OVERVIEW

The North Vacuum Abo West Unit # 15 well was drilled in late 1971 as a conventional test of the Abo formation. The well potential for 201 BOPD, 3 BWPD and 109 MCFD from Abo perforations 8707'-8709', 8725'-8727', 8732'-8734', 8736', 8738', 8761'-8763', 8769'-8771', 8779' and 8780'. Additional perforations, 8674', 8684', 8692' and 8741'-8745', were added in late 1991. Successful horizontal laterals have been drilled in the NVAWU # 26, #27 and #28 wells. It is proposed to employ this technology on the subject well and drill two +/- 2000 foot horizontal laterals (northeast & southwest) in the Abo formation. The basic well plan is as follows:

a) Lay down rods, pump and tubing. Move pumping unit out of the way.

b) Set a TIW full bore SS-WB-BB permanent packer at +/- 8751'. TIH with space out assembly latch (1.0'),(+/- 120' drill collars), debris sub (2.55') and the 3 degree multi-lateral selective/reentry whipstock (casing collar at +/- 8642', top of window +/- 8620', bottom of window +/- 8627').

c) Drill a short radius curve using a 4-3/4" bit to a measured depth of +/- 8817' (TVD +/- 8754'). The final angle will be 85.28 degrees from vertical.

d) Drill +/- 2000' horizontal section (northeast lateral).

e) Retrieve the whipstock. TIH with a +/- 200' space out assembly (drill collars), latch (1'), debris sub (2.55') and another 3 degree whipstock (casing collar at 8550', top of window +/- 8540', bottom of window +/- 8547').

f) Drill a short radius curve using a 4-3/4" bit to a measure depth of +/- 8710' (TVD +/- 8669'). The final angle will be 73.2 degrees from vertical.

g) Drill a +/- 2000' horizontal section (southwest lateral).

h) Acid frac both horizontal laterals in the well. Place well on submersible pump.

LOST IN HOLE INSURANCE FOR THE DOWNHOLE MOTOR AND MWD IS NOT INCLUDED WITH THE DAILY RATE FROM PHOENIX DRILLING. IT IS ADVISED TO TAKE THE LOST IN HOLE INSURANCE FOR BOTH THE MOTOR AND THE GUIDANCE SYSTEM (OPTIONAL).

PRODUCTION HOLE:

1. TOOH and lay down rods, pump and tubing. TIH with a 5-1/2", 17#/ft. TIW full bore packer on wireline and set the top of the packer at +/- 8751'. Correlate the casing collars with the production logs so that the whipstock will be set 5-8' above a casing collar (casing collar at 8642'). TOOH.

2. TIH with the orientation lug and gyro survey tool and tag the packer. Strap the pipe going in the hole. This measurement will be used when setting the whipstock. Accuracy is very important. Check the strap with the wireline measurement. Seat into the riser slot for orientation. Re-set the gyro several times until a consistant azimuth is reached. TOOH.

3. Pick up the latch, +/- 120' of space out drill collars, debris sub and retrievable whipstock. Tighten to required torques. Make up the whipstock assembly over the hole and back off the spline sleeve (this tool has 72 splines with increments of 5 degrees) on the latch assembly. Stretch a string from the whipstock lug to the compass card at the latch. Orientate the azimuth of the packer slot to the key on the latch assembly. Once the latch assembly has been aligned, orientate the whipstock face to the desired (N42.72E) azimuth. Set the shear pins (5000 #'s per pin) for the required release on the latch.

4. Pick up the whipstock assembly using the lifting clevis. Snub into the rotary and set the space out assembly in the slips. Install the starting mill assembly on the whipstock. TIH slowly (no speed records). Record the weight of the assembly prior to stacking out on the packer. Lower the assembly until weight loss is observed. Do not exceed the shear pin requirements! Pick up and pull 5-8000 pounds to verify the latch is set (do not exceed the shear pin requirements). Shear off the starting mill.

5. Pick up the power swivel and begin circulating. Pick up the drill pipe until the starting mill has cleared the whipstock and start rotation. Lower the drill pipe slowly until the torque gauge suggest the starting mill is contacting the casing. Adjust weight and speed until satisfied with the penetration rate. Mill to a predetermined depth that will assure the setting lug is completely removed and a cut out in the casing has been initiated. TOOH.

6. TIH with the mill muncher window mill, string mill and watermellon mill. Resume milling operations and mill until the complete assembly has cleared the casing. Pick up and lower the string several times without rotation to assure a good clean window has been obtained. Circulate the hole clean. TOOH.

7. Inspect the mill on the surface. If extreme wear is evident, consideration should be given to repeating the above step.

HORIZONTAL PRODUCTION HOLE:

1. Rig up Phoenix Drilling Company. Adjust plan to target as necessary. Trip in the hole with Phoenix Drilling's curve building assembly. This will be a 4-3/4" insert bit, 3-3/4" PDM, float sub/orienter combo, 2-flexable monel collars, 2-7/8" 8.7 #/ft P-105 (BTS-6) tubing in the horizontal hole and 2-7/8" AOH drill pipe in the vertical hole).

2. Build curve to estimated target depths and angles as follows:

True Vertical Depth	8754'
Measured Depth	8817'
Final Angle	85.28 degrees
Target Azimuth	N 42.72 E
Build Rate	45 degrees/100'

Drill the curve sliding and rotating as necessary to stay on target. It is recommended that after each slide, the bit be pulled back and washed through the slide. Once the curve is built, rotate through the curve section noting tight spots and fill. Make at least one short trip prior to tripping out of the hole.

3. Trip in the hole with Phoenix Drilling's lateral assembly. This will be a 4-3/4" PDC bit, 3-3/4" articulated motor, float sub/orienter combo, 2 - flexible monel collars, 2-7/8" 8.7 #/ft P-105 (BTS-6) tubing in the horizontal hole and 2-7/8" AOH drill pipe in the vertical hole.

4. Drill +/- 2000' of horizontal hole per the attached Phoenix well plan. **It is highly recommended that a Texaco geologist (Mike Raines) be present on location during the drilling of the entire horizontal section.**

5. Continue drilling the horizontal section per the Texaco geologist recommendations.

6. Trip out of the hole with the drilling assembly.

7. TIH and retrieve the whipstock. TOOH. TIH with the latch, +/- 200' space out assembly (drill collars), debris sub and another retrievable 3 degree whipstock (top of window at +/- 8540', bottom of window at +/- 8547'). Repeat steps 2-7 (production hole) and steps 1-5 (horizontal hole). Build the curve to estimated target depths and angles as follows:

True Vertical Depth	8669'
Measured Depth	8710'
Final Angle	73.2 degrees
Target Azimuth	225.52 degrees
Build Rate	45 degrees/100'

8. Trip in the hole with the lateral drilling assembly. Drill the lateral per Phoenix's well plan. TOOH with the drilling assembly. Pull the whipstock. Set a wireline set, tubing retrievable bridge plug for 5-1/2", 17 #/ft casing at +/- 8000' Test plug to 1000 psi.

9. Lay down the drill pipe.

10. Nipple down the BOP stack. Install a manual 3000 psig BOP equipped with blind rams and 2-7/8" pipe rams. Release the rig. Rig down and move out rotary tools.

COMPLETION PROCEDU[illegible]

1. Back drag the location and set pulling unit anchors.

2. Move in and rig up a pulling unit.

3. Trip in the hole with a retrieving head on 2-7/8" tubing. Retrieve the plug. Trip out of the hole and lay down the plug. TIH with tubing and ported subs to within 400 foot of the end of the lateral. Use a bent joint to orientate into the laterals.

4. Rig up Dowell. Acid frac each Abo horizontal lateral with 120,000 gallons of 20% HCL and gelled water spacers. The acid frac will be done down tubing using ported subs.

5. Flow back immediately. Flow/swab test.

6. Place on pump.