

Form 3160-3
(June 2015)FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT
APPLICATION FOR PERMIT TO DRILL OR REENTER

1a. Type of work: ☐ DRILL ☐ REENTER 1b. Type of Well: ☐ Oil Well ☐ Gas Well ☐ Other 1c. Type of Completion: ☐ Hydraulic Fracturing ☐ Single Zone ☐ Multiple Zone		5. Lease Serial No. 6. If Indian, Allottee or Tribe Name 7. If Unit or CA Agreement, Name and No. 8. Lease Name and Well No.
2. Name of Operator		9. API Well No. 30-015-49579
3a. Address	3b. Phone No. (include area code)	10. Field and Pool, or Exploratory
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		11. Sec., T. R. M. or Blk. and Survey or Area
14. Distance in miles and direction from nearest town or post office*		12. County or Parish
13. State		
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	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.
2. A Drilling Plan.
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). | 4. Bond to cover the operations unless covered by an existing bond on file (see Item 20 above).
5. Operator certification.
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: 10/21/2021

Additional Operator Remarks

Location of Well

0. SHL: NESW / 1267 FSL / 2343 FWL / TWSP: 25S / RANGE: 28E / SECTION: 1 / LAT: 32.15548 / LONG: -104.041884 (TVD: 0 feet, MD: 0 feet)

PPP: SWNE / 1320 FNL / 2310 FEL / TWSP: 25S / RANGE: 28E / SECTION: 13 / LAT: 32.148214 / LONG: -104.039747 (TVD: 8275 feet, MD: 10100 feet)

PPP: NWNE / 100 FNL / 2310 FEL / TWSP: 25S / RANGE: 28E / SECTION: 12 / LAT: 32.151687 / LONG: -104.039742 (TVD: 8275 feet, MD: 8836 feet)

BHL: SWSE / 100 FSL / 2310 FEL / TWSP: 25S / RANGE: 28E / SECTION: 13 / LAT: 32.123032 / LONG: -104.039771 (TVD: 8275 feet, MD: 19261 feet)

BLM Point of Contact

Name: JORDAN NAVARRETTE

Title: LIE

Phone: (575) 234-5972

Email: jnavarrette@blm.gov

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

¹ API Number 30-015 49579	² Pool Code 53610/ 96217	³ Pool Name San Lorenzo, Bone Spring (North)/ Willow Lake; Bone Spring, Southeast
⁴ Property Code 321482	⁵ Property Name RIVERBEND 12-13 FEDERAL COM	⁶ Well Number 22H
⁷ OGRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 2933.3'

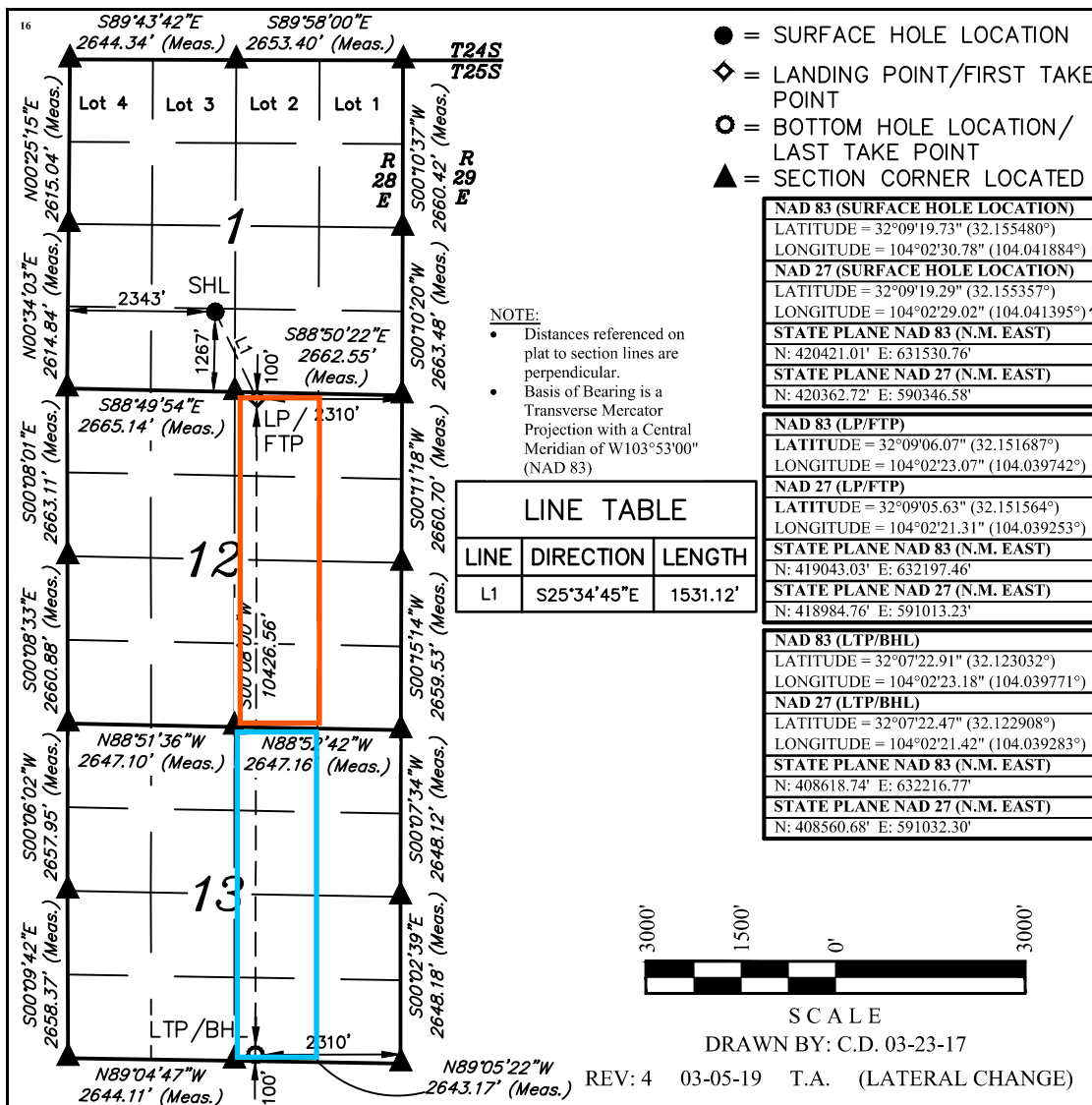
¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
K	1	25S	28E		1267	SOUTH	2343	WEST	EDDY

¹¹ Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
O	13	25S	28E		100	SOUTH	2310	EAST	EDDY
¹² Dedicated Acres 320	¹³ Joint or Infill	¹⁴ Consolidation Code	¹⁵ 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.



¹⁷ 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 4/15/20
Signature Date

Amithy Crawford
Printed Name

acrawford@cmarex.com
E-mail Address

¹⁸ 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.

DECEMBER 12, 2017

Date of Survey
Signature and Seal of 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:** 5 / 2 / 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 12-13 Fed Com 22H		K, Sec 1, T25S, R38E	1267 FSL/2343 FWL	1320	3500	4000

IV. Central Delivery Point Name: Riverbend 12-13 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 12-13 Fed Com 22H		10/1/2024	10/20/2024	1/1/2025	3/1/2025	3/1/2025

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: 5/2/2022
Phone: 432/620-1909
OIL CONSERVATION DIVISION (Only applicable when submitted as a standalone form)
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

04/22/2020

APD ID: 10400054870

Submission Date: 04/21/2020

Highlighted data
reflects the most
recent changes

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RIVERBEND 12-13 FEDERAL COM

Well Number: 22H

[Show Final Text](#)

Well Type: OIL WELL

Well Work Type: Drill

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
720173	RUSTLER	2933	464	464	ANHYDRITE	USEABLE WATER	N
720174	SALADO	1007	1926	1926	ANHYDRITE, SALT	NONE	N
720175	CASTILE	446	2487	2489	ANHYDRITE, SALT	NONE	N
720176	BELL CANYON	253	2680	2685	SANDSTONE	NONE	N
720177	CHERRY CANYON	-735	3668	3692	SANDSTONE	NONE	N
720178	BRUSHY CANYON	-2334	5267	5320	SANDSTONE	NONE	N
720179	BONE SPRING	-3467	6400	6474	LIMESTONE	NATURAL GAS, OIL	N
720180	BONE SPRING 1ST	-4407	7340	7429	SANDSTONE	NATURAL GAS, OIL	N
720181	BONE SPRING 2ND	-5213	8146	8277	SANDSTONE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 3M

Rating Depth: 2610

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 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 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

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** RIVERBEND 12-13 FEDERAL COM**Well Number:** 22H

casing. After installation the pack-off and lower flange will be pressure tested to 3000 psi. The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The casing 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_12_13_Fed_Com_22H_Choke_2M3M_20200421052818.pdf

BOP Diagram Attachment:

Riverbend_12_13_Fed_Com_22H_BOP_3M_20200421052827.pdf

Pressure Rating (PSI): 5M**Rating Depth:** 19261

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_12_13_Fed_Com_22H_Choke_5M_20200421052945.pdf

BOP Diagram Attachment:

Riverbend_12_13_Fed_Com_22H_BOP_5M_20200421052954.pdf

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** RIVERBEND 12-13 FEDERAL COM**Well Number:** 22H**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	API	N	0	514	0	514	2933	2419	514	J-55	48	ST&C	3.327	10.6	BUOY	17.55	BUOY	17.55
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	2610	0	2610	2933	323	2610	J-55	36	ST&C	1.45	2.52	BUOY	4.19	BUOY	4.19
3	PRODUCTION	8.75	5.5	NEW	API	N	0	7886	0	7886	2933	-4953	7886	L-80	17	LT&C	1.7	2.1	BUOY	2.4	BUOY	2.4
4	PRODUCTION	8.75	5.5	NEW	API	N	7886	19261	7886	8275	-4953	-5342	11375	L-80	17	BUTT	1.62	2	BUOY	60.03	BUOY	60.03

Casing Attachments**Casing ID:** 1 **String Type:** SURFACE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**

Riverbend_12_13_Fed_Com_22H_Casing_Assumptions_20200421053144.pdf

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** RIVERBEND 12-13 FEDERAL COM**Well Number:** 22H**Casing Attachments**

Casing ID: 2 **String Type:** INTERMEDIATE**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**Riverbend_12_13_Fed_Com_22H_Casing_Assumptions_20200421053345.pdf

Casing ID: 3 **String Type:** PRODUCTION**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**Riverbend_12_13_Fed_Com_22H_Casing_Assumptions_20200421053508.pdf

Casing ID: 4 **String Type:** PRODUCTION**Inspection Document:****Spec Document:****Tapered String Spec:****Casing Design Assumptions and Worksheet(s):**Riverbend_12_13_Fed_Com_22H_Casing_Assumptions_20200421053643.pdf

Section 4 - Cement

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** RIVERBEND 12-13 FEDERAL COM**Well Number:** 22H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
SURFACE	Lead		0	514	130	1.72	13.5	223	35	Class C	Bentonite
SURFACE	Tail		0	514	195	1.34	14.8	261	35	Class C	LCM
INTERMEDIATE	Lead		0	2610	497	1.88	12.9	934	49	35:65 (POZ C)	Salt, Bentonite
INTERMEDIATE	Tail		0	2610	153	1.34	14.8	205	49	Class C	LCM
PRODUCTION	Lead		0	1926 1	473	3.64	10.3	1721	25	Tuned Light	LCM
PRODUCTION	Tail		0	1926 1	2764	1.3	14.2	3593	25	50:50 (POZ H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
PRODUCTION	Lead		0	1926 1	473	3.64	10.3	1721	25	Tuned Lighed	LCM
PRODUCTION	Tail		0	1926 1	2764	1.3	14.2	3593	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
0	514	OTHER : Fresh Water	7.83	8.33							

Operator Name: CIMAREX ENERGY COMPANY**Well Name:** RIVERBEND 12-13 FEDERAL COM**Well Number:** 22H

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
514	2610	SALT SATURATED	9.8	10.3							
2610	1926 1	OTHER : Cut Brine or Oil Based Mud	8.5	9							

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,COMPENSATED NEUTRON LOG,DIRECTIONAL SURVEY,

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 3872

Anticipated Surface Pressure: 2051

Anticipated Bottom Hole Temperature(F): 154

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 attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Riverbend_12_13_Fed_Com_22H_H2S_Plan_20200421055045.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RIVERBEND 12-13 FEDERAL COM

Well Number: 22H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Riverbend_12_13_Fed_Com_22H_AC_Report_20200421055105.pdf

Riverbend_12_13_Fed_Com_22H_Directional_20200421055113.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Riverbend_12_13_Fed_Com_22H_Drilling_Plan_20200421055123.pdf

Other Variance attachment:

Riverbend_12_13_Fed_Com_22H_Flex_Hose_20200421055135.pdf

Riverbend_12_13_Federal_Com_22H_Multibowl_20200421055143.pdf

1. Geological Formations

TVD of target 8,275

Pilot Hole TD N/A

MD at TD 19,261

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	464	N/A	
Salado	1926	N/A	
Castille	2487	N/A	
Bell Canyon	2680	N/A	
Cherry Canyon	3668	N/A	
Brushy Canyon	5267	N/A	
Bone Spring	6400	Hydrocarbons	
1st Bone Spring	7340	Hydrocarbons	
2nd Bone Spring	8146	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	514	514	13-3/8"	48.00	J-55	ST&C	3.32	10.67	17.55
12 1/4	0	2610	2610	9-5/8"	36.00	J-55	ST&C	1.45	2.52	4.19
8 3/4	0	7886	7886	5-1/2"	17.00	L-80	LT&C	1.70	2.10	2.40
8 3/4	7886	19261	8275	5-1/2"	17.00	L-80	BT&C	1.62	2.00	60.03
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

Cimarex Energy Co., Riverbend 12-13 Federal Com 22H

	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

3. Cementing Program

Casing	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	130	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	497	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	153	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	473	10.30	3.64	22.18		Lead: Tuned Light + LCM
	2764	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	35
Intermediate	0	49
Production	2410	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	3M	Annular	X	50% of working pressure
			Blind Ram		3M
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	5M	Annular	X	50% of working pressure
			Blind Ram		5M
			Pipe Ram		
			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.

	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.				
N	Are anchors required by manufacturer?				

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 514'	Fresh Water	7.83 - 8.33	28	N/C
514' to 2610'	Brine Water	9.80 - 10.30	30-32	N/C
2610' to 19261'	Cut Brine or OBM	8.50 - 9.00	27-70	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
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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
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7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	3872 psi
Abnormal Temperature	No

Hydrogen Sulfide (H₂S) monitors will be installed prior to drilling out the surface shoe. If H₂S 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 ₂ S is present
	H ₂ 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 12-13 Federal Com 22H



Cimarex Riverbend 12-13 Federal Com 22H Rev0 mcs 23Mar20 Anti-Collision Summary Report

Analysis Date-24hr Time: April 02, 2020 - 16:16

Client: Cimarex

Field: NM Eddy County (NAD 83)

Structure: Cimarex Riverbend 12-13 Federal Com #22H

Slot: Cimarex Riverbend 12-13 Federal Com #22H

Well: Cimarex Riverbend 12-13 Federal Com #22H

Borehole: Original Borehole

Scan MD Range: 0.00ft ~ 19261.70ft

Analysis Method: 3D Least Distance

Reference Trajectory: Cimarex Riverbend 12-13 Federal Com 22H Rev0 mcs 23Mar20 (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: 2.10.787.0

Database \ Project: us1153APP452.DIR.SLB.COMIDRILLING-NM Eddy County 2.10

Trajectory Error Model: ISCSA0 3-D 95.000% Confidence 2.7955 sigma, for subject well. For offset wells, error model version is specified with each well respectively.

Offset Trajectories Summary

Offset Selection Criteria

Wellhead distance scan: Not performed!

Selection filters: 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 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 12-13 Federal Com #20H Rev0 mcs 19Mar20 (Def Plan)													
99.99	32.81	98.70	67.18	N/A		MAS = 10.00 (m)	0.00	0.00					Fail Major
99.99	32.81	98.70	67.18	26132.14		MAS = 10.00 (m)	26.00	26.00					Surface
65.32	32.81	50.92	32.51	4.89		MAS = 10.00 (m)	2450.00	2448.15	OSF<5.00				WRP
32.12	32.81	17.90	-0.68	2.39		MAS = 10.00 (m)	2670.00	2664.44			StcRul<10.00		Enter Alert
19.70	32.81	6.02	-13.11	1.49		MAS = 10.00 (m)	2850.00	2841.17					Enter Major
19.02	32.81	5.47	-13.79	1.45		MAS = 10.00 (m)	2900.00	2890.26	OSF<1.50				Enter Minor
18.99	32.81	5.46	-13.81	1.45		MAS = 10.00 (m)	2910.00	2900.08					MinPt-O-SF
19.37	32.81	5.96	-13.44	1.49		MAS = 10.00 (m)	2970.00	2958.98	OSF>1.50				MinPts
32.57	32.81	19.56	-0.24	2.67		MAS = 10.00 (m)	3580.00	3557.88			StcRul>10.00		Exit Minor
135.13	44.39	105.11	90.74	4.69		OSF1.50	7070.00	6984.36					Exit Major
142.27	43.60	112.77	98.67	5.00		OSF1.50	7310.00	7221.43	OSF>5.00				MinPt-O-SF
148.27	42.04	119.83	106.25	5.41		OSF1.50	7700.00	7610.74					Exit Alert
1698.54	342.61	1469.71	1355.94	7.46		OSF1.50	19060.00	8275.00					MinPts
1698.73	342.84	1469.74	1355.89	7.45		OSF1.50	19070.00	8275.00					MINPT-O-EOU
1702.42	344.39	1472.39	1358.03	7.44		OSF1.50	19150.00	8275.00					MinPt-O-ADP
1713.80	345.31	1483.17	1368.49	7.47		OSF1.50	19261.70	8275.00					MinPt-O-SF
													TD

Cimarex Riverbend 12-13 Federal Com #21H Rev0 mcs 23Mar20 (Def Plan)													
20.00	16.25	18.71	3.74	N/A		MAS = 4.95 (m)	0.00	0.00	CtCt<=15m<15.00				Warning Alert
20.00	16.25	18.71	3.74	N/A		MAS = 4.95 (m)	26.00	26.00					Enter Alert
20.00	19.55	6.54	0.45	1.54		OSF1.50	2000.00	2000.00					WRP
20.01	19.60	6.51	0.41	1.53		OSF1.50	2010.00	2010.00					MinPt-CtCt
20.04	19.65	6.51	0.39	1.53		OSF1.50	2020.00	2020.00					MINPT-O-EOU
61.46	19.64	47.94	41.82	4.92		OSF1.50	2640.00	2634.99	OSF>5.00				MinPts
979.92	295.15	782.73	684.78	5.00		OSF1.50	16420.00	8275.00	OSF<5.00				Exit Alert
979.92	386.11	722.06	593.81	3.81		OSF1.50	19261.70	8275.00					Enter Alert
													MinPts

Cimarex Riverbend 12-13 Federal Com #19H Rev0 mcs 19Mar20 (Def Plan)													
116.61	32.81	115.32	83.80	N/A		MAS = 10.00 (m)	0.00	0.00					Warning Alert
116.61	32.81	115.32	83.80	37073.31		MAS = 10.00 (m)	26.00	26.00					Surface
64.92	32.81	50.73	32.11	4.94		MAS = 10.00 (m)	2600.00	2595.72	OSF<5.00				WRP
56.95	32.81	42.92	24.14	4.37		MAS = 10.00 (m)	2750.00	2742.99					Enter Alert
56.94	32.81	42.91	24.13	4.37		MAS = 10.00 (m)	2760.00	2752.81					MinPt-O-SF
64.30	32.81	50.30	31.50	4.96		MAS = 10.00 (m)	2910.00	2900.08	OSF>5.00				MinPts
1535.33	343.01	1306.23	1192.32	6.73		OSF1.50	19030.00	8275.00					Exit Alert
1535.65	344.16	1305.76	1191.50	6.71		OSF1.50	19070.00	8275.00					MinPt-CtCt
1535.89	344.41	1305.86	1191.48	6.71		OSF1.50	19080.00	8275.00					MINPT-O-EOU
1538.69	345.63	1307.84	1193.06	6.70		OSF1.50	19140.00	8275.00					MinPt-O-ADP
1551.48	346.56	1320.01	1204.92	6.73		OSF1.50	19261.70	8275.00					MinPt-O-SF
													TD

Mewbourne Malaga 13 CN Federal Com 1H (Offset) MWD 0ft-12805ft (Def Survey)													
6845.27	32.81	6843.29	6812.46	N/A		MAS = 10.00 (m)	0.00	0.00					Warning Alert
6845.14	32.81	6843.15	6812.33	508289.87		MAS = 10.00 (m)	26.00	26.00					Surface
6827.45	32.81	6818.84	6794.64	1029.82		MAS = 10.00 (m)	1450.00	1450.00					WRP
6827.72	32.81	6818.60	6794.92	955.96		MAS = 10.00 (m)	1550.00	1550.00					MinPts
6833.64	32.81	6822.04	6800.83	710.04		MAS = 10.00 (m)	2100.00	2099.98					MINPT-O-EOU
6808.08	32.81	6796.94	6775.27	744.27		MAS = 10.00 (m)	2510.00	2507.31					MinPt-O-SF
6275.32	35.86	6250.54	6239.46	283.01		OSF1.50	7100.00	7013.82					MinPt-O-SF
6251.10	34.60	6227.15	6216.50	293.39		OSF1.50	7510.00	7420.78					MinPt-O-ADP
6251.07	34.51	6227.15	6216.51	293.76		OSF1.50	7520.00	7430.77					MINPT-O-EOU
6251.06	34.51	6227.17	6216.55	294.14		OSF1.50	7530.00	7440.76					MinPt-CtCt
999.60	237.45	840.65	762.16	6.36		OSF1.50	16390.00	8275.00					MinPt-CtCt
999.34	244.87	835.43	754.46	6.16		OSF1.50	16560.00	8275.00					MinPt-CtCt
970.99	292.99	775.00	678.00	4.99		OSF1.50	17590.00	8275.00	OSF<5.00				Enter Alert
970.88	294.67	773.77	676.21	4.97		OSF1.50	17630.00	8275.00					MinPt-CtCt
975.52	307.87	769.62	667.66	4.77		OSF1.50	17930.00	8275.00					MINPT-O-EOU
951.07	361.78	709.23	589.29	3.96		OSF1.50	18980.00	8275.00					MinPts
992.55	346.70	760.76	645.85	4.31		OSF1.50	19261.70	8275.00					TD

Marathon Oil Rustler Bluff #4 (Offset) Blind 0ft-5210ft (Def Survey)													
2410.76	32.81	2409.63	2377.95	N/A		MAS = 10.00 (m)	0.00	0.00					Warning Alert
2410.29	32.81	2409.10	2377.48	42214.39		MAS = 10.00 (m)	26.00	26.00					Surface
2397.45	721.97	1915.76	1675.48	4.99		OSF1.50	2400.00	2398.70	OSF<5.00				MinPt-O-SF
2204.07	1623.02	1121.63	581.06	2.04		OSF1.50	5370.00	5315.30					Enter Alert
													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		
	2203.86	1622.84	1121.55	581.02	2.04	OSF1.50	5380.00	5325.12				MinPt-O-ADP	
	2203.71	1622.63	1121.53	581.07	2.04	OSF1.50	5390.00	5334.93				MINPT-O-EOU	
	2203.50	1621.81	1121.88	581.69	2.04	OSF1.50	5420.00	5364.39				MinPt-CtCt	
	3410.66	1026.44	2725.99	2384.22	4.99	OSF1.50	8000.00	7909.68	OSF>5.00			Exit Alert	
	4253.28	1148.23	3487.42	3105.06	5.58	OSF1.50	9300.00	8275.00				MinPt-O-SF	
	12937.38	1580.28	11883.48	11357.09	12.29	OSF1.50	19261.70	8275.00				TD	
Cimarex Riverbend 12-13 Federal Com #2H Rev2 mcs 23Mar20 (Def Plan)													
	134.15	32.81	132.86	101.34	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	Pass
	134.15	32.81	132.86	101.34	45999.54	MAS = 10.00 (m)	26.00	26.00				WRP	
	102.86	32.81	90.09	70.05	8.83	MAS = 10.00 (m)	2630.00	2625.17				MinPt-O-SF	
	102.02	32.81	89.41	69.21	8.91	MAS = 10.00 (m)	2690.00	2684.08				MINPT-O-EOU	
	102.00	32.81	89.42	69.19	8.93	MAS = 10.00 (m)	2700.00	2693.90				MinPts	
	429.38	51.45	394.65	377.99	12.80	OSF1.50	7085.93	7000.00				MinPt-O-SF	
	1970.79	333.46	1748.05	1637.33	8.89	OSF1.50	19040.00	8275.00				MinPt-CtCt	
	1971.30	335.48	1747.26	1635.88	8.84	OSF1.50	19090.00	8275.00				MINPT-O-EOU	
	1972.20	336.52	1747.43	1635.68	8.82	OSF1.50	19120.00	8275.00				MinPt-O-ADP	
	1982.63	340.71	1755.06	1641.92	8.76	OSF1.50	19261.70	8275.00				MinPt-O-SF	
Cimarex Riverbend 12-13 Federal Com #1H Rev3 mcs 23Mar20 (Def Plan)													
	152.30	32.81	151.01	119.49	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	Pass
	152.30	32.81	151.01	119.49	52282.06	MAS = 10.00 (m)	26.00	26.00				WRP	
	152.30	32.81	138.90	119.49	12.47	MAS = 10.00 (m)	1990.00	1990.00				MinPts	
	152.35	32.81	138.73	119.54	12.29	MAS = 10.00 (m)	2100.00	2099.98				MinPts	
	837.80	56.57	799.66	781.23	22.70	OSF1.50	7085.93	7000.00				MinPt-O-SF	
	2078.06	343.48	1848.64	1734.57	9.10	OSF1.50	19100.00	8275.00				MINPT-O-EOU	
	2078.97	344.61	1848.80	1734.36	9.08	OSF1.50	19130.00	8275.00				MinPt-O-ADP	
	2088.07	348.66	1855.20	1739.41	9.01	OSF1.50	19261.70	8275.00				MinPt-O-SF	
Cimarex Riverbend 12-13 Federal Com #16H Rev2 mcs 23Mar20 (Def Plan)													
	170.84	32.81	169.55	138.03	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	Pass
	170.84	32.81	169.55	138.03	38155.39	MAS = 10.00 (m)	26.00	26.00				WRP	
	170.84	32.81	160.58	138.03	18.89	MAS = 10.00 (m)	1490.00	1490.00				MinPts	
	170.86	32.81	160.49	138.05	18.67	MAS = 10.00 (m)	1510.00	1510.00				MINPT-O-EOU	
	178.22	32.81	166.99	145.41	17.89	MAS = 10.00 (m)	1720.00	1720.00				MinPt-O-SF	
	441.11	32.81	424.96	408.30	29.69	MAS = 10.00 (m)	3620.00	3597.15				MinPt-O-SF	
	1070.05	59.63	1029.87	1010.42	27.43	OSF1.50	7085.93	7000.00				MinPt-O-SF	
	2608.43	347.17	2376.56	2261.26	11.31	OSF1.50	19120.00	8275.00				MINPT-O-EOU	
	2608.98	347.85	2376.65	2261.13	11.29	OSF1.50	19140.00	8275.00				MinPt-O-ADP	
	2615.61	351.54	2380.82	2264.07	11.20	OSF1.50	19261.70	8275.00				MinPt-O-SF	
Cimarex Riverbend 12-13 Federal Com #15H Rev2 mcs 23Mar20 (Def Plan)													
	189.72	32.81	188.43	156.91	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	Pass
	189.72	32.81	188.43	156.91	42404.45	MAS = 10.00 (m)	26.00	26.00				WRP	
	189.72	32.81	182.60	156.91	32.31	MAS = 10.00 (m)	990.00	990.00				MinPts	
	189.74	32.81	182.52	156.93	31.74	MAS = 10.00 (m)	1010.00	1010.00				MINPT-O-EOU	
	211.20	32.81	202.53	178.39	28.43	MAS = 10.00 (m)	1370.00	1370.00				MinPt-O-SF	
	1311.86	63.87	1268.85	1247.99	31.41	OSF1.50	7085.93	7000.00				MinPt-O-SF	
	1979.83	388.60	1720.33	1591.23	7.66	OSF1.50	19261.70	8275.00				MinPts	
Final Survey - Cimarex Riverbend 12-13 Federal Com #29H 0ft to 21947ft (Surcon Corrected) (Def Survey)													
	954.29	32.81	953.00	921.48	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	Pass
	954.28	32.81	952.98	921.47	80164.91	MAS = 10.00 (m)	26.00	26.00				WRP	
	951.62	32.81	948.52	918.82	522.78	MAS = 10.00 (m)	450.00	450.00				MINPT-O-EOU	
	948.94	32.81	944.41	916.13	278.81	MAS = 10.00 (m)	790.00	790.00				MinPts	
	949.09	32.81	944.28	916.28	256.90	MAS = 10.00 (m)	850.00	850.00				MINPT-O-EOU	
	954.18	32.81	944.13	921.37	106.89	MAS = 10.00 (m)	2100.00	2099.98				MinPts	
	954.16	32.81	944.14	921.35	107.21	MAS = 10.00 (m)	2110.00	2109.97				MinPts	
	978.03	33.31	955.48	944.72	45.39	OSF1.50	6550.00	6473.82				MinPt-CtCt	
	978.08	33.51	955.38	944.54	45.07	OSF1.50	6580.00	6503.27				MINPT-O-EOU	
	978.21	33.69	955.41	944.52	44.86	OSF1.50	6600.00	6522.91				MinPt-O-ADP	
	997.81	37.49	972.48	960.33	41.00	OSF1.50	7100.00	7013.82				MinPt-O-SF	
	999.07	37.24	973.91	961.83	41.34	OSF1.50	7320.00	7231.37				MinPt-O-SF	
	962.13	36.39	937.52	925.73	40.78	OSF1.50	7770.00	7680.74				MinPt-O-SF	
	957.31	35.99	932.97	921.31	41.02	OSF1.50	7890.00	7800.74				MinPt-O-ADP	
	957.29	35.97	932.96	921.31	41.04	OSF1.50	7900.00	7810.74				MinPts	
	2637.33	78.25	2584.84	2559.08	51.18	OSF1.50	10290.00	8275.00				MINPT-O-EOU	
	2643.18	103.51	2573.84	2539.66	38.66	OSF1.50	11150.00	8275.00				MinPt-CtCt	
	2630.03	134.69	2539.91	2495.34	29.50	OSF1.50	12210.00	8275.00				MinPt-CtCt	
	2630.83	137.28	2539.02	2493.61	28.96	OSF1.50	12310.00	8275.00				MINPT-O-EOU	
	2631.96	142.44	2536.61	2489.46	27.90	OSF1.50	12470.00	8275.00				MinPt-CtCt	
	2632.79	145.25	2535.65	2487.57	27.37	OSF1.50	12580.00	8275.00				MINPT-O-EOU	
	2638.11	151.78	2536.61	2486.36	26.24	OSF1.50	12800.00	8275.00				MINPT-O-EOU	
	2642.98	158.64	2536.90	2484.34	25.14	OSF1.50	13030.00	8275.00				MINPT-O-EOU	
	2639.14	189.47	2512.49	2449.66	20.99	OSF1.50	14050.00	8275.00				MinPt-CtCt	
	2639.30	195.81	2508.43	2443.49	20.31	OSF1.50	14260.00	8275.00				MinPt-CtCt	
	2639.64	201.57	2504.94	2438.08	19.73	OSF1.50	14450.00	8275.00				MinPt-CtCt	
	2640.57	204.39	2503.98	2436.18	19.47	OSF1.50	14560.00	8275.00				MINPT-O-EOU	
	2646.59	214.73	2503.11	2431.86	18.57	OSF1.50	14910.00	8275.00				MINPT-O-EOU	
	2648.56	224.22	2498.75	2424.33	17.79	OSF1.50	15210.00	8275.00				MinPt-CtCt	
	2649.26	226.45	2497.96	2422.80	17.62	OSF1.50	15300.00	8275.00				MINPT-O-EOU	
	2652.02	230.18	2498.23	2421.83	17.35	OSF1.50	15430.00	8275.00				MINPT-O-EOU	
	2652.69	230.95	2498.39	2421.74	17.30	OSF1.50	15460.00	8275.00				MinPt-O-ADP	
	2654.98	236.17	2497.21	2418.81	16.93	OSF1.50	15610.00	8275.00				MinPt-CtCt	
	2655.54	241.22	2494.40	2414.32	16.57	OSF1.50	15780.00	8275.00				MinPt-CtCt	
	2656.40	243.78	2493.57	2412.64	16.41	OSF1.50	15880.00	8275.00				MINPT-O-EOU	
	2654.46	259.94	2480.84	2394.52	15.37	OSF1.50	16400.00	8275.00				MinPt-CtCt	
	2655.53	264.02	2479.19	2391.51	15.14	OSF1.50	16550.00	8275.00				MINPT-O-EOU	
	2656.53	265.22	2479.39	2391.31	15.07	OSF1.50	16600.00	8275.00				MinPt-O-ADP	
	2672.75	280.34	2485.53	2392.41	14.35	OSF1.50	17100.00	8275.00				MINPT-O-EOU	
	2673.36	288.70	2480.57	2384.66	13.93	OSF1.50	17360.00	8275.00				MinPt-CtCt	
	2673.88	290.31	2480.01	2383.57	13.86	OSF1.50	17430.00	8275.00				MINPT-O-EOU	
	2674.45	290.98	2480.14	2383.47	13.83	OSF1.50	17460.00	8275.00				MinPt-O-ADP	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Cl-Cl (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
2680.99	297.46	2482.30	2383.54	13.56		OSF1.50	17670.00	8275.00				MINPT-O-EOU	
2682.00	298.69	2482.55	2383.31	13.51		OSF1.50	17720.00	8275.00				MinPt-O-ADP	
2686.85	305.51	2482.85	2381.34	13.23		OSF1.50	17940.00	8275.00				MINPT-O-EOU	
2686.52	309.90	2479.59	2376.62	13.04		OSF1.50	18070.00	8275.00				MinPt-CiCl	
2688.58	321.10	2474.18	2367.47	12.59		OSF1.50	18460.00	8275.00				MINPT-O-EOU	
2689.81	322.60	2474.41	2367.21	12.54		OSF1.50	18520.00	8275.00				MinPt-O-ADP	
2691.10	338.60	2465.04	2352.50	11.95		OSF1.50	19020.00	8275.00				MinPt-CiCl	
2691.25	339.18	2464.81	2352.08	11.93		OSF1.50	19050.00	8275.00				MINPT-O-EOU	
2691.54	339.54	2464.86	2352.01	11.92		OSF1.50	19070.00	8275.00				MinPt-O-ADP	
2699.98	341.88	2471.73	2358.10	11.88		OSF1.50	19240.00	8275.00				MinPt-O-SF	
2701.83	342.09	2473.44	2359.74	11.88		OSF1.50	19261.70	8275.00				TD	

Final Surveys - Riverbend 12-13 Federal Com #31H MWD
Surveys 0ft to 21398ft (Surcon
Corrected) (Def Survey)

Pass

1022.09	32.81	1020.80	989.28	N/A		MAS = 10.00 (m)	0.00	0.00				MinPts	
1022.09	32.81	1020.80	989.28	113564.77		MAS = 10.00 (m)	26.00	26.00				WRP	
962.50	32.81	952.49	929.69	108.53		MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
961.81	32.81	952.09	929.00	112.03		MAS = 10.00 (m)	2190.00	2189.86				MINPT-O-EOU	
961.73	32.81	952.19	928.93	114.21		MAS = 10.00 (m)	2240.00	2239.72				MinPts	
1020.51	32.81	1012.26	987.70	141.03		MAS = 10.00 (m)	3280.00	3263.34				MinPt-O-SF	
1396.00	34.76	1372.49	1361.24	62.02		OSF1.50	7085.93	7000.00				MinPt-O-SF	
1457.48	33.77	1434.62	1423.71	66.71		OSF1.50	7700.00	7610.74				MinPt-O-SF	
1461.97	33.56	1439.25	1428.41	67.33		OSF1.50	7920.00	7830.71				MinPt-O-SF	
2018.88	49.97	1985.24	1968.91	61.79		OSF1.50	8930.00	8275.00				MINPT-O-EOU	
2017.90	81.33	1963.44	1936.66	37.66		OSF1.50	10060.00	8275.00				MinPt-CiCl	
2014.81	146.68	1916.69	1868.13	20.73		OSF1.50	12290.00	8275.00				MinPt-CiCl	
2017.08	152.48	1915.10	1864.60	19.96		OSF1.50	12500.00	8275.00				MINPT-O-EOU	
2019.08	154.91	1915.48	1864.17	19.67		OSF1.50	12590.00	8275.00				MinPt-O-ADP	
2019.93	155.75	1915.76	1864.17	19.57		OSF1.50	12620.00	8275.00				MinPt-O-ADP	
2026.17	164.37	1916.27	1861.81	18.59		OSF1.50	12900.00	8275.00				MINPT-O-EOU	
2028.03	169.03	1915.02	1859.00	18.09		OSF1.50	13040.00	8275.00				MinPt-CiCl	
2023.74	207.95	1884.78	1815.79	14.66		OSF1.50	14340.00	8275.00				MinPt-CiCl	
1992.16	292.41	1796.89	1699.75	10.25		OSF1.50	17150.00	8275.00				MinPt-CiCl	
1991.12	300.52	1790.44	1690.59	9.97		OSF1.50	17420.00	8275.00				MinPt-CiCl	
1987.54	326.77	1769.36	1660.76	9.15		OSF1.50	18290.00	8275.00				MinPt-CiCl	
1988.49	343.69	1759.04	1644.80	8.70		OSF1.50	18850.00	8275.00				MinPt-CiCl	
1989.78	349.06	1756.75	1640.72	8.57		OSF1.50	19040.00	8275.00				MINPT-O-EOU	
1989.93	349.21	1756.80	1640.72	8.57		OSF1.50	19050.00	8275.00				MinPt-O-ADP	
1992.37	350.01	1758.70	1642.36	8.56		OSF1.50	19120.00	8275.00				MinPt-O-SF	
2004.78	350.35	1770.89	1654.43	8.60		OSF1.50	19261.70	8275.00				TD	

Final Survey - Cimarex
Riverbend 12-13 Federal Com
#30H MWD 0ft-20738ft (Surcon
Corrected) (Def Survey)

Pass

974.17	32.81	972.89	941.37	N/A		MAS = 10.00 (m)	0.00	0.00				MinPts	
974.20	32.81	972.90	941.39	74904.66		MAS = 10.00 (m)	26.00	26.00				WRP	
974.24	32.81	972.90	941.43	18938.08		MAS = 10.00 (m)	40.00	40.00				MINPT-O-EOU	
977.69	32.81	970.05	944.88	149.96		MAS = 10.00 (m)	1510.00	1510.00				MinPts	
977.76	32.81	969.98	944.95	146.85		MAS = 10.00 (m)	1540.00	1540.00				MINPT-O-EOU	
981.84	32.81	971.97	949.03	112.24		MAS = 10.00 (m)	2100.00	2099.98				MinPts	
1086.52	32.81	1064.64	1053.72	52.03		MAS = 10.00 (m)	6370.00	6297.10				MinPts	
1086.54	32.81	1064.62	1053.73	51.92		MAS = 10.00 (m)	6380.00	6306.82				MINPT-O-EOU	
1081.23	37.89	1055.63	1043.34	43.95		OSF1.50	7070.00	6984.36				MinPt-CiCl	
1081.25	38.00	1055.58	1043.25	43.82		OSF1.50	7085.93	7000.00				MinPts	
1081.28	38.03	1055.59	1043.25	43.78		OSF1.50	7100.00	7013.82				MinPts	
1021.53	36.85	996.60	984.68	42.83		OSF1.50	8000.00	7909.68				MinPt-CiCl	
1021.54	36.90	996.57	984.64	42.76		OSF1.50	8010.00	7919.38				MinPts	
1046.16	38.43	1020.20	1007.73	41.91		OSF1.50	8250.00	8126.71				MinPt-O-SF	
1646.01	62.79	1603.83	1583.23	39.93		OSF1.50	9650.00	8275.00				MinPt-CiCl	
1627.46	105.00	1557.14	1522.46	23.45		OSF1.50	11160.00	8275.00				MinPt-CiCl	
1632.94	118.31	1553.74	1514.63	20.86		OSF1.50	11630.00	8275.00				MINPT-O-EOU	
1635.12	122.95	1552.82	1512.17	20.10		OSF1.50	11790.00	8275.00				MINPT-O-EOU	
1636.93	125.11	1553.19	1511.82	19.77		OSF1.50	11870.00	8275.00				MinPt-O-ADP	
1646.18	147.18	1547.75	1499.01	16.88		OSF1.50	12600.00	8275.00				MinPt-CiCl	
1645.23	170.29	1531.43	1475.00	14.57		OSF1.50	13380.00	8275.00				MinPt-CiCl	
1642.38	189.00	1516.06	1453.39	13.10		OSF1.50	14010.00	8275.00				MinPt-CiCl	
1641.11	205.05	1504.08	1436.06	12.06		OSF1.50	14550.00	8275.00				MinPt-CiCl	
1638.84	220.03	1491.83	1418.82	11.22		OSF1.50	15050.00	8275.00				MinPt-CiCl	
1638.88	229.90	1485.28	1408.98	10.73		OSF1.50	15380.00	8275.00				MinPt-CiCl	
1638.76	242.44	1476.81	1396.32	10.17		OSF1.50	15800.00	8275.00				MinPt-CiCl	
1639.19	249.30	1472.66	1389.89	9.90		OSF1.50	16030.00	8275.00				MinPt-CiCl	
1627.47	328.52	1408.13	1298.95	7.45		OSF1.50	18660.00	8275.00				MinPt-CiCl	
1628.01	330.28	1407.49	1297.73	7.41		OSF1.50	18730.00	8275.00				MINPT-O-EOU	
1628.59	331.00	1407.60	1297.59	7.40		OSF1.50	18760.00	8275.00				MinPt-O-ADP	
1628.41	339.41	1401.81	1289.00	7.21		OSF1.50	19020.00	8275.00				MinPt-CiCl	
1628.51	339.78	1401.67	1288.75	7.21		OSF1.50	19040.00	8275.00				MINPT-O-EOU	
1628.65	339.92	1401.71	1288.73	7.20		OSF1.50	19050.00	8275.00				MinPt-O-ADP	
1630.28	340.53	1402.94	1289.76	7.20		OSF1.50	19100.00	8275.00				MinPt-O-SF	
1645.98	340.39	1418.73	1305.59	7.27		OSF1.50	19261.70	8275.00				TD	

Final Surveys - Cimarex
Riverbend 12-13 Federal Com
#35H MWD 0ft-21149ft (Surcon
Corrected) (Def Survey)

Pass

1041.81	32.81	1040.53	1009.01	N/A		MAS = 10.00 (m)	0.00	0.00				MinPts	
1041.82	32.81	1040.52	1009.01	110888.87		MAS = 10.00 (m)	26.00	26.00				WRP	
1042.61	32.81	1039.95	1009.80	782.14		MAS = 10.00 (m)	300.00	300.00				MINPT-O-EOU	
1040.08	32.81	1035.18	1007.28	275.05		MAS = 10.00 (m)	870.00	870.00				MinPts	
1040.13	32.81	1035.15	1007.33	269.71		MAS = 10.00 (m)	890.00	890.00				MINPT-O-EOU	
1041.18	32.81	1033.81	1008.37	166.66		MAS = 10.00 (m)	1450.00	1450.00				MinPts	
1042.00	32.81	1033.39	1009.19	139.20		MAS = 10.00 (m)	1730.00	1730.00				MINPT-O-EOU	
1039.61	32.81	1029.73	1006.80	118.77		MAS = 10.00 (m)	2090.00	2089.99				MinPts	
1039.62	32.81	1029.74	1006.81	118.79		MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
1863.02	33.10	1840.62	1829.93	87.07		OSF1.50	7085.93	7000.00				MinPt-O-SF	
1912.38	32.81	1890.93	1879.57	93.57		MAS = 10.00 (m)	7900.00	7810.74				MinPts	
2040.36	34.65	2016.92	2005.71	90.99		OSF1.50	8410.00	8222.14				MinPt-O-SF	
2040.58	45.46	2009.87	1995.05	68.79		OSF1.50	8620.00	8274.70				MinPt-CiCl	
2040.54	45.68	2009.75	1994.85	68.44		OSF1.50	8630.00	8274.95				MINPT-O-EOU	
2041.15	46.37	2009.91	1994.78	67.43		OSF1.50	8660.00	8275.00				MinPt-O-ADP	

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		
2048.29	60.95	2007.33	1987.34	51.21		OSF1.50	9210.00	8275.00				MINPT-O-EOU	
2050.79	64.86	2007.22	1985.93	48.14		OSF1.50	9350.00	8275.00				MINPT-O-EOU	
2052.00	80.78	1997.82	1971.22	38.55		OSF1.50	9900.00	8275.00				MinPt-CtCt	
2053.42	84.97	1996.45	1968.45	36.66		OSF1.50	10060.00	8275.00				MINPT-O-EOU	
2046.61	97.23	1981.46	1949.38	31.88		OSF1.50	10470.00	8275.00				MinPt-CtCt	
2046.88	98.09	1981.16	1948.79	31.60		OSF1.50	10510.00	8275.00				MINPT-O-EOU	
2047.40	98.73	1981.25	1948.67	31.40		OSF1.50	10540.00	8275.00				MinPt-O-ADP	
2067.42	121.00	1986.43	1946.42	25.83		OSF1.50	11290.00	8275.00				MINPT-O-EOU	
2067.80	132.37	1979.23	1935.43	23.60		OSF1.50	11660.00	8275.00				MinPt-CtCt	
2068.06	145.44	1970.77	1922.62	21.46		OSF1.50	12100.00	8275.00				MinPt-CtCt	
2063.03	162.08	1954.65	1900.95	19.20		OSF1.50	12660.00	8275.00				MinPt-CtCt	
2053.02	184.01	1930.02	1869.01	16.82		OSF1.50	13390.00	8275.00				MinPt-CtCt	
2054.34	187.96	1928.68	1866.35	16.47		OSF1.50	13540.00	8275.00				MINPT-O-EOU	
2064.50	206.93	1926.22	1857.57	15.03		OSF1.50	14150.00	8275.00				MinPt-CtCt	
2052.12	250.07	1885.08	1802.05	12.35		OSF1.50	15580.00	8275.00				MinPt-CtCt	
2046.47	276.57	1861.76	1769.90	11.13		OSF1.50	16460.00	8275.00				MinPt-CtCt	
2030.35	300.46	1829.71	1729.89	10.16		OSF1.50	17250.00	8275.00				MinPt-CtCt	
2032.20	305.30	1828.34	1726.90	10.01		OSF1.50	17430.00	8275.00				MINPT-O-EOU	
2033.27	306.60	1828.54	1726.66	9.97		OSF1.50	17480.00	8275.00				MinPt-O-ADP	
2029.04	324.63	1812.29	1704.40	9.40		OSF1.50	18050.00	8275.00				MinPt-CtCt	
2032.47	337.98	1806.82	1694.49	9.04		OSF1.50	18510.00	8275.00				MINPT-O-EOU	
2033.74	339.51	1807.07	1694.23	9.01		OSF1.50	18570.00	8275.00				MinPt-O-ADP	
2040.43	349.28	1807.25	1691.15	8.78		OSF1.50	18880.00	8275.00				MINPT-O-EOU	
2041.44	350.49	1807.45	1690.95	8.76		OSF1.50	18930.00	8275.00				MinPt-O-ADP	
2047.42	354.96	1810.45	1692.46	8.67		OSF1.50	19110.00	8275.00				MinPt-O-SF	
2060.40	355.24	1823.24	1705.16	8.72		OSF1.50	19261.70	8275.00				TD	

Final Surveys - Cimarex
Riverbend 12-13 Federal Com
#34H MWD 0ft-21110ft (Surcon
Corrected) (Def Survey)

Pass

1061.55	32.81	1060.26	1028.74	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
1061.55	32.81	1060.25	1028.74	87257.23		MAS = 10.00 (m)	26.00	26.00				WRP	
1060.14	32.81	1057.15	1027.33	622.73		MAS = 10.00 (m)	440.00	440.00				MINPT-O-EOU	
1059.76	32.81	1056.41	1026.93	476.78		MAS = 10.00 (m)	550.00	550.00				MinPts	
1060.09	32.81	1056.12	1027.28	373.30		MAS = 10.00 (m)	680.00	680.00				MINPT-O-EOU	
1058.05	32.81	1050.99	1025.24	178.42		MAS = 10.00 (m)	1340.00	1340.00				MinPts	
1058.80	32.81	1050.34	1025.99	144.30		MAS = 10.00 (m)	1620.00	1620.00				MINPT-O-EOU	
1064.79	32.81	1054.63	1031.98	117.73		MAS = 10.00 (m)	2000.00	2000.00				MinPt-O-SF	
1066.73	32.81	1056.54	1033.92	117.73		MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
1328.73	32.81	1319.80	1295.92	167.85		MAS = 10.00 (m)	3520.00	3498.97				MinPt-O-SF	
1960.26	35.02	1936.57	1925.24	86.43		OSF1.50	7085.93	7000.00				MinPt-O-SF	
2017.56	33.38	1994.97	1984.18	93.47		OSF1.50	7760.00	7670.74				MinPt-O-SF	
2016.28	33.14	1993.87	1983.18	94.24		OSF1.50	7900.00	7810.74				MinPts	
2016.30	33.12	1993.88	1983.18	94.18		OSF1.50	7910.00	7820.73				MinPt-O-ADP	
2164.06	37.53	2138.71	2126.54	88.89		OSF1.50	8560.00	8268.84				MinPt-O-SF	
2529.76	63.23	2487.27	2466.53	60.94		OSF1.50	9360.00	8275.00				MinPt-CtCt	
2519.15	108.98	2446.17	2410.17	34.98		OSF1.50	10950.00	8275.00				MinPt-CtCt	
2523.56	119.71	2443.43	2403.85	31.87		OSF1.50	11330.00	8275.00				MINPT-O-EOU	
2528.41	134.62	2438.34	2393.80	28.37		OSF1.50	11810.00	8275.00				MinPt-CtCt	
2510.68	174.56	2393.98	2336.12	21.69		OSF1.50	13150.00	8275.00				MinPt-CtCt	
2511.16	190.89	2383.57	2320.27	19.83		OSF1.50	13690.00	8275.00				MinPt-CtCt	
2511.96	193.31	2382.76	2318.65	19.58		OSF1.50	13790.00	8275.00				MINPT-O-EOU	
2510.80	198.98	2377.82	2311.82	19.01		OSF1.50	13960.00	8275.00				MinPt-CtCt	
2511.31	200.59	2377.26	2310.73	18.86		OSF1.50	14030.00	8275.00				MINPT-O-EOU	
2511.86	201.27	2377.35	2310.59	18.81		OSF1.50	14060.00	8275.00				MinPt-O-ADP	
2505.34	229.42	2352.07	2275.92	16.44		OSF1.50	14970.00	8275.00				MinPt-CtCt	
2493.37	259.23	2320.22	2234.14	14.48		OSF1.50	15960.00	8275.00				MinPt-CtCt	
2493.94	261.00	2319.55	2232.85	14.38		OSF1.50	16040.00	8275.00				MINPT-O-EOU	
2494.05	267.94	2315.09	2226.11	14.01		OSF1.50	16250.00	8275.00				MinPt-CtCt	
2494.28	274.28	2311.10	2220.00	13.68		OSF1.50	16460.00	8275.00				MinPt-CtCt	
2492.71	284.55	2302.69	2208.17	13.18		OSF1.50	16800.00	8275.00				MinPt-CtCt	
2493.60	290.90	2299.34	2202.70	12.90		OSF1.50	17010.00	8275.00				MinPt-CtCt	
2495.60	322.36	2280.37	2173.25	11.64		OSF1.50	18050.00	8275.00				MinPt-CtCt	
2493.80	331.72	2272.33	2162.09	11.31		OSF1.50	18360.00	8275.00				MinPt-CtCt	
2492.92	335.66	2268.81	2157.25	11.17		OSF1.50	18490.00	8275.00				MinPt-CtCt	
2493.43	337.21	2268.29	2156.22	11.12		OSF1.50	18560.00	8275.00				MINPT-O-EOU	
2493.99	337.85	2268.43	2156.14	11.10		OSF1.50	18590.00	8275.00				MinPt-O-ADP	
2500.02	344.31	2270.12	2155.67	10.92		OSF1.50	18800.00	8275.00				MINPT-O-EOU	
2500.90	345.33	2270.35	2155.56	10.89		OSF1.50	18840.00	8275.00				MinPt-O-ADP	
2506.87	350.52	2272.86	2156.25	10.75		OSF1.50	19020.00	8275.00				MinPt-O-ADP	
2512.41	353.31	2276.55	2159.11	10.69		OSF1.50	19160.00	8275.00				MinPt-O-SF	
2520.71	353.92	2284.44	2166.80	10.71		OSF1.50	19261.70	8275.00				TD	

Final Surveys - Cimarex
Riverbend 12-13 Federal Com
#33H 0ft-20967ft (Surcon
Corrected) (Def Survey)

Pass

1081.31	32.81	1080.02	1048.50	N/A	MAS = 10.00 (m)	0.00	0.00					MinPts
1081.32	32.81	1080.02	1048.51	100862.46	MAS = 10.00 (m)	26.00	26.00					WRP
1081.77	32.81	1079.81	1048.96	1608.66	MAS = 10.00 (m)	190.00	190.00					MINPT-O-EOU
1081.93	32.81	1079.81	1049.12	1294.88	MAS = 10.00 (m)	220.00	220.00					MINPT-O-EOU
1084.59	32.81	1080.16	1051.78	344.46	MAS = 10.00 (m)	750.00	750.00					MinPts
1084.69	32.81	1080.02	1051.88	320.52	MAS = 10.00 (m)	800.00	800.00					MINPT-O-EOU
1078.15	32.81	1068.41	1045.35	127.39	MAS = 10.00 (m)	1910.00	1910.00					MinPts
1078.23	32.81	1068.35	1045.42	125.32	MAS = 10.00 (m)	1940.00	1940.00					MINPT-O-EOU
1081.81	32.81	1071.49	1049.00	119.59	MAS = 10.00 (m)	2100.00	2099.98					MinPt-O-SF
1329.50	32.81	1320.29	1296.69	167.57	MAS = 10.00 (m)	3170.00	3155.34					MinPt-O-SF
1382.83	32.81	1373.19	1350.02	165.37	MAS = 10.00 (m)	3340.00	3322.25					MinPt-O-SF
1503.20	32.81	1492.92	1470.39	166.99	MAS = 10.00 (m)	3720.00	3695.33					MinPt-O-SF
2347.59	36.99	2322.50	2310.60	98.57	OSF1.50	7100.00	7013.82					MinPt-O-SF
2382.56	34.84	2358.91	2347.72	106.47	OSF1.50	7830.00	7740.74					MinPt-O-ADP
2382.52	34.79	2358.90	2347.73	106.63	OSF1.50	7850.00	7760.74					MINPT-O-EOU
2382.49	34.71	2358.93	2347.78	106.86	OSF1.50	7880.00	7790.74					MinPt-CtCt
2566.92	39.96	2539.85	2526.95	99.50	OSF1.50	8670.00	8275.00					MinPt-O-SF
2589.47	40.30	2562.17	2549.16	99.51	OSF1.50	8720.00	8275.00					MinPt-O-SF
2719.13	56.15	2681.27	2662.98	74.31	OSF1.50	8990.00	8275.00					MinPts
2695.94	76.88	2644.26	2619.06	53.47	OSF1.50	9730.00	8275.00					MinPt-CtCt
2683.52	98.42	2617.48	2585.10	41.42	OSF1.50	10480.00	8275.00					MinPt-CtCt
2684.70	103.45	2615.31	2581.25	39.40	OSF1.50	10670.00	8275.00					MINPT-O-EOU
2685.52	104.43	2615.47	2581.09	39.04	OSF1.50	10710.00	8275.00					MinPt-O-ADP
2685.25	164.92	2574.87	2520.33	24.60	OSF1.50	12720.00	8275.00					MinPt-CtCt

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Cl-Cl (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
2686.61	174.23	2570.02	2512.37	23.29		OSF1.50	13030.00	8275.00				MinPt-CiCi	
2691.53	193.21	2562.30	2498.32	21.03		OSF1.50	13680.00	8275.00				MINPT-O-EOU	
2692.79	194.72	2562.55	2498.07	20.87		OSF1.50	13740.00	8275.00				MinPt-O-ADP	
2685.69	252.84	2516.70	2432.85	16.01		OSF1.50	15640.00	8275.00				MinPt-CiCi	
2687.33	257.08	2515.51	2430.24	15.75		OSF1.50	15800.00	8275.00				MINPT-O-EOU	
2679.41	304.42	2476.03	2374.99	13.25		OSF1.50	17350.00	8275.00				MinPt-CiCi	
2674.96	324.96	2457.89	2350.00	12.39		OSF1.50	18030.00	8275.00				MinPt-CiCi	
2672.53	335.23	2448.62	2337.30	12.00		OSF1.50	18370.00	8275.00				MinPt-CiCi	
2674.56	340.08	2447.41	2334.48	11.84		OSF1.50	18550.00	8275.00				MINPT-O-EOU	
2679.37	347.38	2447.24	2331.97	11.61		OSF1.50	18790.00	8275.00				MINPT-O-EOU	
2682.63	352.51	2447.19	2330.11	11.45		OSF1.50	18960.00	8275.00				MINPT-O-EOU	
2684.49	355.21	2447.26	2329.28	11.37		OSF1.50	19050.00	8275.00				MinPts	
2690.76	357.06	2452.29	2333.69	11.34		OSF1.50	19190.00	8275.00				MinPt-O-SF	
2696.77	357.64	2457.92	2339.13	11.35		OSF1.50	19261.70	8275.00				TD	

Final Surveys - Cimarex
Riverbend 12-13 Federal Com
#32H 0 to 21507' (Surcon
Corrected) (Def Survey)

Pass

1101.03	32.81	1099.74	1068.22	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
1101.02	32.81	1099.73	1068.22	95572.43		MAS = 10.00 (m)	26.00	26.00				WRP	
1090.40	32.81	1085.79	1057.59	313.73		MAS = 10.00 (m)	780.00	780.00				MinPts	
1090.46	32.81	1085.76	1057.65	305.31		MAS = 10.00 (m)	800.00	800.00				MINPT-O-EOU	
1196.92	32.81	1186.37	1164.12	126.93		MAS = 10.00 (m)	2020.00	2020.00				MinPt-O-SF	
2755.03	37.40	2729.76	2717.64	113.57		OSF1.50	7100.00	7013.82				MinPt-O-SF	
2840.16	37.11	2815.08	2803.04	118.00		OSF1.50	7790.00	7700.74				MinPt-O-SF	
3059.37	41.97	3031.05	3017.40	112.02		OSF1.50	8690.00	8275.00				MinPt-O-SF	
3082.97	42.30	3054.43	3040.67	111.99		OSF1.50	8740.00	8275.00				MinPt-O-SF	
3155.80	55.70	3118.34	3100.10	86.49		OSF1.50	8890.00	8275.00				MINPT-O-EOU	
3156.06	67.91	3110.46	3088.15	70.71		OSF1.50	9330.00	8275.00				MinPt-CiCi	
3154.04	86.77	3095.87	3067.27	55.13		OSF1.50	10000.00	8275.00				MinPt-CiCi	
3152.72	101.55	3084.69	3051.17	47.01		OSF1.50	10510.00	8275.00				MinPt-CiCi	
3132.18	148.56	3032.82	2983.63	31.83		OSF1.50	12100.00	8275.00				MinPt-CiCi	
3132.22	152.73	3030.07	2979.49	30.95		OSF1.50	12240.00	8275.00				MinPt-CiCi	
3131.11	175.17	3014.00	2955.94	26.96		OSF1.50	12990.00	8275.00				MinPt-CiCi	
3129.98	192.25	3001.48	2937.73	24.54		OSF1.50	13560.00	8275.00				MinPt-CiCi	
3127.64	209.68	2987.52	2917.96	22.47		OSF1.50	14140.00	8275.00				MinPt-CiCi	
3129.14	214.15	2986.04	2914.99	22.01		OSF1.50	14310.00	8275.00				MINPT-O-EOU	
3145.42	233.12	2989.68	2912.30	20.32		OSF1.50	14950.00	8275.00				MinPt-O-ADP	
3125.55	280.53	2938.20	2845.02	16.77		OSF1.50	16490.00	8275.00				MinPt-CiCi	
3126.40	282.94	2937.44	2843.46	16.63		OSF1.50	16590.00	8275.00				MINPT-O-EOU	
3127.39	284.13	2937.64	2843.25	16.56		OSF1.50	16640.00	8275.00				MinPt-O-ADP	
3132.38	316.82	2920.83	2815.55	14.87		OSF1.50	17690.00	8275.00				MinPt-CiCi	
3130.09	334.97	2906.45	2795.12	14.05		OSF1.50	18290.00	8275.00				MinPt-CiCi	
3129.73	343.13	2900.65	2786.60	13.72		OSF1.50	18560.00	8275.00				MinPt-CiCi	
3129.24	352.84	2893.69	2776.40	13.34		OSF1.50	18880.00	8275.00				MinPt-CiCi	
3129.18	356.21	2891.37	2772.96	13.21		OSF1.50	18990.00	8275.00				MinPt-CiCi	
3129.37	356.93	2891.03	2772.44	13.18		OSF1.50	19030.00	8275.00				MINPT-O-EOU	
3129.66	357.26	2891.16	2772.40	13.17		OSF1.50	19050.00	8275.00				MinPt-O-ADP	
3139.56	359.78	2899.37	2779.77	13.12		OSF1.50	19250.00	8275.00				MinPt-O-SF	
3140.53	359.88	2900.28	2780.64	13.12		OSF1.50	19261.70	8275.00				TD	

Endeavor Seminole Federal #3
(Offset) Inc Only 0ft-5191ft (Def
Survey)

Pass

1226.66	32.81	1225.53	1193.85	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
1226.13	32.81	1224.94	1193.32	19287.68		MAS = 10.00 (m)	20.00	20.00				MinPt-O-SF	
1226.04	32.81	1224.84	1193.23	20294.88		MAS = 10.00 (m)	26.00	26.00				WRP	
1225.93	32.81	1224.66	1193.12	8658.03		MAS = 10.00 (m)	50.00	50.00				MinPts	
1212.32	102.02	1143.93	1110.30	18.01		OSF1.50	1940.00	1940.00				MinPt-CiCi	
1214.72	110.48	1140.69	1104.24	16.65		OSF1.50	2150.00	2149.93				MINPT-O-EOU	
1219.31	115.77	1141.76	1103.55	15.94		OSF1.50	2280.00	2279.55				MinPt-O-ADP	
1273.22	175.68	1155.75	1097.59	10.93		OSF1.50	3310.00	3292.79				MINPT-O-EOU	
1280.79	184.98	1157.09	1095.81	10.44		OSF1.50	3480.00	3459.70				MinPt-O-ADP	
1457.37	268.79	1277.80	1188.58	8.16		OSF1.50	5260.00	5207.30				MinPt-O-SF	
4310.21	191.08	4182.45	4119.13	34.03		OSF1.50	9490.00	8275.00				MinPt-CiCi	
13180.16	265.12	13003.03	12915.03	74.88		OSF1.50	19261.70	8275.00				TD	

Marathon Oil Whistle Pig Fee 1
SB FEE 5H (Offset)MWD 0ft-
14257ft (Def Survey)

Pass

4309.29	32.81	4308.16	4276.48	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
4309.25	32.81	4308.11	4276.44	864422.34		MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
4309.23	32.81	4308.10	4276.42	N/A		MAS = 10.00 (m)	20.00	20.00				MINPT-O-EOU	
4309.23	32.81	4308.10	4276.42	N/A		MAS = 10.00 (m)	26.00	26.00				MinPts	
4309.31	32.81	4308.05	4276.50	32897.79		MAS = 10.00 (m)	80.00	80.00				MINPT-O-EOU	
4309.46	32.81	4308.04	4276.65	15337.74		MAS = 10.00 (m)	120.00	120.00				MINPT-O-EOU	
4310.39	32.81	4307.76	4277.58	2866.75		MAS = 10.00 (m)	390.00	390.00				MinPts	
4310.52	32.81	4307.61	4277.71	2421.79		MAS = 10.00 (m)	450.00	450.00				MINPT-O-EOU	
4306.92	32.81	4299.95	4274.11	736.94		MAS = 10.00 (m)	1370.00	1370.00				MinPts	
4307.30	32.81	4299.11	4274.49	610.34		MAS = 10.00 (m)	1630.00	1630.00				MINPT-O-EOU	
4316.69	32.81	4306.58	4283.88	480.79		MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
1330.07	106.63	1258.61	1223.45	18.50		OSF1.50	8330.00	8179.78				MinPt-O-SF	
1309.41	103.50	1240.03	1205.90	19.17		OSF1.50	8440.00	8235.01				MinPts	
1309.20	103.20	1240.03	1206.01	19.22		OSF1.50	8450.00	8238.92				MinPt-CiCi	
11354.75	89.62	11294.63	11285.13	192.46		OSF1.50	19261.70	8275.00				TD	

Marathon Oil Rustler Bluff #7
(Offset) Inc Only 0ft-6500ft (Def
Survey)

Pass

2336.87	32.81	2335.74	2304.06	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
2336.41	32.81	2335.23	2303.61	42468.93		MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
2336.24	32.81	2334.99	2303.43	19306.64		MAS = 10.00 (m)	60.00	60.00				MinPts	
2336.56	68.29	2290.65	2268.26	52.16		OSF1.50	1440.00	1440.00				MinPt-CiCi	
1759.92	333.73	1536.88	1426.19	7.94		OSF1.50	6730.00	6650.54				MinPt-O-SF	
1757.86	332.97	1535.32	1424.89	7.95		OSF1.50	6790.00	6709.45				MinPt-O-ADP	
1757.72	332.81	1535.29	1424.91	7.95		OSF1.50	6800.00	6719.27				MINPT-O-EOU	
1757.60	332.45	1535.41	1425.15	7.96		OSF1.50	6820.00	6738.91				MinPt-CiCi	
11726.18	335.16	11502.36	11391.02	52.65		OSF1.50	19261.70	8275.00				TD	

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		
Mewbourne Malaga 13 DM Federal Com 1H (Offset) Gyro+MWD Off-Update (Def Survey)													
Pass													
6375.50	32.81	6373.52	6342.69	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
6375.34	32.81	6373.35	6342.53	353769.46		MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
6375.29	32.81	6373.26	6342.48	119502.70		MAS = 10.00 (m)	50.00	50.00				MinPts	
6375.29	32.81	6371.08	6342.48	2851.41		MAS = 10.00 (m)	510.00	510.00				MinPts	
6362.44	32.81	6354.30	6329.63	1033.61		MAS = 10.00 (m)	1320.00	1320.00				MinPts	
6362.52	32.81	6354.19	6329.71	1000.91		MAS = 10.00 (m)	1370.00	1370.00				MINPT-O-EOU	
6374.40	32.81	6363.38	6341.60	704.34		MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
6306.70	32.81	6297.09	6273.89	829.89		MAS = 10.00 (m)	3000.00	2988.44				MinPt-O-SF	
5947.72	35.81	5923.03	5911.91	267.22		OSF1.50	7100.00	7013.82				MinPt-O-SF	
5913.85	34.00	5890.35	5879.85	281.45		OSF1.50	7700.00	7610.74				MinPt-O-SF	
5912.84	33.81	5889.47	5879.03	283.10		OSF1.50	7830.00	7740.74				MinPts	
1898.99	148.82	1799.11	1750.17	19.38		OSF1.50	13840.00	8275.00				MinPt-CtCt	
1899.11	149.12	1799.04	1750.00	19.34		OSF1.50	13860.00	8275.00				MINPT-O-EOU	
1899.25	149.26	1799.08	1749.99	19.32		OSF1.50	13870.00	8275.00				MinPt-O-ADP	
1910.86	151.42	1809.26	1759.45	19.18		OSF1.50	14060.00	8275.00				MinPt-O-SF	
2209.14	184.66	2085.38	2024.49	18.12		OSF1.50	15040.00	8275.00				MinPts	
2398.56	254.53	2228.22	2144.04	14.23		OSF1.50	16540.00	8275.00				MINPT-O-EOU	
2400.83	257.04	2228.81	2143.79	14.11		OSF1.50	16590.00	8275.00				MinPt-O-ADP	
2531.98	312.07	2323.27	2219.91	12.24		OSF1.50	17780.00	8275.00				MinPts	
2538.90	319.40	2325.31	2219.50	11.99		OSF1.50	17890.00	8275.00				MinPt-O-ADP	
2618.62	359.06	2378.59	2259.56	10.99		OSF1.50	18720.00	8275.00				MinPts	
2643.57	377.94	2390.95	2265.63	10.54		OSF1.50	19070.00	8275.00				MinPt-O-ADP	
2652.08	383.36	2395.85	2268.72	10.42		OSF1.50	19200.00	8275.00				MinPt-O-SF	
2657.64	383.93	2401.03	2273.71	10.43		OSF1.50	19261.70	8275.00				TD	
Marathon Oil Whistle Pig Fee 1 WA 4H (Offset) MWD Off- 14593ft (Def Survey)													
Pass													
4294.04	32.81	4292.91	4261.23	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
4294.00	32.81	4292.87	4261.19	934272.56		MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
4293.99	32.81	4292.86	4261.18	N/A		MAS = 10.00 (m)	20.00	20.00				MinPts	
4293.99	32.81	4292.86	4261.18	N/A		MAS = 10.00 (m)	26.00	26.00				WRP	
4294.02	32.81	4292.83	4261.21	79123.57		MAS = 10.00 (m)	50.00	50.00				MINPT-O-EOU	
4296.04	32.81	4293.82	4263.23	3940.08		MAS = 10.00 (m)	300.00	300.00				MINPT-O-EOU	
4306.29	32.81	4299.77	4273.48	799.89		MAS = 10.00 (m)	1230.00	1230.00				MINPT-O-EOU	
4299.09	32.81	4289.25	4266.28	493.25		MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
4297.46	32.81	4288.14	4264.65	524.40		MAS = 10.00 (m)	2290.00	2289.50				MINPT-O-EOU	
4297.44	32.81	4288.16	4264.63	527.78		MAS = 10.00 (m)	2310.00	2309.40				MinPts	
1933.75	107.96	1861.40	1825.79	27.14		OSF1.50	8590.00	8272.71				MinPt-O-SF	
1933.66	107.95	1861.32	1825.71	27.14		OSF1.50	8600.00	8273.58				MinPts	
10963.80	79.37	10910.51	10884.43	210.18		OSF1.50	19261.70	8275.00				TD	
COG Illustrated Man Fee Com #1H (Offset) Gyro+MWD Off- 12865ft (Def Survey)													
Pass													
2025.62	32.81	2023.64	1992.81	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
2025.62	32.81	2023.64	1992.81	N/A		MAS = 10.00 (m)	10.00	10.00				MinPts	
2025.63	32.81	2023.63	1992.82	154129.05		MAS = 10.00 (m)	26.00	26.00				WRP	
2025.74	32.81	2023.58	1992.93	11287.19		MAS = 10.00 (m)	80.00	80.00				MINPT-O-EOU	
2026.25	32.81	2023.24	1993.44	1961.10		MAS = 10.00 (m)	240.00	240.00				MINPT-O-EOU	
2053.43	32.81	2041.48	2020.62	206.08		MAS = 10.00 (m)	2000.00	2000.00				MinPt-O-SF	
2025.21	32.81	2015.92	1992.41	276.76		MAS = 10.00 (m)	3490.00	3469.52				MinPts	
2025.24	32.81	2015.89	1992.44	274.62		MAS = 10.00 (m)	3520.00	3498.97				MINPT-O-EOU	
2195.93	35.87	2171.35	2160.06	97.19		OSF1.50	7100.00	7013.82				MinPt-O-SF	
2128.52	49.59	2094.80	2078.94	67.00		OSF1.50	9090.00	8275.00				MinPt-CtCt	
2128.88	50.72	2094.41	2078.16	65.46		OSF1.50	9140.00	8275.00				MINPT-O-EOU	
2129.24	51.14	2094.48	2078.09	64.90		OSF1.50	9160.00	8275.00				MinPt-O-ADP	
2108.45	88.58	2048.74	2019.87	36.48		OSF1.50	10010.00	8275.00				MinPt-CtCt	
2110.78	94.42	2047.17	2016.36	34.22		OSF1.50	10170.00	8275.00				MINPT-O-EOU	
2114.05	98.52	2047.71	2015.54	32.82		OSF1.50	10270.00	8275.00				MinPt-O-ADP	
2130.60	124.33	2047.05	2006.27	26.10		OSF1.50	10760.00	8275.00				MINPT-O-EOU	
2132.71	127.00	2047.38	2005.71	25.56		OSF1.50	10830.00	8275.00				MinPt-O-ADP	
2149.09	142.15	2053.66	2006.94	22.98		OSF1.50	11140.00	8275.00				MinPt-O-ADP	
2200.10	182.62	2077.70	2017.48	18.25		OSF1.50	11870.00	8275.00				MINPT-O-EOU	
2204.12	187.33	2078.58	2016.79	17.82		OSF1.50	11980.00	8275.00				MinPt-O-ADP	
2217.05	197.99	2084.40	2019.06	16.95		OSF1.50	12210.00	8275.00				MinPt-O-ADP	
2257.97	229.06	2104.61	2028.92	14.90		OSF1.50	12770.00	8275.00				MINPT-O-EOU	
2261.28	234.01	2104.61	2027.27	14.61		OSF1.50	12840.00	8275.00				MINPT-O-EOU	
2267.74	244.61	2104.00	2023.13	14.01		OSF1.50	13010.00	8275.00				MINPT-O-EOU	
2268.72	245.69	2104.27	2023.03	13.95		OSF1.50	13040.00	8275.00				MinPt-O-ADP	
2277.23	254.39	2106.97	2022.84	13.52		OSF1.50	13220.00	8275.00				MINPT-O-EOU	
2277.67	255.04	2106.98	2022.63	13.49		OSF1.50	13230.00	8275.00				MinPt-O-ADP	
2287.66	264.87	2110.43	2022.80	13.04		OSF1.50	13420.00	8275.00				MINPT-O-EOU	
2295.02	273.75	2111.86	2021.27	12.66		OSF1.50	13580.00	8275.00				MinPt-O-ADP	
2304.96	283.57	2115.25	2021.39	12.27		OSF1.50	13760.00	8275.00				MINPT-O-EOU	
2306.91	285.78	2115.73	2021.13	12.18		OSF1.50	13800.00	8275.00				MinPt-O-ADP	
2307.41	285.90	2116.15	2021.51	12.18		OSF1.50	13810.00	8275.00				MinPt-O-SF	
6030.33	141.76	5935.16	5888.57	64.69		OSF1.50	19261.70	8275.00				TD	
Marathon Oil Whistle Pig 1 WXY FEE 9H (Offset) MWD Off- 14503ft (Def Survey)													
Pass													
4324.69	32.81	4323.56	4291.88	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
4324.65	32.81	4323.51	4291.84	870611.99		MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
4324.63	32.81	4323.50	4291.82	N/A		MAS = 10.00 (m)	20.00	20.00				MINPT-O-EOU	
4324.63	32.81	4323.50	4291.82	N/A		MAS = 10.00 (m)	26.00	26.00				MinPts	
4324.66	32.81	4323.47	4291.85	79469.32		MAS = 10.00 (m)	50.00	50.00				MINPT-O-EOU	
4326.73	32.81	4324.45	4293.92	3902.14		MAS = 10.00 (m)	310.00	310.00				MINPT-O-EOU	
4322.61	32.81	4318.02	4289.80	1246.70		MAS = 10.00 (m)	820.00	820.00				MinPts	
4322.73	32.81	4317.91	4289.92	1171.76		MAS = 10.00 (m)	870.00	870.00				MINPT-O-EOU	
4355.59	32.81	4345.72	4322.79	497.85		MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
4400.17	32.81	4391.23	4367.36	562.85		MAS = 10.00 (m)	2710.00	2703.72				MinPt-O-SF	
2515.26	202.10	2380.14	2313.15	18.76		OSF1.50	8590.00	8272.71				MinPt-CtCt	
2515.58	203.06	2379.83	2312.52	18.68		OSF1.50	8610.00	8274.25				MINPT-O-EOU	
2515.93	203.53	2379.87	2312.40	18.64		OSF1.50	8620.00	8274.70				MinPt-O-ADP	
2518.32	204.67	2381.50	2313.65	18.55		OSF1.50	8660.00	8275.00					



Cimarex Riverbend 12-13 Federal Com 22H Rev0 mcs 23Mar20 Proposal

Geodetic Report

(Def Plan)



Report Date: April 02, 2020 - 04:15 PM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Riverbend 12-13 Federal Com #22H / Cimarex Riverbend 12-13 Federal Com #22H
Well: Cimarex Riverbend 12-13 Federal Com #22H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Riverbend 12-13 Federal Com 22H Rev0 mcs 23Mar20
Survey Date: March 23, 2020
Tort / AHD / DDI / ERD Ratio: 111.897 ° / 12068.639 ft / 6.497 / 1.458
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 9' 19.72835", W 104° 2' 30.78164"
Location Grid N/E Y/X: N 420421.010 ftUS, E 631530.760 ftUS
CRS Grid Convergence Angle: 0.1551 °
Grid Scale Factor: 0.99991841
Version / Patch: 2.10.787.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 179.892 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 2959.300 ft above MSL
Seabed / Ground Elevation: 2933.300 ft above MSL
Magnetic Declination: 6.920 °
Total Gravity Field Strength: 998.4600mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47797.289 nT
Magnetic Dip Angle: 59.854 °
Declination Date: March 23, 2020
Magnetic Declination Model: HDGM 2020
North Reference: Grid North
Grid Convergence Used: 0.1551 °
Total Corr Mag North->Grid North: 6.7654 °
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 [1267' FSL 2343' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
Rustler	100.00	0.00	136.50	100.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	200.00	0.00	136.50	200.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	300.00	0.00	136.50	300.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	400.00	0.00	136.50	400.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	464.00	0.00	136.50	464.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	500.00	0.00	136.50	500.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	600.00	0.00	136.50	600.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	700.00	0.00	136.50	700.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	800.00	0.00	136.50	800.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	900.00	0.00	136.50	900.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	1000.00	0.00	136.50	1000.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	1100.00	0.00	136.50	1100.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	1200.00	0.00	136.50	1200.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	1300.00	0.00	136.50	1300.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	1400.00	0.00	136.50	1400.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	1500.00	0.00	136.50	1500.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
Salado	1600.00	0.00	136.50	1600.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	1700.00	0.00	136.50	1700.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	1800.00	0.00	136.50	1800.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	1900.00	0.00	136.50	1900.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	1926.00	0.00	136.50	1926.00	0.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	Nudge 2°/100'	2000.00	0.00	136.50	2000.00	0.00	0.00	0.00	420421.01	631530.76	N 32 9 19.73	W 104 2 30.78	
	DLS	2100.00	2.00	136.50	2099.98	1.27	-1.27	1.20	2.00	420419.74	631531.96	N 32 9 19.72	W 104 2 30.77
		2200.00	4.00	136.50	2199.84	5.07	-5.06	4.80	2.00	420415.95	631535.56	N 32 9 19.68	W 104 2 30.73
		2300.00	6.00	136.50	2299.45	11.40	-11.38	10.80	2.00	420409.63	631541.56	N 32 9 19.62	W 104 2 30.66
		2400.00	8.00	136.50	2398.70	20.26	-20.22	19.19	2.00	420400.79	631549.95	N 32 9 19.53	W 104 2 30.56
	Castille	2489.38	9.79	136.50	2487.00	30.30	-30.25	28.70	2.00	420390.77	631559.46	N 32 9 19.43	W 104 2 30.45
		2500.00	10.00	136.50	2497.47	31.63	-31.57	29.96	2.00	420389.44	631560.72	N 32 9 19.42	W 104 2 30.43
	Hold Nudge	2547.43	10.95	136.50	2544.10	37.89	-37.82	35.89	2.00	420383.19	631566.65	N 32 9 19.35	W 104 2 30.37
		2600.00	10.95	136.50	2595.72	45.15	-45.07	42.77	0.00	420375.95	631573.52	N 32 9 19.28	W 104 2 30.29
	Bell Canyon	2685.84	10.95	136.50	2680.00	57.00	-56.89	53.99	0.00	420364.12	631584.75	N 32 9 19.16	W 104 2 30.16
		2700.00	10.95	136.50	2693.90	58.95	-58.84	55.84	0.00	420362.17	631586.60	N 32 9 19.14	W 104 2 30.13
Cherry Canyon	2800.00	10.95	136.50	2792.08	72.75	-72.62	68.91	0.00	420348.40	631599.67	N 32 9 19.01	W 104 2 29.98	
	2900.00	10.95	136.50	2890.26	86.55	-86.40	81.99	0.00	420334.62	631612.74	N 32 9 18.87	W 104 2 29.83	
	3000.00	10.95	136.50	2988.44	100.35	-100.17	95.06	0.00	420320.84	631625.81	N 32 9 18.73	W 104 2 29.68	
	3100.00	10.95	136.50	3086.62	114.15	-113.95	108.14	0.00	420307.07	631638.89	N 32 9 18.60	W 104 2 29.53	
	3200.00	10.95	136.50	3184.80	127.96	-127.73	121.21	0.00	420293.29	631651.96	N 32 9 18.46	W 104 2 29.38	
	3300.00	10.95	136.50	3282.98	141.76	-141.50	134.28	0.00	420279.52	631665.03	N 32 9 18.32	W 104 2 29.22	
	3400.00	10.95	136.50	3381.16	155.56	-155.28	147.36	0.00	420265.74	631678.10	N 32 9 18.19	W 104 2 29.07	
	3500.00	10.95	136.50	3479.34	169.36	-169.06	160.43	0.00	420251.97	631691.18	N 32 9 18.05	W 104 2 28.92	
	3600.00	10.95	136.50	3577.52	183.16	-182.83	173.50	0.00	420238.19	631704.25	N 32 9 17.91	W 104 2 28.77	
	3692.16	10.95	136.50	3668.00	195.88	-195.53	185.55	0.00	420225.49	631716.30	N 32 9 17.79	W 104 2 28.63	
	3700.00	10.95	136.50	3675.70	196.96	-196.61	186.58	0.00	420224.41	631717.32	N 32 9 17.78	W 104 2 28.62	
	3800.00	10.95	136.50	3773.88	210.76	-210.39	199.65	0.00	420210.64	631730.39	N 32 9 17.64	W 104 2 28.47	
	3900.00	10.95	136.50	3872.06	224.57	-224.17	212.72	0.00	420196.86	631743.47	N 32 9 17.50	W 104 2 28.31	
	4000.00	10.95	136.50	3970.24	238.37	-237.94	225.80	0.00	420183.09	631756.54	N 32 9 17.37	W 104 2 28.16	
	4100.00	10.95	136.50	4068.42	252.17	-251.72	238.87	0.00	420169.31	631769.61	N 32 9 17.23	W 104 2 28.01	
	4200.00	10.95	136.50	4166.59	265.97	-265.50	251.95	0.00	420155.54	631782.68	N 32 9 17.09	W 104 2 27.86	
Brushy Canyon	4300.00	10.95	136.50	4264.77	279.77	-279.27	265.02	0.00	420141.76	631795.76	N 32 9 16.96	W 104 2 27.71	
	4400.00	10.95	136.50	4362.95	293.57	-293.05	278.09	0.00	420127.99	631808.83	N 32 9 16.82	W 104 2 27.56	
	4500.00	10.95	136.50	4461.13	307.37	-306.83	291.17	0.00	420114.21	631821.90	N 32 9 16.68	W 104 2 27.40	
	4600.00	10.95	136.50	4559.31	321.18	-320.60	304.24	0.00	420100.43	631834.98	N 32 9 16.55	W 104 2 27.25	
	4700.00	10.95	136.50	4657.49	334.98	-334.38	317.31	0.00	420086.66	631848.05	N 32 9 16.41	W 104 2 27.10	
	4800.00	10.95	136.50	4755.67	348.78	-348.16	330.39	0.00	420072.88	631861.12	N 32 9 16.27	W 104 2 26.95	
	4900.00	10.95	136.50	4853.85	362.58	-361.93	343.46	0.00	420059.11	631874.19	N 32 9 16.14	W 104 2 26.80	
	5000.00	10.95	136.50	4952.03	376.38	-375.71	356.54	0.00	420045.33	631887.27	N 32 9 16.00	W 104 2 26.65	
	5100.00	10.95	136.50	5050.21	390.18	-389.49	369.61	0.00	420031.56	631900.34	N 32 9 15.86	W 104 2 26.49	
	5200.00	10.95	136.50	5148.39	403.98	-403.26	382.68	0.00	420017.78	631913.41	N 32 9 15.73	W 104 2 26.34	
	5300.00	10.95	136.50	5246.57	417.79	-417.04	395.76	0.00	420004.00	631926.48	N 32 9 15.59	W 104 2 26.19	
	5320.81	10.95	136.50	5267.00	420.66	-419.91	398.48	0.00	420001.14	631929.20	N 32 9 15.56	W 104 2 26.16	
	5400.00	10.95	136.50	5344.75	431.59	-430.82	408.83	0.00	419990.23	631939.56	N 32 9 15.45	W 104 2 26.04	
	5500.00	10.95	136.50	5442.93	445.39	-444.59	421.90	0.00	419976.45	631952.63	N 32 9 15.32	W 104 2 25.89	
	5600.00	10.95	136.50	5541.11	459.19	-458.37	434.98	0.00	419962.68	631965.70	N 32 9 15.18	W 104 2 25.74	
	5700.00	10.95	136.50	5639.29	472.99	-472.15	448.05	0.00	419948.90	631978.77	N 32 9 15.04	W 104 2 25.58	
Brushy Canyon Lower	5800.00	10.95	136.50	5737.47	486.79	-485.92	461.12	0.00	419935.13	631991.85	N 32 9 14.91	W 104 2 25.43	
	5900.00	10.95	136.50	5835.65	500.59	-499.70	474.20	0.00	419921.35	632004.92	N 32 9 14.77	W 104 2 25.28	
	6000.00	10.95	136.50	5933.83	514.40	-513.48	487.27	0.00	419907.58	632017.99	N 32 9 14.63	W 104 2 25.13	
	6100.00	10.95	136.50	6032.01	528.20	-527.25	500.35	0.00	419893.80	632031.06	N 32 9 14.50	W 104 2 24.98	
	6200.00	10.95	136.50	6130.19	542.00	-541.03	513.42	0.00	419880.02	632044.14	N 32 9 14.36	W 104 2 24.83	
	6230.36	10.95	136.50	6160.00	546.19	-545.21	517.39	0.00	419875.84	632048.11	N 32 9 14.32	W 104 2 24.78	
	6300.00	10.95	136.50	6228.37	555.80	-554.81	526.49	0.00	419866.25	632057.21	N 32 9 14.22	W 104 2 24.68	
	6400.00	10.95	136.50	6326.55	569.60	-568.59	539.57	0.00	419852.47	632070.28	N 32 9 14.09	W 104 2 24.52	
	6474.81	10.95	136.50	6400.00	579.93	-578.89	549.35	0.00	419842.17	632080.06	N 32 9 13.99	W 104 2 24.41	

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 ° ' '')
	6500.00	10.95	136.50	6424.73	583.40	-582.36	552.64	0.00	419838.70	632083.35	N 32 9 13.95	W 104 2 24.37
Bone Spring "A" Shale	6590.92	10.95	136.50	6514.00	595.95	-594.89	564.53	0.00	419826.17	632095.24	N 32 9 13.83	W 104 2 24.23
	6600.00	10.95	136.50	6522.91	597.20	-596.14	565.71	0.00	419824.92	632096.43	N 32 9 13.81	W 104 2 24.22
	6700.00	10.95	136.50	6621.09	611.01	-609.92	578.79	0.00	419811.15	632109.50	N 32 9 13.68	W 104 2 24.07
	6800.00	10.95	136.50	6719.27	624.81	-623.69	591.86	0.00	419797.37	632122.57	N 32 9 13.54	W 104 2 23.92
	6900.00	10.95	136.50	6817.45	638.61	-637.47	604.94	0.00	419783.59	632135.64	N 32 9 13.40	W 104 2 23.77
	7000.00	10.95	136.50	6915.63	652.41	-651.25	618.01	0.00	419769.82	632148.72	N 32 9 13.27	W 104 2 23.61
Drop Vertical 2"/100' DLS	7085.93	10.95	136.50	7000.00	664.27	-663.08	629.24	0.00	419757.98	632159.95	N 32 9 13.15	W 104 2 23.48
	7100.00	10.67	136.50	7013.82	666.19	-665.00	631.06	2.00	419756.07	632161.77	N 32 9 13.13	W 104 2 23.46
Bone Spring "C" Shale	7141.85	9.83	136.50	7055.00	671.60	-670.40	636.19	2.00	419750.67	632166.89	N 32 9 13.08	W 104 2 23.40
	7200.00	8.67	136.50	7112.39	678.39	-677.18	642.62	2.00	419743.89	632173.32	N 32 9 13.01	W 104 2 23.33
	7300.00	6.67	136.50	7211.49	688.08	-686.86	651.80	2.00	419734.21	632182.51	N 32 9 12.91	W 104 2 23.22
	7400.00	4.67	136.50	7311.00	695.26	-694.02	658.60	2.00	419727.05	632189.30	N 32 9 12.84	W 104 2 23.14
1st Bone Spring Ss	7429.09	4.09	136.50	7340.00	696.87	-695.63	660.13	2.00	419725.44	632190.83	N 32 9 12.83	W 104 2 23.13
	7500.00	2.67	136.50	7410.79	699.91	-698.66	663.00	2.00	419722.41	632193.71	N 32 9 12.80	W 104 2 23.09
	7600.00	0.67	136.50	7510.74	702.02	-700.77	665.00	2.00	419720.30	632195.71	N 32 9 12.78	W 104 2 23.07
Hold Vertical	7633.36	0.00	136.50	7544.10	702.16	-700.91	665.14	2.00	419720.16	632195.84	N 32 9 12.77	W 104 2 23.07
	7700.00	0.00	136.50	7610.74	702.16	-700.91	665.14	2.00	419720.16	632195.84	N 32 9 12.77	W 104 2 23.07
	7800.00	0.00	136.50	7710.74	702.16	-700.91	665.14	0.00	419720.16	632195.84	N 32 9 12.77	W 104 2 23.07
KOP - Build 12"/100' DLS	7886.79	0.00	136.50	7797.54	702.16	-700.91	665.14	0.00	419720.16	632195.84	N 32 9 12.77	W 104 2 23.07
	7900.00	1.58	179.89	7810.74	702.34	-701.09	665.14	12.00	419719.98	632195.84	N 32 9 12.77	W 104 2 23.07
	8000.00	13.58	179.89	7909.68	715.52	-714.27	665.16	12.00	419706.80	632195.87	N 32 9 12.64	W 104 2 23.07
	8100.00	25.58	179.89	8003.73	748.98	-747.72	665.23	12.00	419673.35	632195.93	N 32 9 12.31	W 104 2 23.07
	8200.00	37.58	179.89	8088.76	801.26	-800.00	665.32	12.00	419621.07	632196.03	N 32 9 11.79	W 104 2 23.07
2nd Bone Spring Ss	8277.39	46.87	179.89	8146.00	853.21	-851.96	665.42	12.00	419569.12	632196.13	N 32 9 11.28	W 104 2 23.07
	8300.00	49.58	179.89	8161.06	870.07	-868.82	665.45	12.00	419552.26	632196.16	N 32 9 11.11	W 104 2 23.07
	8400.00	61.58	179.89	8217.48	952.42	-951.17	665.61	12.00	419469.92	632196.31	N 32 9 10.30	W 104 2 23.07
	8500.00	73.58	179.89	8255.54	1044.70	-1043.44	665.78	12.00	419377.66	632196.49	N 32 9 9.39	W 104 2 23.07
	8600.00	85.58	179.89	8273.58	1142.87	-1141.61	665.97	12.00	419279.49	632196.67	N 32 9 8.41	W 104 2 23.07
Landing Point	8636.79	90.00	179.89	8275.00	1179.63	-1178.37	666.04	12.00	419242.74	632196.74	N 32 9 8.05	W 104 2 23.07
	8700.00	90.00	179.89	8275.00	1242.83	-1241.58	666.16	0.00	419179.54	632196.86	N 32 9 7.42	W 104 2 23.07
Section 1-12 Crossing	8736.50	90.00	179.89	8275.00	1279.33	-1278.08	666.23	0.00	419143.04	632196.93	N 32 9 7.06	W 104 2 23.07
	8800.00	90.00	179.89	8275.00	1342.83	-1341.58	666.35	0.00	419079.54	632197.05	N 32 9 6.44	W 104 2 23.07
First Legal Take Point (330' Hardline)	8836.50	90.00	179.89	8275.00	1379.33	-1378.08	666.41	0.00	419043.05	632197.12	N 32 9 6.07	W 104 2 23.07
	8900.00	90.00	179.89	8275.00	1442.83	-1441.58	666.53	0.00	418979.55	632197.24	N 32 9 5.45	W 104 2 23.07
	9000.00	90.00	179.89	8275.00	1542.83	-1541.58	666.72	0.00	418879.56	632197.43	N 32 9 4.46	W 104 2 23.08
	9100.00	90.00	179.89	8275.00	1642.83	-1641.58	666.91	0.00	418779.57	632197.62	N 32 9 3.47	W 104 2 23.08
	9200.00	90.00	179.89	8275.00	1742.83	-1741.58	667.10	0.00	418679.58	632197.80	N 32 9 2.48	W 104 2 23.08
	9300.00	90.00	179.89	8275.00	1842.83	-1841.58	667.29	0.00	418579.59	632197.99	N 32 9 1.49	W 104 2 23.08
	9400.00	90.00	179.89	8275.00	1942.83	-1941.58	667.48	0.00	418479.60	632198.18	N 32 9 0.50	W 104 2 23.08
	9500.00	90.00	179.89	8275.00	2042.83	-2041.58	667.66	0.00	418379.60	632198.37	N 32 8 59.51	W 104 2 23.08
	9600.00	90.00	179.89	8275.00	2142.83	-2141.58	667.85	0.00	418279.61	632198.56	N 32 8 58.52	W 104 2 23.08
	9700.00	90.00	179.89	8275.00	2242.83	-2241.58	668.04	0.00	418179.62	632198.75	N 32 8 57.53	W 104 2 23.08
	9800.00	90.00	179.89	8275.00	2342.83	-2341.58	668.23	0.00	418079.63	632198.93	N 32 8 56.54	W 104 2 23.08
	9900.00	90.00	179.89	8275.00	2442.83	-2441.58	668.42	0.00	417979.64	632199.12	N 32 8 55.55	W 104 2 23.08
	10000.00	90.00	179.89	8275.00	2542.83	-2541.58	668.61	0.00	417879.65	632199.31	N 32 8 54.56	W 104 2 23.09
	10100.00	90.00	179.89	8275.00	2642.83	-2641.58	668.80	0.00	417779.66	632199.50	N 32 8 53.57	W 104 2 23.09
	10200.00	90.00	179.89	8275.00	2742.83	-2741.58	668.98	0.00	417679.66	632199.69	N 32 8 52.58	W 104 2 23.09
	10300.00	90.00	179.89	8275.00	2842.83	-2841.58	669.17	0.00	417579.67	632199.88	N 32 8 51.59	W 104 2 23.09
	10400.00	90.00	179.89	8275.00	2942.83	-2941.57	669.36	0.00	417479.68	632200.07	N 32 8 50.60	W 104 2 23.09
	10500.00	90.00	179.89	8275.00	3042.83	-3041.57	669.55	0.00	417379.69	632200.25	N 32 8 49.61	W 104 2 23.09
	10600.00	90.00	179.89	8275.00	3142.83	-3141.57	669.74	0.00	417279.70	632200.44	N 32 8 48.62	W 104 2 23.09
	10700.00	90.00	179.89	8275.00	3242.83	-3241.57	669.93	0.00	417179.71	632200.63	N 32 8 47.63	W 104 2 23.09
	10800.00	90.00	179.89	8275.00	3342.83	-3341.57	670.12	0.00	417079.72	632200.82	N 32 8 46.64	W 104 2 23.09
	10900.00	90.00	179.89	8275.00	3442.83	-3441.57	670.30	0.00	416979.72	632201.01	N 32 8 45.65	W 104 2 23.09
	11000.00	90.00	179.89	8275.00	3542.83	-3541.57	670.49	0.00	416879.73	632201.20	N 32 8 44.67	W 104 2 23.09
	11100.00	90.00	179.89	8275.00	3642.83	-3641.57	670.68	0.00	416779.74	632201.39	N 32 8 43.68	W 104 2 23.10
	11200.00	90.00	179.89	8275.00	3742.83	-3741.57	670.87	0.00	416679.75	632201.57	N 32 8 42.69	W 104 2 23.10
	11300.00	90.00	179.89	8275.00	3842.83	-3841.57	671.06	0.00	416579.76	632201.76	N 32 8 41.70	W 104 2 23.10
	11400.00	90.00	179.89	8275.00	3942.83	-3941.57	671.25	0.00	416479.77	632201.95	N 32 8 40.71	W 104 2 23.10
	11500.00	90.00	179.89	8275.00	4042.83	-4041.57	671.44	0.00	416379.77	632202.14	N 32 8 39.72	W 104 2 23.10
	11600.00	90.00	179.89	8275.00	4142.83	-4141.57	671.62	0.00	416279.78	632202.33	N 32 8 38.73	W 104 2 23.10
	11700.00	90.00	179.89	8275.00	4242.83	-4241.57	671.81	0.00	416179.79	632202.52	N 32 8 37.74	W 104 2 23.10
	11800.00	90.00	179.89	8275.00	4342.83	-4341.57	672.00	0.00	416079.80	632202.70	N 32 8 36.75	W 104 2 23.10
	11900.00	90.00	179.89	8275.00	4442.83	-4441.57	672.19	0.00	415979.81	632202.89	N 32 8 35.76	W 104 2 23.10
	12000.00	90.00	179.89	8275.00	4542.83	-4541.57	672.38	0.00	415879.82	632203.08	N 32 8 34.77	W 104 2 23.10
	12100.00	90.00	179.89	8275.00	4642.83	-4641.57	672.57	0.00	415779.83	632203.27	N 32 8 33.78	W 104 2 23.11
	12200.00	90.00	179.89	8275.00	4742.83	-4741.57	672.75	0.00	415679.83	632203.46	N 32 8 32.79	W 104 2 23.11
	12300.00	90.00	179.89	8275.00	4842.83	-4841.57	672.94	0.00	415579.84	632203.65	N 32 8 31.80	W 104 2 23.11
	12400.00	90.00	179.89	8275.00	4942.83	-4941.57	673.13	0.00	415479.85	632203.84	N 32 8 30.81	W 104 2 23.11
	12500.00	90.00	179.89	8275.00	5042.83	-5041.57	673.32	0.00	415379.86	632204.02	N 32 8 29.82	W 104 2 23.11
	12600.00	90.00	179.89	8275.00	5142.83	-5141.57	673.51	0.00	415279.87	632204.21	N 32 8 28.83	W 104 2 23.11
	12700.00	90.00	179.89	8275.00	5242.83	-5241.57	673.70	0.00	415179.88	632204.40	N 32 8 27.84	W 104 2 23.11
	12800.00	90.00	179.89	8275.00	5342.83	-5341.57	673.89	0.00	415079.89	632204.59	N 32 8 26.85	W 104 2 23.11
	12900.00	90.00	179.89	8275.00	5442.83	-5441.57	674.07	0.00	414979.89	632204.78	N 32 8 25.86	W

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 ° ' ")
	15300.00	90.00	179.89	8275.00	7842.83	-7841.57	678.60	0.00	412580.10	632209.30	N 32 8 2.12 W 104	2 23.14
	15400.00	90.00	179.89	8275.00	7942.83	-7941.57	678.79	0.00	412480.11	632209.49	N 32 8 1.13 W 104	2 23.14
	15500.00	90.00	179.89	8275.00	8042.83	-8041.57	678.98	0.00	412380.12	632209.68	N 32 8 0.14 W 104	2 23.14
	15600.00	90.00	179.89	8275.00	8142.83	-8141.57	679.16	0.00	412280.12	632209.87	N 32 7 59.15 W 104	2 23.14
	15700.00	90.00	179.89	8275.00	8242.83	-8241.57	679.35	0.00	412180.13	632210.06	N 32 7 58.16 W 104	2 23.14
	15800.00	90.00	179.89	8275.00	8342.83	-8341.57	679.54	0.00	412080.14	632210.24	N 32 7 57.17 W 104	2 23.14
	15900.00	90.00	179.89	8275.00	8442.83	-8441.57	679.73	0.00	411980.15	632210.43	N 32 7 56.18 W 104	2 23.14
	16000.00	90.00	179.89	8275.00	8542.83	-8541.56	679.92	0.00	411880.16	632210.62	N 32 7 55.19 W 104	2 23.14
	16100.00	90.00	179.89	8275.00	8642.83	-8641.56	680.11	0.00	411780.17	632210.81	N 32 7 54.20 W 104	2 23.14
	16200.00	90.00	179.89	8275.00	8742.83	-8741.56	680.30	0.00	411680.18	632211.00	N 32 7 53.21 W 104	2 23.15
	16300.00	90.00	179.89	8275.00	8842.83	-8841.56	680.48	0.00	411580.18	632211.19	N 32 7 52.22 W 104	2 23.15
	16400.00	90.00	179.89	8275.00	8942.83	-8941.56	680.67	0.00	411480.19	632211.38	N 32 7 51.23 W 104	2 23.15
	16500.00	90.00	179.89	8275.00	9042.83	-9041.56	680.86	0.00	411380.20	632211.56	N 32 7 50.24 W 104	2 23.15
	16600.00	90.00	179.89	8275.00	9142.83	-9141.56	681.05	0.00	411280.21	632211.75	N 32 7 49.25 W 104	2 23.15
	16700.00	90.00	179.89	8275.00	9242.83	-9241.56	681.24	0.00	411180.22	632211.94	N 32 7 48.26 W 104	2 23.15
	16800.00	90.00	179.89	8275.00	9342.83	-9341.56	681.43	0.00	411080.23	632212.13	N 32 7 47.27 W 104	2 23.15
	16900.00	90.00	179.89	8275.00	9442.83	-9441.56	681.62	0.00	410980.24	632212.32	N 32 7 46.28 W 104	2 23.15
	17000.00	90.00	179.89	8275.00	9542.83	-9541.56	681.80	0.00	410880.24	632212.51	N 32 7 45.29 W 104	2 23.15
	17100.00	90.00	179.89	8275.00	9642.83	-9641.56	681.99	0.00	410780.25	632212.70	N 32 7 44.30 W 104	2 23.15
	17200.00	90.00	179.89	8275.00	9742.83	-9741.56	682.18	0.00	410680.26	632212.88	N 32 7 43.31 W 104	2 23.16
	17300.00	90.00	179.89	8275.00	9842.83	-9841.56	682.37	0.00	410580.27	632213.07	N 32 7 42.33 W 104	2 23.16
	17400.00	90.00	179.89	8275.00	9942.83	-9941.56	682.56	0.00	410480.28	632213.26	N 32 7 41.34 W 104	2 23.16
	17500.00	90.00	179.89	8275.00	10042.83	-10041.56	682.75	0.00	410380.29	632213.45	N 32 7 40.35 W 104	2 23.16
	17600.00	90.00	179.89	8275.00	10142.83	-10141.56	682.93	0.00	410280.30	632213.64	N 32 7 39.36 W 104	2 23.16
	17700.00	90.00	179.89	8275.00	10242.83	-10241.56	683.12	0.00	410180.30	632213.83	N 32 7 38.37 W 104	2 23.16
	17800.00	90.00	179.89	8275.00	10342.83	-10341.56	683.31	0.00	410080.31	632214.01	N 32 7 37.38 W 104	2 23.16
	17900.00	90.00	179.89	8275.00	10442.83	-10441.56	683.50	0.00	409980.32	632214.20	N 32 7 36.39 W 104	2 23.16
	18000.00	90.00	179.89	8275.00	10542.83	-10541.56	683.69	0.00	409880.33	632214.39	N 32 7 35.40 W 104	2 23.16
	18100.00	90.00	179.89	8275.00	10642.83	-10641.56	683.88	0.00	409780.34	632214.58	N 32 7 34.41 W 104	2 23.16
	18200.00	90.00	179.89	8275.00	10742.83	-10741.56	684.07	0.00	409680.35	632214.77	N 32 7 33.42 W 104	2 23.17
	18300.00	90.00	179.89	8275.00	10842.83	-10841.56	684.25	0.00	409580.36	632214.96	N 32 7 32.43 W 104	2 23.17
	18400.00	90.00	179.89	8275.00	10942.83	-10941.56	684.44	0.00	409480.36	632215.15	N 32 7 31.44 W 104	2 23.17
	18500.00	90.00	179.89	8275.00	11042.83	-11041.56	684.63	0.00	409380.37	632215.33	N 32 7 30.45 W 104	2 23.17
	18600.00	90.00	179.89	8275.00	11142.83	-11141.56	684.82	0.00	409280.38	632215.52	N 32 7 29.46 W 104	2 23.17
	18700.00	90.00	179.89	8275.00	11242.83	-11241.56	685.01	0.00	409180.39	632215.71	N 32 7 28.47 W 104	2 23.17
	18800.00	90.00	179.89	8275.00	11342.83	-11341.56	685.20	0.00	409080.40	632215.90	N 32 7 27.48 W 104	2 23.17
	18900.00	90.00	179.89	8275.00	11442.83	-11441.56	685.39	0.00	408980.41	632216.09	N 32 7 26.49 W 104	2 23.17
	19000.00	90.00	179.89	8275.00	11542.83	-11541.56	685.57	0.00	408880.42	632216.28	N 32 7 25.50 W 104	2 23.17
	19100.00	90.00	179.89	8275.00	11642.83	-11641.56	685.76	0.00	408780.42	632216.47	N 32 7 24.51 W 104	2 23.17
	19200.00	90.00	179.89	8275.00	11742.83	-11741.56	685.95	0.00	408680.43	632216.65	N 32 7 23.52 W 104	2 23.17

Cimarex
Riverbend 12-13
Federal Com
#22H-PBHL
[100' FSL 2310'
FEL]

19261.70 90.00 179.89 8275.00 11804.53 -11803.26 686.07 0.00 408618.74 632216.77 N 32 7 22.91 W 104 2 23.18

Survey Type: 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	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Riverbend 12-13 Federal Com 22H Rev0 mcs 23Mar20
	1	26.000	19261.697	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Riverbend 12-13 Federal Com



Cimarex Riverbend 12-13 Federal Com 22H Rev0 mcs 23Mar20 Proposal Geodetic Report (Def Plan)



Report Date: April 02, 2020 - 04:15 PM
Client: Cimarex
Field: NM Eddy County (NAD 83)
Structure / Slot: Cimarex Riverbend 12-13 Federal Com #22H / Cimarex Riverbend 12-13 Federal Com #22H
Well: Cimarex Riverbend 12-13 Federal Com #22H
Borehole: Original Borehole
UWI / API#: Unknown / Unknown
Survey Name: Cimarex Riverbend 12-13 Federal Com 22H Rev0 mcs 23Mar20
Survey Date: March 23, 2020
Tort / AHD / DDI / ERD Ratio: 111.897 ° / 12068.639 ft / 6.497 / 1.458
Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
Location Lat / Long: N 32° 9' 19.72835", W 104° 2' 30.78164"
Location Grid N/E Y/X: N 420421.010 ftUS, E 631530.760 ftUS
CRS Grid Convergence Angle: 0.1551 °
Grid Scale Factor: 0.99991841
Version / Patch: 2.10.787.0

Survey / DLS Computation: Minimum Curvature / Lubinski
Vertical Section Azimuth: 179.892 ° (Grid North)
Vertical Section Origin: 0.000 ft, 0.000 ft
TVD Reference Datum: RKB
TVD Reference Elevation: 2959.300 ft above MSL
Seabed / Ground Elevation: 2933.300 ft above MSL
Magnetic Declination: 6.920 °
Total Gravity Field Strength: 998.4600mgn (9.80665 Based)
Gravity Model: GARM
Total Magnetic Field Strength: 47797.289 nT
Magnetic Dip Angle: 59.854 °
Declination Date: March 23, 2020
Magnetic Declination Model: HDGM 2020
North Reference: Grid North
Grid Convergence Used: 0.1551 °
Total Corr Mag North->Grid North: 6.7654 °
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 [1267' FSL 2343' FWL] Nudge 2"/100' DLS	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	420421.01	631530.76	N 32 9 19.73 W 104 2 30.78	
Hold Nudge	2547.43	10.95	136.50	2544.10	37.89	-37.82	35.89	2.00	420383.19	631566.65	N 32 9 19.35 W 104 2 30.37	
Drop Vertical 2"/100' DLS	7085.93	10.95	136.50	7000.00	664.27	-663.08	629.24	0.00	419757.98	632159.95	N 32 9 13.15 W 104 2 23.48	
Hold Vertical	7633.36	0.00	136.50	7544.10	702.16	-700.91	665.14	2.00	419720.16	632195.84	N 32 9 12.77 W 104 2 23.07	
KOP - Build 12"/100' DLS	7886.79	0.00	136.50	7797.54	702.16	-700.91	665.14	0.00	419720.16	632195.84	N 32 9 12.77 W 104 2 23.07	
Landing Point Cimarex Riverbend 12-13 Federal Com #22H-PBHL [100' FSL 2310' FEL]	8636.79	90.00	179.89	8275.00	1179.63	-1178.37	666.04	12.00	419242.74	632196.74	N 32 9 8.05 W 104 2 23.07	
	19261.70	90.00	179.89	8275.00	11804.53	-11803.26	686.07	0.00	408618.74	632216.77	N 32 7 22.91 W 104 2 23.18	

Survey Type: 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	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Riverbend 12-13 Federal Com 22H Rev0 mcs 23Mar20
	1	26.000	19261.697	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Riverbend 12-13 Federal Com



Cimarex

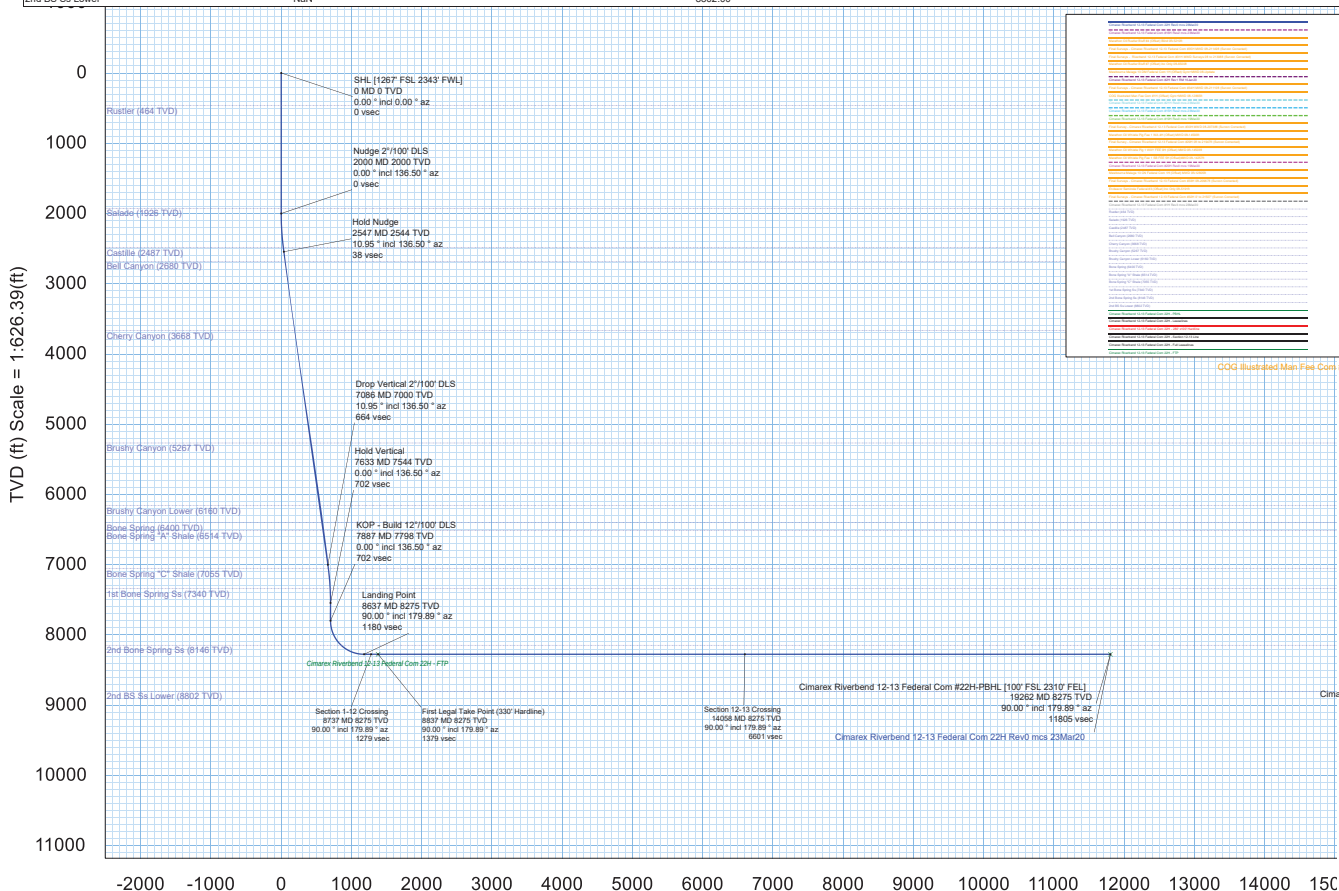
Rev 0



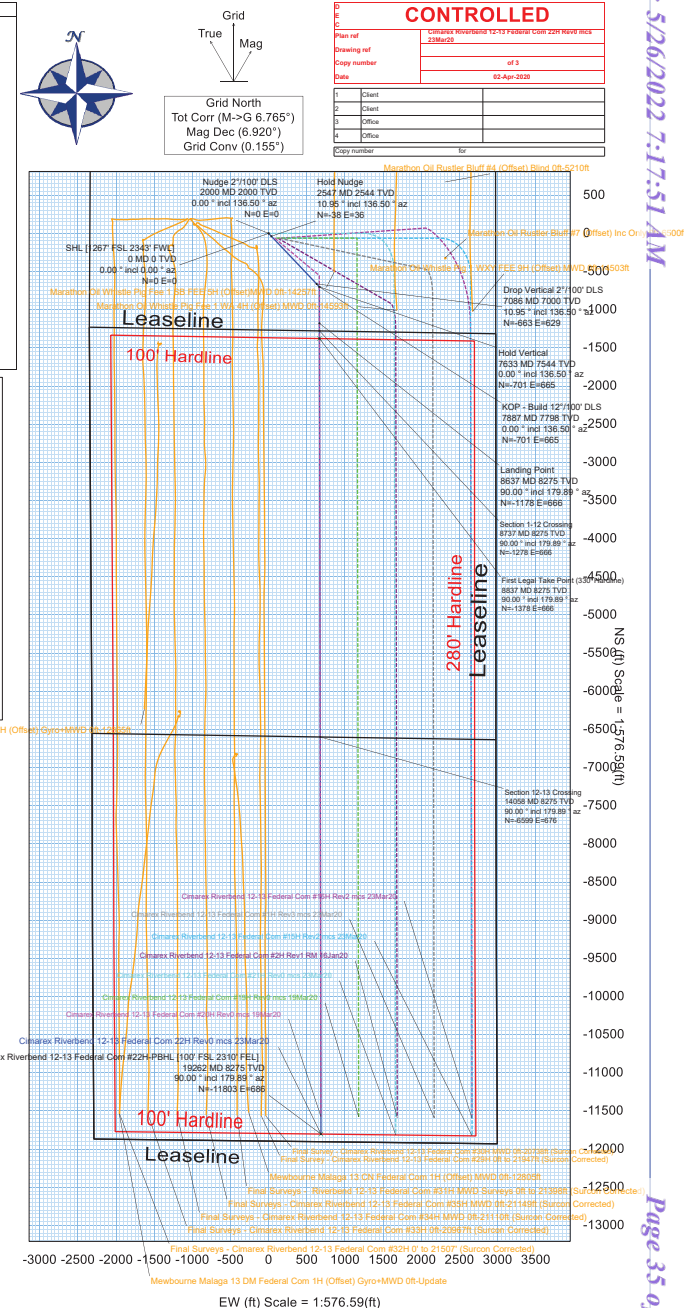
Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Riverbend 12-13 Federal Com #22H	NM Eddy County (NAD 83)	Cimarex Riverbend 12-13 Federal Com #22H

Gravity & Magnetic Parameters	Dip:	Date:	Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Grid Conv:	Miscellaneous
Model: HDGM 2020	59.854°	23-Mar-2020	Lat: N 32 9 19.73	420421.011NUS	0.1551°	Cimarex Riverbend 12-13 Federal Com #22H
MagDec: 6.92°	FS: 47797.289nT	Gravity FS: 998.46mgn (9.80665 Based)	Lon: W 104 2 30.78	631530.761US	Scale Fact: 0.99991841	TVD Ref: RKB(2959.3ft above MSL)
						Cimarex Riverbend 12-13 Federal Com 22H Rev0 mcs 23Mar20

Critical Points		Critical Points		Critical Points		Critical Points	
MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [1267 FSL 2343' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler	464.00	0.00	136.50	464.00	0.00	0.00	0.00
Salado	1926.00	0.00	136.50	1926.00	0.00	0.00	0.00
Nudge 2"/100' DLS	2000.00	0.00	136.50	2000.00	0.00	0.00	0.00
Castille	2489.38	9.79	136.50	2487.00	30.30	28.70	2.00
Hold Nudge	2547.43	10.95	136.50	2544.10	37.89	35.89	2.00
Bell Canyon	2885.84	10.95	136.50	2880.00	57.00	53.99	0.00
Cherry Canyon	3692.16	10.95	136.50	3688.00	195.88	185.55	0.00
Brushy Canyon	5320.81	10.95	136.50	5267.00	420.66	398.48	0.00
Brushy Canyon Lower	6230.36	10.95	136.50	6160.00	546.19	517.39	0.00
Bone Spring	6474.81	10.95	136.50	6400.00	579.93	549.35	0.00
Bone Spring "A" Shale	6590.92	10.95	136.50	6514.00	595.95	564.53	0.00
Drop Vertical 2"/100' DLS	7085.93	10.95	136.50	7000.00	664.27	629.24	0.00
Bone Spring "C" Shale	7141.85	9.83	136.50	7055.00	671.60	636.19	2.00
1st Bone Spring Ss	7429.09	4.09	136.50	7340.00	696.87	660.13	2.00
Hold Vertical	7633.36	0.00	136.50	7544.10	702.16	665.14	2.00
KOP - Build 12"/100' DLS	7886.79	0.00	136.50	7797.54	702.16	665.14	0.00
2nd Bone Spring Ss	8277.39	46.87	179.89	8146.00	853.21	665.42	12.00
Landing Point	8636.79	90.00	179.89	8275.00	1179.63	666.04	12.00
Section 1-12 Crossing	8736.50	90.00	179.89	8275.00	1279.33	666.23	0.00
First Legal Take Point (330' Hardline)	8836.50	90.00	179.89	8275.00	1379.33	666.41	0.00
Section 12-13 Crossing	14057.70	90.00	179.89	8275.00	6600.53	676.26	0.00
Cimarex Riverbend 12-13 Federal Com #22H-PBHL [100' FSL 2310' FEL]	19261.70	90.00	179.89	8275.00	11804.53	686.07	0.00
2nd BS Ss Lower	NaN			8802.00			



Vertical Section (ft) Azim = 179.89° Scale = 1:626.39(ft) Origin = 0N/-S, 0E/-W



PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex Energy
LEASE NO.:	NMNM016104
LOCATION:	Section 1, T.25 S., R.28 E., NMPM
COUNTY:	Eddy County, New Mexico

WELL NAME & NO.:	Riverbend 12-13 Fed Com 22H
SURFACE HOLE FOOTAGE:	1267'/S & 2343'/W
BOTTOM HOLE FOOTAGE:	100'/S & 2310'/E

COA

H2S	☐ Yes	☒ No	
Potash	☒ None	☐ Secretary	☐ R-111-P
Cave/Karst Potential	☐ Low	☐ Medium	☒ High
Cave/Karst Potential	☐ Critical		
Variance	☐ None	☒ Flex Hose	☐ Other
Wellhead	☐ Conventional	☒ Multibowl	☐ Both
Other	☐ 4 String Area	☐ Capitan Reef	☐ WIPP
Other	☐ Fluid Filled	☐ Cement Squeeze	☐ Pilot Hole
Special Requirements	☐ Water Disposal	☒ COM	☐ 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

1. The 13-3/8 inch surface casing shall be set at approximately **514** feet (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt) and cemented to the surface.
 - 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 or potash.**
- ❖ 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 2nd 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.

ZS040721

Riverbend 12-13 Fed Com 22H

Cimarex Energy Co.

UL: N, Sec. 1, 25S, 28E

Eddy Co., 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 H₂S
 - B. Physical effects and hazards
 - C. Principal and operation of H₂S 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.

H₂S Detection and Alarm Systems:

 - A. H₂S 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 H₂S 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 (H₂S present in dangerous concentration). Only H₂S 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 Drilling contractor supervisor will be required to be familiar with the effects H₂S has on tubular goods and other mechanical equipment.
- 9 If H₂S 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 H₂S scavengers if necessary.

H₂S Contingency Plan
Riverbend 12-13 Fed Com 22H
Cimarex Energy Co.
UL: N, Sec. 1, 25S, 28E
Eddy Co., NM

Emergency Procedures

In the event of a release of gas containing H₂S, 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 H₂S monitors and air packs in order to control the release.
- « Use the "buddy system" to ensure no injuries occur during the 432-620-1975
- « Take precautions to avoid personal injury during this operation.
- « Contact operator and/or local officials to aid in operation. See list of phone numbers attached.
- « Have received training in the:
 - Detection of H₂S, and
 - Measures for protection against the gas,
 - Equipment used for protection and emergency response.

Ignition of Gas Source

Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO₂). 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.

Characteristics of H₂S and SO₂

Please see attached International Chemical Safety Cards.

Contacting Authorities

Cimarex Energy Co. of Colorado's 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. of Colorado's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

H₂S Contingency Plan Emergency Contact

s Riverbend 12-13 Fed Com 22H

Cimarex Energy Co.

UL: N, Sec. 1, 25S, 28E

Eddy Co., NM

Company Office

Cimarex Energy Co. of Colorado	800-969-4789
Co. Office and After-Hours Menu	

Key Personnel

Name	Title	Office	Mobile
Larry Seigrist	Drilling Manager	432-620-1934	580-243-8485
Charlie Pritchard	Drilling Superintendent	432-620-1975	432-238-7084
Roy Shirley	Construction Superintendent		432-634-2136

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
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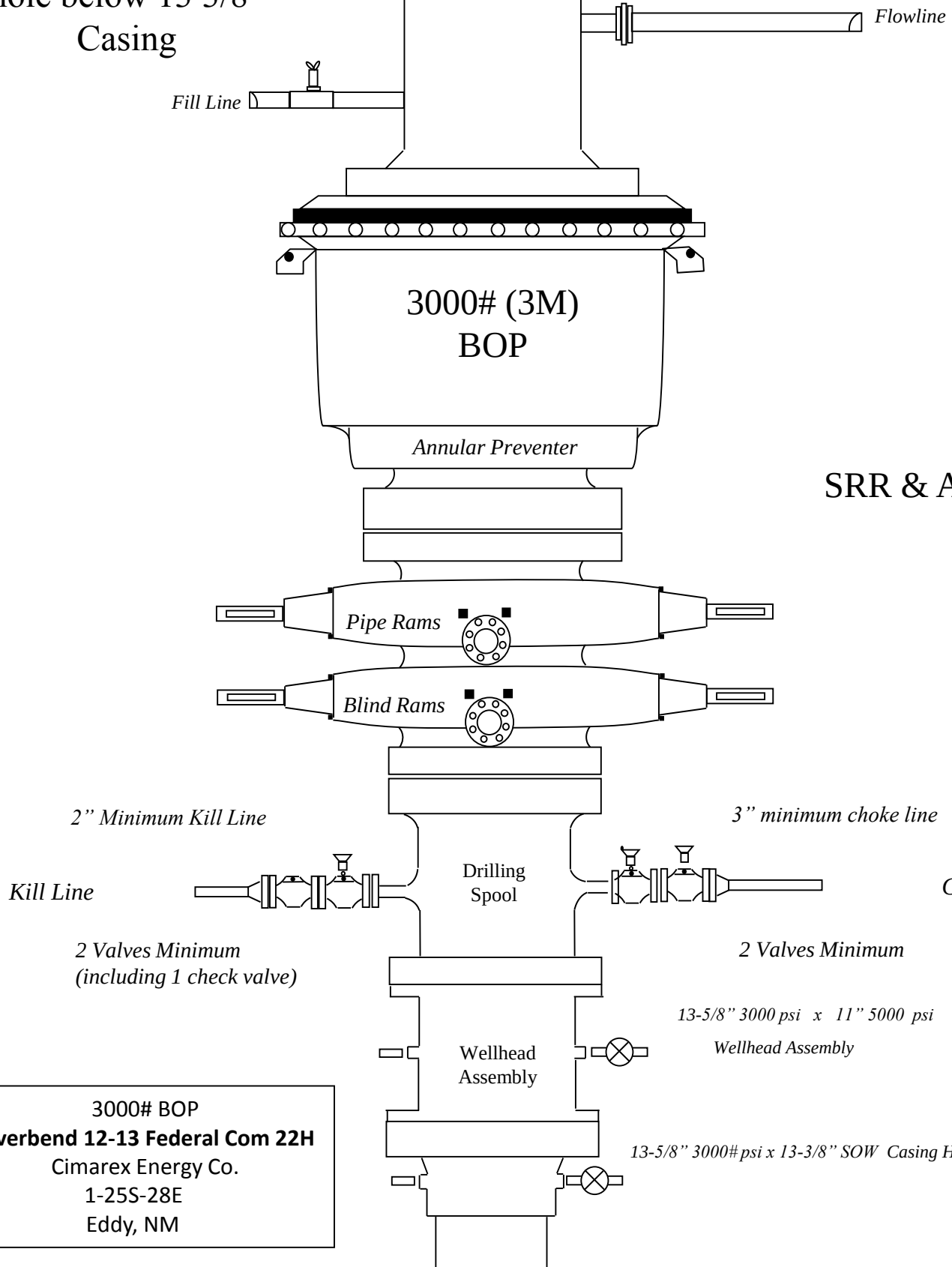
Medical

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



Drilling 8 3/4" hole
below 9 5/8" 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 12-13 Federal Com 22H
Cimarex Energy Co.
1-25S-28E
Eddy, NM

Intent ☐ As Drilled ☐

API #		
Operator Name:	Property Name:	Well Number

Kick Off Point (KOP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

First Take Point (FTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

Last Take Point (LTP)

UL	Section	Township	Range	Lot	Feet	From N/S	Feet	From E/W	County
Latitude					Longitude			NAD	

Is this well the defining well for the Horizontal Spacing Unit? ☐Is this well an infill well? ☐

If infill is yes please provide API if available, Operator Name and well number for Defining well for Horizontal Spacing Unit.

API #		
Operator Name:	Property Name:	Well Number

Estimated Formation Tops

Formation:	Top:	Formation:	Top:

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 110836

CONDITIONS

Operator: CIMAREX ENERGY CO. 600 N. Marienfeld Street Midland, TX 79701	OGRID: 215099
	Action Number: 110836
	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	5/31/2022
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	5/31/2022
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	5/31/2022
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	5/31/2022
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	5/31/2022