

#### 4. Casing and Blowout Preventer Program

- Conductor : Will drill a 26" diameter hole to approximately 300'. Will run new 20" 94# H-40 ST&C casing to total depth and cement with 600 sx or sufficient volume to circulate cement to surface. After WOC 24 hrs, will install 20" API 2000 psi WP casing flange (temporary) and then nipple up 20" API 2000 psi WP ram type BOP. Propose to test casing and BOP to 600 psi before drilling out.
- Surface : Propose to drill a 17½" diameter hole to approximately 3400'. Will run new 13-3/8" 54.5# - 61# K-55 and S-80 ST&C casing to total depth; then cement with 2500 sx or sufficient volume (in one stage) necessary to circulate cement to the surface. If cement does not circulate, propose to run temperature survey to determine top of cement and use 1" tubing in annulus or dump ready mix, as appropriate. Will cut off temporary 20" casing flange, then install 12" API 3000 psi WP casing flange on 13-3/8" casing. BOPs will consist of double hydraulic 12" API 3000 psi WP (pipe and blind rams) and 1 - 12" API 3000 psi WP hydril. After WOC 24 hrs, casing will be tested to 1500 psi before drilling out.
- Intermediate: Propose to drill a 12¼" hole to approximately 7000', then commence angle buildup for horizontal displacement. Will continue angle buildup to a total of approximately 18½ degrees, then hold angle constant while drilling to casing point near 11,185' MD (11,000 TVD). Will run new 9-5/8" 43.5#-53.5# N-80 and S-95 LT&C casing to total depth. Plan to use 2 stage cementing collars (placed at 6500' and 3500') in order to circulate cement to the surface. After cut off, will install 12" API 3000 x 10" API 5000 psi WP casing spool and nipple up double hydraulic 10" API 5000 psi WP BOPs (pipe and blind ram) with addition of 1-10" API 5000 psi WP hydril. Will also use rotating drilling head for additional control while drilling. Casing and BOPs will be tested to 2000 psi after WOC 24 hrs, and before drilling out.
- Production  
Liner : Will drill to total depth of 14,295' MD (13,950' TVD) with 8½" bit, while holding 18½ degree angle. Will run new 5½" 20# S-95 LT&C liner to total depth and cement with adequate volume to cover entire liner.

#### 5. Circulating Medium and Control Equipment:

- 0-300' Will utilize fresh water spud mud, while circulating through a small portion of the lined reserve pit. MW 8.6-9.2 PPG with 45-85 viscosity.
- 300-3400' Saturated brine water will be used to drill this portion of the hole. Fluid will be circulated through a controlled portion of the lined reserve pit. MW 10-10.3 PPG with 28-32 viscosity.