

PENWELL ENERGY, INC.  
TOMCAT "15" FEDERAL COM. #1  
APPLICATION FOR PERMIT TO DRILL

PAGE 2

9. CASING CEMENTING & SETTING DEPTH:

20"	Surface	Set 600' of 20" 94#, 8rd, ST&C, X-56 new casing. Cement with 600 sacks Class "C" Neet + 2% CaCl <sub>2</sub> Circulate cement to surface.
13 3/8"	1st Intermediate	Set 4700' of 13 3/8" 72#, BTC L-80 casing. Cement with 1500 sx "C" Lite + 500 sx "C" Neet. Cement circulate to surface.
9 5/8"	2 <sup>nd</sup> Intermediate	Set 12,500' of 9 5/8", 53.50#, P-110, LTC casing. Cement with 1200 sks. Class "H" Lite +500 sks. of Class "H" Neet.
7"	1 <sup>st</sup> Production liner	Set 7", 29#, 8rd, LT&C, P110 casing at 15,000'. Cement with 275 sx Class "H" + additives.
4 1/2"	2 <sup>nd</sup> Production liner	Set 4 1/2" 13.50#, 8rd, LTC, P-110 casing at 16,000' Cement with 125 sks. of Class "H" + additives

10. PRESSURE CONTROL EQUIPMENT: Exhibit "E". A Blow-out Preventer (no less than 2900 Series 10000 PSI working pressure) consisting of double ram type preventer with bag type preventer. Units will be hydraulically operated. Exhibit "E-1" Choke Manifold and Closing Unit. Blind rams on top, pipe rams on bottom to correspond with size of drill pipe in use. BOP will be nipped up on 13 3/8" casing and remain on well until casing is run and cemented. BOP will be tested as well as choke manifold. BOP will be worked at least once each day while drilling & blind ram will be worked on trips when no drill pipe is in hole. Full opening stabbing valve and upper kelley cock will be utilized. Anticipated BHP 9300 PSI and 195° BHT.

11. PROPOSED MUD CIRCULATING SYSTEM:

DEPTH	MUD. WT.	MUD VISC.	FLUID LOSS	TYPE MUD
0'-600'	8.3		NC	Fresh water spud mud, use paper for seepage control .
600 - 4800'	10.0	28	NC	Brine water, use paper for seepage control and lime for pH control.
4800 - 12500'	9.0	28	NC	Cut brine w/Drispac, starch, soda ash & lime.
12500 - 15000	12.0	40 - 45 10	cc's or less	Brine water
15000 - 16000	10.0	28	NC	Brine water

Sufficient mud materials to maintain mud properties, meet lost circulation and weight increase requirements will be kept at wellsite at all times. In order to run casing and log well viscosity may have to be raised and water loss may have to be lowered.