

HOBBS OCD

OCD Hobbs

Form 3160-3  
(March 2012)

JUN 25 2013

RECEIVED

UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

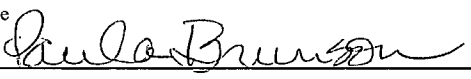
FORM APPROVED  
OMB No. 1004-0137  
Expires October 31, 2014

|                                                                                                                                                                                                                        |                                                                    |                                                                       |  |
|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|-----------------------------------------------------------------------|--|
| 1a. Type of Work: <input checked="" type="checkbox"/> DRILL <input type="checkbox"/> REENTER                                                                                                                           |                                                                    | 5. Lease Serial No.<br>NMNM43562                                      |  |
| 1b. Type of Well: <input checked="" type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other <input checked="" type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone |                                                                    | 6. If Indian, Allottee or Tribe Name                                  |  |
| 2. Name of Operator<br>Cimarex Energy Co.                                                                                                                                                                              |                                                                    | 7. If Unit or CA Agreement, Name and No.                              |  |
| 3a. Address<br>600 N. Marienfeld St. Ste. 600 Midland Tx 79701                                                                                                                                                         |                                                                    | 8. Lease Name and Well No.<br>Cascade 29 Federal 5H <39981>           |  |
| 3b. Phone No. (include area code)<br>432-571-7800                                                                                                                                                                      |                                                                    | 9. API Well No.<br>30-025-41243                                       |  |
| 4. Location of Well (Report location clearly and in accordance with any State requirements. *)<br>At Surface 330' FNL & 500' FWL<br>At proposed prod. Zone 330' FSL & 970' FWL Horizontal Bone Spring test             |                                                                    | 10. Wellhead Post, or Exploratory<br>Wildcat Bone Spring              |  |
| 14. Distance in miles and direction from nearest town or post office*<br>Approximately 24 miles west of Jal, NM                                                                                                        |                                                                    | 11. Sec., T. R. M. or Blk. and Survey or Area<br>29 33E<br>31-25S-71E |  |
| 15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line if any) 330'                                                                                              | 16. No of acres in lease 640                                       | 17. Spacing Unit dedicated to this well 160                           |  |
| 18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 150' from #1H                                                                                               | 19. Proposed Depth<br>Pilot Hole: 12294'<br>15,122' MD 10,664' TVD | 20. BLM/BIA Bond No. on File<br>NM2575; NMB000835                     |  |
| 21. Elevations (Show whether DF, KDB, RT, GL, etc.)<br>3423' GR                                                                                                                                                        | 22. Approximate date work will start*<br>05.01.13                  | 23. Estimated duration<br>35 days                                     |  |

## 24. Attachments

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, shall be attached to this form:

- |                                                                                                                                                 |                                                                                                    |
|-------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------|
| 1. Well plat certified by a registered surveyor                                                                                                 | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).    |
| 2. A Drilling Plan                                                                                                                              | 5. Operator Certification                                                                          |
| 3. A Surface Use Plan (if the location is on National Forest System Lands, the SUPO shall be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be required by the authorized officer. |

|                                                                                                      |                                       |                  |
|------------------------------------------------------------------------------------------------------|---------------------------------------|------------------|
| 25. Signature<br> | Name (Printed/Typed)<br>Paula Brunson | Date<br>03.01.13 |
|------------------------------------------------------------------------------------------------------|---------------------------------------|------------------|

Title

## Regulatory Compliance

|                                           |                      |                     |
|-------------------------------------------|----------------------|---------------------|
| Approved By (Signature) /s/ James Stovall | Name (Printed/Typed) | Date<br>JUN 21 2013 |
|-------------------------------------------|----------------------|---------------------|

Title

FIELD MANAGER

Office

CARLSBAD FIELD OFFICE

App  
con  
Con  
Titl  
Stat  
CA

**CONDITION OF APPROVAL::** 24 HOUR CALL IN FOR SPUD, CASING, CEMENT AND ALL OTHER 24 HOUR NOTICES TO BE REPORTED TO THE OFFICE PHONE 575-393-6161 ex 102 or 120 or 107 Leave a message if no one answers. EMERGENCY ONLY PHONE 575-370-3186

those rights in the subject lease which would entitle the applicant to  
**APPROVAL FOR TWO YEARS**  
knowingly and willfully to make to any department or agency of the United jurisdiction.

\*(Instructions on page 2)

Carlsbad Controlled Water Basin

SEE ATTACHED FOR  
CONDITIONS OF APPROVALApproval Subject to General Requirements  
& Special Stipulations AttachedK#  
06/26/13

JUN 27 2013

Application to Drill  
**Cascade 29 Federal 5H**  
 Cimarex Energy Co.  
 Unit D-Sec 29-25S-33E  
 Lea County, NM

In response to questions asked under Section II B of Bulletin NTL-6, the following information is provided for your consideration:

- 1 Location: SHL 330' FNL & 500' FWL  
 BHL 330' FSL & 970' FWL
- 2 Elevation above sea level: 3423' GR
- 3 Geologic name of surface formation: Quaternary Alluvium Deposits
- 4 Drilling tools and associated equipment: Conventional rotary drilling rig using fluid as a circulating medium for solids removal.
- 5 Proposed drilling depth: 15,122' MD 10,664' TVD
- 6 Estimated tops of geological markers:

| Formation              | Est. Top | Bearing      |
|------------------------|----------|--------------|
| Ground Water (per OSE) | 200      | NA           |
| Rustler                | 989      | NA           |
| Top of Salt            | 1133     | NA           |
| Base of Salt           | 4690     | NA           |
| Bell Canyon            | 4919     | Hydrocarbons |
| Cherry Canyon          | 5982     | NA           |
| Brushy Canyon          | 7876     | NA           |
| Bone Spring            | 9021     | NA           |
| Bone Spring A Shale    | 9080     | Hydrocarbons |
| Bone Spring B Carb     | 9294     | NA           |
| Bone Spring C Shale    | 9694     | NA           |
| 1st Bone Spring Ss     | 10022    | NA           |
| 2nd Bone Spring Ss     | 10616    | Hydrocarbons |
| 3rd Bone Spring Ss     | 11056    | NA           |
| Wolfcamp               | 12194    | NA           |
| TD Pilot hole          | 12294    | NA           |

- 7 Possible mineral bearing formation:

Shown above

- 8 Casing Program:

| Casing Depth From (ft)              | Casing Setting Depth(ft) MD | Casing Setting Depth(ft) TVD | Open Hole Size (inches) | Casing Size (inches) | Casing Weight (lb/ft) | Casing Grade | Thread | Condition | SI Surface Pressure & BHP (psia) | Mud Weight (ppg) | Collapse SF (1.125) | Burst SF (1.125) | Cumulative Air Weight (lbs) | Tension SF (1.6) |
|-------------------------------------|-----------------------------|------------------------------|-------------------------|----------------------|-----------------------|--------------|--------|-----------|----------------------------------|------------------|---------------------|------------------|-----------------------------|------------------|
| Surface                             |                             |                              |                         |                      |                       |              |        |           |                                  |                  |                     |                  |                             |                  |
| 0'                                  | 1039'                       | 1039'                        | 17 1/2                  | 13 3/8               | 48                    | H-40         | ST&C   | New       | 468                              | 8.4              | 1.63                | 3.7              | 49872                       | 6.5              |
| Intermediate                        |                             |                              |                         |                      |                       |              |        |           |                                  |                  |                     |                  |                             |                  |
| 0'                                  | 4900'                       | 4900'                        | 12 1/4                  | 9 5/8                | 36                    | J-55         | LT&C   | New       | 2205                             | 9                | 1.21                | 1.6              | 176400                      | 3.2              |
| Per Operator Production 6/19/13 CRW |                             |                              |                         |                      |                       |              |        |           |                                  |                  |                     |                  |                             |                  |
| 0'                                  | 10206'                      | 10206'                       | 8 3/4                   | 5 1/2                | 17                    | P-110        | LT&C   | New       | 2453                             | 8.4              | 1.68                | 4.3              | 181288                      | 2.5              |
| 10206'                              | 15122'                      | 10664'                       | 8 3/4                   | 5 1/2                | 17                    | P-110        | BT&C   | New       | 4799                             | 8.4              | 1.61                | 2.2              | 7786                        | 70.1             |

**Casing Design Criteria and Casing Loading Assumptions:**

**Surface, Intermediate and Production Casing:**

Tension: A 1.6 design factor without effects of buoyancy.

Collapse: A 1.125 design factor with full internal evacuation.

Burst: A 1.125 design with a surface pressure equal to the fracture gradient at setting depth less gas gradient to surface.

Intermediate: Collapse - 1.125 design factor based on an internal evacuation equal to 1/3 of the proposed TVD of the well.

**Drilling Plan**  
**Cascade 29 Federal 5H**  
 Cimarex Energy Co.  
 Unit D-Sec 29-25S-33E  
 Lea County, NM

**9 Cementing Program:**

| <b>Surface</b>                                               | Sacks | Yield (cuft/sx) | Weight (ppg) | Cubic Feet | Cement Blend                                 |
|--------------------------------------------------------------|-------|-----------------|--------------|------------|----------------------------------------------|
| Lead                                                         | 660   | 1.75            | 13.5         | 1155       | Class C + Bentonite + Calcium Chloride + LCM |
| Tail                                                         | 140   | 1.34            | 14.8         | 180        | Class C + LCM                                |
| TOC: 0' 85% Excess Centralizers per Onshore Order 2.III.B.1f |       |                 |              |            |                                              |

| <b>Intermediate</b> | Sacks | Yield (cuft/sx) | Weight (ppg) | Cubic Feet | Cement Blend                                      |
|---------------------|-------|-----------------|--------------|------------|---------------------------------------------------|
| Lead                | 1130  | 1.88            | 12.9         | 2118       | 35:65 (poz/C) + Salt + Bentonite + LCM + retarder |
| Tail                | 300   | 1.34            | 14.8         | 392        | Class C + retarder + LCM                          |
| TOC: 0' 81% Excess  |       |                 |              |            |                                                   |

| <b>Production</b> | Sacks | Yield (cuft/sx) | Weight (ppg) | Cubic Feet | Cement Blend                                                                                      |
|-------------------|-------|-----------------|--------------|------------|---------------------------------------------------------------------------------------------------|
| Lead              | 684   | 2.4             | 11.9         | 1642       | 35:65 (poz/H) + salt + Sodium Metasilicate + Bentonite + Fluid Loss + Dispersant + LCM + Retarder |
| Tail              | 1381  | 1.24            | 14.5         | 1712       | 50:50 (poz/H) + Bentonite + Salt + Fluid Loss + Dispersant + LCM + Retarder                       |

**Cement volumes will be adjusted depending on hole size.**

TOC: 4400' 25% Excess Centralizers every 3rd joint through the curve or legal location hardline to provide adequate cement coverage every 100' unless hole conditions require greater spacing between centralizers.

**10 Pressure Control Equipment:**

Exhibit "E-1". A 13½" 5000 PSI working pressure BOP, tested to 3000 psi on the surface casing and 5000 psi on the intermediate, consisting of one set of blind rams and one set of pipe rams and a 5000# annular type preventer. A choke manifold and 120 gallon accumulator with floor and remote operating stations and auxiliary power system. Rotating head 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.

BOP unit will be hydraulically operated. BOP will be installed and operated at least once a day while drilling and the blind rams will be operated when out of hole during trips. No abnormal pressure or temperature is expected while drilling.

BOPS will be tested by an independent service company to 250 psi low and 3000 psi high on the surface casing and 250 psi low and 5000 psi high on the intermediate. Hydril will be tested to 250 psi low and 2500 psi high on the surface and intermediate casings.

Cimarex Energy Co. of Colorado requests a variance to drill this well using a co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached (please see Exhibit F, F-1, F-2, F-3). The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used.

Application to Drill  
**Cascade 29 Federal 5H**  
 Cimarex Energy Co.  
 Unit D-Sec 29-25S-33E  
 Lea County, NM

11 Proposed Mud Circulating System:

| Depth |    |        | Mud Wt | Visc  | Fluid Loss | Type Mud     |
|-------|----|--------|--------|-------|------------|--------------|
| 0'    | to | 1039'  | 8.4    | 28    | NC         | FW Spud Mud  |
| 1039' | to | 4900'  | 9      | 30-32 | NC         | Brine water  |
| 4900' | to | 15122' | 8.4    | 30-32 | NC         | FW/Cut Brine |

Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs.

The Mud Monitoring System is an electronic Pason System satisfying requirements of Onshore Order 1.

12 Proposed Drilling Plan

Pilot Hole TD: 12,294'

KOP: 10,206'

EOC: 10958'

Set OH mechanical whipstock w/ 2030 ft of 2.875 tubing and pump 30 bbls of Mudpush @ 12 ppg, followed by 930 sks Type H cement, dispersant 0.080 gasl/sk, retarder 0.045 gas/sk @ 17.5 ppg, 0.94 cuft/sk, & 0 % excess from pilot hole TD to KOP

KO lateral and drill through the curve to TD. Run production csg to TD & cement.

13 Testing, Logging and Coring Program:

- A. Mud logging program: 2 man unit from 4900 to TD
- B. Electric logging program: CNL / LDT / CAL / GR, DLL / CAL / GR -- Inter. Csg to TD
- C. No DSTs or cores are planned at this time.
- D. CBL w/ CCL from as far as gravity will let it fall to TOC

*See COA*

14 Potential Hazards:

No abnormal pressures or temperatures are expected. In accordance with Onshore Order 6, Cimarex does not anticipate that there will be enough H<sub>2</sub>S from the surface to the Bone Spring formations to meet the BLM's minimum requirements for the submission of an "H<sub>2</sub>S Drilling Operation Plan" or "Public Protection Plan" for the drilling and completion of this well. Since we have an H<sub>2</sub>S Safety package on all wells, attached is an "H<sub>2</sub>S Drilling Operations Plan." Adequate flare lines will be installed off the mud / gas separator where gas may be flared safely. All personnel will be familiar with all aspects of safe operation of equipment being used.

Estimated BHP **4798.8 psi**

Estimated BHT **170°**

15 Road and location construction will begin after BLM approval of APD. Anticipated spud date as soon as approved.

Drilling expected to take : **35 days**

If production casing is run an additional 30 days will be required to complete and construct surface facilities.

16 Other Facets of Operations:

After running casing, cased hole gamma ray neutron collar logs will be run from TD over possible pay intervals.

Bone Spring pay will be perforated and stimulated.

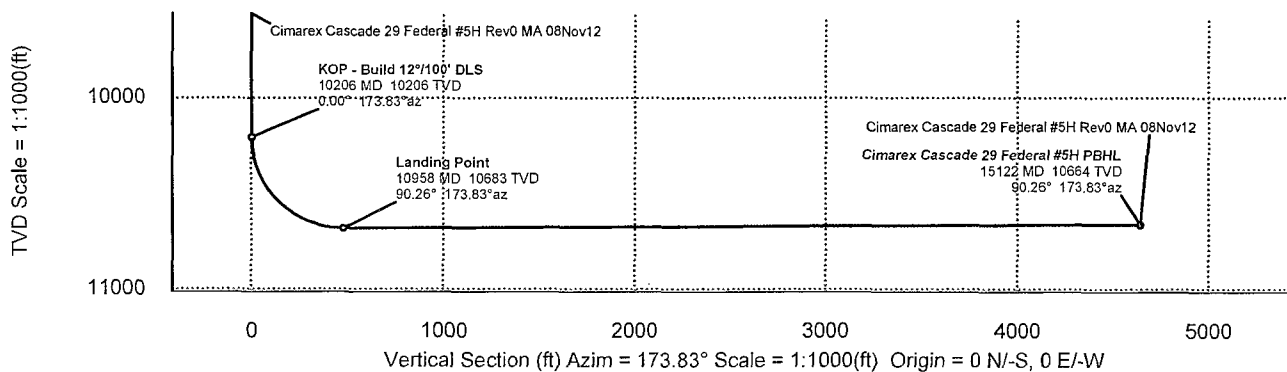
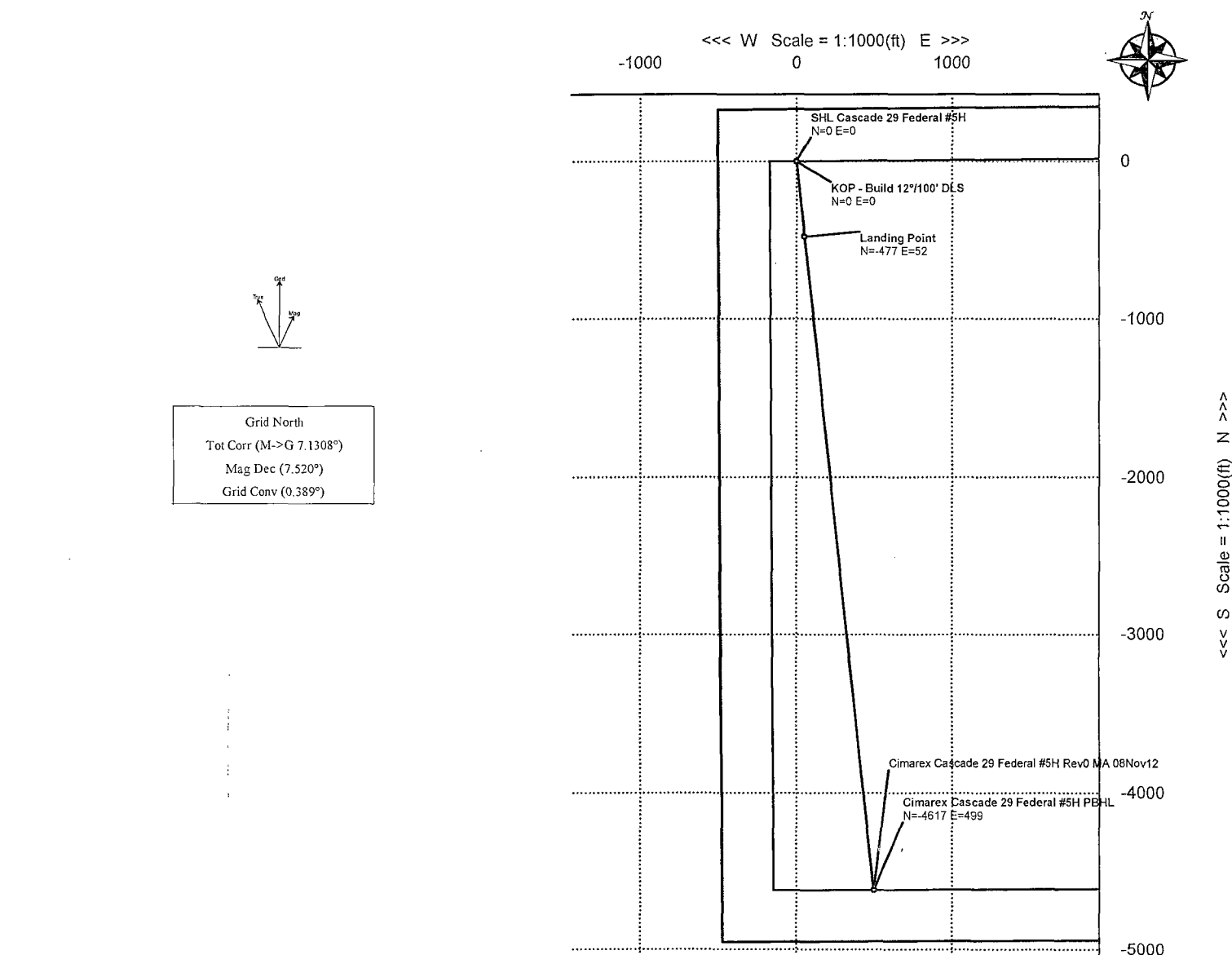
The proposed well will be tested and potentialized as **Oil**



Cimarex

**PATHFINDER**  
A Schlumberger Company

|                                                                                                 |  |  |                                                                                                                                                                                 |  |  |                                                                                                                                                                                |  |  |
|-------------------------------------------------------------------------------------------------|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--|--|
| WELL<br><b>Cascade 29 Federal #5H</b>                                                           |  |  | FIELD<br><b>NM Lea County</b>                                                                                                                                                   |  |  | STRUCTURE<br><b>Cascade 29 Federal #5H</b>                                                                                                                                     |  |  |
| Magnetic Parameters<br>Model: <b>BGGM 2012</b><br>Dip: <b>59.598°</b><br>Mag Dec: <b>7.520°</b> |  |  | Surface Location<br>Lat: <b>N 32 6 28.534</b><br>Lon: <b>W 103 36 4.435</b><br>Northing: <b>403769.70 RUS</b><br>Easting: <b>768016.70 RUS</b><br>Scale Fact: <b>0.99996794</b> |  |  | Miscellaneous<br>Slot: <b>Cascade 29 Federal #5H</b><br>Plan: <b>Rev0 MA 08Nov12</b><br>TVD Ref: <b>Ground Level (3429ft above MSL)</b><br>Srvy Date: <b>November 08, 2012</b> |  |  |



| Critical Point                      | MD       | INCL  | AZIM   | TVD      | VSEC    | N(+) / S(-) | E(+) / W(-) | DLS   |
|-------------------------------------|----------|-------|--------|----------|---------|-------------|-------------|-------|
| SHL Cascade 29 Federal #5H          | 0.00     | 0.00  | 173.83 | 0.00     | 0.00    | 0.00        | 0.00        |       |
| KOP - Build 12°/100' DLS            | 10205.50 | 0.00  | 173.83 | 10205.50 | 0.00    | 0.00        | 0.00        | 0.00  |
| Landing Point                       | 10957.73 | 90.26 | 173.83 | 10683.00 | 479.67  | -476.89     | 51.59       | 12.00 |
| Cimarex Cascade 29 Federal #5H PBHL | 15121.68 | 90.26 | 173.83 | 10664.00 | 4643.58 | -4616.66    | 499.32      | 0.00  |



## Cimarex Cascade 29 Federal #5H Rev0 MA 08Nov12 Proposal Report

(Non-Def Plan)

|                               |                                                                 |                                   |                              |
|-------------------------------|-----------------------------------------------------------------|-----------------------------------|------------------------------|
| Report Date:                  | November 08, 2012 - 04:48 PM                                    | Survey / DLS Computation:         | Minimum Curvature / Lubinski |
| Client:                       | Cimarex                                                         | Vertical Section Azimuth:         | 173.827 ° (Grid North)       |
| Field:                        | NM Lea County (NAD 83)                                          | Vertical Section Origin:          | 0.000 ft, 0.000 ft           |
| Structure / Slot:             | Cimarex Cascade 29 Federal #5H / Cimarex Cascade 29 Federal #5H | TVD Reference Datum:              | Ground Level                 |
| Well:                         | Cimarex Cascade 29 Federal #5H                                  | TVD Reference Elevation:          | 3423.000 ft above MSL        |
| Borehole:                     | Original Borehole                                               | Seabed / Ground Elevation:        | 3423.000 ft above MSL        |
| UWI / API#:                   | Unknown / Unknown                                               | Magnetic Declination:             | 7.520 °                      |
| Survey Name:                  | Cimarex Cascade 29 Federal #5H Rev0 MA 08Nov12                  | Total Gravity Field Strength:     | 999.1533 mgn (9.8 based)     |
| Survey Date:                  | November 08, 2012                                               | Total Magnetic Field Strength:    | 48389.634 nT                 |
| Tort / AHD / DDI / ERD Ratio: | 90.264 ° / 4643.581 ft / 5.773 / 0.435                          | Magnetic Dip Angle:               | 59.998 °                     |
| Coordinate Reference System:  | NAD83 New Mexico State Plane, Eastern Zone, US Feet             | Declination Date:                 | November 08, 2012            |
| Location Lat / Long:          | N 32° 6' 28.53391", W 103° 36' 4.43456"                         | Magnetic Declination Model:       | BGGM 2012                    |
| Location Grid N/E Y/X:        | N 403769.700 ftUS, E 768016.700 ftUS                            | North Reference:                  | Grid North                   |
| CRS Grid Convergence Angle:   | 0.3891 °                                                        | Grid Convergence Used:            | 0.3891 °                     |
| Grid Scale Factor:            | 0.99996794                                                      | Total Corr Mag North->Grid North: | 7.1308 °                     |
|                               |                                                                 | Local Coord Referenced To:        | Structure Reference Point    |

| Comments                      | MD<br>(ft) | Incl<br>(°) | Azlm Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") | Closure<br>(ft) | Closure Azimuth<br>(°) | DLS<br>(°/100ft) |
|-------------------------------|------------|-------------|------------------|-------------|--------------|------------|------------|--------------------|-------------------|-------------------------|--------------------------|-----------------|------------------------|------------------|
| SHL Cascade 29<br>Federal #5H | 0.00       | 0.00        | 173.83           | 0.00        | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | N/A              |
|                               | 100.00     | 0.00        | 173.83           | 100.00      | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 200.00     | 0.00        | 173.83           | 200.00      | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 300.00     | 0.00        | 173.83           | 300.00      | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 400.00     | 0.00        | 173.83           | 400.00      | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 500.00     | 0.00        | 173.83           | 500.00      | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 600.00     | 0.00        | 173.83           | 600.00      | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 700.00     | 0.00        | 173.83           | 700.00      | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 800.00     | 0.00        | 173.83           | 800.00      | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 900.00     | 0.00        | 173.83           | 900.00      | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 1000.00    | 0.00        | 173.83           | 1000.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 1100.00    | 0.00        | 173.83           | 1100.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 1200.00    | 0.00        | 173.83           | 1200.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 1300.00    | 0.00        | 173.83           | 1300.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 1400.00    | 0.00        | 173.83           | 1400.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 1500.00    | 0.00        | 173.83           | 1500.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 1600.00    | 0.00        | 173.83           | 1600.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 1700.00    | 0.00        | 173.83           | 1700.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 1800.00    | 0.00        | 173.83           | 1800.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 1900.00    | 0.00        | 173.83           | 1900.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 2000.00    | 0.00        | 173.83           | 2000.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 2100.00    | 0.00        | 173.83           | 2100.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 2200.00    | 0.00        | 173.83           | 2200.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 2300.00    | 0.00        | 173.83           | 2300.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 2400.00    | 0.00        | 173.83           | 2400.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 2500.00    | 0.00        | 173.83           | 2500.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 2600.00    | 0.00        | 173.83           | 2600.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 2700.00    | 0.00        | 173.83           | 2700.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 2800.00    | 0.00        | 173.83           | 2800.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                               | 2900.00    | 0.00        | 173.83           | 2900.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |

| Comments | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") | Closure<br>(ft) | Closure Azimuth<br>(°) | DLS<br>(°/100ft) |
|----------|------------|-------------|------------------|-------------|--------------|------------|------------|--------------------|-------------------|-------------------------|--------------------------|-----------------|------------------------|------------------|
|          | 3000.00    | 0.00        | 173.83           | 3000.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 3100.00    | 0.00        | 173.83           | 3100.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 3200.00    | 0.00        | 173.83           | 3200.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 3300.00    | 0.00        | 173.83           | 3300.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 3400.00    | 0.00        | 173.83           | 3400.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 3500.00    | 0.00        | 173.83           | 3500.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 3600.00    | 0.00        | 173.83           | 3600.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 3700.00    | 0.00        | 173.83           | 3700.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 3800.00    | 0.00        | 173.83           | 3800.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 3900.00    | 0.00        | 173.83           | 3900.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 4000.00    | 0.00        | 173.83           | 4000.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 4100.00    | 0.00        | 173.83           | 4100.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 4200.00    | 0.00        | 173.83           | 4200.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 4300.00    | 0.00        | 173.83           | 4300.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 4400.00    | 0.00        | 173.83           | 4400.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 4500.00    | 0.00        | 173.83           | 4500.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 4600.00    | 0.00        | 173.83           | 4600.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 4700.00    | 0.00        | 173.83           | 4700.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 4800.00    | 0.00        | 173.83           | 4800.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 4900.00    | 0.00        | 173.83           | 4900.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 5000.00    | 0.00        | 173.83           | 5000.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 5100.00    | 0.00        | 173.83           | 5100.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 5200.00    | 0.00        | 173.83           | 5200.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 5300.00    | 0.00        | 173.83           | 5300.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 5400.00    | 0.00        | 173.83           | 5400.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 5500.00    | 0.00        | 173.83           | 5500.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 5600.00    | 0.00        | 173.83           | 5600.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 5700.00    | 0.00        | 173.83           | 5700.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 5800.00    | 0.00        | 173.83           | 5800.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 5900.00    | 0.00        | 173.83           | 5900.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 6000.00    | 0.00        | 173.83           | 6000.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 6100.00    | 0.00        | 173.83           | 6100.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 6200.00    | 0.00        | 173.83           | 6200.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 6300.00    | 0.00        | 173.83           | 6300.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 6400.00    | 0.00        | 173.83           | 6400.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 6500.00    | 0.00        | 173.83           | 6500.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 6600.00    | 0.00        | 173.83           | 6600.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 6700.00    | 0.00        | 173.83           | 6700.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 6800.00    | 0.00        | 173.83           | 6800.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 6900.00    | 0.00        | 173.83           | 6900.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 7000.00    | 0.00        | 173.83           | 7000.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 7100.00    | 0.00        | 173.83           | 7100.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 7200.00    | 0.00        | 173.83           | 7200.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 7300.00    | 0.00        | 173.83           | 7300.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 7400.00    | 0.00        | 173.83           | 7400.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 7500.00    | 0.00        | 173.83           | 7500.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 7600.00    | 0.00        | 173.83           | 7600.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 7700.00    | 0.00        | 173.83           | 7700.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 7800.00    | 0.00        | 173.83           | 7800.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 7900.00    | 0.00        | 173.83           | 7900.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 8000.00    | 0.00        | 173.83           | 8000.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 8100.00    | 0.00        | 173.83           | 8100.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 8200.00    | 0.00        | 173.83           | 8200.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 8300.00    | 0.00        | 173.83           | 8300.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |
|          | 8400.00    | 0.00        | 173.83           | 8400.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32° 6' 28.53"         | W 103° 36' 4.43"         | 0.00            | 0.00                   | 0.00             |

| Comments                    | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") | Closure<br>(ft) | Closure Azimuth<br>(°) | DLS<br>(°/100ft) |
|-----------------------------|------------|-------------|------------------|-------------|--------------|------------|------------|--------------------|-------------------|-------------------------|--------------------------|-----------------|------------------------|------------------|
|                             | 8500.00    | 0.00        | 173.83           | 8500.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 8600.00    | 0.00        | 173.83           | 8600.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 8700.00    | 0.00        | 173.83           | 8700.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 8800.00    | 0.00        | 173.83           | 8800.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 8900.00    | 0.00        | 173.83           | 8900.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 9000.00    | 0.00        | 173.83           | 9000.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 9100.00    | 0.00        | 173.83           | 9100.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 9200.00    | 0.00        | 173.83           | 9200.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 9300.00    | 0.00        | 173.83           | 9300.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 9400.00    | 0.00        | 173.83           | 9400.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 9500.00    | 0.00        | 173.83           | 9500.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 9600.00    | 0.00        | 173.83           | 9600.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 9700.00    | 0.00        | 173.83           | 9700.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 9800.00    | 0.00        | 173.83           | 9800.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 9900.00    | 0.00        | 173.83           | 9900.00     | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
| KOP - Build 12"/100'<br>DLS | 10000.00   | 0.00        | 173.83           | 10000.00    | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 10100.00   | 0.00        | 173.83           | 10100.00    | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 10200.00   | 0.00        | 173.83           | 10200.00    | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 10205.50   | 0.00        | 173.83           | 10205.50    | 0.00         | 0.00       | 0.00       | 403769.70          | 768016.70         | N 32 6 28.53            | W 103 36 4.43            | 0.00            | 0.00                   | 0.00             |
|                             | 10300.00   | 11.34       | 173.83           | 10299.38    | 9.32         | -9.27      | 1.00       | 403760.43          | 768017.70         | N 32 6 28.44            | W 103 36 4.42            | 9.32            | 173.83                 | 12.00            |
|                             | 10400.00   | 23.34       | 173.83           | 10394.67    | 39.07        | -38.84     | 4.20       | 403730.86          | 768020.90         | N 32 6 28.15            | W 103 36 4.39            | 39.07           | 173.83                 | 12.00            |
|                             | 10500.00   | 35.34       | 173.83           | 10481.68    | 87.97        | -87.46     | 9.46       | 403682.24          | 768026.16         | N 32 6 27.67            | W 103 36 4.33            | 87.97           | 173.83                 | 12.00            |
|                             | 10600.00   | 47.34       | 173.83           | 10556.63    | 153.90       | -153.01    | 16.55      | 403616.70          | 768033.25         | N 32 6 27.02            | W 103 36 4.25            | 153.90          | 173.83                 | 12.00            |
|                             | 10700.00   | 59.34       | 173.83           | 10616.23    | 233.97       | -232.61    | 25.16      | 403537.10          | 768041.86         | N 32 6 26.23            | W 103 36 4.16            | 233.97          | 173.83                 | 12.00            |
|                             | 10800.00   | 71.33       | 173.83           | 10657.89    | 324.68       | -322.80    | 34.92      | 403446.92          | 768051.62         | N 32 6 25.34            | W 103 36 4.05            | 324.68          | 173.83                 | 12.00            |
| Landing Point               | 10900.00   | 83.33       | 173.83           | 10679.78    | 422.07       | -419.62    | 45.40      | 403350.10          | 768062.09         | N 32 6 24.38            | W 103 36 3.94            | 422.07          | 173.83                 | 12.00            |
|                             | 10957.73   | 90.26       | 173.83           | 10683.00    | 479.67       | -476.89    | 51.59      | 403292.83          | 768068.29         | N 32 6 23.81            | W 103 36 3.87            | 479.67          | 173.83                 | 12.00            |
|                             | 11000.00   | 90.26       | 173.83           | 10682.81    | 521.94       | -518.91    | 56.14      | 403250.80          | 768072.84         | N 32 6 23.40            | W 103 36 3.82            | 521.94          | 173.83                 | 0.00             |
|                             | 11100.00   | 90.26       | 173.83           | 10682.35    | 621.94       | -618.33    | 66.89      | 403151.39          | 768083.59         | N 32 6 22.41            | W 103 36 3.71            | 621.94          | 173.83                 | 0.00             |
|                             | 11200.00   | 90.26       | 173.83           | 10681.90    | 721.94       | -717.75    | 77.65      | 403051.97          | 768094.35         | N 32 6 21.43            | W 103 36 3.59            | 721.94          | 173.83                 | 0.00             |
|                             | 11300.00   | 90.26       | 173.83           | 10681.45    | 821.94       | -817.17    | 88.40      | 402952.56          | 768105.10         | N 32 6 20.44            | W 103 36 3.47            | 821.94          | 173.83                 | 0.00             |
|                             | 11400.00   | 90.26       | 173.83           | 10680.99    | 921.94       | -916.59    | 99.16      | 402853.14          | 768115.85         | N 32 6 19.46            | W 103 36 3.35            | 921.94          | 173.83                 | 0.00             |
|                             | 11500.00   | 90.26       | 173.83           | 10680.54    | 1021.94      | -1016.01   | 109.91     | 402753.73          | 768126.61         | N 32 6 18.47            | W 103 36 3.24            | 1021.94         | 173.83                 | 0.00             |
|                             | 11600.00   | 90.26       | 173.83           | 10680.08    | 1121.94      | -1115.43   | 120.67     | 402654.31          | 768137.36         | N 32 6 17.49            | W 103 36 3.12            | 1121.94         | 173.83                 | 0.00             |
|                             | 11700.00   | 90.26       | 173.83           | 10679.63    | 1221.93      | -1214.85   | 131.42     | 402554.89          | 768148.12         | N 32 6 16.50            | W 103 36 3.00            | 1221.93         | 173.83                 | 0.00             |
|                             | 11800.00   | 90.26       | 173.83           | 10679.17    | 1321.93      | -1314.27   | 142.18     | 402455.48          | 768158.87         | N 32 6 15.52            | W 103 36 2.89            | 1321.93         | 173.83                 | 0.00             |
|                             | 11900.00   | 90.26       | 173.83           | 10678.72    | 1421.93      | -1413.68   | 152.93     | 402356.06          | 768169.62         | N 32 6 14.54            | W 103 36 2.77            | 1421.93         | 173.83                 | 0.00             |
|                             | 12000.00   | 90.26       | 173.83           | 10678.26    | 1521.93      | -1513.10   | 163.68     | 402256.65          | 768180.38         | N 32 6 13.55            | W 103 36 2.65            | 1521.93         | 173.83                 | 0.00             |
|                             | 12100.00   | 90.26       | 173.83           | 10677.81    | 1621.93      | -1612.52   | 174.44     | 402157.23          | 768191.13         | N 32 6 12.57            | W 103 36 2.53            | 1621.93         | 173.83                 | 0.00             |
|                             | 12200.00   | 90.26       | 173.83           | 10677.35    | 1721.93      | -1711.94   | 185.19     | 402057.82          | 768201.89         | N 32 6 11.58            | W 103 36 2.42            | 1721.93         | 173.83                 | 0.00             |
|                             | 12300.00   | 90.26       | 173.83           | 10676.90    | 1821.93      | -1811.36   | 195.94     | 401958.40          | 768212.64         | N 32 6 10.60            | W 103 36 2.30            | 1821.93         | 173.83                 | 0.00             |
|                             | 12400.00   | 90.26       | 173.83           | 10676.44    | 1921.93      | -1910.78   | 206.70     | 401858.99          | 768223.39         | N 32 6 9.61             | W 103 36 2.18            | 1921.93         | 173.83                 | 0.00             |
|                             | 12500.00   | 90.26       | 173.83           | 10675.99    | 2021.93      | -2010.20   | 217.45     | 401759.57          | 768234.14         | N 32 6 8.63             | W 103 36 2.07            | 2021.93         | 173.83                 | 0.00             |
|                             | 12600.00   | 90.26       | 173.83           | 10675.53    | 2121.92      | -2109.62   | 228.20     | 401660.15          | 768244.90         | N 32 6 7.64             | W 103 36 1.95            | 2121.92         | 173.83                 | 0.00             |
|                             | 12700.00   | 90.26       | 173.83           | 10675.08    | 2221.92      | -2209.04   | 238.96     | 401560.74          | 768255.65         | N 32 6 6.66             | W 103 36 1.83            | 2221.92         | 173.83                 | 0.00             |
|                             | 12800.00   | 90.26       | 173.83           | 10674.62    | 2321.92      | -2308.46   | 249.71     | 401461.32          | 768266.40         | N 32 6 5.67             | W 103 36 1.71            | 2321.92         | 173.83                 | 0.00             |
|                             | 12900.00   | 90.26       | 173.83           | 10674.16    | 2421.92      | -2407.88   | 260.46     | 401361.91          | 768277.15         | N 32 6 4.69             | W 103 36 1.60            | 2421.92         | 173.83                 | 0.00             |
|                             | 13000.00   | 90.26       | 173.83           | 10673.71    | 2521.92      | -2507.29   | 271.22     | 401262.49          | 768287.91         | N 32 6 3.71             | W 103 36 1.48            | 2521.92         | 173.83                 | 0.00             |
|                             | 13100.00   | 90.26       | 173.83           | 10673.25    | 2621.92      | -2606.71   | 281.97     | 401163.07          | 768298.66         | N 32 6 2.72             | W 103 36 1.36            | 2621.92         | 173.83                 | 0.00             |
|                             | 13200.00   | 90.26       | 173.83           | 10672.79    | 2721.92      | -2706.13   | 292.72     | 401063.66          | 768309.41         | N 32 6 1.74             | W 103 36 1.25            | 2721.92         | 173.83                 | 0.00             |
|                             | 13300.00   | 90.26       | 173.83           | 10672.34    | 2821.92      | -2805.55   | 303.47     | 400964.24          | 768320.16         | N 32 6 0.75             | W 103 36 1.13            | 2821.92         | 173.83                 | 0.00             |
|                             | 13400.00   | 90.26       | 173.83           | 10671.88    | 2921.92      | -2904.97   | 314.22     | 400864.83          | 768330.91         | N 32 5 59.77            | W 103 36 1.01            | 2921.92         | 173.83                 | 0.00             |
|                             | 13500.00   | 90.26       | 173.83           | 10671.42    | 3021.92      | -3004.39   | 324.98     | 400765.41          | 768341.67         | N 32 5 58.78            | W 103 36 0.89            | 3021.92         | 173.83                 | 0.00             |
|                             | 13600.00   | 90.26       | 173.83           | 10670.97    | 3121.91      | -3103.81   | 335.73     | 400666.00          | 768352.42         | N 32 5 57.80            | W 103 36 0.78            | 3121.91         | 173.83                 | 0.00             |
|                             | 13700.00   | 90.26       | 173.83           | 10670.51    | 3221.91      | -3203.23   | 346.48     | 400566.58          | 768363.17         | N 32 5 56.81            | W 103 36 0.66            | 3221.91         | 173.83                 | 0.00             |



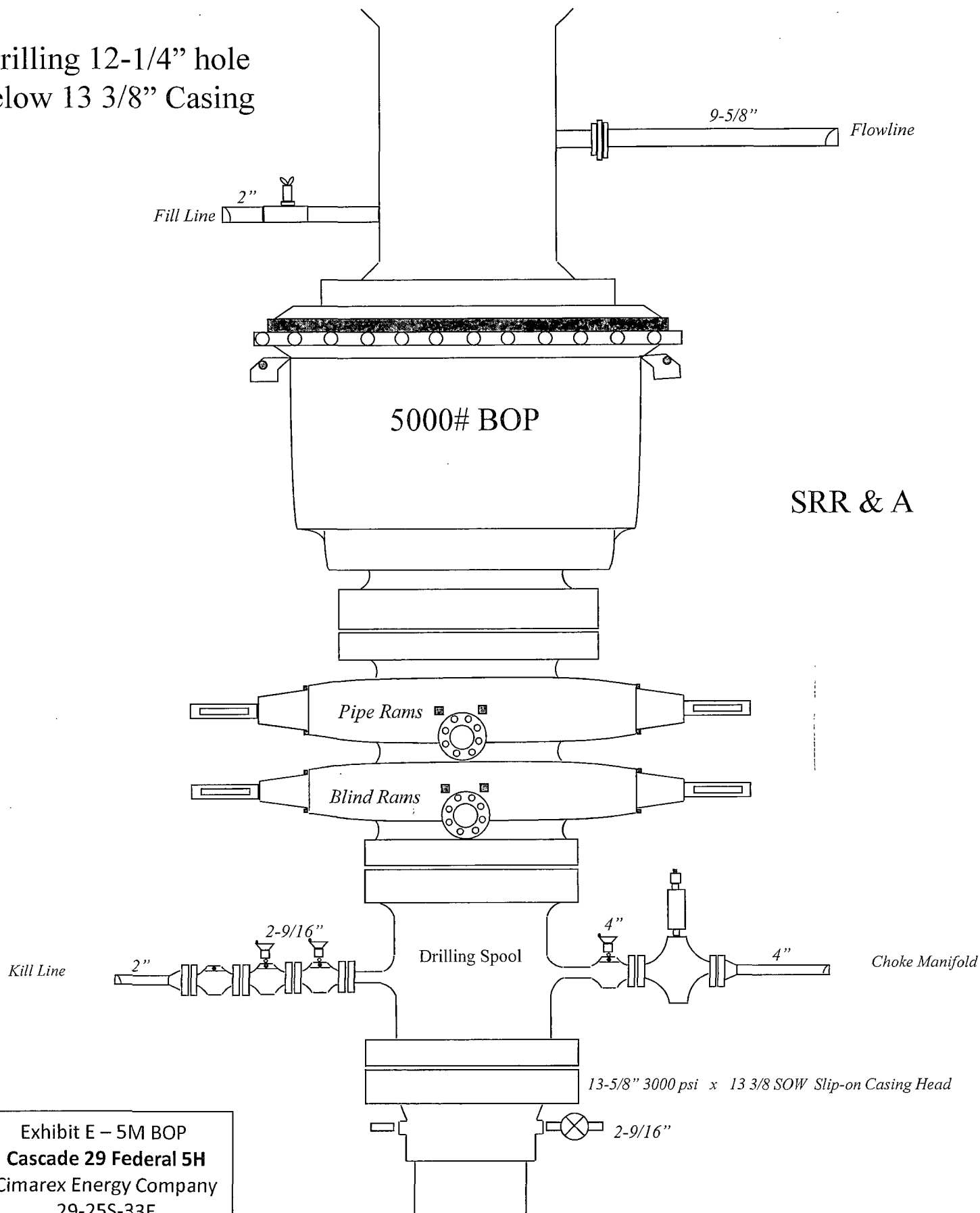
| Comments                                  | MD<br>(ft) | Incl<br>(°) | Azim Grid<br>(°) | TVD<br>(ft) | VSEC<br>(ft) | NS<br>(ft) | EW<br>(ft) | Northing<br>(ftUS) | Easting<br>(ftUS) | Latitude<br>(N/S ° ' ") | Longitude<br>(E/W ° ' ") | Closure<br>(ft) | Closure Azimuth<br>(°) | DLS<br>(°/100ft) |
|-------------------------------------------|------------|-------------|------------------|-------------|--------------|------------|------------|--------------------|-------------------|-------------------------|--------------------------|-----------------|------------------------|------------------|
|                                           | 13800.00   | 90.26       | 173.83           | 10670.05    | 3321.91      | -3302.65   | 357.23     | 400467.16          | 768373.92         | N 32 5 55.83            | W 103 36 0.54            | 3321.91         | 173.83                 | 0.00             |
|                                           | 13900.00   | 90.26       | 173.83           | 10669.60    | 3421.91      | -3402.07   | 367.98     | 400367.75          | 768384.67         | N 32 5 54.85            | W 103 36 0.43            | 3421.91         | 173.83                 | 0.00             |
|                                           | 14000.00   | 90.26       | 173.83           | 10669.14    | 3521.91      | -3501.49   | 378.73     | 400268.33          | 768395.42         | N 32 5 53.86            | W 103 36 0.31            | 3521.91         | 173.83                 | 0.00             |
|                                           | 14100.00   | 90.26       | 173.83           | 10668.68    | 3621.91      | -3600.91   | 389.48     | 400168.92          | 768406.17         | N 32 5 52.88            | W 103 36 0.19            | 3621.91         | 173.83                 | 0.00             |
|                                           | 14200.00   | 90.26       | 173.83           | 10668.22    | 3721.91      | -3700.33   | 400.24     | 400069.50          | 768416.92         | N 32 5 51.89            | W 103 36 0.07            | 3721.91         | 173.83                 | 0.00             |
|                                           | 14300.00   | 90.26       | 173.83           | 10667.77    | 3821.91      | -3799.75   | 410.99     | 399970.08          | 768427.67         | N 32 5 50.91            | W 103 35 59.96           | 3821.91         | 173.83                 | 0.00             |
|                                           | 14400.00   | 90.26       | 173.83           | 10667.31    | 3921.91      | -3899.16   | 421.74     | 399870.67          | 768438.42         | N 32 5 49.92            | W 103 35 59.84           | 3921.91         | 173.83                 | 0.00             |
|                                           | 14500.00   | 90.26       | 173.83           | 10666.85    | 4021.91      | -3998.58   | 432.49     | 399771.25          | 768449.17         | N 32 5 48.94            | W 103 35 59.72           | 4021.91         | 173.83                 | 0.00             |
|                                           | 14600.00   | 90.26       | 173.83           | 10666.39    | 4121.90      | -4098.00   | 443.24     | 399671.84          | 768459.92         | N 32 5 47.95            | W 103 35 59.61           | 4121.90         | 173.83                 | 0.00             |
|                                           | 14700.00   | 90.26       | 173.83           | 10665.93    | 4221.90      | -4197.42   | 453.99     | 399572.42          | 768470.67         | N 32 5 46.97            | W 103 35 59.49           | 4221.90         | 173.83                 | 0.00             |
|                                           | 14800.00   | 90.26       | 173.83           | 10665.48    | 4321.90      | -4296.84   | 464.74     | 399473.00          | 768481.42         | N 32 5 45.98            | W 103 35 59.37           | 4321.90         | 173.83                 | 0.00             |
|                                           | 14900.00   | 90.26       | 173.83           | 10665.02    | 4421.90      | -4396.26   | 475.49     | 399373.59          | 768492.17         | N 32 5 45.00            | W 103 35 59.25           | 4421.90         | 173.83                 | 0.00             |
|                                           | 15000.00   | 90.26       | 173.83           | 10664.56    | 4521.90      | -4495.68   | 486.24     | 399274.17          | 768502.92         | N 32 5 44.02            | W 103 35 59.14           | 4521.90         | 173.83                 | 0.00             |
|                                           | 15100.00   | 90.26       | 173.83           | 10664.10    | 4621.90      | -4595.10   | 496.99     | 399174.76          | 768513.67         | N 32 5 43.03            | W 103 35 59.02           | 4621.90         | 173.83                 | 0.00             |
| Cimarex Cascade<br>29 Federal #5H<br>PBHL | 15121.68   | 90.26       | 173.83           | 10664.00    | 4643.58      | -4616.66   | 499.32     | 399153.20          | 768516.00         | N 32 5 42.82            | W 103 35 58.99           | 4643.58         | 173.83                 | 0.00             |

Survey Type: Non-Def Plan

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

| Description | 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                                          |
|-------------|-----------------|---------------|------------------|-------------------|-------------------------|------------------|------------------------------------------------------------|
|             | 0.000           | 15121.682     | 1/100.000        | 30.000            | 30.000                  | SLB_MWD-STD      | Original Borehole / Cimarex<br>Cascade 29 Federal #5H Rev0 |

Drilling 12-1/4" hole  
below 13 3/8" Casing



SRR & A

Exhibit E – 5M BOP  
**Cascade 29 Federal 5H**  
Cimarex Energy Company  
29-25S-33E  
SHL 330 FNL & 500 FWL  
BHL 330 FSL & 970 FWL  
Lea County, NM

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

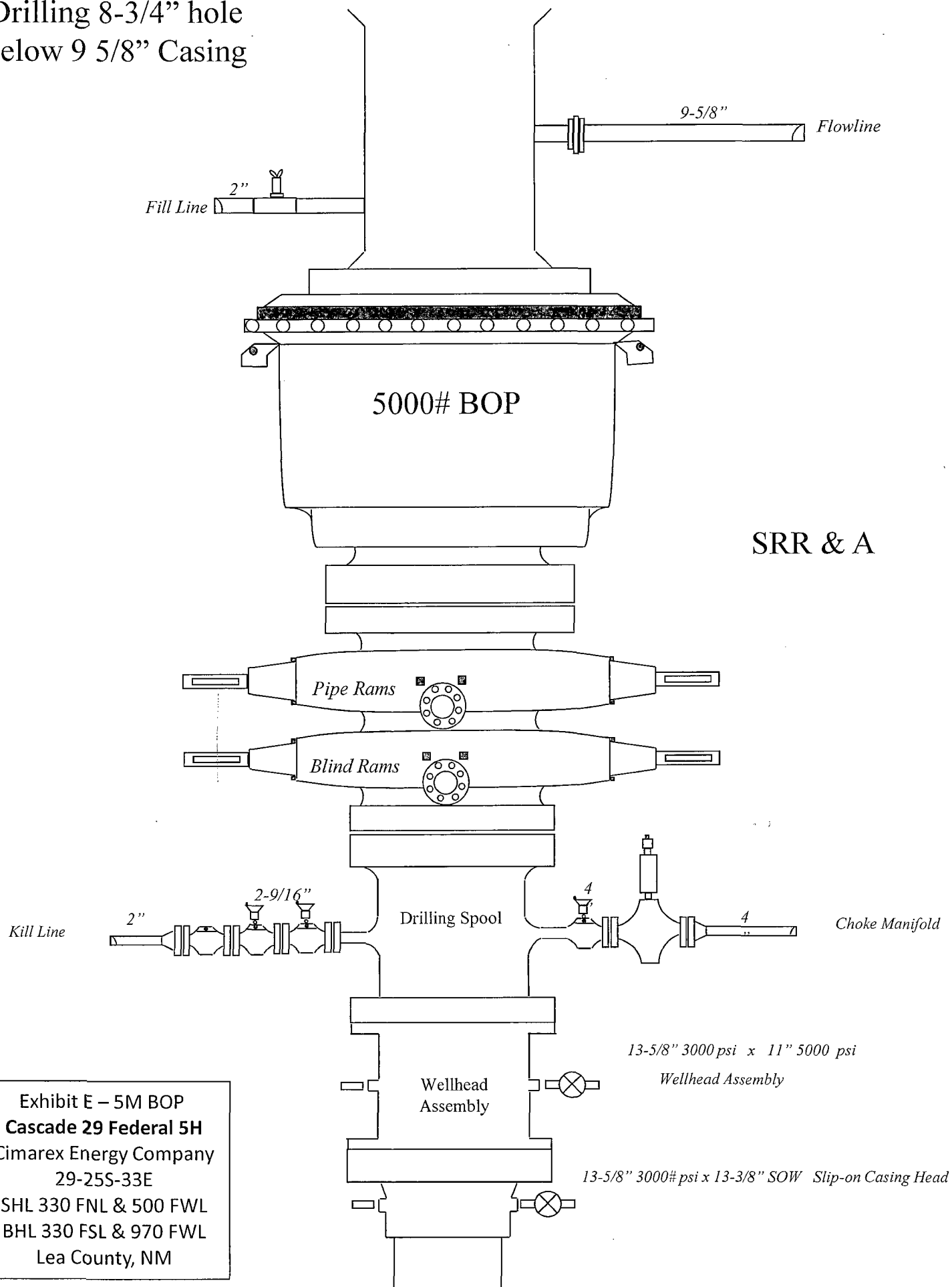


Exhibit E – 5M BOP  
Cascade 29 Federal 5H  
Cimarex Energy Company  
29-25S-33E  
SHL 330 FNL & 500 FWL  
BHL 330 FSL & 970 FWL  
Lea County, NM

Exhibit E-1 – Choke Manifold Diagram

**Cascade 29 Federal 5H**

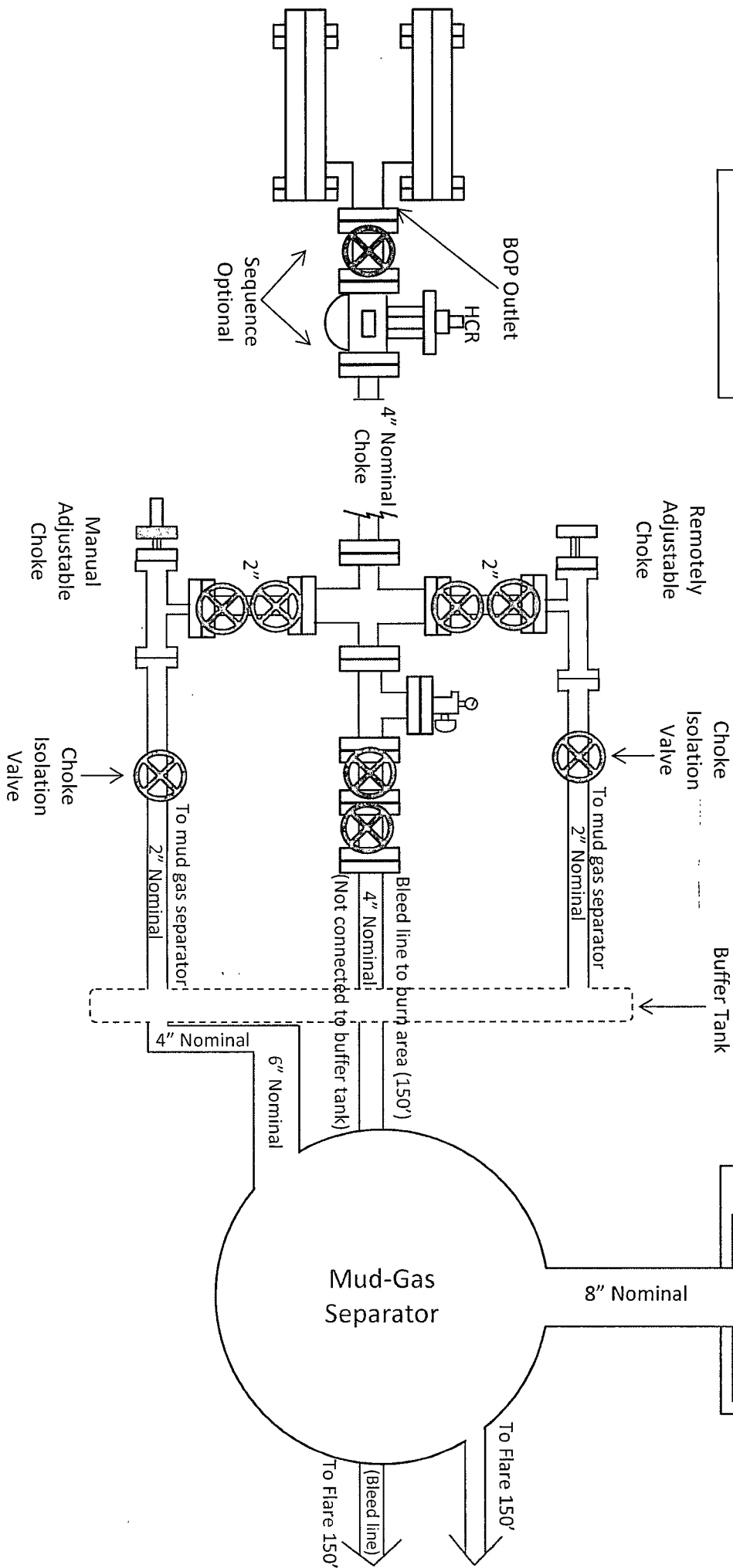
Cimarex Energy Company

29-25S-33E

SHL 330 FNL & 500 FWL

BHL 330 FSL & 970 FWL

Lea County, NM







Midwest Hose  
& Specialty, Inc.

**Certificate of Conformity**

**Customer:**

DEM

**PO**

ODYD-271

**SPECIFICATIONS**

**Sales Order**

79793

**Dated:**

3/8/2011

We hereby certify that the material supplied  
for the referenced purchase order to be true  
according to the requirements of the purchase  
order and current industry standards

**Supplier:**

Midwest Hose & Specialty, Inc.  
10640 Tanner Road  
Houston, Texas 77041

**Comments:**

**Approved:**

*Jonas Garcia*

**Date:**

3/8/2011



Midwest Hose  
& Specialty, Inc.

INTERNAL HYDROSTATIC TEST REPORT

|                                                                         |                                  |                                 |                                       |
|-------------------------------------------------------------------------|----------------------------------|---------------------------------|---------------------------------------|
| Customer:<br>Oderco Inc                                                 |                                  | P.O. Number:<br>odyd-271        |                                       |
| HOSE SPECIFICATIONS                                                     |                                  |                                 |                                       |
| Type: Stainless Steel Armor<br>Choke & Kill Hose                        |                                  | Hose Length: 45'ft.             |                                       |
| I.D. 4 INCHES                                                           |                                  | O.D. 9 INCHES                   |                                       |
| WORKING PRESSURE<br>10,000 PSI                                          | TEST PRESSURE<br>15,000 PSI      |                                 | BURST PRESSURE<br>0 PSI               |
| COUPLINGS                                                               |                                  |                                 |                                       |
| Stem Part No.<br>OKC<br>OKC                                             |                                  | Ferrule No.<br>OKC<br>OKC       |                                       |
| Type of Coupling:<br>Swage-It                                           |                                  |                                 |                                       |
| PROCEDURE                                                               |                                  |                                 |                                       |
| <u>Hose assembly pressure tested with water at ambient temperature.</u> |                                  |                                 |                                       |
| TIME HELD AT TEST PRESSURE<br>15 MIN.                                   |                                  | ACTUAL BURST PRESSURE:<br>0 PSI |                                       |
| Hose Assembly Serial Number:<br>79793                                   |                                  | Hose Serial Number:<br>OKC      |                                       |
| Comments:                                                               |                                  |                                 |                                       |
| Date:<br>3/8/2011                                                       | Tested:<br><i>A. James Jones</i> |                                 | Approved:<br><i>Kevin [Signature]</i> |



Midwest Hose  
& Specialty, Inc.

## Internal Hydrostatic Test Graph

March 3, 2011

Customer: Houston

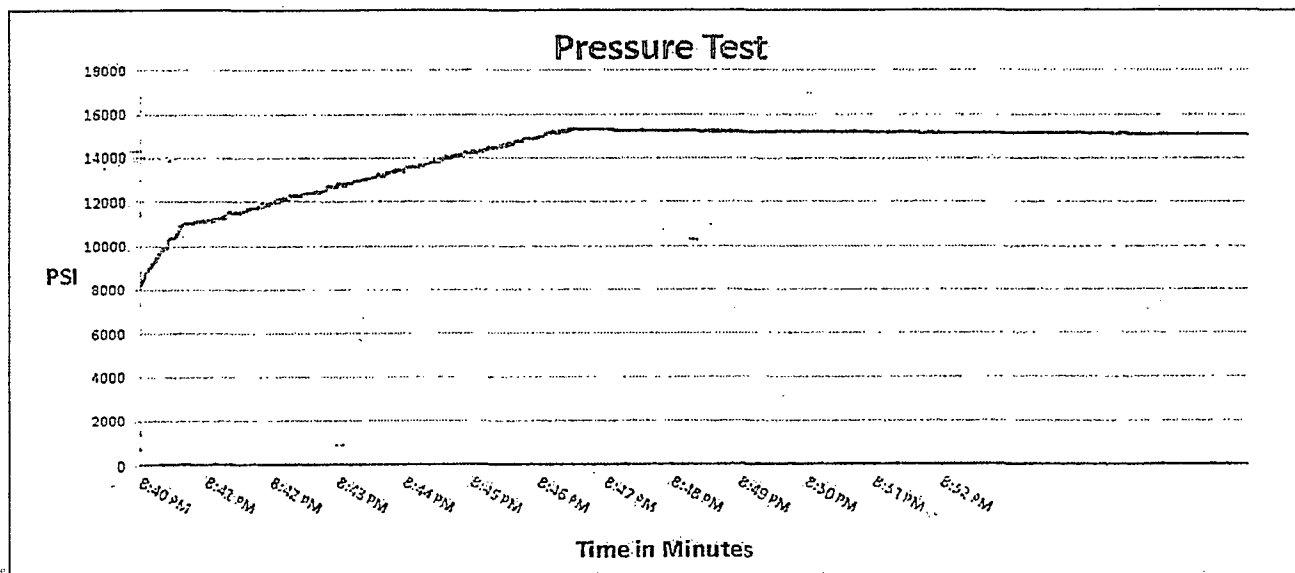
Pick Ticket #: 94260

### Hose Specifications

|                         |                                    |
|-------------------------|------------------------------------|
| <u>Hose Type</u>        | <u>Length</u>                      |
| C & K                   | 45'                                |
| <u>I.D.</u>             | <u>O.D.</u>                        |
| 4"                      | 6.09"                              |
| <u>Working Pressure</u> | <u>Burst Pressure</u>              |
| 10000 PSI               | Standard Safety Multiplier Applies |

### Verification

|                        |                               |
|------------------------|-------------------------------|
| <u>Type of Fitting</u> | <u>Coupling Method</u>        |
| 41/16 10K              | Swage                         |
| <u>Die Size</u>        | <u>Final O.D.</u>             |
| 6.38"                  | 6.25"                         |
| <u>Hose Serial #</u>   | <u>Hose Assembly Serial #</u> |
| 5544                   | 79793                         |



Test Pressure  
15000 PSI

Time Held at Test Pressure  
11 Minutes

Actual Burst Pressure

Peak Pressure  
15483 PSI

**Comments:** Hose assembly pressure tested with water at ambient temperature.

**Tested By:** Zac McConnell

**Approved By:** Kim Thomas



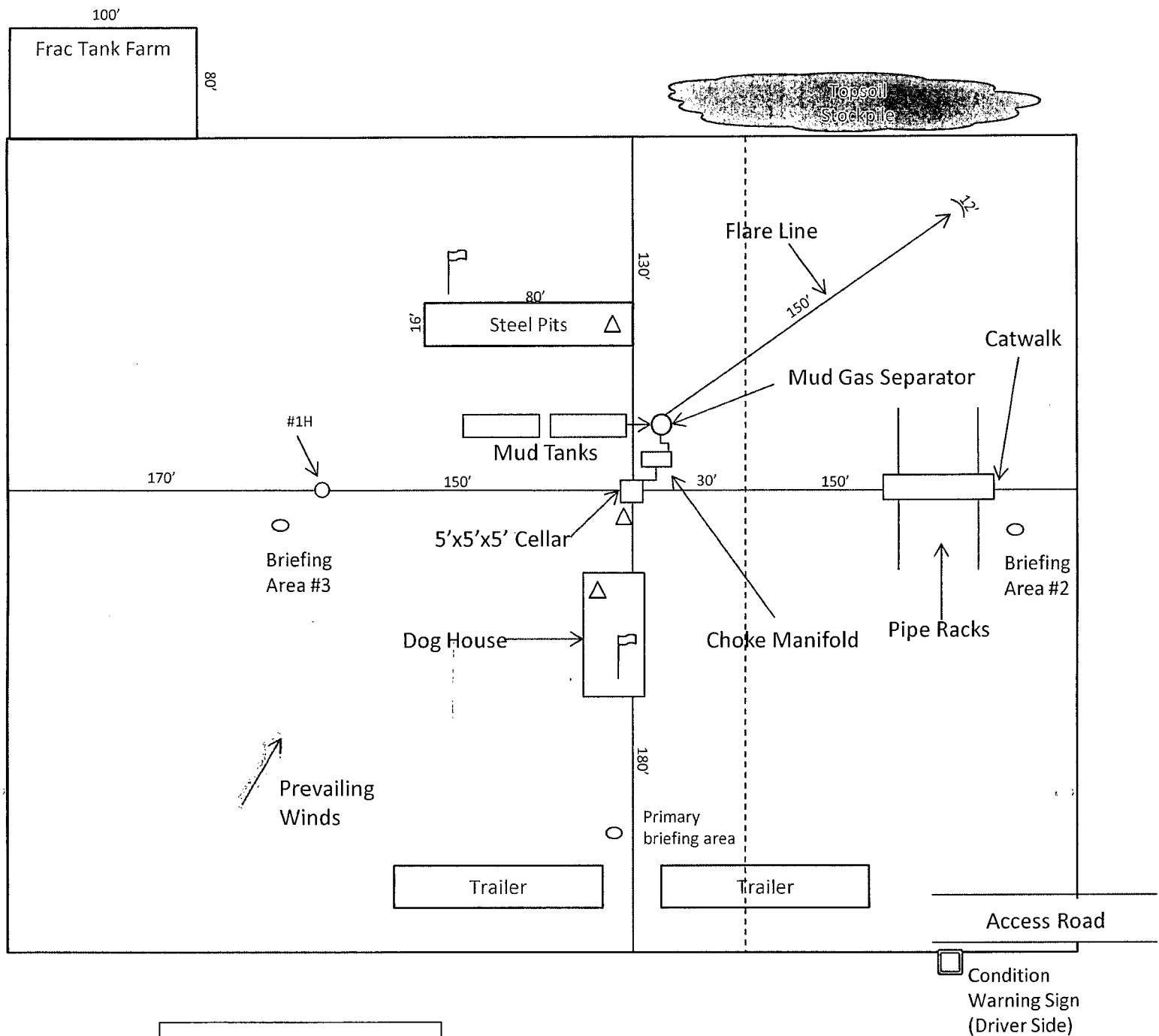


Exhibit D – Rig Diagram  
**Cascade 29 Federal 5H**  
 Cimarex Energy Company  
 29-25S-33E  
 SHL 330 FNL & 500 FWL  
 BHL 330 FSL & 970 FWL  
 Lea County, NM



-  Wind Direction Indicators (wind sock or streamers)
-  • H2S Monitors (alarms at bell nipple and shale shaker)
-  Briefing Areas