

**General information**

Wellbore name	34/10-9
Type	EXPLORATION
Purpose	APPRAISAL
Status	SUSPENDED
Factmaps in new window	link to map
Main area	NORTH SEA
Field	GULLFAKS
Discovery	34/10-1 Gullfaks
Well name	34/10-9
Seismic location	3D 163 SP 275
Production licence	050
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	248-L
Drilling facility	ROSS RIG (1)
Drilling days	47
Entered date	24.03.1980
Completed date	09.05.1980
Release date	09.05.1982
Publication date	15.11.2012
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	BRENT GP
2nd level with HC, age	EARLY JURASSIC
2nd level with HC, formation	COOK FM
Kelly bushing elevation [m]	25.0
Water depth [m]	202.0
Total depth (MD) [m RKB]	2200.0
Final vertical depth (TVD) [m RKB]	2200.0
Maximum inclination [°]	1.75
Bottom hole temperature [°C]	64
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	COOK FM
Geodetic datum	ED50
NS degrees	61° 12' 55.34" N
EW degrees	2° 15' 0.53" E



NS UTM [m]	6787169.27
EW UTM [m]	459717.06
UTM zone	31
NPDID wellbore	140

Wellbore history

General

Well 34/10-9 was drilled on the central part of the Gullfaks Field. The primary objective was to test sandstones of the Early Jurassic Cook Formation. Originally the well was planned to be drilled to a total depth of 2000 m. Results from the well required further drilling into sandstones of the Statfjord Formation.

Operations and results

Appraisal well 34/10-9 was spudded with the semi-submersible installation Ross Rig on 24 March 1980 and drilled to TD at 2200 m in the Early Jurassic Burton Formation. As in other wells drilled in the area the pore pressure was close to the formation integrity in the pressure transition zone. Lost circulation combined with high gas readings, was experienced on several occasions in this zone between ca 1730 and 1760 m. Apart from that, the drilling was carried out without any specific problems. The well was drilled with seawater and high viscosity slugs down to 845 m, and with a gel/lignosulphonate mud system from 845 m to TD. From the well site sample description diesel was added to the mud in the interval 1260 to 1350 m.

The Brent Group, Ness formation was encountered at 1833 m, directly underlying the Late Cretaceous Kyrre Formation. The Brent Group was hydrocarbon bearing down to base Rannoch Formation at 1945 m with ca 97 m net hydrocarbon bearing sands. The Cook Formation was hydrocarbon bearing with an oil/water contact at 2118 m. First trace of oil shows, fluorescence, was seen at 1220 m. Weak shows on claystone and limestone were recorded from this depth to 1500 m. Stronger oil shows with "oil streaks over shaker" and oil-smell were recorded from 1690 m to 1720 m in the Lista Formation.

Four cores were cut in the well. Core 1 was cut from 1850 to 1868 m in the Etive Formation, while cores 2 to 4 were cut from 2089 m to 2130 m in the Cook Formation. The Formation interval tester (FIT) was run in the well for fluid sampling. One sample was recovered from the Brent formation at 1840 m. The sample contained hydrocarbons. The other sample was taken in the Cook Formation at 2132 m. This sample contained water.

The well was suspended on 9 May 1980 for further drilling and testing in a later re-entry. It is classified as an oil appraisal well.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
290.00	2410.00



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	1850.0	1863.5	[m]
2	2089.0	2093.2	[m]
3	2094.0	2109.5	[m]
4	2112.0	2129.4	[m]

Total core sample length [m]	50.6
Cores available for sampling?	YES

Core photos



1850-1852m



1852-1855m



1855-1858m



1858-1860m



1860-1863m



2089-2091m



2091-2093m



2094-2096m



2096-2099m



2099-2102m



2102-2104m



2104-2107m



2107-2109m



2112-2114m



2114-2117m



2117-2120m



2120-2122m



2122-2125m



2125-2128m



2128-2129m



2400-2400m



2400-2403m



2403-2404m

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		2078.00	2084.00			YES
DST	DST 2A	2084.00	2090.00		21.06.1980 - 13:00	YES
DST	DST 3	1906.00	1910.00		24.06.1980 - 00:00	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
227	NORDLAND GP
921	UTSIRA FM
945	NO FORMAL NAME
990	HORDALAND GP
1163	NO FORMAL NAME
1362	NO FORMAL NAME
1510	ROGALAND GP
1510	BALDER FM
1575	LISTA FM
1696	SHETLAND GP
1696	JORSALFARE FM



1767	KYRRE FM
1833	BRENT GP
1833	NESS FM
1836	ETIVE FM
1867	RANNOCH FM
1945	BROOM FM
1957	DUNLIN GP
1957	DRAKE FM
2083	COOK FM

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

Document name	Document format	Document size [MB]
140_01_WDSS_General_Information	pdf	0.14
140_02_WDSS_completion_log	pdf	0.17

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

Document name	Document format	Document size [MB]
140_34_10_9_Completion_log	pdf	1.54
140_34_10_9_Completion_report	pdf	27.30
140_34_10_9_Drilling_Completion_report	pdf	33.81
140_34_10_9_Evaluation_Of_Wet_Crude_De_mulsifier	pdf	0.30
140_34_10_9_Fluid_Sample_Data	pdf	1.84
140_34_10_9_Fluid_Sample_Data_DST2	pdf	1.39
140_34_10_9_Fluid_Sample_Data_DST3	pdf	1.32
140_34_10_9_Formation_Testing_Service_Report	pdf	0.29
140_34_10_9_Laboratory_Final_Report_Core_parameters	pdf	1.05
140_34_10_9_Palaeontological_Stratigraphical_Final_Report	pdf	2.60
140_34_10_9_Well_Test_Report	pdf	3.14

Drill stem tests (DST)





Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	2078	2084	9.5
2.0	2059	2065	9.5
3.0	1879	1885	12.7

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0	32.000	15.000		
2.0	33.000	32.000		
3.0	31.000	30.000		

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	35	2715	0.854		77
2.0	751	48428	0.847		65
3.0	727	42480	0.866		62

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL GR	712	2206
CDL VDL GR	1800	1896
CDL VDL GR	2050	2124
CYBERDIP	1718	2428
DLL MSFL GR	1800	2202
FDC CNL GR CAL	1718	2428
FDC GR CAL	831	1725
GEODIP	2350	2428
HDT	1718	2428
ISF SON GR	218	2427

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	288.0	36	289.5	0.00	LOT
SURF.COND.	20	830.0	26	845.0	1.59	LOT



INTERM.	13 3/8	1441.0	17 1/2	1455.0	1.76	LOT
INTERM.	9 5/8	1715.0	12 1/4	1722.0	1.90	LOT
INTERM.	9 5/8	1718.0	12 1/4	1722.0	1.90	LOT
LINER	7	2199.0	8 1/2	2200.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
350	1.04			waterbased	
650	1.10			waterbased	
825	1.09			waterbased	
1050	1.20			waterbased	
1275	1.30			waterbased	
1490	1.55			waterbased	
1630	1.67			waterbased	
1755	1.82			waterbased	
1820	1.80			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]
140 Formation pressure (Formasjonstrykk)	pdf	0.17

