

Well no : 6407/09-04

Operator : SHELL

Coordinates : 64 22 14.00 N
07 43 21.84 E

UTM coord. : 7139103 N
438354 E

Licence no : 93

Permit no : 472

Rig : WEST VENTURE

Rig type : SEMI-SUB.

Contractor : A/S SMEDVIK DRILLING CO.

Bottom hole temperature : 47.8 deg.C

Elev. KB : 32 M

Spud. date : 85.07.04

Water depth : 244 M

Compl. date : 85.09.10

Total depth : 1820 M

Spud. class : APPRAISAL

Form. at TD : E.JURASSIC

Compl. class : P&A. OIL DISCOVERY

Prod. form : JURASSIC

Seisloca : 84 - 117 A SP. 630

LICENSEES

20.000000 BP PETROLEUM DEVELOPMENT 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/cm ³
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CONDUCTOR	30	365.5	36	373.0	
SURF.COND.	20	804.5	26	820.0	1.55
INTERM.	13 3/8	1622.0	17 1/2	1635.0	1.81
INTERM.	9 5/8	1793.0	12 1/4	1820.0	

CONVENTIONAL CORES

Core no.	Intervals cored meters	Recovery		Series
		M	%	
1	1666.0 - 1671.1	5.1	100.0	MIDDLE JURASSIC
2	1673.0 - 1674.7	1.7	100.0	MIDDLE JURASSIC
3	1676.3 - 1684.4	8.1	87.0	MIDDLE JURASSIC
4	1685.7 - 1695.5	9.5	97.0	MIDDLE JURASSIC
5	1695.5 - 1711.5	15.8	99.0	MIDDLE JURASSIC

MUD PROPERTIES

Depth below KB meter	Mud weight g/cm ³	Funnel viscosity mPa.s	Mud type
295.000	1.03		WATER BASED
417.000	1.06		WATER BASED
820.000	1.09	50.0	WATER BASED
1000.000	1.35	43.0	WATER BASED
1076.000	1.36	53.0	WATER BASED
1084.000	1.38	53.0	WATER BASED
1408.000	1.40	50.0	WATER BASED
1666.000	1.19		WATER BASED
1700.000	1.20	45.0	WATER BASED

DRILL STEM TEST

INTERVALS AND PRESSURES

Test no	interval meter	Choke size	Pressure (PSI)		
			WHP	BTHP	FFP
1.0	1708.000 - 1713.000				
2.0	1662.000 - 1668.000	25.4	306		

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	962		0.820	0.820	36

DRILL BIT CUTTINGS AND WET SAMPLES

SAMPLE TYPE	INTERVAL BELOW KB	NUMBER OF SAMPLES
Cutting	390 - 1820	150
Wet Samples	390 - 1820	192

SHALLOW GAS

Interval below KB	REMARKS
380 M	POSSIBLE GAS CHARGED SAND LAYERS

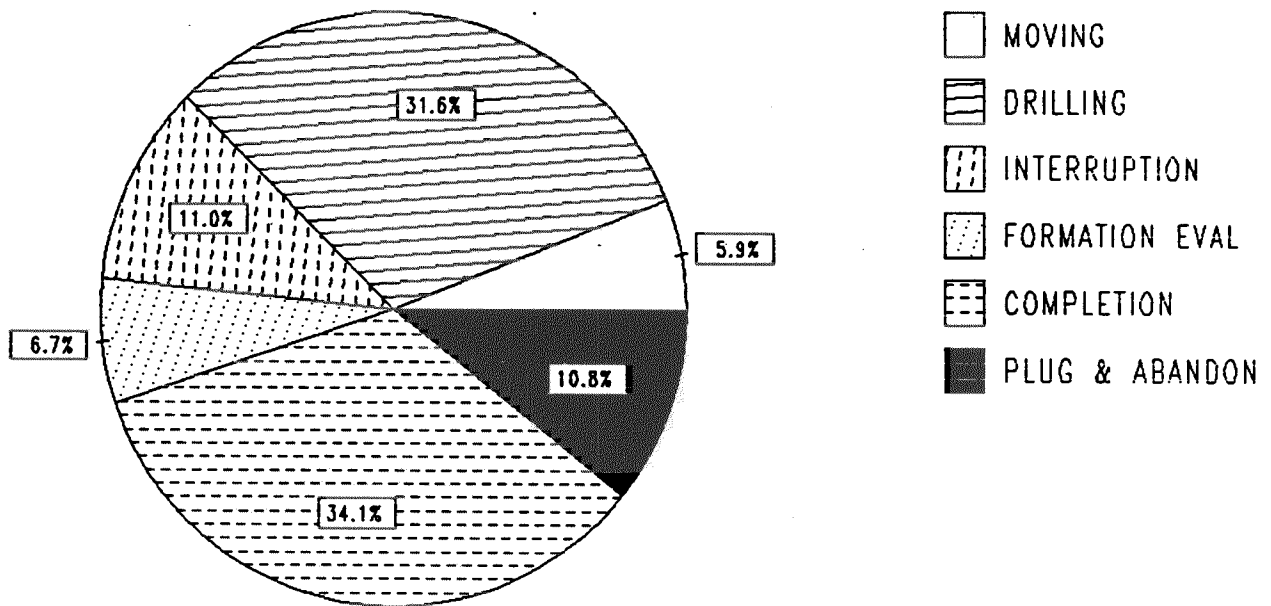
AVAILABLE LOGS

LOG TYPE	INTERVALS	1/200	1/500
ISF LSS GR	365 - 816	X	X
ISF LSS	805 - 1626	X	X
ISF LSS	1622 - 1816	X	X
LDL CNL	365 - 818	X	X
LDL CNL	805 - 1628	X	X
LDL CNL SGR	1622 - 1817	X	X
DLL MSFL	1622 - 1814	X	X
CDM AP/SHDT	1621 - 1815	X	X
SHDT GR	1622 - 1815	X	
NGS	1622 - 1817	X	
RFT	1681 - 1798	X	
TEMPERATURE DATA	276 - 1820	1:5000	
PRESSURE EVALUATION	276 - 1820	1:5000	
WIRELINE DATA PRESSURE	276 - 1820	1:5000	
DRILLING DATA PRESSURE	276 - 1820	1:5000	
CBL VDL	700 - 1620	X	
CBL VDL	1565 - 1753	X	
MUD	375 - 1820		X
VELOCITY	365 - 1818		X

(+ Synthetic Seismogram, Geogram, 20 cm/s, 6 stk)
 (+ V.S.P., Rigshot V.S.P., Plot 1-13, 20 cm/s, 13 stk)

DAILY DRILLING REPORT SYSTEM

Main operation : 6407/09-04



Total : 1728 HRS

Main operation	Minutes	Hours	% of total
MOVING	6120	102.00	5.90
DRILLING	32730	545.50	31.57
INTERRUPTION	11370	189.50	10.97
FORMATION EVAL	6990	116.50	6.74
COMPLETION	35310	588.50	34.06
PLUG & ABANDON	11160	186.00	10.76

MAIN OPERATIONS WELL : 6407/09-04

MAIN OPERATION: DRILLING

Sub operations	Min	Hrs	% of total
OTHER	3150	52.50	9.62
BOP/WELLHEAD EQ	900	15.00	2.75
TRIP	6540	109.00	19.98
DRILL	7320	122.00	22.36
SURVEY	570	9.50	1.74
CIRC/COND	1710	28.50	5.22
CASING	7290	121.50	22.27
HOLE OPEN	1290	21.50	3.94
UNDERREAM	1470	24.50	4.49
BOP ACTIVITIES	2250	37.50	6.87
REAM	240	4.00	0.73
TOTAL	32730	545.50	

MAIN OPERATION: MOVING

Sub operations	Min	Hrs	% of total
TRANSIT	2370	39.50	38.73
ANCHOR	3750	62.50	61.27
TOTAL	6120	102.00	

MAIN OPERATION: FORMATION EVAL

Sub operations	Min	Hrs	% of total
OTHER	1020	17.00	14.59
LOG	3540	59.00	50.64
CIRC SAMPLES	120	2.00	1.72
CORE	720	12.00	10.30
TRIP	1440	24.00	20.60
CIRC/COND	150	2.50	2.15
TOTAL	6990	116.50	

MAIN OPERATION: INTERRUPTION

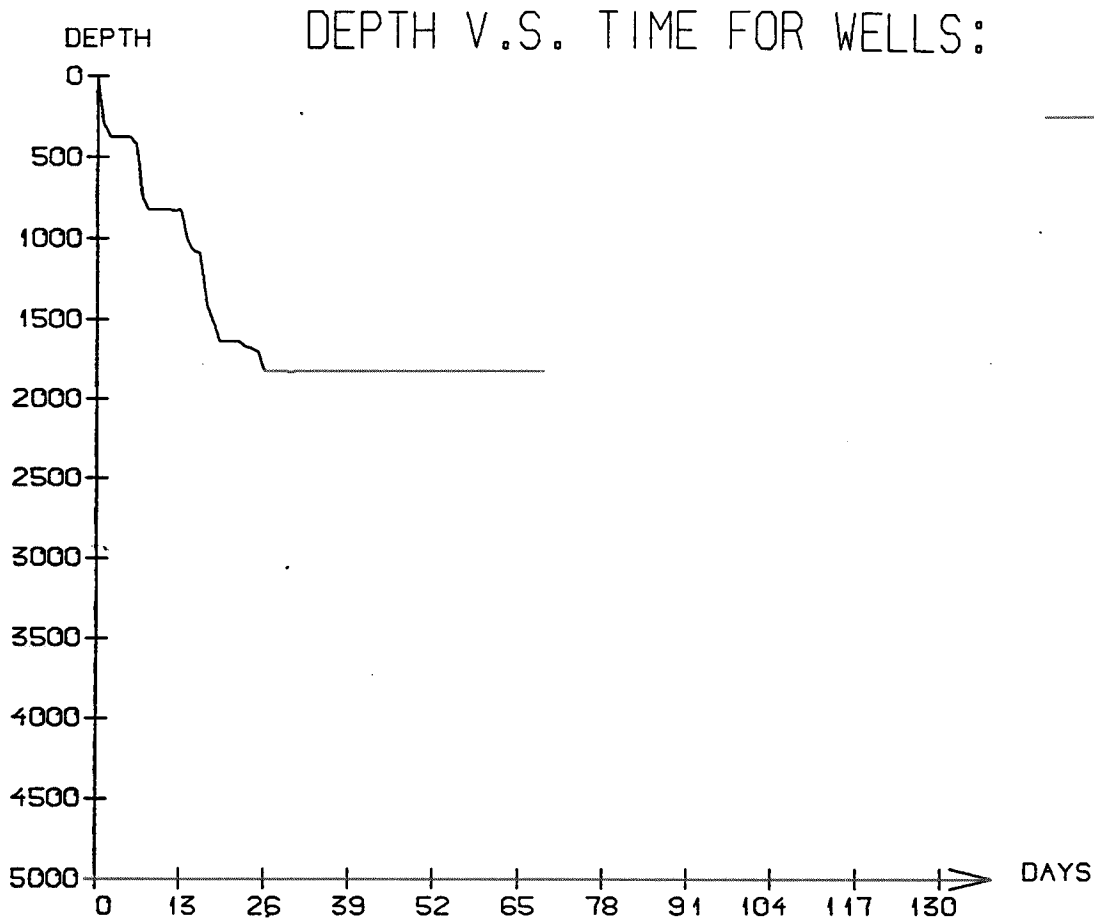
Sub operations	Min	Hrs	% of total
MAINTAIN/REP	4950	82.50	43.54
FISH	1830	30.50	16.09
OTHER	1950	32.50	17.15
WAIT	2640	44.00	23.22
TOTAL	11370	189.50	

MAIN OPERATION: COMPLETION

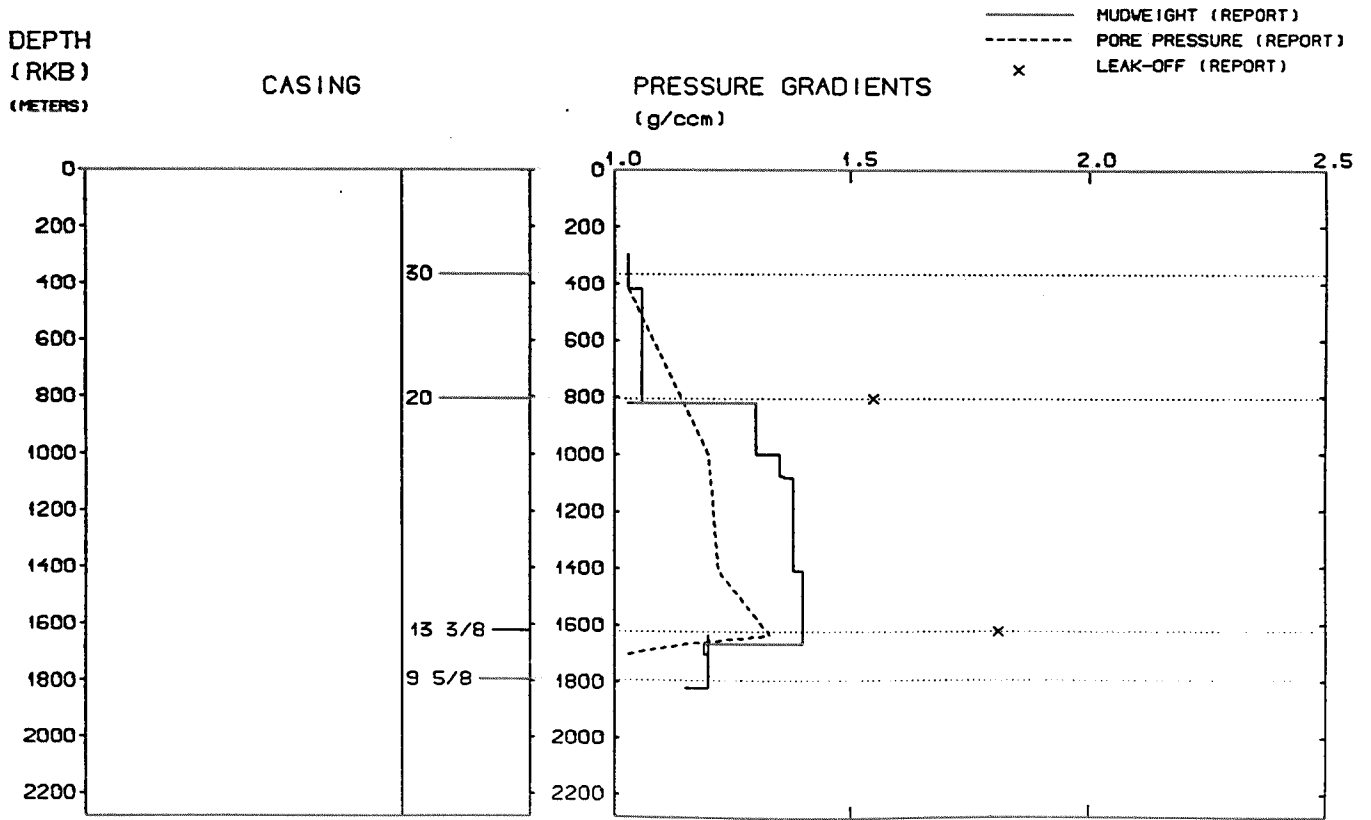
Sub operations	Min	Hrs	% of total
OTHER	7230	120.50	20.48
CIRC/COND	4920	82.00	13.93
WIRE LINE	4530	75.50	12.83
COMPL STRING	8340	139.00	23.62
PERFORATE	510	8.50	1.44
FLOW	7020	117.00	19.88
BOP/WELLHEAD EQ	810	13.50	2.29
SAND CONTROL	1680	28.00	4.76
WAIT	150	2.50	0.42
STIMULATE	120	2.00	0.34
TOTAL	35310	588.50	

MAIN OPERATION: PLUG & ABANDON

Sub operations	Min	Hrs	% of total
TRIP	3540	59.00	31.72
CIRC/COND	270	4.50	2.42
CEMENT PLUG	1380	23.00	12.37
MECHANICAL PLUG	660	11.00	5.91
OTHER	870	14.50	7.80
PERFORATE	510	8.50	4.57
EQUIP RECOVERY	3930	65.50	35.22
TOTAL	11160	186.00	



WELL: 640709 04 PRESSURE COMPOSITE PLOT



WELL HISTORY 6407/9-4

GENERAL:

Appraisal well 6407/9-4 was drilled as the fourth well on the Draugen Field.

The main objective was Late Jurassic, Frøy Formation.

The purpose of the well was to evaluate the reservoir quality and sand development on the north-west flank of the accumulation, and to evaluate the oil deliverability and water injection potential of the reservoir sands.

OPERATIONS:

6407/9-4 was spudded 4 July 1985 by the semi-submersible rig West Venture.

No significant problems were encountered while drilling the well.

Light oil with a low gas content was discovered in Tomma Formation, as Frøy Formation proved to be only appr. 1 m thick. The oil/water contact corresponded with the those in the rest of the Draugen Field, and was found at 1638 m (msl).

It is therefor possible that direct communication exist, through the fault east of 6407/9-4, between Tomma and Frøy Formation.

The result from this well seems to confirm the NPD,s resource estimate for the Draugen Field.

5 cores were cut in the well.

TESTING:

To Drill Stem Tests were performed. One injection test in the water zone, and 1 production test in the oil zone.

GEOLOGICAL TOPS

WELL: 6407/09-04

Depth m (RKB)

<i>Nordland Group</i>	277
<i>Hordaland Group</i>	886
<i>Rogaland Group</i>	1401
<i>Tare Fm</i>	1401
<i>Tang Fm</i>	1442
<i>Shetland Group</i>	1571
<i>Cromer Knoll Group</i>	1609
<i>Viking Group</i>	1635
<i>Spekk Fm</i>	1635
<i>Rogn Fm</i>	1657
<i>Fangst Group</i>	1660
<i>Garn Fm</i>	1660
<i>Not Fm</i>	1702
<i>Ile Fm</i>	1748
<i>Båt Group</i>	1767
<i>Ror Fm</i>	1767
<i>Tilje Fm</i>	1794
<i>TD=</i>	1820