

**General information**

Wellbore name	30/9-14
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	OSEBERG SØR
Discovery	30/9-13 S Oseberg Sør
Well name	30/9-14
Seismic location	NH 8502- REKKE 325 & KOLONNE 251
Production licence	104
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	756-L
Drilling facility	POLAR PIONEER
Drilling days	60
Entered date	16.03.1993
Completed date	14.05.1993
Release date	14.05.1995
Publication date	28.05.2003
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	INTRA HEATHER FM SS
2nd level with HC, age	MIDDLE JURASSIC
2nd level with HC, formation	TARBERT FM
Kelly bushing elevation [m]	23.0
Water depth [m]	107.0
Total depth (MD) [m RKB]	3680.0
Final vertical depth (TVD) [m RKB]	3678.0
Maximum inclination [°]	8.4
Bottom hole temperature [°C]	135
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	DRAKE FM
Geodetic datum	ED50
NS degrees	60° 23' 11.12" N
EW degrees	2° 42' 19.37" E



NS UTM [m]	6694641.09
EW UTM [m]	483758.05
UTM zone	31
NPDID wellbore	2076

Wellbore history

General

Well 30/9-14 is located in the western part of block 30/9, on the Southern Oseberg complex. The primary objectives of the well were to appraise oil within the G-North prospect and verify the potential resources of the G-North and G-West prospect, leaving a minimum of untested resources up dip of the well on the G-North prospect; to define fluid contacts, primarily the OWC in the Tarbert Formation; and to verify the structural mapping, depth conversion and the geological model for the G-North area. Secondary objectives were to verify the lateral extent of the lower Heather sand, to test a possible hydrocarbon potential within the Ness and ORE (Oseberg/Rannoch/Etive) Formations, and to obtain a good well tie of the base Brent reflector and the intra Dunlin reflector.

Operations and results

Appraisal well 30/9-14 was spudded with the semi-submersible installation "Polar Pioneer" on 16 March 1993 and drilled to total depth at 3680 m in the Early Jurassic Drake Formation. The well was drilled water based with sea water and hi-vis pills in the 36", 24", and 17 1/2" sections, down to 1040 m, and with a KCl / PHPA / Polymer mud from 104 m to TD. Sedimentological and lithological development was similar to 30/9-13 S, but approximately 250 m of Early Oligocene sand encountered in well 30/9-13 S was not present in well 30/9-14 where the same interval is dominated by clay stone. The Viking Group came in at 2967 m and the Top Tarbert Formation came in at 3059.5 m, 84 m deeper than prognosis due to too low velocities in the Tertiary section. Sixty-six m of Intra Heather Sandstone was verified from 2993.5 m to 3059.5 m. Poor to moderate shows were observed in the Draupne and Heather Formations from 2968.5 m to 3059.5 m. Moderate to good shows were seen from 3059.6 m to 3130 m in the Tarbert Formation. Good shows (residual oil) were also observed in the ORE Formation from 3503 - 3514 m. The Lower Heather and upper Tarbert Formations were proven to be gas bearing, with a GDT at 3163 m. Oil was encountered in Tarbert with an OWC at 3218 m. There was a four bar pressure difference, in the oil zone, between 30/9-13S and 30/9-14. The water gradient was similar to 30/9-13S. Eight conventional cores with near 100% recovery were cut in the interval 2968 m to 3219 m (Draupne, Heather, and Tarbert Formations). Three further cores were cut from 3470 m to 3534 m (Ness, ORE, and Drake Formations). Wireline MDT samples were recovered from 3154.3 m (Tarbert Formation, water), 3126 m (Tarbert Formation, oil), and 3060.5 m (top Tarbert, Gas). An additional RFT sample containing gas was recovered from 3060.5 m. The well was plugged back and permanently abandoned as an oil and gas appraisal well on 14 May 1993.

Testing

The well was production tested from two intervals. Test no. 1 was perforated at 3144.5 m - 3157.5 m and produced water. Test no. 2 was perforated at 3084.0 m - 3127.0 m and produced saturated oil. Production test no. 1 was interpreted to flow from a net pay interval of 22.5 m with an average permeability of 478 mD. Test no. 2 was producing from a net pay interval of 14.25 m with an average permeability of 123 mD.



Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
490.00	3680.00

Cuttings available for sampling?	YES
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Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	2968.5	2980.0	[m]
2	2981.0	2985.4	[m]
3	2985.5	3003.0	[m]
4	3003.5	3031.0	[m]
5	3031.1	3058.0	[m]
6	3058.5	3113.0	[m]
7	3113.1	3166.0	[m]
8	3166.2	3218.0	[m]
9	3470.0	3500.0	[m]
10	3500.0	3500.4	[m]
11	3503.0	3534.1	[m]

Total core sample length [m]	308.4
Cores available for sampling?	YES

Core photos



2968-2973m



2973-2978m



2978-2980m



2981-2985m



2985-2990m





2990-2995m

2995-3000m

3000-3003m

3003-3008m

3008-3013m



3013-3018m

3018-3023m

3023-3028m

3028-3031m

3031-3036m



3036-3041m

3041-3046m

3046-3051m

3051-3056m

3056-3058m



3059-3063m

3063-3068m

3068-3073m

3073-3078m

3078-3083m



3088-3093m

3093-3098m

3098-3103m

3103-3108m

3108-3113m



3113-3113m

3113-3118m

3118-3123m

3123-3128m

3128-3133m





3133-3138m



3138-3143m



3143-3148m



3148-3153m



3153-3158m



3158-3163m



3163-3166m



3166-3171m



3171-3176m



3176-3181m



3181-3186m



3186-3191m



3191-3196m



3196-3201m



3201-3206m



3206-3211m



3211-3216m



3216-3218m



3470-3475m



3475-3480m



3480-3485m



3485-3490m



3490-3495m



3495-3500m



3500-3501m



3500-3508m



3508-3513m



3513-3518m



3518-3523m



3523-3528m



3528-3533m 3533-3534m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
500.0	[m]	DC	GEOST
520.0	[m]	DC	GEOST
540.0	[m]	DC	GEOST
560.0	[m]	DC	GEOST
580.0	[m]	DC	GEOST
600.0	[m]	DC	GEOST
620.0	[m]	DC	GEOST
640.0	[m]	DC	GEOST
660.0	[m]	DC	GEOST
680.0	[m]	DC	GEOST
700.0	[m]	DC	GEOST
720.0	[m]	DC	GEOST
740.0	[m]	DC	GEOST
760.0	[m]	DC	GEOST
780.0	[m]	DC	GEOST
800.0	[m]	DC	GEOST
820.0	[m]	DC	GEOST
840.0	[m]	DC	GEOST
860.0	[m]	DC	GEOST
880.0	[m]	DC	GEOST
900.0	[m]	DC	GEOST
910.0	[m]	DC	GEOST
940.0	[m]	DC	GEOST
960.0	[m]	DC	GEOST
980.0	[m]	DC	GEOST
1000.0	[m]	DC	GEOST
1020.0	[m]	DC	GEOST
1040.0	[m]	DC	GEOST
1048.5	[m]	SWC	HYDRO
1080.0	[m]	DC	GEOST
1100.0	[m]	DC	GEOST
1120.0	[m]	DC	GEOST
1140.0	[m]	DC	GEOST
1160.0	[m]	DC	GEOST



1180.0 [m]	DC	GEOST
1200.0 [m]	DC	GEOST
1220.0 [m]	DC	GEOST
1240.0 [m]	DC	GEOST
1260.0 [m]	DC	GEOST
1280.0 [m]	DC	GEOST
1300.0 [m]	DC	GEOST
1320.0 [m]	DC	GEOST
1350.0 [m]	DC	GEOST
1360.0 [m]	DC	GEOST
1380.0 [m]	DC	GEOST
1400.0 [m]	DC	GEOST
1420.0 [m]	DC	GEOST
1441.5 [m]	SWC	HYDRO
1460.0 [m]	DC	GEOST
1481.0 [m]	SWC	HYDRO
1500.0 [m]	DC	GEOST
1520.0 [m]	DC	GEOST
1530.0 [m]	SWC	HYDRO
1560.0 [m]	DC	GEOST
1572.5 [m]	SWC	HYDRO
1600.0 [m]	DC	GEOST
1620.0 [m]	DC	GEOST
1640.0 [m]	DC	GEOST
1660.0 [m]	DC	GEOST
1680.0 [m]	DC	GEOST
1698.0 [m]	SWC	HYDRO
1720.0 [m]	DC	GEOST
1730.0 [m]	DC	GEOST
1740.0 [m]	DC	GEOST
1760.0 [m]	DC	GEOST
1780.0 [m]	DC	GEOST
1800.0 [m]	DC	GEOST
1820.0 [m]	DC	GEOST
1840.0 [m]	DC	GEOST
1860.0 [m]	DC	GEOST
1870.0 [m]	SWC	HYDRO
1900.0 [m]	DC	GEOST
1922.0 [m]	SWC	HYDRO
1930.0 [m]	DC	GEOST



1960.0	[m]	DC	GEOST
1980.0	[m]	DC	GEOST
2000.0	[m]	DC	GEOST
2020.0	[m]	DC	GEOST
2038.5	[m]	SWC	HYDRO
2060.0	[m]	DC	GEOST
2080.0	[m]	DC	GEOST
2100.0	[m]	DC	GEOST
2120.0	[m]	DC	GEOST
2125.5	[m]	SWC	HYDRO
2140.0	[m]	DC	GEOST
2150.0	[m]	DC	GEOST
2151.0	[m]	SWC	HYDRO
2160.0	[m]	DC	GEOST
2170.0	[m]	DC	GEOST
2190.0	[m]	DC	GEOST
2210.0	[m]	SWC	HYDRO
2235.0	[m]	SWC	HYDRO
2240.0	[m]	DC	GEOST
2260.0	[m]	DC	GEOST
2280.0	[m]	DC	GEOST
2300.0	[m]	DC	GEOST
2320.0	[m]	DC	GEOST
2340.0	[m]	DC	GEOST
2358.0	[m]	SWC	HYDRO
2381.0	[m]	SWC	HYDRO
2400.0	[m]	DC	GEOST
2420.0	[m]	DC	GEOST
2440.0	[m]	DC	GEOST
2460.0	[m]	DC	GEOST
2480.0	[m]	DC	GEOST
2500.0	[m]	DC	GEOST
2520.0	[m]	DC	GEOST
2540.0	[m]	DC	GEOST
2560.0	[m]	DC	GEOST
2580.0	[m]	DC	GEOST
2600.0	[m]	DC	GEOST
2620.0	[m]	DC	GEOST
2640.0	[m]	DC	GEOST
2660.0	[m]	DC	GEOST



2680.0	[m]	DC	GEOST
2700.0	[m]	DC	GEOST
2720.0	[m]	DC	GEOST
2740.0	[m]	DC	GEOST
2760.0	[m]	DC	GEOST
2780.0	[m]	DC	GEOST
2800.0	[m]	DC	GEOST
2836.5	[m]	SWC	HYDRO
2850.0	[m]	DC	GEOST
2870.0	[m]	DC	GEOST
2890.0	[m]	DC	GEOST
2900.0	[m]	DC	GEOST
2910.0	[m]	DC	GEOST
2915.0	[m]	DC	GEOST
2925.0	[m]	SWC	HYDRO
2935.0	[m]	DC	GEOST
2945.0	[m]	DC	GEOST
2955.0	[m]	DC	GEOST
2959.0	[m]	SWC	HYDRO
2960.0	[m]	DC	GEOST
2962.0	[m]	DC	GEOST
2964.0	[m]	SWC	HYDRO
2965.0	[m]	DC	GEOST
2965.5	[m]	SWC	HYDRO
2967.5	[m]	SWC	HYDRO
2968.5	[m]	C	GEOST
2970.0	[m]	DC	GEOST
2973.0	[m]	C	GEOST
2973.5	[m]	C	GEOST
2980.0	[m]	DC	GEOST
2981.0	[m]	C	GEOST
2990.6	[m]	C	GEOST
2991.5	[m]	C	GEOST
2995.5	[m]	C	GEOST
3005.3	[m]	C	GEOST
3015.0	[m]	C	GEOST
3024.0	[m]	C	GEOST
3032.6	[m]	C	GEOST
3041.0	[m]	C	GEOST
3050.5	[m]	C	GEOST



3058.0 [m]	C	GEOST
3059.5 [m]	C	GEOST
3068.9 [m]	C	HYDRO
3079.0 [m]	C	HYDRO
3088.5 [m]	C	HYDRO
3098.7 [m]	C	HYDRO
3106.8 [m]	C	HYDRO
3114.1 [m]	C	HYDRO
3124.0 [m]	C	HYDRO
3132.1 [m]	C	HYDRO
3134.7 [m]	C	HYDRO
3144.0 [m]	C	HYDRO
3158.2 [m]	C	HYDRO
3161.6 [m]	C	HYDRO
3167.9 [m]	C	HYDRO
3178.9 [m]	C	HYDRO
3187.3 [m]	C	GEOST
3194.3 [m]	C	GEOST
3204.3 [m]	C	GEOST
3213.8 [m]	C	GEOST
3222.5 [m]	SWC	HYDRO
3232.0 [m]	SWC	HYDRO
3239.0 [m]	SWC	HYDRO
3254.0 [m]	SWC	HYDRO
3257.0 [m]	SWC	HYDRO
3262.0 [m]	DC	GEOST
3269.0 [m]	SWC	HYDRO
3274.0 [m]	SWC	HYDRO
3280.0 [m]	SWC	HYDRO
3287.0 [m]	DC	GEOST
3295.0 [m]	DC	GEOST
3298.5 [m]	SWC	HYDRO
3302.0 [m]	DC	GEOST
3310.0 [m]	DC	GEOST
3312.5 [m]	SWC	HYDRO
3317.0 [m]	DC	GEOST
3320.0 [m]	SWC	HYDRO
3326.0 [m]	SWC	HYDRO
3332.0 [m]	DC	GEOST
3334.5 [m]	SWC	HYDRO



3339.5 [m]	SWC	HYDRO
3340.0 [m]	DC	GEOST
3347.0 [m]	DC	GEOST
3347.5 [m]	SWC	HYDRO
3353.5 [m]	SWC	HYDRO
3355.0 [m]	DC	GEOST
3359.5 [m]	SWC	HYDRO
3362.0 [m]	DC	GEOST
3369.5 [m]	SWC	HYDRO
3370.0 [m]	DC	GEOST
3377.0 [m]	DC	GEOST
3380.5 [m]	SWC	HYDRO
3384.5 [m]	SWC	HYDRO
3385.0 [m]	DC	GEOST
3392.0 [m]	DC	GEOST
3397.0 [m]	SWC	HYDRO
3400.0 [m]	DC	GEOST
3406.0 [m]	SWC	HYDRO
3413.0 [m]	SWC	HYDRO
3422.0 [m]	SWC	HYDRO
3429.0 [m]	SWC	HYDRO
3437.0 [m]	SWC	HYDRO
3447.0 [m]	SWC	HYDRO
3455.0 [m]	DC	GEOST
3461.0 [m]	SWC	HYDRO
3470.0 [m]	C	GEOST
3475.0 [m]	C	GEOST
3485.0 [m]	C	GEOST
3489.4 [m]	C	GEOST
3503.9 [m]	C	GEOST
3507.9 [m]	C	GEOST
3516.0 [m]	C	GEOST
3525.0 [m]	C	GEOST
3533.9 [m]	C	GEOST
3539.5 [m]	SWC	HYDRO
3548.5 [m]	SWC	HYDRO
3550.0 [m]	DC	GEOST
3555.5 [m]	SWC	HYDRO
3566.5 [m]	SWC	HYDRO
3578.5 [m]	SWC	HYDRO



3587.5	[m]	SWC	HYDRO
3604.5	[m]	SWC	HYDRO
3612.5	[m]	SWC	HYDRO
3624.5	[m]	SWC	HYDRO
3625.0	[m]	DC	GEOST
3635.0	[m]	DC	GEOST
3639.5	[m]	SWC	HYDRO
3645.0	[m]	DC	GEOST
3657.5	[m]	SWC	HYDRO
3670.0	[m]	DC	GEOST
3672.5	[m]	SWC	HYDRO
3680.0	[m]	SWC	HYDRO
3680.0	[m]	DC	GEOST

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	TEST2	3127.00	3084.00	OIL	04.05.1993 - 01:06	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
130	NORDLAND GP
637	UTSIRA FM
840	HORDALAND GP
923	SKADE FM
1012	NO FORMAL NAME
1443	GRID FM
1478	NO FORMAL NAME
1538	GRID FM
1571	NO FORMAL NAME
2141	ROGALAND GP
2141	BALDER FM
2200	SELE FM
2265	LISTA FM
2438	SHETLAND GP



2438	HARDRÅDE FM
2682	KYRRE FM
2919	CROMER KNOLL GP
2919	RØDBY FM
2955	SOLA FM
2965	MIME FM
2968	VIKING GP
2968	DRAUPNE FM
2974	HEATHER FM
2994	INTRA HEATHER FM SS
3060	BRENT GP
3060	TARBERT FM
3236	NESS FM
3509	UNDIFFERENTIATED
3512	DUNLIN GP
3512	DRAKE FM

Composite logs

Document name	Document format	Document size [MB]
2076	pdf	0.75

Geochemical information

Document name	Document format	Document size [MB]
2076_1	pdf	1.76
2076_2	pdf	1.85
2076_3	pdf	1.72
2076_4	pdf	1.96
2076_5	pdf	1.93
2076_6	pdf	1.85

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





Document name	Document format	Document size [MB]
2076 30 9 14 COMPLETION REPORT AND LOG	pdf	27.74

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CST GR	1048	2909
CST GR	2918	3667
CST GR	3269	3667
CST GR	3286	3672
CST GR	3289	3680
DLL LSS LDL SP ACT GR	935	2889
DLL LSS SP CAL AMS GR	130	1036
DLL MSFL DSI NGT SP AMS GR	2902	3678
GHMT AMS GR	2901	3672
LDL CNL FMI GR	2902	3681
MDT GR	2993	3501
MWD DPR - YGR DPR DIR	2222	2903
MWD RGD - YGR RES DIR	130	3577
RFT HP AMS GR	2900	3515
VSP	1200	3590

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	217.0	36	217.0	0.00	LOT
INTERM.	18 5/8	471.0	24	478.0	1.88	LOT
INTERM.	13 5/8	1031.0	17 1/2	1040.0	1.44	LOT
INTERM.	9 5/8	2900.0	12 1/4	2912.0	1.77	LOT
LINER	7	3680.0	8 1/2	3680.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
180	1.13	17.0	8.0	WATER BASED	18.05.1993





180	1.13	16.0	11.0	WATER BASED	18.05.1993
456	1.20	11.0	22.0	WATER BASED	23.03.1993
478	1.20			WATER BASED	23.03.1993
478	1.20			WATER BASED	23.03.1993
800	1.13	18.0	11.0	WATER BASED	13.05.1993
921	1.20	5.0	10.0	WATER BASED	23.03.1993
993	1.10	6.0	9.0	WATER BASED	25.03.1993
1040	1.20	6.0	9.0	WATER BASED	24.03.1993
1043	1.10	6.0	9.0	WATER BASED	26.03.1993
1188	1.10	19.0	9.5	WATER BASED	30.03.1993
1369	1.32	22.0	11.5	WATER BASED	30.03.1993
1995	1.35	26.0	12.0	WATER BASED	30.03.1993
2165	1.05			WATER BASED	17.03.1993
2165	1.05			WATER BASED	18.03.1993
2165	1.05			WATER BASED	19.03.1993
2231	1.35	25.0	14.0	WATER BASED	30.03.1993
2516	1.35	26.0	10.0	WATER BASED	31.03.1993
2860	1.35	26.0	12.5	WATER BASED	31.03.1993
2900	1.13	15.0	8.0	WATER BASED	11.05.1993
2912	1.36	31.0	12.0	WATER BASED	01.04.1993
2969	1.15	22.0	7.0	WATER BASED	06.04.1993
3141	1.15	17.0	14.0	WATER BASED	03.05.1993
3141	1.13	17.0	12.0	WATER BASED	03.05.1993
3141	1.13	15.0	9.0	WATER BASED	10.05.1993
3141	1.13	14.0	11.0	WATER BASED	10.05.1993
3470	1.16	14.0	9.5	WATER BASED	14.04.1993
3500	1.16	13.0	8.5	WATER BASED	16.04.1993
3534	1.16	14.0	10.0	WATER BASED	16.04.1993
3668	1.19	13.0	11.5	WATER BASED	26.04.1993
3668	1.19	15.0	11.0	WATER BASED	26.04.1993
3668	1.19	15.0	11.0	WATER BASED	26.04.1993
3668	1.19	15.0	11.0	WATER BASED	27.04.1993
3680	1.19	15.0	12.0	WATER BASED	21.04.1993
3680	1.19	15.0	12.0	WATER BASED	21.04.1993
3680	1.19	15.0	12.0	WATER BASED	21.04.1993
3680	1.19	15.0	12.0	WATER BASED	21.04.1993
3680	1.19	14.0	12.0	WATER BASED	21.04.1993
3680	1.19	12.0	12.5	WATER BASED	22.04.1993
3680	1.19	13.0	11.0	WATER BASED	23.04.1993

**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]
2076 Formation pressure (Formasjonstrykk)	pdf	0.23

