

Form 3160-3  
(June 2015)FORM APPROVED  
OMB No. 1004-0137  
Expires: January 31, 2018UNITED STATES  
DEPARTMENT OF THE INTERIOR  
BUREAU OF LAND MANAGEMENT

## APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: <input type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No.
1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator		8. Lease Name and Well No.
3a. Address	3b. Phone No. (include area code)	9. API Well No. 30-015-49919
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		10. Field and Pool, or Exploratory
14. Distance in miles and direction from nearest town or post office*		11. Sec., T. R. M. or Blk. and Survey or Area
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)		12. County or Parish
16. No of acres in lease		13. State
17. Spacing Unit dedicated to this well		
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.		
19. Proposed Depth		
20. BLM/BIA Bond No. in file		
21. Elevations (Show whether DF, KDB, RT, GL, etc.)		
22. Approximate date work will start*		23. Estimated duration
24. Attachments		

The following, completed in accordance with the requirements of Onshore Oil and Gas Order No. 1, and the Hydraulic Fracturing rule per 43 CFR 3162.3-3 (as applicable)

- |  |   |
|--|---|
| 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 must be filed with the appropriate Forest Service Office). | 6. Such other site specific information and/or plans as may be requested by the BLM.            |

25. Signature	Name (Printed/Typed)	Date
Title		
Approved by (Signature)	Name (Printed/Typed)	Date
Title		
Office		

Application approval 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.  
Conditions of approval, if any, are attached.

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.

(Continued on page 2)

\*(Instructions on page 2)



Approval Date: 06/24/2022

## Additional Operator Remarks

### Location of Well

0. SHL: NENW / 390 FNL / 2049 FWL / TWSP: 25S / RANGE: 28E / SECTION: 11 / LAT: 32.150895 / LONG: -104.05994 ( TVD: 0 feet, MD: 0 feet )

PPP: SENW / 1320 FNL / 2310 FWL / TWSP: 25S / RANGE: 28E / SECTION: 11 / LAT: 32.148333 / LONG: -104.059094 ( TVD: 8700 feet, MD: 9444 feet )

PPP: NENW / 390 FNL / 2310 FWL / TWSP: 25S / RANGE: 28E / SECTION: 11 / LAT: 32.150528 / LONG: -104.0591 ( TVD: 8558 feet, MD: 8607 feet )

BHL: SESW / 330 FSL / 2310 FWL / TWSP: 25S / RANGE: 28E / SECTION: 14 / LAT: 32.123736 / LONG: -104.059024 ( TVD: 8700 feet, MD: 18393 feet )

### BLM Point of Contact

Name: JORDAN NAVARRETTE

Title: LIE

Phone: (575) 234-5972

Email: jnavarrette@blm.gov

CONFIDENTIAL

### **Review and Appeal Rights**

A person contesting a decision shall request a State Director review. This request must be filed within 20 working days of receipt of the Notice with the appropriate State Director (see 43 CFR 3165.3). The State Director review decision may be appealed to the Interior Board of Land Appeals, 801 North Quincy Street, Suite 300, Arlington, VA 22203 (see 43 CFR 3165.4). Contact the above listed Bureau of Land Management office for further information.

CONFIDENTIAL

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 30-015- <b>49919</b>	<sup>2</sup> Pool Code 53610	<sup>3</sup> Pool Name San Lorenzo North (Bone Spring)
<sup>4</sup> Property Code <b>321641</b>	<sup>5</sup> Property Name RIVERBEND 11-14 FEDERAL COM	<sup>6</sup> Well Number 15H
<sup>7</sup> OGRID No. 215099	<sup>8</sup> Operator Name CIMAREX ENERGY CO.	<sup>9</sup> Elevation 2967.3'

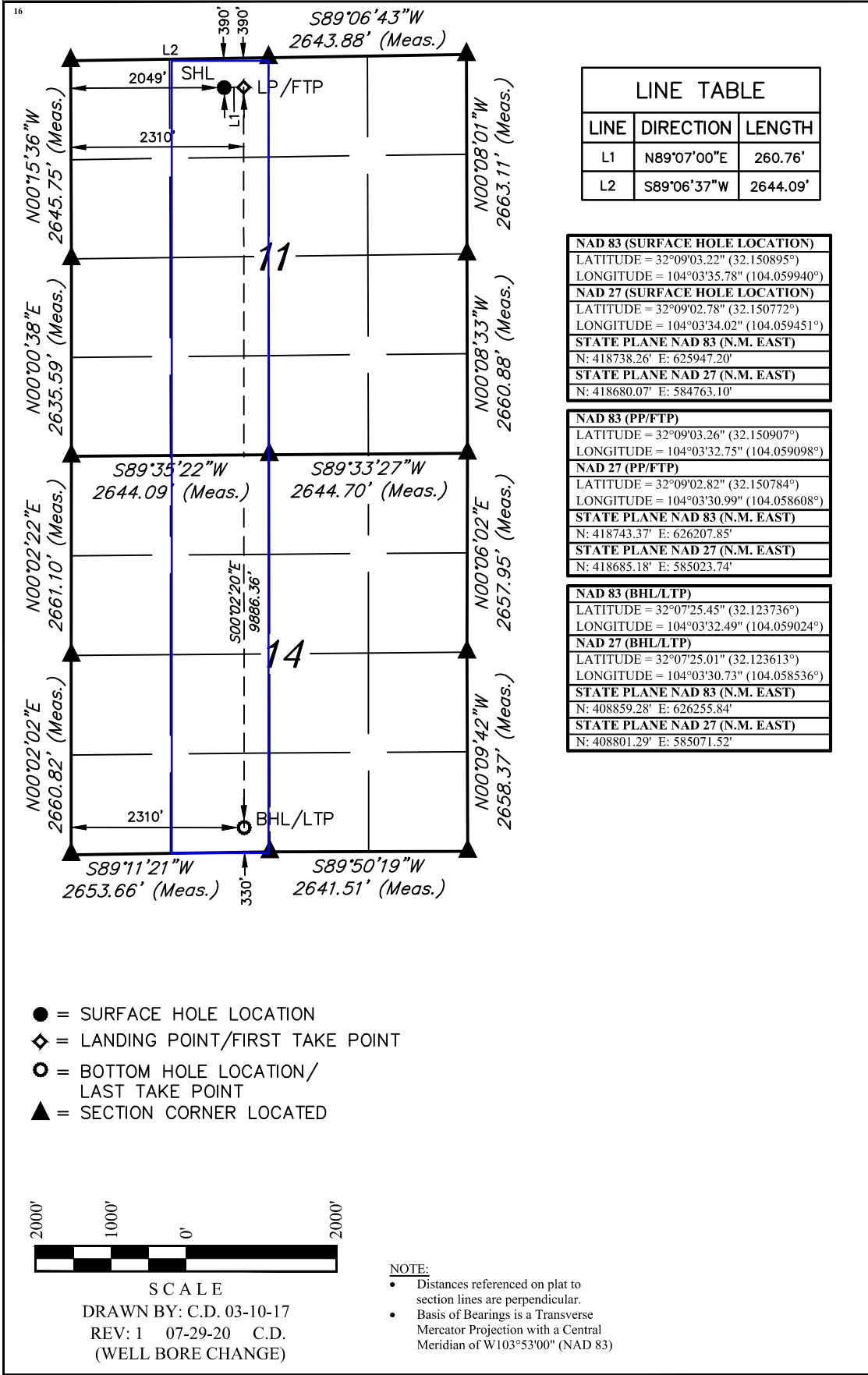
<sup>10</sup> Surface Location

UL or lot no. C	Section 11	Township 25S	Range 28E	Lot Idn	Feet from the 390	North/South line NORTH	Feet from the 2049	East/West line WEST	County EDDY
--------------------	---------------	-----------------	--------------	---------	----------------------	---------------------------	-----------------------	------------------------	----------------

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

UL or lot no. N	Section 14	Township 25S	Range 28E	Lot Idn	Feet from the 330	North/South line SOUTH	Feet from the 2310	East/West line WEST	County EDDY
<sup>12</sup> Dedicated Acres 320	<sup>13</sup> Joint or Infill	<sup>14</sup> Consolidation Code	<sup>15</sup> Order No.						

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



**<sup>17</sup> OPERATOR CERTIFICATION**  
I hereby certify that the information contained herein is true and complete to the best of my knowledge and belief, and that this organization either owns a working interest or unleased mineral interest in the land including the proposed bottom hole location or has a right to drill this well at this location pursuant to a contract with an owner of such a mineral or working interest, or to a voluntary pooling agreement or a compulsory pooling order heretofore entered by the division.

*Amithy Crawford* 10/28/2020  
Signature Date

Amithy Crawford  
Printed Name

acrawford@cimarex.com  
E-mail Address

**<sup>18</sup> SURVEYOR CERTIFICATION**  
I hereby certify that the well location shown on this plat was plotted from field notes of actual surveys made by me or under my supervision, and that the same is true and correct to the best of my belief.

MARCH 03, 2017  
Date of Survey

Signature and Seal of Professional Surveyor:

**PAUL BUCHELE**  
NEW MEXICO  
23782  
07-29-20  
PROFESSIONAL SURVEYOR

Certificate Number:

State of New Mexico  
Energy, Minerals and Natural Resources Department

Submit Electronically  
Via E-permitting

Oil Conservation Division  
1220 South St. Francis Dr.  
Santa Fe, NM 87505

## NATURAL GAS MANAGEMENT PLAN

This Natural Gas Management Plan must be submitted with each Application for Permit to Drill (APD) for a new or recompleted well.

### **Section 1 – Plan Description** **Effective May 25, 2021**

**I. Operator:** Cimarex Energy Company **OGRID:** 215099 **Date:** 8 / 23 / 2022

**II. Type:** ☒ Original ☐ Amendment due to ☐ 19.15.27.9.D(6)(a) NMAC ☐ 19.15.27.9.D(6)(b) NMAC ☐ Other.

If Other, please describe: \_\_\_\_\_

**III. Well(s):** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	ULSTR	Footages	Anticipated Oil BBL/D	Anticipated Gas MCF/D	Anticipated Produced Water BBL/D
Riverbend 11-14 Fed 15H		C, Sec 11 T25S, R28E	390 FNL/2049 FWL	1540	4700	7000

**IV. Central Delivery Point Name:** Riverbend 11-14 CDP Sales  
[See 19.15.27.9(D)(1) NMAC]

**V. Anticipated Schedule:** Provide the following information for each new or recompleted well or set of wells proposed to be drilled or proposed to be recompleted from a single well pad or connected to a central delivery point.

Well Name	API	Spud Date	TD Reached Date	Completion Commencement Date	Initial Flow Back Date	First Production Date
Riverbend 11-14 Fed 16H		1/1/2024	5/1/2024	11/1/2024	1/1/2025	1/1/2025

**VI. Separation Equipment:** ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.

**VII. Operational Practices:** ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.

**VIII. Best Management Practices:** ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

**Section 2 – Enhanced Plan****EFFECTIVE APRIL 1, 2022**

Beginning April 1, 2022, an operator that is not in compliance with its statewide natural gas capture requirement for the applicable reporting area must complete this section.

☒ Operator certifies that it is not required to complete this section because Operator is in compliance with its statewide natural gas capture requirement for the applicable reporting area.

**IX. Anticipated Natural Gas Production:**

Well	API	Anticipated Average Natural Gas Rate MCF/D	Anticipated Volume of Natural Gas for the First Year MCF

**X. Natural Gas Gathering System (NGGS):**

Operator	System	ULSTR of Tie-in	Anticipated Gathering Start Date	Available Maximum Daily Capacity of System Segment Tie-in

**XI. Map.** ☐ Attach an accurate and legible map depicting the location of the well(s), the anticipated pipeline route(s) connecting the production operations to the existing or planned interconnect of the natural gas gathering system(s), and the maximum daily capacity of the segment or portion of the natural gas gathering system(s) to which the well(s) will be connected.

**XII. Line Capacity.** The natural gas gathering system ☐ will ☐ will not have capacity to gather 100% of the anticipated natural gas production volume from the well prior to the date of first production.

**XIII. Line Pressure.** Operator ☐ does ☐ does not anticipate that its existing well(s) connected to the same segment, or portion, of the natural gas gathering system(s) described above will continue to meet anticipated increases in line pressure caused by the new well(s).

☐ Attach Operator's plan to manage production in response to the increased line pressure.

**XIV. Confidentiality:** ☐ Operator asserts confidentiality pursuant to Section 71-2-8 NMSA 1978 for the information provided in Section 2 as provided in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and attaches a full description of the specific information for which confidentiality is asserted and the basis for such assertion.

### **Section 3 - Certifications**

**Effective May 25, 2021**

Operator certifies that, after reasonable inquiry and based on the available information at the time of submittal:

☒ Operator will be able to connect the well(s) to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system; or

☐ Operator will not be able to connect to a natural gas gathering system in the general area with sufficient capacity to transport one hundred percent of the anticipated volume of natural gas produced from the well(s) commencing on the date of first production, taking into account the current and anticipated volumes of produced natural gas from other wells connected to the pipeline gathering system.

***If Operator checks this box, Operator will select one of the following:***

**Well Shut-In.** ☐ Operator will shut-in and not produce the well until it submits the certification required by Paragraph (4) of Subsection D of 19.15.27.9 NMAC; or

**Venting and Flaring Plan.** ☐ Operator has attached a venting and flaring plan that evaluates and selects one or more of the potential alternative beneficial uses for the natural gas until a natural gas gathering system is available, including:

- (a) power generation on lease;
- (b) power generation for grid;
- (c) compression on lease;
- (d) liquids removal on lease;
- (e) reinjection for underground storage;
- (f) reinjection for temporary storage;
- (g) reinjection for enhanced oil recovery;
- (h) fuel cell production; and
- (i) other alternative beneficial uses approved by the division.

### **Section 4 - Notices**


1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(a) Operator becomes aware that the natural gas gathering system it planned to connect the well(s) to has become unavailable or will not have capacity to transport one hundred percent of the production from the well(s), no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised venting and flaring plan containing the information specified in Paragraph (5) of Subsection D of 19.15.27.9 NMAC; or

(b) Operator becomes aware that it has, cumulatively for the year, become out of compliance with its baseline natural gas capture rate or natural gas capture requirement, no later than 20 days after becoming aware of such information, Operator shall submit for OCD's approval a new or revised Natural Gas Management Plan for each well it plans to spud during the next 90 days containing the information specified in Paragraph (2) of Subsection D of 19.15.27.9 NMAC, and shall file an update for each Natural Gas Management Plan until Operator is back in compliance with its baseline natural gas capture rate or natural gas capture requirement.

2. OCD may deny or conditionally approve an APD if Operator does not make a certification, fails to submit an adequate venting and flaring plan which includes alternative beneficial uses for the anticipated volume of natural gas produced, or if OCD determines that Operator will not have adequate natural gas takeaway capacity at the time a well will be spud.

I certify that, after reasonable inquiry, the statements in and attached to this Natural Gas Management Plan are true and correct to the best of my knowledge and acknowledge that a false statement may be subject to civil and criminal penalties under the Oil and Gas Act.

Signature: 
Printed Name: Sarah Jordan
Title: Regulatory Analyst
E-mail Address: sarah.jordan@coterra.com
Date: 8/23/2022
Phone: 432/620-1909
<b>OIL CONSERVATION DIVISION</b> <b>(Only applicable when submitted as a standalone form)</b>
Approved By:
Title:
Approval Date:
Conditions of Approval:



***From State of New Mexico, Natural Gas Management Plan***

**VI. Separation Equipment:** Attach a complete description of how Operator will size separation equipment to optimize gas capture.

**XEC Standard Response**

Standard facility gas process flow begins at the inlet separator. These vessels are designed based off of forecasted rates and residence times in accordance with, and often greater than, API 12J. The separated gas is then routed to an additional separation vessel (ie sales scrubber) in order to extract liquids that may have carried over or developed due to the decrease in pressure. The sales scrubber is sized based on API 521. From the sales scrubber, the gas leaves the facility and enters the gas midstream gathering network.

## **Cimarex**

### **VII. Operational Practices**

Cimarex values the sustainable development of New Mexico's natural resources. Venting and flaring of natural gas is a source of waste in the industry, and Cimarex will ensure that its values are aligned with those of NMOCD. As such, Cimarex plans to take pointed steps to ensure compliance with Subsection A through F of 19.15.27.8 NMAC.

Specifically, below are the steps Cimarex will plan to follow under routine well commissioning and operations.

1. Capture or combust natural gas during drilling operations where technically feasible, using the best industry practices and control technologies.
  - a. All flares during these operations will be a minimum of 100ft away from the nearest surface-hole location.
2. All gas present during post-completion drill-out and flow back will be routed through separation equipment, and, if technically feasible, flare unsellable vapors rather than vent. Lastly, formal sales separator commissioning to process well-stream fluids and send gas to a gas flow line/collection system or use the gas for on-site fuel or beneficial usage, gas as soon as is safe and technically feasible.
3. Cimarex will ensure the flare or combustion equipment is properly sized to handle expected flow rates, ensure this equipment is equipped with an automatic or continuous ignition source, and ensure this equipment is designed for proper combustion efficiency.
4. If Cimarex must flare because gas is not meeting pipeline specifications, Cimarex will limit flaring to <60 days, analyze gas composition at least twice per week, and route gas into a gathering pipeline as soon as pipeline specifications are met.
5. Under routine production operations, Cimarex will not flare/vent unless:
  - a. Venting or flaring occurs due to an emergency or equipment malfunction.
  - b. Venting or flaring occurs as a result of unloading practices, and an operator is onsite (or within 30 minutes of drive time and posts contact information at the wellsite) until the end of unloading practice.
  - c. The venting or flaring occurs during automated plungerlift operations, in which case the Cimarex operator will work to optimize the plungerlift system to minimize venting/flaring.
  - d. The venting or flaring occurs during downhole well maintenance, in which case Cimarex will work to minimize venting or flaring operations to the extent that it does not pose a risk to safe operations.
  - e. The well is an exploratory well, the division has approved the well as an exploratory well, venting or flaring is limited to 12 months, as approved by the division, and venting/flaring does not cause Cimarex to breach its State-wide 98% gas capture requirement.
  - f. Venting or flaring occurs because the stock tanks or other low-pressure vessels are being gauged, sampled, or liquids are being loaded out.
  - g. The venting or flaring occurs because pressurized vessels are being maintained and are being blown-down or depressurized.
  - h. Venting or flaring occurs as a result of normal dehydration unit operations.

- i. Venting or flaring occurs as a result of bradenhead testing.
  - j. Venting or flaring occurs as a result of normal compressor operations, including general compressor operations, compressor engines and turbines.
  - k. Venting or flaring occurs as a result of a packer leakage test.
  - l. Venting or flaring occurs as a result of a production test lasting less than 24 hours unless otherwise approved by the division.
  - m. Venting or flaring occurs as a result of new equipment commissioning and is necessary to purge impurities from the pipeline or production equipment.
6. Cimarex will maintain its equipment in accordance with its Operations and Maintenance Program, to ensure venting or flaring events are minimized and that equipment is properly functioning.
7. Cimarex will install automatic tank gauging equipment on all production facilities constructed after May 25, 2021, to ensure minimal emissions from tank gauging practices.
8. By November 25, 2022, all Cimarex facilities equipped with flares or combustors will be equipped with continuous pilots or automatic igniters, and technology to ensure proper function, i.e. thermocouple, fire-eye, etc...
9. Cimarex will perform AVO (audio, visual, olfactory) facility inspections in accordance with NMOCD requirements. Specifically, Cimarex will:
  - a. Perform weekly inspections during the first year of production, and so long as production is greater than 60 MCFD.
  - b. If production is less than 60 MCFD, Cimarex will perform weekly AVO inspections when an operator is present on location, and inspections at least once per calendar month with at least 20 calendar days between inspections.
10. Cimarex will measure or estimate the volume of vented, flared or beneficially used natural gas, regardless of the reason or authorization for such venting or flaring.
11. On all facilities constructed after May 25, 2021, Cimarex will install metering where feasible and in accordance with available technology and best engineering practices, in an effort to measure how much gas could have been vented or flared.
  - a. In areas where metering is not technically feasible, such as low-pressure/low volume venting or flaring applications, engineering estimates will be used such that the methodology could be independently verified.
12. Cimarex will fulfill the division's requirements for reporting and filing of venting or flaring that exceeds 50 MCF in volume or last eight hours or more cumulatively within any 24-hour period.

## **VIII. Best Management Practices to minimize venting during active and planned maintenance**

Cimarex strives to ensure minimal venting occurs during active and planned maintenance activities. Below is a description of common maintenance practices, and the steps Cimarex takes to limit venting exposure.

- **Workovers:**
  - Always strive to kill well when performing downhole maintenance.
  - If vapors or trapped pressure is present and must be relieved then:
    - Initial blowdown to production facility:
      - Route vapors to LP flare if possible/applicable
    - Blowdown to portable gas buster tank:
      - Vent to existing or portable flare if applicable.
- **Stock tank servicing:**
  - Minimize time spent with thief hatches open.
  - When cleaning or servicing via manway, suck tank bottoms to ensure minimal volatiles exposed to atmosphere.
    - Connect vacuum truck to low pressure flare while cleaning bottoms to limit venting.
  - Isolate the vent lines and overflows on the tank being serviced from other tanks.
- **Pressure vessel/compressor servicing and associated blowdowns:**
  - Route to flare where possible.
  - Blow vessel down to minimum available pressure via pipeline, prior to venting vessel.
  - Preemptively changing anodes to reduce failures and extended corrosion related servicing.
  - When cleaning or servicing via manway, suck vessel bottoms to ensure minimal volatiles exposed to atmosphere.
- **Flare/combustor maintenance:**
  - Minimize downtime by coordinating with vendor and Cimarex staff travel logistics.
  - Utilizing preventative and predictive maintenance programs to replace high wear components before failure.
  - Because the flare/combustor is the primary equipment used to limit venting practices, ensure flare/combustor is properly maintained and fully operational at all times via routine maintenance, temperature telemetry, onsite visual inspections.

*The Cimarex expectation is to limit all venting exposure. Equipment that may not be listed on this document is still expected to be maintained and associated venting during such maintenance minimized.*



U.S. Department of the Interior  
BUREAU OF LAND MANAGEMENT

# Drilling Plan Data Report

08/18/2022

APD ID: 10400064879

Submission Date: 11/09/2020

Highlighted data  
reflects the most  
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RIVERBEND 11-14 FEDERAL COM

Well Number: 15H

Well Type: OIL WELL

Well Work Type: Drill

[Show Final Text](#)

## Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
1133164	RUSTLER	2974	450	450	ANHYDRITE	USEABLE WATER	N
1133165	SALADO	1146	1828	1828	ANHYDRITE, SALT	NONE	N
1133166	CASTILE	610	2364	2368	ANHYDRITE, SALT	NONE	N
1133167	BELL CANYON	469	2505	2510	SANDSTONE	NONE	N
1133168	CHERRY CANYON	-501	3475	3487	SANDSTONE	NONE	N
1133169	BRUSHY CANYON	-2191	5165	5185	SANDSTONE	NATURAL GAS, OIL	N
1133170	BONE SPRING	-3175	6149	6169	LIMESTONE	NATURAL GAS, OIL	N

## Section 2 - Blowout Prevention

Pressure Rating (PSI): 2M

Rating Depth: 2450

**Equipment:** A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock 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.

**Requesting Variance?** YES

**Variance request:** Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. 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. Variance to include Hammer Union connections on lines downstream of the buffer tank only.

**Testing Procedure:** A multi-bowl wellhead system will be utilized. After running the 13-3/8" surface casing, a 13 5/8 BOP/BOPE system with a minimum working pressure of 2000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 2000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2. The multi-bowl wellhead will be installed by vendors representative. A copy of the installation instructions has been sent to the BLM field office. The wellhead will be installed by a third-party welder, monitored by the wellhead vendor representative. All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 2000 psi. The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The

**Operator Name:** CIMAREX ENERGY COMPANY**Well Name:** RIVERBEND 11-14 FEDERAL COM**Well Number:** 15H

casing strings utilizing steel body pack-off will be tested to 70% of casing burst. If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

**Choke Diagram Attachment:**

Riverbend\_11\_14\_Fed\_Com\_15H\_Choke\_Diagram\_2M3M\_20201104141316.pdf

**BOP Diagram Attachment:**

Riverbend\_11\_14\_Fed\_Com\_15H\_BOP\_2M\_20201104141327.pdf

**Pressure Rating (PSI):** 5M**Rating Depth:** 19393

**Equipment:** A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock 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.

**Requesting Variance?** YES

**Variance request:** Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. 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. Variance to include Hammer Union connections on lines downstream of the buffer tank only.

**Testing Procedure:** A multi-bowl wellhead system will be utilized. After running the 13-3/8" surface casing, a 13 5/8 BOP/BOPE system with a minimum working pressure of 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2. The multi-bowl wellhead will be installed by vendors representative. A copy of the installation instructions has been sent to the BLM field office. The wellhead will be installed by a third-party welder, monitored by the wellhead vendor representative. All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi. Slips will be utilized after running and cementing the production casing. After installation of the slips and wellhead on the production casing, a 13 5/8 BOP/BOPE system with a minimum working pressure of 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2. The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The casing string utilizing steel body pack-off will be tested to 70% of casing burst. If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

**Choke Diagram Attachment:**

Riverbend\_11\_14\_Fed\_Com\_15H\_5M\_Choke\_20201104141253.pdf

**BOP Diagram Attachment:**

Riverbend\_11\_14\_Fed\_Com\_15H\_5M\_BOP\_8.75\_20201104141301.pdf

**Operator Name:** CIMAREX ENERGY COMPANY**Well Name:** RIVERBEND 11-14 FEDERAL COM**Well Number:** 15H**Section 3 - Casing**

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	NON API	N	0	450	0	450	2967	2517	450	OTHER	48	ST&C	3.8	8.88	BUOY	14.91	BUOY	14.91
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	2450	0	2450	2974	517	2450	J-55	36	LT&C	1.54	2.68	BUOY	5.14	BUOY	5.14
3	PRODUCTION	8.75	5.5	NEW	API	N	0	8235	0	8235	2974	-5268	8235	L-80	20	LT&C	2.06	2.15	BUOY	2.39	BUOY	2.39
4	PRODUCTION	8.75	5.5	NEW	API	N	8235	19393	8235	8700	-5268	-5733	11158	L-80	20	BUTT	1.95	1.99	BUOY	50.11	BUOY	50.11

**Casing Attachments****Casing ID:** 1      **String** SURFACE**Inspection Document:****Spec Document:**

Riverbend\_11\_14\_Fed\_Com\_15H\_Casing\_Spec\_Sheet\_20201104141451.pdf

**Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

Riverbend\_11\_14\_Fed\_Com\_15H\_Csg\_Assumptions\_20201104141516.pdf



**Operator Name:** CIMAREX ENERGY COMPANY**Well Name:** RIVERBEND 11-14 FEDERAL COM**Well Number:** 15H**Casing Attachments****Casing ID:** 2      **String**      INTERMEDIATE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

Riverbend\_11\_14\_Fed\_Com\_15H\_Csg\_Assumptions\_20201104141543.pdf

**Casing ID:** 3      **String**      PRODUCTION**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

Riverbend\_11\_14\_Fed\_Com\_15H\_Csg\_Assumptions\_20201104141645.pdf

**Casing ID:** 4      **String**      PRODUCTION**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

Riverbend\_11\_14\_Fed\_Com\_15H\_Csg\_Assumptions\_20201104141735.pdf

**Section 4 - Cement**



**Operator Name:** CIMAREX ENERGY COMPANY**Well Name:** RIVERBEND 11-14 FEDERAL COM**Well Number:** 15H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		0	0	0	0	0	0	0	0	00

SURFACE	Lead		0	450	91	1.72	13.5	156	33	Class C	Bentonite
SURFACE	Tail		0	450	195	1.34	14.8	261	33	Class C	LCM
INTERMEDIATE	Lead		0	2450	468	1.88	12.9	1.88	49	35:65 (POZ C)	Salt Bentonite
INTERMEDIATE	Tail		0	2450	141	1.36	14.8	191	49	Class C	Retarder
PRODUCTION	Lead		0	1939 3	618	3.64	10.3	2249	25	Tuned Light	LCM
PRODUCTION	Tail		0	1939 3	3253	1.3	14.2	4228	25	50:50 POZ H	Salt Bentonite Fluid Loss Dispersant SMS

### Section 5 - Circulating Medium

**Mud System Type:** Closed**Will an air or gas system be Used?** NO**Description of the equipment for the circulating system in accordance with Onshore Order #2:****Diagram of the equipment for the circulating system in accordance with Onshore Order #2:**

**Describe what will be on location to control well or mitigate other conditions:** 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.

**Describe the mud monitoring system utilized:** PVT/Pason/Visual Monitoring

### Circulating Medium Table

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
-----------	--------------	----------	----------------------	----------------------	---------------------	-----------------------------	----	----------------	----------------	-----------------	----------------------------

**Operator Name:** CIMAREX ENERGY COMPANY**Well Name:** RIVERBEND 11-14 FEDERAL COM**Well Number:** 15H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	450	OTHER : Fresh Water	7.83	8.33							
450	2450	SALT SATURATED	9.8	10.3							
2450	1939 3	OIL-BASED MUD	9.5	10							

### Section 6 - Test, Logging, Coring

**List of production tests including testing procedures, equipment and safety measures:**

No DST Planned

**List of open and cased hole logs run in the well:**

GAMMA RAY LOG,DIRECTIONAL SURVEY,COMPENSATED NEUTRON LOG,

**Coring operation description for the well:**

N/A

### Section 7 - Pressure

**Anticipated Bottom Hole Pressure:** 4524

**Anticipated Surface Pressure:** 2610

**Anticipated Bottom Hole Temperature(F):** 158

**Anticipated abnormal pressures, temperatures, or potential geologic hazards?** YES

**Describe:**

Lost circulation may be encountered in the Delaware mountain group. Abnormal pressure as well as hole stability issues may be encountered in the Wolfcamp.

**Contingency Plans geohazards description:**

Lost circulation material will be available, as well as additional drilling fluid along with the fluid volume in the drilling rig pit system. Drilling fluid can be mixed on location or mixed in vendor mud plant and trucked to location if needed. Sufficient barite will be available to maintain appropriate mud weight for the Wolfcamp interval.

**Contingency Plans geohazards**

**Hydrogen Sulfide drilling operations plan required?** YES

**Hydrogen sulfide drilling operations**

Riverbend\_11\_14\_Fed\_Com\_15H\_H2S\_Plan\_20201104142913.pdf

**Operator Name:** CIMAREX ENERGY COMPANY

**Well Name:** RIVERBEND 11-14 FEDERAL COM

**Well Number:** 15H

## Section 8 - Other Information

### Proposed horizontal/directional/multi-lateral plan submission:

Riverbend\_11\_14\_Fed\_Com\_15H\_Directional\_Survey\_AC\_Report\_20201104142959.pdf

Riverbend\_11\_14\_Federal\_Com\_15H\_Directional\_Survey\_20201104143100.pdf

### Other proposed operations facets description:

### Other proposed operations facets attachment:

Riverbend\_11\_14\_Fed\_Com\_15H\_\_Drilling\_Plan\_20201104151341.pdf

### Other Variance attachment:

Riverbend\_11\_14\_Federal\_Com\_15H\_Multibowl\_20201104151538.pdf

Riverbend\_11\_14\_Fed\_Com\_15H\_Flex\_Hose\_20201104151552.pdf

**1. Geological Formations**

TVD of target 8,700

Pilot Hole TD N/A

MD at TD 18,393

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	450	N/A	
Salado	1828	N/A	
Castille	2364	N/A	
Bell Canyon	2505	N/A	
Cherry Canyon	3475	N/A	
Brushy Canyon	5165	Hydrocarbons	
Bone Spring	6149	Hydrocarbons	

**2. Casing Program**

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	450	450	13-3/8"	48.00	H-40/J-55 Hybrid	ST&C	3.80	8.88	14.91
12 1/4	0	2450	2450	9-5/8"	36.00	J-55	LT&C	1.54	2.68	5.14
8 3/4	0	8235	8235	5-1/2"	20.00	L-80	LT&C	2.06	2.15	2.39
8 3/4	8235	19393	8700	5-1/2"	20.00	L-80	BT&C	1.95	1.99	50.11
BLM Minimum Safety Factor								1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.

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

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

Cimarex Energy Co., Riverbend 11-14 Federal Com 15H

**3. Cementing Program**

Casing	# Sk	Wt. lb/gal	Yld ft <sup>3</sup> /sack	H <sub>2</sub> O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	91	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	195	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	468	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	141	14.80	1.36	6.57	9.5	Tail: Class C + Retarder
Production	618	10.30	3.64	22.18		Lead: Tuned Light + LCM
	3253	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

Casing String	TOC	% Excess
Surface	0	33
Intermediate	0	49
Production	2250	25

Cimarex request the ability to perform casing integrity tests after plug bump of cement job.

**4. Pressure Control Equipment**

A variance is requested for the use of a diverter on the surface casing. See attached for schematic.					
BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	50% of working pressure
			Blind Ram		2M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	5M	Annular	X	50% of working pressure
			Blind Ram		5M
			Pipe Ram	X	
			Double Ram	X	
			Other		

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

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

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

**5. Mud Program**

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 450'	Fresh Water	7.83 - 8.33	28	N/C
450' to 2450'	Brine Water	9.80 - 10.30	30-32	N/C
2450' to 19393'	Oil Based Mud	9.50 - 10.00	50-70	N/C

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

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

**6. Logging and Testing Procedures**

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

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

**7. Drilling Conditions**

Condition	
BH Pressure at deepest TVD	4524 psi
Abnormal Temperature	No

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

	H <sub>2</sub> S is present
	H <sub>2</sub> S plan is attached

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

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

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

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

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

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.

All casing strings will be tested as per Onshore Order No.2 to at least 0.22 psi/ft or 1,500 whichever is greater and not to exceed 70% of casing burst.

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

Cimarex Energy Co., Riverbend 11-14 Federal Com 15H





## Cimarex Riverbend 11-14 Federal Com #15H Rev0 RM 06Oct20 Anti-Collision Summary Report

**Analysis Date-24hr Time:** October 07, 2020 - 11:54

**Client:** Cimarex Energy

**Field:** NM Eddy County (NAD 83)

**Structure:** Cimarex Riverbend 11-14 Federal Com #15H

**Slot:** New Slot

**Well:** Riverbend 11-14 Federal Com #15H

**Borehole:** Riverbend 11-14 Federal Com #15H

**Scan MD Range:** 0.00ft ~ 18393.07ft

**Analysis Method:** 3D Least Distance

**Reference Trajectory:** Cimarex Riverbend 11-14 Federal Com #15H Rev0 RM 06Oct20 (Non-Def Plan)

**Depth Interval:** Every 10.00 Measured Depth (ft)

**Rule Set:** NAL Procedure: D&M AntiCollision Standard S002

**Min Pts:** All local minima indicated.

**Version / Patch:** 2.10.821.3

**Database \ Project:** US1153APP452.dir.slb.com\drilling-NM Eddy County 2.10

ISCWSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

### Trajectory Error Model:

### Offset Selection Criteria

Wellhead distance scan:

Selection filters:

Not performed!

Definitive Surveys - Definitive Plans - Definitive surveys exclude definitive plans

- All Non-Def Surveys when no Def-Survey is set in a borehole - All Non-Def Plans when no Def-Plan is set in a borehole

### Offset Trajectories Summary

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		

Results highlighted: Sep-Factor separation <= 1.50 ft

Cimarex Riverbend 11-14  
Federal Com #16H Rev0 RM  
06Oct20 (Non-Def Plan)

Warning Alert

20.00	16.25	18.71	3.74	N/A	MAS = 4.95 (m)	0.00	0.00	CtCt<=15m<15.00	Enter Alert
20.00	16.25	18.71	3.74	N/A	MAS = 4.95 (m)	23.00	23.00		WRP
20.00	16.25	9.67	3.74	2.07	MAS = 4.95 (m)	1500.00	1500.00		MinPts
20.01	16.25	9.64	3.76	2.06	MAS = 4.95 (m)	1510.00	1510.00		MINPT-O-EOU
20.15	16.25	9.68	3.90	2.05	MAS = 4.95 (m)	1530.00	1530.00		MinPt-O-SF
56.37	17.91	44.00	38.46	4.97	OSF1.50	2000.00	1998.38	OSF>5.00	Exit Alert
97.00	30.02	76.55	66.97	5.00	OSF1.50	4000.00	3987.65	OSF<5.00	Enter Alert
97.21	30.12	76.70	67.09	4.99	OSF1.50	4012.41	4000.00		MinPt-O-SF
58.38	35.79	34.09	22.59	2.48	OSF1.50	5010.00	4997.05		MinPt-CtCt
58.41	35.89	34.06	22.52	2.48	OSF1.50	5030.00	5017.05		MINPT-O-EOU
58.45	35.93	34.07	22.52	2.48	OSF1.50	5040.00	5027.05		MinPt-O-ADP
58.55	36.01	34.11	22.54	2.47	OSF1.50	5060.00	5047.05		MinPt-O-SF
59.89	58.82	20.25	1.07	1.53	OSF1.50	8235.48	8222.54		MinPts
192.41	59.45	152.34	132.95	4.93	OSF1.50	8600.00	8552.66	OSF>5.00	Exit Alert
1275.30	305.29	1071.34	970.01	6.29	OSF1.50	18393.07	8700.00		MinPts

Cimarex Riverbend 11-14  
Federal Com #17H Rev0 RM  
06Oct20 (Non-Def Plan)

Warning Alert

39.99	32.25	38.70	7.74	N/A	MAS = 9.83 (m)	0.00	0.00	CtCt<=15m<15.00	Enter Alert
39.99	32.25	38.70	7.74	N/A	MAS = 9.83 (m)	23.00	23.00		WRP
39.99	32.25	29.67	7.74	4.28	MAS = 9.83 (m)	1500.00	1500.00		MinPts

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)		Minor	Major		
40.13	32.25	29.74	7.88	4.27	MAS = 9.83 (m)	1520.00	1520.00					MinPt-O-SF	
48.84	32.25	38.17	16.59	5.07	MAS = 9.83 (m)	1660.00	1659.92					Exit Alert	
479.64	32.25	461.00	447.39	27.57	MAS = 9.83 (m)	4012.41	4000.00					MinPt-O-SF	
494.95	58.24	455.69	436.71	13.00	OSF1.50	8320.00	8306.61					MinPts	
494.97	58.24	455.71	436.72	13.00	OSF1.50	8340.00	8326.22					MinPt-O-SF	
1367.79	305.58	1163.64	1062.20	6.74	OSF1.50	18393.07	8700.00					MinPts	

Cimarex Riverbend 14 Federal  
#2H XEM + MWD 0ft to  
12455ft (Def Survey)

Warning Alert

4978.64	32.81	4976.66	4945.83	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
4978.54	32.81	4976.55	4945.73	471897.86	MAS = 10.00 (m)	20.00	20.00					MinPt-O-SF	
4978.54	32.81	4976.55	4945.73	529862.69	MAS = 10.00 (m)	23.00	23.00					WRP	
4978.53	32.81	4976.53	4945.72	314151.17	MAS = 10.00 (m)	30.00	30.00					MinPts	
4978.56	32.81	4976.49	4945.75	59970.14	MAS = 10.00 (m)	60.00	60.00					MINPT-O-EOU	
5021.17	32.81	5010.54	4988.36	580.20	MAS = 10.00 (m)	2670.00	2664.79					MINPT-O-EOU	
5023.23	32.81	5010.27	4990.43	456.99	MAS = 10.00 (m)	3350.00	3341.14					MINPT-O-EOU	
5023.89	32.81	5010.26	4991.08	431.00	MAS = 10.00 (m)	3530.00	3520.17					MINPT-O-EOU	
5024.59	32.81	5010.25	4991.78	406.20	MAS = 10.00 (m)	3710.00	3699.21					MINPT-O-EOU	
5027.37	32.81	5011.80	4994.56	369.60	MAS = 10.00 (m)	4100.00	4087.24					MinPt-O-SF	
5055.78	32.81	5033.84	5022.97	253.18	MAS = 10.00 (m)	6480.00	6467.05					MinPt-O-SF	
5048.49	35.17	5024.38	5013.32	228.10	OSF1.50	7070.00	7057.05					MinPt-CtCt	
5043.50	39.79	5016.32	5003.71	200.02	OSF1.50	7810.00	7797.05					MinPt-CtCt	
5043.59	40.10	5016.20	5003.49	198.40	OSF1.50	7860.00	7847.05					MINPT-O-EOU	
5044.05	40.63	5016.30	5003.41	195.66	OSF1.50	7960.00	7947.05					MinPt-O-ADP	
5040.60	42.09	5011.88	4998.51	188.41	OSF1.50	8300.00	8286.86					MinPt-O-SF	
339.81	105.51	267.95	234.30	4.98	OSF1.50	13390.00	8700.00			OSF<5.00		Enter Alert	
300.20	113.17	224.10	187.03	4.02	OSF1.50	13550.00	8700.00					MinPts	
331.51	103.03	262.16	228.48	4.89	OSF1.50	13690.00	8700.00			OSF>5.00		Exit Alert	
2118.13	165.82	2006.92	1952.30	19.37	OSF1.50	15650.00	8700.00					MinPts	
2132.25	167.82	2019.71	1964.43	19.27	OSF1.50	15810.00	8700.00					MinPt-O-SF	
3549.82	136.29	3458.30	3413.53	39.62	OSF1.50	18393.07	8700.00					TD	

Cimarex Riverbend 14 Federal  
#2H MWD 10734ft to 15325ft  
(Def Survey)

Warning Alert

4978.64	32.81	4976.66	4945.83	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
4978.54	32.81	4976.55	4945.73	471897.86	MAS = 10.00 (m)	20.00	20.00					MinPt-O-SF	
4978.54	32.81	4976.55	4945.73	529862.69	MAS = 10.00 (m)	23.00	23.00					WRP	
4978.53	32.81	4976.53	4945.72	314151.17	MAS = 10.00 (m)	30.00	30.00					MinPts	
4978.56	32.81	4976.49	4945.75	59970.14	MAS = 10.00 (m)	60.00	60.00					MINPT-O-EOU	
5021.17	32.81	5010.54	4988.36	580.20	MAS = 10.00 (m)	2670.00	2664.79					MINPT-O-EOU	
5023.23	32.81	5010.27	4990.43	456.99	MAS = 10.00 (m)	3350.00	3341.14					MINPT-O-EOU	
5023.89	32.81	5010.26	4991.08	431.00	MAS = 10.00 (m)	3530.00	3520.17					MINPT-O-EOU	
5024.59	32.81	5010.25	4991.78	406.20	MAS = 10.00 (m)	3710.00	3699.21					MINPT-O-EOU	
5027.37	32.81	5011.80	4994.56	369.60	MAS = 10.00 (m)	4100.00	4087.24					MinPt-O-SF	
5055.78	32.81	5033.84	5022.97	253.18	MAS = 10.00 (m)	6480.00	6467.05					MinPt-O-SF	
5048.49	35.17	5024.38	5013.32	228.10	OSF1.50	7070.00	7057.05					MinPt-CtCt	
5043.50	39.79	5016.32	5003.71	200.02	OSF1.50	7810.00	7797.05					MinPt-CtCt	
5043.59	40.10	5016.20	5003.49	198.40	OSF1.50	7860.00	7847.05					MINPT-O-EOU	
5044.05	40.63	5016.30	5003.41	195.66	OSF1.50	7960.00	7947.05					MinPt-O-ADP	
5040.60	42.09	5011.88	4998.51	188.41	OSF1.50	8300.00	8286.86					MinPt-O-SF	
339.81	105.51	267.95	234.30	4.98	OSF1.50	13390.00	8700.00			OSF<5.00		Enter Alert	
300.20	113.17	224.10	187.03	4.02	OSF1.50	13550.00	8700.00					MinPts	
331.51	103.03	262.16	228.48	4.89	OSF1.50	13690.00	8700.00			OSF>5.00		Exit Alert	
2109.99	184.74	1986.17	1925.25	17.30	OSF1.50	16370.00	8700.00					MinPt-CtCt	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
	2101.97	204.35	1965.08	1897.62	15.57	OSF1.50	17070.00	8700.00				MinPt-CtCt	
	2077.97	242.84	1915.41	1835.12	12.93	OSF1.50	18393.07	8700.00				MinPts	

Matador Salt Draw 11 Federal  
Com #1 (Offset) Inc Only 0ft-  
13550ft (Def Survey)

Warning Alert

1935.29	32.81	1934.00	1902.48	N/A	MAS = 10.00 (m)	0.00	0.00						MinPts	
1935.29	32.81	1933.91	1902.48	21125.95	MAS = 10.00 (m)	23.00	23.00						WRP	
1936.79	36.12	1912.28	1900.67	83.35	OSF1.50	810.00	810.00						MinPt-CtCt	
1776.37	219.57	1629.52	1556.80	12.20	OSF1.50	4370.00	4357.05						MinPt-CtCt	
1772.58	316.51	1561.11	1456.08	8.43	OSF1.50	6230.00	6217.05						MinPt-CtCt	
1772.94	420.51	1492.14	1352.44	6.34	OSF1.50	8230.00	8217.05						MinPt-CtCt	
1470.25	443.49	1173.94	1026.76	4.99	OSF1.50	8900.00	8692.37		OSF<5.00				Enter Alert	
999.93	444.94	702.81	554.99	3.38	OSF1.50	9980.00	8700.00						MinPts	
1480.03	447.07	1181.55	1032.96	4.98	OSF1.50	11070.00	8700.00		OSF>5.00				Exit Alert	
8470.63	460.45	8163.23	8010.18	27.67	OSF1.50	18393.07	8700.00						TD	

Mewbourne Hoss 2-11 B2BO  
Fed Com 2H (Offset) MWD 0ft-  
18370ft (Def Survey)

Warning Alert

5728.18	32.81	5726.90	5695.38	N/A	MAS = 10.00 (m)	0.00	0.00						Surface	
5728.17	32.81	5726.88	5695.36	N/A	MAS = 10.00 (m)	23.00	23.00						WRP	
5726.33	32.81	5723.75	5693.52	4427.91	MAS = 10.00 (m)	320.00	320.00						MinPts	
5726.62	32.81	5723.46	5693.81	3061.95	MAS = 10.00 (m)	470.00	470.00						MINPT-O-EOU	
5726.67	32.81	5722.94	5693.86	2346.76	MAS = 10.00 (m)	600.00	600.00						MinPts	
1282.85	286.92	1091.11	995.93	6.73	OSF1.50	8330.00	8316.44						MinPt-CtCt	
1282.86	286.99	1091.07	995.87	6.73	OSF1.50	8340.00	8326.22						MinPts	
1283.28	287.19	1091.37	996.09	6.73	OSF1.50	8370.00	8355.28						MinPt-O-SF	
1330.16	301.70	1128.58	1028.46	6.64	OSF1.50	9070.00	8700.00						MinPt-CtCt	
1335.69	318.75	1122.69	1016.94	6.31	OSF1.50	9440.00	8700.00						MINPT-O-EOU	
1328.87	336.25	1104.25	992.62	5.95	OSF1.50	9770.00	8700.00						MinPt-CtCt	
1329.31	337.61	1103.76	991.71	5.93	OSF1.50	9820.00	8700.00						MINPT-O-EOU	
1329.75	338.12	1103.83	991.62	5.92	OSF1.50	9840.00	8700.00						MinPt-O-ADP	
1331.38	339.79	1104.33	991.59	5.90	OSF1.50	9890.00	8700.00						MinPt-O-ADP	
1339.58	344.58	1109.26	995.00	5.85	OSF1.50	10040.00	8700.00						MinPt-O-SF	
1353.15	353.94	1116.64	999.22	5.75	OSF1.50	10180.00	8700.00						MinPts	
1376.51	382.24	1121.18	994.26	5.42	OSF1.50	10690.00	8700.00						MINPT-O-EOU	
1371.16	412.44	1095.77	958.72	5.00	OSF1.50	11240.00	8700.00		OSF<5.00				Enter Alert	
1370.00	422.24	1088.07	947.76	4.88	OSF1.50	11440.00	8700.00						MinPt-CtCt	
1369.98	434.44	1079.92	935.55	4.74	OSF1.50	11670.00	8700.00						MinPt-CtCt	
1364.90	460.48	1057.47	904.42	4.45	OSF1.50	12170.00	8700.00						MinPt-CtCt	
1378.13	497.04	1046.28	881.09	4.17	OSF1.50	12900.00	8700.00						MINPT-O-EOU	
1385.03	505.30	1047.64	879.74	4.12	OSF1.50	13080.00	8700.00						MinPt-O-ADP	
1387.41	507.94	1048.26	879.48	4.11	OSF1.50	13130.00	8700.00						MinPt-O-ADP	
1387.89	508.41	1048.43	879.48	4.10	OSF1.50	13140.00	8700.00						MinPt-O-SF	
1534.22	464.95	1223.10	1069.27	4.98	OSF1.50	13730.00	8700.00		OSF>5.00				Exit Alert	
5498.06	147.10	5399.57	5350.96	56.55	OSF1.50	18393.07	8700.00						TD	

Mewbourne Hoss 11 SWD #1  
(Offset) Blind SWD 0ft-15650ft  
(Def Survey)

Warning Alert

3030.95	32.81	3029.66	2998.14	N/A	MAS = 10.00 (m)	0.00	0.00						Surface	
3030.71	32.81	3029.39	2997.90	99627.17	MAS = 10.00 (m)	23.00	23.00						MinPt-O-SF	
2904.53	872.45	2322.45	2032.08	5.00	OSF1.50	2870.00	2863.71		OSF<5.00				Enter Alert	
2771.30	2557.02	1066.12	214.28	1.63	OSF1.50	8235.48	8222.54						MinPt-CtCt	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
2793.90	2677.30	1008.56	116.60	1.57	OSF1.50	8680.00	8605.57					MINPT-O-EOU	
2803.45	2689.07	1010.27	114.38	1.56	OSF1.50	8750.00	8643.10					MinPts	
9016.06	2707.63	7210.55	6308.44	5.00	OSF1.50	16860.00	8700.00		OSF>5.00			Exit Alert	
10485.97	2707.68	8680.42	7778.29	5.81	OSF1.50	18393.07	8700.00					TD	

Cimarex Riverbend 11-14  
Federal Com #3H Rev0 RM  
06Oct20 (Non-Def Plan)

Pass

1359.76	32.81	1358.48	1326.96	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
1359.76	32.81	1358.46	1326.96	82624.68	MAS = 10.00 (m)	23.00	23.00					WRP	
1359.76	32.81	1349.48	1326.96	150.94	MAS = 10.00 (m)	1490.00	1490.00					MinPts	
1359.77	32.81	1349.44	1326.96	150.14	MAS = 10.00 (m)	1500.00	1500.00					MINPT-O-EOU	
1365.75	32.81	1355.09	1332.94	145.60	MAS = 10.00 (m)	1640.00	1639.94					MinPt-O-SF	
1386.54	32.81	1375.79	1353.74	146.28	MAS = 10.00 (m)	1800.00	1799.45					MinPt-O-SF	
1889.59	32.81	1869.99	1856.78	103.12	MAS = 10.00 (m)	4100.00	4087.24					MinPt-O-SF	
1975.69	32.81	1953.97	1942.88	96.60	MAS = 10.00 (m)	4760.00	4747.05					MinPt-O-SF	
1979.93	55.60	1942.44	1924.33	54.65	OSF1.50	8300.00	8286.86					MinPt-O-SF	
1979.78	55.54	1942.33	1924.24	54.70	OSF1.50	8390.00	8374.37					MinPts	
1979.78	55.53	1942.33	1924.25	54.71	OSF1.50	8400.00	8383.82					MinPt-CtCt	
2350.81	308.26	2144.87	2042.55	11.48	OSF1.50	18393.07	8700.00					MinPts	

Chisholm Salt Draw 11 Federal  
#1 (Offset) ST01 Gyro+MWD  
0ft-6850ft (Def Survey)

Pass

2804.37	32.81	2803.09	2771.56	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
2804.00	32.81	2802.66	2771.19	50469.81	MAS = 10.00 (m)	23.00	23.00					MinPt-O-SF	
2803.79	32.81	2802.42	2770.98	34090.34	MAS = 10.00 (m)	60.00	60.00					MinPts	
2803.84	32.81	2801.21	2771.03	2090.43	MAS = 10.00 (m)	360.00	360.00					MinPts	
2803.99	32.81	2801.07	2771.18	1719.02	MAS = 10.00 (m)	420.00	420.00					MINPT-O-EOU	
2790.98	32.81	2782.69	2758.17	398.97	MAS = 10.00 (m)	1540.00	1540.00					MinPts	
2791.00	32.81	2782.65	2758.19	395.14	MAS = 10.00 (m)	1560.00	1560.00					MINPT-O-EOU	
1735.83	111.78	1660.84	1624.05	23.57	OSF1.50	4970.00	4957.05					MinPts	
4170.52	45.97	4139.44	4124.54	139.95	OSF1.50	9680.00	8700.00					MinPt-O-SF	
4178.35	43.31	4149.05	4135.04	149.10	OSF1.50	9910.00	8700.00					MinPt-O-SF	
4185.15	43.89	4155.46	4141.26	147.32	OSF1.50	10070.00	8700.00					MinPt-O-SF	
4187.76	43.87	4158.09	4143.89	147.47	OSF1.50	10120.00	8700.00					MinPt-O-SF	
4188.30	41.51	4160.20	4146.79	156.15	OSF1.50	10180.00	8700.00					MINPT-O-EOU	
4188.69	41.96	4160.29	4146.73	154.43	OSF1.50	10210.00	8700.00					MinPt-O-ADP	
4239.28	52.37	4203.94	4186.91	124.44	OSF1.50	10840.00	8700.00					MinPt-O-SF	
5223.27	91.74	5161.68	5131.53	86.60	OSF1.50	13540.00	8700.00					MinPt-O-SF	
8882.42	113.19	8806.53	8769.23	119.05	OSF1.50	18393.07	8700.00					TD	

Mewbourne Hoss 2-11 W2BO  
Fed Com 1H (Offset) MWD 0ft-  
20624ft (Def Survey)

Pass

5706.54	32.81	5703.63	5673.73	3527.20	MAS = 10.00 (m)	0.00	0.00					MinPt-O-SF	
5704.52	32.81	5701.60	5671.71	3477.57	MAS = 10.00 (m)	23.00	23.00					MinPt-O-SF	
5673.65	32.81	5669.16	5640.84	1776.72	MAS = 10.00 (m)	750.00	750.00					MinPts	
5673.79	32.81	5669.06	5640.98	1648.68	MAS = 10.00 (m)	810.00	810.00					MINPT-O-EOU	
5674.77	32.81	5669.19	5641.96	1322.67	MAS = 10.00 (m)	1010.00	1010.00					MINPT-O-EOU	
5680.16	32.81	5672.17	5647.35	847.86	MAS = 10.00 (m)	1600.00	1599.98					MINPT-O-EOU	
5636.20	32.81	5621.06	5603.39	407.61	MAS = 10.00 (m)	4100.00	4087.24					MinPt-O-SF	
5631.12	32.81	5616.50	5598.31	423.48	MAS = 10.00 (m)	4510.00	4497.05					MinPts	
5631.16	32.81	5616.46	5598.35	421.06	MAS = 10.00 (m)	4540.00	4527.05					MINPT-O-EOU	
5638.02	32.81	5622.02	5605.22	383.65	MAS = 10.00 (m)	4990.00	4977.05					MINPT-O-EOU	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
2374.00	189.80	2247.03	2184.19	18.88		OSF1.50	8970.00	8699.75				MinPts	
2383.64	220.71	2236.06	2162.92	16.29		OSF1.50	9770.00	8700.00				MinPt-CtCt	
2383.94	221.59	2235.78	2162.35	16.22		OSF1.50	9820.00	8700.00				MINPT-O-EOU	
2384.22	221.94	2235.83	2162.28	16.20		OSF1.50	9840.00	8700.00				MinPt-O-ADP	
2385.86	223.44	2236.47	2162.42	16.10		OSF1.50	9910.00	8700.00				MinPt-O-ADP	
2394.94	235.37	2237.60	2159.57	15.34		OSF1.50	10160.00	8700.00				MINPT-O-EOU	
2395.05	235.50	2237.62	2159.55	15.33		OSF1.50	10170.00	8700.00				MinPt-O-ADP	
2408.78	238.51	2249.35	2170.27	15.22		OSF1.50	10440.00	8700.00				MinPt-O-SF	
2421.36	252.05	2252.90	2169.31	14.48		OSF1.50	10580.00	8700.00				MINPT-O-EOU	
2422.68	253.65	2253.16	2169.03	14.39		OSF1.50	10640.00	8700.00				MinPt-O-ADP	
2439.78	259.19	2266.56	2180.59	14.18		OSF1.50	10930.00	8700.00				MinPt-O-SF	
2464.72	291.29	2270.09	2173.43	12.74		OSF1.50	11450.00	8700.00				MinPt-CtCt	
2452.80	305.09	2248.98	2147.71	12.10		OSF1.50	11880.00	8700.00				MinPt-CtCt	
2449.39	312.86	2240.38	2136.52	11.79		OSF1.50	12110.00	8700.00				MinPt-CtCt	
2437.72	326.87	2219.38	2110.85	11.22		OSF1.50	12500.00	8700.00				MinPt-CtCt	
2438.22	328.45	2218.82	2109.77	11.17		OSF1.50	12570.00	8700.00				MINPT-O-EOU	
2438.93	329.33	2218.95	2109.60	11.15		OSF1.50	12610.00	8700.00				MinPt-O-ADP	
2430.48	341.94	2202.10	2088.55	10.70		OSF1.50	12940.00	8700.00				MinPt-CtCt	
2430.51	342.00	2202.08	2088.51	10.69		OSF1.50	12950.00	8700.00				MinPts	
2431.03	342.18	2202.48	2088.85	10.69		OSF1.50	12990.00	8700.00				MinPt-O-SF	
5971.59	167.43	5859.31	5804.16	54.13		OSF1.50	18393.07	8700.00				TD	

Chisholm Salt Draw 11 Federal  
#1 (Offset) Gyro 0ft-5110ft (Def  
Survey)

Pass

2804.37	32.81	2803.09	2771.56	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
2804.00	32.81	2802.66	2771.19	50469.81	MAS = 10.00 (m)	23.00	23.00					MinPt-O-SF	
2803.79	32.81	2802.42	2770.98	34090.34	MAS = 10.00 (m)	60.00	60.00					MinPts	
2803.84	32.81	2801.21	2771.03	2090.43	MAS = 10.00 (m)	360.00	360.00					MinPts	
2803.99	32.81	2801.07	2771.18	1719.02	MAS = 10.00 (m)	420.00	420.00					MINPT-O-EOU	
2790.98	32.81	2782.69	2758.17	398.97	MAS = 10.00 (m)	1540.00	1540.00					MinPts	
2791.00	32.81	2782.65	2758.19	395.14	MAS = 10.00 (m)	1560.00	1560.00					MINPT-O-EOU	
2919.61	32.81	2902.73	2886.80	187.18	MAS = 10.00 (m)	4012.41	4000.00					MinPt-O-SF	
2930.27	32.81	2913.79	2897.46	192.79	MAS = 10.00 (m)	4670.00	4657.05					MinPts	
2930.36	32.81	2913.70	2897.55	190.60	MAS = 10.00 (m)	4750.00	4737.05					MINPT-O-EOU	
2930.50	32.81	2913.56	2897.69	187.12	MAS = 10.00 (m)	4900.00	4887.05					MinPts	
2930.71	32.81	2913.43	2897.90	183.09	MAS = 10.00 (m)	5040.00	5027.05					MINPT-O-EOU	
2930.82	32.81	2913.43	2898.01	181.98	MAS = 10.00 (m)	5090.00	5077.05					MINPT-O-EOU	
2931.04	32.81	2913.45	2898.23	179.71	MAS = 10.00 (m)	5190.00	5177.05					MINPT-O-EOU	
3344.41	33.88	3321.40	3310.54	153.87	OSF1.50	6790.00	6777.05					MinPt-O-SF	
4023.51	56.35	3985.52	3967.17	109.58	OSF1.50	10720.00	8700.00					MinPt-CtCt	
4023.72	57.02	3985.28	3966.70	108.25	OSF1.50	10760.00	8700.00					MINPT-O-EOU	
4024.14	57.53	3985.35	3966.61	107.29	OSF1.50	10790.00	8700.00					MinPt-O-ADP	
4654.97	89.96	4594.57	4565.01	78.72	OSF1.50	13060.00	8700.00					MinPt-O-SF	
8664.84	106.87	8593.16	8557.97	123.08	OSF1.50	18393.07	8700.00					TD	

Walter W Krug Mada Fed #1  
(Offset) Dry Hole Blind 0ft-  
3170ft (Def Survey)

Pass

7468.79	32.81	7467.50	7435.98	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
7468.68	32.81	7467.38	7435.88	550907.31	MAS = 10.00 (m)	23.00	23.00					WRP	
7409.64	982.17	6754.42	6427.47	11.33	OSF1.50	3350.00	3341.14					MinPt-O-SF	
7408.58	981.86	6753.56	6426.72	11.33	OSF1.50	3450.00	3440.60					MinPt-O-ADP	
7408.55	981.82	6753.56	6426.73	11.33	OSF1.50	3460.00	3450.55					MINPT-O-EOU	
7408.53	981.74	6753.59	6426.79	11.33	OSF1.50	3480.00	3470.44					MinPt-CtCt	
7716.74	692.54	7254.61	7024.19	16.74	OSF1.50	10630.00	8700.00					MinPt-O-SF	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
	6015.31	432.81	5726.35	5582.51	20.91	OSF1.50	15460.00	8700.00				MinPt-CtCt	
	6015.49	433.28	5726.21	5582.22	20.88	OSF1.50	15510.00	8700.00				MINPT-O-EOU	
	6015.80	433.62	5726.29	5582.18	20.87	OSF1.50	15540.00	8700.00				MinPt-O-ADP	
	6690.71	598.00	6291.61	6092.71	16.82	OSF1.50	18393.07	8700.00				MinPt-O-SF	



Cimarex Energy

Rev 0

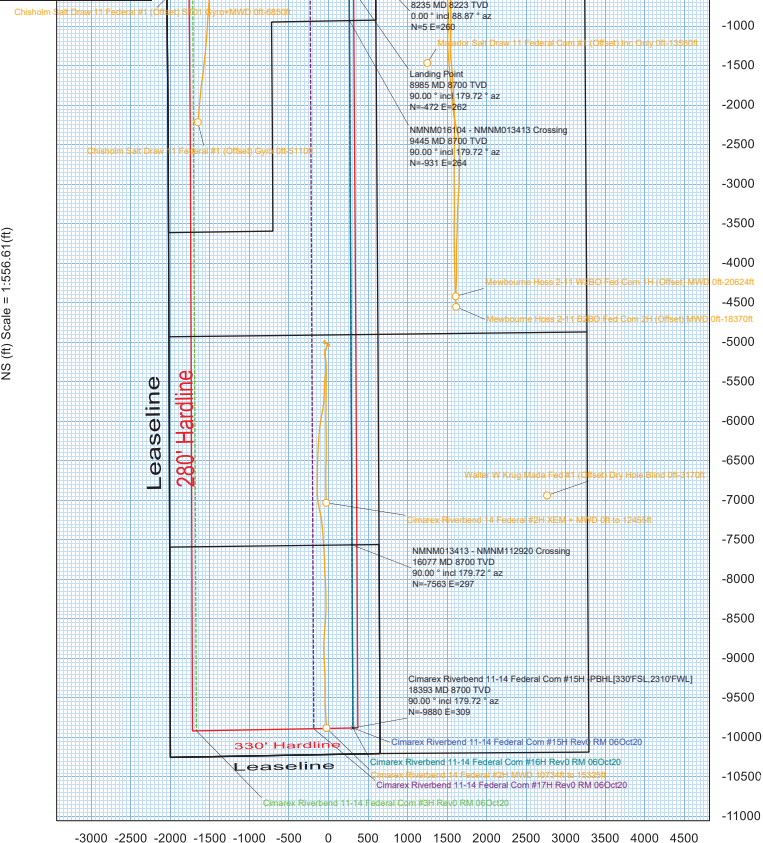
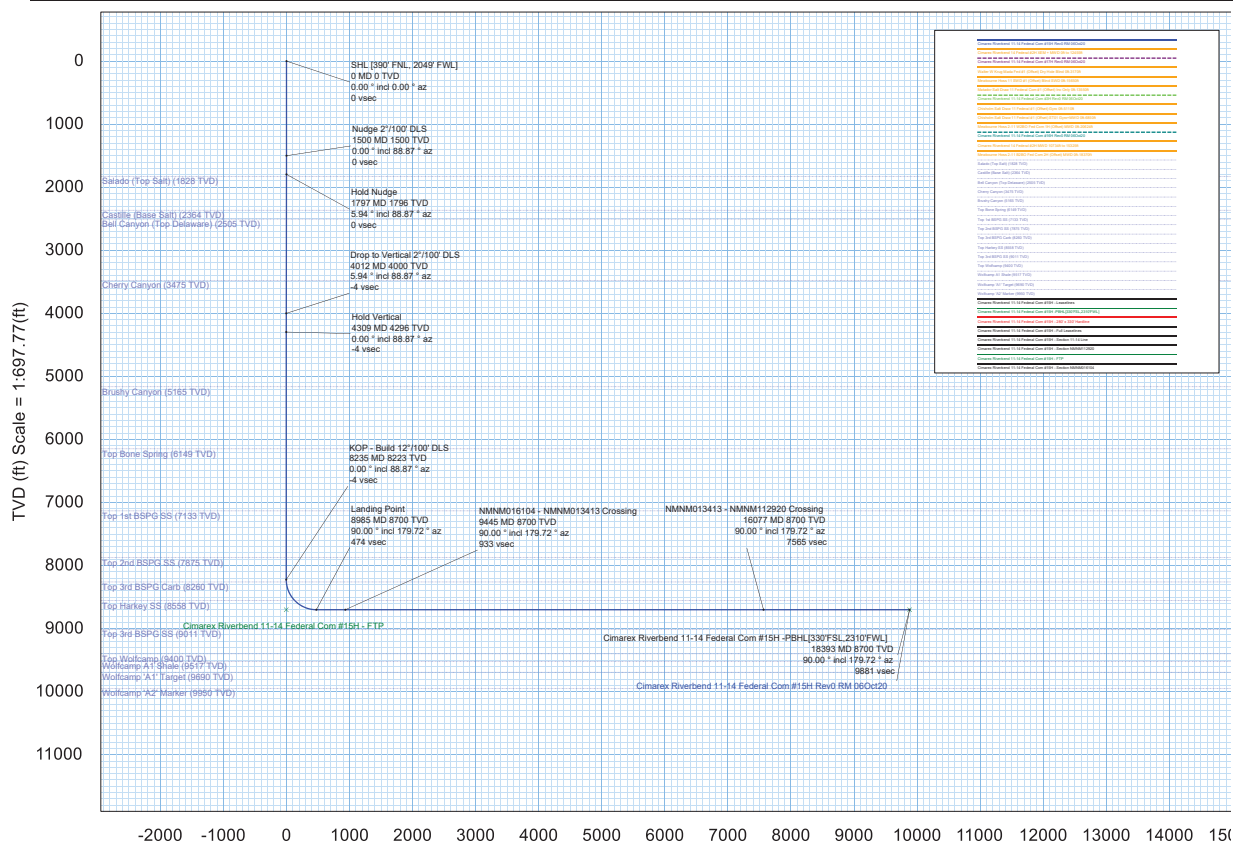


Borehole:	Well:	Field:	Structure:
Riverbend 11-14 Federal Com #15H	Riverbend 11-14 Federal Com #15H	NM Eddy County (NAD 83)	Cimarex Riverbend 11-14 Federal Com #15H

Gravity & Magnetic Parameters	Dip:	59.829°	Date:	06-Oct-2020	Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Grid Conv:	0.1485°	Miscellaneous
Model: HDGM 2020	FS:	47736.048nT	Gravity FS:	998.457mgN (9.80665 Based)	Lat: N 32 9 3.22	Northings: 418738.26HUS	Scale Fact:	0.99991729	Slot: New Slot
MagDec: 6.889°					Lon: W 104 3 35.78	Easting: 625947.21HUS			Plan: Cimarex Riverbend 11-14 Federal Com #15H Rev0 RM 06Oct20

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)S(-)	E(+)W(-)	DLS
SHL [390° FNL, 2049° FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	0.00
Nudge 2°/100' DLS	1500.00	0.00	88.87	1500.00	0.00	0.00	0.00	0.00
Hold Nudge	1796.85	5.94	88.87	1796.32	-0.23	0.30	15.36	2.00
Salado (Top Salt)	1828.70	5.94	88.87	1828.00	-0.28	0.37	18.66	0.00
Castille (Base Salt)	2367.59	5.94	88.87	2364.00	-1.10	1.47	74.39	0.00
Bell Canyon (Top Delaware)	2509.35	5.94	88.87	2505.00	-1.32	1.75	89.05	0.00
Cherry Canyon	3484.58	5.94	88.87	3475.00	-2.80	3.74	189.90	0.00
Drop to Vertical 2°/100' DLS	4012.41	5.94	88.87	4000.00	-3.61	4.82	244.49	0.00
Hold Vertical	4309.26	0.00	88.87	4296.32	-3.84	5.12	259.85	2.00
Brushy Canyon	5177.95	0.00	88.87	5165.00	-3.84	5.12	259.85	0.00
Top Bone Spring	6161.95	0.00	88.87	6149.00	-3.84	5.12	259.85	0.00
Top 1st BSPG SS	7145.95	0.00	88.87	7133.00	-3.84	5.12	259.85	0.00
Top 2nd BSPG SS	7887.95	0.00	88.87	7875.00	-3.84	5.12	259.85	0.00
KOP - Build 12°/100' DLS	8235.48	0.00	88.87	8222.54	-3.84	5.12	259.85	0.00
Top 3rd BSPG Carb	8272.98	4.50	179.72	8260.00	-2.37	3.65	259.86	12.00
Top Hankey SS	8607.44	44.64	179.72	8558.00	133.87	-132.58	260.53	12.00
Landing Point	8985.48	90.00	179.72	8700.00	473.63	-472.34	262.21	12.00
NMNM016104 - NMNM013413 Crossing	9444.60	90.00	179.72	8700.00	932.75	-931.45	264.47	0.00
NMNM013413 - NMNM112920 Crossing	16076.70	90.00	179.72	8700.00	7564.85	-7563.47	297.23	0.00
Cimarex Riverbend 11-14 Federal Com #15H - PBHL330°FSL 2310°FWL	18393.07	90.00	179.72	8700.00	9881.22	-9879.82	308.67	0.00
Top 3rd BSPG SS	NaN			9011.00				
Top Wolfcamp	NaN			9400.00				
Wolfcamp A1 Shale	NaN			9517.00				
Wolfcamp A1 Target	NaN			9690.00				
Wolfcamp A2 Marker	NaN			9950.00				

**CONTROLLED**  
Drawing ref: 060002  
Copy number: 1 of 3  
Date: 07-Oct-2020  
Client: Cimarex Energy  
Office: Houston  
Copy number: 1 of 3



Vertical Section (ft) Azim = 179.72° Scale = 1:697.77(ft) Origin = 0N/-S, 0E/-W

EW (ft) Scale = 1:556.61(ft)



## Cimarex Riverbend 11-14 Federal Com #15H Rev0 RM 06Oct20 Proposal Geodetic Report (Non-Def Plan)



**Report Date:** October 07, 2020 - 11:54 AM  
**Client:** Cimarex Energy  
**Field:** NM Eddy County (NAD 83)  
**Structure / Slot:** Cimarex Riverbend 11-14 Federal Com #15H / New Slot  
**Well:** Riverbend 11-14 Federal Com #15H  
**Borehole:** Riverbend 11-14 Federal Com #15H  
**UWI / API#:** Unknown / Unknown  
**Survey Name:** Cimarex Riverbend 11-14 Federal Com #15H Rev0 RM 06Oct20  
**Survey Date:** October 06, 2020  
**Tort / AHD / DDI / ERD Ratio:** 101.874 ° / 10144.957 ft / 6.339 / 1.166  
**Coordinate Reference System:** NAD83 New Mexico State Plane, Eastern Zone, US Feet  
**Location Lat / Long:** N 32° 9' 3.22071", W 104° 3' 35.78426"  
**Location Grid N/E Y/X:** N 418738.260 ftUS, E 625947.200 ftUS  
**CRS Grid Convergence Angle:** 0.1455 °  
**Grid Scale Factor:** 0.99991729  
**Version / Patch:** 2.10.821.3

**Survey / DLS Computation:** Minimum Curvature / Lubinski  
**Vertical Section Azimuth:** 179.717 ° (Grid North)  
**Vertical Section Origin:** 0.000 ft, 0.000 ft  
**TVD Reference Datum:** RKB  
**TVD Reference Elevation:** 2990.300 ft above MSL  
**Seabed / Ground Elevation:** 2967.300 ft above MSL  
**Magnetic Declination:** 6.889 °  
**Total Gravity Field Strength:** 998.4571mgn (9.80665 Based)  
**Gravity Model:** GARM  
**Total Magnetic Field Strength:** 47736.048 nT  
**Magnetic Dip Angle:** 59.829 °  
**Declination Date:** October 06, 2020  
**Magnetic Declination Model:** HDGM 2020  
**North Reference:** Grid North  
**Grid Convergence Used:** 0.1455 °  
**Total Corr Mag North->Grid North:** 6.7430 °  
**Local Coord Referenced To:** Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [390' FNL, 2049' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	100.00	0.00	88.87	100.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	200.00	0.00	88.87	200.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	300.00	0.00	88.87	300.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	400.00	0.00	88.87	400.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	500.00	0.00	88.87	500.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	600.00	0.00	88.87	600.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	700.00	0.00	88.87	700.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	800.00	0.00	88.87	800.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	900.00	0.00	88.87	900.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	1000.00	0.00	88.87	1000.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	1100.00	0.00	88.87	1100.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	1200.00	0.00	88.87	1200.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	1300.00	0.00	88.87	1300.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	1400.00	0.00	88.87	1400.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
Nudge 2°/100' DLS	1500.00	0.00	88.87	1500.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
	1600.00	2.00	88.87	1599.98	-0.03	0.03	1.74	2.00	418738.29	625948.94	N 32 9 3.22	W 104 3 35.76
	1700.00	4.00	88.87	1699.84	-0.10	0.14	6.98	2.00	418738.40	625954.18	N 32 9 3.22	W 104 3 35.70
Hold Nudge	1796.85	5.94	88.87	1796.32	-0.23	0.30	15.36	2.00	418738.56	625962.56	N 32 9 3.22	W 104 3 35.61
	1800.00	5.94	88.87	1799.45	-0.23	0.31	15.69	0.00	418738.57	625962.89	N 32 9 3.22	W 104 3 35.60
Salado (Top Salt)	1828.70	5.94	88.87	1828.00	-0.28	0.37	18.66	0.00	418738.63	625965.86	N 32 9 3.22	W 104 3 35.57
	1900.00	5.94	88.87	1898.92	-0.38	0.51	26.03	0.00	418738.77	625973.23	N 32 9 3.23	W 104 3 35.48
	2000.00	5.94	88.87	1998.38	-0.54	0.72	36.37	0.00	418738.98	625983.57	N 32 9 3.23	W 104 3 35.36
	2100.00	5.94	88.87	2097.84	-0.69	0.92	46.71	0.00	418739.18	625993.91	N 32 9 3.23	W 104 3 35.24
	2200.00	5.94	88.87	2197.31	-0.84	1.12	57.05	0.00	418739.38	626004.25	N 32 9 3.23	W 104 3 35.12



Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	2300.00	5.94	88.87	2296.77	-1.00	1.33	67.40	0.00	418739.59	626014.59	N 32 9 3.23	W 104 3 35.00
Castille (Base Salt)	2367.59	5.94	88.87	2364.00	-1.10	1.47	74.39	0.00	418739.73	626021.58	N 32 9 3.23	W 104 3 34.92
	2400.00	5.94	88.87	2396.23	-1.15	1.53	77.74	0.00	418739.79	626024.93	N 32 9 3.23	W 104 3 34.88
	2500.00	5.94	88.87	2495.70	-1.30	1.74	88.08	0.00	418740.00	626035.27	N 32 9 3.24	W 104 3 34.76
Bell Canyon (Top Delaware)	2509.35	5.94	88.87	2505.00	-1.32	1.75	89.05	0.00	418740.01	626036.24	N 32 9 3.24	W 104 3 34.75
	2600.00	5.94	88.87	2595.16	-1.45	1.94	98.42	0.00	418740.20	626045.61	N 32 9 3.24	W 104 3 34.64
	2700.00	5.94	88.87	2694.62	-1.61	2.14	108.76	0.00	418740.40	626055.95	N 32 9 3.24	W 104 3 34.52
	2800.00	5.94	88.87	2794.09	-1.76	2.35	119.10	0.00	418740.61	626066.29	N 32 9 3.24	W 104 3 34.40
	2900.00	5.94	88.87	2893.55	-1.91	2.55	129.45	0.00	418740.81	626076.63	N 32 9 3.24	W 104 3 34.28
	3000.00	5.94	88.87	2993.02	-2.06	2.75	139.79	0.00	418741.01	626086.97	N 32 9 3.24	W 104 3 34.16
	3100.00	5.94	88.87	3092.48	-2.22	2.96	150.13	0.00	418741.22	626097.32	N 32 9 3.25	W 104 3 34.04
	3200.00	5.94	88.87	3191.94	-2.37	3.16	160.47	0.00	418741.42	626107.66	N 32 9 3.25	W 104 3 33.92
	3300.00	5.94	88.87	3291.41	-2.52	3.37	170.81	0.00	418741.63	626118.00	N 32 9 3.25	W 104 3 33.80
	3400.00	5.94	88.87	3390.87	-2.68	3.57	181.15	0.00	418741.83	626128.34	N 32 9 3.25	W 104 3 33.68
Cherry Canyon	3484.58	5.94	88.87	3475.00	-2.80	3.74	189.90	0.00	418742.00	626137.08	N 32 9 3.25	W 104 3 33.58
	3500.00	5.94	88.87	3490.33	-2.83	3.77	191.49	0.00	418742.03	626138.68	N 32 9 3.25	W 104 3 33.56
	3600.00	5.94	88.87	3589.80	-2.98	3.98	201.84	0.00	418742.24	626149.02	N 32 9 3.25	W 104 3 33.44
	3700.00	5.94	88.87	3689.26	-3.13	4.18	212.18	0.00	418742.44	626159.36	N 32 9 3.26	W 104 3 33.32
	3800.00	5.94	88.87	3788.72	-3.29	4.39	222.52	0.00	418742.64	626169.70	N 32 9 3.26	W 104 3 33.20
	3900.00	5.94	88.87	3888.19	-3.44	4.59	232.86	0.00	418742.85	626180.04	N 32 9 3.26	W 104 3 33.08
	4000.00	5.94	88.87	3987.65	-3.59	4.79	243.20	0.00	418743.05	626190.38	N 32 9 3.26	W 104 3 32.96
Drop to Vertical 2°/100' DLS	4012.41	5.94	88.87	4000.00	-3.61	4.82	244.49	0.00	418743.08	626191.66	N 32 9 3.26	W 104 3 32.94
	4100.00	4.19	88.87	4087.24	-3.72	4.97	252.21	2.00	418743.23	626199.39	N 32 9 3.26	W 104 3 32.85
	4200.00	2.19	88.87	4187.08	-3.81	5.08	257.77	2.00	418743.34	626204.94	N 32 9 3.26	W 104 3 32.79
	4300.00	0.19	88.87	4287.05	-3.84	5.12	259.83	2.00	418743.38	626207.01	N 32 9 3.26	W 104 3 32.76
Hold Vertical	4309.26	0.00	88.87	4296.32	-3.84	5.12	259.85	2.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	4400.00	0.00	88.87	4387.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	4500.00	0.00	88.87	4487.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	4600.00	0.00	88.87	4587.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	4700.00	0.00	88.87	4687.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	4800.00	0.00	88.87	4787.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	4900.00	0.00	88.87	4887.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	5000.00	0.00	88.87	4987.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	5100.00	0.00	88.87	5087.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
Brushy Canyon	5177.95	0.00	88.87	5165.00	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	5200.00	0.00	88.87	5187.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	5300.00	0.00	88.87	5287.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	5400.00	0.00	88.87	5387.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	5500.00	0.00	88.87	5487.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	5600.00	0.00	88.87	5587.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	5700.00	0.00	88.87	5687.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	5800.00	0.00	88.87	5787.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	5900.00	0.00	88.87	5887.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	6000.00	0.00	88.87	5987.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	6100.00	0.00	88.87	6087.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
Top Bone Spring	6161.95	0.00	88.87	6149.00	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	6200.00	0.00	88.87	6187.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	6300.00	0.00	88.87	6287.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	6400.00	0.00	88.87	6387.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	6500.00	0.00	88.87	6487.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	6600.00	0.00	88.87	6587.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	6700.00	0.00	88.87	6687.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	6800.00	0.00	88.87	6787.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	6900.00	0.00	88.87	6887.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Top 1st BSPG SS	7000.00	0.00	88.87	6987.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	7100.00	0.00	88.87	7087.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	7145.95	0.00	88.87	7133.00	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	7200.00	0.00	88.87	7187.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	7300.00	0.00	88.87	7287.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	7400.00	0.00	88.87	7387.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	7500.00	0.00	88.87	7487.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	7600.00	0.00	88.87	7587.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
Top 2nd BSPG SS	7700.00	0.00	88.87	7687.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	7800.00	0.00	88.87	7787.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	7887.95	0.00	88.87	7875.00	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	7900.00	0.00	88.87	7887.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	8000.00	0.00	88.87	7987.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	8100.00	0.00	88.87	8087.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
	8200.00	0.00	88.87	8187.05	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
KOP - Build 12"/100' DLS	8235.48	0.00	88.87	8222.54	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
Top 3rd BSPG Carb	8272.98	4.50	179.72	8260.00	-2.37	3.65	259.86	12.00	418741.91	626207.03	N 32 9 3.25	W 104 3 32.76
Top Harkey SS	8300.00	7.74	179.72	8286.86	0.52	0.77	259.87	12.00	418739.03	626207.05	N 32 9 3.22	W 104 3 32.76
	8400.00	19.74	179.72	8383.82	24.23	-22.94	259.99	12.00	418715.32	626207.16	N 32 9 2.99	W 104 3 32.76
	8500.00	31.74	179.72	8473.73	67.58	-66.30	260.20	12.00	418671.97	626207.38	N 32 9 2.56	W 104 3 32.76
	8600.00	43.74	179.72	8552.66	128.68	-127.39	260.50	12.00	418610.88	626207.68	N 32 9 1.95	W 104 3 32.76
	8607.44	44.64	179.72	8558.00	133.87	-132.58	260.53	12.00	418605.69	626207.71	N 32 9 1.90	W 104 3 32.76
	8700.00	55.74	179.72	8617.17	204.85	-203.57	260.88	12.00	418534.71	626208.06	N 32 9 1.20	W 104 3 32.76
	8800.00	67.74	179.72	8664.42	292.78	-291.49	261.31	12.00	418446.80	626208.49	N 32 9 0.33	W 104 3 32.75
	8900.00	79.74	179.72	8692.37	388.60	-387.31	261.79	12.00	418350.98	626208.96	N 32 8 59.38	W 104 3 32.75
Landing Point	8985.48	90.00	179.72	8700.00	473.63	-472.34	262.21	12.00	418265.96	626209.38	N 32 8 58.54	W 104 3 32.75
	9000.00	90.00	179.72	8700.00	488.15	-486.86	262.28	0.00	418251.44	626209.46	N 32 8 58.40	W 104 3 32.75
	9100.00	90.00	179.72	8700.00	588.15	-586.86	262.77	0.00	418151.45	626209.95	N 32 8 57.41	W 104 3 32.75
	9200.00	90.00	179.72	8700.00	688.15	-686.85	263.27	0.00	418051.46	626210.44	N 32 8 56.42	W 104 3 32.74
	9300.00	90.00	179.72	8700.00	788.15	-786.85	263.76	0.00	417951.47	626210.94	N 32 8 55.43	W 104 3 32.74
	9400.00	90.00	179.72	8700.00	888.15	-886.85	264.25	0.00	417851.48	626211.43	N 32 8 54.44	W 104 3 32.74
NMNM016104 - NMNM013413 Crossing	9444.60	90.00	179.72	8700.00	932.75	-931.45	264.47	0.00	417806.89	626211.65	N 32 8 54.00	W 104 3 32.74
	9500.00	90.00	179.72	8700.00	988.15	-986.85	264.75	0.00	417751.49	626211.92	N 32 8 53.45	W 104 3 32.73
	9600.00	90.00	179.72	8700.00	1088.15	-1086.85	265.24	0.00	417651.50	626212.42	N 32 8 52.46	W 104 3 32.73
	9700.00	90.00	179.72	8700.00	1188.15	-1186.85	265.73	0.00	417551.51	626212.91	N 32 8 51.47	W 104 3 32.73
	9800.00	90.00	179.72	8700.00	1288.15	-1286.85	266.23	0.00	417451.52	626213.41	N 32 8 50.48	W 104 3 32.73
	9900.00	90.00	179.72	8700.00	1388.15	-1386.85	266.72	0.00	417351.53	626213.90	N 32 8 49.49	W 104 3 32.72
	10000.00	90.00	179.72	8700.00	1488.15	-1486.84	267.22	0.00	417251.54	626214.39	N 32 8 48.50	W 104 3 32.72
	10100.00	90.00	179.72	8700.00	1588.15	-1586.84	267.71	0.00	417151.55	626214.89	N 32 8 47.51	W 104 3 32.72
	10200.00	90.00	179.72	8700.00	1688.15	-1686.84	268.20	0.00	417051.56	626215.38	N 32 8 46.52	W 104 3 32.71
	10300.00	90.00	179.72	8700.00	1788.15	-1786.84	268.70	0.00	416951.57	626215.88	N 32 8 45.53	W 104 3 32.71
	10400.00	90.00	179.72	8700.00	1888.15	-1886.84	269.19	0.00	416851.58	626216.37	N 32 8 44.54	W 104 3 32.71
	10500.00	90.00	179.72	8700.00	1988.15	-1986.84	269.69	0.00	416751.59	626216.86	N 32 8 43.55	W 104 3 32.71
	10600.00	90.00	179.72	8700.00	2088.15	-2086.84	270.18	0.00	416651.60	626217.36	N 32 8 42.56	W 104 3 32.70
	10700.00	90.00	179.72	8700.00	2188.15	-2186.84	270.67	0.00	416551.61	626217.85	N 32 8 41.57	W 104 3 32.70
	10800.00	90.00	179.72	8700.00	2288.15	-2286.84	271.17	0.00	416451.62	626218.34	N 32 8 40.59	W 104 3 32.70
	10900.00	90.00	179.72	8700.00	2388.15	-2386.83	271.66	0.00	416351.63	626218.84	N 32 8 39.60	W 104 3 32.70
	11000.00	90.00	179.72	8700.00	2488.15	-2486.83	272.16	0.00	416251.64	626219.33	N 32 8 38.61	W 104 3 32.69
	11100.00	90.00	179.72	8700.00	2588.15	-2586.83	272.65	0.00	416151.65	626219.83	N 32 8 37.62	W 104 3 32.69
	11200.00	90.00	179.72	8700.00	2688.15	-2686.83	273.14	0.00	416051.66	626220.32	N 32 8 36.63	W 104 3 32.69
	11300.00	90.00	179.72	8700.00	2788.15	-2786.83	273.64	0.00	415951.67	626220.81	N 32 8 35.64	W 104 3 32.68
	11400.00	90.00	179.72	8700.00	2888.15	-2886.83	274.13	0.00	415851.68	626221.31	N 32 8 34.65	W 104 3 32.68

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	11500.00	90.00	179.72	8700.00	2988.15	-2986.83	274.62	0.00	415751.69	626221.80	N 32 8 33.66	W 104 3 32.68
	11600.00	90.00	179.72	8700.00	3088.15	-3086.83	275.12	0.00	415651.70	626222.29	N 32 8 32.67	W 104 3 32.68
	11700.00	90.00	179.72	8700.00	3188.15	-3186.82	275.61	0.00	415551.71	626222.79	N 32 8 31.68	W 104 3 32.67
	11800.00	90.00	179.72	8700.00	3288.15	-3286.82	276.11	0.00	415451.72	626223.28	N 32 8 30.69	W 104 3 32.67
	11900.00	90.00	179.72	8700.00	3388.15	-3386.82	276.60	0.00	415351.73	626223.78	N 32 8 29.70	W 104 3 32.67
	12000.00	90.00	179.72	8700.00	3488.15	-3486.82	277.09	0.00	415251.73	626224.27	N 32 8 28.71	W 104 3 32.66
	12100.00	90.00	179.72	8700.00	3588.15	-3586.82	277.59	0.00	415151.74	626224.76	N 32 8 27.72	W 104 3 32.66
	12200.00	90.00	179.72	8700.00	3688.15	-3686.82	278.08	0.00	415051.75	626225.26	N 32 8 26.73	W 104 3 32.66
	12300.00	90.00	179.72	8700.00	3788.15	-3786.82	278.58	0.00	414951.76	626225.75	N 32 8 25.74	W 104 3 32.66
	12400.00	90.00	179.72	8700.00	3888.15	-3886.82	279.07	0.00	414851.77	626226.25	N 32 8 24.75	W 104 3 32.65
	12500.00	90.00	179.72	8700.00	3988.15	-3986.81	279.56	0.00	414751.78	626226.74	N 32 8 23.76	W 104 3 32.65
	12600.00	90.00	179.72	8700.00	4088.15	-4086.81	280.06	0.00	414651.79	626227.23	N 32 8 22.77	W 104 3 32.65
	12700.00	90.00	179.72	8700.00	4188.15	-4186.81	280.55	0.00	414551.80	626227.73	N 32 8 21.78	W 104 3 32.65
	12800.00	90.00	179.72	8700.00	4288.15	-4286.81	281.04	0.00	414451.81	626228.22	N 32 8 20.79	W 104 3 32.64
	12900.00	90.00	179.72	8700.00	4388.15	-4386.81	281.54	0.00	414351.82	626228.71	N 32 8 19.81	W 104 3 32.64
	13000.00	90.00	179.72	8700.00	4488.15	-4486.81	282.03	0.00	414251.83	626229.21	N 32 8 18.82	W 104 3 32.64
	13100.00	90.00	179.72	8700.00	4588.15	-4586.81	282.53	0.00	414151.84	626229.70	N 32 8 17.83	W 104 3 32.63
	13200.00	90.00	179.72	8700.00	4688.15	-4686.81	283.02	0.00	414051.85	626230.20	N 32 8 16.84	W 104 3 32.63
	13300.00	90.00	179.72	8700.00	4788.15	-4786.80	283.51	0.00	413951.86	626230.69	N 32 8 15.85	W 104 3 32.63
	13400.00	90.00	179.72	8700.00	4888.15	-4886.80	284.01	0.00	413851.87	626231.18	N 32 8 14.86	W 104 3 32.63
	13500.00	90.00	179.72	8700.00	4988.15	-4986.80	284.50	0.00	413751.88	626231.68	N 32 8 13.87	W 104 3 32.62
	13600.00	90.00	179.72	8700.00	5088.15	-5086.80	285.00	0.00	413651.89	626232.17	N 32 8 12.88	W 104 3 32.62
	13700.00	90.00	179.72	8700.00	5188.15	-5186.80	285.49	0.00	413551.90	626232.66	N 32 8 11.89	W 104 3 32.62
	13800.00	90.00	179.72	8700.00	5288.15	-5286.80	285.98	0.00	413451.91	626233.16	N 32 8 10.90	W 104 3 32.61
	13900.00	90.00	179.72	8700.00	5388.15	-5386.80	286.48	0.00	413351.92	626233.65	N 32 8 9.91	W 104 3 32.61
	14000.00	90.00	179.72	8700.00	5488.15	-5486.80	286.97	0.00	413251.93	626234.15	N 32 8 8.92	W 104 3 32.61
	14100.00	90.00	179.72	8700.00	5588.15	-5586.79	287.46	0.00	413151.94	626234.64	N 32 8 7.93	W 104 3 32.61
	14200.00	90.00	179.72	8700.00	5688.15	-5686.79	287.96	0.00	413051.95	626235.13	N 32 8 6.94	W 104 3 32.60
	14300.00	90.00	179.72	8700.00	5788.15	-5786.79	288.45	0.00	412951.96	626235.63	N 32 8 5.95	W 104 3 32.60
	14400.00	90.00	179.72	8700.00	5888.15	-5886.79	288.95	0.00	412851.97	626236.12	N 32 8 4.96	W 104 3 32.60
	14500.00	90.00	179.72	8700.00	5988.15	-5986.79	289.44	0.00	412751.98	626236.62	N 32 8 3.97	W 104 3 32.60
	14600.00	90.00	179.72	8700.00	6088.15	-6086.79	289.93	0.00	412651.99	626237.11	N 32 8 2.98	W 104 3 32.59
	14700.00	90.00	179.72	8700.00	6188.15	-6186.79	290.43	0.00	412552.00	626237.60	N 32 8 1.99	W 104 3 32.59
	14800.00	90.00	179.72	8700.00	6288.15	-6286.79	290.92	0.00	412452.01	626238.10	N 32 8 1.00	W 104 3 32.59
	14900.00	90.00	179.72	8700.00	6388.15	-6386.79	291.42	0.00	412352.02	626238.59	N 32 8 0.01	W 104 3 32.58
	15000.00	90.00	179.72	8700.00	6488.15	-6486.78	291.91	0.00	412252.03	626239.08	N 32 7 59.03	W 104 3 32.58
	15100.00	90.00	179.72	8700.00	6588.15	-6586.78	292.40	0.00	412152.04	626239.57	N 32 7 58.04	W 104 3 32.58
	15200.00	90.00	179.72	8700.00	6688.15	-6686.78	292.90	0.00	412052.04	626240.07	N 32 7 57.05	W 104 3 32.58
	15300.00	90.00	179.72	8700.00	6788.15	-6786.78	293.39	0.00	411952.05	626240.57	N 32 7 56.06	W 104 3 32.57
	15400.00	90.00	179.72	8700.00	6888.15	-6886.78	293.88	0.00	411852.06	626241.06	N 32 7 55.07	W 104 3 32.57
	15500.00	90.00	179.72	8700.00	6988.15	-6986.78	294.38	0.00	411752.07	626241.55	N 32 7 54.08	W 104 3 32.57
	15600.00	90.00	179.72	8700.00	7088.15	-7086.78	294.87	0.00	411652.08	626242.05	N 32 7 53.09	W 104 3 32.56
	15700.00	90.00	179.72	8700.00	7188.15	-7186.78	295.37	0.00	411552.09	626242.54	N 32 7 52.10	W 104 3 32.56
	15800.00	90.00	179.72	8700.00	7288.15	-7286.77	295.86	0.00	411452.10	626243.04	N 32 7 51.11	W 104 3 32.56
	15900.00	90.00	179.72	8700.00	7388.15	-7386.77	296.35	0.00	411352.11	626243.53	N 32 7 50.12	W 104 3 32.56
	16000.00	90.00	179.72	8700.00	7488.15	-7486.77	296.85	0.00	411252.12	626244.02	N 32 7 49.13	W 104 3 32.55
NMNM013413 - NMNM112920 Crossing	16076.70	90.00	179.72	8700.00	7564.85	-7563.47	297.23	0.00	411175.43	626244.40	N 32 7 48.37	W 104 3 32.55
	16100.00	90.00	179.72	8700.00	7588.15	-7586.77	297.34	0.00	411152.13	626244.52	N 32 7 48.14	W 104 3 32.55
	16200.00	90.00	179.72	8700.00	7688.15	-7686.77	297.84	0.00	411052.14	626245.01	N 32 7 47.15	W 104 3 32.55
	16300.00	90.00	179.72	8700.00	7788.15	-7786.77	298.33	0.00	410952.15	626245.50	N 32 7 46.16	W 104 3 32.54
	16400.00	90.00	179.72	8700.00	7888.15	-7886.77	298.82	0.00	410852.16	626246.00	N 32 7 45.17	W 104 3 32.54
	16500.00	90.00	179.72	8700.00	7988.15	-7986.77	299.32	0.00	410752.17	626246.49	N 32 7 44.18	W 104 3 32.54
	16600.00	90.00	179.72	8700.00	8088.15	-8086.76	299.81	0.00	410652.18	626246.99	N 32 7 43.19	W 104 3 32.54
	16700.00	90.00	179.72	8700.00	8188.15	-8186.76	300.30	0.00	410552.19	626247.48	N 32 7 42.20	W 104 3 32.53
	16800.00	90.00	179.72	8700.00	8288.15	-8286.76	300.80	0.00	410452.20	626247.97	N 32 7 41.21	W 104 3 32.53
	16900.00	90.00	179.72	8700.00	8388.15	-8386.76	301.29	0.00	410352.21	626248.47	N 32 7 40.22	W 104 3 32.53

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	17000.00	90.00	179.72	8700.00	8488.15	-8486.76	301.79	0.00	410252.22	626248.96	N 32 7 39.23	W 104 3 32.53
	17100.00	90.00	179.72	8700.00	8588.15	-8586.76	302.28	0.00	410152.23	626249.45	N 32 7 38.25	W 104 3 32.52
	17200.00	90.00	179.72	8700.00	8688.15	-8686.76	302.77	0.00	410052.24	626249.95	N 32 7 37.26	W 104 3 32.52
	17300.00	90.00	179.72	8700.00	8788.15	-8786.76	303.27	0.00	409952.25	626250.44	N 32 7 36.27	W 104 3 32.52
	17400.00	90.00	179.72	8700.00	8888.15	-8886.75	303.76	0.00	409852.26	626250.94	N 32 7 35.28	W 104 3 32.51
	17500.00	90.00	179.72	8700.00	8988.15	-8986.75	304.26	0.00	409752.27	626251.43	N 32 7 34.29	W 104 3 32.51
	17600.00	90.00	179.72	8700.00	9088.15	-9086.75	304.75	0.00	409652.28	626251.92	N 32 7 33.30	W 104 3 32.51
	17700.00	90.00	179.72	8700.00	9188.15	-9186.75	305.24	0.00	409552.29	626252.42	N 32 7 32.31	W 104 3 32.51
	17800.00	90.00	179.72	8700.00	9288.15	-9286.75	305.74	0.00	409452.30	626252.91	N 32 7 31.32	W 104 3 32.50
	17900.00	90.00	179.72	8700.00	9388.15	-9386.75	306.23	0.00	409352.31	626253.41	N 32 7 30.33	W 104 3 32.50
	18000.00	90.00	179.72	8700.00	9488.15	-9486.75	306.72	0.00	409252.32	626253.90	N 32 7 29.34	W 104 3 32.50
	18100.00	90.00	179.72	8700.00	9588.15	-9586.75	307.22	0.00	409152.33	626254.39	N 32 7 28.35	W 104 3 32.49
	18200.00	90.00	179.72	8700.00	9688.15	-9686.74	307.71	0.00	409052.34	626254.89	N 32 7 27.36	W 104 3 32.49
	18300.00	90.00	179.72	8700.00	9788.15	-9786.74	308.21	0.00	408952.35	626255.38	N 32 7 26.37	W 104 3 32.49
Cimarex Riverbend 11-14 Federal Com #15H - PBHL[330'FSL,2 310'FWL]	18393.07	90.00	179.72	8700.00	9881.22	-9879.82	308.67	0.00	408859.28	626255.84	N 32 7 25.45	W 104 3 32.49

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 (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	23.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Riverbend 11-14 Federal Com #15H / Cimarex Riverbend 11-14 Federal Com #15H Rev0 RM
	1	23.000	18393.074	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Riverbend 11-14 Federal Com #15H / Cimarex Riverbend 11-14



## Cimarex Riverbend 11-14 Federal Com #15H Rev0 RM 06Oct20 Proposal Geodetic Report (Non-Def Plan)



**Report Date:** October 07, 2020 - 11:54 AM  
**Client:** Cimarex Energy  
**Field:** NM Eddy County (NAD 83)  
**Structure / Slot:** Cimarex Riverbend 11-14 Federal Com #15H / New Slot  
**Well:** Riverbend 11-14 Federal Com #15H  
**Borehole:** Riverbend 11-14 Federal Com #15H  
**UWI / API#:** Unknown / Unknown  
**Survey Name:** Cimarex Riverbend 11-14 Federal Com #15H Rev0 RM 06Oct20  
**Survey Date:** October 06, 2020  
**Tort / AHD / DDI / ERD Ratio:** 101.874 ° / 10144.957 ft / 6.339 / 1.166  
**Coordinate Reference System:** NAD83 New Mexico State Plane, Eastern Zone, US Feet  
**Location Lat / Long:** N 32° 9' 3.22071", W 104° 3' 35.78426"  
**Location Grid N/E Y/X:** N 418738.260 ftUS, E 625947.200 ftUS  
**CRS Grid Convergence Angle:** 0.1455 °  
**Grid Scale Factor:** 0.99991729  
**Version / Patch:** 2.10.821.3

**Survey / DLS Computation:** Minimum Curvature / Lubinski  
**Vertical Section Azimuth:** 179.717 ° (Grid North)  
**Vertical Section Origin:** 0.000 ft, 0.000 ft  
**TVD Reference Datum:** RKB  
**TVD Reference Elevation:** 2990.300 ft above MSL  
**Seabed / Ground Elevation:** 2967.300 ft above MSL  
**Magnetic Declination:** 6.889 °  
**Total Gravity Field Strength:** 998.4571mgn (9.80665 Based)  
**Gravity Model:** GARM  
**Total Magnetic Field Strength:** 47736.048 nT  
**Magnetic Dip Angle:** 59.829 °  
**Declination Date:** October 06, 2020  
**Magnetic Declination Model:** HDGM 2020  
**North Reference:** Grid North  
**Grid Convergence Used:** 0.1455 °  
**Total Corr Mag North->Grid North:** 6.7430 °  
**Local Coord Referenced To:** Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [390' FNL, 2049' FWL] Nudge 2°/100' DLS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
Hold Nudge	1500.00	0.00	88.87	1500.00	0.00	0.00	0.00	0.00	418738.26	625947.20	N 32 9 3.22	W 104 3 35.78
Drop to Vertical	1796.85	5.94	88.87	1796.32	-0.23	0.30	15.36	2.00	418738.56	625962.56	N 32 9 3.22	W 104 3 35.61
2°/100' DLS	4012.41	5.94	88.87	4000.00	-3.61	4.82	244.49	0.00	418743.08	626191.66	N 32 9 3.26	W 104 3 32.94
Hold Vertical	4309.26	0.00	88.87	4296.32	-3.84	5.12	259.85	2.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
KOP - Build	8235.48	0.00	88.87	8222.54	-3.84	5.12	259.85	0.00	418743.38	626207.03	N 32 9 3.26	W 104 3 32.76
12°/100' DLS	8985.48	90.00	179.72	8700.00	473.63	-472.34	262.21	12.00	418265.96	626209.38	N 32 8 58.54	W 104 3 32.75
Landing Point Cimarex Riverbend 11-14 Federal Com #15H - PBHL[330'FSL,2 310'FWL]	18393.07	90.00	179.72	8700.00	9881.22	-9879.82	308.67	0.00	408859.28	626255.84	N 32 7 25.45	W 104 3 32.49

**Survey Type:** Non-Def Plan

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

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey			
	1	0.000	23.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Riverbend 11-14 Federal Com #15H / Cimarex Riverbend 11-14 Federal Com #15H Rev0 RM			
	1	23.000	18393.074	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Riverbend 11-14 Federal Com #15H / Cimarex Riverbend 11-14			

## PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

<b>OPERATOR'S NAME:</b>	<b>Cimarex</b>
<b>LEASE NO.:</b>	<b>NMNM16104</b>
<b>LOCATION:</b>	Section 11, T.25 S., R.28 E., NMPM
<b>COUNTY:</b>	Lea County, New Mexico

<b>WELL NAME &amp; NO.:</b>	Riverbend 11-14 Fed Com 15H
<b>SURFACE HOLE FOOTAGE:</b>	390'/N & 2049'/W
<b>BOTTOM HOLE FOOTAGE:</b>	330'/S & 2310'/W

COA

H2S	<input type="radio"/> Yes	<input checked="" type="radio"/> No	
Potash	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P
Cave/Karst Potential	<input type="radio"/> Low	<input type="radio"/> Medium	<input checked="" type="radio"/> High
Cave/Karst Potential	<input type="radio"/> Critical		
Variance	<input type="radio"/> None	<input checked="" type="radio"/> Flex Hose	<input type="radio"/> Other
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both
Other	<input type="checkbox"/> 4 String Area	<input type="checkbox"/> Capitan Reef	<input type="checkbox"/> WIPP
Other	<input type="checkbox"/> Fluid Filled	<input type="checkbox"/> Cement Squeeze	<input type="checkbox"/> Pilot Hole
Special Requirements	<input type="checkbox"/> Water Disposal	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit

### A. HYDROGEN SULFIDE

Hydrogen Sulfide (H2S) monitors shall be installed prior to drilling out the surface shoe. If H2S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

### B. CASING

The **13-3/8** inch surface casing shall be set at approximately **660** feet (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface. **Excess calculates to -9%. Additional cement maybe required.**

1.

- 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 will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
  - 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 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.**
- ❖ In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
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.

### C. PRESSURE CONTROL

1. **Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).**
2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **5000 (5M)** psi.
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
  - c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
  - e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.



**D. SPECIAL REQUIREMENT (S)****Communitization Agreement**

- The operator will submit a Communitization Agreement to the Santa Fe Office, 301 Dinosaur Trail Santa Fe, New Mexico 87508, at least 90 days before the anticipated date of first production from a well subject to a spacing order issued by the New Mexico Oil Conservation Division. The Communitization Agreement will include the signatures of all working interest owners in all Federal and Indian leases subject to the Communitization Agreement (i.e., operating rights owners and lessees of record), or certification that the operator has obtained the written signatures of all such owners and will make those signatures available to the BLM immediately upon request.
- If the operator does not comply with this condition of approval, the BLM may take enforcement actions that include, but are not limited to, those specified in 43 CFR 3163.1.
- In addition, the well sign shall include the surface and bottom hole lease numbers. When the Communitization Agreement number is known, it shall also be on the sign.

**GENERAL REQUIREMENTS**

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

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

☒ Eddy County

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

☒ Lea County

Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575)  
393-3612

1. 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.
  - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
  - b. When the operator proposes to set surface casing with Spudder Rig
    - Notify the BLM when moving in and removing the Spudder Rig.

- Notify the BLM when moving in the 2<sup>nd</sup> Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
  - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.
2. 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 are located, this does not include the dog house or stairway area.
  3. 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 Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

#### A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. 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.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. 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.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

**B. 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. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. 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.
3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.
4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:
  - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
  - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.

- c. Manufacturer representative shall install the test plug for the initial BOP test.
  - d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
  - e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
- 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. In potash areas, 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. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).
  - c. 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 (8 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).
  - d. 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.
  - e. The results of the test shall be reported to the appropriate BLM office.

- f. 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.
- g. 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.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per Onshore Order No. 2.

#### C. DRILLING MUD

Mud system monitoring equipment, with derrick floor indicators and visual and audio alarms, shall be operating before drilling into the Wolfcamp formation, and shall be used until production casing is run and cemented.

#### D. 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.

**ZS021522**

**Riverbend 11-14 Federal Com #15H**

Cimarex Energy Co.

Eddy County, NM

- 1. All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor to the following:**
  - A. Characteristics of H<sub>2</sub>S
  - B. Physical effects and hazards
  - C. Principal and operation of H<sub>2</sub>S detectors, warning system and briefing areas.
  - D. Evacuation procedure, routes and first aid.
  - E. Proper use of safety equipment & life support systems
  - F. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30 minute pressure demand air packs.
- 2. H<sub>2</sub>S Detection and Alarm Systems:**
  - A. H<sub>2</sub>S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H<sub>2</sub>S detectors may be placed as deemed necessary.
  - B. An audio alarm system will be installed on the derrick floor and in the top doghouse.
- 3. Windsock and/or wind streamers:**
  - A. Windsock at mudpit area should be high enough to be visible.
  - B. Windsock on the rig floor and / or top doghouse should be high enough to be visible.
- 4. Condition Flags and Signs**
  - A. Warning sign on access road to location.
  - B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H<sub>2</sub>S present in dangerous concentration). Only H<sub>2</sub>S trained and certified personnel admitted to location.
- 5. Well control equipment:**
  - A. See exhibit "E-1"
- 6. Communication:**
  - A. While working under masks chalkboards will be used for communication.
  - B. Hand signals will be used where chalk board is inappropriate.
  - C. Two way radio will be used to communicate off location in case of emergency help is required. In most cases cellular telephones will be available at most drilling foreman's trailer or living quarters.
- 7. Drillstem Testing:**

No DSTs or cores are planned at this time.
- 8. Tubular Goods & Other Equipment**

Drilling contractor supervisor will be required to be familiar with the effects H<sub>2</sub>S has on tubular goods and other mechanical equipment.
- 9. Mud System**

If H<sub>2</sub>S is encountered, mud system will be altered if necessary to maintain control of formation. A mud gas separator will be brought into service along with H<sub>2</sub>S scavengers if necessary.

H<sub>2</sub>S Contingency Plan  
**Riverbend 11-14 Federal Com #15H**  
Cimarex Energy Co.  
Eddy County, NM

**10. Emergency Procedures**

In the event of a release of gas containing H<sub>2</sub>S, the first responder(s) must:

- « Isolate the area and prevent entry by other persons into the 100 ppm ROE.
- « Evacuate any public places encompassed by the 100 ppm ROE.
- « Be equipped with H<sub>2</sub>S monitors and air packs in order to control the release.
- « Use the "buddy system" to ensure no injuries occur during the response.
- « Take precautions to avoid personal injury during this operation.
- « Contact operator and/or local officials to aid in operation. Phone numbers attached.
- « Have received training in the:
  - Detection of H<sub>2</sub>S, and
  - Measures for protection against the gas,
  - Equipment used for protection and emergency response.

**11. Ignition of Gas Source**

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO<sub>2</sub>). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas.

**12. Characteristics of H<sub>2</sub>S and SO<sub>2</sub>**

Please see attached International Chemical Safety Cards.

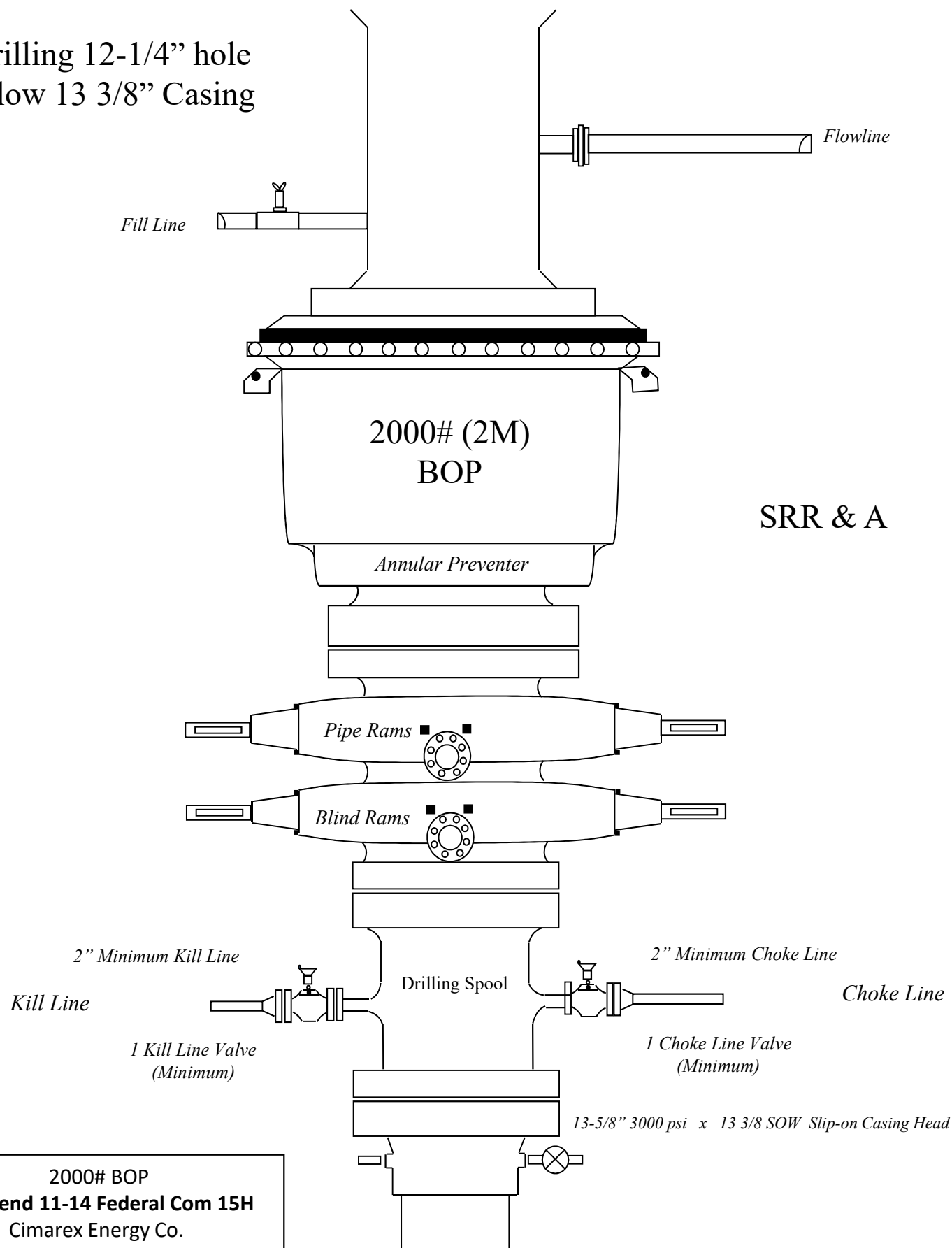
**13. Contacting Authorities**

Cimarex Energy Co. personnel must liaise with local and state agencies to ensure a proper response to a major release. Additionally, the OCD must be notified of the release as soon as possible but no later than 4 hours. Agencies will ask for information such as type and volume of release, wind direction, location of release, etc. Be prepared with all information available including directions to site. The following call list of essential and potential responders has been prepared for use during a release. Cimarex Energy Co. response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

H <sub>2</sub> S Contingency Plan Emergency Contacts					
Riverbend 11-14 Federal Com #15H					
Cimarex Energy Co.					
Eddy County, NM					
Company Office					
Cimarex Energy Co. Midland Office			432-571-7800		
Cimarex Energy Co. After-Hours Contact			800-969-4789		
Key Personnel					
Name	Title	Office		Mobile	
Larry Seigrist	Director of Drilling & Completions	915-560-7148		580-243-8485	
Charlie Pritchard	Drilling Manager	432-620-1975		432-238-7084	
Spencer Bryant	Drilling Manager	432-620-7885		580-768-9995	
Stuart Wittenbach	Director of EHS	918-560-7257		918-404-1084	
Artesia					
Ambulance		911			
State Police		575-746-2703			
City Police		575-746-2703			
Sheriff's Office		575-746-9888			
Fire Department		575-746-2701			
Local Emergency Planning Committee		575-746-2122			
New Mexico Oil Conservation Division		575-748-1283			
Carlsbad					
Ambulance		911			
State Police		575-885-3137			
City Police		575-885-2111			
Sheriff's Office		575-887-7551			
Fire Department		575-887-3798			
Local Emergency Planning Committee		575-887-6544			
US Bureau of Land Management		575-887-6544			
Santa Fe					
New Mexico Emergency Response Commission (Santa Fe)		505-476-9600			
New Mexico Emergency Response Commission (Santa Fe) 24 Hrs		505-827-9126			
New Mexico State Emergency Operations Center		505-476-9635			
National					
National Emergency Response Center (Washington, D.C.)		800-424-8802			
Medical					
Flight for Life - 4000 24th St.; Lubbock, TX		806-743-9911			
Aerocare - R3, Box 49F; Lubbock, TX		806-747-8923			
Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM		505-842-4433			
SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM		505-842-4949			
Other					
Boots & Coots IWC		800-256-9688	or	281-931-8884	
Cudd Pressure Control		432-699-0139	or	432-563-3356	
Halliburton		575-746-2757			
B.J. Services		575-746-3569			



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



2000# BOP  
Riverbend 11-14 Federal Com 15H  
Cimarex Energy Co.  
Sec 11, 25S, 28E  
Eddy County, NM

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

Fill Line

Flowline

5000# (5M)  
BOP

Annular Preventer

SRR &amp; A

Pipe Rams

Blind Rams

2" Minimum Kill Line

Kill Line

Drilling  
Spool

3" minimum choke line

Choke Line

2 Valves Minimum

(HCR Required)

2 Valves and a check valve

Wellhead  
Assembly

11" 5000 psi x 7-1/16" 10,000 psi  
Wellhead Assembly

Wellhead  
Assembly

13-5/8" 3000 psi x 11" 5000 psi  
Wellhead Assembly

13-5/8" 3000#psi x 13-3/8" SOW Casing Head

5000# BOP  
**Riverbend 11-14 Federal Com 15H**  
Cimarex Energy Co.  
1-25S-28E  
Eddy, NM

Drilling 6" hole  
below 7" Casing

Fill Line

Flowline

5000# (5M)  
BOP

Annular Preventer

SRR & A

Pipe Rams

Blind Rams

2" Minimum Kill Line

Kill Line

Drilling  
Spool

3" minimum choke line

Choke Line

2 Valves Minimum

(HCR Required)

2 Valves and a check valve

Wellhead  
Assembly

11" 5000 psi x 7-1/16" 10,000 psi  
Wellhead Assembly

Wellhead  
Assembly

13-5/8" 3000 psi x 11" 5000 psi  
Wellhead Assembly

13-5/8" 3000#psi x 13-3/8" SOW Casing Head

5000# BOP  
**Riverbend 11-14 Federal Com 3H**  
Cimarex Energy Co.  
1-25S-28E  
Eddy, NM

**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 Rd., Aztec, NM 87410  
Phone:(505) 334-6178 Fax:(505) 334-6170

**District IV**

1220 S. St Francis Dr., Santa Fe, NM 87505  
Phone:(505) 476-3470 Fax:(505) 476-3462

**State of New Mexico**  
**Energy, Minerals and Natural Resources**  
**Oil Conservation Division**  
**1220 S. St Francis Dr.**  
**Santa Fe, NM 87505**

CONDITIONS

Action 136843

**CONDITIONS**

Operator: CIMAREX ENERGY CO. 600 N. Marienfeld Street Midland, TX 79701	OGRID: 215099
	Action Number: 136843
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

**CONDITIONS**

Created By	Condition	Condition Date
kpickford	Notify OCD 24 hours prior to casing & cement	8/30/2022
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	8/30/2022
kpickford	Once the well is spud, to prevent ground water contamination through whole or partial conduits from the surface, the operator shall drill without interruption through the fresh water zone or zones and shall immediately set in cement the water protection string	8/30/2022
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	8/30/2022
kpickford	Oil base muds are not to be used until fresh water zones are cased and cemented providing isolation from the oil or diesel. This includes synthetic oils. Oil based mud, drilling fluids and solids must be contained in a steel closed loop system	8/30/2022