A. **Mud:** Take a sample and verify 10 ppg saturated brine water before use (188K ppm chloride) and drill with to 5850'. Use paper sweeps to stop any seepage. Mix LCM if necessary to control circulation problems that have occurred in the Capitan Reef Section 3800'- 4000'. Add Lime and Caustic for a 10 pH. If necessary use Salt Gel Pill sweeps to clean hole. At TD add yellow starch to stabilize the hole prior to running casing. (See attached Mud Program for details)

B. **Potential Problems:** Possible troublesome gravel section from 1100' – 1300'. Severe lost circulation problems and stuck drill pipe while drilling has occurred around 4000'.

C. **Mudlogging Program:** From 3500' to casing setting depth take 2 dried sets every 10'.

D. **Casing:**

5850' to Surface – 9-5/8", 40 lb/ft L-80 LT&C

Make-up Torque, ft-lbs:	
Optimum	7270
Minimum	5450
Maximum	9090

E. **Cement:** Set DV tool above lost circulation problems. Circulate bottoms up before pumping cement. Pump 20 bbls of fresh water ahead of lead slurry.

Lead: 2527 sx of Interfill C mixed w/fresh water

Slurry Weight:	11.7 ppg
Slurry Yield:	2.60 ft^3/sx
Water Requirement	6.29 gals/sx

Tail: 402 sx of Premium Plus mixed w/ fresh water

Slurry Weight:	14.80 ppg
Slurry Yield:	1.32 ft^3/sx
Water Requirement:	6.29 gals/sx

F. **Notes:**

1. Circulate cement to surface.
2. Base cement volumes on 200% excess over fluid caliper log.
3. Sandblast the bottom 3 joints of casing.
4. Install one centralizer on shoe joint and every 4th joint to 200' inside 13-3/8".
5. Tack weld collars and use thread lock compound on bottom two joints when run.
6. Circulate a minimum of one casing volume before cementing.
7. Displace the plug with 10# Brine.
8. Bump plug w/1000 # over lifting pressure.
9. After bumping plug wait on cement a minimum of 6 hours prior to nippling up BOP stack, and at least 18 hours prior to drilling out shoe.
10. Install 9-5/8" casing spool 5000 psi.
11. NU 5M BOP stack.
12. Test casing to 4500 psi for 30 minutes prior to drill out cement.
13. RU "Low Risk" H_2S equipment (100 ppm ROE < 3000') before drilling.

<u>INTERMEDIATE/PRODUCTION HOLE:</u> 12600' RKB, 8- 3/4" Bit

A. **Formation Integrity Test:** WOC 18 hours. Drill-out 9-5/8" casing shoe and 10' of new hole. Perform formation limit test. Surface test pressure 860 psig.

B. **Mud:** Drill out with fresh water. Use paper sweeps to stop any seepage. Mix LCM if necessary (acid soluble once in producing formations). Lost circulation has been encountered in the top of