

<b>Well no:</b>	<b>Operator:</b>
<b>30/09-13 S</b>	<b>HYDRO</b>

## Well

Coordinates :	60° 21' 37.69" N 02° 43' 17.78" E	UTM coord. :	6691746.63 N 484640.3 E
License no :	104	Permit no :	688
Rig :	VILDKAT EXPLORER	Rig type :	SEMI-SUB.
Contractor :	TRANSNOR RIG AS		
Bottom hole temp:	133 °C	Elev. KB :	25 M
Spud. date :	91.07.05	Water depth :	106 M
Compl. date :	91.10.11	Total depth :	3964 M
Spud. class :	WILDCAT	Form. at TD :	E.JURASSIC
Compl. class :	SUSPENDED. OIL/GAS	Prod.form. :	M/L.JURA
Seisloca :	NH 8502, RAD 267, KOLONNE 592		

## Licensees

5.000000 CONOCO PETROLEUM NORGE AS  
5.000000 DNO OLJE A/S  
30.000000 NORSK HYDRO PRODUKSJON AS  
5.000000 SAGA PETROLEUM A.S.  
50.000000 DEN NORSKE STATS OLJESELSKAP A.S  
5.000000 NORSK AGIP AS

## Casing and Leak-off Tests

Type	Casing diam	Depth below KB	Hole diam.	Hole depth below KB	Lot mud eqv. g/cm3
CONDUCTOR	30	216.0	36	218.0	
INTERM.	13 3/8	1017.0	17 1/2	1020.0	
INTERM.	9 5/8	2876.0	12 1/4	2880.0	1.88
LINER	7	3326.0	8 1/2	4027.0	1.65

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### Conventional Cores

Core no.	Intervals cored meters	Recovery m	%
1	2957.0 - 2975.0	18.0	100.0
2	2975.0 - 2985.0	10.0	100.0
3	2985.0 - 3018.0	33.0	100.0
4	3018.0 - 3040.7	22.7	100.0
5	3041.0 - 3066.7	25.7	100.0
6	3067.0 - 3086.0	19.0	100.0
7	3086.0 - 3093.6	7.6	100.0
8	3095.0 - 3122.0	27.0	100.0
9	3122.0 - 3150.4	28.4	100.0
10	3150.4 - 3178.8	28.4	100.0
11	3179.0 - 3188.0	9.0	100.0

### Mud

Depth	Mud weight	Visc.	Mud type
217.0	1.05		WATER BASED
1030.0	1.20		WATER BASED
1052.0	1.10	11.0	WATER BASED
1205.0	1.12	14.0	WATER BASED
1486.0	1.20	16.0	WATER BASED
1685.0	1.32	20.0	WATER BASED
1822.0	1.33	20.0	WATER BASED
1960.0	1.33	22.0	WATER BASED
2498.0	1.31	23.0	WATER BASED
2579.0	1.32	19.0	WATER BASED
2610.0	1.33	18.0	WATER BASED
2783.0	1.35	19.0	WATER BASED
2786.0	1.27	11.0	WATER BASED
2890.0	1.35	20.0	WATER BASED
2921.0	1.22	14.0	WATER BASED
2963.0	1.35	23.0	WATER BASED
2975.0	1.23	15.0	WATER BASED
2993.0	1.22	15.0	WATER BASED
3009.0	1.27	4.0	WATER BASED
3031.0	1.35	21.0	WATER BASED
3067.0	1.22	15.0	WATER BASED
3083.0	1.26	8.0	WATER BASED
3316.0	1.22	12.0	WATER BASED

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3991.0	1.26	20.0	WATER BASED
4027.0	1.27	20.0	WATER BASED

### Drill Stem Test (intervals and pressures)

Test no.	Test interval meter	Choke size	Pressure (psi) WHP	BTHP	FFP
1.0	3086.0 - 3095.0	19.0	1218	3660.5	
2.0	3024.0 - 3073.0	19.0	889	2691.7	
3.0	2958.0 - 2986.0	28.5	753	1457.5	

### Drill Stem Test (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	792	120983	0.850	0.730	153
2.0	535	107458	0.840	0.760	201
3.0	90	459522	0.780	0.720	5099

### Drill Bit Cuttings and Wet Samples

Sample type	Interval below KB	Number of samples
WET SAMPLES	1030 - 4027	540
CUTTINGS	1030 - 4077	690

### Shallow Gas

Interval below KB	Remarks

### Available Logs

Log type	Intervals logged	1/200	1/500
AMS	1016.0 - 4018.0		

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CDM AP/SHDT MSD	2925.0 - 4029.0			
CDR	250.0 - 525.0			
CST	2487.0 - 4020.0			
DIL LSS AMS SP GR	3286.0 - 4027.0			
DIL LSS SP GR TVD	1016.0 - 3006.0			
DIL LSS SP SGR	2874.0 - 3394.0			
DIL LSS SP SGR GR	1016.0 - 4027.0			
DLL MSFL AMS SP GR	3940.0 - 4026.0			
DLL MSFL SP GR	2700.0 - 4026.0			
DRILLING DATA PRESS.	131.0 - 4027.0			
FMS GR	2925.0 - 4029.0			
LDL CNL AMS SGR	3300.0 - 4029.0			
LDL CNL SGR	2874.0 - 4029.0			
LDL CNL SGR GR	1016.0 - 4029.0			
LDL GR	1016.0 - 3006.0			
MWD MD+TVD	220.0 - 4027.0			
NGS PLAYBACK	3300.0 - 4020.0			
NGS RATIOS	2874.0 - 3366.0			
PLT BHS	150.0 - 2940.0			
RFT HP	3079.0 - 4014.0			
RFT HP GR	2966.0 - 3392.0			
SYNTHETIC SEISMOGRAM				
TWO-WAY TRAVEL TIME	100.0 - 3900.0			
VSP				

## Main operations for well: 30/9-13 S

### Main operation: DRILLING

Sub operation:	Minutes:	Hours:	% of total:
BOP ACTIVITIES	1980	33,0	3,95
BOP/WELLHEAD EQ	180	3,0	0,36
CASING	5640	94,0	11,25
CIRC/COND	1410	23,5	2,81
DRILL	24750	412,5	49,37
OTHER	1200	20,0	2,39
REAM	540	9,0	1,08
SURVEY	60	1,0	0,12
TRIP	14370	239,5	28,67
<b>Total</b>	<b>50130</b>	<b>835,5</b>	<b>100,00</b>

### Main operation: FORMATION EVAL

Sub operation:	Minutes:	Hours:	% of total:
CIRC SAMPLES	600	10,0	1,11
CIRC/COND	570	9,5	1,06
CORE	5040	84,0	9,36
DST	32550	542,5	60,48
LOG	6630	110,5	12,32
RFT/FIT	2340	39,0	4,35
TRIP	6090	101,5	11,32
<b>Total</b>	<b>53820</b>	<b>897,0</b>	<b>100,00</b>

### Main operation: INTERRUPTION

Sub operation:	Minutes:	Hours:	% of total:
FISH	13890	231,5	45,13
MAINTAIN/REP	15450	257,5	50,19
OTHER	330	5,5	1,07
WAIT	1110	18,5	3,61
<b>Total</b>	<b>30780</b>	<b>513,0</b>	<b>100,00</b>

### Main operation: MOVING

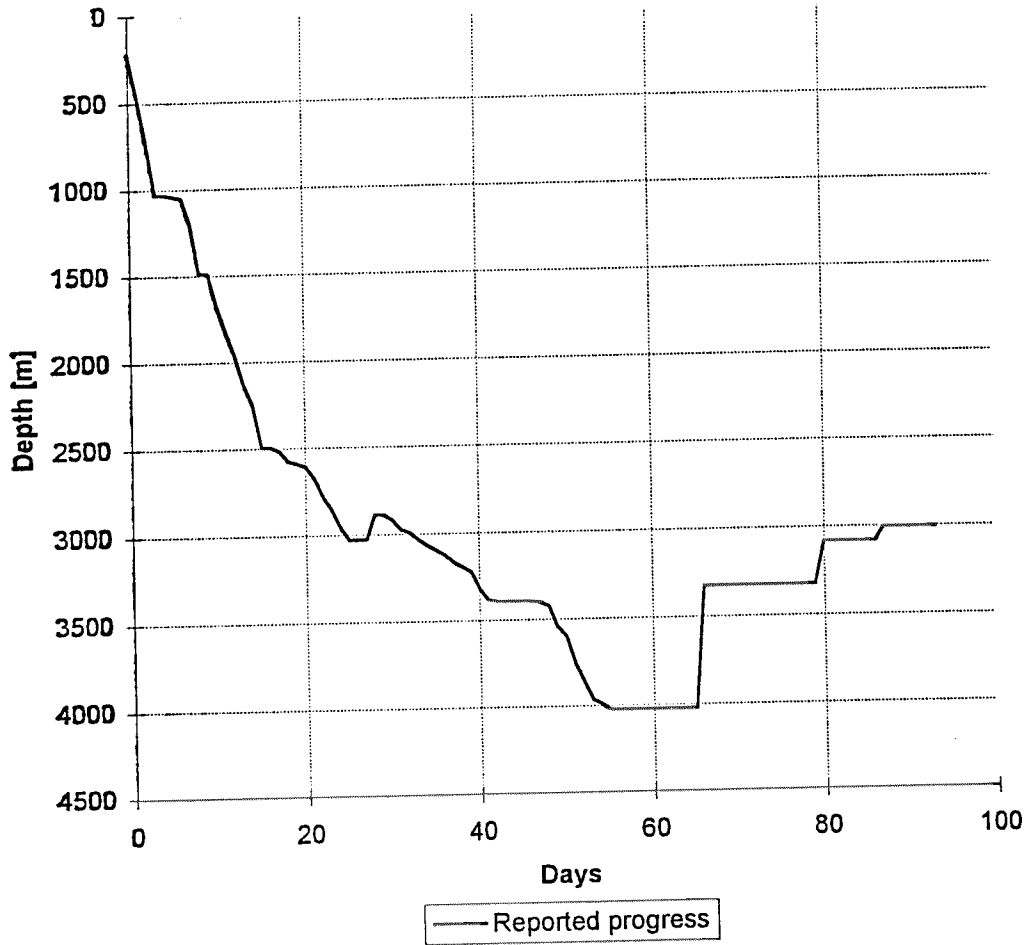
Sub operation:	Minutes:	Hours:	% of total:
ANCHOR	1560	26,0	38,52
TRANSIT	2490	41,5	61,48
<b>Total</b>	<b>4050</b>	<b>67,5</b>	<b>100,00</b>

### Main operation: PLUG & ABANDON

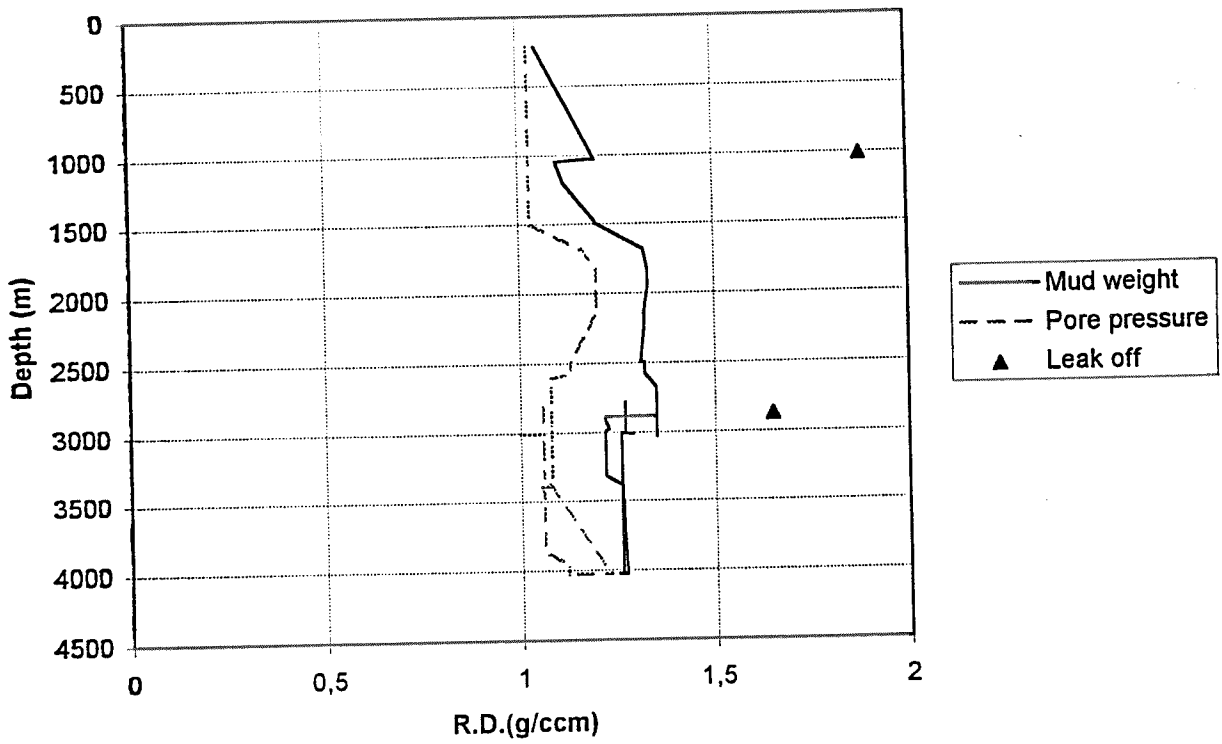
Sub operation:	Minutes:	Hours:	% of total:
CEMENT PLUG	390	6,5	10,32
CIRC/COND	270	4,5	7,14
CUT	120	2,0	3,17
EQUIP RECOVERY	120	2,0	3,17
MECHANICAL PLUG	810	13,5	21,43
OTHER	30	0,5	0,79
TRIP	2040	34,0	53,97
<b>Total</b>	<b>3780</b>	<b>63,0</b>	<b>100,00</b>

Total time used: 2376,0 Hours

Depth vs time for well: 30/9-13 S



Composite plot for well: 30/9-13 S



# Well History 30/9-13 S

## General:

Well 30/9-13 S is located in the central western part of block 30/9 on the G-east structure south west of the Oseberg Field on the Horda Platform. The main objectives of the well were:

- 1) to prove oil and verify the potential resources within the G-east prospect.
- 2) to define the fluid contacts and leave a minimum of untested reserves by locating the well in an optimum position where the contacts can be established in the lower part of the Tarbert Formation.
- 3) to verify the Tarbert reservoir model by drilling an untruncated Tarbert Formation.
- 5) to verify the structural mapping, depth conversion and geological model for the G-prospect area.
- 6) to test the resource potential within the Ness, Oseberg, Rannoch, Etive, Cook, and Statfjord Formations.

The well was planned deviated due to a very high amplitude reflection, resulting in a shallow gas warning for a sand layer at 496 m RKB  $\pm$  10 m

## Operations:

Wildcat well 30/9-13 S was spudded 5 May 1991 by the semi-submersible rig Vildkat Explorer and completed 12 October 1991 at a total depth of 4027 m RKB MD within the Statfjord Formation. The well was kicked off at 1053 m RKB and drilled to 1483 m RKB MD where an inclination of 31° was achieved. The steerable system was pulled and a drop assembly was run in hole to continue drilling. Drilling proceeded without any significant problems. The Heather sandstone was encountered at 2959 m RKB MD in the 12 1/4" hole before the planned 9 5/8" casing point had been reached. The well was plugged back and casing was set above the hydrocarbon bearing interval. On drilling out of the casing, the well was side-tracked down to the top of the Heather Formation. The greater part of the Heather Formation proved to be sand bearing with oil and gas shows. A total of 11 conventional cores were cut in this well. A total of 60 sidewall cores were attempted, and 35 were recovered. A total oil reservoir zone of 77 m with a net pay zone spanning 60 m was identified. The Statfjord Formation consisted of water bearing, moderately overpressured sandstones of low permeability. The well was temporary plugged and abandoned with oil and gas shows.

## Testing:

Tree DST tests were performed. Test 1 was performed in the interval 3086.5-3094.5 m RKB MD yielding a maximum flow rate of 792 Sm<sup>3</sup>/d oil and 120983 Sm<sup>3</sup>/d gas through a 19.05 mm choke. Test 2 was performed in the interval 3023.9-3072.9 m RKB MD yielding a maximum flow rate of 535 Sm<sup>3</sup>/d oil and 107458 Sm<sup>3</sup>/d gas through a 19.05 mm choke. Test 3 was performed in the interval 2958.1-2986.1 m RKB MD and yielded 90 Sm<sup>3</sup>/d oil and 459552 Sm<sup>3</sup>/d gas through a 28.575 mm choke.

# Geological Tops.

## Well: 30/9-13 S.

	Depth m (RKB).
Nordland Group	131.0
Utsira Fm	646.0
Hordaland Group	892.0
Rogaland Group	2199.0
Balder Fm	2199.0
Sele Fm	2264.5
Lista Fm	2334.0
Våle Fm	2424.5
Shetland Group	2493.0
Cromer Knoll Group	2901.5
Viking Group	2943.5
Heather Fm	2959.0
Brent Group	3024.0
Tarbert Fm	3024.0
Ness Fm	3194.0
Rannoch - Etive Fm	3437.0
Oseberg Fm	3444.0
Dunlin Group	3451.5
Drake Fm	3451.5
Cook Fm	3758.0
Burton Fm	3777.0
Amundsen Fm	3860.0
Statfjord Fm	3975.5
T.D.	4027.0