

Well no : 7321/09-01

Operator : HYDRO

Coordinates : 73 16 07.34 N
21 41 0.68 E

UTM coord. : 8142669 N
714366 E

Licence no : 141

Permit no : 594

Rig : ROSS RIG

Rig type : SEMI-SUB.

Contractor : ROSS DRILLING CO. A/S

Bottom hole temperature : 84 deg.C

Elev. KB : 23 M

Spud. date : 88.10.25

Water depth : 459 M

Compl. date : 88.11.28

Total depth : 1800 M

Spud. class : WILDCAT

Form. at TD : L.TRIASSIC

Compl. class : P&A. SHOWS

Prod. form :

Seisloca : SBB - 86 - 1198 SP 265

LICENSEES

15.000000 BP PETROLEUM DEV. OF NORWAY A.S
20.000000 NORSK HYDRO PRODUKSJON A.S
5.000000 SAGA PETROLEUM A.S.
50.000000 DEN NORSKE STATS OLJESELSKAP A.S
10.000000 TENNECO OIL NORWAY 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	543.0	36	546.0	.
CONDUCTOR	30	546.0	36	546.0	.
INTERM.	13 3/8	668.0	17 1/2	680.0	1.38

CONVENTIONAL CORES

Core no.	Intervals cored meters	Recovery		Series
		M	%	
1	1365.0 - 1384.1	19.1	97.9	
2	1385.2 - 1398.2	13.0	100.0	

MUD PROPERTIES

Depth below KB meter	Mud weighth g/cm3	Viscosity	Mud type
500.000	1.14	15.0	WATER BASED
562.000	1.05	0.0	WATER BASED
622.000	1.14	15.0	WATER BASED
680.000	1.05	0.0	WATER BASED
680.000	1.08	13.0	WATER BASED
1800.000	1.14	16.0	WATER BASED

DRILL BIT CUTTINGS AND WET SAMPLES

SAMPLE TYPE	INTERVAL BELOW KB	NUMBER OF SAMPLES
Cutting	690-1800	210
Wet Samples	690-1800	180

SHALLOW GAS

Interval below KB	REMARKS

AVAILABLE LOGS

LOG TYPE	INTERVALS	1/200	1/500	Div.
DIL LSS MSFL GR	669.000 - 1372.000	X	X	
LDL CNL NGS	669.000 - 1370.000	X		
MWD	547.000 - 1362.000	X	X	
MWD	1385.000 - 1511.000	X	X	
CDM AP	675.000 - 1366.000	X	X	
SHDT	669.000 - 1372.000	X		
NGS RATIOS	669.000 - 1370.000	X	X	
PRESSURE EVALUATION	483.000 - 1390.000			1:5000
RFT HP GR	937.000 - 1365.000			
MUD	483.000 - 1801.000			X
VELOCITY LOG	668.000 - 1371.000			1:1000 X
(Synthetic seismogram, 10 cm/s				5 stk)
(Two way travel time, 10cm/s				1 stk)
(Display of well velocity records, part 1+2				2 stk)

MAIN OPERATIONS FOR WELL: 732109 01**Main operation: DRILLING**

Sub operations	Minutes	Hrs	% of total
BOP ACTIVITIES	2370	39,5	12,31
BOP/WELLHEAD EQ	390	6,5	2,02
CASING	2850	47,5	14,80
CIRC/COND	420	7,0	2,18
DRILL	7950	132,5	41,28
HOLE OPEN	120	2,0	0,62
OTHER	120	2,0	0,62
REAM	600	10,0	3,12
SURVEY	150	2,5	0,78
TRIP	4290	71,5	22,27
Total	19260	321,0	100,00

Main operation: FORMATION EVAL

Sub operations	Minutes	Hrs	% of total
CIRC/COND	30	0,5	0,53
CORE	2280	38,0	40,43
LOG	2370	39,5	42,02
TRIP	960	16,0	17,02
Total	5640	94,0	100,00

Main operation: INTERRUPTION

Sub operations	Minutes	Hrs	% of total
FISH	6690	111,5	37,48
LOST CIRC	120	2,0	0,67
MAINTAIN/REP	4980	83,0	27,90
OTHER	1590	26,5	8,91
WAIT	4470	74,5	25,04
Total	17850	297,5	100,00

Main operation: MOVING

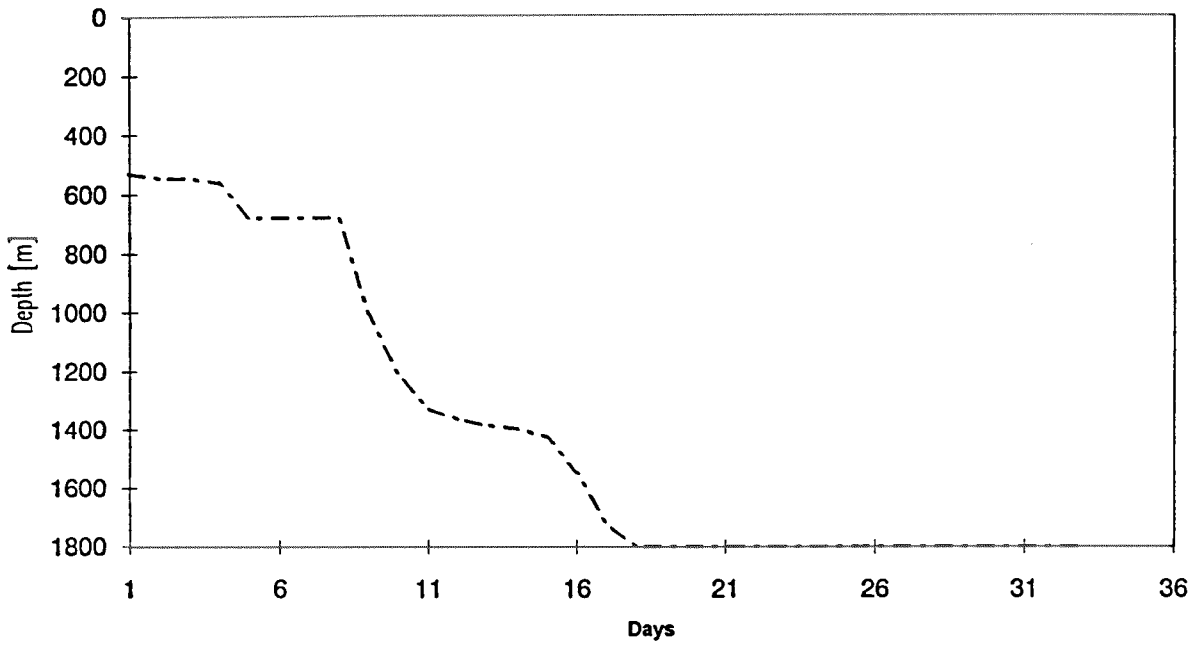
Sub operations	Minutes	Hrs	% of total
ANCHOR	3120	52,0	86,67
TRANSIT	480	8,0	13,33
Total	3600	60,0	100,00

Main operation: PLUG & ABANDON

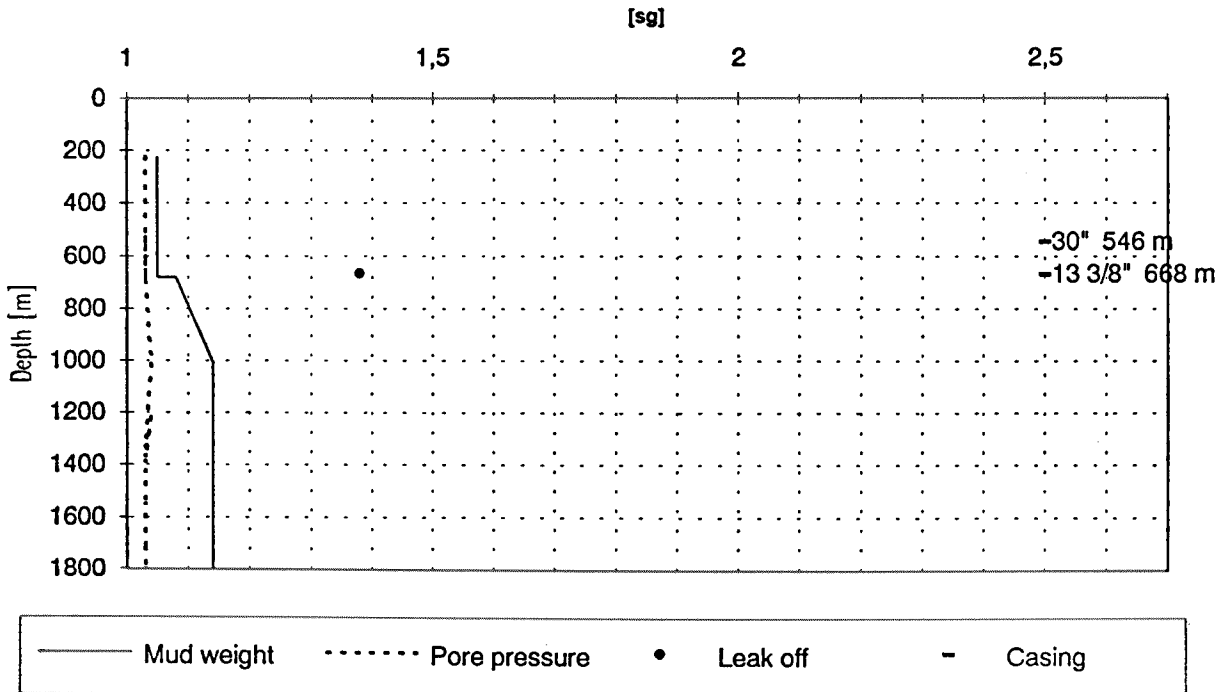
Sub operations	Minutes	Hrs	% of total
CEMENT PLUG	300	5,0	18,87
CIRC/COND	30	0,5	1,89
EQUIP RECOVERY	510	8,5	32,08
MECHANICAL PLUG	180	3,0	11,32
TRIP	570	9,5	35,85
Total	1590	26,5	100,00

Total time used 799 hrs (33 days)

Depth v.s. time plot for well: 732109 01



Composite plot for well: 732109 01



Well History 7321/9-1

GENERAL:

Well 7321/9-1 was drilled on the Beta structure on a rotated fault block in the Bjarmeland subbasin. The main objectives of the well were to:

- Test the hydrocarbon potential of the Beta structure with the target horizon being the Late Triassic to Middle Jurassic sandstones.
- Leave a minimum of untested potential updip from the well location.
- Avoid faults in the vicinity of the well location to ensure a good seismic tie.
- Gather as much geological information as possible regarding reservoir, source and cap rock interval.
- Have the well approved as a commitment well.

OPERATIONS:

Wildcat well 7321/9-1 was spudded 25 October 1988 by Ross Drilling semi-submersible rig Ross Rig and completed 28 November 1988 at a depth of 1800 m in Late Triassic rocks.

Drilling proceeded without any significant problems. On the way out of the hole the string got stuck at 1501 m. After several unsuccessful attempts, the string was shot off at 1377 m. There were also mechanical problems during plugging.

There was no shallow gas in the hole. Reservoir sandstone was not encountered at Intra Barremian level. A new possible source rock with high organic content was encountered in Barremian in the interval 961 - 986 m. Approx. 116 m of reservoir rock was found in Middle Jurassic - Late Jurassic level with 36.4 m net sand. The reservoirs were water-bearing with only weak indications of hydrocarbons. 19 attempts of RFT pressure testing were done with only one good measurement at 1359 m. The formation pressure here was measured to be 0.83 SG. Due to the technical problems experienced, the lower part of the well between 1507 - 1800 m was not logged. From approx. 1000 - 670 m the quality of the MSFL and sonic logs was bad due to a powerful wash-out of the hole.

Two cores were cut in the interval 1365 - 1398.2 m. The well is plugged and abandoned with shows.

TESTING:

No DST tests were performed in the well.

GEOLOGICAL TOPS

WELL: 7321/9-1

Depth m (RKB)

<i>Nordland Group</i>	482.5
<i>Nordvestbanken Group</i>	558.0
<i>Kolmule Fm.</i>	558.0
<i>Kolje Fm.</i>	892.0
<i>Knurr Fm.</i>	985.0
<i>Teistengrunnen Group</i>	1316.5
<i>Hekkingen Fm.</i>	1316.5
<i>Fuglen Fm.</i>	1366.5
<i>Realgrunnen Group</i>	1378.8
<i>Stø Fm.</i>	1378.8
<i>Nordmela Fm.</i>	1416.5
<i>Fruholmen Fm.</i>	1423.5
<i>Reke Mb.</i>	1423.5
<i>Akkar Mb.</i>	1536.0
<i>Ingøydjupet Group</i>	1572.0
<i>Snadd Fm.</i>	1572.0
<i>T.D.</i>	1800.0