

Well no : 6406/03-02

Operator : STATOIL

Coordinates : 64 51 46.78 N  
06 49 51.87 EUTM coord. : 7195126 N  
397207 E

Licence no : 91

Permit no : 519

Rig : WEST VANGUARD

Rig type : SEMI-SUB.

Contractor : A/S SMEDVIK DRILLING CO.

Bottom hole temperature : deg.C

Elev. KB : 22 M

Spud. date : 86.06.28

Water depth : 300 M

Compl. date : 86.11.22

Total depth : 4527 M

Spud. class : WILDCAT

Form. at TD : L.TRIASSIC

Compl. class : P&amp;A. OIL/GAS DISC.

Prod. form : M.JURASSIC

Seisloca : 911430 X ST 8403 - 401

## LICENSEES

45.000000 MOBIL DEVELOPMENT NORWAY A.S.  
5.000000 SAGA PETROLEUM A.S.  
50.000000 DEN NORSKE STATS OLJESELSKAP A.S

## CASING AND LEAK-OFF TESTS

Type	Casing diam.	Depth below KB	Hole diam.	Hole depth below KB	Lot mud eqv. g/cm <sup>3</sup>
CONDUCTOR	30	433.0	36	436.0	.
SURF.COND.	20	951.0	26	965.0	1.60
INTERM.	13 3/8	2283.0	17 1/2	2301.0	1.85
INTERM.	9 5/8	3913.0	12 1/4	3930.0	1.93
LINER	7	4377.0	8 1/2	4380.0	2.07

## CONVENTIONAL CORES

Core no.	Intervals cored meters	Recovery		Series
		M	%	
1	3931.0 - 3933.9	2.9	72.5	
2	3935.0 - 3952.0	17.0	100.0	
3	3952.0 - 3965.0	13.0	100.0	
4	3965.0 - 3981.4	16.4	100.0	
5	3983.0 - 4001.0	18.0	100.0	
6	4001.0 - 4027.5	26.0	98.1	
7	4027.5 - 4048.0	20.5	100.0	
8	4048.0 - 4056.5	8.5	100.0	
9	4067.0 - 4094.0	27.0	100.0	
10	4094.0 - 4121.0	27.0	100.0	
11	4121.0 - 4149.0	28.0	100.0	
12	4282.0 - 4298.5	16.5	100.0	
13	4298.5 - 4308.5	10.0	100.0	
14	4308.5 - 4336.0	27.5	100.0	
15	4336.0 - 4340.9	4.9	100.0	
16	4345.5 - 4361.0	17.5	100.0	
17	4363.0 - 4376.0	12.3	84.8	

## MUD PROPERTIES

Depth below KB meter	Mud weigh g/cm3	Viscosity	Mud type
436.000	1.10	60.0	WATERBASED
677.000	1.12	57.0	WATERBASED
965.000	1.23	42.0	WATERBASED
1030.000	1.12	57.0	WATERBASED
1380.000	1.14	53.0	WATERBASED
1571.000	1.20	58.0	WATERBASED
1972.000	1.21	65.0	WATERBASED
2216.000	1.50	80.0	WATERBASED
2298.000	1.55	75.0	WATERBASED
2301.000	1.61	61.0	WATERBASED
3904.000	1.80	47.0	WATERBASED
3913.000	1.26	53.0	WATERBASED
3930.000	1.80	49.0	WATERBASED
3930.500	1.36	44.0	WATERBASED
3935.000	1.37	40.0	WATERBASED
3947.000	1.36	50.0	WATERBASED
3965.000	1.35	50.0	WATERBASED
3983.000	1.25	56.0	WATERBASED
4094.000	1.23	58.0	WATERBASED
4161.000	1.26	63.0	WATERBASED
4161.000	1.27	60.0	WATERBASED
4161.000	1.26	63.0	WATERBASED
4298.500	1.23	58.0	WATERBASED
4300.000	1.38	58.0	WATERBASED
4327.000	1.23	59.0	WATERBASED
4343.000	1.26	60.0	WATERBASED
4347.000	1.23	62.0	WATERBASED
4353.000	1.38	64.0	WATERBASED
4353.000	1.26	64.0	WATERBASED
4377.500	1.23	62.0	WATERBASED
4380.000	1.26	55.0	WATERBASED
4400.000	1.35	57.0	WATERBASED
4523.000	1.62	60.0	WATERBASED

## DRILL BIT CUTTINGS AND WET SAMPLES

SAMPLE TYPE	INTERVAL BELOW KB	NUMBER OF SAMPLES
Cutting	430-4512	750
Wet Samples	436-4512	650

## SHALLOW GAS

Interval below KB	REMARKS

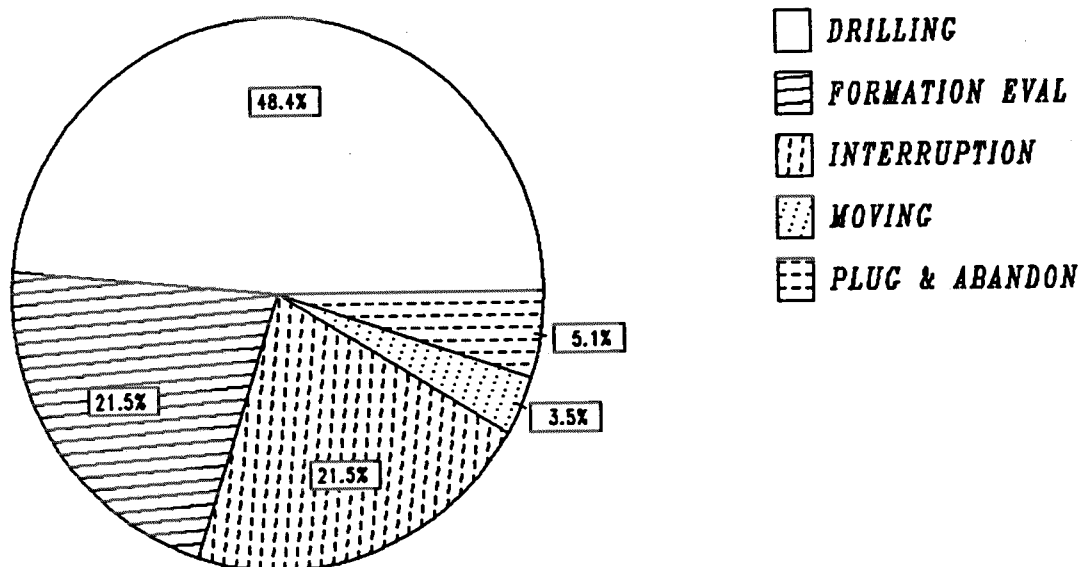
## AVAILABLE LOGS

LOG TYPE	INTERVALS	1/200	1/500	Div.

ISF LSS MSFL GR	433.000 - 4524.000	X	X
LDL CNL GR	3913.000 - 4382.000	X	X
DLL	3913.000 - 4378.000	X	X
SHDT GR	3913.000 - 4382.500	X	
CDM AP/SHDT MSD	3913.000 - 4382.000	X	
RFT	3942.000 - 4371.000	1:100	
HP PRETEST	3942.000 - 4371.000	1:100	
CBL VDL GR	320.000 - 2282.500	X	
CBL VDL GR CCL	3768.000 - 4381.000	X	
TEMPERATURE LOG	340.000 - 3875.000		
MUD	433.000 - 4523.000		X
VELOCITY	346.000 - 4525.110		X
(VSP,Rigshot,plot 1-5, 2200-4523 m		5 stk.)	
(VSP,Power spectrum display, 2200-4525 m		1 stk.)	
(Two-way travel time , 10cm/s		1 stk.)	
(Geogram, synthetic seismogram, 10cm/s		8 stk.)	
(Synthetic seismogram, 10cm/s		1 stk.)	

# DAILY DRILLING REPORT SYSTEM

Main operations for well : 6406/03 -02



Total : 3696.00 hours

Main operation	Minutes	Hours	% of total
DRILLING	107430	1790.50	48.44
FORMATION EVAL	47641	794.02	21.48
INTERRUPTION	47639	793.98	21.48
MOVING	7710	128.50	3.48
PLUG & ABANDON	11340	189.00	5.11

MAIN OPERATIONS FOR WELL : 6406 / 03 - 02

MAIN OPERATION : DRILLING

Sub operations	Minutes	Hrs	% of total
BOP ACTIVITIES	1950	32.50	1.82
BOP/WELLHEAD EQ	4530	75.50	4.22
CASING	16441	274.02	15.30
CIRC/COND	9570	159.50	8.91
DRILL	43380	723.00	40.38
HOLE OPEN	720	12.00	0.67
OTHER	120	2.00	0.11
PRESS DETECTION	90	1.50	0.08
REAM	1950	32.50	1.82
SURVEY	1920	32.00	1.79
TRIP	24270	404.50	22.59
UNDERREAM	2400	40.00	2.23
WAIT	89	1.48	0.08
<b>Total</b>	<b>107430</b>	<b>1790.50</b>	<b>100.00</b>

MAIN OPERATION : FORMATION EVAL

Sub operations	Minutes	Hrs	% of total
CIRC SAMPLES	720	12.00	1.51
CIRC/COND	2280	38.00	4.79
CORE	9210	153.50	19.33
DST	13470	224.50	28.27
LOG	7591	126.52	15.93
RFT/FIT	90	1.50	0.19
TRIP	14160	236.00	29.72
WAIT	120	2.00	0.25
<b>Total</b>	<b>47641</b>	<b>794.02</b>	<b>100.00</b>

MAIN OPERATION : INTERRUPTION

Sub operations	Minutes	Hrs	% of total
FISH	34440	574.00	72.29
MAINTAIN/REP	5909	98.48	12.40
OTHER	1380	23.00	2.90
WAIT	4410	73.50	9.26
WELL CONTROL	1500	25.00	3.15
<b>Total</b>	<b>47639</b>	<b>793.98</b>	<b>100.00</b>

MAIN OPERATION : MOVING

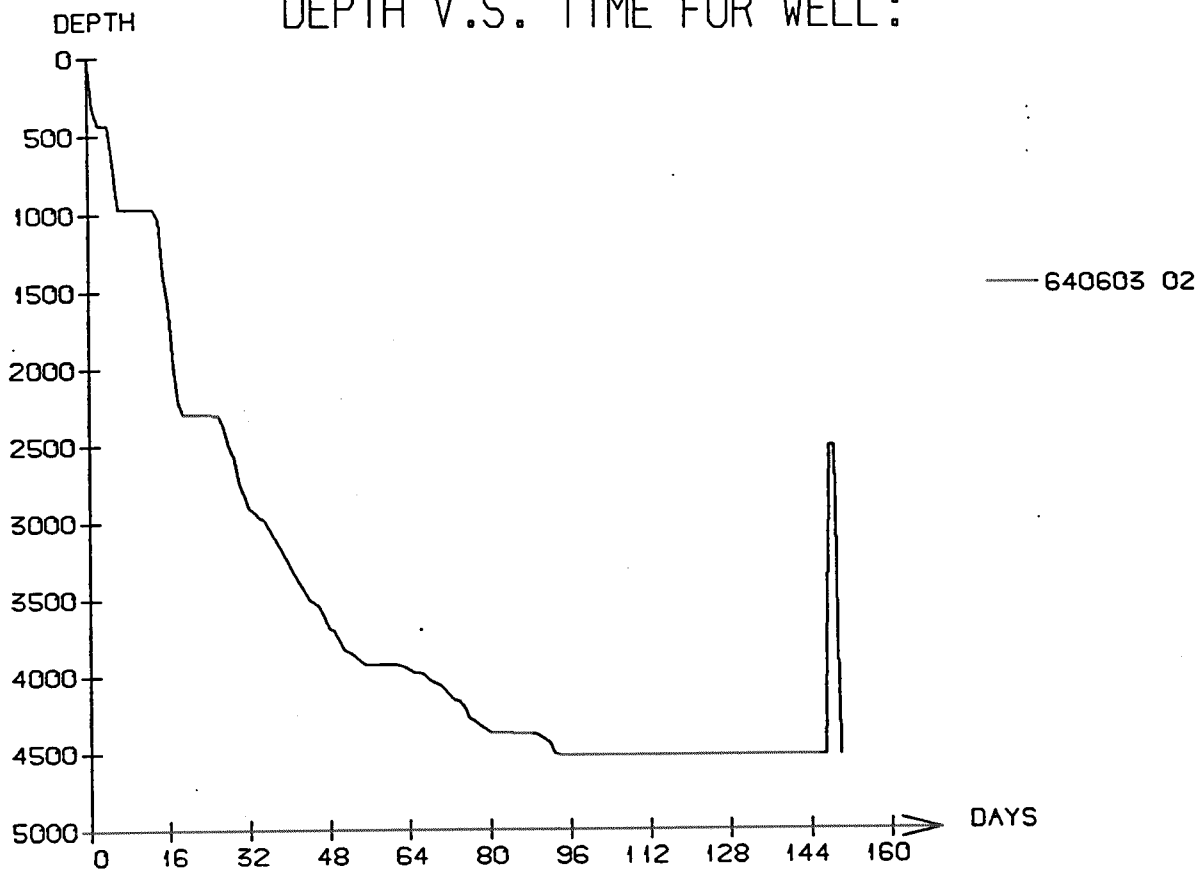
Sub operations	Minutes	Hrs	% of total
ANCHOR	1140	19.00	14.79
TRANSIT	6570	109.50	85.21
<b>Total</b>	<b>7710</b>	<b>128.50</b>	<b>100.00</b>

MAIN OPERATION : PLUG & ABANDON

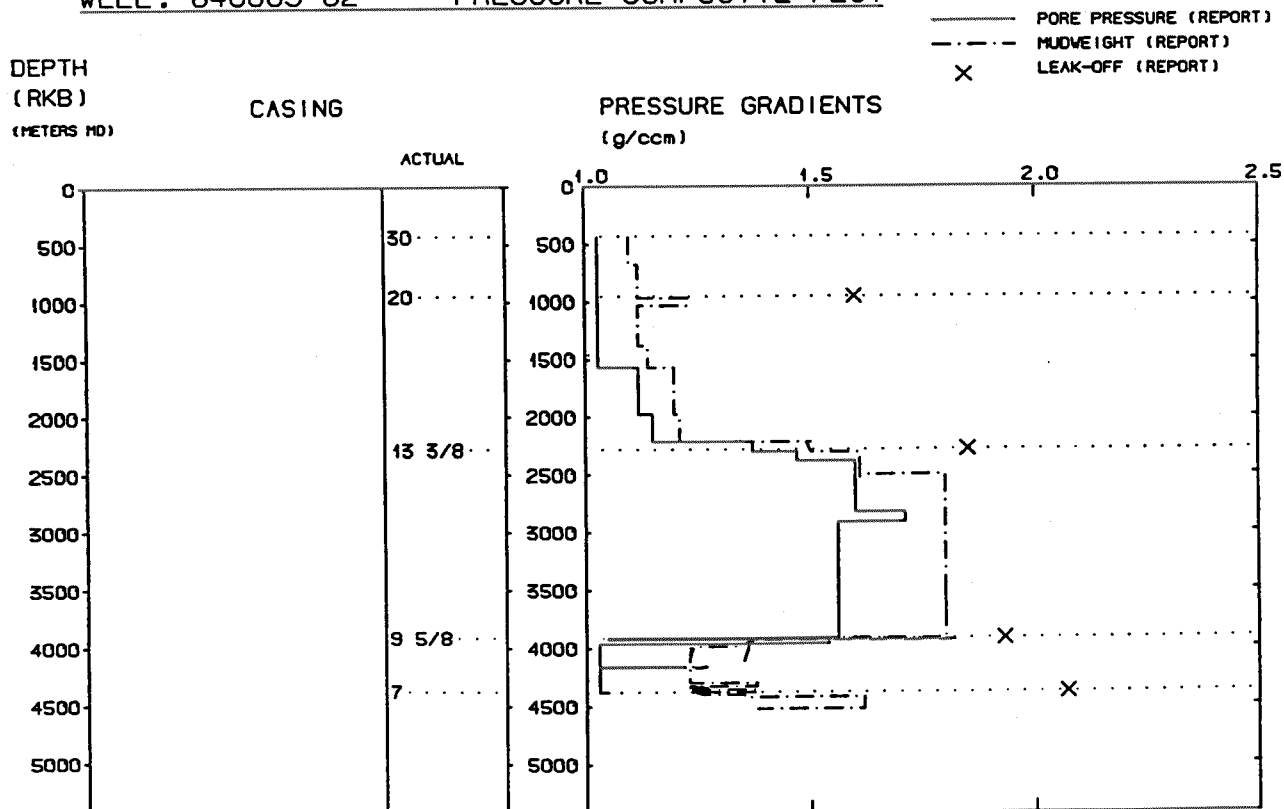
Sub operations	Minutes	Hrs	% of total
CEMENT PLUG	570	9.50	5.03
CIRC/COND	870	14.50	7.67
CUT	2010	33.50	17.72
EQUIP RECOVERY	1500	25.00	13.23
MECHANICAL PLUG	540	9.00	4.76
OTHER	60	1.00	0.53
PERFORATE	330	5.50	2.91
SQUEEZE	390	6.50	3.44
TRIP	4830	80.50	42.59
WAIT	240	4.00	2.12
<b>Total</b>	<b>11340</b>	<b>189.00</b>	<b>100.00</b>

Total time used 3696.00 hrs

# DEPTH V.S. TIME FOR WELL:



## WELL: 640603 02 PRESSURE COMPOSITE PLOT



## Well History 6406/3-2

### GENERAL:

Well 6406/3-2 was drilled on the Alpha structure on Haltenbanken as a commitment well. The main objective was to find hydrocarbon accumulations of significant amounts in the Middle Jurassic sandstone reservoir. Secondary objectives were hydrocarbon accumulations in the Early Jurassic sandstone, to verify the geophysical and structural interpretation and improve the geological, paleontological and geochemical understanding of the area. The prognosed depth was 4490 m.

### OPERATIONS:

Wildcat well 6406/3-2 was spudded 28 June 1986 by A/S Smedvig Drilling Co. semi-submersible rig West Vanguard and completed 22 November 1986 at a depth of 4523 m in Early Jurassic rocks. Drilling proceeded without significant problems down to 2100 m, where pore pressure increased rapidly. The pore pressure decreased in Cretaceous.

17 cores were cut in the well. One was cut in the interval 3931 - 3933.9 m, 3 in the interval 3935 - 3981 m, 4 between 3983 - 4056.5 m, 3 between 4067 - 4149 m, 4 in the interval 4282 - 4340.9 m, 1 between 4345.5 - 4361 m and 1 between 4363 - 4376 m. The top of the reservoir came in at 3930 m, 20 m above the prognosed depth.

RFT-data indicates that both Ile and Tilje Formations are impermeable. The logs indicate that the oil/water contact is at 4335 m.

The well was logged, plugged and abandoned as an oil and gas discovery.

### TESTING:

2 DST tests were performed in this well. DST 1 at 4302 - 4336 m, and DST 2 at 3937 - 3995 m.

# GEOLOGICAL TOPS

WELL: 6406/3-2

Depth m (RKB)

<i>Norland Group</i>	325
<i>Naust Fm.</i>	325
<i>Kai Fm.</i>	1496
<i>Hordaland Group</i>	1973
<i>Brygge Fm.</i>	1973
<i>Rogaland Group</i>	2312
<i>Tare Fm.</i>	2312
<i>Tang Fm.</i>	2383
<i>Shetland Group</i>	2476
<i>Cromer Knoll Group</i>	3122
<i>Viking Group</i>	3844
<i>Spekk Fm.</i>	3844
<i>Melke Fm.</i>	3870
<i>Fangst Group</i>	3933
<i>Garn Fm.</i>	3933
<i>Not Fm.</i>	4020
<i>Ile Fm.</i>	4072
<i>Båt Group</i>	4130.5
<i>Ror Fm.</i>	4130.5
<i>Tilje Fm.</i>	4288
<i>Åre Fm.</i>	4499
<i>T.D.</i>	4526