

Formation Pressures



FORMATION PRESSURE WELL 6507/6-2

DEPTH		HYDROSTATIC MUD PRESSURE		FORMATION PRESSURE		COMMENTS
MD mRKB	TVD mRKB	(before) psia	(after) psia	(HP-gauge) psia	bar	
RUN 2A						
2054.5	2054.5	4569.9				Dry test,tight formation
2054.7	2054.7	4570.4				Dry test,tight formation
2740.0	2740.0	6081.9	6082.8	4652.5	320.8	Mobility= 15.96 mD/cP
2747.0	2747.0	6098.0				Dry test,tight formation
2754.5	2754.5	6107.7				Segregated samples, 2 3/4 and 1 gal chambres
2754.5	2754.5	6115.4	6116.0	4680.9	322.8	Mobility= 15.62 mD/cP
2807.5	2807.5	6232.5	6233.7	4905.7	338.3	Mobility= 34.60 mD/cP
2815.0	2815.0	6249.0	6248.6	4922.7	339.4	
2886.5	2886.5	6404.8	6405.0	5499.7	379.2	Sampling 2 3/4 gal chambre

REMARKS:

The pressures are temperature corrected.

KB: 18 m

Formation Pressures



FORMATION PRESSURE WELL 6507/6-2

DEPTH		HYDROSTATIC MUD PRESSURE		FORMATION PRESSURE		COMMENTS
MD mRKB	TVD mRKB	(before) psia	(after) psia	(HP-gauge) psia	bar	
RUN 4B						
3728.5	3722.0	7597.7	7600.4	5472.1	377.3	Mobility=9.75mD/cP
3735.0	3728.4	7615.1	7615.4	5483.8	378.1	Mobility= 1.53mD/cP
3747.0	3740.3	7642.2	7639.9	5519.6	380.6	Mobility=2.19mD/cP
3752.0	3745.2					Tight formation
3752.0	3745.2	7648.0	7649.4	5525.7	381.0	Mobility=0.73mD/cP
3763.5	3756.6					Tight formation
3847.0	3839.1					Lost seal
3928.5	3920.1	8001.3	8001.9	5819.1	401.2	Mobility= 1.44mD/cP
3953.0	3944.5	8046.1	8048.5	5820.0	401.3	Mobility=34.22mD/cP
3957.0	3948.5	8055.4	8056.8	5826.2	401.7	Mobility= 13.01mD/cP
3966.5	3958.0					Dry test,tight form.
3967.5	3958.9	8078.0	8079.6	5841.2	402.8	Mobility=35.20mD/cP

REMARKS:

The pressures are temperature corrected.

KB: 18 m

5.4 Fluid Analyses

RFT sample

One RFT sample was taken at 2754.5 mRKB MD.

The RFT chamber from run No. 2A, sampling date 08.06.91 was sent to GECO - PRAKLA and transferred to storage bottles (3 X 600 ml). The remaining oil was flushed out.

A short onshore PVT analyses programme was carried out from bottle No K-7816.

The main PVT results are summarized in tables 5.5 and 5.6.

Formation Fluid sample (RFT)

Tabel 5.4: Results from 1 gallon chamber, well 6507/6-2

Run No.	Depth mRKB	Fluid Content/Type (room cond.)	Bubble Point Pressure (bar)
2A	2754.5	178 liter gas 890 ml oil 100 ml water	276 at 20° C

Fluid Composition, RFT sample



COMPOSITION OF RESERVOIR OIL
 RFT Sample, Run No 2A, Tool No RFS AD 1222.
 Depth 2754.5 mRKB.

COMPONENT	weight%	mol%
CO ₂	0.27	0.51
N ₂	0.03	0.10
C ₁	10.79	55.45
C ₂	1.74	4.77
C ₃	1.45	2.72
i - C ₄	0.40	0.57
n - C ₄	0.73	1.04
i - C ₅	0.47	0.54
n - C ₅	0.55	0.63
C ₆	1.17	1.14
C ₇	2.48	2.23
C ₈	4.10	3.23
C ₉	3.40	2.32
C ₁₀ +	72.42	24.75

Average molecular weight	(calc.)	: 82
Molecular weight of C ₇ +	(calc.)	: 209
Density of C ₇ +	(calc.)	: 839 [kg/m ³]
Molecular weight of C ₁₀ +	(meas.)	: 241
Density of C ₁₀ +	(calc.)	: 851 [kg/m ³]

Table 5.5 Reservoir oil composition, well 6507/6-2

Fluid Analysis, RFT sample



PVT DATA SUMMARY, WELL 6507/6-2.

Reservoir pressure	[bar]	:	361
Reservoir temperature	[°C]	:	88.0
Saturation pressure at T_{res}	[bar]	:	302
Reservoir oil density	[kg/m ³]	:	655.1
Density at saturation pressure	[kg/m ³]	:	647
Reservoir oil viscosity	[mPa s]	:	0.254
Viscosity at saturation pressure	[mPa s]	:	0.242

Single flash of reservoir fluid to stock tank conditions:

B_o at reservoir conditions	[m ³ /Sm ³]	:	1.507
GOR	[Sm ³ /Sm ³]	:	184.6
Residual oil density	[kg/m ³]	:	832.2

Well: 6507/6-2

Date	Hole size	Hole depth	Mud weight	PV	YP	Gel strength	pH	Alkalinity Pf /Mf	Ca++ mg/l	Cl- mg/l	Sand %	Solids %	Mudtype
910426	PSPUD		1.05			/		/					SPUD MUD
910427	36"	336.0	1.05			/		/					SPUD MUD
910428	36"	336.0	1.05			/		/					SPUD MUD
910429	26"	336.0	1.05			/		/					SPUD MUD
910430	9 7/8"	336.0	1.05			/		/					SPUD MUD
910501	9 7/8"	1055.0	1.05			/		/					SPUD MUD
910502	26"	1055.0	1.05			1/		1.0/1.0					SPUD MUD
910503	26"	1055.0	1.05			1/		1.0/1.0					SPUD MUD
910504	26"	1055.0	1.05			1/		1.0/1.0					SPUD MUD
910505	26"	1040.0	1.05			1/		1.0/1.0					SPUD MUD
910506	26"	1055.0	1.30	13.0	15.0	3/7	7.9	1.0/1.0	160	45000		7.4	KCL MUD
910507	17 1/2"	1350.0	1.32	16.0	17.0	3/8	8.6	.0/.2	160	54000		9.3	KCL MUD
910508	17 1/2"	1487.0	1.35	16.0	18.0	3/6	8.8	.1/.6	160	48000		10.6	KCL MUD
910509	17 1/2"	1848.0	1.45	36.0	25.0	8/24	7.5	.1/.2	400	52000		16.1	KCL MUD
910510	17 1/2"	2050.0	1.55	21.0	24.0	8/35	7.7	.1/.3	400	53000		21.2	KCL MUD
910511	17 1/2"	2050.0	1.55	21.0	24.0	9/35	7.8	.1/.5	600	51000		22.0	KCL MUD
910512	17 1/2"	2050.0	1.55	20.0	18.0	7/40		.1/.4	460	53000		21.2	KCL MUD
910513	17 1/2"	2050.0	1.55	20.0	20.0	6/40	7.6	.1/.4	480	55000		21.2	KCL MUD
910514	17 1/2"	2050.0	1.55	20.0	17.0	7/30	7.8	.1/.7	560	50000		19.3	KCL MUD
910515	12 1/4"	2050.0	1.55	14.0	21.0	6/30	7.5	1.5/1.5	500	50000		17.2	KCL MUD
910516	12 1/4"	2050.0	1.55	20.0	20.0	6/30	8.0	.2/.6	700	50000		17.2	KCL MUD
910517	12 1/4"	2056.0	1.55	20.0	17.0	6/40	9.0	.3/1.1	800	50000		17.2	KCL MUD
910518	12 1/4"	2285.0	1.55	22.0	16.0	3/16	9.0	.3/1.2	580	50000		17.2	KCL MUD
910519	12 1/4"	2285.0	1.52	22.0	14.0	3/15	9.0	1.0/1.0	600	51000		16.2	KCL MUD
910520	12 1/4"	2295.0	1.52	22.0	16.0	4/18	8.5	.1/.9	600	53000		17.1	KCL MUD
910521	12 1/4"	2396.0	1.52	20.0	19.0	3/19	8.1	.1/.1	800	55000		17.0	KCL MUD
910522	12 1/4"	2531.0	1.52	14.0	16.0	3/21	8.0	.0/.9	450	63000		16.3	KCL MUD

Well: 6507/6-2

Date	Hole size	Hole depth	Mud weight	PV	YP	Gel strength	pH	Alkalinity Pf /Mf	Ca++ mg/l	Cl- mg/l	Sand %	Solids %	Mudtype
910523	12 1/4"	2531.0	1.52	15.0	16.0	3/19	8.0	.0/.9	450	63000		16.5	KCL MUD
910524	12 1/4"	2548.0	1.52	15.0	14.0	5/20	8.0	.0/.8	420	68000		16.6	KCL MUD
910525	12 1/4"	2573.0	1.52	16.0	15.0	3/20	8.1	.0/.8	680	70000		16.5	KCL MUD
910526	12 1/4"	2694.0	1.52	15.0	16.0	3/26	8.2	.1/	840	70000		17.0	KCL MUD
910527	12 1/4"	2727.0	1.53	22.0	15.0	3/18	8.0	.0/.9	880	68000		16.6	KCL MUD
910528	12 1/4"	2815.0	1.52	19.0	15.0	4/20	8.1	.0/.4	960	67000		16.6	KCL MUD
910529	12 1/4"	2907.0	1.52	19.0	16.0	3/25	8.0	.0/.8	1000	64000		16.8	KCL MUD
910530	12 1/4"	2907.0	1.54	17.0	18.0	3/24	8.1	.0/.8	1000	65000		17.8	KCL MUD
910531	12 1/4"	2907.0	1.54	18.0	15.0	3/17	8.1	.0/.8	1000	65000		17.8	KCL MUD
910601	12 1/4"	2994.0	1.54	19.0	16.0	5/24	8.1	.0/.6	1080	64000		16.8	KCL MUD
910602	12 1/4"	3013.0	1.54	21.0	17.0	7/26	8.0	.0/.6	1060	62000		17.3	KCL MUD
910603	12 1/4"	3111.0	1.54	20.0	17.0	4/20	8.0	.0/.6	1000	61000		17.9	KCL MUD
910604	12 1/4"	3169.0	1.54	21.0	16.0	4/21	8.0	.0/.6	920	59000		18.0	KCL MUD
910605	12 1/4"	3217.0	1.55	20.0	18.0	3/24	8.0	/.6	1000	60000		17.9	KCL MUD
910606	12 1/4"	3314.0	1.55	22.0	16.0	3/21	8.0	.0/.6	920	58000		20.4	KCL MUD
910607	12 1/4"	3325.0	1.55	21.0	16.0	4/20	8.0	.0/.6	920	56000		19.3	KCL MUD
910608	12 1/4"	3325.0	1.55	21.0	16.0	4/20	8.0	.0/.6	920	56000		19.3	KCL MUD
910609	12 1/4"	3325.0	1.55	22.0	14.0	4/20	7.9	.0/.6	920	56000		20.4	KCL MUD
910610	12 1/4"	3325.0	1.52	20.0	16.0	2/18	8.0	.0/.5	900	53000		16.5	KCL MUD
910611	8 1/2"	3327.0	1.52	21.0	18.0	3/24	12.0	.3/1.0	920	48000		17.2	KCL MUD
910612	8 1/2"	3327.0	1.52	21.0	11.0	3/25	11.7	.2/.6	420	47000		16.6	KCL MUD
910613	8 1/2"	3413.0	1.52	19.0	13.0	3/15	11.1	.8/.1	920	42000		15.8	KCL MUD
910614	8 1/2"	3460.0	1.52	21.0	28.0	15/25	12.0	2.4/3.1	1000	40000		15.8	HI TEMP POLYMER
910615	8 1/2"	3503.0	1.52	20.0	10.0	3/14	12.6	2.4/3.4	960	38000		16.9	HI TEMP POLYMER
910616	8 1/2"	3618.0	1.52	21.0	12.0	3/16	12.5	.2/.2	960	36000		17.0	HI TEMP POLYMER
910617	8 1/2"	3727.0	1.52	20.0	10.0	2/13	11.3	1.0/1.3	1120	27000		17.5	HI TEMP POLYMER
910618	8 1/2"	3732.0	1.52	21.0	12.0	3/20	11.3	1.1/2.2	1240	28000		18.0	HI TEMP POLYMER

Well: 6507/6-2

Date	Hole size	Hole depth	Mud weight	PV	YP	Gel strength	pH	Alkalinity Pf /Mf	Ca++ mg/l	Cl- mg/l	Sand %	Solids %	Mudtype
910619	8 1/2"	3740.0	1.52	20.0	10.0	3/24	11.4	1.2/2.3	1240	28000		18.0	HI TEMP POLYMER
910620	8 1/2"	3806.0	1.52	22.0	13.0	5/25	11.4	.8/1.7	1040	31		18.4	HI TEMP POLYMER
910621	8 1/2"	3849.0	1.52	21.0	12.0	4/25	11.3	.4/1.8	1200	26		17.7	HI TEMP POLYMER
910622	8 1/2"	4002.0	1.50	21.0	12.0	5/26	11.1	.8/1.7	960	26		17.7	HI TEMP POLYMER
910623	8 1/2"	4056.0	1.48	17.0	10.0	5/22	11.0	.8/1.7	760	24		16.7	HI TEMP POLYMER
910624	8 1/2"	4100.0	1.45	18.0	13.0	6/22	10.9	.6/1.7	720	22		15.3	HI TEMP POLYMER
910625	8 1/2"	4180.0	1.45	18.0	13.0	5/23	11.1	.9/1.8	640	21		15.9	HI TEMP POLYMER
910626	8 1/2"	4180.0	1.45	15.0	13.0	5/24	11.0	.9/1.8	640	21		15.9	HI TEMP POLYMER
910627	8 1/2"	4273.0	1.45	18.0	15.0	8/30	10.6	.6/1.4	520	19		15.9	HI TEMP POLYMER
910628	8 1/2"	4284.0	1.45	18.0	14.0	7/28	11.2	.7/1.6	360	17000		16.1	HI TEMP POLYMER
910629	8 1/2"	4284.0	1.45	18.0	14.0	7/28	11.2	.7/1.6	360	17000		16.1	HI TEMP POLYMER
910630	8 1/2"	4296.0	1.45	17.0	14.0	9/28	11.3	.8/1.9	440	17000		16.1	HI TEMP POLYMER
910701	8 1/2"	4327.0	1.45	15.0	15.0	14/27	11.0	.9/1.9	400	15000		16.1	HI TEMP POLYMER
910702	8 1/2"	4335.0	1.45	15.0	18.0	15/28	10.4	.8/1.9	300	14000		16.1	HI TEMP POLYMER
910703	8 1/2"	4343.0	1.45	16.0	15.0	8/30	11.1	.7/2.0	360	13000		16.2	HI TEMP POLYMER
910704	8 1/2"	4354.0	1.45	15.0	23.0	22/35	10.5	.6/2.0	360	11500		17.4	HI TEMP POLYMER
910705	8 1/2"	4354.0	1.45	15.0	23.0	22/35	10.5	.6/2.0	360	11500		17.4	HI TEMP POLYMER
910706	8 1/2"	4354.0	1.45	16.0	19.0	8/25	9.9	.6/2.3	360	11500		17.4	HI TEMP POLYMER
910707	8 1/2"	4354.0	1.45	14.0	9.0	2/3	11.5	1.6/3.5	520	11000		16.4	HI TEMP POLYMER
910708	8 1/2"	4354.0	1.45	17.0	20.0	5/11	12.2	1.6/4.0	520	10000		17.5	HI TEMP POLYMER
910709	8 1/2"	4354.0	1.45	17.0	20.0	5/11	12.2	1.6/4.0	520	10000		17.5	HI TEMP POLYMER
910710	P&A	3722.0	1.45	16.0	12.0	3/10	12.1	1.6/3.9	400	10000		17.5	HI TEMP POLYMER
910711	P&A	3722.0	1.45	14.0	12.0	2/8	12.0	1.8/4.0	480	10000		17.5	HI TEMP POLYMER
910712	P&A	1906.0	1.44	13.0	11.0	2/8	12.5	1.8/4.0	480	10000		17.5	HI TEMP POLYMER
910713	P&A	730.0	1.44	16.0	7.0	2/9	12.5	1.8/4.0	480	10000		17.5	HI TEMP POLYMER
910714	P&A					/		/					HI TEMP POLYMER
910715	P&A					/		/					WATER BASED

Saga Petroleum a.s.

6.2.1

MUD PROPERTIES, DAILY REPORT

Well: 6507/6-2

Date	Hole size	Hole depth	Mud weight	PV	YP	Gel strength	pH	Alkalinity Pf /Mf	Ca++ mg/l	Cl- mg/l	Sand %	Solids %	Mudtype
910716	P&A					/		/					WATER BASED

Final Well Report 6507/6-2

Materials	Unit	36" Hole	26" Hole	17 1/2" Hole	12 1/4" Hole	8 1/2" Hole	Total
ANTISOL FL 3000	25 kg	-	-	39	67	-	106
Antisol FL 30	25 kg	-	-	246	327	-	573
BARITE	M/T	-	75	417	495	387	1374
BENTONITE	M	25	31	-	-	10	66
BORREWELL C	25 kg	-	-	-	-	50	50
Baracor 95	55 gal	-	-	-	-	12	12
Baradefoam W-30	55 gal	-	-	-	-	7	7
Baranex	50 lbs	-	-	-	-	740	740
CAUSTIC SODA	25 k	5	7	1	-	78	91
Carbonox	50 lbs	-	-	-	-	195	195
Citric Acid	25 kg	-	-	28	132	26	186
Condet	55 gal	-	-	-	6	-	6
EZ Mud DP	25 kg	-	-	42	103	-	145
EZ-Spot	55 gal	-	-	-	220	4	224
Gypsum	40 kg	-	-	28	132	26	186
KCL - sxs	50 kg	-	-	310	1240	-	1550
KCl Brine	m3	-	-	740	353	-	1093
KOH -POTASS. HY	50 kg	-	-	8	-	-	8
Lime	20 kg	-	-	-	-	193	193
MICA C/F	SXS	-	-	-	36	-	36
Nut plug F/M/C	25 kg	-	-	-	36	12	48
POT. BICARBONAT	50 kg	-	-	-	128	-	128
Sarascav-D	25 kg	-	-	44	39	115	198
Soda Ash	25 k	12	-	11	-	11	34
Therma-Chek	25 lbs	-	-	-	-	79	79
Therma-Thin	25 kg	-	-	-	84	258	342
Therma-Vis	20 kg	-	-	-	-	5	5
XCD polymer	25 kg	-	-	64	34	79	177

Table 6.2.2 Mud Materials Used