

BP AMERICA PRODUCTION COMPANY

Macondo #1

9 7/8" X 7" Production Casing Design Report

For: Brian Morel
Date: April 14, 2010

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HALLIBURTON



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1.0 DESIGN

1.1 Customer Information

Customer	BP AMERICA PRODUCTION COMPANY
Sales Order	
Job Configuration	N2 Foamed Cement
Well Name	Macondo
Well Number	#1
Start Time	Monday, April 12, 2010
County	
State	Louisiana
UWI/API	
Country	United States of America
H2S Present	Unknown
CO2 Present	Unknown
Customer Representative	Brian Morel
Service Representative	Jesse Gagliano
Design Name	Macondo Prospect MC 252 #1 - 9.875 X 7 - with 12 ppg Base Oil
Comment	
Injection Path	Casing

1.2 Parameters

Fracture Zone Measured Depth	18300.0	ft
Fracture Zone Gradient	0.779	psi/ft
Fracture Zone Density	15.00	lb/gal
Fracture Zone Pressure	14260	psi
Reservoir Measured Depth	17700.0	ft
Reservoir Pore Pressure	12873	psi
Reservoir Zone Gradient	0.727	psi/ft
Reservoir Zone Density	14.00	lb/gal
Back Pressure	0	psi
Height - Mud Line to Mean Sea Level	4992.0	ft
Height - Mean Sea Level to Rotary Kelly Bushing	75.0	ft
Sea Water Density	8.54	lb/gal
Returns To Surface		
Simulator Volume Increment	5.00	bbl
Entered Standoff	70.00	%
Surface Iron Displacement	0.41	bbl
Shoe Track Length	200.0	ft
Additional Pressure to Seat Plug	500	psi
Eccentricity Enhanced Calculations	No	
Erodibility Enhanced Calculations	Yes	
Mud Erodibility Measured Depth	17168.0	ft
Mud Erodibility Number	20.69	
Mud Required Shear Stress	29.00	lbf/(100*ft ²)
Use Coupling Information	No	

1.3 Surface Lines

Equipment	Length	Elev. Change	OD	ID	Friction Factor	Num In Parallel
	ft	ft	in	in		
2" 15,000 psi Discharge Iron	120.0	45.0	2.620	1.870	1.00	1

1.4 Wellbore Geometry

Deleted Well
 From Existing Information
 Offshore
 Water Depth: 4932.0 ft
 Air Gap: 75.0 ft
 Sea Water Density: 8.54 lb/cu ft
 Wellbore Volume:
 Surface: 0.41 bbl
 Casing: 294.32 bbl
 Annulus: 2731.16 bbl

Column Filter: Required Data

Type	Top MD	Bottom MD	Start	End	Length	Num In Parallel	Volume	Elevation Change	Friction Factor	Correct Friction Factor	Injects	Description (Tubular, Formation, etc)	OD	Weight	Grade	ID	Int Spout Diameter	Data Source	Excess
	ft	ft	ft	ft	ft		cu ft	ft					in	lb/ft		in	in		%
Surface Line (pu)	0.0	0.0	0.0	120.0	120.0	1	0.11	45.0	1.00		Liquid	2" 15,000 psi Discharge Iron	2.620			1.870			
Drill Pipe	0.0	5067.0		5067.0	5067.0					0.25		8.875 in Drill Pipe	8.875	30.480		5.426		Line	4.26
Casing	0.0	5067.0		5067.0	5067.0					0.25		24.000 in Casing	24.000		None	19.500		Line	19.500
Casing	5067.0	11185.0		6518.0	6518.0					0.25		16.000 in Casing	16.000	97.600		14.900		Line	14.900
Casing	5067.0	12600.0		7523.0	7523.0					0.25		9.875 in Casing	9.875	62.800		8.625		Line	8.625
Line	11185.0	13100.0		1915.0	1915.0					0.25		12.025 in Line	12.025	60.200		12.375		Line	12.375
Line	12800.0	16200.0		2500.0	2500.0					0.25		11.875 in Line	11.875	71.800		10.711		Line	10.711
Line	14803.0	17168.0		2365.0	2365.0					0.25		9.875 in Line	9.875	62.800		8.625		Line	8.625
Open Hole	17168.0	18130.0		962.0	962.0					0.20		6.000 in Open Hole	6.000			6.094		Line	6.094
Casing	12800.0	18200.0		6700.0	6700.0					0.25		7.000 in Casing	7.000	32.000		6.500		Line	6.500
Open Hole	16120.0	16200.0		170.0	170.0					0.20		6.500 in Open Hole	6.500			6.500		Line	6.500

MD	Hole Ex.	Hole Dia.	Casing OD	Casing ID	Casing Weight
ft	%	in	in	in	lb/ft
5067.0	0.00	19.500	6.625	5.426	32.000
11185.0	0.00	14.920	9.875	8.625	62.800
12600.0	0.00	12.375	9.875	8.625	62.800
12800.0	0.00	12.375	7.000	6.094	32.000
14803.0	0.00	10.711	7.000	6.094	32.000
17168.0	0.00	8.625	7.000	6.094	32.000
18130.0	0.00	9.875	7.000	6.094	32.000
18300.0	0.00	8.500	7.000	6.094	32.000

1.5 Pumping Schedule

No.	Description	Density	Rate	Volume	Duration
		lb/gal	bpm	bbl	min
1	Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg	14.17	1.00	0.00	0.00
2	6.7 ppg Base Oil Macondo	6.50	4.00	12.00	3.00
3	Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	14.30	4.00	72.00	18.00
4	Macondo Foamed Slurry - 16.74 ppg	16.74	4.00	4.71	1.18
5-1	Macondo Foamed Slurry - 16.74 ppg	16.74	2.00	12.60	6.30
5-2	Macondo Foamed Slurry - 16.74 ppg	16.74	4.00	18.61	4.65
5-3	Macondo Foamed Slurry - 16.74 ppg	16.74	4.00	7.22	1.80
	Top Plug				
6	Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	14.30	4.00	20.00	5.00
7	Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg	14.17	4.00	867.71	216.93
	Total			1014.85	256.86

1.6 Fluid Rheology - Generalized Herschel Bulkley

Fluid	Temp.	Foam Density	m	n	Tau0	Mulnf	Speed	Dial	
	°F	lb/gal			lbf/(100*ft ²)	cp	rpm		
Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg	40		1.00	0.87	7.38	99.14	600	187.00	
							300	106.00	
							200	76.00	
							100	45.00	
							6	10.00	
	100			0.57	0.57	5.25	33.85	600	97.00
								300	57.00
								200	41.00
								100	27.00
								6	8.00
150			1.00	0.89	7.22	25.87	600	62.00	
							300	37.00	
							200	27.00	
							100	18.00	
							6	8.00	
	75			1.00	1.00	1.56	3.02	600	8.00
								300	4.00
								200	3.00
								100	2.00
								6	2.00
120			1.00	1.00	0.66	2.30	600	5.00	
							300	3.00	
							200	2.00	
							100	1.00	
							6	1.00	
	150			1.00	1.00	0.66	2.30	600	4.00
								300	2.00
								200	2.00
								100	1.00
								6	2.00
80		14.50	1.00	1.00	0.38	117.01	600	22.00	
							300	8.00	
							200	5.00	
							100	3.00	
							6	2.00	

Fluid	Temp.	Foam Density	m	n	Tau0	Mulnf	Speed	Dial
	°F	lb/gal			lb/(100*ft²)	cp	rpm	
							60	2.00
							30	2.00
							6	2.00
							3	1.00
	80		1.00	1.00	0.01	58.54	600	120.00
							300	58.00
							200	36.00
							100	16.00
							60	8.00
							30	4.00
							20	2.00
							10	2.00
							6	2.00
							3	2.00
	130		1.00	1.00	0.15	27.59	600	56.00
							300	28.00
							200	18.00
							100	8.00
							60	4.00
							30	2.00
							20	2.00
							10	2.00
							6	2.00
							3	2.00
	190		1.00	0.95	0.01	100.73	600	192.00
							300	108.00
							200	66.00
							100	34.00
							60	20.00
							30	10.00
							20	6.00
							10	2.00
							6	2.00
							3	2.00
Macondo Foamed Slurry - 16.74 ppg (Class H)	80	15.00	1.00	1.00	0.38	117.01	600	22.00
							300	8.00
							200	5.00
							100	3.00
							60	2.00
							30	2.00
							6	2.00
							3	1.00
	80		1.00	1.00	0.01	58.54	600	120.00
							300	58.00
							200	36.00

Fluid	Temp.	Foam Density	m	n	Tau0	Mulnf	Speed	Dial
	°F	lb/gal			lbf/(100*ft ²)	cp	rpm	
							100	16.00
							60	8.00
							30	4.00
							20	2.00
							10	2.00
							6	2.00
							3	2.00
	130		1.00	1.00	0.15	27.59	600	56.00
							300	28.00
							200	18.00
							100	8.00
							60	4.00
							30	2.00
							20	2.00
							10	2.00
							6	2.00
							3	2.00
	190		1.00	0.95	0.01	100.73	600	192.00
							300	108.00
							200	66.00
							100	34.00
							60	20.00
							30	10.00
							20	6.00
							10	2.00
							6	2.00
							3	2.00

1.7 Fluid Rheology - Bingham Plastic

Fluid	Temp.	PV	YP	Speed	Dial
	°F	cp	lbf/(100*ft ²)	rpm	
Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	80	36.76	20.00		

1.8 Temperature Input

Entered BHCT Method

Surface 80 °F
 Outlet 120 °F
 BHCT 135 °F
 BHST °F

1.9 Temperature Profile, Temperature Profile 1

Measured Depth	Casing Circulating Temperature	Annulus Circulating Temperature
ft	°F	°F
0.0	80	120
18300.0	135	135

1.10 Fracture Gradient/Pore Pressure Profile

Measured Depth	True Vertical Depth	Pore Pressure	Reservoir Gradient	Reservoir Density	Fracture Gradient	Fracture Density	Fracture Pressure
ft	ft	psi	psi/ft	lb/gal	psi/ft	lb/gal	psi
17163.0	17163.0	12304	0.717	13.80	0.753	14.50	12928
17700.0	17700.0	12873	0.727	14.00			
18200.0	18200.0				0.753	14.50	13709
18300.0	18300.0	13262	0.725	13.95	0.779	15.00	14260

1.11 Critical Velocity - Fracture Zone

Stage Description	Critical Rate	Critical Velocity	GHB Effective Reynold's Number
	bpm	ft/s	
Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg	8.21	6.06	3467.89
6.7 ppg Base Oil Macondo	2.36	1.74	3741.58
Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	11.91	8.79	3516.40
Macondo Foamed Slurry - 16.74 ppg	5.05	3.73	2962.52
Macondo Foamed Slurry - 16.74 ppg	5.05	3.73	2962.52
Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	11.91	8.79	3516.40
Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg	8.21	6.06	3467.89

Based on annular segment at fracture zone MD of 18300.0 ft.

1.12 Critical Velocity - Reservoir Zone

Stage Description	Critical Rate	Critical Velocity	GHB Effective Reynold's Number
	bpm	ft/s	
Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg	13.00	4.60	3687.75
6.7 ppg Base Oil Macondo	4.28	1.51	4005.42
Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	19.16	6.77	3744.31
Macondo Foamed Slurry - 16.74 ppg	5.84	2.07	3106.09
Macondo Foamed Slurry - 16.74 ppg	5.84	2.07	3106.09
Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	19.16	6.77	3744.31
Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg	13.00	4.60	3687.75

Based on annular segment at reservoir zone MD of 17700.0 ft.

2.0 TUNED SPACER

**2.1 Tuned Spacer Parameters, 3. Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg
 TS III, Bingham Plastic**

Density	14.30	lb/gal
Calculated YP	20.00	lbf/(100*ft ²)
Calculated PV	36.76	cp
Temperature	190	°F
Use Job Design	Yes	
Zone of Interest		
Measured Depth	18360.0	ft
Displacement Efficiency	100.00	
Hole Dia.	8.636	in
Standoff	70.00	%
Pipe OD	7.000	in
Rate	4.00	bpm
Mud		
Erodibility Number	20.69	
Required Shear Stress	29.00	lbf/(100*ft ²)
Density	14.00	lb/gal
PV	23.83	cp
YP	6.27	lbf/(100*ft ²)
Laboratory Volume	600.00	cm ³
<p>This Tuned Spacer was designed to meet the above conditions. Check pipe OD, hole dia., standoff, rate, erodibility number, density, PV, and YP for any differences in the final job design and simulation.</p>		
Simulated Downhole Rate	4.00	bpm
Simulated Downhole MD	18300.0	ft

**2.2 Tuned Spacer Parameters, 6. Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg
 TS III, Bingham Plastic**

Density	14.30	lb/gal
Calculated YP	20.00	lbf/(100*ft ²)
Calculated PV	36.76	cp
Temperature	190	°F
Use Job Design	Yes	
Zone of Interest		
Measured Depth	18360.0	ft
Displacement Efficiency	100.00	
Hole Dia.	8.636	in
Standoff	70.00	%
Pipe OD	7.000	in
Rate	4.00	bpm
Mud		
Erodibility Number	20.69	
Required Shear Stress	29.00	lbf/(100*ft ²)
Density	14.00	lb/gal
PV	23.83	cp
YP	6.27	lbf/(100*ft ²)
Laboratory Volume	600.00	cm ³
<p>This Tuned Spacer was designed to meet the above conditions. Check pipe OD, hole dia., standoff, rate, erodibility number, density, PV, and YP for any differences in the final job design and simulation.</p>		
Simulated Downhole Rate		bpm
Simulated Downhole MD	18300.0	ft

3.0 FOAM

3.1 Foam Design Parameters

Constant or Stages Gas Flow Calculation Method

Foaming Agents in Mix Water (volume based)

Surfactant 1.50 %
 Stabilizer 0.00 %

Fracture Zone

Measured Depth 18300.0 ft
 Fracture Pressure 14260 psi
 Fracture Gradient 0.779 psi/ft
 Fracture Density 15.00 lb/gal
 Calculated Hydrostatic Pressure 13457 psi
 Calculated Hydrostatic Pressure Gradient 0.735 psi/ft
 Calculated Hydrostatic Density 14.16 lb/gal

Reservoir Zone

Measured Depth 17700.0 ft
 Pore Pressure 12873 psi
 Reservoir Gradient 0.727 psi/ft
 Reservoir Density 14.00 lb/gal
 Calculated Hydrostatic Pressure 13005 psi
 Calculated Hydrostatic Pressure Gradient 0.735 psi/ft
 Calculated Hydrostatic Density 14.14 lb/gal

3.2 Foam Pumping Schedule for Liquids

Stg	Start Time	Pump Rate	Base Slurry Vol.	Cum. Base Slurry Vol.	Cem. Mix Water Vol.	Cum. Cem. Mix Water Vol.	Foam Agents Rate	Foam Agents Vol.	Foaming Agents Cum. Job Volume
	min	bpm	bbbl	bbbl	bbbl	bbbl	gpm	gal	gal
1	0.00	1.00	0.00	0.00	0.00	0.00		0.0	0.0
2	0.00	4.00	12.00	12.00	0.00	0.00	0.0	0.0	0.0
3	3.00	4.00	72.00	72.00	0.00	0.00	0.0	0.0	0.0
4	21.00	4.00	4.71	4.71	2.23	2.23	0.0	0.0	0.0
5-1	22.18	2.00	12.60	12.60	5.95	5.95	0.6	3.8	3.8
5-2	28.48	4.00	18.61	31.22	8.79	14.74	1.2	5.5	9.3
5-3	33.13	4.00	7.22	38.43	3.41	18.15	0.0	0.0	9.3
6	34.94	4.00	20.00	20.00	0.00	0.00	0.0	0.0	9.3
7	39.94	4.00	867.71	867.71	0.00	0.00	0.0	0.0	9.3

3.3 Foam Pumping Schedule for Gas

Stg	Start Time	Pump Rate	Starting Gas Conc.	Starting Gas Rate	Cum. Job Gas Vol.	Exp. Factor
	min	bpm	scf/bbl	scfm	Mscf	
1	0.00	1.00	0.000	0	0.0	1.00
2	0.00	4.00	0.000	0	0.0	1.00
3	3.00	4.00	0.000	0	0.0	1.00
4	21.00	4.00	0.000	0	0.0	1.00
5-1	22.18	2.00	582.729	1165	7.3	1.23
5-2	28.48	4.00	582.729	2331	18.2	1.22
5-3	33.13	4.00	0.000	0	18.2	1.00
6	34.94	4.00	0.000	0	18.2	1.00
7	39.94	4.00	0.000	0	18.2	1.00

3.4 Foam Slurry Data

No.	Description	Base Slurry Vol.	Foam Slurry Vol.	Bulk Cem.	Water Req.	Yield
		bbl	bbl	sk94	gal/sk94	ft ³ /sk94
1	Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg	0.00	0.00			
2	6.7 ppg Base Oil Macondo	12.00	12.00			
3	Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	72.00	72.00			
4	Macondo Foamed Slurry - 16.74 ppg	4.71	4.71	19	4.840	1.3700
5-1	Macondo Foamed Slurry - 16.74 ppg	12.60	15.46	52	4.840	1.3700
5-2		18.61	22.78	76	4.840	1.3700
5-3		7.22	7.22	30	4.840	1.3700
6	Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	20.00	20.00			
7	Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg	867.71	867.71			

4.0 SIMULATION

4.1 Volume and Pressure Results

4.2 Volume and Rate Calculations

Time	Surface Stage In	Surface Stage Out	Liquid Volume In	Total Volume Out	Liquid Rate In	Total Rate Out
min			bbl	bbl	bpm	bpm
0.02	1	1	0.07	0.07	4.00	4.00
6.25	3	1	25.00	25.00	4.00	4.00
18.75	3	1	75.00	75.00	4.00	4.00
21.88	4	1	87.50	87.50	4.00	4.00
27.82	5	1	100.00	117.04	2.00	4.21
33.15	5	1	120.00	150.99	4.00	7.05
35.15	6	1	128.00	159.55	4.00	2.99
44.40	7	1	165.00	187.29	4.00	3.23
56.90	7	1	215.00	230.91	4.00	3.63
69.40	7	1	265.00	278.39	4.00	3.89
81.90	7	1	315.00	327.40	4.00	3.93
94.40	7	1	365.00	376.61	4.00	3.94
106.90	7	1	415.00	425.96	4.00	3.95
119.40	7	1	465.00	475.43	4.00	3.96
131.90	7	1	515.00	524.97	4.00	3.97
144.40	7	1	565.00	574.59	4.00	3.97
156.90	7	1	615.00	624.26	4.00	3.97
169.40	7	1	665.00	673.96	4.00	3.98
181.90	7	1	715.00	723.67	4.00	3.98
194.40	7	1	765.00	773.45	4.00	3.98
206.90	7	1	815.00	823.16	4.00	3.97
219.40	7	1	865.00	872.83	4.00	3.98
231.90	7	1	915.00	922.63	4.00	3.98
244.40	7	1	965.00	972.38	4.00	3.98
256.86	7	1	1014.85	1022.13	4.00	4.01
256.98	7	1	1015.26	1022.57	0.00	1.84

4.3 Horsepower, Pressure, Freefall

Time	Liquid Volume In	Pump Output	Surface Pressure In	Surface Pressure Out	ECD @ TD	ECD @ Frac Zone	Free Fall Height
min	bbl	hp	psi	psi	lb/gal	lb/gal	ft
0.02	0.07	51.9	515	0	14.51	14.51	0.0
6.25	25.00	62.0	618	0	14.44	14.44	0.0
18.75	75.00	62.4	622	0	14.44	14.44	0.0
21.88	87.50	65.1	649	0	14.44	14.44	0.0
27.82	100.00	51.0	1026	0	14.43	14.43	0.0
33.15	120.00	144.2	1457	0	14.51	14.51	0.0
35.15	128.00	103.9	1045	0	14.40	14.40	0.0
44.40	165.00	82.0	822	0	14.40	14.40	0.0
56.90	215.00	67.4	673	0	14.41	14.41	0.0
69.40	265.00	52.9	525	0	14.42	14.42	0.0
81.90	315.00	53.8	534	0	14.42	14.42	0.0
94.40	365.00	53.0	526	0	14.42	14.42	0.0
106.90	415.00	52.4	520	0	14.42	14.42	0.0
119.40	465.00	51.9	515	0	14.42	14.42	0.0
131.90	515.00	51.5	511	0	14.43	14.43	0.0
144.40	565.00	51.1	507	0	14.42	14.42	0.0
156.90	615.00	50.8	504	0	14.42	14.42	0.0
169.40	665.00	50.6	501	0	14.43	14.43	0.0
181.90	715.00	56.7	564	0	14.42	14.42	0.0
194.40	765.00	56.8	565	0	14.42	14.42	0.0
206.90	815.00	55.4	551	0	14.42	14.42	0.0
219.40	865.00	54.5	542	0	14.42	14.42	0.0
231.90	915.00	28.4	275	0	14.29	14.29	0.0
244.40	965.00	28.5	276	0	14.30	14.30	0.0
256.86	1014.85	57.8	575	0	14.59	14.59	0.0
256.98	1015.26	0.0	1073	0	14.41	14.41	0.0

4.4 Gas Flow Potential

Gas Flow Potential 4.59
 at Reservoir Zone Measured Depth 17700.0 ft

Based on analysis of the above outlined well conditions, this well is considered to have a MODERATE gas flow problem. Wells in this category fall into flow condition 2.

4.5 Pressure to Break Circulation - Hydrostatic Pressures

Total Depth 13471 psi
 Fracture Zone 13471 psi

4.6 Pressure to Break Circulation

Gel Strength	Surface Pressure	Total Depth Additional Pressure	Fracture Zone Additional Pressure
lb/(100*ft ²)	psi	psi	psi
25.00	622	388	388
50.00	1243	775	775
75.00	1865	1163	1163
100.00	2486	1551	1551
200.00	4973	3102	3102

4.7 Final Position of Stages

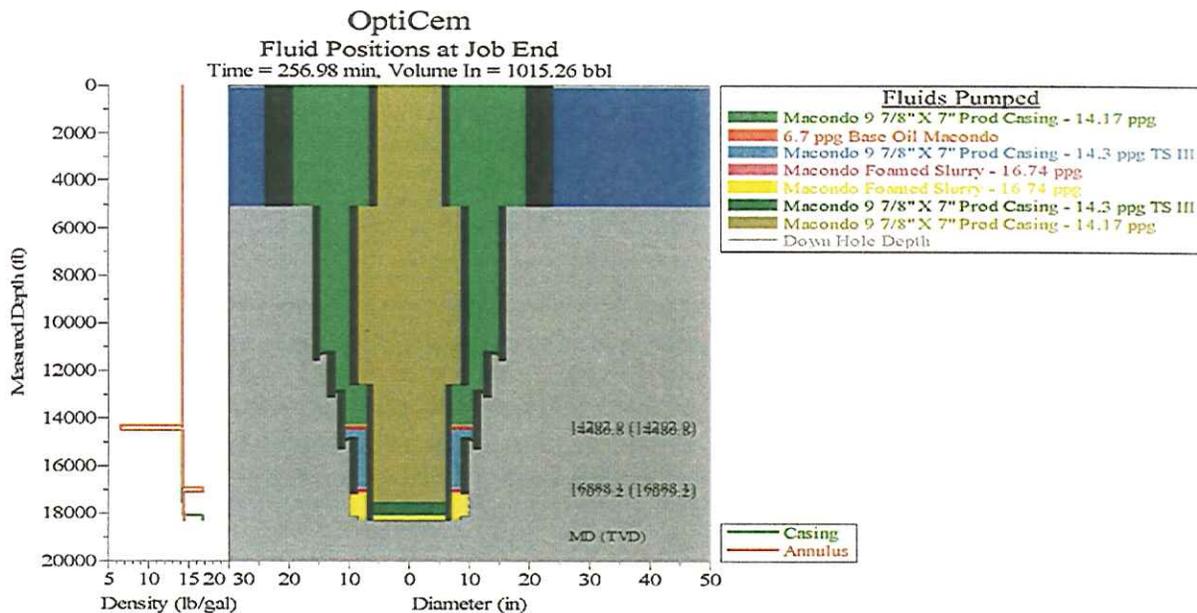
Stage Description	Annular Length	Casing Length	Annular Top MD	Casing Top MD
	ft	ft	ft	ft
Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg	14292.9		0.0	
6.7 ppg Base Oil Macondo	187.9		14292.9	
Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	2407.3		14480.8	
Macondo Foamed Slurry - 16.74 ppg	191.1		16888.1	
Macondo Foamed Slurry - 16.74 ppg	1220.8	200.0	17079.2	18100.0
Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III		554.4		17545.6
Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg		17545.6		0.0

4.8 Time of Events

Time	Frac Zone ECD	Res Zone ECD	Stage Starts Pumping	Stage Enters Annulus
min	lb/gal	lb/gal		
0.50	14.44	14.42	2. 6.7 ppg Base Oil Macondo	
3.75	14.44	14.42	3. Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	
21.12	14.44	14.42	4. Macondo Foamed Slurry - 16.74 ppg	
22.82	14.49	14.47	5. Macondo Foamed Slurry - 16.74 ppg	
35.15	14.40	14.38	6. Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III	
40.65	14.40	14.38	7. Macondo 9 7/8" X 7" Prod Casing - 14.17 ppg	
225.65	14.38	14.41		2. 6.7 ppg Base Oil Macondo
228.15	14.24	14.41		3. Macondo 9 7/8" X 7" Prod Casing - 14.3 ppg TS III
246.90	14.32	14.27		4. Macondo Foamed Slurry - 16.74 ppg
248.15	14.38	14.28		5. Macondo Foamed Slurry - 16.74 ppg
256.97	14.59	14.50	Prior to plug landing	
256.98	14.41	14.41	Plug Landed	

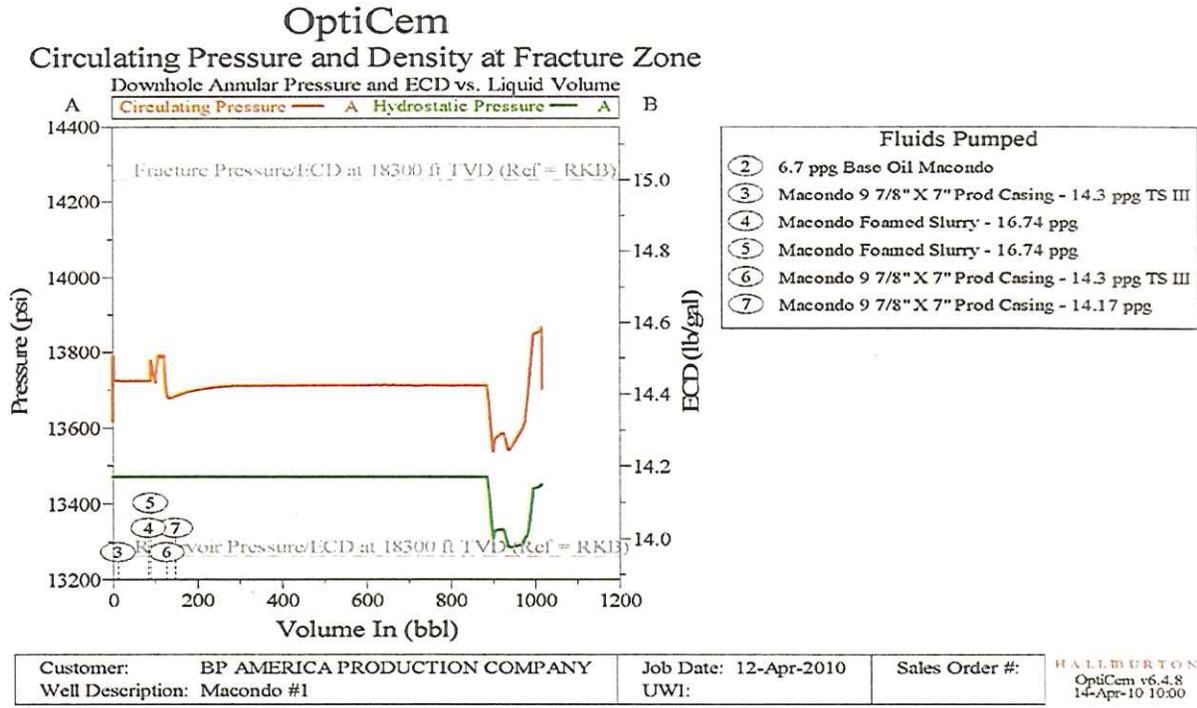
5.0 ATTACHMENTS

5.1 Fluid Positions (graph)



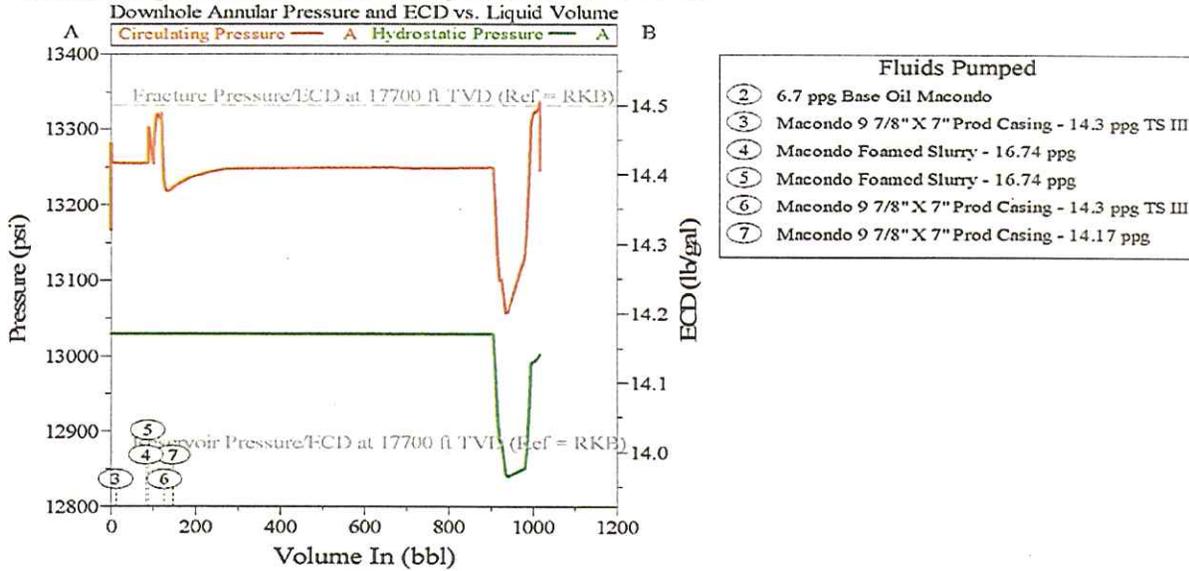
Customer: BP AMERICA PRODUCTION COMPANY	Job Date: 12-Apr-2010	Sales Order #:	HALLIBURTON OptiCem v6.4.8 14-Apr-10 10:00
Well Description: Macondo #1	UWI:		

5.2 Circ Pressure & Density - Frac Zone (graph)



5.3 Circ Pressure & Density - Res Zone (graph)

OptiCem
 Circulating Pressure and Density at Reservoir Zone



Customer: BP AMERICA PRODUCTION COMPANY	Job Date: 12-Apr-2010	Sales Order #:	HALLIBURTON OptiCem v6.4.8 14-Apr-10 10:00
Well Description: Macondo #1	UWI:		

5.4 Downhole Pressure Profiles (graph)

