

**General information**

Wellbore name	6506/11-4 S
Type	EXPLORATION
Purpose	APPRAISAL
Status	RE-CLASS TO DEV
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Field	ÅSGARD
Discovery	6506/12-1 Smørbukk
Well name	6506/11-4
Seismic location	3 D HWM-94- Inline 3578 & Crossline 1562
Production licence	134
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	839-L
Drilling facility	TRANSOCEAN SEARCHER
Drilling days	117
Entered date	11.02.1996
Completed date	06.06.1996
Release date	06.06.1998
Publication date	13.12.2005
Purpose - planned	APPRAISAL
Reclassified to wellbore	6506/11-F-4 H
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	FANGST GP
2nd level with HC, age	EARLY JURASSIC
2nd level with HC, formation	BÅT GP
Kelly bushing elevation [m]	22.0
Water depth [m]	303.0
Total depth (MD) [m RKB]	5110.0
Final vertical depth (TVD) [m RKB]	4909.0
Maximum inclination [°]	24.2
Bottom hole temperature [°C]	165
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	ÅRE FM
Geodetic datum	ED50



NS degrees	65° 1' 46.19" N
EW degrees	6° 36' 4.48" E
NS UTM [m]	7214066.73
EW UTM [m]	387022.92
UTM zone	32
NPDID wellbore	2736

Wellbore history

**General**

Well 6506/11-4 S was drilled on the southern segment of the Smørbukk Discovery. The objectives of the well were to appraise the Smørbukk Discovery and to verify the planned production in the southern segment. The well was planned to be completed as a future producer.

Operations and results

Wildcat well 6506/11-4 S was spudded with the semi-submersible installation Transocean Searcher on 11 February 1996 and drilled to TD at 5110 m (4887.5 m MSL) in Early Jurassic sediments of the Åre Formation. The hole was drilled to 4531 m in the Garn Formation and the 9 5/8" casing was set at planned depth, with casing shoe a few meters into the Garn Formation. However, during drilling out of casing, the new 8 1/2" bottom hole assembly was seized by late setting cement and got stuck inside casing. The well was side tracked with KOP at approximately 3144 m. The sidetrack is designated 6506/11-4 S T2. The sidetrack leg was drilled to the original target zone, the Åre Formation. The well was drilled with seawater and bentonite down to 1415 m, with KCl/polymer/Anco200 from 1415 m to 2825 m and with Ancovert oil based mud from 2825 m to TD.

A Lange Formation sandstone unit was encountered from 4236 m to 4321 m. Well bore 6506/11-4 S T2 penetrated the top of the Tilje Formation and the Åre Formation approximately 24 m deeper than prognosed. Logs proved hydrocarbons in the Garn Formation, the Ile Formation and in the Åre 2 reservoir zone. The Tilje 1.1 Reservoir Zone was found to be water bearing. Hydrocarbons were further indicated by high resistivity log readings in the Lange Formation sandstone unit and in interbedded sandstones in the Lysing Formation from 3571 m to 3603 m.

Two cores were cut in the first well bore, from 4260 m to 4299.9 m in the Lange Formation sandstone unit. A further six cores were cut from 4790 m to 5085.2 m in 6506/11-4 S T2. The latter cores covered the Early Jurassic from upper Tofte through Tilje, and 68.7 m into the Åre Formation. Oil shows were recorded in sandstones throughout both cored intervals. Further geochemical analyses of the oil shows were made difficult by the oil base used in the well. No sidewall cores were taken in this well. The Formation Multi Tester (FMT) was run for pressure and fluid sampling. One segregated fluid sample was taken at 4272.6 m in the Lange Formation; one was taken at 4588 m in the Garn Formation and one at 4702 m in the Ile Formation.

The well is classified as an oil appraisal. It was completed on 6 June 1996 as a development well.

Testing

One test, test 1 A, was carried out over the interval 5066 - 5073 m (Åre 1 Reservoir Zone) and proved to be tight. A second test, test 1 B, was carried out over the same interval plus interval 5039 - 5043 m (Åre 1 plus Åre 2 Reservoir Zone) and flowed with an oil rate of 726 SM3/day and a gas rate of 396500 Sm3/day gas. In reality this was a test of the Åre 2 reservoir zone. The bottom hole flowing temperature during the test was 163 deg C. A planned microfracture test was cancelled due to strike.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
3440.00	5110.00

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	4260.0	4270.5	[m]
2	4272.0	4299.9	[m]
3	4790.0	4826.0	[m]
4	4826.0	4881.7	[m]
5	4881.9	4937.5	[m]
6	4937.5	5011.9	[m]
7	5011.9	5030.8	[m]
8	5030.8	5085.2	[m]

Total core sample length [m]	333.3
Cores available for sampling?	YES

Core photos



4260-4264m



4264-4268m



4268-4270m



4272-4276m



4276-4280m



4280-4284m



4284-4288m



4288-4292m



4292-4296m



4296-4299m



4790-4795m



4795-4800m



4800-4805m



4805-4810m



4810-4815m



4815-4820m



4820-4825m



4825-4826m



4826-4831m



4831-4836m



4836-4841m



4841-4846m



4846-4851m



4851-4856m



4856-4861m



4861-4866m



4866-4871m



4871-4876m



4876-4881m



4881-4882m



4881-4886m



4886-4891m



4891-4896m



4896-4901m



4901-4906m



4906-4911m



4911-4916m



4916-4921m



4921-4926m



4926-4931m



4931-4936m



4936-4937m



4937-4942m



4942-4947m



4947-4952m



4952-4957m



4957-4962m



4962-4967m



4967-4972m



4972-4977m



4977-4982m



4982-4987m



4987-4992m



4992-4997m



4997-5002m



5002-5007m



5007-5011m



5011-5016m



5016-5021m



5021-5026m



5026-5030m



5030-5035m



5035-5040m



5040-5045m



5045-5050m



5050-5055m



5055-5060m



5060-5065m



5065-5070m



5070-5075m



5075-5080m



5080-5085m



5085-5085m

**Palynological slides at the Norwegian Offshore Directorate**

Sample depth	Depth unit	Sample type	Laboratory
3440.0	[m]	DC	RRI
3450.0	[m]	DC	RRI
3460.0	[m]	DC	RRI
3470.0	[m]	DC	RRI
3480.0	[m]	DC	RRI
3490.0	[m]	DC	RRI
3500.0	[m]	DC	RRI
3510.0	[m]	DC	RRI
3520.0	[m]	DC	RRI
3530.0	[m]	DC	RRI
3540.0	[m]	DC	RRI
3550.0	[m]	DC	RRI
3560.0	[m]	DC	RRI
3570.0	[m]	DC	RRI
3580.0	[m]	DC	RRI
3590.0	[m]	DC	RRI
3600.0	[m]	DC	RRI
3610.0	[m]	DC	RRI
3620.0	[m]	DC	RRI
3630.0	[m]	DC	RRI
3640.0	[m]	DC	RRI
3650.0	[m]	DC	RRI
3660.0	[m]	DC	RRI
3670.0	[m]	DC	RRI
3680.0	[m]	DC	RRI
3690.0	[m]	DC	RRI
3700.0	[m]	DC	RRI
3710.0	[m]	DC	RRI
3720.0	[m]	DC	RRI
3730.0	[m]	DC	RRI
3740.0	[m]	DC	RRI
3750.0	[m]	DC	RRI
3760.0	[m]	DC	RRI
3770.0	[m]	DC	RRI
3780.0	[m]	DC	RRI
3790.0	[m]	DC	RRI



3800.0	[m]	DC	RRI
3810.0	[m]	DC	RRI
3820.0	[m]	DC	RRI
3830.0	[m]	DC	RRI
3840.0	[m]	DC	RRI
3850.0	[m]	DC	RRI
3860.0	[m]	DC	RRI
3870.0	[m]	DC	RRI
3880.0	[m]	DC	RRI
3890.0	[m]	DC	RRI
3910.0	[m]	DC	RRI
3920.0	[m]	DC	RRI
3940.0	[m]	DC	RRI
3950.0	[m]	DC	RRI
3970.0	[m]	DC	RRI
3980.0	[m]	DC	RRI
3990.0	[m]	DC	RRI
4000.0	[m]	DC	RRI
4010.0	[m]	DC	RRI
4020.0	[m]	DC	RRI
4040.0	[m]	DC	RRI
4050.0	[m]	DC	RRI
4060.0	[m]	DC	RRI
4070.0	[m]	DC	RRI
4080.0	[m]	DC	RRI
4090.0	[m]	DC	RRI
4100.0	[m]	DC	RRI
4110.0	[m]	DC	RRI
4120.0	[m]	DC	RRI
4130.0	[m]	DC	RRI
4140.0	[m]	DC	RRI
4150.0	[m]	DC	RRI
4160.0	[m]	DC	RRI
4170.0	[m]	DC	RRI
4180.0	[m]	DC	RRI
4188.0	[m]	DC	RRI
4197.0	[m]	DC	RRI
4209.0	[m]	DC	RRI
4218.0	[m]	DC	RRI
4230.0	[m]	DC	RRI



4239.0 [m]	DC	RRI
4251.0 [m]	DC	RRI
4260.4 [m]	C	WESTLB
4262.9 [m]	C	WESTLB
4268.3 [m]	C	WESTLB
4273.2 [m]	C	WESTLB
4278.6 [m]	C	WESTLB
4282.9 [m]	C	WESTLB
4287.7 [m]	C	WESTLB
4288.9 [m]	C	WESTLB
4293.6 [m]	C	WESTLB
4298.8 [m]	C	WESTLB
4311.0 [m]	DC	RRI
4320.0 [m]	DC	RRI
4326.0 [m]	DC	RRI
4332.0 [m]	DC	RRI
4341.0 [m]	DC	RRI
4353.0 [m]	DC	RRI
4362.0 [m]	DC	RRI
4374.0 [m]	DC	RRI
4383.0 [m]	DC	RRI
4398.0 [m]	DC	RRI
4404.0 [m]	DC	RRI
4416.0 [m]	DC	RRI
4425.0 [m]	DC	RRI
4431.0 [m]	DC	RRI
4434.0 [m]	DC	RRI
4437.0 [m]	DC	RRI
4440.0 [m]	DC	RRI
4443.0 [m]	DC	RRI
4446.0 [m]	DC	RRI
4449.0 [m]	DC	RRI
4452.0 [m]	DC	RRI
4455.0 [m]	DC	RRI
4461.0 [m]	DC	RRI
4467.0 [m]	DC	RRI
4470.0 [m]	DC	RRI
4476.0 [m]	DC	RRI
4482.0 [m]	DC	RRI
4491.0 [m]	DC	RRI



4500.0 [m]	DC	RRI
4509.0 [m]	DC	RRI
4512.0 [m]	DC	RRI
4518.0 [m]	DC	RRI
4527.0 [m]	DC	RRI
4530.0 [m]	DC	RRI
4539.0 [m]	DC	RRI
4548.0 [m]	DC	RRI
4557.0 [m]	DC	RRI
4566.0 [m]	DC	RRI
4578.0 [m]	DC	RRI
4587.0 [m]	DC	RRI
4596.0 [m]	DC	RRI
4605.0 [m]	DC	RRI
4614.0 [m]	DC	RRI
4623.0 [m]	DC	RRI
4632.0 [m]	DC	RRI
4641.0 [m]	DC	RRI
4650.0 [m]	DC	RRI
4659.0 [m]	DC	RRI
4668.0 [m]	DC	RRI
4677.0 [m]	DC	RRI
4686.0 [m]	DC	RRI
4695.0 [m]	DC	RRI
4704.0 [m]	DC	RRI
4749.0 [m]	DC	RRI
4758.0 [m]	DC	RRI
4767.0 [m]	DC	RRI
4776.0 [m]	DC	RRI
4785.0 [m]	DC	RRI
4790.3 [m]	DC	RRI
4791.0 [m]	DC	RRI
4796.4 [m]	DC	RRI
4797.0 [m]	DC	RRI
4801.4 [m]	DC	RRI
4804.0 [m]	DC	RRI
4806.7 [m]	DC	RRI
4812.8 [m]	DC	RRI
4819.1 [m]	DC	RRI
4826.8 [m]	DC	RRI



4831.1 [m]	DC	RRI
4838.0 [m]	DC	RRI
4843.7 [m]	DC	RRI
4849.6 [m]	DC	RRI
4855.3 [m]	DC	RRI
4861.3 [m]	DC	RRI
4867.8 [m]	C	RRI
4871.2 [m]	C	RRI
4875.5 [m]	C	RRI
4879.9 [m]	C	RRI
4886.0 [m]	C	RRI
4889.4 [m]	C	RRI
4893.5 [m]	C	RRI
4899.4 [m]	C	RRI
4905.7 [m]	C	RRI
4911.3 [m]	C	RRI
4917.4 [m]	C	RRI
4926.5 [m]	C	RRI
4934.4 [m]	C	RRI
4938.4 [m]	C	RRI
4943.4 [m]	C	RRI
4947.9 [m]	C	RRI
4953.1 [m]	C	RRI
4957.4 [m]	C	RRI
4964.1 [m]	C	RRI
4969.6 [m]	C	RRI
4973.5 [m]	C	RRI
4979.3 [m]	C	RRI
4981.3 [m]	C	RRI
4987.8 [m]	C	RRI
4992.9 [m]	C	RRI
4997.4 [m]	C	RRI
5003.7 [m]	C	RRI
5008.4 [m]	C	RRI
5012.7 [m]	C	RRI
5019.0 [m]	C	RRI
5022.8 [m]	C	RRI
5024.4 [m]	C	RRI
5027.5 [m]	C	RRI
5031.8 [m]	C	RRI



5038.2	[m]	C	RRI
5046.0	[m]	C	RRI
5052.4	[m]	C	RRI
5058.7	[m]	C	RRI
5065.8	[m]	C	RRI
5074.3	[m]	C	RRI
5078.5	[m]	C	RRI
5084.3	[m]	C	RRI
5091.0	[m]	DC	RRI
5100.0	[m]	DC	RRI
5106.0	[m]	DC	RRI
5110.0	[m]	DC	RRI

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
325	NORDLAND GP
325	NAUST FM
1485	KAI FM
1943	HORDALAND GP
1943	BRYGGE FM
2297	ROGALAND GP
2297	TARE FM
2400	TANG FM
2449	SHETLAND GP
2449	SPRINGAR FM
2652	NISE FM
2862	KVITNOS FM
3500	CROMER KNOLL GP
3500	LYSING FM
3620	LANGE FM
4399	LYR FM
4428	VIKING GP
4428	SPEKK FM
4434	MELKE FM
4512	FANGST GP
4512	GARN FM
4611	NOT FM
4658	ILE FM



4726	BÅT GP
4726	ROR FM
4782	TOFTE FM
4852	TILJE FM
5022	ÅRE FM

Composite logs

Document name	Document format	Document size [MB]
2736	pdf	0.59

Geochemical information

Document name	Document format	Document size [MB]
2736_1	pdf	4.20

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

Document name	Document format	Document size [MB]
2736_6506_11_4_S_COMPLETION_REPORT_AND_COMPLETION_LOG	pdf	37.10

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	5039	5073	15.9

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0		15.000		163





Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0	725	395000	0.800	0.738	545

Logs

Log type	Log top depth [m]	Log bottom depth [m]
4ARM CAL GR	2808	4502
CBIL HDIP GR TTRM	4510	4732
CDL CN SLH TTRM	4512	4748
CDL CN SLH TTRM	4708	5110
DPIL MAC HDIL GR	4512	5110
DPIL MAC SL TTRM	2400	4744
DPIL MAC SLH TTRM	2400	4250
DPIL MAC ZDL CN SLH CHT	4045	4510
FMT GR CHT	4522	4725
FMT GR CHT	4588	4702
FMT GR CHT	4685	5041
FMT GR CHT	4685	4908
FMT GR CHT	5015	5015
FMT VPC GR	2897	4319
HDIP GR	4510	5110
MRIL GR	4520	5100
MWD - DPR	384	1415
MWD - DPR TF4	3144	4520
MWD - DPR2A	2810	4516
MWD - RGD	384	2825
MWD - TRIPLE COMBO	4512	5110
VSP GR	1975	5050
ZDL CN GR TTRM	3475	4282

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	384.0	36	385.0	0.00	LOT
SURF.COND.	20	1401.0	26	1402.0	1.68	LOT
INTERM.	13 3/8	2810.0	17 1/2	2812.0	1.87	LOT



INTERM.	9 5/8	4518.0	12 1/4	4520.0	0.00	LOT
LINER	7	5109.0	8 1/2	5109.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
1403	1.20	22.0		ANCO 2000	
2400	1.64	38.0		ANCO 2000	
2811	1.73	59.0		ANCO VERT	
2825	1.64	37.0		ANCO 2000	
3060	1.75	62.0		ANCO VERT	
3658	1.73	64.0		ANCO VERT	
4272	1.75	52.0		ANCO VERT	
4338	1.75	50.0		ANCO VERT	
4520	1.22	30.0		ANCO VERT	
4531	1.32	51.0		ANCO VERT	
4701	1.21	27.0		ANCO VERT	
4745	1.22	30.0		ANCO VERT	
5034	1.22	26.0		ANCO VERT	
5110	1.22	30.0		ANCO VERT	

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
4266.38	[m]
4272.12	[m]
4273.00	[m]
4276.95	[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]
2736 Formation pressure (Formasjonstrykk)	pdf	0.28
2736 T2 Formation pressure (Formasjonstrykk)	pdf	0.27

