

Well no : 31/04-08 Operator : HYDRO

Coordinates : 60 31 22.82 N UTM coord. : 6709817 N  
 03 00 9.59 E 500146 E

Licence no : 55 Permit no : 508

Rig : TREASURE HUNTER Rig type : SEMI-SUB.

Contractor : WILHELMSSEN OFFSHORE SERVICES

Bottom hole temperature : deg.C Elev. KB : 25 M

Spud. date : 86.03.21 Water depth : 124 M

Compl. date : 86.05.11 Total depth : 2570 M

Spud. class : APPRAISAL Form. at TD : TRIASSIC

Compl. class : P&A. OIL/GAS DISC. Prod. form : E.JURASSIC

Seisloca : NH 8501 - 077 SP. 172

### LICENSEES

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10.000000 ARCO NORGE A/S  
 5.000000 BP PETROLEUM DEV. OF NORWAY A.S  
 20.000000 ESSO NORGE A.S  
 15.000000 NORSK HYDRO PRODUKSJON 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/cm3
CONDUCTOR	30	237.0	36	242.0	.
SURF.COND.	20	875.0	26	903.0	.
INTERM.	13 3/8	2012.0	17 1/2	2030.0	1.60
INTERM.	9 5/8	2596.0	12 1/4	2611.0	.

### CONVENTIONAL CORES

Core no.	Intervals cored meters	Recovery		Series
		M	%	
1	2347.0 - 2355.9	8.9	100.0	
2	2359.0 - 2375.0	16.0	100.0	LOWER JURASSIC
3	2377.0 - 2395.0	18.0	100.0	LOWER JURASSIC
4	2395.0 - 2413.6	18.6	100.0	UPPER TRIASSIC
5	2413.6 - 2432.3	18.7	100.0	UPPER TRIASSIC
6	2432.3 - 2451.1	18.8	100.0	UPPER TRIASSIC

### MUD PROPERTIES

Depth below KB meter	Mud weight g/cm3	Viscosity	Mud type
190.000	1.03	0.0	SEAWATER
240.000	1.10	0.0	WATER
242.000	1.03	0.0	WATER
903.000	1.20	18.0	WATERBASED
1231.000	1.26	21.0	WATERBASED

2015.000	1.35	24.0	WATERBASED
2030.000	1.40	20.0	WATER BASED
2044.000	1.21	11.0	WATERBASED
2347.000	1.20	13.0	WATERBASED
2414.000	1.21	14.0	WATERBASED
2553.000	1.20	14.0	WATERBASED

### DRILL STEM TEST

#### INTERVALS AND PRESSURES

Test no.	interval meter	Choke size	Pressure (PSI)		
			WHP	BTHP	FFP
1.0	2349.100 - 2397.600 Test temperature: 95 °C	12.7	957.0	3560.9	3379.2
2.0	2421.700 - 2437.400 Test temperature: 98 °C	50.8	167.0	3614.0	3393.7

#### 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	503	19900	0.830	0.820	40
2.0	0	0	0	0	0

### DRILL BIT CUTTINGS AND WET SAMPLES

SAMPLE TYPE	INTERVAL BELOW KB	NUMBER OF SAMPLES
Cutting	910-2610	300
Wet Samples	910-2610	260

### SHALLOW GAS

Interval below KB                      REMARKS

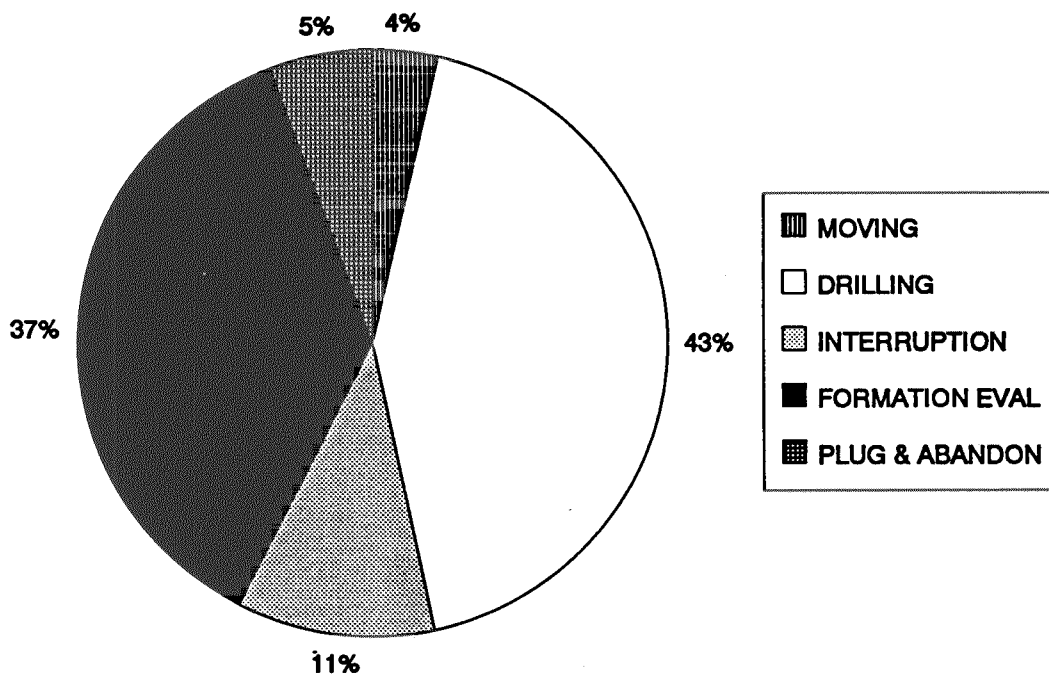
### AVAILABLE LOGS

LOG TYPE	INTERVALS	1/200	1/500	Div.
DIL LSS SONIC GR	876.000 - 1989.000	X	X	
DIL LS SONIC	2012.000 - 2571.000	X	X	
CDL GR	784.000 - 1987.000	X		
CDL CNL SP GR	1868.000 - 2572.000	X		
DLL MSFL	2012.000 - 2572.000	X		
CDM SURVEY GR	2011.000 - 2570.000			X
FMT	875.000 - 2015.000	X		1:100

CBL GR	553.000 - 2011.500	X	X
TEMP. DATA LOG	2150.000 - 2611.000	1:3000	
DRILL. DATA PRESS.	2150.000 - 2611.000	1:3000	
MUD LOG	900.000 - 2611.000		X
VELOCITY	875.000 - 2570.000	1:1000X	
(Geogram, Synthetic seismogram			10 stk.)
(VSP. Single offset, 10cm/s. Plot 1-11			11 stk.)
(VSP. Single offset, 10cm/s. Plot 1-7			7 stk.)
(VSP. Vertical raypath, 10cm/s. Plot 1a-8			10 stk.)

# DAILY DRILLING REPORT SYSTEM

Main operations for well: 31/04-08



Total: 1320 HRS

Main operation	Minutes	Hrs	% of total
MOVING	3020	50,3	3,81
DRILLING	34110	568,5	43,07
INTERRUPTION	8620	143,7	10,88
FORMATION EVAL	29190	486,5	36,86
PLUG & ABANDON	4260	71,0	5,38
<b>Total</b>	<b>79200</b>	<b>1320,0</b>	<b>100,00</b>

## MAIN OPERATIONS FOR WELL: 31/04-08

### MAIN OPERATION: MOVING

Sub operation	Minutes	Hrs	% of total
TRANSIT	420	7,0	13,91
ANCHOR	2600	43,3	86,09
Total	3020	50,3	100,00

### MAIN OPERATION: DRILLING

Sub operation	Minutes	Hrs	% of total
BOP/WELLHEAD EQ	1260	21,0	3,69
CASING	8490	141,5	24,89
DRILL	9930	165,5	29,11
SURVEY	600	10,0	1,76
CIRC/COND	1680	28,0	4,93
TRIP	7020	117,0	20,58
WAIT	510	8,5	1,50
OTHER	330	5,5	0,97
HOLE OPEN	1980	33,0	5,80
BOP ACTIVITIES	1500	25,0	4,40
REAM	810	13,5	2,37
Total	34110	568,5	100,00

### MAIN OPERATION: INTERRUPTION

Sub operation	Minutes	Hrs	% of total
WAIT	3900	65,0	45,24
FISH	1870	31,2	21,69
MAINTAIN/REP	2610	43,5	30,28
OTHER	240	4,0	2,78
Total	8620	143,7	100,00

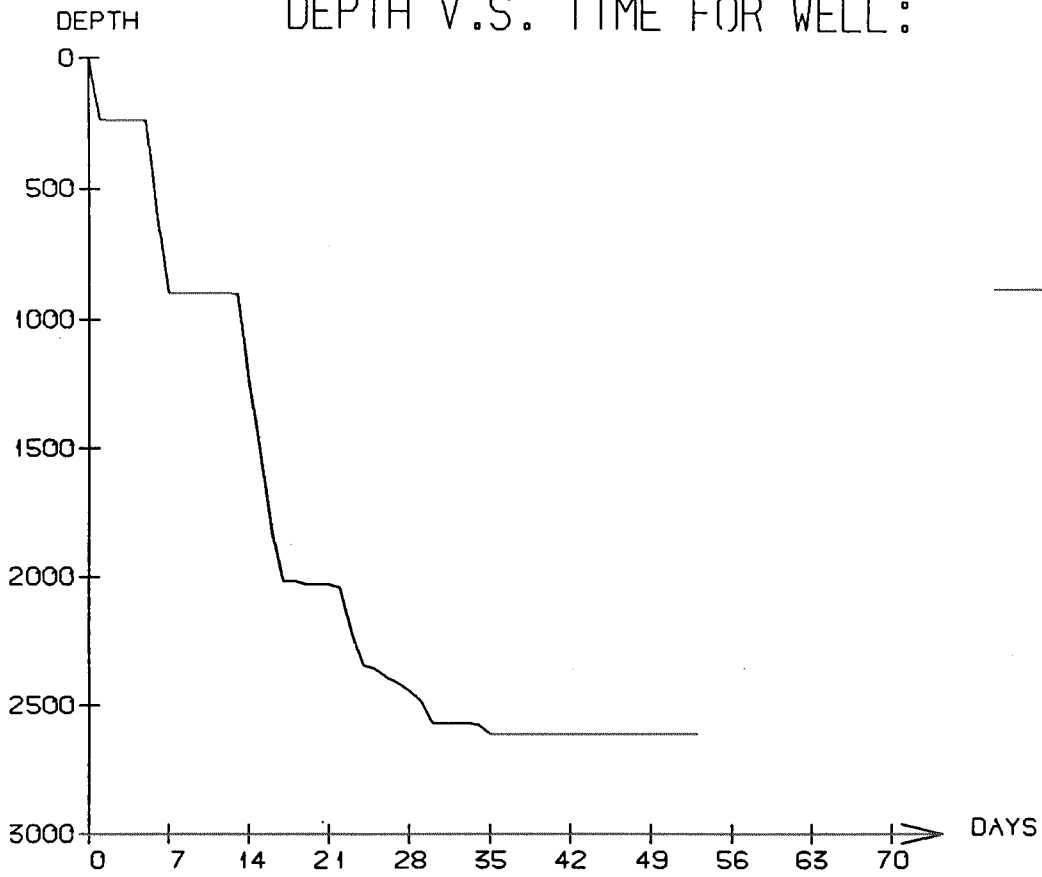
### MAIN OPERATION: FORMATION EVAL

Sub operation	Minutes	Hrs	% of total
LOG	5490	91,5	18,81
TRIP	2730	45,5	9,35
OTHER	240	4,0	0,82
CORE	2940	49,0	10,07
CIRC/COND	210	3,5	0,72
DST	17580	293,0	60,23
Total	29190	486,5	100,00

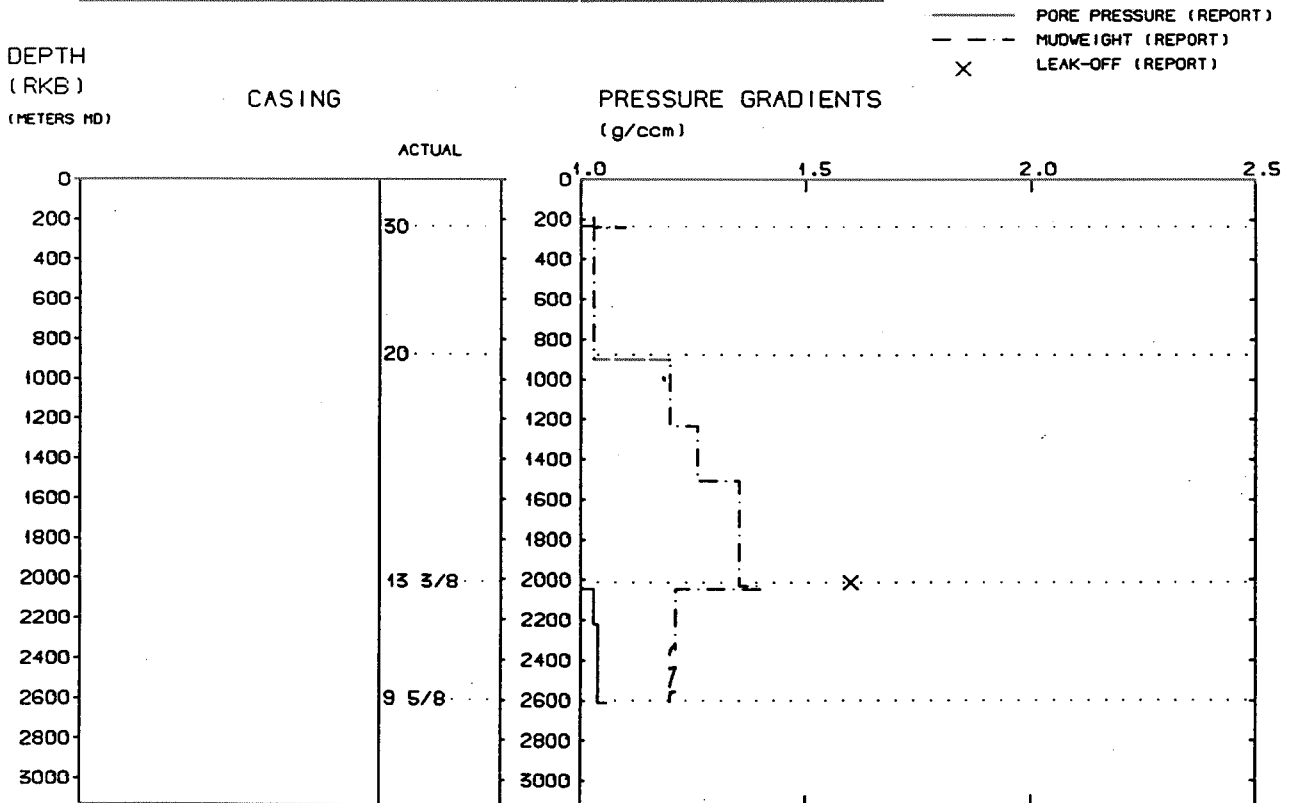
### MAIN OPERATION: PLUG & ABANDON

Sub operation	Minutes	Hrs	% of total
MECHANICAL PLUG	300	5,0	7,04
TRIP	1740	29,0	40,85
CIRC/COND	120	2,0	2,82
SQUEEZE	90	1,5	2,11
CEMENT PLUG	150	2,5	3,52
PERFORATE	240	4,0	5,63
OTHER	120	2,0	2,82
EQUIP RECOVERY	1500	25,0	35,21
Total	4260	71,0	100,00

# DEPTH V.S. TIME FOR WELL:



## WELL: 003104 08 PRESSURE COMPOSITE PLOT



## Well History 31/4-8

### GENERAL:

Well 31/4-8 was designed as an appraisal well of the Statfjord reservoir discovery made in well 31/4-7. The primary objective was to confirm this discovery and firm up the hydrocarbon column and reserve potential in the southern part of the horst.

Cook Formation (Intra Dunlin Group) was the secondary target. This sandstone was found waterbearing in well 31/4-7. Chances for finding hydrocarbons in well 31/4-8 were good since the formation would be penetrated in a structurally higher position. Prognosed TD was 2565 m or 50 m into Triassic rocks.

### OPERATIONS:

Appraisal well 31/4-8 was spudded 21 March 1986 by Wilh Wilhelmsen semi-submersible rig Treasure Hunter, and completed 11 May 1986 at a depth of 2611 m RKB (DD) in rocks of Triassic age. Six cores were cut in the interval 2347-2451 m RKB, with recovery between 74- 100 %.

The oil-bearing Statfjord Formation came in at 2346 m RKB with an oil column of 60 m. OWC was encountered at 2404 m RKB which is common with the OWC in well 31/4-7. Top Lunde Formation came in at 2438 m RKB with shows. Altogether, hydrocarbon bearing rocks were encountered in Statfjord Fm, Viking Group and Hegre Group.

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

### TESTING:

Two DST-tests were performed in this well:  
Test one in the interval 2349.1- 2397.6 m RKB.  
Test two in the interval 2421.7- 2437.4 m RKB.

# GEOLOGICAL TOPS

WELL: 31/4-8

	Depth m (RKB)
<i>Nordland Group</i>	149,0
<i>Utsira Fm</i>	668,0
<i>Hordaland Group</i>	827,0
<i>Rogaland Group</i>	1837,0
<i>Balder Fm</i>	1837,0
<i>Sele Fm</i>	1900,0
<i>Lista Fm</i>	1937,0
<i>Shetland Group</i>	2024,0
<i>Trygvason Fm</i>	2024,0
<i>Svarte Fm</i>	2038,0
<i>Cromer Knoll Group</i>	2279,0
<i>Viking Group</i>	2085,0
<i>Draupne Fm</i>	2085,0
<i>Fensfjord Fm</i>	2088,0
<i>Dunlin Group</i>	2117,0
<i>Drake Fm</i>	2117,0
<i>Cook Fm</i>	2222,0
<i>Amundsen Fm</i>	2255,0
<i>Statfjord Fm</i>	2346,0
<i>Hegre Group</i>	2438,0
<i>Lunde Fm</i>	2438,0
<i>TD</i>	2611,0