## General information

| | |
|---|---|
| Wellbore name | 30/6-7 |
| Type | EXPLORATION |
| Purpose | APPRAISAL |
| Status | P&A |
| Factmaps in new window | link to map |
| Main area | NORTH SEA |
| Field | OSEBERG |
| Discovery | 30/6-1 Oseberg |
| Well name | 30/6-7 |
| Seismic location | 8006 - 137 SP 589 |
| Production licence | 053 |
| Drilling operator | Norsk Hydro Produksjon AS |
| Drill permit | 329-L |
| Drilling facility | NORTRYM |
| Drilling days | 97 |
| Entered date | 20.05.1982 |
| Completed date | 24.08.1982 |
| Release date | 24.08.1984 |
| Publication date | 26.10.2009 |
| Purpose - planned | APPRAISAL |
| Reentry | NO |
| Content | OIL/GAS |
| Discovery wellbore | NO |
| 1st level with HC, age | MIDDLE JURASSIC |
| 1st level with HC, formation | TARBERT FM |
| 2nd level with HC, age | MIDDLE JURASSIC |
| 2nd level with HC, formation | NESS FM |
| Kelly bushing elevation [m] | 25.0 |
| Water depth [m] | 114.0 |
| Total depth (MD) [m RKB] | 3236.0 |
| Final vertical depth (TVD) [m RKB] | 3236.0 |
| Maximum inclination [°] | 3 |
| Bottom hole temperature [°C] | 124 |
| Oldest penetrated age | EARLY JURASSIC |
| Oldest penetrated formation | STATFJORD GP |
| Geodetic datum | ED50 |
| NS degrees | 60° 38' 39.49'' N |
| EW degrees | 2° 45' 21.74'' E |

| | |
|---|---|
| NS UTM [m] | 6723352.60 |
| EW UTM [m] | 486657.23 |
| UTM zone | 31 |
| NPDID wellbore | 73 |

## Wellbore history

### General

Well 30/6-7 is an appraisal well on the Oseberg Field, discovered by well 30/6-1 in 1979.The primary objective was to test for hydrocarbon accumulations in the Late Jurassic sandstones of the Brent formation and the Late and Early Jurassic sandstones of the Dunlin and Statfjord formations in the Alpha north structure. Secondary objectives were to establish the type of communication between the Alpha and Alpha North structures and to define the oil/water contact on Alpha North. The well was planned to reach total depth at 3225 +- 50 m, 75 m into the Statfjord Formation.

The well is Type well for the Oseberg Formation and Reference well for the Amundsen, Cook, Drake, Etive, Ness, and Tarbert Formations.

### Operations and results

Well 30/6-7 was spudded with the semi-submersible installation Nortrym on 20 May 1982 and drilled to TD at 3236 m in Early Jurassic rocks of the Statfjord Formation. The 26" section was initiated by a 17 1/2" pilot hole. One small pocket of shallow gas was detected at 358 m (5.6% C1). The well was drilled with seawater and hi-vis pills down to 952 m and with KCl/polymer mud from 952 m to 2285 m. At 2285 m the 13 3/8" casing got stuck and a pill of EZY spot and diesel was pumped in the hole, without effect. The drilling fluid used in the 12 1/4" section from 2285 m to 2915 m the well was drilled with a Dextrid/KCl mud. From 2915 m to TD the mud was converted to a dispersed system by adding lignosulfonate.

The Brent Group was encountered at 2631.5 m. The Brent Group was hydrocarbon bearing with a total gross thickness of 154.5 m and a net sand interval of 106.9 m. The net pay was 50.7 m. Sandstone intervals were also encountered in the Early Jurassic Cook and Statfjord formations but these were both 100% water saturated.

The Tarbert Formation (2631.5 - 2646.5 m) formed the uppermost interval in the Brent Group. It consisted of very fine to fine grained sandstone which was occasionally medium to coarse grained. Wire line log evaluation gave a net pay of 14.7 m, with an average porosity of 20.7% and an average water saturation of 18.1%. Average permeability (KH, log) was 520 mD.

The Ness Formation (2646.5 - 2727.5 m) consisted of interbedded sandstones, shales, siltstones and stringers of coal. The sandstones were very fine to medium, occasionally coarse grained and locally very micaceous and carbonaceous. The interval contained 38.7 m of net sand and 36 m of net pay which had an average porosity of 20.5%, average water saturation of 27.7% and an average permeability of 577 mD (KH, log). Measured average permeability (KH, core) was 1163 mD.

FMT pressure measurements were taken throughout the Brent interval showing that the different sandstone intervals in the Tarbert and Ness Formations have different oil gradients. From log analysis an oil/water contact has been estimated to be at 2723.5 m in the Ness Formation. On the Alpha structure an oil/water contact has been defined at 2731 m from earlier wells and it appears therefore that the southwest - northeast fault separating the Alpha from the Alpha North structure does have some sealing properties.

The Etive Formation (2727.5 - 2786 m) consists predominantly of a very fine grained to pebbly sandstone with occasional stringers of shale and siltstone. The interval contained 53.5 m of net sand with average porosity of 19.5%. A transition zone of residual hydrocarbons (2727.5 - 2747 m) had an average water saturation of 72%. This agrees with patchy oil shows seen in the cores down to 2755 m (2747 m when depth correction between logger's and driller's depths is applied). The remaining interval of the Etive Formation (2747 - 2786 m) had an average water saturation of 94%. Average permeability of the Etive Formation was 799 mD (KH, log) Measured average permeability from cores was 1670 mD (KH, core).

Apart from in the hydrocarbon bearing reservoirs as described above, weak shows were described in thin limestone stringers in the Sele Formation and in limestones of the Shetland Group.

A total of twelve conventional cores were cut from 2648 to 2812.4 m in the 12 1/4" section in the well. A total of 155.1 m (94.3%) was recovered. Cores were cut consecutively from the top of the Ness Formation and down into the Dunlin Group shales. Core depths are approximately 5 m shallower than logger's depths at the top of Core No 1 and 8.5 m shallower at the base of Core No 12. FMT fluid samples were taken at 2633.5 m (gas, oil and water/filtrate), 2643m (gas, oil and water/filtrate), 2666 m (gas, oil and water/filtrate), 2676 m (gas, oil and water/filtrate), 2684 m (gas, oil and trace of water/filtrate), 2713 m (water/filtrate), and 2714 m (water/filtrate).

The well was permanently abandoned on 24 August 1982 as an oil and gas appraisal well.

**Testing**

Four DTS' were performed in the Brent formation sandstones.

DST 1 was taken over the interval 2729 -2736 m and produced 770 m3 water/day through an 80/64" choke. Reservoir pressure was 4255.5 psig and the BHT was 110 °C.

DST 2 was taken over the interval 2711 - 2716 m and produced 1028 SM3/day of 34.9 deg API oil and 116100 Sm3 of 0.72 SG gravity gas through a 56/6 4" choke. Separator GOR was 113 Sm3/Sm3, CO2 content was 0.8%, reservoir pressure was 4250 psig and the BHT was 110 °C.

DST 3 was taken in the interval 2681 -2684 m and produced 534 Sm3 of 33.9 deg API gravity oil and 65130 Sm3 of 0.702 SG gravity gas through a 32/64" choke. Separator GOR was 122 Sm3/Sm3, CO2 content was 0.2%, and reservoir pressure was extrapolated to be 4222 psig. This test was aborted due to bad weather conditions and no bottom hole samples were obtained.

DST 4 was taken in the interval 2633 -2636 m and produced 1339 Sm3 of 34.1 deg API oil and 146681 Sm3 of 0.700 SG gravity gas through a 72/64" choke. Separator GOR was 110 Sm3/Sm3, CO2 content was 1.0%, and reservoir pressure was extrapolated to be 4178 psig.

## Cuttings at the Norwegian Offshore Directorate

| Cutting sample, top depth [m] | Cutting samples, bottom depth [m] |
|---|---|
| 230.00 | 3237.00 |

| 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 | 2648.0 | 2666.1 | [m ] |
| 2 | 2666.1 | 2675.0 | [m ] |
| 3 | 2679.5 | 2692.2 | [m ] |
| 4 | 2692.2 | 2693.7 | [m ] |
| 5 | 2694.0 | 2705.0 | [m ] |
| 6 | 2707.0 | 2719.4 | [m ] |
| 7 | 2720.0 | 2733.1 | [m ] |
| 8 | 2733.1 | 2750.0 | [m ] |
| 9 | 2751.0 | 2761.4 | [m ] |
| 10 | 2762.0 | 2778.8 | [m ] |
| 11 | 2780.0 | 2793.9 | [m ] |
| 12 | 2793.9 | 2812.4 | [m ] |

| | |
|---|---|
| Total core sample length [m] | 154.1 |
| Cores available for sampling? | YES |

## Core photos


2648-2652m


2652-2656m


2656-2660m


2660-2664m


2664-2666m


2666-2670m


2670-2674m


2674-2675m


2679-2683m


2683-2687m

2687-2691m 2691-2692m 2692-2693m 2694-2698m 2698-2702m





2702-2705m 2707-2711m 2711-2715m 2715-2719m 2719-2719m





2720-2724m 2724-2728m 2728-2732m 2732-2733m 2733-2737m





2737-2741m 2741-2745m 2745-2749m 2749-2750m 2751-2755m





2755-2759m 2759-2761m 2762-2766m 2766-2770m 2770-2774m





2774-2778m 2778-2779m 2780-2784m 2784-2788m 2788-2792m





2792-2793m 2793-2797m 2797-2801m 2801-2805m 2805-2808m

2809-2812m

**Palynological slides at the Norwegian Offshore Directorate**

| Sample depth | Depth unit | Sample type | Laboratory |
|---|---|---|---|
| 2507.0 | [m] | SWC | RRI |
| 2530.0 | [m] | SWC | RRI |
| 2545.0 | [m] | SWC | RRI |
| 2602.0 | [m] | SWC | RRI |
| 2609.5 | [m] | SWC | RRI |
| 2615.0 | [m] | SWC | RRI |
| 2620.0 | [m] | SWC | RRI |
| 2625.0 | [m] | SWC | RRI |
| 2628.0 | [m] | SWC | RRI |
| 2662.0 | [m] | C | RRI |
| 2692.1 | [m] | C | RRI |
| 2693.7 | [m] | C | RRI |
| 2698.0 | [m] | C | RRI |
| 2699.0 | [m] | C | RRI |
| 2705.0 | [m] | C | RRI |
| 2712.4 | [m] | C | RRI |
| 2717.8 | [m] | C | RRI |
| 2726.9 | [m] | C | RRI |
| 2730.8 | [m] | C | RRI |
| 2734.1 | [m] | C | RRI |
| 2745.0 | [m] | C | RRI |
| 2765.1 | [m] | C | RRI |
| 2780.3 | [m] | C | RRI |
| 2795.1 | [m] | C | RRI |
| 2800.5 | [m] | C | RRI |
| 2805.0 | [m] | C | RRI |
| 2807.0 | [m] | SWC | RRI |

| | | | |
|---|---|---|---|
| 2810.0 | [m] | C | RRI |
| 2812.0 | [m] | C | RRI |
| 2817.0 | [m] | SWC | RRI |
| 2836.0 | [m] | SWC | RRI |
| 2869.0 | [m] | SWC | RRI |
| 2892.0 | [m] | SWC | RRI |
| 2908.9 | [m] | SWC | RRI |

**Lithostratigraphy**

| Top depth [mMD RKB] | Lithostrat. unit |
|---|---|
| 139 | NORDLAND GP |
| 704 | UTSIRA FM |
| 893 | HORDALAND GP |
| 1344 | NO FORMAL NAME |
| 1376 | NO FORMAL NAME |
| 2010 | ROGALAND GP |
| 2010 | BALDER FM |
| 2083 | SELE FM |
| 2192 | LISTA FM |
| 2272 | VÅLE FM |
| 2290 | SHETLAND GP |
| 2290 | JORSALFARE FM |
| 2360 | KYRRE FM |
| 2560 | VIKING GP |
| 2560 | HEATHER FM |
| 2632 | BRENT GP |
| 2632 | TARBERT FM |
| 2646 | NESS FM |
| 2727 | ETIVE FM |
| 2737 | RANNOCH FM |
| 2739 | OSEBERG FM |
| 2786 | DUNLIN GP |
| 2786 | DRAKE FM |
| 2975 | COOK FM |
| 3023 | AMUNDSEN FM |
| 3152 | STATFJORD GP |

## Geochemical information

| Document name | Document format | Document size [MB] |
|---|---|---|
| 73_1 | pdf | 0.80 |
| 73_2 | pdf | 0.51 |

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

| Document name | Document format | Document size [MB] |
|---|---|---|
| 73_01_WDSS_General_Information | pdf | 0.21 |
| 73_02_WDSS_completion_log | pdf | 0.24 |

## Documents - reported by the production licence (period for duty of secrecy expired)

| Document name | Document format | Document size [MB] |
|---|---|---|
| 73_01_30_6_7_Completion_Report_and_Log | pdf | 18.46 |

## Drill stem tests (DST)

| Test number | From depth MD [m] | To depth MD [m] | Choke size [mm] |
|---|---|---|---|
| 1.0 | 2729 | 2736 | 31.7 |
| 2.0 | 2711 | 2716 | 22.2 |
| 3.0 | 2681 | 2684 | 12.7 |
| 4.0 | 2637 | 2639 | 19.0 |

| Test number | Final shut-in pressure [MPa] | Final flow pressure [MPa] | Bottom hole pressure [MPa] | Downhole temperature [°C] |
|---|---|---|---|---|
| 1.0 | | | | |
| 2.0 | | | | |
| 3.0 | | | | |
| 4.0 | | | | |

| Test number | Oil [Sm3/day] | Gas [Sm3/day] | Oil density [g/cm3] | Gas grav. rel.air | GOR [m3/m3] |
|---|---|---|---|---|---|
| 1.0 | | | | | |
| 2.0 | 1028 | 116000 | 0.850 | 0.720 | 113 |
| 3.0 | 534 | 65000 | 0.835 | 0.700 | 122 |
| 4.0 | 1339 | 146000 | 0.853 | 0.700 | 109 |

**Logs**

| Log type | Log top depth [m] | Log bottom depth [m] |
|---|---|---|
| CBL VDL | 825 | 2285 |
| CBL VDL | 2250 | 2928 |
| CCL GR | 130 | 2928 |
| CDL CNL CR CNL | 952 | 3233 |
| CST | 1300 | 2433 |
| CST | 2444 | 2908 |
| CST | 2914 | 32132 |
| DIFL LS BHC GR SP | 137 | 3232 |
| DLL MLL GR CAL | 2600 | 2908 |
| FMT | 2633 | 2775 |
| FMT | 2633 | 2633 |
| FMT | 2643 | 2643 |
| FMT | 2666 | 0 |
| FMT | 2666 | 2666 |
| FMT | 2676 | 2676 |
| FMT | 2684 | 2695 |
| FMT | 2684 | 2684 |
| FMT | 2694 | 2714 |
| FMT | 2713 | 2713 |
| FMT | 2743 | 2743 |
| FMT | 2977 | 3188 |
| HRD | 2000 | 3232 |
| MWD | 2475 | 2885 |
| VELOCITY | 230 | 3232 |

**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 | 227.0 | 36 | 227.5 | 0.00 | LOT |
| SURF.COND. | 20 | 952.0 | 26 | 965.0 | 1.62 | LOT |
| INTERM. | 13 3/8 | 2285.0 | 17 1/2 | 1787.0 | 1.78 | LOT |
| INTERM. | 9 5/8 | 2900.0 | 12 1/4 | 2916.0 | 1.75 | LOT |
| OPEN HOLE | | 3236.0 | 8 3/8 | 3236.0 | 0.00 | LOT |

**Drilling mud**

| Depth MD [m] | Mud weight [g/cm3] | Visc. [mPa.s] | Yield point [Pa] | Mud type | Date measured |
|---|---|---|---|---|---|
| 490 | 1.08 | 46.0 | | waterbased | |
| 970 | 1.20 | 38.0 | | waterbased | |
| 1795 | 1.35 | 60.0 | | waterbased | |
| 2200 | 1.43 | 69.0 | | waterbased | |
| 2450 | 1.36 | 62.0 | | waterbased | |
| 2720 | 1.35 | 45.0 | | waterbased | |
| 3045 | 1.26 | 49.0 | | waterbased | |
| 3120 | 1.27 | 67.0 | | waterbased | |
| 3210 | 1.26 | 58.0 | | waterbased | |

**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] |
|---|---|---|
| 73_Formation_pressure_(Formasjonstrykk) | pdf | 0.22 |