

BP Exploration Inc. 5151 San Felipe P. O. Box 4587 Houston, Texas 77210 (713) 552-8500

0679m

DIRECTIONAL DRILLING PROCEDURE

Howling Coyote #30-1 Sec. 30-T17S-R38E Lea County, New Mexico

- 1. Move in and rig up rotary rig.
- 2. Drill to intermediate casing point and run 8-5/8" casing. Set 24#, K-55, STC at approximately 4,500 ft.
- 3. While W.O.C. run a gyroscopic survey to establish bottom hole location at the casing shoe depth.
- 4. Nipple up. Pick up a 7-7/8" bit, 6-1/2" non mag drill collar, 6-1/2" drill collar, 7-7/8" string IBS, drill collar, 7-7/8" string IBS and the rest of the drill collars and drill pipe to drill out the float collar and shoe.
- 5. Drill with this BHA and take intermittent single shot surveys at approximate 250' intervals to determine the trajectory of the wellbore.
- 6. At 9,000' +/-, drop a multishot survey and trip out of the hole surveying on 93' intervals to the bottom of the 8-5/8" casing to determine bottom hole location for the kick off.
- 7. Pick up a 7-7/8" bit, 5-1/2" slow speed mud motor, 1.25° or 1.5° bent sub, 6-1/4" x 30' non mag drill collar and the rest of the rig collars and drill pipe and trip in the hole.
- 8. Orient the deflecting assembly with a steering tool to the desired direction and drill until the desired direction is obtained and approximately 4° to 4.5° of angle is achieved.
- 9. Trip out and pick up a 7-7/8" bit, 7-7/8" IBS, 6-1/4" x 30' non mag drill collar, 6-1/4" drill collar, 7-7/8" string IBS, drill collar, 7-7/8" string IBS and the rest of the rig collars and drill pipe. Drilling jars may be picked up on this assembly if required.
- 10. Drill with this bottom hole assembly until desired angle is obtained. Estimate at 16.0° at 10,000' MD +/-.

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- 11. Trip out and pick up a full packed hole assembly consisting of: 7-7/8" bit, 7-7/8" IBS, short steel collar, 7-7/8" reamer, 6-1/2" non mag drill collar, 7-7/8" string IBS, drill collar, 7-7/8" string IBS, rig collars, jars, 3 rig collars and drill with this assembly to T.D. or until a corrective run is required.
- 12. At T.D. drop a multishot survey and survey back to the tie in at the KOP to meet commission requirements.

BWS/dm