General information

Wellbore name	6407/7-5
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORWEGIAN SEA
Field	NJORD
Discovery	6407/7-1 S Njord
Well name	6407/7-5
Seismic location	NH 8604- Row 342 & COL. 655
Production licence	107
Drilling operator	Norsk Hydro Produksjon AS
Drill permit	660-L
Drilling facility	TRANSOCEAN 8
Drilling days	61
Entered date	17.12.1990
Completed date	15.02.1991
Release date	15.02.1993
Publication date	09.03.2009
Purpose - planned	APPRAISAL
Reentry	NO
Content	SHOWS
Discovery wellbore	NO
Kelly bushing elevation [m]	24.0
Water depth [m]	327.0
Total depth (MD) [m RKB]	3725.0
Final vertical depth (TVD) [m RKB]	3716.0
Maximum inclination [°]	11.3
Bottom hole temperature [°C]	140
Oldest penetrated age	EARLY JURASSIC
Oldest penetrated formation	ÅRE FM
Geodetic datum	ED50
NS degrees	64° 18' 24.34'' N
EW degrees	7° 10' 50.58'' E
NS UTM [m]	7132634.02
EW UTM [m]	411996.50
UTM zone	32
NPDID wellbore	1699

Wellbore history

General

The Njord Field is situated in the southern part of the Haltenbanken area in a down faulted position relative to the Trøndelag Platform and the Frøya High. Oil had been encountered in previous wells on Njord in the Ile, Tilje, and Åre Formations. Well 6407/7-5 is located on the North II fault segment on the North Flank of the Njord structure. The main objectives for the well were to test the resource potential of the Northern Flank, to clarify the number of production and injection wells needed for development, and to verify the reservoir quality and the sealing potential of faults. The pore pressure gradient was expected to be maximum 1.54 rd in the reservoir. Shallow gas warnings were given for 6 levels down to 650 m. Planned TD was 3725 m

Operations and results

Well 6407/7-5 was spudded with the semi-submersible installation Transocean 8 on 15 February 1991 and drilled to TD at 3725 m in Early Jurassic sediments of the Åre Formation. After coring the interval 3168 - 3215m the drilling assembly got stuck when running in the hole. Fishing the drilling assembly failed and the well was subsequently plugged back and side tracked from 3080 m. Indications of shallow gas were found in two of the six warned levels. The well was drilled with spud mud down to 1112 m and with KCl/polymer mud from 1112 m to TD.

The reservoir sandstones of the Ile, Ror and Tilje Formations were found to be water bearing. RFT pressures and one segregated sample indicated very poor permeabilities in the sandstone intervals tested. From the data it was not possible to determine whether pressure communication exists between 6407/7-5 and 6407/7-3.

Sporadic oil shows were recorded on sandstone stringers in the Nise Formation below 2267 m. Weak oil shows were recorded on claystones, limestones and sandstones of the Lysing Formation between 3000 - 3084 m. This interval also had high gas readings with gas peaks up to 10%. Some oil shows were seen on sandstones from 3163.5 to 3274 m in the Ile and Ror Formations. The deepest recorded show while drilling was at 3360 m in the Tilje Formation. Organic geochemical analyses confirmed that migrated hydrocarbons were present in the Cromer Knoll Group, and the Ile and Tilje Formations.

A total of five conventional cores were cut in the well. Fifteen side wall cores were attempted and 5 were recovered. The RFT sample at 3412.8 m recovered only mud filtrate.

The well was permanently abandoned on 15 February 1991 as a dry well.

Testing

No drill stem test was performed.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
1120.00	3725.00

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	3075.0	3083.7	[m]
2	3168.0	3195.5	[m]
3	3195.5	3214.5	[m]
4	3359.0	3383.0	[m]
5	3410.0	3437.0	[m]

Total core sample length [m]	106.2
Cores available for sampling?	YES

Core photos


3075-3080m


3080-3083m


3168-3173m


3173-3178m


3178-3183m


3183-3188m


3188-3193m


3193-3197m


3197-3202m


3202-3207m


3207-3212m


3212-3214m


3359-3364m


3364-3369m


3369-3374m


3374-3379m


3379-3383m


3410-3415m


3415-3420m


3420-3425m


3425-3430m


3430-3435m


3435-3437m

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
1180.0	[m]	DC	RRI
1240.0	[m]	DC	RRI
1300.0	[m]	DC	RRI
1330.0	[m]	DC	RRI
1390.0	[m]	DC	RRI
1420.0	[m]	DC	RRI
1450.0	[m]	DC	RRI
1750.0	[m]	DC	RRI
1870.0	[m]	DC	RRI
1900.0	[m]	DC	RRI
1930.0	[m]	DC	RRI
2035.0	[m]	DC	RRI
2050.0	[m]	DC	RRI
2070.0	[m]	DC	RRI
2130.0	[m]	DC	RRI
2530.0	[m]	DC	RRI
2560.0	[m]	DC	RRI
2590.0	[m]	DC	RRI
2640.0	[m]	DC	RRI
2650.0	[m]	DC	RRI
2660.0	[m]	DC	RRI
2670.0	[m]	DC	RRI
2680.0	[m]	DC	RRI

2690.0	[m]	DC	RRI
2700.0	[m]	DC	RRI
2710.0	[m]	DC	RRI
2730.0	[m]	DC	RRI
2750.0	[m]	DC	RRI
2770.0	[m]	DC	RRI
2780.0	[m]	DC	RRI
2795.0	[m]	DC	RRI
2825.0	[m]	DC	RRI
2830.0	[m]	DC	RRI
2840.0	[m]	DC	RRI
2850.0	[m]	DC	RRI
2860.0	[m]	DC	RRI
2875.0	[m]	DC	RRI
2880.0	[m]	DC	RRI
2890.0	[m]	DC	RRI
2900.0	[m]	DC	RRI
2910.0	[m]	DC	RRI
2920.0	[m]	DC	RRI
2930.0	[m]	DC	RRI
2940.0	[m]	DC	RRI
2950.0	[m]	DC	RRI
2960.0	[m]	DC	RRI
2970.0	[m]	C	HYDRO
2980.0	[m]	DC	RRI
2990.0	[m]	DC	RRI
3005.0	[m]	DC	RRI
3010.0	[m]	DC	RRI
3020.0	[m]	DC	RRI
3035.0	[m]	DC	RRI
3040.0	[m]	DC	RRI
3050.0	[m]	DC	RRI
3060.0	[m]	DC	RRI
3070.0	[m]	DC	RRI
3075.0	[m]	C	RRI
3077.0	[m]	C	HYDRO
3083.7	[m]	C	RRI
3090.0	[m]	C	HYDRO
3100.0	[m]	DC	RRI
3110.0	[m]	DC	RRI

3122.0	[m]	C	HYDRO
3130.0	[m]	DC	RRI
3140.0	[m]	DC	RRI
3155.0	[m]	DC	RRI
3160.0	[m]	DC	RRI
3168.0	[m]	C	RRI
3169.5	[m]	C	RRI
3175.0	[m]	C	RRI
3185.0	[m]	C	RRI
3196.0	[m]	C	RRI
3206.0	[m]	C	RRI
3214.5	[m]	C	RRI
3280.0	[m]	DC	RRI
3290.0	[m]	DC	RRI
3300.0	[m]	DC	RRI
3310.0	[m]	DC	RRI
3320.0	[m]	DC	RRI
3330.0	[m]	DC	RRI
3340.0	[m]	DC	RRI
3350.0	[m]	DC	RRI
3359.0	[m]	C	RRI
3365.6	[m]	C	RRI
3371.0	[m]	C	RRI
3378.5	[m]	C	RRI
3381.0	[m]	C	RRI
3413.0	[m]	C	RRI
3426.0	[m]	C	RRI
3431.8	[m]	C	RRI
3435.0	[m]	C	RRI
3436.0	[m]	C	RRI
3447.0	[m]	DC	RRI
3460.0	[m]	DC	RRI
3470.0	[m]	DC	RRI
3490.0	[m]	DC	RRI
3530.0	[m]	DC	RRI
3540.0	[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
3680.0	[m]	DC	RRI
3720.0	[m]	DC	RRI

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
351	NORDLAND GP
351	NAUST FM
1120	KAI FM
1140	HORDALAND GP
1140	BRYGGE FM
1795	ROGALAND GP
1795	TARE FM
1864	TANG FM
2111	SHETLAND GP
2111	NISE FM
2532	KVITNOS FM
3003	CROMER KNOLL GP
3003	LYSING FM
3120	VIKING GP
3120	SPEKK FM
3154	FANGST GP
3154	NOT FM
3164	ILE FM
3207	BÅT GP
3207	ROR FM
3355	TILJE FM
3496	ÅRE FM

Geochemical information

Document name	Document format	Document size [MB]
1699_1	pdf	0.16
1699_2	pdf	1.30

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

Document name	Document format	Document size [MB]
1699_01_WDSS_General_Information	pdf	0.50
1699_02_WDSS_completion_log	pdf	0.17

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

Document name	Document format	Document size [MB]
1699_6407_7_5_COMPLETION_REPORT_AND_LOG	pdf	14.76

Logs

Log type	Log top depth [m]	Log bottom depth [m]
CST	3970	3122
DIL LSS LDL CNL GR SP AMS	2859	3719
DIL LSS LDL SP GR AMS	1097	2870
FMS4 GR AMS	2859	3719
LWD - GR RES DIR	439	3725
MWD - GR RES DIR	351	394
RFT GR AMS	3004	3171
RFTB HP GR AMS	3166	3254
RFTB HP GR AMS	3412	3412
RFTB HP GR AMS	3433	3433
VSP	2840	3510
VSP	2970	3122

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	435.0	36	437.0	0.00	LOT
INTERM.	13 3/8	1097.0	17 1/2	1100.0	1.49	LOT
INTERM.	9 5/8	2859.0	12 1/4	2866.0	1.45	LOT
OPEN HOLE		3725.0	8 1/2	3725.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
380	1.60	38.0	16.0	WATER BASED	08.02.1991
380	1.60	38.0	16.0	WATER BASED	08.02.1991
650	1.05			WATER BASED	27.12.1990
1112	1.20			WATER BASED	27.12.1990
1112	1.40	19.0	10.0	WATER BASED	27.12.1990
1112	1.40	20.0	11.0	WATER BASED	27.12.1990
1400	1.46	23.0	13.0	WATER BASED	27.12.1990
1902	1.60	28.0	10.0	WATER BASED	27.12.1990
2272	1.60	26.0	10.0	WATER BASED	28.12.1990
2519	1.60	21.0	10.0	WATER BASED	03.01.1991
2588	1.60	24.0	10.0	WATER BASED	03.01.1991
2723	1.60	24.0	12.0	WATER BASED	03.01.1991
2795	1.61	48.0	23.0	WATER BASED	07.02.1991
2824	1.60	26.0	12.0	WATER BASED	03.01.1991
2826	1.60	28.0	11.0	WATER BASED	03.01.1991
2834	1.60	20.0	8.0	WATER BASED	03.01.1991
2866	1.60	25.0	11.0	WATER BASED	07.01.1991
2870	1.45	26.0	8.0	WATER BASED	09.01.1991
2870	1.45	26.0	8.0	WATER BASED	08.01.1991
2870	1.45	18.0	8.0	WATER BASED	11.01.1991
2964	1.45	26.0	10.0	WATER BASED	14.01.1991
3026	1.64	29.0	10.0	WATER BASED	23.01.1991
3049	1.40	31.0	12.0	WATER BASED	14.01.1991
3075	1.64	27.0	10.0	WATER BASED	14.01.1991
3084	1.67	29.0	9.0	WATER BASED	15.01.1991
3090	1.64	31.0	18.0	WATER BASED	25.01.1991
3134	1.64	27.0	8.0	WATER BASED	25.01.1991
3168	1.64	29.0	10.0	WATER BASED	16.01.1991
3195	1.64	28.0	10.0	WATER BASED	17.01.1991
3214	1.64	28.0	10.0	WATER BASED	18.01.1991
3214	1.64	30.0	10.0	WATER BASED	21.01.1991
3214	1.64	29.0	10.0	WATER BASED	21.01.1991
3214	1.64	29.0	9.0	WATER BASED	21.01.1991
3359	1.64	30.0	10.0	WATER BASED	29.01.1991

3383	1.64	30.0	8.0	WATER BASED	29.01.1991
3410	1.64	29.0	8.0	WATER BASED	29.01.1991
3437	1.64	30.0	11.0	WATER BASED	30.01.1991
3716	1.64	27.0	10.0	WATER BASED	30.01.1991
3725	1.64	26.0	10.0	WATER BASED	31.01.1991
3725	1.64	27.0	9.0	WATER BASED	01.02.1991
3725	1.64	26.0	9.0	WATER BASED	05.02.1991
3725	1.63	28.0	10.0	WATER BASED	05.02.1991
3725	1.63	29.0	10.0	WATER BASED	05.02.1991
3725	1.63	29.0	10.0	WATER BASED	06.02.1991
3725	1.63	28.0	10.0	WATER BASED	05.02.1991

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]
1699_Formation_pressure_(Formasjonstrykk)	pdf	0.27