



Generell informasjon

Brønnbane navn	34/11-4
Type	EXPLORATION
Formål	APPRAISAL
Status	P&A
Faktakart i nytt vindu	lenke til kart
Hovedområde	NORTH SEA
Felt	VALEMON
Funn	34/10-23 Valemon
Brønn navn	34/11-4
Seismisk lokalisering	TFE 91- INLINE 356 & X-LINE 1641
Utvinningstillatelse	193
Boreoperatør	Den norske stats oljeselskap a.s
Boretillatelse	947-L
Boreinnretning	TRANSOCEAN ARCTIC
Boredager	127
Borestart	09.12.1998
Boreslutt	14.04.1999
Frigitt dato	14.04.2001
Publiseringsdato	11.04.2003
Opprinnelig formål	APPRAISAL
Gjenåpnet	NO
Innhold	GAS/CONDENSATE
Funnbrønnbane	NO
1. nivå med hydrokarboner, alder	MIDDLE JURASSIC
1. nivå med hydrokarboner, formasjon.	NESS FM
2. nivå med hydrokarboner, alder	MIDDLE JURASSIC
2. nivå med hydrokarboner, formasjon	TARBERT FM
Avstand, boredekk - midlere havflate [m]	24.0
Vanndybde ved midlere havflate [m]	133.0
Totalt målt dybde (MD) [m RKB]	4438.0
Totalt vertikalt dybde (TVD) [m RKB]	4437.0
Maks inklinasjon [°]	2.3
Temperatur ved bunn av brønnbanen [°C]	159
Eldste penetrerte alder	EARLY JURASSIC



Eldste penetrerte formasjon	COOK FM
Geodetisk datum	ED50
NS grader	61° 3' 26.2" N
ØV grader	2° 22' 46.5" E
NS UTM [m]	6769486.55
ØV UTM [m]	466503.35
UTM sone	31
NPDID for brønnbanen	3314

Brønnhistorie

General

Block 34/11 is geographically located in the eastern part of the Tampen Spur, adjacent to the western controlling fault of the North Viking Graben. Structurally 34/11 is situated over a large, complex fault terrace down thrown to the south east of the Tampen Spur. The Mats Segment, which was tested with this well, is situated in the southwest part of block 34/11, and represents an easterly extension of the Gullfaks Gamma discovery in block 34/10. The Brent Group reservoir within the Gullfaks Gamma structure is within a high pressure, high temperature geological environment being at over 4000 m depth, with temperatures of 150 deg C. The main objective of the appraisal well 34/11-4 was to appraise additional hydrocarbon reserves in the Brent Group. Secondary objectives were to improve the geological / geophysical engineering parameter database, provide a key velocity calibration point to aid depth conversion, and to give a better understanding of the hydrocarbon characteristics, fluid contacts and distribution within the southern part of the 34/11 block.

Operations and results

Appraisal well 34/11-4 was spudded on 9 December 1998 with the semi-submersible installation "Transocean Arctic" and drilled to 3938 m. An unsuccessful cement job on the 9 7/8" casing resulted in backing off several joints of the casing. The casing was cut and retrieved from below the 13 3/8" shoe. The well was then sidetracked (34/11-4 T2) from 3580 m on 7 February 1999 and the 9 7/8" casing was successfully run and cemented at 3939 m. The T2 track was drilled to TD at 4438 m in the Early Jurassic Cook Formation, then logged and sampled (water and hydrocarbon samples). The initial well track was drilled with water based "Quadrill" mud containing 2 & 5 % polyols, a glycol-additive. The T2 track was drilled oil-based. Finally, an 8 1/2" sidetrack, 34/11-4 T3, was kicked-off at 4098 m on 31 March 1999 and drilled to 4210 m. This track was drilled water based to obtain high quality hydrocarbon samples as an alternative to a DST. The well was planned to take 86 days without the sidetrack, 94.5 days including the sidetrack. A total of 129.5 days was used to finish the well, including 43.4 days downtime and 6.6 days waiting time. The major contribution to the downtime was the poor cement job with the 9 7/8" casing. Further operational problem was caused by the crossover in 14 x 13 3/8" casing string had an ID less than 12 1/4" due to a mistake during fabrication. It was not drifted on board before going in the hole. The result was that 12" bits had to be used, but the availability of 12" bits was very limited, resulting in slow drilling progress.

The top of the Brent Group was penetrated at 4142 m and was proven to be gas/condensate bearing. Two different gas/condensate accumulations were encountered, at slightly different GOR's. The upper gas leg goes down to a shale unit at 4173.5 m TVD within the Ness Formation. PVT analysis of wire line samples showed that the GOR of this upper gas was about 4000 m3/m3. A lower gas leg extends down to



another intra-Ness Formation shale at 4207.5 m TVD. This lower gas had a GOR at about 1200 m³/m³ and is one of the richest gasses proven in the area. Two hydrocarbon pressure gradients, separated by approximately 0.3 bar, were established for the two pools. No clear contacts could be defined for either gas pool and the pressure gradients showed that the lower gas is not in communication with the water leg. No visual shows were detected down to the top Jurassic except for one sample at 3210 m where traces of weak to moderate yellow fluorescence were logged. The sample did not give any cut fluorescence. This corresponds to the depth of the sudden increase in background gas to a maximum 57.45% observed from a limestone/dolomite/sandstone sequence between 3201- 3204 m. A distinct change in the amount of all the gas components occurred at this level. The gas peak represents the maximum gas readings in the well. No direct fluorescence was logged in the Viking Group. The very carbonaceous claystone of the Draupne Formation showed only a blooming to very slow streaming blue white to white cut fluorescence. The Heather Formation showed a similar cut fluorescence locally in the most carbonaceous parts. Good gas shows were logged when drilling and coring the hydrocarbon-bearing interval of the Brent Group. The sandstone showed an orange to yellow orange fluorescence in the cored section. The water bearing part of the Brent Formation did only show a weak cloudy blue white cut fluorescence. No shows were encountered in the Drake Formation and only weak cloudy blue white cut fluorescence was recorded in the Cook Formation. Two cores were cut in well track 34/11-4 T2 in the interval 4150 to 4204 m in the Ness Formation. Four FMT runs were performed and three segregated samples were taken during the TD logging of the 8 1/2" hole section in well 34/11-4T2. One water sample was taken at 4233 m, one hydrocarbon sample at 4145.8 m, and one hydrocarbon sample at 4197.8 m. In addition, the two MDT runs performed in track 34/11-4 T3 sampled hydrocarbons at 4151 m and 4194.8 m.

The well was permanently abandoned on 14 April 1999 as a gas and condensate appraisal well.

Testing

No drill stem test was performed.

Borekaks i Sokkeldirektoratet

Borekaksprøve, topp dybde [m]	Borekaksprøve, bunn dybde [m]
1230.00	3939.00

Borekaks tilgjengelig for prøvetaking?	YES
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Borekjerner i Sokkeldirektoratet

Kjerneprøve nummer	Kjerneprøve - topp dybde	Kjerneprøve - bunn dybde	Kjerneprøve dybde - enhet
1	4150.0	4176.9	[m]
2	4177.0	4200.2	[m]

Total kjerneprøve lengde [m]	50.2
Kjerner tilgjengelig for prøvetaking?	YES



Kjernebilder



4150-4155m



4155-4160m



4160-4165m



4165-4170m



4170-4175m



4175-4177m



4177-4182m



4182-4187m



4187-4192m



4192-4197m



4197-4200m

Palynologiske preparater i Sokkeldirektoratet

Prøve dybde	Dybde enhet	Prøve type	Laboratorie
1240.0	[m]	DC	GEOSTR
1260.0	[m]	DC	GEOSTR
1280.0	[m]	DC	GEOSTR
1300.0	[m]	DC	GEOSTR
1320.0	[m]	DC	GEOSTR
1340.0	[m]	DC	GEOSTR
1360.0	[m]	DC	GEOSTR
1380.0	[m]	DC	GEOSTR
1400.0	[m]	DC	GEOSTR
1420.0	[m]	DC	GEOSTR
1440.0	[m]	DC	GEOSTR
1460.0	[m]	DC	GEOSTR
1480.0	[m]	DC	GEOSTR



1500.0	[m]	DC	GEOSTR
1520.0	[m]	DC	GEOSTR
1540.0	[m]	DC	GEOSTR
1560.0	[m]	DC	GEOSTR
1580.0	[m]	DC	GEOSTR
1600.0	[m]	DC	GEOSTR
1620.0	[m]	DC	GEOSTR
1640.0	[m]	DC	GEOSTR
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1680.0	[m]	DC	GEOSTR
1700.0	[m]	DC	GEOSTR
1720.0	[m]	DC	GEOSTR
1740.0	[m]	DC	GEOSTR
1760.0	[m]	DC	GEOSTR
1780.0	[m]	DC	GEOSTR
1800.0	[m]	DC	GEOSTR
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1893.0	[m]	DC	GEOSTR
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2190.0	[m]	DC	GEOSTR
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2260.0	[m]	DC	GEOSTR
2290.0	[m]	DC	GEOSTR
2300.0	[m]	DC	GEOSTR
2320.0	[m]	DC	GEOSTR
2340.0	[m]	DC	GEOSTR
2360.0	[m]	DC	GEOSTR
2380.0	[m]	DC	GEOSTR
2400.0	[m]	DC	GEOSTR
2420.0	[m]	DC	GEOSTR
2440.0	[m]	DC	GEOSTR
2460.0	[m]	DC	GEOSTR
2480.0	[m]	DC	GEOSTR
2500.0	[m]	DC	GEOSTR
2520.0	[m]	DC	GEOSTR
2540.0	[m]	DC	GEOSTR
2560.0	[m]	DC	GEOSTR
2580.0	[m]	DC	GEOSTR
2600.0	[m]	DC	GEOSTR
2620.0	[m]	DC	GEOSTR
2640.0	[m]	DC	GEOSTR
2660.0	[m]	DC	GEOSTR
2680.0	[m]	DC	GEOSTR
2700.0	[m]	DC	GEOSTR
2720.0	[m]	DC	GEOSTR
2740.0	[m]	DC	GEOSTR



2760.0	[m]	DC	GEOSTR
2780.0	[m]	DC	GEOSTR
2800.0	[m]	DC	GEOSTR
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2840.0	[m]	DC	GEOSTR
2860.0	[m]	DC	GEOSTR
2880.0	[m]	DC	GEOSTR
2900.0	[m]	DC	GEOSTR
2920.0	[m]	DC	GEOSTR
2940.0	[m]	DC	GEOSTR
2960.0	[m]	DC	GEOSTR
2980.0	[m]	DC	GEOSTR
3000.0	[m]	DC	GEOSTR
3020.0	[m]	DC	GEOSTR
3040.0	[m]	DC	GEOSTR
3060.0	[m]	DC	GEOSTR
3080.0	[m]	DC	GEOSTR
3100.0	[m]	DC	GEOSTR
3120.0	[m]	DC	GEOSTR
3140.0	[m]	DC	GEOSTR
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3180.0	[m]	DC	GEOSTR
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3220.0	[m]	DC	GEOSTR
3240.0	[m]	DC	GEOSTR
3260.0	[m]	DC	GEOSTR
3280.0	[m]	DC	GEOSTR
3300.0	[m]	DC	GEOSTR
3320.0	[m]	DC	GEOSTR
3340.0	[m]	DC	GEOSTR
3360.0	[m]	DC	GEOSTR
3380.0	[m]	DC	GEOSTR
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3440.0	[m]	DC	GEOSTR
3460.0	[m]	DC	GEOSTR
3480.0	[m]	DC	GEOSTR
3500.0	[m]	DC	GEOSTR
3519.0	[m]	DC	GEOSTR
3540.0	[m]	DC	GEOSTR



3560.0	[m]	DC	GEOSTR
3580.0	[m]	DC	GEOSTR
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3620.0	[m]	DC	GEOSTR
3640.0	[m]	DC	GEOSTR
3660.0	[m]	DC	GEOSTR
3680.0	[m]	DC	GEOSTR
3700.0	[m]	DC	GEOSTR
3720.0	[m]	DC	GEOSTR
3740.0	[m]	DC	GEOSTR
3760.0	[m]	DC	GEOSTR
3770.0	[m]	DC	GEOSTR
3780.0	[m]	DC	GEOSTR
3790.0	[m]	DC	GEOSTR
3800.0	[m]	DC	GEOSTR
3810.0	[m]	DC	GEOSTR
3820.0	[m]	DC	GEOSTR
3830.0	[m]	DC	GEOSTR
3840.0	[m]	DC	GEOSTR
3850.0	[m]	DC	GEOSTR
3860.0	[m]	DC	GEOSTR
3870.0	[m]	DC	GEOSTR
3880.0	[m]	DC	GEOSTR
3890.0	[m]	DC	GEOSTR
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3909.0	[m]	DC	GEOSTR
3918.0	[m]	DC	GEOSTR
3927.0	[m]	DC	GEOSTR
3936.0	[m]	DC	GEOSTR

Litostratigrafi

Topp Dyb [mMD RKB]	Litostrat. enhet
157	NORDLAND GP
902	UTSIRA FM
996	HORDALAND GP
1238	NO FORMAL NAME
1254	NO FORMAL NAME
1302	NO FORMAL NAME



1480	NO FORMAL NAME
1515	NO FORMAL NAME
1630	NO FORMAL NAME
1875	ROGALAND GP
1875	BALDER FM
1928	LISTA FM
2117	SHETLAND GP
2117	JORSALFARE FM
2428	KYRRE FM
3512	SVARTE FM
3697	CROMER KNOLL GP
3904	VIKING GP
3904	DRAUPNE FM
4018	HEATHER FM
4142	BRENT GP
4142	TARBERT FM
4148	NESS FM
4277	ETIVE FM
4292	RANNOCH FM
4339	DUNLIN GP
4339	DRAKE FM
4410	COOK FM

Spleisede logger

Dokument navn	Dokument format	Dokument størrelse [KB]
3314	pdf	0.63

Geokjemisk informasjon

Dokument navn	Dokument format	Dokument størrelse [KB]
3314_1	pdf	1.93
3314_2	pdf	1.88
3314_3	pdf	1.84
3314_4	pdf	1.95
3314_5	pdf	1.73
3314_6	pdf	0.80





Dokumenter - rapportert av utvinningstillatelsen (frigitt ihht til regelverk)

Dokument navn	Dokument format	Dokument størrelse [KB]
3314 34 11 4 COMPLETION LOG	.pdf	4.02
3314 34 11 4 COMPLETION REPORT	.pdf	23.44

Logger

Type logg	Topp dyp for logg [m]	Bunn dyp for logg [m]
DLL MAC DSL TTRM	1100	2200
DLL MAC DSL TTRM	2043	3513
FMT CHT GR	4143	4297
FMT GR	4143	4145
HDIL MAC DGR TTRM	3890	4435
HDIP DGR TTRM	3943	4376
MAC HDIP ZDL DGR TTRM	3500	3938
MDT GR	4150	4150
MDT GR	4194	4194
MWD - GR MDC	3555	3944
MWD - MPR LITE	1222	3519
MWD - MPR LITE MDC	218	1222
MWD - MPR LITE MDP	4046	4210
MWD - MPR MDP	3522	3938
MWD - MPR MDP	3970	4436
SBT CCL GR	3650	3845
VSP GR	780	1200
VSP GR	1210	1750
VSP GR	1630	3427
VSP GR	3410	3930
VSP GR	3890	4420
ZDEN CND SGR TTRM	3939	4358
ZDL CND DGR TTRM	1210	3507

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	218.0	36	218.0	0.00	LOT
INTERM.	20	1210.0	26	1210.0	1.69	LOT
INTERM.	13 3/8	3509.0	17 1/2	3509.0	1.93	LOT
INTERM.	9 7/8	3939.0	12 1/4	3939.0	2.12	LOT
OPEN HOLE		4438.0	8 1/2	4438.0	0.00	LOT

Boreslam

Dybde MD [m]	Egenvekt, slam [g/cm3]	Viskositet, slam [mPa.s]	Flytegrense [Pa]	Type slam	Dato, måling
1222	1.03			DUMMY	
1335	1.39	25.0		QUADRILL	
1530	1.39	16.0		QUADRILL	
1595	1.39	18.0		QUADRILL	
1607	1.39	19.0		QUADRILL	
1871	1.39	18.0		QUADRILL	
2011	1.45	21.0		QUADRILL	
2224	1.45	21.0		QUADRILL	
2399	1.45	23.0		QUADRILL	
2399	1.45	21.0		QUADRILL	
2440	1.45	25.0		QUADRILL	
2647	1.45	25.0		QUADRILL	
3048	1.45	29.0		QUADRILL	
3198	1.45			DUMMY	
3203	1.55	30.0		QUADRILL	
3350	1.55	30.0		QUADRILL	
3493	1.85			DUMMY	
3509	1.85			DUMMY	
3519	1.56	29.0		QUADRILL	
3522	1.68			DUMMY	
3524	1.85	32.0		QUADRILL	
3525	1.85	29.0		QUADRILL	
3529	1.85	26.0		QUADRILL	
3536	1.85	52.0		QUADRILL	
3540	1.85	28.0		QUADRILL	
3557	1.85	28.0		QUADRILL	
3564	1.85			DUMMY	



3569	1.71	30.0	QUADRILL
3570	1.85		DUMMY
3580	1.85	41.0	QUADRILL
3594	1.70	46.0	INTERDRILL NT
3610	1.70	58.0	INTERDRILL NT
3620	1.85	31.0	QUADRILL
3653	1.85	30.0	QUADRILL
3671	1.85	31.0	QUADRILL
3675	1.70	52.0	INTERDRILL NT
3758	1.85	33.0	QUADRILL
3770	1.85	30.0	QUADRILL
3800	1.80	56.0	INTERDRILL NT
3807	1.85	34.0	QUADRILL
3870	1.77	49.0	INTERDRILL NT
3898	1.85	26.0	QUADRILL
3938	1.85	35.0	QUADRILL
3942	1.85	32.0	QUADRILL
3943	1.85	31.0	QUADRILL
3944	1.80	51.0	INTERDRILL NT
3967	2.02	72.0	INTERDRILL NT
3973	2.02	70.0	INTERDRILL NT
4020	2.00	81.0	INTERDRILL NT
4030	2.00	64.0	INTERDRILL NT
4059	2.00	82.0	INTERDRILL NT
4100	2.00	80.0	INTERDRILL NT
4117	2.00	75.0	INTERDRILL NT
4123	2.00	87.0	KCL/GLYCOL/PAC
4144	2.00	67.0	INTERDRILL NT
4163	2.00	51.0	KCL/GLYCOL/PAC
4177	2.00	64.0	INTERDRILL NT
4204	2.00	67.0	INTERDRILL NT
4210	2.00	51.0	KCL/GLYCOL/PAC
4272	2.00	67.0	INTERDRILL NT
4354	2.00	67.0	INTERDRILL NT
4417	2.00	70.0	INTERDRILL NT
4438	2.00	71.0	INTERDRILL NT

Tynnslip i Sokkeldirektoratet



Dybde	Enhet
4153.00	[m]
4164.50	[m]
4168.45	[m]
4183.69	[m]
4189.10	[m]
4195.00	[m]
4196.00	[m]
4197.00	[m]
4198.00	[m]
4199.00	[m]
4200.00	[m]
4151.80	[m]

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]
3314 T2 Formation pressure_ (Formasjonstrykk)	pdf	0.22
3314 T3 Formation pressure_ (Formasjonstrykk)	pdf	0.21

