the Bone Spring Formation from 8000' – 9000' (tight spot in the State R offset well @8472'). Start mudding up to 9 ppg at 10200' (100'prior to the Wolf Camp). Prior to drilling through the Atoka formation at 12,175' increase the mud weight to 10.9 ppg, lower the API water loss below 6cc, and raise the viscosity as described in the mud program. Increase mud weight as necessary to maintain control of the well. If a severe lost circulation problem occurs that can not be resolved stop drilling and contact PPCo drilling department before setting 7- 5/8" csg. At TD add yellow starch to stabilize the hole prior to running casing. (See attached Mud Program for details)

C. **Potential Problems:** Severe lost circulation problems and stuck drill pipe has occurred in the Bones Springs while drilling through the Atoka formation.

D. **Casing:**

12600' to Surface – 7-5/8", 33.7 lb/ft L-80 LT&C

Make-up Torque, ft-lbs:	
Optimum	6640
Minimum	4980
Maximum	8300

E. **Cement**: Pump 20 bbls of fresh water ahead of lead slurry.

Lead: 320 sx of Interfill H mixed w/ fresh water

Slurry Weight:	11.90 ppg
Slurry Yield:	2.46 ft^3/sx
Water Requirement	14.28 gals/sx

Tail: 105 sx of Modified Super H + 5 1b/sk Gilsonite + 1 1b/sk Salt +.5% HALAD-344 +0.4 CFR-3 +0.2 % HR-7 mixed w/fresh water.

Slurry Weight:	13.00 ppg
Slurry Yield:	1.67 ft^3/sx
Water Requirement:	8.25 gals/sx

F. **Notes:**

1. Circulate cement to surface.
2. Base cement volumes on 50% excess over caliper log.
3. Sandblast the bottom 3 joints of casing.
4. Install one centralizer on shoe joint and every 4th joint to 200' inside 9-5/8".
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 7-5/8" tubing spool.
11. NU 5M BOP stack.
12. Test casing to 5500 psi for 30 minutes prior to drill out cement.
13. RU "Low Risk" H_2S equipment (100 ppm ROE < 3000') before drilling.

<u>PRODUCTION HOLE:</u> 13500' RKB, 6- 1/2" Bit

A. **Formation Integrity Test:** WOC 18 hours. Drill-out 7-5/8" casing shoe and 10' of new hole. Perform formation limit test. Surface test pressure 100 psi.