

WDSS Report

Date: 30/09/96

PB/SKR

Page: 1 / 4

Well no:	Operator:
<b>6406/11-01 S</b>	<b>SAGA</b>

**Well**

Coordinates :	64° 02' 46.02" N 06° 36' 14.16" E	UTM coord. :	7104528.42 N 383011.46 E
License no :	156	Permit no :	651
Rig :	TREASURE SAGA	Rig type :	SEMI-SUB.
Contractor :	TRANSOCEAN AS	Elev. KB :	25 M
Bottom hole temp:	131 °C	Water depth :	315 M
Spud. date :	90.10.19	Total depth :	4185 M
Compl. date :	91.02.22	Form. at TD :	L.TRIASSIC
Spud. class :	WILDCAT	Prod.form. :	
Compl. class :	P&A. SHOWS		
Seisloca :	DG M2-3D-90, ROW 243, COL. 920		

**Licenseses**

- 20.000000 MOBIL DEVELOPMENT NORWAY AS
- 20.000000 SAGA PETROLEUM A.S.
- 50.000000 DEN NORSKE STATS OLJESELSKAP A.S
- 10.000000 AMERADA HESS NORGE 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	449.0	36	454.0	
INTERM.	20	1202.0	26	1218.0	
INTERM.	13 3/8	2151.0	17 1/2	2165.0	1.72
INTERM.	9 5/8	3275.0	12 1/4	3395.0	1.92
OPEN HOLE	7	4185.0	8 1/2	4185.0	1.98

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PB/SKR

Page: 2 / 4

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### Conventional Cores

Core no.	Intervals cored meters	Recovery m	%
1	3604.0 - 3605.5	1.5	100.0
2	3615.0 - 3623.8	8.8	100.0
3	3625.0 - 3637.7	12.7	100.0
4	3642.0 - 3649.2	7.2	100.0
5	3653.0 - 3664.0	11.0	100.0
6	3665.0 - 3683.8	18.8	100.0
7	3684.0 - 3692.2	8.2	100.0
8	3694.0 - 3712.0	18.0	100.0
9	3712.0 - 3721.0	9.0	100.0
10	3725.0 - 3728.5	3.5	100.0
11	3733.0 - 3747.0	14.0	100.0

### Mud

Depth	Mud weight	Visc.	Mud type
934.0	1.13	5.0	WATER BASED
1215.0	1.16	6.0	WATER BASED
1218.0	1.18	7.0	WATER BASED
1235.0	1.30	23.0	WATER BASED
1920.0	1.52	28.0	WATER BASED
2125.0	1.59	37.0	WATER BASED
2165.0	1.61	35.0	WATER BASED
2297.0	1.66	30.0	WATER BASED
2450.0	1.71	37.0	WATER BASED
2636.0	1.71	30.0	WATER BASED
2721.0	1.71	31.0	WATER BASED
2827.0	1.71	31.0	WATER BASED
2898.0	1.71	35.0	WATER BASED
2992.0	1.71	37.0	WATER BASED
3104.0	1.71	33.0	WATER BASED
3159.0	1.71	34.0	WATER BASED
3195.0	1.71	32.0	WATER BASED
3244.0	1.71	28.0	WATER BASED
3295.0	1.71	29.0	WATER BASED
3319.0	1.72	26.0	WATER BASED
3324.0	1.72	30.0	WATER BASED
3348.0	1.71	38.0	WATER BASED
3390.0	1.72	27.0	WATER BASED

Date: 30/09/96

<b>Well no:</b>	<b>Operator:</b>
<b>6406/11-01 S</b>	<b>SAGA</b>

3395.0	1.71	33.0	WATER BASED
3405.0	1.72	25.0	WATER BASED
3455.0	1.72	26.0	WATER BASED
3488.0	1.72	29.0	WATER BASED
3532.0	1.72	30.0	WATER BASED
3576.0	1.72	29.0	WATER BASED
3600.0	1.72	34.0	WATER BASED
3615.0	1.72	28.0	WATER BASED
3625.0	1.72	29.0	WATER BASED
3653.0	1.72	29.0	WATER BASED
3665.0	1.72	29.0	WATER BASED
3684.0	1.72	29.0	WATER BASED
3713.0	1.72	28.0	WATER BASED
3875.0	1.81	28.0	WATER BASED
3945.0	1.78	26.0	WATER BASED
3975.0	1.83	21.0	WATER BASED
4091.0	1.87	36.0	WATER BASED
4185.0	1.83	26.0	WATER BASED

**Drill Stem Test (intervals and pressures)**

Test no.	Test interval meter	Choke size	Pressure (psi) WHP	BTHP	FFP
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**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>
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**Drill Bit Cuttings and Wet Samples**

Sample type	Interval below KB	Number of samples
WET SAMPLES	440 - 4184	450
CUTTINGS	460 - 4185	330

WDSS Report

Date: 30/09/96

PB/SKR

Page: 4 / 4

Well no:	Operator:
6406/11-01 S	SAGA

Shallow Gas

Interval below KB	Remarks

Available Logs

Log type	Intervals logged	1/200	1/500	
AC CBL VDL GR	1050.0 - 4125.0			
CDL CN GR	3267.0 - 4184.0			
CDL CNL GR	3405.0 - 3921.0			
CDL GR	449.0 - 3394.0			
CDM AP/DIPLOG	3267.0 - 4173.0			
DIFL BHC AS GR	449.0 - 3394.0			
DIFL LS BHC AC GR	449.0 - 4181.0			
DLL MLL GR	3563.0 - 3923.0			
FMT	3600.0 - 3978.0			
MWD	445.0 - 1215.0			
MWD (MD)+(TVD)	1200.0 - 2100.0			
PRESSURE EVALUATION	300.0 - 4185.0			
SHDT/DIPLOG	3267.0 - 4173.0			
SYNTHETIC SEISMOGRAM				
TWO-WAY TRAVEL TIME				
WELL SITE LITHOLOGY	360.0 - 4185.0			
VELOCITY LOG	472.0 - 4160.0			
VSP				

**Main operations for well: 6406/11-1 S****Main operation: DRILLING**

Sub operation:	Minutes:	Hours:	% of total:
BOP ACTIVITIES	2250	37,5	3,32
BOP/WELLHEAD EQ	5040	84,0	7,43
CASING	9750	162,5	14,38
CIRC/COND	2730	45,5	4,03
DRILL	31950	532,5	47,12
OTHER	420	7,0	0,62
PRESS DETECTION	750	12,5	1,11
REAM	240	4,0	0,35
SURVEY	240	4,0	0,35
TRIP	12780	213,0	18,85
UNDERREAM	1650	27,5	2,43
<b>Total</b>	<b>67800</b>	<b>1130,0</b>	<b>100,00</b>

**Main operation: FORMATION EVAL**

Sub operation:	Minutes:	Hours:	% of total:
CIRC SAMPLES	420	7,0	0,96
CIRC/COND	1980	33,0	4,53
CORE	3450	57,5	7,89
DST	16260	271,0	37,17
LOG	7620	127,0	17,42
OTHER	30	0,5	0,07
RFT/FIT	3360	56,0	7,68
TRIP	10620	177,0	24,28
<b>Total</b>	<b>43740</b>	<b>729,0</b>	<b>100,00</b>

**Main operation: INTERRUPTION**

Sub operation:	Minutes:	Hours:	% of total:
FISH	20970	349,5	34,06
MAINTAIN/REP	21060	351,0	34,21
OTHER	1950	32,5	3,17
SIDETRACK	6870	114,5	11,16
WAIT	10710	178,5	17,40
<b>Total</b>	<b>61560</b>	<b>1026,0</b>	<b>100,00</b>

**Main operation: MOVING**

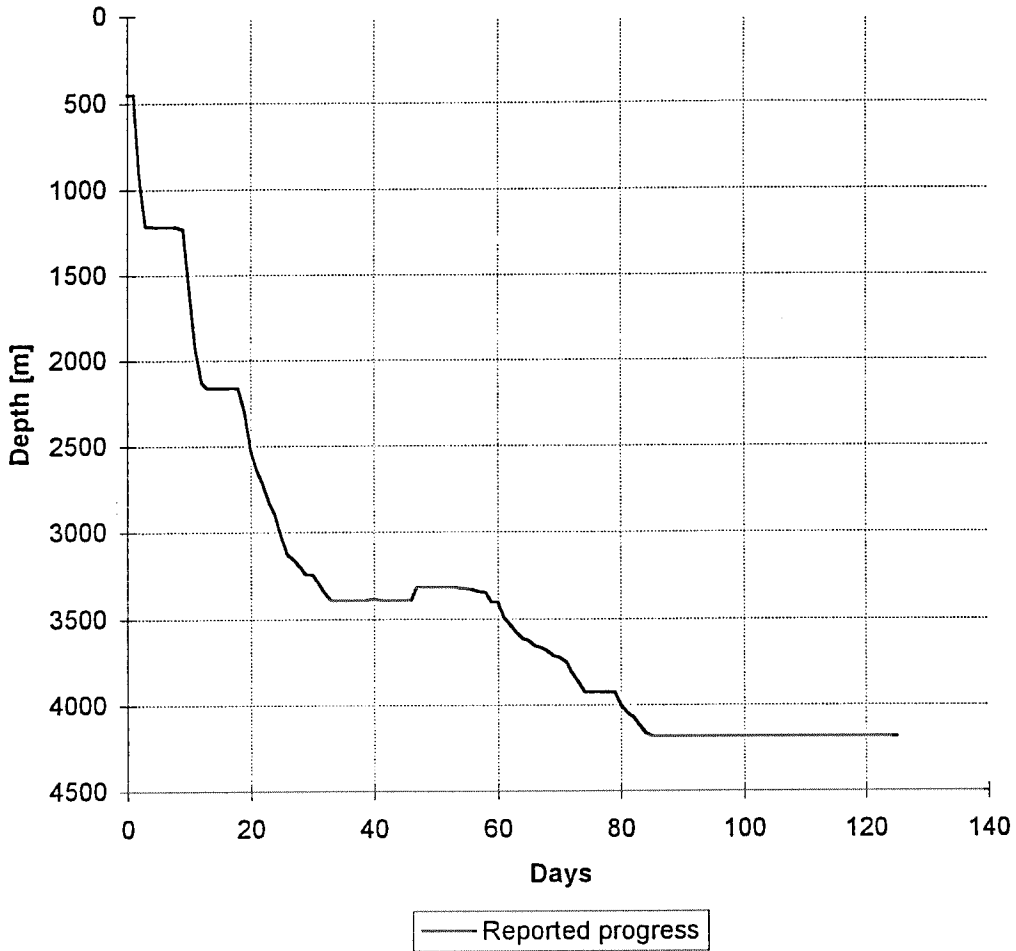
Sub operation:	Minutes:	Hours:	% of total:
ANCHOR	3030	50,5	48,56
TRANSIT	3210	53,5	51,44
<b>Total</b>	<b>6240</b>	<b>104,0</b>	<b>100,00</b>

**Main operation: PLUG & ABANDON**

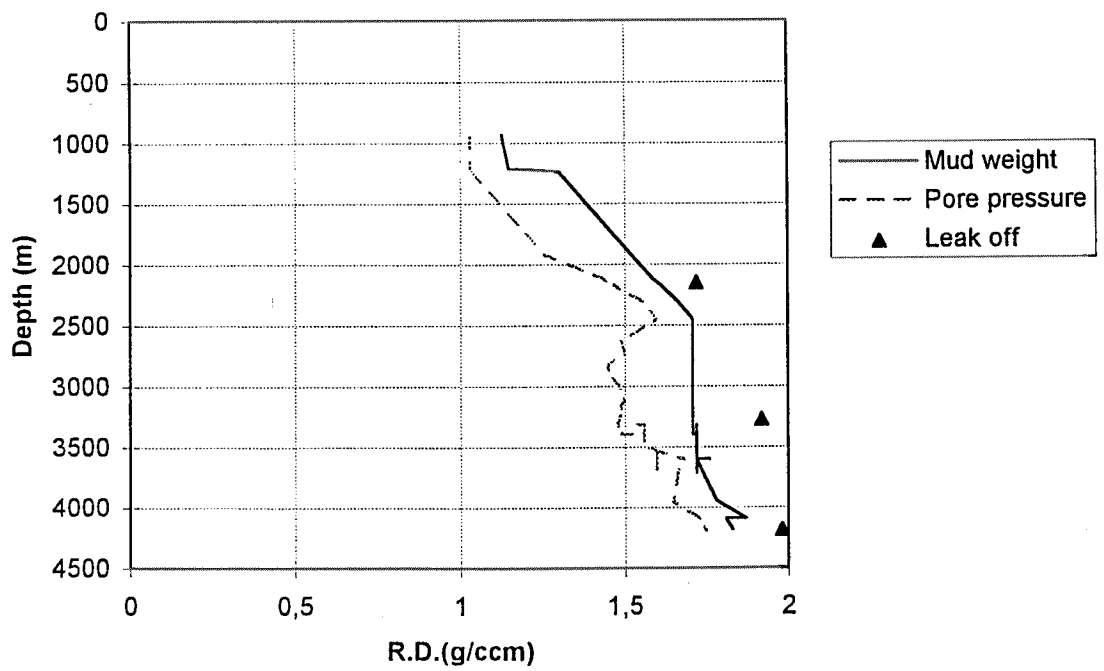
Sub operation:	Minutes:	Hours:	% of total:
CEMENT PLUG	540	9,0	15,38
CUT	180	3,0	5,13
EQUIP RECOVERY	1500	25,0	42,74
OTHER	30	0,5	0,85
TRIP	1260	21,0	35,90
<b>Total</b>	<b>3510</b>	<b>58,5</b>	<b>100,00</b>

**Total time used:**  Hours

Depth vs time for well: 6406/11-1 S



Composite plot for well: 6406/11-1 S



# Well History 6406/11-01 S

## General:

Well 6406/11-01 S was designed to drill the Middle Jurassic prospect in the southern part of block 6406/11. It was defined as truncational/fault seal trap where well 6406/11-01 S is located on a minor structural trap within the main prospect. The prospect is dependant on a fault seal to the east and south-east, seal against Base Cretaceous Unconformity to the west and south-west, and it is dip-limited northwards. The main objectives of the well were:

- 1) to test the hydrocarbon potential in the Early to Middle Jurassic Fangst Group.
- 2) to test the reservoir properties within the underlying Tilje Formation and the sequence in the uppermost Triassic.
- 3) to test a possible sand development in the Tertiary.
- 4) to test the probable source rock properties in the Early Jurassic Åre Formation.

Planned total depth was 4526 m RKB TVD beneath a seismic marker representing the Triassic Evaporite equivalent. The well was the first well on a new block and the pressure prognosis were uncertain, and the formation pressure were to be watched closely while drilling.

## Operations:

Wildcat well 6406/11-01 S was spudded 19 October 1990 by the semi-submersible rig Treasure Saga and completed 12 January 1991 at a total depth of 4185 m RKB MD within Triassic Red beds. To avoid shallow gas the well was spudded 260 m NNW of the planned target location. During drilling the Nordland Group, two shallow gas intervals were penetrated at 893-897.5 m RKB and 1148-1150 m RKB. To get back to vertical drilling the well was deviated from 1235-2165 m RKB MD. Only minor problems occurred while drilling down to the 12 1/4" section. After drilling the 12 1/4" hole down to 3395 m RKB, the VSP tool become stuck at 3383m RKB. A total of 5 days were spent recovering the wireline and miring the fish down. Only minor problems with tight spots occurred while drilling to TD. The Fangst Group comprised shales of the Not Formation before penetrating the reservoir sands of the Ile Formation at 3599 m RKB MD. The well drilled further through the Early Jurassic Båt Group, comprising the Ror, Tilje and Åre Formations before penetrating the Triassic Grey Beds at 4134 m RKB MD and Red Beds at 4149 m RKB MD. A total of 11 conventional cores were cut in the Ile and Ror Formations. A total of 113 sidewall cores were attempted, and 73 were recovered. The well was permanently plugged and abandoned as a minor oil discovery.

## Testing:

3 DST tests were performed. Test 1, performed in the intervals 4027-4049 m RKB and 4053-4060 m RKB (Åre Formation) yielded 2 Sm<sup>3</sup>/d of water. Test 3A and 3B within the Ile formation, yielded 19 Sm<sup>3</sup>/d oil in the interval 3709-3723 m RKB, and 610 Sm<sup>3</sup>/d water in the intervals 3692-3705 m RKB and 3709-3723 m RKB, respectively.

# Geological Tops.

## Well: 6406/11-1S.

	Depth m (RKB).
Nordland Group	341.0
Naust Fm	450.0
Kai Fm	1191.0
Hordaland Group	1397.0
Brygge Fm	1397.0
Rogaland Group	2143.0
Tare Fm	2143.0
Tang Fm	2190.0
Shetland Group	2335.0
Cromer Knoll Group	3205.0
Lange Fm	3205.0
Lyr Fm	3370.0
Viking Group	3419.0
Melke Fm	3419.0
Fangst Group	3522.0
Not Fm	3522.0
Ile Fm	3599.0
Båt Group	3722.0
Ror Fm	3722.0
Tofte Fm	3787.0
Ror Fm	3822.0
Tilje Fm	3871.0
Åre Fm	3985.0
Triassic	
Grey Beds	4134.0
Red Beds	4149.0
T.D.	4185.0