General information

Wellbore name	1/3-3
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	TAMBAR
Discovery	1/3-3 Tambar
Well name	1/3-3
Seismic location	8186 - 216 sp264-8186-407 sp463
Production licence	065
Drilling operator	Elf Petroleum Norge AS
Drill permit	343-L
Drilling facility	BORGSTEN DOLPHIN
Drilling days	215
Entered date	22.08.1982
Completed date	24.03.1983
Release date	24.03.1985
Publication date	30.04.2010
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL
Discovery wellbore	YES
1st level with HC, age	LATE JURASSIC
1st level with HC, formation	ULA FM
Kelly bushing elevation [m]	25.0
Water depth [m]	68.0
Total depth (MD) [m RKB]	4876.0
Final vertical depth (TVD) [m RKB]	4875.0
Bottom hole temperature [°C]	179
Oldest penetrated age	LATE PERMIAN
Oldest penetrated formation	ZECHSTEIN GP
Geodetic datum	ED50
NS degrees	56° 57' 8.56'' N
EW degrees	2° 58' 54.05'' E
NS UTM [m]	6312226.32
EW UTM [m]	498885.66
UTM zone	31
NPDID wellbore	87

Wellbore history

General

Well 1/3-3 is located on the Cod Terrace in the North Sea. It was drilled to evaluate the hydrocarbon potential of both the Late Jurassic and the Triassic sandstone formations. Main target was the Late Jurassic Ula Formation found oil bearing in the Ula field, 17 km to the NW, and in the well 2/1-3. Secondary target was the Triassic sandstone found oil bearing in the well 7/12-6 in the Ula field.

Operations and results

Wildcat well 1/3-3 was spudded with the semi-submersible installation Borgsten Dolphin on 22 August 1982 and drilled to TD at 4876 m logger's depth (4867 m driller's depth). The well was drilled using water based mud. Two drilling breaks occurred, one at 4127 m and one at 4180 m.

Thin layers of sandstone were found in the Palaeocene. The Chalk Group was 686 m thick. Less than 10 m of sandstones scattered in several thin layers were encountered and partially cored in the Farsund Formation, they were found tight. The Late Jurassic Ula Sandstones, which were the main objective, were found at 4178 m and they were oil bearing down to an OWC at 4221 m, but with only ca 5 m pay zone. The upper half with the best reservoir qualities was cored (cores 2 to 6). The coaly Bryne Formation is assigned at 4527 m, top Triassic Smith Bank Formation at 4620 m, and the Zechstein evaporitic rocks, anhydrite (26 m) and halite was penetrated from 4820 m to TD.

Residual hydrocarbon saturation based on electric logs were seen in the Paleocene at 3068 to 3093 m and in top Triassic at 4622 to 4637 m. Shows were reported as follows: Direct yellow fluorescence on cuttings at 2955 m; Weak direct fluorescence and poor streaming yellow cut fluorescence on cuttings at 3075 - 3145 m; Yellowish green direct fluorescence and dull bright yellow cut fluorescence on cores at 4186 - 4219 m; Weak direct fluorescence and pale cut fluorescence on cuttings at 4527 - 4542 m.

One core was cut from 4129 m to 4147 m in the Farsund Formation and five more from 4181 m to 4284 m in the upper half of the Ula Formation (core depths = log depths + 7 m for core 1 and + 6.4 m for cores 2 to 6). RFT wire line fluid samples were taken at 4212 m (2 l gas and 3.5 l light brown water with yellow green oil film), 4244 m (3.5 l water), 4214 m (3.5 l water with strong petroleum odour), and 4436 m (4.2 l fluid).

The well was permanently abandoned on 24 March 1983 as an oil discovery.

Testing

Three DST's were performed in this well.

DST 1 tested the intervals 4528.5 - 4533.8 m + 4535.3 - 4538.3 m + 4546 -4552 m. It produced mud filtrate and formation water at a rate of 2.63 m3/day. The maximum temperature recorded in the test was 160.9 deg C.

DST 2 tested the interval 4233 - 4240 m. It produced formation water at a rate of 170 m3/day. The maximum temperature recorded in the test was 160.0 deg C.

DST 3A tested the interval 4202 - 4208 m. It produced mud filtrate and formation water at a rate of 0.6 m3/day. The maximum temperature recorded in the test was 158.3 deg C.

DST 3B tested the intervals 4202 - 4208 + 4211 - 4214 m. It produced 143 Sm3 oil and 28000 Sm3 gas/day. The GOR was 196 Sm3/Sm3, the oil density was 0.829 g/cm3, and the gas gravity was 0.820 (air = 1). The maximum temperature recorded in the test was 165.6 deg C.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
245.00	4866.00

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	4129.0	4147.4	[m]
2	4181.0	4199.2	[m]
3	4199.2	4213.0	[m]
4	4213.0	4231.0	[m]
5	4231.0	4234.5	[m]
6	4234.5	4247.5	[m]

Total core sample length [m]	84.9
Cores available for sampling?	YES

Core photos


4129-4135m


4135-4141m


4141-4148m


4147-4186m


4186-4192m


4192-4198m


4198-4203m


4203-4209m


4209-4215m


4215-4221m


4221-4227m


4227-4231m


4231-4234m


4239-4244m


4244-4247m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
3885.0	[m]	DC	GEOST
3895.0	[m]	DC	GEOST
3905.0	[m]	DC	GEOST
3915.0	[m]	DC	GEOST
3925.0	[m]	DC	GEOST
3935.0	[m]	DC	GEOST
3945.0	[m]	DC	GEOST
3955.0	[m]	DC	GEOST
3965.0	[m]	DC	GEOST
3975.0	[m]	DC	GEOST
3985.0	[m]	DC	GEOST
3995.0	[m]	DC	GEOST
4005.0	[m]	DC	GEOST
4015.0	[m]	DC	GEOST
4045.0	[m]	DC	GEOST
4050.0	[m]	DC	PETROSTR
4055.0	[m]	DC	GEOSTRAT
4060.0	[m]	DC	PETROSTR
4065.0	[m]	DC	GEOSTRAT
4070.0	[m]	DC	PETROSTR
4075.0	[m]	DC	GEOSTRAT
4080.0	[m]	DC	PETROSTR
4085.0	[m]	DC	GEOSTRAT
4090.0	[m]	DC	PETROSTR
4095.0	[m]	DC	GEOSTRAT
4100.0	[m]	DC	PETROSTR
4105.0	[m]	DC	GEOSTRAT
4110.0	[m]	DC	PETROSTR
4115.0	[m]	C	GEOSTRAT

4120.0	[m]	DC	PETROSTR
4128.0	[m]	C	GEOSTRAT
4129.0	[m]	C	GEOSTR
4129.0	[m]	C	APT
4129.6	[m]	C	PETROSTR
4130.0	[m]	C	APT
4130.5	[m]	C	PETROSTR
4131.0	[m]	C	APT
4132.5	[m]	C	APT
4133.0	[m]	C	PETROSTR
4133.0	[m]	C	APT
4134.0	[m]	C	APT
4135.5	[m]	C	APT
4135.8	[m]	C	PETROSTR
4136.8	[m]	C	APT
4137.6	[m]	C	APT
4138.0	[m]	C	GEOSTRAT
4138.5	[m]	C	APT
4139.4	[m]	C	APT
4140.5	[m]	C	APT
4140.9	[m]	C	PETROSTR
4141.4	[m]	C	APT
4142.5	[m]	C	APT
4144.0	[m]	C	APT
4144.3	[m]	C	APT
4145.0	[m]	C	PETROSTR
4145.1	[m]	C	APT
4146.2	[m]	C	APT
4147.0	[m]	C	PETROSTR
4147.0	[m]	C	GEOSTRAT
4147.1	[m]	C	APT
4147.3	[m]	C	APT
4150.0	[m]	C	GEOSTRAT
4150.0	[m]	DC	PETROSTR
4160.0	[m]	DC	PETROS
4160.0	[m]	C	GEOSTRAT
4170.0	[m]	DC	PETROSTR
4170.0	[m]	DC	GEOSTRAT
4180.0	[m]	DC	GEOSTR
4181.1	[m]	C	APT

4181.6	[m]	C	PETROSTR
4181.9	[m]	C	APT
4183.5	[m]	C	APT
4183.5	[m]	C	GEOSTRA
4183.6	[m]	C	GEOSTR
4185.4	[m]	C	APT
4189.7	[m]	C	PETROSTR
4189.7	[m]	C	APT
4189.7	[m]	C	APT
4189.8	[m]	C	APT
4190.2	[m]	C	APT
4190.2	[m]	C	GEOSTRAT
4191.0	[m]	C	APT
4191.4	[m]	C	APT
4191.5	[m]	C	PETROSTR
4193.5	[m]	C	APT
4194.6	[m]	C	PETROSTR
4194.6	[m]	C	APT
4195.8	[m]	C	APT
4198.6	[m]	C	APT
4200.9	[m]	C	APT
4201.0	[m]	C	APT
4201.0	[m]	C	PETROSTR
4201.2	[m]	C	GEOSTR
4202.6	[m]	C	APT
4202.7	[m]	C	APT
4203.6	[m]	C	PETROSTR
4208.7	[m]	C	APT
4212.7	[m]	C	PETROS
4212.7	[m]	C	APT
4218.6	[m]	C	PETROSTR
4218.6	[m]	C	APT
4219.4	[m]	C	APT
4220.1	[m]	C	GEOSTRAT
4221.9	[m]	C	APT
4222.0	[m]	C	PETROSTR
4226.7	[m]	C	APT
4226.8	[m]	C	APT
4228.9	[m]	C	PETROSTR
4228.9	[m]	C	APT

4232.7	[m]	C	GEOSTRAT
4232.8	[m]	C	APT
4233.8	[m]	C	PETROSTR
4239.3	[m]	C	APT
4239.6	[m]	C	APT
4244.6	[m]	C	APT
4245.6	[m]	C	PETROSTR
4245.7	[m]	C	APT
4245.7	[m]	C	GEOSTRAT
4255.0	[m]	C	GEOSTR
4260.0	[m]	DC	PETROSTR
4265.0	[m]	DC	GEOSTRAT
4270.0	[m]	DC	PETROSTR
4275.0	[m]	DC	GEOSTRAT
4285.0	[m]	DC	GEOSTR
4285.0	[m]	DC	PETROSTR
4295.0	[m]	DC	PETROS
4295.0	[m]	DC	GEOSTRAT
4305.0	[m]	DC	GEOSTR
4305.0	[m]	DC	PETROSTR
4315.0	[m]	DC	PETROS
4315.0	[m]	DC	GEOSTRAT
4325.0	[m]	DC	GEOSTR
4325.0	[m]	DC	PETROSTR
4335.0	[m]	DC	PETROS
4335.0	[m]	DC	GEOSTRAT
4345.0	[m]	DC	GEOSTR
4345.0	[m]	DC	PETROSTR
4348.0	[m]	DC	PETROS
4355.0	[m]	DC	PETROS
4355.0	[m]	DC	GEOSTRAT
4365.0	[m]	DC	GEOSTR
4365.0	[m]	DC	PETROSTR
4374.0	[m]	DC	PETROS
4374.0	[m]	DC	GEOSTRAT
4385.0	[m]	DC	GEOSTR
4385.0	[m]	DC	PETROSTR
4395.0	[m]	DC	PETROS
4395.0	[m]	DC	GEOSTRAT
4405.0	[m]	DC	GEOSTR

4405.0	[m]	DC	PETROSTR
4410.0	[m]	DC	PETROS
4415.0	[m]	DC	GEOSTRAT
4420.0	[m]	DC	PETROSTR
4425.0	[m]	DC	GEOSTRAT
4430.0	[m]	DC	PETROSTR
4435.0	[m]	DC	GEOSTRAT
4440.0	[m]	DC	PETROSTR
4445.0	[m]	DC	GEOSTRAT
4450.0	[m]	DC	PETROSTR
4455.0	[m]	DC	GEOSTRAT
4460.0	[m]	DC	PETROSTR
4465.0	[m]	DC	GEOSTRAT
4470.0	[m]	DC	PETROSTR
4475.0	[m]	DC	GEOSTRAT
4480.0	[m]	DC	PETROSTR
4485.0	[m]	DC	GEOSTRAT
4490.0	[m]	DC	PETROSTR
4495.0	[m]	DC	GEOSTRAT
4500.0	[m]	DC	PETROSTR
4506.0	[m]	DC	GEOSTRAT
4510.0	[m]	DC	PETROSTR
4516.0	[m]	DC	GEOSTRAT
4520.0	[m]	DC	PETROSTR
4526.0	[m]	DC	GEOSTRAT
4530.0	[m]	DC	PETROSTR
4536.0	[m]	DC	GEOSTRAT
4540.0	[m]	DC	PETROSTR
4550.0	[m]	DC	PETROS
4560.0	[m]	DC	PETROS
4570.0	[m]	DC	PETROS
4570.0	[m]	DC	GEOSTRAT
4580.0	[m]	DC	GEOSTR
4580.0	[m]	DC	PETROSTR
4590.0	[m]	DC	PETROS
4590.0	[m]	DC	GEOSTRAT
4599.0	[m]	DC	GEOSTR
4600.0	[m]	DC	PETROSTR
4610.0	[m]	DC	GEOSTRAT
4620.0	[m]	DC	GEOSTR

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	DST3A	4202.00	4208.00	WATER	06.03.1983 - 00:00	YES
DST	DST0,1	0.00	0.00		20.02.1983 - 00:00	YES
DST	TEST1	4529.00	4552.00		02.08.1983 - 00:00	YES
DST	DST0,2	4240.00	4233.00		25.02.1983 - 00:00	YES
DST	DST2	4233.00	4240.00		27.02.1983 - 00:00	YES
DST	DST0,3	0.00	0.00	WATER	06.03.1983 - 00:00	YES
DST	TEST3C	0.00	0.00	WATER	06.03.1983 - 00:00	YES
DST	3B	0.00	0.00		13.03.1983 - 00:00	YES
DST		4211.00	4214.00			YES
DST		0.00	0.00			YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
93	NORDLAND GP
1647	HORDALAND GP
2936	ROGALAND GP
2936	BALDER FM
2984	SELE FM
2991	LISTA FM
3059	VIDAR FM
3148	LISTA FM
3180	VÅLE FM
3201	SHETLAND GP
3201	EKOFISK FM

3288	TOR FM
3803	HOD FM
3852	BLODØKS FM
3887	CROMER KNOLL GP
3887	RØDBY FM
4043	TYNE GP
4043	MANDAL FM
4112	FARSUND FM
4178	VESTLAND GP
4178	ULA FM
4324	NO FORMAL NAME
4435	ULA FM
4542	BRYNE FM
4620	NO GROUP DEFINED
4620	SMITH BANK FM
4820	ZECHSTEIN GP

Geochemical information

Document name	Document format	Document size [MB]
87_1	pdf	0.31

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

Document name	Document format	Document size [MB]
87_01_WDSS_General_Information	pdf	0.19
87_02_WDSS_completion_log	pdf	0.44

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

Document name	Document format	Document size [MB]
87_01_1_3_3_Addendum_to_Petroleum_Geological_Evaluation	pdf	8.55
87_01_1_3_3_Biostratigraph_report	pdf	1.00
87_01_1_3_3_Completion_log	pdf	2.04
87_01_1_3_3_Completion_Report	pdf	27.74

87_01_1_3_3_Compte_rendu_de_mission_de_chantillonnage	pdf	0.56
87_01_1_3_3_Core_description	pdf	0.79
87_01_1_3_3_Core_report	pdf	3.02
87_01_1_3_3_Description_of_core_and_sidewall_core_samples	pdf	35.46
87_01_1_3_3_Description_of_the_cored_interval_of_the_upper_jurassic_sandstones	pdf	35.41
87_01_1_3_3_Discovery_annual_report	pdf	0.65
87_01_1_3_3_Etude_sedimentologique_et_mineralogique_des_carottes	pdf	2.09
87_01_1_3_3_Geological_completion_report	pdf	12.28
87_01_1_3_3_Laboratory_study_of_the_permian_to_danian_series	pdf	38.41
87_01_1_3_3_Preliminary_evaluation	pdf	1.20
87_01_1_3_3_Pressure_Survey-DST-1B	pdf	1.03
87_01_1_3_3_Pressure_Survey-DST-2	pdf	2.28
87_01_1_3_3_Pressure_Survey-DST-3A	pdf	1.52
87_01_1_3_3_Pressure_Survey-DST-3B	pdf	1.23
87_01_1_3_3_Pressure_Test_data_summary-DST-1A	pdf	0.57
87_01_1_3_3_Pressure_Test_data_Summary-DST-1B	pdf	0.90
87_01_1_3_3_Pressure_Test_data_Summary-DST-2	pdf	0.78
87_01_1_3_3_Pressure_Test_data_summary-DST-3	pdf	2.20
87_01_1_3_3_Pressure_test_data_summary-DST-No-2	pdf	1.18
87_01_1_3_3_Pressure_test_data_summary_DST-3	pdf	0.60
87_01_1_3_3_Pressure_Test_data_Summary_DST-no-3B	pdf	0.67
87_01_1_3_3_Pressure_Variations_in_Late_jurassic_Sandstones	pdf	22.98
87_01_1_3_3_Reservoir_Evaluation_Report	pdf	13.88
87_01_1_3_3_Side_wall_cores_description	pdf	0.60
87_01_1_3_3_Test_report_Chronological_order	pdf	22.33
87_01_1_3_3_Thermodynamic_Study_and_Physical_Properties	pdf	4.07
87_01_1_3_3_Water_Samples-DST-1	pdf	0.14
87_01_1_3_3_Water_Samples-DST-2-DST-3A	pdf	0.39
87_01_1_3_3_Water_Samples	pdf	0.21
87_01_1_3_3_Water_Samples_UP_Chamber	pdf	0.12

87_01_1_3_3_Well_Logging_Study_of_Upper_Jurassic_Formation	pdf	3.53
87_01_1_3_3_Well_Testing_Report	pdf	9.90
87_01_1_3_3_Well_Testing_Report_2	pdf	5.60
87_01_1_3_3_Well_Testing_Report_3	pdf	7.70
87_01_1_3_3_Pressure_Test_data_summary-DST-3	.pdf	2.20

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	4529	4552	25.4
2.0	4233	4240	9.5
3.1	4202	4208	50.8
3.3	4211	4214	6.4

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				
2.0				
3.1				
3.3				165

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					
2.0					
3.1					
3.3	143	28000	0.829	0.820	196

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL	550	1904
CBL VDL	1598	4048
CST	1908	4054
CST	4076	4818
CST	4260	4818

DLL MSFL GR	4048	4750
HDT	1904	4875
ISF BHC GR	155	1913
ISF LSS GR	1904	4835
LDT CNL GR CAL	1904	4875
LDT GR CAL	155	1913
NGT	4048	4875
RFT	4188	4244
RFT	4212	4212
RFT	4214	4214
RFT	4436	4436
VELOCITY	800	4875

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	153.0	36	155.0	0.00	LOT
SURF.COND.	20	697.0	26	710.0	1.80	LOT
INTERM.	13 3/8	1902.0	17 1/2	1912.0	1.81	LOT
INTERM.	9 5/8	4047.0	12 1/4	4060.0	2.21	LOT
LINER	7	4800.0	8 1/2	4875.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
160	1.07	46.0		waterbased	
330	1.10	50.0		waterbased	
710	1.13	65.0		waterbased	
850	1.16	48.0		waterbased	
1260	1.18	54.0		waterbased	
1490	1.23	30.0		waterbased	
1840	1.43	55.0		waterbased	
2250	1.50	70.0		waterbased	
3420	1.55	38.0		waterbased	
4850	1.57	55.0		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]
87_Formation_pressure_(Formasjonstrykk)	pdf	0.22