

WDSS Report

Date: 03/01/97

PB/SKR

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Well no:	Operator:
<b>2/07-26 S</b>	<b>PHILLIPS</b>

**Well**

Coordinates :	56° 19' 59.60" N 03° 14' 53.73" E	UTM coord. :	6243333.52 N 515350.58 E
License no :	18	Permit no :	674
Rig :	WEST DELTA	Rig type :	SEMI-SUB.
Contractor :	A/S SMEDVIG DRILLING		
Bottom hole temp:	158 °C	Elev. KB :	29 M
Spud. date :	91.03.30	Water depth :	70.8 M
Compl. date :	91.09.13	Total depth :	4849 M
Spud. class :	APPRAISAL	Form. at TD :	DEVONIAN
Compl. class :	RE-CLASS. TO PROD.	Prod.form. :	
Seisloca :	PC-88 LINE 369, COLUMN 1061		

**Licensees**

- 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 A/S
- 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	158.0	36	160.0	
INTERM.	20	571.0	26	573.0	
INTERM.	13 3/8	2130.0	17 1/2	2133.0	1.91

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INTERM.	9 5/8	4117.0	12 1/4	4120.0	2.16
INTERM.	6 5/8	4847.0	8 1/8	4848.0	

**Conventional Cores**

Core no.	Intervals cored meters	Recovery m	%
1	3200.4 - 3214.1	13.7	100.0
2	4298.5 - 4314.1	15.6	100.0
3	4394.3 - 4405.0	11.7	100.0
4	4406.5 - 4413.8	7.3	100.0
5	4413.8 - 4433.6	19.8	100.0
6	4437.3 - 4444.5	7.2	100.0
7	4445.8 - 4447.6	1.8	100.0
8	4449.5 - 4460.9	11.4	100.0
9	4461.0 - 4467.7	6.7	100.0
10	4468.4 - 4478.0	9.6	100.0
11	4479.3 - 4494.0	14.7	100.0
12	4494.5 - 4513.2	18.7	100.0
13	4513.2 - 4525.7	12.5	100.0
14	4527.5 - 4542.6	15.1	100.0
15	4542.6 - 4552.5	9.9	100.0
16	4667.0 - 4695.0	27.0	100.0
17	4695.1 - 4722.8	27.7	100.0
18	4829.3 - 4848.6	19.3	100.0

**Mud**

Depth	Mud weight	Visc.	Mud type
180.4	1.05		WATER BASED
575.5	1.32	39.0	OIL BASED
575.5	1.20		WATER BASED
1178.1	1.32	38.0	OIL BASED
1627.9	1.56	42.0	OIL BASED
2142.7	1.70	51.0	OIL BASED
2142.7	1.68	28.0	OIL BASED
2724.3	1.70	19.0	OIL BASED
3778.0	1.73	26.0	OIL BASED
3929.8	1.75	25.0	OIL BASED
3959.4	1.76	24.0	OIL BASED
4073.3	1.75	23.0	OIL BASED

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4113.3	1.94	35.0	WATER BASED
4125.5	1.76	26.0	OIL BASED
4145.6	2.00	52.0	WATER BASED
4255.9	2.03	49.0	WATER BASED
4279.4	2.04	46.0	OIL BASED
4313.5	2.03	44.0	WATER BASED
4315.4	2.04	45.0	WATER BASED
4330.9	2.05	45.0	WATER BASED
4394.3	2.06	49.0	WATER BASED
4406.5	2.05	55.0	WATER BASED
4523.2	2.06	54.0	WATER BASED
4554.0	2.05	52.0	WATER BASED
4848.5	2.04	42.0	OIL BASED

### Drill Stem Test (intervals and pressures)

Test no.	Test interval meter	Choke size	Pressure (psi) WHP	BTHP	FFP
1.0	4309.0 - 4538.0	6.3			
2.0	4605.0 - 4696.0	6.3			

### Drill Stem Test (recovery)

Test no.	Oil Sm <sup>3</sup> /d	Gas Sm <sup>3</sup> /d	Oil grav. g/cm <sup>3</sup>	Gas grav. rel. air	GOR m <sup>3</sup> /m <sup>3</sup>
1.0	53	10109	0.819		191
2.0	223	62141	0.819		279

### Drill Bit Cuttings and Wet Samples

Sample type	Interval below KB	Number of samples
WET SAMPLES	579 - 4547.6	420

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Available Logs

Log type	Intervals logged	1/200	1/500
BHC GR	6999.0 - 13464.0		
CBL VDL CCL GR	1500.0 - 6950.0		
CBL VDL CCL GR	13225.0 - 15825.0		
CDM AP	13519.0 - 15936.0		
CDM AP/SHDT MSD	10202.0 - 13395.0		
CST GR	13600.0 - 15844.0		
DLL MSFL BHC GR	6999.0 - 13464.0		
DRILLING PARAMETER	98.0 - 4848.0		
FMS FRACTURE	10202.0 - 10800.0		
FMS FRACTURE	11200.0 - 11600.0		
FMS FRACTURE	12800.0 - 13395.0		
FMS GR	10210.0 - 13396.0		
LDL CNL GR	6999.0 - 13464.0		
LDL CNL NGL AMS	13864.0 - 15442.0		
MUDLOG	98.0 - 4848.0		
MWD MD+TVD	900.0 - 14417.0		
NGL AMS	13864.0 - 15913.0		
PRESSURE PARAMETER	98.0 - 4848.0		
RFT AMS GR	13696.0 - 15470.0		
RFT GR	10283.0 - 11583.0		
SYNTHETIC SEISMOGRAM			
WSC	7400.0 - 15750.0		
VSP	7400.0 - 15750.0		
ZERO PHASE			

**Main operations for well: 2/7-26 S****Main operation: COMPLETION**

Sub operation:	Minutes:	Hours:	% of total:
BOP/WELLHEAD EQ	2050	34,2	94,47
COMPL STRING	120	2,0	5,53
<b>Total</b>	<b>2170</b>	<b>36,2</b>	<b>100,00</b>

**Main operation: DRILLING**

Sub operation:	Minutes:	Hours:	% of total:
BOP ACTIVITIES	4570	76,2	3,93
BOP/WELLHEAD EQ	1500	25,0	1,29
CASING	18800	313,3	16,16
CIRC/COND	5570	92,8	4,79
DRILL	53500	891,7	46,00
OTHER	3640	60,7	3,13
PRESS DETECTION	710	11,8	0,61
REAM	1500	25,0	1,29
SURVEY	1270	21,2	1,09
TRIP	25250	420,8	21,71
<b>Total</b>	<b>116310</b>	<b>1938,5</b>	<b>100,00</b>

**Main operation: FORMATION EVAL**

Sub operation:	Minutes:	Hours:	% of total:
CIRC SAMPLES	370	6,2	0,57
CIRC/COND	790	13,2	1,22
CORE	9450	157,5	14,60
DST	13960	232,7	21,57
LOG	2990	49,8	4,62
OTHER	780	13,0	1,21
RFT/FIT	1620	27,0	2,50
TRIP	34760	579,3	53,71
<b>Total</b>	<b>64720</b>	<b>1078,7</b>	<b>100,00</b>

**Main operation: INTERRUPTION**

Sub operation:	Minutes:	Hours:	% of total:
FISH	22690	378,2	56,60
LOST CIRC	8100	135,0	20,20
MAINTAIN/REP	8700	145,0	21,70
OTHER	600	10,0	1,50
<b>Total</b>	<b>40090</b>	<b>668,2</b>	<b>100,00</b>

**Main operation: MOVING**

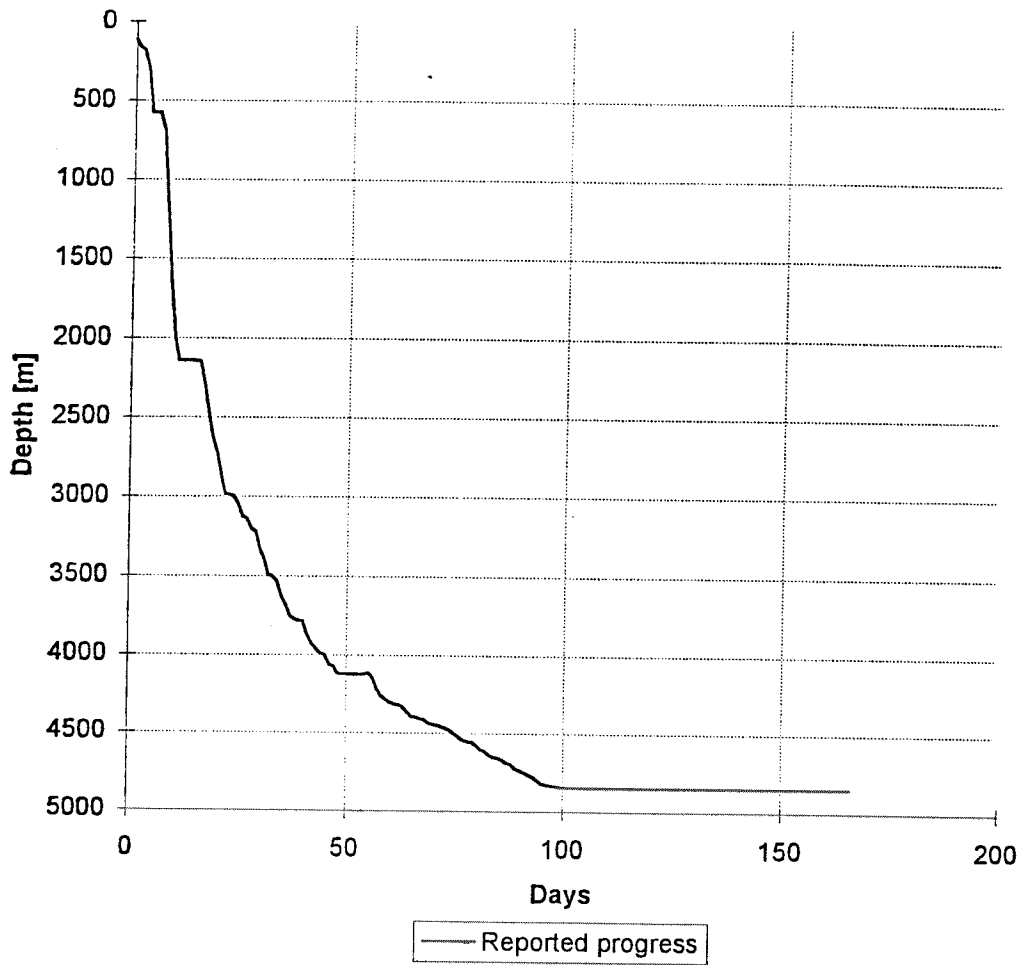
Sub operation:	Minutes:	Hours:	% of total:
POSITION	70	1,2	100,00
<b>Total</b>	<b>70</b>	<b>1,2</b>	<b>100,00</b>

**Main operation: PLUG & ABANDON**

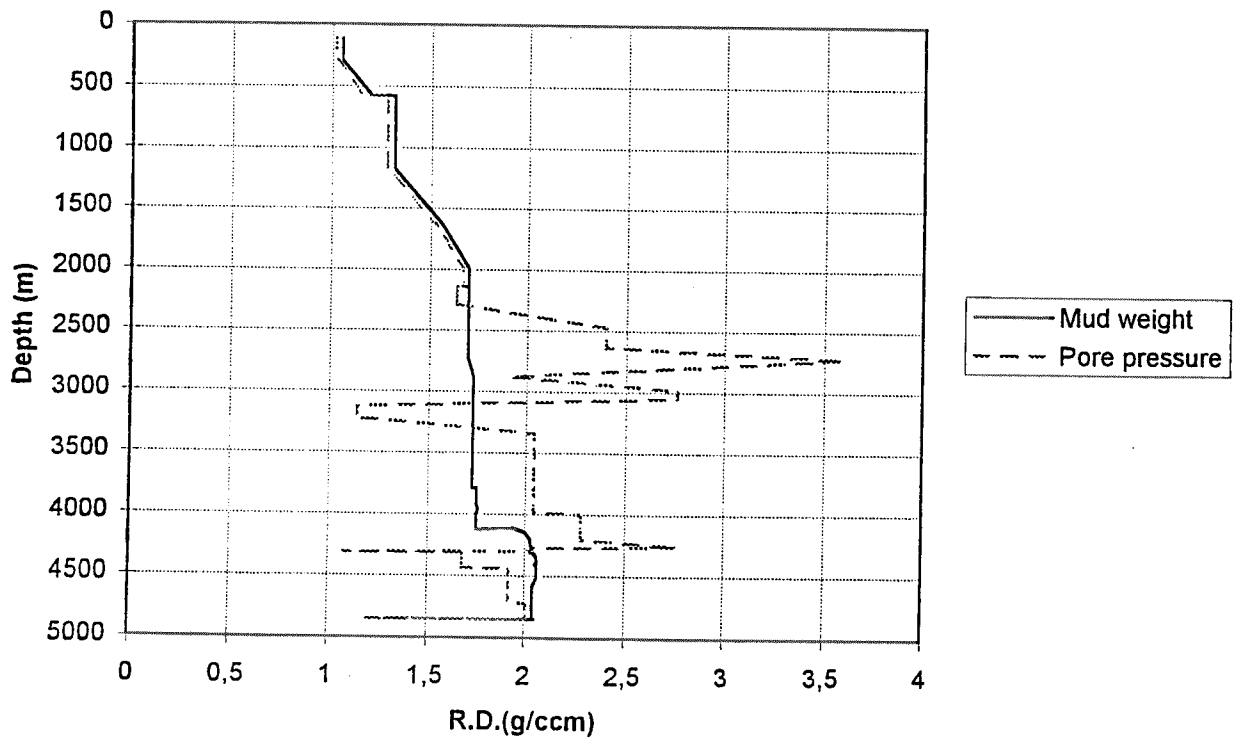
Sub operation:	Minutes:	Hours:	% of total:
CEMENT PLUG	2040	34,0	53,83
CIRC/COND	910	15,2	24,01
EQUIP RECOVERY	120	2,0	3,17
MECHANICAL PLUG	540	9,0	14,25
OTHER	60	1,0	1,58
WAIT	120	2,0	3,17
<b>Total</b>	<b>3790</b>	<b>63,2</b>	<b>100,00</b>

Total time used:  Hours

Depth vs time for well: 2/7-26 S



Composite plot for well: 2/7-26 S



# Well History 2/7-26 S

## General:

Well 2/7-26 S was designed to test the Pre-Jurassic sandstones which have shown commercial quantities of hydrocarbons in the 2/7-20 and 2/7-21 S wells on the Embla Structure. The 2/7-26 S well was drilled deviated from a template located over the 2/7-20 well to encounter the reservoir in the western fault block of the Embla structure. The target location was 300 m to the south of the 2/7-9 well at Base Cretaceous level. The objectives of the well at this location were:

- 1) to confirm the presence of hydrocarbon bearing sandstones in the western fault block of the structure.
- 2) to establish the productivity of this reservoir through a program of well testing.
- 3) to provide definitive analysis of the reservoir quality through a comprehensive coring program.
- 4) to define the stratigraphy of the western fault block by drilling to a total depth within which both the upper and lower sandstones will be encountered.

The reservoir section was expected to be highly fractured. Shallow gas was expected since gas has been encountered in all wells drilled from the template location over the 2/7-20 well. The well was expected to be highly overpressured.

## Operations:

Appraisal well 2/7-26 S was spudded by the semi-submersible rig West Delta 30 March 1991 and completed at a depth of 4849 m RKB in rocks of Pre-Jurassic age, possible Devonian rocks. Minor shallow gas was detected in sandy zones with an increase in background gas from 4 to 64 units. Apart from some failures when logging and some stuck pipe experiences, drilling proceeded without any significant problems. One core was cut in the Late Tor Formation chalk, and one core was cut in the Mandal Formation and into the upper part of the Farsund Formation. A total of 15 cores were cut in the reservoir zone, and one core was cut in the rhyolitic rocks of possible Devonian age. Top reservoir came in 58.2 m MD higher than prognosed, and both the upper as well as the lower sandstone units were present in the well as predicted. A total of 90 sidewall cores were attempted and 28 were recovered. The well was temporary plugged and abandoned as a possible later producer.

## Testing:

Two DST tests were performed in this well.

# Geological Tops.

## Well:.2/7-26S

	Depth m (RKB).
Nordland Group	99.3
Hordaland Group	1606.2
Rogaland Group	2965.5
Balder Fm	2965.5
Sele Fm	2983.5
Lista Fm	3037.8
Våle Fm	3090.5
Shetland Group	3117.7
Ekofisk Fm	3117.7
Tor Fm	3199.6
Hod Fm	3320.6
Blodoks Fm	3980.5
Hidra Fm	3988.5
Cromer Knoll Group	4057.0
Rodby Fm	4057.0
Sola Fm	4141.5
Tuxen Fm	4163.0
Åsgard Fm	4193.0
Tyne Group	4299.0
Mandal Fm	4299.0
Farsund Fm	4302.0
Undefined Fm (Upper Sand Unit 1)	4384.3
Undefined (Upper Sand Unit 2)	4476.5
Undefined (Middle Mudstone)	4538.3
Undefined (Lower Sand Unit 1)	4597.0
Undefined (Lower Sand Unit 2)	4651.3
Devonian Mudstone	4722.3
Undefined.(Basal Rhyolite)	4826.0
T.D.	4849.0