

**General information**

Wellbore name	6506/12-3
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Field	ÅSGARD
Discovery	6506/12-3 Smørbukk Sør
Well name	6506/12-3
Seismic location	ST 8403 - 402 A SP. 1112
Production licence	094
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	456-L
Drilling facility	ROSS ISLE
Drilling days	138
Entered date	02.03.1985
Completed date	17.07.1985
Release date	17.07.1987
Publication date	28.06.2007
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL/GAS
Discovery wellbore	YES
1st level with HC, age	LATE CRETACEOUS
1st level with HC, formation	LYSING FM
2nd level with HC, age	MIDDLE JURASSIC
2nd level with HC, formation	FANGST GP
3rd level with HC, age	EARLY JURASSIC
3rd level with HC, formation	TILJE FM
Kelly bushing elevation [m]	22.0
Water depth [m]	301.0
Total depth (MD) [m RKB]	4360.0
Final vertical depth (TVD) [m RKB]	4359.0
Maximum inclination [°]	4.4
Bottom hole temperature [°C]	152
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	TILJE FM
Geodetic datum	ED50



NS degrees	65° 1' 31.09" N
EW degrees	6° 53' 27.35" E
NS UTM [m]	7213112.80
EW UTM [m]	400646.78
UTM zone	32
NPDID wellbore	468

Wellbore history

General

Wildcat well 6506/12-3 is a replacement well for 6506/12-2, which was abandoned at 955 m due to technical problems. The new well was designed to test the hydrocarbon potential of the Beta structure in the southeast part of the

block. The main object was Middle Jurassic sandstones, secondary targets were possible Cretaceous sands, Early Jurassic sandstones and sandstones within the Coal Beds.

Operations and results

Well 6506/12-3 was spudded with the semi-submersible installation Ross Isle, 47 m from the junked well 6506/12-2. It was spudded on 2 March 1985 and drilled to TD at 4360 m in the Early Jurassic Tilje Formation (formerly called the Aldra Formation). No significant technical problems occurred during the operations. From 0600 hours on 15 June, during the testing phase, the rig was on strike for 13 days. The well was drilled with seawater/gel down to 955 m, with gypsum/lignosulphonate mud from 955 m to 3831 m, and with gel/lignosulphonate mud from 3831 m to TD. The shallow gas present at 572 m in 6506/12-2 was not encountered in 6506/12-3.

Top Middle Jurassic Garn Formation (formerly Tomma Formation) came in at 3822 m, 80 m above the prognosis. The Early Jurassic Tilje Formation sandstone (Aldra Formation) came in at 4147 m. Hydrocarbons were encountered both in the Middle and the Early Jurassic sandstones, with a hydrocarbon/water contact at 4216 m in the Tilje Formation. Late Cretaceous Lysing sandstones at the top of the Cromer Knoll Group (Finnvør Group) was also hydrocarbon bearing. A total of 242 m of hydrocarbon bearing sands was proven. Shows were only recorded in association with the hydrocarbon bearing sections.

A total of 289 m core was recovered in 15 cores from the Garn, Not, Ile, Ror, and Tilje Formations between 3836 and 4269 m. Six RFT runs were completed in the Early - Middle Jurassic section in well 6506/12-3. A total of 47 pressure tests gave reliable results. In addition, segregated fluid samples were collected at 3863 m, 4231 m, 4308.1 m, and 4310.9 m.

The well was permanently abandoned on 17 July as an oil/condensate/gas discovery.

Testing

Six DST tests were performed:

DST 1 at 4222 - 4241 m in the Tilje Formation flowed 742 Sm³ light oil and 373300 Sm³ gas /day through a 22.2 mm choke. The GOR was 503 Sm³/Sm³, the oil density was 0.802 g/cm³ and the gas gravity was 0.847 (air = 1). The DST temperature was 150 deg C.



DST 2 at 4165 - 4170 m in the Tilje Formation flowed 53.8 Sm³ light oil and 66800 Sm³ gas /day through a 25.4 mm choke. The GOR was 1241 Sm³/Sm³, the oil density was 0.820 g/cm³ and the gas gravity was 0.907 (air = 1). The DST temperature was 143.8 deg C.

DST 3 at 3960 - 3980 m in the Ile Formation flowed 328.9 Sm³ condensate and 453100 Sm³ gas /day through a 31.8 mm choke. The GOR was 1378 Sm³/Sm³, the oil density was 0.787 g/cm³ and the gas gravity was 0.745 (air = 1). The DST temperature was 143.4 deg C.

DST 4 at 3880 - 3890 m in the Garn Formation flowed 777.3 Sm³ light oil and 396500 Sm³ gas /day through a 23.8 mm choke. The GOR was 510 Sm³/Sm³, the oil density was 0.820 g/cm³ and the gas gravity was 0.764 (air = 1). The DST temperature was 141.8 deg C.

DST 5 at 3822 - 3836 m in the topmost Garn Formation flowed 156.2 Sm³ oil and 37600 Sm³ gas /day through a 12.7 mm choke. The GOR was 241 Sm³/Sm³, the oil density was 0.830 g/cm³ and the gas gravity was 0.787 (air = 1). The DST temperature was 141 deg C.

DST 6 at 3162 - 3173 m in the Lysing Formation flowed 582.7 Sm³ light oil, 712.2 m³ water, and 109600 Sm³ gas /day through a 19.1 mm choke. The GOR was 188 Sm³/Sm³, the oil density was 0.807 g/cm³ and the gas gravity was 0.780 (air = 1). This was the only test with water production.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
950.00	4360.00

Cuttings available for sampling?	YES
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Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	3836.0	3845.5	[m]
2	3845.5	3855.0	[m]
3	3855.0	3864.2	[m]
4	3864.2	3882.6	[m]
5	3884.0	3911.2	[m]
6	3911.2	3926.0	[m]
7	3949.0	3977.0	[m]
8	3977.0	4003.0	[m]
9	4004.0	4017.9	[m]
10	4116.0	4144.0	[m]
11	4144.0	4170.0	[m]
12	4170.0	4197.5	[m]



13	4197.5	4221.5	[m]
14	4221.5	4249.5	[m]
15	4249.5	4268.0	[m]

Total core sample length [m]	308.5
Cores available for sampling?	YES

Core photos



3836-3842m



3842-3845m



3845-3851m



3851-3855m



3855-3861m



3861-3864m



3864-3869m



3870-3876m



3878-3882m



3882-3883m



3884-3890m



3890-3896m



3896-3902m



3902-3908m



3908-3917m



3911-3917m



3917-3923m



3923-3925m



3949-3955m



3955-3961m



3961-3967m



3967-3973m



3973-3977m



3977-3983m



3983-3989m



3989-3995m



3995-4001m



4001-4003m



4004-4010m



4010-4016m



4016-4017m



4116-4122m



4122-4128m



4128-4134m



4134-4140m



4140-4144m



4144-4150m



4150-4156m



4156-4162m



4162-4168m



4168-4170m



4170-4176m



4176-4182m



4182-4188m



4188-4194m



4194-4197m



4197-4203m



4203-4209m



4209-4215m



4215-4221m



4221-4222m



4222-4227m



4227-4233m



4233-4239m



4239-4245m



4245-4249m



4249-4255m



4255-4261m



4261-4267m



4267-4268m

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	DST1	4222.00	4241.00		21.05.1985 - 23:20	YES
DST	DST2	4143.00	4148.00		28.05.1985 - 00:30	YES
DST	DST3	3960.00	3980.00		04.06.1985 - 01:30	YES
DST	DST4	3880.00	3890.00		10.06.1985 - 00:00	YES
DST	DST5	3822.00	3836.00		03.07.1985 - 10:10	YES
DST	DST6	3162.00	3173.00		08.07.1985 - 16:40	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
323	NORDLAND GP
323	NAUST FM
1388	KAI FM
1982	HORDALAND GP
1982	BRYGGE FM



2214	ROGALAND GP
2214	TARE FM
2278	TANG FM
2336	SHETLAND GP
3146	CROMER KNOLL GP
3146	LYSING FM
3173	LANGE FM
3709	VIKING GP
3709	SPEKK FM
3721	MELKE FM
3822	FANGST GP
3822	GARN FM
3908	NOT FM
3947	ILE FM
3997	BÅT GP
3997	ROR FM
4147	TILJE FM

Geochemical information

Document name	Document format	Document size [MB]
468_1	pdf	0.88
468_2	pdf	0.54
468_3	pdf	4.69
468_4	pdf	1.16
468_5	pdf	5.00
468_6	pdf	0.15

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

Document name	Document format	Document size [MB]
468_01_WDSS_General_Information	pdf	0.31
468_02_WDSS_completion_log	pdf	0.31

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





Document name	Document format	Document size [MB]
468_01_6506_12_3_Completion_report	pdf	23.72
468_02_6506_12_3_Completion_log	pdf	2.73

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	4222	4241	25.4
2.0	4165	4170	25.4
3.0	3960	3980	25.4
4.0	3881	3890	28.6
5.0	3822	3836	9.5
6.0	3162	3173	32.0
6.1	3162	3173	15.8

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0		83.000		120
2.0		10.000		120
3.0		7.000		118
4.0		9.000		121
5.0	7.000		23.000	120
6.0		14.000	40.000	
6.1		128.000		

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	820	372000	0.810	0.803	454
2.0	54	68000	0.820	0.907	1264
3.0	297	445000	0.795	0.755	1500
4.0	790	416000	0.820	0.765	526
5.0	100	29000	0.830	0.797	290
6.0	92	28000	0.785	0.797	304
6.1	329	57000	0.814	0.797	173

Logs





Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL CCL GR	347	2236
CBL VDL CCL GR	2390	3797
CBL VDL CCL GR	3659	4287
CEQL	3659	4298
CST	2281	3824
CST	4078	4351
DIL LSS GR	3810	4359
DLL MSFL GR SP	3809	4357
ISF LSS MS SP GR	940	3830
LDL CNL NGT GR	2236	4362
LDL GR	940	2249
MWD - GR RES DIR	940	4358
NGS	2236	4362
RFT GR	3840	3961
RFT GR	3863	3863
RFT GR	3865	4335
RFT GR	3961	4208
RFT GR	4302	4306
RFT GR	4309	4343
SHDT GR	2236	4362
VELOCITY	600	4350

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	404.0	36	404.0	0.00	LOT
SURF.COND.	20	940.0	26	955.0	1.65	LOT
INTERM.	13 3/8	2240.0	17 1/2	2280.0	1.87	LOT
INTERM.	9 5/8	3809.0	12 1/4	3831.0	1.83	LOT
LINER	7	4359.0	8 1/2	4360.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
2043	1.25	11.0	7.5	WATERBASED	19.03.1985



2043	1.25	11.0	7.5	WATER BASED	19.03.1985
2131	1.40	12.0	7.0	WATER BASED	19.03.1985
2131	1.40	12.0	7.0	WATERBASED	19.03.1985
2206	1.48	17.0	10.0	WATERBASED	19.03.1985
2206	1.48	17.0	10.0	WATER BASED	19.03.1985
2250	1.57	17.0	10.0	WATERBASED	19.03.1985
2250	1.57	17.0	10.0	WATER BASED	19.03.1985
3290	1.65	240.0	7.0	WATERBASED	02.04.1985
3290	1.65	240.0	7.0	WATER BASED	02.04.1985
3711	1.70	21.0	6.2	WATER BASED	10.04.1985
3711	1.70	21.0	6.2	WATERBASED	10.04.1985
3822	1.20			WATER BASED	17.04.1985
3830	1.73		24.0	WATERBASED	15.04.1985
3830	1.73		24.0	WATER BASED	15.04.1985
4360	1.12	10.0	9.0	WATER BASED	07.05.1985

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]
468 Formation pressure (Formasjonstrykk)	pdf	0.24

