

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENTFORM APPROVED  
OMB NO. 1004-0137  
Expires: January 31, 2018**SUNDRY NOTICES AND REPORTS ON WELLS**  
*Do not use this form for proposals to drill or to re-enter an abandoned well. Use form 3160-3 (APD) for such proposals.*5. Lease Serial No.  
NMNM26394

6. If Indian, Allottee or Tribe Name

7. If Unit or CA/Agreement, Name and/or No.

**SUBMIT IN TRIPLICATE - Other instructions on page 2**  
**HOBBS OCD**8. Well Name and No.  
VACA DRAW 20-17 FEDERAL 4H9. API Well No.  
30-025-44304-00-X110. Field and Pool or Exploratory Area  
WILDCAT;WOLFCAMP11. County or Parish, State  
LEA COUNTY, NM

1. Type of Well

☐ Oil Well ☒ Gas Well ☐ Other2. Name of Operator  
CIMAREX ENERGY COMPANYContact: ARICKA EASTERLING  
E-Mail: aeasterling@cimarex.com3a. Address  
600 N. MARIENFELD SUITE 600  
MIDLAND, TX 797013b. Phone No. (include area code)  
Ph: 918.560.7060

4. Location of Well (Footage, Sec., T., R., M., or Survey Description)

Sec 20 T25S R33E SESW 390FSL 1950FWL  
32.109905 N Lat, 103.596550 W Lon

## 12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT, OR OTHER DATA

## TYPE OF SUBMISSION

☒ Notice of Intent☐ Subsequent Report☐ Final Abandonment Notice☐ Acidize☐ Alter Casing☐ Casing Repair☐ Change Plans☐ Convert to Injection☐ Deepen☐ Hydraulic Fracturing☐ New Construction☐ Plug and Abandon☐ Plug Back☐ Reclamation (Start/Resume)☐ Reclamation☐ Recomplete☐ Temporarily Abandon☐ Water Disposal☐ Water Shut-Off☐ Well Integrity☒ Other  
Change to Original A  
PD

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleat horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be performed or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompleat in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has determined that the site is ready for final inspection.

Cimarex respectfully requests approval to change the BHL of the Vaca Draw 20-17 Federal 3H well

Approved:  
BHL: 330 FNL & 2261 FWL  
Proposed  
BHL: 330 FNL & 2024 FWL

Please see attached plat, directional plan, and drilling plan for changes due to the BHL move.

Cimarex is also requesting approval to change from a 10K BOP system to a 5K BOP System. Please see attached procedure.

14. I hereby certify that the foregoing is true and correct.

Electronic Submission #420694 verified by the BLM Well Information System  
For CIMAREX ENERGY COMPANY, sent to the Hobbs  
Committed to AFMSS for processing by PRISCILLA PEREZ on 05/21/2018 (18PP1060SE)

Name (Printed/Typed) ARICKA EASTERLING

Title REGULATORY ANALYST

Signature (Electronic Submission)

Date 05/18/2018

## THIS SPACE FOR FEDERAL OR STATE OFFICE USE

Approved By ZOTA STEVENS

Title PETROLEUM ENGINEER

Date 05/06/2018

Conditions of approval, if any, are attached. Approval of this notice does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.

Office Hobbs

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

(Instructions on page 2)

\*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\* BLM REVISED \*\*

District I  
1625 N. French Dr., Hobbs, NM 88240  
Phone: (575) 393-6161 Fax: (575) 393-0720  
District II  
811 S. First St., Artesia, NM 88210  
Phone: (575) 748-1283 Fax: (575) 748-9720  
District III  
1000 Rio Brazos Road, Aztec, NM 87410  
Phone: (505) 334-6178 Fax: (505) 334-6170  
District IV  
1220 S. St. Francis Dr., Santa Fe, NM 87505  
Phone: (505) 476-3460 Fax: (505) 476-3462

State of New Mexico  
Energy, Minerals & Natural Resources Department  
OIL CONSERVATION DIVISION  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

Form C-102  
Revised August 1, 2011  
Submit one copy to appropriate  
District Office

☐ AMENDED REPORT

WELL LOCATION AND ACREAGE DEDICATION PLAT

|                                         |                                                       |                                                           |
|-----------------------------------------|-------------------------------------------------------|-----------------------------------------------------------|
| <sup>1</sup> API Number<br>30-025-44304 | <sup>2</sup> Pool Code<br>98250                       | <sup>3</sup> Pool Name<br>WC-025-S253317M; Wolfcamp (GAS) |
| <sup>4</sup> Property Code<br>319775    | <sup>5</sup> Property Name<br>VACA DRAW 20-17 FEDERAL |                                                           |
| <sup>7</sup> OGRID No.<br>215099        | <sup>8</sup> Operator Name<br>CIMAREX ENERGY CO.      | <sup>6</sup> Well Number<br>4H                            |
|                                         |                                                       | <sup>9</sup> Elevation<br>3417.7'                         |

<sup>10</sup> Surface Location

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| N             | 20      | 25S      | 33E   |         | 390           | SOUTH            | 1950          | WEST           | LEA    |

<sup>11</sup> Bottom Hole Location If Different From Surface

| UL or lot no.                        | Section | Township                      | Range | Lot Idn                          | Feet from the | North/South line        | Feet from the | East/West line | County |
|--------------------------------------|---------|-------------------------------|-------|----------------------------------|---------------|-------------------------|---------------|----------------|--------|
| C                                    | 17      | 25S                           | 33E   |                                  | 330           | NORTH                   | 2024          | WEST           | LEA    |
| <sup>12</sup> Dedicated Acres<br>640 |         | <sup>13</sup> Joint or Infill |       | <sup>14</sup> Consolidation Code |               | <sup>15</sup> Order No. |               |                |        |

No allowable will be assigned to this completion until all interests have been consolidated or a non-standard unit has been approved by the division.

<sup>16</sup> NOTE:

- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W103°53'00"

|                                        |  |
|----------------------------------------|--|
| <b>NAD 83 (SURFACE HOLE LOCATION)</b>  |  |
| LATITUDE = 32°06'35.66" (32.109906)    |  |
| LONGITUDE = 103°35'47.58" (103.596550) |  |
| <b>NAD 27 (SURFACE HOLE LOCATION)</b>  |  |
| LATITUDE = 32°06'35.21" (32.109781)    |  |
| LONGITUDE = 103°35'45.88" (103.596078) |  |
| <b>STATE PLANE NAD 83 (N.M. EAST)</b>  |  |
| N: 404499.61 E: 769461.17              |  |
| <b>STATE PLANE NAD 27 (N.M. EAST)</b>  |  |
| N: 404441.83 E: 728275.01              |  |

|                                        |  |
|----------------------------------------|--|
| <b>NAD 83 (BOTTOM HOLE LOCATION)</b>   |  |
| LATITUDE = 32°08'13.01" (32.136948)    |  |
| LONGITUDE = 103°35'46.68" (103.596301) |  |
| <b>NAD 27 (BOTTOM HOLE LOCATION)</b>   |  |
| LATITUDE = 32°08'12.57" (32.136824)    |  |
| LONGITUDE = 103°35'44.98" (103.595827) |  |
| <b>STATE PLANE NAD 83 (N.M. EAST)</b>  |  |
| N: 414338.06 E: 769471.29              |  |
| <b>STATE PLANE NAD 27 (N.M. EAST)</b>  |  |
| N: 414280.05 E: 728285.58              |  |

The diagram shows a grid of sections 17 and 20. Section 17 is on the left and section 20 is on the right. A dashed line represents the well location. Key points include BHL (Bottom Hole Location) and LP (Landing Point). Bearings and distances are provided for all boundaries and internal lines. For example, the top boundary of section 17 is S89°52'21"W 2646.52' (Meas.). The bottom boundary of section 20 is S89°56'49"W 2644.60' (Meas.).

**<sup>17</sup> OPERATOR CERTIFICATION**

I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, for a voluntary pooling agreement or a compulsory pooling order has been entered by the division.

Signature: *Aricka Easterling* Date: 5/11/18

Printed Name: Aricka Easterling

E-mail Address: aeasterling@cimarex.com

**<sup>18</sup> SURVEYOR CERTIFICATION**

I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

January 20, 2017

Date of Survey

Signature and Seal of Professional Surveyor:

PAUL BUCHELE

NEW MEXICO

23782

12-20-17

PROFESSIONAL SURVEYOR

Certificate Number:

**LINE TABLE**

| LINE | DIRECTION   | LENGTH  |
|------|-------------|---------|
| L1   | N10°22'08"E | 408.85' |

SCALE

REV: 2 12-20-17 R.T.  
(MOVED BOTTOM HOLE)

● = SURFACE HOLE LOCATION  
○ = BOTTOM HOLE LOCATION  
▲ = SECTION CORNERS LOCATED  
◆ = LANDING POINT

**1. Geological Formations**

TVD of target 12,430

Pilot Hole TD N/A

MD at TD 22,036

Deepest expected fresh water

| Formation            | Depth (TVD) from KB | Water/Mineral Bearing/Target Zone | Hazards |
|----------------------|---------------------|-----------------------------------|---------|
| Rustler              | 984                 | N/A                               |         |
| Salado               | 1128                | N/A                               |         |
| Castille             | 4687                | N/A                               |         |
| Bell Canyon          | 4956                | N/A                               |         |
| Cherry Canyon        | 5974                | Hydrocarbons                      |         |
| Brushy Canyon        | 7484                | Hydrocarbons                      |         |
| Bone Spring          | 9040                | Hydrocarbons                      |         |
| 2nd Bone Spring Sand | 10573               | Hydrocarbons                      |         |
| 3rd Bone Spring Sand | 11726               | Hydrocarbons                      |         |
| Wolfcamp             | 12196               | Hydrocarbons                      |         |
| Wolfcamp A1 Shale    | 12361               | Hydrocarbons                      |         |

**2. Casing Program**

| Hole Size                 | Casing Depth From | Casing Depth To | Casing Size | Weight (lb/ft) | Grade | Conn. | SF Collapse | SF Burst | SF Tension         |
|---------------------------|-------------------|-----------------|-------------|----------------|-------|-------|-------------|----------|--------------------|
| 14 3/4                    | 0                 | 1034            | 10-3/4"     | 40.50          | J-55  | BT&C  | 3.34        | 6.62     | 15.02              |
| 9 7/8                     | 0                 | 12546           | 7-5/8"      | 29.70          | L-80  | BT&C  | 2.47        | 1.19     | 1.81               |
| 6 3/4                     | 0                 | 11921           | 5-1/2"      | 20.00          | L-80  | LT&C  | 1.14        | 1.19     | 1.86               |
| 6 3/4                     | 11855             | 22036           | 5"          | 18.00          | P-110 | BT&C  | 1.66        | 1.69     | 63.30              |
| BLM Minimum Safety Factor |                   |                 |             |                |       |       | 1.125       | 1        | 1.6 Dry<br>1.8 Wet |

TVD was used on all calculations.

All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

Request Variance for 5-1/2" x 7-5/8" annular clearance. The portion that does not meet clearance will not be cemented

|                                                                                                                                                  | Y or N |
|--------------------------------------------------------------------------------------------------------------------------------------------------|--------|
| Is casing new? If used, attach certification as required in Onshore Order #1                                                                     | Y      |
| Does casing meet API specifications? If no, attach casing specification sheet.                                                                   | Y      |
| Is premium or uncommon casing planned? If yes attach casing specification sheet.                                                                 | N      |
| Does the above casing design meet or exceed BLM's minimum standards? If not provide justification (loading assumptions, casing design criteria). | Y      |
| Will the intermediate pipe be kept at a minimum 1/3 fluid filled to avoid approaching the collapse pressure rating of the casing?                | Y      |
| Is well located within Capitan Reef?                                                                                                             | N      |
| If yes, does production casing cement tie back a minimum of 50' above the Reef?                                                                  | N      |
| Is well within the designated 4 string boundary.                                                                                                 | N      |
| Is well located in SOPA but not in R-111-P?                                                                                                      | N      |
| If yes, are the first 2 strings cemented to surface and 3rd string cement tied back 500' into previous casing?                                   | N      |
| Is well located in R-111-P and SOPA?                                                                                                             | N      |
| If yes, are the first three strings cemented to surface?                                                                                         | N      |
| Is 2nd string set 100' to 600' below the base of salt?                                                                                           | N      |
| Is well located in high Cave/Karst?                                                                                                              | N      |
| If yes, are there two strings cemented to surface?                                                                                               | N      |
| (For 2 string wells) If yes, is there a contingency casing if lost circulation occurs?                                                           | N      |
| Is well located in critical Cave/Karst?                                                                                                          | N      |
| If yes, are there three strings cemented to surface?                                                                                             | N      |

**3. Cementing Program**

| Casing               | # Sks | Wt.<br>lb/gal | Yld<br>ft <sup>3</sup> /sack | H <sub>2</sub> O<br>gal/sk | 500# Comp.<br>Strength<br>(hours) | Slurry Description                                                     |
|----------------------|-------|---------------|------------------------------|----------------------------|-----------------------------------|------------------------------------------------------------------------|
| Surface              | 402   | 13.50         | 1.72                         | 9.15                       | 15.5                              | Lead: Class C + Bentonite                                              |
|                      | 107   | 14.80         | 1.34                         | 6.32                       | 9.5                               | Tail: Class C + LCM                                                    |
|                      |       |               |                              |                            |                                   |                                                                        |
| Intermediate Stage 1 | 621   | 10.50         | 3.45                         | 22.18                      | N/A                               | Lead: NeoCem                                                           |
|                      | 207   | 14.20         | 1.30                         | 5.86                       | 14:30                             | Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS |
|                      |       |               |                              |                            |                                   |                                                                        |
| Intermediate Stage 2 | 792   | 12.90         | 1.88                         | 9.65                       | 12                                | Lead: 35:65 (Poz:C) + Salt + Bentonite                                 |
|                      |       |               |                              |                            |                                   |                                                                        |
| Production           | 715   | 14.20         | 1.30                         | 5.86                       | 14:30                             | Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS |
|                      |       |               |                              |                            |                                   |                                                                        |

DV tool with possible annular casing packer as needed is proposed at a depth of +/- 4,900'.

| Casing String        | TOC   | % Excess |
|----------------------|-------|----------|
| Surface              | 0     | 45       |
| Intermediate Stage 1 | 4900  | 47       |
| Intermediate Stage 2 | 0     | 39       |
| Production           | 12280 | 9        |

**4. Pressure Control Equipment**

| A variance is requested for the use of a diverter on the surface casing. See attached for schematic. |        |                 |            |   |                         |
|------------------------------------------------------------------------------------------------------|--------|-----------------|------------|---|-------------------------|
| BOP installed and tested before drilling which hole?                                                 | Size   | Min Required WP | Type       |   | Tested To               |
| 9 7/8                                                                                                | 13 5/8 | 5M              | Annular    | X | 50% of working pressure |
|                                                                                                      |        |                 | Blind Ram  |   | 5M                      |
|                                                                                                      |        |                 | Pipe Ram   | X |                         |
|                                                                                                      |        |                 | Double Ram | X |                         |
|                                                                                                      |        |                 | Other      |   |                         |
| 6 3/4                                                                                                | 13 5/8 | 10M             | Annular    | X | 50% of working pressure |
|                                                                                                      |        |                 | Blind Ram  |   | 10M                     |
|                                                                                                      |        |                 | Pipe Ram   | X |                         |
|                                                                                                      |        |                 | Double Ram | X |                         |
|                                                                                                      |        |                 | Other      |   |                         |

BOP/BOPE will be tested by an independent service company to 250 psi low and the high pressure indicated above per Onshore Order 2 requirements. The System may be upgraded to a higher pressure but still tested to the working pressure listed in the table above. If the system is upgraded all the components installed will be functional and tested.

Pipe rams will be operationally checked each 24 hour period. Blind rams will be operationally checked on each trip out of the hole. These checks will be noted on the daily tour sheets. Other accessories to the BOP equipment will include a Kelly cock and floor safety valve (inside BOP) and choke lines and choke manifold. See attached schematics.

|   |                                                                                                                                                                                                                                                                                                               |  |  |  |  |
|---|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--|--|
| X | Formation integrity test will be performed per Onshore Order #2.<br>On Exploratory wells or on that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.i. |  |  |  |  |
| X | A variance is requested for the use of a flexible choke line from the BOP to Choke Manifold. See attached for specs and hydrostatic test chart.                                                                                                                                                               |  |  |  |  |
| N | Are anchors required by manufacturer?                                                                                                                                                                                                                                                                         |  |  |  |  |

**5. Mud Program**

| Depth            | Type                  | Weight (ppg)  | Viscosity | Water Loss |
|------------------|-----------------------|---------------|-----------|------------|
| 0' to 1034'      | FW Spud Mud           | 8.30 - 8.80   | 30-32     | N/C        |
| 1034' to 12546'  | Brine Diesel Emulsion | 8.50 - 9.00   | 30-35     | N/C        |
| 12546' to 22036' | OBM                   | 12.00 - 12.50 | 50-70     | N/C        |

Sufficient mud materials to maintain mud properties and meet minimum lost circulation and weight increase requirements will be kept on location at all times.

The Brine Emulsion is completely saturated brine fluid that ties diesel into itself to lower the weight of the fluid. The drilling fluid is completely salt saturated.

|                                                         |                             |
|---------------------------------------------------------|-----------------------------|
| What will be used to monitor the loss or gain of fluid? | PVT/Pason/Visual Monitoring |
|---------------------------------------------------------|-----------------------------|

**6. Logging and Testing Procedures**

| Logging, Coring and Testing |                                                                                                                                                             |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------|
| X                           | Will run GR/CNL from TD to surface (horizontal well – vertical portion of hole). Stated logs run will be in the Completion Report and submitted to the BLM. |
|                             | No logs are planned based on well control or offset log information.                                                                                        |
|                             | Drill stem test?                                                                                                                                            |
|                             | Coring?                                                                                                                                                     |

| Additional Logs Planned | Interval |
|-------------------------|----------|
|-------------------------|----------|

**7. Drilling Conditions**

| Condition                  |          |
|----------------------------|----------|
| BH Pressure at deepest TVD | 8079 psi |
| Abnormal Temperature       | No       |

Hydrogen Sulfide (H<sub>2</sub>S) monitors will be installed prior to drilling out the surface shoe. If H<sub>2</sub>S is detected in concentrations greater than 100 ppm, the operator will comply with the provisions of Onshore Oil and Gas Order #6. If Hydrogen Sulfide is encountered, measured values and formations will be provided to the BLM.

|   |                                   |
|---|-----------------------------------|
| X | H <sub>2</sub> S is present       |
| X | H <sub>2</sub> S plan is attached |

**8. Other Facets of Operation****9. Wellhead**

A multi-bowl wellhead system will be utilized.

After running the 10-3/4" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 10000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 10000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office.

The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative.

All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 10000 psi.

The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater.

The casing string utilizing steel body pack-off will be tested to 70% of casing burst.

If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.



# Cimarex Vaca Draw 20-17 Federal #4H Rev1 RM 11Apr18 Proposal

## Geodetic Report

(Non-Def Plan)



**Report Date:** April 11, 2018 - 03:28 PM  
**Client:** Cimarex  
**Field:** NM Lea County (NAD 83)  
**Structure / Slot:** Cimarex Vaca Draw 20-17 Federal #4H / Cimarex Vaca Draw 20-17 Federal #4H  
**Well:** Cimarex Vaca Draw 20-17 Federal #4H  
**Borehole:** Original Borehole  
**UWI / API#:** Unknown / Unknown  
**Survey Name:** Cimarex Vaca Draw 20-17 Federal #4H Rev1 RM 11Apr18  
**Survey Date:** April 13, 2017  
**Tort / AHD / DDI / ERD Ratio:** 95.623 ° / 9912.643 ft / 6.225 / 0.797  
**Coordinate Reference System:** NAD83 New Mexico State Plane, Eastern Zone, US Feet  
**Location Lat / Long:** N 32° 6' 35.65929", W 103° 35' 47.58310"  
**Location Grid N/E Y/X:** N 404499.610 ftUS, E 769461.170 ftUS  
**CRS Grid Convergence Angle:** 0.3916 °  
**Grid Scale Factor:** 0.99996869  
**Version / Patch:** 2.10.715.0

**Survey / DLS Computation:** Minimum Curvature / Lubinski  
**Vertical Section Azimuth:** 359.630 ° (Grid North)  
**Vertical Section Origin:** 0.000 ft, 0.000 ft  
**TVD Reference Datum:** RKB  
**TVD Reference Elevation:** 3441.700 ft above MSL  
**Seabed / Ground Elevation:** 3417.700 ft above MSL  
**Magnetic Declination:** 6.768 °  
**Total Gravity Field Strength:** 998.4303mgn (9.80665 Based)  
**Gravity Model:** GARM  
**Total Magnetic Field Strength:** 47898.145 nT  
**Magnetic Dip Angle:** 59.776 °  
**Declination Date:** April 11, 2018  
**Magnetic Declination Model:** HDGM 2018  
**North Reference:** Grid North  
**Grid Convergence Used:** 0.3916 °  
**Total Corr Mag North->Grid North:** 6.3768 °  
**Local Coord Referenced To:** Structure Reference Point

| Comments                     | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") |
|------------------------------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|-------------------------|--------------------------|
| SHL [390' FSL,<br>1950' FWL] | 0.00       | 0.00        | 0.00             | 0.00        | 0.00         | 0.00       | 0.00       | N/A              | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 100.00     | 0.00        | 90.00            | 100.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 200.00     | 0.00        | 90.00            | 200.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 300.00     | 0.00        | 90.00            | 300.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 400.00     | 0.00        | 90.00            | 400.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 500.00     | 0.00        | 90.00            | 500.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 600.00     | 0.00        | 90.00            | 600.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 700.00     | 0.00        | 90.00            | 700.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 800.00     | 0.00        | 90.00            | 800.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 900.00     | 0.00        | 90.00            | 900.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
| Rustler                      | 984.00     | 0.00        | 90.00            | 984.00      | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 1000.00    | 0.00        | 90.00            | 1000.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 1100.00    | 0.00        | 90.00            | 1100.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
| Top of Salt                  | 1128.00    | 0.00        | 90.00            | 1128.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 1200.00    | 0.00        | 90.00            | 1200.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 1300.00    | 0.00        | 90.00            | 1300.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
|                              | 1400.00    | 0.00        | 90.00            | 1400.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
| Nudge 2°/100'                | 1500.00    | 0.00        | 90.00            | 1500.00     | 0.00         | 0.00       | 0.00       | 0.00             | 404499.61          | 769461.17         | N 32 6 35.66            | W 103 35 47.58           |
| DLS                          | 1600.00    | 2.00        | 90.00            | 1599.98     | -0.01        | 0.00       | 1.75       | 2.00             | 404499.61          | 769462.92         | N 32 6 35.66            | W 103 35 47.56           |
| Hold Nudge                   | 1640.58    | 2.81        | 90.00            | 1640.52     | -0.02        | 0.00       | 3.45       | 2.00             | 404499.61          | 769464.62         | N 32 6 35.66            | W 103 35 47.54           |
|                              | 1700.00    | 2.81        | 90.00            | 1699.87     | -0.04        | 0.00       | 6.36       | 0.00             | 404499.61          | 769467.53         | N 32 6 35.66            | W 103 35 47.51           |
|                              | 1800.00    | 2.81        | 90.00            | 1799.75     | -0.07        | 0.00       | 11.27      | 0.00             | 404499.61          | 769472.44         | N 32 6 35.66            | W 103 35 47.45           |
|                              | 1900.00    | 2.81        | 90.00            | 1899.63     | -0.10        | 0.00       | 16.17      | 0.00             | 404499.61          | 769477.34         | N 32 6 35.66            | W 103 35 47.40           |
|                              | 2000.00    | 2.81        | 90.00            | 1999.51     | -0.14        | 0.00       | 21.08      | 0.00             | 404499.61          | 769482.25         | N 32 6 35.66            | W 103 35 47.34           |
|                              | 2100.00    | 2.81        | 90.00            | 2099.39     | -0.17        | 0.00       | 25.98      | 0.00             | 404499.61          | 769487.15         | N 32 6 35.66            | W 103 35 47.28           |

| Comments                        | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ")     | Longitude<br>(E/W ° ' ") |
|---------------------------------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|-----------------------------|--------------------------|
|                                 | 2200.00    | 2.81        | 90.00            | 2199.27     | -0.20        | 0.00       | 30.89      | 0.00             | 404499.61          | 769492.06         | N 32 6 35.66 W 103 35 47.22 |                          |
|                                 | 2300.00    | 2.81        | 90.00            | 2299.15     | -0.23        | 0.00       | 35.79      | 0.00             | 404499.61          | 769496.96         | N 32 6 35.66 W 103 35 47.17 |                          |
|                                 | 2400.00    | 2.81        | 90.00            | 2399.03     | -0.26        | 0.00       | 40.70      | 0.00             | 404499.61          | 769501.87         | N 32 6 35.66 W 103 35 47.11 |                          |
|                                 | 2500.00    | 2.81        | 90.00            | 2498.91     | -0.29        | 0.00       | 45.60      | 0.00             | 404499.61          | 769506.77         | N 32 6 35.66 W 103 35 47.05 |                          |
|                                 | 2600.00    | 2.81        | 90.00            | 2598.79     | -0.33        | 0.00       | 50.51      | 0.00             | 404499.61          | 769511.68         | N 32 6 35.66 W 103 35 47.00 |                          |
|                                 | 2700.00    | 2.81        | 90.00            | 2698.67     | -0.36        | 0.00       | 55.41      | 0.00             | 404499.61          | 769516.58         | N 32 6 35.66 W 103 35 46.94 |                          |
|                                 | 2800.00    | 2.81        | 90.00            | 2798.55     | -0.39        | 0.00       | 60.32      | 0.00             | 404499.61          | 769521.49         | N 32 6 35.66 W 103 35 46.88 |                          |
|                                 | 2900.00    | 2.81        | 90.00            | 2898.43     | -0.42        | 0.00       | 65.22      | 0.00             | 404499.61          | 769526.39         | N 32 6 35.65 W 103 35 46.82 |                          |
|                                 | 3000.00    | 2.81        | 90.00            | 2998.31     | -0.45        | 0.00       | 70.13      | 0.00             | 404499.61          | 769531.30         | N 32 6 35.65 W 103 35 46.77 |                          |
| Drop to Vertical<br>2°/100' DLS | 3001.69    | 2.81        | 90.00            | 3000.00     | -0.45        | 0.00       | 70.21      | 0.00             | 404499.61          | 769531.38         | N 32 6 35.65 W 103 35 46.77 |                          |
|                                 | 3100.00    | 0.85        | 90.00            | 3098.25     | -0.47        | 0.00       | 73.35      | 2.00             | 404499.61          | 769534.52         | N 32 6 35.65 W 103 35 46.73 |                          |
| Hold Vertical                   | 3142.27    | 0.00        | 90.00            | 3140.52     | -0.48        | 0.00       | 73.66      | 2.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 3200.00    | 0.00        | 90.00            | 3198.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 3300.00    | 0.00        | 90.00            | 3298.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 3400.00    | 0.00        | 90.00            | 3398.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 3500.00    | 0.00        | 90.00            | 3498.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 3600.00    | 0.00        | 90.00            | 3598.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 3700.00    | 0.00        | 90.00            | 3698.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 3800.00    | 0.00        | 90.00            | 3798.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 3900.00    | 0.00        | 90.00            | 3898.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 4000.00    | 0.00        | 90.00            | 3998.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 4100.00    | 0.00        | 90.00            | 4098.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 4200.00    | 0.00        | 90.00            | 4198.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 4300.00    | 0.00        | 90.00            | 4298.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 4400.00    | 0.00        | 90.00            | 4398.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 4500.00    | 0.00        | 90.00            | 4498.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 4600.00    | 0.00        | 90.00            | 4598.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
| Base of Salt                    | 4688.75    | 0.00        | 90.00            | 4687.00     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 4700.00    | 0.00        | 90.00            | 4698.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 4800.00    | 0.00        | 90.00            | 4798.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 4900.00    | 0.00        | 90.00            | 4898.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
| Bell Canyon                     | 4957.75    | 0.00        | 90.00            | 4956.00     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 5000.00    | 0.00        | 90.00            | 4998.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 5100.00    | 0.00        | 90.00            | 5098.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 5200.00    | 0.00        | 90.00            | 5198.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 5300.00    | 0.00        | 90.00            | 5298.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 5400.00    | 0.00        | 90.00            | 5398.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 5500.00    | 0.00        | 90.00            | 5498.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 5600.00    | 0.00        | 90.00            | 5598.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 5700.00    | 0.00        | 90.00            | 5698.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 5800.00    | 0.00        | 90.00            | 5798.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 5900.00    | 0.00        | 90.00            | 5898.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
| Cherry Canyon                   | 5975.75    | 0.00        | 90.00            | 5974.00     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 6000.00    | 0.00        | 90.00            | 5998.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 6100.00    | 0.00        | 90.00            | 6098.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 6200.00    | 0.00        | 90.00            | 6198.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 6300.00    | 0.00        | 90.00            | 6298.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 6400.00    | 0.00        | 90.00            | 6398.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 6500.00    | 0.00        | 90.00            | 6498.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 6600.00    | 0.00        | 90.00            | 6598.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 6700.00    | 0.00        | 90.00            | 6698.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 6800.00    | 0.00        | 90.00            | 6798.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 6900.00    | 0.00        | 90.00            | 6898.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 7000.00    | 0.00        | 90.00            | 6998.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 7100.00    | 0.00        | 90.00            | 7098.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 7200.00    | 0.00        | 90.00            | 7198.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 7300.00    | 0.00        | 90.00            | 7298.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |
|                                 | 7400.00    | 0.00        | 90.00            | 7398.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61          | 769534.83         | N 32 6 35.65 W 103 35 46.73 |                          |

| Comments                 | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(RUS) | Easting<br>(RUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") |
|--------------------------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|-------------------|------------------|-------------------------|--------------------------|
| Brushy Canyon            | 7485.75    | 0.00        | 90.00            | 7484.00     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 7500.00    | 0.00        | 90.00            | 7498.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 7600.00    | 0.00        | 90.00            | 7598.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 7700.00    | 0.00        | 90.00            | 7698.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 7800.00    | 0.00        | 90.00            | 7798.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 7900.00    | 0.00        | 90.00            | 7898.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 8000.00    | 0.00        | 90.00            | 7998.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 8100.00    | 0.00        | 90.00            | 8098.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 8200.00    | 0.00        | 90.00            | 8198.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 8300.00    | 0.00        | 90.00            | 8298.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 8400.00    | 0.00        | 90.00            | 8398.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 8500.00    | 0.00        | 90.00            | 8498.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 8600.00    | 0.00        | 90.00            | 8598.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 8700.00    | 0.00        | 90.00            | 8698.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 8800.00    | 0.00        | 90.00            | 8798.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 8900.00    | 0.00        | 90.00            | 8898.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 9000.00    | 0.00        | 90.00            | 8998.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
| Bone Spring              | 9041.75    | 0.00        | 90.00            | 9040.00     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 9100.00    | 0.00        | 90.00            | 9098.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 9200.00    | 0.00        | 90.00            | 9198.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 9300.00    | 0.00        | 90.00            | 9298.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 9400.00    | 0.00        | 90.00            | 9398.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 9500.00    | 0.00        | 90.00            | 9498.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 9600.00    | 0.00        | 90.00            | 9598.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 9700.00    | 0.00        | 90.00            | 9698.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 9800.00    | 0.00        | 90.00            | 9798.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 9900.00    | 0.00        | 90.00            | 9898.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 10000.00   | 0.00        | 90.00            | 9998.25     | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 10100.00   | 0.00        | 90.00            | 10098.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 10200.00   | 0.00        | 90.00            | 10198.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 10300.00   | 0.00        | 90.00            | 10298.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 10400.00   | 0.00        | 90.00            | 10398.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 10500.00   | 0.00        | 90.00            | 10498.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
| 2nd Bone Spring Sand     | 10574.75   | 0.00        | 90.00            | 10573.00    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 10600.00   | 0.00        | 90.00            | 10598.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 10700.00   | 0.00        | 90.00            | 10698.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 10800.00   | 0.00        | 90.00            | 10798.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 10900.00   | 0.00        | 90.00            | 10898.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 11000.00   | 0.00        | 90.00            | 10998.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 11100.00   | 0.00        | 90.00            | 11098.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 11200.00   | 0.00        | 90.00            | 11198.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 11300.00   | 0.00        | 90.00            | 11298.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 11400.00   | 0.00        | 90.00            | 11398.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 11500.00   | 0.00        | 90.00            | 11498.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 11600.00   | 0.00        | 90.00            | 11598.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 11700.00   | 0.00        | 90.00            | 11698.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
| 3rd Bone Spring Sand     | 11727.75   | 0.00        | 90.00            | 11726.00    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 11800.00   | 0.00        | 90.00            | 11798.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 11900.00   | 0.00        | 90.00            | 11898.25    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
| KOP - Build 12"/100' DLS | 11921.75   | 0.00        | 90.00            | 11920.00    | -0.48        | 0.00       | 73.66      | 0.00             | 404499.61         | 769534.83        | N 32 6 35.65            | W 103 35 46.73           |
|                          | 12000.00   | 9.39        | 359.63           | 11997.90    | 5.92         | 6.40       | 73.62      | 12.00            | 404506.01         | 769534.79        | N 32 6 35.72            | W 103 35 46.73           |
|                          | 12100.00   | 21.39       | 359.63           | 12094.14    | 32.41        | 32.89      | 73.45      | 12.00            | 404532.50         | 769534.62        | N 32 6 35.98            | W 103 35 46.73           |
|                          | 12200.00   | 33.39       | 359.63           | 12182.76    | 78.33        | 78.81      | 73.15      | 12.00            | 404578.42         | 769534.32        | N 32 6 36.43            | W 103 35 46.73           |
| Wolfcamp                 | 12216.03   | 35.31       | 359.63           | 12196.00    | 87.38        | 87.85      | 73.09      | 12.00            | 404587.46         | 769534.26        | N 32 6 36.52            | W 103 35 46.73           |
|                          | 12300.00   | 45.39       | 359.63           | 12259.91    | 141.68       | 142.15     | 72.74      | 12.00            | 404641.76         | 769533.91        | N 32 6 37.06            | W 103 35 46.73           |
|                          | 12400.00   | 57.39       | 359.63           | 12322.19    | 219.68       | 220.15     | 72.24      | 12.00            | 404719.75         | 769533.41        | N 32 6 37.83            | W 103 35 46.73           |

| Comments             | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") |
|----------------------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|-------------------------|--------------------------|
| Build 4"/100'<br>DLS | 12500.00   | 69.39       | 359.63           | 12366.90    | 308.92       | 309.39     | 71.66      | 12.00            | 404808.99          | 769532.83         | N 32 6 38.72 W          | 103 35 46.73             |
|                      | 12546.75   | 75.00       | 359.63           | 12381.19    | 353.41       | 353.88     | 71.37      | 12.00            | 404853.48          | 769532.54         | N 32 6 39.16 W          | 103 35 46.73             |
|                      | 12600.00   | 77.13       | 359.63           | 12394.02    | 405.09       | 405.56     | 71.04      | 4.00             | 404905.16          | 769532.21         | N 32 6 39.67 W          | 103 35 46.72             |
|                      | 12700.00   | 81.13       | 359.63           | 12412.87    | 503.28       | 503.75     | 70.41      | 4.00             | 405003.34          | 769531.57         | N 32 6 40.64 W          | 103 35 46.72             |
| Landin Point         | 12800.00   | 85.13       | 359.63           | 12424.83    | 602.54       | 603.00     | 69.77      | 4.00             | 405102.59          | 769530.93         | N 32 6 41.62 W          | 103 35 46.72             |
|                      | 12900.00   | 89.13       | 359.63           | 12429.83    | 702.40       | 702.86     | 69.12      | 4.00             | 405202.44          | 769530.29         | N 32 6 42.61 W          | 103 35 46.72             |
|                      | 12921.75   | 90.00       | 359.63           | 12430.00    | 724.14       | 724.60     | 68.98      | 4.00             | 405224.19          | 769530.15         | N 32 6 42.82 W          | 103 35 46.72             |
|                      | 13000.00   | 90.00       | 359.63           | 12430.00    | 802.40       | 802.85     | 68.48      | 0.00             | 405302.44          | 769529.64         | N 32 6 43.60 W          | 103 35 46.72             |
|                      | 13100.00   | 90.00       | 359.63           | 12430.00    | 902.40       | 902.85     | 67.83      | 0.00             | 405402.43          | 769529.00         | N 32 6 44.59 W          | 103 35 46.72             |
|                      | 13200.00   | 90.00       | 359.63           | 12430.00    | 1002.40      | 1002.85    | 67.18      | 0.00             | 405502.43          | 769528.35         | N 32 6 45.58 W          | 103 35 46.72             |
|                      | 13300.00   | 90.00       | 359.63           | 12430.00    | 1102.40      | 1102.85    | 66.54      | 0.00             | 405602.42          | 769527.71         | N 32 6 46.57 W          | 103 35 46.72             |
|                      | 13400.00   | 90.00       | 359.63           | 12430.00    | 1202.40      | 1202.85    | 65.89      | 0.00             | 405702.42          | 769527.06         | N 32 6 47.56 W          | 103 35 46.72             |
|                      | 13500.00   | 90.00       | 359.63           | 12430.00    | 1302.40      | 1302.84    | 65.25      | 0.00             | 405802.41          | 769526.41         | N 32 6 48.55 W          | 103 35 46.72             |
|                      | 13600.00   | 90.00       | 359.63           | 12430.00    | 1402.40      | 1402.84    | 64.60      | 0.00             | 405902.40          | 769525.77         | N 32 6 49.54 W          | 103 35 46.72             |
|                      | 13700.00   | 90.00       | 359.63           | 12430.00    | 1502.40      | 1502.84    | 63.95      | 0.00             | 406002.40          | 769525.12         | N 32 6 50.53 W          | 103 35 46.72             |
|                      | 13800.00   | 90.00       | 359.63           | 12430.00    | 1602.40      | 1602.84    | 63.31      | 0.00             | 406102.39          | 769524.48         | N 32 6 51.52 W          | 103 35 46.72             |
|                      | 13900.00   | 90.00       | 359.63           | 12430.00    | 1702.40      | 1702.84    | 62.66      | 0.00             | 406202.39          | 769523.83         | N 32 6 52.50 W          | 103 35 46.72             |
|                      | 14000.00   | 90.00       | 359.63           | 12430.00    | 1802.40      | 1802.83    | 62.02      | 0.00             | 406302.38          | 769523.19         | N 32 6 53.49 W          | 103 35 46.72             |
|                      | 14100.00   | 90.00       | 359.63           | 12430.00    | 1902.40      | 1902.83    | 61.37      | 0.00             | 406402.38          | 769522.54         | N 32 6 54.48 W          | 103 35 46.72             |
|                      | 14200.00   | 90.00       | 359.63           | 12430.00    | 2002.40      | 2002.83    | 60.73      | 0.00             | 406502.37          | 769521.89         | N 32 6 55.47 W          | 103 35 46.72             |
|                      | 14300.00   | 90.00       | 359.63           | 12430.00    | 2102.40      | 2102.83    | 60.08      | 0.00             | 406602.37          | 769521.25         | N 32 6 56.46 W          | 103 35 46.72             |
|                      | 14400.00   | 90.00       | 359.63           | 12430.00    | 2202.40      | 2202.82    | 59.43      | 0.00             | 406702.36          | 769520.60         | N 32 6 57.45 W          | 103 35 46.72             |
|                      | 14500.00   | 90.00       | 359.63           | 12430.00    | 2302.40      | 2302.82    | 58.79      | 0.00             | 406802.36          | 769519.96         | N 32 6 58.44 W          | 103 35 46.72             |
|                      | 14600.00   | 90.00       | 359.63           | 12430.00    | 2402.40      | 2402.82    | 58.14      | 0.00             | 406902.35          | 769519.31         | N 32 6 59.43 W          | 103 35 46.72             |
|                      | 14700.00   | 90.00       | 359.63           | 12430.00    | 2502.40      | 2502.82    | 57.50      | 0.00             | 407002.35          | 769518.66         | N 32 7 0.42 W           | 103 35 46.72             |
|                      | 14800.00   | 90.00       | 359.63           | 12430.00    | 2602.40      | 2602.82    | 56.85      | 0.00             | 407102.34          | 769518.02         | N 32 7 1.41 W           | 103 35 46.72             |
|                      | 14900.00   | 90.00       | 359.63           | 12430.00    | 2702.40      | 2702.81    | 56.21      | 0.00             | 407202.33          | 769517.37         | N 32 7 2.40 W           | 103 35 46.71             |
|                      | 15000.00   | 90.00       | 359.63           | 12430.00    | 2802.40      | 2802.81    | 55.56      | 0.00             | 407302.33          | 769516.73         | N 32 7 3.39 W           | 103 35 46.71             |
|                      | 15100.00   | 90.00       | 359.63           | 12430.00    | 2902.40      | 2902.81    | 54.91      | 0.00             | 407402.32          | 769516.08         | N 32 7 4.38 W           | 103 35 46.71             |
|                      | 15200.00   | 90.00       | 359.63           | 12430.00    | 3002.40      | 3002.81    | 54.27      | 0.00             | 407502.32          | 769515.44         | N 32 7 5.37 W           | 103 35 46.71             |
|                      | 15300.00   | 90.00       | 359.63           | 12430.00    | 3102.40      | 3102.81    | 53.62      | 0.00             | 407602.31          | 769514.79         | N 32 7 6.36 W           | 103 35 46.71             |
|                      | 15400.00   | 90.00       | 359.63           | 12430.00    | 3202.40      | 3202.80    | 52.98      | 0.00             | 407702.31          | 769514.14         | N 32 7 7.35 W           | 103 35 46.71             |
|                      | 15500.00   | 90.00       | 359.63           | 12430.00    | 3302.40      | 3302.80    | 52.33      | 0.00             | 407802.30          | 769513.50         | N 32 7 8.34 W           | 103 35 46.71             |
|                      | 15600.00   | 90.00       | 359.63           | 12430.00    | 3402.40      | 3402.80    | 51.68      | 0.00             | 407902.30          | 769512.85         | N 32 7 9.33 W           | 103 35 46.71             |
|                      | 15700.00   | 90.00       | 359.63           | 12430.00    | 3502.40      | 3502.80    | 51.04      | 0.00             | 408002.29          | 769512.21         | N 32 7 10.32 W          | 103 35 46.71             |
|                      | 15800.00   | 90.00       | 359.63           | 12430.00    | 3602.40      | 3602.80    | 50.39      | 0.00             | 408102.29          | 769511.56         | N 32 7 11.31 W          | 103 35 46.71             |
|                      | 15900.00   | 90.00       | 359.63           | 12430.00    | 3702.40      | 3702.79    | 49.75      | 0.00             | 408202.28          | 769510.92         | N 32 7 12.30 W          | 103 35 46.71             |
|                      | 16000.00   | 90.00       | 359.63           | 12430.00    | 3802.40      | 3802.79    | 49.10      | 0.00             | 408302.27          | 769510.27         | N 32 7 13.28 W          | 103 35 46.71             |
|                      | 16100.00   | 90.00       | 359.63           | 12430.00    | 3902.40      | 3902.79    | 48.46      | 0.00             | 408402.27          | 769509.62         | N 32 7 14.27 W          | 103 35 46.71             |
|                      | 16200.00   | 90.00       | 359.63           | 12430.00    | 4002.40      | 4002.79    | 47.81      | 0.00             | 408502.26          | 769508.98         | N 32 7 15.26 W          | 103 35 46.71             |
|                      | 16300.00   | 90.00       | 359.63           | 12430.00    | 4102.40      | 4102.79    | 47.16      | 0.00             | 408602.26          | 769508.33         | N 32 7 16.25 W          | 103 35 46.71             |
|                      | 16400.00   | 90.00       | 359.63           | 12430.00    | 4202.40      | 4202.78    | 46.52      | 0.00             | 408702.25          | 769507.69         | N 32 7 17.24 W          | 103 35 46.71             |
|                      | 16500.00   | 90.00       | 359.63           | 12430.00    | 4302.40      | 4302.78    | 45.87      | 0.00             | 408802.25          | 769507.04         | N 32 7 18.23 W          | 103 35 46.71             |
|                      | 16600.00   | 90.00       | 359.63           | 12430.00    | 4402.40      | 4402.78    | 45.23      | 0.00             | 408902.24          | 769506.39         | N 32 7 19.22 W          | 103 35 46.71             |
|                      | 16700.00   | 90.00       | 359.63           | 12430.00    | 4502.40      | 4502.78    | 44.58      | 0.00             | 409002.24          | 769505.75         | N 32 7 20.21 W          | 103 35 46.71             |
|                      | 16800.00   | 90.00       | 359.63           | 12430.00    | 4602.40      | 4602.77    | 43.93      | 0.00             | 409102.23          | 769505.10         | N 32 7 21.20 W          | 103 35 46.71             |
|                      | 16900.00   | 90.00       | 359.63           | 12430.00    | 4702.40      | 4702.77    | 43.29      | 0.00             | 409202.23          | 769504.46         | N 32 7 22.19 W          | 103 35 46.71             |
|                      | 17000.00   | 90.00       | 359.63           | 12430.00    | 4802.40      | 4802.77    | 42.64      | 0.00             | 409302.22          | 769503.81         | N 32 7 23.18 W          | 103 35 46.71             |
|                      | 17100.00   | 90.00       | 359.63           | 12430.00    | 4902.40      | 4902.77    | 42.00      | 0.00             | 409402.22          | 769503.17         | N 32 7 24.17 W          | 103 35 46.71             |
|                      | 17200.00   | 90.00       | 359.63           | 12430.00    | 5002.40      | 5002.77    | 41.35      | 0.00             | 409502.21          | 769502.52         | N 32 7 25.16 W          | 103 35 46.70             |
|                      | 17300.00   | 90.00       | 359.63           | 12430.00    | 5102.40      | 5102.76    | 40.71      | 0.00             | 409602.20          | 769501.87         | N 32 7 26.15 W          | 103 35 46.70             |
|                      | 17400.00   | 90.00       | 359.63           | 12430.00    | 5202.40      | 5202.76    | 40.06      | 0.00             | 409702.20          | 769501.23         | N 32 7 27.14 W          | 103 35 46.70             |
|                      | 17500.00   | 90.00       | 359.63           | 12430.00    | 5302.40      | 5302.76    | 39.41      | 0.00             | 409802.19          | 769500.58         | N 32 7 28.13 W          | 103 35 46.70             |
|                      | 17600.00   | 90.00       | 359.63           | 12430.00    | 5402.40      | 5402.76    | 38.77      | 0.00             | 409902.19          | 769499.94         | N 32 7 29.12 W          | 103 35 46.70             |
|                      | 17700.00   | 90.00       | 359.63           | 12430.00    | 5502.40      | 5502.76    | 38.12      | 0.00             | 410002.18          | 769499.29         | N 32 7 30.11 W          | 103 35 46.70             |
|                      | 17800.00   | 90.00       | 359.63           | 12430.00    | 5602.40      | 5602.75    | 37.48      | 0.00             | 410102.18          | 769498.65         | N 32 7 31.10 W          | 103 35 46.70             |
|                      | 17900.00   | 90.00       | 359.63           | 12430.00    | 5702.40      | 5702.75    | 36.83      | 0.00             | 410202.17          | 769498.00         | N 32 7 32.09 W          | 103 35 46.70             |
|                      | 18000.00   | 90.00       | 359.63           | 12430.00    | 5802.40      | 5802.75    | 36.19      | 0.00             | 410302.17          | 769497.35         | N 32 7 33.08 W          | 103 35 46.70             |

| Comments | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") |
|----------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|--------------------|-------------------|-------------------------|--------------------------|
|          | 18100.00   | 90.00       | 359.63           | 12430.00    | 5902.40      | 5902.75    | 35.54      | 0.00             | 410402.16          | 769496.71         | N 32 7 34.07            | W 103 35 46.70           |
|          | 18200.00   | 90.00       | 359.63           | 12430.00    | 6002.40      | 6002.75    | 34.89      | 0.00             | 410502.16          | 769496.06         | N 32 7 35.05            | W 103 35 46.70           |
|          | 18300.00   | 90.00       | 359.63           | 12430.00    | 6102.40      | 6102.74    | 34.25      | 0.00             | 410602.15          | 769495.42         | N 32 7 36.04            | W 103 35 46.70           |
|          | 18400.00   | 90.00       | 359.63           | 12430.00    | 6202.40      | 6202.74    | 33.60      | 0.00             | 410702.15          | 769494.77         | N 32 7 37.03            | W 103 35 46.70           |
|          | 18500.00   | 90.00       | 359.63           | 12430.00    | 6302.40      | 6302.74    | 32.96      | 0.00             | 410802.14          | 769494.13         | N 32 7 38.02            | W 103 35 46.70           |
|          | 18600.00   | 90.00       | 359.63           | 12430.00    | 6402.40      | 6402.74    | 32.31      | 0.00             | 410902.13          | 769493.48         | N 32 7 39.01            | W 103 35 46.70           |
|          | 18700.00   | 90.00       | 359.63           | 12430.00    | 6502.40      | 6502.74    | 31.66      | 0.00             | 411002.13          | 769492.83         | N 32 7 40.00            | W 103 35 46.70           |
|          | 18800.00   | 90.00       | 359.63           | 12430.00    | 6602.40      | 6602.73    | 31.02      | 0.00             | 411102.12          | 769492.19         | N 32 7 40.99            | W 103 35 46.70           |
|          | 18900.00   | 90.00       | 359.63           | 12430.00    | 6702.40      | 6702.73    | 30.37      | 0.00             | 411202.12          | 769491.54         | N 32 7 41.98            | W 103 35 46.70           |
|          | 19000.00   | 90.00       | 359.63           | 12430.00    | 6802.40      | 6802.73    | 29.73      | 0.00             | 411302.11          | 769490.90         | N 32 7 42.97            | W 103 35 46.70           |
|          | 19100.00   | 90.00       | 359.63           | 12430.00    | 6902.40      | 6902.73    | 29.08      | 0.00             | 411402.11          | 769490.25         | N 32 7 43.96            | W 103 35 46.70           |
|          | 19200.00   | 90.00       | 359.63           | 12430.00    | 7002.40      | 7002.72    | 28.44      | 0.00             | 411502.10          | 769489.60         | N 32 7 44.95            | W 103 35 46.70           |
|          | 19300.00   | 90.00       | 359.63           | 12430.00    | 7102.40      | 7102.72    | 27.79      | 0.00             | 411602.10          | 769488.96         | N 32 7 45.94            | W 103 35 46.70           |
|          | 19400.00   | 90.00       | 359.63           | 12430.00    | 7202.40      | 7202.72    | 27.14      | 0.00             | 411702.09          | 769488.31         | N 32 7 46.93            | W 103 35 46.69           |
|          | 19500.00   | 90.00       | 359.63           | 12430.00    | 7302.40      | 7302.72    | 26.50      | 0.00             | 411802.09          | 769487.67         | N 32 7 47.92            | W 103 35 46.69           |
|          | 19600.00   | 90.00       | 359.63           | 12430.00    | 7402.40      | 7402.72    | 25.85      | 0.00             | 411902.08          | 769487.02         | N 32 7 48.91            | W 103 35 46.69           |
|          | 19700.00   | 90.00       | 359.63           | 12430.00    | 7502.40      | 7502.71    | 25.21      | 0.00             | 412002.07          | 769486.38         | N 32 7 49.90            | W 103 35 46.69           |
|          | 19800.00   | 90.00       | 359.63           | 12430.00    | 7602.40      | 7602.71    | 24.56      | 0.00             | 412102.07          | 769485.73         | N 32 7 50.89            | W 103 35 46.69           |
|          | 19900.00   | 90.00       | 359.63           | 12430.00    | 7702.40      | 7702.71    | 23.92      | 0.00             | 412202.06          | 769485.08         | N 32 7 51.88            | W 103 35 46.69           |
|          | 20000.00   | 90.00       | 359.63           | 12430.00    | 7802.40      | 7802.71    | 23.27      | 0.00             | 412302.06          | 769484.44         | N 32 7 52.87            | W 103 35 46.69           |
|          | 20100.00   | 90.00       | 359.63           | 12430.00    | 7902.40      | 7902.71    | 22.62      | 0.00             | 412402.05          | 769483.79         | N 32 7 53.86            | W 103 35 46.69           |
|          | 20200.00   | 90.00       | 359.63           | 12430.00    | 8002.40      | 8002.70    | 21.98      | 0.00             | 412502.05          | 769483.15         | N 32 7 54.85            | W 103 35 46.69           |
|          | 20300.00   | 90.00       | 359.63           | 12430.00    | 8102.40      | 8102.70    | 21.33      | 0.00             | 412602.04          | 769482.50         | N 32 7 55.83            | W 103 35 46.69           |
|          | 20400.00   | 90.00       | 359.63           | 12430.00    | 8202.40      | 8202.70    | 20.69      | 0.00             | 412702.04          | 769481.86         | N 32 7 56.82            | W 103 35 46.69           |
|          | 20500.00   | 90.00       | 359.63           | 12430.00    | 8302.40      | 8302.70    | 20.04      | 0.00             | 412802.03          | 769481.21         | N 32 7 57.81            | W 103 35 46.69           |
|          | 20600.00   | 90.00       | 359.63           | 12430.00    | 8402.40      | 8402.70    | 19.39      | 0.00             | 412902.03          | 769480.56         | N 32 7 58.80            | W 103 35 46.69           |
|          | 20700.00   | 90.00       | 359.63           | 12430.00    | 8502.40      | 8502.69    | 18.75      | 0.00             | 413002.02          | 769479.92         | N 32 7 59.79            | W 103 35 46.69           |
|          | 20800.00   | 90.00       | 359.63           | 12430.00    | 8602.40      | 8602.69    | 18.10      | 0.00             | 413102.02          | 769479.27         | N 32 8 0 78             | W 103 35 46.69           |
|          | 20900.00   | 90.00       | 359.63           | 12430.00    | 8702.40      | 8702.69    | 17.46      | 0.00             | 413202.01          | 769478.63         | N 32 8 1 77             | W 103 35 46.69           |
|          | 21000.00   | 90.00       | 359.63           | 12430.00    | 8802.40      | 8802.69    | 16.81      | 0.00             | 413302.00          | 769477.98         | N 32 8 2 76             | W 103 35 46.69           |
|          | 21100.00   | 90.00       | 359.63           | 12430.00    | 8902.40      | 8902.69    | 16.17      | 0.00             | 413402.00          | 769477.34         | N 32 8 3 75             | W 103 35 46.69           |
|          | 21200.00   | 90.00       | 359.63           | 12430.00    | 9002.40      | 9002.68    | 15.52      | 0.00             | 413501.99          | 769476.69         | N 32 8 4 74             | W 103 35 46.69           |
|          | 21300.00   | 90.00       | 359.63           | 12430.00    | 9102.40      | 9102.68    | 14.87      | 0.00             | 413601.99          | 769476.04         | N 32 8 5 73             | W 103 35 46.69           |
|          | 21400.00   | 90.00       | 359.63           | 12430.00    | 9202.40      | 9202.68    | 14.23      | 0.00             | 413701.98          | 769475.40         | N 32 8 6 72             | W 103 35 46.69           |
|          | 21500.00   | 90.00       | 359.63           | 12430.00    | 9302.40      | 9302.68    | 13.58      | 0.00             | 413801.98          | 769474.75         | N 32 8 7 71             | W 103 35 46.69           |
|          | 21600.00   | 90.00       | 359.63           | 12430.00    | 9402.40      | 9402.67    | 12.94      | 0.00             | 413901.97          | 769474.11         | N 32 8 8 70             | W 103 35 46.68           |
|          | 21700.00   | 90.00       | 359.63           | 12430.00    | 9502.40      | 9502.67    | 12.29      | 0.00             | 414001.97          | 769473.46         | N 32 8 9 69             | W 103 35 46.68           |
|          | 21800.00   | 90.00       | 359.63           | 12430.00    | 9602.40      | 9602.67    | 11.65      | 0.00             | 414101.96          | 769472.81         | N 32 8 10 68            | W 103 35 46.68           |
|          | 21900.00   | 90.00       | 359.63           | 12430.00    | 9702.40      | 9702.67    | 11.00      | 0.00             | 414201.96          | 769472.17         | N 32 8 11 67            | W 103 35 46.68           |
|          | 22000.00   | 90.00       | 359.63           | 12430.00    | 9802.40      | 9802.67    | 10.35      | 0.00             | 414301.95          | 769471.52         | N 32 8 12 66            | W 103 35 46.68           |

Cimarex Vaca  
Draw 20-17  
Federal #4H -  
PBHL [330'  
FNL, 2024'  
FWL]

22036.11 90.00 359.63 12430.00 9838.51 9838.78 10.12 0.00 414338.06 769471.29 N 32 8 13.01 W 103 35 46.68

Survey Type: Non-Def Plan

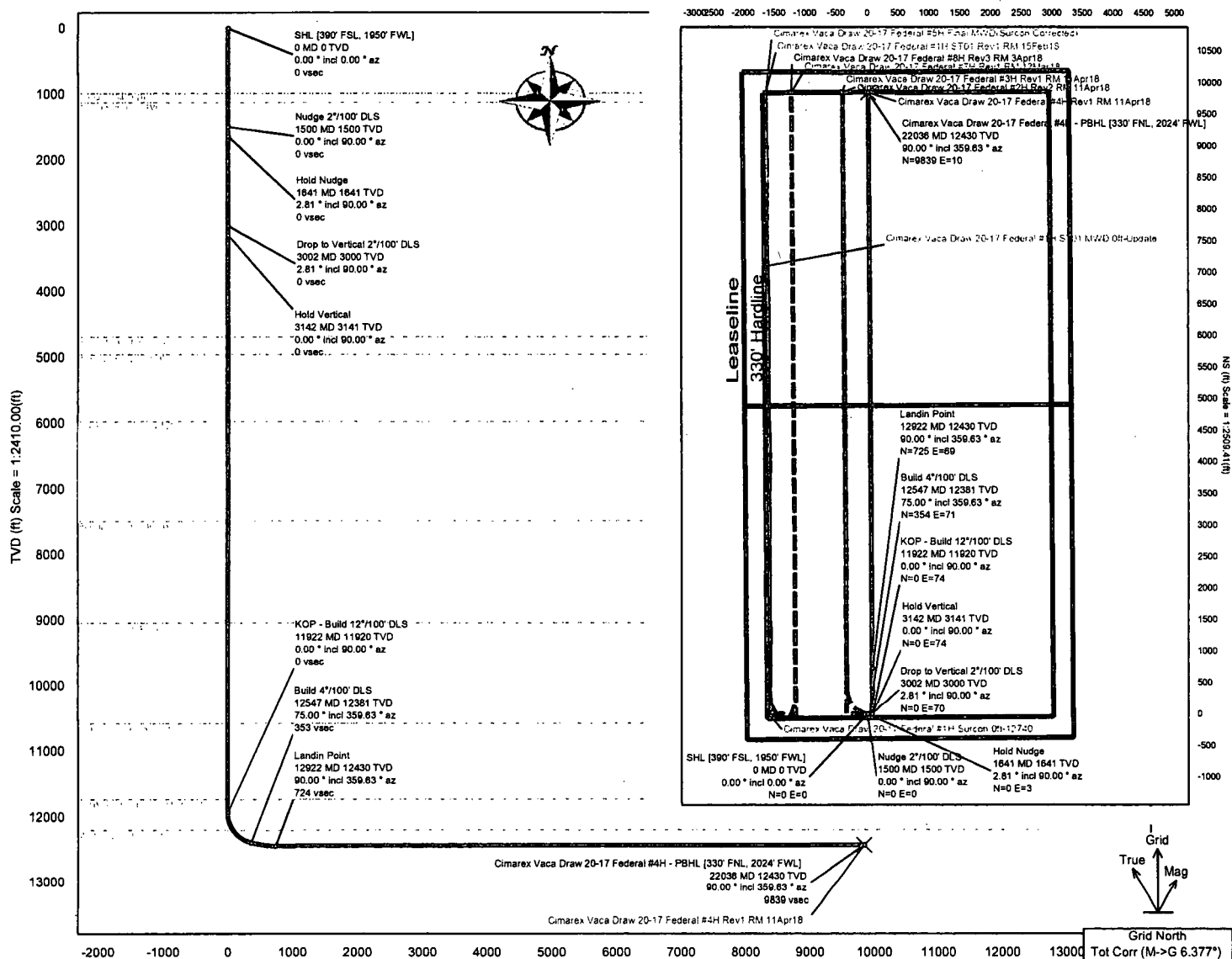
Survey Error Model: ISCWSA Rev 0 \*\*\* 3-D 95.000% Confidence 2.7955 sigma  
Survey Program:

| Description | Part | MD From<br>(ft) | MD To<br>(ft) | EOU Freq<br>(ft) | Hole Size<br>(in) | Casing<br>Diameter<br>(in) | Expected Max<br>Inclination<br>(deg) | Survey Tool Type | Borehole / Survey |
|-------------|------|-----------------|---------------|------------------|-------------------|----------------------------|--------------------------------------|------------------|-------------------|
|-------------|------|-----------------|---------------|------------------|-------------------|----------------------------|--------------------------------------|------------------|-------------------|

| Comments | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Northing<br>(ftUS)         | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ")                                                       | Longitude<br>(E/W ° ' ") |
|----------|------------|-------------|------------------|-------------|--------------|------------|------------|------------------|----------------------------|-------------------|-------------------------------------------------------------------------------|--------------------------|
|          |            | 1           | 0.000            | 24.000      | 1/100.000    | 30.000     | 30.000     |                  | NAL_MWD_IFR1+MS-Depth Only |                   | Original Borehole / Cimarex Vaca<br>Draw 20-17 Federal #4H Rev1<br>RM 11Apr18 |                          |
|          |            | 1           | 24.000           | 22036.112   | 1/100.000    | 30.000     | 30.000     |                  | NAL_MWD_IFR1+MS            |                   | Original Borehole / Cimarex Vaca<br>Draw 20-17 Federal #4H Rev1               |                          |

|                   |                                     |                        |                                     |
|-------------------|-------------------------------------|------------------------|-------------------------------------|
| Borehole:         | Well:                               | Field:                 | Structure:                          |
| Original Borehole | Cimarex Vaca Draw 20-17 Federal #4H | NM Lea County (NAD 83) | Cimarex Vaca Draw 20-17 Federal #4H |

|                               |          |                 |                                                                      |                           |                     |                                                     |               |                        |
|-------------------------------|----------|-----------------|----------------------------------------------------------------------|---------------------------|---------------------|-----------------------------------------------------|---------------|------------------------|
| Gravity & Magnetic Parameters |          |                 | Surface Location NAD83 New Mexico State Plane, Eastern Zone, US Feet |                           |                     | Miscellaneous                                       |               |                        |
| Model:                        | HDM 2018 | Dip: 59.77°     | Date:                                                                | 11-Apr-2018               | Lat: N 32 6 35.06   | Northings:                                          | 404499.817RUS | Grid Conv: 0.3918°     |
| MagDec:                       | 6.768°   | FS: 47898.145nT | Gravity FS:                                                          | 988.43mgn (8.80665 Based) | Lon: W 103 35 47.59 | Easting:                                            | 769461.177RUS | Scale Fact: 0.99999889 |
|                               |          |                 |                                                                      |                           |                     | Cimarex Vaca Draw 20-17 Federal #4H Rev1 RM 11Apr18 |               |                        |
|                               |          |                 |                                                                      |                           |                     | EW (N) Scale = 1:2500.41(N)                         |               |                        |



Vertical Section (ft) Azim = 359.63° Scale = 1:2410.00(ft) Origin = 0N/-S, 0E/-W

## Critical Points

| Critical Point                                                   | MD       | INCL  | AZIM   | TVD      | VSEC    | N(+)/S(-) | E(+)/W(-) | DLS   |
|------------------------------------------------------------------|----------|-------|--------|----------|---------|-----------|-----------|-------|
| SHL [390' FSL, 1950' FWL]                                        | 0.00     | 0.00  | 0.00   | 0.00     | 0.00    | 0.00      | 0.00      | 0.00  |
| Rustler                                                          | 984.00   | 0.00  | 90.00  | 984.00   | 0.00    | 0.00      | 0.00      | 0.00  |
| Top of Salt                                                      | 1128.00  | 0.00  | 90.00  | 1128.00  | 0.00    | 0.00      | 0.00      | 0.00  |
| Nudge 2'100' DLS                                                 | 1500.00  | 0.00  | 90.00  | 1500.00  | 0.00    | 0.00      | 0.00      | 0.00  |
| Hold Nudge                                                       | 1640.58  | 2.81  | 90.00  | 1640.52  | -0.02   | 0.00      | 3.45      | 2.00  |
| Drop to Vertical 2'100' DLS                                      | 3001.69  | 2.81  | 90.00  | 3000.00  | -0.45   | 0.00      | 70.21     | 0.00  |
| Hold Vertical                                                    | 3142.27  | 0.00  | 90.00  | 3140.52  | -0.48   | 0.00      | 73.66     | 2.00  |
| Base of Salt                                                     | 4888.75  | 0.00  | 90.00  | 4887.00  | -0.48   | 0.00      | 73.66     | 0.00  |
| Bell Canyon                                                      | 4957.75  | 0.00  | 90.00  | 4956.00  | -0.48   | 0.00      | 73.66     | 0.00  |
| Cherry Canyon                                                    | 5975.75  | 0.00  | 90.00  | 5974.00  | -0.48   | 0.00      | 73.66     | 0.00  |
| Brushy Canyon                                                    | 7485.75  | 0.00  | 90.00  | 7484.00  | -0.48   | 0.00      | 73.66     | 0.00  |
| Bone Spring                                                      | 9041.75  | 0.00  | 90.00  | 9040.00  | -0.48   | 0.00      | 73.66     | 0.00  |
| 2nd Bone Spring Sand                                             | 10574.75 | 0.00  | 90.00  | 10573.00 | -0.48   | 0.00      | 73.66     | 0.00  |
| 3rd Bone Spring Sand                                             | 11727.75 | 0.00  | 90.00  | 11726.00 | -0.48   | 0.00      | 73.66     | 0.00  |
| KOP - Build 12'100' DLS                                          | 11921.75 | 0.00  | 90.00  | 11920.00 | -0.48   | 0.00      | 73.66     | 0.00  |
| Wolfcamp                                                         | 12216.03 | 35.31 | 359.63 | 12196.00 | 87.38   | 87.85     | 73.09     | 12.00 |
| Build 4'100' DLS                                                 | 12546.75 | 75.00 | 359.63 | 12381.19 | 353.41  | 353.88    | 71.37     | 12.00 |
| Landin Point                                                     | 12921.75 | 90.00 | 359.63 | 12430.00 | 724.14  | 724.80    | 88.98     | 4.00  |
| Cimarex Vaca Draw 20-17 Federal #4H - PBHL [330' FSL, 2024' FWL] | 22036.11 | 90.00 | 359.63 | 12430.00 | 9838.51 | 9838.78   | 10.12     | 0.00  |

Drilling 8-3/4" hole below  
9-5/8" Casing

5M Annular Preventer

10M Double  
Ram BOP

Pipe Rams

Blind Rams

2" Kill Line Valves (2)  
with Check Valve

3" Manual Choke Valve  
and 3" HCR Valve

2" Kill Line

3" Choke Line

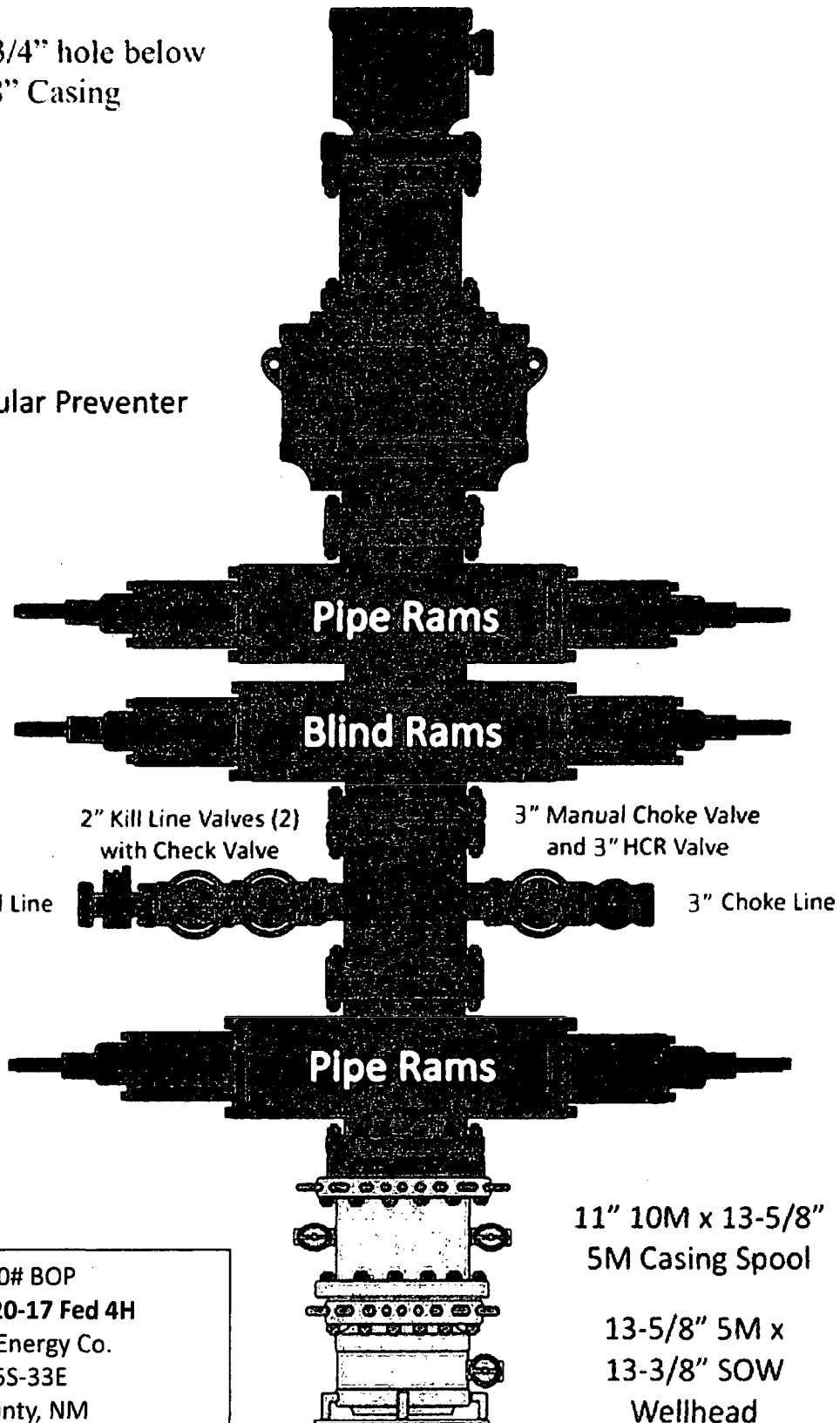
10M Single  
Ram BOP

Pipe Rams

10,000# BOP  
Vaca Draw 20-17 Fed 4H  
Cimarex Energy Co.  
20-25S-33E  
Lea County, NM

11" 10M x 13-5/8"  
5M Casing Spool

13-5/8" 5M x  
13-3/8" SOW  
Wellhead





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## Cimarex 10M Well Control Plan

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Version 1.0

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## BOPE Preventer Utilization

The table below displays all BHA components, drill pipe, casing, or open hole that could be present during a required shut in and the associated preventer component that would provide a barrier to flow. It is specific to the hole section that requires a 10M system. The mud system being utilized in the hole will always assumed to be the first barrier to flow. The below table, combined with the mud program, documents that two barriers to flow can be maintained at all times, independent of the rating of the annular preventer.

| Drill String Element                   | OD        | Preventer                      | RWP |
|----------------------------------------|-----------|--------------------------------|-----|
| 4" Drillpipe                           | 4"        | Lower Ram 3 1/2" - 5 1/2" VBR* | 10M |
|                                        |           | Upper Ram 3 1/2" - 5 1/2" VBR* |     |
| 4.5" Drillpipe                         | 4.5"      | Lower Ram 3 1/2" - 5 1/2" VBR* | 10M |
|                                        |           | Upper Ram 3 1/2" - 5 1/2" VBR* |     |
| 4" HWDP Drillpipe                      | 4"        | Lower Ram 3 1/2" - 5 1/2" VBR* | 10M |
|                                        |           | Upper Ram 3 1/2" - 5 1/2" VBR* |     |
| 4.5" HWDP Drillpipe                    | 4.5"      | Lower Ram 3 1/2" - 5 1/2" VBR* | 10M |
|                                        |           | Upper Ram 3 1/2" - 5 1/2" VBR* |     |
| Drill Collars (including non-magnetic) | 4.75-     | Lower Ram 3 1/2" - 5 1/2" VBR* | 10M |
|                                        | 5.25"     | Upper Ram 3 1/2" - 5 1/2" VBR* |     |
| Production Casing                      | 5.5"      | Lower Ram 3 1/2" - 5 1/2" VBR* | 10M |
|                                        |           | Upper Ram 3 1/2" - 5 1/2" VBR* |     |
| Production Casing                      | 5"        | Lower Ram 3 1/2" - 5 1/2" VBR* | 10M |
|                                        |           | Upper Ram 3 1/2" - 5 1/2" VBR* |     |
| Production Casing                      | 4.5"      | Lower Ram 3 1/2" - 5 1/2" VBR* | 10M |
|                                        |           | Upper Ram 3 1/2" - 5 1/2" VBR* |     |
| ALL                                    | 0-13 5/8" | Annular                        | 5M  |
| Open Hole                              |           | Blind Rams                     | 10M |

\*VBR – Variable Bore Ram

## Well Control Procedures

Proper well control response is highly specific to current well conditions and must be adapted based on environment as needed. The procedures below are given in "common" operating conditions to cover the basic and most necessary operations required during the wellbore construction. These include drilling ahead, tripping pipe, tripping BHA, running casing, and pipe out of the hole/open hole. In some of the procedures below, there will be a switch of control from the lesser RWP annular to the appropriate 10M RWP ram. The pressure at which this is done is variable based on overall well conditions that must be evaluated situationally. The pressure that control is switched may be equal to or less than the RWP but at no time will the pressure on the annular preventer exceed the RWP of the annular. The annular will be tested to 5,000 psi. This will be the RWP of the annular preventer.

### Shutting In While Drilling

1. Sound alarm to alert crew
2. Space out drill string
3. Shut down pumps
4. Shut in uppermost BOPE preventer (typically the annular preventer) and open HCR.
5. Verify well is shut-in and flow has stopped
6. Notify supervisory personnel
7. Record data (SIDP, SICP, Pit Gain, and Time)
8. Hold pre-job safety meeting and discuss kill procedure

9. If pressure is anticipated to climb to the RWP of the annular preventer during kill procedure, swap control of the well to the upper pipe ram

***Shutting In While Tripping***

1. Sound alarm and alert crew
2. Install open, full open safety valve and close valve
3. Shut in uppermost BOPE preventer (typically the annular preventer) and open HCR.
4. Verify well is shut-in and flow has stopped
5. Notify supervisory personnel
6. Record data (SIDP, SICP, Pit Gain, and Time)
7. Hold pre-job safety meeting and discuss kill procedure
8. If pressure is anticipated to climb to the RWP of the annular preventer during kill procedure, swap control of the well to the upper pipe ram

***Shutting In While Running Casing***

1. Sound alarm and alert crew
2. Install circulating swedge. Close high pressure, low torque valves.
3. Shut in uppermost BOPE preventer (typically the annular preventer) and open HCR.
4. Verify well is shut-in and flow has stopped
5. Notify supervisory personnel
6. Record data (SIDP, SICP, Pit Gain, and Time)
7. Hold Pre-job safety meeting and discuss kill procedure
8. If pressure is anticipated to climb to the RWP of the annular preventer during kill procedure, swap control of the well to the upper pipe ram

***Shutting in while out of hole***

1. Sound alarm
2. Shut-in well: close blind rams
3. Verify well is shut-in and monitor pressures
4. Notify supervisory personnel
5. Record data (SIDP, SICP, Pit Gain, and Time)
6. Hold Pre-job safety meeting and discuss kill procedure

***Shutting in prior to pulling BHA through stack***

1. Prior to pulling last joint of drill pipe thru the stack space out and check flow. If flowing see steps below.
2. Sound alarm and alert crew
3. Install open, full open safety valve and close valve
4. Shut in upper pipe ram and open HCR.

5. Verify well is shut-in and flow has stopped
6. Notify supervisory personnel
7. Record data (SIDP, SICP, Pit Gain, and Time)
8. Hold pre-job safety meeting and discuss kill procedure

***Shutting in while BHA is in the stack and ram preventer and combo immediately available***

1. Sound alarm and alert crew
2. Stab Crossover and install open, full open safety valve and close valve
3. Space out drill string with upset just beneath the compatible pipe ram.
4. Shut in upper compatible pipe ram and open HCR.
5. Verify well is shut-in and flow has stopped
6. Notify supervisory personnel
7. Record data (SIDP, SICP, Pit Gain, and Time)
8. Hold pre-job safety meeting and discuss kill procedure

***Shutting in while BHA is in the stack and no ram preventer or combo immediately available***

1. Sound alarm and alert crew
2. If possible pick up high enough, to pull string clear and follow "Open Hole" scenario
3. If not possible to pick up high enough:
  1. Stab Crossover, make up one joint/stand of drill pipe, and install open, full open safety valve and close valve
4. Space out drill string with upset just beneath the compatible pipe ram.
5. Shut in upper compatible pipe ram and open HCR.
6. Verify well is shut-in and flow has stopped
7. Notify supervisory personnel
8. Record data (SIDP, SICP, Pit Gain, and Time)
9. Hold pre-job safety meeting and discuss kill procedure