Date

Date

THIS SPACE FOR FEDERAL OR STATE OFFICE USE

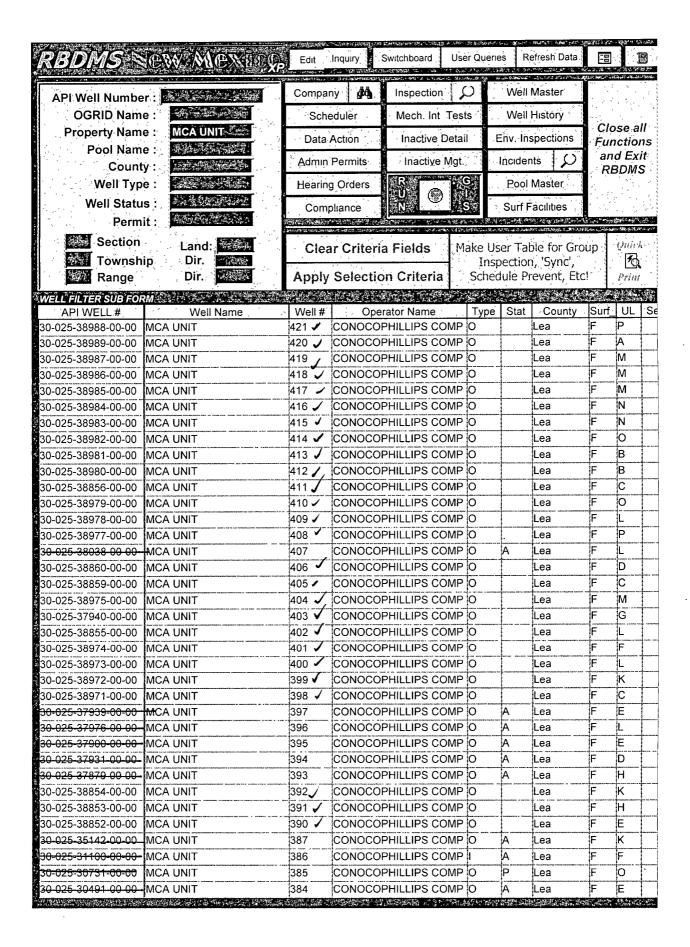
Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United

(Instructions on page 2)

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease

States any false, fictitious or fraudulent statements or representations as tolany matter within its jurisdiction.

which would entitle the applicant to conduct operations thereon.



## 4. Proposed cementing program:

For the cementing program a range is presented for the number of sacks of cement and for the bottom, top, and length of the lead slurries and tail slurries due to the variation in formation tops and planned TD for the planned / contemplated wells for which this Master Drilling Plan is intended.

## 13-3/8" Conductor:

Cement to surface with ready mix or Class C Neat cement. TOC at surface.

## 8-5/8" Surface Casing:

The intention for the cementing program for the Surface Casing is to:

- Place the Tail Slurry from the casing shoe to 300' above the casing shoe,
- Bring the Lead Slurry to surface.

Spacer: 20 bbls Fresh Water

Lead Slurry		·					<del>,</del>	
Volume (sx) & Recipe & Excess %	Bottom (ft MD)	Top (ft MD)	Length (ft)	Density (ppg)	Yield (cuft/sx)	Mix Wtr gal/sx	,	ve Strengths y UCA Method
185 – 535 sx Class C + 6% bentonite + 2% CaCl2 + 0.125% Polyflake	325 to 940	Surface	325 to 940	13.5	1.96	10.69	Time 12 hrs 18 hrs 24 hrs	Strength 316 psi 417 psi 506 psi
Excess = 170%							,	

Tail Slurry								
Volume (sx) & Recipe & Excess %	Bottom (ft MD)	Top (ft MD)	Length (ft)	Density (ppg)	Yield (cuft/sx)	Mix Wtr gal/sx	Compressive Strengths @ 91 deg F by UCA Metho	
220 sx Class C + 2% CaCl2 + 0.125% Polyflake Excess = 100%	625' to 1240'	325' to 940'	300'	14.8	1.35	6.36	Time 3 hrs 9 hrs 12 hrs 24 hrs 48 hrs	Strength 50 psi 500 psi 793 psi 1266 psi 2183 psi

Displacement: Fresh Water

Note: In accordance with the Pecos District Conditions of Approval, we will Wait on Cement (WOC) for a period of not less than 18 hrs after placement of the cement on the Surface Casing in order to achieve at least 500 psi compressive strength in both the Lead Slurry and Tail Slurry cements prior to drilling out of the Surface Casing.

## 5-1/2" Production Casing Cementing Program - Single Stage Cementing Option:

The intention for the cementing program for the Production Casing – Single Stage Cementing Option is to:

- Place the Tail Slurry from the casing shoe to the top of the Grayburg formation,
- Bring the Lead Slurry to surface.

Spacer: 20 bbls Fresh Water with an option to follow this with 1000 gallons SuperFlush 102 and 20 additional bbls Fresh Water.

Lead Siurry							:	17
Volume (sx) & Recipe & Excess %	Bottom (ft MD)	Top (ft MD)	Length (ft)	Density (ppg)	Yield (cuft/sx)	Mix Wtr gal/sx	Stre @ 113	pressive engths deg F by Method
433 – 644 sx 50% Class C 50% POZ + 10% bentonite + 8 lb/sx Salt + 0.2% Fluid Loss Additive + 0.125% Polyflake	3270' to 3940'	Surface	3270' to 3940'	11.8	2.55	14.88	Time 12 hrs 24 hrs 48 hrs 72 hrs	Strength 100 psi 200 psi 245 psi 310 psi
Excess = 88% - 135% (based	d on calipe	r if availab	le)				t t	

Volume (sx)	Bottom	Top	Length	Density	Yield	Mix Wtr	Compressive Strengths @ 115 deg F by UCA Met	
& Recipe & Excess %	(ft MD)	(ft MD)	(ft)	(ppg)	(cuft/sx)	gal/sx		
150 – 285 sx 65% Class C 35% POZ + 0.4% Dispersant	4155' to 4705'	3270' to 3940'	636' to 885'	14.8	0.98	3.76	Time 5 hrs 56 min 8 hrs 12 min 24 hrs 48 hrs 72 hrs	Strength 50 psi 500 psi 2806 psi 4690 psi 5661 psi

Displacement: 2% KCL water with approximately 250 ppm gluteraldehyde biocide.

## 5-1/2" Production Casing Cementing Program - Two-Stage Cementing Option (for Loss of Circulation Events):

We propose an option to use the two-stage cementing method for cementing the production casing if any loss of circulation events or heavy seepage is experienced while drilling the 7-7/8" hole. (see discussion in Item 3 above). The proposed two-stage cementing program would be as follows:

- Stage 1: Would place cement from the casing shoe to the stage tool.
- Stage 2: Would place cement from the stage tool to Surface.

## Stage 1:

Spacer: 20 bbls Fresh Water with an option to follow this with 1000 gallons SuperFlush 102 and 20 additional bbls Fresh Water

## Stage 1 - Lead Surry: None

Volume (sx)	Bottom	Top	Length	Density	Yield	Mix Wtr	Compressive Strengths @ 113 deg F by Crush Meth	
& Recipe & Excess %	(ft MD)	(ft MD)	(ft)	(ppg)	(cuft/sx)	gal/sx		
150 – 285 sx 65% Class C 35% POZ + 0.4% Dispersant	4155' to 4705'	3270' to 3940'	636' to 885'	14.8	0.98	3.76	Time 5 hrs 56 min 8 hrs 12 min 24 hrs 48 hrs 72 hrs	Strength 50 psi 500 psi 2806 psi 4690 psi 5661 psi

Displacement: A volume of Fresh Water equal to the capacity volume from the stage tool to the float collar, followed by brine based mud.

# 5-1/2" Production Casing Cementing Program – Two-Stage Cementing Option with Stage Tool and External Casing Packers (for Water Flow Events):

We propose an option to use the two-stage cementing method with a Stage Tool and two each External Casing Packers if any waterflow event is experienced while drilling the 7-7/8" hole as discussed above in Item 3. The proposed two-stage cementing program would be as follows:

- Stage 1: Would place cement from the casing shoe to the stage tool
- Stage 2: Would place cement from the stage tool to Surface.

#### Stage 1:

Spacer: 20 bbls Fresh Water with an option to follow this with 1000 gallons SuperFlush 102 and 20 additional bbls Fresh Water

Stage 1 – Lead Slurry Volume (sx) & Recipe & Excess %	Bottom (ft MD)	Top (ft MD)	Length (ft)	Density (ppg)	Yield (cuft/sx)	Mix Wtr gal/sx	Compressive @ 113 deg F by	
77 – 363 sx 50% Class C 50% POZ + 10% bentonite + 8 lb/sx Salt + 0.2% Fluid Loss Additive + 0.125% Polyflake	3270' to 3940'	1670' to 3440'	500' to 1600'	11.8	2.55	14.88	Time 12 hrs 24 hrs 48 hrs 72 hrs	Strength 100 psi 200 psi 245 psi 310 psi

Volume (sx)	Bottom	Top	Length	Density	Yield	Mix Wtr	Compressive Strengths @ 113 deg F by Crush Met	
& Recipe & Excess %	(ft MD)	(ft MD)	(ft)	(ppg)	(cuft/sx)	gal/sx		
150 – 285 sx 65% Class C 35% POZ + 0.4% Dispersant	4155' to 4705'	3270' to 3940'	636' to 885'	14.8	0.98	3.76	Time 5 hrs 56 min 8 hrs 12 min 24 hrs 48 hrs 72 hrs	Strength 50 psi 500 psi 2806 psi 4690 psi 5661 psi

Displacement: A volume of Fresh Water equal to the capacity volume from the stage tool to the float collar, followed by brine based mud.