General information

Wellbore name	15/9-9
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	SLEIPNER ØST
Discovery	15/9-9 Sleipner Øst
Well name	15/9-9
Seismic location	line no 510 - 157 SP: 160
Production licence	046
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	285-L
Drilling facility	NORDRAUG
Drilling days	72
Entered date	04.05.1981
Completed date	14.07.1981
Release date	14.07.1983
Publication date	24.09.2015
Purpose - planned	WILDCAT
Reentry	NO
Content	GAS/CONDENSATE
Discovery wellbore	YES
1st level with HC, age	PALEOCENE
1st level with HC, formation	HEIMDAL FM
2nd level with HC, age	PALEOCENE
2nd level with HC, formation	TY FM
Kelly bushing elevation [m]	25.0
Water depth [m]	83.0
Total depth (MD) [m RKB]	3044.0
Maximum inclination [°]	2.3
Bottom hole temperature [°C]	79
Oldest penetrated age	EARLY PERMIAN
Oldest penetrated formation	ROTLIEGEND GP
Geodetic datum	ED50
NS degrees	58° 20' 47.81'' N
EW degrees	1° 53' 24.98'' E
NS UTM [m]	6467984.08

EW UTM [m]	435038.52
UTM zone	31
NPDID wellbore	328

Wellbore history

General

Well 15/9-9, was drilled on the Sleipner Terrace in the North Sea. The primary objective was to test possible hydrocarbons in Jurassic sandstones on the 15/9-Gamma structure and to get more information about the sand distribution in the area.

Operations and results

Wildcat well 15/9-9 was spudded with the semi-submersible installation Nordraug on 4 May 1981 and drilled to TD at 3044 m in the Early-Middle Permian Rotliegendes Group. No significant problems were experienced in operation, logging or testing of the well. The well was drilled with seawater and pre-hydrated gel down to 501 m, with gel/lignosulphonate from 501 to 1155 m, with gypsum/polymer mud from 1155 m to 2540 m, and with gel/lignosulphonate from 2540 m to TD.

The primary objective, the Jurassic, was thinner than expected and consisted of Late Jurassic Viking Group shales only. The well, however, proved gas and condensate in the Heimdal Formation. The Heimdal Formation was reached at 2322 m. It consisted of sand of fairly good reservoir properties interbedded with some thin shale beds. The whole sand interval was hydrocarbon bearing and no water contact was located. In addition, the well proved residual hydrocarbons over the interval 2648 to 2738 m on cores from the Triassic Skagerrak Formation.

Seven cores were cut. The interval 2648 to 2756 m was cored in six cores with 98 - 100% recovery. A seventh core was cut from 3032 to 3043.5 m with 96% recovery at TD. RFT segregated samples were taken at 2323 m (condensate and mud filtrate) and 2648 m (water and mud filtrate, no gas or condensate). Repeated attempts to sample in the interval 2401 to 2414 all failed due to plugging of probe by unconsolidated sand.

The well was permanently abandoned on 14 July as a gas/condensate discovery.

Testing

Three drill stem tests were performed.

DST 1 tested the interval 2414 to 2421 m. This test gave no flow to surface and it was aborted due to malfunctioning downhole valves. The maximum downhole temperature measured by the gauges was 85.6 °C

DST 2 tested the interval 2386 to 2392 m. This test produced 286 Sm3 condensate and 586200 Sm3 gas /day through a 1.0" choke (max flow). No H2S and only traces of CO2 was measured. The GOR was 2050 Sm3/Sm3, the condensate gravity was 57.7 °API and the gas gravity was 0.734. The bottom hole temperature measured by the Flopetrol gauge was 87.8 °C.

DST 3 tested the interval 2323 to 2333 m. This test produced 272 Sm3 condensate and 587000 Sm3 gas /day through a 1.0" choke (max flow). No H2S and only traces of CO2 was measured. The GOR was 2160 Sm3/Sm3, the condensate gravity was 60.7 °API and the gas gravity was 0.740. The maximum down hole temperature measured by the gauges was 93.9 °C.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
160.00	3040.00

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	2648.0	2665.7	[m]
2	2666.0	2684.0	[m]
3	2684.0	2701.9	[m]
4	2702.0	2719.9	[m]
5	2720.0	2738.4	[m]
6	2738.4	2755.6	[m]
7	3032.0	3043.1	[m]

Total core sample length [m]	118.1
Cores available for sampling?	YES

Core photos


2648-2651m


2651-2654m


2654-2657m


2657-2660m


2660-2663m


2663-2665m


2665-2669m


2669-2672m


2672-2675m


2675-2678m


2678-2681m


2681-2684m


2684-2687m


2687-2690m


2690-2693m


2693-2696m


2696-2699m


2699-2701m


2702-2705m


2705-2708m


2708-2711m


2711-2714m


2714-2717m


2717-2719m


2720-2723m


2723-2726m


2726-2729m


2729-2732m


2732-2735m


2735-2738m


2738-2738m


2738-2741m


2741-2744m


2744-2747m


2747-2750m


2750-2753m


2753-2755m


3032-3035m


3035-3038m


3038-3041m


3041-3043m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
2105.0	[m]	DC	
2130.0	[m]	DC	
2160.0	[m]	DC	
2191.0	[m]	DC	
2221.0	[m]	DC	
2251.0	[m]	DC	
2281.0	[m]	DC	
2311.0	[m]	DC	
2341.0	[m]	DC	
2371.0	[m]	DC	
2401.0	[m]	DC	
2431.0	[m]	DC	
2452.0	[m]	DC	
2482.0	[m]	DC	
2512.0	[m]	DC	
2542.0	[m]	DC	
2551.0	[m]	DC	
2572.0	[m]	DC	
2602.0	[m]	DC	
2605.0	[m]	DC	
2605.0	[m]	DC	
2611.0	[m]	DC	
2623.0	[m]	DC	
2623.0	[m]	DC	
2626.0	[m]	DC	
2626.0	[m]	DC	
2629.0	[m]	DC	
2632.0	[m]	DC	
2635.0	[m]	DC	

2648.2	[m]	C	STATOIL
2650.5	[m]	C	STATOIL
2650.7	[m]	C	STATOIL
2650.9	[m]	C	
2655.1	[m]	C	STATOIL
2659.7	[m]	C	STATOI
2667.0	[m]	C	
2667.4	[m]	C	STATOIL
2668.4	[m]	C	STATOI
2668.7	[m]	C	STATOI
2686.0	[m]	C	STATOI
2686.0	[m]	C	
2691.8	[m]	C	STATOIL
2701.8	[m]	C	STATOIL
2703.7	[m]	C	
2704.7	[m]	C	STATOIL
2705.6	[m]	C	STATOI
2708.5	[m]	C	STATOI
2715.3	[m]	C	STATOI
2715.7	[m]	C	STATOI
2716.6	[m]	C	STATOI
2716.7	[m]	C	STATOI
2717.4	[m]	C	STATOI
2717.5	[m]	C	STATOI
2725.6	[m]	C	
2730.5	[m]	C	STATOIL
2736.5	[m]	C	STATOI
2737.6	[m]	C	STATOI
2740.1	[m]	C	
2744.5	[m]	C	STATOIL
2744.6	[m]	C	STATOI
2763.6	[m]	C	STATOI
2975.7	[m]	C	STATOI
3033.0	[m]	C	

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	TEST2	2386.00	2392.00		02.07.1981 - 05:00	YES
DST	TEST3	2323.00	2333.00		06.07.1981 - 00:00	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
108	NORDLAND GP
108	UNDIFFERENTIATED
844	UTSIRA FM
1092	HORDALAND GP
1092	UNDIFFERENTIATED
2125	ROGALAND GP
2125	BALDER FM
2168	SELE FM
2255	LISTA FM
2322	HEIMDAL FM
2392	MAUREEN FM
2425	SHETLAND GP
2425	EKOFISK FM
2452	TOR FM
2524	HOD FM
2571	BLODØKS FM
2590	HIDRA FM
2597	CROMER KNOLL GP
2597	RØDBY FM
2606	SOLA FM
2613	ÅSGARD FM
2625	VIKING GP
2625	DRAUPNE FM
2627	HEATHER FM
2642	HEGRE GP
2642	SKAGERRAK FM
2776	SMITH BANK FM
2969	ZECHSTEIN GP
2969	UNDIFFERENTIATED

3011	KUPFERSCHIEFER FM
3014	ROTLIEGEND GP
3014	NO FORMAL NAME

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

Document name	Document format	Document size [MB]
328_01_WDSS_General_Information	pdf	0.10
328_02_WDSS_completion_log	pdf	0.22

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

Document name	Document format	Document size [MB]
328_15_9_9_COMPLETION_LOG	pdf	1.85
328_15_9_9_COMPLETION_REPORT	pdf	20.29

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	2414	2421	0.0
2.0	2386	2392	25.4
3.0	2323	2332	25.4

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

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					
2.0	295	580000	0.740	0.740	
3.0	271	590000	0.740	0.740	

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL GR	388	2526
CST	2579	3028
CYBERDIP ADT	1141	3043
DLL MSFL GR	2300	2539
FDC CNL GR	487	3043
ISF SON GR	81	3043
RFT	2322	3043
VELOCITY	700	3040

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	158.0	36	159.0	0.00	LOT
SURF.COND.	20	487.0	26	501.0	1.78	LOT
INTERM.	13 3/8	1142.0	17 1/2	1155.0	1.79	LOT
INTERM.	9 5/8	2527.0	12 1/4	2540.0	1.82	LOT
OPEN HOLE		3044.0	8 1/2	3044.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
390	1.06			waterbased	
960	1.14			waterbased	
1410	1.13			waterbased	
2430	1.20			waterbased	
2530	1.29			waterbased	
2535	1.50			waterbased	

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
3032.56	[m]
3035.03	[m]

3036.03	[m]
3041.02	[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]
328_Formation_pressure_(Formasjonstrykk)	pdf	0.27