

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

OCD Artesia

FORM APPROVED  
OMB NO. 1004-0135  
Expires: July 31, 2010**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.***SUBMIT IN TRIPLICATE - Other instructions on reverse side.**

|                                                                                                                                                       |                                                       |                                                                         |
|-------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------|-------------------------------------------------------------------------|
| 1. Type of Well<br><input type="checkbox"/> Oil Well <input checked="" type="checkbox"/> Gas Well <input type="checkbox"/> Other                      |                                                       | 5. Lease Serial No.<br>NMNM114350                                       |
| 2. Name of Operator<br>CIMAREX ENERGY COMPANY OF CO<br>Contact: HOPE KNAULS<br>E-Mail: hknaults@cimarex.com                                           |                                                       | 6. If Indian, Allottee or Tribe Name                                    |
| 3a. Address<br>600 NORTH MARIENFELD STREET SUITE 600<br>MIDLAND, TX 79701                                                                             | 3b. Phone No. (include area code)<br>Ph: 918.295.1799 | 7. If Unit or CA/Agreement, Name and/or No.                             |
| 4. Location of Well (Footage, Sec., T., R., M., or Survey Description)<br>Sec 32 T26S R27E Lot 1 0210FSL 0750FEL<br>32.000217 N Lat, 104.122061 W Lon |                                                       | 8. Well Name and No.<br>MEDWICK 32 FEDERAL COM 11H                      |
|                                                                                                                                                       |                                                       | 9. API Well No.<br>30-015-42175-00-X1                                   |
|                                                                                                                                                       |                                                       | 10. Field and Pool, or Exploratory<br>WILDCAT<br>WCD15G045262728A; Bone |
|                                                                                                                                                       |                                                       | 11. County or Parish, and State<br>EDDY COUNTY, NM Spring               |

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

| TYPE OF SUBMISSION                                   | TYPE OF ACTION                                |                                           |                                                    |                                           |
|------------------------------------------------------|-----------------------------------------------|-------------------------------------------|----------------------------------------------------|-------------------------------------------|
| <input checked="" type="checkbox"/> Notice of Intent | <input type="checkbox"/> Acidize              | <input type="checkbox"/> Deepen           | <input type="checkbox"/> Production (Start/Resume) | <input type="checkbox"/> Water Shut-Off   |
| <input type="checkbox"/> Subsequent Report           | <input type="checkbox"/> Alter Casing         | <input type="checkbox"/> Fracture Treat   | <input type="checkbox"/> Reclamation               | <input type="checkbox"/> Well Integrity   |
| <input type="checkbox"/> Final Abandonment Notice    | <input type="checkbox"/> Casing Repair        | <input type="checkbox"/> New Construction | <input type="checkbox"/> Recomplete                | <input checked="" type="checkbox"/> Other |
|                                                      | <input type="checkbox"/> Change Plans         | <input type="checkbox"/> Plug and Abandon | <input type="checkbox"/> Temporarily Abandon       | Change to Original A                      |
|                                                      | <input type="checkbox"/> Convert to Injection | <input type="checkbox"/> Plug Back        | <input type="checkbox"/> Water Disposal            | 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 shall 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 shall be filed once testing has been completed. Final Abandonment Notices shall 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 ENERGY CO. RESPECTFULLY REQUESTS APPROVAL TO CHANGE THE APD AS FOLLOWS

Proposed new BHL 330 FNL & 750 FEL ✓  
Proposed well will be an oil well

The Medwick 32 Fed 11H will be drilled to the Bone Spring not the Wolfcamp as proposed. The pressure in the Bone Spring does not require a 4 string casing design. The Bone Spring is only a 3 string casing design; therefore, the 7? and 4-1/2? are being removed and a 5-1/2? long string will be our production casing ran from the end of lateral to surface. Plan is to set Surface and Intermediate casing strings. Drill production hole to KOP. Continue drilling lateral through the curve to TD. Run prod casing & cement.

**SEE ATTACHED FOR  
CONDITIONS OF APPROVAL**

|                                                                                                                                                                                                                                                                                                                |                             |              |                                                                      |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------|--------------|----------------------------------------------------------------------|
| 14. I hereby certify that the foregoing is true and correct.<br><b>Electronic Submission #258710 verified by the BLM Well Information System</b><br><b>For CIMAREX ENERGY COMPANY OF CO, sent to the Carlsbad</b><br><b>Committed to AFMSS for processing by CHRISTOPHER WALLS on 10/03/2014 (15CRW0003SE)</b> |                             |              |                                                                      |
| Name (Printed/Typed) HOPE KNAULS                                                                                                                                                                                                                                                                               | Title REGULATORY TECHNICIAN |              |                                                                      |
| Signature (Electronic Submission)                                                                                                                                                                                                                                                                              | Date 08/27/2014             |              |                                                                      |
| <b>THIS SPACE FOR FEDERAL OR STATE OFFICE USE</b>                                                                                                                                                                                                                                                              |                             |              |                                                                      |
| Approved By _____                                                                                                                                                                                                                                                                                              |                             | Title _____  | Date OCT 3 2014                                                      |
| 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 _____ | Is/Chris Walls<br>BUREAU OF LAND MANAGEMENT<br>CARLSBAD FIELD OFFICE |

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.

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

## Additional data for EC transaction #258710 that would not fit on the form

### 32. Additional remarks, continued

#### Approved:

KOP 9063'

EOC 9811'

MD 15899'

TVD 9560'

Pool Wolfcamp

Casing

Surface-17 1/2" Hole Size, 13 3/8 Casing, 48# H-40 ST&C, Setting Depth 400/400 MD/TVD

Intermediate- 12 1/4 Hole Size, 9 5/8 Casing, 36# J-55 LT&C, Setting Depth 1900/1900 MD/TVD

Production- 8 3/4 Hole Size, 7 Casing, 32# L-80 LT&C, Setting Depth 9,811'/9,560' MD/TVD

Completion -6 Hole Size, 4 1/2 Casing, 11.6# P-110 BT&C, Setting Depth 15,899'/9,560

#### Proposed:

KOP 6926'

EOC 7675'

MD 14093'

TVD 7424'

Pool Bone Spring

#### Casing Design

Change Surface Casing/Remove 7" Casing/Remove 6" hole and 4-1/2" casing

Surface-17 1/2" Hole Size, 13 3/8 Casing, 48# H-40/J-55 Hybrid ST&C, Setting Deth 400/400 MD/TVD

Intermediate- 12 1/4 Hole Size, 9 5/8 Casing, 36# J-55 LT&C, Setting Depth 1900/1900 MD/TVD

Production-8 3/4 Hole Size, 5 1/2 Casing, 17# L-80 LT&C, Setting Depth 6825/6825 MD/TVD . From 1800' to 6825, the 5-1/2" casing will have an external coating for additional protection from corrosion.

Production-8 3/4 Hole Size, 5 1/2 Casing, 17# L-80 BT&C, Setting Depth 14093/7424 MD/TVD

Surface Lead 60 sxs, 1.75 yld, 13.50 ppg, 104 cubic feet, Class C + Bentonite + Calcium Chloride + LCM, 8.829 gps water.

Tail 195 sxs, 1.34 yld, 14.80 ppgm, 260 cubic feet, Class C + LCM, 6.320 gps water. TOC: 0, 31%

Excess, Centralizers per Onshore Order 2.III.B.1f

#### Intermediate

Lead 347 sxs, 1.88 yld, 12.90 ppg, 652 cubic feet, 35:65 (Poz:C) + Salt + Bentonite + LCM +

Retarder, 9.650 gps water.

Tail 111 sxs, 1.34 yld, 14.80 ppg, 176 cubic feet, Class C + Retarder + LCM, 6.320 gps water. TOC:

0, 44% Excess

#### Production

Lead 558 sxs, 2.40 yld, 11.90 ppg, 1338 cubic feet, 35:65 (poz/H) + Salt + Sodium Metasilicate +

Bentonite + Fluid Loss + Dispersant + LCM + Retarder, 13.800 gps water 2102

Tail 1466 sxs, 1.30 yld, 14.50 ppg, 1906 cubic feet 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss +

Dispersant + Expanding Agent + Retarder + Antifoam + LCM, 5.790 gps water

TOC: 1700, 10% Excess, No centralizers planned in the lateral section. 1 every jt from EOC to

KOP. 1 every 4th joint from KOP to 200' inside previous casing.

Hole size will be 8 3/4" or 8 1/2"

#### BOP

Remove 5(M) BOP System

A BOP consisting of two rams with blind rams and pipe rams, and one annular preventer. Below the surface casing, a 2Msystem will be used. Below the intermediate casing, a 3M system will be used. A Rotating head may be installed as needed. A Kelly cock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

C-102, directional plan, attached

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>30-015-42175 | <sup>2</sup> Pool Code<br>98018                      | <sup>3</sup> Pool Name<br>Wildcat; Bone Spring |
| <sup>4</sup> Property Code<br>40451     | <sup>5</sup> Property Name<br>MEDWICK 32 FEDERAL COM | <sup>6</sup> Well Number<br>11H                |
| <sup>7</sup> OGRID No.<br>215099        | <sup>8</sup> Operator Name<br>CIMAREX ENERGY CO.     | <sup>9</sup> Elevation<br>3183'                |

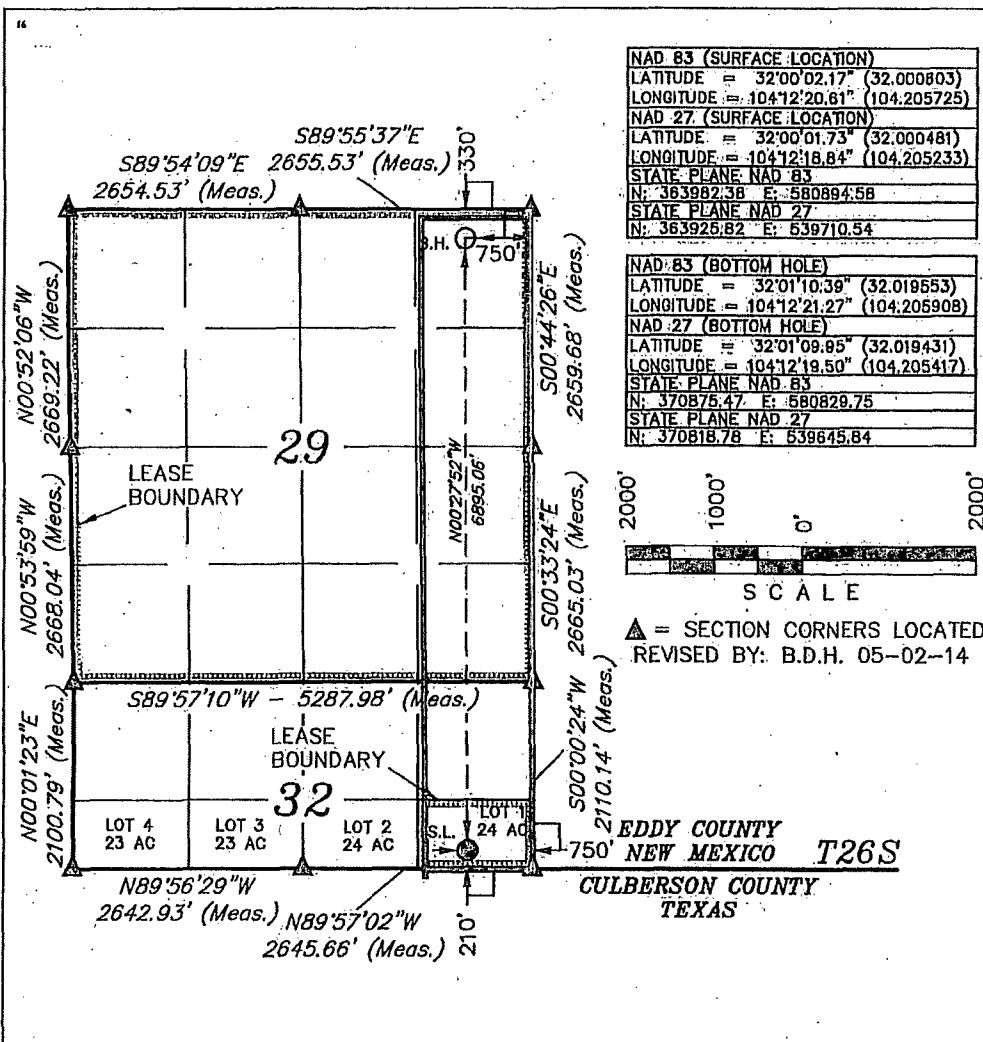
**"Surface Location**

| UL or lot no. | Section | Township | Range | Lot Idn | Feet from the | North/South line | Feet from the | East/West line | County |
|---------------|---------|----------|-------|---------|---------------|------------------|---------------|----------------|--------|
| 1             | 32      | 26S      | 27E   |         | 210           | SOUTH            | 750           | EAST           | EDDY   |

**"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 |
|-----------------------------------------|-------------------------------|----------------------------------|-------------------------|-------------------|---------------|------------------|---------------|----------------|--------|
| A                                       | 29                            | 26S                              | 27E                     |                   | 330           | NORTH            | 750           | EAST           | EDDY   |
| <sup>11</sup> Dedicated Acres<br>223.32 | <sup>12</sup> Joint or Infill | <sup>13</sup> Consolidation Code | <sup>14</sup> Order No. | NSL & NSP Pending |               |                  |               |                |        |

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.



**"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 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, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

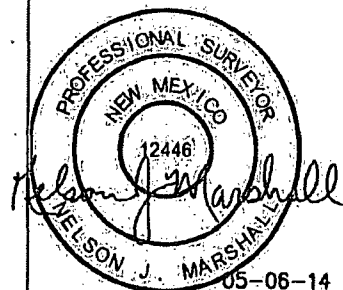
*Hope Knauls* 8/25/14  
Signature Date

Hope Knauls  
Printed Name  
hknauls@cimarex.com  
E-mail Address

**"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.

August 26, 2013  
Date of Survey  
Signature and Seal of Professional Surveyor:



Certificate Number:



Cactus 112

Cimarex

Rev1



|                               |                        |                                         |                                                      |
|-------------------------------|------------------------|-----------------------------------------|------------------------------------------------------|
| Borehole:                     | Well:                  | Field:                                  | Structure:                                           |
| Original Borehole             | Medwick 32 Federal 11H | Eddy County, NM                         | Cactus 112                                           |
| Gravity & Magnetic Parameters |                        |                                         |                                                      |
| Model: BOGM 2014              | Dip: 69.779°           | Date: 12-Aug-2014                       | Surface Location                                     |
| MagDec: 7.634°                | FS: 48051.42mT         | Gravity FS: 980.68mgals (3.00645 Based) | State: New Mexico State Plane, Eastern Zone, US Feet |
|                               |                        |                                         | Lat: N 32 0 2.17                                     |
|                               |                        |                                         | North: 343897.38705                                  |
|                               |                        |                                         | Grid Conv: 0.0578°                                   |
|                               |                        |                                         | Scale Fact: 0.99991083                               |
|                               |                        |                                         | Uticurto                                             |
|                               |                        |                                         | Slot: Medwick 32                                     |
|                               |                        |                                         | Federal 11H                                          |
|                               |                        |                                         | Plan: Rev1 mcs 12Aug14                               |
|                               |                        |                                         | TVD Ref: RUPB(3207ft above)                          |

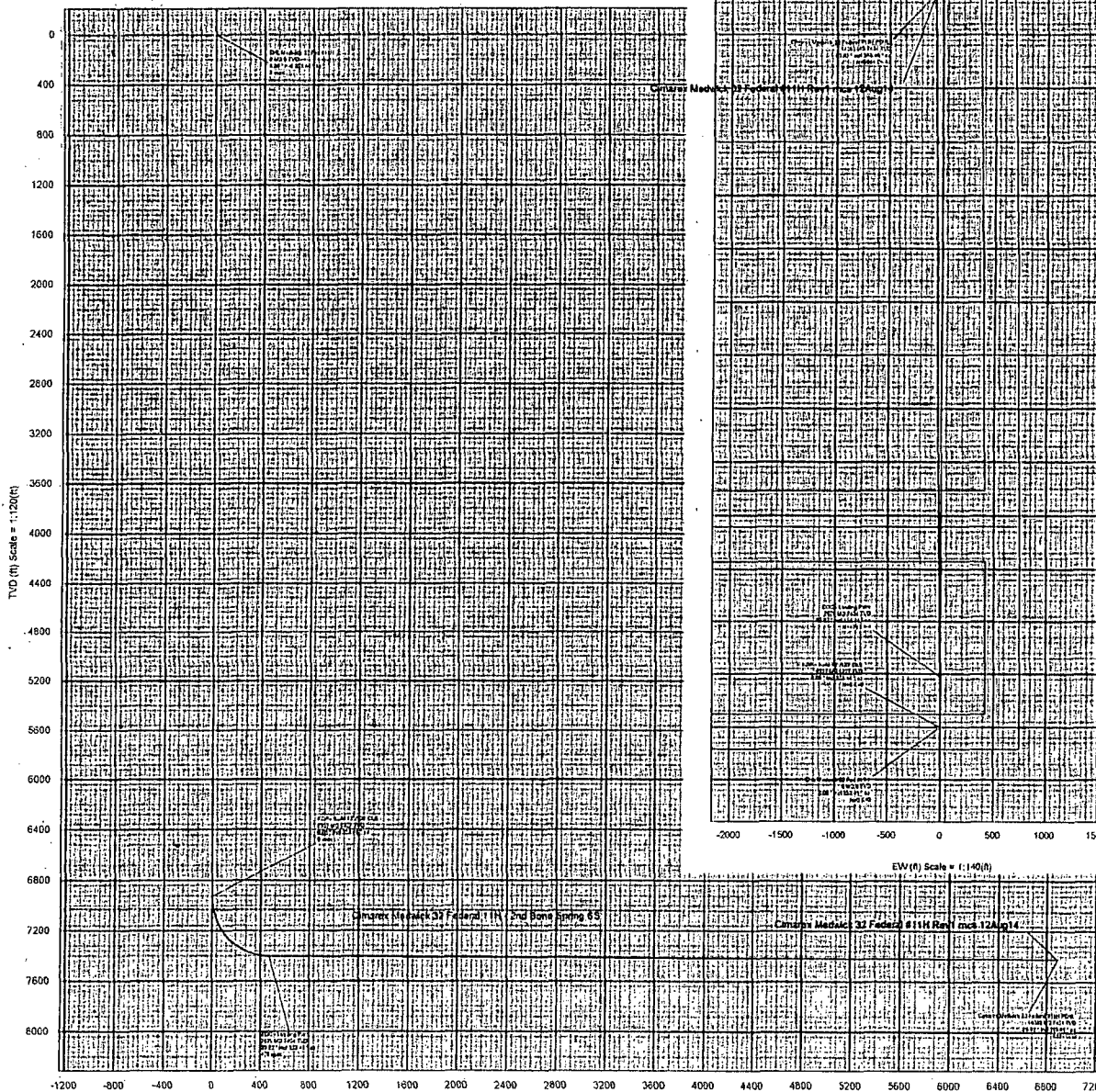
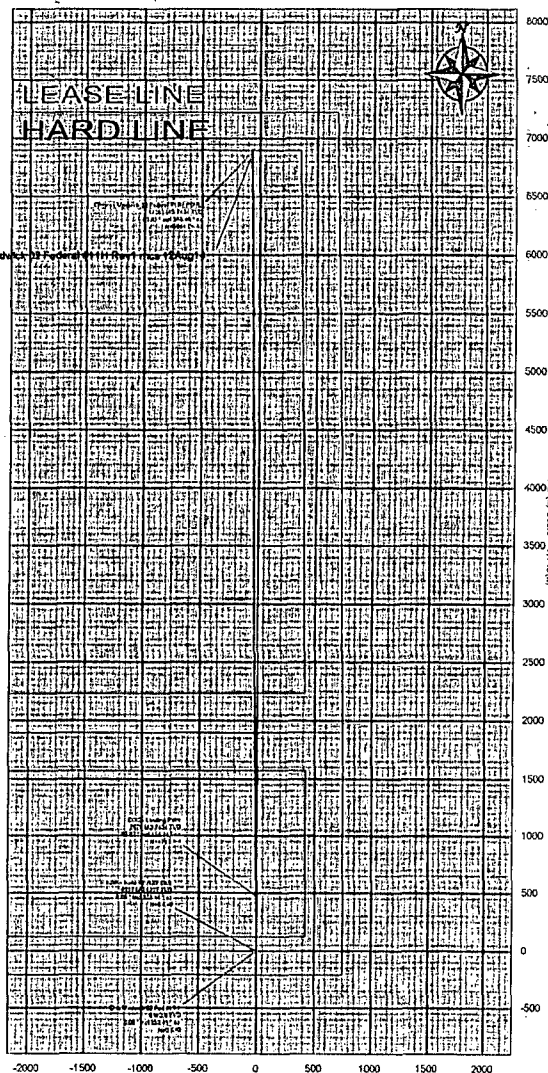
### Critical Points

| Comments                 | Survey | MD       | Inc   | Azim   | TVD     | SSVD     | VS      | NS      | EW     | Longitude       | Latitude      | Easting   | Northing  | DLS   | Tool Face |
|--------------------------|--------|----------|-------|--------|---------|----------|---------|---------|--------|-----------------|---------------|-----------|-----------|-------|-----------|
| SHL                      |        | 0.00     | 0.00  | 359.46 | 0.00    | -3207.00 | 0.00    | 0.00    | 0.00   | W 104 12 20.607 | N 32 0 2.172  | 580894.58 | 363982.38 |       | 359.46    |
| KOP - Build 12"/100' DLS |        | 6926.54  | 0.00  | 359.46 | 6926.54 | 3719.54  | 0.00    | 0.00    | 0.00   | W 104 12 20.607 | N 32 0 2.172  | 580894.58 | 363982.38 | 0.00  | 359.46    |
| EOC - Landing Point      |        | 7675.05  | 89.82 | 359.46 | 7404.00 | 4197.00  | 475.98  | 475.96  | -4.48  | W 104 12 20.652 | N 32 0 6.882  | 580890.10 | 364458.29 | 12.00 | 0.00      |
| PBHL                     |        | 14093.13 | 89.82 | 359.46 | 7424.00 | 4217.00  | 6894.02 | 6893.72 | -64.84 | W 104 12 21.265 | N 32 1 10.390 | 580829.75 | 370875.47 | 0.00  |           |

Cimarex Medwick 32 Federal 11H Rev1 mcs 12Aug14  
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Cimarex Medwick 32 Federal 11H Rev1 mcs 12Aug14



Grid North  
Tot Cor (M=0 7.568")  
Mag Dec (7.636")  
Grid Conv (0.058")



Vertical Section (ft) Azim = 359.46° Scale = 1:120(ft) Origin = ONI-S, OEAW



# Cimarex Medwick 32 Federal #11H Rev1 mcs 12Aug14 Proposal Geodetic



## Report (Non-Def Plan)

|                               |                                                                   |                                   |                              |
|-------------------------------|-------------------------------------------------------------------|-----------------------------------|------------------------------|
| Report Date:                  | August 12, 2014 - 01:28 PM                                        | Survey / DLS Computation:         | Minimum Curvature / Lubinski |
| Client:                       | Cimarex                                                           | Vertical Section Azimuth:         | 359.475 ° (Grid North)       |
| Field:                        | NM Eddy County (NAD 83)                                           | Vertical Section Origin:          | 0.000 ft, 0.000 ft           |
| Structure / Slot:             | Cimarex Medwick 32 Federal #11H / Cimarex Medwick 32 Federal #11H | TVD Reference Datum:              | RKB                          |
| Well:                         | Cimarex Medwick 32 Federal #11H                                   | TVD Reference Elevation:          | 3207.000 ft above            |
| Borehole:                     | Original Borehole                                                 | Seabed / Ground Elevation:        | 3183.000 ft above            |
| UWI / API#:                   | Cactus 112 / Unknown                                              | Magnetic Declination:             | 7.636 °                      |
| Survey Name:                  | Cimarex Medwick 32 Federal #11H Rev1 mcs 12Aug14                  | Total Gravity Field Strength:     | 998.6864mgn (9.80665 Based)  |
| Survey Date:                  | September 27, 2013                                                | Gravity Model:                    | DOX                          |
| Tort / AHD / DDI / ERD Ratio: | 89.821 ° / 6894.023 ft / 6.070 / 0.929                            | Total Magnetic Field Strength:    | 48051.628 nT                 |
| Coordinate Reference System:  | NAD83 New Mexico State Plane, Eastern Zone, US Feet               | Magnetic Dip Angle:               | 59.779 °                     |
| Location Lat / Long:          | N 32° 0' 2.17231", W 104° 12' 20.60893"                           | Declination Date:                 | August 12, 2014              |
| Location Grid N/E Y/X:        | N 363982.380 ftUS, E 580894.580 ftUS                              | Magnetic Declination Model:       | BGGM 2014                    |
| CRS Grid Convergence Angle:   | 0.0676 °                                                          | North Reference:                  | Grid North                   |
| Grid Scale Factor:            | 0.99991088                                                        | Grid Convergence Used:            | 0.0676 °                     |
| Version / Patch:              | 2.7.1043.0                                                        | Total Corr Mag North->Grid North: | 7.5679 °                     |
|                               |                                                                   | Local Coord Referenced To:        | Structure Reference Point    |

| Comments                | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Closure<br>Azimuth<br>(°) | Closure<br>(ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' '') | Longitude<br>(E/W ° ' '') |
|-------------------------|------------|-------------|------------------|-------------|---------------|--------------|------------|------------|------------------|---------------------------|-----------------|--------------------|-------------------|--------------------------|---------------------------|
| SHL Medwick 32 Fed #11H | 0.00       | 0.00        | 359.46           | 0.00        | -3207.00      | 0.00         | 0.00       | 0.00       | N/A              | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 100.00     | 0.00        | 359.46           | 100.00      | -3107.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 200.00     | 0.00        | 359.46           | 200.00      | -3007.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 300.00     | 0.00        | 359.46           | 300.00      | -2907.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 400.00     | 0.00        | 359.46           | 400.00      | -2807.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 500.00     | 0.00        | 359.46           | 500.00      | -2707.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 600.00     | 0.00        | 359.46           | 600.00      | -2607.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 700.00     | 0.00        | 359.46           | 700.00      | -2507.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 800.00     | 0.00        | 359.46           | 800.00      | -2407.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 900.00     | 0.00        | 359.46           | 900.00      | -2307.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 1000.00    | 0.00        | 359.46           | 1000.00     | -2207.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 1100.00    | 0.00        | 359.46           | 1100.00     | -2107.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 1200.00    | 0.00        | 359.46           | 1200.00     | -2007.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 1300.00    | 0.00        | 359.46           | 1300.00     | -1907.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 1400.00    | 0.00        | 359.46           | 1400.00     | -1807.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 1500.00    | 0.00        | 359.46           | 1500.00     | -1707.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 1600.00    | 0.00        | 359.46           | 1600.00     | -1607.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 1700.00    | 0.00        | 359.46           | 1700.00     | -1507.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 1800.00    | 0.00        | 359.46           | 1800.00     | -1407.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 1900.00    | 0.00        | 359.46           | 1900.00     | -1307.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 2000.00    | 0.00        | 359.46           | 2000.00     | -1207.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 2100.00    | 0.00        | 359.46           | 2100.00     | -1107.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 2200.00    | 0.00        | 359.46           | 2200.00     | -1007.00      | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 2300.00    | 0.00        | 359.46           | 2300.00     | -907.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 2400.00    | 0.00        | 359.46           | 2400.00     | -807.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 2500.00    | 0.00        | 359.46           | 2500.00     | -707.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 2600.00    | 0.00        | 359.46           | 2600.00     | -607.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 2700.00    | 0.00        | 359.46           | 2700.00     | -507.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 2800.00    | 0.00        | 359.46           | 2800.00     | -407.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 2900.00    | 0.00        | 359.46           | 2900.00     | -307.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 3000.00    | 0.00        | 359.46           | 3000.00     | -207.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 3100.00    | 0.00        | 359.46           | 3100.00     | -107.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 3200.00    | 0.00        | 359.46           | 3200.00     | -7.00         | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 3300.00    | 0.00        | 359.46           | 3300.00     | 93.00         | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 3400.00    | 0.00        | 359.46           | 3400.00     | 193.00        | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 3500.00    | 0.00        | 359.46           | 3500.00     | 293.00        | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 3600.00    | 0.00        | 359.46           | 3600.00     | 393.00        | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 3700.00    | 0.00        | 359.46           | 3700.00     | 493.00        | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |
|                         | 3800.00    | 0.00        | 359.46           | 3800.00     | 593.00        | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38          | 580894.58         | N 32 0 2.17              | W 104 12 20.61            |

| Comments                 | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Closure<br>Azimuth<br>(°) | Closure<br>(ft) | Nonthing<br>(RUS) | Easting<br>(RUS) | Latitude<br>(N/S ° ° °) | Longitude<br>(E/W ° ° °) |
|--------------------------|------------|-------------|------------------|-------------|---------------|--------------|------------|------------|------------------|---------------------------|-----------------|-------------------|------------------|-------------------------|--------------------------|
|                          | 3900.00    | 0.00        | 359.46           | 3900.00     | 693.00        | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 4000.00    | 0.00        | 359.46           | 4000.00     | 793.00        | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 4100.00    | 0.00        | 359.46           | 4100.00     | 893.00        | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 4200.00    | 0.00        | 359.46           | 4200.00     | 993.00        | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 4300.00    | 0.00        | 359.46           | 4300.00     | 1093.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 4400.00    | 0.00        | 359.46           | 4400.00     | 1193.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 4500.00    | 0.00        | 359.46           | 4500.00     | 1293.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 4600.00    | 0.00        | 359.46           | 4600.00     | 1393.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 4700.00    | 0.00        | 359.46           | 4700.00     | 1493.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 4800.00    | 0.00        | 359.46           | 4800.00     | 1593.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 4900.00    | 0.00        | 359.46           | 4900.00     | 1693.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 5000.00    | 0.00        | 359.46           | 5000.00     | 1793.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 5100.00    | 0.00        | 359.46           | 5100.00     | 1893.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 5200.00    | 0.00        | 359.46           | 5200.00     | 1993.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 5300.00    | 0.00        | 359.46           | 5300.00     | 2093.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 5400.00    | 0.00        | 359.46           | 5400.00     | 2193.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 5500.00    | 0.00        | 359.46           | 5500.00     | 2293.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 5600.00    | 0.00        | 359.46           | 5600.00     | 2393.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 5700.00    | 0.00        | 359.46           | 5700.00     | 2493.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 5800.00    | 0.00        | 359.46           | 5800.00     | 2593.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 5900.00    | 0.00        | 359.46           | 5900.00     | 2693.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 6000.00    | 0.00        | 359.46           | 6000.00     | 2793.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 6100.00    | 0.00        | 359.46           | 6100.00     | 2893.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 6200.00    | 0.00        | 359.46           | 6200.00     | 2993.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 6300.00    | 0.00        | 359.46           | 6300.00     | 3093.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 6400.00    | 0.00        | 359.46           | 6400.00     | 3193.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 6500.00    | 0.00        | 359.46           | 6500.00     | 3293.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 6600.00    | 0.00        | 359.46           | 6600.00     | 3393.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 6700.00    | 0.00        | 359.46           | 6700.00     | 3493.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 6800.00    | 0.00        | 359.46           | 6800.00     | 3593.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 6900.00    | 0.00        | 359.46           | 6900.00     | 3693.00       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
| KOP - Build 12"/100' DLS | 6926.54    | 0.00        | 359.46           | 6926.54     | 3719.54       | 0.00         | 0.00       | 0.00       | 0.00             | 0.00                      | 0.00            | 363982.38         | 580894.58        | N 32 0 2.17             | W 104 12 20.61           |
|                          | 7000.00    | 8.82        | 359.46           | 6999.71     | 3792.71       | 5.64         | 5.64       | -0.05      | 12.00            | 359.46                    | 5.64            | 363988.02         | 580894.53        | N 32 0 2.23             | W 104 12 20.61           |
|                          | 7100.00    | 20.82       | 359.46           | 7096.21     | 3889.21       | 31.16        | 31.16      | -0.29      | 12.00            | 359.46                    | 31.16           | 364013.54         | 580894.29        | N 32 0 2.48             | W 104 12 20.61           |
|                          | 7200.00    | 32.82       | 359.46           | 7185.29     | 3978.29       | 76.19        | 76.19      | -0.72      | 12.00            | 359.46                    | 76.19           | 364058.56         | 580893.86        | N 32 0 2.93             | W 104 12 20.61           |
|                          | 7300.00    | 44.82       | 359.46           | 7263.07     | 4056.07       | 138.76       | 138.75     | -1.30      | 12.00            | 359.46                    | 138.76          | 364121.12         | 580893.28        | N 32 0 3.55             | W 104 12 20.62           |
|                          | 7400.00    | 56.82       | 359.46           | 7326.13     | 4119.13       | 216.13       | 216.12     | -2.03      | 12.00            | 359.46                    | 216.13          | 364198.48         | 580892.55        | N 32 0 4.31             | W 104 12 20.63           |
|                          | 7500.00    | 68.82       | 359.46           | 7371.74     | 4164.74       | 304.92       | 304.91     | -2.87      | 12.00            | 359.46                    | 304.92          | 364287.26         | 580891.71        | N 32 0 5.19             | W 104 12 20.64           |
|                          | 7600.00    | 80.82       | 359.46           | 7397.88     | 4190.88       | 401.25       | 401.23     | -3.77      | 12.00            | 359.46                    | 401.25          | 364383.58         | 580890.81        | N 32 0 6.14             | W 104 12 20.65           |
| EOC - Landing Point      | 7675.05    | 89.82       | 359.46           | 7404.08     | 4197.08       | 475.98       | 475.96     | -4.48      | 12.00            | 359.46                    | 475.98          | 364458.29         | 580890.10        | N 32 0 6.86             | W 104 12 20.65           |
|                          | 7700.00    | 89.82       | 359.46           | 7404.08     | 4197.08       | 500.92       | 500.90     | -4.71      | 0.00             | 359.46                    | 500.92          | 364483.24         | 580889.87        | N 32 0 7.13             | W 104 12 20.65           |
|                          | 7800.00    | 89.82       | 359.46           | 7404.39     | 4197.39       | 600.92       | 600.90     | -5.65      | 0.00             | 359.46                    | 600.92          | 364583.22         | 580888.93        | N 32 0 8.12             | W 104 12 20.66           |
|                          | 7900.00    | 89.82       | 359.46           | 7404.70     | 4197.70       | 700.92       | 700.89     | -6.59      | 0.00             | 359.46                    | 700.92          | 364683.21         | 580887.99        | N 32 0 9.11             | W 104 12 20.67           |
|                          | 8000.00    | 89.82       | 359.46           | 7405.01     | 4198.01       | 800.92       | 800.89     | -7.53      | 0.00             | 359.46                    | 800.92          | 364783.19         | 580887.05        | N 32 0 10.10            | W 104 12 20.68           |
|                          | 8100.00    | 89.82       | 359.46           | 7405.33     | 4198.33       | 900.92       | 900.88     | -8.47      | 0.00             | 359.46                    | 900.92          | 364883.18         | 580886.11        | N 32 0 11.09            | W 104 12 20.69           |
|                          | 8200.00    | 89.82       | 359.46           | 7405.64     | 4198.64       | 1000.92      | 1000.88    | -9.41      | 0.00             | 359.46                    | 1000.92         | 364983.17         | 580885.17        | N 32 0 12.08            | W 104 12 20.70           |
|                          | 8300.00    | 89.82       | 359.46           | 7405.95     | 4198.95       | 1100.92      | 1100.87    | -10.35     | 0.00             | 359.46                    | 1100.92         | 365083.15         | 580884.23        | N 32 0 13.07            | W 104 12 20.71           |
|                          | 8400.00    | 89.82       | 359.46           | 7406.26     | 4199.26       | 1200.92      | 1200.87    | -11.29     | 0.00             | 359.46                    | 1200.92         | 365183.14         | 580883.29        | N 32 0 14.06            | W 104 12 20.72           |
|                          | 8500.00    | 89.82       | 359.46           | 7406.57     | 4199.57       | 1300.92      | 1300.86    | -12.23     | 0.00             | 359.46                    | 1300.92         | 365283.12         | 580882.35        | N 32 0 15.05            | W 104 12 20.73           |
|                          | 8600.00    | 89.82       | 359.46           | 7406.88     | 4199.88       | 1400.92      | 1400.86    | -13.18     | 0.00             | 359.46                    | 1400.92         | 365383.11         | 580881.41        | N 32 0 16.03            | W 104 12 20.74           |
|                          | 8700.00    | 89.82       | 359.46           | 7407.20     | 4200.20       | 1500.92      | 1500.85    | -14.12     | 0.00             | 359.46                    | 1500.92         | 365483.10         | 580880.47        | N 32 0 17.02            | W 104 12 20.75           |
|                          | 8800.00    | 89.82       | 359.46           | 7407.51     | 4200.51       | 1600.92      | 1600.85    | -15.06     | 0.00             | 359.46                    | 1600.92         | 365583.08         | 580879.53        | N 32 0 18.01            | W 104 12 20.76           |
|                          | 8900.00    | 89.82       | 359.46           | 7407.82     | 4200.82       | 1700.92      | 1700.84    | -16.00     | 0.00             | 359.46                    | 1700.92         | 365683.07         | 580878.58        | N 32 0 19.00            | W 104 12 20.77           |
|                          | 9000.00    | 89.82       | 359.46           | 7408.13     | 4201.13       | 1800.92      | 1800.84    | -16.94     | 0.00             | 359.46                    | 1800.92         | 365783.05         | 580877.64        | N 32 0 19.99            | W 104 12 20.78           |
|                          | 9100.00    | 89.82       | 359.46           | 7408.44     | 4201.44       | 1900.92      | 1900.83    | -17.88     | 0.00             | 359.46                    | 1900.92         | 365883.04         | 580876.70        | N 32 0 20.98            | W 104 12 20.79           |
|                          | 9200.00    | 89.82       | 359.46           | 7408.75     | 4201.75       | 2000.92      | 2000.83    | -18.82     | 0.00             | 359.46                    | 2000.92         | 365983.03         | 580875.76        | N 32 0 21.97            | W 104 12 20.80           |
|                          | 9300.00    | 89.82       | 359.46           | 7409.07     | 4202.07       | 2100.92      | 2100.82    | -19.76     | 0.00             | 359.46                    | 2100.92         | 366083.01         | 580874.82        | N 32 0 22.96            | W 104 12 20.81           |
|                          | 9400.00    | 89.82       | 359.46           | 7409.38     | 4202.38       | 2200.92      | 2200.82    | -20.70     | 0.00             | 359.46                    | 2200.92         | 366183.00         | 580873.88        | N 32 0 23.95            | W 104 12 20.82           |
|                          | 9500.00    | 89.82       | 359.46           | 7409.69     | 4202.69       | 2300.92      | 2300.81    | -21.64     | 0.00             | 359.46                    | 2300.92         | 366282.98         | 580872.94        | N 32 0 24.94            | W 104 12 20.83           |
|                          | 9600.00    | 89.82       | 359.46           | 7410.00     | 4203.00       | 2400.92      | 2400.81    | -22.58     | 0.00             | 359.46                    | 2400.92         | 366382.97         | 580872.00        | N 32 0 25.93            | W 104 12 20.84           |
|                          | 9700.00    | 89.82       | 359.46           | 7410.31     | 4203.31       | 2500.91      | 2500.80    | -23.52     | 0.00             | 359.46                    | 2500.91         | 366482.96         | 580871.06        | N 32 0 26.92            | W 104 12 20.85           |
|                          | 9800.00    | 89.82       | 359.46           | 7410.62     | 4203.62       | 2600.91      | 2600.80    | -24.46     | 0.00             | 359.46                    | 2600.91         | 366582.94         | 580870.12        | N 32 0 27.91            | W 104 12 20.86           |
|                          | 9900.00    | 89.82       | 359.46           | 7410.94     | 4203.94       | 2700.91      | 2700.79    | -25.40     | 0.00             | 359.46                    | 2700.91         | 366682.93         | 580869.18        | N 32 0 28.90            | W 104 12 20.86           |
|                          | 10000.00   | 89.82       | 359.46           | 7411.25     | 4204.25       | 2800.91      | 2800.79    | -26.34     | 0.00             | 359.46                    | 2800.91         | 366782.91         | 580868.24        | N 32 0 29.89            | W 104 12 20.87           |

| Comments                             | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | TVDSS<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | DLS<br>(°/100ft) | Closure<br>Azimuth<br>(°) | Closure<br>(ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' '') | Longitude<br>(E/W ° ' '') |
|--------------------------------------|------------|-------------|------------------|-------------|---------------|--------------|------------|------------|------------------|---------------------------|-----------------|--------------------|-------------------|--------------------------|---------------------------|
|                                      | 10100.00   | 89.82       | 359.46           | 7411.56     | 4204.56       | 2900.91      | 2900.78    | -27.28     | 0.00             | 359.46                    | 2900.91         | 366882.90          | 580867.30         | N 32 0 30.88             | W 104 12 20.88            |
|                                      | 10200.00   | 89.82       | 359.46           | 7411.87     | 4204.87       | 3000.91      | 3000.78    | -28.22     | 0.00             | 359.46                    | 3000.91         | 366982.89          | 580866.36         | N 32 0 31.87             | W 104 12 20.89            |
|                                      | 10300.00   | 89.82       | 359.46           | 7412.18     | 4205.18       | 3100.91      | 3100.77    | -29.16     | 0.00             | 359.46                    | 3100.91         | 367082.87          | 580865.42         | N 32 0 32.86             | W 104 12 20.90            |
|                                      | 10400.00   | 89.82       | 359.46           | 7412.49     | 4205.49       | 3200.91      | 3200.77    | -30.10     | 0.00             | 359.46                    | 3200.91         | 367182.86          | 580864.48         | N 32 0 33.85             | W 104 12 20.91            |
|                                      | 10500.00   | 89.82       | 359.46           | 7412.80     | 4205.80       | 3300.91      | 3300.77    | -31.04     | 0.00             | 359.46                    | 3300.91         | 367282.84          | 580863.54         | N 32 0 34.84             | W 104 12 20.92            |
|                                      | 10600.00   | 89.82       | 359.46           | 7413.12     | 4206.12       | 3400.91      | 3400.76    | -31.98     | 0.00             | 359.46                    | 3400.91         | 367382.83          | 580862.60         | N 32 0 35.82             | W 104 12 20.93            |
|                                      | 10700.00   | 89.82       | 359.46           | 7413.43     | 4206.43       | 3500.91      | 3500.76    | -32.92     | 0.00             | 359.46                    | 3500.91         | 367482.82          | 580861.66         | N 32 0 36.81             | W 104 12 20.94            |
|                                      | 10800.00   | 89.82       | 359.46           | 7413.74     | 4206.74       | 3600.91      | 3600.75    | -33.87     | 0.00             | 359.46                    | 3600.91         | 367582.80          | 580860.72         | N 32 0 37.80             | W 104 12 20.95            |
|                                      | 10900.00   | 89.82       | 359.46           | 7414.05     | 4207.05       | 3700.91      | 3700.75    | -34.81     | 0.00             | 359.46                    | 3700.91         | 367682.79          | 580859.78         | N 32 0 38.79             | W 104 12 20.96            |
|                                      | 11000.00   | 89.82       | 359.46           | 7414.36     | 4207.36       | 3800.91      | 3800.74    | -35.75     | 0.00             | 359.46                    | 3800.91         | 367782.77          | 580858.84         | N 32 0 39.78             | W 104 12 20.97            |
|                                      | 11100.00   | 89.82       | 359.46           | 7414.67     | 4207.67       | 3900.91      | 3900.74    | -36.69     | 0.00             | 359.46                    | 3900.91         | 367882.76          | 580857.90         | N 32 0 40.77             | W 104 12 20.98            |
|                                      | 11200.00   | 89.82       | 359.46           | 7414.99     | 4207.99       | 4000.91      | 4000.73    | -37.63     | 0.00             | 359.46                    | 4000.91         | 367982.75          | 580856.96         | N 32 0 41.76             | W 104 12 20.99            |
|                                      | 11300.00   | 89.82       | 359.46           | 7415.30     | 4208.30       | 4100.91      | 4100.73    | -38.57     | 0.00             | 359.46                    | 4100.91         | 368082.73          | 580856.02         | N 32 0 42.75             | W 104 12 21.00            |
|                                      | 11400.00   | 89.82       | 359.46           | 7415.61     | 4208.61       | 4200.91      | 4200.72    | -39.51     | 0.00             | 359.46                    | 4200.91         | 368182.72          | 580855.08         | N 32 0 43.74             | W 104 12 21.01            |
|                                      | 11500.00   | 89.82       | 359.46           | 7415.92     | 4208.92       | 4300.91      | 4300.72    | -40.45     | 0.00             | 359.46                    | 4300.91         | 368282.70          | 580854.14         | N 32 0 44.73             | W 104 12 21.02            |
|                                      | 11600.00   | 89.82       | 359.46           | 7416.23     | 4209.23       | 4400.91      | 4400.71    | -41.39     | 0.00             | 359.46                    | 4400.91         | 368382.69          | 580853.19         | N 32 0 45.72             | W 104 12 21.03            |
|                                      | 11700.00   | 89.82       | 359.46           | 7416.54     | 4209.54       | 4500.91      | 4500.71    | -42.33     | 0.00             | 359.46                    | 4500.91         | 368482.68          | 580852.25         | N 32 0 46.71             | W 104 12 21.04            |
|                                      | 11800.00   | 89.82       | 359.46           | 7416.86     | 4209.86       | 4600.90      | 4600.70    | -43.27     | 0.00             | 359.46                    | 4600.90         | 368582.66          | 580851.31         | N 32 0 47.70             | W 104 12 21.05            |
|                                      | 11900.00   | 89.82       | 359.46           | 7417.17     | 4210.17       | 4700.90      | 4700.70    | -44.21     | 0.00             | 359.46                    | 4700.90         | 368682.65          | 580850.37         | N 32 0 48.69             | W 104 12 21.06            |
|                                      | 12000.00   | 89.82       | 359.46           | 7417.48     | 4210.48       | 4800.90      | 4800.69    | -45.15     | 0.00             | 359.46                    | 4800.90         | 368782.63          | 580849.43         | N 32 0 49.68             | W 104 12 21.07            |
|                                      | 12100.00   | 89.82       | 359.46           | 7417.79     | 4210.79       | 4900.90      | 4900.69    | -46.09     | 0.00             | 359.46                    | 4900.90         | 368882.62          | 580848.49         | N 32 0 50.67             | W 104 12 21.08            |
|                                      | 12200.00   | 89.82       | 359.46           | 7418.10     | 4211.10       | 5000.90      | 5000.68    | -47.03     | 0.00             | 359.46                    | 5000.90         | 368982.61          | 580847.55         | N 32 0 51.66             | W 104 12 21.08            |
|                                      | 12300.00   | 89.82       | 359.46           | 7418.41     | 4211.41       | 5100.90      | 5100.68    | -47.97     | 0.00             | 359.46                    | 5100.90         | 369082.59          | 580846.61         | N 32 0 52.65             | W 104 12 21.09            |
|                                      | 12400.00   | 89.82       | 359.46           | 7418.72     | 4211.72       | 5200.90      | 5200.67    | -48.91     | 0.00             | 359.46                    | 5200.90         | 369182.58          | 580845.67         | N 32 0 53.64             | W 104 12 21.10            |
|                                      | 12500.00   | 89.82       | 359.46           | 7419.04     | 4212.04       | 5300.90      | 5300.67    | -49.85     | 0.00             | 359.46                    | 5300.90         | 369282.56          | 580844.73         | N 32 0 54.63             | W 104 12 21.11            |
|                                      | 12600.00   | 89.82       | 359.46           | 7419.35     | 4212.35       | 5400.90      | 5400.65    | -50.79     | 0.00             | 359.46                    | 5400.90         | 369382.55          | 580843.79         | N 32 0 55.62             | W 104 12 21.12            |
|                                      | 12700.00   | 89.82       | 359.46           | 7419.66     | 4212.66       | 5500.90      | 5500.66    | -51.73     | 0.00             | 359.46                    | 5500.90         | 369482.54          | 580842.85         | N 32 0 56.60             | W 104 12 21.13            |
|                                      | 12800.00   | 89.82       | 359.46           | 7419.97     | 4212.97       | 5600.90      | 5600.65    | -52.67     | 0.00             | 359.46                    | 5600.90         | 369582.52          | 580841.91         | N 32 0 57.59             | W 104 12 21.14            |
|                                      | 12900.00   | 89.82       | 359.46           | 7420.28     | 4213.28       | 5700.90      | 5700.65    | -53.61     | 0.00             | 359.46                    | 5700.90         | 369682.51          | 580840.97         | N 32 0 58.58             | W 104 12 21.15            |
|                                      | 13000.00   | 89.82       | 359.46           | 7420.59     | 4213.59       | 5800.90      | 5800.64    | -54.56     | 0.00             | 359.46                    | 5800.90         | 369782.49          | 580840.03         | N 32 0 59.57             | W 104 12 21.16            |
|                                      | 13100.00   | 89.82       | 359.46           | 7420.91     | 4213.91       | 5900.90      | 5900.64    | -55.50     | 0.00             | 359.46                    | 5900.90         | 369882.48          | 580839.09         | N 32 1 0.56              | W 104 12 21.17            |
|                                      | 13200.00   | 89.82       | 359.46           | 7421.22     | 4214.22       | 6000.90      | 6000.63    | -56.44     | 0.00             | 359.46                    | 6000.90         | 369982.47          | 580838.15         | N 32 1 1.55              | W 104 12 21.18            |
|                                      | 13300.00   | 89.82       | 359.46           | 7421.53     | 4214.53       | 6100.90      | 6100.63    | -57.38     | 0.00             | 359.46                    | 6100.90         | 370082.45          | 580837.21         | N 32 1 2.54              | W 104 12 21.19            |
|                                      | 13400.00   | 89.82       | 359.46           | 7421.84     | 4214.84       | 6200.90      | 6200.62    | -58.32     | 0.00             | 359.46                    | 6200.90         | 370182.44          | 580836.27         | N 32 1 3.53              | W 104 12 21.20            |
|                                      | 13500.00   | 89.82       | 359.46           | 7422.15     | 4215.15       | 6300.90      | 6300.62    | -59.26     | 0.00             | 359.46                    | 6300.90         | 370282.42          | 580835.33         | N 32 1 4.52              | W 104 12 21.21            |
|                                      | 13600.00   | 89.82       | 359.46           | 7422.46     | 4215.46       | 6400.90      | 6400.61    | -60.20     | 0.00             | 359.46                    | 6400.90         | 370382.41          | 580834.39         | N 32 1 5.51              | W 104 12 21.22            |
|                                      | 13700.00   | 89.82       | 359.46           | 7422.78     | 4215.78       | 6500.90      | 6500.61    | -61.14     | 0.00             | 359.46                    | 6500.90         | 370482.40          | 580833.45         | N 32 1 6.50              | W 104 12 21.23            |
|                                      | 13800.00   | 89.82       | 359.46           | 7423.09     | 4216.09       | 6600.89      | 6600.60    | -62.08     | 0.00             | 359.46                    | 6600.90         | 370582.38          | 580832.51         | N 32 1 7.49              | W 104 12 21.24            |
|                                      | 13900.00   | 89.82       | 359.46           | 7423.40     | 4216.40       | 6700.89      | 6700.60    | -63.02     | 0.00             | 359.46                    | 6700.89         | 370682.37          | 580831.57         | N 32 1 8.48              | W 104 12 21.25            |
|                                      | 14000.00   | 89.82       | 359.46           | 7423.71     | 4216.71       | 6800.89      | 6800.59    | -63.96     | 0.00             | 359.46                    | 6800.89         | 370782.35          | 580830.63         | N 32 1 9.47              | W 104 12 21.26            |
| Cimarex Medwick 32 Federal #11H PBHL | 14093.13   | 89.82       | 359.46           | 7424.00     | 4217.00       | 6894.02      | 6893.72    | -64.84     | 0.00             | 359.46                    | 6894.02         | 370875.47          | 580829.75         | N 32 1 10.39             | W 104 12 21.27            |

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 Diameter<br>(in) | Survey Tool Type       | Borehole / Survey                                           |
|-------------|------|-----------------|---------------|------------------|-------------------|-------------------------|------------------------|-------------------------------------------------------------|
|             | 1    | 0.000           | 24.000        | 1/100.000        | 30.000            | 30.000                  | SLB_MWD-STD-Depth Only | Original Borehole / Cimarex<br>Medwick 32 Federal #11H Rev1 |
|             | 1    | 24.000          | 14093.129     | 1/100.000        | 30.000            | 30.000                  | SLB_MWD-STD            | Original Borehole / Cimarex<br>Medwick 32 Federal #11H Rev1 |

## CONDITIONS OF APPROVAL

|                       |                                                 |
|-----------------------|-------------------------------------------------|
| OPERATOR'S NAME:      | Cimarex Energy Co. of Colorado                  |
| LEASE NO.:            | NMNM-114350                                     |
| WELL NAME & NO.:      | Medwick 32 Federal Com 11H                      |
| SURFACE HOLE FOOTAGE: | 0210' FSL & 0750' FEL                           |
| BOTTOM HOLE FOOTAGE:  | 0660' FNL & 0750' FEL Sec. 29, T. 26 S., R 27 E |
| LOCATION:             | Section 32, T. 26 S., R 27 E., NMPM             |
| COUNTY:               | Eddy County, New Mexico                         |

### I. DRILLING

#### A. DRILLING OPERATIONS REQUIREMENTS

The BLM is to be notified in advance for a representative to witness:

- Spudding well (minimum of 24 hours)
- Setting and/or Cementing of all casing strings (minimum of 4 hours)
- BOPE tests (minimum of 4 hours)

☒ **Eddy County**

Call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,  
(575) 361-2822

- Although Hydrogen Sulfide has not been reported in the area, it is always a potential hazard. If Hydrogen Sulfide is encountered, report measured amounts and formations to the BLM.**
- Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval. **If the drilling rig is removed without approval – an Incident of Non-Compliance will be written and will be a “Major” violation.**
- Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works is located, this does not include the dog house or stairway area.
- The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The top and bottom of Salt are to be recorded on the Completion Report.**



## **B. CASING**

Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.).

**Centralizers required on surface casing per Onshore Order 2.III.B.1.f.**

**Wait on cement (WOC) time prior to drilling out for a primary cement job will be a minimum 18 hours for a water basin, 24 hours in the potash area, or 500 pounds compressive strength, whichever is greater for all casing strings. DURING THIS WOC TIME, NO DRILL PIPE, ETC. SHALL BE RUN IN THE HOLE. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. IF OPERATOR DOES NOT HAVE THE WELL SPECIFIC CEMENT DETAILS ONSITE PRIOR TO PUMPING THE CEMENT FOR EACH CASING STRING, THE WOC WILL BE 30 HOURS. See individual casing strings for details regarding lead cement slurry requirements.**

**No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.**

### **Medium Cave/Karst**

**Possibility of water flows in the Castile and Delaware.**

**Possibility of lost circulation in the Salado and Delaware.**

1. The 13-3/8 inch surface casing shall be set at approximately 400 feet and cemented to the surface. **If salt is encountered, set casing at least 25 feet above the salt. Excess calculates to 10% - Additional cement may be required.**
  - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
  - b. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry.**
  - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.

- d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing, which shall be set at approximately **1900** feet, is:
  - ☒ Cement to surface. If cement does not circulate see B.1.a, c-d above. **Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.**

**If 75% or greater lost circulation occurs while drilling the intermediate casing hole, the cement on the production casing must come to surface.**

**Centralizers approved as written.**

3. The minimum required fill of cement behind the 5-1/2 inch production casing is:
  - ☒ Cement should tie-back at least 200 feet into previous casing string. Operator shall provide method of verification. **Excess calculates to 3% - Additional cement may be required.**
4. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.

## **C. PRESSURE CONTROL**

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.
2. Variance approved to use flex line from BOP to choke manifold. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. **Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.** If the BLM inspector questions the straightness of the hose, a BLM engineer will be contacted and will review in the field or via picture supplied by inspector to determine if changes are required (operator shall expect delays if this occurs).

3. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M)** psi.
  - a. **For surface casing only:** If the BOP/BOPE is to be tested against casing, the wait on cement (WOC) time for that casing is to be met (see WOC statement at start of casing section). Independent service company required.
4. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the **9-5/8** intermediate casing shoe shall be **3000 (3M)** psi.
5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.
  - a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).
  - b. The tests shall be done by an independent service company utilizing a test plug **not a cup or J-packer**. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (18 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
  - c. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
  - d. The results of the test shall be reported to the appropriate BLM office.
  - e. All tests are required to be recorded on a calibrated test chart. **A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.**

- f. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

#### **D. DRILL STEM TEST**

If drill stem tests are performed, Onshore Order 2.III.D shall be followed.

#### **E. WASTE MATERIAL AND FLUIDS**

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.

**CRW 100314**