General information

Wellbore name	16/7-2
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Discovery	16/7-2
Well name	16/7-2
Seismic location	NH 8008 - 016 SP 1040
Production licence	072
Drilling operator	Esso Exploration and Production Norway A/S
Drill permit	314-L
Drilling facility	GLOMAR BISCAY II
Drilling days	79
Entered date	11.01.1982
Completed date	30.03.1982
Release date	30.03.1984
Publication date	14.12.2006
Purpose - planned	WILDCAT
Reentry	NO
Content	GAS
Discovery wellbore	YES
1st level with HC, age	PALEOCENE
1st level with HC, formation	HEIMDAL FM
Kelly bushing elevation [m]	25.0
Water depth [m]	83.0
Total depth (MD) [m RKB]	3146.0
Final vertical depth (TVD) [m RKB]	3146.0
Maximum inclination [°]	2.75
Bottom hole temperature [°C]	97
Oldest penetrated age	EARLY PERMIAN
Oldest penetrated formation	ROTLIEGEND GP
Geodetic datum	ED50
NS degrees	58° 28' 26.5'' N
EW degrees	2° 2' 3.12'' E
NS UTM [m]	6482040.15
EW UTM [m]	443667.12
UTM zone	31
NPDID wellbore	40

Wellbore history

General

The 16/7-2 well was drilled on the western flank of the Utsira High in the North Sea. The primary objective was to test the presence of a stratigraphic trap in Paleocene sandstones. Secondary objectives were to test the Mesozoic structure for possible Triassic sands, and also to test the Zechstein carbonate and Rotliegendes sandstone plays. The well was the first to be drilled in connection with the 6th. License Round awards.

Operations and results

Well 16/7-2 was spudded with the semi-submersible installation Glomar Biscay II on 11 January 1982 and drilled to TD at 3146 m in Early Permian, Rotliegendes Group sediments. Drilling of the 36" and 26" holes went forth without any specific problems. While cementing the 20" casing, the cement slurry was overdisplaced. A remedial squeeze job was necessary. Problems also occurred when logging the 12 1/4" section due to tight hole. In the 8 1/2" inch section problems with the BOP choke valve/controls led to close to 9 days lost time, a major reason for the 38% non-productive time in this well. The well was drilled with seawater gel down to 171 m, and with lignite/lignosulphonate mud from 171 m to TD.

Top Lista Formation was encountered at 2268 m and contained 9.5 m net of gas from 2292 m in thin sandstone intervals, interbedded with shales. The average porosity is 22% and average water saturation is 47% in the net sand. The Heimdal Formation sandstones were massive, of very good reservoir quality, and contained 13.5 m of net gas sand in a gross gas sand interval of 13.5 m down to the gas/water contact at 2352 m. The average porosity is 26% and average water saturation is 34%. The well was drilled on the crest of a structurally limited trap and the gas accumulation is not connected to the 15/9 Paleocene Gamma discovery. In the Jurassic, 19 m of water wet Hugin Formation sand was encountered. The Zechstein dolomites and Rotliegendes sandstones were also water wet and of poor reservoir quality. The well also penetrated a 5 m thick sequence of the Permian Kupferschiefer at 3112 m.

Three cores were taken in the Lista and Heimdal Formations from 2300 m to 2376 m. A fourth core core was taken from 2675 m to 2693 m in the Middle Jurassic Hugin Formation. MFT fluid samples were taken at 2680.5 m (content: mud filtrate), 2313 m (mud filtrate), and 2341 m (gas condensate; single flash to stock tank conditions gave GOR = 3042 Sm3/Sm3 and liquid gravity = 48.3 deg API).

The well was permanently abandoned on 30 March 1982 as a gas discovery.

Testing

No drill stem test was performed

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
180.00	3146.00

Cuttings available for sampling?	NO

Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	2300.0	2301.5	[m]
2	2347.0	2356.5	[m]
3	2356.5	2375.0	[m]
4	2675.0	2690.8	[m]

Total core sample length [m]	45.3
Cores available for sampling?	YES

Core photos


2301-2302m


2347-2353m


2353-2356m


2356-2362m


2362-2368m


2368-2374m


2374-2375m


2675-2681m


2687-2690m


2681-2687m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
600.0	[m]	DC	
700.0	[m]	DC	
701.0	[m]	C	SNEA
715.4	[m]	C	SNEA
715.8	[m]	C	SNEA
716.7	[m]	C	SNEA
717.7	[m]	C	SNEA
718.4	[m]	C	SNEA

720.4	[m]	C	SNEA
720.5	[m]	C	SNEA
721.5	[m]	C	SNEA
800.0	[m]	DC	
815.4	[m]	C	SNEA
817.8	[m]	C	SNEA
818.1	[m]	C	SNEA
900.0	[m]	DC	
1000.0	[m]	DC	
1100.0	[m]	DC	
1200.0	[m]	DC	
1300.0	[m]	DC	
1400.0	[m]	DC	
1500.0	[m]	DC	
1600.0	[m]	DC	
1700.0	[m]	DC	
1800.0	[m]	DC	
1900.0	[m]	DC	
1930.0	[m]	DC	
1960.0	[m]	DC	
1990.0	[m]	DC	
2020.0	[m]	DC	
2050.0	[m]	DC	
2080.0	[m]	DC	
2110.0	[m]	DC	
2140.0	[m]	DC	
2170.0	[m]	DC	
2200.0	[m]	DC	
2230.0	[m]	DC	
2235.0	[m]	DC	
2240.0	[m]	DC	
2250.0	[m]	DC	
2255.0	[m]	DC	
2260.0	[m]	DC	
2290.0	[m]	DC	
2295.0	[m]	SWC	
2298.0	[m]	SWC	
2300.0	[m]	DC	
2300.6	[m]	C	
2301.2	[m]	C	

2304.5	[m]	SWC	
2310.0	[m]	SWC	
2311.0	[m]	SWC	
2311.0	[m]	DC	
2315.0	[m]	SWC	
2320.0	[m]	SWC	
2320.0	[m]	DC	
2324.0	[m]	SWC	
2326.0	[m]	SWC	
2329.0	[m]	DC	
2338.0	[m]	DC	
2339.0	[m]	SWC	
2339.0	[m]	SWC	
2347.0	[m]	DC	
2359.0	[m]	DC	
2363.5	[m]	SWC	
2365.0	[m]	DC	
2366.5	[m]	SWC	
2375.5	[m]	SWC	
2378.8	[m]	SWC	
2380.0	[m]	SWC	
2395.0	[m]	DC	
2424.0	[m]	SWC	
2425.0	[m]	DC	
2455.0	[m]	DC	
2485.0	[m]	DC	
2515.0	[m]	DC	
2545.0	[m]	DC	
2575.0	[m]	DC	
2581.0	[m]	DC	RRI
2581.0	[m]	SWC	
2587.0	[m]	DC	
2590.0	[m]	DC	RRI
2593.0	[m]	SWC	
2596.0	[m]	DC	
2596.0	[m]	DC	RRI
2605.0	[m]	DC	
2610.0	[m]	DC	
2611.0	[m]	DC	RRI
2626.0	[m]	DC	RRI

2626.0	[m]	DC	
2635.0	[m]	DC	
2641.0	[m]	DC	RRI
2645.0	[m]	SWC	
2656.0	[m]	DC	RRI
2665.0	[m]	DC	
2668.0	[m]	DC	RRI
2675.0	[m]	C	
2675.5	[m]	DC	
2678.1	[m]	C	RRI
2679.0	[m]	C	
2681.0	[m]	C	
2683.0	[m]	C	
2685.0	[m]	C	
2687.0	[m]	C	
2687.6	[m]	C	
2688.0	[m]	C	
2689.0	[m]	C	
2689.2	[m]	C	
2689.2	[m]	C	
2690.7	[m]	C	RRI
2690.8	[m]	C	
2691.0	[m]	SWC	
2695.0	[m]	SWC	
2695.0	[m]	DC	
2701.0	[m]	DC	RRI
2725.0	[m]	DC	
2725.0	[m]	SWC	
2752.0	[m]	DC	RRI
2755.0	[m]	DC	
2785.0	[m]	DC	
2815.0	[m]	DC	
2845.0	[m]	DC	
2851.0	[m]	DC	RRI
2875.0	[m]	DC	
2875.0	[m]	SWC	
2903.0	[m]	SWC	
2905.0	[m]	DC	
2930.0	[m]	SWC	
2935.0	[m]	DC	

2965.0	[m]	DC	
2974.0	[m]	SWC	
2975.2	[m]	SWC	
2983.0	[m]	DC	RRI
2995.0	[m]	DC	
3001.0	[m]	DC	RRI
3003.0	[m]	SWC	
3013.0	[m]	SWC	
3025.0	[m]	DC	
3025.0	[m]	DC	RRI
3033.2	[m]	SWC	
3055.0	[m]	DC	
3085.0	[m]	DC	
3115.0	[m]	DC	
3115.0	[m]	DC	RRI
3118.0	[m]	DC	RRI
3146.0	[m]	DC	

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
108	NORDLAND GP
794	UTSIRA FM
1096	HORDALAND GP
2148	ROGALAND GP
2148	BALDER FM
2204	SELE FM
2268	LISTA FM
2339	HEIMDAL FM
2423	MAUREEN FM
2435	SHETLAND GP
2435	TOR FM
2535	HOD FM
2579	VIKING GP
2579	DRAUPNE FM
2668	VESTLAND GP
2668	HUGIN FM
2692	NO GROUP DEFINED
2692	SMITH BANK FM

3010	ZECHSTEIN GP
3010	UNDIFFERENTIATED
3112	KUPFERSCHIEFER FM
3117	ROTLIEGEND GP

Composite logs

Document name	Document format	Document size [MB]
40	pdf	0.52

Geochemical information

Document name	Document format	Document size [MB]
40_1	pdf	1.22
40_2	pdf	1.82
40_3	pdf	0.07

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

Document name	Document format	Document size [MB]
40_01_WDSS_General_Information	pdf	0.17
40_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]
40_01_16_7_2_Completion_Report_Geological	pdf	16.16
40_02_16_7_2_Final_Well_Report	pdf	58.18
40_03_16_7_2_Well_Completion_Report_Gearhart	pdf	47.57
40_04_16_7_2_Drilling_And_Evaluation_Program	pdf	7.43
40_05_16_7_2_Hydrocarbon_Source_Analysis	pdf	5.60
40_06_16_7_2_Paleontological_And_Geochemical	pdf	3.36

40_07_16_7_2_Well_Core_1-4	pdf	0.81

Logs

Log type	Log top depth [m]	Log bottom depth [m]
4-CAL	82	2271
4-CAL	100	490
CBL	82	2473
CDL CNL	82	2273
CDL CNL	1192	2528
CDL FOR CAL	485	1209
DIP	2200	2528
DIP	2504	3135
DLL MLL	82	2472
IEL AC GR	502	1215
IEL AC GR CAL	82	2273
IEL AC GR CAL	100	338
IEL AC GR CAL	100	519
IEL AC GR CAL	1120	2391
IEL AC GR CAL	2285	2527
MFT	2295	2422
MFT	2675	2918
SWC	2290	2521
SWC	2545	3130
SWC	2581	3136
TEMP	108	1064
VELOCITY	500	3135

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	171.0	36	172.0	0.00	LOT
SURF.COND.	20	502.0	26	522.0	1.73	LOT
INTERM.	13 3/8	1201.0	17 1/2	1217.0	1.88	LOT
INTERM.	9 5/8	2510.0	12 1/4	2536.0	2.00	LOT
OPEN HOLE		3146.0	8 1/2	3146.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
250	1.06	48.0		waterbased	
510	1.15	43.0		waterbased	
760	1.15	44.0		waterbased	
1150	1.10	45.0		waterbased	
1320	1.21	51.0		waterbased	
1440	1.20	43.0		waterbased	
2650	1.34	54.0		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]
40_Formation_pressure_(Formasjonstrykk)	pdf	0.23