

**CEMENTING SUMMARY (no liner needed)****13.375" Surface Casing**

**1st Stage:**    Lead 1:        Premium Plus Scavenger Slurry with 10 PPS Diamond Seal  
                   Lead 2:        Thix-Set Cement, 1% Thix-Set A, 0.25% Thix-Set B  
                   Lead 3:        Halliburton Light Premium Plus with 2% CaCl<sub>2</sub>, 0.5 PPS Flocele, 5 PPS Gilsonite  
                   Tail Slurry:      Premium Plus with 2% CaCl<sub>2</sub>

From Depth	TOC (MD)	Stage	Hole Size	% Excess	Density PPG	Yield ft <sup>3</sup> /sk	Mix Water	Qty Sks	Pump Time	FL cc	FW %	12 Hr Psi	24 Hr Psi
Surf	Surf	Lead 1	17.5"		9.50	7.15	49.9	100					
Surf	Surf	Lead 2	17.5"		14.00	1.52	7.71	100					
900'	Surf	Lead 3	17.5"	50	12.40	2.04	10.78	440					
1200'	900'	Tail	17.5"	50	14.80	1.34	6.31	300					

**Remarks:**            Lead with 10 bbls gelled water  
                               Cement slurry design may be adjusted based on formation tops and hole conditions  
                               Use Weatherford-Gemeco for float equipment

**Float Equip.**        Texas pattern shoe, single shoe joint, insert float

**Centralizers:**      Middle of shoe jt., every other jt. to surface

**9.625" Intermediate Casing**

**1st Stage:**    Lead Slurry:      Class H foamed with 350 dcf/bbl N<sub>2</sub>  
                   Lead Slurry:      Class H foamed with 150 dcf/bbl N<sub>2</sub>

**2nd Stage:**    Lead Slurry:      Interfill C w/ 0.25 PPS flocele, 3.0 PPS gilsonite, 0.2% Halad 322  
                   Tail Slurry:      Premium

From Depth	TOC (MD)	Stage	Hole Size	% Excess	Density Ppg	Yield ft <sup>3</sup> /sk	Mix Water	Qty Sks	Pump Time	FL cc	FW %	12 Hr Psi	24 Hr Psi
6800'	0'	2-Lead	12.25"	35	11.9	2.47	13.83	1360	4:50	650	0	173	365
7200'	6800'	2-Tail	12.25"	35	14.8	1.32	6.32	200	2:10	950	1	1100	2400
8300'	7200'	1-Lead	12.25"	60	9.20	2.18	5.2	350					
10600'	8300'	1-Lead	12.25"	60	13.0	1.44	5.18	670					

**Remarks:**            Use open hole caliper volume plus 35% excess for first stage  
                               Use open hole caliper volume plus 35% excess for second stage  
                               Cement slurry design may be adjusted based on formation tops and hole conditions  
                               Use Weatherford-Gemeco for float equipment

**Float Equip.**        Float shoe, single shoe joint, float collar, DV and ECP tool @ 7300' (MD)

**Centralizers:**      Middle of shoe jt., every other jt. to DV collar, 1 below & above DV collar

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