

**General information**

Wellbore name	6406/3-2
Type	EXPLORATION
Purpose	WILDCAT
Status	P&A
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Field	TRESTAKK
Discovery	6406/3-2 Trestakk
Well name	6406/3-2
Seismic location	911430 X ST 8403 - 401
Production licence	091
Drilling operator	Den norske stats oljeselskap a.s
Drill permit	519-L
Drilling facility	WEST VANGUARD
Drilling days	148
Entered date	28.06.1986
Completed date	22.11.1986
Release date	22.11.1988
Publication date	28.06.2007
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL
Discovery wellbore	YES
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	GARN FM
Kelly bushing elevation [m]	22.0
Water depth [m]	300.0
Total depth (MD) [m RKB]	4523.0
Final vertical depth (TVD) [m RKB]	4522.0
Maximum inclination [°]	3.4
Bottom hole temperature [°C]	160
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	ÅRE FM
Geodetic datum	ED50
NS degrees	64° 51' 46.78" N
EW degrees	6° 49' 51.87" E
NS UTM [m]	7195126.91
EW UTM [m]	397207.63



UTM zone	32
NPDID wellbore	863

Wellbore history

General

Well 6406/3-2 is located in the middle of the block, west of the Tyrihans North field off shore Mid Norway. The primary objective of the well was to find hydrocarbon accumulations of significant size in the Middle Jurassic. Secondary objectives were hydrocarbon accumulations in the Early Jurassic sandstone. The well should also verify the geophysical and structural interpretation and improve the geological, paleontological and geochemical understanding of the area. Total depth was to be in rocks of Triassic age or 4000 m in order to satisfy the licence commitment.

Operations and results

Well 6406/3-2 was spudded with the semi-submersible installation West Vanguard on 28 June 1986 and drilled to TD at 4523 m in the Early Jurassic Åre Formation. The well was drilled practically vertical down to the deepest survey point at 4261 m (4260 m TVD). In the testing phase 543.5 hrs were spent on fishing to get the cement stinger loose. The well was drilled with spud mud down to 965 m, with gypsum/polymer mud from 965 m to 2301 m, with gypsum lignosulphonate mud from 2301 m to 3930 m, and with lignosulphonate mud from 3930 m to TD.

The Middle Jurassic sandstones (Garn Formation) were penetrated at 3930 m and were found to be HC-bearing. The oil contact, probably and oil-down-to contact, was found from geochemical methods at approximately 4030 m. The logs indicated that the oil/water contact was at 4335 m. Oil shows were recorded in several intervals below this depth throughout down to TD. RFT data indicated that both Ile and Ti1je Formations were impermeable.

A total of 285 m core was recovered in 17 cores from the Garn, Not, Ile, Ror, and Tilje formations. No fluid samples were taken on wire line.

The well was permanently abandoned on 22 November 1986 as an oil discovery.

Testing

Two drill stem tests were performed in the well. DST 1 tested the interval 4302 - 4336 m in the Tilje Formation. It produced only 4.5 m³ water into the test string. Maximum temperature recorded was 145.8 deg C.

DST 2 tested the interval 3937 - 3995 m in the Garn Formation. The test produced at maximum rate on open choke manifold 645 sm³ oil and 130000 sm³ gas /day. The GOR was 202 Sm³/Sm³, the oil density was 0.828 g/cm³, and the gas gravity was 0.855 (air = 1). Maximum temperature recorded in the corresponding flow period was 145 deg C.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
436.00	4512.00



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	3931.0	3933.9	[m]
2	3935.0	3952.0	[m]
3	3952.0	3964.3	[m]
4	3965.0	3981.5	[m]
5	3983.0	4001.3	[m]
6	4001.0	4027.0	[m]
7	4027.5	4047.0	[m]
8	4048.0	4056.6	[m]
9	4067.0	4094.0	[m]
10	4094.0	4119.8	[m]
11	4121.0	4148.3	[m]
12	4282.0	4296.0	[m]
13	4298.5	4308.0	[m]
14	4308.5	4335.0	[m]
15	4336.0	4340.9	[m]
16	4345.5	4361.0	[m]
17	4363.0	4376.0	[m]

Total core sample length [m]	284.6
Cores available for sampling?	YES

Core photos



3931-3933m



3935-3941m



3941-3947m



3947-3952m



3952-3958m



3958-3964m



3964-3964m



3965-3971m



3971-3917m



3917-3981m



3983-3989m



3989-3995m



3995-4001m



4001-4001m



4001-4007m



4007-4013m



4013-4019m



4019-4025m



4025-4027m



4027-4033m



4033-4039m



4039-4045m



4045-4048m



4048-4054m



4054-4056m



4067-4073m



4073-4079m



4079-4085m



4085-4091m



4091-4094m



4094-4099m



4100-4108m



4106-4112m



4112-4118m



4118-4119m



4121-4127m



4127-4133m



4183-4139m



4139-4145m



4145-4148m



4282-4288m



4288-4294m



4294-4296m



4298-4304m



4304-4308m



4308-4314m



4314-4320m



4320-4326m



4326-4332m



4332-4335m



4336-4340m



4345-4351m



4351-4357m



4357-4360m



4363-4369m



4369-4375m



4375-4375m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
2415.0	[m]	DC	OD
2439.0	[m]	DC	OD
2463.0	[m]	DC	OD



2499.0	[m]	DC	OD
2523.0	[m]	DC	OD
2550.0	[m]	DC	OD
2574.0	[m]	DC	OD
2598.0	[m]	DC	OD
2628.0	[m]	DC	OD
2652.0	[m]	DC	OD
2676.0	[m]	DC	OD
2700.0	[m]	DC	OD
2724.0	[m]	DC	OD
2751.0	[m]	DC	OD
2775.0	[m]	DC	OD
2802.0	[m]	DC	OD
2826.0	[m]	DC	OD
2850.0	[m]	DC	OD
2874.0	[m]	DC	OD
2901.0	[m]	DC	OD
2925.0	[m]	DC	OD
2952.0	[m]	DC	OD
2973.0	[m]	DC	OD
3000.0	[m]	DC	OD
3024.0	[m]	DC	OD
3051.0	[m]	DC	OD
3078.0	[m]	DC	OD
3102.0	[m]	DC	OD
3126.0	[m]	DC	OD
3153.0	[m]	DC	OD
3174.0	[m]	DC	OD
3201.0	[m]	DC	OD
3225.0	[m]	DC	OD
3233.0	[m]	SWC	R.R.I
3274.5	[m]	SWC	R.R.I
3275.0	[m]	DC	OD
3284.5	[m]	SWC	R.R.I
3300.0	[m]	DC	OD
3306.5	[m]	SWC	RRI
3327.0	[m]	DC	OD
3350.0	[m]	DC	OD
3361.5	[m]	SWC	RRI
3384.0	[m]	DC	OD



3400.2 [m]	SWC	RRI
3402.0 [m]	DC	OD
3421.0 [m]	SWC	RRI
3426.0 [m]	DC	OD
3450.0 [m]	DC	OD
3474.0 [m]	DC	OD
3501.0 [m]	DC	OD
3528.0 [m]	DC	OD
3549.0 [m]	DC	OD
3573.0 [m]	DC	OD
3600.0 [m]	DC	OD
3624.0 [m]	DC	OD
3651.0 [m]	DC	OD
3675.0 [m]	DC	OD
3699.0 [m]	DC	OD
3726.0 [m]	DC	OD
3750.0 [m]	DC	OD
3774.0 [m]	DC	OD
3798.0 [m]	DC	OD
3803.5 [m]	SWC	RRI
3825.0 [m]	DC	OD
3825.8 [m]	SWC	RRI
3849.0 [m]	DC	OD
3857.5 [m]	SWC	RRI
3876.0 [m]	DC	OD
3900.0 [m]	DC	OD
3900.0 [m]	DC	RRI
3906.0 [m]	DC	RRI
3912.0 [m]	DC	RRI
3918.0 [m]	DC	RRI
3924.0 [m]	DC	RRI
3927.0 [m]	DC	OD
3930.0 [m]	DC	OD
3930.0 [m]	DC	RRI
3931.0 [m]	C	RRI
3940.0 [m]	C	RRI
3946.0 [m]	C	RRI
3957.0 [m]	C	RRI
3962.0 [m]	C	RRI
3968.0 [m]	C	RRI



3970.0	[m]	C	RRI
3976.0	[m]	C	RRI
3980.0	[m]	C	RRI
3983.0	[m]	C	RRI
3988.0	[m]	C	RRI
3994.0	[m]	C	RRI
4000.0	[m]	C	RRI
4008.0	[m]	C	RRI
4012.0	[m]	C	RRI
4017.0	[m]	C	RRI
4019.0	[m]	C	RRI
4022.0	[m]	C	RRI
4027.0	[m]	C	RRI
4033.0	[m]	C	RRI
4039.0	[m]	C	RRI
4044.0	[m]	C	RRI
4050.0	[m]	C	RRI
4056.0	[m]	C	RRI
4067.0	[m]	C	RRI
4068.0	[m]	C	RRI
4073.0	[m]	C	RRI
4076.0	[m]	C	RRI
4092.0	[m]	C	RRI
4098.0	[m]	C	RRI
4124.0	[m]	C	RRI
4135.0	[m]	C	RRI
4145.0	[m]	C	RRI
4153.0	[m]	DC	OD
4283.0	[m]	C	RRI
4292.0	[m]	DC	RRI
4298.0	[m]	C	RRI
4305.0	[m]	C	RRI
4321.0	[m]	C	RRI
4334.0	[m]	C	RRI
4348.0	[m]	C	RRI
4360.0	[m]	C	RRI
4367.0	[ft]	C	RRI



Test type	Bottle number	Top depth MD [m]	Bottom depth MD [m]	Fluid type	Test time	Samples available
DST	TEST2	3937.00	3995.00		09.11.1986 - 12:30	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
322	NORDLAND GP
1493	KAI FM
1970	HORDALAND GP
1970	BRYGGE FM
2309	ROGALAND GP
2309	TARE FM
2380	TANG FM
2437	SHETLAND GP
3119	CROMER KNOLL GP
3841	VIKING GP
3841	SPEKK FM
3867	MELKE FM
3930	FANGST GP
3930	GARN FM
4017	NOT FM
4069	ILE FM
4128	BÅT GP
4128	ROR FM
4178	TOFTE FM
4203	ROR FM
4285	TILJE FM
4496	ÅRE FM

Geochemical information

Document name	Document format	Document size [MB]
863_1	pdf	0.28
863_2	pdf	1.42
863_3	pdf	0.41





863 4	pdf	0.93
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Documents - older Norwegian Offshore Directorate WDSS reports and other related documents

Document name	Document format	Document size [MB]
863 01 WDSS General Information	pdf	0.27
863 02 WDSS completion log	pdf	0.34

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

Document name	Document format	Document size [MB]
863 01 6406 3 2 Completion report	pdf	2.40
863 02 6406 3 2 Completion report Drilling	pdf	9.74
863 03 6406 3 2 Completion report Samples	pdf	9.66
863 04 6406 3 2 Completion log	pdf	2.98

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	4302	4336	12.7
2.0	3937	3995	11.0

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0			38.000	146
2.0	2.000		24.000	145

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					
2.0	645	129000	0.825		200

Logs





Log type	Log top depth [m]	Log bottom depth [m]
	0	0
CBL CDL GR	320	2282
CBL VDL GR	3768	4381
CBL VDL GR	3980	4711
CST GR	3233	3865
CST GR	4385	4518
DLL GR	3913	4378
ISF MSFL LSS GR	315	4524
LDL CNL GR	3913	4526
MWD - DLWD	322	4282
RFT GR	3942	3950
RFT GR	3942	4371
SHDT GR	3913	4382
TEMP	340	3875

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	433.0	36	436.0	0.00	LOT
SURF.COND.	20	951.0	26	965.0	1.60	LOT
INTERM.	13 3/8	2283.0	17 1/2	2301.0	1.85	LOT
INTERM.	9 5/8	3913.0	12 1/4	3930.0	1.93	LOT
LINER	7	4377.0	8 1/2	4380.0	2.07	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
436	1.10	60.0		WATERBASED	30.06.1986
677	1.12	57.0	23.8	WATERBASED	01.07.1986
965	1.12	41.0	25.9	WATERBASED	02.07.1986
965	0.00	40.0	25.2	WATERBASED	04.07.1986
965	0.00	41.0	24.5	WATERBASED	06.07.1986
965	1.12	44.0	19.1	WATER BASED	06.07.1986
965	1.23	42.0	4.3	WATER BASED	06.07.1986
1030	1.12	57.0	12.0	WATER BASED	10.07.1986



1380	1.14	53.0	8.6	WATER BASED	13.07.1986
1571	1.20	58.0	7.7	WATER BASED	13.07.1986
1972	1.21	65.0	12.6	WATERBASED	13.07.1986
2216	1.50	80.0	20.3	WATERBASED	14.07.1986
2298	1.55	75.0	17.5	WATERBASED	15.07.1986
2298	0.00	72.0	16.8	WATERBASED	16.07.1986
2298	0.00	61.0	14.0	WATERBASED	17.07.1986
2298	0.00	71.0	12.6	WATERBASED	20.07.1986
2298	0.00	72.0	13.3	WATERBASED	20.07.1986
2298	0.00	60.0	12.6	WATERBASED	20.07.1986
2301	1.61	61.0	14.0	WATERBASED	21.07.1986
2301	0.00	59.0	11.9	WATERBASED	22.07.1986
2379	1.61	51.0	11.2	WATERBASED	23.07.1986
2498	1.80	72.0	12.6	WATERBASED	24.07.1986
2581	1.80	82.0	17.5	WATERBASED	28.07.1986
2741	1.80	65.0	16.1	WATERBASED	28.07.1986
2827	1.80	55.0	14.0	WATERBASED	28.07.1986
2911	1.80	60.0	14.0	WATERBASED	28.07.1986
2937	1.80	56.0	14.0	WATERBASED	30.07.1986
2974	1.80	52.0	14.7	WATERBASED	31.07.1986
2994	1.80	47.0	9.1	WATERBASED	01.08.1986
3045	1.80	54.0	11.2	WATERBASED	04.08.1986
3106	1.80	52.0	9.8	WATERBASED	04.08.1986
3163	1.80	55.0	11.2	WATERBASED	04.08.1986
3223	1.80	54.0	9.8	WATERBASED	05.08.1986
3287	1.80	55.0	10.5	WATERBASED	06.08.1986
3344	1.80	57.0	10.5	WATERBASED	07.08.1986
3402	1.80	53.0	10.5	WATERBASED	08.08.1986
3453	1.80	51.0	10.5	WATERBASED	11.08.1986
3511	1.80	51.0	11.2	WATERBASED	11.08.1986
3527	1.80	51.0	10.5	WATERBASED	11.08.1986
3554	1.80	53.0	11.2	WATERBASED	12.08.1986
3622	1.80	51.0	10.5	WATERBASED	13.08.1986
3696	1.80	48.0	11.2	WATERBASED	14.08.1986
3707	1.80	48.0	12.0	WATERBASED	18.08.1986
3780	1.80	47.0	12.0	WATERBASED	18.08.1986
3840	1.80	48.0	11.0	WATERBASED	18.08.1986
3850	1.80	50.0	13.3	WATERBASED	18.08.1986
3872	1.80	48.0	11.2	WATERBASED	19.08.1986
3904	1.80	47.0	13.3	WATERBASED	20.08.1986



3913	1.26	53.0	7.0	WATERBASED	01.09.1986
3930	1.80	49.0	13.3	WATERBASED	21.08.1986
3930	0.00	52.0	14.0	WATERBASED	22.08.1986
3930	0.00	58.0	13.3	WATERBASED	25.08.1986
3930	0.00	52.0	13.3	WATERBASED	25.08.1986
3930	0.00	52.0	14.0	WATERBASED	25.08.1986
3931	1.36	44.0	5.6	WATERBASED	27.08.1986
3935	1.37	40.0	6.3	WATERBASED	28.08.1986
3947	1.36	50.0	6.3	WATERBASED	29.08.1986
3965	1.35	50.0	7.0	WATERBASED	01.09.1986
3983	1.25	56.0	7.0	WATERBASED	01.09.1986
4001	1.23	57.0	7.0	WATERBASED	02.09.1986
4031	1.23	56.0	6.3	WATERBASED	04.09.1986
4048	1.23	60.0	7.0	WATERBASED	04.09.1986
4060	1.23	58.0	7.0	WATERBASED	05.09.1986
4094	1.23	58.0	7.0	WATERBASED	08.09.1986
4161	1.26	55.0	7.7	WATER BASED	14.10.1986
4161	1.26	60.0	8.4	WATER BASED	16.10.1986
4161	1.27	60.0	9.1	WATER BASED	24.10.1986
4161	1.26	60.0	8.4	WATER BASED	15.10.1986
4161	1.26	56.0	7.7	WATER BASED	17.10.1986
4161	1.26	55.0	7.0	WATER BASED	20.10.1986
4161	1.26	60.0	10.5	WATER BASED	20.10.1986
4161	1.26	55.0	9.1	WATER BASED	20.10.1986
4161	1.26	60.0	10.5	WATER BASED	21.10.1986
4161	1.26	63.0	10.5	WATER BASED	23.10.1986
4161	0.00	60.0	9.1	WATERBASED	27.10.1986
4161	0.00	60.0	9.3	WATERBASED	27.10.1986
4161	1.26	60.0	9.3	WATER BASED	27.10.1986
4161	1.26	60.0	9.1	WATER BASED	28.10.1986
4161	1.26	60.0	9.1	WATER BASED	29.10.1986
4161	1.26	60.0	10.5	WATER BASED	30.10.1986
4161	1.26	60.0	9.8	WATER BASED	31.10.1986
4161	1.26	63.0	9.8	WATER BASED	17.11.1986
4164	1.23	55.0	7.0	WATERBASED	08.09.1986
4168	1.23	62.0	7.0	WATERBASED	09.09.1986
4212	1.23	56.0	6.3	WATERBASED	10.09.1986
4282	1.23	62.0	8.4	WATERBASED	11.09.1986
4299	1.23	58.0	7.7	WATERBASED	12.09.1986
4300	1.38	58.0	5.6	WATERBASED	06.10.1986



4327	1.23	59.0	6.3	WATERBASED	15.09.1986
4343	1.26	60.0	7.0	WATERBASED	18.09.1986
4347	1.23	62.0	7.7	WATER BASED	15.09.1986
4353	1.38	64.0	7.7	WATERBASED	06.10.1986
4353	1.26	64.0	8.4	WATER BASED	07.10.1986
4353	1.26	62.0	7.7	WATER BASED	09.10.1986
4353	1.26	60.0	7.0	WATER BASED	10.10.1986
4353	1.26	55.0	7.0	WATER BASED	13.10.1986
4353	1.26	55.0	7.7	WATER BASED	13.10.1986
4377	1.26	55.0	6.3	WATERBASED	23.09.1986
4378	0.00	61.0	7.0	WATERBASED	16.09.1986
4378	0.00	60.0	7.0	WATERBASED	17.09.1986
4378	0.00	62.0	7.7	WATERBASED	19.09.1986
4378	1.23	62.0	7.7	WATERBASED	15.09.1986
4380	0.00	53.0	6.3	WATERBASED	22.09.1986
4380	1.26	55.0	6.3	WATERBASED	22.09.1986
4380	0.00	58.0	6.3	WATERBASED	22.09.1986
4380	0.00	68.0	8.4	WATERBASED	24.09.1986
4400	1.35	57.0	6.3	WATERBASED	25.09.1986
4420	1.62	63.0	7.0	WATERBASED	26.09.1986
4429	1.62	55.0	6.3	WATERBASED	29.09.1986
4513	1.62	59.0	7.0	WATERBASED	29.09.1986
4523	1.62	60.0	5.6	WATERBASED	29.09.1986
4523	0.00	60.0	5.6	WATERBASED	30.09.1986
4523	0.00	62.0	5.6	WATERBASED	01.10.1986
4523	0.00	53.0	4.9	WATERBASED	02.10.1986
4523	0.00	60.0	4.9	WATERBASED	03.10.1986
4523	0.00	60.0	4.9	WATERBASED	06.10.1986
4523	0.00	60.0	5.7	WATERBASED	06.10.1986

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]
863_Formalion_pressure_(Formasjonstrykk)	pdf	0.27

