



General information





Wellbore name	30/10-5
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	FRIGG
Discovery	25/1-1 Frigg
Well name	30/10-5
Seismic location	LINE S 72 SP.2010
Production licence	030
Drilling operator	Esso Exploration and Production Norway A/S
Drill permit	118-L
Drilling facility	NEPTUNE 7
Drilling days	250
Entered date	25.08.1974
Completed date	01.05.1975
Release date	01.05.1977
Publication date	24.09.2004
Purpose - planned	WILDCAT
Reentry	NO
Content	OIL/GAS
Discovery wellbore	NO
1st level with HC, age	EOCENE
1st level with HC, formation	FRIGG FM
Kelly bushing elevation [m]	24.0
Water depth [m]	106.0
Total depth (MD) [m RKB]	5186.0
Final vertical depth (TVD) [m RKB]	5186.0
Bottom hole temperature [°C]	160
Oldest penetrated age	LATE TRIASSIC
Oldest penetrated formation	HEGRE GP
Geodetic datum	ED50
NS degrees	60° 0' 25.88" N
EW degrees	2° 4' 7.17" E
NS UTM [m]	6652732.96
EW UTM [m]	448061.74
UTM zone	31
NPDID wellbore	395



Wellbore history

General

Well 30/10-5 was drilled on the northern tip of the Frigg Field. Its main purpose was to explore a deep-seated closure at Middle Jurassic level. This structure was targeted already in the 30/10-1 and 30/10-4 wells, but it was not reached because well 30/10-1 was terminated in the Late Cretaceous due to high-pressure problems and well 30/10-4 became junked in the Miocene due to an unrecoverable fish.

Operations and results

Exploration well 30/10-5 was spudded with the semi-submersible steel installation Neptune 7 on 25 August 1974 and drilled to TD at 5185 m in the Late Triassic Hegre Group. Reaming of the 12 1/4" hole to 17 1/2" for setting the 13 3/8" casing was delayed due to several twist-offs, junk in hole, pod trouble and weather. After setting the 13 3/8" casing drilling was resumed. At 2943 m, lost circulation was encountered, however; after setting a cement plug, drilling was continued without difficulties. Drilling from the sea floor to 747 m was with seawater and gel. Below 747 m a fresh-water Spersene XP 20 (lignosulphonate) mud system was used.

The Oligocene section consisted entirely of siltstone and clay. The Eocene, section contained a sandstone reservoir (Frigg Formation, first informally termed "Frigg Clastic Tongue") from 1964 m to 2150 m. Good gas shows were present from 1965 m to 1974 m and good oil shows from 1974 m to 1978 m. Below 1978 m the section was water wet. The Rogaland Group contained 159 m of potential sandstone reservoirs but no shows were encountered. The Danian consisted of silty limestone and dark grey shale. The Late Cretaceous consisted primarily of interbeds of tight micritic limestone, marl and shale. Numerous gas shows were noted in limestone stringers in the uppermost part of this section. The limestone section between 2917 m and 2943 m was sandy and contained some gas. A second zone between 3628 m and 3534 m also contained some gas. Log analysis indicated that this zone had an average porosity of 17.8 percent and water saturation of 58.3 percent. The Early Cretaceous was primarily a shale. The Middle Jurassic Brent Group had sands present from 4583 m to 4654 m, 4692 m to 4761 m, and 4793 m to 4806 m. The porosity ranged from 19 to 22 per cent. The Early Jurassic consisted of shale and sandstone stringers. The Triassic consisted of shale and thin limestone stringers. The only oil shows encountered in 30/10-5 were in the Eocene Frigg Formation and the Middle Jurassic Brent Group. The latter had a slight fluorescence and cut in the upper 9 m.

The well had an extensive sidewall-coring programme, recovering 232 sidewall cores in 12 runs from 874 m to 5176 m. One conventional core was cut from 4590.0 m to 4599.1 m in Brent sand with coaly layers. No fluid samples were taken on wire line. The well was permanently abandoned on 1 May 1975 as an oil and gas appraisal of the Frigg Discovery.

Testing

One drill stem test was made. The 9 5/8 inch casing was perforated from 3638 m to 3644 m in the Late Cretaceous. With the packer set at 3635 m the tool was open for 3 minutes, and then closed for 30 minutes for initial build up, then open for 3 hours. During the 3 hours the well flowed 3 1/4 barrels, insufficient for identification of reservoir fluid. Upon completion of flowing the well was shut in for 6 hours and 10 minutes for final pressure build up. A maximum reservoir pressure could not be determined, but the results indicated high pressure and low permeability. Two pressurized bottom hole samples were taken during the test. Both turned out to contain mud and gas, and one of them also contained some water.

**Cuttings at the Norwegian Offshore Directorate**

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
770.00	5185.00

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	15059.0	15089.0	[ft]

Total core sample length [m]	9.1
Cores available for sampling?	YES

Palynological slides at the Norwegian Offshore Directorate

Sample depth	Depth unit	Sample type	Laboratory
780.0	[m]	DC	
810.0	[m]	DC	
840.0	[m]	DC	
890.0	[m]	DC	
925.0	[m]	DC	
960.0	[m]	DC	
990.0	[m]	DC	
1020.0	[m]	DC	
1050.0	[m]	DC	
1080.0	[m]	DC	
1110.0	[m]	DC	
1140.0	[m]	DC	
1170.0	[m]	DC	
1200.0	[m]	DC	
1230.0	[m]	DC	
1260.0	[m]	DC	
1290.0	[m]	DC	
1320.0	[m]	DC	
1350.0	[m]	DC	



1380.0 [m]	DC	
1410.0 [m]	DC	
1440.0 [m]	DC	
1470.0 [m]	DC	
1510.0 [m]	DC	
1540.0 [m]	DC	
1570.0 [m]	DC	
1600.0 [m]	DC	
1630.0 [m]	DC	
1660.0 [m]	DC	
1690.0 [m]	DC	
1720.0 [m]	DC	
1750.0 [m]	DC	
1780.0 [m]	DC	
1810.0 [m]	DC	
1840.0 [m]	DC	
1870.0 [m]	DC	
1900.0 [m]	DC	
1930.0 [m]	DC	
1960.0 [m]	DC	
1990.0 [m]	DC	
2020.0 [m]	DC	
2050.0 [m]	DC	
2080.0 [m]	DC	
2110.0 [m]	DC	
2140.0 [m]	DC	
2170.0 [m]	DC	
2200.0 [m]	DC	
2230.0 [m]	DC	
2260.0 [m]	DC	
2295.0 [m]	DC	
2325.0 [m]	DC	
2355.0 [m]	DC	
2385.0 [m]	DC	
2415.0 [m]	DC	
2445.0 [m]	DC	
2475.0 [m]	DC	
2505.0 [m]	DC	
2535.0 [m]	DC	
2565.0 [m]	DC	



2595.0 [m]	DC	
2625.0 [m]	DC	
2655.0 [m]	DC	
2685.0 [m]	DC	
2715.0 [m]	DC	
2722.0 [m]	SWC	
2754.0 [m]	SWC	
2770.0 [m]	SWC	
2835.0 [m]	SWC	
2895.0 [m]	SWC	
2914.0 [m]	SWC	
2955.0 [m]	SWC	
2980.0 [m]	SWC	
3020.0 [m]	SWC	
3050.0 [m]	SWC	
3070.0 [m]	SWC	
3127.0 [m]	SWC	
3206.0 [m]	SWC	
3249.0 [m]	SWC	
3276.0 [m]	SWC	
3324.0 [m]	SWC	
3376.0 [m]	SWC	
3426.0 [m]	SWC	
3469.0 [m]	SWC	
3500.0 [m]	DC	
3518.0 [m]	SWC	
3574.0 [m]	SWC	
3629.0 [m]	SWC	
3640.0 [m]	SWC	
3727.0 [m]	SWC	
3750.0 [m]	DC	
3785.0 [m]	DC	
3800.0 [m]	DC	
3800.0 [m]	DC	
3810.0 [m]	DC	
3822.0 [m]	DC	
3842.0 [m]	DC	
3860.0 [m]	DC	
3885.0 [m]	DC	
3940.0 [m]	DC	



3965.0	[m]	DC	
3995.0	[m]	DC	
4035.0	[m]	DC	
4070.0	[m]	DC	
4100.0	[m]	DC	
4128.0	[m]	DC	
4152.0	[m]	DC	
4176.0	[m]	DC	

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
129	NORDLAND GP
453	UTSIRA FM
658	HORDALAND GP
658	SKADE FM
743	NO FORMAL NAME
1965	FRIGG FM
2075	ROGALAND GP
2075	BALDER FM
2100	INTRA BALDER FM SS
2150	BALDER FM
2182	SELE FM
2214	HERMOD FM
2262	SELE FM
2310	HERMOD FM
2371	SELE FM
2447	LISTA FM
2625	VÅLE FM
2641	SHETLAND GP
2641	EKOFISK FM
2683	JORSALFARE FM
2829	KYRRE FM
3630	TRYGGVASON FM
3782	BLODØKS FM
3805	SVARTE FM
3972	CROMER KNOLL GP
3972	RØDBY FM
4046	SOLA FM



4121	ÅSGARD FM
4162	VIKING GP
4162	DRAUPNE FM
4187	HEATHER FM
4583	BRENT GP
4860	DUNLIN GP
4860	DRAKE FM
4967	COOK FM
5010	AMUNDSEN FM
5049	STATFJORD GP
5127	HEGRE GP

Composite logs

Document name	Document format	Document size [MB]
395	pdf	0.60

Geochemical information

Document name	Document format	Document size [MB]
395 1 Northern North Sea basin An organic geochemical source rock study	pdf	13.06
395 2 Geochemical study of the Mesozoic series in well 30 10 5	pdf	0.89
395 3 Organic matter diagenesis in 30 10 5	pdf	0.12
395 4	pdf	0.24
395 5	pdf	0.24

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

Document name	Document format	Document size [MB]
395 01 WDSS General Information	pdf	0.26

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





Document name	Document format	Document size [MB]
395 1 Completion Report	pdf	2.64
395 2 Completion log	pdf	2.89

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3638	3644	0.0

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

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					

Logs

Log type	Log top depth [m]	Log bottom depth [m]
BHC S GR-C	731	5181
CBL	3658	3599
CNL	731	5181
DIP	731	3797
DIP	5056	5182
IES	731	5916
TEMP	2487	3074
TEMP	3639	4338
VELOCITY	735	5181

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	162.0	36	162.0	0.00	LOT
SURF.COND.	20	732.0	26	758.0	0.00	LOT





INTERM.	13 3/8	2699.0	17 1/2	2712.0	0.00	LOT
INTERM.	9 5/8	3779.0	12 1/4	3802.0	0.00	LOT
LINER	7	5186.0	8 1/2	5186.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
222	1.07		22.0	seawater	
733	1.07		26.0	seawater	
1226	1.20		14.0	seawater	
1729	1.24	75.0	18.0	water	
2072	1.23	45.0	10.0	water	
2697	1.24	43.0	12.0	water	
3112	1.65	47.0	16.0	water	
4399	1.97	45.0	13.0	water	
4636	2.04	50.0	14.0	water	
5184	2.07	65.0	26.0	water	