Form 3160-3
(June 2015)

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

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

APPLICATION FOR PERMIT TO DRILL OR REENTER

5. Lease Serial No.: NMNM16104

6. If Indian, Allotee or Tribe Name:

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

7. If Unit or CA Agreement, Name and No.:

8. Lease Name and Well No.: RIVERBEND 12-13 FEDERAL COM 20H

2. Name of Operator: CIMAREX ENERGY COMPANY

9. API Well No.: 30-015-49536

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 WOLFCA

4. Location of Well *(Report location clearly and in accordance with any State requirements.*)*

At surface: SESW / 1207 FSL / 2422 FWL / LAT 32.15531 / LONG -104.04163

At proposed prod. zone: SWSE / 330 FSL / 2310 FEL / LAT 32.123664 / LONG -104.039773

11. Sec., T. R. M. or Blk. and Survey or Area: SEC 1/T25S/R28E/NMP

14. Distance in miles and direction from nearest town or post office*: 5 miles

12. County or Parish: EDDY

13. State: NM

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: 9975 feet / 20839 feet

20. BLM/BIA Bond No. in file: FED: NMB001188

21. Elevations (Show whether DF, KDB, RT, GL, etc.): 2935 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	Name *(Printed/Typed)*	Date
(Electronic Submission)	AMITHY CRAWFORD / Ph: (432) 620-1936	04/28/2020

Title: Regulatory Analyst

Approved by *(Signature)*	Name *(Printed/Typed)*	Date
(Electronic Submission)	Cody Layton / Ph: (575) 234-5959	04/13/2022

Title	Office
Assistant Field Manager Lands & Minerals	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

(Continued on page 2)

*(Instructions on page 2)

Approval Date: 04/13/2022

Additional Operator Remarks

Location of Well

0. SHL: SESW / 1207 FSL / 2422 FWL / TWSP: 25S / RANGE: 28E / SECTION: 1 / LAT: 32.15531 / LONG: -104.04163 (TVD: 0 feet, MD: 0 feet)

PPP: SWNE / 1320 FNL / 2310 FEL / TWSP: 25S / RANGE: 28E / SECTION: 13 / LAT: 32.148511 / LONG: -104.039747 (TVD: 9975 feet, MD: 10874 feet)

PPP: NWNE / 330 FNL / 2310 FEL / TWSP: 25S / RANGE: 28E / SECTION: 12 / LAT: 32.151055 / LONG: -104.039743 (TVD: 9975 feet, MD: 10874 feet)

BHL: SWSE / 330 FSL / 2310 FEL / TWSP: 25S / RANGE: 28E / SECTION: 13 / LAT: 32.123664 / LONG: -104.039773 (TVD: 9975 feet, MD: 20839 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	[2] Pool Code	[3] Pool Name
30-015 49536	98220	Purple Sage (Wolfcamp) Gas

[4] Property Code	[5] Property Name	[6] Well Number
321482	RIVERBEND 12-13 FEDERAL COM	20H

[7] OGRID No.	[8] Operator Name	[9] Elevation
215099	CIMAREX ENERGY CO.	2935.0'

[10] Surface Location

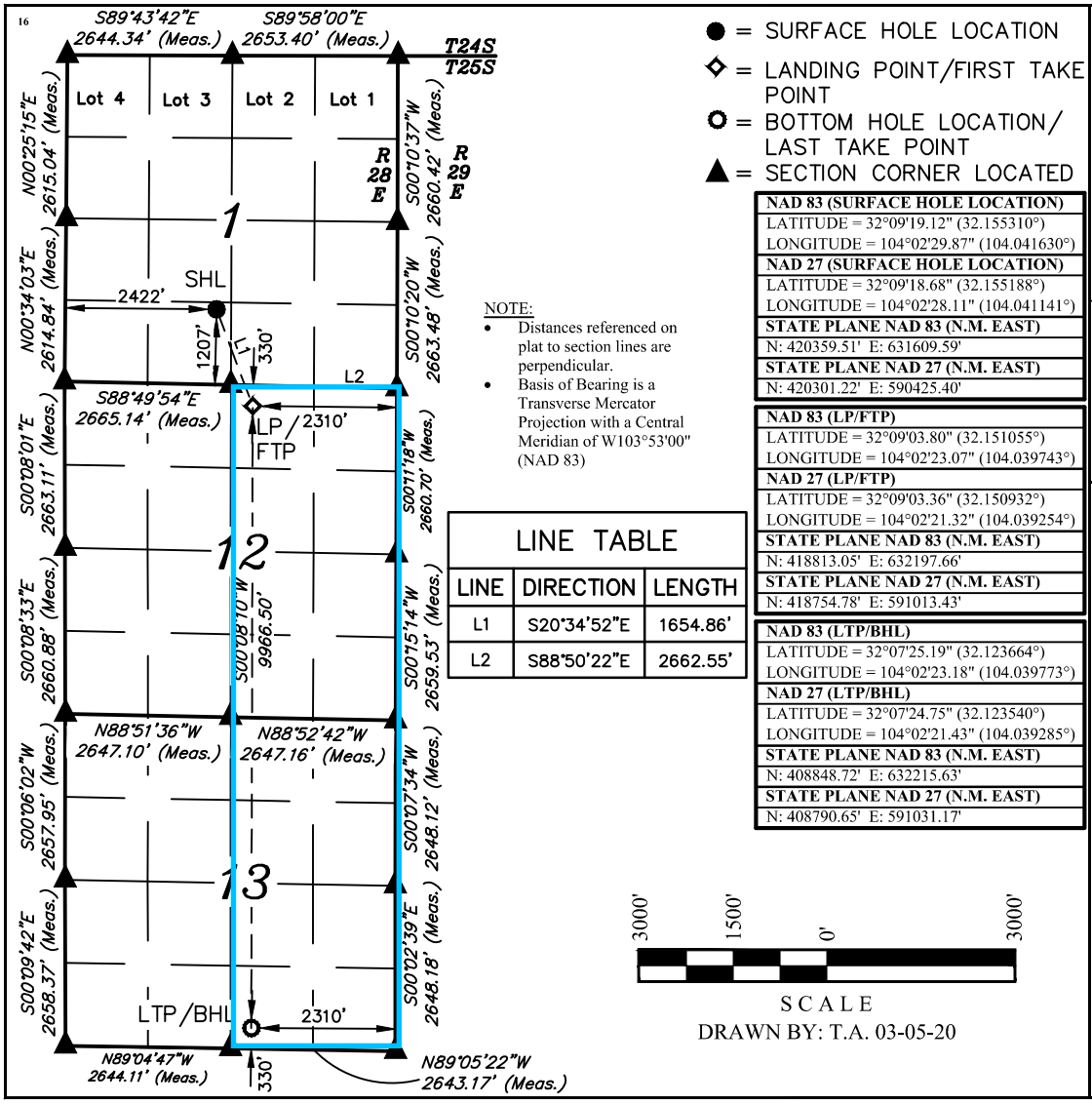
UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
N	1	25S	28E		1207	SOUTH	2422	WEST	EDDY

[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	2310	EAST	EDDY

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
640			

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.



● = SURFACE HOLE LOCATION
◇ = LANDING POINT/FIRST TAKE POINT
○ = BOTTOM HOLE LOCATION/ LAST TAKE POINT
▲ = SECTION CORNER LOCATED

NOTE:
- Distances referenced on plat to section lines are perpendicular.
- Basis of Bearing is a Transverse Mercator Projection with a Central Meridian of W103°53'00" (NAD 83)

LINE TABLE		
LINE	DIRECTION	LENGTH
L1	S20°34'52"E	1654.86'
L2	S88°50'22"E	2662.55'

NAD 83 (SURFACE HOLE LOCATION)
LATITUDE = 32°09'19.12" (32.155310°)
LONGITUDE = 104°02'29.87" (104.041630°)
NAD 27 (SURFACE HOLE LOCATION)
LATITUDE = 32°09'18.68" (32.155188°)
LONGITUDE = 104°02'28.11" (104.041141°)
STATE PLANE NAD 83 (N.M. EAST)
N: 420359.51' E: 631609.59'
STATE PLANE NAD 27 (N.M. EAST)
N: 420301.22' E: 590425.40'

NAD 83 (LP/FTP)
LATITUDE = 32°09'03.80" (32.151055°)
LONGITUDE = 104°02'23.07" (104.039743°)
NAD 27 (LP/FTP)
LATITUDE = 32°09'03.36" (32.150932°)
LONGITUDE = 104°02'21.32" (104.039254°)
STATE PLANE NAD 83 (N.M. EAST)
N: 418813.05' E: 632197.66'
STATE PLANE NAD 27 (N.M. EAST)
N: 418754.78' E: 591013.43'

NAD 83 (LTP/BHL)
LATITUDE = 32°07'25.19" (32.123664°)
LONGITUDE = 104°02'23.18" (104.039773°)
NAD 27 (LTP/BHL)
LATITUDE = 32°07'24.75" (32.123540°)
LONGITUDE = 104°02'21.43" (104.039285°)
STATE PLANE NAD 83 (N.M. EAST)
N: 408848.72' E: 632215.63'
STATE PLANE NAD 27 (N.M. EAST)
N: 408790.65' E: 591031.17'

SCALE
DRAWN BY: T.A. 03-05-20

[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 / 3 / 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 20H		N, Sec 1, T25S, R28E	1207 FSL/2422FWL	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 20H		3/1/2023	7/1/2023	1/1/2024	4/1/2024	4/1/20024

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:	Sarah Jordan
Printed Name:	Sarah Jordan
Title:	Regulatory Analyst
E-mail Address:	sarah.jordan@coterra.com
Date:	5/3/2022
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.

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

Drilling Plan Data Report
04/25/2022

APD ID: 10400054852
Submission Date: 04/28/2020
Operator Name: CIMAREX ENERGY COMPANY
Well Name: RIVERBEND 12-13 FEDERAL COM
Well Number: 20H
Well Type: CONVENTIONAL GAS WELL
Well Work Type: Drill

Highlighted data reflects the most recent changes

Show Final Text

Section 1 - Geologic Formations

Formation ID	Formation Name	Elevation	True Vertical Depth	Measured Depth	Lithologies	Mineral Resources	Producing Formation
726076	RUSTLER	0	464	464	ANHYDRITE	USEABLE WATER	N
726077	SALADO	-1926	1926	1926	ANHYDRITE, SALT	NONE	N
726078	CASTILE	-2487	2487	2487	ANHYDRITE, SALT	NONE	N
726079	BELL CANYON	-2680	2680	2680	SANDSTONE	NONE	N
726080	CHERRY CANYON	-3668	3668	3680	SANDSTONE	NONE	N
726081	BRUSHY CANYON	-5267	5267	5302	SANDSTONE	NATURAL GAS, OIL	N
726082	BONE SPRING	-6160	6160	6451	LIMESTONE	NATURAL GAS, OIL	N
726083	BONE SPRING 1ST	-7340	7340	7402	SANDSTONE	NATURAL GAS, OIL	N
726084	BONE SPRING 2ND	-8146	8146	8208	SANDSTONE	NATURAL GAS, OIL	N
726085	BONE SPRING 3RD	-9264	9264	9326	SANDSTONE	NATURAL GAS, OIL	N
726086	WOLFCAMP	-9642	9642	9707	SANDSTONE, SHALE	NATURAL GAS, OIL	Y
726075		0					N

Section 2 - Blowout Prevention

Pressure Rating (PSI): 2M
Rating Depth: 2610

Equipment: A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.
Requesting Variance? YES

Variance request: Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RIVERBEND 12-13 FEDERAL COM **Well Number:** 20H

Testing Procedure: A multi-bowl wellhead system will be utilized. After running the 13-3/8" surface casing, a 13 5/8 BOP/BOPE system with a minimum working pressure of 2000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 2000 psi test. Annular will be tested to 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 vendors representative. A copy of the installation instructions has been sent to the BLM field office. The wellhead will be installed by a third-party welder, monitored by the wellhead vendor representative. All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 2000 psi. The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The casing strings utilizing steel body pack-off will be tested to 70% of casing burst. If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

Choke Diagram Attachment:

Riverbend_12_13_Fed_Com_20H_2M3M_Choke_20200428071402.pdf

BOP Diagram Attachment:

Riverbend_12_13_Fed_Com_20H_2M_BOP_20200428071253.pdf

Pressure Rating (PSI): 3M **Rating Depth:** 10461

Equipment: A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

Requesting Variance? YES

Variance request: Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.

Testing Procedure: A multi-bowl wellhead system will be utilized. After running the 13-3/8" surface casing, a 13 5/8 BOP/BOPE system with a minimum working pressure of 3000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 3000 psi test. Annular will be tested to 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 vendors representative. A copy of the installation instructions has been sent to the BLM field office. The wellhead will be installed by a third-party welder, monitored by the wellhead vendor representative. All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 3000 psi. The surface casing string will be tested as per Onshore Order No. 2 to at least 0.22 psi/ft or 1500 psi, whichever is greater. The casing strings utilizing steel body pack-off will be tested to 70% of casing burst. If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

Choke Diagram Attachment:

Riverbend_12_13_Fed_Com_20H_2M3M_Choke_20200428071513.pdf

BOP Diagram Attachment:

Riverbend_12_13_Fed_Com_20H_3M_BOP_20200428071521.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RIVERBEND 12-13 FEDERAL COM **Well Number:** 20H

Pressure Rating (PSI): 5M **Rating Depth:** 20839

Equipment: A BOP consisting of three rams, including one blind ram and two pipe rams and one annular preventer. An accumulator that meets the requirements in Onshore Order #2 for the pressure rating of the BOP stack. A rotating head may be installed as needed. A Kelly clock will be installed and maintained in operable condition and a drill string safety valve in the open position will be available on the rig floor.

Requesting Variance? YES

Variance request: Co-flex line between the BOP and choke manifold. Certification for proposed co-flex hose is attached. The hose is not required by the manufacturer to be anchored. In the event the specific hose is not available, one of equal or higher rating will be used. Variance to include Hammer Union connections on lines downstream of the buffer tank only.

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

Choke Diagram Attachment:

Riverbend_12_13_Fed_Com_20H_5M_Choke_20200428071635.pdf

BOP Diagram Attachment:

Riverbend_12_13_Fed_Com_20H_5M_BOP_20200428071644.pdf

Section 3 - Casing

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
1	SURFACE	17.5	13.375	NEW	API	N	0	514	0	514	2935	2421	514	J-55	48	ST&C	3.32	10.67	BUOY	17.55	BUOY	17.55
2	INTERMEDIATE	12.25	9.625	NEW	API	N	0	2610	0	2610	2935	325	2610	J-55	36	ST&C	1.45	2.52	BUOY	4.19	BUOY	4.19
3	PRODUCTION	8.75	7.0	NEW	API	N	0	9545	0	9545	2935	-6610	9545	L-80	26	LT&C	1.21	1.62	BUOY	1.97	BUOY	1.97
4	PRODUCTION	8.75	7.0	NEW	API	N	9545	10461	9545	9975	-6610	-7040	916	L-80	26	BUTT	1.16	1.55	BUOY	54.03	BUOY	54.03

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RIVERBEND 12-13 FEDERAL COM **Well Number:** 20H

Casing ID	String Type	Hole Size	Csg Size	Condition	Standard	Tapered String	Top Set MD	Bottom Set MD	Top Set TVD	Bottom Set TVD	Top Set MSL	Bottom Set MSL	Calculated casing length MD	Grade	Weight	Joint Type	Collapse SF	Burst SF	Joint SF Type	Joint SF	Body SF Type	Body SF
5	COMPLETION SYSTEM	6	4.5	NEW	API	N	9545	20839	9545	9975	-6610	-7040	11294	P-110	11.6	BUTT	1.22	1.72	BUOY	73.58	BUOY	73.58

Casing Attachments

Casing ID: 1 **String Type:** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Riverbend_12_13_Fed_Com_20H_Casing_Assumptions_20200819111605.pdf

Casing ID: 2 **String Type:** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Riverbend_12_13_Fed_Com_20H_Casing_Assumptions_20200819111640.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RIVERBEND 12-13 FEDERAL COM **Well Number:** 20H

Casing Attachments

Casing ID: 3 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Riverbend_12_13_Fed_Com_20H_Casing_Assumptions_20200819111658.pdf

Casing ID: 4 **String Type:** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Riverbend_12_13_Fed_Com_20H_Casing_Assumptions_20200819111748.pdf

Casing ID: 5 **String Type:** COMPLETION SYSTEM

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Riverbend_12_13_Fed_Com_20H_Casing_Assumptions_20200819111811.pdf

Section 4 - Cement

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RIVERBEND 12-13 FEDERAL COM **Well Number:** 20H

String Type	Lead/Tail	Stage Tool Depth	Top MD	Bottom MD	Quantity(sx)	Yield	Density	Cu Ft	Excess%	Cement type	Additives
PRODUCTION	Lead		0	0	0	0	0	0	0	0	0
SURFACE	Lead		0	514	130	1.72	13.5	223	35	Class C	Bentonite
SURFACE	Tail		0	514	195	1.34	14.8	261	35	Class C	LCM
INTERMEDIATE	Lead		0	2610	497	1.88	12.9	934	49	35:65 (POZ C)	Salt, Bentonite
INTERMEDIATE	Tail		0	2610	153	1.34	14.8	205	49	Class C	LCM
PRODUCTION	Lead		0	10461	367	3.64	10.3	1335	25	Tuned Light	LCM
PRODUCTION	Tail		0	10461	134	1.3	14.2	174	25	50:50 (PoZ H)	Salt, Bentonite, Fluid Loss, Dispersant, SMS
COMPLETION SYSTEM	Lead		9545	20839	790	1.3	14.2	1027	10	50:50(POZ H)	salt, Bentonite, Fluid Loss, Dispersant, SMS

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

Description of the equipment for the circulating system in accordance with Onshore Order #2:

Diagram of the equipment for the circulating system in accordance with Onshore Order #2:

Describe what will be on location to control well or mitigate other conditions: Sufficient mud materials will be kept on location at all times in order to combat lost circulation or unexpected kicks. In order to run DSTs, open hole logs, and casing, the viscosity and water loss may have to be adjusted in order to meet these needs.
Describe the mud monitoring system utilized: PVT/Pason/Visual Monitoring

Circulating Medium Table

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RIVERBEND 12-13 FEDERAL COM **Well Number:** 20H

Top Depth	Bottom Depth	Mud Type	Min Weight (lbs/gal)	Max Weight (lbs/gal)	Density (lbs/cu ft)	Gel Strength (lbs/100 sqft)	PH	Viscosity (CP)	Salinity (ppm)	Filtration (cc)	Additional Characteristics
0	514	OTHER : Fresh Water	7.83	8.33							
514	2610	SALT SATURATED	9.8	10.3							
2610	10461	SALT SATURATED	8.5	9							
10461	20839	OIL-BASED MUD	11.5	12							

Section 6 - Test, Logging, Coring

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

No DST Planned

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

COMPENSATED NEUTRON LOG,DIRECTIONAL SURVEY,GAMMA RAY LOG,

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 6224 **Anticipated Surface Pressure:** 4029

Anticipated Bottom Hole Temperature(F): 169

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

Describe:

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

Contingency Plans geoharzards description:

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

Contingency Plans geohazards attachment:

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations plan:

Riverbend_12_13_Fed_Com_20H_H2S_Plan_20210412150613.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: RIVERBEND 12-13 FEDERAL COM **Well Number:** 20H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Riverbend_12_13_Fed_Com_20H_AC_Report_20200428073624.pdf

Riverbend_12_13_Fed_Com_20H_Directional_20200428073631.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Riverbend_12_13_Fed_Com_20H_Drilling_Plan_20210412150547.pdf

Other Variance attachment:

Riverbend_12_13_Fed_Com_20H__Flex_Hose_20200428073651.pdf

Riverbend_12_13_Federal_Com_20H_Multibowl_20200819111843.pdf

1. Geological Formations

TVD of target 9,975
MD at TD 20,839

Pilot Hole TD N/A
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	6160	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	2610	2610	9-5/8"	36.00	J-55	ST&C	1.45	2.52	4.19
8 3/4	0	9545	9545	7"	26.00	L-80	LT&C	1.21	1.62	1.97
8 3/4	9545	10461	9975	7"	26.00	L-80	BT&C	1.16	1.55	54.03
6	9545	20839	9975	4-1/2"	11.60	P-110	BT&C	1.22	1.72	73.58
						BLM Minimum Safety Factor		1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.
All casing strings will be tested in accordance with Onshore Oil and Gas Order #2 III.B.1.h

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

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	130	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	195	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	497	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	153	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	367	10.30	3.64	22.18		Lead: Tuned Light + LCM
	134	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS
Completion System	790	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	2430	25
Completion System	10012	10

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

4. Pressure Control Equipment

	A variance is requested for the use of a diverter on the surface casing. See attached for schematic.

BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	3M
			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?

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
10461' to 20839'	OBM	11.50 - 12.00	50-70	N/C
0' to 514'	Fresh Water	7.83 - 8.33	28	N/C
514' to 2610'	Brine Water	9.80 - 10.30	30-32	N/C
2610' to 10461'	Brine Water	8.50 - 9.00	30-32	N/C

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

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

6. Logging and Testing Procedures

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

Additional Logs Planned	Interval

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	6224 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.	
	H2S is present
	H2S 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 atleast 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.

Schlumberger

CIMAREX

Cimarex Riverbend 12-13 Federal Com #20H Rev0 mcs 19Mar20 Anti-Collision Summary Report

Analysis Date-24hr Time:	April 02, 2020 - 14:54	**Analysis Method:**	3D Least Distance
Client:	Cimarex	**Reference Trajectory:**	Cimarex Riverbend 12-13 Federal Com #20H Rev0 mcs 19Mar20 (Def Plan)
Field:	NM Eddy County (NAD 83)	**Depth Interval:**	Every 10.00 Measured Depth (ft)
Structure:	Cimarex Riverbend 12-13 Federal Com #20H	**Rule Set:**	NAL Procedure: D&M AntiCollision Standard S002
Slot:	Cimarex Riverbend 12-13 Federal Com #20H	**Min Pts:**	All local minima indicated.
Well:	Cimarex Riverbend 12-13 Federal Com #20H	**Version / Patch:**	2.10.787.0
Borehole:	Original Borehole	**Database \ Project:**	us1153APP452.DIR.SLB.COM\DRILLING-NM Eddy County 2.10
Scan MD Range:	0.00ft ~ 20839.22ft		

Trajectory Error Model: ISCWSA0 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
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
Results highlighted: Sep-Factor separation <= 1.50 ft													
Cimarex Riverbend 12-13 Federal Com 22H Rev0 mcs 23Mar20 (Def Plan)													Fail Major
	100.00	32.81	98.72	67.20	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	99.99	32.81	98.70	67.18	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	64.52	32.81	50.28	31.71	4.89	MAS = 10.00 (m)	2450.00	2450.00	OSF<5.00			Enter Alert	
	32.44	32.81	18.35	-0.37	2.44	MAS = 10.00 (m)	2660.00	2659.92			SfcRul<10.00	Enter Major	
	19.75	32.81	6.09	-13.06	1.49	MAS = 10.00 (m)	2840.00	2839.20		OSF<1.50		Enter Minor	
	19.00	32.81	5.46	-13.81	1.45	MAS = 10.00 (m)	2900.00	2898.70				MinPts	
	18.99	32.81	5.48	-13.81	1.45	MAS = 10.00 (m)	2910.00	2908.60				MinPts	
	19.35	32.81	5.93	-13.46	1.49	MAS = 10.00 (m)	2960.00	2958.03		OSF>1.50		Exit Minor	
	32.78	32.81	19.80	-0.02	2.69	MAS = 10.00 (m)	3580.00	3569.28			SfcRul>10.00	Exit Major	
	135.07	44.32	105.09	90.75	4.66	OSF1.50	7059.90	7000.00				MinPt-O-SF	
	142.14	43.63	112.63	98.51	4.99	OSF1.50	7290.00	7228.15	OSF>5.00			Exit Alert	
	148.27	42.02	119.83	106.25	5.41	OSF1.50	7670.00	7607.83				MinPts	
	148.33	41.87	119.99	106.46	5.44	OSF1.50	7870.00	7807.83				MinPt-O-SF	
	1698.30	341.84	1469.98	1356.46	7.47	OSF1.50	20839.22	9975.00				MinPts	
Cimarex Riverbend 12-13 Federal Com #19H Rev0 mcs 19Mar20 (Def Plan)													Fail Minor
	20.00	16.25	18.71	3.74	N/A	MAS = 4.95 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	20.00	16.25	18.71	3.74	N/A	MAS = 4.95 (m)	26.00	26.00				WRP	
	20.00	20.02	6.22	-0.02	1.50	OSF1.50	2050.00	2050.00		OSF<1.50		Enter Minor	
	20.00	23.31	4.02	-3.32	1.27	OSF1.50	2400.00	2400.00				MinPt-CtCt	
	20.01	23.39	3.99	-3.37	1.27	OSF1.50	2410.00	2410.00				MINPT-O-EOU	
	20.06	23.46	4.00	-3.39	1.27	OSF1.50	2420.00	2420.00				MinPts	
	23.93	24.06	7.46	-0.13	1.49	OSF1.50	2560.00	2560.00		OSF>1.50		Exit Minor	
	74.11	23.19	58.23	50.93	4.99	OSF1.50	3140.00	3135.50	OSF>5.00			Exit Alert	
	696.36	54.81	659.39	641.55	19.48	OSF1.50	9270.00	9207.83				MinPts	
	494.98	52.68	459.43	442.30	14.41	OSF1.50	9790.00	9717.24				MinPt-CtCt	
	495.15	53.13	459.31	442.02	14.29	OSF1.50	9810.00	9734.46				MinPts	
	507.59	55.64	470.07	451.96	13.97	OSF1.50	9950.00	9841.05				MinPt-O-SF	
	552.15	166.72	440.58	385.44	4.99	OSF1.50	14110.00	9975.00	OSF<5.00			Enter Alert	
	552.14	379.18	298.93	172.97	2.19	OSF1.50	20839.22	9975.00				MinPts	
Marathon Oil Whistle Pig Fee 1 SB FEE 5H (Offset)MWD 0ft-14257ft (Def Survey)													Fail Minor
	4323.06	32.81	4321.93	4290.25	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	4323.01	32.81	4321.88	4290.20	764316.52	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	4322.99	32.81	4321.86	4290.18	N/A	MAS = 10.00 (m)	20.00	20.00				MINPT-O-EOU	
	4322.99	32.81	4321.86	4290.18	N/A	MAS = 10.00 (m)	26.00	26.00				MinPts	
	4323.06	32.81	4321.80	4290.26	33335.17	MAS = 10.00 (m)	80.00	80.00				MINPT-O-EOU	
	4323.21	32.81	4321.80	4290.40	15475.53	MAS = 10.00 (m)	120.00	120.00				MINPT-O-EOU	
	4324.16	32.81	4321.52	4291.35	2876.49	MAS = 10.00 (m)	390.00	390.00				MinPts	
	4324.27	32.81	4321.36	4291.46	2429.96	MAS = 10.00 (m)	450.00	450.00				MINPT-O-EOU	
	4320.84	32.81	4313.78	4288.03	728.24	MAS = 10.00 (m)	1390.00	1390.00				MinPts	
	4321.24	32.81	4313.01	4288.44	608.09	MAS = 10.00 (m)	1640.00	1640.00				MINPT-O-EOU	
	4349.74	32.81	4337.56	4316.93	393.56	MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
	458.21	139.78	364.34	318.42	4.97	OSF1.50	9090.00	9027.83	OSF<5.00			Enter Alert	
	203.36	205.62	64.67	-2.26	1.48	OSF1.50	9460.00	9397.83		OSF<1.50		Enter Minor	
	198.82	206.68	59.39	-7.86	1.44	OSF1.50	9500.00	9437.83				MinPts	
	200.65	203.61	63.30	-2.96	1.48	OSF1.50	9530.00	9467.83		OSF>1.50		Exit Minor	
	395.52	121.30	313.58	274.22	4.98	OSF1.50	9840.00	9759.45	OSF>5.00			Exit Alert	
	11077.87	79.26	11024.66	10998.62	212.66	OSF1.50	20839.22	9975.00				TD	
Cimarex Riverbend 12-13 Federal Com #2H Rev2 mcs 23Mar20 (Def Plan)													Warning Alert
	39.99	32.25	38.71	7.74	N/A	MAS = 9.83 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	39.99	32.25	38.70	7.74	N/A	MAS = 9.83 (m)	26.00	26.00				WRP	
	39.99	32.25	25.28	7.74	2.88	MAS = 9.83 (m)	2200.00	2200.00				MinPts	
	40.00	32.25	25.25	7.75	2.87	MAS = 9.83 (m)	2210.00	2210.00				MINPT-O-EOU	
	40.23	32.25	25.36	7.98	2.87	MAS = 9.83 (m)	2240.00	2240.00				MinPt-O-SF	
	69.81	32.25	54.66	37.56	4.94	MAS = 9.83 (m)	2660.00	2659.92	OSF>5.00			Exit Alert	
	425.81	47.41	393.77	378.40	13.81	OSF1.50	7059.90	7000.00				MinPt-O-SF	
	998.94	70.50	951.51	928.44	21.62	OSF1.50	10270.00	9962.17				MinPt-CtCt	
	999.06	70.85	951.39	928.20	21.51	OSF1.50	10300.00	9965.86				MINPT-O-EOU	
	999.24	71.09	951.42	928.15	21.44	OSF1.50	10320.00	9967.98				MinPt-O-ADP	
	999.93	78.67	947.05	921.26	19.36	OSF1.50	10880.00	9975.00				MinPt-CtCt	
	999.92	301.06	798.79	698.87	5.00	OSF1.50	18460.00	9975.00	OSF<5.00			Enter Alert	
	999.92	377.03	748.14	622.89	3.99	OSF1.50	20839.22	9975.00				MinPts	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
Cimarex Riverbend 12-13 Federal Com #1H Rev3 mcs 23Mar20 (Def Plan)													Warning Alert
	59.99	32.81	58.70	27.18	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	59.99	32.81	58.70	27.18	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	59.99	32.81	46.91	27.18	4.98	MAS = 10.00 (m)	1940.00	1940.00	OSF<5.00			Enter Alert	
	59.99	32.81	46.53	27.18	4.82	MAS = 10.00 (m)	2000.00	2000.00				MinPts	
	60.00	32.81	46.50	27.19	4.81	MAS = 10.00 (m)	2010.00	2010.00				MINPT-O-EOU	
	60.58	32.81	46.86	27.77	4.77	MAS = 10.00 (m)	2060.00	2060.00				MinPt-O-SF	
	64.82	32.81	50.74	32.01	4.97	MAS = 10.00 (m)	2170.00	2170.00	OSF>5.00			Exit Alert	
	788.51	53.36	752.50	735.15	22.67	OSF1.50	7059.90	7000.00				MinPt-O-SF	
	1504.89	383.19	1249.00	1121.70	5.91	OSF1.50	20839.22	9975.00				MinPts	
Final Survey - Cimarex Riverbend 12-13 Federal Com #30H MWD 0ft-20738ft (Surcon Corrected) (Def Survey)													Warning Alert
	1061.57	32.81	1060.28	1028.76	N/A	MAS = 10.00 (m)	0.00	0.00				MinPts	
	1061.59	32.81	1060.30	1028.78	106427.90	MAS = 10.00 (m)	26.00	26.00				WRP	
	1061.62	32.81	1060.29	1028.82	21989.73	MAS = 10.00 (m)	40.00	40.00				MINPT-O-EOU	
	1064.26	32.81	1056.62	1031.46	163.27	MAS = 10.00 (m)	1510.00	1510.00				MinPts	
	1064.34	32.81	1056.56	1031.53	159.88	MAS = 10.00 (m)	1540.00	1540.00				MINPT-O-EOU	
	1056.19	32.81	1044.23	1023.38	97.49	MAS = 10.00 (m)	2490.00	2490.00				MinPts	
	1056.20	32.81	1044.19	1023.39	97.09	MAS = 10.00 (m)	2500.00	2500.00				MINPT-O-EOU	
	1059.32	32.81	1047.24	1026.51	96.73	MAS = 10.00 (m)	2590.00	2589.99				MinPt-O-SF	
	1067.06	32.81	1047.17	1034.25	56.62	MAS = 10.00 (m)	6400.00	6349.43				MinPts	
	1067.07	32.81	1047.15	1034.26	56.52	MAS = 10.00 (m)	6410.00	6359.29				MINPT-O-EOU	
	1053.42	34.21	1030.25	1019.21	47.66	OSF1.50	7100.00	7039.58				MinPt-O-SF	
	1046.14	33.82	1023.22	1012.32	47.92	OSF1.50	7300.00	7238.12				MinPt-O-SF	
	938.54	34.80	914.89	903.74	42.03	OSF1.50	8940.00	8877.83				MinPt-CtCt	
	938.57	34.88	914.87	903.69	41.92	OSF1.50	8990.00	8927.83				MINPT-O-EOU	
	938.62	34.94	914.88	903.68	41.85	OSF1.50	9020.00	8957.83				MinPt-O-ADP	
	748.67	40.56	721.08	708.10	28.77	OSF1.50	9670.00	9606.41				MinPt-O-SF	
	743.78	40.05	716.54	703.73	28.98	OSF1.50	9790.00	9717.24				MinPts	
	743.78	39.99	716.57	703.78	29.01	OSF1.50	9800.00	9725.91				MinPt-CtCt	
	767.84	70.56	720.31	697.29	16.65	OSF1.50	11610.00	9975.00				MinPt-CtCt	
	767.40	78.03	714.88	689.37	15.01	OSF1.50	11890.00	9975.00				MinPt-CtCt	
	766.93	83.40	710.83	683.53	14.02	OSF1.50	12090.00	9975.00				MinPt-CtCt	
	762.79	106.96	690.99	655.83	10.83	OSF1.50	12940.00	9975.00				MinPt-CtCt	
	756.71	127.51	671.20	629.20	8.99	OSF1.50	13640.00	9975.00				MinPt-CtCt	
	756.99	128.30	670.95	628.69	8.94	OSF1.50	13680.00	9975.00				MINPT-O-EOU	
	757.31	128.69	671.01	628.62	8.91	OSF1.50	13700.00	9975.00				MinPt-O-ADP	
	759.31	130.78	671.61	628.52	8.79	OSF1.50	13780.00	9975.00				MinPt-O-ADP	
	762.02	162.27	653.34	599.75	7.10	OSF1.50	14810.00	9975.00				MinPt-CtCt	
	759.90	183.63	636.97	576.27	6.25	OSF1.50	15530.00	9975.00				MinPt-CtCt	
	755.56	206.58	617.33	548.98	5.52	OSF1.50	16300.00	9975.00				MinPt-CtCt	
	755.15	211.96	613.34	543.19	5.37	OSF1.50	16480.00	9975.00				MinPt-CtCt	
	755.32	216.44	610.52	538.88	5.26	OSF1.50	16630.00	9975.00				MinPt-CtCt	
	755.75	222.10	607.18	533.65	5.13	OSF1.50	16820.00	9975.00				MinPt-CtCt	
	755.57	228.00	603.07	527.57	4.99	OSF1.50	17010.00	9975.00	OSF<5.00			Enter Alert	
	754.07	235.35	596.67	518.72	4.83	OSF1.50	17260.00	9975.00				MinPt-CtCt	
	751.36	251.28	583.33	500.08	4.50	OSF1.50	17790.00	9975.00				MinPt-CtCt	
	748.78	257.09	576.88	491.69	4.39	OSF1.50	17980.00	9975.00				MinPt-CtCt	
	748.95	257.57	576.73	491.38	4.38	OSF1.50	18010.00	9975.00				MINPT-O-EOU	
	749.09	257.72	576.77	491.37	4.38	OSF1.50	18020.00	9975.00				MinPt-O-ADP	
	749.97	258.60	577.07	491.38	4.37	OSF1.50	18060.00	9975.00				MinPt-O-ADP	
	758.65	271.05	577.45	487.60	4.21	OSF1.50	18440.00	9975.00				MinPt-CtCt	
	760.27	290.42	566.15	469.85	3.94	OSF1.50	19090.00	9975.00				MinPt-CtCt	
	762.75	303.26	560.09	459.50	3.78	OSF1.50	19520.00	9975.00				MinPt-CtCt	
	755.23	316.44	543.77	438.78	3.59	OSF1.50	19960.00	9975.00				MinPt-CtCt	
	759.09	335.52	534.91	423.57	3.40	OSF1.50	20610.00	9975.00				MINPT-O-EOU	
	759.65	336.20	535.02	423.45	3.40	OSF1.50	20640.00	9975.00				MinPt-O-ADP	
	760.85	342.66	531.91	418.19	3.34	OSF1.50	20830.00	9975.00				MinPts	
	760.91	342.51	532.08	418.41	3.34	OSF1.50	20839.22	9975.00				TD	
Final Surveys - Riverbend 12-13 Federal Com #31H MWD Surveys 0ft to 21398ft (Surcon Corrected) (Def Survey)													Warning Alert
	1111.83	32.81	1110.55	1079.02	N/A	MAS = 10.00 (m)	0.00	0.00				MinPts	
	1111.84	32.81	1110.54	1079.03	210255.54	MAS = 10.00 (m)	26.00	26.00				WRP	
	1011.97	32.81	999.85	979.16	91.41	MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
	1007.68	32.81	995.97	974.87	94.60	MAS = 10.00 (m)	2760.00	2759.64				MINPT-O-EOU	
	1007.67	32.81	995.99	974.86	94.83	MAS = 10.00 (m)	2770.00	2769.60				MinPts	
	1049.46	32.81	1039.06	1016.65	111.85	MAS = 10.00 (m)	3730.00	3717.16				MinPt-O-SF	
	1319.31	32.81	1298.38	1286.50	66.20	MAS = 10.00 (m)	7059.90	7000.00				MinPt-O-SF	
	1372.41	32.81	1351.79	1339.60	69.98	MAS = 10.00 (m)	7780.00	7717.83				MinPt-O-SF	
	1360.35	32.81	1338.46	1327.54	65.14	MAS = 10.00 (m)	9190.00	9127.83				MinPts	
	1360.40	32.81	1338.41	1327.59	64.83	MAS = 10.00 (m)	9230.00	9167.83				MINPT-O-EOU	
	1135.39	50.62	1101.32	1084.77	34.28	OSF1.50	10560.00	9975.00				MinPt-CtCt	
	1135.87	52.07	1100.83	1083.80	33.33	OSF1.50	10640.00	9975.00				MINPT-O-EOU	
	1136.33	52.61	1100.93	1083.72	32.99	OSF1.50	10670.00	9975.00				MinPt-O-ADP	
	1127.80	83.59	1071.75	1044.21	20.46	OSF1.50	11860.00	9975.00				MinPt-CtCt	
	1128.53	85.27	1071.36	1043.26	20.07	OSF1.50	11940.00	9975.00				MINPT-O-EOU	
	1129.95	86.94	1071.66	1043.01	19.70	OSF1.50	12010.00	9975.00				MinPt-O-ADP	
	1119.81	148.50	1020.48	971.31	11.38	OSF1.50	14120.00	9975.00				MinPt-CtCt	
	1121.84	153.28	1019.33	968.56	11.04	OSF1.50	14300.00	9975.00				MINPT-O-EOU	
	1122.63	154.21	1019.50	968.42	10.98	OSF1.50	14340.00	9975.00				MinPt-O-ADP	
	1126.51	163.97	1016.87	962.54	10.36	OSF1.50	14640.00	9975.00				MinPt-CtCt	
	1126.19	174.08	1009.81	952.11	9.75	OSF1.50	14980.00	9975.00				MinPt-CtCt	
	1122.18	207.26	983.68	914.92	8.15	OSF1.50	16090.00	9975.00				MinPt-CtCt	
	1123.93	213.77	981.09	910.16	7.92	OSF1.50	16330.00	9975.00				MINPT-O-EOU	
	1123.98	237.53	965.30	886.45	7.12	OSF1.50	17100.00	9975.00				MinPt-CtCt	
	1124.92	246.13	960.50	878.79	6.88	OSF1.50	17390.00	9975.00				MinPt-CtCt	
	1099.71	284.40	909.78	815.31	5.82	OSF1.50	18660.00	9975.00				MinPt-CtCt	
	1099.85	290.40	905.92	809.45	5.70	OSF1.50	18860.00	9975.00				MinPt-CtCt	
	1096.52	302.78	894.34	793.74	5.45	OSF1.50	19270.00	9975.00				MinPt-CtCt	
	1096.20	328.11	877.13	768.08	5.02	OSF1.50	20110.00	9975.00				MinPt-CtCt	
	1096.33	329.77	876.16	766.57	5.00	OSF1.50	20170.00	9975.00	OSF<5.00			Enter Alert	
	1096.70	334.14	873.61	762.56	4.93	OSF1.50	20310.00	9975.00				MinPt-CtCt	
	1098.30	349.69	864.85	748.62	4.72	OSF1.50	20820.00	9975.00				MinPts	
	1098.41	349.65	864.98	748.76	4.72	OSF1.50	20839.22	9975.00				TD	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
Marathon Oil Rustler Bluff #4 (Offset) Blind 0ft-5210ft (Def Survey)													Warning Alert
	2353.71	32.81	2352.58	2320.90	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	2353.21	32.81	2352.02	2320.40	38100.58	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	2352.99	709.34	1879.72	1643.65	4.98	OSF1.50	2360.00	2360.00	OSF<5.00			Enter Alert	
	2154.71	1622.66	1072.51	532.05	1.99	OSF1.50	5370.00	5333.98				MinPt-O-SF	
	2154.42	1622.42	1072.37	532.00	1.99	OSF1.50	5380.00	5343.84				MinPt-O-ADP	
	2154.17	1622.14	1072.31	532.03	1.99	OSF1.50	5390.00	5353.70				MINPT-O-EOU	
	2153.62	1620.23	1073.03	533.39	1.99	OSF1.50	5440.00	5402.99				MinPt-CtCt	
	3330.08	1002.71	2661.23	2327.37	4.99	OSF1.50	7950.00	7887.83	OSF>5.00			Exit Alert	
	6661.40	1150.51	5894.02	5510.89	8.69	OSF1.50	13010.00	9975.00				MinPt-O-SF	
	13221.07	1519.91	12207.41	11701.15	13.06	OSF1.50	20839.22	9975.00				TD	
Cimarex Riverbend 12-13 Federal Com #16H Rev2 mcs 23Mar20 (Def Plan)													Pass
	79.97	32.81	78.68	47.16	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	79.97	32.81	78.68	47.16	118047.26	MAS = 10.00 (m)	26.00	26.00				WRP	
	79.97	32.81	69.72	47.16	8.77	MAS = 10.00 (m)	1490.00	1490.00				MinPts	
	79.99	32.81	69.62	47.18	8.67	MAS = 10.00 (m)	1510.00	1510.00				MINPT-O-EOU	
	81.67	32.81	70.88	48.86	8.45	MAS = 10.00 (m)	1600.00	1600.00				MinPt-O-SF	
	984.33	57.03	945.89	927.31	26.45	OSF1.50	7059.90	7000.00				MinPt-O-SF	
	1974.55	83.69	1918.33	1890.87	35.92	OSF1.50	10460.00	9975.00				MinPt-O-SF	
	1979.84	375.97	1728.76	1603.87	7.92	OSF1.50	20839.22	9975.00				MinPts	
Cimarex Riverbend 12-13 Federal Com #21H Rev0 mcs 23Mar20 (Def Plan)													Pass
	116.62	32.81	115.33	83.81	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	116.61	32.81	115.32	83.80	N/A	MAS = 10.00 (m)	26.00	26.00				WRP	
	85.52	32.81	69.84	52.71	5.86	MAS = 10.00 (m)	2830.00	2829.27				MinPt-O-SF	
	85.50	32.81	69.83	52.70	5.86	MAS = 10.00 (m)	2840.00	2839.20				MinPts	
	995.46	61.49	954.04	933.97	24.77	OSF1.50	8510.00	8447.83				MinPt-O-SF	
	1961.08	379.43	1707.70	1581.65	7.77	OSF1.50	20839.22	9975.00				MinPts	
Cimarex Riverbend 12-13 Federal Com #15H Rev2 mcs 23Mar20 (Def Plan)													Pass
	99.99	32.81	98.70	67.18	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	99.99	32.81	98.70	67.18	148076.33	MAS = 10.00 (m)	26.00	26.00				WRP	
	99.99	32.81	92.87	67.18	16.94	MAS = 10.00 (m)	990.00	990.00				MinPts	
	100.00	32.81	92.78	67.20	16.63	MAS = 10.00 (m)	1010.00	1010.00				MINPT-O-EOU	
	104.32	32.81	96.45	71.51	15.67	MAS = 10.00 (m)	1160.00	1160.00				MinPt-O-SF	
	1251.45	61.27	1210.17	1190.18	31.26	OSF1.50	7059.90	7000.00				MinPt-O-SF	
	2540.76	78.30	2488.13	2462.46	49.46	OSF1.50	9990.00	9866.23				MinPts	
	2610.28	396.34	2345.62	2213.93	9.91	OSF1.50	20839.22	9975.00				MinPts	
Final Survey - Cimarex Riverbend 12-13 Federal Com #29H 0ft to 21947ft (Surcon Corrected) (Def Survey)													Pass
	1041.82	32.81	1040.53	1009.01	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1041.81	32.81	1040.51	1009.00	129401.84	MAS = 10.00 (m)	26.00	26.00				WRP	
	1039.25	32.81	1036.15	1006.45	570.90	MAS = 10.00 (m)	450.00	450.00				MINPT-O-EOU	
	1036.59	32.81	1032.06	1003.78	304.70	MAS = 10.00 (m)	790.00	790.00				MinPts	
	1036.73	32.81	1031.91	1003.92	280.67	MAS = 10.00 (m)	850.00	850.00				MINPT-O-EOU	
	1026.04	32.81	1013.90	993.23	93.18	MAS = 10.00 (m)	2550.00	2550.00				MinPts	
	1026.54	32.81	1014.35	993.73	92.77	MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
	933.89	32.81	913.01	901.08	47.26	MAS = 10.00 (m)	6640.00	6586.04				MinPts	
	933.92	32.81	912.95	901.12	47.04	MAS = 10.00 (m)	6660.00	6605.75				MINPT-O-EOU	
	943.14	33.82	920.22	909.32	43.22	OSF1.50	7100.00	7039.58				MinPt-O-SF	
	888.38	33.35	865.73	855.03	41.45	OSF1.50	7830.00	7767.83				MinPt-O-SF	
	887.26	33.26	864.67	854.01	41.53	OSF1.50	7900.00	7837.83				MinPts	
	893.57	33.34	870.93	860.23	41.69	OSF1.50	8210.00	8147.83				MinPt-O-SF	
	900.31	33.58	877.53	866.74	41.68	OSF1.50	8500.00	8437.83				MinPt-O-SF	
	917.84	34.30	894.59	883.54	41.51	OSF1.50	9120.00	9057.83				MinPt-CtCt	
	917.63	34.80	894.04	882.83	40.88	OSF1.50	9380.00	9317.83				MinPt-CtCt	
	917.68	34.95	893.99	882.73	40.70	OSF1.50	9440.00	9377.83				MINPT-O-EOU	
	917.77	35.06	894.01	882.71	40.57	OSF1.50	9480.00	9417.83				MinPt-O-ADP	
	917.96	35.22	894.09	882.74	40.39	OSF1.50	9545.20	9483.03				MinPt-O-ADP	
	917.98	35.22	894.11	882.76	40.39	OSF1.50	9550.00	9487.83				MinPt-O-SF	
	1113.97	39.85	1087.07	1074.12	42.95	OSF1.50	10180.00	9946.66				MinPt-CtCt	
	1114.02	40.01	1087.02	1074.02	42.78	OSF1.50	10190.00	9948.95				MinPts	
	1137.02	66.30	1092.49	1070.71	26.09	OSF1.50	11310.00	9975.00				MinPt-CtCt	
	1137.50	67.64	1092.08	1069.86	25.57	OSF1.50	11370.00	9975.00				MINPT-O-EOU	
	1138.45	70.59	1091.06	1067.86	24.51	OSF1.50	11470.00	9975.00				MinPt-CtCt	
	1138.96	77.96	1086.66	1061.00	22.18	OSF1.50	11740.00	9975.00				MinPt-CtCt	
	1141.65	85.22	1084.51	1056.43	20.31	OSF1.50	12010.00	9975.00				MINPT-O-EOU	
	1142.87	100.45	1075.58	1042.43	17.22	OSF1.50	12540.00	9975.00				MinPt-CtCt	
	1144.36	110.36	1070.46	1034.00	15.68	OSF1.50	12880.00	9975.00				MinPt-CtCt	
	1128.56	143.49	1032.57	985.07	11.87	OSF1.50	14010.00	9975.00				MinPt-CtCt	
	1131.63	152.88	1029.39	978.76	11.17	OSF1.50	14340.00	9975.00				MINPT-O-EOU	
	1132.24	153.58	1029.53	978.66	11.12	OSF1.50	14370.00	9975.00				MinPt-O-ADP	
	1142.95	163.54	1033.60	979.41	10.54	OSF1.50	14700.00	9975.00				MINPT-O-EOU	
	1133.55	197.50	1001.56	936.06	8.64	OSF1.50	15830.00	9975.00				MinPt-CtCt	
	1136.78	207.04	998.43	929.74	8.27	OSF1.50	16160.00	9975.00				MINPT-O-EOU	
	1139.65	211.58	998.27	928.07	8.11	OSF1.50	16310.00	9975.00				MINPT-O-EOU	
	1141.95	220.36	994.72	921.59	7.80	OSF1.50	16590.00	9975.00				MinPt-CtCt	
	1141.28	234.04	984.92	907.24	7.34	OSF1.50	17050.00	9975.00				MinPt-CtCt	
	1143.57	238.95	983.95	904.62	7.20	OSF1.50	17230.00	9975.00				MINPT-O-EOU	
	1143.75	250.46	976.45	893.29	6.87	OSF1.50	17600.00	9975.00				MinPt-CtCt	
	1144.19	251.91	975.92	892.28	6.83	OSF1.50	17660.00	9975.00				MINPT-O-EOU	
	1145.00	255.27	974.49	889.73	6.75	OSF1.50	17760.00	9975.00				MinPt-CtCt	
	1149.19	272.09	967.47	877.10	6.35	OSF1.50	18330.00	9975.00				MINPT-O-EOU	
	1150.06	273.11	967.66	876.95	6.33	OSF1.50	18370.00	9975.00				MinPt-O-ADP	
	1160.89	286.82	969.35	874.08	6.09	OSF1.50	18810.00	9975.00				MinPt-CtCt	
	1159.87	298.15	960.77	861.72	5.85	OSF1.50	19190.00	9975.00				MinPt-CtCt	
	1160.35	299.57	960.31	860.78	5.82	OSF1.50	19250.00	9975.00				MINPT-O-EOU	
	1163.47	305.44	959.52	858.03	5.73	OSF1.50	19450.00	9975.00				MINPT-O-EOU	
	1165.21	321.76	950.38	843.45	5.44	OSF1.50	19980.00	9975.00				MinPt-CtCt	
	1164.53	327.47	945.89	837.07	5.35	OSF1.50	20170.00	9975.00				MinPt-CtCt	
	1165.43	330.34	944.88	835.09	5.30	OSF1.50	20280.00	9975.00				MINPT-O-EOU	
	1166.39	331.77	944.88	834.61	5.28	OSF1.50	20330.00	9975.00				MINPT-O-EOU	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	1168.57	334.63	945.15	833.94	5.25	OSF1.50	20430.00	9975.00				MinPt-O-ADP	
	1174.37	346.01	943.37	828.36	5.10	OSF1.50	20780.00	9975.00				MinPt-CtCt	
	1174.49	347.63	942.41	826.87	5.08	OSF1.50	20839.22	9975.00				MinPts	
Marathon Oil Whistle Pig Fee 1 WA 4H (Offset) MWD 0ft-14593ft (Def Survey)													Pass
	4308.40	32.81	4307.27	4275.60	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	4308.36	32.81	4307.23	4275.55	817540.26	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	4308.34	32.81	4307.21	4275.54	N/A	MAS = 10.00 (m)	20.00	20.00				MINPT-O-EOU	
	4308.34	32.81	4307.21	4275.54	N/A	MAS = 10.00 (m)	26.00	26.00				MinPts	
	4308.37	32.81	4307.19	4275.56	79573.23	MAS = 10.00 (m)	50.00	50.00				MINPT-O-EOU	
	4310.38	32.81	4308.16	4277.57	3953.27	MAS = 10.00 (m)	300.00	300.00				MINPT-O-EOU	
	4320.83	32.81	4314.36	4288.02	810.03	MAS = 10.00 (m)	1220.00	1220.00				MINPT-O-EOU	
	4301.30	32.81	4289.17	4268.49	391.38	MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
	4300.22	32.81	4288.42	4267.41	403.18	MAS = 10.00 (m)	2730.00	2729.75				MINPT-O-EOU	
	4300.18	32.81	4288.45	4267.38	405.71	MAS = 10.00 (m)	2760.00	2759.64				MinPts	
	4329.55	32.81	4318.12	4296.74	420.46	MAS = 10.00 (m)	3590.00	3579.14				MinPt-O-SF	
	4378.33	32.81	4364.21	4345.52	337.06	MAS = 10.00 (m)	4610.00	4584.72				MinPt-O-SF	
	996.97	96.99	931.40	899.98	15.82	OSF1.50	9980.00	9860.18				MinPts	
	1014.44	101.89	945.63	912.54	15.29	OSF1.50	10260.00	9960.80				MinPts	
	1017.12	103.13	947.48	913.99	15.14	OSF1.50	10320.00	9967.98				MinPt-O-SF	
	10611.75	54.83	10574.81	10556.91	296.36	OSF1.50	20839.22	9975.00				TD	
Final Surveys - Cimarex Riverbend 12-13 Federal Com #35H MWD 0ft-21149ft (Surcon Corrected) (Def Survey)													Pass
	1131.41	32.81	1130.12	1098.60	N/A	MAS = 10.00 (m)	0.00	0.00				MinPts	
	1131.41	32.81	1130.12	1098.61	194798.52	MAS = 10.00 (m)	26.00	26.00				WRP	
	1132.31	32.81	1129.70	1099.50	853.76	MAS = 10.00 (m)	300.00	300.00				MINPT-O-EOU	
	1129.84	32.81	1124.93	1097.03	298.74	MAS = 10.00 (m)	870.00	870.00				MinPts	
	1129.89	32.81	1124.90	1097.08	292.94	MAS = 10.00 (m)	890.00	890.00				MINPT-O-EOU	
	1130.99	32.81	1123.49	1098.18	177.35	MAS = 10.00 (m)	1480.00	1480.00				MinPts	
	1131.69	32.81	1122.94	1098.88	148.53	MAS = 10.00 (m)	1760.00	1760.00				MINPT-O-EOU	
	1125.13	32.81	1113.86	1092.32	110.88	MAS = 10.00 (m)	2330.00	2330.00				MinPts	
	1125.35	32.81	1113.50	1092.55	104.91	MAS = 10.00 (m)	2460.00	2460.00				MinPts	
	1125.42	32.81	1113.43	1092.61	103.62	MAS = 10.00 (m)	2490.00	2490.00				MINPT-O-EOU	
	1128.09	32.81	1115.97	1095.28	102.54	MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
	1808.63	32.81	1789.03	1775.82	97.26	MAS = 10.00 (m)	7059.90	7000.00				MinPt-O-SF	
	1815.64	32.81	1795.97	1782.84	97.28	MAS = 10.00 (m)	7100.00	7039.58				MinPt-O-SF	
	1850.93	32.81	1831.83	1818.12	102.31	MAS = 10.00 (m)	7570.00	7507.83				MinPt-O-SF	
	1848.03	32.81	1828.91	1815.23	102.06	MAS = 10.00 (m)	7850.00	7787.83				MinPt-O-SF	
	1838.34	32.81	1819.16	1805.53	101.17	MAS = 10.00 (m)	8550.00	8487.83				MinPts	
	1479.35	34.86	1455.78	1444.49	65.46	OSF1.50	9570.00	9507.82				MinPt-O-SF	
	1476.80	34.68	1453.35	1442.11	65.69	OSF1.50	9650.00	9586.99				MinPts	
	1554.84	40.26	1527.67	1514.58	59.34	OSF1.50	10280.00	9963.47				MINPT-O-EOU	
	1548.13	57.84	1509.24	1490.29	40.81	OSF1.50	11050.00	9975.00				MinPt-CtCt	
	1548.21	62.83	1506.00	1485.39	37.53	OSF1.50	11240.00	9975.00				MinPt-CtCt	
	1537.97	76.47	1486.67	1461.50	30.54	OSF1.50	11740.00	9975.00				MinPt-CtCt	
	1522.43	92.02	1460.75	1430.41	25.07	OSF1.50	12290.00	9975.00				MinPt-CtCt	
	1522.53	92.29	1460.68	1430.24	25.00	OSF1.50	12310.00	9975.00				MINPT-O-EOU	
	1522.65	92.42	1460.71	1430.23	24.96	OSF1.50	12320.00	9975.00				MinPt-O-ADP	
	1549.01	111.54	1474.32	1437.47	21.00	OSF1.50	12990.00	9975.00				MINPT-O-EOU	
	1543.62	133.58	1454.24	1410.05	17.45	OSF1.50	13720.00	9975.00				MinPt-CtCt	
	1530.09	164.12	1420.35	1365.97	14.06	OSF1.50	14750.00	9975.00				MinPt-CtCt	
	1524.52	177.87	1405.62	1346.65	12.92	OSF1.50	15210.00	9975.00				MinPt-CtCt	
	1524.98	179.12	1405.24	1345.86	12.83	OSF1.50	15270.00	9975.00				MINPT-O-EOU	
	1525.75	180.01	1405.42	1345.74	12.78	OSF1.50	15310.00	9975.00				MinPt-O-ADP	
	1536.42	188.34	1410.53	1348.08	12.29	OSF1.50	15600.00	9975.00				MinPt-O-ADP	
	1544.34	207.21	1405.87	1337.13	11.23	OSF1.50	16210.00	9975.00				MINPT-O-EOU	
	1540.85	225.86	1389.95	1314.99	10.27	OSF1.50	16810.00	9975.00				MinPt-CtCt	
	1541.21	226.88	1389.63	1314.33	10.23	OSF1.50	16860.00	9975.00				MINPT-O-EOU	
	1541.54	227.28	1389.69	1314.26	10.21	OSF1.50	16880.00	9975.00				MinPt-O-ADP	
	1522.52	266.67	1344.41	1255.85	8.59	OSF1.50	18160.00	9975.00				MinPt-CtCt	
	1517.53	282.50	1328.86	1235.02	8.08	OSF1.50	18690.00	9975.00				MinPt-CtCt	
	1519.34	295.72	1321.87	1223.62	7.73	OSF1.50	19150.00	9975.00				MINPT-O-EOU	
	1519.88	296.36	1321.98	1223.52	7.71	OSF1.50	19180.00	9975.00				MinPt-O-ADP	
	1517.38	317.16	1305.61	1200.22	7.19	OSF1.50	19840.00	9975.00				MinPt-CtCt	
	1514.23	327.79	1295.37	1186.44	6.95	OSF1.50	20190.00	9975.00				MinPt-CtCt	
	1514.39	328.32	1295.18	1186.07	6.94	OSF1.50	20220.00	9975.00				MINPT-O-EOU	
	1514.67	328.66	1295.23	1186.01	6.93	OSF1.50	20240.00	9975.00				MinPt-O-ADP	
	1518.93	332.64	1296.84	1186.29	6.87	OSF1.50	20380.00	9975.00				MINPT-O-EOU	
	1519.16	332.90	1296.90	1186.27	6.86	OSF1.50	20390.00	9975.00				MinPt-O-ADP	
	1524.58	338.55	1298.56	1186.04	6.77	OSF1.50	20570.00	9975.00				MINPT-O-EOU	
	1525.02	339.02	1298.68	1186.01	6.76	OSF1.50	20590.00	9975.00				MinPt-O-ADP	
	1534.54	345.97	1303.57	1188.58	6.67	OSF1.50	20839.22	9975.00				MinPts	
Final Surveys - Cimarex Riverbend 12-13 Federal Com #34H MWD 0ft-21110ft (Surcon Corrected) (Def Survey)													Pass
	1151.00	32.81	1149.71	1118.19	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1150.99	32.81	1149.70	1118.18	138981.88	MAS = 10.00 (m)	26.00	26.00				WRP	
	1149.58	32.81	1146.60	1116.78	675.31	MAS = 10.00 (m)	440.00	440.00				MINPT-O-EOU	
	1149.06	32.81	1145.62	1116.25	495.88	MAS = 10.00 (m)	570.00	570.00				MinPts	
	1149.31	32.81	1145.29	1116.50	397.87	MAS = 10.00 (m)	690.00	690.00				MINPT-O-EOU	
	1147.24	32.81	1140.18	1114.43	193.52	MAS = 10.00 (m)	1340.00	1340.00				MinPts	
	1148.02	32.81	1139.57	1115.22	156.52	MAS = 10.00 (m)	1620.00	1620.00				MINPT-O-EOU	
	1153.88	32.81	1143.42	1121.07	123.59	MAS = 10.00 (m)	2080.00	2080.00				MinPts	
	1153.94	32.81	1143.39	1121.13	122.40	MAS = 10.00 (m)	2100.00	2100.00				MINPT-O-EOU	
	1172.33	32.81	1159.72	1139.52	101.99	MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
	1933.23	32.81	1912.27	1900.42	96.94	MAS = 10.00 (m)	7059.90	7000.00				MinPt-O-SF	
	1981.66	32.81	1961.52	1948.85	103.61	MAS = 10.00 (m)	7740.00	7677.83				MinPt-O-SF	
	1979.90	32.81	1959.82	1947.09	103.88	MAS = 10.00 (m)	7980.00	7917.83				MinPts	
	1885.67	35.94	1861.39	1849.74	80.88	OSF1.50	9910.00	9813.36				MinPt-CtCt	
	1885.69	36.00	1861.37	1849.70	80.74	OSF1.50	9920.00	9820.51				MinPts	
	1914.15	53.91	1877.88	1860.24	54.23	OSF1.50	10830.00	9975.00				MinPt-CtCt	
	1891.46	106.57	1820.09	1784.89	26.86	OSF1.50	12750.00	9975.00				MinPt-CtCt	
	1891.90	107.84	1819.68	1784.06	26.54	OSF1.50	12810.00	9975.00				MINPT-O-EOU	
	1892.43	108.47	1819.79	1783.96	26.40	OSF1.50	12840.00	9975.00				MinPt-O-ADP	
	1897.37	115.27	1820.20	1782.10	24.89	OSF1.50	13070.00	9975.00				MINPT-O-EOU	
	1898.62	116.73	1820.47	1781.88	24.59	OSF1.50	13130.00	9975.00				MinPt-O-ADP	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	1906.73	132.07	1818.35	1774.66	21.81	OSF1.50	13620.00	9975.00				MinPt-CtCt	
	1890.51	172.06	1775.48	1718.45	16.57	OSF1.50	14970.00	9975.00				MinPt-CtCt	
	1891.81	175.00	1774.81	1716.81	16.30	OSF1.50	15090.00	9975.00				MINPT-O-EOU	
	1893.52	188.26	1767.69	1705.26	15.16	OSF1.50	15510.00	9975.00				MinPt-CtCt	
	1893.83	189.29	1767.31	1704.54	15.08	OSF1.50	15560.00	9975.00				MINPT-O-EOU	
	1894.32	189.89	1767.40	1704.44	15.03	OSF1.50	15590.00	9975.00				MinPt-O-ADP	
	1892.96	195.99	1761.97	1696.97	14.55	OSF1.50	15770.00	9975.00				MinPt-CtCt	
	1893.15	196.54	1761.79	1696.61	14.51	OSF1.50	15800.00	9975.00				MINPT-O-EOU	
	1893.43	196.89	1761.84	1696.54	14.49	OSF1.50	15820.00	9975.00				MinPt-O-ADP	
	1887.44	226.66	1736.00	1660.78	12.54	OSF1.50	16790.00	9975.00				MinPt-CtCt	
	1887.90	227.98	1735.59	1659.93	12.47	OSF1.50	16850.00	9975.00				MINPT-O-EOU	
	1888.64	228.84	1735.75	1659.79	12.43	OSF1.50	16890.00	9975.00				MinPt-O-ADP	
	1873.81	256.22	1702.66	1617.59	11.01	OSF1.50	17770.00	9975.00				MinPt-CtCt	
	1874.15	257.21	1702.35	1616.94	10.97	OSF1.50	17820.00	9975.00				MINPT-O-EOU	
	1874.48	257.59	1702.42	1616.89	10.95	OSF1.50	17840.00	9975.00				MinPt-O-ADP	
	1875.04	264.64	1698.29	1610.40	10.66	OSF1.50	18050.00	9975.00				MinPt-CtCt	
	1875.58	269.76	1695.41	1605.82	10.46	OSF1.50	18220.00	9975.00				MinPt-CtCt	
	1874.59	281.25	1686.76	1593.34	10.03	OSF1.50	18600.00	9975.00				MinPt-CtCt	
	1875.14	282.79	1686.28	1592.35	9.98	OSF1.50	18670.00	9975.00				MINPT-O-EOU	
	1875.69	283.43	1686.41	1592.26	9.96	OSF1.50	18700.00	9975.00				MinPt-O-ADP	
	1876.18	287.31	1684.31	1588.87	9.82	OSF1.50	18800.00	9975.00				MinPt-CtCt	
	1878.01	294.87	1681.10	1583.14	9.58	OSF1.50	19050.00	9975.00				MinPt-CtCt	
	1879.00	300.61	1678.26	1578.39	9.40	OSF1.50	19240.00	9975.00				MinPt-CtCt	
	1873.10	319.79	1659.58	1553.31	8.81	OSF1.50	19870.00	9975.00				MinPt-CtCt	
	1867.54	333.15	1645.12	1534.40	8.43	OSF1.50	20310.00	9975.00				MinPt-CtCt	
	1867.79	333.91	1644.86	1533.89	8.41	OSF1.50	20350.00	9975.00				MINPT-O-EOU	
	1868.09	334.27	1644.92	1533.83	8.40	OSF1.50	20370.00	9975.00				MinPt-O-ADP	
	1874.88	340.92	1647.27	1533.96	8.27	OSF1.50	20590.00	9975.00				MINPT-O-EOU	
	1875.07	341.13	1647.32	1533.94	8.26	OSF1.50	20600.00	9975.00				MinPt-O-ADP	
	1884.39	347.52	1652.38	1536.87	8.15	OSF1.50	20839.22	9975.00				MinPt-O-SF	
Final Surveys - Cimarex Riverbend 12-13 Federal Com #33H 0ft-20967ft (Surcon Corrected) (Def Survey)													Pass
	1170.61	32.81	1169.32	1137.80	N/A	MAS = 10.00 (m)	0.00	0.00				MinPts	
	1170.62	32.81	1169.33	1137.81	163758.56	MAS = 10.00 (m)	26.00	26.00				WRP	
	1171.04	32.81	1169.14	1138.24	1887.24	MAS = 10.00 (m)	180.00	180.00				MINPT-O-EOU	
	1174.00	32.81	1169.57	1141.20	372.92	MAS = 10.00 (m)	750.00	750.00				MinPts	
	1174.14	32.81	1169.43	1141.33	342.29	MAS = 10.00 (m)	810.00	810.00				MINPT-O-EOU	
	1167.62	32.81	1157.88	1134.81	137.97	MAS = 10.00 (m)	1910.00	1910.00				MinPts	
	1167.71	32.81	1157.78	1134.90	135.00	MAS = 10.00 (m)	1950.00	1950.00				MINPT-O-EOU	
	1198.56	32.81	1185.97	1165.75	105.87	MAS = 10.00 (m)	2500.00	2500.00				MinPt-O-SF	
	1201.69	32.81	1189.08	1168.88	106.03	MAS = 10.00 (m)	2540.00	2540.00				MinPt-O-SF	
	1641.19	32.81	1629.44	1608.38	156.73	MAS = 10.00 (m)	4170.00	4150.94				MinPt-O-SF	
	1700.19	32.81	1688.18	1667.39	158.42	MAS = 10.00 (m)	4380.00	4357.97				MinPt-O-SF	
	2324.86	33.04	2302.41	2291.82	109.76	OSF1.50	7100.00	7039.58				MinPt-O-SF	
	2347.54	32.81	2326.21	2314.73	117.03	MAS = 10.00 (m)	7880.00	7817.83				MINPT-O-EOU	
	2347.54	32.81	2326.21	2314.73	117.06	MAS = 10.00 (m)	7890.00	7827.83				MinPts	
	2349.60	32.81	2328.12	2316.79	116.32	MAS = 10.00 (m)	8370.00	8307.83				MinPts	
	2349.60	32.81	2328.12	2316.79	116.26	MAS = 10.00 (m)	8390.00	8327.83				MINPT-O-EOU	
	2274.48	38.17	2248.61	2236.32	92.46	OSF1.50	9800.00	9725.91				MinPt-CtCt	
	2274.50	38.23	2248.59	2236.28	92.31	OSF1.50	9810.00	9734.46				MINPT-O-EOU	
	2274.55	38.29	2248.60	2236.26	92.16	OSF1.50	9820.00	9742.91				MinPt-O-ADP	
	2324.76	51.97	2289.68	2272.79	68.76	OSF1.50	10680.00	9975.00				MinPt-O-ADP	
	2290.05	100.15	2222.86	2189.90	34.73	OSF1.50	12440.00	9975.00				MinPt-CtCt	
	2290.52	101.65	2222.33	2188.87	34.21	OSF1.50	12510.00	9975.00				MINPT-O-EOU	
	2291.17	102.63	2222.33	2188.55	33.89	OSF1.50	12550.00	9975.00				MINPT-O-EOU	
	2299.49	112.17	2224.28	2187.32	31.09	OSF1.50	12890.00	9975.00				MinPt-O-ADP	
	2284.51	166.77	2172.90	2117.74	20.70	OSF1.50	14700.00	9975.00				MinPt-CtCt	
	2295.19	188.83	2168.87	2106.36	18.35	OSF1.50	15460.00	9975.00				MINPT-O-EOU	
	2296.15	189.97	2169.07	2106.18	18.24	OSF1.50	15510.00	9975.00				MinPt-O-ADP	
	2299.99	196.60	2168.50	2103.39	17.65	OSF1.50	15700.00	9975.00				MinPt-CtCt	
	2289.17	248.74	2122.92	2040.43	13.87	OSF1.50	17430.00	9975.00				MinPt-CtCt	
	2289.75	250.51	2122.32	2039.24	13.77	OSF1.50	17510.00	9975.00				MINPT-O-EOU	
	2267.44	332.67	2045.23	1934.77	10.26	OSF1.50	20210.00	9975.00				MinPt-CtCt	
	2268.26	335.34	2044.27	1932.92	10.18	OSF1.50	20320.00	9975.00				MINPT-O-EOU	
	2270.91	338.45	2044.85	1932.47	10.10	OSF1.50	20440.00	9975.00				MinPt-O-ADP	
	2280.76	350.87	2046.41	1929.89	9.78	OSF1.50	20839.22	9975.00				MinPts	
Final Surveys - Cimarex Riverbend 12-13 Federal Com #32H 0' to 21507' (Surcon Corrected) (Def Survey)													Pass
	1190.19	32.81	1188.91	1157.38	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1190.19	32.81	1188.90	1157.38	154204.40	MAS = 10.00 (m)	26.00	26.00				WRP	
	1179.25	32.81	1174.65	1146.45	339.37	MAS = 10.00 (m)	780.00	780.00				MinPts	
	1179.29	32.81	1174.59	1146.48	330.29	MAS = 10.00 (m)	800.00	800.00				MINPT-O-EOU	
	1333.87	32.81	1321.42	1301.06	117.76	MAS = 10.00 (m)	2500.00	2500.00				MinPt-O-SF	
	1853.95	32.81	1842.29	1821.14	174.11	MAS = 10.00 (m)	4260.00	4239.67				MinPt-O-SF	
	2726.02	33.85	2703.11	2692.17	124.51	OSF1.50	7100.00	7039.58				MinPt-O-SF	
	2796.58	33.93	2773.62	2762.65	127.42	OSF1.50	7770.00	7707.83				MinPt-O-SF	
	2799.88	34.00	2776.87	2765.88	127.31	OSF1.50	7930.00	7867.83				MinPt-O-SF	
	2801.21	34.01	2778.20	2767.21	127.34	OSF1.50	8030.00	7967.83				MinPt-O-SF	
	2804.66	33.89	2781.72	2770.76	127.93	OSF1.50	8210.00	8147.83				MinPt-O-SF	
	2808.14	34.39	2784.87	2773.75	126.18	OSF1.50	8500.00	8437.83				MinPts	
	2808.14	34.40	2784.87	2773.75	126.16	OSF1.50	8510.00	8447.83				MinPt-O-ADP	
	2808.33	34.42	2785.04	2773.90	126.07	OSF1.50	8570.00	8507.83				MinPt-O-SF	
	2812.22	34.81	2788.67	2777.41	124.79	OSF1.50	8980.00	8917.83				MinPt-O-SF	
	2683.28	41.70	2655.15	2641.58	98.81	OSF1.50	9960.00	9847.59				MinPt-CtCt	
	2683.33	41.87	2655.09	2641.46	98.42	OSF1.50	9980.00	9860.18				MINPT-O-EOU	
	2683.39	41.95	2655.10	2641.45	98.22	OSF1.50	9990.00	9866.23				MinPt-O-ADP	
	2688.89	51.13	2654.48	2637.76	80.41	OSF1.50	10520.00	9975.00				MinPt-CtCt	
	2681.84	82.80	2626.31	2599.03	49.15	OSF1.50	11800.00	9975.00				MinPt-CtCt	
	2681.08	96.92	2616.13	2584.15	41.90	OSF1.50	12310.00	9975.00				MinPt-CtCt	
	2667.17	121.78	2585.65	2545.39	33.11	OSF1.50	13180.00	9975.00				MinPt-CtCt	
	2665.14	154.00	2562.15	2511.14	26.12	OSF1.50	14280.00	9975.00				MinPt-CtCt	
	2658.70	187.28	2533.52	2471.42	21.40	OSF1.50	15400.00	9975.00				MinPt-CtCt	
	2655.99	204.01	2519.66	2451.98	19.62	OSF1.50	15960.00	9975.00				MinPt-CtCt	
	2665.03	222.14	2516.61	2442.89	18.07	OSF1.50	16590.00	9975.00				MINPT-O-EOU	
	2668.62	226.64	2517.20	2441.98	17.73	OSF1.50	16750.00	9975.00				MinPt-O-ADP	
	2637.16	275.40	2453.23	2361.76	14.41	OSF1.50	18330.00	9975.00				MinPt-CtCt	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	2637.79	277.23	2452.64	2360.56	14.32	OSF1.50	18410.00	9975.00				MINPT-O-EOU	
	2638.54	278.12	2452.80	2360.42	14.28	OSF1.50	18450.00	9975.00				MinPt-O-ADP	
	2643.78	300.19	2443.32	2343.59	13.25	OSF1.50	19150.00	9975.00				MinPt-CtCt	
	2642.63	312.25	2434.13	2330.37	12.73	OSF1.50	19550.00	9975.00				MinPt-CtCt	
	2638.01	329.81	2417.81	2308.20	12.03	OSF1.50	20130.00	9975.00				MinPt-CtCt	
	2637.66	337.08	2412.61	2300.58	11.77	OSF1.50	20370.00	9975.00				MinPt-CtCt	
	2637.36	345.84	2406.47	2291.51	11.47	OSF1.50	20660.00	9975.00				MinPt-CtCt	
	2637.38	350.09	2403.66	2287.29	11.33	OSF1.50	20800.00	9975.00				MinPt-CtCt	
	2637.53	350.55	2403.50	2286.98	11.31	OSF1.50	20830.00	9975.00				MINPT-O-EOU	
	2637.64	350.68	2403.53	2286.96	11.31	OSF1.50	20839.22	9975.00				MinPts	
Endeavor Seminole Federal #3 (Offset) Inc Only 0ft-5191ft (Def Survey)													Pass
	1239.63	32.81	1238.50	1206.82	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	1239.08	32.81	1237.88	1206.27	18302.26	MAS = 10.00 (m)	20.00	20.00				MinPt-O-SF	
	1238.98	32.81	1237.78	1206.17	18768.46	MAS = 10.00 (m)	26.00	26.00				WRP	
	1238.85	32.81	1237.60	1206.04	10722.47	MAS = 10.00 (m)	50.00	50.00				MinPts	
	1224.91	100.60	1157.46	1124.30	18.46	OSF1.50	1910.00	1910.00				MinPt-CtCt	
	1253.87	190.49	1126.51	1063.39	9.92	OSF1.50	3580.00	3569.28				MINPT-O-EOU	
	1260.52	198.61	1127.74	1061.91	9.57	OSF1.50	3760.00	3746.73				MinPt-O-ADP	
	1376.94	268.66	1197.45	1108.28	7.71	OSF1.50	5250.00	5215.68				MinPt-O-SF	
	6786.11	198.05	6653.70	6588.06	51.68	OSF1.50	13100.00	9975.00				MinPt-O-SF	
	13457.02	263.60	13280.91	13193.42	76.90	OSF1.50	20839.22	9975.00				TD	
Marathon Oil Rustler Bluff #7 (Offset) Inc Only 0ft-6500ft (Def Survey)													Pass
	2251.01	32.81	2249.88	2218.20	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	2250.51	32.81	2249.32	2217.70	37169.97	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	2250.31	32.81	2249.08	2217.50	22355.01	MAS = 10.00 (m)	60.00	60.00				MinPts	
	2250.62	68.20	2204.78	2182.42	50.31	OSF1.50	1440.00	1440.00				MinPt-CtCt	
	1737.42	333.21	1514.71	1404.21	7.85	OSF1.50	6720.00	6664.91				MinPt-O-SF	
	1735.18	332.33	1513.07	1402.85	7.86	OSF1.50	6780.00	6724.06				MinPt-O-ADP	
	1735.01	332.15	1513.02	1402.86	7.87	OSF1.50	6790.00	6733.92				MINPT-O-EOU	
	1734.84	331.75	1513.12	1403.10	7.88	OSF1.50	6810.00	6753.63				MinPt-CtCt	
	4853.27	243.68	4690.44	4609.59	30.01	OSF1.50	12610.00	9975.00				MinPt-O-SF	
	11874.72	329.67	11654.57	11545.05	54.21	OSF1.50	20839.22	9975.00				TD	
Mewbourne Malaga 13 CN Federal Com 1H (Offset) MWD 0ft-12805ft (Def Survey)													Pass
	6789.16	32.81	6787.19	6756.36	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	6789.03	32.81	6787.04	6756.22	461354.50	MAS = 10.00 (m)	26.00	26.00				WRP	
	6771.71	32.81	6763.10	6738.90	1021.69	MAS = 10.00 (m)	1450.00	1450.00				MinPts	
	6771.98	32.81	6762.86	6739.17	948.34	MAS = 10.00 (m)	1550.00	1550.00				MINPT-O-EOU	
	6782.76	32.81	6768.76	6749.96	563.87	MAS = 10.00 (m)	2560.00	2560.00				MinPt-O-SF	
	6671.64	32.81	6659.79	6638.83	682.15	MAS = 10.00 (m)	3860.00	3845.32				MinPt-O-SF	
	6408.73	32.81	6386.88	6375.92	329.54	MAS = 10.00 (m)	7100.00	7039.58				MinPt-O-SF	
	6395.29	32.81	6374.09	6362.49	340.61	MAS = 10.00 (m)	7420.00	7357.87				MINPT-O-EOU	
	6395.27	32.81	6374.12	6362.46	341.53	MAS = 10.00 (m)	7440.00	7377.85				MinPts	
	6399.23	32.81	6378.33	6366.42	346.32	MAS = 10.00 (m)	7770.00	7707.83				MINPT-O-EOU	
	6588.44	32.81	6566.55	6555.63	330.78	MAS = 10.00 (m)	9545.20	9483.03				MinPt-O-SF	
	1920.65	160.05	1813.29	1760.60	18.21	OSF1.50	16990.00	9975.00				MinPt-CtCt	
	1889.68	194.44	1759.39	1695.23	14.71	OSF1.50	18160.00	9975.00				MinPt-CtCt	
	1876.77	231.04	1722.09	1645.73	12.28	OSF1.50	19290.00	9975.00				MinPt-CtCt	
	1877.27	232.62	1721.53	1644.65	12.20	OSF1.50	19360.00	9975.00				MINPT-O-EOU	
	1875.40	245.34	1711.18	1630.06	11.55	OSF1.50	19710.00	9975.00				MinPt-CtCt	
	1876.37	247.97	1710.40	1628.40	11.43	OSF1.50	19810.00	9975.00				MINPT-O-EOU	
	1877.16	249.16	1710.40	1628.00	11.38	OSF1.50	19850.00	9975.00				MINPT-O-EOU	
	1879.29	252.90	1710.03	1626.39	11.22	OSF1.50	19950.00	9975.00				MINPT-O-EOU	
	1880.33	254.17	1710.22	1626.16	11.17	OSF1.50	20000.00	9975.00				MinPt-O-ADP	
	1863.55	282.19	1674.77	1581.37	9.97	OSF1.50	20790.00	9975.00				MinPts	
	1863.61	282.25	1674.78	1581.35	9.96	OSF1.50	20800.00	9975.00				MinPt-O-ADP	
	1864.08	282.41	1675.15	1581.67	9.96	OSF1.50	20830.00	9975.00				MinPt-O-SF	
	1864.33	282.44	1675.37	1581.88	9.96	OSF1.50	20839.22	9975.00				TD	
Marathon Oil Whistle Pig 1 WXY FEE 9H (Offset) MWD 0ft-14503ft (Def Survey)													Pass
	4337.86	32.81	4336.73	4305.05	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	4337.82	32.81	4336.68	4305.01	769561.04	MAS = 10.00 (m)	10.00	10.00				MinPt-O-SF	
	4337.80	32.81	4336.66	4304.99	N/A	MAS = 10.00 (m)	20.00	20.00				MINPT-O-EOU	
	4337.79	32.81	4336.66	4304.99	N/A	MAS = 10.00 (m)	26.00	26.00				MinPts	
	4337.84	32.81	4336.63	4305.03	56428.21	MAS = 10.00 (m)	60.00	60.00				MINPT-O-EOU	
	4339.93	32.81	4337.69	4307.12	3914.19	MAS = 10.00 (m)	310.00	310.00				MINPT-O-EOU	
	4335.96	32.81	4331.36	4303.15	1250.61	MAS = 10.00 (m)	820.00	820.00				MinPts	
	4336.06	32.81	4331.24	4303.25	1175.43	MAS = 10.00 (m)	870.00	870.00				MINPT-O-EOU	
	4386.16	32.81	4373.79	4353.35	390.43	MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
	1989.62	220.85	1841.82	1768.78	13.61	OSF1.50	9810.00	9734.46				MinPt-CtCt	
	1990.04	221.90	1841.53	1768.14	13.55	OSF1.50	9850.00	9767.54				MINPT-O-EOU	
	1990.51	222.44	1841.65	1768.07	13.52	OSF1.50	9870.00	9783.35				MinPt-O-ADP	
	1999.54	230.43	1845.38	1769.11	13.10	OSF1.50	10040.00	9893.90				MinPts	
	2021.51	246.28	1856.75	1775.24	12.39	OSF1.50	10420.00	9974.39				MinPt-O-SF	
	10738.00	100.25	10670.79	10637.75	162.49	OSF1.50	20839.22	9975.00				TD	
COG Illustrated Man Fee Com #1H (Offset) Gyro+MWD 0ft-12865ft (Def Survey)													Pass
	2041.43	32.81	2039.45	2008.63	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	2041.43	32.81	2039.45	2008.62	N/A	MAS = 10.00 (m)	10.00	10.00				MinPts	
	2041.44	32.81	2039.45	2008.63	216304.99	MAS = 10.00 (m)	26.00	26.00				WRP	
	2041.57	32.81	2039.38	2008.76	9865.97	MAS = 10.00 (m)	90.00	90.00				MINPT-O-EOU	
	2041.97	32.81	2038.96	2009.16	1990.95	MAS = 10.00 (m)	240.00	240.00				MINPT-O-EOU	
	2050.34	32.81	2036.99	2017.54	180.37	MAS = 10.00 (m)	2570.00	2569.99				MinPt-O-SF	
	2047.68	32.81	2035.16	2014.87	194.31	MAS = 10.00 (m)	2840.00	2839.20				MINPT-O-EOU	
	2047.62	32.81	2035.22	2014.81	196.60	MAS = 10.00 (m)	2880.00	2878.89				MinPts	
	2251.15	32.81	2229.75	2218.34	115.82	MAS = 10.00 (m)	7059.90	7000.00				MinPt-O-SF	
	2254.61	32.81	2233.18	2221.80	115.81	MAS = 10.00 (m)	7100.00	7039.58				MinPt-O-SF	
	2282.31	32.81	2261.92	2249.51	123.80	MAS = 10.00 (m)	7550.00	7487.83				MinPt-O-SF	
	2673.14	68.30	2626.94	2604.83	60.41	OSF1.50	11810.00	9975.00				MinPt-CtCt	
	2673.97	70.70	2626.18	2603.27	58.32	OSF1.50	11900.00	9975.00				MINPT-O-EOU	
	2675.08	72.03	2626.40	2603.05	57.24	OSF1.50	11950.00	9975.00				MinPt-O-ADP	

Offset Trajectory	Separation			Allow	Sep.	Controlling	Reference Trajectory		Risk Level			Alert	Status
	Ct-Ct (ft)	MAS (ft)	EOU (ft)	Dev. (ft)	Fact.	Rule	MD (ft)	TVD (ft)	Alert	Minor	Major		
	2702.80	102.85	2633.58	2599.95	40.16	OSF1.50	12630.00	9975.00				MINPT-O-EOU	
	2704.29	104.64	2633.87	2599.65	39.48	OSF1.50	12690.00	9975.00				MinPt-O-ADP	
	2712.46	115.63	2634.71	2596.83	35.77	OSF1.50	12920.00	9975.00				MINPT-O-EOU	
	2712.74	115.92	2634.79	2596.81	35.69	OSF1.50	12930.00	9975.00				MinPt-O-ADP	
	2757.46	153.65	2654.37	2603.81	27.25	OSF1.50	13720.00	9975.00				MINPT-O-EOU	
	2761.17	158.09	2655.12	2603.08	26.51	OSF1.50	13840.00	9975.00				MinPt-O-ADP	
	2767.27	165.19	2656.48	2602.08	25.42	OSF1.50	13990.00	9975.00				MINPT-O-EOU	
	2767.64	165.60	2656.58	2602.04	25.35	OSF1.50	14000.00	9975.00				MinPt-O-ADP	
	2781.55	174.90	2664.29	2606.65	24.11	OSF1.50	14240.00	9975.00				MinPt-O-ADP	
	2808.00	193.55	2678.30	2614.44	21.97	OSF1.50	14610.00	9975.00				MINPT-O-EOU	
	2819.48	206.81	2680.95	2612.67	20.63	OSF1.50	14860.00	9975.00				MinPt-O-ADP	
	2827.86	215.72	2683.39	2612.14	19.83	OSF1.50	15040.00	9975.00				MINPT-O-EOU	
	2835.02	229.74	2681.20	2605.28	18.66	OSF1.50	15290.00	9975.00				MINPT-O-EOU	
	2837.61	232.83	2681.73	2604.78	18.43	OSF1.50	15380.00	9975.00				MinPt-O-ADP	
	2849.40	241.48	2687.75	2607.92	17.83	OSF1.50	15610.00	9975.00				MinPts	
	2853.42	243.86	2690.19	2609.56	17.68	OSF1.50	15680.00	9975.00				MinPt-O-SF	
	6054.19	147.84	5954.97	5906.35	62.24	OSF1.50	20839.22	9975.00				TD	
Mewbourne Malaga 13 DM Federal Com 1H (Offset) Gyro+MWD 0ft-Update (Def Survey)													Pass
	6329.82	32.81	6327.84	6297.01	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	6329.66	32.81	6327.66	6296.85	326760.35	MAS = 10.00 (m)	26.00	26.00				MinPt-O-SF	
	6329.60	32.81	6327.55	6296.79	83760.01	MAS = 10.00 (m)	60.00	60.00				MinPts	
	6329.68	32.81	6325.50	6296.87	2876.96	MAS = 10.00 (m)	500.00	500.00				MinPts	
	6316.99	32.81	6308.87	6284.19	1028.46	MAS = 10.00 (m)	1320.00	1320.00				MinPts	
	6317.08	32.81	6308.76	6284.27	995.85	MAS = 10.00 (m)	1370.00	1370.00				MINPT-O-EOU	
	6336.90	32.81	6323.46	6304.09	552.82	MAS = 10.00 (m)	2600.00	2599.98				MinPt-O-SF	
	6077.50	32.81	6055.79	6044.69	312.30	MAS = 10.00 (m)	7100.00	7039.58				MinPt-O-SF	
	6055.43	32.81	6034.70	6022.62	328.33	MAS = 10.00 (m)	7590.00	7527.83				MinPt-O-SF	
	6054.95	32.81	6034.22	6022.14	328.33	MAS = 10.00 (m)	7630.00	7567.83				MinPt-O-SF	
	6053.56	32.81	6032.81	6020.75	328.02	MAS = 10.00 (m)	7810.00	7747.83				MinPts	
	6282.01	32.81	6260.58	6249.20	322.98	MAS = 10.00 (m)	9545.20	9483.03				MinPt-O-SF	
	2649.92	135.70	2558.80	2514.23	29.70	OSF1.50	15840.00	9975.00				MinPt-CtCt	
	2650.12	136.37	2558.54	2513.75	29.56	OSF1.50	15880.00	9975.00				MINPT-O-EOU	
	2650.41	136.71	2558.61	2513.70	29.49	OSF1.50	15900.00	9975.00				MinPt-O-ADP	
	2731.81	156.92	2626.53	2574.89	26.43	OSF1.50	16600.00	9975.00				MinPts	
	2888.06	222.96	2738.76	2665.10	19.59	OSF1.50	18300.00	9975.00				MINPT-O-EOU	
	2889.24	224.57	2738.86	2664.67	19.46	OSF1.50	18320.00	9975.00				MinPt-O-ADP	
	2997.34	278.38	2811.09	2718.96	16.26	OSF1.50	19530.00	9975.00				MinPts	
	3007.61	287.26	2815.44	2720.35	15.80	OSF1.50	19710.00	9975.00				MinPt-O-ADP	
	3040.70	302.66	2838.27	2738.04	15.16	OSF1.50	20120.00	9975.00				MinPts	
	3068.22	318.16	2855.46	2750.07	14.55	OSF1.50	20440.00	9975.00				MinPts	
	3073.82	324.00	2857.16	2749.82	14.31	OSF1.50	20510.00	9975.00				MinPts	
	3084.21	332.24	2862.06	2751.98	14.00	OSF1.50	20670.00	9975.00				MINPT-O-EOU	
	3086.72	335.06	2862.68	2751.66	13.89	OSF1.50	20720.00	9975.00				MinPt-O-ADP	
	3093.42	339.15	2866.66	2754.27	13.75	OSF1.50	20839.22	9975.00				MinPt-O-SF	

Schlumberger

Cimarex Riverbend 12-13 Federal Com #20H Rev0 mcs 19Mar20 Proposal
Geodetic Report
(Def Plan)

CIMAREX

Report Date:	April 02, 2020 - 02:54 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 #20H / Cimarex Riverbend 12-13 Federal Com #20H	**TVD Reference Datum:**	RKB
Well:	Cimarex Riverbend 12-13 Federal Com #20H	**TVD Reference Elevation:**	2961.000 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	2935.000 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.920 °
Survey Name:	Cimarex Riverbend 12-13 Federal Com #20H Rev0 mcs 19Mar20	**Total Gravity Field Strength:**	998.4598mgn (9.80665 Based)
Survey Date:	March 23, 2020	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	109.287 ° / 11784.706 ft / 6.430 / 1.181	**Total Magnetic Field Strength:**	47797.250 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.853 °
Location Lat / Long:	N 32° 9' 19.11763", W 104° 2' 29.86656"	**Declination Date:**	March 23, 2020
Location Grid N/E Y/X:	N 420359.510 ftUS, E 631609.590 ftUS	**Magnetic Declination Model:**	HDGM 2020
CRS Grid Convergence Angle:	0.1553 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99991842	**Grid Convergence Used:**	0.1553 °
Version / Patch:	2.10.787.0	**Total Corr Mag North->Grid North:**	6.7647 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [1207' FSL 2422' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	100.00	0.00	130.00	100.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	200.00	0.00	130.00	200.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	300.00	0.00	130.00	300.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	400.00	0.00	130.00	400.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
Rustler	*464.00*	*0.00*	*130.00*	*464.00*	*0.00*	*0.00*	*0.00*	*0.00*	*420359.51*	*631609.59*	*N 32 9 19.12*	*W 104 2 29.87*
	500.00	0.00	130.00	500.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	600.00	0.00	130.00	600.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	700.00	0.00	130.00	700.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	800.00	0.00	130.00	800.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	900.00	0.00	130.00	900.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	1000.00	0.00	130.00	1000.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	1100.00	0.00	130.00	1100.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	1200.00	0.00	130.00	1200.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	1300.00	0.00	130.00	1300.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	1400.00	0.00	130.00	1400.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	1500.00	0.00	130.00	1500.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	1600.00	0.00	130.00	1600.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	1700.00	0.00	130.00	1700.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	1800.00	0.00	130.00	1800.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	1900.00	0.00	130.00	1900.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
Salado	*1926.00*	*0.00*	*130.00*	*1926.00*	*0.00*	*0.00*	*0.00*	*0.00*	*420359.51*	*631609.59*	*N 32 9 19.12*	*W 104 2 29.87*
	2000.00	0.00	130.00	2000.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	2100.00	0.00	130.00	2100.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	2200.00	0.00	130.00	2200.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	2300.00	0.00	130.00	2300.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	2400.00	0.00	130.00	2400.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
Castille	*2487.00*	*0.00*	*130.00*	*2487.00*	*0.00*	*0.00*	*0.00*	*0.00*	*420359.51*	*631609.59*	*N 32 9 19.12*	*W 104 2 29.87*
Nudge 2°/100' DLS	2500.00	0.00	130.00	2500.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
	2600.00	2.00	130.00	2599.98	1.12	-1.12	1.34	2.00	420358.39	631610.93	N 32 9 19.11	W 104 2 29.85
Bell Canyon	*2680.12*	*3.60*	*130.00*	*2680.00*	*3.65*	*-3.64*	*4.34*	*2.00*	*420355.87*	*631613.93*	*N 32 9 19.08*	*W 104 2 29.82*
	2700.00	4.00	130.00	2699.84	4.50	-4.49	5.35	2.00	420355.02	631614.94	N 32 9 19.07	W 104 2 29.80
	2800.00	6.00	130.00	2799.45	10.11	-10.09	12.02	2.00	420349.42	631621.61	N 32 9 19.02	W 104 2 29.73
	2900.00	8.00	130.00	2898.70	17.96	-17.92	21.36	2.00	420341.59	631630.95	N 32 9 18.94	W 104 2 29.62
Hold Nudge	2982.19	9.64	130.00	2979.91	26.08	-26.02	31.01	2.00	420333.49	631640.60	N 32 9 18.86	W 104 2 29.51
	3000.00	9.64	130.00	2997.47	28.00	-27.94	33.30	0.00	420331.57	631642.89	N 32 9 18.84	W 104 2 29.48
	3100.00	9.64	130.00	3096.06	38.80	-38.71	46.13	0.00	420320.80	631655.72	N 32 9 18.73	W 104 2 29.33
	3200.00	9.64	130.00	3194.65	49.59	-49.48	58.96	0.00	420310.04	631668.55	N 32 9 18.63	W 104 2 29.18
	3300.00	9.64	130.00	3293.24	60.38	-60.24	71.80	0.00	420299.27	631681.38	N 32 9 18.52	W 104 2 29.03
	3400.00	9.64	130.00	3391.82	71.17	-71.01	84.63	0.00	420288.50	631694.21	N 32 9 18.41	W 104 2 28.88
	3500.00	9.64	130.00	3490.41	81.96	-81.78	97.46	0.00	420277.74	631707.04	N 32 9 18.31	W 104 2 28.74
	3600.00	9.64	130.00	3589.00	92.76	-92.55	110.30	0.00	420266.97	631719.88	N 32 9 18.20	W 104 2 28.59
Cherry Canyon	*3680.14*	*9.64*	*130.00*	*3668.00*	*101.41*	*-101.18*	*120.58*	*0.00*	*420258.34*	*631730.16*	*N 32 9 18.11*	*W 104 2 28.47*
	3700.00	9.64	130.00	3687.58	103.55	-103.32	123.13	0.00	420256.20	631732.71	N 32 9 18.09	W 104 2 28.44
	3800.00	9.64	130.00	3786.17	114.34	-114.08	135.96	0.00	420245.43	631745.54	N 32 9 17.99	W 104 2 28.29
	3900.00	9.64	130.00	3884.76	125.13	-124.85	148.79	0.00	420234.67	631758.37	N 32 9 17.88	W 104 2 28.14
	4000.00	9.64	130.00	3983.34	135.93	-135.62	161.63	0.00	420223.90	631771.20	N 32 9 17.77	W 104 2 27.99
	4100.00	9.64	130.00	4081.93	146.72	-146.39	174.46	0.00	420213.13	631784.03	N 32 9 17.66	W 104 2 27.84
	4200.00	9.64	130.00	4180.52	157.51	-157.16	187.29	0.00	420202.37	631796.87	N 32 9 17.56	W 104 2 27.69
	4300.00	9.64	130.00	4279.10	168.30	-167.93	200.13	0.00	420191.60	631809.70	N 32 9 17.45	W 104 2 27.54
	4400.00	9.64	130.00	4377.69	179.09	-178.69	212.96	0.00	420180.83	631822.53	N 32 9 17.34	W 104 2 27.40
	4500.00	9.64	130.00	4476.28	189.89	-189.46	225.79	0.00	420170.06	631835.36	N 32 9 17.24	W 104 2 27.25
	4600.00	9.64	130.00	4574.86	200.68	-200.23	238.62	0.00	420159.30	631848.19	N 32 9 17.13	W 104 2 27.10
	4700.00	9.64	130.00	4673.45	211.47	-211.00	251.46	0.00	420148.53	631861.03	N 32 9 17.02	W 104 2 26.95
	4800.00	9.64	130.00	4772.04	222.26	-221.77	264.29	0.00	420137.76	631873.86	N 32 9 16.92	W 104 2 26.80
	4900.00	9.64	130.00	4870.63	233.06	-232.53	277.12	0.00	420127.00	631886.69	N 32 9 16.81	W 104 2 26.65
	5000.00	9.64	130.00	4969.21	243.85	-243.30	289.96	0.00	420116.23	631899.52	N 32 9 16.70	W 104 2 26.50
	5100.00	9.64	130.00	5067.80	254.64	-254.07	302.79	0.00	420105.46	631912.35	N 32 9 16.60	W 104 2 26.35
	5200.00	9.64	130.00	5166.39	265.43	-264.84	315.62	0.00	420094.69	631925.18	N 32 9 16.49	W 104 2 26.20
	5300.00	9.64	130.00	5264.97	276.22	-275.61	328.45	0.00	420083.93	631938.02	N 32 9 16.38	W 104 2 26.05
Brushy Canyon	*5302.06*	*9.64*	*130.00*	*5267.00*	*276.45*	*-275.83*	*328.72*	*0.00*	*420083.71*	*631938.28*	*N 32 9 16.38*	*W 104 2 26.05*
	5400.00	9.64	130.00	5363.56	287.02	-286.37	341.29	0.00	420073.16	631950.85	N 32 9 16.27	W 104 2 25.91
	5500.00	9.64	130.00	5462.15	297.81	-297.14	354.12	0.00	420062.39	631963.68	N 32 9 16.17	W 104 2 25.76
	5600.00	9.64	130.00	5560.73	308.60	-307.91	366.95	0.00	420051.63	631976.51	N 32 9 16.06	W 104 2 25.61
	5700.00	9.64	130.00	5659.32	319.39	-318.68	379.78	0.00	420040.86	631989.34	N 32 9 15.95	W 104 2 25.46
	5800.00	9.64	130.00	5757.91	330.18	-329.45	392.62	0.00	420030.09	632002.17	N 32 9 15.85	W 104 2 25.31
	5900.00	9.64	130.00	5856.49	340.98	-340.21	405.45	0.00	420019.33	632015.01	N 32 9 15.74	W 104 2 25.16
	6000.00	9.64	130.00	5955.08	351.77	-350.98	418.28	0.00	420008.56	632027.84	N 32 9 15.63	W 104 2 25.01
	6100.00	9.64	130.00	6053.67	362.56	-361.75	431.12	0.00	419997.79	632040.67	N 32 9 15.53	W 104 2 24.86
	6200.00	9.64	130.00	6152.25	373.35	-372.52	443.95	0.00	419987.02	632053.50	N 32 9 15.42	W 104 2 24.71
Brushy Canyon Lower	*6207.86*	*9.64*	*130.00*	*6160.00*	*374.20*	*-373.36*	*444.96*	*0.00*	*419986.18*	*632054.51*	*N 32 9 15.41*	*W 104 2 24.70*
	6300.00	9.64	130.00	6250.84	384.15	-383.29	456.78	0.00	419976.26	632066.33	N 32 9 15.31	W 104 2 24.57
	6400.00	9.64	130.00	6349.43	394.94	-394.05	469.61	0.00	419965.49	632079.17	N 32 9 15.21	W 104 2 24.42
Bone Spring	*6451.30*	*9.64*	*130.00*	*6400.00*	*400.47*	*-399.58*	*476.20*	*0.00*	*419959.97*	*632085.75*	*N 32 9 15.15*	*W 104 2 24.34*

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	6500.00	9.64	130.00	6448.01	405.73	-404.82	482.45	0.00	419954.72	632092.00	N 32 9 15.10	W 104 2 24.27
Bone Spring "A" Shale	*6566.93*	*9.64*	*130.00*	*6514.00*	*412.95*	*-412.03*	*491.04*	*0.00*	*419947.52*	*632100.59*	*N 32 9 15.03*	*W 104 2 24.17*
	6600.00	9.64	130.00	6546.60	416.52	-415.59	495.28	0.00	419943.96	632104.83	N 32 9 14.99	W 104 2 24.12
	6700.00	9.64	130.00	6645.19	427.31	-426.36	508.11	0.00	419933.19	632117.66	N 32 9 14.89	W 104 2 23.97
	6800.00	9.64	130.00	6743.78	438.11	-437.13	520.95	0.00	419922.42	632130.49	N 32 9 14.78	W 104 2 23.82
	6900.00	9.64	130.00	6842.36	448.90	-447.89	533.78	0.00	419911.65	632143.32	N 32 9 14.67	W 104 2 23.67
	7000.00	9.64	130.00	6940.95	459.69	-458.66	546.61	0.00	419900.89	632156.16	N 32 9 14.56	W 104 2 23.52
Drop 2°/100' DLS	7059.90	9.64	130.00	7000.00	466.16	-465.11	554.30	0.00	419894.44	632163.84	N 32 9 14.50	W 104 2 23.43
	7100.00	8.84	130.00	7039.58	470.30	-469.25	559.23	2.00	419890.30	632168.78	N 32 9 14.46	W 104 2 23.38
Bone Spring "C" Shale	*7115.60*	*8.53*	*130.00*	*7055.00*	*471.82*	*-470.77*	*561.04*	*2.00*	*419888.78*	*632170.58*	*N 32 9 14.44*	*W 104 2 23.36*
	7200.00	6.84	130.00	7138.64	479.09	-478.02	569.68	2.00	419881.53	632179.23	N 32 9 14.37	W 104 2 23.26
	7300.00	4.84	130.00	7238.12	485.65	-484.56	577.48	2.00	419874.99	632187.02	N 32 9 14.31	W 104 2 23.16
	7400.00	2.84	130.00	7337.89	489.97	-488.87	582.61	2.00	419870.68	632192.15	N 32 9 14.26	W 104 2 23.11
1st Bone Spring Ss	*7402.12*	*2.80*	*130.00*	*7340.00*	*490.03*	*-488.94*	*582.69*	*2.00*	*419870.61*	*632192.23*	*N 32 9 14.26*	*W 104 2 23.10*
	7500.00	0.84	130.00	7437.83	492.04	-490.94	585.07	2.00	419868.62	632194.61	N 32 9 14.24	W 104 2 23.08
Hold	7542.08	0.00	130.00	7479.91	492.24	-491.13	585.31	2.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	7600.00	0.00	130.00	7537.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	7700.00	0.00	130.00	7637.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	7800.00	0.00	130.00	7737.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	7900.00	0.00	130.00	7837.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	8000.00	0.00	130.00	7937.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	8100.00	0.00	130.00	8037.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	8200.00	0.00	130.00	8137.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
2nd Bone Spring Ss	*8208.17*	*0.00*	*130.00*	*8146.00*	*492.24*	*-491.13*	*585.31*	*0.00*	*419868.42*	*632194.85*	*N 32 9 14.24*	*W 104 2 23.07*
	8300.00	0.00	130.00	8237.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	8400.00	0.00	130.00	8337.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	8500.00	0.00	130.00	8437.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	8600.00	0.00	130.00	8537.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	8700.00	0.00	130.00	8637.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	8800.00	0.00	130.00	8737.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
2nd BS Ss Lower	*8864.17*	*0.00*	*130.00*	*8802.00*	*492.24*	*-491.13*	*585.31*	*0.00*	*419868.42*	*632194.85*	*N 32 9 14.24*	*W 104 2 23.07*
	8900.00	0.00	130.00	8837.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	9000.00	0.00	130.00	8937.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	9100.00	0.00	130.00	9037.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	9200.00	0.00	130.00	9137.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	9300.00	0.00	130.00	9237.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
3rd Bone Spring Ss	*9326.17*	*0.00*	*130.00*	*9264.00*	*492.24*	*-491.13*	*585.31*	*0.00*	*419868.42*	*632194.85*	*N 32 9 14.24*	*W 104 2 23.07*
	9400.00	0.00	130.00	9337.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	9500.00	0.00	130.00	9437.83	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
KOP - Build 12°/100' DLS	9545.20	0.00	130.00	9483.03	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
	9600.00	6.58	179.89	9537.71	495.38	-494.28	585.32	12.00	419865.28	632194.86	N 32 9 14.21	W 104 2 23.07
	9700.00	18.58	179.89	9635.13	517.11	-516.01	585.36	12.00	419843.54	632194.90	N 32 9 14.00	W 104 2 23.07
Wolfcamp	*9707.27*	*19.45*	*179.89*	*9642.00*	*519.48*	*-518.38*	*585.36*	*12.00*	*419841.18*	*632194.90*	*N 32 9 13.97*	*W 104 2 23.07*
	9800.00	30.58	179.89	9725.91	558.63	-557.52	585.44	12.00	419802.03	632194.98	N 32 9 13.59	W 104 2 23.07
	9900.00	42.58	179.89	9806.07	618.11	-617.00	585.55	12.00	419742.56	632195.09	N 32 9 13.00	W 104 2 23.08
	10000.00	54.58	179.89	9872.11	692.95	-691.85	585.69	12.00	419667.72	632195.23	N 32 9 12.26	W 104 2 23.08
	10100.00	66.58	179.89	9921.14	779.89	-778.79	585.85	12.00	419580.78	632195.39	N 32 9 11.40	W 104 2 23.08
	10200.00	78.58	179.89	9951.03	875.13	-874.03	586.03	12.00	419485.55	632195.57	N 32 9 10.45	W 104 2 23.08
Build 4°/100' DLS - Soft Land	10211.87	80.00	179.89	9953.24	886.79	-885.69	586.05	12.00	419473.90	632195.60	N 32 9 10.34	W 104 2 23.08
	10300.00	83.53	179.89	9965.86	974.00	-972.90	586.22	4.00	419386.69	632195.76	N 32 9 9.47	W 104 2 23.08
	10400.00	87.53	179.89	9973.66	1073.68	-1072.57	586.41	4.00	419287.03	632195.95	N 32 9 8.49	W 104 2 23.08
Landing Point	10461.87	90.00	179.89	9975.00	1135.52	-1134.42	586.52	4.00	419225.19	632196.06	N 32 9 7.88	W 104 2 23.08
	10500.00	90.00	179.89	9975.00	1173.66	-1172.55	586.60	0.00	419187.05	632196.14	N 32 9 7.50	W 104 2 23.08
Section 1-12 Crossing	*10544.00*	*90.00*	*179.89*	*9975.00*	*1217.66*	*-1216.55*	*586.68*	*0.00*	*419143.06*	*632196.22*	*N 32 9 7.06*	*W 104 2 23.08*
	10600.00	90.00	179.89	9975.00	1273.66	-1272.55	586.78	0.00	419087.06	632196.32	N 32 9 6.51	W 104 2 23.08
	10700.00	90.00	179.89	9975.00	1373.66	-1372.55	586.97	0.00	418987.07	632196.51	N 32 9 5.52	W 104 2 23.08
	10800.00	90.00	179.89	9975.00	1473.66	-1472.55	587.16	0.00	418887.08	632196.70	N 32 9 4.53	W 104 2 23.08
First Legal Take Point (330' Hardline)	*10874.10*	*90.00*	*179.89*	*9975.00*	*1547.76*	*-1546.65*	*587.30*	*0.00*	*418812.99*	*632196.84*	*N 32 9 3.80*	*W 104 2 23.08*
	10900.00	90.00	179.89	9975.00	1573.66	-1572.55	587.35	0.00	418787.09	632196.89	N 32 9 3.54	W 104 2 23.08
	11000.00	90.00	179.89	9975.00	1673.66	-1672.55	587.54	0.00	418687.10	632197.08	N 32 9 2.55	W 104 2 23.09
	11100.00	90.00	179.89	9975.00	1773.66	-1772.55	587.73	0.00	418587.11	632197.27	N 32 9 1.56	W 104 2 23.09
	11200.00	90.00	179.89	9975.00	1873.66	-1872.55	587.91	0.00	418487.11	632197.46	N 32 9 0.57	W 104 2 23.09
	11300.00	90.00	179.89	9975.00	1973.66	-1972.55	588.10	0.00	418387.12	632197.64	N 32 8 59.58	W 104 2 23.09
	11400.00	90.00	179.89	9975.00	2073.66	-2072.55	588.29	0.00	418287.13	632197.83	N 32 8 58.59	W 104 2 23.09
	11500.00	90.00	179.89	9975.00	2173.66	-2172.55	588.48	0.00	418187.14	632198.02	N 32 8 57.60	W 104 2 23.09
	11600.00	90.00	179.89	9975.00	2273.66	-2272.55	588.67	0.00	418087.15	632198.21	N 32 8 56.61	W 104 2 23.09
	11700.00	90.00	179.89	9975.00	2373.66	-2372.55	588.86	0.00	417987.16	632198.40	N 32 8 55.62	W 104 2 23.09
	11800.00	90.00	179.89	9975.00	2473.66	-2472.55	589.05	0.00	417887.16	632198.59	N 32 8 54.64	W 104 2 23.09
	11900.00	90.00	179.89	9975.00	2573.66	-2572.55	589.23	0.00	417787.17	632198.78	N 32 8 53.65	W 104 2 23.09
	12000.00	90.00	179.89	9975.00	2673.66	-2672.55	589.42	0.00	417687.18	632198.96	N 32 8 52.66	W 104 2 23.10
	12100.00	90.00	179.89	9975.00	2773.66	-2772.55	589.61	0.00	417587.19	632199.15	N 32 8 51.67	W 104 2 23.10
	12200.00	90.00	179.89	9975.00	2873.66	-2872.55	589.80	0.00	417487.20	632199.34	N 32 8 50.68	W 104 2 23.10
	12300.00	90.00	179.89	9975.00	2973.66	-2972.55	589.99	0.00	417387.21	632199.53	N 32 8 49.69	W 104 2 23.10
	12400.00	90.00	179.89	9975.00	3073.66	-3072.55	590.18	0.00	417287.22	632199.72	N 32 8 48.70	W 104 2 23.10
	12500.00	90.00	179.89	9975.00	3173.66	-3172.55	590.37	0.00	417187.22	632199.91	N 32 8 47.71	W 104 2 23.10
	12600.00	90.00	179.89	9975.00	3273.66	-3272.55	590.55	0.00	417087.23	632200.10	N 32 8 46.72	W 104 2 23.10
	12700.00	90.00	179.89	9975.00	3373.66	-3372.55	590.74	0.00	416987.24	632200.28	N 32 8 45.73	W 104 2 23.10
	12800.00	90.00	179.89	9975.00	3473.66	-3472.55	590.93	0.00	416887.25	632200.47	N 32 8 44.74	W 104 2 23.10
	12900.00	90.00	179.89	9975.00	3573.66	-3572.55	591.12	0.00	416787.26	632200.66	N 32 8 43.75	W 104 2 23.10
	13000.00	90.00	179.89	9975.00	3673.66	-3672.55	591.31	0.00	416687.27	632200.85	N 32 8 42.76	W 104 2 23.11
	13100.00	90.00	179.89	9975.00	3773.66	-3772.55	591.50	0.00	416587.28	632201.04	N 32 8 41.77	W 104 2 23.11
	13200.00	90.00	179.89	9975.00	3873.66	-3872.55	591.69	0.00	416487.28	632201.23	N 32 8 40.78	W 104 2 23.11
	13300.00	90.00	179.89	9975.00	3973.66	-3972.55	591.87	0.00	416387.29	632201.42	N 32 8 39.79	W 104 2 23.11
	13400.00	90.00	179.89	9975.00	4073.66	-4072.55	592.06	0.00	416287.30	632201.60	N 32 8 38.80	W 104 2 23.11
	13500.00	90.00	179.89	9975.00	4173.66	-4172.55	592.25	0.00	416187.31	632201.79	N 32 8 37.81	W 104 2 23.11
	13600.00	90.00	179.89	9975.00	4273.66	-4272.55	592.44	0.00	416087.32	632201.98	N 32 8 36.82	W 104 2 23.11
	13700.00	90.00	179.89	9975.00	4373.66	-4372.55	592.63	0.00	415987.33	632202.17	N 32 8 35.83	W 104 2 23.11
	13800.00	90.00	179.89	9975.00	4473.66	-4472.55	592.82	0.00	415887.34	632202.36	N 32 8 34.84	W 104 2 23.11
	13900.00	90.00	179.89	9975.00	4573.66	-4572.55	593.01	0.00	415787.34	632202.55	N 32 8 33.86	W 104 2 23.11
	14000.00	90.00	179.89	9975.00	4673.66	-4672.55	593.19	0.00	415687.35	632202.74	N 32 8 32.87	W 104 2 23.11
	14100.00	90.00	179.89	9975.00	4773.66	-4772.55	593.38	0.00	415587.36	632202.92	N 32 8 31.88	W 104 2 23.12
	14200.00	90.00	179.89	9975.00	4873.66	-4872.55	593.57	0.00	415487.37	632203.11	N 32 8 30.89	W 104 2 23.12
	14300.00	90.00	179.89	9975.00	4973.66	-4972.55	593.76	0.00	415387.38	632203.30	N 32 8 29.90	W 104 2 23.12
	14400.00	90.00	179.89	9975.00	5073.66	-5072.55	593.95	0.00	415287.39	632203.49	N 32 8 28.91	W 104 2 23.12
	14500.00	90.00	179.89	9975.00	5173.66	-5172.55	594.14	0.00	415187.40	632203.68	N 32 8 27.92	W 104 2 23.12
	14600.00	90.00	179.89	9975.00	5273.66	-5272.55	594.33	0.00	415087.40	632203.87	N 32 8 26.93	W 104 2 23.12
	14700.00	90.00	179.89	9975.00	5373.66	-5372.55	594.51	0.00	414987.41	632204.05	N 32 8 25.94	W 104 2 23.12

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	14800.00	90.00	179.89	9975.00	5473.66	-5472.55	594.70	0.00	414887.42	632204.24	N 32 8 24.95	W 104 2 23.12
	14900.00	90.00	179.89	9975.00	5573.66	-5572.55	594.89	0.00	414787.43	632204.43	N 32 8 23.96	W 104 2 23.12
	15000.00	90.00	179.89	9975.00	5673.66	-5672.55	595.08	0.00	414687.44	632204.62	N 32 8 22.97	W 104 2 23.12
	15100.00	90.00	179.89	9975.00	5773.66	-5772.55	595.27	0.00	414587.45	632204.81	N 32 8 21.98	W 104 2 23.13
	15200.00	90.00	179.89	9975.00	5873.66	-5872.55	595.46	0.00	414487.46	632205.00	N 32 8 20.99	W 104 2 23.13
	15300.00	90.00	179.89	9975.00	5973.66	-5972.55	595.65	0.00	414387.46	632205.19	N 32 8 20.00	W 104 2 23.13
	15400.00	90.00	179.89	9975.00	6073.66	-6072.55	595.83	0.00	414287.47	632205.37	N 32 8 19.01	W 104 2 23.13
	15500.00	90.00	179.89	9975.00	6173.66	-6172.55	596.02	0.00	414187.48	632205.56	N 32 8 18.02	W 104 2 23.13
	15600.00	90.00	179.89	9975.00	6273.66	-6272.54	596.21	0.00	414087.49	632205.75	N 32 8 17.03	W 104 2 23.13
	15700.00	90.00	179.89	9975.00	6373.66	-6372.54	596.40	0.00	413987.50	632205.94	N 32 8 16.04	W 104 2 23.13
	15800.00	90.00	179.89	9975.00	6473.66	-6472.54	596.59	0.00	413887.51	632206.13	N 32 8 15.05	W 104 2 23.13
Section 12-13 Crossing	*15865.20*	*90.00*	*179.89*	*9975.00*	*6538.86*	*-6537.74*	*596.71*	*0.00*	*413822.31*	*632206.25*	*N 32 8 14.41*	*W 104 2 23.13*
	15900.00	90.00	179.89	9975.00	6573.66	-6572.54	596.78	0.00	413787.51	632206.32	N 32 8 14.06	W 104 2 23.13
	16000.00	90.00	179.89	9975.00	6673.66	-6672.54	596.97	0.00	413687.52	632206.51	N 32 8 13.08	W 104 2 23.13
	16100.00	90.00	179.89	9975.00	6773.66	-6772.54	597.15	0.00	413587.53	632206.69	N 32 8 12.09	W 104 2 23.14
	16200.00	90.00	179.89	9975.00	6873.66	-6872.54	597.34	0.00	413487.54	632206.88	N 32 8 11.10	W 104 2 23.14
	16300.00	90.00	179.89	9975.00	6973.66	-6972.54	597.53	0.00	413387.55	632207.07	N 32 8 10.11	W 104 2 23.14
	16400.00	90.00	179.89	9975.00	7073.66	-7072.54	597.72	0.00	413287.56	632207.26	N 32 8 9.12	W 104 2 23.14
	16500.00	90.00	179.89	9975.00	7173.66	-7172.54	597.91	0.00	413187.57	632207.45	N 32 8 8.13	W 104 2 23.14
	16600.00	90.00	179.89	9975.00	7273.66	-7272.54	598.10	0.00	413087.57	632207.64	N 32 8 7.14	W 104 2 23.14
	16700.00	90.00	179.89	9975.00	7373.66	-7372.54	598.29	0.00	412987.58	632207.83	N 32 8 6.15	W 104 2 23.14
	16800.00	90.00	179.89	9975.00	7473.66	-7472.54	598.47	0.00	412887.59	632208.01	N 32 8 5.16	W 104 2 23.14
	16900.00	90.00	179.89	9975.00	7573.66	-7572.54	598.66	0.00	412787.60	632208.20	N 32 8 4.17	W 104 2 23.14
	17000.00	90.00	179.89	9975.00	7673.66	-7672.54	598.85	0.00	412687.61	632208.39	N 32 8 3.18	W 104 2 23.14
	17100.00	90.00	179.89	9975.00	7773.66	-7772.54	599.04	0.00	412587.62	632208.58	N 32 8 2.19	W 104 2 23.15
	17200.00	90.00	179.89	9975.00	7873.66	-7872.54	599.23	0.00	412487.63	632208.77	N 32 8 1.20	W 104 2 23.15
	17300.00	90.00	179.89	9975.00	7973.66	-7972.54	599.42	0.00	412387.63	632208.96	N 32 8 0.21	W 104 2 23.15
	17400.00	90.00	179.89	9975.00	8073.66	-8072.54	599.61	0.00	412287.64	632209.15	N 32 7 59.22	W 104 2 23.15
	17500.00	90.00	179.89	9975.00	8173.66	-8172.54	599.79	0.00	412187.65	632209.33	N 32 7 58.23	W 104 2 23.15
	17600.00	90.00	179.89	9975.00	8273.66	-8272.54	599.98	0.00	412087.66	632209.52	N 32 7 57.24	W 104 2 23.15
	17700.00	90.00	179.89	9975.00	8373.66	-8372.54	600.17	0.00	411987.67	632209.71	N 32 7 56.25	W 104 2 23.15
	17800.00	90.00	179.89	9975.00	8473.66	-8472.54	600.36	0.00	411887.68	632209.90	N 32 7 55.26	W 104 2 23.15
	17900.00	90.00	179.89	9975.00	8573.66	-8572.54	600.55	0.00	411787.69	632210.09	N 32 7 54.27	W 104 2 23.15
	18000.00	90.00	179.89	9975.00	8673.66	-8672.54	600.74	0.00	411687.69	632210.28	N 32 7 53.28	W 104 2 23.15
	18100.00	90.00	179.89	9975.00	8773.66	-8772.54	600.93	0.00	411587.70	632210.47	N 32 7 52.30	W 104 2 23.15
	18200.00	90.00	179.89	9975.00	8873.66	-8872.54	601.11	0.00	411487.71	632210.65	N 32 7 51.31	W 104 2 23.16
	18300.00	90.00	179.89	9975.00	8973.66	-8972.54	601.30	0.00	411387.72	632210.84	N 32 7 50.32	W 104 2 23.16
	18400.00	90.00	179.89	9975.00	9073.66	-9072.54	601.49	0.00	411287.73	632211.03	N 32 7 49.33	W 104 2 23.16
	18500.00	90.00	179.89	9975.00	9173.66	-9172.54	601.68	0.00	411187.74	632211.22	N 32 7 48.34	W 104 2 23.16
	18600.00	90.00	179.89	9975.00	9273.66	-9272.54	601.87	0.00	411087.75	632211.41	N 32 7 47.35	W 104 2 23.16
	18700.00	90.00	179.89	9975.00	9373.66	-9372.54	602.06	0.00	410987.75	632211.60	N 32 7 46.36	W 104 2 23.16
	18800.00	90.00	179.89	9975.00	9473.66	-9472.54	602.25	0.00	410887.76	632211.79	N 32 7 45.37	W 104 2 23.16
	18900.00	90.00	179.89	9975.00	9573.66	-9572.54	602.43	0.00	410787.77	632211.97	N 32 7 44.38	W 104 2 23.16
	19000.00	90.00	179.89	9975.00	9673.66	-9672.54	602.62	0.00	410687.78	632212.16	N 32 7 43.39	W 104 2 23.16
	19100.00	90.00	179.89	9975.00	9773.66	-9772.54	602.81	0.00	410587.79	632212.35	N 32 7 42.40	W 104 2 23.16
	19200.00	90.00	179.89	9975.00	9873.66	-9872.54	603.00	0.00	410487.80	632212.54	N 32 7 41.41	W 104 2 23.17
	19300.00	90.00	179.89	9975.00	9973.66	-9972.54	603.19	0.00	410387.81	632212.73	N 32 7 40.42	W 104 2 23.17
	19400.00	90.00	179.89	9975.00	10073.66	-10072.54	603.38	0.00	410287.81	632212.92	N 32 7 39.43	W 104 2 23.17
	19500.00	90.00	179.89	9975.00	10173.66	-10172.54	603.57	0.00	410187.82	632213.10	N 32 7 38.44	W 104 2 23.17
	19600.00	90.00	179.89	9975.00	10273.66	-10272.54	603.75	0.00	410087.83	632213.29	N 32 7 37.45	W 104 2 23.17
	19700.00	90.00	179.89	9975.00	10373.66	-10372.54	603.94	0.00	409987.84	632213.48	N 32 7 36.46	W 104 2 23.17
	19800.00	90.00	179.89	9975.00	10473.66	-10472.54	604.13	0.00	409887.85	632213.67	N 32 7 35.47	W 104 2 23.17
	19900.00	90.00	179.89	9975.00	10573.66	-10572.54	604.32	0.00	409787.86	632213.86	N 32 7 34.48	W 104 2 23.17
	20000.00	90.00	179.89	9975.00	10673.66	-10672.54	604.51	0.00	409687.86	632214.05	N 32 7 33.49	W 104 2 23.17
	20100.00	90.00	179.89	9975.00	10773.66	-10772.54	604.70	0.00	409587.87	632214.24	N 32 7 32.50	W 104 2 23.17
	20200.00	90.00	179.89	9975.00	10873.66	-10872.54	604.89	0.00	409487.88	632214.42	N 32 7 31.52	W 104 2 23.18
	20300.00	90.00	179.89	9975.00	10973.66	-10972.54	605.07	0.00	409387.89	632214.61	N 32 7 30.53	W 104 2 23.18
	20400.00	90.00	179.89	9975.00	11073.66	-11072.54	605.26	0.00	409287.90	632214.80	N 32 7 29.54	W 104 2 23.18
	20500.00	90.00	179.89	9975.00	11173.66	-11172.54	605.45	0.00	409187.91	632214.99	N 32 7 28.55	W 104 2 23.18
	20600.00	90.00	179.89	9975.00	11273.66	-11272.54	605.64	0.00	409087.92	632215.18	N 32 7 27.56	W 104 2 23.18
	20700.00	90.00	179.89	9975.00	11373.66	-11372.54	605.83	0.00	408987.92	632215.37	N 32 7 26.57	W 104 2 23.18
	20800.00	90.00	179.89	9975.00	11473.66	-11472.54	606.02	0.00	408887.93	632215.56	N 32 7 25.58	W 104 2 23.18
Cimarex Riverbend 12-13 Federal Com #20H-PBHL 330' FSL 2310' FEL]	20839.22	90.00	179.89	9975.00	11512.87	-11511.75	606.09	0.00	408848.72	632215.63	N 32 7 25.19	W 104 2 23.18

Survey Type: Def Plan

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

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Riverbend 12-13 Federal Com #20H Rev0 mcs 19Mar20
	1	26.000	20839.216	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Riverbend 12-13 Federal Com

Schlumberger

Cimarex Riverbend 12-13 Federal Com #20H Rev0 mcs 19Mar20 Proposal Geodetic Report

(Def Plan)

CIMAREX

Report Date:	April 02, 2020 - 02:54 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 #20H / Cimarex Riverbend 12-13 Federal Com #20H	**TVD Reference Datum:**	RKB
Well:	Cimarex Riverbend 12-13 Federal Com #20H	**TVD Reference Elevation:**	2961.000 ft above MSL
Borehole:	Original Borehole	**Seabed / Ground Elevation:**	2935.000 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.920 °
Survey Name:	Cimarex Riverbend 12-13 Federal Com #20H Rev0 mcs 19Mar20	**Total Gravity Field Strength:**	998.4598mgn (9.80665 Based)
Survey Date:	March 23, 2020	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	109.287 ° / 11784.706 ft / 6.430 / 1.181	**Total Magnetic Field Strength:**	47797.250 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.853 °
Location Lat / Long:	N 32° 9' 19.11763", W 104° 2' 29.86656"	**Declination Date:**	March 23, 2020
Location Grid N/E Y/X:	N 420359.510 ftUS, E 631609.590 ftUS	**Magnetic Declination Model:**	HDGM 2020
CRS Grid Convergence Angle:	0.1553 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99991842	**Grid Convergence Used:**	0.1553 °
Version / Patch:	2.10.787.0	**Total Corr Mag North->Grid North:**	6.7647 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [1207' FSL 2422' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	N/A	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
Nudge 2°/100' DLS	2500.00	0.00	130.00	2500.00	0.00	0.00	0.00	0.00	420359.51	631609.59	N 32 9 19.12	W 104 2 29.87
Hold Nudge	2982.19	9.64	130.00	2979.91	26.08	-26.02	31.01	2.00	420333.49	631640.60	N 32 9 18.86	W 104 2 29.51
Drop 2°/100' DLS	7059.90	9.64	130.00	7000.00	466.16	-465.11	554.30	0.00	419894.44	632163.84	N 32 9 14.50	W 104 2 23.43
Hold	7542.08	0.00	130.00	7479.91	492.24	-491.13	585.31	2.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
KOP - Build 12°/100' DLS	9545.20	0.00	130.00	9483.03	492.24	-491.13	585.31	0.00	419868.42	632194.85	N 32 9 14.24	W 104 2 23.07
Build 4°/100' DLS - Soft Land	10211.87	80.00	179.89	9953.24	886.79	-885.69	586.05	12.00	419473.90	632195.60	N 32 9 10.34	W 104 2 23.08
Landing Point	10461.87	90.00	179.89	9975.00	1135.52	-1134.42	586.52	4.00	419225.19	632196.06	N 32 9 7.88	W 104 2 23.08
Cimarex Riverbend 12-13 Federal Com #20H-PBHL 330' FSL 2310' FEL]	20839.22	90.00	179.89	9975.00	11512.87	-11511.75	606.09	0.00	408848.72	632215.63	N 32 7 25.19	W 104 2 23.18

Survey Type: Def Plan

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

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	26.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Original Borehole / Cimarex Riverbend 12-13 Federal Com #20H Rev0 mcs 19Mar20
	1	26.000	20839.216	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Original Borehole / Cimarex Riverbend 12-13 Federal Com

Schlumberger

Cimarex

Rev 0

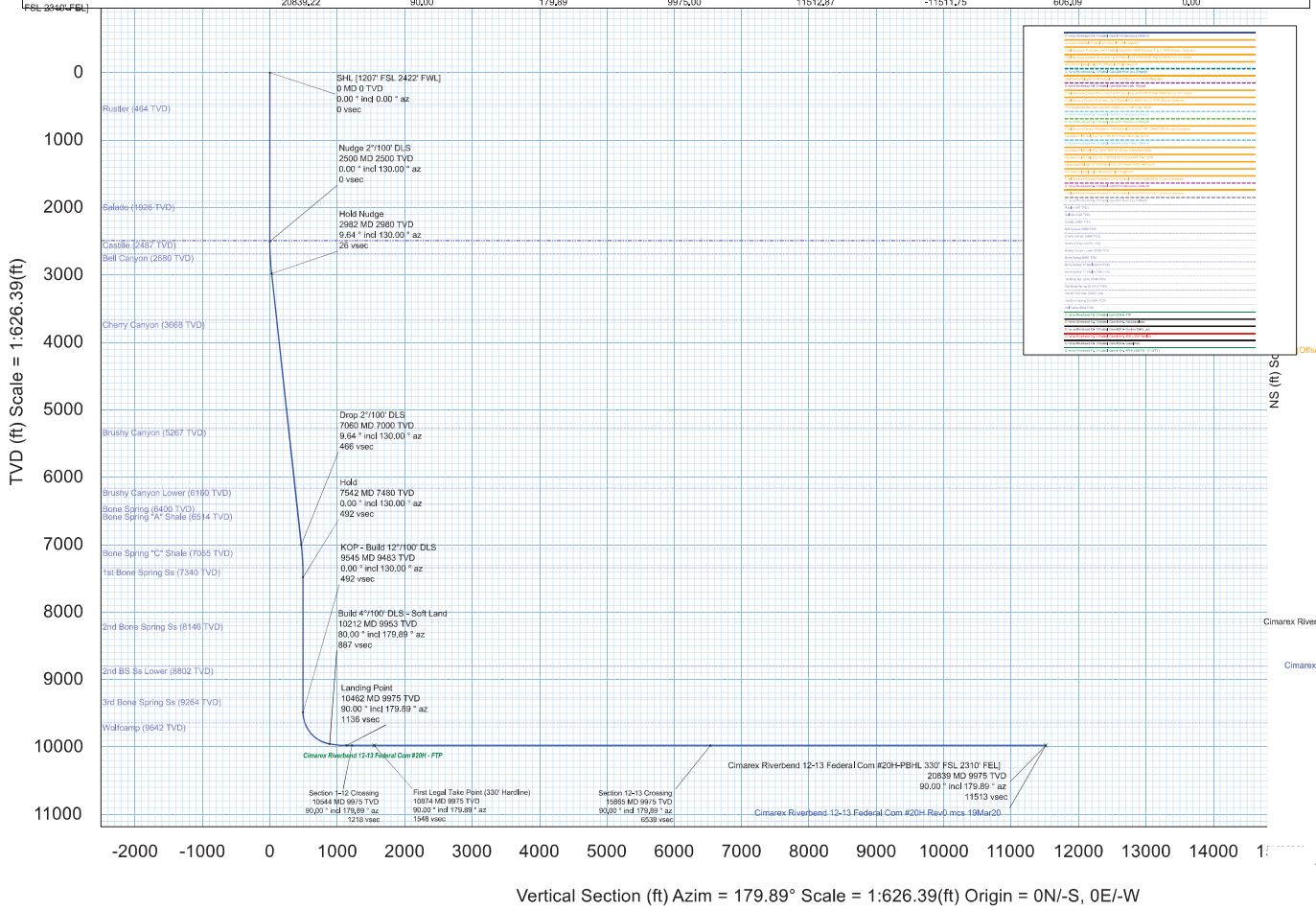
CIMAREX

Borehole:	Well:	Field:	Structure:
Original Borehole	Cimarex Riverbend 12-13 Federal Com #20H	NM Eddy County (NAD 83)	Cimarex Riverbend 12-13 Federal Com #20H

Gravity & Magnetic Parameters						Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet				Miscellaneous			
Model:	HDGM 2020	Dip:	59.853°	Date:	23-Mar-2020	Lat:	N 32 9 19.12	Northing:	420359.51ftUS	Grid Conv:	0.1553°	Slot:	Cimarex Riverbend 12-13 Federal Com #20H	TVD Ref:	RKB(2961ft above MSL)
MagDec:	6.92°	FS:	47797.25nT	Gravity FS:	998.46mgn (9.80665 Based)	Lon:	W 104 2 29.87	Easting:	631609.59ftUS	Scale Fact:	0.99991842	Plan:	Cimarex Riverbend 12-13 Federal Com #20H Rev0 mcs 19Mar20		

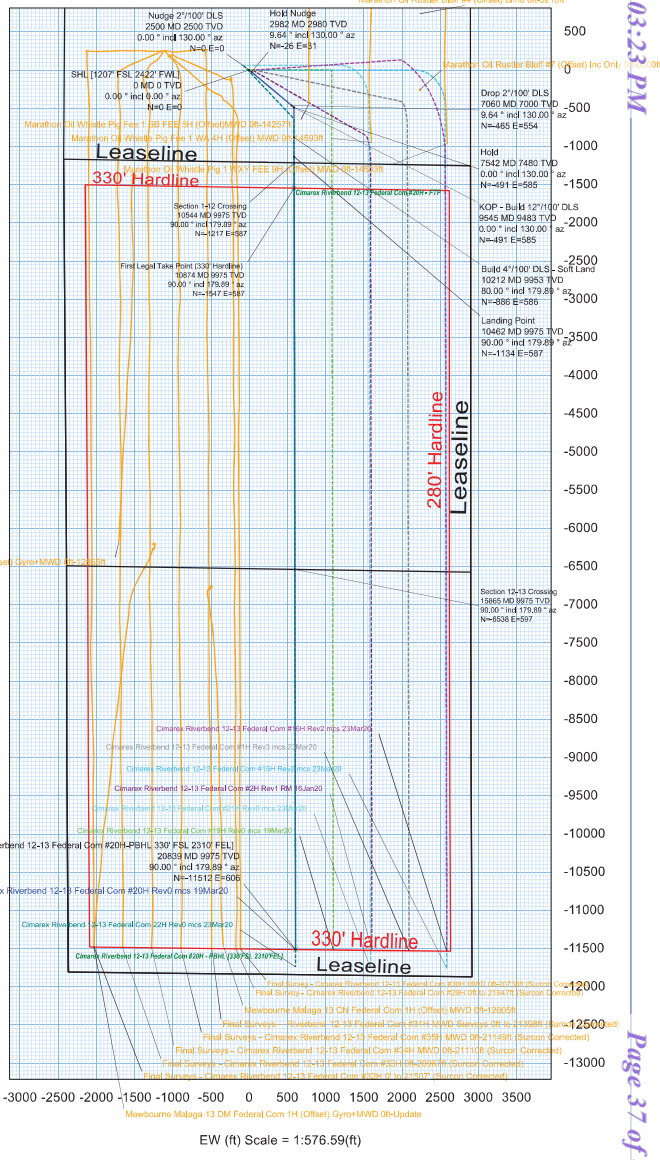
Critical Points

Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [1207' FSL 2422' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Rustler	464.00	0.00	130.00	464.00	0.00	0.00	0.00	0.00
Salado	1926.00	0.00	130.00	1926.00	0.00	0.00	0.00	0.00
Castille	2487.00	0.00	130.00	2487.00	0.00	0.00	0.00	0.00
Nudge 2°/100' DLS	2500.00	0.00	130.00	2500.00	0.00	0.00	0.00	0.00
Bell Canyon	2680.12	3.60	130.00	2680.00	3.65	-3.64	4.34	2.00
Hold Nudge	2982.19	9.64	130.00	2979.91	26.08	-26.02	31.01	2.00
Cherry Canyon	3680.14	9.64	130.00	3668.00	101.41	-101.18	120.58	0.00
Brushy Canyon	5302.06	9.64	130.00	5267.00	276.45	-275.83	328.72	0.00
Brushy Canyon Lower	6207.86	9.64	130.00	6160.00	374.20	-373.36	444.96	0.00
Bone Spring	6451.30	9.64	130.00	6400.00	400.47	-399.58	476.20	0.00
Bone Spring "A" Shale	6566.93	9.64	130.00	6514.00	412.95	-412.03	491.04	0.00
Drop 2°/100' DLS	7059.90	9.64	130.00	7000.00	466.16	-465.11	554.30	0.00
Bone Spring "C" Shale	7115.60	8.53	130.00	7055.00	471.82	-470.77	561.04	2.00
1st Bone Spring Ss	7402.12	2.80	130.00	7340.00	490.03	-488.94	582.69	2.00
Hold	7542.08	0.00	130.00	7479.91	492.24	-491.13	585.31	2.00
2nd Bone Spring Ss	8208.17	0.00	130.00	8146.00	492.24	-491.13	585.31	0.00
2nd BS Ss Lower	8864.17	0.00	130.00	8802.00	492.24	-491.13	585.31	0.00
3rd Bone Spring Ss	9326.17	0.00	130.00	9264.00	492.24	-491.13	585.31	0.00
KOP - Build 12°/100' DLS	9545.20	0.00	130.00	9483.03	492.24	-491.13	585.31	0.00
Wolfcamp	9707.27	19.45	179.89	9642.00	519.48	-518.38	585.36	12.00
Build 4°/100' DLS - Soft Land	10211.87	80.00	179.89	9953.24	886.79	-885.69	586.05	12.00
Landing Point	10461.87	90.00	179.89	9975.00	1135.52	-1134.42	586.52	4.00
Section 1-12 Crossing	10544.00	90.00	179.89	9975.00	1217.66	-1216.55	586.68	0.00
First Legal Take Point (330' Hardline)	10874.10	90.00	179.89	9975.00	1547.76	-1546.65	587.30	0.00
Section 12-13 Crossing	15865.20	90.00	179.89	9975.00	6538.86	-6537.74	596.71	0.00
Cimarex Riverbend 12-13 Federal Com #20H-PBHL 330' FSL 2310' FEL	20839.22	90.00	179.89	9975.00	11512.87	-11511.75	606.09	0.00



CONTROLLED

D		
E		
C		
Plan ref	Cimarex Riverbend 12-13 Federal Com #20H Rev0 mcs 19Mar20	
Drawing ref		
Copy number	of 3	
Date	02-Apr-2020	
1	Client	
2	Client	
3	Office	
4	Office	
Copy number	for	



Cimarex Energy Co.
Sec. 1, 25S, 28E
Eddy Co., NM

1 All Company and Contract personnel admitted on location must be trained by a qualified H2S safety instructor in the following:

A. Characteristics of H_2S
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.

H_2S 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 play placed as deemed necessary.

B. An audio alarm system will be installed on the derrick floor and in the top doghouse.

3 Windsock and/or wind streamers:

A. Windsock at mudpit area should be high enough to be visible.
B. Windsock on the rig floor and / or top doghouse should be high enough to be visible.

4 Condition Flags and Signs

A. Warning sign on access road to location.
B. Flags to be displayed on sign at entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates danger (H_2S 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 r cores are planned at this time.

8 Drilling contractor supervisor will be required to be familiar with the effects H_2S 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.

H_2S Contingency Plan
Riverbend 12-13 Fed Com 20H
Cimarex Energy Co. Sec. 1, 25S, 28E
Eddy Co., NM

Emergency Procedures

In the event of a release of gas containing H_2S, the first responder(s) must:

« Isolate the area and prevent entry by other persons into the 100 ppm ROE.
« Evacuate any public places encompassed by the 100 ppm ROE.
« Be equipped with H_2S 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 H_2S, 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 (SO_2). 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 H_2S and SO_2

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).

H_2S Contingency Plan Emergency Contact s
Riverbend 12-13 Fed Com 20H
Cimarex Energy Co.
Sec. 1, 25S, 28E
Eddy Co., NM

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

Key Personnel

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

Artesia			
Ambulance		911	
State Police		575-746-2703	
City Police		575-746-2703	
Sheriff's Office		575-746-9888	
Fire Department		**575-746-2701**	
Local Emergency Planning Committee		575-746-2122	
New Mexico Oil Conservation Division		575-748-1283	

Carlsbad			
Ambulance		911	
State Police		575-885-3137	
City Police		575-885-2111	
Sheriff's Office		575-887-7551	
Fire Department		**575-887-3798**	
Local Emergency Planning Committee		575-887-6544	
US Bureau of Land Management		575-887-6544	

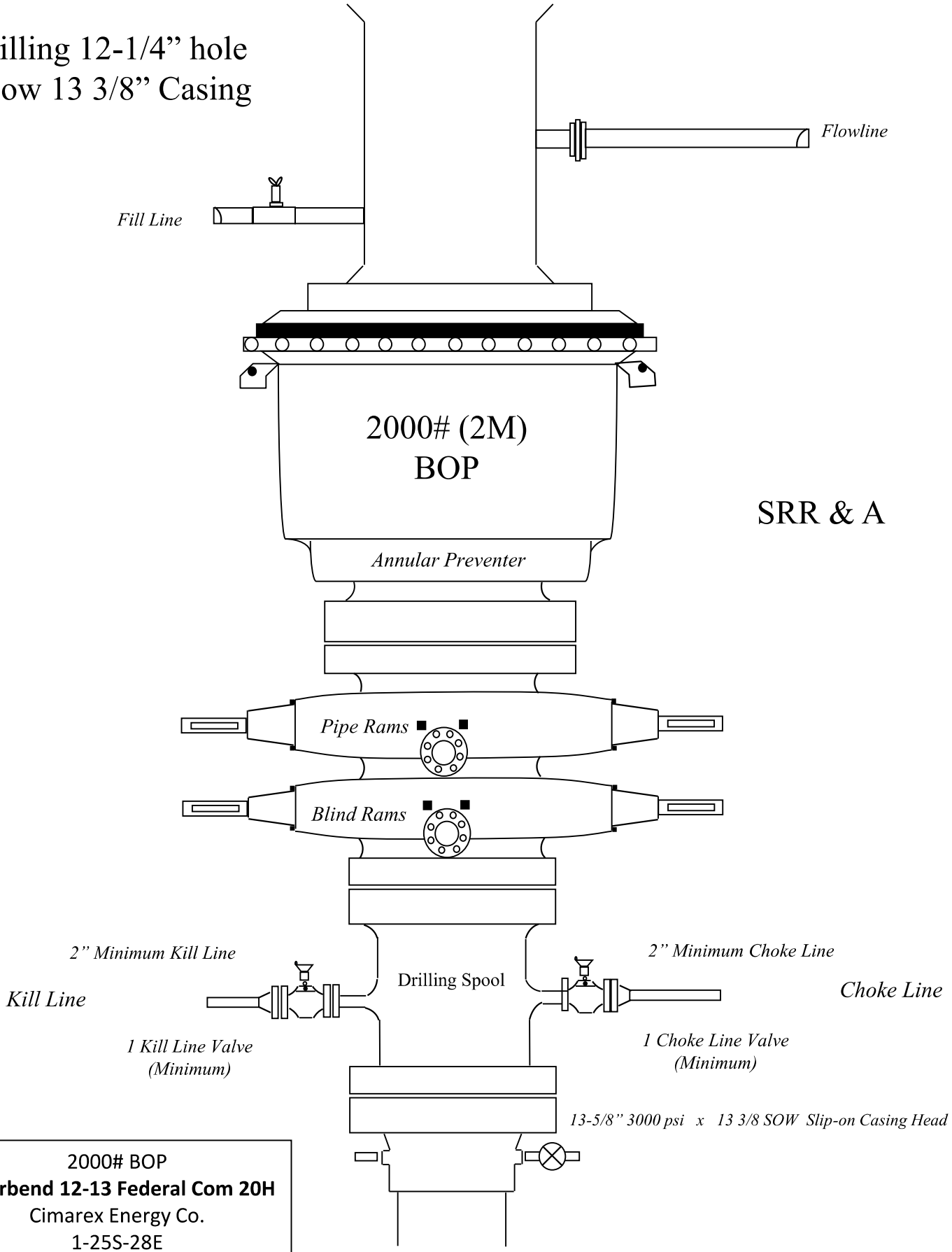
Santa Fe			
New Mexico Emergency Response Commission (Santa Fe)		505-476-9600	
New Mexico Emergency Response Commission (Santa Fe) 24 Hrs		505-827-9126	
New Mexico State Emergency Operations Center		505-476-9635	

National			
National Emergency Response Center (Washington, D.C.)		800-424-8802	

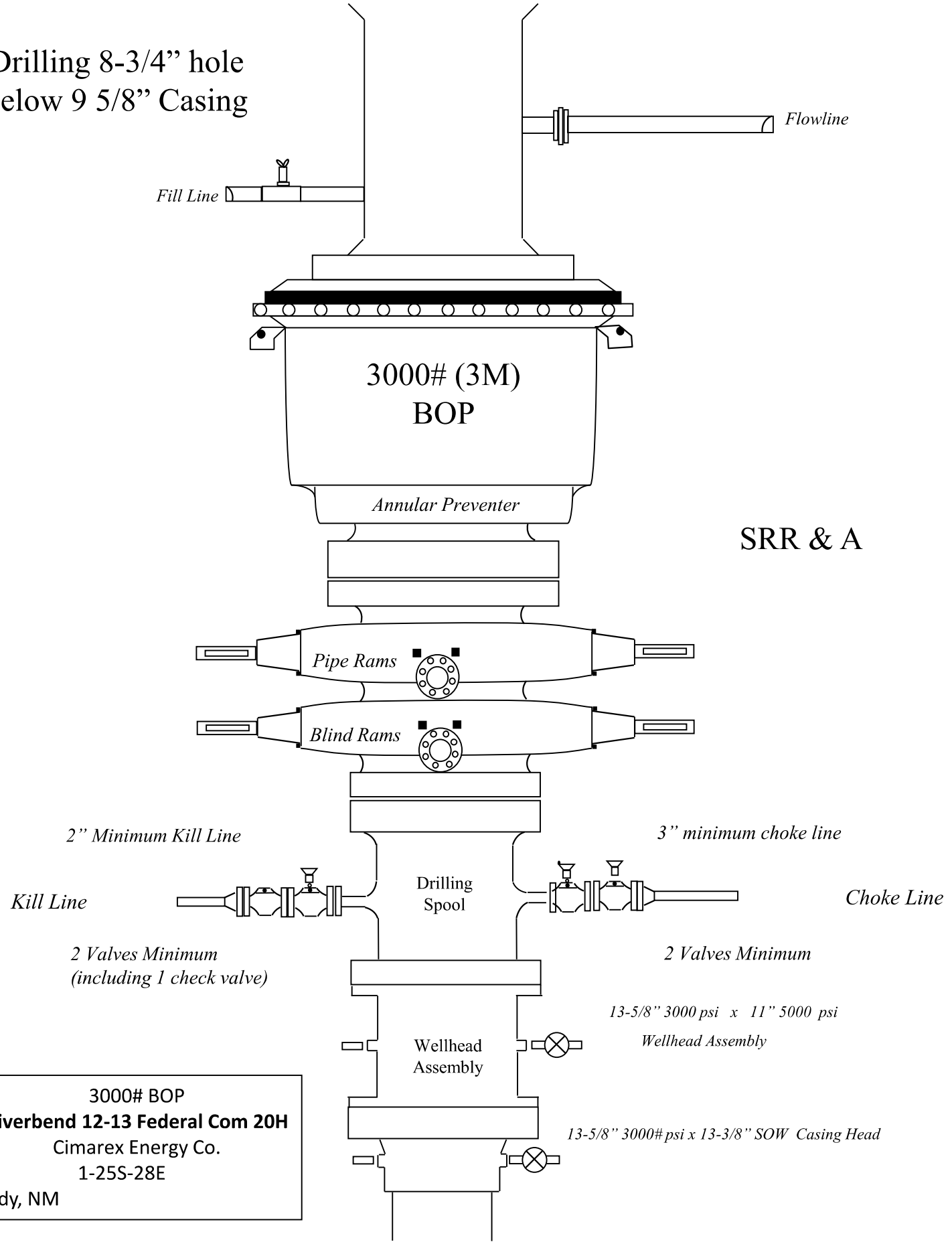
Medical			
Flight for Life - 4000 24th St.; Lubbock, TX		806-743-9911	
Aerocare - R3, Box 49F; Lubbock, TX		806-747-8923	
Med Flight Air Amb - 2301 Yale Blvd S.E., #D3; Albuquerque, NM		505-842-4433	
SB Air Med Service - 2505 Clark Carr Loop S.E.; Albuquerque, NM		505-842-4949	

Other			
Boots & Coots IWC		800-256-9688	or 281-931-8884
Cudd Pressure Control		432-699-0139	or 432-563-3356
Halliburton		575-746-2757	
B.J. Services		575-746-3569	

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

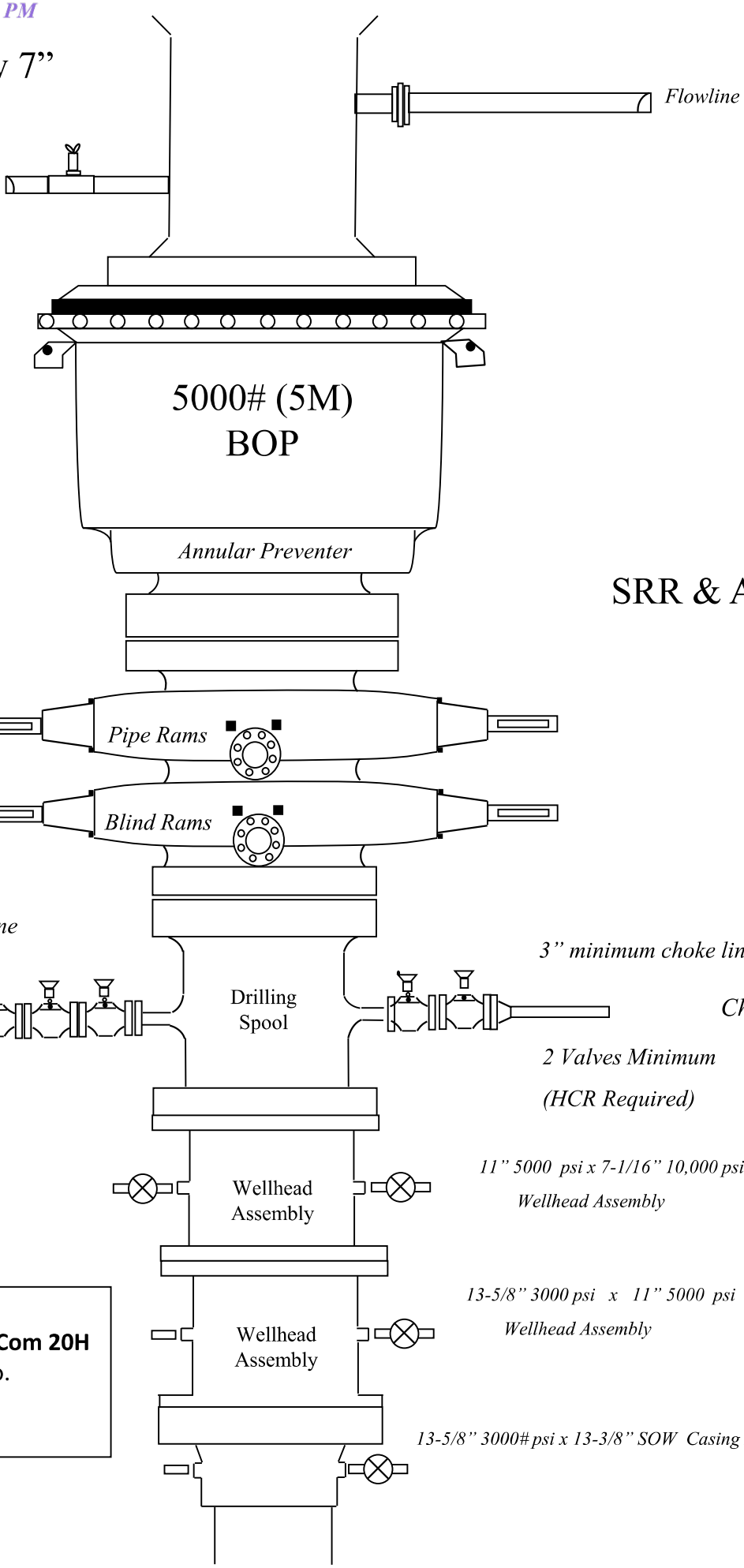


2000# BOP
Riverbend 12-13 Federal Com 20H
Cimarex Energy Co.
1-25S-28E
Eddy, NM



3000# BOP
Riverbend 12-13 Federal Com 20H
Cimarex Energy Co.
1-25S-28E
Eddy, NM

Drilling 6” hole below 7” Casing



SRR & A

5000# BOP
Riverbend 12-13 Federal Com 20H
Cimarex Energy Co.
1-25S-28E
Eddy, NM

District I
1625 N. French Dr., Hobbs, NM 88240
Phone:(575) 393-6161 Fax:(575) 393-0720
District II
811 S. First St., Artesia, NM 88210
Phone:(575) 748-1283 Fax:(575) 748-9720
District III
1000 Rio Brazos Rd., Aztec, NM 87410
Phone:(505) 334-6178 Fax:(505) 334-6170
District IV
1220 S. St Francis Dr., Santa Fe, NM 87505
Phone:(505) 476-3470 Fax:(505) 476-3462

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

CONDITIONS

Action 106035

CONDITIONS

Operator:	OGRID:
CIMAREX ENERGY CO. 600 N. Marienfeld Street Midland, TX 79701	215099
	Action Number: 106035
	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	5/16/2022
kpickford	Will require a File As Drilled C-102 and a Directional Survey with the C-104	5/16/2022
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	5/16/2022
kpickford	Cement is required to circulate on both surface and intermediate1 strings of casing	5/16/2022
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	5/16/2022