

Well no : 6406/03-04

Operator : STATOIL

Coordinates : 64 53 00.11 N
06 50 48.55 EUTM coord. : 7197370 N
398030 E

Licence no : 91

Permit no : 563

Rig : WEST DELTA

Rig type : SEMI-SUB.

Contractor : DYVI OFFSHORE A/S

Bottom hole temperature : deg.C

Elev. KB : 29 M

Spud. date : 87.09.25

Water depth : 295 M

Compl. date : 87.12.29

Total depth : 4414 M

Spud. class : APPRAISAL

Form. at TD : E.JURASSIC

Compl. class : P&A. DRY HOLE

Prod. form :

Seisloca : ST 8710 - 201 SP. 870

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 ³
CONDUCTOR	30	436.0	36	442.0	.
SURF.COND.	20	1157.0	26	1179.0	1.60
INTERM.	13 3/8	2648.0	17 1/2	2692.0	1.87
INTERM.	9 5/8	3970.0	12 1/4	3984.0	1.98
LINER	7	4409.0	8 1/2	4414.0	.

CONVENTIONAL CORES

Core no.	Intervals cored meters	Recovery		Series
		M	%	
1	4020.0 - 4048.0	28.0	100.0	
2	4048.0 - 4076.0	28.0	100.0	MIDDLE JURASSIC
3	4076.0 - 4094.0	18.0	100.0	MIDDLE JURASSIC
4	4094.0 - 4122.0	27.9	99.6	MIDDLE JURASSIC
5	4156.0 - 4185.0	28.3	97.6	MIDDLE JURASSIC
6	4185.0 - 4213.0	27.8	99.3	MIDDLE JURASSIC

MUD PROPERTIES

Depth below KB meter	Mud weight g/cm ³	Viscosity	Mud type
375.000	1.03	0.0	WATER BASED
442.000	1.05	105.0	WATER BASED
526.000	1.03	0.0	WATER BASED
586.000	1.06	4400.0	WATER BASED
1179.000	1.05	100.0	WATER BASED
1179.000	1.06	1500.0	WATER BASED

1179.000	1.05	1200.0	WATER BASED
1182.000	1.06	1500.0	WATER BASED
1442.000	1.12	1300.0	WATER BASED
1676.000	1.20	1400.0	WATER BASED
1945.000	1.50	1900.0	WATER BASED
2014.000	1.24	16.0	WATER BASED
2387.000	1.69	6300.0	WATER BASED
2450.000	1.60	20.0	WATER BASED
2525.000	1.69	5300.0	WATER BASED
2525.000	1.70	5000.0	WATER BASED
2538.000	1.69	6000.0	WATER BASED
2648.000	1.53	49.0	WATER BASED
2665.000	1.60	20.0	WATER BASED
3175.000	1.53	25.0	WATER BASED
3175.000	1.69	24.0	WATER BASED
3759.000	1.53	23.0	WATER BASED
3970.000	1.24	14.0	WATER BASED
3970.000	1.22	16.0	WATER BASED
3970.000	1.24	21.0	WATER BASED
3970.000	1.23	15.0	WATER BASED
4050.000	1.24	19.0	WATER BASED
4156.000	1.22	16.0	WATER BASED
4371.000	1.24	6800.0	WATER BASED

DRILL STEM TEST

INTERVALS AND PRESSURES

Test no	interval meter	Choke size	Pressure (PSI)		
			WHP	BTHP	FFP
1.0	4175.000 - 4198.000	25.4	The formation was tight		
2.0	4103.000 - 4117.000	7.9			
3.0	4054.000 - 4082.000	4.0			

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
1.0					
2.0	No production due to a tight formation				
3.0					

DRILL BIT CUTTINGS AND WET SAMPLES

SAMPLE TYPE	INTERVAL BELOW KB	NUMBER OF SAMPLES
Cutting	1180-4414	500
Wet Samples	1190-4413	420

SHALLOW GAS

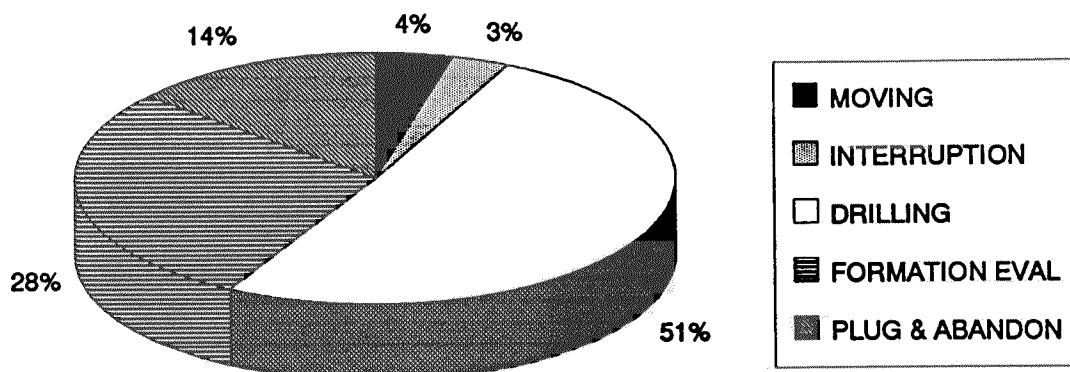
Interval below KB	REMARKS

AVAILABLE LOGS

LOG TYPE	INTERVALS	1/200	1/500	Div.
MWD	438.000 - 4331.000		X	
DIFL LS BHC AC GR	321.000 - 1177.000	X	X	
DIFL LS BHC AC GR	1156.000 - 2665.000	X	X	
DIFL LS BHC AC GR	2648.000 - 3984.000	X	X	
DIFL LS BHC AC GR	3974.000 - 4414.000	X	X	
DLL MLL GR	3974.000 - 4413.000	X	X	
CDL	324.000 - 1177.000	X	X	
CNL	1156.000 - 2665.000	X	X	
CDL GR	2648.000 - 3965.000	X	X	
CDL CNL GR	3972.000 - 4414.000	X	X	
SHDT	3974.000 - 4412.000	X		
SHDT/SPECTRA	3974.000 - 4406.000	X	X	
SHDT/EPI	4000.000 - 4150.000	X		
CDM AP/4-ARM COMPUTED	3974.000 - 4412.000	X	X	
CDM AP/STRATADIP	3974.000 - 4412.000	1:40		
FMT HP CRYSTAL GAUGE	4033.000 - 4403.000			
FMT HP CRYSTAL GAUGE	4027.000 - 4395.000			
AC CBL VDL GR	430.000 - 1330.000	X		
AC CBL VDL GR	2500.000 - 3974.000	X		
AC CBL VDL GR	3817.000 - 4380.000	X		
TEMPERATURE LOG	438.000 - 4413.000	1:5000		
DRILLING DATA	438.000 - 4413.000	1:5000		
MUD	325.000 - 4414.000		X	
VELOCITY	311.000 - 4421.000	1:1000X		
(Airgun well velocity survey and calibr.log			1 stk.)	
(Display of well velocity survey records			4 stk.)	
(VSP			7 stk.)	
(Synthetic seismogram			9 stk.)	
(Two-way travel time, 10cm/s			1 stk.)	
(LSAL/SWAL AC tube wave & corr.cycle skips			2 stk.)	
(Full waveform plot			8 stk.)	

DAILY DRILLING REPORT SYSTEM

MAIN OPERATIONS FOR WELL: 6406/03-04



Main operation	Minutes	Hrs	% of total
MOVING	5910	98,5	4,19
INTERRUPTION	4590	76,5	3,25
DRILLING	71700	1195,0	50,81
FORMATION EVAL	39810	663,5	28,21
PLUG & ABANDON	19110	318,5	13,54
<i>Total</i>	141120	2352,0	100,00

SUB OPERATIONS FOR WELL: 6406/03-04

MAIN OPERATION: MOVING

Sub operation	Minutes	Hrs	% of total
TRANSIT	1950	32,5	32,99
ANCHOR	3960	66,0	67,01
<i>Total</i>	5910	98,5	100,00

MAIN OPERATION: INTERRUPTION

Sub operation	Minutes	Hrs	% of total
WAIT	1740	29,0	37,91
MAINTAIN/REP	2760	46,0	60,13
FISH	90	1,5	1,96
<i>Total</i>	4590	76,5	100,00

MAIN OPERATION: DRILLING

Sub operation	Minutes	Hrs	% of total
CASING	15120	252,0	21,09
TRIP	13830	230,5	19,29
DRILL	30420	507,0	42,43
HOLE OPEN	2460	41,0	3,43
CIRC/COND	3720	62,0	5,19
SURVEY	210	3,5	0,29
BOP/WELLHEAD EQ	4290	71,5	5,98
BOP ACTIVITIES	720	12,0	1,00
REAM	930	15,5	1,30
<i>Total</i>	71700	1195,0	100,00

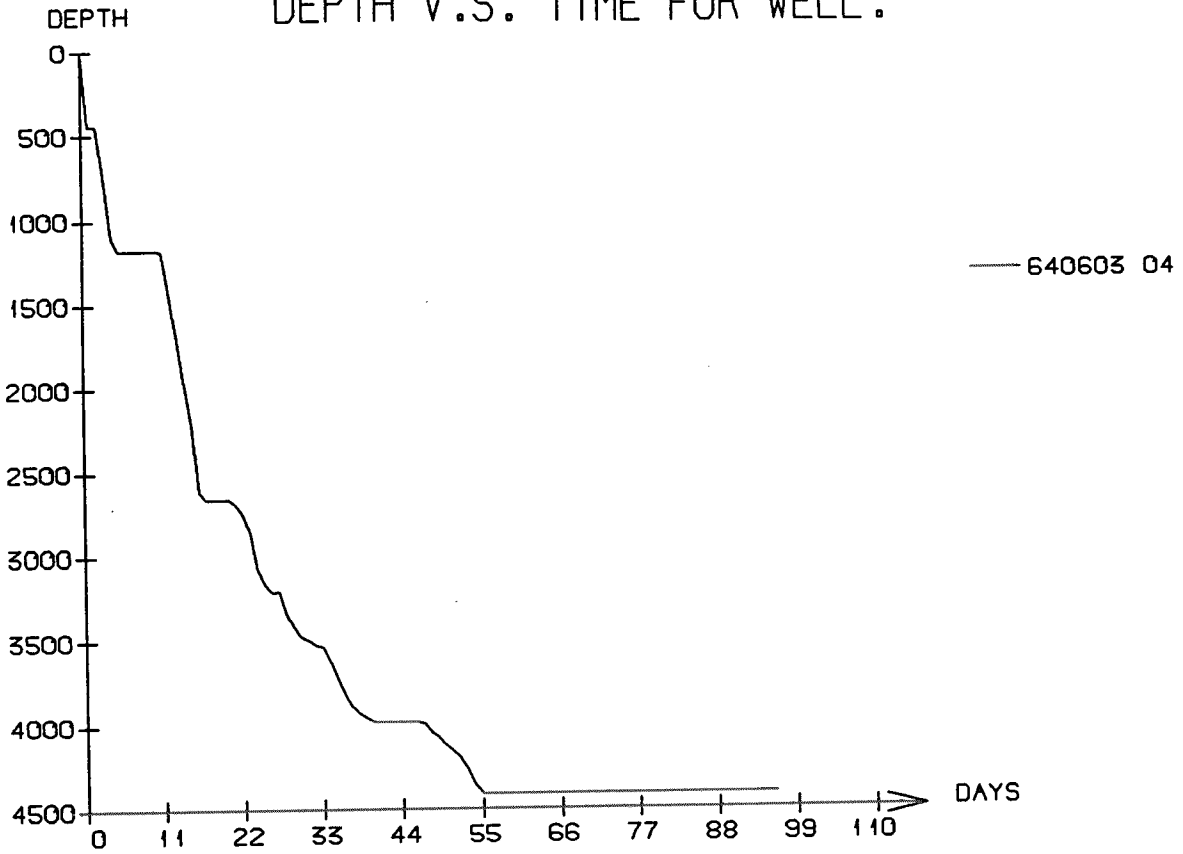
MAIN OPERATION: FORMATION EVAL

Sub operation	Minutes	Hrs	% of total
LOG	6600	110,0	16,58
CIRC/COND	2070	34,5	5,20
TRIP	4950	82,5	12,43
CORE	2130	35,5	5,35
DST	22380	373,0	56,22
WAIT	1680	28,0	4,22
<i>Total</i>	39810	663,5	100,00

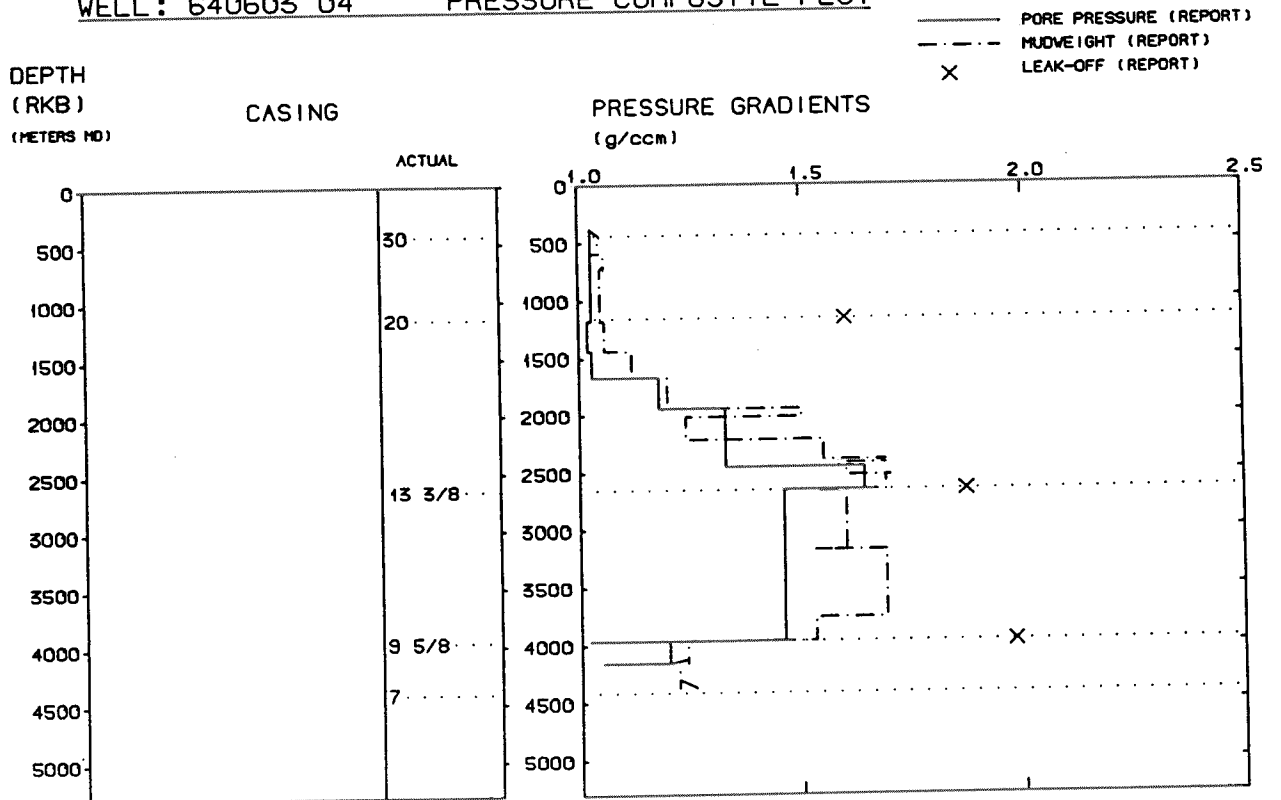
MAIN OPERATION: PLUG & ABANDON

Sub operation	Minutes	Hrs	% of total
CEMENT PLUG	2280	38,0	11,93
CIRC/COND	1530	25,5	8,01
TRIP	3540	59,0	18,52
PERFORATE	5310	88,5	27,79
SQUEEZE	1110	18,5	5,81
MECHANICAL PLUG	660	11,0	3,45
CUT	1590	26,5	8,32
EQUIP RECOVERY	1860	31,0	9,73
WAIT	1050	17,5	5,49
OTHER	180	3,0	0,94
<i>Total</i>	19110	318,5	100,00

DEPTH V.S. TIME FOR WELL:



WELL: 640603 04 PRESSURE COMPOSITE PLOT



Well History 6406/3-4

GENERAL:

Well 6406/3-4 was drilled on the Alpha structure in the northern part of the block. This well was the first appraisal well on the structure which was discovered by oil discovery well 6406/3-2.

The primary purpose of the well was to find hydrocarbon accumulations of significant amounts in the Middle Jurassic reservoirs downflanks on this structure.

Secondary objectives were to check for hydrocarbon accumulations deeper than the structural closure of the main field, and to verify the geophysical and structural interpretation and improve the geological, paleontological and geochemical understanding of the area.

Total depth was to be 50 m into the Tilje Formation.

OPERATIONS:

Appraisal well 6406/3-4 was spudded 25 September 1987 by Dyvi Offshore semi-submersible rig West Delta and completed 29 December 1987 at a depth of 4414 m in Early Jurassic rocks. Drilling proceeded without any significant problems and there were no signs of shallow gas. An expected pressure build-up started in Paleocene and reached its maximum at 1.50 g/cm³ EMV in the top of Cretaceous. After this the over-pressure decreased and was at 1.42 g/cm³ EMV close to top Jurassic.

Top reservoir came in at 4018 m, and 4 cores were cut in the interval 4020 - 4122 m. There were good shows down to 4078 m, but the reservoir qualities do not seem to be very good due to low permeability. 2 cores were cut between 4156 - 4213 m. There were poor shows which may indicate tight rocks or residual oil.

Both RFT-data and logs makes it hard to establish an oil/water contact.

The well was plugged and abandoned as a dry hole.

TESTING:

4 DST tests were performed in the well. DST 1 was in the interval 4174 - 4198 m, DST 2 between 4103 - 4117 m, DST 3 between 4054 - 4082 m and DST 4 in the Garn Fm.

GEOLOGICAL TOPS

WELL: 6406/3-4

Depth m (RKB)

<i>Nordland Group</i>	325.0
<i>Naust Fm.</i>	325.0
<i>Kai Fm.</i>	1514.0
<i>Hordaland Group</i>	1994.0
<i>Brygge Fm.</i>	1994.0
<i>Rogaland Group</i>	2314.0
<i>Tare Fm.</i>	2314.0
<i>Tang Fm.</i>	2380.0
<i>Shetland Group</i>	2437.0
<i>Springar Fm.</i>	2437.0
<i>Nise Fm.</i>	2655.0
<i>Kvitnos Fm.</i>	2974.0
<i>Cromer Knoll Group</i>	3278.0
<i>Lange Fm.</i>	3278.0
<i>Lyr Fm.</i>	3884.0
<i>Viking Group</i>	3907.5
<i>Spekk Fm.</i>	3907.5
<i>Melke Fm.</i>	3949.0
<i>Fangst Group</i>	4025.0
<i>Garn Fm.</i>	4025.0
<i>Not Fm.</i>	4120.5
<i>Ile Fm.</i>	4161.5
<i>Båt Group</i>	4224.0
<i>Ror Fm.</i>	4224.0
<i>Tofte Fm.</i>	4272.0
<i>Ror Fm.</i>	4299.0
<i>Tilje Fm.</i>	4372.0
<i>T.D.</i>	4414.0