General information

Wellbore name	2/5-2
Type	EXPLORATION
Purpose	APPRAISAL
Status	P&A
Factmaps in new window	link to map
Main area	NORTH SEA
Field	TOR
Discovery	2/5-1 Tor
Well name	2/5-2
Seismic location	
Production licence	006
Drilling operator	Amoco Norway Oil Company
Drill permit	51-L
Drilling facility	MÆRSK EXPLORER
Drilling days	96
Entered date	15.01.1971
Completed date	20.04.1971
Release date	20.04.1973
Publication date	02.04.2007
Purpose - planned	APPRAISAL
Reentry	NO
Content	OIL
Discovery wellbore	NO
1st level with HC, age	PALEOCENE
1st level with HC, formation	EKOFISK FM
Kelly bushing elevation [m]	35.0
Water depth [m]	66.0
Total depth (MD) [m RKB]	3597.0
Maximum inclination [°]	1
Bottom hole temperature [°C]	120
Oldest penetrated age	LATE CRETACEOUS
Oldest penetrated formation	TOR FM
Geodetic datum	ED50
NS degrees	56° 38' 41.6'' N
EW degrees	3° 22' 20.6'' E
NS UTM [m]	6278059.65
EW UTM [m]	522837.92
UTM zone	31
NPDID wellbore	188

Wellbore history

General

Well 2/5-2 was drilled as an appraisal well on the 2/5-1 Tor Discovery in the southern Norwegian North Sea. The objective was to evaluate the eastern part of the structure.

Operations and results

Appraisal well 2/5-2 was spudded with the jack-up installation M ærsk Explorer on 15 January 1971 and drilled to TD at 3597 m in the Late Cretaceous Tor Formation. The well was drilled water based, but with diesel addition below 1830 m.

The well encountered top Paleocene (Balder Formation at 2978 m, top Danian chalk (Ekofisk Formation) at 3118 m, and top Late Cretaceous chalk (Tor Formation) at 3360 m. Commercial quantities of hydrocarbons were encountered in the Ekofisk Formation where a total of approximately 57 m net pay out of a gross section of 244 m was found. This was a significant reduction from the 89 m net pay in the 2/5-1 discovery well. Furthermore, the water saturation in Ekofisk was higher in 2/5-2 compared to 2/5-1 (41% and 22%, respectively).

Five conventional cores were cut in the intervals 3120 - 3188 m and 3235 - 3311 m in the Ekofisk Formation. No wire line fluid samples were taken.

The well was permanently abandoned on 20 April 1971 as a an oil appraisal.

Testing

Six drill stem tests were carried out: DST 1 in Late Cretaceous chalk (Tor Formation), DST 2 in the Late Cretaceous/ Danian boundary, and DST 3 - 6 in Danian chalk (Ekofisk Formation). The following results are after acidization:

DST 1 in the interval 3511 to 3513 m flowed minor quantities of slightly oil-cut mud.

DST 2 at 3350 - 3361 m flowed 165 Sm3, 34 m3 water, and 39077 Sm3 gas /day on 64/64" + 32/64" choke. The oil gravity was 39 deg API and the GOR was 237 Sm3/Sm3.

DST 3 at 3299 - 3314 m flowed 629 Sm3 oil and 159900 Sm3 gas /day on a 23/64" choke. The oil gravity was 40.5 deg API and the GOR was 254 Sm3/Sm3. Maximum bottom hole temperature recorded in the test was 134 deg C.

DST 4 at 3165 - 3183 m flowed initially 362 Sm3 and 6400 Sm3 gas /day, declining to 4.6 Sm3 oil and 1010 Sm3 gas /day.

DST 5 at 3162 - 3179 m produced a total accumulated of 15 Sm3 oil and 36 Sm3 water in a 7.5 hours test.

DST 6 at 3150 - 3188 m produced sluggishly a total accumulated of 2.4 Sm3 oil and 3.5 Sm3 water in 8 hours test.

Cuttings at the Norwegian Offshore Directorate

Cutting sample, top depth [m]	Cutting samples, bottom depth [m]
137.16	3596.64

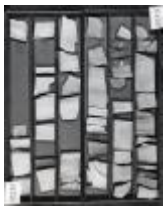
Cuttings available for sampling?	YES

Cores at the Norwegian Offshore Directorate

Core sample number	Core sample - top depth	Core sample - bottom depth	Core sample depth - uom
1	10235.0	10244.0	[ft]
2	10295.0	10338.0	[ft]
3	10413.0	10458.0	[ft]
4	10614.0	10669.0	[ft]
5	10841.0	10865.0	[ft]

Total core sample length [m]	53.6
Cores available for sampling?	YES

Core photos

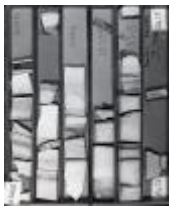

10235-10253ft


10253-10271ft


10271-10289ft


10289-10307ft


10307-10321ft


10321-10415ft


10415-10423ft


10415-10432ft


10249-10458ft


10432-10449ft


10614-10630ft


10630-10647ft


10647-10664ft


10664-10850ft


10850-10865ft

Lithostratigraphy

Top depth [mMD RKB]	Lithostrat. unit
101	NORDLAND GP
1712	HORDALAND GP
2978	ROGALAND GP
2978	BALDER FM
2996	SELE FM
3005	LISTA FM
3102	VÅLE FM
3118	SHETLAND GP
3118	EKOFISK FM
3360	TOR FM

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

Document name	Document format	Document size [MB]
188_01_WDSS_General_Information	pdf	0.17

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

Document name	Document format	Document size [MB]
188_01_2_5_2_Completionr_Report	pdf	16.39
188_01_2_5_2_Completion_log	pdf	2.06
188_04_2_5_2_Core_Analysis_Report	pdf	1.43

Drill stem tests (DST)

Test number	From depth MD [m]	To depth MD [m]	Choke size [mm]
1.0	3511	3514	0.0
2.0	3350	3361	0.0
3.0	3300	3315	0.0
4.0	3166	3183	0.0
5.0	3166	3183	0.0
6.0	3150	3188	0.0

Test number	Final shut-in pressure [MPa]	Final flow pressure [MPa]	Bottom hole pressure [MPa]	Downhole temperature [°C]
1.0				
2.0				
3.0				
4.0				
5.0				
6.0				

Test number	Oil [Sm3/day]	Gas [Sm3/day]	Oil density [g/cm3]	Gas grav. rel.air	GOR [m3/m3]
1.0					
2.0	165	39643			
3.0	377	96276			
4.0	362				
5.0					
6.0					

Logs

Log type	Log top depth [m]	Log bottom depth [m]
AMPL	3104	3596
BHC GR	400	3596
CBL	1372	3571
CCL	3021	3226
DLL	3104	3422
FDC GR	1589	3426
GR	67	400
GRN	3110	3570
HDT	1589	3426
IES	400	3599
ML MLL-C	3104	3426
PROX ML	3104	3426
SNP GR	3104	3599
VELOCITY	400	3598

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	134.0	36	137.0	0.00	LOT
INTERM.	20	400.0	26	400.0	0.00	LOT
INTERM.	13 3/8	1598.0	17 1/2	1600.0	0.00	LOT
INTERM.	9 5/8	3104.0	12 1/4	3109.0	0.00	LOT
PROD.	7	3595.0	8 1/2	3598.0	0.00	LOT

Drilling mud

Depth MD [m]	Mud weight [g/cm3]	Visc. [mPa.s]	Yield point [Pa]	Mud type	Date measured
137	1.07	70.0		seawater	
365	1.14	40.0		seawater	
1706	1.49	43.0		lignosul	
3322	1.61	45.0		lignosul	

Thin sections at the Norwegian Offshore Directorate

Depth	Unit
10862.00	[ft]