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INTEROFFICE MEMO

To: **Ann Wiley**
From: **Don Wood**
Date: **1/3/08**
Subject: **Application to Drill Information for the Encore "32" Loafer Com #1**

As requested I am providing you with the casing design, cementing program, mud program and directional plan so you can solicit a permit to drill the subject well.

1. Casing String Design:

Size	Interval	Weight	Grade	Thread	Burst	Collapse	Jt. Str.
20	0-100	94.0					
9-5/8"	0-1,500	40.0	J-55	BTC	3950	2570	843000
5-1/2	0-10,200	20.0	P-110	LTC	12630	11100	548000

Collapse, burst and joint strength are minimum values with no safety factor. The drift through the 20" is 19.125 inches, through the 9-5/8" casing drifts 8.75" and the 5-1/2" liner drifts 4.653 inches.

The 20" conductor will be set in a 26" hole, the 9-5/8" in a 14-3/4" hole and the 5-1/2" set in an 8-3/4" hole.

2. Cementation:

Casing Size	Cement Slurry	Properties	Property Values
20"	Redi-mix		

Cement will be circulated back to surface behind 9-5/8" casing.

Casing Size	Cement Slurry	Properties	Property Values
	Stage 1		
9-5/8"	Spacer: 20 bbls of FW		20.0 bbls
	Lead Slurry: 270 sacks Interfill C	Fluid Weight:	11.8 ppg
		Fluid Yield:	2.54cu ft/sk
		Amount of mix water:	14.83gal/sk
		Top of Fluid:	700
		Calculated Fill:	500 ft.
		12 hr Comp. Strength	95 psi
		24 hr Comp. Strength	175 psi
		48 hr Comp. Strength	225 psi
	Tail Slurry: 320 sacks Premium Plus Cement w/94 lbm/sk Premium Plus Cement + 1% $CaCl_2$	Fluid Weight:	14.80 ppg
		Fluid Yield:	1.34cu ft/sk
		Amount of mix water:	6.36 gal/sk
		Top of Fluid:	1,200 ft.
		Calculated Fill:	300 ft.
		12 hr Comp. Strength	510 psi
		24 hr Comp. Strength	910 psi
		48 hr Comp. Strength	1260 psi
	DV tool @ ±700'		
	Stage 2		
	Spacer: 20 bbls of FW		20.0 bbls
	Scavenger Cement: 100 sacks Premium Plus Cement w/94 lbm/sk Premium Plus Cement +10 lbm/sk Cal-Seal 60 + 10 lbm/sk Gilsonite	Fluid Weight:	14.2 ppg
		Fluid Yield:	1.62cu ft/sk

		Amount of mix water:	6.97gal/sk
	Lead Slurry: 245 sacks Interfill C	Fluid Weight:	11.8 ppg
		Fluid Yield:	2.54cu ft/sk
		Amount of mix water:	14.83gal/sk
		Top of Fluid:	Surface
		Calculated Fill:	400 ft.
		12 hr Comp. Strength	95 psi
		24 hr Comp. Strength	175 psi
		48 hr Comp. Strength	225 psi
	Tail Slurry: 305 sacks Premium Plus Cement w/94 lbm/sk Premium Plus Cement + 1% $CaCl_2$	Fluid Weight:	14.80 ppg
		Fluid Yield:	1.34cu ft/sk
		Amount of mix water:	6.36 gal/sk
		Top of Fluid:	400 ft.
		Calculated Fill:	300 ft.
		12 hr Comp. Strength	510 psi
		24 hr Comp. Strength	910 psi
		48 hr Comp. Strength	1,260 psi

Cement will be circulated back to surface behind the 5-1/2" string.

Casing Size	Cement Slurry	Properties	Property Values
	Stage 1		
5-1/2"	Spacer: 500 gals Super Flush 102		11.5 bbls
	Stage 1 Tail Slurry: 550 sacks Super H Cement + 0.4% LAP-1, + 0.3 % CFR-3 + 1.0 lbm/sk Salt + 0.25 lbm/sk D-Air 3000 + 0.2% HR-7	Fluid Weight:	13.20 ppg
		Fluid Yield:	1.61cu ft/sk
		Amount of mix water:	8.39 gal/sk
		Top of Fluid:	7,900 ft.
		Calculated Fill:	2,300 ft.
		12 hr Comp. Strength	510 psi
		24 hr Comp. Strength	910 psi
		48 hr Comp. Strength	1,260 psi
	DV tool @ ±7,900' TVD.		

	Stage 2		
	Spacer: 20 bbls FW		
	Scavenger Cement: 100 sacks Premium Plus Cement w/94 lbm/sk Premium Plus Cement +10 lbm/sk Cal-Seal 60 + 10 lbm/sk Gilsonite	Fluid Weight:	14.2 ppg
		Fluid Yield:	1.62cu ft/sk
		Amount of mix water:	6.97gal/sk
	Stage 2 Lead Slurry: 970 sacks Interfill H	Fluid Weight:	11.90 ppg
		Fluid Yield:	2.48 cu ft/sk
		Amount of mix water:	14.41 gal/sk
		Top of Fluid:	Surface
		Calculated Fill:	6600 ft.
		12 hr Comp. Strength	95 psi
		24 hr Comp. Strength	175 psi
		48 hr Comp. Strength	225 psi
	Stage 2 Tail Slurry: 415 sacks Premium Cement w/94 lbm/sk Premium Cement	Fluid Weight:	15.60 ppg
		Fluid Yield:	1.19 cu ft/sk
		Amount of mix water:	5.39 gal/sk
		Top of Fluid:	6600 ft.
		Calculated Fill:	1300 ft.
		12 hr Comp. Strength	1210 psi
		24 hr Comp. Strength	1825 psi
		48 hr Comp. Strength	2380 psi

3. Mud Program:

Spud with freshwater bentonite/lime type mud having a 38-42 sec/qt viscosity and drill to 9-5/8" casing point at 1,500 feet. If returns are lost in the 14-3/4" hole, the drilling fluid will be aerated and the rest of the 14-3/4" hole will be drilled with aerated mud to 9-5/8" casing point. Drill out the 9-5/8" casing with 8.4-9.2 ppg cut brine. Drill from 1,500' to mud-up point at ±7,200'MD with an 8.4-9.5 ppg brine water. Mud-up 9.5-9.7 ppg brine water with Duo Vis, Poly Pac R and My-Lo-Jel products. Maintain a 38-44 sec/qt viscosity, 12.0-8.0 cc fluid loss and 9.5-9.7 ppg mud weight after mud up to 8,400' MD. To drill from the top of the Morrow expected at 8,400' MD (8,206' TVD) to total depth

mud weights of 9.7-9.8 ppg are expected. Mud filtrate will be reduced to 8.0-6.0 cc by 8,400' MD and maintained at these values to TD. Lost circulation material will be added, as needed. A H_2S scavenger chemical will be added to the mud system after drilling out the 9-5/8" shoe and maintain to TD. H_2S training and safety equipment will be operations from the drilling out of the 9-5/8" casing to TD.

Drilling Fluid Properties

Depth (MD)	MW (ppg.)	Viscosity	PV	YP	API FL	pH	Drill Solids
0-1,500	8.3-9.0	38-42			NC	9.5-10 0	4-5%
1,500-7,200	8 4-9 5	28	1	1	NC	9.5-10 0	≤1.5%
7,200-8,400	9 5-9.7	28-30	1-2	1-2	12 0-8.0	9 5-10.0	≤1 5%
8,400-TD	9.7-9.8	38-44	10-12	10-15	8.0-6.0	9 5-10.5	≤5%

3. Directional Program:

This will be a S-type curve directional well. The well bore will be kicked off at ±3,600' MD at a build rate of 3.0 degrees/100' and an azimuth of 289.4°. The inclination will be built to 26.28° by ±4,476' MD (4,446' TVD). From 4,476 MD to 5,824' MD (5,654' TVD) a tangent section will be maintained at 26.28° inclination and 289.4° azimuth. At ±5,824' MD (±5,655' TVD) the inclination will be dropped at 3 degrees/100' until the inclination and azimuth are both zero at ± 6,700 MD (±6,500' TVD) and vertical section of ±992 feet. From ±6,700' MD to TD at ±10,200' MD (±10,000' TVD) the inclination and azimuth will be held at zero. See attached directional plan for further details.