

5-1/2" Production Casing: Cement w/ 700 sx Super "H" Modified + 0.4% CFR-3 + 0.5% Halad-344 + 1 pps salt + 0.1% HR-7 (13.0 ppg, 1.65 ft³/sx).

5. Pressure Control Equipment:

The blowout preventer equipment (BOPE) shown in Exhibit D will be utilized for the 11" and 7-7/8" hole sections as follows:

- 2000 psi WP rating for the 11" section
- 5000 psi WP rating for the 7-7/8" hole section

The 2M BOPE assembly will consist of a 13-5/8" annular preventer nipped up on the surface casing. The 5M BOPE assembly will consist of a 5000 psi WP double ram-type preventer (4-1/2" pipe and blind rams) and a 5000 psi WP annular preventer (API RP53 Fig. 2c.5), nipped up on the 8-5/8" intermediate casing and used continuously until setting the 5-1/2" casing at total depth of 13,700'.

BOPE will be tested as follows:

- Prior to drilling out from surface casing – test all BOPE to 1000 psi using rig pump.
- Prior to drilling out from 8-5/8" casing – test ram-type preventers and choke manifold to 5000 psi and annular to 50% of rated WP using independent tester and test plug.

A rotating head will be installed on top of the annular preventer after setting the 8-5/8" casing at $\pm 4850'$.

All BOP's will be hydraulically operated. Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of hole. The kill line will be 2" minimum and will include a remote connection. The choke line will be 3" minimum. A complete choke manifold schematic is shown in Exhibit E.

***Note:** Contractor choke manifold has 5000 psi rating. Hydraulic choke and remote choke line valve required for 7-7/8" hole section only.

