

# Formation Pressures



Depth mRKB	Hydrostatic mud pressure		Formation pressure psi	Corrected formation pressure	
	Before psi	After psi		psi	bar
<u>RUN 3A</u>					
2562	6233.2	6227.4	5622.6	5621	387.66
2567.5	6242	6237	5627.6	5626	388.00
2582	6271	6267	5642.4	5640.8	389.02
2591	6291	6287	5673	5671.4	391.13
2587	6272	6270	5647.5	5645.9	389.37
2613.5	6345	6330	5675.8	5674.2	391.32
2613.5	oil sample				
2643.5	6413	6409	5719	5717.4	346.51
2658.5	6448	6442	5771.6	5770	397.93
2692	6535	6532	5784.1	5782.5	398.79
2715.5	6592	6590	5824.6	5823	401.59
2721.5	6601	6598	5833.2	5831.6	402.18
2743.5		tight			
2743		"			
2658.1		"			
<u>RUN 3B</u>					
2586	sample attempt - no success				
<u>RUN 3C</u>					
2564.8	6235	6235	5623.1	5621.5	387.69
2564.8	oil sample				
2631		tight			
2642		"			
2641.3		"			
2642.2		"			
2656		"			
2658.5	6468	6468	5751.2	5749.6	396.52
2643.5	6430	6431	5720.2	5718.6	394.39
<u>RUN 4D</u>					
2797	6505	6505	5936.8	5935.2	409.32
2846	6618	6618	6008.5	6006.9	414.27
2879	6694	6693	6057.1	6055.5	417.62
2923	6795	6795	6144.6	6143	423.66
2976.5	6919	6919	6199.1	6197.5	427.41
3066	7124	7124	6328.6	6327	436.34
3236.5	7517	7517	6575.3	6573.7	453.36
3331.5	7739	7739	6716.4	6714.8	463.09
3378.5	7843	7843	6778.3	6776.7	467.35
3426	7955	7955	6832.7	6831.1	471.11

Remarks: Formation pressure correction is - 1.6 psi (HP gauge is 1 m below snorkel).

Fig. 5.4: HP gauge Formation pressures, 34/7-7

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# Formation Pressures

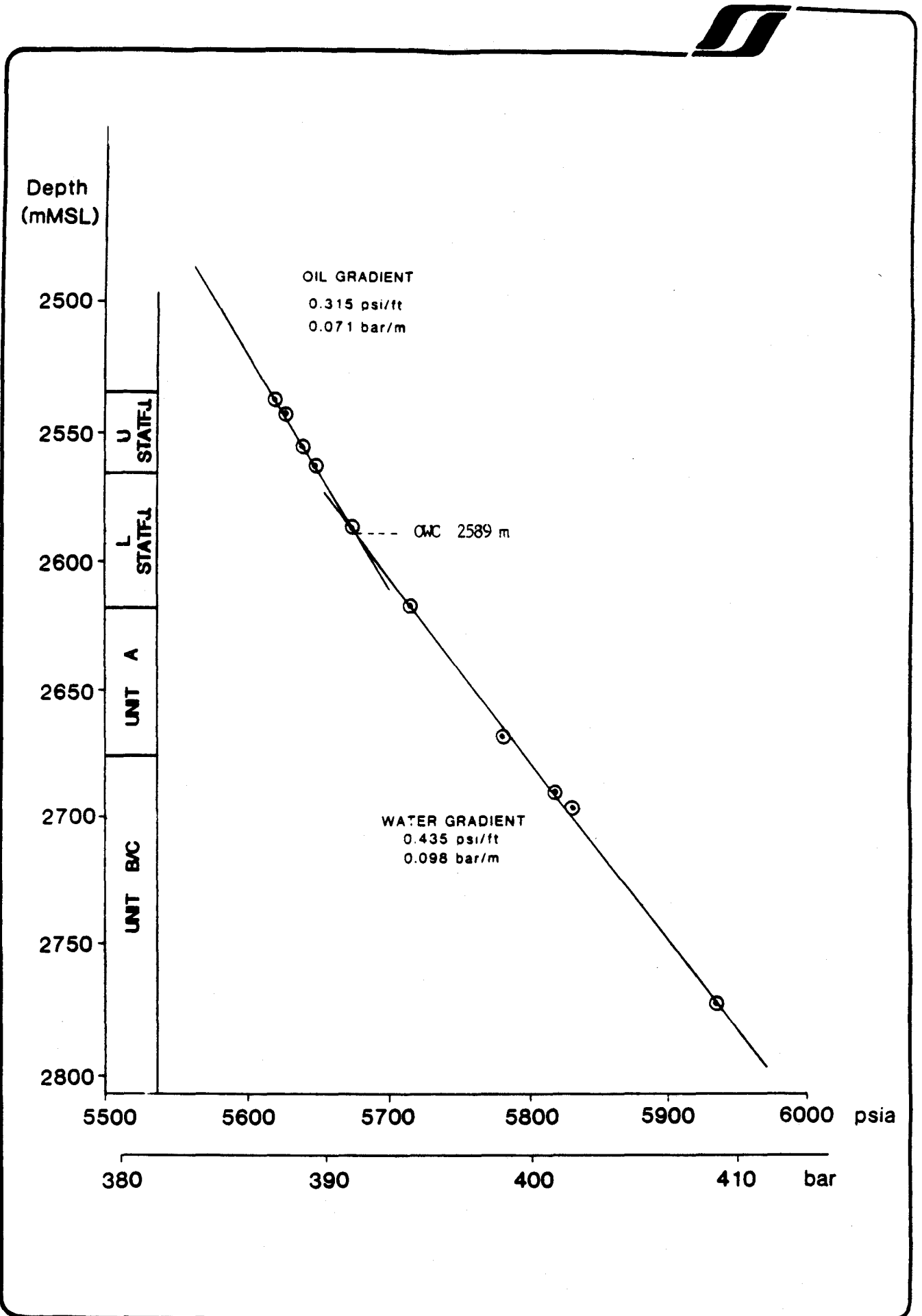


Fig. 5.5 : Formation Pressures versus Depth, 34/7-7

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# Testing



Time (hrs)	Pressure (psi)	Time (hrs)	Pressure (psi)
20.7500	4976.460	5.3000	5547.920
20.7667	5479.740	5.3333	5548.400
20.8000	5493.240	5.4667	5548.140
20.8333	5499.580	6.0000	5548.630
20.8667	5503.590	6.2667	5548.740
20.9000	5506.390	6.4000	5548.890
20.9333	5508.720	6.4667	5548.970
21.0000	5512.110	6.5000	5549.220
21.0667	5514.750	6.5000	5549.880
21.2000	5518.670	7.5667	5550.230
21.3333	5521.280	7.7000	5550.740
21.4667	5523.520	8.7667	5551.900
21.5000	5523.940	10.9000	5552.070
21.5333	5526.190	11.1667	5552.090
21.8333	5528.000	11.2000	5552.810
21.9000	5528.560	11.2333	5552.220
21.9333	5528.800	11.2667	5552.330
21.9667	5529.510	11.8000	5553.220
22.0000	5529.690	13.9333	5553.250
22.2667	5531.560	14.2000	5553.390
22.3333	5531.920	14.2333	5554.390
22.3667	5532.230	16.7000	5554.800
22.4000	5532.980	17.7667	5554.910
22.5333	5533.220	17.8333	5555.160
23.0667	5535.800	17.8667	5555.020
23.3333	5536.990	18.1333	5555.580
23.4667	5537.590	20.2667	5555.600
23.5000	5538.490	20.3333	5555.640
0.6000	5540.820	20.3667	5556.050
0.6333	5541.150	20.4000	5555.770
0.9000	5541.440	20.6667	5555.340
1.0333	5541.810	20.9333	5555.920
1.1000	5541.790	21.0667	
1.1333	5542.470		
1.2667	5542.240		
1.8000	5543.320		
2.0667	5543.800		
2.1000	5543.900		
2.6333	5544.600		
2.7000	5545.060		
2.7667	5544.550		
2.8333	5544.840		
3.3667	5545.660		
3.6333	5545.950		
3.7667	5546.190		
3.8333	5546.280		
3.8667	5546.180		
3.9000	5546.730		
4.9667	5547.620		
5.2333	5547.970		

Fig.5.6 : Main Pressure Build-Up Data, DST No.1, 34/7-7

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Drawn by		Ref		

# Testing



Time (hrs)	Pressure (psi)
19.8000	6055.310
19.8333	5641.190
19.8667	5575.680
19.9000	5569.040
19.9333	5566.170
19.9667	5564.650
20.0333	5562.790
20.1000	5561.520
20.2333	5560.050
20.3667	5558.980
20.5000	5558.150
20.6333	5557.730
20.9000	5556.570
20.9667	5555.550
21.1667	5555.080
21.4333	5554.820
21.7000	5554.200
21.9667	5554.020
22.2333	5553.970
22.3667	5553.800
22.4333	5553.560
22.4667	5553.560
22.7667	5553.180
23.3000	5552.290
23.7667	5552.060
23.8000	5551.710
0.0000	5551.320
1.0667	5550.420
1.6000	5549.900
2.1333	5549.310
2.4000	5549.260
2.4667	5549.120
2.7667	5547.990
4.9000	5547.610
5.4333	5547.550
5.9667	5547.420
6.1000	5547.560
6.2333	5547.350
6.3333	5547.560
6.4000	5547.820
6.4667	5547.450

Fig.5.7 : Pressure Fall-Off Data, DST No.1, 34/7-7

Date	4.86	Auth	ThS	Appr
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# Testing

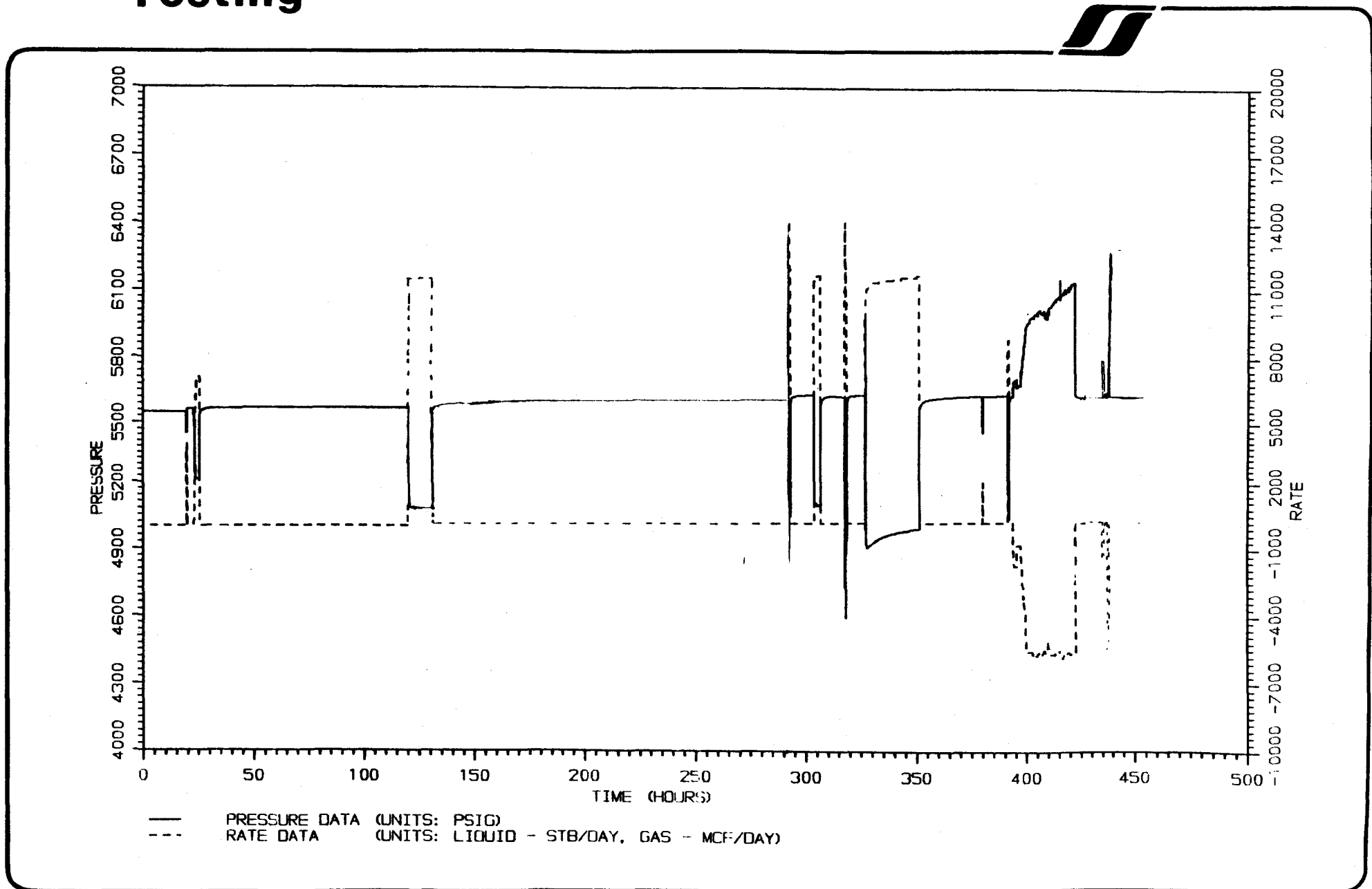


Fig. 5. 8 : Merged Pressure/Rate/Time Data, DST No.1, 34/7-7

# Testing

Event	Date	Clocktime (hrs. min)	Choke (mm)	Flowrate (Sm <sup>3</sup> /day)	Bottomhole pressure (bar)	Wellhead pressure (bar)	Remarks
Perforated	08.11.85	05.30	4.8				0.35 m <sup>3</sup> was back surged
Flowed initially	09.11.85	01.06-01.20	7.9	644	375.5	130.0	Abnormal well- head pressure due to cushion water in the string.
Main flow 1st attempt	09.11.85	04.52-06.56	12.7	1131	359.4	154.0	
Opened the well for main flow	13.11.85	05.30			383.8	180.7	
		10.30	14.3	1762	356.6	147.9	2nd attempt.
		14.00	"	1817	356.6	148.9	
Shut in the well		14.04					Leak in the flowhead. Pulled and reran the teststring.

Depth measurements refers to 2514.1 mRKB.

Fig. 5.9: Flow Data DST No 1, after string was rerun, 34/7-7

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# Testing



Event	Date	Clocktime (hrs. min)	Choke (mm)	Flowrate (Sm <sup>3</sup> /day)	Bottomhole pressure (bar)	Wellhead pressure (bar)	Remarks
Flowed the well	20.11.85	09.45-10.45	variable		349.2	141.0	Cleaned out the string
Opened the well		21.21			383.8	185.2	
		23.00	14.3	1729	350.3	143.7	
	21.11.85	00.00	"	1725	350.5	144.1	
Shut in the well		00.22					
Flowed the well		11.13-11.40	variable				Flowed back the acid. shut in because the flare went out
Flowed the well		20.26-20.38	variable				
Opened the well		20.45			382.8	192.4	
		21.45	14.3	1649	337.7	132.5	
	22.11.85	00.00	"	1679	339.0	134.2	
		06.00	"	1689	341.2	135.8	
		12.00	"	1700	342.1	136.9	
		18.00	"	1712	343.0	137.9	
Shut in the well		20.45	"	1722	343.2	138.0	

Fig. 5.9: Flow Data DST No. 1, after string was rerun 34/7-7  
(cont)

# Testing



Event	Date	Clocktime (hrs. min)	Choke (mm)	Flow/Injection rate (Sm <sup>3</sup> /day)	Bottomhole pressure (bar)	Wellhead pressure (bar)	Remarks
Flowed the well	24.11.85	01.07-01.21	variable				Flowed out water after pressure testing
Flowed the well		12.50-13.20	14.3	N/A	346.8	137.8	Flowed out in string volume to clean up.
Started injecting		15.10			383.2	193.6	
		16.45		306.4	388.6	147.9	Decreased rate
		18.42		153.6	386.8	133.1	Increased rate
		19.22		327.9	392.6	136.4	"
		19.50		480.0	394.7	141.9	"
		20.00		496.7	397.0	144.4	"
		20.42		665.9	398.6	147.4	"
		20.55		758.7	402.1	154.4	"
		25.11.85 00.00		927.1	407.3	160.0	
		04.00		950.8	408.6	163.1	
08.00		914.3	410.1	163.1			
13.00		930.2	418.5	176.1			

Fig. 5.9: Flow Data DST No 1, after string was rerun, 34/7-7



# Testing



Event	Date	Clocktime (hrs. min)	Choke (mm)	Flow/injection rate (Sm <sup>3</sup> /day)	Bottomhole pressure (bar)	Wellhead pressure (bar)	Remarks
	25.11.85	18.00		922.5	416.4	171.3	
Stopped injecting		19.50			417.5	171.3	
Injected 21 m <sup>3</sup> visc.pill	26.11.85	21.35-					Injected vis- consified sea- water down to the perfs.
	27.11.85	00.00					
Started injecting	"	00.30			383.0	125.7	Step rate injection test
		00.50		63.1	397.8	142.7	Increased rate
		01.10		103.2	407.5	154.1	"
		01.30		171.1	422.7	173.4	"
		01.50		299.1	440.1	198.2	"
		02.10		391.1	438.1	197.5	"
		02.30		653.6	432.6	192.0	"
Stopped injection		02.50		859.4	432.8	192.0	"

Fig. 5.9: Flow Data, DST No 1, after sting was rerun 34/7-7  
(cont.)

# Testing



Time (hrs)	Pressure (psi)
13.0147	4010.950
13.0150	4163.600
13.0192	4235.330
13.0219	4247.390
13.0233	4252.930
13.0250	4257.790
13.0275	4264.710
13.0297	4269.580
13.0328	4276.000
13.0364	4282.590
13.0400	4288.400
13.0433	4293.050
13.0472	4298.570
13.0519	4304.470
13.0583	4311.400
13.0650	4318.270
13.0687	4322.770
13.0739	4326.470
13.0828	4334.030
13.0833	4334.560
13.0861	4336.810
13.0917	4341.160
13.1028	4349.330
13.1194	4360.560
13.1417	4374.060
13.1722	4390.540
13.2000	4403.960
13.2444	4423.040
13.5333	4509.980
13.9500	4592.630
14.3667	4655.820
14.7833	4708.360
16.4167	4858.980
18.1667	4967.030
19.6667	5034.780
21.7500	5104.990
22.9167	5135.850
0.0833	5162.200
1.1667	5183.410
3.1667	5216.050
3.5000	5220.810
4.1667	5229.790
5.5000	5246.010
6.6667	5258.480
7.1667	5263.400
7.7500	5268.860
8.5000	5275.520
9.1667	5281.020
10.0000	5287.460
11.2500	5296.370
12.0000	5301.340
12.5833	5304.970
13.0833	5308.010
13.2833	5308.010

Fig. 5. 10: Main Pressure Build-Up Data, DST No.2, 34/7-7

Date 4.86	Auth. THS	Appr.
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# Testing

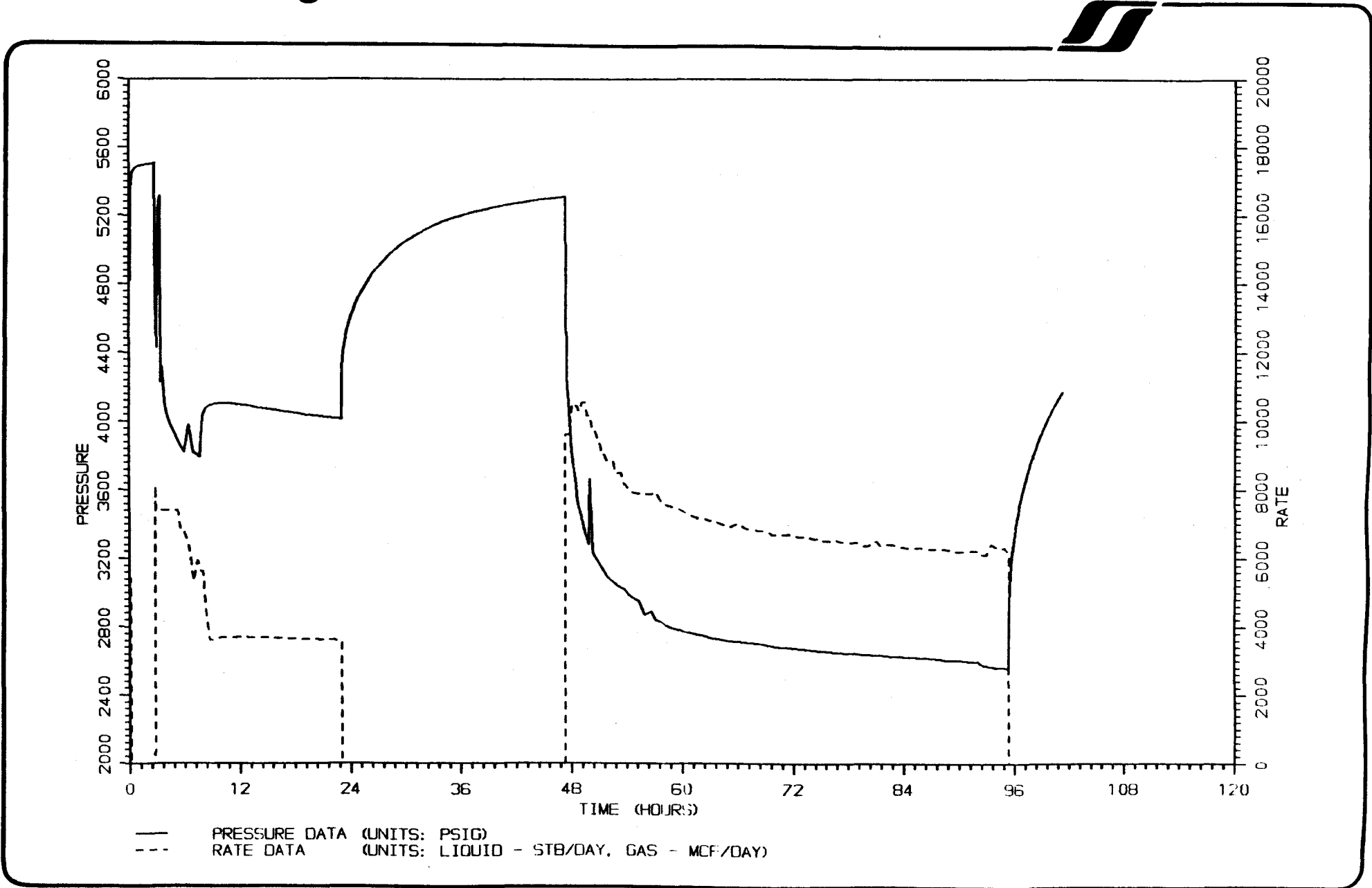


Fig. 5.11 : Merged Pressure/Rate/Time Data, DST No.2, 34/7-7

# Testing



Event	Date	Clocktime (hrs. min)	Choke (mm)	Flowrate (Sm <sup>3</sup> /day)	Bottomhole pressure (bar)	Wellhead pressure (bar)	Remarks
Perforated	04.12.85	09.48					Backsurged 0.4 Sm <sup>3</sup>
Initially flowed	"	14.01- 14.10	14.3	905.7	3322	42.4	Abnormal well headpressure due to water- cushion in string
The well opened	"	16.45			379.7	99.6	Main flow
		20.15	17.5	1010	262.5	69.6	Changed choke
		21.00	14.3	944	263.2	71.3	at 20.20
	05.12.85	00.00	9.5	586	283.0	96.0	Changed choke
		06.00	"	583	280.1	94.1	at 21.56
		12.00	"	571	277.0	91.3	
Shut in the well		13.00	"	570	276.6	90.0	
Shut in the well	06.12.85	13.17			366.1	175.1	
		14.00	22.2 adj.	1673	263.8	56.4	Changed choke
		14.35	28.6	1784	245.9	41.00	at 14.25

Depth measurement refers to 2493.6 m RKB

Fig. 5.12: Flow Data DST No 2, 34/7-7

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# Testing



Event	Date	Clocktime (hrs. min)	Choke (mm)	Flowrate (Sm <sup>3</sup> /day)	Bottomhole pressure (bar)	Wellhead pressure (bar)	Remarks
		15.00	fully open	1676	238.0	37.3	Choke fully opened at 14.41
		18.00	"	1376	213.0	26.4	
	7.12.86	00.00	"	1197	194.6	18.7	
		06.00	"	1100	187.9	16.5	
		12.00	"	1067	185.0	16.0	
		18.00	"	1041	183.0	15.8	
	8.12.86	20.00	"	1019	181.5	15.5	
		06.00	"	997	180.1	15.1	
		12.00	"	1003	176.9	13.8	
		13.00	"	979	176.5	13.7	
Well shut in		13.21			176.5	13.7	No water produced

Fig. 5.12 cont: Flow Data DST No 2, 34/7-7

# Fluid Analyses

Chamber no	ST 024	ST 021
Sampled at (mRKB)	2564.80	2613.50
Bleed down volumes	65.0 l gas	5.00 l gas
	1.35 l oil	0.10 l oil
	Trace water/mudfiltrate	1.50 l water/mudfiltrate

Flash of reservoir oil to stock tank conditions (1 bar and 15°C):

Bubble point pressure (bar)	92.7	91°C	89.1	92°C
GOR (Sm <sup>3</sup> /St. tank m <sup>3</sup> )	70.6			
Bo (m <sup>3</sup> /St. tank m <sup>3</sup> )	1.301			
$\rho$ - stock tank oil 15°C (kg/m <sup>3</sup> )	840.0			
$\rho_{C7+}$ - stock tank oil 15°C (kg/m <sup>3</sup> )	858.1			
$M_{C7+}$ - stock tank oil			232	
Specific gravity of flashed gas (air = 1.0)	1.041			

Component	Reservoir fluid - mol %
N <sub>2</sub>	1.01
CO <sub>2</sub>	0.16
C <sub>1</sub>	21.86
C <sub>2</sub>	6.00
C <sub>3</sub>	8.13
i-C <sub>4</sub>	1.24
n-C <sub>4</sub>	4.66
i-C <sub>5</sub>	2.00
n-C <sub>5</sub>	2.96
C <sub>6</sub>	3.23
C <sub>7+</sub>	48.75

$\rho_{C7+}$  - reservoir oil @ 15°C (kg/m<sup>3</sup>)  
857.0

$M_{C7+}$  - reservoir oil 231

Fig. 5.13: Analyses of FME samples, 34/7-7

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# Fluid Analyses

Reservoir temperature (°C)	92.3
Flash of reservoir fluid to stock tank conditions (1 bar and 15 °C):	
Bubble point pressure @ reservoir temp (bar)	90.2
GOR (Sm <sup>3</sup> /St. tank m <sup>3</sup> )	68.7
B <sub>o</sub> (m <sup>3</sup> /St. tank m <sup>3</sup> )	1.263
ρ - stock tank oil @ 15°C (kg/m <sup>3</sup> )	836.2
ρ <sub>C7+</sub> - stock tank oil @ 15°C (kg/m <sup>3</sup> )	854.4
M <sub>C7+</sub> - stock tank oil	219
Specific gravity of flashed gas (air = 1.0)	1.059

Component	Reservoir fluid - mol %
N <sub>2</sub>	1.08
CO <sub>2</sub>	0.29
C <sub>1</sub>	20.48
C <sub>2</sub>	5.74
C <sub>3</sub>	8.23
i- C <sub>4</sub>	1.27
n- C <sub>4</sub>	4.90
i- C <sub>5</sub>	1.62
n- C <sub>5</sub>	2.83
C <sub>6</sub>	3.49
C <sub>7</sub>	6.00
C <sub>8</sub>	5.25
C <sub>9</sub>	4.77
C <sub>10</sub> <sup>+</sup>	34.05
ρ <sub>C7+</sub> - reservoir fluid @ 15°C (kg/m <sup>3</sup> )	852.1
M <sub>C7+</sub> - reservoir fluid	218
Differential liberation:	
GOR (Sm <sup>3</sup> /St.tank m <sup>3</sup> )	88.0
Bo (Sm <sup>3</sup> /St.tank m <sup>3</sup> )	1.359
ρ - residual oil @ 5°C (kg/m <sup>3</sup> )	850.4
Oil resistivity @ 383 bar and reservoir temperature (m Pas)	0.838
Iso-thermal oil compressibility @ reservoir temperature and 383 bar (bar <sup>-1</sup> )	7.29·10 <sup>-5</sup>

Fig. 5.14: Analyses of Reservoir Oil DST No 1A, 34/7-7

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# Fluid Analyses

- 05 -

## GASPHASE

1.	H <sub>2</sub> S	ml/m <sup>3</sup>	<0,1 - 0,4
2.	Mercaptans	ml/m <sup>3</sup>	<0,1
3.1	Hg inorganic	ng/m <sup>3</sup>	440 - 3800
3.2	Hg organic	ng/m <sup>3</sup>	160 - 800
3.3	Hg total	ng/m <sup>3</sup>	600 - 4600
4.	Radon-222	Bq/l	0,26 - 0,43
5.a	H <sub>2</sub> O	mg/l	0,23 - 0,78
5.b	Dewpoint	oC	-20 oC - -34 oC
6.	CO <sub>2</sub>	% (v/v)	0,6 - 0,8
7.	He	% (v/v)	0,008 - 0,013
8.	N <sub>2</sub>	% (v/v)	4,6 - 5,2

## OILPHASE

1.	Mercury	mg/l	0,0051 - 0,0096
2.	Total Sulphur	% (w/v)	0,12 - 0,16
3.	Po-210	Bq/l	<0,1 - 0,3
4.	Nickel	mg/l	1,1 - 1,5
5.	Vanadium	mg/l	1,8 - 2,0
6.	Density	g/cm <sup>3</sup>	0,813 - 0,846

Fig.5.15 : Trace Component Analyses, DST No.1, 34/7-7

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# Fluid Analyses

Reservoir temperature (°C)	93.6
Flash of reservoir fluid to stock tank conditions (1 bar and 15°C):	
Bubble point pressure at reservoir temp (bar)	88.2
GOR (Sm <sup>3</sup> /St. tank m <sup>3</sup> )	62.5
B <sub>o</sub> (m <sup>3</sup> /St. tank m <sup>3</sup> )	1.256
P - stock tank oil @ 15°C (kg/m <sup>3</sup> )	840.3
P <sub>c7+</sub> - stock tank oil @ 15°C (kg/m <sup>3</sup> )	860.3
MC <sub>7+</sub> - stock tank oil	230
Specific gravity of flashed gas (air = 1.0)	1.081

Component	Reservoir fluid - mol %
N <sub>2</sub>	0.88
CO <sub>2</sub>	0.19
C <sub>1</sub>	19.27
C <sub>2</sub>	5.43
C <sub>3</sub>	8.39
i- C <sub>4</sub>	1.46
n- C <sub>4</sub>	5.28
i- C <sub>5</sub>	1.74
n- C <sub>5</sub>	2.65
C <sub>6</sub>	4.28
C <sub>7</sub>	4.88
C <sub>8</sub>	5.67
C <sub>9</sub>	4.71
C <sub>10</sub> <sup>+</sup>	35.17

ρ <sub>c7+</sub> - reservoir fluid 15°C (kg/m <sup>3</sup> )	860.3
MC <sub>7+</sub> - reservoir fluid	230

Differential liberation:

GOR (Sm <sup>3</sup> /St. tank m <sup>3</sup> )	81.4
B <sub>o</sub> (Sm <sup>3</sup> /St. tank m <sup>3</sup> )	1.346
ρ - residual oil @ 15°C (kg/m <sup>3</sup> )	851.3
Oil viscosity @ 383 bar and reservoir temperature (m Pas)	1.021
Iso-thermal oil compressibility @ reservoir temperature and 383 bar (bar <sup>-1</sup> )	8.37 · 10 <sup>-5</sup>

Fig. 5.16: Analyses of Reservoir Oil, DST No 2, 34/7-7

Date 5.86	Auth. B&B	Appr.
Draw by	Ref	

# Fluid Analyses

## GASPHASE

1.	H <sub>2</sub> S	ml/m <sup>3</sup>	<0,1
2.	Mercaptans	ml/m <sup>3</sup>	<0,1
3.1	Hg inorganic	ng/m <sup>3</sup>	640 - 1590
3.2	Hg organic	ng/m <sup>3</sup>	160 - 990
3.3	Hg total	ng/m <sup>3</sup>	1080 - 2580
4.	Radon-222	Bq/l	0,180 - 0,435
5.a	H <sub>2</sub> O	mg/l	0,47 - 0,93
5.b	Dewpoint	oC	-18 oC - -25 oC
6.	CO <sub>2</sub>	% (v/v)	0,5 - 0,6
7.	He	% (v/v)	0,010 - 0,014
8.	N <sub>2</sub>	% (v/v)	2,45 - 4,05

## OILPHASE

1.	Mercury	mg/l	0,0047 - 0,0140
2.	Total Sulphur	% (w/v)	0,11 - 0,13
3.	Po-210	Bq/l	0,3 - 0,7
4.	Nickel	mg/l	1,2 - 1,4
5.	Vanadium	mg/l	2,0 - 2,1
6.	Density (15 oC)	g/cm <sup>3</sup>	0,834 - 0,851

Fig.5.17 : Trace Component Analyses, DST No.2, 34/7-7

Date 4.86	Auth. B&B	Appr
Draw by	Ref	

# Fluid Analyses

## Onshore Analyses

pH		5,95 - 6,61
Clorides	mg/l	10 000 - 51 000
Conductivity (15 oC)	mMHO/cm	19,2 - 60,0
Resistivity (15 oC)	OHM-m	0,1670 - 0,5249
Density (20 oC)	g/cm <sup>3</sup>	1,014 - 1,039
Mercury	ng/ml	34 - 43
Barium + Strontium	mg/l	<1,0 - 6,0
Sulfate	mg/l	704 - 1700
Dissolved oxygen	mg/l	<0,1
Alkalinity (CaCO <sub>3</sub> equiv)	mg/l	132 - 330
Turbidity	NTU	62 - 87
BS & W	% (v/v)	<0,1

## Offshore Analyses

Aluminum	(Al)	mg/l	<0,1
Boron	(B)	mg/l	3,5-7,1
Barium	(Ba)	mg/l	0,19-0,50
Calcium	(Ca)	mg/l	1840-8080
Cadmium	(Cd)	mg/l	<0,05
Cobalt	(Co)	mg/l	<0,01
Cromium	(Cr)	mg/l	<0,05-0,04
Copper	(Cu)	mg/l	0,01-0,09
Iron	(Fe)	mg/l	160-880
Potassium	(K)	mg/l	165-385
Magnesium	(Mg)	mg/l	208-803
Manganese	(Mn)	mg/l	11-56,2
Sodium	(Na)	mg/l	3100-7280
Nickel	(NI)	mg/l	<0,1-0,2
Lead	(Pb)	mg/l	<0,05
Silicon	(Si)	mg/l	5,6-13,5
Tin	(Ti)	mg/l	<0,5-0,9
Strontium	(Sr)	mg/l	2,9-14,6
Titanium	(Ti)	mg/l	<0,5
Vanadium	(V)	mg/l	<0,5
Zinc	(Zn)	mg/l	0,5-4,7

Fig. 5.18 : Analyses of Produced Water, DST No.2, 34/7-7

Date 4.86	Auth. B&B	Appr.
Draw by	Ref	

Date	Hole size	Hole depth	Mud weight	PV	YP	Gel strength	pH	Alkalinity Pf / Mf	Ca++ mg/L	Cl- mg/L	Sand %	Solids %	Mudtype
850913	36	.0	1.03										SPUD MUD
850914	36	.0	1.03										SPUD MUD
850915	36	.0	1.03										SPUD MUD
850916	36	.0	1.03										SPUD MUD
850917	36	385.0	1.05										SPUD MUD
850918	36	455.0	1.05										SPUD MUD
850919	17-1/2	455.0	1.05										GEL MUD
850920	17-1/2	906.0	1.11	8	43	21/25	9.3	0.1/0.4	280	10000	0.3	6.0	GEL MUD
850921	26	995.0	1.11	6	46	23/26	9.3	0.1/0.3	280	13000	0.3	7.0	GEL MUD
850922	26	995.0	1.20	7	43	20/25	9.4	0.1/0.4	320	11000	0.3	9.0	GEL MUD
850923	26	.0	1.03										GEL MUD
850924	26	995.0	1.10	15	20	3/4	9.5	0.1/0.2	2400	20000			GYP/POLYMER MUD
850925	17-1/2	1000.0	1.10	14	19	3/4	10.0	0.1/0.3	2800	20000	0.5	4.0	GYP/POLYMER MUD
850926	17-1/2	1456.0	1.25	15	20	3/4	9.7	0.1/0.3	3000	22000	0.5	8.5	GYP/POLYMER MUD
850927	17-1/2	1855.0	1.42	17	21	3/5	9.7	0.1/0.3	2600	21000	1.0	14.0	GYP/POLYMER MUD
850928	17-1/2	1878.0	1.42	16	20	3/7	9.7	0.1/0.4	2640	21000	1.0	14.5	GYP/POLYMER MUD
850929	17-1/2	1878.0	1.45	15	19	3/6	9.8	0.1/0.3	2400	21000	1.0	15.0	GYP/POLYMER MUD
850930	17-1/2	1878.0	1.53	17	21	3/4	9.8	0.1/0.3	2400	20000	3.0	16.0	GYP/POLYMER MUD
851001	12-1/4	2022.0	1.53	22	17	3/4	10.8	0.1/0.6	2400	20000	0.5	17.0	GYP/POLYMER MUD
851002	12-1/4	2345.0	1.68	26	18	4/12	10.2	0.1/0.5	2840	20000	0.3	23.0	GYP/POLYMER MUD
851003	12-1/4	2475.0	1.68	30	20	4/20	10.5	0.1/0.5	2200	20000	0.3	23.0	GYP/POLYMER MUD
851004	12-1/4	2562.0	1.68	24	17	3/15	10.4	0.1/0.5	1580	17000	0.5	23.0	GYP/POLYMER MUD
851005	12-1/4	2562.0	1.68	21	15	2/10	10.5	0.2/1.0	1500	15000	0.3	25.0	GEL MUD
851006	12-1/4	2562.0	1.68	23	14	2/10	10.5	0.3/1.0	1200	15000	0.3	25.0	GEL MUD
851007	12-1/4	2611.0	1.68	24	13	4/15	10.3	0.2/0.9	1240	16000	0.3	25.0	GEL MUD
851008	12-1/4	2620.0	1.68	24	13	3/15	10.3	0.1/0.9	1360	16000	0.3	25.0	GEL MUD
851009	12-1/4	2640.0	1.68	22	14	2/15	10.3	0.2/1.0	1240	16000	0.3	24.0	GEL MUD
851010	12-1/4	2660.0	1.68	25	13	3/16	10.2	0.1/1.0	1200	16500	0.2	24.0	GEL MUD
851011	12-1/4	2700.0	1.68	24	13	3/14	10.5	0.2/1.0	1200	17000	0.3	24.0	GEL MUD
851012	12-1/4	2765.0	1.68	24	13	2/13	10.4	0.2/0.9	1200	16000	0.3	24.0	GEL MUD

Date	Hole size	Hole depth	Mud weight	PV	YP	Gel strength	pH	Alkalinity Pf / Mf	Ca++ mg/l	Cl- mg/l	Sand %	Solids %	Mudtype
851013	12-1/4	2765.0	1.68	24	13	2/13	10.4	0.2/0.9	1200	16000	0.3	24.0	GEL MUD
851014	12-1/4	2765.0	1.68	24	12	2/14	10.5	0.2/1.0	1160	16500	0.2	24.0	GEL MUD
851015	12-1/4	2765.0	1.68	24	12	2/14	10.5	0.2/1.0	1160	16500	0.2	24.0	GEL MUD
851016	12-1/4	2765.0	1.68	25	10	2/11	10.4	0.2/1.0	960	17000	0.2	23.0	GEL MUD
851017	8-1/2	2680.0	1.68	24	12	2/20	10.6	0.2/1.2	1000	17000	0.3	24.0	GEL MUD
851018	8-1/2	2750.0	1.60	18	12	2/16	10.8	0.3/1.1	960	17000	0.3	23.0	GEL MUD
851019	8-1/2	2886.0	1.60	20	12	3/23	10.8	0.2/0.8	960	16000	0.3	22.0	GEL MUD
851020	8-1/2	2905.0	1.60	19	12	3/22	10.8	0.2/0.7	1040	17000	0.2	22.0	GEL MUD
851021	8-1/2	2932.0	1.60	15	11	2/18	10.7	0.1/0.6	1240	17000	0.2	22.0	GEL MUD
851022	8-1/2	2960.0	1.60	16	12	2/20	10.6	0.1/0.6	1320	17000	0.3	22.0	GEL MUD
851023	8-1/2	2988.0	1.60	17	14	4/24	10.5	0.1/0.7	1280	17000	0.2	22.0	GEL MUD
851024	8-1/2	3133.0	1.60	16	11	2/15	10.5	0.2/0.6	920	15500	0.2	23.0	GEL MUD
851025	8-1/2	3280.0	1.60	17	14	3/22	10.2	0.1/0.6	860	15000		23.0	GEL MUD
851026	8-1/2	3336.0	1.60	17	13	3/18	10.5	0.2/0.8	680	15000		23.0	GEL MUD
851027	8-1/2	3338.0	1.60	16	12	2/16	10.4	0.1/0.7	720	15000		23.0	GEL MUD
851028	8-1/2	3475.0	1.60	16	13	3/16	10.6	0.2/0.8	580	14500	0.2	23.0	GEL MUD
851029	8-1/2	3526.0	1.60	17	11	2/12	10.7	0.2/0.8	480	15000	0.2	22.0	GEL MUD
851030	8-1/2	3526.0	1.60	20	11	3/16	10.5	0.2/0.7	480	15000	0.2	22.0	GEL MUD
851031	8-1/2	3526.0	1.60	19	11	3/16	10.4	0.1/0.7	480	15000	0.2	22.0	GEL MUD
851101	8-1/2	3526.0	1.60	19	11	3/12	10.3	0.1/0.9	480	15000	0.2	22.0	GEL MUD
851102	8-1/2	3526.0	1.60	19	11	3/13	10.3	0.1/0.9	480	15000	0.2	22.0	GEL MUD
851103	8-1/2	2750.0	1.60	20	10	3/15	10.3	0.1/0.9	480	15000	0.2	22.0	GEL MUD
851104		2686.0	1.68	25	15	5/28	10.8	0.2/1.1	520	15000	0.2	24.0	GEL MUD
851105		2686.0	1.68	25	16	5/29	10.8	0.2/1.1	520	15000	0.2	24.0	GEL MUD
851106		2686.0	1.68	25	16	5/29	10.6	0.2/1.1	520	15000	0.2	24.0	GEL MUD
851107		2686.0	1.68	26	18	6/29	10.7	0.2/1.1	520	15000	0.2	24.0	GEL MUD
851108		2686.0	1.68	26	18	6/29	10.7	0.2/1.1	520	15000	0.2	24.0	GEL MUD
851109		2686.0	1.68	26	18	6/29	10.0	0.2/1.1	520	15000	0.2	24.0	GEL MUD
851110		2686.0	1.68	25	17	6/29	10.0	0.2/1.1	520	15000	0.2	24.0	GEL MUD
851111		2686.0	1.68	23	16	5/27	10.0	0.2/1.1	520	15000	0.2	24.0	GEL MUD

Date	Hole size	Hole depth	Mud weight	PV	YP	Gel strength	pH	Alkalinity Pf / Mf	Ca++ mg/l	Cl- mg/l	Sand %	Solids %	Mudtype
851112		2686.0	1.68	24	16	6/28	10.0	0.2/1.0	520	15000	0.2	24.0	GEL MUD
851113		2686.0	1.68	20	17	6/28	10.0	0.2/1.0	520	15000	0.2	24.0	GEL MUD
851114		2686.0	1.68	20	16	9/29	10.3	0.2/1.0	520	15000	0.2	24.0	GEL MUD
851115		2560.0	1.68	20	16	6/30	10.3	0.2/1.0	520	15000	0.2	24.0	GEL MUD
851116		2560.0	1.68	23	13	4/28	10.3	0.2/1.0	500	15000	0.2	24.0	GEL MUD
851117		2686.0	1.68	23	23	7/32	10.2	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851118		2686.0	1.68	23	22	7/34	10.3	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851119		2561.0	1.68	23	20	6/34	10.3	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851120		2561.0	1.68	23	20	6/32	10.3	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851121		2561.0	1.68	23	20	6/32	10.3	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851122		2561.0	1.68	21	19	6/30	10.2	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851123		2561.0	1.68	25	22	6/31	10.2	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851124		2686.0	1.68	20	18	5/28	10.2	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851125		2686.0	1.68	20	19	5/28	10.2	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851126		2686.0	1.68	20	19	5/28	10.3	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851127		2686.0	1.68	18	16	4/24	10.0	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851128		2686.0	1.68	18	15	0/4	10.0	0.2/1.0	480	14000	0.2	24.0	GEL MUD
851129		2686.0	1.68	20	16	7/30	11.6	0.5/1.6	640	14000	0.2	24.0	GEL MUD
851130		2686.0	1.68	19	16	7/28	11.6	0.5/1.5	640	14000	0.2	24.0	GEL MUD
851201		2686.0	1.68	19	15	7/28	11.5	0.5/1.5	600	14000	0.2	24.0	GEL MUD
851202		2686.0	1.68	21	17	7/31	11.5	0.5/1.5	600	14000	0.2	24.0	GEL MUD
851203		2686.0	1.68	21	18	7/31	10.7	0.3/1.2	480	14500	0.2	24.0	GEL MUD
851204		2686.0	1.68	18	20	9/25	10.0	0.1/1.0	680	15000	0.2	24.0	GEL MUD
851205		2686.0	1.68	23	21	9/30	9.9	0.1/1.0	640	15000	0.2	24.0	GEL MUD
851206		2612.0	1.68	23	21	9/30	9.9	0.1/1.0	640	15000	0.2	24.0	GEL MUD
851207		2612.0	1.68	23	21	9/30	9.9	0.1/1.0	640	15000	0.2	24.0	GEL MUD
851208		2686.0	1.68	22	20	9/30	9.9	0.1/1.0	640	15000	0.2	24.0	GEL MUD
851209		2686.0	1.68	22	20	9/30	9.9	0.1/1.0	640	15000	0.2	24.0	GEL MUD
851210		855.0	1.68	23	21	9/30	10.6	0.2/1.2	640	15000	0.2	24.0	GEL MUD
851211		.0	1.68	23	21	9/30	10.8	0.2/1.2	640	15000		24.0	GEL MUD

SAGA PETROLEUM A.S.

6.2.1 MUD PROPERTIES, DAILY REPORT  
Well no: 34/7-7

Date	Hole size	Hole depth	Mud weight	PV	YP	Gel strength	pH	Alkalinity Pf / Mf	Ca++ mg/l	Cl- mg/l	Sand %	Solids %	Mudtype
851212		.0	1.68	23	21	9/30	10.8	0.2/1.2	640	15000	0.2	24.0	GEL MUD
851213		.0	1.68	23	21	9/30	10.8	0.2/1.2	640	15000	0.2	24.0	GEL MUD
851214		.0	1.68	23	17	9/27	11.3	0.2/1.2	640	15000	0.2	24.0	GEL MUD
851215		.0	1.68	23	17	9/27	11.3	0.2/1.2	640	15000	0.2	24.0	GEL MUD
851216		.0	1.68	23	17	9/27	11.3	0.2/1.2	640	15000	0.2	24.0	GEL MUD

SAGA PETROLEUM A.S.

6.2.2 MUD MATERIALS USED

Well no: 34/7-7

Materials	Unit	36 in hole	26 in hole	17-1/2 hole	12-1/4 hole	8-1/2 hole	Total
BARITE	M/T	0	135	412	395	460	1402
BICARBONATE	50 KG	0	0	0	5	15	20
CAUSTIC SODA	25 KG	6	37	115	120	71	349
DRISPAC REG	50 LB	0	0	114	7	2	123
DRISPAC S/L	50 LB	0	0	8	133	47	188
GYPSUM	50 KG	0	0	415	50	0	465
LIME	40 KG	13	0	0	0	0	13
MD	200 L	1	0	0	0	0	1
MILBIO	55 GA	0	0	7	1	0	8
MILPOL 302	25 KG	0	0	168	17	40	225
PERMALOSE	25 KG	0	0	211	0	0	211
PRO-DEFOAMER	25 L	0	0	8	4	17	29
SUPER SHALE T	25 KG	0	0	20	0	0	20
W.O.21	25 KG	0	0	0	0	23	23
BENTONITE	M/T	28	49	0	5	11	93
BENTONITE	50 KG	0	0	30	0	0	30
PRO-THIN	25 KG	0	0	0	399	195	594
CACL2	25 KG	0	0	0	0	360	360