



Generell informasjon

Brønnbane navn	30/6-7
Type	EXPLORATION
Formål	APPRAISAL
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Felt	OSEBERG
Funn	30/6-1 Oseberg
Brønn navn	30/6-7
Seismisk lokalisering	8006 - 137 SP 589
Utvinningstillatelse	053
Boreoperatør	Norsk Hydro Produksjon AS
Boretillatelse	329-L
Boreinnretning	NORTRYM
Boredager	97
Borestart	20.05.1982
Boreslutt	24.08.1982
Frigitt dato	24.08.1984
Publiseringsdato	26.10.2009
Opprinnelig formål	APPRAISAL
Gjenåpnet	NO
Innhold	OIL/GAS
Funnbrønnbane	NO
1. nivå med hydrokarboner, alder	MIDDLE JURASSIC
1. nivå med hydrokarboner, formasjon.	TARBERT FM
2. nivå med hydrokarboner, alder	MIDDLE JURASSIC
2. nivå med hydrokarboner, formasjon	NESS FM
Avstand, boredekk - midlere havflate [m]	25.0
Vanndybde ved midlere havflate [m]	114.0
Totalt målt dybde (MD) [m RKB]	3236.0
Totalt vertikalt dybde (TVD) [m RKB]	3236.0
Maks inklinasjon [°]	3
Temperatur ved bunn av brønnbanen [°C]	124
Eldste penetrerte alder	EARLY JURASSIC



Eldste penetrerte formasjon	STATFJORD GP
Geodetisk datum	ED50
NS grader	60° 38' 39.49" N
ØV grader	2° 45' 21.74" E
NS UTM [m]	6723352.60
ØV UTM [m]	486657.23
UTM sone	31
NPDID for brønnbanen	73

Brønnhistorie

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.



Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
230.00	3237.00

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerne i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
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 kjerneprøve lengde [m]	154.1
Kjerner tilgjengelig for prøvetaking?	YES

Kjernebilder



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

Palynologiske preparater i Sokkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
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

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
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

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
73_1	pdf	0.80
73_2	pdf	0.51

Dokumenter - eldre Sokkeldirektoratets WDSS rapporter og andre relaterte dokumenter

Dokument navn	Dokument format	Dokument størrelse [KB]
73_01_WDSS_General_Information	pdf	0.21
73_02_WDSS_completion_log	pdf	0.24

Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
73_01_30_6_7_Completion_Report_and_Log	pdf	18.46

Borestrengtester (DST)

Test nummer	Fra dybde MD [m]	Til dybde MD [m]	Reduksjonsven til størrelse [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 nummer	Endelig avstengningstrykk [MPa]	Endelig strømningstrykk [MPa]	Bunnhullstrykk [MPa]	Borehullstemperatur [°C]
1.0				
2.0				





3.0				
4.0				

Test nummer	Olje produksjon [Sm3/dag]	Gass produksjon [Sm3/dag]	Oljetetthet [g/cm3]	Gasstygde rel. luft	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

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [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



Foringsrør og formasjonsstyrketester

Type utforing	Utforing diam. [tommer]	Utforing dybde [m]	Brønnbane diam. [tommer]	Brønnbane dyp [m]	LOT/FIT slam eqv. [g/cm3]	Type formasjonstest
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

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
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	

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]
73 Formation pressure (Formasjonstrykk)	pdf	0.22

