

**General information**

Wellbore name	34/10-42 S
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	VALEMON
Discovery	34/10-23 Valemon
Well name	34/10-42
Seismic location	STM98MS INNLIN 856 & X-LIN 3056
Production licence	050
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	960-L
Drilling facility	TRANSOCEAN ARCTIC
Drilling days	67
Entered date	15.07.1999
Completed date	19.09.1999
Release date	19.09.2001
Publication date	11.04.2003
Purpose - planned	APPRAISAL
Reentry	NO
Content	SHOWS
Discovery wellbore	NO
Kelly bushing elevation [m]	24.0
Water depth [m]	135.0
Total depth (MD) [m RKB]	4520.0
Final vertical depth (TVD) [m RKB]	4378.0
Maximum inclination [°]	27.7
Bottom hole temperature [°C]	155
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	COOK FM
Geodetic datum	ED50
NS degrees	61° 0' 26.99" N
EW degrees	2° 17' 3.46" E
NS UTM [m]	6763994.22
EW UTM [m]	461298.18
UTM zone	31
NPDID wellbore	3816



Wellbore history

**General**

Block 34/10 covers a structurally complex area located in the Tampen Spur area of the Viking Graben. The Tampen Spur is characterized by a series of rotated fault blocks, where the major faults generally have throws towards the east and stratigraphic dips westwards. The Gullfaks Gamma structure sits on a fault terrace, down thrown from the Gullfaks Sør Field. This terrace also covers the Kvitebjørn area. The structure is a complex, faulted culmination, with a dip closure in all directions. The Gullfaks Gamma area straddles the 34/10 - 34/11 block boundary. The majority of the defined prospective elements, lie within block 34/10

The primary objectives for drilling well 34/10-42 S were to appraise economical Brent hydrocarbon reserves updip from well 34/10-23 and to test the Brent erosion model and thereby to enable a Gullfaks Gamma Field PDO. The hydrocarbon type was to be tested. A secondary objective was to test possible additional reserves in the Cook and Statfjord Formation if the well was extended through these formations. Finally, the well should add data to the field parameter database and provide a key velocity calibration point for time-depth conversion.

Operations and results

The appraisal well 34/10-42 S was spudded with the semi-submersible installation "Transocean Arctic" on 15 July 1999 and drilled to TD at 4520 m (4378 m TVD RKB) approximately 40 m into the Early Jurassic Cook Formation. It was drilled deviated to avoid shallow gas Class II warnings. The well was drilled with sea water and hi-vis pills down to 1133 m, with KCl / polymer / glycol mud from 1133 m to 3666 m, and with oil based mud from 3666 m to TD. The reservoir tops came in deeper than the geological prognosis indicated. The top of the Tarbert and Cook Formations were found 174 m and 112m deeper, respectively. Both the Brent group and the Cook Formation proved to be water wet, indicating a sealing fault between well 34/10-23 and 34/10-42 S.

No visual shows were observed above the Viking Group. Dull, yellowish, direct fluorescence and slow streaming, milky white cut fluorescence was observed on some of the claystone cuttings from the Draupne Formation hot shale. In the sandstones of the Tarbert and upper Ness Formations, no direct fluorescence was observed, but moderate to weak, slow streaming bluish white cut fluorescence was common in the upper half of the cored section. Gas readings were recorded from the 20" shoe. The gas level was generally low, below 0.5 %, down to 3140 m where the gas content increased sharply to a higher level, 2 - 6%, reaching a maximum peak of 9.73% at 3202 m. This continued down to the top of the Viking Group. Gas levels through the Draupne Formation varied from 0.7% and up to 3.1% in the most carbonaceous intervals (C1-C5). Throughout the Heather Formation, the background gas varied between 0.6% and 3% with peaks up to 3.8%. All components from C1 to C5 were recorded. In the Brent reservoir, the gas readings were commonly showing levels slightly below and slightly above 2%, with a maximum of 7.2 % in the relatively tight, arkosic Rannoch Formation. In the Dunlin Group, gas levels were typically between 0.8 % and 2.2% with a local maximum of 6.2% at 4359 m. In a very tight, impermeable, arkosic sand near TD of the well within the Cook sandstone unit, the gas level was peaking 14.4%. One core was cut in the interval 4109 m to 4111 m in the Heather Formation and a second was cut in the interval 4217 m to 4254 m in the Ness Formation. One segregated FMT water sample was taken at 4226.4 m. A 2x20 litres preflush chamber and a 4 litres PVT chamber was run, and a total volume of 32 litres and 3.4 litres were sampled respectively. No contamination was measured offshore (tritium added as tracer in the mud), however some traces of oil are reported from the laboratory. The well was abandoned as a dry appraisal well with shows on 19 September 1999.

Testing

No drill stem test was performed.



Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1150.00	4520.00

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	4109.0	4110.7	[m]
2	4217.0	4253.7	[m]

Total core sample length [m]	38.4
Cores available for sampling?	YES

Core photos



4109-4111m



4217-4222m



4222-4227m



4227-4232m



4232-4237m



4237-4242m



4242-4247m



4247-4252m



4252-4253m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1150.0	[m]	DC	GEOSTR
1170.0	[m]	DC	GEOSTR



1190.0 [m]	DC	GEOSTR
1210.0 [m]	DC	GEOSTR
1230.0 [m]	DC	GEOSTR
1250.0 [m]	DC	GEOSTR
1270.0 [m]	DC	GEOSTR
1290.0 [m]	DC	GEOSTR
1310.0 [m]	DC	GEOSTR
1330.0 [m]	DC	GEOSTR
1350.0 [m]	DC	GEOSTR
1370.0 [m]	DC	GEOSTR
1390.0 [m]	DC	GEOSTR
1410.0 [m]	DC	GEOSTR
1430.0 [m]	DC	GEOSTR
1450.0 [m]	DC	GEOSTR
1470.0 [m]	DC	GEOSTR
1490.0 [m]	DC	GEOSTR
1510.0 [m]	DC	GEOSTR
1530.0 [m]	DC	GEOSTR
1550.0 [m]	DC	GEOSTR
1570.0 [m]	DC	GEOSTR
1590.0 [m]	DC	GEOSTR
1610.0 [m]	DC	GEOSTR
1630.0 [m]	DC	GEOSTR
1650.0 [m]	DC	GEOSTR
1670.0 [m]	DC	GEOSTR
1690.0 [m]	DC	GEOSTR
1710.0 [m]	DC	GEOSTR
1730.0 [m]	DC	GEOSTR
1750.0 [m]	DC	GEOSTR
1770.0 [m]	DC	GEOSTR
1790.0 [m]	DC	GEOSTR
1810.0 [m]	DC	GEOSTR
1830.0 [m]	DC	GEOSTR
1850.0 [m]	DC	GEOSTR
1870.0 [m]	DC	GEOSTR
1890.0 [m]	DC	GEOSTR
1910.0 [m]	DC	GEOSTR
1930.0 [m]	DC	GEOSTR
1950.0 [m]	DC	GEOSTR
1970.0 [m]	DC	GEOSTR



2000.0	[m]	DC	GEOSTR
2010.0	[m]	DC	GEOSTR
2030.0	[m]	DC	GEOSTR
2050.0	[m]	DC	GEOSTR
2070.0	[m]	DC	GEOSTR
2090.0	[m]	DC	GEOSTR
2110.0	[m]	DC	GEOSTR
2130.0	[m]	DC	GEOSTR
2150.0	[m]	DC	GEOSTR
2170.0	[m]	DC	GEOSTR
2190.0	[m]	DC	GEOSTR
2210.0	[m]	DC	GEOSTR
2230.0	[m]	DC	GEOSTR
2250.0	[m]	DC	GEOSTR
2270.0	[m]	DC	GEOSTR
2290.0	[m]	DC	GEOSTR
2310.0	[m]	DC	GEOSTR
2330.0	[m]	DC	GEOSTR
2350.0	[m]	DC	GEOSTR
2370.0	[m]	DC	GEOSTR
2390.0	[m]	DC	GEOSTR
2410.0	[m]	DC	GEOSTR
2430.0	[m]	DC	GEOSTR
2450.0	[m]	DC	GEOSTR
2470.0	[m]	DC	GEOSTR
2490.0	[m]	DC	GEOSTR
2510.0	[m]	DC	GEOSTR
2530.0	[m]	DC	GEOSTR
2550.0	[m]	DC	GEOSTR
2570.0	[m]	DC	GEOSTR
2590.0	[m]	DC	GEOSTR
2610.0	[m]	DC	GEOSTR
2630.0	[m]	DC	GEOSTR
2650.0	[m]	DC	GEOSTR
2670.0	[m]	DC	GEOSTR
2690.0	[m]	DC	GEOSTR
2710.0	[m]	DC	GEOSTR
2730.0	[m]	DC	GEOSTR
2750.0	[m]	DC	GEOSTR
2770.0	[m]	DC	GEOSTR



2790.0	[m]	DC	GEOSTR
2810.0	[m]	DC	GEOSTR
2830.0	[m]	DC	GEOSTR
2850.0	[m]	DC	GEOSTR
2870.0	[m]	DC	GEOSTR
2890.0	[m]	DC	GEOSTR
2910.0	[m]	DC	GEOSTR
2930.0	[m]	DC	GEOSTR
2950.0	[m]	DC	GEOSTR
2970.0	[m]	DC	GEOSTR
2990.0	[m]	DC	GEOSTR
3010.0	[m]	DC	GEOSTR
3030.0	[m]	DC	GEOSTR
3050.0	[m]	DC	GEOSTR
3070.0	[m]	DC	GEOSTR
3090.0	[m]	DC	GEOSTR
3110.0	[m]	DC	GEOSTR
3130.0	[m]	DC	GEOSTR
3150.0	[m]	DC	GEOSTR
3170.0	[m]	DC	GEOSTR
3190.0	[m]	DC	GEOSTR
3210.0	[m]	DC	GEOSTR
3230.0	[m]	DC	GEOSTR
3250.0	[m]	DC	GEOSTR
3270.0	[m]	DC	GEOSTR
3290.0	[m]	DC	GEOSTR
3310.0	[m]	DC	GEOSTR
3330.0	[m]	DC	GEOSTR
3350.0	[m]	DC	GEOSTR
3370.0	[m]	DC	GEOSTR
3390.0	[m]	DC	GEOSTR
3410.0	[m]	DC	GEOSTR
3430.0	[m]	DC	GEOSTR
3450.0	[m]	DC	GEOSTR
3470.0	[m]	DC	GEOSTR
3490.0	[m]	DC	GEOSTR
3510.0	[m]	DC	GEOSTR
3530.0	[m]	DC	GEOSTR
3550.0	[m]	DC	GEOSTR
3570.0	[m]	DC	GEOSTR



3590.0	[m]	DC	GEOSTR
3610.0	[m]	DC	GEOSTR
3630.0	[m]	DC	GEOSTR
3650.0	[m]	DC	GEOSTR
3670.0	[m]	DC	GEOSTR
3690.0	[m]	DC	GEOSTR
3710.0	[m]	DC	GEOSTR
3730.0	[m]	DC	GEOSTR
3750.0	[m]	DC	GEOSTR
3770.0	[m]	DC	GEOSTR
3790.0	[m]	DC	GEOSTR
3810.0	[m]	DC	GEOSTR
3830.0	[m]	DC	GEOSTR
3850.0	[m]	DC	GEOSTR
3870.0	[m]	DC	GEOSTR
3890.0	[m]	DC	GEOSTR
3900.0	[m]	DC	GEOSTR
3910.0	[m]	DC	GEOSTR
3920.0	[m]	DC	GEOSTR
3930.0	[m]	DC	GEOSTR
3940.0	[m]	DC	GEOSTR
3950.0	[m]	DC	GEOSTR
3960.0	[m]	DC	GEOSTR
3969.0	[m]	DC	GEOSTR
3975.0	[m]	DC	GEOSTR
3984.0	[m]	DC	GEOSTR
3993.0	[m]	DC	GEOSTR
4002.0	[m]	DC	GEOSTR
4011.0	[m]	DC	GEOSTR
4020.0	[m]	DC	GEOSTR
4029.0	[m]	DC	GEOSTR
4038.0	[m]	DC	GEOSTR
4047.0	[m]	DC	GEOSTR
4056.0	[m]	DC	GEOSTR
4065.0	[m]	DC	GEOSTR
4074.0	[m]	DC	GEOSTR
4083.0	[m]	DC	GEOSTR
4092.0	[m]	DC	GEOSTR
4101.0	[m]	DC	GEOSTR
4107.0	[m]	DC	GEOSTR



4109.2 [m]	C	WESTLB
4110.5 [m]	C	WESTLB
4119.0 [m]	DC	GEOSTR
4128.0 [m]	DC	GEOSTR
4137.0 [m]	DC	GEOSTR
4146.0 [m]	DC	GEOSTR
4155.0 [m]	DC	GEOSTR
4164.0 [m]	DC	GEOSTR
4173.0 [m]	DC	GEOSTR
4182.0 [m]	DC	GEOSTR
4191.0 [m]	DC	GEOSTR
4200.0 [m]	DC	GEOSTR
4203.0 [m]	DC	GEOSTR
4206.0 [m]	DC	GEOSTR
4209.0 [m]	DC	GEOSTR
4212.0 [m]	DC	GEOSTR
4215.0 [m]	DC	GEOSTR
4217.1 [m]	C	WESTLB
4218.0 [m]	C	WESTLB
4220.5 [m]	C	WESTLB
4226.5 [m]	C	WESTLB
4226.8 [m]	C	WESTLB
4228.2 [m]	C	WESTLB
4230.9 [m]	C	WESTLB
4232.9 [m]	C	WESTLB
4234.5 [m]	C	WESTLB
4236.7 [m]	C	WESTLB
4238.8 [m]	C	WESTLB
4240.5 [m]	C	WESTLB
4242.8 [m]	C	WESTLB
4243.9 [m]	C	WESTLB
4245.5 [m]	C	WESTLB
4247.7 [m]	C	WESTLB
4248.5 [m]	C	WESTLB
4249.4 [m]	C	WESTLB
4251.9 [m]	C	WESTLB
4252.5 [m]	C	WESTLB
4253.4 [m]	C	WESTLB
4254.0 [m]	DC	GEOSTR
4257.0 [m]	DC	GEOSTR



4260.0 [m]	DC	GEOSTR
4263.0 [m]	DC	GEOSTR
4266.0 [m]	DC	GEOSTR
4269.0 [m]	DC	GEOSTR
4272.0 [m]	DC	GEOSTR
4275.0 [m]	DC	GEOSTR
4278.0 [m]	DC	GEOSTR
4281.0 [m]	DC	GEOSTR
4284.0 [m]	DC	GEOSTR
4287.0 [m]	DC	GEOSTR
4290.0 [m]	DC	GEOSTR
4293.0 [m]	DC	GEOSTR
4296.0 [m]	DC	GEOSTR
4299.0 [m]	DC	GEOSTR
4302.0 [m]	DC	GEOSTR
4305.0 [m]	DC	GEOSTR
4308.0 [m]	DC	GEOSTR
4311.0 [m]	DC	GEOSTR
4314.0 [m]	DC	GEOSTR
4317.0 [m]	DC	GEOSTR
4320.0 [m]	DC	GEOSTR
4323.0 [m]	DC	GEOSTR
4326.0 [m]	DC	GEOSTR
4329.0 [m]	DC	GEOSTR
4332.0 [m]	DC	GEOSTR
4335.0 [m]	DC	GEOSTR
4338.0 [m]	DC	GEOSTR
4341.0 [m]	DC	GEOSTR
4344.0 [m]	DC	GEOSTR
4347.0 [m]	DC	GEOSTR
4350.0 [m]	DC	GEOSTR
4353.0 [m]	DC	GEOSTR
4356.0 [m]	DC	GEOSTR
4359.0 [m]	DC	GEOSTR
4362.0 [m]	DC	GEOSTR
4365.0 [m]	DC	GEOSTR
4368.0 [m]	DC	GEOSTR
4371.0 [m]	DC	GEOSTR
4374.0 [m]	DC	GEOSTR
4377.0 [m]	DC	GEOSTR



4380.0 [m]	DC	GEOSTR
4383.0 [m]	DC	GEOSTR
4386.0 [m]	DC	GEOSTR
4389.0 [m]	DC	GEOSTR
4392.0 [m]	DC	GEOSTR
4395.0 [m]	DC	GEOSTR
4398.0 [m]	DC	GEOSTR
4401.0 [m]	DC	GEOSTR
4404.0 [m]	DC	GEOSTR
4407.0 [m]	DC	GEOSTR
4410.0 [m]	DC	GEOSTR
4410.0 [m]	DC	FUGRO
4413.0 [m]	DC	GEOSTR
4416.0 [m]	DC	GEOSTR
4419.0 [m]	DC	GEOSTR
4422.0 [m]	DC	GEOSTR
4425.0 [m]	DC	GEOSTR
4425.0 [m]	DC	FUGRO
4428.0 [m]	DC	GEOSTR
4428.0 [m]	DC	GEOSTR
4434.0 [m]	DC	GEOSTR
4437.0 [m]	DC	GEOSTR
4440.0 [m]	DC	FUGRO
4443.0 [m]	DC	GEOSTR
4446.0 [m]	DC	GEOSTR
4455.0 [m]	DC	GEOSTR
4455.0 [m]	DC	FUGRO
4461.0 [m]	DC	GEOSTR
4464.0 [m]	DC	GEOSTR
4470.0 [m]	DC	FUGRO
4473.0 [m]	DC	GEOSTR
4479.0 [m]	DC	GEOSTR
4479.0 [m]	DC	FUGRO
4482.0 [m]	DC	GEOSTR
4485.0 [m]	DC	FUGRO
4491.0 [m]	DC	GEOSTR
4497.0 [m]	DC	GEOSTR
4500.0 [m]	DC	GEOSTR
4509.0 [m]	DC	GEOSTR
4518.0 [m]	DC	GEOSTR



4520.0 [m]	DC	GEOSTR
------------	----	--------

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
159	NORDLAND GP
885	UTSIRA FM
970	HORDALAND GP
1940	ROGALAND GP
1940	BALDER FM
1989	SELE FM
1995	LISTA FM
2196	SHETLAND GP
2196	JORSALFARE FM
2451	KYRRE FM
3656	SVARTE FM
3790	CROMER KNOLL GP
3960	VIKING GP
3960	DRAUPNE FM
4008	HEATHER FM
4211	BRENT GP
4211	TARBERT FM
4217	NESS FM
4355	ETIVE FM
4369	RANNOCH FM
4403	DUNLIN GP
4403	DRAKE FM
4485	COOK FM

Composite logs

Document name	Document format	Document size [MB]
3816	pdf	0.49

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





Document name	Document format	Document size [MB]
3816 34 10 42 S COMPLETION LOG	.pdf	3.51
3816 34 10 42 S COMPLETION REPORT	.pdf	59.32

Logs

Log type	Log top depth [m]	Log bottom depth [m]
FMT GR	4212	4213
FMT GR	4212	4387
HDIP ORIT DSL TTRM	3968	4516
MAC HDIL DGR TTRM	3945	4521
MAC HDIP ZDL DR TTRM	1132	3973
MWD LWD - MPR LITE	159	4520
VSP GR	1132	3955
VSP GR	3790	4387
ZDL CND SGR TTRM	3968	4515

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	221.0	36	221.0	0.00	LOT
SURF.COND.	20	1133.0	26	1133.0	1.57	LOT
INTERM.	13 3/8	3666.0	17 1/2	3666.0	2.09	LOT
INTERM.	9 7/8	3968.0	12 1/4	3968.0	2.12	LOT
OPEN HOLE		4520.0	8 1/2	4520.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
221	1.39			DUMMY	
255	1.03			DUMMY	
318	1.03			DUMMY	
841	1.03			DUMMY	
963	1.03			DUMMY	
1143	1.20	17.0		BENTONITE/FW	
1145	1.41	19.0		KCL/GLYCOL/PAC	





1150	1.41	20.0		KCL/GLYCOL/PAC	
1200	1.87	60.0		INTERDRILL NT	
1222	1.47			KCL/GLYCOL/PAC	
1342	1.39	19.0		KCL/GLYCOL/PAC	
1400	1.87	61.0		INTERDRILL NT	
1615	1.39	20.0		KCL/GLYCOL/PAC	
1965	1.45	22.0		KCL/GLYCOL/PAC	
2137	1.45	24.0		KCL/GLYCOL/PAC	
2250	1.45	22.0		KCL/GLYCOL/PAC	
2355	1.45	24.0		KCL/GLYCOL/PAC	
2479	1.47	28.0		KCL/GLYCOL/PAC	
2497	1.45	30.0		KCL/GLYCOL/PAC	
2552	1.46	20.0		KCL/GLYCOL/PAC	
2722	1.45	21.0		KCL/GLYCOL/PAC	
2849	1.45	24.0		KCL/GLYCOL/PAC	
2929	1.45	26.0		KCL/GLYCOL/PAC	
2937	1.45	25.0		KCL/GLYCOL/PAC	
2950	1.45	25.0		KCL/GLYCOL/PAC	
3026	1.45	37.0		KCL/GLYCOL/PAC	
3095	1.45	33.0		KCL/GLYCOL/PAC	
3115	1.45	34.0		KCL/GLYCOL/PAC	
3555	1.45	28.0		KCL/GLYCOL/PAC	
3679	1.80	49.0		INTERDRILL NT	
3736	1.80	46.0		KCL/GLYCOL/PAC	
3842	2.02	60.0		INTERDRILL NT	
3900	1.80	44.0		INTERDRILL NT	
3977	1.85	44.0		INTERDRILL NT	
4000	2.04	68.0		INTERDRILL NT	
4097	2.04	72.0		INTERDRILL NT	
4109	2.04	65.0		INTERDRILL NT	
4160	2.04	59.0		INTERDRILL NT	
4211	2.02	58.0		INTERDRILL NT	
4215	2.04	59.0		INTERDRILL NT	
4217	2.04	59.0		INTERDRILL NT	
4254	2.02	57.0		INTERDRILL NT	
4520	2.02	56.0		INTERDRILL NT	

Thin sections at the Norwegian Offshore Directorate



Depth	Unit
4246.65	[m]
4237.75	[m]
4232.75	[m]
4225.78	[m]
4223.00	[m]
4221.77	[m]
4219.42	[m]
1410.00	[m]
1560.00	[m]
2120.00	[m]
2580.00	[m]
3550.00	[m]
3750.00	[m]
4035.00	[m]
4239.00	[m]
4317.00	[m]
4520.00	[m]

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]
3816 Formation pressure (Formasjonstrykk)	pdf	0.22

