

Well no : 31/ 2-13

Operator : SHELL

Coordinates	: 60 47 14.15 N 03 26 3.43 E	UTM coord.	: 6739329 N
		UTM zone 31	: 523646 E
Licence no	: 054	Permit no	: 401
Rig	: BORGNY DOLPHIN	Rig type	: SEMI-SUB.
Contractor	: DOLPHIN SERVICES A/S		
Bottom hole temperature	: 60 deg.C	Elev. KB	: 25 M
Spud date	: 84.01.02	Water depth	: 334 M
Compl. date	: 84.03.15	Total depth	: 2010 M
Spud class.	: APPRAISAL	TVD	: 1727 M
Compl. class.	: P&A. OIL/GAS DISC.	Age at TD	: JURASSIC
Seis. loc.	: 81 007-412 SP 337.5 & 82-430 SP 102		

## LICENSEES

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5.000	CONOCO NORWAY INC.
5.000	NORSK HYDRO PRODUKSJON A.S
35.000	A/S NORSKE SHELL
50.000	DEN NORSKE STATS OLJESELSKAP A.S
5.000	SUPERIOR OIL NORGE 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	455.5	36	468.0	
SURF.COND.	20	806.0	26	813.0	1.81
INTERM.	13 3/8	1700.0	17 1/2	1710.0	1.61
INTERM.	9 5/8	1999.0	12 1/4	2007.0	

## CONVENTIONAL CORES

Core no.	Intervals cored meters	Recovery		Series
		M	%	
1	1744.0 - 1754.0	0.4	4.0	UPPER JURASSIC
2	1754.0 - 1772.0	3.6	20.0	UPPER JURASSIC
3	1772.0 - 1784.0	11.0	91.7	UPPER JURASSIC
4	1784.0 - 1795.0	11.0	100.0	UPPER JURASSIC
5	1795.0 - 1807.0	11.3	94.2	UPPER JURASSIC
6	1807.0 - 1813.0	6.0	100.0	UPPER JURASSIC
7	1813.0 - 1825.5	11.7	93.6	UPPER JURASSIC
8	1825.5 - 1844.0	15.2	82.2	UPPER JURASSIC

## MUD PROPERTIES

Depth below KB meter	Mud weight g/cm <sup>3</sup>	Mud type
500.0	1.05	WATER BASED
550.0	1.07	WATER BASED
600.0	1.10	WATER BASED
800.0	1.12	WATER BASED
830.0	1.30	OIL BASED
900.0	1.31	OIL BASED
1140.0	1.40	OIL BASED
1550.0	1.41	OIL BASED
1750.0	1.25	OIL BASED

## DRILL STEM TEST

## INTERVALS AND PRESSURES

Test no.	Interval meter	Choke size	Pressure (PSI)		
			FSIP	BTHP	FFP
1.0	1807.0 - 1801.0	21.0		2007.0	

## RECOVERY

Test no.	Oil Sm <sup>3</sup> /d	Gas M 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	540		0.880	0.630	267

## DRILL BIT CUTTINGS AND WET SAMPLES

SAMPLE TYPE	INTERVAL BELOW KB	NUMBER OF SAMPLES
CUTTINGS		
WET SAMPLES	480 - 2006	150

## SHALLOW GAS

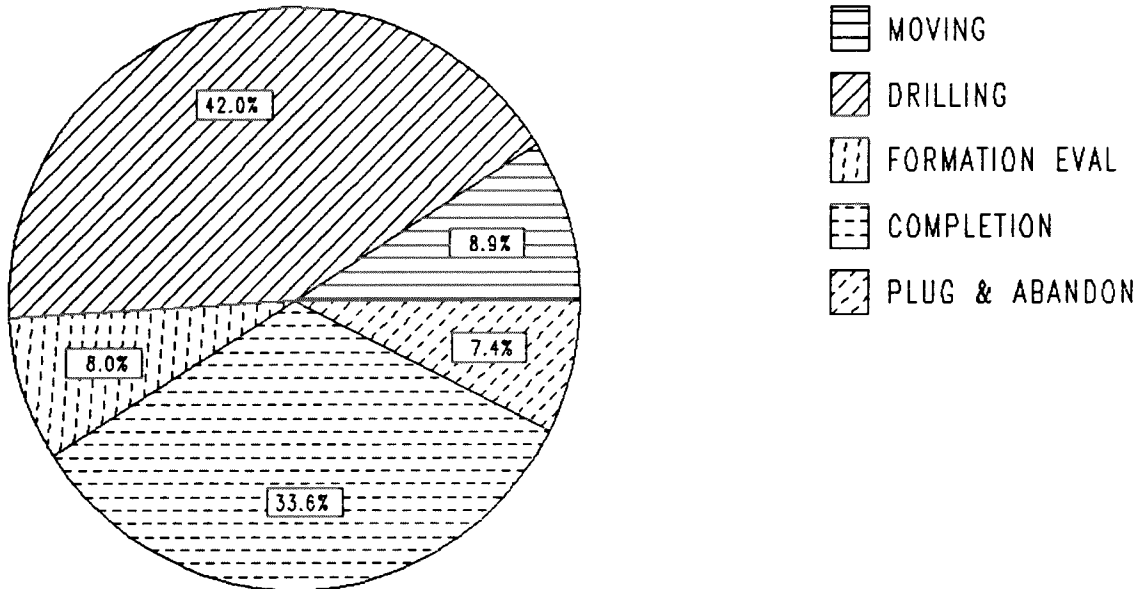
INTERVAL BELOW KB	REMARKS
	NONE

## AVAILABLE LOGS

LOG TYPE	INTERVALS	1/200	1/500
ISF BHC GR (GR:350-455)	455 - 823	X	X
DIL BHC	805 - 1675	X	X
DIL LSS	1699 - 2006	X	X
DIL LSS - TVD	1496 - 1728	X	
LDL CNL	455 - 825	X	X
LDL CNL	804 - 1677	X	X
LDL CNL	1699 - 2007	X	X
LDL CNL - TVD	1500 - 1726	X	
NGS	1699 - 2007	X	
RFT SAMPLE	1750 - 1992	X	
RFT	1750 - 1992	X	
CNL GR GRAV. PACK	1700 - 1788	X	
GR CCL CORRELATION	1688 - 1950	X	
CBL VDL	635 - 1697	X	
CBL VDL	1450 - 1968	X	
MUD	455 - 2010		X
VELOCITY (L.T.S.)	455 - 2006	1:1000	X
(+ Airgun Well Velocity Survey & C.L.D.		1 stk)	
(+ Two Way Travel Time, 10 cm/s,		1 stk)	

# DAILY DRILLING REPORT SYSTEM

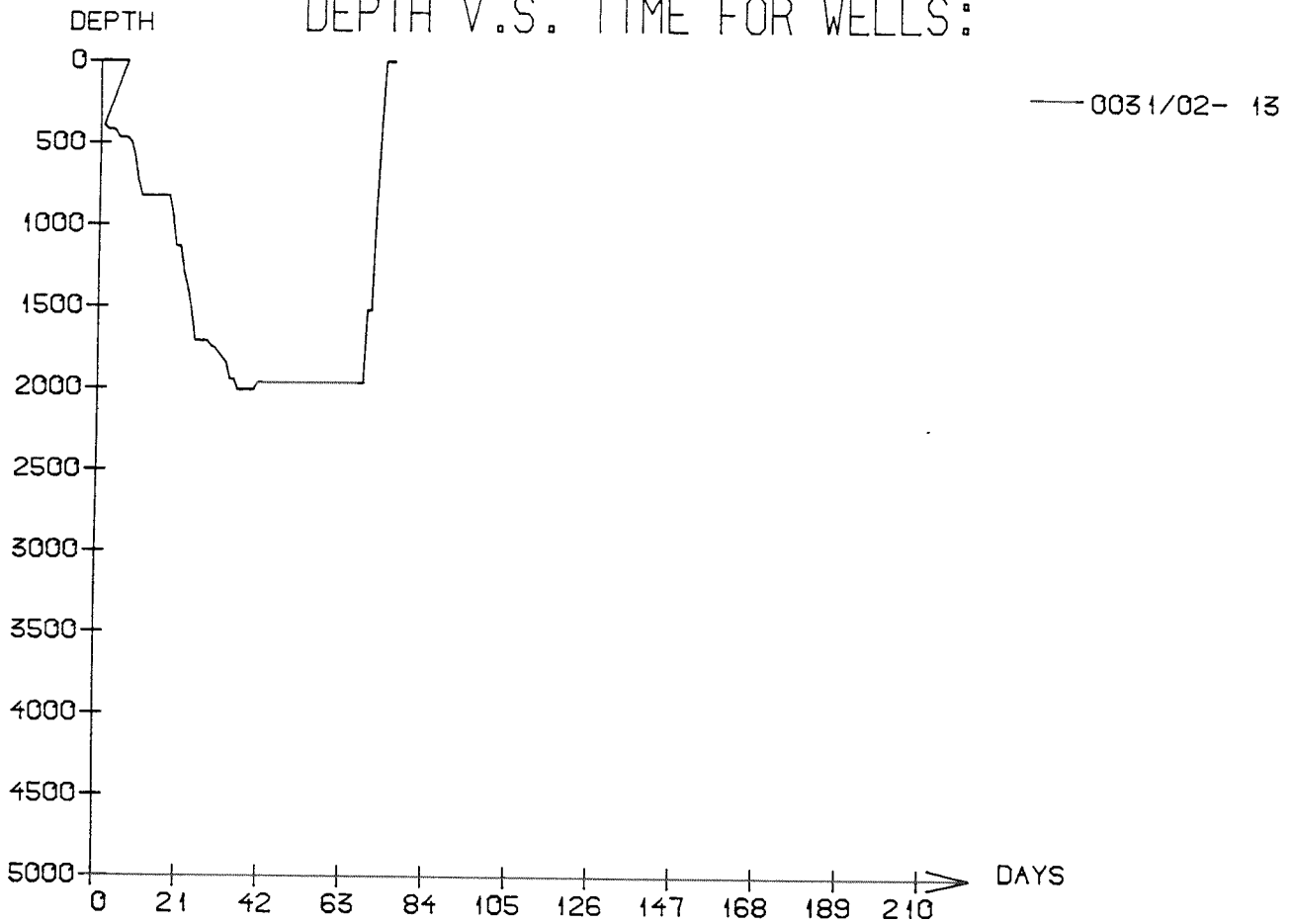
Main operation : 31/02-13



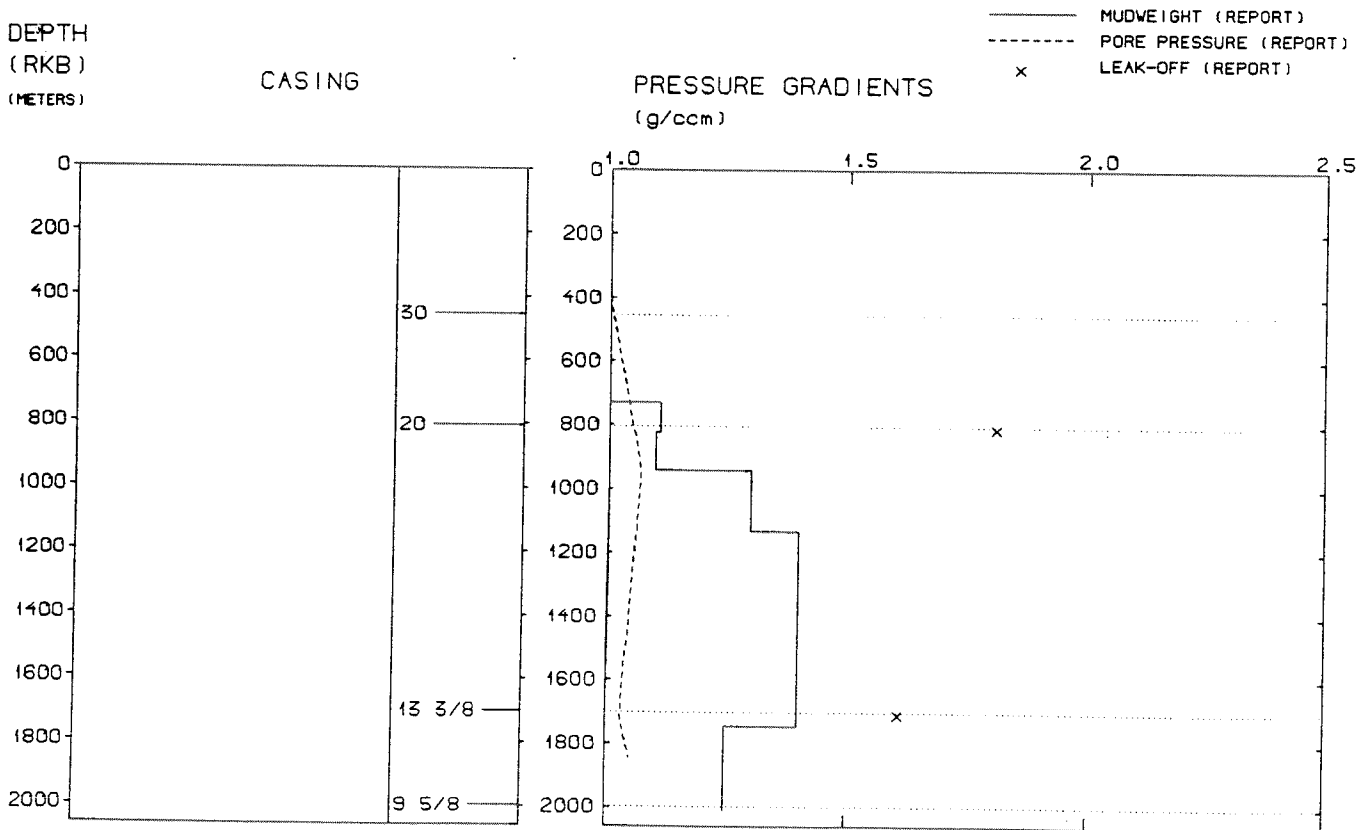
Total : 1938,50 HRS

Main operation	Hours	% of total
MOVING	173,00	8,92
DRILLING	814,00	41,99
FORMATION EVAL	156,00	8,05
COMPLETION	651,00	33,58
PLUG & ABANDON	144,50	7,45

DEPTH V.S. TIME FOR WELLS:



WELL: 003102 13 PRESSURE COMPOSITE PLOT



## WELL HISTORY - 31/2-13

### GENERAL:

The main objectives of the appraisal well 31/2-13 were to investigate the reservoir properties and accumulation conditions between the wells 31/2-5 (WDSS vol.11) and 31/2-11 (WDSS vol.14). A water coning test will be evaluated. If the geological conditions do not permit it, a gas coning test will be done. Hydrocarbon bearing sands were encountered in Upper Jurassic sands. A gas coning test was performed in the Jurassic Viking Group.

### OPERATIONS:

The well 31/2-13 was spudded 02.01.84 by the semi-submersible rig Borgny Dolphin. Eighth cores were cut in the Upper Jurassic sequence. Due to bad weather the string parted and was observed lying across the temporary guide base when the well was spudded. The fish was recovered. Straight hole was drilled down to 500 m where the hole was kicked off with an angle of  $1\ 1/2^{\circ}$ . Some problems due to tight hole occurred in the 17 1/2" hole. Mudlosses to the formation occurred at 1531 and 1700 m, 100 bbls at each depth. A drill break occurred at 1744 m in the 12 1/4" hole section.

Water based mud was used drilling the 36" and 26" hole sections. The hole was displaced to oil based mud before drilling out of the 20" casing shoe.

### TESTING:

One test was performed through a 5" production tubing in the Upper Jurassic sequence. Gas coning was investigated. More gas was produced with increased oil production rate.

# GEOLOGICAL TOPS

WELL: 31/ 2-13

	<i>Depth m (RKB)</i>
<i>Nordland Group</i>	<i>359.000</i>
<i>Hordaland Group</i>	<i>783.000</i>
<i>Rogaland Group</i>	<i>1438.000</i>
<i>Balder Fm</i>	<i>1438.000</i>
<i>Sele Fm</i>	<i>1540.000</i>
<i>Lista Fm</i>	<i>1577.000</i>
<i>Viking Group</i>	<i>1732.000</i>
<i>Heather/Sognefjord Fm</i>	<i>1732.000</i>
<i>Fensfjord Fm</i>	<i>1934.000</i>
 <i>TD =</i>	 <i>2010.000</i>