General information

Wellbore name	16/1-3
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Well name	16/1-3
Seismic location	SC 75 - 30 2110
Production licence	001
Drilling operator	Esso Exploration and Production Norway A/S
Drill permit	340-L
Drilling facility	GLOMAR BISCAY II
Drilling days	61
Entered date	29.07.1982
Completed date	27.09.1982
Release date	27.09.1984
Publication date	24.09.2004
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL SHOWS
Discovery wellbore	NO
Kelly bushing elevation [m]	25.0
Water depth [m]	108.0
Total depth (MD) [m RKB]	3498.0
Final vertical depth (TVD) [m RKB]	3496.0
Maximum inclination [°]	1.2
Bottom hole temperature [°C]	97
Oldest penetrated age	PRE-DEVONIAN
Oldest penetrated formation	BASEMENT
Geodetic datum	ED50
NS degrees	58° 48' 48.9'' N
EW degrees	2° 2' 56.45'' E
NS UTM [m]	6519834.64
EW UTM [m]	445067.06
UTM zone	31
NPDID wellbore	84

Wellbore history

General

Well 16/1-3 is located on the Gudrun Terrace west of the Utsira High. The main objective of the well was to evaluate the hydrocarbon potential of Jurassic sand reservoirs. Eocene and Paleocene sands were secondary objectives. 16/1-3 was drilled on the flank of a seismically defined structure. The prime crestal location could not be tested due to the presence of a telephone cable on the sea floor.

Operations and results

Well 16/1-3 was spudded with the semi-submersible installation Glomar Biscay II on 29 July 1982 and drilled to TD at 3498 m in granite basement. After losing returns while drilling at 210 m, the 30" casing was re-cemented. Shallow gas was encountered between 400 and 444 meters. Tight hole, swabbing on trips and reaming were recurrent problems in the 12 1/4" hole due mainly to swelling of claystone and siltstone. Mud was lost when drilling through a flint layer at 2638 m. The well was drilled with seawater and bentonite down to 702 m, with a lignosulphonate/CMC mud from 702 m to 2282 m, and with lignosulphonate/lignite mud from 2282 m to TD.

Mechanical log analysis over the Jurassic interval indicated the presence of about 60 meters of gross sand. Two thin zones of approximately 4 meters each in thickness were interpreted to be hydrocarbon bearing. The remaining sands were judged to be water bearing or non-reservoir. No reservoir was believed to be present in the Triassic sand, siltstones and shales. Minor shows, consisting of stain, fluorescence and/or mud gas manifestations were recorded in the Pliocene-Eocene, Miocene and Paleocene sections. In addition, oily mud was recovered in one of the MFT samples from the Jurassic Sleipner Formation. The Zechstein formation contained generally tight anhydritic dolomites at the top. A porous but interpreted water bearing limestone section was found in the middle portion of the Zechstein Group. Below the limestone a 36 m thick sandstone sequence was encountered. At the base of the Zechstein Group 3 m of Kupferschiefer Formation was encountered. The Kupferschiefer Formation is present in several wells in the area. The Permian Rotliegendes formation contained poor reservoir quality felspathic sandstones, siltstones and shales. Also the Permian reservoirs appeared to be water bearing on wire line logs.

One core was cut from 2282 m to 2290.5 m in the Lista Formation. Two Multi Formation Test (MFT) samples were taken at 2742 m and 2742.5 m in a thin sand in the Jurassic Sleipner Formation. The first sample contained mud filtrate only. The second sample contained mud filtrate and 75 cc of light gravity oil. The well was permanently abandoned as a dry well with shows on 27 September 1982.

Testing

No drill stem test was performed

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
200.00	3498.50

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	2282.0	2291.8	[m]

Total core sample length [m]	9.8
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
500.0	[unknown]	DC	
530.0	[unknown]	DC	
560.0	[unknown]	DC	
590.0	[unknown]	DC	
620.0	[unknown]	DC	
650.0	[unknown]	DC	
680.0	[unknown]	DC	
710.0	[unknown]	DC	
740.0	[unknown]	DC	
770.0	[unknown]	DC	
800.0	[unknown]	DC	
840.0	[unknown]	DC	
860.0	[unknown]	DC	
890.0	[unknown]	DC	
920.0	[unknown]	DC	
950.0	[unknown]	DC	
980.0	[unknown]	DC	
1010.0	[unknown]	DC	
1040.0	[unknown]	DC	
1070.0	[unknown]	DC	
1100.0	[unknown]	DC	
1130.0	[unknown]	DC	
1160.0	[unknown]	DC	
1190.0	[unknown]	DC	
1220.0	[unknown]	DC	
1250.0	[unknown]	DC	

1280.0	[unknown]	DC	
1310.0	[unknown]	DC	
1340.0	[unknown]	DC	
1350.0	[unknown]	DC	RRI
1370.0	[unknown]	DC	
1410.0	[unknown]	DC	
1410.0	[unknown]	DC	RRI
1430.0	[unknown]	DC	
1460.0	[unknown]	DC	
1470.0	[unknown]	DC	RRI
1490.0	[unknown]	DC	
1520.0	[unknown]	DC	
1530.0	[unknown]	DC	RRI
1550.0	[unknown]	DC	
1580.0	[unknown]	DC	
1590.0	[unknown]	DC	RRI
1610.0	[unknown]	DC	
1640.0	[unknown]	DC	
1650.0	[unknown]	DC	RRI
1680.0	[unknown]	DC	
1700.0	[unknown]	DC	
1730.0	[unknown]	DC	RRI
1730.0	[unknown]	DC	
1760.0	[unknown]	DC	
1762.0	[unknown]	SWC	
1790.0	[unknown]	DC	RRI
1790.0	[unknown]	DC	
1820.0	[unknown]	DC	
1850.0	[unknown]	DC	RRI
1850.0	[unknown]	DC	
1880.0	[unknown]	DC	
1910.0	[unknown]	DC	
1910.0	[unknown]	DC	RRI
1930.0	[unknown]	DC	
1960.0	[unknown]	DC	
1970.0	[unknown]	DC	RRI
1990.0	[unknown]	DC	
2010.0	[unknown]	DC	
2021.0	[unknown]	SWC	
2030.0	[unknown]	DC	RRI

2040.0	[unknown]	DC	
2056.5	[unknown]	SWC	
2056.5	[unknown]	SWC	OD
2070.0	[unknown]	DC	
2090.0	[unknown]	DC	RRI
2092.5	[unknown]	SWC	
2100.0	[unknown]	DC	
2101.5	[unknown]	SWC	
2110.0	[unknown]	SWC	
2130.0	[unknown]	DC	
2143.0	[unknown]	SWC	
2143.0	[unknown]	SWC	OD
2150.0	[unknown]	DC	RRI
2156.0	[unknown]	SWC	
2160.0	[unknown]	DC	
2170.0	[unknown]	SWC	OD
2174.0	[unknown]	SWC	OD
2174.0	[unknown]	SWC	
2178.5	[unknown]	SWC	
2190.0	[unknown]	DC	
2200.0	[unknown]	DC	RRI
2220.0	[unknown]	DC	
2231.0	[unknown]	DC	
2250.0	[unknown]	DC	
2257.0	[unknown]	SWC	
2278.5	[unknown]	SWC	
2279.3	[unknown]	SWC	OD
2279.3	[unknown]	SWC	
2280.0	[unknown]	DC	
2310.0	[unknown]	DC	
2316.0	[unknown]	SWC	
2340.0	[unknown]	DC	
2345.0	[unknown]	SWC	
2370.0	[unknown]	DC	
2372.5	[unknown]	SWC	OD
2372.5	[unknown]	SWC	
2399.0	[unknown]	SWC	OD
2399.0	[unknown]	SWC	
2400.0	[unknown]	DC	
2405.0	[unknown]	DC	

2410.0	[unknown]	DC	ENTERPR
2410.0	[unknown]	DC	
2419.0	[unknown]	SWC	
2430.0	[unknown]	DC	
2431.0	[unknown]	SWC	
2450.0	[unknown]	DC	
2465.0	[unknown]	DC	
2470.0	[unknown]	DC	ENTERPR
2500.0	[unknown]	DC	
2530.0	[unknown]	DC	
2560.0	[unknown]	DC	
2590.0	[unknown]	DC	
2620.0	[unknown]	DC	
2650.0	[unknown]	DC	
2680.0	[unknown]	DC	
2710.0	[unknown]	DC	
2710.0	[unknown]	SWC	
2710.0	[unknown]	SWC	OD
2713.5	[unknown]	SWC	
2713.5	[unknown]	SWC	OD
2722.0	[unknown]	SWC	OD
2722.0	[unknown]	SWC	
2728.0	[unknown]	SWC	
2728.0	[unknown]	SWC	OD
2740.0	[unknown]	DC	
2764.5	[unknown]	SWC	
2770.0	[unknown]	DC	
2800.0	[unknown]	DC	
2830.0	[unknown]	DC	
2857.0	[unknown]	DC	
2887.0	[unknown]	DC	
2917.0	[unknown]	DC	
2947.0	[unknown]	DC	
2977.0	[unknown]	DC	
3007.0	[unknown]	DC	
3037.0	[unknown]	DC	
3067.0	[unknown]	DC	
3090.0	[unknown]	SWC	
3091.0	[unknown]	DC	
3113.5	[unknown]	SWC	

3113.5	[unknown]	SWC	OD
3114.5	[unknown]	SWC	
3114.5	[unknown]	SWC	OD
3121.0	[unknown]	DC	
3151.0	[unknown]	DC	
3181.0	[unknown]	DC	
3211.0	[unknown]	DC	
3240.0	[unknown]	DC	
3271.0	[unknown]	DC	
3301.0	[unknown]	DC	
3331.0	[unknown]	DC	
3361.0	[unknown]	DC	
3391.0	[unknown]	DC	
3421.0	[unknown]	DC	
3451.0	[unknown]	DC	
3481.0	[unknown]	DC	
3498.5	[unknown]	C	

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
133	NORDLAND GP
732	UTSIRA FM
923	UNDIFFERENTIATED
951	HORDALAND GP
1043	SKADE FM
1143	NO FORMAL NAME
1610	GRID FM
1760	NO FORMAL NAME
1834	GRID FM
1893	NO FORMAL NAME
2125	ROGALAND GP
2125	BALDER FM
2168	SELE FM
2219	LISTA FM
2423	HEIMDAL FM
2423	MEILE MBR (INFORMAL)
2458	SHETLAND GP
2603	CROMER KNOLL GP

2707	VIKING GP
2707	HEATHER FM
2730	VESTLAND GP
2730	SLEIPNER FM
2754	UNDIFFERENTIATED
2840	NO GROUP DEFINED
2840	SMITH BANK FM
3082	ZECHSTEIN GP
3082	UNDIFFERENTIATED
3227	KUPFERSCHIEFER FM
3230	ROTLIEGEND GP
3440	BASEMENT

Composite logs

Document name	Document format	Document size [MB]
84	pdf	0.62

Geochemical information

Document name	Document format	Document size [MB]
84_1	pdf	3.24

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

Document name	Document format	Document size [MB]
84_01_WDSS_General_Information	pdf	0.17
84_02_WDSS_completion_log	pdf	0.23

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

Document name	Document format	Document size [MB]
84_16_1_3_COMPLETION_LOG	pdf	2.30
84_16_1_3_COMPLETION_REPORT	pdf	22.20

Logs

Log type	Log top depth [m]	Log bottom depth [m]
4ARM CAL	170	521
4ARM CAL	506	1201
CDL CN GR	2724	3097
CN CDL GR	1242	2737
CNL CD GR	3050	3495
CNL CDR GR	3050	3271
DIPLOG	2725	3270
DLL MLL GR	2250	2732
IEL AC GR	195	520
IEL AC GR	506	1277
IEL AC GR	1242	2735
IEL AC GR	2724	3095
IEL AC GR	2724	3269
IEL AC GR	3200	3495
MFT	1850	2750
MFT	2741	3073
MFT	2742	3194
MFT	2742	2742
SRC	2733	3095
SWC	1762	2729
SWC	2733	3095
SWC	3101	3266
TEMP CCL	10	1237
TEMP CCL	1235	2200
VEL	1242	3495

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	192.0	36	194.0	0.00	LOT
SURF.COND.	20	506.0	26	521.0	1.55	LOT
INTERM.	13 3/8	1263.0	17 1/2	1278.0	1.70	LOT
INTERM.	9 5/8	2727.0	12 1/4	2738.0	1.80	LOT
OPEN HOLE		3498.0	8 1/2	3498.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
280	1.02	45.0		water	
350	1.06	38.0		water	
470	1.08	32.0		water	
640	1.18	41.0		water	
730	1.16	36.0		water	
1240	1.20	37.0		water	
1470	1.18	40.0		water	
2090	1.22	48.0		water	
2380	1.26	59.0		water	
2650	1.17	50.0		water	
2790	1.50	57.0		water	
3040	1.56	60.0		water	
3160	1.19	48.0		water	
3460	1.20	49.0		water	

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]
84_Formation_pressure_(Formasjonstrykk)	pdf	0.22