

Well no : 6407/09-06

Operator : SHELL

Coordinates : 64 19 58.07 N  
07 44 23.70 E

UTM coord. : 7134880 N  
439100 E

Licence no : 93

Permit no : 499

Rig : BORGNY DOLPHIN

Rig type : SEMI-SUB.

Contractor : DOLPHIN SERVICES A/S

Bottom hole temperature : deg.C

Elev. KB : 25 M

Spud. date : 86.01.02

Water depth : 297 M

Compl. date : 86.03.13

Total depth : 1800 M

Spud. class : APPRAISAL

Form. at TD : E.JURASSIC

Compl. class : SUSPENDED. OIL DISC.

Prod. form :

Seisloca :

### LICENSEES

20.000000 BP PETROLEUM DEV. OF NORWAY A.S  
30.000000 A/S NORSKE SHELL  
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	375.0	36	382.0	.
SURF.COND.	20	804.0	26	812.0	1.44
INTERM.	13 3/8	1619.0	17 1/2	1628.0	1.68
INTERM.	9 5/8	1776.0	12 1/4	1800.0	.

### CONVENTIONAL CORES

Core no.	Intervals cored meters	Recovery		Series
		M	%	
1	1646.0 - 1657.8	11.8	100.0	UPPER JURASSIC
2	1660.0 - 1672.7	12.7	100.0	
3	1672.7 - 1676.9	4.2	100.0	
4	1678.8 - 1690.2	11.4	100.0	

### MUD PROPERTIES

Depth below KB meter	Mud weight g/cm3	Viscosity	Mud type
382.000	1.03	120.0	WATER BASED
382.000	1.06	11.0	WATER BASED
416.000	1.15	0.0	WATER BASED
613.000	1.11	11.0	WATER BASED
810.000	1.12	11.0	WATER BASED
810.000	1.13	12.0	WATER BASED
810.000	1.03	0.0	WATER BASED
817.000	1.35	23.0	WATER BASED
1126.000	1.37	22.0	WATER BASED

1628.000	1.39	33.0	WATER BASED
1633.000	1.40	26.0	WATER BASED
1641.000	1.15	0.0	WATER BASED
1678.000	1.20	18.0	WATER BASED
1730.000	1.15	0.0	WATER BASED
1738.000	1.03	0.0	WATER BASED
1738.000	1.15	0.0	WATER BASED
1750.000	1.20	20.0	WATER BASED
1800.000	1.21	19.0	WATER BASED

### DRILL BIT CUTTINGS AND WET SAMPLES

SAMPLE TYPE	INTERVAL BELOW KB	NUMBER OF SAMPLES
Cutting	390-1800	300
Wet Samples	390-1800	180

### SHALLOW GAS

Interval below KB	REMARKS
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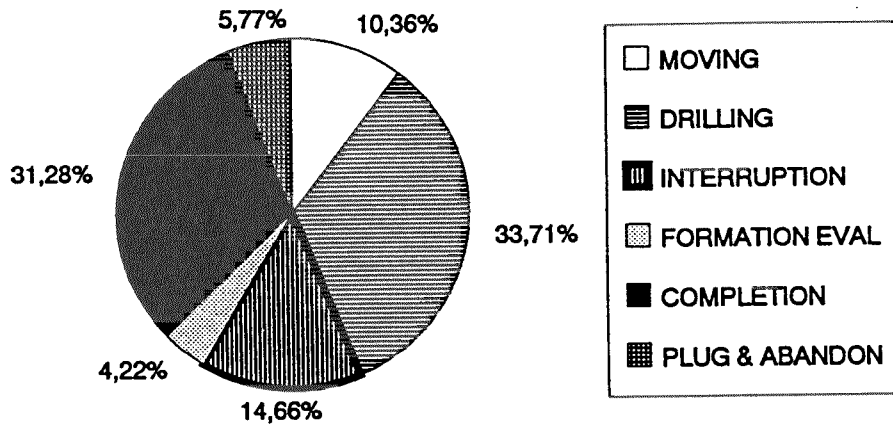
### AVAILABLE LOGS

LOG TYPE	INTERVALS	1/200	1/500	Div.
DIFL LS BHC ACL GR	278.000 - 808.000	X	X	
DIFL LS BHC ACL GR	803.000 - 1607.000	X	X	
DIFL LS BHC ACL GR	1617.000 - 1799.000	X	X	
CDL CNL GR	365.000 - 807.000	X	X	
CDL CNL GR	802.500 - 1603.200	X	X	
CDL CNL GR	1617.000 - 1795.000	X	X	
DLL MLL GR	1617.400 - 1795.000	X		
CDM AP	1616.000 - 1794.000	X	X	
FMT	1644.000 - 1719.000		X	
FMT HP CRYSTAL GAUGE	1644.000 - 1719.000		X	
ACBL VDL	303.000 - 1628.000	X		
ACBL VDL	1055.000 - 1735.000	X		
MUD	383.000 - 1800.000			X
VELOCITY LOG	378.000 - 1787.000			1:1000X

(Airgun well velocity survey & calibrated data, 1 stk.)  
 (Display of well velocity survey records, 1 stk.)  
 (Two-way travel time, 10cm/s, 378-1787m 1 stk.)  
 (Two-way travel time, 20cm/s, 378-1797m 1 stk.)

# DAILY DRILLING REPORT SYSTEM

Main operations for well: 6407/09-06



Total: 1872.00 hours

<i>Main operation</i>	<i>Minutes</i>	<i>Hours</i>	<i>% of total</i>
MOVING	11640	194,00	10,36
DRILLING	37860	631,00	33,71
INTERRUPTION	16470	274,50	14,66
FORMATION EVAL	4740	79,00	4,22
COMPLETION	35130	585,50	31,28
PLUG & ABANDON	6480	108,00	5,77

**MAIN OPERATIONS FOR WELL: 6407/09-06**

**MAIN OPERATION: MOVING**

<i>Sub operation</i>	<i>Minutes</i>	<i>Hours</i>	<i>% of total</i>
ANCHOR	2730	45,50	23,45
TRANSIT	7080	118,00	60,82
POSITION	1830	30,50	15,72
<b>Total</b>	<b>11640</b>	<b>194,00</b>	<b>100,00</b>

**MAIN OPERATION: INTERRUPTION**

<i>Sub operation</i>	<i>Minutes</i>	<i>Hours</i>	<i>% of total</i>
MAINTAIN/REP	2100	35,00	0,58
WAIT	5730	95,50	1,59
FISH	360	6,00	0,10
OTHER	8280	138,00	2,30
<b>Total</b>	<b>16470</b>	<b>274,50</b>	<b>4,58</b>

**MAIN OPERATION: DRILLING**

<i>Sub operation</i>	<i>Minutes</i>	<i>Hours</i>	<i>% of total</i>
BOP/WELLHEAD	4350	72,50	11,49
TRIP	12510	208,50	33,04
DRILL	6540	109,00	17,27
SURVEY	1395	23,25	3,68
REAM	870	14,50	2,30
OTHER	450	7,50	1,19
HOLE OPEN	1740	29,00	4,60
CIRC/COND	2700	45,00	7,13
CASING	6720	112,00	17,75
PRESS	75	1,25	0,20
BOP ACTIVITIES	510	8,50	1,35
<b>Total</b>	<b>37860</b>	<b>631,00</b>	<b>100,00</b>

**MAIN OPERATION: COMPLETION**

<i>Sub operation</i>	<i>Minutes</i>	<i>Hours</i>	<i>% of total</i>
CIRC/COND	4425	73,75	12,60
OTHER	10980	183,00	31,26
WIRE LINE	4650	77,50	13,24
BOP/WELLHEAD	750	12,50	2,13
COMPL STRING	5040	84,00	14,35
PERFORATE	120	2,00	0,34
FLOW	7020	117,00	19,98
SAND CONTROL	1920	32,00	5,47
WAIT	30	0,50	0,09
STIMULATE	195	3,25	0,56
<b>Total</b>	<b>35130</b>	<b>585,50</b>	<b>100,00</b>

**MAIN OPERATION: FORMATION EVAL**

<i>Sub operation</i>	<i>Minutes</i>	<i>Hours</i>	<i>% of total</i>
LOG	3180	53,00	67,09
CIRC SAMPLES	270	4,50	5,70
CORE	1080	18,00	22,78
OTHER	90	1,50	1,90
TRIP	120	2,00	2,53
<b>Total</b>	<b>4740</b>	<b>79,00</b>	<b>100,00</b>

**MAIN OPERATION: PLUG & ABANDON**

<i>Sub operation</i>	<i>Minutes</i>	<i>Hours</i>	<i>% of total</i>
OTHER	1380	53,00	21,30
CIRC/COND	270	4,50	4,17
MECHANICAL PLUC	1590	18,00	24,54
TRIP	1815	1,50	28,01
CEMENT PLUG	555	2,00	8,56
EQUIP RECOVERY	870	79,00	13,43
<b>Total</b>	<b>6480</b>	<b>0,00</b>	<b>100,00</b>

WELL: 640709 06 PRESSURE COMPOSITE PLOT

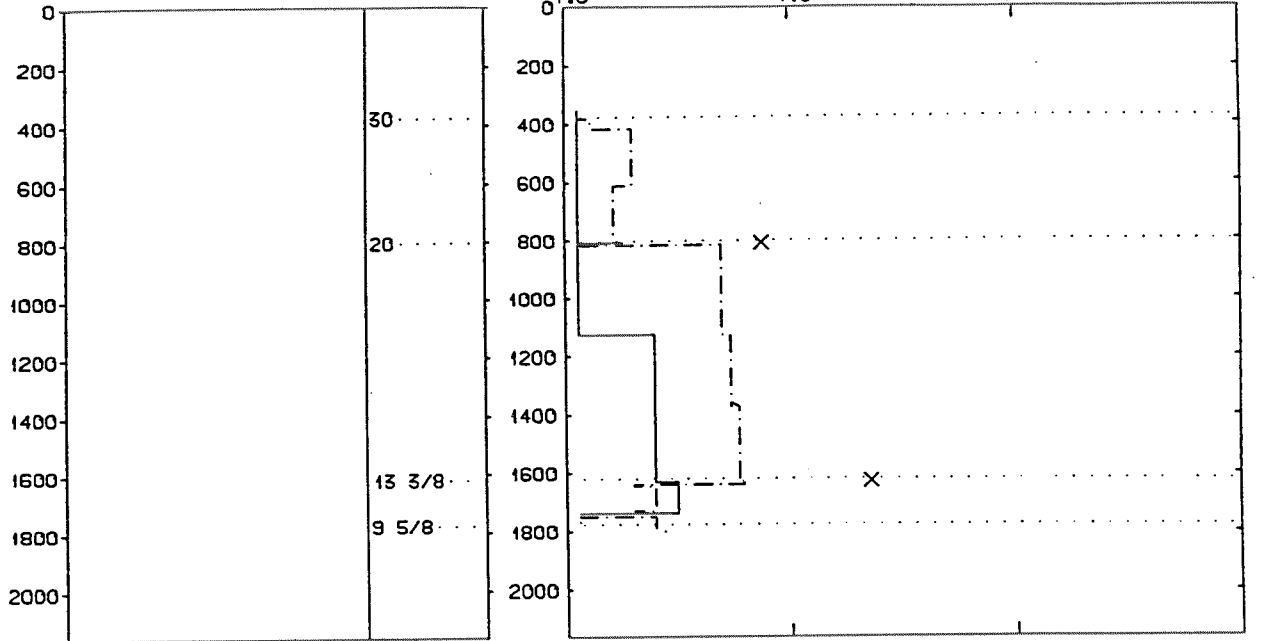
DEPTH  
(RKB)  
(METERS MD)

CASING

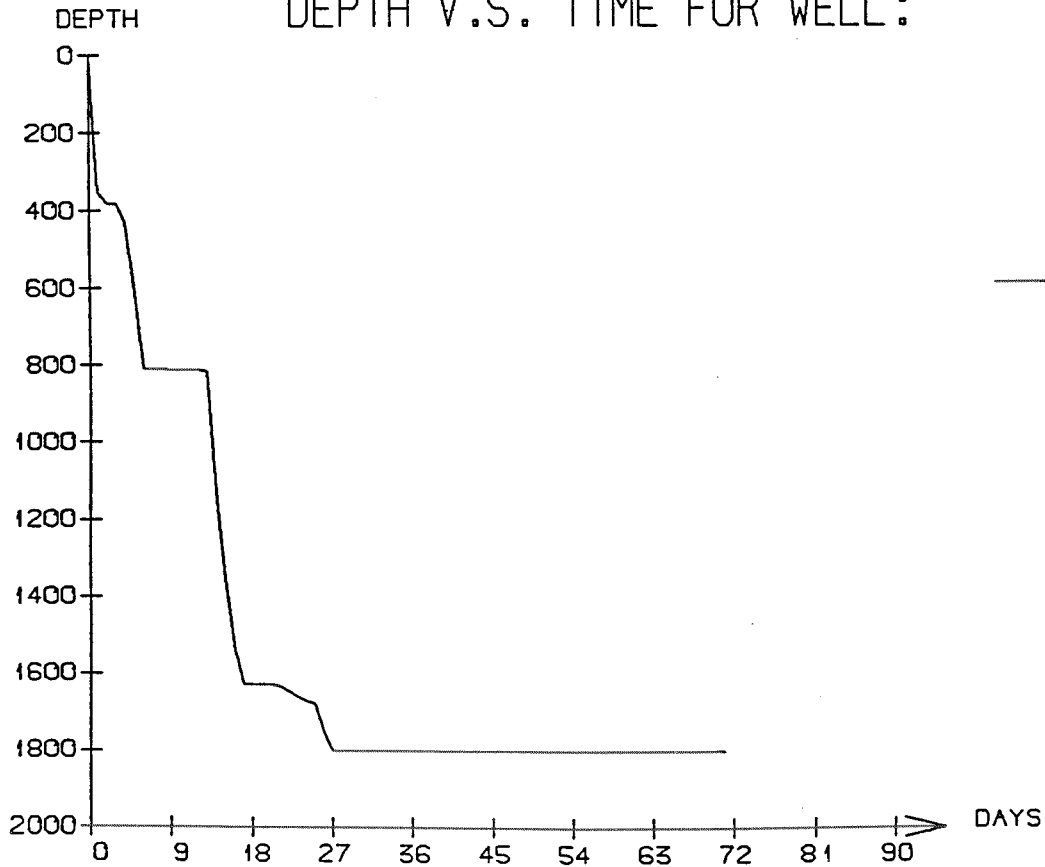
ACTUAL

PRESSURE GRADIENTS  
(g/ccm)

— PORE PRESSURE (REPORT)  
- - - MUDWEIGHT (REPORT)  
X LEAK-OFF (REPORT)



DEPTH V.S. TIME FOR WELL:



## Well History 6407/9-6

### GENERAL:

Well 6407/9-6 was drilled on the Draugen Field in the Norwegian North Sea. The target area was the Rogn Sandstone Formation of the Late Jurassic. The main objectives were to identify the western edge of the Rogn Formation and by calibration of the impedance seismic data, delineate the pinch-out over the western and southwestern flanks; to establish the reservoir properties and the development of the Unit III basal shales in the region of the Rogn sand pinch-out; to evaluate the water injection potential in an oil bearing interval of the reservoir sands; and to calibrate the seismic velocity model and improve the structural interpretation of the western flank.

### OPERATIONS:

Appraisal well 6407/9-6 was spudded 2 January 1986 by Dolphin Services A/S semi-submersible rig Borgny Dolphin and completed 13 March, 1986 at a depth of 1800 m in Early Jurassic rocks. Drilling proceeded without significant problems.

4 cores were cut in the interval 1646 - 1690.2 m. The oil/water contact was as expected at 1664 m RKB.

After the well was plugged it was discovered that small amounts of Methane leaked from the well head. The rig abandoned the location and a diving ship will inspect this later. The well was suspended as an oil discovery and a possible water injection well.

### TESTING:

1 DST test was performed in the interval 1643 - 1656 m.

# GEOLOGICAL TOPS

WELL:6407/9-6

Depth m (RKB)

<i>Nordland Group</i>	301.0
<i>Hordaland Group</i>	832.0
<i>Brygge Fm.</i>	832.0
<i>Rogaland Group</i>	1342.0
<i>Tare Fm.</i>	1342.0
<i>Tang Fm.</i>	1377.0
<i>Shetland Group</i>	1541.0
<i>Cromer Knoll Group</i>	1571.0
<i>Viking Group</i>	1611.0
<i>Spekk Fm.</i>	1611.0
<i>Rogn Fm.</i>	1642.5
<i>Fangst Group</i>	1661.0
<i>Garn Fm.</i>	1661.0
<i>Not Fm.</i>	1745.0
<i>T.D.</i>	1800.0