## APD - South Mattix Unit Federal #49 Page 2

9. The proposed casing program is as follows:

Surface: 13-3/8" 49# H40 ST&C new casing set at 300'

Intermediate: 8-5/8" 32# K55 ST&C new casing from 0-1100'

Production: 5-1/2" 17# L80 LT&C new casing from 0-6500' DV Tool @ 3500'

- 10. Casing setting depth and cementing program:
  - A. 13-3/8" surface casing set at 300' in 17-1/2" hole. Circulate cement with 390sx Premium Plus cement w/ 2% CaCl<sub>2</sub>.

If cement does not circulate, a temperature survey will be run to find the TOC and then finish cementing to surface through 1" using Class C with 2% CaCl<sub>2</sub>.

B. 8-5/8" intermediate casing set at 1100' in 11" hole. Circulate cement with 525sx Premium Plus cement w/ 4% Gel + 2% CaCl<sub>2</sub> + .25#/sx Flocele followed by 200sx Premium Plus cement w/ 2% CaCl<sub>2</sub> + .25#/sx Flocele.

If cement does not circulate, a temperature survey will be run to find the TOC and then finish cementing to surface through 1" using Class C with 2%  $CaCl_2$ .

Note: Cement volumes may be adjusted according to fluid caliper.

C. 5-1/2" production casing set at 6500'. Circulate cement  $1^{\rm st}$  stage-285sx Interfill C cement followed by 395sx Premium Plus Cement with .3% CFR-3 + .3% D-AIR-1 + .4% LAP-1.

 $2^{nd}$  stage-240sx Interfill C cement followed by 395sx Premium Plus Cement with 2% CaCl2.

Note: Cement volumes may need to be adjusted to hole caliper.

11. Pressure Control Equipment

0' - 300' None

300' - 1100' 11" 5M blind and pipe with 5M annular preventer.

1100' - 6500'

11" 5000# ram type preventers with one set blind rams and one set pipe rams and a 5000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head below 5300'. Exhibit A.

A kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.