

WDSS Report

Date: 17/04/98

PB/SKR

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Well no:	Operator:
2/04-17	PHILLIPS

Well

Coordinates :	56° 41' 02.60" N 03° 13' 45.20" E	UTM coord. :	6282380.93 N 514043.23 E
License no :	18	Permit no :	689
Rig :	MÆRSK GUARDIAN	Rig type :	JACK-UP
Contractor :	MÆRSK DRILLING		
Bottom hole temp:	181 °C	Elev. KB :	43 M
Spud. date :	91.07.21	Water depth :	68 M
Compl. date :	92.02.29	Total depth :	5258 M
Spud. class :	WILDCAT	Form. at TD :	
Compl. class :	SUSPENDED. GAS/COND	Prod.form. :	JURASSIC
Seisloca :	PC 88-0614, SP. 160		

Licenseses

- 7.594000 ELF PETROLEUM NORGE AS
- .456000 ELF REP NORGE A/S
- .399000 ELF REX NORGE AS
- 30.000000 FINA PRODUCTION LICENCES AS
- 6.700000 NORSK HYDRO PRODUKSJON AS
- .304000 NORMINOL AS
- 36.960000 PHILLIPS PETROLEUM COMPANY NORWAY
- 1.000000 DEN NORSKE STATS OLJESELSKAP A.S
- 3.547000 TOTAL NORGE AS
- 13.040000 NORSK AGIP AS

Casing and Leak-off Tests

Type	Casing diam	Depth below KB	Hole diam.	Hole depth below KB	Lot mud eqv. g/cm3
CONDUCTOR	30	204.0	36	205.0	
INTERM.	20	459.0	30	460.0	1.62
INTERM.	13 3/8	2133.0	17 1/2	2135.0	1.96
INTERM.	9 5/8	4146.8	12 1/4	4148.0	2.17
LINER	7	5021.0	8 1/2	5021.0	FIT=2.16

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Conventional Cores

Core no.	Intervals cored meters	Recovery m	%
1	4338.8 - 4356.5	17.7	100.0

Mud

Depth	Mud weight	Visc.	Mud type
167.6	1.80	14.0	WATER BASED
192.0	1.03		WATER BASED
206.7	1.03		WATER BASED
466.3	1.14		WATER BASED
483.4	1.14	13.0	OIL BASED
902.5	1.19	25.0	OIL BASED
1304.8	1.26	23.0	OIL BASED
1591.1	1.44	29.0	OIL BASED
1638.6	1.56	31.0	OIL BASED
1795.3	1.58	47.0	OIL BASED
1885.8	1.62	50.0	OIL BASED
1935.5	1.80	14.0	WATER BASED
1969.3	1.50	36.0	OIL BASED
1995.5	1.62	35.0	OIL BASED
2080.9	1.56	36.0	OIL BASED
2133.6	2.12	23.0	WATER BASED
2145.8	1.63	19.0	WATER BASED
2295.1	2.12	32.0	WATER BASED
2317.7	1.68	26.0	OIL BASED
2377.4	1.80	20.0	WATER BASED
2529.8	2.12	32.0	WATER BASED
2560.3	1.70	36.0	WATER BASED
2613.7	1.70	20.0	WATER BASED
2848.1	1.70	24.0	WATER BASED
2966.6	1.71	22.0	WATER BASED
3038.9	1.73	19.0	WATER BASED
3172.1	1.73	28.0	WATER BASED
3269.0	1.74	16.0	WATER BASED
3330.2	1.74	27.0	WATER BASED
3384.2	1.74	20.0	WATER BASED
3555.5	1.75	25.0	WATER BASED
3723.1	1.77	25.0	WATER BASED
3767.0	2.12	31.0	WATER BASED
3851.5	2.12	31.0	WATER BASED

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3888.6	1.77	21.0	WATER BASED
3970.0	1.77	21.0	WATER BASED
3987.7	1.77	21.0	WATER BASED
4056.6	1.77	14.0	WATER BASED
4151.4	1.77	19.0	WATER BASED
4159.3	2.04	22.0	OIL BASED
4200.1	2.04	27.0	OIL BASED
4239.5	2.12	33.0	WATER BASED
4244.9	2.04	28.0	OIL BASED
4250.4	2.12	31.0	WATER BASED
4289.4	2.06	33.0	OIL BASED
4307.1	2.12	37.0	WATER BASED
4310.2	2.12	33.0	WATER BASED
4315.1	2.12	35.0	WATER BASED
4320.5	2.12	32.0	WATER BASED
4322.1	2.12	30.0	WATER BASED
4336.4	2.06	30.0	OIL BASED
4338.8	2.09	33.0	OIL BASED
4352.5	2.12	36.0	WATER BASED
4355.9	2.12	31.0	WATER BASED
4357.1	2.09	37.0	OIL BASED
4402.2	2.10	26.0	WATER BASED
4421.4	2.10	33.0	OIL BASED
4428.7	2.10	50.0	OIL BASED
4429.0	2.10	38.0	OIL BASED
4432.4	2.11	37.0	OIL BASED
4432.4	2.10	39.0	OIL BASED
4435.4	2.14	32.0	WATER BASED
4439.4	2.12	38.0	WATER BASED
4440.3	2.10	42.0	OIL BASED
4448.3	2.10	43.0	OIL BASED
4461.1	2.10	38.0	OIL BASED
4479.6	2.10	48.0	OIL BASED
4494.9	2.10	36.0	OIL BASED
4501.9	2.11	36.0	OIL BASED
4504.0	2.11	39.0	OIL BASED
4512.0	2.10	44.0	OIL BASED
4521.4	2.06	47.0	WATER BASED
4526.0	2.11	45.0	OIL BASED
4546.4	2.10	47.0	OIL BASED
4559.2	2.10	32.0	OIL BASED
4566.2	2.11	25.0	OIL BASED
4604.0	2.11	28.0	OIL BASED
4622.6	2.10	58.0	OIL BASED
4666.5	2.10	52.0	OIL BASED
4677.5	2.11	31.0	OIL BASED
4689.0	2.10	36.0	OIL BASED
4716.8	2.10	37.0	OIL BASED

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4725.0	2.11	31.0	OIL BASED
4802.7	2.11	46.0	OIL BASED
4922.5	2.11	48.0	OIL BASED
4962.1	2.06	43.0	WATER BASED
5022.2	2.11	32.0	WATER BASED
5025.2	2.10	40.0	WATER BASED
5069.7	1.98	36.0	WATER BASED
5106.3	1.98	39.0	WATER BASED
5114.5	1.98	51.0	WATER BASED
5134.7	1.98	39.0	WATER BASED
5178.6	1.98	43.0	WATER BASED
5221.5	1.98	38.0	WATER BASED
5258.4	1.98	36.0	WATER BASED

Drill Stem Test (intervals and pressures)

Test no.	Test interval meter	Choke size	Pressure (psi) WHP	BTHP	FFP
2.0	4341.0 - 4387.6	15.9	5921		

Drill Stem Test (recovery)

Test no.	Oil Sm ³ /d	Gas Sm ³ /d	Oil grav. g/cm ³	Gas grav. rel. air	GOR m ³ /m ³
2.0	774	849620	0.799	0.735	1097

Drill Bit Cuttings and Wet Samples

Sample type	Interval below KB	Number of samples
WET SAMPLES	475.5 - 5257	480

Shallow Gas

Interval below KB	Remarks

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Available Logs

Log type	Intervals logged feet	1/200	1/500
ARRAY SONIC	14200.0 - 16450.0		
ARRAY SONIC SLOWNESS	14200.0 - 16470.0		
BHC AMS GR	6766.0 - 13628.0		
CBL VDL CCL GR	9840.0 - 13586.0		
CBL VDL GR CCL	16487.0 - 16293.0		
CDM AP/SHDT MSD	9947.0 - 13643.0		
CST SP	16638.0 - 16906.0		
DLL MSFL AMS GR	1508.0 - 7034.0		
DLL MSFL BHC AMS GR	6766.0 - 15350.0		
DLL MSFL BHC GR	16490.0 - 17243.0		
DLL MSFL NGS AMS	13610.0 - 16485.0		
FMS AMS GR	9950.0 - 13640.0		
FMS GR	13610.0 - 15485.0		
LDL CNL AMS GR	13610.0 - 16498.0		
LDL CNL NGS GR	16490.0 - 17257.0		
MERGED MSD AND FMS I	9948.0 - 15500.0		
MSCT GR	10246.0 - 12901.0		
MSD	13610.0 - 17180.0		
MWD	678.0 - 14235.0		
NGL RATIOS	13610.0 - 16448.0		
NGT PLAYBACK	16490.0 - 17245.0		
RFT AMS GR	10239.0 - 15132.0		
RFT GR	14835.0 - 15384.0		
SDT (ARRAY) NGT	13610.0 - 16484.0		
SHDT GR	16490.0 - 17181.0		

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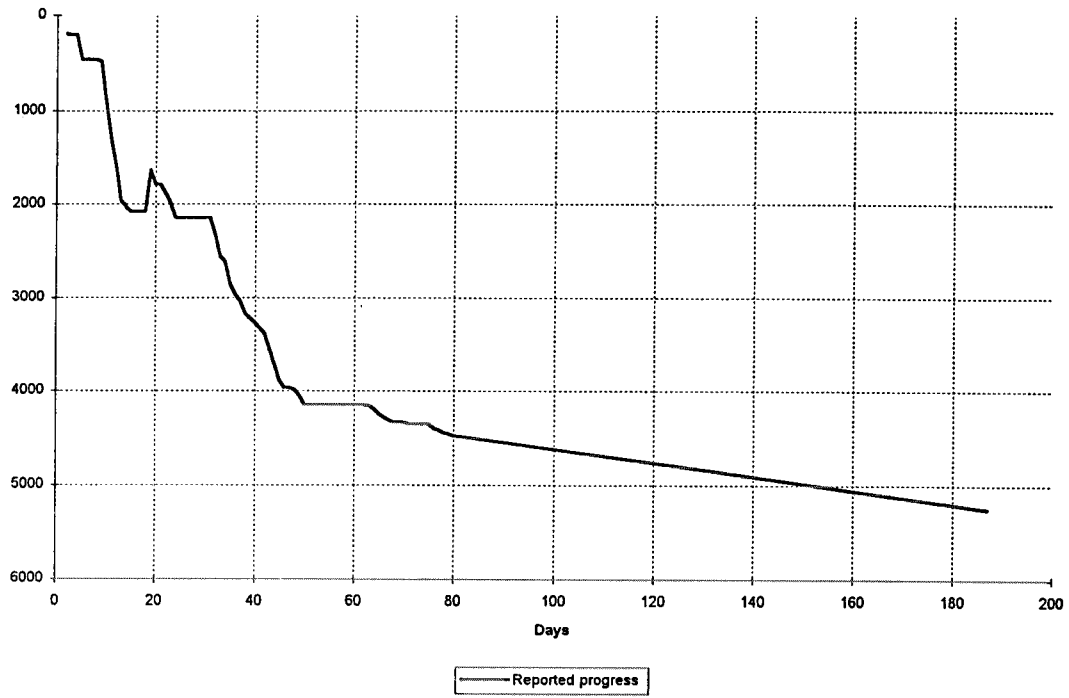
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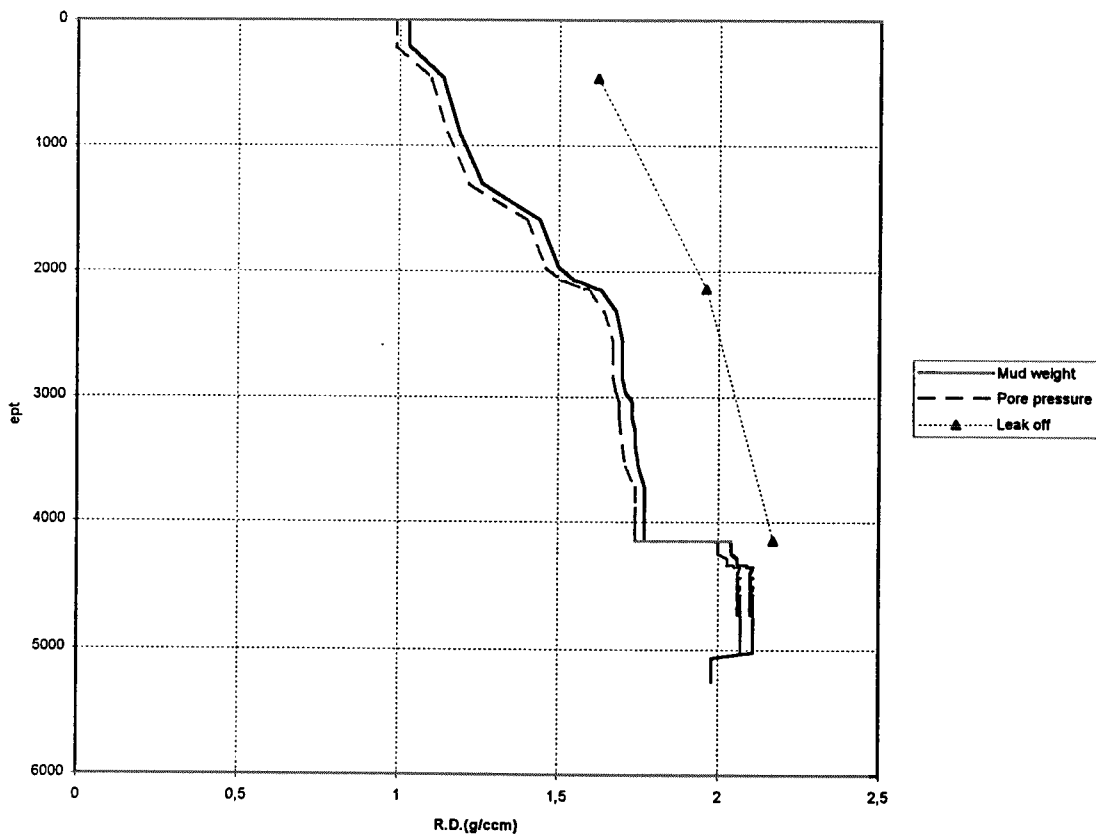
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SYNTHETIC SEISMOGRAM				
VELOCITY				
VSP	9400.0 - 17250.0			
VSP-COMPOSITE				
VSP-ZERO OFFSET				
ZERO PHASE				
ZERO PHASE FREQUENCY				

Depth v.s. time plot for well: 2/4-17



Composite plot for well: 2/4-17



Main operations for well: 2/4-17

Main operation: COMPLETION

Sub operation:	Minutes:	Hours:	% of total:
BOP/WELLHEAD EQ	1590	26,5	67,09
OTHER	30	0,5	1,27
PERFORATE	30	0,5	1,27
TEST SCSSSV	630	10,5	26,58
WIRE LINE	90	1,5	3,80
Total	2370	39,5	100,00

Main operation: DRILLING

Sub operation:	Minutes:	Hours:	% of total:
BOP ACTIVITIES	5170	86,2	2,92
BOP/WELLHEAD EQ	3440	57,3	1,94
CASING	40310	671,8	22,76
CIRC/COND	10670	177,8	6,03
DRILL	79550	1325,8	44,92
OTHER	3560	59,3	2,01
PRESS DETECTION	2990	49,8	1,69
REAM	2730	45,5	1,54
SURVEY	1280	21,3	0,72
TRIP	25940	432,3	14,65
UNDERREAM	1440	24,0	0,81
Total	177080	2951,3	100,00

Main operation: FORMATION EVAL

Sub operation:	Minutes:	Hours:	% of total:
CIRC SAMPLES	180	3,0	0,34
CIRC/COND	2770	46,2	5,27
CORE	840	14,0	1,60
DST	4140	69,0	7,88
LOG	14300	238,3	27,21
OTHER	6450	107,5	12,27
PROD TEST	4800	80,0	9,13
RFT/FIT	830	13,8	1,58
TRIP	17220	287,0	32,77
WAIT	1020	17,0	1,94
Total	52550	875,8	100,00

Main operation: INTERRUPTION

Sub operation:	Minutes:	Hours:	% of total:
FISH	9300	155,0	27,68
LOST CIRC	4410	73,5	13,13
MAINTAIN/REP	9860	164,3	29,35
OTHER	3200	53,3	9,52
SIDETRACK	1440	24,0	4,29
WAIT	2860	47,7	8,51
WELL CONTROL	2530	42,2	7,53
Total	33600	560,0	100,00

Main operation: MOVING

Sub operation:	Minutes:	Hours:	% of total:
ANCHOR	1890	31,5	72,69
JACK	240	4,0	9,23
POSITION	240	4,0	9,23
SKID	230	3,8	8,85
Total	2600	43,3	100,00

Main operation: PLUG & ABANDON

Sub operation:	Minutes:	Hours:	% of total:
CEMENT PLUG	1170	19,5	2,71
CIRC/COND	4380	73,0	10,14
CUT	1530	25,5	3,54
EQUIP RECOVERY	3300	55,0	7,64
MECHANICAL PLUG	300	5,0	0,69
OTHER	11910	198,5	27,57
PERFORATE	240	4,0	0,56
TRIP	19650	327,5	45,49

Main operations for well: 2/4-17

Main operation: PLUG & ABANDON

Sub operation:	Minutes:	Hours:	% of total:
WAIT	720	12,0	1,67
Total	43200	720,0	100,00

Main operation: WORKOVER

Sub operation:	Minutes:	Hours:	% of total:
WIRE LINE	120	2,0	100,00
Total	120	2,0	100,00

Total time used: Hours

Well History 2/4-17

General:

The Exploration well 2/4-17 was drilled on the NW Tor prospect situated in the Production License 018, and had the objective of testing the Upper Jurassic and Lower Permian section contained in a rotated fault block located at a terrace Northwest of the Tor Field.

Block 2/4 lies within the Central Trough, which is part of the failed Mesozoic North Sea, rift system. The Central Trough comprises a complex series of narrow discontinuous high and lows with a NW-SE trend. The most important basins are Feda Graben, Breiflab Basin and Søgne Basin. From the Feda Graben/Breiflab Basin up to the Sørvestlandet High several rotated fault blocks form platforms and small highs, named Cod Terrace, Hitra High and Steinbit Terrace. The NW Tor Prospect is situated on a Terrace between Hitra High and the Feda Graben.

Operation:

The well was spudded using the "Mærsk Guardian" jack-up on July 20, 1991 and was completed February 29th 1992 at depth of 5258m RKB in rocks of Early Permian age (Rotliegendes Group).

Drilling went without problems to 2081m where the well was sidetracked because the string became stuck while taking a survey. Drilling continued down to 9 7/8" casing point in the Hod Formation. Thin hydrocarbon bearing intervals were present in the Hod Formation.

Drilling continued and at 4340m a major hydrocarbon bearing sand of upper Jurassic Ula Formation was encountered. One 60" core was cut in the lower Ula Formation, which consisted of major shallow Marine sandstone, with Marine silty sandstone in the base grading into thin lagoonal sand/silt/mudstone at the top. Drilling continued and massive Sandstone 508m thick was encountered at 4474m RKB, before TD was reached at 5258m in a mixed volcanics of a possible Lower Permian age. A technical sidetrack was taken at 4724m due to a twist-off of the bottom hole assembly.

The well was temporarily plugged and abandoned, suitable for later re-entry and a possible tieback to production facilities.

Testing:

Two DST tests were performed to investigate the separate sand units. One in the Permian sandstone-unit (4525,2-4637,5m) which produced 890 Sm³ water/day, and one in the Upper Jurassic Lower Ula Formation (4341,0-4387,5m) which produced 774 Sm³ oil/day and 849510 Sm³ gas/day on a 15,875mm choke with a GOR of 1097 Sm³/Sm³

Geological Tops.

Well: 2/4-17.

	Depth m (RKB).
Nordland Group	110.0
Hordaland Group	1774.0
Rogaland Group	3050.0
Balder Fm	3050.0
Sele Fm	3056.0
Lista Fm	3096.0
Vidar Fm	3118.0
Lista Fm	3165.0
Våle Fm	3182.0
Shetland Group	3192.0
Ekofisk Fm Eqv.	3192.0
Tor Fm	3334.0
Hod Fm	3729.0
Cromer Knoll Group	4183.0
Tyne Group	4189.0
Farsund Fm	4189.0
Haugesund Fm	4283.0
Vestland Group	4340.0
Ula Fm	4340.0
Bryne Fm	4389.0
Zechstein Group	4486.0
Rotliegendes Group	4520.0
T.D.	5258.0