

### BOP Minimum Requirements

- a. 11-inch, 3000-psi working pressure double-hydraulic BOP.
- b. 11-inch, 3000-psi working pressure annular BOP.
- c. 3-inch, 3000-psi working pressure manual choke manifold.

A schematic of the BOP stack is included as Exhibit A.

8. Drill out the following cement plugs and conduct deviation surveys every 1000 feet or on trips:
- a. 1912 feet to 2045 feet, 40 sacks
  - b. 3620 feet to 3720 feet, 50 sacks
  - c. 5456 feet to 5556 feet, 40 sacks
  - d. 7435 feet to 7535 feet, 50 sacks

### Estimated Tops of Geologic Formations

|            |       |                |       |
|------------|-------|----------------|-------|
| San Andres | 2005' | Lower Wolfcamp | 7270' |
| Yeso       | 4210' | Cisco          | 7645' |
| Abo        | 5506' | Canyon         | 8390' |
| Wolfcamp   | 6728' | Strawn         | 8894' |

No fresh water or hydrocarbons are expected to be encountered.

### Expected Bottom-Hole Pressure and Hazards

The expected bottom-hole pressure is 3500 psia at the total depth of 9200 feet. The bottom-hole pressure was determined from the pressure measured in Navajo's WDW-1, or 2928 psia, at 7924 feet. Navajo's WDW-1 is completed in the same interval proposed for WDW-2 and is located 11,000 feet northeast of WDW-2 in 31-T17S-R28E. The average specific gravity of the fluid between 7924 feet and 9200 feet is expected to be 1.034, which is the specific gravity of the fluid swabbed from the interval between 8220 feet and 8476 feet in WDW-1. The expected bottom-hole pressure at 9200 feet in proposed WDW-2 is calculated below:

$$\begin{aligned}\text{BHP (9200 feet)} &= 2928 \text{ psia} + (9200 \text{ feet} - 7924 \text{ feet}) \times 0.433 \text{ psi/ft} \times 1.034 \\ &= 3500 \text{ psia}\end{aligned}$$

No abnormal pressures or temperatures or other hazards are expected while drilling or testing the well. Hydrogen sulfide monitoring equipment will be set up prior to swabbing operations.

9. Clean the well out to a depth of 9200 feet and circulate and condition the hole for logging. Make a wiper trip to the base of the 8-5/8 inch surface casing while strapping the drillpipe.
10. Conduct a formation microimager (FMI) survey with gamma ray from the well's total depth to 4000 feet. Continue the four-arm caliper survey to the 8-5/8 inch casing shoe. Process the FMI for fracture identification over the lower 200 feet of the confining zone and zones of interest in the injection zone, if warranted.
11. Spot a gelled pill at 9200 feet and lay down the drillpipe.
12. Run the 5-1/2 inch, 17-lb/ft, J-55, LT&C casing with a packoff shoe and float collar to 9200 feet. Install a "DV" tool at approximately 5800 feet. Run centralizers at approximately 120-foot intervals.
13. Cement the 5-1/2 inch casing in place. Use a minimum of 20% excess cement as calculated from the caliper log. Circulate cement to the surface and allow to cure.

#### Cement Program

- a. Stage 1 Cement (total depth to 5800 feet): Lightweight Class H with fly ash, gel, friction reducer, and salt mixed with fresh water.
  - b. Stage 2 Lead Cement (5200 feet to the surface): Lightweight Class C with gel and bridging agents mixed with fresh water.
  - c. Stage 2 Tail Cement (5800 feet to 5200 feet): Class C mixed with fresh water.
14. Clean out the mud pits and release the drilling rig 12 hours after cementing the 5-1/2 inch casing in place.
  15. Stabilize the 5-1/2 inch casing at the surface using ready-mix cement.

16. Move in and rig up the completion rig pump, tank, power swivel, and work string. Install the blowout preventer.
17. Run in the well with a 4-3/4 inch bit to the "DV" tool and test the casing to 1500 psig for 30 minutes.
18. Drill out the "DV" tool and clean out the wellbore to the float collar. Test the casing to 1500 psig for 30 minutes. Circulate the wellbore with clean brine, preceded by 15% HCL to clean the casing. Trip the work string out of the well.
19. Conduct the casing inspection, CBL/VDL, and differential temperature surveys.
20. Perforate the selected injection interval as determined from the open hole logs. Depending on the height of the perforated interval, the interval may be perforated in two stages, as Zone Nos. 1 and 2.
21. Run in the well with a packer and tailpipe. Set the packer above the top perforation and swab test the perforated interval. Recover at minimum two tubing volumes of the reservoir fluid for analysis (Note: Set up H<sub>2</sub>S monitoring equipment prior to swabbing operations).
22. Acidize the perforated zone (Zone 1) using diverters. Pull the packer out of the well.
23. Perforate the next selected injection interval (Zone 2) as determined from the open hole logs.
24. Run a retrievable bridge plug and packer into the well and isolate Zone 2.
25. Acidize Zone 2 using diverters. Pull the retrievable bridge plug and packer out of the well, laying down the work string.
26. Conduct an injection test down the 5-1/2 inch casing at 420 gpm for 12 hours, followed by a pressure falloff test.
27. Conduct a differential temperature survey and radioactive tracer survey to determine the injection profile.

28. Run the injection tubing and packer. Fill the annulus with corrosion inhibited brine.
29. Wait for the well system to come to thermal stabilization (approximately 24 hours).
30. Conduct an annulus pressure test witnessed by the OCD.
31. Rig down and move out all equipment and close the reserve pit.
32. Install the annulus monitoring system and return the well to the client.

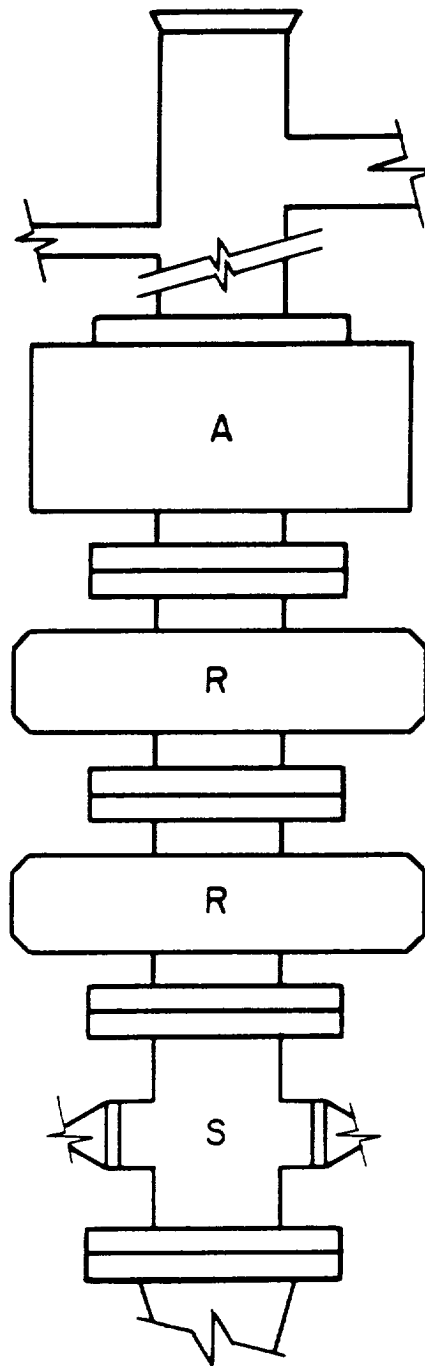
### **Logging, Testing, And Coring Program**

A formation fluid sample will be retrieved from the proposed injection zone in proposed WDW-2. Navajo will conduct injectivity testing in the injection zone of proposed WDW-2.

No coring is planned.

The proposed logging program is described below:

| HOLE/CASING   | OPEN-HOLE LOGS   | CASED-HOLE LOGS   |
|---|--|---|
| Proposed WDW-2  |  |   |
| 11 inch Surface Borehole<br>(8-5/8 inch Casing)<br>1995 feet        |  | Logs Run in 1973:<br>Gamma Ray<br><br>Logs Proposed on Reentry:<br>Cement Bond/Variable Density<br>Casing Inspection Log                        |
| 7-7/8 inch Long-String Borehole<br>(5-1/2 inch Casing)<br>9200 feet | Logs Run on August 27, 1973:<br>Dual Induction-Laterolog/<br>Spontaneous Potential<br>Compensated Neutron/<br>Formation Density<br>Caliper<br>Gamma Ray<br><br>Logs Proposed on Reentry:<br>Fracture Identification Log<br>4-Arm Caliper | Logs Proposed on Reentry:<br>Cement Bond/Variable Density<br>Casing Inspection Log<br>Differential Temperature Log<br>Radioactive Tracer Survey |



A = ANNULAR-TYPE BLOWOUT PREVENTER  
11-inch throughbore, 3000-psi working pressure

R = RAM-TYPE BLOWOUT PREVENTER  
11-inch throughbore, 3000-psi working pressure

S = DRILLING SPOOL WITH SIDE OUTLET CONNECTIONS  
FOR CHOKE AND KILL LINES

MANUAL CHOKE MANIFOLD  
3-inch throughbore, 3000-psi working pressure

Source: API RP 53: Recommended Practices for  
Blowout Prevention Equipment Systems

|   |                 |                  |
|---|-----------------|------------------|
| <b>ENVIROCORP</b>   |                 | HOUSTON, TX.     |
| ENVIROCORP SERVICES & TECHNOLOGY, INC.                      |                 | SOUTH BEND, IN.  |
|   |                 | BATON ROUGE, LA. |
| <b>EXHIBIT A</b>  |                 |                  |
| <b>BLOWOUT PREVENTER STACK<br/>AND MINIMUM REQUIREMENTS</b> |                 |                  |
| DATE: 4/7/98  | CHECKED BY: JDB | JOB NO:          |
| DRAWN BY: ALN   | APPROVED BY:    | DWG. NO:         |