

Form 3160-3
(June 2015)

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

FORM APPROVED
OMB No. 1004-0137
Expires: January 31, 2018

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. NMNM016104 6. If Indian, Allottee or Tribe Name 7. If Unit or CA Agreement, Name and No. 8. Lease Name and Well No. RIVERBEND 12-13 FEDERAL COM 19H 9. API Well No. 30-015-49523
2. Name of Operator CIMAREX ENERGY COMPANY 3a. Address 600 N MARIENFELD STREET ST SUITE 600, MIDLAND 3b. Phone No. (include area code) (432) 571-7800		10. Field and Pool, or Exploratory PURPLE SAGE/PURPLE SAGE WOLFC/ 11. Sec., T. R. M. or Blk. and Survey or Area SEC 1/T25S/R28E/NMP
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface SESW / 1207 FSL / 2442 FWL / LAT 32.155309 / LONG -104.041565 At proposed prod. zone SWSE / 330 FSL / 1815 FEL / LAT 32.123644 / LONG -104.038174		12. County or Parish EDDY 13. State NM
14. Distance in miles and direction from nearest town or post office* 5 miles		15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any) 1207 feet
16. No of acres in lease 17. Spacing Unit dedicated to this well 640.0		18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft. 20 feet
19. Proposed Depth 9730 feet / 21123 feet		20. BLM/BIA Bond No. in file FED: NMB001188
21. Elevations (Show whether DF, KDB, RT, GL, etc.) 2934 feet		22. Approximate date work will start* 11/30/2020
23. Estimated duration 30 days		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 (Electronic Submission)	Name (Printed/Typed) AMITHY CRAWFORD / Ph: (432) 620-1936	Date 04/28/2020
Title Regulatory Analyst		
Approved by (Signature) (Electronic Submission)	Name (Printed/Typed) Cody Layton / Ph: (575) 234-5959	Date 10/21/2021
Title Assistant Field Manager Lands & Minerals		
Office Carlsbad Field 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.

APPROVED WITH CONDITIONS

Approval Date: 10/21/2021

(Continued on page 2)

*(Instructions on page 2)

Additional Operator Remarks

Location of Well

O. SHL: SESW / 1207 FSL / 2442 FWL / TWSP: 25S / RANGE: 28E / SECTION: 1 / LAT: 32.155309 / LONG: -104.041565 (TVD: 0 feet, MD: 0 feet)

PPP: SWNE / 1320 FNL / 1815 FEL / TWSP: 25S / RANGE: 28E / SECTION: 13 / LAT: 32.133603 / LONG: -104.038164 (TVD: 9730 feet, MD: 17500 feet)

PPP: NWNE / 330 FNL / 1815 FEL / TWSP: 25S / RANGE: 28E / SECTION: 12 / LAT: 32.151029 / LONG: -104.038144 (TVD: 9730 feet, MD: 11160 feet)

BHL: SWSE / 330 FSL / 1815 FEL / TWSP: 25S / RANGE: 28E / SECTION: 13 / LAT: 32.123644 / LONG: -104.038174 (TVD: 9730 feet, MD: 21123 feet)

BLM Point of Contact

Name: JORDAN NAVARRETTE

Title: LIE

Phone: (575) 234-5972

Email: jnavarrette@blm.gov

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 41523	² Pool Code 98220	³ Pool Name Purple Sage(Wolfcamp) Gas
⁴ Property Code 321482	⁵ Property Name RIVERBEND 12-13 FEDERAL COM	⁶ Well Number 19H
⁷ OGRID No. 215099	⁸ Operator Name CIMAREX ENERGY CO.	⁹ Elevation 2934.7'

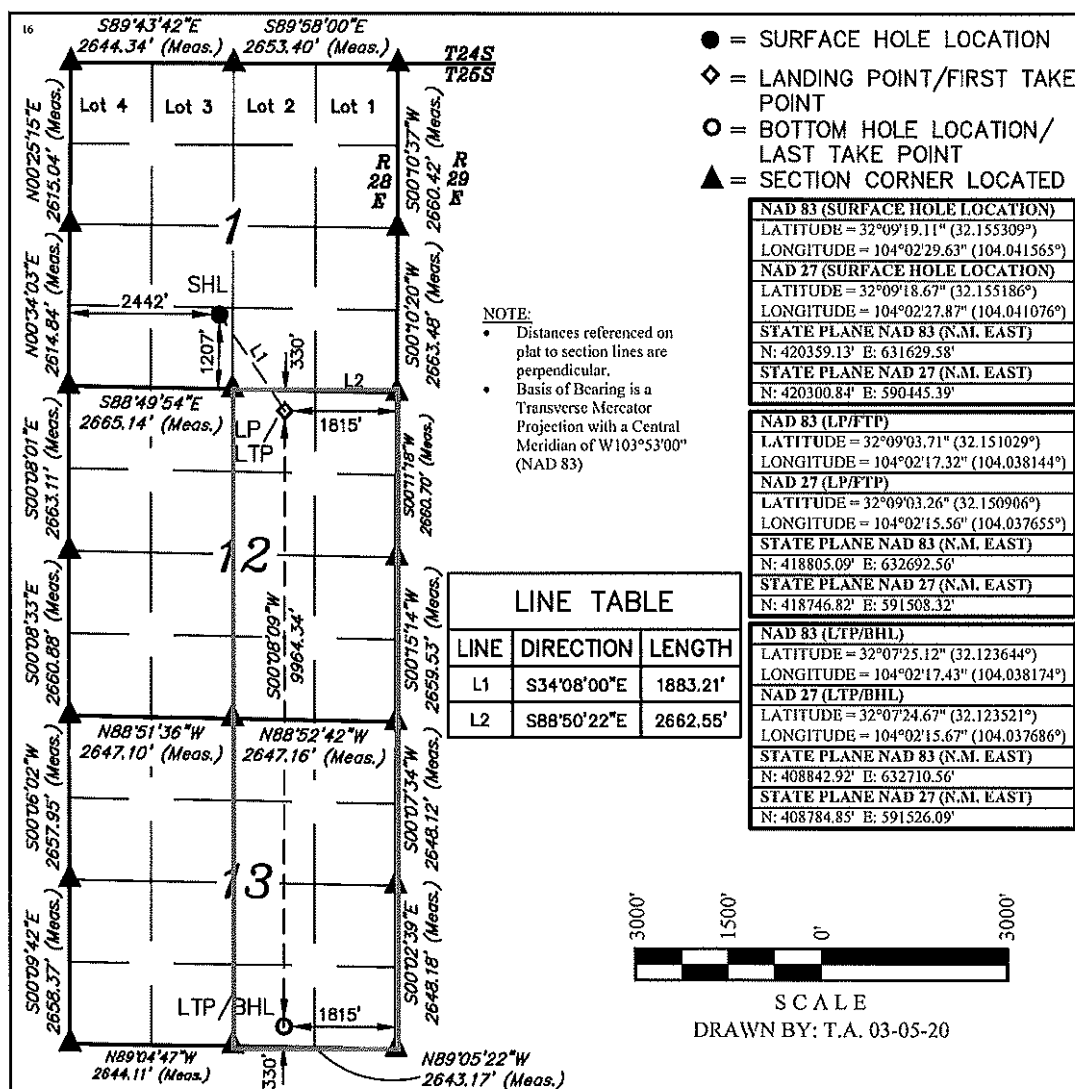
¹⁰ Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	1	25S	28E		1207	SOUTH	2442	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		330	SOUTH	1815	EAST	EDDY
¹² Dedicated Acres 640	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

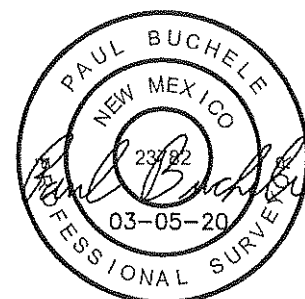
acrawford@cimarex.com
E-mail Address

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 19H		N, Sec 1, T25S, R28E	1207 FSL, 2442 FWL	1540	4700	7000

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 19H		3/1/2023	7/1/2023	1/1/2024	4/1/2024	4/1/2024

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

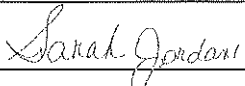
1. If, at any time after Operator submits this Natural Gas Management Plan and before the well is spud:

(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.

Cimarex Energy Co., Riverbend 12-13 Federal Com 19H

1. Geological Formations

TVD of target 9,730

Pilot Hole TD N/A

MD at TD 21,123

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	464	Useable Water	
Salado	1926	N/A	
Castille	2487	N/A	
Bell Canyon	2680	N/A	
Cherry Canyon	3668	N/A	
Brushy Canyon	5267	Hydrocarbons	
Bone Spring	6400	Hydrocarbons	
1st Bone Spring	7340	Hydrocarbons	
2nd Bone Spring	8146	Hydrocarbons	
3rd Bone Spring	9264	Hydrocarbons	
Wolfcamp	9642	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	2630	2630	9-5/8"	36.00	J-55	ST&C	1.43	2.50	4.16
8 3/4	0	9330	9330	7"	26.00	L-80	LT&C	1.24	1.66	2.02
8 3/4	9330	10330	9730	7"	26.00	L-80	BT&C	1.19	1.59	58.08
6	8330	21123	9730	4-1/2"	11.60	P-110	BT&C	1.25	1.76	22.60
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 19H

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

Cimarex Energy Co., Riverbend 12-13 Federal Com 19H

3. Cementing Program

Casing	# Sks	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	501	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	354	10.30	3.64	22.18		Lead: Tuned light + LCM
	145	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS
Completion System	830	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	2463	25
Completion System	9755	10

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

Cimarex Energy Co., Riverbend 12-13 Federal Com 19H

4. Pressure Control Equipment

A variance is requested for the use of a diverter on the surface casing. See attached for schematic.					
BOP Installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	2M
			Blind Ram		
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular	X	3M
			Blind Ram		
			Pipe Ram		
			Double Ram	X	
			Other		
6	13 5/8	5M	Annular	X	5M
			Blind Ram		
			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?

Cimarex Energy Co., Riverbend 12-13 Federal Com 19H

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 514'	Fresh Water	7.83 - 8.33	28	N/C
514' to 2630'	Brine Water	9.80 - 10.30	30-32	N/C
2630' to 10330'	Brine Water	8.50 - 9.00	30-32	N/C
10330' to 21123'	OBM	11.50 - 12.00	50-70	N/C

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

What will be used to monitor the loss or gain of fluid?	PVT/Pason/Visual Monitoring
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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	6071 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 100% 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.

A solid steel body pack-off will be utilized after running and cementing the production 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 19H

Schlumberger

Cimarex Riverbend 12-13 Federal Com #19H Rev0 mcs 19Mar20 Proposal

Geodetic Report

(Def Plan)



Report Date:	April 02, 2020 - 02:23 PM	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	Cimarex	Vertical Section Azimuth:	179.892 ° (Grid North)
Field:	NM Eddy County (NAD 83)	Vertical Section Origin:	0,000 ft, 0,000 ft
Structure / Slot:	Cimarex Riverbend 12-13 Federal Com #19H / Cimarex Riverbend 12-13 Federal Com #19H	TVD Reference Datum:	RKB
Well:	Cimarex Riverbend 12-13 Federal Com #19H	TVD Reference Elevation:	2960.700 ft above MSL
Borehole:	Original Borehole	Seabed / Ground Elevation:	2934.700 ft above MSL
UWI / API#:	Unknown / Unknown	Magnetic Declination:	6.820 °
Survey Name:	Cimarex Riverbend 12-13 Federal Com #19H Rev0 mcs 19Mar20	Total Gravity Field Strength:	998.4559mgm (9.80665 Based)
Survey Date:	March 23, 2020	Gravity Model:	GARM
Tort / AHO / BDI / ERD Ratio:	114.929 ° / 12576.560 ft / 6.487 / 1.293	Total Magnetic Field Strength:	47787.261 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	59.853 °
Location Lat / Long:	N 32° 9' 19.11334", W 104° 2' 29.63403"	Declination Date:	March 23, 2020
Location Grid N/E Y/X:	N 420359.130 RUS, E 631629.580 RUS	Magnetic Declination Model:	HDM 2020
CRS Grid Convergence Angle:	0.1553 °	North Reference:	Grid North
Grid Scale Factor:	0.99991843	Grid Convergence Used:	0.1553 °
Version / Patch:	2.10.787.0	Total Corr Mag North->Grid North:	6.7645 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azlm Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")	
SHL {1207' FSL 2442' FWL}	0.00	0.00	90.00	0.00	0.00	0.00	0.00	N/A	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
Rustler	100.00	0.00	90.00	100.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	200.00	0.00	90.00	200.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	300.00	0.00	90.00	300.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	400.00	0.00	90.00	400.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	464.00	0.00	90.00	464.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	500.00	0.00	90.00	500.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	600.00	0.00	90.00	600.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	700.00	0.00	90.00	700.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	800.00	0.00	90.00	800.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	900.00	0.00	90.00	900.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	1000.00	0.00	90.00	1000.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	1100.00	0.00	90.00	1100.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	1200.00	0.00	90.00	1200.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	1300.00	0.00	90.00	1300.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	1400.00	0.00	90.00	1400.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	1500.00	0.00	90.00	1500.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
Salado	1600.00	0.00	90.00	1600.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	1700.00	0.00	90.00	1700.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	1800.00	0.00	90.00	1800.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	1900.00	0.00	90.00	1900.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	1926.00	0.00	90.00	1926.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	2000.00	0.00	90.00	2000.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	2100.00	0.00	90.00	2100.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	2200.00	0.00	90.00	2200.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	2300.00	0.00	90.00	2300.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
	2400.00	0.00	90.00	2400.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32° 9' 19.11"	W 104° 2' 29.63"	
Castile	2487.01	1.74	90.00	2487.00	0.00	0.00	1.32	2.00	420359.13	631630.90	N 32° 9' 19.11"	W 104° 2' 29.62"	
Bell Canyon	2500.00	2.00	90.00	2499.98	0.00	0.00	1.75	2.00	420359.13	631631.33	N 32° 9' 19.11"	W 104° 2' 29.61"	
	2600.00	4.00	90.00	2599.84	0.01	0.00	6.98	2.00	420359.13	631636.56	N 32° 9' 19.11"	W 104° 2' 29.55"	
	2680.45	5.61	90.00	2680.00	0.03	0.00	13.72	2.00	420359.13	631643.30	N 32° 9' 19.11"	W 104° 2' 29.47"	
	2700.00	6.00	90.00	2699.45	0.03	0.00	15.69	2.00	420359.13	631645.27	N 32° 9' 19.11"	W 104° 2' 29.45"	
	2800.00	8.00	90.00	2788.70	0.05	0.00	27.88	2.00	420359.13	631657.46	N 32° 9' 19.11"	W 104° 2' 29.31"	
	2900.00	10.00	90.00	2897.47	0.08	0.00	43.52	2.00	420359.13	631673.10	N 32° 9' 19.11"	W 104° 2' 29.13"	
Hold Nudge	3000.00	12.00	90.00	2995.62	0.12	0.00	62.60	2.00	420359.13	631692.18	N 32° 9' 19.11"	W 104° 2' 28.91"	
	3023.22	12.46	90.00	3018.31	0.13	0.00	67.52	2.00	420359.13	631697.10	N 32° 9' 19.11"	W 104° 2' 28.85"	
	3100.00	12.46	90.00	3093.29	0.16	0.00	84.09	0.00	420359.13	631713.67	N 32° 9' 19.11"	W 104° 2' 28.66"	
	3200.00	12.46	90.00	3190.93	0.20	0.00	105.68	0.00	420359.13	631735.25	N 32° 9' 19.11"	W 104° 2' 28.40"	
	3300.00	12.46	90.00	3288.57	0.24	0.00	127.28	0.00	420359.13	631756.83	N 32° 9' 19.11"	W 104° 2' 28.15"	
	3400.00	12.46	90.00	3386.22	0.28	0.00	148.84	0.00	420359.13	631778.41	N 32° 9' 19.11"	W 104° 2' 27.90"	
Cherry Canyon	3500.00	12.46	90.00	3483.86	0.32	0.00	170.43	0.00	420359.13	631799.99	N 32° 9' 19.11"	W 104° 2' 27.65"	
	3600.00	12.46	90.00	3581.50	0.36	0.00	192.01	0.00	420359.13	631821.57	N 32° 9' 19.11"	W 104° 2' 27.40"	
	3688.59	12.46	90.00	3668.00	0.40	0.00	211.13	0.00	420359.13	631840.69	N 32° 9' 19.11"	W 104° 2' 27.18"	
	3700.00	12.46	90.00	3679.14	0.40	0.00	213.69	0.00	420359.13	631843.15	N 32° 9' 19.11"	W 104° 2' 27.15"	
	3800.00	12.48	90.00	3776.79	0.44	0.00	235.18	0.00	420359.13	631864.74	N 32° 9' 19.11"	W 104° 2' 26.90"	
	3900.00	12.46	90.00	3874.43	0.48	0.00	256.76	0.00	420359.13	631886.32	N 32° 9' 19.11"	W 104° 2' 26.65"	
	4000.00	12.48	90.00	3972.07	0.52	0.00	278.34	0.00	420359.13	631907.90	N 32° 9' 19.11"	W 104° 2' 26.40"	
	4100.00	12.46	90.00	4069.72	0.57	0.00	299.92	0.00	420359.13	631929.48	N 32° 9' 19.11"	W 104° 2' 26.15"	
	4200.00	12.48	90.00	4167.36	0.61	0.00	321.51	0.00	420359.13	631951.06	N 32° 9' 19.10"	W 104° 2' 25.89"	
	4300.00	12.48	90.00	4265.00	0.65	0.00	343.09	0.00	420359.13	631972.64	N 32° 9' 19.10"	W 104° 2' 25.64"	
	4400.00	12.46	90.00	4362.65	0.69	0.00	364.67	0.00	420359.13	631994.22	N 32° 9' 19.10"	W 104° 2' 25.39"	
	4500.00	12.48	90.00	4460.29	0.73	0.00	386.26	0.00	420359.13	632015.81	N 32° 9' 19.10"	W 104° 2' 25.14"	
	4600.00	12.46	90.00	4557.93	0.77	0.00	407.84	0.00	420359.13	632037.39	N 32° 9' 19.10"	W 104° 2' 24.89"	
	4700.00	12.46	90.00	4655.58	0.81	0.00	429.42	0.00	420359.13	632058.97	N 32° 9' 19.10"	W 104° 2' 24.64"	
	4800.00	12.48	90.00	4753.22	0.85	0.00	451.01	0.00	420359.13	632080.55	N 32° 9' 19.10"	W 104° 2' 24.39"	
	4900.00	12.46	90.00	4850.86	0.89	0.00	472.59	0.00	420359.13	632102.13	N 32° 9' 19.10"	W 104° 2' 24.14"	
Brushy Canyon	5000.00	12.48	90.00	4948.50	0.93	0.00	494.17	0.00	420359.13	632123.71	N 32° 9' 19.10"	W 104° 2' 23.89"	
	5100.00	12.46	90.00	5046.15	0.97	0.00	515.76	0.00	420359.13	632145.29	N 32° 9' 19.10"	W 104° 2' 23.63"	
	5200.00	12.48	90.00	5143.79	1.01	0.00	537.34	0.00	420359.13	632166.87	N 32° 9' 19.10"	W 104° 2' 23.38"	
	5300.00	12.48	90.00	5241.43	1.05	0.00	558.92	0.00	420359.13	632188.46	N 32° 9' 19.10"	W 104° 2' 23.13"	
	5326.18	12.46	90.00	5267.00	1.06	0.00	564.57	0.00	420359.13	632194.11	N 32° 9' 19.10"	W 104° 2' 23.07"	
	5400.00	12.48	90.00	5339.08	1.09	0.00	580.51	0.00	420359.13	632210.04	N 32° 9' 19.10"	W 104° 2' 22.86"	
	5500.00	12.48	90.00	5436.72	1.13	0.00	602.09	0.00	420359.13	632231.62	N 32° 9' 19.10"	W 104° 2' 22.63"	
	5600.00	12.48	90.00	5534.36	1.16	0.00	623.67	0.00	420359.13	632253.20	N 32° 9' 19.10"	W 104° 2' 22.38"	
	5700.00	12.48	90.00	5632.01	1.22	0.00	645.26	0.00	420359.13	632274.78	N 32° 9' 19.10"	W 104° 2' 22.13"	
	5800.00	12.48	90.00	5729.65	1.26	0.00	666.84	0.00	420359.13	632296.36	N 32° 9' 19.10"	W 104° 2' 21.88"	
	5900.00	12.48	90.00	5827.29	1.30	0.00	688.42	0.00	420359.13	632317.94	N 32° 9' 19.09"	W 104° 2' 21.63"	
	6000.00	12.48	90.00	5924.94	1.34	0.00	710.00	0.00	420359.13	632339.53	N 32° 9' 19.09"	W 104° 2' 21.38"	
	6100.00	12.48	90.00	6022.58	1.38	0.00	731.59	0.00	420359.13	632361.11	N 32° 9' 19.09"	W 104° 2' 21.12"	
	6200.00	12.46	90.00	6120.22	1.42	0.00	753.17	0.00	420359.13	632382.69	N 32° 9' 19.09"	W 104° 2' 20.87"	
	Brushy Canyon Lower	6240.74	12.46	90.00	6160.00	1.44	0.00	761.96	0.00	420359.13	632391.48	N 32° 9' 19.09"	W 104° 2' 20.77"
	Bona Springs	6300.00	12.48	90.00	6217.86	1.48	0.00	774.75	0.00	420359.13	632404.27	N 32° 9' 19.09"	W 104° 2' 20.62"
6400.00		12.46	90.00	6315.51	1.50	0.00	796.34	0.00	420359.13	632425.85	N 32° 9' 19.09"	W 104° 2' 20.37"	
6486.53		12.46	90.00	6400.00	1.54	0.00	816.01	0.00	420359.13	632444.53	N 32° 9' 19.09"	W 104° 2' 20.15"	

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (ft/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	6500.00	12.46	90.00	6413.15	1.54	0.00	817.92	0.00	420359.13	632447.43	N 32 9 19.09 W 104	2 20.12
	6600.00	12.46	90.00	6510.79	1.58	0.00	839.50	0.00	420359.13	632469.01	N 32 9 19.09 W 104	2 19.87
Bone Spring "A" Shale	6603.28	12.46	90.00	6514.00	1.58	0.00	840.21	0.00	420359.13	632469.72	N 32 9 19.09 W 104	2 19.86
	6700.00	12.46	90.00	6608.44	1.62	0.00	861.09	0.00	420359.13	632490.59	N 32 9 19.09 W 104	2 19.62
	6800.00	12.46	90.00	6706.08	1.66	0.00	882.67	0.00	420359.13	632512.18	N 32 9 19.09 W 104	2 19.37
	6900.00	12.46	90.00	6803.72	1.70	0.00	904.25	0.00	420359.13	632533.76	N 32 9 19.09 W 104	2 19.12
	7000.00	12.46	90.00	6901.37	1.75	0.00	925.84	0.00	420359.13	632555.34	N 32 9 19.09 W 104	2 18.86
	7100.00	12.46	90.00	6999.01	1.79	0.00	947.42	0.00	420359.13	632576.92	N 32 9 19.09 W 104	2 18.61
Bone Spring "C" Shale	7157.34	12.46	90.00	7055.00	1.81	0.00	959.80	0.00	420359.13	632599.29	N 32 9 19.09 W 104	2 18.47
	7200.00	12.46	90.00	7096.65	1.83	0.00	969.00	0.00	420359.13	632598.50	N 32 9 19.09 W 104	2 18.36
	7300.00	12.46	90.00	7184.30	1.87	0.00	990.59	0.00	420359.13	632620.08	N 32 9 19.09 W 104	2 18.11
Drop 2"/100' DLS	7305.84	12.46	90.00	7200.00	1.87	0.00	991.85	0.00	420359.13	632621.34	N 32 9 19.09 W 104	2 18.10
	7400.00	10.58	90.00	7292.26	1.91	0.00	1010.65	2.00	420359.13	632640.15	N 32 9 19.09 W 104	2 17.88
1st Bone Spring Ss	7448.50	9.61	90.00	7340.00	1.92	0.00	1019.16	2.00	420359.13	632648.65	N 32 9 19.09 W 104	2 17.78
	7500.00	8.58	90.00	7390.86	1.94	0.00	1027.30	2.00	420359.13	632656.79	N 32 9 19.09 W 104	2 17.68
	7600.00	8.58	90.00	7489.98	1.96	0.00	1040.49	2.00	420359.13	632659.98	N 32 9 19.09 W 104	2 17.53
	7700.00	4.58	90.00	7589.50	1.98	0.00	1050.21	2.00	420359.13	632679.71	N 32 9 19.09 W 104	2 17.42
	7800.00	2.58	90.00	7689.30	1.99	0.00	1056.46	2.00	420359.13	632685.95	N 32 9 19.09 W 104	2 17.35
	7900.00	0.58	90.00	7789.25	2.00	0.00	1059.22	2.00	420359.13	632688.71	N 32 9 19.09 W 104	2 17.31
	7929.06	0.00	90.00	7818.31	2.00	0.00	1059.37	2.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	8000.00	0.00	90.00	7869.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	8100.00	0.00	90.00	7969.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	8200.00	0.00	90.00	8069.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
2nd Bone Spring Ss	8256.75	0.00	90.00	8146.00	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	8300.00	0.00	90.00	8189.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	8400.00	0.00	90.00	8289.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	8500.00	0.00	90.00	8389.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	8600.00	0.00	90.00	8489.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	8700.00	0.00	90.00	8589.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	8800.00	0.00	90.00	8689.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	8900.00	0.00	90.00	8789.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
2nd BS Ss Lower	8912.75	0.00	90.00	8802.00	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	9000.00	0.00	90.00	8889.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	9100.00	0.00	90.00	8989.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	9200.00	0.00	90.00	9089.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
	9300.00	0.00	90.00	9189.25	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
KOP - Build 12"/100' DLS	9330.74	0.00	90.00	9220.00	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.09 W 104	2 17.31
3rd Bone Spring Ss	9374.81	5.29	179.89	9264.00	4.03	-2.03	1059.37	12.00	420357.10	632688.86	N 32 9 19.06 W 104	2 17.31
	9400.00	8.31	179.89	9289.01	7.01	-5.01	1059.38	12.00	420354.12	632688.87	N 32 9 19.04 W 104	2 17.31
	9500.00	20.31	179.89	9385.73	31.68	-29.69	1059.42	12.00	420329.45	632688.91	N 32 9 18.79 W 104	2 17.31
	9600.00	32.31	179.89	9475.21	75.93	-73.93	1059.61	12.00	420285.21	632689.00	N 32 9 18.35 W 104	2 17.31
	9700.00	44.31	179.89	9553.53	137.81	-135.81	1059.62	12.00	420223.33	632689.11	N 32 9 17.74 W 104	2 17.31
	9800.00	56.31	179.89	9617.28	214.62	-212.62	1059.77	12.00	420146.53	632689.26	N 32 9 16.98 W 104	2 17.31
Wolfcamp	9848.32	62.11	179.89	9642.00	256.11	-254.11	1059.85	12.00	420105.04	632689.34	N 32 9 16.57 W 104	2 17.31
	9900.00	68.31	179.89	9663.66	303.00	-301.01	1059.93	12.00	420058.15	632689.43	N 32 9 16.11 W 104	2 17.31
Build 4"/100' DLS - Soft Landing	9955.74	75.00	179.89	9681.19	355.88	-353.89	1060.03	12.00	420005.27	632689.53	N 32 9 15.58 W 104	2 17.32
	10000.00	76.77	179.89	9691.98	398.80	-396.81	1060.12	4.00	419962.36	632689.61	N 32 9 15.16 W 104	2 17.32
	10100.00	80.77	179.89	9711.45	456.87	-454.87	1060.30	4.00	419864.30	632689.79	N 32 9 14.19 W 104	2 17.32
	10200.00	84.77	179.89	9724.04	596.05	-594.06	1060.49	4.00	419765.12	632689.98	N 32 9 13.21 W 104	2 17.32
	10300.00	88.77	179.89	9729.67	695.87	-693.88	1060.68	4.00	419665.31	632690.17	N 32 9 12.22 W 104	2 17.32
	10330.74	90.00	179.89	9730.00	726.62	-724.62	1060.73	4.00	419634.57	632690.22	N 32 9 11.91 W 104	2 17.32
	10400.00	90.00	179.89	9730.00	795.87	-793.87	1060.86	0.00	419565.32	632690.35	N 32 9 11.23 W 104	2 17.32
	10500.00	90.00	179.89	9730.00	895.87	-893.87	1061.05	0.00	419465.33	632690.54	N 32 9 10.24 W 104	2 17.32
	10600.00	90.00	179.89	9730.00	955.87	-953.87	1061.24	0.00	419365.34	632690.73	N 32 9 9.25 W 104	2 17.32
	10700.00	90.00	179.89	9730.00	1055.87	-1053.87	1061.43	0.00	419265.35	632690.92	N 32 9 8.26 W 104	2 17.32
	10800.00	90.00	179.89	9730.00	1155.87	-1153.87	1061.62	0.00	419165.36	632691.11	N 32 9 7.27 W 104	2 17.32
Section 1-12 Crossing	10830.30	90.00	179.89	9730.00	1226.17	-1224.17	1061.67	0.00	419135.06	632691.17	N 32 9 6.97 W 104	2 17.32
	10900.00	90.00	179.89	9730.00	1295.87	-1293.87	1061.81	0.00	419065.36	632691.30	N 32 9 6.28 W 104	2 17.32
	11000.00	90.00	179.89	9730.00	1359.87	-1357.87	1061.99	0.00	418965.37	632691.49	N 32 9 5.29 W 104	2 17.33
	11100.00	90.00	179.89	9730.00	1455.87	-1453.87	1062.18	0.00	418865.38	632691.67	N 32 9 4.30 W 104	2 17.33
First Legal Teko Point (330' Hardline)	11160.40	90.00	179.89	9730.00	1556.27	-1554.27	1062.30	0.00	418804.99	632691.79	N 32 9 3.70 W 104	2 17.33
	11200.00	90.00	179.89	9730.00	1595.87	-1593.87	1062.37	0.00	418765.39	632691.86	N 32 9 3.31 W 104	2 17.33
	11300.00	90.00	179.89	9730.00	1695.87	-1693.87	1062.55	0.00	418665.40	632692.05	N 32 9 2.32 W 104	2 17.33
	11400.00	90.00	179.89	9730.00	1795.87	-1793.87	1062.76	0.00	418565.41	632692.24	N 32 9 1.33 W 104	2 17.33
	11500.00	90.00	179.89	9730.00	1895.87	-1893.87	1062.94	0.00	418465.42	632692.43	N 32 9 0.34 W 104	2 17.33
	11600.00	90.00	179.89	9730.00	1995.87	-1993.87	1063.12	0.00	418365.42	632692.62	N 32 8 59.35 W 104	2 17.33
	11700.00	90.00	179.89	9730.00	2095.87	-2093.87	1063.31	0.00	418265.43	632692.80	N 32 8 58.37 W 104	2 17.33
	11800.00	90.00	179.89	9730.00	2195.87	-2193.87	1063.50	0.00	418165.44	632692.99	N 32 8 57.38 W 104	2 17.33
	11900.00	90.00	179.89	9730.00	2295.87	-2293.87	1063.69	0.00	418065.45	632693.18	N 32 8 56.39 W 104	2 17.33
	12000.00	90.00	179.89	9730.00	2395.87	-2393.87	1063.88	0.00	417965.46	632693.37	N 32 8 55.40 W 104	2 17.34
	12100.00	90.00	179.89	9730.00	2495.87	-2493.87	1064.07	0.00	417865.47	632693.56	N 32 8 54.41 W 104	2 17.34
	12200.00	90.00	179.89	9730.00	2595.87	-2593.87	1064.26	0.00	417765.48	632693.75	N 32 8 53.42 W 104	2 17.34
	12300.00	90.00	179.89	9730.00	2695.87	-2693.87	1064.44	0.00	417665.48	632693.93	N 32 8 52.43 W 104	2 17.34
	12400.00	90.00	179.89	9730.00	2795.87	-2793.87	1064.63	0.00	417565.49	632694.12	N 32 8 51.44 W 104	2 17.34
	12500.00	90.00	179.89	9730.00	2895.87	-2893.87	1064.82	0.00	417465.50	632694.31	N 32 8 50.45 W 104	2 17.34
	12600.00	90.00	179.89	9730.00	2995.87	-2993.87	1065.01	0.00	417365.51	632694.50	N 32 8 49.46 W 104	2 17.34
	12700.00	90.00	179.89	9730.00	3095.87							

Comments	MD (ft)	Incl (°)	Azin Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	14700.00	90.00	179.89	9730.00	5095.87	-5093.87	1068.97	0.00	415285.69	632898.46	N 32 8 28.88 W 104	2 17.36
	14800.00	90.00	179.89	9730.00	5195.87	-5193.87	1069.15	0.00	415165.70	632898.65	N 32 8 27.69 W 104	2 17.36
	14900.00	90.00	179.89	9730.00	5295.87	-5293.87	1069.34	0.00	415055.71	632898.83	N 32 8 26.70 W 104	2 17.36
	15000.00	90.00	179.89	9730.00	5395.87	-5393.87	1069.53	0.00	414965.71	632899.02	N 32 8 25.71 W 104	2 17.37
	15100.00	90.00	179.89	9730.00	5495.87	-5493.87	1069.72	0.00	414865.72	632899.21	N 32 8 24.72 W 104	2 17.37
	15200.00	90.00	179.89	9730.00	5595.87	-5593.87	1069.91	0.00	414765.73	632899.40	N 32 8 23.73 W 104	2 17.37
	15300.00	90.00	179.89	9730.00	5695.87	-5693.87	1070.10	0.00	414665.74	632899.59	N 32 8 22.74 W 104	2 17.37
	15400.00	90.00	179.89	9730.00	5795.87	-5793.87	1070.29	0.00	414565.75	632899.78	N 32 8 21.75 W 104	2 17.37
	15500.00	90.00	179.89	9730.00	5895.87	-5893.87	1070.47	0.00	414465.76	632899.96	N 32 8 20.76 W 104	2 17.37
	15600.00	90.00	179.89	9730.00	5995.87	-5993.87	1070.66	0.00	414365.77	632700.15	N 32 8 19.77 W 104	2 17.37
	15700.00	90.00	179.89	9730.00	6095.87	-6093.87	1070.85	0.00	414265.77	632700.34	N 32 8 18.78 W 104	2 17.37
	15800.00	90.00	179.89	9730.00	6195.87	-6193.87	1071.04	0.00	414165.78	632700.53	N 32 8 17.79 W 104	2 17.37
	15900.00	90.00	179.89	9730.00	6295.87	-6293.87	1071.23	0.00	414065.79	632700.72	N 32 8 16.81 W 104	2 17.37
	16000.00	90.00	179.89	9730.00	6395.87	-6393.87	1071.42	0.00	413965.80	632700.91	N 32 8 15.82 W 104	2 17.38
	16100.00	90.00	179.89	9730.00	6495.87	-6493.87	1071.60	0.00	413865.81	632701.09	N 32 8 14.83 W 104	2 17.38
Section 12-13 Crossing	16151.20	90.00	179.89	9730.00	6547.07	-6545.06	1071.70	0.00	413814.61	632701.19	N 32 8 14.32 W 104	2 17.38
	16200.00	90.00	179.89	9730.00	6595.87	-6593.86	1071.79	0.00	413765.82	632701.28	N 32 8 13.84 W 104	2 17.38
	16300.00	90.00	179.89	9730.00	6695.87	-6693.86	1071.98	0.00	413665.83	632701.47	N 32 8 12.85 W 104	2 17.38
	16400.00	90.00	179.89	9730.00	6795.87	-6793.86	1072.17	0.00	413565.83	632701.66	N 32 8 11.86 W 104	2 17.38
	16500.00	90.00	179.89	9730.00	6895.87	-6893.86	1072.36	0.00	413465.84	632701.85	N 32 8 10.87 W 104	2 17.38
	16600.00	90.00	179.89	9730.00	6995.87	-6993.86	1072.55	0.00	413365.85	632702.04	N 32 8 9.88 W 104	2 17.38
	16700.00	90.00	179.89	9730.00	7095.87	-7093.86	1072.74	0.00	413265.86	632702.23	N 32 8 8.89 W 104	2 17.38
	16800.00	90.00	179.89	9730.00	7195.87	-7193.86	1072.92	0.00	413165.87	632702.41	N 32 8 7.90 W 104	2 17.38
	16900.00	90.00	179.89	9730.00	7295.87	-7293.86	1073.11	0.00	413065.88	632702.60	N 32 8 6.91 W 104	2 17.38
	17000.00	90.00	179.89	9730.00	7395.87	-7393.86	1073.30	0.00	412965.89	632702.79	N 32 8 5.92 W 104	2 17.39
	17100.00	90.00	179.89	9730.00	7495.87	-7493.86	1073.49	0.00	412865.89	632702.98	N 32 8 4.93 W 104	2 17.39
	17200.00	90.00	179.89	9730.00	7595.87	-7593.86	1073.68	0.00	412765.90	632703.17	N 32 8 3.94 W 104	2 17.39
	17300.00	90.00	179.89	9730.00	7695.87	-7693.86	1073.87	0.00	412665.91	632703.36	N 32 8 2.95 W 104	2 17.39
	17400.00	90.00	179.89	9730.00	7795.87	-7793.86	1074.05	0.00	412565.92	632703.54	N 32 8 1.96 W 104	2 17.39
	17500.00	90.00	179.89	9730.00	7895.87	-7893.86	1074.24	0.00	412465.93	632703.73	N 32 8 0.97 W 104	2 17.39
	17600.00	90.00	179.89	9730.00	7995.87	-7993.86	1074.43	0.00	412365.94	632703.92	N 32 7 59.98 W 104	2 17.39
	17700.00	90.00	179.89	9730.00	8095.87	-8093.86	1074.62	0.00	412265.95	632704.11	N 32 7 58.99 W 104	2 17.39
	17800.00	90.00	179.89	9730.00	8195.87	-8193.86	1074.81	0.00	412165.95	632704.30	N 32 7 58.00 W 104	2 17.39
	17900.00	90.00	179.89	9730.00	8295.87	-8293.86	1075.00	0.00	412065.96	632704.49	N 32 7 57.01 W 104	2 17.39
	18000.00	90.00	179.89	9730.00	8395.87	-8393.86	1075.18	0.00	411965.97	632704.67	N 32 7 56.03 W 104	2 17.40
	18100.00	90.00	179.89	9730.00	8495.87	-8493.86	1075.37	0.00	411865.98	632704.86	N 32 7 55.04 W 104	2 17.40
	18200.00	90.00	179.89	9730.00	8595.87	-8593.86	1075.56	0.00	411765.99	632705.05	N 32 7 54.05 W 104	2 17.40
	18300.00	90.00	179.89	9730.00	8695.87	-8693.86	1075.75	0.00	411666.00	632705.24	N 32 7 53.06 W 104	2 17.40
	18400.00	90.00	179.89	9730.00	8795.87	-8793.86	1075.94	0.00	411566.01	632705.43	N 32 7 52.07 W 104	2 17.40
	18500.00	90.00	179.89	9730.00	8895.87	-8893.86	1076.13	0.00	411466.01	632705.62	N 32 7 51.08 W 104	2 17.40
	18600.00	90.00	179.89	9730.00	8995.87	-8993.86	1076.32	0.00	411366.02	632705.81	N 32 7 50.09 W 104	2 17.40
	18700.00	90.00	179.89	9730.00	9095.87	-9093.86	1076.50	0.00	411266.03	632705.99	N 32 7 49.10 W 104	2 17.40
	18800.00	90.00	179.89	9730.00	9195.87	-9193.86	1076.69	0.00	411166.04	632706.18	N 32 7 48.11 W 104	2 17.40
	18900.00	90.00	179.89	9730.00	9295.87	-9293.86	1076.88	0.00	411066.05	632706.37	N 32 7 47.12 W 104	2 17.40
	19000.00	90.00	179.89	9730.00	9395.87	-9393.86	1077.07	0.00	410966.06	632706.56	N 32 7 46.13 W 104	2 17.41
	19100.00	90.00	179.89	9730.00	9495.87	-9493.86	1077.26	0.00	410866.06	632706.75	N 32 7 45.14 W 104	2 17.41
	19200.00	90.00	179.89	9730.00	9595.87	-9593.86	1077.45	0.00	410766.07	632706.94	N 32 7 44.15 W 104	2 17.41
	19300.00	90.00	179.89	9730.00	9695.87	-9693.86	1077.63	0.00	410666.08	632707.12	N 32 7 43.16 W 104	2 17.41
	19400.00	90.00	179.89	9730.00	9795.87	-9793.86	1077.82	0.00	410566.09	632707.31	N 32 7 42.17 W 104	2 17.41
	19500.00	90.00	179.89	9730.00	9895.87	-9893.86	1078.01	0.00	410466.10	632707.50	N 32 7 41.18 W 104	2 17.41
	19600.00	90.00	179.89	9730.00	9995.87	-9993.86	1078.20	0.00	410366.11	632707.69	N 32 7 40.19 W 104	2 17.41
	19700.00	90.00	179.89	9730.00	10095.87	-10093.86	1078.39	0.00	410266.12	632707.88	N 32 7 39.20 W 104	2 17.41
	19800.00	90.00	179.89	9730.00	10195.87	-10193.86	1078.58	0.00	410166.12	632708.07	N 32 7 38.21 W 104	2 17.41
	19900.00	90.00	179.89	9730.00	10295.87	-10293.86	1078.77	0.00	410066.13	632708.25	N 32 7 37.22 W 104	2 17.41
	20000.00	90.00	179.89	9730.00	10395.87	-10393.86	1078.95	0.00	409966.14	632708.44	N 32 7 36.23 W 104	2 17.42
	20100.00	90.00	179.89	9730.00	10495.87	-10493.86	1079.14	0.00	409866.15	632708.63	N 32 7 35.25 W 104	2 17.42
	20200.00	90.00	179.89	9730.00	10595.87	-10593.86	1079.33	0.00	409766.16	632708.82	N 32 7 34.26 W 104	2 17.42
	20300.00	90.00	179.89	9730.00	10695.87	-10693.86	1079.52	0.00	409666.17	632709.01	N 32 7 33.27 W 104	2 17.42
	20400.00	90.00	179.89	9730.00	10795.87	-10793.86	1079.71	0.00	409566.18	632709.20	N 32 7 32.28 W 104	2 17.42
	20500.00	90.00	179.89	9730.00	10895.87	-10893.86	1079.90	0.00	409466.18	632709.39	N 32 7 31.29 W 104	2 17.42
	20600.00	90.00	179.89	9730.00	10995.87	-10993.86	1080.08	0.00	409366.19	632709.57	N 32 7 30.30 W 104	2 17.42
	20700.00	90.00	179.89	9730.00	11095.87	-11093.86	1080.27	0.00	409266.20	632709.76	N 32 7 29.31 W 104	2 17.42
	20800.00	90.00	179.89	9730.00	11195.87	-11193.86	1080.46	0.00	409166.21	632709.95	N 32 7 28.32 W 104	2 17.42
	20900.00	90.00	179.89	9730.00	11295.87	-11293.86	1080.65	0.00	409066.22	632710.14	N 32 7 27.33 W 104	2 17.42
	21000.00	90.00	179.89	9730.00	11395.87	-11393.86	1080.84	0.00	408966.23	632710.33	N 32 7 26.34 W 104	2 17.43
	21100.00	90.00	179.89	9730.00	11495.87	-11493.86	1081.03	0.00	408866.24	632710.52	N 32 7 25.35 W 104	2 17.43

Cimarex

Riverbend 12-13

Federal Com

#19H - PBHL

[330° FSL

1815° FEL]

Survey Type:

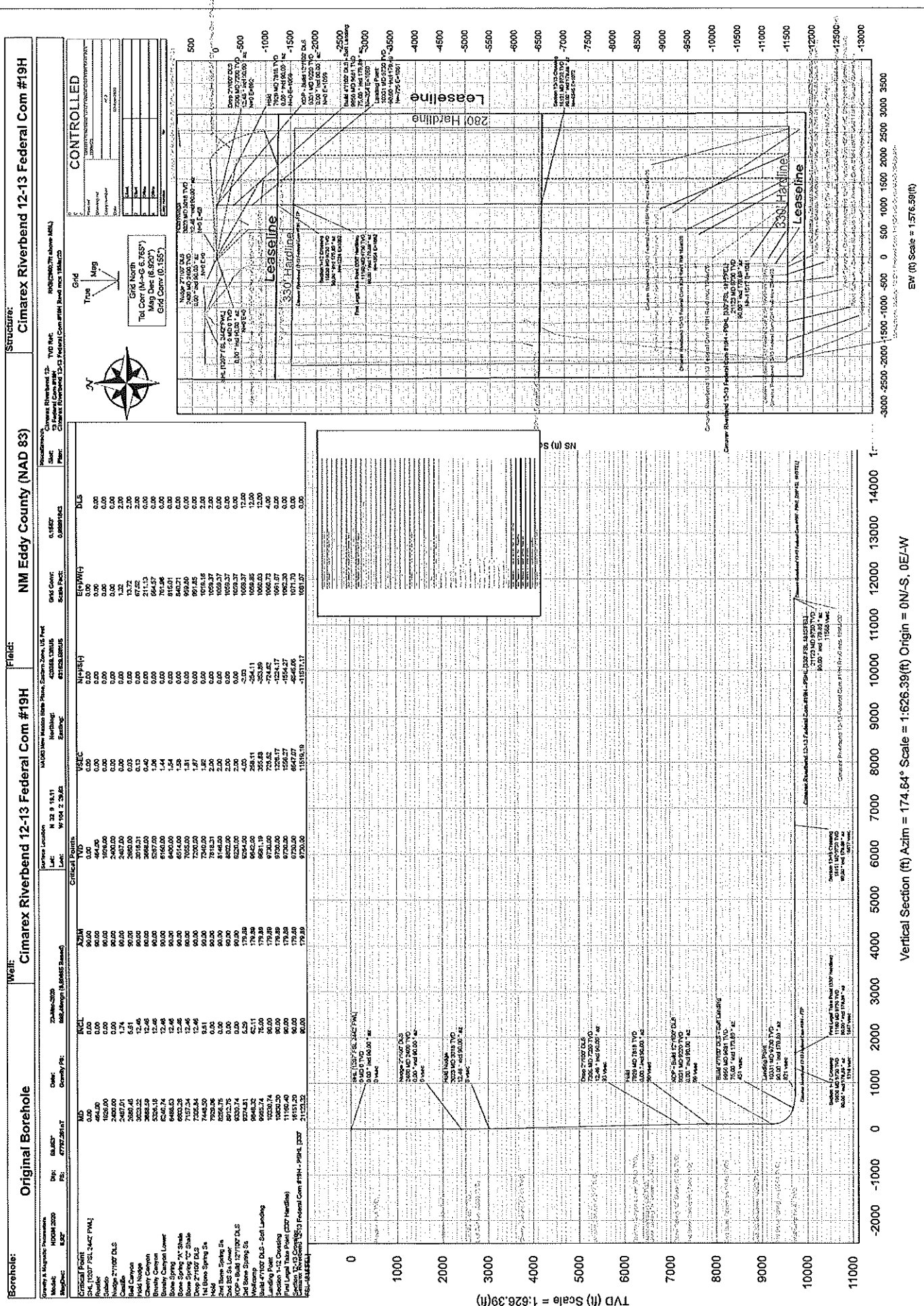
Def Plan

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	
	1	26.000	21123.317	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	#19H Rev0 mcs 19Mar20 Original Borehole / Cimarex Riverbend 12-13 Federal Com	
MD From (ft)	MD To (ft)	Grid Convergence (deg)	Declination (deg)	Dip Angle (deg)	Field Strength (nT)	Geomag Model	Geomag Date	Gravity Model	Gravity (9.80665 Based))	Grid Scale Factor
0.000	21123.320	0.155	6.920	59.853	47797.261	HDGM 2020	3/23/2020	GARM	998.450	0.999918428



Schlumberger

Cimarex Riverbend 12-13 Federal Com #19H Rev0 mcs 19Mar20 Proposal Geodetic Report (Def Plan)



Report Date: April 02, 2020 - 02:23 PM
 Client: Cimarex
 Field: NM Eddy County (NAD 83)
 Structure / Slot: Cimarex Riverbend 12-13 Federal Com #19H / Cimarex Riverbend 12-13 Federal Com #19H
 Well: Cimarex Riverbend 12-13 Federal Com #19H
 Borehole: Original Borehole
 UWI / API#: Unknown / Unknown
 Survey Name: Cimarex Riverbend 12-13 Federal Com #19H Rev0 mcs 19Mar20
 Survey Date: March 23, 2020
 Tort / AHD / DDI / ERD Ratio: 114.929 ° / 12576.580 ft / 6.497 / 1.293
 Coordinate Reference System: NAD83 New Mexico State Plane, Eastern Zone, US Feet
 Location Lat / Long: N 32° 9' 19.11334", W 104° 2' 29.63403"
 Location Grid N/E Y/X: N 420359.130 NUS, E 631629.580 NUS
 CRS Grid Convergence Angle: 0.1553 °
 Grid Scale Factor: 0.99991843
 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: 2960.700 ft above MSL
 Seabed / Ground Elevation: 2934.700 ft above MSL
 Magnetic Declination: 6.920 °
 Total Gravity Field Strength: 998.4599mgm (9.80665 Based)
 Gravity Model: GARM
 Total Magnetic Field Strength: 47797.261 nT
 Magnetic Dip Angle: 59.853 °
 Declination Date: March 23, 2020
 Magnetic Declination Model: HDGM 2020
 North Reference: Grid North
 Grid Convergence Used: 0.1553 °
 Total Corr Mag North->Grid North: 6.7845 °
 Local Coord Referenced To: Well Head

Comments	MD (ft)	Incl (°)	Azlm Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [1207' FSL 2442' FWL]	0.00	0.00	90.00	0.00	0.00	0.00	0.00	N/A	420359.13	631629.58	N 32 9 19.11 W 104	2 29.63
Nudge 2"/100'	2400.00	0.00	90.00	2400.00	0.00	0.00	0.00	0.00	420359.13	631629.58	N 32 9 19.11 W 104	2 29.63
DLS	3023.22	12.46	90.00	3018.31	0.13	0.00	67.52	2.00	420359.13	631697.10	N 32 9 19.11 W 104	2 28.85
Hold Nudge	7305.84	12.46	90.00	7200.00	1.87	0.00	991.85	0.00	420359.13	632621.34	N 32 9 19.09 W 104	2 18.10
Drop 2"/100'	7929.06	0.00	90.00	7818.31	2.00	0.00	1059.37	2.00	420359.13	632688.86	N 32 9 19.08 W 104	2 17.31
DLS	9330.74	0.00	90.00	9220.00	2.00	0.00	1059.37	0.00	420359.13	632688.86	N 32 9 19.08 W 104	2 17.31
Hold												
KOP - Build												
12"/100' DLS												
Build 4"/100'												
DLS - Soft	9955.74	75.00	179.89	9681.19	355.88	-353.89	1060.03	12.00	420005.27	632689.53	N 32 9 15.58 W 104	2 17.32
Landing												
Landing Point	10330.74	90.00	179.89	9730.00	726.62	-724.62	1060.73	4.00	419634.57	632690.22	N 32 9 11.91 W 104	2 17.32
Cimarex Riverbend 12-13 Federal Com #19H - PBHL [330' FSL 1815' FEL]	21123.32	90.00	179.89	9730.00	11519.19	-11517.17	1081.07	0.00	408842.92	632710.56	N 32 7 25.12 W 104	2 17.43

Survey Type: Def Plan

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

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 #19H Rev0 mcs 19Mar20
	1	26.000	21123.317	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS		Original Borehole / Cimarex Riverbend 12-13 Federal Com
MD From (ft)	MD To (ft)	Grid Convergence (deg)	Declination (deg)	Dip Angle (deg)	Field Strength (nT)	Geomag Model	Geomag Date	Gravity Model	Gravity (mgm (9.80665 Based))	Grid Scale Factor
0.000	21123.320	0.155	6.920	59.853	47797.261	HDGM 2020	3/23/2020	GARM	998.460	0.999918428

Schlumberger



Cimarex Riverbend 12-13 Federal Com #19H Rev0 mcs 19Mar20 Anti-Collision Summary Report

Analysis Date/24hr Time: April 02, 2020 - 14:24

Client: Cimarex
 Field: NM Eddy County (NAD 83)
 Structure: Cimarex Riverbend 12-13 Federal Com #19H
 Slot: Cimarex Riverbend 12-13 Federal Com #19H
 Well: Cimarex Riverbend 12-13 Federal Com #19H
 Borehole: Original Borehole
 Scan MD Range: 0.00ft - 21123.32ft

Analysis Method: 3D Least Distance
 Reference Trajectory: Cimarex Riverbend 12-13 Federal Com #19H Rev0 mcs 19Mar20 (Def Plan)
 Depth Interval: Every 10.00 Measured Depth (ft)
 Rule Set: NAL Procedure: D&M Anti-Collision Standard S002
 Min Pts: All local minima indicated.
 Version / Patch: 2.10.787.0
 Database \ Project: us1153APP452.DIR.SLB.COMDRILLING-NM Eddy County 2.10

Trajectory Error Model: ISC/WSAD 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	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Cl-Cl (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)

20.00	18.25	18.71	3.74	N/A	MAS = 4.95 (m)	0.00	0.00	CIC1<=15m<15.00				Enter Alert	Fail Minor
20.00	18.25	18.71	3.74	26068.19	MAS = 4.95 (m)	26.00	26.00					WRP	
20.00	20.02	6.22	-0.02	1.60	OSF1.50	2050.00	2050.00		OSF<1.50			Enter Minor	
20.00	23.32	4.02	-3.32	1.27	OSF1.50	2400.00	2400.00					MinPt-CIC1	
20.01	23.35	3.55	-3.38	1.27	OSF1.50	2410.00	2410.00					MINPT-O-EQU	
20.07	23.48	4.00	-3.35	1.27	OSF1.50	2420.00	2420.00					MinPts	
23.97	24.03	7.48	-0.12	1.49	OSF1.50	2550.00	2559.92			OSF>1.50		Ext Minor	
74.85	23.43	58.80	51.42	4.88	OSF1.50	3140.00	3132.34		OSF>5.00			Ext Alert	
494.97	52.76	459.37	442.22	14.39	OSF1.50	10160.00	9719.84					MinPts	
496.18	63.31	462.21	444.87	14.33	OSF1.50	10230.00	9726.46					MinPt-O-SF	
552.15	166.80	440.52	385.95	4.99	OSF1.50	14380.00	9730.00		OSF<5.00			Enter Alert	
552.14	378.97	299.07	173.18	2.19	OSF1.50	21110.00	9730.00					MinPt-CIC1	
552.15	379.07	299.01	173.03	2.19	OSF1.50	21120.00	9730.00					MinPts	
552.19	378.96	299.12	173.23	2.19	OSF1.50	21123.32	9730.00					TD	

Cimarex Riverbend 12-13
 Federal Com #21H Rev2 mcs
 23Mar20 (Def Plan)

20.00	18.25	18.71	3.74	N/A	MAS = 4.95 (m)	0.00	0.00	CIC1<=15m<15.00				Enter Alert	Fail Minor
20.00	18.25	18.71	3.74	N/A	MAS = 4.95 (m)	26.00	26.00					WRP	
20.00	20.02	6.22	-0.02	1.60	OSF1.50	2050.00	2050.00		OSF<1.50			Enter Minor	
20.00	21.43	5.28	-1.43	1.39	OSF1.50	2200.00	2200.00					MinPt-CIC1	
20.01	21.46	5.25	-1.48	1.39	OSF1.50	2210.00	2210.00					MINPT-O-EQU	
20.05	21.65	5.28	-1.43	1.39	OSF1.50	2220.00	2220.00					MinPts	
21.85	22.04	6.73	-0.19	1.49	OSF1.50	2310.00	2310.00			OSF>1.50		Ext Minor	
95.13	21.65	54.27	47.48	5.00	OSF1.50	2940.00	2936.81		OSF>5.00			Ext Alert	
459.98	77.00	418.22	392.98	9.29	OSF1.50	10490.00	9730.00					MinPt-CIC1	
470.07	77.18	418.19	392.93	9.27	OSF1.50	10500.00	9730.00					MinPts	
472.21	77.80	419.92	394.42	9.23	OSF1.50	10540.00	9730.00					MinPt-O-SF	
561.30	169.55	447.84	391.75	4.99	OSF1.50	15240.00	9730.00		OSF<5.00			Enter Alert	
561.30	353.10	325.47	208.20	2.39	OSF1.50	21123.32	9730.00					MinPts	

Cimarex Riverbend 12-13
 Federal Com #1H Rev3 mcs
 23Mar20 (Def Plan)

39.99	32.25	38.70	7.74	N/A	MAS = 9.83 (m)	0.00	0.00	CIC1<=15m<15.00				Enter Alert	Warning Alert
39.99	32.25	38.70	7.74	N/A	MAS = 9.83 (m)	26.00	26.00					WRP	
39.96	32.25	26.53	7.74	3.18	MAS = 9.83 (m)	2000.00	2000.00					MinPts	
40.01	32.25	26.50	7.76	3.17	MAS = 9.83 (m)	2010.00	2010.00					MINPT-O-EQU	
40.26	32.25	26.53	8.01	3.16	MAS = 9.83 (m)	2040.00	2040.00					MinPt-O-SF	
57.10	32.25	52.40	34.85	4.91	MAS = 9.83 (m)	2400.00	2400.00		OSF>5.00			Ext Alert	
457.95	61.43	426.57	406.52	11.64	OSF1.50	7305.84	7200.00					MinPt-O-SF	
979.70	79.69	926.15	900.02	18.72	OSF1.50	10000.00	9691.98					MinPt-CIC1	
979.74	79.77	926.13	899.97	18.70	OSF1.50	10010.00	9694.24					MINPT-O-EQU	
979.82	79.85	926.16	899.97	18.68	OSF1.50	10020.00	9696.43					MinPt-O-ADP	
983.94	80.71	929.70	903.23	18.50	OSF1.50	10150.00	9718.61					MinPt-O-SF	
989.91	82.19	934.69	907.72	18.33	OSF1.50	10720.00	9730.00					MinPt-CIC1	
989.92	297.57	790.84	691.85	5.00	OSF1.50	18650.00	9730.00		OSF<5.00			Enter Alert	
989.92	376.22	738.68	613.70	3.99	OSF1.50	21123.32	9730.00					MinPts	

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

116.61	32.81	115.33	83.81	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	Warning Alert
116.61	32.81	115.32	83.80	N/A	MAS = 10.00 (m)	26.00	26.00					WRP	
64.91	32.81	50.85	32.10	4.99	MAS = 10.00 (m)	2560.00	2569.86		OSF<5.00			Enter Alert	
56.94	32.81	42.91	24.13	4.37	MAS = 10.00 (m)	2780.00	2749.13					MinPts	
64.61	32.81	50.51	31.80	4.94	MAS = 10.00 (m)	2900.00	2897.47		OSF>5.00			Ext Alert	
1535.33	343.27	1305.05	1192.05	6.73	OSF1.50	21123.32	9730.00					MinPts	

Cimarex Riverbend 12-13
 Federal Com #21H Rev0 mcs
 23Mar20 (Def Plan)

134.15	32.81	132.87	101.34	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	Warning Alert
134.15	32.81	132.86	101.34	N/A	MAS = 10.00 (m)	26.00	26.00					WRP	
83.59	32.81	65.81	50.78	5.00	MAS = 10.00 (m)	3490.00	3474.09		OSF<5.00			Enter Alert	
62.27	44.98	31.85	17.28	2.09	OSF1.50	5570.00	5505.07					MinPt-CIC1	
64.60	52.45	29.40	12.35	1.66	OSF1.50	6240.00	6159.28					MINPT-O-EQU	
68.43	56.79	30.14	11.64	1.81	OSF1.50	6630.00	6540.09					MinPt-O-ADP	
71.74	59.78	31.45	11.99	1.81	OSF1.50	6900.00	6803.72					MinPt-O-SF	
210.42	64.65	168.95	145.88	4.00	OSF1.50	8130.00	8019.25		OSF>5.00			Ext Alert	
1532.59	382.07	1277.45	1160.52	6.03	OSF1.50	21123.32	9730.00					MinPts	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	CI-CI (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
Marathon Oil Whistle Pig Fee 1 SB FEE DR1 (Offset) MWD On- 14257R (Def Survey)													
												Warning Alert	
4313.61	32.81	4312.48	4280.80	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
4313.57	32.81	4312.43	4280.76	777643.33		MAS = 10.00 (m)	10.00	10.00				MnPl-O-SF	
4313.56	32.81	4312.41	4280.74	N/A		MAS = 10.00 (m)	20.00	20.00				MINPT-O-EOU	
4313.54	32.81	4312.41	4280.74	N/A		MAS = 10.00 (m)	26.00	26.00				MnPls	
4313.62	32.81	4312.36	4280.81	33214.05		MAS = 10.00 (m)	60.00	60.00				MINPT-O-EOU	
4313.77	32.81	4312.36	4280.96	15431.00		MAS = 10.00 (m)	120.00	120.00				MINPT-O-EOU	
4314.71	32.81	4312.08	4281.90	2689.97		MAS = 10.00 (m)	390.00	390.00				MnPls	
4314.83	32.81	4311.90	4282.02	2424.46		MAS = 10.00 (m)	450.00	450.00				MINPT-O-EOU	
4311.43	32.81	4304.36	4278.62	726.65		MAS = 10.00 (m)	1390.00	1390.00				MnPls	
4311.83	32.81	4303.56	4279.02	606.74		MAS = 10.00 (m)	1640.00	1640.00				MINPT-O-EOU	
4168.19	37.52	4162.79	4150.67	172.72		OSF1.50	4880.00	4831.33				MnPl-CICI	
471.69	142.49	376.32	329.20	4.99		OSF1.50	9180.00	9069.25	OSF<5.00			Enter Alert	
301.63	204.78	164.64	96.76	2.21		OSF1.50	9650.00	9431.63				MnPl-CICI	
301.73	205.20	164.66	98.63	2.21		OSF1.50	9560.00	9440.65				MnPls	
403.67	192.08	275.24	211.69	3.19		OSF1.50	10080.00	9708.11				MnPl-O-SF	
582.90	179.01	462.97	403.89	4.92		OSF1.50	10460.00	9730.00	OSF>5.00			Ext Alert	
11077.68	90.51	11017.16	10987.37	185.89		OSF1.50	21123.32	9730.00				TD	
Marathon Oil Rustler Bluff #4 (Offset) Blind Off-521DR (Def Survey)													
												Warning Alert	
2334.84	32.81	2333.71	2302.03	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
2334.35	32.81	2333.15	2301.64	37846.81		MAS = 10.00 (m)	26.00	26.00				MnPl-O-SF	
2334.13	703.15	1654.99	1630.99	4.98		OSF1.50	2340.00	2340.00	OSF<5.00			Enter Alert	
1779.94	1615.77	702.19	164.17	1.65		OSF1.50	5510.00	5446.48				MnPl-O-SF	
1778.99	1614.84	701.87	164.16	1.65		OSF1.50	5520.00	5456.25				MnPl-O-ADP	
1778.49	1611.73	701.44	164.76	1.65		OSF1.50	5550.00	5485.64				MINPT-O-EOU	
1771.52	1592.94	708.99	178.66	1.67		OSF1.50	5560.00	5512.48				MnPl-CICI	
2724.62	620.77	2177.07	1903.85	4.98		OSF1.50	7730.00	7619.41	OSF>5.00			Ext Alert	
6309.00	1150.42	6541.68	5158.64	8.23		OSF1.50	13160.00	9730.00				MnPl-O-SF	
13089.20	1529.91	12068.89	11599.30	12.84		OSF1.50	21123.32	9730.00				TD	
Cimarex Riverbend 12-13 Federal Com #16H Rev2 mcs 23Mar20 (Def Plan)													
												Pass	
59.98	32.81	58.69	27.17	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
59.98	32.81	58.69	27.17	44024.62		MAS = 10.00 (m)	26.00	26.00				WRP	
59.92	32.81	49.72	27.17	6.64		MAS = 10.00 (m)	1490.00	1490.00				MnPls	
59.99	32.81	49.63	27.19	6.47		MAS = 10.00 (m)	1510.00	1510.00				MINPT-O-EOU	
61.37	32.81	50.62	28.56	6.35		MAS = 10.00 (m)	1590.00	1590.00				MnPl-O-SF	
433.48	66.28	398.85	367.16	9.97		OSF1.50	7350.00	7243.19				MnPl-O-SF	
1504.66	365.63	1250.59	1139.03	8.15		OSF1.50	21123.32	9730.00				MnPls	
Cimarex Riverbend 12-13 Federal Com #15H Rev2 mcs 23Mar20 (Def Plan)													
												Pass	
79.99	32.81	78.70	47.18	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
79.99	32.81	78.70	47.18	59039.06		MAS = 10.00 (m)	26.00	26.00				WRP	
79.92	32.81	72.85	47.18	13.61		MAS = 10.00 (m)	990.00	990.00				MnPls	
80.01	32.81	72.75	47.20	13.26		MAS = 10.00 (m)	1010.00	1010.00				MINPT-O-EOU	
82.83	32.81	75.13	50.66	12.61		MAS = 10.00 (m)	1130.00	1130.00				MnPl-O-SF	
788.91	70.06	739.77	716.85	17.13		OSF1.50	7370.00	7282.89				MnPl-O-SF	
2079.83	403.80	1810.20	1676.03	7.73		OSF1.50	21123.32	9730.00				MnPls	
Marathon Oil Whistle Pig Fee 1 WA 4H (Offset) MWD On- 14593R (Def Survey)													
												Pass	
4299.07	32.81	4297.94	4266.26	N/A		MAS = 10.00 (m)	0.00	0.00				Surface	
4299.02	32.81	4297.89	4266.22	833227.81		MAS = 10.00 (m)	10.00	10.00				MnPl-O-SF	
4299.01	32.81	4297.87	4266.20	N/A		MAS = 10.00 (m)	20.00	20.00				MINPT-O-EOU	
4299.01	32.81	4297.87	4266.23	N/A		MAS = 10.00 (m)	26.00	26.00				MnPls	
4299.03	32.81	4297.85	4265.22	79368.13		MAS = 10.00 (m)	50.00	50.00				MINPT-O-EOU	
4301.04	32.81	4298.62	4268.24	3944.69		MAS = 10.00 (m)	300.00	300.00				MINPT-O-EOU	
4311.48	32.81	4305.07	4278.68	815.47		MAS = 10.00 (m)	1210.00	1210.00				MINPT-O-EOU	
535.26	102.38	468.03	432.90	8.03		OSF1.50	10210.00	9724.91				MnPl-CICI	
535.30	102.49	465.97	432.81	8.03		OSF1.50	10220.00	9725.72				MINPT-O-EOU	
535.40	102.63	465.97	432.77	8.02		OSF1.50	10230.00	9726.48				MnPl-O-ADP	
552.23	109.23	478.44	443.00	7.75		OSF1.50	10560.00	9730.00				MnPls	
10584.09	58.59	10544.66	10525.50	276.28		OSF1.50	21123.32	9730.00				TD	
Final Surveys - Riverbend 12-13 Federal Com #31H MWD Surveys DR to 21380R (Surcon Corrected) (Def Survey)													
												Pass	
1131.41	32.81	1130.12	1098.60	N/A		MAS = 10.00 (m)	0.00	0.00				MnPls	
1131.41	32.81	1130.12	1098.60	191907.77		MAS = 10.00 (m)	26.00	26.00				WRP	
1036.30	32.81	1024.44	1003.45	95.81		MAS = 10.00 (m)	2840.00	2639.72				MnPls	
1563.20	43.50	1553.85	1539.89	55.87		OSF1.50	7305.84	7200.00				MnPl-O-SF	
1561.69	45.39	1631.07	1616.28	56.14		OSF1.50	9030.00	8909.25				MnPl-CICI	
1601.75	45.68	1631.02	1616.17	55.90		OSF1.50	9070.00	8959.25				MINPT-O-EOU	
1601.81	45.68	1631.04	1616.18	55.81		OSF1.50	9050.00	8919.25				MnPl-O-ADP	
1605.97	46.77	1634.45	1619.20	54.89		OSF1.50	9400.00	9289.01				MnPl-O-SF	
1607.44	47.27	1635.69	1620.17	54.03		OSF1.50	9480.00	9369.83				MnPl-O-SF	
1605.61	47.21	1633.70	1618.30	54.03		OSF1.50	9510.00	9395.07				MnPl-O-SF	
1653.60	48.38	1621.11	1605.34	52.38		OSF1.50	9880.00	9695.88				MnPls	
1543.83	61.06	1602.80	1582.78	41.02		OSF1.50	10840.00	9730.00				MnPl-CICI	
1644.10	61.50	1602.51	1582.20	40.46		OSF1.50	10900.00	9730.00				MINPT-O-EOU	
1644.46	62.33	1602.57	1582.12	40.18		OSF1.50	10930.00	9730.00				MnPl-O-ADP	
1537.27	90.87	1576.37	1546.40	27.31		OSF1.50	12140.00	9730.00				MnPl-CICI	
1537.81	92.06	1576.09	1545.72	26.95		OSF1.50	12210.00	9730.00				MINPT-O-EOU	
1538.65	93.36	1576.29	1545.50	26.60		OSF1.50	12270.00	9730.00				MnPl-O-ADP	
1540.77	95.22	1576.96	1545.53	26.10		OSF1.50	12360.00	9730.00				MnPl-O-ADP	
1629.60	163.13	1527.18	1476.47	16.06		OSF1.50	14390.00	9730.00				MnPl-CICI	
1629.94	164.27	1526.77	1475.67	15.94		OSF1.50	14450.00	9730.00				MINPT-O-EOU	
1631.62	167.60	1526.23	1474.02	15.62		OSF1.50	14570.00	9730.00				MINPT-O-EOU	
1632.35	168.45	1526.36	1473.90	15.64		OSF1.50	14610.00	9730.00				MnPl-O-ADP	
1637.30	167.06	1525.69	1470.33	14.78		OSF1.50	14870.00	9730.00				MnPl-CICI	
1637.74	177.90	1518.81	1459.84	13.88		OSF1.50	15240.00	9730.00				MnPl-CICI	
1633.35	211.20	1492.22	1422.15	11.65		OSF1.50	16370.00	9730.00				MnPl-CICI	
1634.65	217.18	1489.73	1417.66	11.34		OSF1.50	16600.00	9730.00				MINPT-O-EOU	
1634.05	242.61	1472.02	1391.49	10.14		OSF1.50	17430.00	9730.00				MnPl-CICI	

Offset Trajectory	Separation			Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	C1-C1 (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Alert	Minor	Major		
1633.66	249.68	1466.68	1363.66	9.84	OSF1.50	17680.00	9730.00				MnPl-CICI	
1604.48	305.37	1400.67	1299.11	7.90	OSF1.50	19530.00	9730.00				MnPl-CICI	
1603.49	330.93	1382.64	1272.66	7.29	OSF1.50	20380.00	9730.00				MnPl-CICI	
1604.07	339.93	1379.12	1267.14	7.16	OSF1.50	20580.00	9730.00				MnPl-CICI	
1605.75	352.61	1370.35	1253.14	6.85	OSF1.50	21100.00	9730.00				MnPls	
1606.91	352.60	1370.51	1253.31	6.85	OSF1.50	21123.32	9730.00				TD	

Final Survey - Cimarex
Riverbend 12-13 Federal Com
#29H Off to 21947ft (Surcon
Corrected) (Def Survey)

1061.55	32.81	1060.27	1028.74	N/A	MAS = 10.00 (m)	0.00	0.00				Pass	
1061.54	32.81	1060.26	1028.74	121312.02	MAS = 10.00 (m)	26.00	26.00				Surface	
1058.98	32.81	1056.83	1026.17	581.81	MAS = 10.00 (m)	450.00	450.00				WRP	
1056.31	32.81	1051.78	1023.51	310.49	MAS = 10.00 (m)	790.00	790.00				MNPT-O-EOU	
1056.46	32.81	1051.64	1023.65	288.02	MAS = 10.00 (m)	850.00	850.00				MnPls	
1047.82	32.81	1035.99	1015.03	58.04	MAS = 10.00 (m)	2470.00	2469.99				MNPT-O-EOU	
1047.82	32.81	1035.98	1015.01	97.86	MAS = 10.00 (m)	2480.00	2479.99				MnPls	
1047.98	32.81	1036.10	1015.17	97.51	MAS = 10.00 (m)	2500.00	2499.98				MNPT-O-EOU	
1050.46	32.81	1038.66	1017.65	97.44	MAS = 10.00 (m)	2580.00	2579.68				MnPl-O-SF	
1052.82	32.81	1040.68	1019.95	97.44	MAS = 10.00 (m)	2670.00	2619.78				MnPl-O-SF	
1143.93	32.81	1129.76	1111.12	87.00	MAS = 10.00 (m)	3760.00	3737.73				MnPls	
1143.98	32.81	1129.74	1111.15	86.62	MAS = 10.00 (m)	3780.00	3757.26				MNPT-O-EOU	
1312.79	46.40	1281.51	1269.30	43.36	OSF1.50	7400.00	7292.26				MnPl-O-SF	
1313.68	44.37	1283.99	1269.91	45.43	OSF1.50	7890.00	7689.25				MnPl-O-SF	
1313.58	44.62	1283.56	1269.05	45.26	OSF1.50	8070.00	7599.25				MnPl-CICI	
1313.62	44.62	1283.53	1269.00	45.16	OSF1.50	8110.00	7599.25				MNPT-O-EOU	
1313.66	44.67	1283.64	1269.94	45.11	OSF1.50	8130.00	8319.25				MnPl-O-ADP	
1313.04	45.23	1282.55	1267.82	44.52	OSF1.50	8350.00	8239.25				MnPl-CICI	
1313.17	45.59	1282.44	1267.68	44.16	OSF1.50	8470.00	8399.25				MNPT-O-EOU	
1313.30	45.75	1282.46	1267.53	44.01	OSF1.50	8520.00	8409.25				MnPl-O-ADP	
1324.21	48.18	1291.75	1276.03	42.06	OSF1.50	9400.00	9289.01				MnPl-O-SF	
1321.45	47.43	1289.49	1274.02	42.68	OSF1.50	9610.00	9483.60				MnPls	
1321.43	47.39	1289.49	1274.01	42.71	OSF1.50	9620.00	9491.88				MnPl-CICI	
1658.16	57.38	1619.68	1600.78	44.08	OSF1.50	10700.00	9730.00				MnPls	
1668.08	79.35	1614.65	1588.72	31.81	OSF1.50	11590.00	9730.00				MnPl-CICI	
1668.43	80.25	1614.60	1588.18	31.55	OSF1.50	11640.00	9730.00				MNPT-O-EOU	
1668.74	80.51	1614.68	1588.13	31.42	OSF1.50	11660.00	9730.00				MnPl-O-ADP	
1669.67	83.43	1613.72	1586.24	30.36	OSF1.50	11750.00	9730.00				MnPl-CICI	
1670.09	90.47	1609.44	1579.62	27.58	OSF1.50	12020.00	9730.00				MnPl-CICI	
1672.83	96.65	1608.07	1576.18	26.21	OSF1.50	12270.00	9730.00				MNPT-O-EOU	
1672.93	112.25	1597.77	1560.66	22.64	OSF1.50	12820.00	9730.00				MnPl-CICI	
1674.75	121.59	1593.40	1553.30	20.82	OSF1.50	13150.00	9730.00				MnPl-CICI	
1658.85	154.33	1555.63	1504.51	16.22	OSF1.50	14290.00	9730.00				MnPl-CICI	
1659.61	156.34	1554.96	1503.16	16.01	OSF1.50	14360.00	9730.00				MNPT-O-EOU	
1661.87	163.10	1552.80	1498.77	15.37	OSF1.50	14610.00	9730.00				MNPT-O-EOU	
1662.37	163.69	1552.91	1498.68	15.32	OSF1.50	14640.00	9730.00				MnPl-O-ADP	
1673.70	173.75	1557.63	1499.94	14.62	OSF1.50	14980.00	9730.00				MNPT-O-EOU	
1662.67	207.68	1523.91	1455.06	12.07	OSF1.50	16100.00	9730.00				MnPl-CICI	
1665.88	218.13	1521.47	1449.75	11.61	OSF1.50	15416.00	9730.00				MNPT-O-EOU	
1671.33	232.64	1515.94	1438.76	10.82	OSF1.50	16940.00	9730.00				MnPl-CICI	
1669.55	244.44	1506.30	1425.15	10.28	OSF1.50	17340.00	9730.00				MnPl-CICI	
1670.81	260.66	1496.71	1410.15	9.65	OSF1.50	17880.00	9730.00				MnPl-CICI	
1671.19	261.87	1496.28	1409.32	9.60	OSF1.50	17940.00	9730.00				MNPT-O-EOU	
1677.21	281.12	1489.47	1396.09	8.98	OSF1.50	18590.00	9730.00				MNPT-O-EOU	
1678.40	282.62	1489.68	1395.77	8.93	OSF1.50	18650.00	9730.00				MnPl-O-ADP	
1687.62	298.03	1488.60	1389.69	8.62	OSF1.50	19130.00	9730.00				MnPl-CICI	
1685.88	308.51	1479.88	1377.37	8.22	OSF1.50	19480.00	9730.00				MnPl-CICI	
1688.10	315.01	1477.77	1373.09	8.06	OSF1.50	19720.00	9730.00				MNPT-O-EOU	
1687.58	338.05	1461.88	1349.62	7.51	OSF1.50	20460.00	9730.00				MnPl-CICI	
1688.94	341.48	1460.96	1347.45	7.44	OSF1.50	20600.00	9730.00				MNPT-O-EOU	
1690.62	343.58	1461.24	1347.04	7.40	OSF1.50	20680.00	9730.00				MnPl-O-ADP	
1696.85	349.32	1463.65	1347.53	7.30	OSF1.50	20870.00	9730.00				MNPT-O-EOU	
1698.82	355.51	1461.48	1343.31	7.16	OSF1.50	21040.00	9730.00				MnPl-CICI	
1699.15	357.65	1460.43	1341.57	7.14	OSF1.50	21120.00	9730.00				MnPls	
1699.19	357.60	1460.46	1341.58	7.14	OSF1.50	21123.32	9730.00				MnPl-O-SF	

Final Survey - Cimarex
Riverbend 12-13 Federal Com
#30H MWD Off-20736ft (Surcon
Corrected) (Def Survey)

1081.31	32.81	1080.03	1048.51	N/A	MAS = 10.00 (m)	0.00	0.00				Pass	
1081.34	32.81	1080.04	1048.53	104336.22	MAS = 10.00 (m)	26.00	26.00				WRP	
1081.37	32.81	1080.04	1048.56	22222.09	MAS = 10.00 (m)	40.00	40.00				MNPT-O-EOU	
1084.09	32.81	1076.41	1051.25	168.30	MAS = 10.00 (m)	1510.00	1510.00				MnPls	
1084.14	32.81	1076.35	1051.33	162.85	MAS = 10.00 (m)	1540.00	1540.00				MNPT-O-EOU	
1078.75	32.81	1065.12	1043.88	102.12	MAS = 10.00 (m)	2450.00	2450.00				MnPls	
1077.70	32.81	1065.91	1044.83	101.10	MAS = 10.00 (m)	2500.00	2499.98				MnPl-O-SF	
1496.98	46.18	1465.66	1450.81	49.63	OSF1.50	7305.84	7200.00				MnPl-O-SF	
1506.05	46.43	1473.76	1458.62	49.63	OSF1.50	7400.00	7292.26				MnPl-O-SF	
1474.42	46.90	1442.81	1427.52	48.17	OSF1.50	6820.00	6709.25				MnPl-CICI	
1474.45	46.95	1442.80	1427.49	48.12	OSF1.50	6840.00	6729.25				MnPls	
1224.15	51.06	1189.73	1173.07	36.71	OSF1.50	10340.00	9730.00				MnPls	
1224.17	51.11	1189.73	1173.09	36.69	OSF1.50	10350.00	9730.00				MnPl-O-ADP	
1229.43	81.02	1175.06	1148.41	23.04	OSF1.50	11900.00	9730.00				MnPl-CICI	
1218.72	115.24	1141.53	1103.47	16.00	OSF1.50	13220.00	9730.00				MnPl-CICI	
1218.10	119.93	1137.79	1098.16	15.36	OSF1.50	13390.00	9730.00				MnPl-CICI	
1215.98	134.20	1126.17	1081.80	13.68	OSF1.50	13890.00	9730.00				MnPl-CICI	
1216.18	134.86	1125.90	1081.30	13.62	OSF1.50	13930.00	9730.00				MNPT-O-EOU	
1216.44	135.22	1125.93	1081.22	13.59	OSF1.50	13960.00	9730.00				MnPl-O-ADP	
1221.21	190.16	1094.08	1031.05	9.68	OSF1.50	15820.00	9730.00				MnPl-CICI	
1216.55	212.84	1074.31	1003.72	8.61	OSF1.50	16590.00	9730.00				MnPl-CICI	
1216.22	218.47	1070.22	997.75	8.38	OSF1.50	16780.00	9730.00				MnPl-CICI	
1215.93	223.20	1066.77	992.73	8.20	OSF1.50	16940.00	9730.00				MnPl-CICI	
1216.00	228.23	1063.49	987.77	8.02	OSF1.50	17110.00	9730.00				MnPl-CICI	
1214.57	240.20	1054.07	974.37	7.61	OSF1.50	17510.00	9730.00				MnPl-CICI	
1212.14	266.59	1040.71	955.65	7.11	OSF1.50	18060.00	9730.00				MnPl-CICI	
1210.34	262.34	1036.09	948.00	6.94	OSF1.50	18250.00	9730.00				MnPl-CICI	
1210.48	262.81	1034.92	947.69	6.93	OSF1.50	18280.00	9730.00				MNPT-O-EOU	
1210.74	263.10	1034.97	947.64	6.93	OSF1.50	18300.00	9730.00				MnPl-O-ADP	
1221.03	276.42	1036.40	944.61	6.65	OSF1.50	18720.00	9730.00				MnPl-CICI	
1222.03	285.31	1031.47	936.72	6.44	OSF1.50	19020.00	9730.00				MnPl-CICI	

Offset Trajectory	Separation					Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Cl-Cl (ft)	MAS (ft)	EOU (ft)	Allow Dev. (ft)	Sep. Fact.		MD (ft)	TVD (ft)	Alert	Minor	Major		
1220.28	296.08	1022.63	924.20	6.20		OSF1.50	19380.00	9730.00				MnPl-CICI	
1220.43	301.14	1019.32	919.29	6.10		OSF1.50	19550.00	9730.00				MnPl-CICI	
1212.67	321.65	997.74	890.81	5.67		OSF1.50	20240.00	9730.00				MnPl-CICI	
1219.91	340.24	968.72	875.67	5.37		OSF1.50	20880.00	9730.00				MNPT-O-EOU	
1217.26	347.94	964.97	869.37	5.26		OSF1.50	21100.00	9730.00				MnPls	
1217.25	347.84	965.00	869.41	5.26		OSF1.50	21110.00	9730.00				MnPl-CICI	
1217.36	347.72	965.18	869.63	5.26		OSF1.50	21123.32	9730.00				TD	

Endeavor Semircle Federal #3
(Offset) Inc Only Off-5191ft (Def Survey)

1230.63	32.61	1229.60	1197.82	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	Pass
1230.08	32.61	1228.69	1197.26	18265.58	MAS = 10.00 (m)	20.00	20.00					MnPl-O-SF	
1229.96	32.61	1228.79	1197.17	18810.23	MAS = 10.00 (m)	26.00	26.00					WRP	
1229.66	32.61	1228.61	1197.05	10234.10	MAS = 10.00 (m)	60.00	60.00					MnPls	
1215.95	100.60	1148.41	1115.26	18.32	OSF1.50	1910.00	1910.00					MnPl-CICI	
1082.51	269.65	902.53	813.05	9.04	OSF1.50	5290.00	5291.67					MnPls	
6421.77	201.60	6286.69	6220.16	48.04	OSF1.50	13090.00	9730.00					MnPl-O-SF	
13368.34	269.72	13208.15	13116.62	74.76	OSF1.50	21123.32	9730.00					TD	

Final Surveys - Cimarex
Riverbend 12-13 Federal Com
#39H MWD Off-21149ft (Surcon
Corrected) (Def Survey)

1151.03	32.61	1149.71	1118.19	N/A	MAS = 10.00 (m)	0.00	0.00					MnPls	Pass
1151.00	32.61	1149.71	1118.20	180425.33	MAS = 10.00 (m)	26.00	26.00					WRP	
1151.69	32.61	1149.28	1119.09	668.07	MAS = 10.00 (m)	300.00	300.00					MNPT-O-EOU	
1149.42	32.61	1144.51	1116.61	303.94	MAS = 10.00 (m)	870.00	870.00					MnPls	
1149.48	32.61	1144.49	1116.65	298.02	MAS = 10.00 (m)	890.00	890.00					MNPT-O-EOU	
1150.66	32.61	1143.09	1117.76	160.42	MAS = 10.00 (m)	1460.00	1480.00					MnPls	
1151.28	32.61	1142.54	1118.47	151.11	MAS = 10.00 (m)	1760.00	1760.00					MNPT-O-EOU	
1144.72	32.61	1133.45	1111.92	112.62	MAS = 10.00 (m)	2330.00	2330.00					MnPls	
1144.93	32.61	1133.35	1112.12	109.46	MAS = 10.00 (m)	2400.00	2400.00					MNPT-O-EOU	
1146.77	32.61	1134.96	1113.96	107.29	MAS = 10.00 (m)	2500.00	2499.98					MnPl-O-SF	
1154.69	32.61	1142.82	1121.89	107.49	MAS = 10.00 (m)	2620.00	2618.78					MnPl-O-SF	
1164.33	32.61	1152.39	1131.52	107.67	MAS = 10.00 (m)	2710.00	2709.40					MnPl-O-SF	
2138.52	42.08	2110.12	2096.44	78.04	OSF1.50	7305.64	7200.00					MnPl-O-SF	
2158.69	42.37	2130.10	2116.33	78.27	OSF1.50	7400.00	7282.26					MnPl-O-SF	
2191.65	42.20	2153.21	2149.49	79.60	OSF1.50	8610.00	8499.25					MnPl-CICI	
2191.70	42.24	2153.20	2149.49	79.71	OSF1.50	8630.00	8519.25					MnPls	
1996.18	47.03	1964.60	1949.15	66.00	OSF1.50	9420.00	9308.73					MnPl-O-SF	
1967.17	45.67	1936.39	1921.50	66.00	OSF1.50	9870.00	9651.70					MnPls	
1967.16	45.64	1936.40	1921.51	66.04	OSF1.50	9860.00	9655.88					MnPl-CICI	
1976.37	45.61	1945.64	1930.76	66.40	OSF1.50	10150.00	9718.61					MnPl-O-SF	
2011.10	64.95	1967.47	1946.15	47.14	OSF1.50	11270.00	9730.00					MnPl-CICI	
2003.07	83.00	1947.41	1920.07	36.62	OSF1.50	12010.00	9730.00					MnPl-CICI	
1888.51	97.63	1923.09	1890.87	30.85	OSF1.50	12560.00	9730.00					MnPl-CICI	
1888.55	97.65	1922.99	1890.70	30.78	OSF1.50	12560.00	9730.00					MNPT-O-EOU	
1888.63	97.95	1922.99	1890.67	30.75	OSF1.50	12560.00	9730.00					MnPl-O-ADP	
2010.32	106.91	1938.72	1903.42	26.46	OSF1.50	12940.00	9730.00					MNPT-O-EOU	
2015.47	116.24	1937.65	1899.23	26.22	OSF1.50	13270.00	9730.00					MNPT-O-EOU	
2011.38	137.78	1919.20	1873.60	22.04	OSF1.50	14000.00	9730.00					MnPl-CICI	
1997.97	168.01	1886.64	1829.95	17.93	OSF1.50	15040.00	9730.00					MnPl-CICI	
1991.64	181.20	1870.51	1810.43	16.57	OSF1.50	15480.00	9730.00					MnPl-CICI	
1991.95	182.16	1870.19	1809.79	16.48	OSF1.50	15540.00	9730.00					MNPT-O-EOU	
1992.78	183.15	1870.30	1829.64	16.40	OSF1.50	15590.00	9730.00					MnPl-O-ADP	
2003.67	191.42	1875.73	1812.26	15.77	OSF1.50	15890.00	9730.00					MnPl-O-ADP	
2011.43	210.31	1870.89	1801.11	14.41	OSF1.50	16500.00	9730.00					MNPT-O-EOU	
2006.68	228.71	1853.77	1777.86	13.21	OSF1.50	17090.00	9730.00					MnPl-CICI	
2008.94	229.84	1853.38	1777.09	13.15	OSF1.50	17150.00	9730.00					MNPT-O-EOU	
2007.23	230.21	1853.43	1777.63	13.13	OSF1.50	17170.00	9730.00					MnPl-O-ADP	
2001.50	248.92	1836.55	1754.67	12.20	OSF1.50	17700.00	9730.00					MnPl-CICI	
1998.71	269.49	1808.72	1719.22	11.10	OSF1.50	18450.00	9730.00					MnPl-CICI	
1981.70	288.11	1790.64	1695.60	10.42	OSF1.50	19010.00	9730.00					MnPl-CICI	
1981.62	291.78	1786.83	1689.90	10.22	OSF1.50	19200.00	9730.00					MnPl-CICI	
1981.63	295.06	1784.82	1686.69	10.10	OSF1.50	19310.00	9730.00					MnPl-CICI	
1982.50	297.93	1783.53	1684.67	10.01	OSF1.50	19430.00	9730.00					MNPT-O-EOU	
1983.01	298.53	1783.69	1684.43	9.99	OSF1.50	19460.00	9730.00					MnPl-O-ADP	
1980.45	319.43	1767.16	1661.01	9.32	OSF1.50	20120.00	9730.00					MnPl-CICI	
1980.74	320.35	1766.84	1660.36	9.30	OSF1.50	20170.00	9730.00					MNPT-O-EOU	
1978.10	329.75	1757.95	1648.36	9.02	OSF1.50	20460.00	9730.00					MnPl-CICI	
1978.31	330.43	1757.70	1647.89	9.00	OSF1.50	20500.00	9730.00					MNPT-O-EOU	
1978.58	330.75	1757.75	1647.63	9.00	OSF1.50	20520.00	9730.00					MnPl-O-ADP	
1983.22	334.99	1759.56	1648.23	8.90	OSF1.50	20580.00	9730.00					MnPl-O-ADP	
1988.99	340.43	1751.41	1648.26	8.78	OSF1.50	20650.00	9730.00					MNPT-O-EOU	
1989.35	341.20	1751.59	1648.15	8.77	OSF1.50	20680.00	9730.00					MnPl-O-ADP	
1988.42	347.47	1766.44	1650.95	8.62	OSF1.50	21123.32	9730.00					MnPls	

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

1170.60	32.61	1169.31	1137.79	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	Pass
1170.60	32.61	1169.30	1137.79	130388.74	MAS = 10.00 (m)	26.00	26.00					WRP	
1169.19	32.61	1166.20	1136.38	666.78	MAS = 10.00 (m)	440.00	440.00					MNPT-O-EOU	
1168.63	32.61	1165.23	1135.87	504.33	MAS = 10.00 (m)	570.00	570.00					MnPls	
1168.94	32.61	1164.92	1136.13	404.66	MAS = 10.00 (m)	660.00	660.00					MNPT-O-EOU	
1168.86	32.61	1169.81	1134.05	196.82	MAS = 10.00 (m)	1340.00	1340.00					MnPls	
1167.65	32.61	1159.19	1134.84	159.19	MAS = 10.00 (m)	1620.00	1620.00					MNPT-O-EOU	
1173.54	32.61	1163.13	1140.73	126.32	MAS = 10.00 (m)	2070.00	2070.00					MnPls	
1173.67	32.61	1163.09	1140.76	125.09	MAS = 10.00 (m)	2090.00	2090.00					MNPT-O-EOU	
1191.84	32.61	1179.63	1169.03	106.63	MAS = 10.00 (m)	2550.00	2549.93					MnPl-O-SF	
1485.03	32.61	1471.09	1452.22	114.89	MAS = 10.00 (m)	3710.00	3668.91					MnPl-O-SF	
1541.74	32.61	1527.29	1508.93	114.81	MAS = 10.00 (m)	3880.00	3854.90					MnPl-O-SF	
2362.92	43.26	2333.75	2319.67	83.89	OSF1.50	7305.84	7200.00					MnPl-O-SF	
2435.83	41.66	2407.72	2394.18	59.89	OSF1.50	8030.00	7919.25					MnPl-CICI	
2435.85	41.70	2407.71	2394.15	59.79	OSF1.50	8050.00	7930.25					MNPT-O-EOU	
2435.87	41.72	2407.72	2394.13	59.74	OSF1.50	8060.00	7949.25					MnPl-O-ADP	
2440.24	43.13	2411.15	2397.11	66.89	OSF1.50	8560.00	8449.25					MNPT-O-EOU	
2440.26	43.15	2411.16	2397.11	66.84	OSF1.50	8570.00	8459.25					MnPl-O-ADP	
2498.08	45.79	2428.22	2413.30	82.37	OSF1.50	9330.74	9220.00					MnPl-O-SF	
2382.81	47.65	2350.70	2335.19	76.62	OSF1.50	10130.00	9715.98					MnPls	
2382.81	47.65	2350.72	2335.16	76.66	OSF1.50	10140.00	9717.32					MnPl-CICI	

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		
2416.78	63.04	2374.42	2363.74	50.39		OSF1.50	11116.00	9730.00					MnPt-CICI
2395.32	111.46	2320.69	2283.66	32.61		OSF1.50	13020.00	9730.00					MnPt-CICI
2395.74	112.75	2320.24	2282.98	32.14		OSF1.50	13090.00	9730.00					MNPT-O-EQU
2396.21	113.30	2320.35	2282.91	31.99		OSF1.50	13120.00	9730.00					MnPt-O-ADP
2400.83	119.62	2320.81	2281.26	30.34		OSF1.50	13340.00	9730.00					MNPT-O-EQU
2401.97	120.94	2321.02	2281.03	30.02		OSF1.50	13400.00	9730.00					MnPt-O-ADP
2410.18	136.25	2319.02	2273.93	26.72		OSF1.50	13900.00	9730.00					MnPt-CICI
2412.39	148.07	2313.36	2264.33	24.59		OSF1.50	14310.00	9730.00					MnPt-CICI
2393.15	175.35	2275.83	2217.81	20.69		OSF1.50	15290.00	9730.00					MnPt-CICI
2394.61	178.35	2275.33	2216.25	20.24		OSF1.50	15380.00	9730.00					MNPT-O-EQU
2395.83	191.30	2258.00	2204.57	18.68		OSF1.50	16790.00	9730.00					MnPt-CICI
2398.17	192.21	2257.70	2203.96	18.79		OSF1.50	16840.00	9730.00					MNPT-O-EQU
2396.63	192.74	2257.60	2203.83	18.74		OSF1.50	16870.00	9730.00					MnPt-O-ADP
2395.31	198.78	2252.48	2199.65	18.16		OSF1.50	16940.00	9730.00					MnPt-CICI
2395.49	199.40	2252.23	2199.09	18.10		OSF1.50	16980.00	9730.00					MNPT-O-EQU
2395.74	199.71	2252.28	2199.03	18.08		OSF1.50	16100.00	9730.00					MnPt-O-ADP
2389.58	229.06	2236.56	2160.63	15.71		OSF1.50	17090.00	9730.00					MnPt-CICI
2390.05	230.45	2236.03	2159.60	15.62		OSF1.50	17130.00	9730.00					MNPT-O-EQU
2390.72	231.25	2236.23	2159.47	15.67		OSF1.50	17170.00	9730.00					MnPt-O-ADP
2375.73	258.58	2203.02	2117.15	13.83		OSF1.50	18950.00	9730.00					MnPt-CICI
2376.05	259.45	2202.76	2116.60	13.78		OSF1.50	18100.00	9730.00					MNPT-O-EQU
2376.36	259.80	2202.83	2116.58	13.77		OSF1.50	18120.00	9730.00					MnPt-O-ADP
2378.92	266.96	2190.63	2109.97	13.40		OSF1.50	18330.00	9730.00					MnPt-CICI
2377.43	272.05	2196.74	2105.39	13.15		OSF1.50	18500.00	9730.00					MnPt-CICI
2378.31	283.44	2187.03	2092.68	12.61		OSF1.50	18880.00	9730.00					MnPt-CICI
2378.83	284.84	2186.61	2091.99	12.55		OSF1.50	18950.00	9730.00					MNPT-O-EQU
2377.34	285.43	2186.73	2091.91	12.63		OSF1.50	18960.00	9730.00					MnPt-O-ADP
2377.85	289.48	2184.53	2088.37	12.36		OSF1.50	19080.00	9730.00					MnPt-CICI
2379.58	296.97	2181.27	2082.61	12.05		OSF1.50	19330.00	9730.00					MnPt-CICI
2380.69	302.67	2178.57	2078.01	11.83		OSF1.50	19520.00	9730.00					MnPt-CICI
2375.47	321.78	2160.62	2053.69	11.10		OSF1.50	20150.00	9730.00					MnPt-CICI
2370.18	334.88	2148.88	2035.28	10.64		OSF1.50	20560.00	9730.00					MnPt-CICI
2370.42	335.73	2148.28	2034.70	10.62		OSF1.50	20630.00	9730.00					MNPT-O-EQU
2370.70	336.05	2148.32	2034.62	10.61		OSF1.50	20680.00	9730.00					MnPt-O-ADP
2377.83	342.83	2148.95	2035.03	10.43		OSF1.50	20860.00	9730.00					MnPt
2386.58	348.52	2153.90	2030.05	10.30		OSF1.50	21110.00	9730.00					MNPT-O-ADP
2387.10	348.98	2154.12	2038.12	10.25		OSF1.50	21123.32	9730.00					MnPt-O-SF

Final Surveys - Cimarex
Riverbend 12-13 Federal Com
#33H CR-209678 (Surcon
Corrected) (Def Survey)

Pass												
1190.23	32.81	1189.94	1157.42	N/A	MAS = 10.00 (m)	0.00	0.00					MnPt
1190.24	32.81	1188.94	1157.43	154374.60	MAS = 10.00 (m)	26.00	26.00					WRP
1190.66	32.81	1188.75	1157.85	1918.05	MAS = 10.00 (m)	180.00	180.00					MNPT-O-EQU
1193.61	32.81	1188.18	1160.80	379.15	MAS = 10.00 (m)	750.00	750.00					MnPt
1193.75	32.81	1188.04	1160.94	348.01	MAS = 10.00 (m)	810.00	810.00					MNPT-O-EQU
1187.22	32.81	1177.45	1154.42	140.29	MAS = 10.00 (m)	1910.00	1910.00					MnPt
1187.32	32.81	1177.35	1154.51	137.27	MAS = 10.00 (m)	1950.00	1950.00					MNPT-O-EQU
1219.91	32.81	1207.62	1187.11	108.72	MAS = 10.00 (m)	2500.00	2499.98					MnPt-O-SF
1469.80	32.81	1456.05	1436.95	117.92	MAS = 10.00 (m)	3360.00	3347.16					MnPt-O-SF
1519.08	32.81	1604.34	1586.25	120.35	MAS = 10.00 (m)	3750.00	3727.87					MnPt-O-SF
2733.05	44.99	2702.64	2688.07	93.73	OSF1.50	7305.84	7200.00					MnPt-O-SF
2750.80	45.19	2720.25	2705.62	93.95	OSF1.50	7400.00	7292.26					MnPt-O-SF
2794.11	42.94	2765.05	2751.17	100.68	OSF1.50	8020.00	7909.25					MnPt-CICI
2794.12	42.97	2765.04	2751.15	100.49	OSF1.50	8040.00	7929.25					MnPt
2795.32	43.94	2765.59	2751.37	99.25	OSF1.50	8360.00	8269.25					MnPt-CICI
2795.35	44.05	2765.55	2751.30	98.01	OSF1.50	8420.00	8309.25					MNPT-O-EQU
2795.38	44.10	2765.55	2751.29	97.88	OSF1.50	8440.00	8329.25					MnPt-O-ADP
2799.49	47.33	2767.51	2752.16	91.18	OSF1.50	9390.00	9279.10					MnPt-O-SF
2795.22	48.60	2763.73	2748.63	92.50	OSF1.50	9560.00	9440.55					MnPt
2795.19	48.50	2763.76	2748.69	92.69	OSF1.50	9580.00	9458.09					MnPt-CICI
2768.54	49.89	2734.84	2718.64	85.40	OSF1.50	10250.00	9727.72					MnPt-CICI
2768.67	60.02	2734.80	2718.56	85.18	OSF1.50	10270.00	9728.71					MNPT-O-EQU
2768.62	50.08	2734.81	2718.54	85.06	OSF1.50	10280.00	9729.10					MnPt-O-ADP
2803.12	58.78	2763.50	2744.33	73.10	OSF1.50	10940.00	9730.00					MnPt-O-ADP
2804.34	60.02	2763.90	2744.33	71.59	OSF1.50	10970.00	9730.00					MnPt-O-ADP
2768.88	103.75	2699.29	2665.13	40.62	OSF1.50	12710.00	9730.00					MnPt-CICI
2769.34	105.06	2699.87	2664.28	40.01	OSF1.50	12780.00	9730.00					MNPT-O-EQU
2769.81	105.62	2699.96	2664.18	39.80	OSF1.50	12810.00	9730.00					MnPt-O-ADP
2772.26	108.31	2699.62	2663.95	38.84	OSF1.50	12920.00	9730.00					MnPt-O-ADP
2772.77	108.83	2699.79	2663.95	38.66	OSF1.50	12940.00	9730.00					MnPt-O-ADP
2778.13	114.07	2701.65	2664.05	36.93	OSF1.50	13130.00	9730.00					MnPt-O-ADP
2784.48	168.44	2651.78	2595.04	24.80	OSF1.50	14970.00	9730.00					MnPt-CICI
2774.44	190.25	2647.17	2584.18	22.01	OSF1.50	15740.00	9730.00					MNPT-O-EQU
2775.14	191.10	2647.31	2584.04	21.92	OSF1.50	15780.00	9730.00					MnPt-O-ADP
2768.33	249.69	2601.46	2518.66	18.71	OSF1.50	17710.00	9730.00					MnPt-CICI
2768.69	251.34	2600.90	2517.85	16.60	OSF1.50	17790.00	9730.00					MNPT-O-EQU
2774.95	260.33	2600.97	2514.62	16.06	OSF1.50	18100.00	9730.00					MNPT-O-EQU
2747.41	332.88	2525.07	2414.54	12.42	OSF1.50	20480.00	9730.00					MnPt-CICI
2748.32	335.68	2524.12	2412.66	12.32	OSF1.50	20500.00	9730.00					MNPT-O-EQU
2750.66	338.36	2524.65	2412.29	12.23	OSF1.50	20710.00	9730.00					MnPt-O-ADP
2760.05	349.93	2526.34	2410.13	11.87	OSF1.50	21060.00	9730.00					MNPT-O-EQU
2760.88	351.15	2526.35	2409.73	11.83	OSF1.50	21123.32	9730.00					MnPt

Final Surveys - Cimarex
Riverbend 12-13 Federal Com
#33H CR-21007 (Surcon
Corrected) (Def Survey)

1209.82	32.81	1208.53	1177.01	N/A	MAS = 10.00 (m)	0.00	0.00					Surface
1209.82	32.81	1208.53	1177.01	144242.68	MAS = 10.00 (m)	26.00	26.00					WRP
1198.91	32.81	1194.35	1166.15	345.01	MAS = 10.00 (m)	780.00	780.00					MnPtS
1198.95	32.81	1194.25	1166.14	335.79	MAS = 10.00 (m)	800.00	800.00					MNPT-O-EQU
1365.24	32.81	1343.00	1322.44	121.65	MAS = 10.00 (m)	2500.00	2499.98					MnPt-O-SF
1761.11	32.81	1747.00	1728.30	134.51	MAS = 10.00 (m)	3580.00	3569.62					MnPt-O-SF
1827.54	32.81	1812.93	1794.73	134.41	MAS = 10.00 (m)	3860.00	3835.37					MnPt-O-SF
3113.92	45.38	3083.33	3068.54	105.27	OSF1.50	7330.00	7223.61					MnPt-O-SF
3204.20	44.67	3174.08	3159.53	110.03	OSF1.50	7890.00	7889.25					MnPt-O-SF
3212.66	48.21	3181.53	3166.47	105.60	OSF1.50	8550.00	8439.25					MnPt-CICI
3212.69	48.25	3181.52	3166.44	105.50	OSF1.50	8570.00	8459.25					MNPT-O-EQU
3212.71	48.28	3181.52	3166.43	105.44	OSF1.50	8580.00	8469.25					MnPt-O-ADP
3223.52	48.45	3190.68	3175.07	101.91	OSF1.50	9400.00	9289.01					MnPt-O-SF

Offset Trajectory	Separation			Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)			MD (ft)	TVD (ft)	Alert	Minor	Major		
3223.57	49.09	3190.50	3174.48	100.58	OSF1.50	9420.00	9308.73				MnPl-O-SF	
3217.30	48.52	3184.62	3168.79	101.58	OSF1.50	9580.00	9458.09				MnPls	
3217.30	48.48	3184.64	3168.82	101.66	OSF1.50	9590.00	9466.70				MnPl-CICI	
3182.17	51.78	3147.33	3130.40	93.95	OSF1.50	10180.00	9722.08				MnPl-CICI	
3152.19	51.83	3147.31	3130.36	93.85	OSF1.50	10190.00	9723.09				MNPT-O-EQU	
3182.29	51.96	3147.32	3130.33	93.62	OSF1.50	10210.00	9724.91				MnPl-O-ADP	
3189.27	60.08	3148.83	3129.18	80.92	OSF1.50	10790.00	9730.00				MnPl-CICI	
3190.15	62.06	3148.45	3128.10	78.33	OSF1.50	10920.00	9730.00				MNPT-O-EQU	
3183.18	68.65	3123.75	3094.63	54.45	OSF1.50	12080.00	9730.00				MnPl-CICI	
3182.32	101.93	3114.04	3080.39	47.27	OSF1.50	12980.00	9730.00				MnPl-CICI	
3167.68	128.30	3082.02	3039.59	37.31	OSF1.50	13550.00	9730.00				MnPl-CICI	
3165.43	157.12	3060.37	3008.32	30.40	OSF1.50	14590.00	9730.00				MnPl-CICI	
3159.43	189.27	3032.93	2970.17	25.16	OSF1.50	15660.00	9730.00				MnPl-CICI	
3156.73	206.35	3018.84	2950.38	23.05	OSF1.50	16240.00	9730.00				MnPl-CICI	
3160.11	213.68	3017.33	2946.43	22.28	OSF1.50	16520.00	9730.00				MNPT-O-EQU	
3164.52	221.05	3016.80	2943.43	21.66	OSF1.50	16770.00	9730.00				MNPT-O-EQU	
3170.50	228.70	3017.71	2941.83	20.68	OSF1.50	17040.00	9730.00				MnPl-O-ADP	
3139.99	276.92	2956.05	2883.07	17.05	OSF1.50	18600.00	9730.00				MnPl-CICI	
3140.52	278.61	2954.45	2861.92	16.96	OSF1.50	18680.00	9730.00				MNPT-O-EQU	
3141.19	279.43	2954.57	2861.75	16.92	OSF1.50	18720.00	9730.00				MnPl-O-ADP	
3146.94	302.44	2944.98	2844.50	15.65	OSF1.50	19450.00	9730.00				MnPl-CICI	
3145.75	313.55	2936.39	2832.20	15.09	OSF1.50	19820.00	9730.00				MnPl-CICI	
3141.38	331.03	2920.36	2810.34	14.27	OSF1.50	20400.00	9730.00				MnPl-CICI	
3141.01	338.65	2914.98	2802.46	13.95	OSF1.50	20680.00	9730.00				MnPl-CICI	
3140.68	347.30	2908.82	2793.38	13.60	OSF1.50	20940.00	9730.00				MnPl-CICI	
3140.68	351.50	2906.02	2789.19	13.44	OSF1.50	21080.00	9730.00				MnPl-CICI	
3140.83	361.88	2905.92	2788.95	13.42	OSF1.50	21110.00	9730.00				MNPT-O-EQU	
3140.94	352.00	2905.95	2788.94	13.42	OSF1.50	21120.00	9730.00				MnPl-O-ADP	
3140.99	352.04	2905.97	2788.95	13.42	OSF1.50	21123.32	9730.00				MnPl-O-SF	

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

2231.11	32.81	2229.97	2198.30	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	Pass
2230.61	32.81	2229.42	2197.60	36884.03	MAS = 10.00 (m)	26.00	26.00				MnPl-O-SF	
2230.41	32.81	2229.18	2197.60	21434.72	MAS = 10.00 (m)	60.00	60.00				MnPls	
2230.72	68.22	2184.66	2162.50	49.65	OSF1.50	1440.00	1440.00				MnPl-CICI	
1366.60	333.41	1143.50	1033.05	6.18	OSF1.50	6600.00	6706.08				MnPl-O-SF	
1360.63	330.78	1139.35	1029.65	6.20	OSF1.50	6680.00	6784.19				MnPl-O-ADP	
1359.89	329.04	1139.22	1029.56	6.21	OSF1.50	6900.00	6803.72				MNPT-O-EQU	
1359.32	328.04	1139.60	1031.26	6.25	OSF1.50	6940.00	6842.78				MnPl-CICI	
4475.52	246.68	4310.70	4228.56	27.33	OSF1.50	12800.00	9730.00				MnPl-O-SF	
11754.03	334.44	11530.69	11419.58	52.89	OSF1.50	21123.32	9730.00				TD	

Marathon Oil White Pl 1
WXY FEE 9H (Offset) MWD DR
14503ft (Def Survey)

4328.31	32.81	4327.18	4295.50	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	Pass
4328.26	32.81	4327.13	4295.46	78252.56	MAS = 10.00 (m)	10.00	10.00				MnPl-O-SF	
4328.24	32.81	4327.11	4295.44	N/A	MAS = 10.00 (m)	20.00	20.00				MNPT-O-EQU	
4328.23	32.81	4327.11	4295.43	N/A	MAS = 10.00 (m)	26.00	26.00				MnPls	
4328.28	32.81	4327.08	4295.48	56218.18	MAS = 10.00 (m)	60.00	60.00				MNPT-O-EQU	
4330.39	32.81	4328.15	4297.58	3905.60	MAS = 10.00 (m)	310.00	310.00				MNPT-O-EQU	
4326.44	32.81	4321.84	4293.63	1247.85	MAS = 10.00 (m)	820.00	820.00				MnPls	
4326.54	32.81	4321.72	4293.73	1172.83	MAS = 10.00 (m)	870.00	870.00				MNPT-O-EQU	
4369.94	32.81	4357.58	4337.13	389.13	MAS = 10.00 (m)	2840.00	2838.27				MnPl-O-SF	
4352.68	32.81	4339.36	4319.87	356.78	MAS = 10.00 (m)	3390.00	3347.16				MnPls	
4352.71	32.81	4339.33	4319.80	355.29	MAS = 10.00 (m)	3380.00	3366.69				MNPT-O-EQU	
4430.45	32.81	4419.94	4406.64	229.00	MAS = 10.00 (m)	4970.00	4919.21				MNPT-O-EQU	
1489.65	213.18	1346.97	1276.67	10.68	OSF1.50	9530.00	9573.86				MnPl-CICI	
1494.44	222.50	1345.33	1271.56	10.17	OSF1.50	10130.00	9715.96				MNPT-O-EQU	
1497.12	225.67	1345.87	1271.44	10.04	OSF1.50	10200.00	9724.04				MnPl-O-ADP	
1505.31	237.69	1345.55	1267.41	9.57	OSF1.50	10420.00	9730.00				MNPT-O-EQU	
1507.92	240.91	1346.54	1267.02	9.47	OSF1.50	10490.00	9730.00				MnPl-O-ADP	
1518.09	248.90	1351.34	1269.18	9.22	OSF1.50	10670.00	9730.00				MnPl-O-SF	
10661.65	56.16	10597.83	10566.49	170.06	OSF1.50	21123.32	9730.00				TD	

Mawbourne Malaga 13 CN
Federal Com 1H (Offset) MWD
DR-12806ft (Def Survey)

6790.27	32.81	6788.29	6757.46	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	Pass
6790.13	32.81	6768.14	6757.33	467884.70	MAS = 10.00 (m)	26.00	26.00				WRP	
6772.90	32.81	6764.30	6740.09	1021.83	MAS = 10.00 (m)	1450.00	1450.00				MnPls	
6773.18	32.81	6764.06	6740.37	948.47	MAS = 10.00 (m)	1550.00	1550.00				MNPT-O-EQU	
6784.16	32.81	6770.39	6751.36	574.91	MAS = 10.00 (m)	2510.00	2503.97				MnPl-O-SF	
6992.91	45.39	6931.98	6917.51	240.51	OSF1.50	7400.00	7292.26				MnPl-O-SF	
7105.81	48.38	7074.23	7059.43	239.96	OSF1.50	9330.74	9220.00				MnPl-O-SF	
2019.48	204.43	1881.54	1814.06	14.94	OSF1.50	18450.00	9730.00				MnPl-CICI	
1990.36	247.92	1833.42	1751.44	12.18	OSF1.50	19590.00	9730.00				MnPl-CICI	
1990.09	263.18	1822.97	1735.91	11.47	OSF1.50	19970.00	9730.00				MnPl-CICI	
2000.79	267.05	1822.09	1733.74	11.31	OSF1.50	20100.00	9730.00				MNPT-O-EQU	
2004.21	273.74	1821.09	1730.47	11.05	OSF1.50	20260.00	9730.00				MNPT-O-EQU	
1981.96	307.90	1775.03	1674.06	9.71	OSF1.50	21060.00	9730.00				MnPl-CICI	
1981.97	307.97	1775.03	1674.00	9.71	OSF1.50	21070.00	9730.00				MnPls	
1982.52	308.17	1776.42	1674.35	9.70	OSF1.50	21110.00	9730.00				MnPl-O-SF	
1982.63	308.21	1776.75	1674.68	9.70	OSF1.50	21123.32	9730.00				TD	

COG Illustrated Man Fee Com
#1H (Offset) Gyro/MWD DR-
12806ft (Def Survey)

2056.19	32.81	2054.21	2023.38	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	Pass
2056.18	32.81	2054.20	2023.36	N/A	MAS = 10.00 (m)	10.00	10.00				MnPls	
2056.19	32.81	2054.20	2023.38	204965.27	MAS = 10.00 (m)	26.00	26.00				WRP	
2056.32	32.81	2054.14	2023.52	9925.31	MAS = 10.00 (m)	80.00	80.00				MNPT-O-EQU	
2056.71	32.81	2053.71	2023.50	2005.80	MAS = 10.00 (m)	245.00	240.00				MNPT-O-EQU	
2067.61	32.81	2054.48	2034.80	165.43	MAS = 10.00 (m)	2500.00	2499.99				MnPls	
2093.07	32.81	2080.06	2060.27	189.38	MAS = 10.00 (m)	2920.00	2817.15				MnPl-O-SF	
2873.28	43.79	2843.42	2829.49	103.02	OSF1.50	7305.64	7200.00				MnPl-O-SF	
2952.79	41.84	2934.24	2910.95	111.03	OSF1.50	8030.00	7919.25				MnPl-O-SF	
2954.83	74.42	2904.62	2880.47	61.14	OSF1.50	12000.00	9730.00				MnPl-CICI	
2955.68	76.73	2903.87	2878.96	59.27	OSF1.50	12180.00	9730.00				MNPT-O-EQU	
2956.74	78.01	2904.07	2878.73	58.29	OSF1.50	12230.00	9730.00				MnPl-O-ADP	
2994.32	109.77	2910.45	2874.65	41.50	OSF1.50	12910.00	9730.00				MNPT-O-EQU	

Offset Trajectory	Separation			Allow Dev. (ft)	Sep. Fact.	Controlling Rule	Reference Trajectory		Risk Level			Alert	Status
	CI-CI (ft)	MAS (ft)	EOU (ft)				MD (ft)	TVD (ft)	Alert	Minor	Major		
2965.36	110.93	2910.75	2874.44	41.08		OSF1.50	12650.00	9730.00				MnPt-O-ADP	
2966.47	123.52	2913.46	2872.95	36.96		OSF1.50	13220.00	9730.00				MNPT-O-EQU	
2966.81	123.94	2913.52	2872.87	36.83		OSF1.50	13230.00	9730.00				MnPt-O-ADP	
3044.32	161.88	2935.74	2882.44	26.64		OSF1.50	13970.00	9730.00				MNPT-O-EQU	
3047.68	166.37	2936.41	2881.61	27.79		OSF1.50	14050.00	9730.00				MnPt-O-ADP	
3057.48	175.79	2939.63	2881.66	26.37		OSF1.50	14300.00	9730.00				MnPt-O-ADP	
3073.26	185.62	2948.85	2897.63	25.09		OSF1.50	14550.00	9730.00				MnPt-O-ADP	
3100.33	205.45	2962.66	2894.84	22.84		OSF1.50	14910.00	9730.00				MNPT-O-EQU	
3111.04	219.05	2964.32	2891.99	21.48		OSF1.50	15140.00	9730.00				MNPT-O-EQU	
3111.43	219.54	2964.41	2891.83	21.44		OSF1.50	15150.00	9730.00				MnPt-O-ADP	
3120.66	228.97	2967.25	2891.59	20.61		OSF1.50	15340.00	9730.00				MNPT-O-EQU	
3129.49	243.47	2968.53	2886.02	19.43		OSF1.50	15580.00	9730.00				MNPT-O-EQU	
3131.44	245.63	2967.03	2885.81	19.27		OSF1.50	15650.00	9730.00				MnPt-O-ADP	
3144.99	256.04	2973.63	2888.94	18.56		OSF1.50	15910.00	9730.00				MnPt	
3148.42	258.24	2975.60	2890.16	18.42		OSF1.50	15970.00	9730.00				MNPT-O-SF	
6204.10	165.69	6092.98	6030.41	56.83		OSF1.50	21123.32	9730.00				TD	

Newbourne Malaga 13 DM
Federal Com 1H (Offseal)
Gyro/MWD GR-Update (Def
Survey)

6333.35	32.81	6331.37	6300.54	N/A	MAS = 10.00 (m)	0.00	0.00					Surface	
6333.19	32.81	6331.19	6300.36	330000.42	MAS = 10.00 (m)	26.00	26.00					MNPT-O-SF	
6333.13	32.81	6331.08	6300.32	83806.51	MAS = 10.00 (m)	60.00	60.00					MnPt	
6333.22	32.81	6329.05	6300.42	2877.60	MAS = 10.00 (m)	500.00	600.00					MnPt	
6320.58	32.81	6312.48	6287.77	1029.63	MAS = 10.00 (m)	1320.00	1320.00					MnPt	
6320.67	32.81	6312.35	6287.85	898.88	MAS = 10.00 (m)	1370.00	1370.00					MNPT-O-EQU	
6343.92	32.81	6330.72	6311.11	663.64	MAS = 10.00 (m)	2640.00	2639.72					MnPt-O-SF	
6668.82	45.36	6637.92	6623.49	230.55	OSF1.50	7400.00	7282.26					MnPt-O-SF	
6630.12	45.60	6799.05	6784.51	234.78	OSF1.50	9330.74	9220.00					MnPt-O-SF	
2894.67	135.65	2803.64	2769.12	32.49	OSF1.50	16080.00	9730.00					MnPt-CICL	
2894.81	136.00	2803.48	2758.81	32.38	OSF1.50	16090.00	9730.00					MNPT-O-EQU	
2895.09	136.29	2803.54	2758.77	32.31	OSF1.50	16110.00	9730.00					MnPt-O-ADP	
2960.46	143.94	2863.84	2816.62	31.23	OSF1.50	16720.00	9730.00					MnPt-O-SF	
2994.60	145.92	2896.66	2848.66	31.18	OSF1.50	16880.00	9730.00					MnPt-O-SF	
3032.48	161.96	2923.84	2870.51	28.41	OSF1.50	17040.00	9730.00					MnPt	
3200.38	230.86	3045.81	2969.51	20.96	OSF1.50	18640.00	9730.00					MnPt	
3202.04	232.51	3048.37	2969.53	20.82	OSF1.50	18670.00	9730.00					MnPt-O-ADP	
3320.01	287.74	3127.52	3032.27	17.42	OSF1.50	19680.00	9730.00					MnPt	
3327.94	295.19	3130.49	3032.75	17.01	OSF1.50	20010.00	9730.00					MnPt-O-ADP	
3364.44	310.83	3156.57	3053.62	16.33	OSF1.50	20450.00	9730.00					MnPt	
3394.98	326.55	3176.62	3068.43	15.68	OSF1.50	20770.00	9730.00					MNPT-O-EQU	
3395.50	327.83	3178.69	3068.07	15.62	OSF1.50	20780.00	9730.00					MnPt-O-ADP	
3400.41	333.68	3177.28	3066.73	15.37	OSF1.50	20830.00	9730.00					MnPt	
3411.42	342.41	3182.48	3069.01	15.02	OSF1.50	20990.00	9730.00					MNPT-O-EQU	
3413.66	344.88	3183.08	3068.76	14.92	OSF1.50	21030.00	9730.00					MnPt-O-ADP	
3419.23	347.99	3186.58	3071.24	14.81	OSF1.50	21123.32	9730.00					MnPt-O-SF	

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 19H
SURFACE HOLE FOOTAGE:	1207'/S & 2442'/W
BOTTOM HOLE FOOTAGE:	330'/S & 1815'/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 **7** inch production casing is:
- Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.
4. The minimum required fill of cement behind the **4-1/2** inch production liner is:
- Cement should tie-back **100 feet** into the previous casing. Operator shall provide method of verification. **Excess calculates to 4%. Additional cement maybe required.**

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.

ZS 040521

Hydrogen Sulfide Drilling Operations Plan
Riverbend 12-13 Fed Com 19H Cimarex Energy Co.
UL: N, Sec. 1, 25S, 28E
Eddy Co., NM

All Company and Contract personnel admitted on location must be trained by a qualified H₂S

1 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 19H
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.

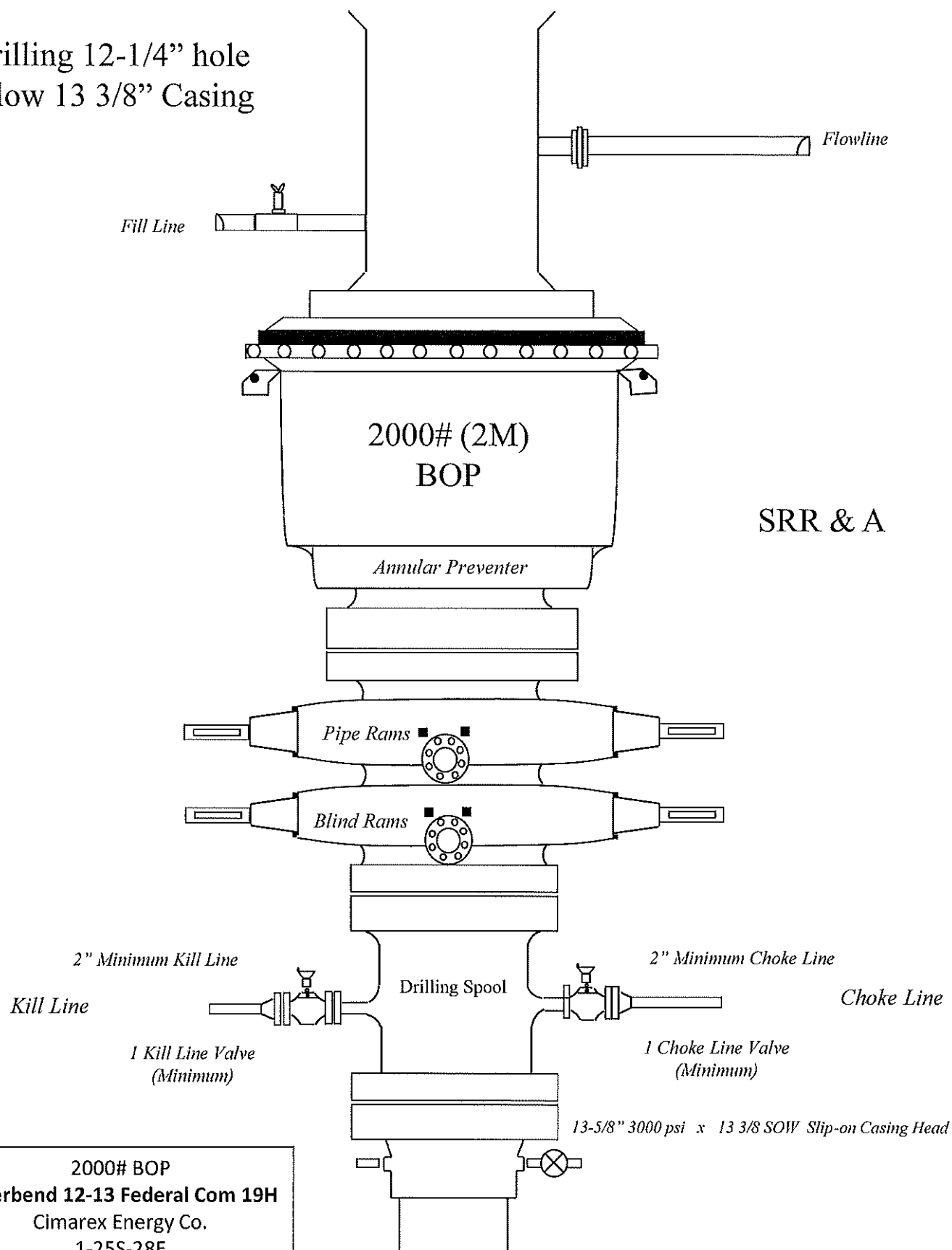
Contacting Authorities

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).

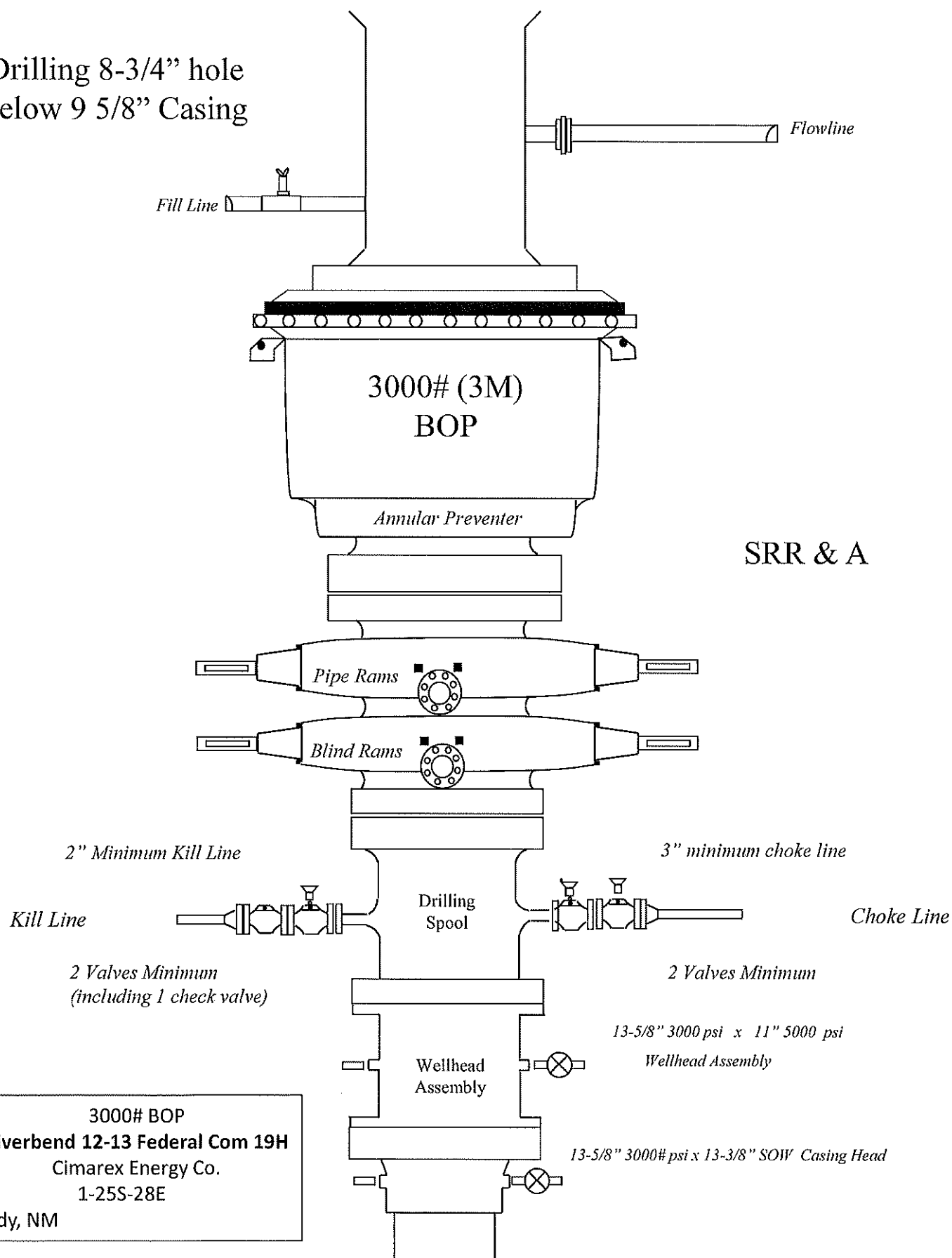
H₂S Contingency Plan Emergency Contact s
 Riverbend 12-13 Fed Com 19H
 Cimarex Energy Co.
 UL: N, Sec. 1, 25S, 28E
 Eddy Co., NM

<u>Company Office</u>			
Cimarex Energy Co. of Colorado		800-969-4789	
Co. Office and After-Hours Menu			
<u>Key Personnel</u>			
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
<u>Artesia</u>			
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	
<u>Carlsbad</u>			
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	
<u>Santa Fe</u>			
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	
<u>National</u>			
National Emergency Response Center (Washington, D.C.)		800-424-8802	
<u>Medical</u>			
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	
<u>Other</u>			
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		

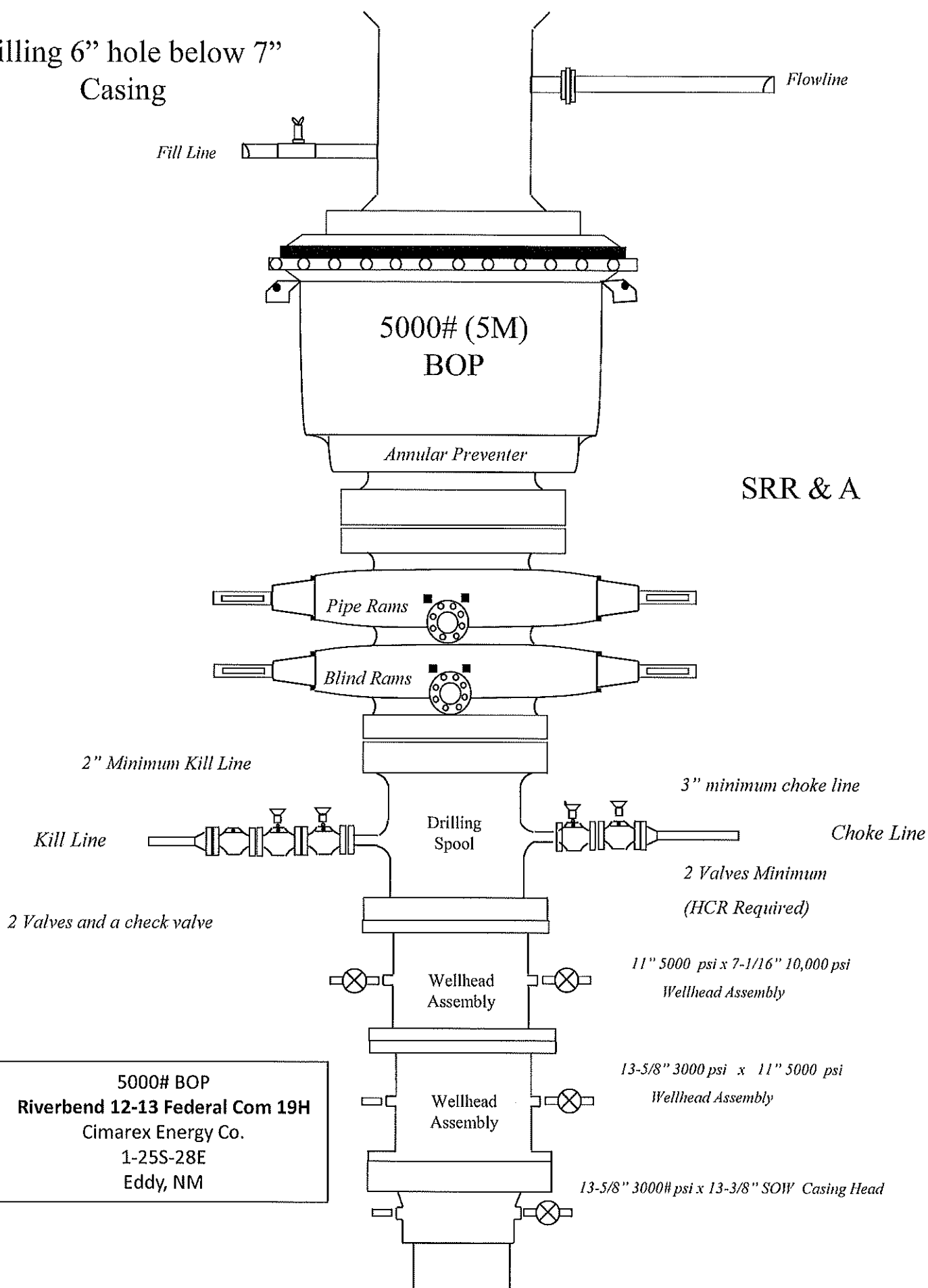
Drilling 12-1/4" hole
below 13 3/8" Casing



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



Drilling 6" hole below 7"
Casing



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 104758

CONDITIONS

Operator: CIMAREX ENERGY CO. 600 N. Marienfeld Street Midland, TX 79701	OGRID: 215099
	Action Number: 104758
	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	5/10/2022
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	5/10/2022
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	5/10/2022
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	5/10/2022
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	5/10/2022