Second Intermediate Casing:

This string will be cemented in two stages using a bomb type DV Tool at 6200'. The DV Tool provides the best opportunity for circulating cement to surface.

First Stage:

Cement with 700 sacks of 50/50 pozmix containing 2% gel, 5% salt and 1/4 lb/sx cellophane flakes. The required pump time is 150 minutes at 130 degrees F. The minimum cement waiting time is 12 hours. The recommended pump rate is 8 BPM.

Cement Properties:

- Slurry Weight ..... 14.2 ppg
  Slurry Yield ..... 1.35 cu-ft/sx

Cement volume is based on 8-3/4" by 7" annular volume plus 100% excess. This volume of cement is calculated to cover from TD (bottom of curve) to the DV Tool. Circulate a mimimun of six hours between stages.

Second Stage:

Cement with 1000 sacks of 35/65 pozmix containing 6% gel, 5% salt and 1/4 lb/sx cellophane flakes followed by 100 sacks of Class "H" neat cement. The required pump time is 160 minutes at 130 degrees F. The minimum waiting time for the cement is 12 hours. The recommended pump rate is 8 BPM.

Cement Properties:

Slurry Weight (lead) ..... 12.4 ppg
(tail) ..... 15.6 ppg

Slurry Yield (lead) ..... 1.94 cu-ft/sx
(tail) ..... 1.18 cu-ft/sx

The cement volume is based on the 7-7/8" by 5-1/2" annular volume plus 100% excess and the 8-5/8" by 5-1/2" annular volume plus 13% excess. Cement is calculated to circulate to surface. Run a temperature survey 12-16 hours after cementing to determine the cement top should cement not circulate. No immediate remedial action is required in the event cement does not circulate. The BLM would perfer 100' of cement tie back into the surface casing. Remedial action would be required if pressure where to develop between the 8-5/8" and the 5-1/2" casing strings