

**General information**

Wellbore name	6407/7-2
Type	EXPLORATION
Purpose	APPRAISAL
Status	SUSPENDED
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Field	NJORD
Discovery	6407/7-1 S Njord
Well name	6407/7-2
Seismic location	NH 8604 - 235 KOLONNE 960
Production licence	107
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	532-L
Drilling facility	POLAR PIONEER
Drilling days	63
Entered date	19.11.1986
Completed date	21.01.1987
Release date	21.01.1989
Publication date	09.03.2009
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	MIDDLE JURASSIC
1st level with HC, formation	ILE FM
2nd level with HC, age	EARLY JURASSIC
2nd level with HC, formation	TILJE FM
Kelly bushing elevation [m]	23.0
Water depth [m]	338.0
Total depth (MD) [m RKB]	3320.0
Final vertical depth (TVD) [m RKB]	3320.0
Maximum inclination [°]	4
Bottom hole temperature [°C]	125
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	RED BEDS (INFORMAL)
Geodetic datum	ED50
NS degrees	64° 15' 26.39" N
EW degrees	7° 10' 42.65" E



NS UTM [m]	7127130.16
EW UTM [m]	411732.18
UTM zone	32
NPDID wellbore	1017

Wellbore history

**General**

Well 6407/7-2 was drilled on the Njord A-structure in the southern part of the Halten Terrace. The Njord structure is located ca 30 km west of the Draugen Field. The primary objectives of the well were to test the reservoir properties of the pre-Tilje sequence and to find the oil-water contact in the central part of the A-structure. By this the volumetric potential of the structure could be established. The well would furthermore obtain seismic calibration to the base Cretaceous and intra Jurassic and intra Triassic events. It should penetrate a flat seismic event at approximately 2570 ms TWT. A Rogn Formation sand unit was expected at 2598 +/- 65 m.

Operations and results

Well 6407/7-2 was spudded with the semi-submersible installation Polar Pioneer on 20 November 1986. The 36" hole was drilled to 361 m where the MWD showed an inclination of 7.1 degrees. A respud was thus decided. The well was respudded on 20 November and drilled without significant problems to TD at 3320 m in the Triassic Red Beds. It was drilled with spud mud down to 780 m and with KCl/polymer mud from 780 m to TD.

No Rogn Formation was encountered. Hydrocarbons were encountered in two different pressured reservoir zones in the Middle to Early Jurassic. The upper reservoir was a 14 m gas/condensate zone in the Ile Formation from 2697.5 m to 2711.5 m. A segregated RFT sample from this zone recovered gas and condensate. The lower and main reservoir zone was encountered from 2771 to 2877.5 m in the Tilje Formation and contained oil. Two drill stem testes were performed in this zone. The Åre Formation was encountered at 2877.5 m and consisted of sandstones with minor claystones and siltstones. The Åre Formation sandstones were cemented and with low porosity. The logs and cores proved the Åre Formation to be water bearing, although moderate quality RFT pressure data gave an oil gradient in the interval 2896 to 2925 m.

Eleven cores were cut in the well with a total recovery of 171.25 m (87%). The first core was cut in the interval 2673 - 2688 m, two cores in the interval 2701 - 2742 m, and 8 cores in the interval 2775 - 2915 m. A segregated RFT sample from 2701.9 m recovered 2.1 Sm³ gas, 1.85 l condensate, and 0.9 l filtrate.

The well was suspended on 21 January 1987 as a possible future development well or for long term testing. It is classified as an oil appraisal well.

Testing

Two drill stem tests were performed in the Tilje Formation main reservoir.

DST 1 in the interval 2869.8 - 2878.8 m produced 125 Sm³ oil and 23750 Sm³ gas /day through a 12.7 mm choke. The GOR was 190, the oil density was 0.829 g/cm³, and the gas gravity was 0.744 (air = 1). The CO₂ content was 1.5 percent and the H₂S content was 0.2 ppm. The down hole temperature measured in the test was 109.0 deg C.

DST 2 in the interval 2801.5 - 2819.5 m produced 575 Sm³ oil and 105800 Sm³ gas /day through a 12.7 mm choke. The GOR was 184, the oil density was 0.825 g/cm³, and the gas gravity was 0.0685 (air = 1). The CO₂ content was 1.5 percent and the H₂S content was 1.5 ppm. The down hole temperature measured in the test was 111.2 deg C.

Cuttings at the Norwegian Offshore Directorate



Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
780.00	3320.00

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	2673.0	2686.9	[m]
2	2701.0	2718.9	[m]
3	2723.0	2739.6	[m]
4	2775.0	2787.1	[m]
5	2791.5	2803.2	[m]
6	2804.5	2823.5	[m]
7	2823.5	2841.1	[m]
8	2841.5	2869.4	[m]
9	2869.5	2869.8	[m]
10	2879.0	2896.0	[m]
11	2896.0	2913.6	[m]

Total core sample length [m]	171.3
Cores available for sampling?	YES

Core photos



2673-2679m



2679-2685m



2685-2686m



2701-2707m



2707-2713m



2713-2718m



2723-2729m



2729-2735m



2735-2739m



2775-2781m



2781-2787m



2787-2787m



2791-2797m



2797-2803m



2804-2810m



2810-2816m



2816-2822m



2822-2823m



2823-2829m



2829-2835m



2835-2841m



2841-2842m



2842-2847m



2847-2853m



2853-2859m



2859-2865m



2865-2869m



2869-2870m



2879-2885m



2885-2891m



2891-2896m



2896-2902m



2902-2908m



2908-2913m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
2675.9	[m]	C	OD
2676.1	[m]	C	OD

**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		2869.00	2878.00		06.01.1987 - 00:00	YES
DST	DST2	2801.50	2819.50	OIL	12.01.1987 - 00:00	YES

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
361	NORDLAND GP
361	NAUST FM
1078	KAI FM
1723	ROGALAND GP
1723	TARE FM
1786	TANG FM
1959	SHETLAND GP
2467	CROMER KNOLL GP
2637	VIKING GP
2637	SPEKK FM
2652	MELKE FM
2668	FANGST GP
2668	GARN FM
2681	NOT FM
2697	ILE FM
2712	BÅT GP
2771	TILJE FM
2878	ÅRE FM
2934	GREY BEDS (INFORMAL)
2980	RED BEDS (INFORMAL)

Geochemical information

Document name	Document format	Document size [MB]
1017_1	pdf	0.33
1017_2	pdf	2.41





1017_3	pdf	13.21
1017_4	pdf	1.28

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

Document name	Document format	Document size [MB]
1017_01_WDSS_General_Information	pdf	0.45
1017_02_WDSS_completion_log	pdf	0.26

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

Document name	Document format	Document size [MB]
1017_01_6407_7_2_Completion_report	pdf	9.41
1017_02_6407_7_2_Completion_log	pdf	9.10

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	2870	2879	12.7
2.0	2802	2820	12.7

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

Test number	Oil [Sm ³ /day]	Gas [Sm ³ /day]	Oil density [g/cm ³]	Gas grav. rel.air	GOR [m ³ /m ³]
1.0	125	24000	0.829	0.744	190
2.0	575	106000	0.825	0.685	184

Logs





Log type	Log top depth [m]	Log bottom depth [m]
CBL VDL	435	1501
CBL VDL	1300	3248
CET GR	2491	3184
CST GR	1708	2550
CST GR	2552	3315
CST GR	2553	3315
DIL LSS GR SP	1501	2548
DITE LSS MSFL GR SP	2533	3320
DLL SP	2600	3000
LDL CNL NGT	2533	3321
MWD - GR RES DIR	361	2520
MWD - GR RES DIR	3025	3305
RFT GR	2698	2884
RFT GR	2701	2925
RFT GR	2816	3093
SHDT GR	1501	2550
SHDT GR	2533	3320
VSP	1080	3260

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	445.0	36	446.0	0.00	LOT
INTERM.	13 3/8	757.0	17 1/2	1517.0	1.76	LOT
INTERM.	9 5/8	2535.0	12 1/4	2550.0	1.87	LOT
LINER	7	3316.0	8 1/2	3320.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
382	1.05	99.0	99.0	WATERBASED	20.11.1986
406	1.05	99.0	99.0	WATERBASED	21.11.1986
446	1.05			WATERBASED	24.11.1986
650	0.00			WATERBASED	19.01.1987
780	1.05			WATERBASED	24.11.1986



780	0.00	18.0	10.0	WATERBASED	26.11.1986
1000	1.47	11.0	12.0	WATER BASED	22.03.1990
1160	1.20	24.0	18.0	WATERBASED	25.11.1986
1517	1.30	20.0	13.0	WATERBASED	27.11.1986
1517	0.00	20.0	15.0	WATERBASED	30.11.1986
1517	0.00	22.0	9.0	WATERBASED	30.11.1986
1839	1.60	30.0	15.0	WATERBASED	30.11.1986
2016	1.60	33.0	10.0	WATER BASED	02.12.1986
2190	1.60	28.0	8.0	WATER BASED	02.12.1986
2230	1.60	28.0	8.0	WATERBASED	03.12.1986
2310	1.60	30.0	10.0	WATERBASED	04.12.1986
2372	1.48	19.0	11.0	WATER BASED	22.03.1990
2409	1.60	25.0	7.0	WATERBASED	06.12.1986
2464	1.47	19.0	10.0	WATER BASED	22.03.1990
2513	1.60	27.0	9.0	WATERBASED	06.12.1986
2535	1.49	20.0	4.0	WATERBASED	10.12.1986
2535	0.00	21.0	5.0	WATERBASED	11.12.1986
2550	1.60	25.0	8.0	WATERBASED	06.12.1986
2550	0.00	29.0	9.0	WATERBASED	09.12.1986
2550	0.00	29.0	9.0	WATERBASED	08.12.1986
2553	1.48	17.0	8.0	WATERBASED	14.12.1986
2582	1.48	20.0	8.0	WATERBASED	14.12.1986
2651	1.48	24.0	8.0	WATERBASED	14.12.1986
2680	1.48	21.0	8.0	WATERBASED	15.12.1986
2701	1.48	21.0	8.0	WATERBASED	16.12.1986
2731	1.48	19.0	7.0	WATERBASED	17.12.1986
2775	1.48	22.0	8.0	WATERBASED	18.12.1986
2794	1.48	11.0	7.0	WATER BASED	22.03.1990
2796	1.48	20.0	6.0	WATERBASED	19.01.1987
2805	1.48	23.0	8.0	WATERBASED	20.12.1986
2819	1.48	24.0	8.0	WATERBASED	14.01.1987
2819	0.00	20.0	6.0	WATERBASED	19.01.1987
2819	0.00	20.0	6.0	WATERBASED	15.01.1987
2819	0.00	20.0	6.0	WATERBASED	16.01.1987
2842	1.48	22.0	8.0	WATERBASED	20.12.1986
2859	1.48	23.0	8.0	WATERBASED	13.01.1987
2861	1.48	19.0	7.0	WATERBASED	12.01.1987
2879	1.48	23.0	7.0	WATERBASED	20.12.1986
2915	1.48	24.0	8.0	WATERBASED	23.12.1986
2970	1.48	18.0	11.0	WATER BASED	22.03.1990



2994	1.48	25.0	9.0	WATERBASED	29.12.1986
3028	1.48	23.0	8.0	WATERBASED	30.12.1986
3039	1.48	23.0	8.0	WATERBASED	30.12.1986
3078	1.48	23.0	8.0	WATERBASED	30.12.1986
3182	1.48	24.0	9.0	WATERBASED	30.12.1986
3265	1.48	22.0	7.0	WATERBASED	06.01.1987
3265	0.00	22.0	7.0	WATERBASED	06.01.1987
3265	0.00	22.0	7.0	WATERBASED	07.01.1987
3265	0.00	21.0	5.0	WATERBASED	09.01.1987
3265	0.00	23.0	6.0	WATERBASED	12.01.1987
3265	0.00	18.0	6.0	WATERBASED	12.01.1987
3265	1.48	17.0	12.0	WATER BASED	22.03.1990
3265	1.48	17.0	16.0	WATER BASED	22.03.1990
3265	1.48	18.0	15.0	WATER BASED	23.03.1990
3265	1.48	17.0	14.0	WATER BASED	26.03.1990
3265	1.47	17.0	14.0	WATER BASED	26.03.1990
3265	1.47	14.0	13.0	WATER BASED	27.03.1990
3265	1.47	14.0	12.0	WATER BASED	28.03.1990
3265	1.47	15.0	14.0	WATER BASED	02.04.1990
3265	1.48	15.0	13.0	WATER BASED	02.04.1990
3265	1.48	15.0	13.0	WATER BASED	02.04.1990
3265	1.48	15.0	13.0	WATER BASED	04.04.1990
3265	1.48	15.0	13.0	WATER BASED	04.04.1990
3265	1.47	15.0	12.0	WATER BASED	06.04.1990
3265	1.48	15.0	13.0	WATER BASED	09.04.1990
3265	1.48	15.0	13.0	WATER BASED	09.04.1990
3265	1.48	15.0	13.0	WATER BASED	10.04.1990
3265	1.48	15.0	13.0	WATER BASED	11.04.1990
3265	1.48	15.0	13.0	WATER BASED	18.04.1990
3265	1.48	15.0	12.0	WATER BASED	18.04.1990
3265	1.48	14.0	9.0	WATER BASED	18.04.1990
3265	1.47	15.0	14.0	WATER BASED	18.04.1990
3265	1.02	1.0	1.0	WATER BASED	18.04.1990
3265	1.47	15.0	14.0	WATER BASED	24.04.1990
3265	1.47	15.0	14.0	WATER BASED	24.04.1990
3265	1.47	15.0	14.0	WATER BASED	24.04.1990
3265	1.47	15.0	14.0	WATER BASED	24.04.1990
3265	1.47	13.0	13.0	WATER BASED	27.04.1990
3265	1.45	13.0	12.0	WATER BASED	27.04.1990
3265	1.48	12.0	12.0	WATER BASED	30.03.1990



3265	1.48	15.0	17.0	WATER BASED	30.03.1990
3265	1.48	15.0	13.0	WATER BASED	05.04.1990
3265	1.48	15.0	13.0	WATER BASED	09.04.1990
3265	1.47	15.0	14.0	WATER BASED	18.04.1990
3265	1.47	15.0	14.0	WATER BASED	25.04.1990
3265	0.00	22.0	7.0	WATERBASED	09.01.1987
3266	1.49	25.0	6.0	WATERBASED	05.01.1987
3276	1.48	24.0	10.0	WATERBASED	30.12.1986
3320	0.00	24.0	6.0	WATERBASED	05.01.1987
3320	1.48	23.0	8.0	WATERBASED	30.12.1986
3320	0.00	23.0	8.0	WATERBASED	02.01.1987
3320	0.00	24.0	8.0	WATERBASED	02.01.1987

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
2701.60	[m]
2710.90	[m]
2806.90	[m]
2811.60	[m]
2842.60	[m]
2853.60	[m]
2868.30	[m]
2895.40	[m]
2911.90	[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]
1017 Formation pressure (Formasjonstrykk)	pdf	0.28

