General information

Wellbore name	3/7-4
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	TRYM
Discovery	3/7-4 Trym
Well name	3/7-4
Seismic location	EL 8201 - 219 SP 220
Production licence	147
Drilling operator	A/S Norske Shell
Drill permit	619-L
Drilling facility	HUNTER
Drilling days	126
Entered date	20.09.1989
Completed date	23.01.1990
Release date	23.01.1992
Publication date	19.10.2006
Purpose - planned	WILDCAT
Reentry	NO
Content	GAS/CONDENSATE
Discovery wellbore	YES
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	SANDNES FM
2nd level with HC, age	MIDDLE JURASSIC
2nd level with HC, formation	BRYNE FM
Kelly bushing elevation [m]	25.0
Water depth [m]	66.0
Total depth (MD) [m RKB]	3723.0
Final vertical depth (TVD) [m RKB]	3721.0
Maximum inclination [°]	7.3
Bottom hole temperature [°C]	136
Oldest penetrated age	LATE PERMIAN
Oldest penetrated formation	ZECHSTEIN GP
Geodetic datum	ED50
NS degrees	56° 24' 15.6'' N
EW degrees	4° 14' 22.24'' E

NS UTM [m]	6251910.40
EW UTM [m]	576498.02
UTM zone	31
NPDID wellbore	1467

Wellbore history

General

Well 3/7-4 was designed to drill a prospect on the Lulita culmination. The Lulita prospect extends in to Danish waters, and forms part of an elongated, N-S trending, salt induced feature on the western margin of the Søgne Basin. The present structural features were developed during mid Cretaceous time, and closure at Late Cretaceous and Tertiary levels essentially reflects compaction and drape over the Jurassic high. The Jurassic Lulita closure is separated from the area tested by the 3/7-3 well by a faulted saddle, which also is well expressed at Tertiary and Cretaceous levels, providing a vertical closure of some 75 metres. The well had as primary objective to test the hydrocarbon potential of Middle Jurassic sandstones within a structural/stratigraphic trap, and as secondary objective to testing the potential in possible Late Jurassic and Early Cretaceous sandstones, within a structural trap. Additional objectives included testing of Late Cretaceous Chalk, found hydrocarbon bearing in the nearby Harald field, Paleocene/Eocene turbiditic sandstones, and the reservoir quality of the Triassic sequence. The well should drill some 150 m into rocks of Triassic age. Shallow gas could be encountered at 317 to 388 m, at 485, and at 515 m according to seismic anomalies.

Operations and results

Wildcat well 3/7-4 was spudded with the semi-submersible installation Hunter on 20 September 1989 and drilled to TD at 3723 m in the Permian Zechstein Group. At 3472.9 m the string was backed off, and a cement kick off plug was set. The hole was sidetracked from 3405 m. The well was drilled with seawater and hi-vis spud mud down to 622 m, with KCl polymer from 622 m to 3473 m, and with seawater/polymer from 3473 m to TD. No shallow gas was encountered.

A 160 m hydrocarbon column from top Ula Formation and down to 3572 m in the Bryne Formation was found from well-logs, core shows, and RFT pressure gradients. Strong shows were recorded throughout the reservoir. Below the ODT shows died out, and were not seen below 3600 m. The RFT pressures indicated a light condensate-type fluid gradient of 0.39 bar/10m in the hydrocarbon-bearing zone. The secondary and additional objective levels were evaluated: A 29 m thick sequence of Maureen Formation sandstone was encountered in the Tertiary, no reservoir quality sands or chalk was found in the Late Jurassic and Cretaceous, and the Triassic was missing. Weak shows were recorded in the Maureen sandstone.

Two segregated RFT fluid samples were obtained. The first (No. 1) from 3564.5 m contained gas, condensate and water, whilst the second (No. 2) from 3442.5 m contained gas and water only. A total of 123.5 m conventional core was recovered in eight cores in the interval 3416 m to 3574 in the Ula and Bryne Formations. Core no 1 was cut in the first hole, the remaining seven cores were cut in the sidetrack.

The well was permanently abandoned on 23 January 1990 as a gas/condensate discovery.

Testing

Two DST tests were performed in this well. Test no 1A in the interval 3473 to 3537 m produced 665 Sm3/d liquid hydrocarbons of 0.804 g/cm3 and 884450 Sm3 gas through a 19 mm choke. The Gas/Liquid ratio was 1330 Sm3/Sm3. Test no 1B in the interval 3440 to 3537 m produced 611 Sm3/d of 0.796 g/cm3 liquid and 838292 Sm3 gas through a 19 mm choke. The GLR was 1372 Sm3/Sm3. The gas gravity (air = 1) was 0.72 in both tests. Temperature measurements during the tests gave a reservoir temperature of 131 deg C.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
630.00	3721.00

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	3416.0	3436.0	[m]
2	3437.0	3464.7	[m]
3	3464.4	3487.9	[m]
4	3492.0	3501.2	[m]
5	3504.0	3514.0	[m]
6	3514.0	3520.0	[m]
7	3526.0	3553.4	[m]
8	3553.4	3574.3	[m]

Total core sample length [m]	144.7
Cores available for sampling?	YES

Core photos

3416-3421m

3421-3426m

3426-3431m

3431-3434m

3437-3442m

3442-3447m

3447-3452m

3452-3457m

3457-3462m

3462-3465m

3464-3469m

3469-3474m

3474-3479m

3479-3484m

3484-3487m

3492-3497m

3497-3501m

3504-3509m

3509-3514m

3514-3519m

3519-3524m

3524-3525m

3526-3531m

3531-3536m

3536-3541m

3541-3546m

3546-3551m

3551-3553m

3553-3558m

3558-3563m

3563-3568m

3568-3573m

3573-3574m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1980.0	[m]	DC	RRI
1980.0	[m]	DC	AMOCO
2010.0	[m]	DC	RRI

2010.0	[m]	DC	AMOCO
2040.0	[m]	DC	RRI
2040.0	[m]	DC	AMOCO
2070.0	[m]	DC	RRI
2070.0	[m]	DC	AMOCO
2080.0	[m]	DC	RRI
2090.0	[m]	DC	RRI
2100.0	[m]	DC	RRI
2100.0	[m]	DC	AMOCO
2120.0	[m]	DC	RRI
2130.0	[m]	DC	RRI
2130.0	[m]	DC	AMOCO
2140.0	[m]	DC	RRI
2160.0	[m]	DC	RRI
2160.0	[m]	DC	AMOCO
2170.0	[m]	DC	RRI
2180.0	[m]	DC	RRI
2190.0	[m]	DC	RRI
2190.0	[m]	DC	AMOCO
2200.0	[m]	DC	RRI
2210.0	[m]	DC	RRI
2220.0	[m]	DC	RRI
2220.0	[m]	DC	AMOCO
2240.0	[m]	DC	RRI
2250.0	[m]	DC	RRI
2250.0	[m]	DC	AMOCO
2260.0	[m]	DC	RRI
2280.0	[m]	DC	RRI
2280.0	[m]	DC	AMOCO
2290.0	[m]	DC	RRI
2300.0	[m]	DC	RRI
2310.0	[m]	DC	RRI
2310.0	[m]	DC	AMOCO
2320.0	[m]	DC	RRI
2330.0	[m]	DC	RRI
2340.0	[m]	DC	RRI
2340.0	[m]	DC	AMOCO
2360.0	[m]	DC	RRI
2370.0	[m]	DC	RRI
2370.0	[m]	DC	AMOCO

2380.0	[m]	DC	RRI
2400.0	[m]	DC	RRI
2400.0	[m]	DC	RRI
2400.0	[m]	DC	RRI
2410.0	[m]	DC	RRI
2420.0	[m]	DC	RRI
2430.0	[m]	DC	RRI
2430.0	[m]	DC	AMOCO
2440.0	[m]	DC	RRI
2450.0	[m]	DC	RRI
2460.0	[m]	DC	RRI
2460.0	[m]	DC	AMOCO
2480.0	[m]	DC	RRI
2490.0	[m]	DC	RRI
2490.0	[m]	DC	AMOCO
2500.0	[m]	DC	RRI
2520.0	[m]	DC	RRI
2520.0	[m]	DC	AMOCO
2540.0	[m]	DC	RRI
2550.0	[m]	DC	RRI
2550.0	[m]	DC	AMOCO
2560.0	[m]	DC	RRI
2570.0	[m]	DC	RRI
2580.0	[m]	DC	RRI
2580.0	[m]	DC	AMOCO
2600.0	[m]	DC	RRI
2610.0	[m]	DC	RRI
2610.0	[m]	DC	AMOCO
2620.0	[m]	DC	RRI
2640.0	[m]	DC	RRI
2640.0	[m]	DC	AMOCO
2650.0	[m]	DC	RRI
2660.0	[m]	DC	RRI
2670.0	[m]	DC	RRI
2670.0	[m]	DC	AMOCO
2680.0	[m]	DC	RRI
2690.0	[m]	DC	RRI
2700.0	[m]	DC	RRI
2700.0	[m]	DC	AMOCO
2710.0	[m]	DC	RRI

2720.0	[m]	DC	RRI
2730.0	[m]	DC	RRI
2740.0	[m]	DC	RRI
2750.0	[m]	DC	RRI
2760.0	[m]	DC	RRI
2770.0	[m]	DC	RRI
2780.0	[m]	DC	RRI
2780.0	[m]	DC	RRI
2790.0	[m]	DC	RRI
2790.0	[m]	DC	AMOCO
2800.0	[m]	DC	RRI
2800.0	[m]	DC	AMOCO
2810.0	[m]	DC	RRI
2810.0	[m]	DC	AMOCO
2820.0	[m]	DC	RRI
2820.0	[m]	DC	AMOCO
2830.0	[m]	DC	RRI
2830.0	[m]	DC	AMOCO
2840.0	[m]	DC	RRI
2840.0	[m]	DC	AMOCO
2850.0	[m]	DC	RRI
2850.0	[m]	DC	AMOCO
2860.0	[m]	DC	RRI
2860.0	[m]	DC	AMOCO
2880.0	[m]	DC	RRI
2890.0	[m]	DC	RRI
2900.0	[m]	DC	RRI
2920.0	[m]	DC	RRI
2930.0	[m]	DC	RRI
2940.0	[m]	DC	RRI
2960.0	[m]	DC	RRI
2970.0	[m]	DC	RRI
2980.0	[m]	DC	RRI
3000.0	[m]	DC	RRI
3382.2	[m]	C	APT
3417.0	[m]	C	APT
3426.0	[m]	C	APT
3428.0	[m]	C	APT
3430.0	[m]	C	APT
3432.0	[m]	C	APT

3434.0	[m]	C	APT
3436.0	[m]	C	APT
3438.0	[m]	C	APT
3440.0	[m]	C	APT
3440.9	[m]	C	APT
3441.9	[m]	C	APT
3442.3	[m]	C	APT
3446.4	[m]	C	APT
3447.1	[m]	C	APT
3447.9	[m]	C	APT
3448.2	[m]	C	APT
3448.2	[m]	C	APT
3450.5	[m]	C	APT
3451.8	[m]	C	APT
3459.2	[m]	C	APT
3459.4	[m]	C	APT
3459.5	[m]	C	APT
3463.4	[m]	C	APT
3464.4	[m]	C	APT
3466.0	[m]	C	APT
3467.8	[m]	C	APT
3469.0	[m]	C	APT
3469.3	[m]	C	APT
3471.0	[m]	C	APT
3471.8	[m]	C	APT
3473.4	[m]	C	APT
3475.8	[m]	C	APT
3476.0	[m]	C	APT
3480.8	[m]	C	APT
3486.5	[m]	C	APT
3495.5	[m]	C	APT
3497.8	[m]	C	APT
3498.4	[m]	C	APT
3507.5	[m]	C	APT
3509.1	[m]	C	APT
3511.2	[m]	C	APT
3513.1	[m]	C	APT
3514.8	[m]	C	APT
3516.8	[m]	C	APT
3519.4	[m]	C	APT

3522.6	[m]	C	APT
3527.7	[m]	C	APT
3534.0	[m]	C	APT
3539.7	[m]	C	APT
3541.3	[m]	C	APT
3551.6	[m]	C	APT
3552.5	[m]	C	APT
3554.0	[m]	C	APT
3554.0	[m]	C	APT
3558.5	[m]	C	APT
3559.5	[m]	C	APT
3563.0	[m]	C	APT
3563.5	[m]	C	APT
3568.0	[m]	C	APT
3568.0	[m]	C	APT
3568.2	[m]	C	APT
3574.3	[m]	C	APT

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	DST1A	3440.00	3537.00		01.01.1990 - 00:00	YES
DST	DST1B	3470.00	3440.00		03.01.1990 - 00:00	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
91	NORDLAND GP
1412	HORDALAND GP
2747	ROGALAND GP
2747	BALDER FM
2766	SELE FM
2787	LISTA FM
2819	MAUREEN FM
2848	SHETLAND GP
2848	EKOFISK FM

2922	TOR FM
3088	HOD FM
3247	CROMER KNOLL GP
3247	RØDBY FM
3255	SOLA FM
3261	TYNE GP
3261	HAUGESUND FM
3411	VESTLAND GP
3411	SANDNES FM
3474	BRYNE FM
3688	ZECHSTEIN GP

Geochemical information

Document name	Document format	Document size [MB]
1467_1	pdf	5.53

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

Document name	Document format	Document size [MB]
1467_01_WDSS_General_Information	pdf	0.27
1467_02_WDSS_completion_log	pdf	0.20

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

Document name	Document format	Document size [MB]
1467_3_7_4_COMPLETION_REPORT_AND_LOG	pdf	48.76

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3473	3537	19.0
2.0	3440	3473	19.0

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				131
2.0				131

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	665	884450	0.804	0.720	1330
2.0	611	838292	0.796	0.720	1372

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL CCL GR	92	2092
CBL VDL CCL GR	1890	2400
CBL VDL CCL GR	3186	3636
CDL CNL SPL CAL	3370	3723
CND CNL DISL GR CAL	575	2103
CND CNL SPL CAL	2092	3470
DIFL AC GR	180	619
DIFL AC SP GR	2070	3502
DIFL AC SP GR	3382	3722
DIFL AC SP GR CAL	545	2108
DIPLOG GR	3150	3469
DIPLOG GR	3393	3722
DLL MLL CAL GR	3382	3721
DLL MLL GR	2091	3470
FMT GR	2825	3260
FMT GR	3415	3684
FMT GR	3443	3443
GYRO MULTISHOT	92	2055
GYRO MULTISHOT	2055	3640
MWD - GR RES DIR	187	3603
PLT GR	3430	3549
SWS GR	627	2088
SWS GR	3404	3707
VSP	2700	3723

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	177.0	36	187.0	0.00	LOT
INTERM.	20	610.0	26	622.0	1.86	LOT
INTERM.	20	611.0	26	622.0	1.86	LOT
INTERM.	13 3/8	2093.0	17 1/2	2110.0	1.88	LOT
INTERM.	9 5/8	3383.0	12 1/4	3603.0	1.95	LOT
LINER	7	3710.0	8 3/8	3723.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
187	1.07			WATER BASED	
346	1.07			WATER BASED	
622	1.32	50.0		WATER BASED	
1011	1.34	54.0		WATER BASED	
1182	1.33	56.0		WATER BASED	
1363	1.33	53.0		WATER BASED	
1649	1.33	65.0		WATER BASED	
2110	1.50	62.0		WATER BASED	
2450	1.50	53.0		WATER BASED	
2889	1.52	53.0		WATER BASED	
3068	1.50	45.0		WATER BASED	
3256	1.52	40.0		WATER BASED	
3390	1.56	46.0		WATER BASED	
3405	1.55	48.0		WATER BASED	
3416	1.55	38.0		WATER BASED	
3506	1.55	40.0		WATER BASED	
3571	1.55	40.0		WATER BASED	
3723	1.53	53.0		WATER BASED	
3725	1.54	48.0		WATER BASED	

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]
1467_Formation_pressure_(Formasjonstrykk)	pdf	0.22