.5 ppm H<sub>2</sub>S.

DST 5 in the Dunlin Group perforated the interval 2988.5 m to 3019.5 m and flowed 992 Sm<sup>3</sup> oil and 225000 Sm<sup>3</sup> gas / day. The GOR was 227 Sm<sup>3</sup>/Sm<sup>3</sup>, oil density (@15 °C) was 0.820 g/cm<sup>3</sup>, and the gas gravity (air = 1) was 0.74 with 1.2 % CO<sub>2</sub> and 0.5 ppm H<sub>2</sub>S.

**Cuttings at the Norwegian Offshore Directorate**

| Cutting sample, top depth [m] | Cutting samples, bottom depth [m] |
|-------------------------------|-----------------------------------|
| 2190.00                       | 3567.00                           |

|                                  |     |
|----------------------------------|-----|
| 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                  | 2909.0                  | 2914.1                     | [m ]                    |
| 2                  | 2994.0                  | 3006.1                     | [m ]                    |
| 3                  | 3063.0                  | 3071.8                     | [m ]                    |
| 4                  | 3072.5                  | 3087.7                     | [m ]                    |
| 5                  | 3088.0                  | 3102.6                     | [m ]                    |
| 6                  | 3103.0                  | 3112.4                     | [m ]                    |
| 7                  | 3113.5                  | 3117.7                     | [m ]                    |
| 8                  | 3118.5                  | 3134.7                     | [m ]                    |
| 9                  | 3135.0                  | 3146.3                     | [m ]                    |
| 10                 | 3146.5                  | 3155.0                     | [m ]                    |
| 11                 | 3156.0                  | 3183.0                     | [m ]                    |
| 12                 | 3183.0                  | 3196.2                     | [m ]                    |
| 13                 | 3197.5                  | 3197.8                     | [m ]                    |



|    |        |        |      |
|----|--------|--------|------|
| 14 | 3198.5 | 3201.0 | [m ] |
| 15 | 3247.5 | 3258.4 | [m ] |
| 16 | 3329.0 | 3342.5 | [m ] |

|                               |       |
|-------------------------------|-------|
| Total core sample length [m]  | 172.8 |
| Cores available for sampling? | YES   |

### Core photos



2909-2913m



2913-2914m



2994-2998m



2998-3002m



3002-3006m



3006-3006m



3063-3067m



3067-3071m



3071-3072m



3072-3076m



3076-3080m



3080-3084m



3084-3087m



3088-3092m



3092-3096m



3096-3100m



3100-3102m



3103-3107m



3107-3111m



3111-3112m



3113-3117m



3118-3123m



3123-3128m



3128-3133m



3133-3134m



3135-3140m



3140-3145m



3145-3146m



3146-3151m



3151-3154m



3156-3161m



3161-3166m



3166-3171m



3171-3176m



3176-3181m



3181-3182m



3183-3188m



3188-3193m



3193-3196m



3197-3198m



3198-3201m



3247-3252m



3252-3257m



3257-3258m



3329-3334m



3334-3339m



3339-3342m

**Palynological slides at the Norwegian Offshore Directorate**

| Sample depth | Depth unit | Sample type | Laboratory |
|--------------|------------|-------------|------------|
| 2910.1       | [m]        | C           | HYDRO      |
| 2912.5       | [m]        | C           | HYDRO      |
| 2965.0       | [m]        | SWC         | HYDRO      |
| 2985.0       | [m]        | SWC         | HYDRO      |
| 3000.3       | [m]        | C           | HYDRO      |
| 3003.8       | [m]        | C           | HYDRO      |
| 3020.0       | [m]        | SWC         | HYDRO      |
| 3050.0       | [m]        | SWC         | HYDRO      |
| 3055.0       | [m]        | SWC         | HYDRO      |
| 3069.0       | [m]        | C           | HYDRO      |
| 3074.0       | [m]        | C           | HYDRO      |
| 3094.1       | [m]        | C           | HYDRO      |
| 3110.2       | [m]        | C           | HYDRO      |
| 3116.6       | [m]        | C           | HYDRO      |
| 3117.4       | [m]        | C           | HYDRO      |
| 3119.5       | [m]        | C           | HYDRO      |
| 3125.3       | [m]        | C           | HYDRO      |
| 3149.9       | [m]        | C           | HYDRO      |
| 3150.3       | [m]        | C           | HYDRO      |
| 3159.5       | [m]        | C           | HYDRO      |
| 3181.3       | [m]        | C           | HYDRO      |
| 3186.6       | [m]        | C           | HYDRO      |
| 3194.7       | [m]        | C           | HYDRO      |
| 3220.0       | [m]        | SWC         | HYDRO      |
| 3225.0       | [m]        | SWC         | HYDRO      |
| 3230.0       | [m]        | SWC         | HYDRO      |
| 3235.0       | [m]        | SWC         | HYDRO      |
| 3250.8       | [m]        | SWC         | HYDRO      |
| 3275.0       | [m]        | SWC         | HYDRO      |
| 3330.6       | [m]        | C           | HYDRO      |
| 3340.6       | [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       | DST1          | 3322.90          | 3340.90             | OIL        | 09.04.1992 - 17:30 | YES               |
| DST       | DST2          | 0.00             | 0.00                | OIL        | 22.04.1992 - 00:00 | YES               |
| DST       | DST4          | 0.00             | 0.00                | OIL        | 12.05.1992 - 22:15 | YES               |

**Lithostratigraphy**

| Top depth [mMD RKB] | Lithostrat. unit                |
|---------------------|---------------------------------|
| 333                 | <a href="#">NORDLAND GP</a>     |
| 1072                | <a href="#">UTSIRA FM</a>       |
| 1109                | <a href="#">HORDALAND GP</a>    |
| 1820                | <a href="#">ROGALAND GP</a>     |
| 1820                | <a href="#">BALDER FM</a>       |
| 1863                | <a href="#">SELE FM</a>         |
| 1876                | <a href="#">LISTA FM</a>        |
| 2031                | <a href="#">SHETLAND GP</a>     |
| 2894                | <a href="#">CROMER KNOLL GP</a> |
| 2903                | <a href="#">DUNLIN GP</a>       |
| 2903                | <a href="#">AMUNDSEN FM</a>     |
| 3057                | <a href="#">STATFJORD GP</a>    |
| 3143                | <a href="#">HEGRE GP</a>        |
| 3143                | <a href="#">LUNDE FM</a>        |

**Composite logs**

| Document name        | Document format | Document size [MB] |
|----------------------|-----------------|--------------------|
| <a href="#">1909</a> | pdf             | 0.56               |

**Geochemical information**

| Document name          | Document format | Document size [MB] |
|------------------------|-----------------|--------------------|
| <a href="#">1909_1</a> | pdf             | 5.30               |



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

| Document name                                    | Document format | Document size [MB] |
|--------------------------------------------------|-----------------|--------------------|
| <a href="#">1909_01_WDSS_General_Information</a> | pdf             | 1.18               |
| <a href="#">1909_02_WDSS_completion_log</a>      | pdf             | 0.19               |

**Drill stem tests (DST)**

| Test number | From depth MD [m] | To depth MD [m] | Choke size [mm] |
|-------------|-------------------|-----------------|-----------------|
| 1.0         | 3323              | 3341            | 14.2            |
| 2.0         | 3214              | 3228            | 12.7            |
| 3.0         | 3160              | 3184            | 19.0            |
| 4.0         | 3056              | 3108            | 12.7            |
| 5.0         | 2988              | 3019            | 14.3            |

| Test number | Final shut-in pressure [MPa] | Final flow pressure [MPa] | Bottom hole pressure [MPa] | Downhole temperature [°C] |
|-------------|------------------------------|---------------------------|----------------------------|---------------------------|
| 1.0         | 23.000                       |                           | 49.000                     | 118                       |
| 2.0         | 1.000                        |                           | 7.000                      | 105                       |
| 3.0         | 11.000                       |                           | 27.000                     | 113                       |
| 4.0         | 26.000                       |                           | 45.000                     | 110                       |
| 5.0         | 26.000                       |                           | 44.000                     | 109                       |

| Test number | Oil [Sm3/day] | Gas [Sm3/day] | Oil density [g/cm3] | Gas grav. rel.air | GOR [m3/m3] |
|-------------|---------------|---------------|---------------------|-------------------|-------------|
| 1.0         | 936           | 211536        | 0.815               | 0.770             | 226         |
| 2.0         | 35            | 15680         | 0.800               | 0.810             | 448         |
| 3.0         | 821           | 170768        | 0.820               | 0.740             | 208         |
| 4.0         | 831           | 181158        | 0.821               | 0.740             | 218         |
| 5.0         | 992           | 225184        | 0.820               | 0.740             | 227         |

**Logs**





| Log type                | Log top depth [m] | Log bottom depth [m] |
|-------------------------|-------------------|----------------------|
| ASI GR                  | 2235              | 3485                 |
| CST GR                  | 2300              | 3522                 |
| DIL LSS LDL CNL NGT SP  | 1838              | 3564                 |
| DLL MSFL LDL CNL GR AMS | 2960              | 3156                 |
| DLL MSFL LSS GR AMS     | 2140              | 3393                 |
| MDT GR AMS              | 2991              | 3413                 |
| MDT GR AMS              | 3294              | 3448                 |
| MWD - GR RES DIR        | 2187              | 3504                 |
| SHDT GR AMS             | 2850              | 3537                 |

**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                  | 417.0            | 36                | 420.0          | 0.00                     | LOT                 |
| INTERM.     | 18 5/8              | 1146.0           | 26                | 1150.0         | 1.58                     | LOT                 |
| INTERM.     | 13 3/8              | 2161.0           | 17 1/2            | 2165.0         | 1.78                     | LOT                 |
| INTERM.     | 9 5/8               | 3567.0           | 12 1/4            | 3567.0         | 0.00                     | LOT                 |

**Drilling mud**

| Depth MD [m] | Mud weight [g/cm3] | Visc. [mPa.s] | Yield point [Pa] | Mud type    | Date measured |
|--------------|--------------------|---------------|------------------|-------------|---------------|
| 550          | 1.71               | 22.0          |                  | WATER BASED |               |
| 2188         | 1.64               | 30.0          |                  | WATER BASED |               |
| 2230         | 1.70               | 27.0          |                  | WATER BASED |               |
| 2250         | 1.64               | 31.0          |                  | WATER BASED |               |
| 2434         | 1.64               | 30.0          |                  | WATER BASED |               |
| 2509         | 1.63               | 35.0          |                  | WATER BASED |               |
| 2615         | 1.64               | 34.0          |                  | WATER BASED |               |
| 2700         | 1.70               | 20.0          |                  | WATER BASED |               |
| 2813         | 1.64               | 37.0          |                  | WATER BASED |               |
| 2909         | 1.64               | 36.0          |                  | WATER BASED |               |
| 2914         | 1.64               | 40.0          |                  | WATER BASED |               |
| 2994         | 1.64               | 40.0          |                  | WATER BASED |               |
| 3012         | 1.70               | 33.0          |                  | WATER BASED |               |
| 3037         | 1.70               | 20.0          |                  | WATER BASED |               |



|      |      |      |  |             |  |
|------|------|------|--|-------------|--|
| 3042 | 1.65 | 37.0 |  | WATER BASED |  |
| 3073 | 1.66 | 40.0 |  | WATER BASED |  |
| 3103 | 1.66 | 41.0 |  | WATER BASED |  |
| 3114 | 1.66 | 41.0 |  | WATER BASED |  |
| 3120 | 1.66 | 39.0 |  | WATER BASED |  |
| 3144 | 1.70 | 30.0 |  | WATER BASED |  |
| 3147 | 1.66 | 40.0 |  | WATER BASED |  |
| 3150 | 1.70 | 32.0 |  | WATER BASED |  |
| 3156 | 1.66 | 37.0 |  | WATER BASED |  |
| 3156 | 1.66 | 37.0 |  | WATER BASED |  |
| 3183 | 1.65 | 37.0 |  | WATER BASED |  |
| 3197 | 1.70 | 32.0 |  | WATER BASED |  |
| 3198 | 1.65 | 39.0 |  | WATER BASED |  |
| 3200 | 1.65 | 39.0 |  | WATER BASED |  |
| 3202 | 1.65 | 39.0 |  | WATER BASED |  |
| 3248 | 1.70 | 32.0 |  | WATER BASED |  |
| 3259 | 1.65 | 35.0 |  | WATER BASED |  |
| 3272 | 1.65 | 35.0 |  | WATER BASED |  |
| 3342 | 1.65 | 39.0 |  | WATER BASED |  |
| 3447 | 1.65 | 33.0 |  | WATER BASED |  |
| 3500 | 1.71 | 35.0 |  | WATER BASED |  |
| 3504 | 1.65 | 37.0 |  | WATER BASED |  |
| 3567 | 1.64 | 38.0 |  | WATER BASED |  |

## 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] |
|-----------------------------------------------------------|-----------------|--------------------|
| <a href="#">1909 Formation pressure (Formasjonstrykk)</a> | pdf             | 0.23               |

