DRILLING PROCEDURE

General Comments
Arco Federal No. 1
Eddy County, New Mexico

0-30'

Set approximately 30' (one joint) of 20" conductor pipe with a rat hole machine. Cement with ready mix.

30-1700'

Drill a 12 1/4" hole to 1700' (into top of Delaware) and set 9 5/8" casing. Circulate cement. If not circulated, a top outside job will be done. Potential lost circulation zones occur approximately 100-200' (water sands) and at approximately 800-1000' (caverns). If caverns are encountered, run a DV tool in casing above the top cavern encountered and two stage the cement. Volume of cement for surface pipe is based on 200% excess. Ratio each stage based on DV tool setting depth.

First casinghead installed will be 3000# WP. A BOP stack will be installed prior to drilling out the surface shoe.

1700-8600'

Drill an 8 1/2" hole to approximately 8600' (into top of the Wolfcamp) and set 7 5/8" casing. Cement will be circulated on this string in two stages. A DV tool will be run at the top of the bone springs. (Approximately 5000'). Ratio the light weight cement for each stage based on the DV tool setting depth. All of the Class "H" neat will be tailed-in on the first stage.

A degasser, separator and flow sensor equipment will be installed at this point. A mud logging unit will be operative from this point to TD.

8600-11,700'

A 6 1/2" hole will be drilled below the intermediate casing. After drilling approximately 10' of new hole, the casing and casing seat will be tested to the frac gradient. This section will be drilled with mud weights of 9.6# to 10# using a KcL Polymer brine system.

Throughout the Wolfcamp section, high pressure gas bearing zones will probably be encountered. Every effort should be made to drill under-balanced and flare gas as necessary. Mud program as shown on Phase C-I(A) and C-II(A) should be used. A mud system shown on Phases C-I, C-II & C-III should only be used if absolutely necessary. Mud Engineer to check with AQP personnel before going to the latter system.

A 5" liner will be run at TD overlapping the 7 5/8" intermediate a minimum of 300 ft. The liner will be cemented with 420 sx cement. If cement is not circulated, the liner top will be squeezed.

Logs per the attached logging program will be run before setting the 7 5/8" intermediate string and the 5" liner.