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.

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.

[39981]

2. Name of Operator **[215099]**

9. API Well No. **30-025-50292**

3a. Address

3b. Phone No. *(include area code)*

10. Field and Pool, or Exploratory **[98180]**
XXXXXXXXXX

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

At surface

At proposed prod. zone

11. Sec., T. R. M. or Blk. and Survey or Area

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

12. County or Parish

13. State

15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration

24. Attachments

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

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

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

Application approval does not warrant or certify that the applicant holds legal or equitable title to those rights in the subject lease which would entitle the applicant to conduct operations thereon.
Conditions of approval, if any, are attached.

Title 18 U.S.C. Section 1001 and Title 43 U.S.C. Section 1212, make it a crime for any person knowingly and willfully to make to any department or agency of the United States any false, fictitious or fraudulent statements or representations as to any matter within its jurisdiction.

NGMP Rec 06/07/2022

SL

KZ
06/30/2022

APPROVED WITH CONDITIONS

Approval Date: 04/19/2022

(Continued on page 2)

*(Instructions on page 2)

Additional Operator Remarks

Location of Well

0. SHL: SESE / 390 FSL / 1180 FEL / TWSP: 25S / RANGE: 33E / SECTION: 29 / LAT: 32.095383 / LONG: -103.589587 (TVD: 0 feet, MD: 0 feet)

PPP: SWSE / 390 FSL / 1717 FEL / TWSP: 25S / RANGE: 33E / SECTION: 29 / LAT: 32.095385 / LONG: -103.591321 (TVD: 12575 feet, MD: 13096 feet)

BHL: NWNE / 100 FNL / 1717 FEL / TWSP: 25S / RANGE: 33E / SECTION: 29 / LAT: 32.108555 / LONG: -103.591314 (TVD: 12575 feet, MD: 17163 feet)

BLM Point of Contact

Name: Priscilla Perez

Title: Legal Instruments Examiner

Phone: (575) 234-5934

Email: pperez@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
30-025-50292	98180	WC-025 G-09 S253309P;UPR WOLFCAMP

[4] Property Code	[5] Property Name	[6] Well Number
39981	CASCADE 29 FEDERAL	73H

[7] OGRID No.	[8] Operator Name	[9] Elevation
215099	CIMAREX ENERGY CO.	3397.7

[10] Surface Location

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
P	29	25S	33E		390	SOUTH	1180	EAST	LEA

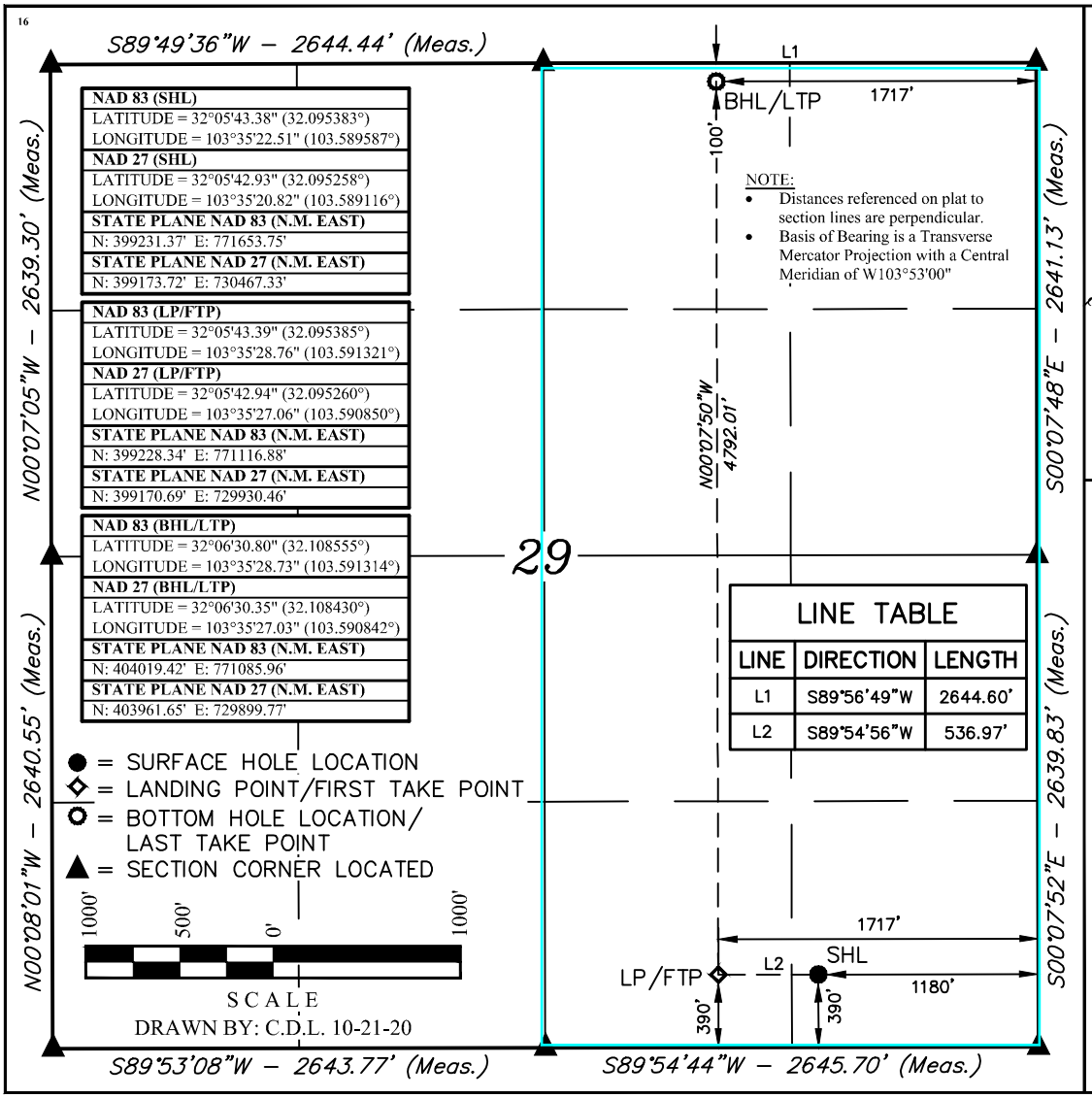
[11] Bottom Hole Location If Different From Surface

UL or lot no.	Section	Township	Range	Lot Idn	Feet from the	North/South line	Feet from the	East/West line	County
B	29	25S	33E		100	NORTH	1717	EAST	LEA

[12] Dedicated Acres	[13] Joint or Infill	[14] Consolidation Code	[15] Order No.
320			

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.

[16]



[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 4/14/21
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.

JULY 05, 2018
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:** 6/7/2022

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
Cascade 29 Federal 73H	30-025-50292	P, Sec 29 T25S, R33E	390 FSL/1180 FEL	1900	3800	4500

IV. Central Delivery Point Name: Cascade 29 South 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
Cascade 29 Federal 73H	30-025-50292	6/11/2025	7/1/2025	11/1/2025	1/1/2026	1/1/2026

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:	6/7/2022
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
05/25/2022

APD ID: 10400073018
Submission Date: 04/14/2021

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 29 FEDERAL
Well Number: 73H

Well Type: OIL 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	Measured Depth	Lithologies	Mineral Resources	Producing Formatio
3706162	RUSTLER	3398	994	994	ANHYDRITE, SANDSTONE	USEABLE WATER	N
3706163	TOP OF SALT	2070	1328	1328	ANHYDRITE	NONE	N
3706164	LAMAR LS	-1522	4920	4920	SANDSTONE	NONE	N
3706165	BELL CANYON	-1556	4954	4954	SANDSTONE	NATURAL GAS, OIL	N
3706166	CHERRY CANYON	-2616	6014	6014	SANDSTONE	NATURAL GAS, OIL	N
3706167	BRUSHY CANYON	-4110	7508	7508	SANDSTONE	NATURAL GAS, OIL	N
3706168	BONE SPRING	-5650	9048	9048	LIMESTONE	NATURAL GAS, OIL	N
3706169	AVALON	-6325	9723	9723	SHALE	NATURAL GAS, OIL	N
3706170	BONE SPRING 2ND	-7017	10415	10415	SANDSTONE	NATURAL GAS, OIL	N
3706171	BONE SPRING 3RD	-7656	11054	11054	SANDSTONE	NATURAL GAS, OIL	N
3706172	WOLFCAMP	-8791	12189	12189	SHALE	NATURAL GAS, OIL	Y

Section 2 - Blowout Prevention

Pressure Rating (PSI): 10M
Rating Depth: 17164

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. Cimarex requests a 5M annular variance for the 10M BOP system. See

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 29 FEDERAL **Well Number:** 73H

attached procedure

Testing Procedure: A multi-bowl wellhead system will be utilized. After running the 10-3/4" surface casing, a 13 5/8 BOP/BOPE system with a minimum working pressure of 10000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 10000 psi test. Annular will be tested to 50% of working pressure. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2. The multi-bowl wellhead will be installed by vendors representative. A copy of the installation instructions has been sent to the BLM field office. The wellhead will be installed by a third-party welder, monitored by the wellhead vendor representative. All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type. A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 10000 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 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:

Cascade_29_Federal_73H_10M_Choke_20210414125306.pdf

BOP Diagram Attachment:

Cascade_29_Federal_73H_10M_BOP_20210414125317.pdf

Pressure Rating (PSI): 5M **Rating Depth:** 12721

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 10-3/4" 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. 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:

Cascade_29_Federal_73H_5M_Choke_20210414125226.pdf

BOP Diagram Attachment:

Cascade_29_Federal_73H_5M_BOP_20210414125244.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 29 FEDERAL **Well Number:** 73H

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	14.75	10.75	NEW	API	N	0	1050	0	1050	3398	2348	1050	J-55	40.5	BUTT	3.47	6.88	BUOY	14.79	BUOY	14.79
2	PRODUCTION	6.75	5.5	NEW	API	Y	0	12050	0	12050	3398	-8652	12050	L-80	23	LT&C	1.39	1.23	BUOY	2.16	BUOY	2.16
3	INTERMEDIATE	9.875	7.625	NEW	API	N	0	12721	0	12526	3398	-9128	12721	HCL-80	29.7	BUTT	2.46	1.18	BUOY	1.84	BUOY	1.84
4	PRODUCTION	6.75	5.0	NEW	API	Y	12050	17164	12050	12575	-8652	-9177	5114	P-110	18	BUTT	1.61	1.63	BUOY	61.38	BUOY	61.38

Casing Attachments

Casing ID: 1 **String** SURFACE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Cascade_29_Federal_73H_Casing_Assumptions_20210414125606.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 29 FEDERAL **Well Number:** 73H

Casing Attachments

Casing ID: 2 **String** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Cascade_29_Federal_73H_Tapered_Specs_20210414125428.pdf

Casing Design Assumptions and Worksheet(s):

Cascade_29_Federal_73H_Casing_Assumptions_20210414125418.pdf

Casing ID: 3 **String** INTERMEDIATE

Inspection Document:

Spec Document:

Tapered String Spec:

Casing Design Assumptions and Worksheet(s):

Cascade_29_Federal_73H_Casing_Assumptions_20210414125543.pdf

Casing ID: 4 **String** PRODUCTION

Inspection Document:

Spec Document:

Tapered String Spec:

Cascade_29_Federal_73H_Tapered_Specs_20210414125453.pdf

Casing Design Assumptions and Worksheet(s):

Cascade_29_Federal_73H_Casing_Assumptions_20210414125510.pdf

Section 4 - Cement

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 29 FEDERAL **Well Number:** 73H

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	1050	408	1.72	13.5	701	45	Class C	Bentonite
SURFACE	Tail		0	1050	109	1.34	14.8	146	45	Class C	LCM
INTERMEDIATE	Lead	4920	0	4920	795	1.88	12.9	1494	39	35:65 (POZ C)	Salt Bentonite
INTERMEDIATE	Lead	4920	4920	12721	603	3.64	10.3	2194	47	Tuned Light	LCM
INTERMEDIATE	Tail		4920	12721	207	1.36	14.2	281	47	Class C	Retarder
PRODUCTION	Lead		0	17164	657	1.3	14.2	853	25	50:50 (POZ H)	Salt Bentonite Fluid Loss Dispersant SMS

Section 5 - Circulating Medium

Mud System Type: Closed

Will an air or gas system be Used? NO

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

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

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

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

Circulating Medium Table

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 29 FEDERAL **Well Number:** 73H

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	1050	OTHER : Fresh Water	7.83	8.33							
1050	12721	OTHER : Brine Diesel Emulsion	8.5	9							
12721	17164	OIL-BASED MUD	12.3	12.8							

Section 6 - Test, Logging, Coring

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

No DST Planned

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

GAMMA RAY LOG,DIRECTIONAL SURVEY,COMPENSATED NEUTRON LOG,

Coring operation description for the well:

N/A

Section 7 - Pressure

Anticipated Bottom Hole Pressure: 8369 **Anticipated Surface Pressure:** 5602

Anticipated Bottom Hole Temperature(F): 193

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

Hydrogen Sulfide drilling operations plan required? YES

Hydrogen sulfide drilling operations

Cascade_29_Fed_73H_H2S_Plan_20210414125948.pdf

Operator Name: CIMAREX ENERGY COMPANY

Well Name: CASCADE 29 FEDERAL **Well Number:** 73H

Section 8 - Other Information

Proposed horizontal/directional/multi-lateral plan submission:

Cascade_29_Federal_73H_AC_Report_20210414130037.pdf

Cascade_29_Federal_73H_Directional_20210414130057.pdf

Other proposed operations facets description:

Other proposed operations facets attachment:

Cascade_29_Fed_73H_Gas_Capture_Plan__1__20210414130111.pdf

Cascade_29_Federal_73H_Drilling_Plan_20210414130121.pdf

Other Variance attachment:

Cascade_29_Federal__Well_Control_10M_w_5M_annular_Plan_20210413124407.pdf

Cascade_29_Federal_73H_Flex_Hose_20210414130144.pdf

Cascade_29_Federal_73H_Multibowl_20210414130152.pdf

1. Geological Formations

TVD of target 12,575
MD at TD 17,164

Pilot Hole TD N/A
Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	994	Useable Water	
Top Salt	1328	N/A	
Lamar	4920	N/A	
Bell Canyon	4954	Hydrocarbons	
Cherry Canyon	6014	Hydrocarbons	
Brushy Canyon	7508	Hydrocarbons	
Bone Spring	9048	Hydrocarbons	
Upper Avalon Shale	9723	Hydrocarbons	
2nd Bone Spring	10415	Hydrocarbons	
3rd Bone Spring	11054	Hydrocarbons	
Wolfcamp	12189	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
14 3/4	0	1050	1050	10-3/4"	40.50	J-55	BT&C	3.47	6.88	14.79
9 7/8	0	12721	12526	7-5/8"	29.70	HCL-80	BT&C	2.46	1.18	1.84
6 3/4	0	12050	12050	5-1/2"	23.00	L-80	LT&C	1.39	1.23	2.16
6 3/4	12050	17164	12575	5"	18.00	P-110	BT&C	1.61	1.63	61.38
					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

Request Variance for 5-1/2" x 7-5/8" annular clearance. The portion that does not meet clearance will not be cemented

	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.	Y
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?	N

3. Cementing Program

Casing	# Sks	Wt. lb/gal	Yld ft3/sack	H2O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	408	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	109	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate Stage 1	603	10.30	3.64	22.18		Lead: Tuned Light + LCM
	207	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS
Intermediate Stage 2	795	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
Production	657	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

DV tool with possible annular casing packer as needed is proposed at a depth of +/- 4,920'.

Casing String	TOC	% Excess
Surface	0	45
Intermediate Stage 1	4920	47
Intermediate Stage 2	0	39
Production	12521	25

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

4. Pressure Control Equipment

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

BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
9 7/8	13 5/8	5M	Annular	X	5M
			Blind Ram		
			Pipe Ram	X	
			Double Ram	X	
			Other		
6 3/4	13 5/8	10M	Annular	X	50% of working pressure
			Blind Ram		10M
			Pipe Ram	X	
			Double Ram	X	
			Other		

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

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

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

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 1050'	Fresh Water	7.83 - 8.33	28	N/C
1050' to 12721'	Brine Diesel Emulsion	8.50 - 9.00	30-35	N/C
12721' to 17164'	OBM	12.30 - 12.80	50-70	N/C

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

The Brine Emulsion is completely saturated brine fluid that ties diesel into itself to lower the weight of the fluid. The drilling fluid is completely salt saturated.

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.
	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	8369 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 10-3/4" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 10000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 10000 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 10000 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 Energy Cascade 29 Federal #73H Rev0 RM 29Oct20 Anti-Collision Summary Report

Analysis Date-24hr Time:	October 29, 2020 - 12:56	**Analysis Method:**	3D Least Distance
Client:	Cimarex Energy	**Reference Trajectory:**	Cimarex Energy Cascade 29 Federal #73H Rev0 RM 29Oct20 (Non-Def Plan)
Field:	NM Lea County (NAD 83)	**Depth Interval:**	Every 10.00 Measured Depth (ft)
Structure:	Cimarex Cascade 29 Federal #73H	**Rule Set:**	NAL Procedure: D&M AntiCollision Standard S002
Slot:	New Slot	**Min Pts:**	All local minima indicated.
Well:	Cascade 29 Federal #73H	**Version / Patch:**	2.10.821.3
Borehole:	Cascade 29 Federal #73H	**Database \ Project:**	US1153APP452.dir.slb.com\drilling-NM Lea County 2.10
Scan MD Range:	0.00ft ~ 17163.68ft		

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 Energy Cascade 29 Federal #72H Rev0 RM 29Oct20 (Non-Def Plan)													Warning Alert
	19.99	16.25	18.70	3.74	N/A	MAS = 4.95 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	19.99	16.25	18.70	3.74	7653.18	MAS = 4.95 (m)	23.00	23.00				WRP	
	19.99	17.59	7.84	2.41	1.72	OSF1.50	1790.00	1790.00				MinPt-CtCt	
	20.01	17.75	7.75	2.26	1.71	OSF1.50	1810.00	1810.00				MINPT-O-EOU	
	20.07	17.82	7.76	2.25	1.70	OSF1.50	1820.00	1820.00				MinPts	
	67.26	21.13	52.74	46.12	4.99	OSF1.50	2860.00	2855.33	OSF>5.00			Exit Alert	
	190.98	50.17	157.10	140.81	5.82	OSF1.50	6405.06	6373.97				MinPt-O-SF	
	340.92	77.95	288.53	262.98	6.65	OSF1.50	11770.00	11738.03				MINPT-O-EOU	
	341.01	78.05	288.55	262.96	6.64	OSF1.50	11780.00	11748.03				MinPt-O-ADP	
	341.50	78.23	288.92	263.27	6.63	OSF1.50	11800.00	11768.03				MinPt-O-SF	
	571.09	172.38	455.74	398.71	5.00	OSF1.50	16520.00	12575.00	OSF<5.00			Enter Alert	
	571.09	191.32	443.11	379.76	4.50	OSF1.50	17163.68	12575.00				MinPts	
Cimarex Energy Cascade 29 Federal #74H Rev0 RM 29Oct20 (Non-Def Plan)													Warning Alert
	20.00	16.26	18.72	3.74	N/A	MAS = 4.96 (m)	0.00	0.00	CtCt<=15m<15.00			Enter Alert	
	20.00	16.26	18.71	3.74	N/A	MAS = 4.96 (m)	23.00	23.00				WRP	
	20.00	19.56	6.53	0.44	1.54	OSF1.50	2000.00	2000.00				MinPt-CtCt	
	20.02	19.63	6.50	0.39	1.53	OSF1.50	2010.00	2010.00				MINPT-O-EOU	
	20.07	19.70	6.51	0.37	1.53	OSF1.50	2020.00	2020.00				MinPts	
	74.26	23.24	58.34	51.02	4.99	OSF1.50	2620.00	2617.12	OSF>5.00			Exit Alert	
	542.02	99.69	475.13	442.33	8.24	OSF1.50	12160.00	12127.85				MinPt-CtCt	
	542.03	99.72	475.12	442.31	8.24	OSF1.50	12170.00	12137.75				MinPts	
	542.09	99.74	475.16	442.35	8.24	OSF1.50	12180.00	12147.62				MinPt-O-SF	
	574.97	95.28	511.02	479.69	9.16	OSF1.50	13110.00	12575.00				MinPt-CtCt	
	574.97	173.42	458.93	401.55	5.00	OSF1.50	16710.00	12575.00	OSF<5.00			Enter Alert	
	574.98	186.05	450.52	388.93	4.66	OSF1.50	17163.68	12575.00				MinPts	
Cimarex Energy Cascade 29 Federal #71H Rev0 RM 29Oct20 (Non-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	21775.63	MAS = 9.83 (m)	23.00	23.00				WRP	
	39.99	32.25	29.73	7.74	4.31	MAS = 9.83 (m)	1490.00	1490.00				MinPts	
	40.01	32.25	29.64	7.76	4.26	MAS = 9.83 (m)	1510.00	1510.00				MINPT-O-EOU	
	40.63	32.25	30.02	8.38	4.22	MAS = 9.83 (m)	1560.00	1560.00				MinPt-O-SF	
	50.80	32.25	39.50	18.55	4.94	MAS = 9.83 (m)	1750.00	1750.00	OSF>5.00			Exit Alert	
	485.76	52.70	450.20	433.06	14.13	OSF1.50	6405.06	6373.97				MinPt-O-SF	
	1036.34	85.01	979.24	951.33	18.54	OSF1.50	12180.00	12147.62				MinPt-CtCt	
	1035.95	186.96	910.88	848.99	8.36	OSF1.50	17163.68	12575.00				MinPts	
Cimarex Energy Cascade 29 Federal #75H Rev0 RM 29Oct20 (Non-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	38.71	7.74	N/A	MAS = 9.83 (m)	23.00	23.00				WRP	
	39.99	32.25	29.67	7.74	4.28	MAS = 9.83 (m)	1500.00	1500.00				MinPts	
	40.01	32.25	29.63	7.76	4.26	MAS = 9.83 (m)	1510.00	1510.00				MINPT-O-EOU	
	40.61	32.25	30.00	8.35	4.22	MAS = 9.83 (m)	1560.00	1560.00				MinPt-O-SF	
	50.70	32.25	39.40	18.45	4.93	MAS = 9.83 (m)	1750.00	1750.00	OSF>5.00			Exit Alert	
	1005.51	44.42	975.46	961.08	34.92	OSF1.50	6405.06	6373.97				MinPt-O-SF	
	1026.86	84.59	970.04	942.27	18.47	OSF1.50	12130.00	12098.01				MinPt-CtCt	
	1026.91	190.79	899.29	836.12	8.12	OSF1.50	17163.68	12575.00				MinPts	
Cimarex Cascade 29 Federal 7H XEM+MWD Survey 0ft - 14306'MD (Def Survey)													Warning Alert
	4561.50	32.81	4559.52	4528.69	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	4561.49	32.81	4559.50	4528.68	724858.61	MAS = 10.00 (m)	23.00	23.00				WRP	
	4559.31	32.81	4554.29	4526.50	1495.90	MAS = 10.00 (m)	740.00	740.00				MinPts	
	4547.64	32.81	4536.19	4514.83	480.25	MAS = 10.00 (m)	2660.00	2656.82				MinPts	
	4547.74	32.81	4536.05	4514.93	468.00	MAS = 10.00 (m)	2810.00	2805.70				MINPT-O-EOU	
	4559.29	32.81	4543.74	4526.49	335.74	MAS = 10.00 (m)	4130.00	4115.86				MINPT-O-EOU	
	4554.26	32.81	4534.20	4521.45	251.72	MAS = 10.00 (m)	5280.00	5257.29				MinPts	
	587.30	178.30	467.77	409.00	4.98	OSF1.50	9450.00	9418.03	OSF<5.00			Enter Alert	
	392.91	237.13	234.15	155.78	2.49	OSF1.50	9880.00	9848.03				MinPts	
	392.87	237.01	234.19	155.85	2.49	OSF1.50	9890.00	9858.03				MinPt-CtCt	
	577.52	175.21	460.05	402.30	4.98	OSF1.50	10310.00	10278.03	OSF>5.00			Exit Alert	
	2731.19	86.88	2672.62	2644.32	48.22	OSF1.50	13170.00	12575.00				MinPt-O-ADP	
	2730.21	85.90	2672.29	2644.31	48.77	OSF1.50	13230.00	12575.00				MinPts	
	2715.70	79.09	2662.31	2636.61	52.79	OSF1.50	13730.00	12575.00				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		
	2715.63	79.00	2662.30	2636.63	52.85	OSF1.50	13740.00	12575.00				MINPT-O-EOU	
	2714.99	77.67	2662.55	2637.32	53.77	OSF1.50	13890.00	12575.00				MinPt-CtCt	
	2713.87	74.83	2663.33	2639.05	55.84	OSF1.50	14250.00	12575.00				MinPt-CtCt	
	2713.88	74.83	2663.33	2639.04	55.84	OSF1.50	14260.00	12575.00				MinPts	
	2714.64	74.92	2664.03	2639.72	55.79	OSF1.50	14360.00	12575.00				MinPt-O-SF	
	2707.35	73.77	2657.52	2633.59	56.53	OSF1.50	14690.00	12575.00				MinPt-O-SF	
	2707.32	73.75	2657.50	2633.57	56.54	OSF1.50	14700.00	12575.00				MinPt-O-ADP	
	2702.04	74.96	2651.41	2627.08	55.50	OSF1.50	15060.00	12575.00				MinPt-CtCt	
	2702.20	75.98	2650.89	2626.22	54.74	OSF1.50	15210.00	12575.00				MINPT-O-EOU	
	2702.35	76.17	2650.91	2626.18	54.60	OSF1.50	15230.00	12575.00				MinPt-O-ADP	
	2707.75	78.29	2654.90	2629.46	53.19	OSF1.50	15450.00	12575.00				MinPt-O-SF	
	2707.88	79.23	2654.40	2628.65	52.54	OSF1.50	15570.00	12575.00				MinPt-CtCt	
	2708.08	79.85	2654.19	2628.23	52.13	OSF1.50	15620.00	12575.00				MINPT-O-EOU	
	2708.29	80.10	2654.23	2628.19	51.97	OSF1.50	15640.00	12575.00				MinPt-O-ADP	
	2899.18	98.24	2833.03	2800.94	45.15	OSF1.50	17150.00	12575.00				MinPt-O-SF	
	2902.85	98.36	2836.62	2804.49	45.15	OSF1.50	17163.68	12575.00				TD	
Cimarex Cascade 29 Federal #3H XEM+MWD 0ft to 14241ft MD (Def Survey)													Warning Alert
	4700.79	32.81	4699.50	4667.98	N/A	MAS = 10.00 (m)	0.00	0.00				MinPts	
	4700.79	32.81	4699.47	4667.98	154585.97	MAS = 10.00 (m)	23.00	23.00				WRP	
	4700.31	32.81	4697.35	4667.50	2807.10	MAS = 10.00 (m)	400.00	400.00				MinPts	
	4700.72	32.81	4696.62	4667.91	1669.20	MAS = 10.00 (m)	650.00	650.00				MINPT-O-EOU	
	4701.41	32.81	4694.90	4668.60	899.59	MAS = 10.00 (m)	1190.00	1190.00				MinPts	
	4702.63	32.81	4693.52	4669.82	601.15	MAS = 10.00 (m)	1760.00	1760.00				MinPts	
	4703.15	32.81	4693.06	4670.34	533.91	MAS = 10.00 (m)	2000.00	2000.00				MINPT-O-EOU	
	4702.94	32.81	4692.67	4670.13	523.10	MAS = 10.00 (m)	2100.00	2099.98				MinPt-O-SF	
	653.40	200.07	519.38	453.32	4.93	OSF1.50	9520.00	9488.03	OSF<5.00			Enter Alert	
	536.90	235.11	379.27	301.79	3.45	OSF1.50	9890.00	9858.03				MinPts	
	656.38	199.55	522.76	456.84	4.97	OSF1.50	10270.00	10238.03	OSF>5.00			Exit Alert	
	2751.44	88.50	2692.00	2662.93	47.30	OSF1.50	13230.00	12575.00				MinPt-CtCt	
	2750.15	85.77	2692.54	2664.38	48.80	OSF1.50	13390.00	12575.00				MinPt-O-ADP	
	2749.82	85.40	2692.46	2664.42	49.01	OSF1.50	13430.00	12575.00				MINPT-O-EOU	
	2735.84	80.74	2681.59	2655.10	51.63	OSF1.50	13940.00	12575.00				MinPt-CtCt	
	2735.86	80.77	2681.58	2655.08	51.60	OSF1.50	13950.00	12575.00				MinPts	
	2741.70	81.54	2686.91	2660.16	51.22	OSF1.50	14160.00	12575.00				MinPt-O-SF	
	2759.39	78.68	2706.50	2680.71	53.46	OSF1.50	14770.00	12575.00				MinPts	
	2758.20	79.78	2704.58	2678.41	52.68	OSF1.50	15050.00	12575.00				MinPt-CtCt	
	2758.07	80.63	2703.89	2677.44	52.12	OSF1.50	15190.00	12575.00				MinPt-CtCt	
	2754.25	87.26	2695.65	2666.99	48.03	OSF1.50	15810.00	12575.00				MinPt-CtCt	
	2755.41	91.71	2693.84	2663.70	45.69	OSF1.50	16100.00	12575.00				MINPT-O-EOU	
	2757.11	94.27	2693.84	2662.84	44.46	OSF1.50	16250.00	12575.00				MINPT-O-EOU	
	2758.38	95.83	2694.06	2662.55	43.74	OSF1.50	16340.00	12575.00				MinPt-O-ADP	
	2856.27	107.26	2784.33	2749.01	40.41	OSF1.50	17163.68	12575.00				MinPt-O-SF	
Tenneco Oil Company H W Jenning Federal #1 (Offset) Plugged Blind 0ft-5401ft (Def Survey)													Warning Alert
	4504.26	32.81	4485.24	4471.45	253.88	MAS = 10.00 (m)	0.00	0.00				Surface	
	4504.26	32.81	4482.36	4471.45	218.46	MAS = 10.00 (m)	23.00	23.00				WRP	
	4330.02	1303.27	3460.70	3026.75	4.99	OSF1.50	4080.00	4066.23	OSF<5.00			Enter Alert	
	4213.94	1665.39	3103.15	2548.54	3.80	OSF1.50	5430.00	5406.17				MinPt-O-SF	
	4211.13	1663.74	3101.45	2547.40	3.80	OSF1.50	5510.00	5485.58				MinPt-O-ADP	
	4210.47	1662.96	3101.31	2547.51	3.80	OSF1.50	5540.00	5515.35				MINPT-O-EOU	
	4209.76	1660.48	3102.25	2549.28	3.81	OSF1.50	5620.00	5594.76				MinPt-CtCt	
	4777.39	1434.24	3820.80	3343.15	5.00	OSF1.50	7690.00	7658.03	OSF>5.00			Exit Alert	
	7900.49	615.58	7489.67	7284.91	19.29	OSF1.50	15290.00	12575.00				MinPt-CtCt	
	7900.50	615.64	7489.65	7284.87	19.29	OSF1.50	15310.00	12575.00				MINPT-O-EOU	
	7900.57	615.72	7489.67	7284.86	19.28	OSF1.50	15330.00	12575.00				MinPt-O-ADP	
	8118.90	716.28	7640.95	7402.62	17.03	OSF1.50	17163.68	12575.00				MinPt-O-SF	
Cimarex Cascade 29 Federal 4H XEM+MWD 0ft to 14230ft MD (Def Survey)													Pass
	4582.82	32.81	4580.85	4550.02	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	4582.81	32.81	4580.82	4550.00	332490.59	MAS = 10.00 (m)	23.00	23.00				WRP	
	4582.35	32.81	4579.91	4549.54	9784.39	MAS = 10.00 (m)	150.00	150.00				MinPts	
	4582.42	32.81	4579.86	4549.61	7788.94	MAS = 10.00 (m)	180.00	180.00				MINPT-O-EOU	
	4659.31	32.81	4641.91	4626.50	302.03	MAS = 10.00 (m)	4650.00	4631.99				MinPts	
	4659.48	32.81	4641.59	4626.68	292.61	MAS = 10.00 (m)	4780.00	4761.02				MINPT-O-EOU	
	4660.57	32.81	4641.66	4627.76	275.09	MAS = 10.00 (m)	5040.00	5019.08				MinPts	
	4661.19	32.81	4641.14	4628.38	257.74	MAS = 10.00 (m)	5320.00	5296.99				MINPT-O-EOU	
	1315.38	235.64	1157.62	1079.74	8.43	OSF1.50	9910.00	9878.03				MinPts	
	1315.41	235.65	1157.65	1079.76	8.43	OSF1.50	9920.00	9888.03				MinPt-O-SF	
	2963.33	106.63	2891.58	2856.70	42.45	OSF1.50	13360.00	12575.00				MinPt-O-ADP	
	2962.85	106.15	2891.42	2856.70	42.64	OSF1.50	13390.00	12575.00				MinPt-O-ADP	
	2962.38	105.57	2891.34	2856.81	42.87	OSF1.50	13430.00	12575.00				MINPT-O-EOU	
	2962.06	104.60	2891.67	2857.46	43.27	OSF1.50	13500.00	12575.00				MinPt-CtCt	
	2960.74	94.94	2896.79	2865.80	47.74	OSF1.50	13940.00	12575.00				MinPt-O-ADP	
	2960.48	94.62	2896.74	2865.86	47.90	OSF1.50	13960.00	12575.00				MINPT-O-EOU	
	2959.32	92.92	2896.72	2866.41	48.78	OSF1.50	14050.00	12575.00				MINPT-O-EOU	
	2952.54	87.18	2893.76	2865.35	51.94	OSF1.50	14440.00	12575.00				MinPt-O-ADP	
	2952.48	87.11	2893.75	2865.37	51.99	OSF1.50	14450.00	12575.00				MINPT-O-EOU	
	2949.63	83.75	2893.13	2865.88	54.07	OSF1.50	14700.00	12575.00				MinPt-O-ADP	
	2933.86	80.46	2879.56	2853.39	56.03	OSF1.50	15080.00	12575.00				MinPt-O-SF	
	2886.82	90.08	2826.11	2796.74	49.12	OSF1.50	16310.00	12575.00				MinPt-CtCt	
	2886.96	90.48	2825.99	2796.49	48.90	OSF1.50	16340.00	12575.00				MINPT-O-EOU	
	2887.19	90.74	2826.04	2796.45	48.76	OSF1.50	16360.00	12575.00				MinPt-O-ADP	
	2988.25	99.57	2921.21	2888.68	45.90	OSF1.50	17163.68	12575.00				MinPt-O-SF	
Cimarex Cascade 29 Federal #2H Extreme+MWD 0ft to 14248ft (Def Survey)													Pass
	5066.82	32.81	5065.50	5034.01	205726.25	MAS = 10.00 (m)	0.00	0.00				Surface	
	5066.71	32.81	5065.29	5033.90	39397.32	MAS = 10.00 (m)	23.00	23.00				WRP	
	5051.64	32.81	5043.94	5018.83	788.15	MAS = 10.00 (m)	1460.00	1460.00				MinPts	
	1447.88	226.49	1295.83	1221.39	9.70	OSF1.50	9890.00	9858.03				MinPt-O-SF	
	1447.87	226.48	1295.82	1221.39	9.70	OSF1.50	9900.00	9868.03				MinPts	
	3037.50	119.25	2957.57	2918.25	38.61	OSF1.50	13120.00	12575.00				MinPt-O-ADP	
	3037.32	119.04	2957.53	2918.28	38.67	OSF1.50	13140.00	12575.00				MINPT-O-EOU	
	3036.37	115.84	2958.72	2920.53	39.74	OSF1.50	13310.00	12575.00				MinPt-CtCt	
	3045.51	102.07	2977.04	2943.44	45.31	OSF1.50	14040.00	12575.00				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		
	3045.52	102.09	2977.03	2943.43	45.30	OSF1.50	14050.00	12575.00				MinPts	
	3048.09	102.39	2979.40	2945.76	45.20	OSF1.50	14210.00	12575.00				MinPt-O-SF	
	3079.99	96.73	3015.08	2983.27	48.39	OSF1.50	15040.00	12575.00				MinPt-O-SF	
	3080.93	95.30	3016.96	2985.62	49.13	OSF1.50	15250.00	12575.00				MinPts	
	3080.36	95.69	3016.14	2984.67	48.93	OSF1.50	15390.00	12575.00				MinPt-CtCt	
	3080.48	96.08	3015.99	2984.40	48.73	OSF1.50	15440.00	12575.00				MINPT-O-EOU	
	3080.59	96.24	3016.00	2984.35	48.64	OSF1.50	15460.00	12575.00				MinPts	
	3067.72	105.39	2997.03	2962.33	44.18	OSF1.50	16360.00	12575.00				MinPt-CtCt	
	3067.93	106.09	2996.78	2961.85	43.89	OSF1.50	16400.00	12575.00				MINPT-O-EOU	
	3068.36	106.61	2996.86	2961.75	43.68	OSF1.50	16430.00	12575.00				MinPt-O-ADP	
	3157.04	117.62	3078.20	3039.42	40.69	OSF1.50	17163.68	12575.00				MinPt-O-SF	
Cimarex Energy Cascade 29 Federal #18H Rev0 RM 29Oct20 (Non-Def Plan)													Pass
	3678.85	32.81	3677.57	3646.05	N/A	MAS = 10.00 (m)	0.00	0.00				Surface	
	3678.85	32.81	3677.56	3646.05	352169.39	MAS = 10.00 (m)	23.00	23.00				WRP	
	1703.26	67.52	1656.97	1635.75	40.04	OSF1.50	8620.00	8588.03				MinPt-O-SF	
	1570.01	88.41	1509.68	1481.60	27.88	OSF1.50	12460.00	12394.05				MinPt-O-SF	
	1568.97	88.35	1508.69	1480.63	27.88	OSF1.50	12540.00	12447.14				MinPt-O-SF	
	1568.76	88.32	1508.50	1480.44	27.88	OSF1.50	12600.00	12480.00				MinPts	
	1569.03	186.52	1443.31	1382.51	12.87	OSF1.50	17163.68	12575.00				MinPts	
Cimarex Cascade 29 Federal #5H Extreme+MWD 0ft to 14373ft MD (Def Survey)													Pass
	5766.64	32.81	5764.66	5733.83	N/A	MAS = 10.00 (m)	0.00	0.00				MinPts	
	5766.66	32.81	5764.63	5733.85	120619.86	MAS = 10.00 (m)	23.00	23.00				WRP	
	5763.07	32.81	5756.68	5730.26	1305.29	MAS = 10.00 (m)	990.00	990.00				MinPts	
	5763.16	32.81	5756.59	5730.35	1255.19	MAS = 10.00 (m)	1030.00	1030.00				MINPT-O-EOU	
	5761.67	32.81	5752.33	5728.87	781.82	MAS = 10.00 (m)	1580.00	1580.00				MinPts	
	5761.81	32.81	5752.17	5729.00	751.81	MAS = 10.00 (m)	1650.00	1650.00				MINPT-O-EOU	
	5763.61	32.81	5752.57	5730.80	635.58	MAS = 10.00 (m)	1960.00	1960.00				MINPT-O-EOU	
	5737.64	32.81	5725.06	5704.83	542.07	MAS = 10.00 (m)	2560.00	2557.56				MinPt-O-SF	
	2381.96	236.81	2222.74	2145.14	15.32	OSF1.50	9890.00	9858.03				MinPts	
	3601.68	145.42	3504.08	3456.26	37.64	OSF1.50	13240.00	12575.00				MINPT-O-EOU	
	3599.91	141.78	3504.73	3458.13	38.60	OSF1.50	13370.00	12575.00				MINPT-O-EOU	
	3598.46	136.96	3506.49	3461.50	39.97	OSF1.50	13610.00	12575.00				MinPt-CtCt	
	3589.67	108.60	3516.61	3481.07	50.47	OSF1.50	15620.00	12575.00				MinPt-CtCt	
	3589.79	109.03	3516.45	3480.76	50.27	OSF1.50	15680.00	12575.00				MINPT-O-EOU	
	3590.03	109.30	3516.50	3480.72	50.15	OSF1.50	15720.00	12575.00				MinPt-O-ADP	
	3600.18	113.35	3523.96	3486.84	48.46	OSF1.50	16170.00	12575.00				MinPt-O-SF	
	3600.88	112.80	3525.02	3488.09	48.71	OSF1.50	16210.00	12575.00				MinPt-O-ADP	
	3702.82	128.56	3616.46	3574.27	43.86	OSF1.50	17163.68	12575.00				MinPt-O-SF	
Cimarex Cascade 29 Federal #1H (offset) Gyro+MWD 0ft to 14296ft (Def Survey)													Pass
	5910.35	32.81	5908.36	5877.54	503639.26	MAS = 10.00 (m)	0.00	0.00				Surface	
	5910.33	32.81	5908.28	5877.52	87800.58	MAS = 10.00 (m)	23.00	23.00				WRP	
	5910.07	32.81	5907.39	5877.26	8364.05	MAS = 10.00 (m)	200.00	200.00				MinPts	
	3162.82	245.36	2998.59	2917.47	19.48	OSF1.50	9860.00	9828.03				MinPts	
	3162.87	245.37	2998.63	2917.51	19.48	OSF1.50	9880.00	9848.03				MinPt-O-SF	
	4193.02	171.40	4078.09	4021.62	37.11	OSF1.50	13140.00	12575.00				MinPt-CtCt	
	4212.04	143.37	4115.80	4068.67	44.66	OSF1.50	14050.00	12575.00				MINPT-O-EOU	
	4211.94	143.03	4115.93	4068.91	44.77	OSF1.50	14090.00	12575.00				MinPt-CtCt	
	4216.95	132.50	4127.96	4084.45	48.44	OSF1.50	14500.00	12575.00				MinPt-O-ADP	
	4216.86	132.38	4127.94	4084.47	48.48	OSF1.50	14520.00	12575.00				MINPT-O-EOU	
	4210.06	126.00	4125.40	4084.06	50.90	OSF1.50	14810.00	12575.00				MinPt-O-ADP	
	4209.90	125.76	4125.39	4084.13	50.99	OSF1.50	14820.00	12575.00				MINPT-O-EOU	
	4207.10	124.33	4123.56	4082.78	51.56	OSF1.50	14970.00	12575.00				MinPts	
	4205.91	122.87	4123.34	4083.04	52.16	OSF1.50	15080.00	12575.00				MinPt-O-ADP	
	4205.44	122.87	4122.86	4082.56	52.15	OSF1.50	15160.00	12575.00				MinPt-CtCt	
	4205.46	122.94	4122.84	4082.52	52.13	OSF1.50	15180.00	12575.00				MinPts	
	4206.12	123.20	4123.33	4082.93	52.02	OSF1.50	15260.00	12575.00				MinPt-O-SF	
	4206.76	120.82	4125.55	4085.94	53.07	OSF1.50	15370.00	12575.00				MinPt-O-ADP	
	4206.74	120.80	4125.55	4085.94	53.08	OSF1.50	15380.00	12575.00				MINPT-O-EOU	
	4206.74	120.79	4125.56	4085.95	53.09	OSF1.50	15390.00	12575.00				MinPt-CtCt	
	4207.69	120.86	4126.46	4086.83	53.07	OSF1.50	15560.00	12575.00				MinPt-O-SF	
	4207.41	119.09	4127.36	4088.32	53.86	OSF1.50	15790.00	12575.00				MinPts	
	4201.81	117.65	4122.72	4084.17	54.46	OSF1.50	15930.00	12575.00				MinPts	
	4198.99	117.57	4119.95	4081.41	54.46	OSF1.50	15990.00	12575.00				MinPts	
	4168.87	124.19	4085.41	4044.68	51.14	OSF1.50	16550.00	12575.00				MinPt-CtCt	
	4169.19	125.22	4085.05	4043.97	50.72	OSF1.50	16610.00	12575.00				MINPT-O-EOU	
	4169.61	125.74	4085.12	4043.87	50.51	OSF1.50	16640.00	12575.00				MinPt-O-ADP	
	4203.01	134.44	4112.72	4068.57	47.57	OSF1.50	17163.68	12575.00				MinPt-O-SF	

Schlumberger

Cimarex Energy Cascade 29 Federal #73H Rev0 RM 29Oct20 Proposal Geodetic Report

(Non-Def Plan)

CIMAREX

Report Date:	October 29, 2020 - 12:56 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex Energy	**Vertical Section Azimuth:**	359.630 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Cascade 29 Federal #73H / New Slot	**TVD Reference Datum:**	RKB
Well:	Cascade 29 Federal #73H	**TVD Reference Elevation:**	3420.700 ft above MSL
Borehole:	Cascade 29 Federal #73H	**Seabed / Ground Elevation:**	3397.700 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.486 °
Survey Name:	Cimarex Energy Cascade 29 Federal #73H Rev0 RM 29Oct20	**Total Gravity Field Strength:**	998.4309mgn (9.80665 Based)
Survey Date:	October 28, 2020	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	104.000 ° / 5328.230 ft / 5.879 / 0.424	**Total Magnetic Field Strength:**	47611.708 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.668 °
Location Lat / Long:	N 32° 5' 43.37883", W 103° 35' 22.51414"	**Declination Date:**	October 28, 2020
Location Grid N/E Y/X:	N 399231.370 ftUS, E 771653.750 ftUS	**Magnetic Declination Model:**	HDGM 2020
CRS Grid Convergence Angle:	0.3952 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99996985	**Grid Convergence Used:**	0.3952 °
Version / Patch:	2.10.821.3	**Total Corr Mag North->Grid North:**	6.0909 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [390' FSL, 1180' FEL]	0.00	0.00	353.24	0.00	0.00	0.00	0.00	N/A	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	100.00	0.00	269.68	100.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	200.00	0.00	269.68	200.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	300.00	0.00	269.68	300.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	400.00	0.00	269.68	400.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	500.00	0.00	269.68	500.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	600.00	0.00	269.68	600.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	700.00	0.00	269.68	700.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	800.00	0.00	269.68	800.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	900.00	0.00	269.68	900.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	1000.00	0.00	269.68	1000.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	1100.00	0.00	269.68	1100.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	1200.00	0.00	269.68	1200.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	1300.00	0.00	269.68	1300.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	1400.00	0.00	269.68	1400.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	1500.00	0.00	269.68	1500.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	1600.00	0.00	269.68	1600.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	1700.00	0.00	269.68	1700.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	1800.00	0.00	269.68	1800.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	1900.00	0.00	269.68	1900.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
Nudge 2°/100' DLS	2000.00	0.00	269.68	2000.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
	2100.00	2.00	269.68	2099.98	0.00	-0.01	-1.75	2.00	399231.36	771652.00	N 32 5 43.38	W 103 35 22.53
	2200.00	4.00	269.68	2199.84	0.01	-0.04	-6.98	2.00	399231.33	771646.77	N 32 5 43.38	W 103 35 22.60
	2300.00	6.00	269.68	2299.45	0.01	-0.09	-15.69	2.00	399231.28	771638.06	N 32 5 43.38	W 103 35 22.70
Hold Nudge	2350.00	7.00	269.68	2349.13	0.02	-0.12	-21.35	2.00	399231.25	771632.40	N 32 5 43.38	W 103 35 22.76
	2400.00	7.00	269.68	2398.76	0.02	-0.15	-27.45	0.00	399231.22	771626.30	N 32 5 43.38	W 103 35 22.83
	2500.00	7.00	269.68	2498.01	0.03	-0.22	-39.63	0.00	399231.15	771614.12	N 32 5 43.38	W 103 35 22.97
	2600.00	7.00	269.68	2597.27	0.04	-0.29	-51.82	0.00	399231.08	771601.93	N 32 5 43.38	W 103 35 23.12
	2700.00	7.00	269.68	2696.52	0.05	-0.36	-64.01	0.00	399231.01	771589.75	N 32 5 43.38	W 103 35 23.26
	2800.00	7.00	269.68	2795.78	0.06	-0.43	-76.19	0.00	399230.94	771577.56	N 32 5 43.38	W 103 35 23.40
	2900.00	7.00	269.68	2895.03	0.07	-0.50	-88.38	0.00	399230.87	771565.37	N 32 5 43.38	W 103 35 23.54
	3000.00	7.00	269.68	2994.28	0.08	-0.57	-100.57	0.00	399230.80	771553.19	N 32 5 43.38	W 103 35 23.68
	3100.00	7.00	269.68	3093.54	0.09	-0.64	-112.75	0.00	399230.73	771541.00	N 32 5 43.38	W 103 35 23.82
	3200.00	7.00	269.68	3192.79	0.10	-0.71	-124.94	0.00	399230.66	771528.81	N 32 5 43.38	W 103 35 23.97
	3300.00	7.00	269.68	3292.05	0.11	-0.77	-137.13	0.00	399230.60	771516.63	N 32 5 43.38	W 103 35 24.11
	3400.00	7.00	269.68	3391.30	0.12	-0.84	-149.31	0.00	399230.53	771504.44	N 32 5 43.38	W 103 35 24.25
	3500.00	7.00	269.68	3490.56	0.13	-0.91	-161.50	0.00	399230.46	771492.25	N 32 5 43.38	W 103 35 24.39
	3600.00	7.00	269.68	3589.81	0.14	-0.98	-173.69	0.00	399230.39	771480.07	N 32 5 43.38	W 103 35 24.53
	3700.00	7.00	269.68	3689.07	0.15	-1.05	-185.87	0.00	399230.32	771467.88	N 32 5 43.38	W 103 35 24.67
	3800.00	7.00	269.68	3788.32	0.16	-1.12	-198.06	0.00	399230.25	771455.70	N 32 5 43.38	W 103 35 24.82
	3900.00	7.00	269.68	3887.58	0.17	-1.19	-210.25	0.00	399230.18	771443.51	N 32 5 43.38	W 103 35 24.96
	4000.00	7.00	269.68	3986.83	0.18	-1.26	-222.43	0.00	399230.11	771431.32	N 32 5 43.38	W 103 35 25.10
	4100.00	7.00	269.68	4086.09	0.19	-1.32	-234.62	0.00	399230.05	771419.14	N 32 5 43.38	W 103 35 25.24
	4200.00	7.00	269.68	4185.34	0.20	-1.39	-246.81	0.00	399229.98	771406.95	N 32 5 43.38	W 103 35 25.38
	4300.00	7.00	269.68	4284.59	0.21	-1.46	-259.00	0.00	399229.91	771394.76	N 32 5 43.38	W 103 35 25.52
	4400.00	7.00	269.68	4383.85	0.22	-1.53	-271.18	0.00	399229.84	771382.58	N 32 5 43.38	W 103 35 25.67
	4500.00	7.00	269.68	4483.10	0.23	-1.60	-283.37	0.00	399229.77	771370.39	N 32 5 43.38	W 103 35 25.81
	4600.00	7.00	269.68	4582.36	0.24	-1.67	-295.56	0.00	399229.70	771358.20	N 32 5 43.38	W 103 35 25.95
	4700.00	7.00	269.68	4681.61	0.25	-1.74	-307.74	0.00	399229.63	771346.02	N 32 5 43.38	W 103 35 26.09
	4800.00	7.00	269.68	4780.87	0.26	-1.81	-319.93	0.00	399229.56	771333.83	N 32 5 43.38	W 103 35 26.23
	4900.00	7.00	269.68	4880.12	0.27	-1.87	-332.12	0.00	399229.50	771321.65	N 32 5 43.38	W 103 35 26.37
	5000.00	7.00	269.68	4979.38	0.28	-1.94	-344.30	0.00	399229.43	771309.46	N 32 5 43.38	W 103 35 26.52
	5100.00	7.00	269.68	5078.63	0.29	-2.01	-356.49	0.00	399229.36	771297.27	N 32 5 43.38	W 103 35 26.66
	5200.00	7.00	269.68	5177.89	0.30	-2.08	-368.68	0.00	399229.29	771285.09	N 32 5 43.38	W 103 35 26.80
	5300.00	7.00	269.68	5277.14	0.31	-2.15	-380.86	0.00	399229.22	771272.90	N 32 5 43.38	W 103 35 26.94
	5400.00	7.00	269.68	5376.40	0.32	-2.22	-393.05	0.00	399229.15	771260.71	N 32 5 43.38	W 103 35 27.08
	5500.00	7.00	269.68	5475.65	0.33	-2.29	-405.24	0.00	399229.08	771248.53	N 32 5 43.38	W 103 35 27.22
	5600.00	7.00	269.68	5574.90	0.34	-2.36	-417.42	0.00	399229.01	771236.34	N 32 5 43.38	W 103 35 27.37
	5700.00	7.00	269.68	5674.16	0.35	-2.42	-429.61	0.00	399228.95	771224.15	N 32 5 43.38	W 103 35 27.51
	5800.00	7.00	269.68	5773.41	0.36	-2.49	-441.80	0.00	399228.88	771211.97	N 32 5 43.38	W 103 35 27.65
	5900.00	7.00	269.68	5872.67	0.37	-2.56	-453.98	0.00	399228.81	771199.78	N 32 5 43.38	W 103 35 27.79
	6000.00	7.00	269.68	5971.92	0.38	-2.63	-466.17	0.00	399228.74	771187.60	N 32 5 43.38	W 103 35 27.93
	6100.00	7.00	269.68	6071.18	0.39	-2.70	-478.36	0.00	399228.67	771175.41	N 32 5 43.38	W 103 35 28.07
	6200.00	7.00	269.68	6170.43	0.40	-2.77	-490.54	0.00	399228.60	771163.22	N 32 5 43.38	W 103 35 28.22
	6300.00	7.00	269.68	6269.69	0.41	-2.84	-502.73	0.00	399228.53	771151.04	N 32 5 43.39	W 103 35 28.36
	6400.00	7.00	269.68	6368.94	0.42	-2.91	-514.92	0.00	399228.46	771138.85	N 32 5 43.39	W 103 35 28.50
Drop to Vertical 2°/100' DLS	6405.06	7.00	269.68	6373.97	0.42	-2.91	-515.53	0.00	399228.46	771138.23	N 32 5 43.39	W 103 35 28.51
	6500.00	5.10	269.68	6468.37	0.43	-2.97	-525.54	2.00	399228.40	771128.23	N 32 5 43.39	W 103 35 28.62
	6600.00	3.10	269.68	6568.11	0.43	-3.01	-532.69	2.00	399228.36	771121.08	N 32 5 43.39	W 103 35 28.71
	6700.00	1.10	269.68	6668.04	0.44	-3.03	-536.36	2.00	399228.34	771117.41	N 32 5 43.39	W 103 35 28.75
Hold Vertical	6755.06	0.00	269.68	6723.10	0.44	-3.03	-536.89	2.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	6800.00	0.00	269.68	6768.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	6900.00	0.00	269.68	6868.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	7000.00	0.00	269.68	6968.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	7100.00	0.00	269.68	7068.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
	7200.00	0.00	269.68	7168.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	7300.00	0.00	269.68	7268.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	7400.00	0.00	269.68	7368.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	7500.00	0.00	269.68	7468.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	7600.00	0.00	269.68	7568.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	7700.00	0.00	269.68	7668.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	7800.00	0.00	269.68	7768.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	7900.00	0.00	269.68	7868.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	8000.00	0.00	269.68	7968.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	8100.00	0.00	269.68	8068.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	8200.00	0.00	269.68	8168.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	8300.00	0.00	269.68	8268.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	8400.00	0.00	269.68	8368.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	8500.00	0.00	269.68	8468.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	8600.00	0.00	269.68	8568.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	8700.00	0.00	269.68	8668.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	8800.00	0.00	269.68	8768.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	8900.00	0.00	269.68	8868.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	9000.00	0.00	269.68	8968.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	9100.00	0.00	269.68	9068.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	9200.00	0.00	269.68	9168.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	9300.00	0.00	269.68	9268.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	9400.00	0.00	269.68	9368.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	9500.00	0.00	269.68	9468.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	9600.00	0.00	269.68	9568.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	9700.00	0.00	269.68	9668.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	9800.00	0.00	269.68	9768.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	9900.00	0.00	269.68	9868.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	10000.00	0.00	269.68	9968.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	10100.00	0.00	269.68	10068.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	10200.00	0.00	269.68	10168.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	10300.00	0.00	269.68	10268.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	10400.00	0.00	269.68	10368.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	10500.00	0.00	269.68	10468.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	10600.00	0.00	269.68	10568.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	10700.00	0.00	269.68	10668.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	10800.00	0.00	269.68	10768.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	10900.00	0.00	269.68	10868.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	11000.00	0.00	269.68	10968.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	11100.00	0.00	269.68	11068.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	11200.00	0.00	269.68	11168.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	11300.00	0.00	269.68	11268.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	11400.00	0.00	269.68	11368.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	11500.00	0.00	269.68	11468.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	11600.00	0.00	269.68	11568.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	11700.00	0.00	269.68	11668.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	11800.00	0.00	269.68	11768.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	11900.00	0.00	269.68	11868.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	12000.00	0.00	269.68	11968.03	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
KOP - Build 12°/100' DLS	12096.96	0.00	269.68	12065.00	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
	12100.00	0.36	359.63	12068.03	0.45	-3.02	-536.89	12.00	399228.35	771116.88	N 32 5 43.39	W 103 35 28.76
	12200.00	12.36	359.63	12167.24	11.51	8.04	-536.96	12.00	399239.41	771116.81	N 32 5 43.50	W 103 35 28.76
	12300.00	24.36	359.63	12261.97	42.96	39.49	-537.16	12.00	399270.86	771116.61	N 32 5 43.81	W 103 35 28.75
	12400.00	36.36	359.63	12348.10	93.42	89.95	-537.49	12.00	399321.32	771116.28	N 32 5 44.31	W 103 35 28.75
	12500.00	48.36	359.63	12421.85	160.68	157.21	-537.92	12.00	399388.57	771115.85	N 32 5 44.97	W 103 35 28.75
	12600.00	60.36	359.63	12480.00	241.80	238.33	-538.45	12.00	399469.69	771115.32	N 32 5 45.77	W 103 35 28.75
	12700.00	72.36	359.63	12520.02	333.25	329.77	-539.04	12.00	399561.13	771114.73	N 32 5 46.68	W 103 35 28.75
Build 4°/100' DLS	12721.96	75.00	359.63	12526.19	354.32	350.85	-539.17	12.00	399582.21	771114.60	N 32 5 46.89	W 103 35 28.75
	12800.00	78.12	359.63	12544.33	430.22	426.74	-539.66	4.00	399658.10	771114.11	N 32 5 47.64	W 103 35 28.75
	12900.00	82.12	359.63	12561.48	528.71	525.24	-540.30	4.00	399756.59	771113.47	N 32 5 48.61	W 103 35 28.75
	13000.00	86.12	359.63	12571.72	628.17	624.69	-540.94	4.00	399856.04	771112.83	N 32 5 49.60	W 103 35 28.75
Landing Point	13096.96	90.00	359.63	12575.00	725.06	721.57	-541.56	4.00	399952.92	771112.20	N 32 5 50.56	W 103 35 28.75
	13100.00	90.00	359.63	12575.00	728.09	724.61	-541.58	0.00	399955.96	771112.18	N 32 5 50.59	W 103 35 28.75
	13200.00	90.00	359.63	12575.00	828.09	824.61	-542.23	0.00	400055.95	771111.54	N 32 5 51.58	W 103 35 28.75
	13300.00	90.00	359.63	12575.00	928.09	924.61	-542.87	0.00	400155.95	771110.89	N 32 5 52.56	W 103 35 28.75
	13400.00	90.00	359.63	12575.00	1028.09	1024.60	-543.52	0.00	400255.94	771110.25	N 32 5 53.55	W 103 35 28.75
	13500.00	90.00	359.63	12575.00	1128.09	1124.60	-544.16	0.00	400355.94	771109.60	N 32 5 54.54	W 103 35 28.75
	13600.00	90.00	359.63	12575.00	1228.09	1224.60	-544.81	0.00	400455.93	771108.96	N 32 5 55.53	W 103 35 28.75
	13700.00	90.00	359.63	12575.00	1328.09	1324.60	-545.46	0.00	400555.93	771108.31	N 32 5 56.52	W 103 35 28.75
	13800.00	90.00	359.63	12575.00	1428.09	1424.60	-546.10	0.00	400655.92	771107.67	N 32 5 57.51	W 103 35 28.75
	13900.00	90.00	359.63	12575.00	1528.09	1524.59	-546.75	0.00	400755.92	771107.02	N 32 5 58.50	W 103 35 28.75
	14000.00	90.00	359.63	12575.00	1628.09	1624.59	-547.39	0.00	400855.91	771106.38	N 32 5 59.49	W 103 35 28.75
	14100.00	90.00	359.63	12575.00	1728.09	1724.59	-548.04	0.00	400955.90	771105.73	N 32 6 0.48	W 103 35 28.75
	14200.00	90.00	359.63	12575.00	1828.09	1824.59	-548.68	0.00	401055.90	771105.09	N 32 6 1.47	W 103 35 28.75
	14300.00	90.00	359.63	12575.00	1928.09	1924.59	-549.33	0.00	401155.89	771104.44	N 32 6 2.46	W 103 35 28.75
	14400.00	90.00	359.63	12575.00	2028.09	2024.58	-549.97	0.00	401255.89	771103.79	N 32 6 3.45	W 103 35 28.75
	14500.00	90.00	359.63	12575.00	2128.09	2124.58	-550.62	0.00	401355.88	771103.15	N 32 6 4.44	W 103 35 28.74
	14600.00	90.00	359.63	12575.00	2228.09	2224.58	-551.26	0.00	401455.88	771102.50	N 32 6 5.43	W 103 35 28.74
	14700.00	90.00	359.63	12575.00	2328.09	2324.58	-551.91	0.00	401555.87	771101.86	N 32 6 6.42	W 103 35 28.74
	14800.00	90.00	359.63	12575.00	2428.09	2424.58	-552.55	0.00	401655.87	771101.21	N 32 6 7.41	W 103 35 28.74
	14900.00	90.00	359.63	12575.00	2528.09	2524.57	-553.20	0.00	401755.86	771100.57	N 32 6 8.40	W 103 35 28.74
	15000.00	90.00	359.63	12575.00	2628.09	2624.57	-553.85	0.00	401855.86	771099.92	N 32 6 9.39	W 103 35 28.74
	15100.00	90.00	359.63	12575.00	2728.09	2724.57	-554.49	0.00	401955.85	771099.28	N 32 6 10.38	W 103 35 28.74
	15200.00	90.00	359.63	12575.00	2828.09	2824.57	-555.14	0.00	402055.85	771098.63	N 32 6 11.37	W 103 35 28.74
	15300.00	90.00	359.63	12575.00	2928.09	2924.57	-555.78	0.00	402155.84	771097.99	N 32 6 12.36	W 103 35 28.74
	15400.00	90.00	359.63	12575.00	3028.09	3024.56	-556.43	0.00	402255.84	771097.34	N 32 6 13.35	W 103 35 28.74
	15500.00	90.00	359.63	12575.00	3128.09	3124.56	-557.07	0.00	402355.83	771096.70	N 32 6 14.33	W 103 35 28.74
	15600.00	90.00	359.63	12575.00	3228.09	3224.56	-557.72	0.00	402455.83	771096.05	N 32 6 15.32	W 103 35 28.74
	15700.00	90.00	359.63	12575.00	3328.09	3324.56	-558.36	0.00	402555.82	771095.41	N 32 6 16.31	W 103 35 28.74
	15800.00	90.00	359.63	12575.00	3428.09	3424.55	-559.01	0.00	402655.81	771094.76	N 32 6 17.30	W 103 35 28.74
	15900.00	90.00	359.63	12575.00	3528.09	3524.55	-559.65	0.00	402755.81	771094.11	N 32 6 18.29	W 103 35 28.74
	16000.00	90.00	359.63	12575.00	3628.09	3624.55	-560.30	0.00	402855.80	771093.47	N 32 6 19.28	W 103 35 28.74
	16100.00	90.00	359.63	12575.00	3728.09	3724.55	-560.94	0.00	402955.80	771092.82	N 32 6 20.27	W 103 35 28.74
	16200.00	90.00	359.63	12575.00	3828.09	3824.55	-561.59	0.00	403055.79	771092.18	N 32 6 21.26	W 103 35 28.74
	16300.00	90.00	359.63	12575.00	3928.09	3924.54	-562.23	0.00	403155.79	771091.53	N 32 6 22.25	W 103 35 28.74
	16400.00	90.00	359.63	12575.00	4028.09	4024.54	-562.88	0.00	403255.78	771090.89	N 32 6 23.24	W 103 35 28.74
	16500.00	90.00	359.63	12575.00	4128.09	4124.54	-563.53	0.00	403355.78	771090.24	N 32 6 24.23	W 103 35 28.73
	16600.00	90.00	359.63	12575.00	4228.09	4224.54	-564.17	0.00	403455.77	771089.60	N 32 6 25.22	W 103 35 28.73
	16700.00	90.00	359.63	12575.00	4328.09	4324.54	-564.82	0.00	403555.77	771088.95	N 32 6 26.21	W 103 35 28.73
	16800.00	90.00	359.63	12575.00	4428.09	4424.53	-565.46	0.00	403655.76	771088.31	N 32 6 27.20	W 103 35 28.73
	16900.00	90.00	359.63	12575.00	4528.09	4524.53	-566.11	0.00	403755.76	771087.66	N 32 6 28.19	W 103 35 28.73
	17000.00	90.00	359.63	12575.00	4628.09	4624.53	-566.75	0.00	403855.75	771087.02	N 32 6 29.18	W 103 35 28.73
	17100.00	90.00	359.63	12575.00	4728.09	4724.53	-567.40	0.00	403955.75	771086.37	N 32 6 30.17	W 103 35 28.73

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 ° ' ")
Cimarex Energy Cascade 29 Federal #73H - PBHL [100'FNL,1717'FEL]	17163.68	90.00	359.63	12575.00	4791.77	4788.20	-567.81	0.00	404019.42	771085.96	N 32 6 30.80	W 103 35 28.73

Survey Type: Non-Def Plan

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

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	23.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Cascade 29 Federal #73H / Cimarex Energy Cascade 29 Federal #73H Rev0 RM 29Oct20
	1	23.000	17163.678	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Cascade 29 Federal #73H / Cimarex Energy Cascade 29

Schlumberger

Cimarex Energy Cascade 29 Federal #73H Rev0 RM 29Oct20 Proposal Geodetic Report

(Non-Def Plan)

Report Date:	October 29, 2020 - 12:56 PM	**Survey / DLS Computation:**	Minimum Curvature / Lubinski
Client:	Cimarex Energy	**Vertical Section Azimuth:**	359.630 ° (Grid North)
Field:	NM Lea County (NAD 83)	**Vertical Section Origin:**	0.000 ft, 0.000 ft
Structure / Slot:	Cimarex Cascade 29 Federal #73H / New Slot	**TVD Reference Datum:**	RKB
Well:	Cascade 29 Federal #73H	**TVD Reference Elevation:**	3420.700 ft above MSL
Borehole:	Cascade 29 Federal #73H	**Seabed / Ground Elevation:**	3397.700 ft above MSL
UWI / API#:	Unknown / Unknown	**Magnetic Declination:**	6.486 °
Survey Name:	Cimarex Energy Cascade 29 Federal #73H Rev0 RM 29Oct20	**Total Gravity Field Strength:**	998.4309mgn (9.80665 Based)
Survey Date:	October 28, 2020	**Gravity Model:**	GARM
Tort / AHD / DDI / ERD Ratio:	104.000 ° / 5328.230 ft / 5.879 / 0.424	**Total Magnetic Field Strength:**	47611.708 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	**Magnetic Dip Angle:**	59.668 °
Location Lat / Long:	N 32° 5' 43.37883", W 103° 35' 22.51414"	**Declination Date:**	October 28, 2020
Location Grid N/E Y/X:	N 399231.370 ftUS, E 771653.750 ftUS	**Magnetic Declination Model:**	HDGM 2020
CRS Grid Convergence Angle:	0.3952 °	**North Reference:**	Grid North
Grid Scale Factor:	0.99996985	**Grid Convergence Used:**	0.3952 °
Version / Patch:	2.10.821.3	**Total Corr Mag North->Grid North:**	6.0909 °
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim Grid (°)	TVD (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (N/S ° ' ")	Longitude (E/W ° ' ")
SHL [390' FSL, 1180' FEL]	0.00	0.00	353.24	0.00	0.00	0.00	0.00	N/A	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
Nudge 2°/100' DLS	2000.00	0.00	269.68	2000.00	0.00	0.00	0.00	0.00	399231.37	771653.75	N 32 5 43.38	W 103 35 22.51
Hold Nudge	2350.00	7.00	269.68	2349.13	0.02	-0.12	-21.35	2.00	399231.25	771632.40	N 32 5 43.38	W 103 35 22.76
Drop to Vertical 2°/100' DLS	6405.06	7.00	269.68	6373.97	0.42	-2.91	-515.53	0.00	399228.46	771138.23	N 32 5 43.39	W 103 35 28.51
Hold Vertical	6755.06	0.00	269.68	6723.10	0.44	-3.03	-536.89	2.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
KOP - Build 12°/100' DLS	12096.96	0.00	269.68	12065.00	0.44	-3.03	-536.89	0.00	399228.34	771116.88	N 32 5 43.39	W 103 35 28.76
Build 4°/100' DLS	12721.96	75.00	359.63	12526.19	354.32	350.85	-539.17	12.00	399582.21	771114.60	N 32 5 46.89	W 103 35 28.75
Landing Point	13096.96	90.00	359.63	12575.00	725.06	721.57	-541.56	4.00	399952.92	771112.20	N 32 5 50.56	W 103 35 28.75
Cimarex Energy Cascade 29 Federal #73H - PBHL [100'FNL,1717'FEL]	17163.68	90.00	359.63	12575.00	4791.77	4788.20	-567.81	0.00	404019.42	771085.96	N 32 6 30.80	W 103 35 28.73

Survey Type: Non-Def Plan

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

Survey Program:

Description	Part	MD From (ft)	MD To (ft)	EOU Freq (ft)	Hole Size (in)	Casing Diameter (in)	Expected Max Inclination (deg)	Survey Tool Type	Borehole / Survey
	1	0.000	23.000	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS-Depth Only	Cascade 29 Federal #73H / Cimarex Energy Cascade 29 Federal #73H Rev0 RM 29Oct20
	1	23.000	17163.678	1/100.000	17.500	13.375		NAL_MWD_IFR1+MS	Cascade 29 Federal #73H / Cimarex Energy Cascade 29

Schlumberger

Cimarex Energy

Rev 0

CIMAREX

Borehole:	Well:	Field:	Structure:
Cascade 29 Federal #73H	Cascade 29 Federal #73H	NM Lea County (NAD 83)	Cimarex Cascade 29 Federal #73H

Gravity & Magnetic Parameters						Surface Location	NAD83 New Mexico State Plane, Eastern Zone, US Feet				Miscellaneous			
Model:	HDGM 2020	Dip:	59.668°	Date:	28-Oct-2020	Lat:	N 32 5 43.38	Northing:	399231.37ftUS	Grid Conv:	0.3952°	Slot:	New Slot	TVD Ref:	RKB(3420.7ft above MSL)
MagDec:	6.486°	FS:	47611.708nT	Gravity FS:	998.431mgn (9.80665 Based)	Lon:	W 103 35 22.51	Easting:	771653.75ftUS	Scale Fact:	0.99996985	Plan:	Cimarex Energy Cascade 29 Federal #73H Rev0 RM 29Oct20		

Critical Points

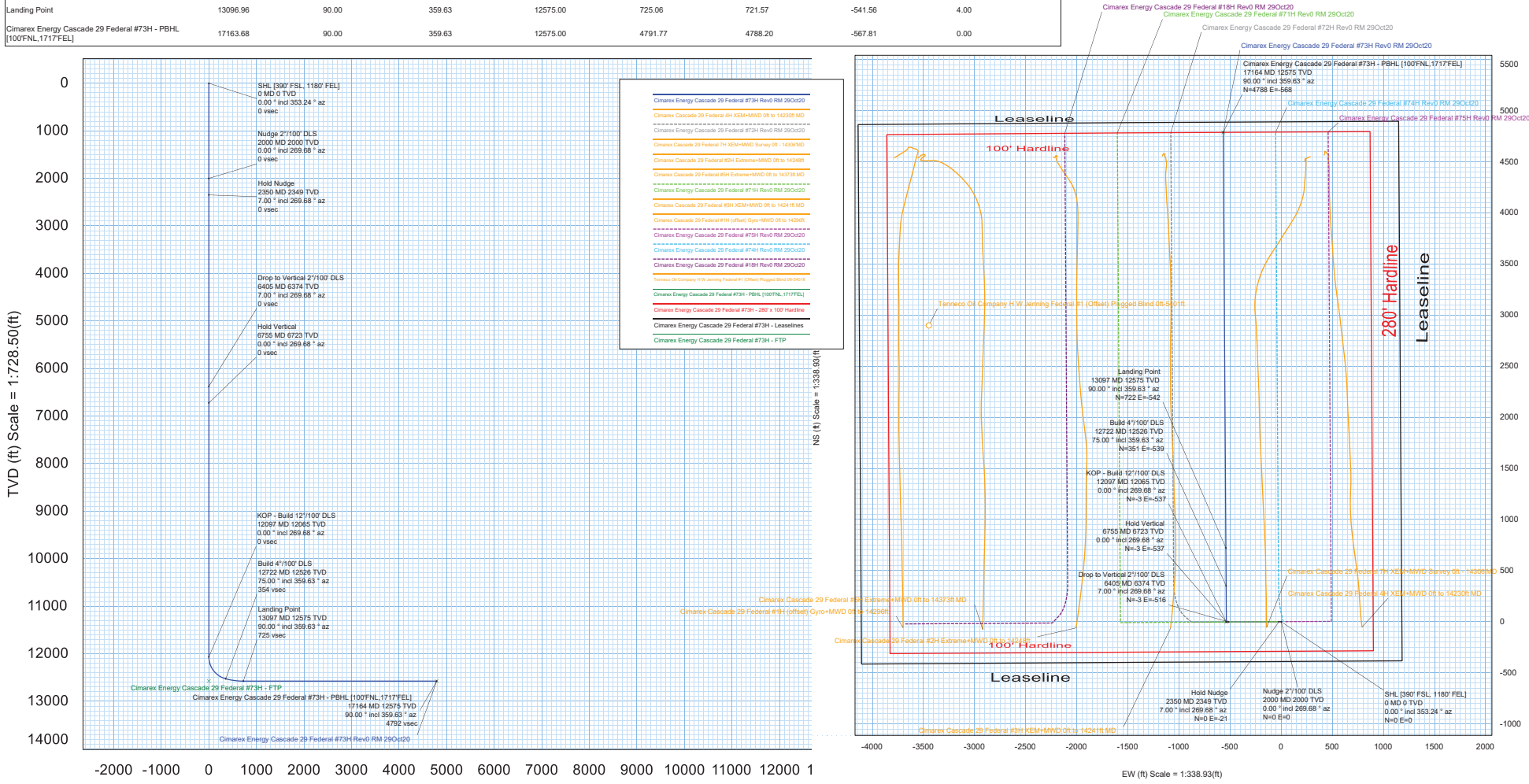
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [390' FSL, 1180' FEL]	0.00	0.00	353.24	0.00	0.00	0.00	0.00	
Nudge 2°/100' DLS	2000.00	0.00	269.68	2000.00	0.00	0.00	0.00	0.00
Hold Nudge	2350.00	7.00	269.68	2349.13	0.02	-0.12	-21.35	2.00
Drop to Vertical 2°/100' DLS	6405.06	7.00	269.68	6373.97	0.42	-2.91	-515.53	0.00
Hold Vertical	6755.06	0.00	269.68	6723.10	0.44	-3.03	-536.89	2.00
KOP - Build 12°/100' DLS	12096.96	0.00	269.68	12065.00	0.44	-3.03	-536.89	0.00
Build 4°/100' DLS	12721.96	75.00	359.63	12526.19	354.32	350.85	-539.17	12.00
Landing Point	13096.96	90.00	359.63	12575.00	725.06	721.57	-541.56	4.00
Cimarex Energy Cascade 29 Federal #73H - PBHL [100'FNL,1717'FEL]	17163.68	90.00	359.63	12575.00	4791.77	4788.20	-567.81	0.00

CONTROLLED

Plan ref	Cimarex Energy Cascade 29 Federal #73H Rev0 RM 29Oct20
Drawing ref	
Copy number	of 3
Date	29-Oct-2020

1	Client	
2	Client	
3	Office	
4	Office	

Copy number for



PECOS DISTRICT
DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	**Cimarex**
LEASE NO.:	**NMNM043562**
LOCATION:	Section 29, T.25 S., R.33 E., NMPM
COUNTY:	Lea County, New Mexico

WELL NAME & NO.:	Cascade 29 Fed 73H
SURFACE HOLE FOOTAGE:	390'/S & 1180'/E
BOTTOM HOLE FOOTAGE	100'/N & 1717'/E

COA

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

A. HYDROGEN SULFIDE

A Hydrogen Sulfide (H2S) Drilling Plan shall be activated 500 feet prior to drilling into the **Wolfcamp and Pennsylvanian** formations. As a result, the Hydrogen Sulfide area must meet Onshore Order 6 requirements, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, please provide measured values and formations to the BLM.

B. CASING

1. The **10-3/4** inch surface casing shall be set at approximately **1170** feet (a minimum of 25 feet (Lea County) into the Rustler Anhydrite and above the salt) and cemented to the surface.

    a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
    b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8**

Approval Date: 04/19/2022

hours or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)

c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
d. If cement falls back, remedial cementing will be done prior to drilling out that string.

2. The minimum required fill of cement behind the **7-5/8** inch intermediate casing is: Operator has proposed a DV tool, the depth may be adjusted as long as the cement is changed proportionally. The DV tool may be cancelled if cement circulates to surface on the first stage.

a. First stage to DV tool: Cement to circulate. If cement does not circulate off the DV tool, contact the appropriate BLM office before proceeding with second stage cement job.

b. Second stage above DV tool:

- Cement to surface. If cement does not circulate, contact the appropriate BLM office.
  Wait on cement (WOC) time for a primary cement job is to include the tail cement slurry due to cave/karst.

3. The minimum required fill of cement behind the **5-1/2 x 5** inch production casing is:
   - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).

2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **10,000 (10M)** psi. **Variance is approved to use a 5000 (5M) Annular which shall be tested to 5000 (5M) psi.**

a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
c. Manufacturer representative shall install the test plug for the initial BOP test.

d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
e. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.

D. SPECIAL REQUIREMENT (S)

Communitization Agreement

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

GENERAL REQUIREMENTS

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

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

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

☒ Lea County
Call the Hobbs Field Station, 414 West Taylor, Hobbs NM 88240, (575) 689-5981

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.

Approval Date: 04/19/2022

a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
b. When the operator proposes to set surface casing with Spudder Rig
   - Notify the BLM when moving in and removing the Spudder Rig.
   - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
   - BOP/BOPE test to be conducted per Onshore Oil and Gas Order No. 2 as soon as 2nd Rig is rigged up on well.

2. Floor controls are required for 3M or Greater systems. These controls will be on the rig floor, unobstructed, readily accessible to the driller and will be operational at all times during drilling and/or completion activities. Rig floor is defined as the area immediately around the rotary table; the area immediately above the substructure on which the draw works are located, this does not include the dog house or stairway area.

3. The record of the drilling rate along with the GR/N well log run from TD to surface (horizontal well – vertical portion of hole) shall be submitted to the BLM office as well as all other logs run on the borehole 30 days from completion. If available, a digital copy of the logs is to be submitted in addition to the paper copies. The Rustler top and top and bottom of Salt are to be recorded on the Completion Report.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.

2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours.

Approval Date: 04/19/2022

WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing intergrity test can be done (prior to the cement setting up) immediately after bumping the plug.

4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.

5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.

6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.

7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in Onshore Oil and Gas Order No. 2 and API RP 53 Sec. 17.

2. If a variance is approved for a flexible hose to be installed from the BOP to the choke manifold, the following requirements apply: The flex line must meet the requirements of API 16C. Check condition of flexible line from BOP to choke manifold, replace if exterior is damaged or if line fails test. Line to be as straight as possible with no hard bends and is to be anchored according to Manufacturer's requirements. The flexible hose can be exchanged with a hose of equal size and equal or greater pressure rating. Anchor requirements, specification sheet and hydrostatic pressure test certification matching the hose in service, to be onsite for review. These documents shall be posted in the company man's trailer and on the rig floor.

3. 5M or higher system requires an HCR valve, remote kill line and annular to match. The remote kill line is to be installed prior to testing the system and tested to stack pressure.

4. If the operator has proposed a multi-bowl wellhead assembly in the APD. The following requirements must be met:

a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
c. Manufacturer representative shall install the test plug for the initial BOP test.
d. Whenever any seal subject to test pressure is broken, all the tests in OOGO2.III.A.2.i must be followed.
e. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.

5. The appropriate BLM office shall be notified a minimum of 4 hours in advance for a representative to witness the tests.

a. In a water basin, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. The casing cut-off and BOP installation can be initiated four hours after installing the slips, which will be approximately six hours after bumping the plug. For those casing strings not using slips, the minimum wait time before cut-off is eight hours after bumping the plug. BOP/BOPE testing can begin after cut-off or once cement reaches 500 psi compressive strength (including lead when specified), whichever is greater. However, if the float does not hold, cut-off cannot be initiated until cement reaches 500 psi compressive strength (including lead when specified).

b. In potash areas, for all casing strings utilizing slips, these are to be set as soon as the crew and rig are ready and any fallback cement remediation has been done. For all casing strings, casing cut-off and BOP installation can be initiated at twelve hours after bumping the plug. However, **no tests** shall commence until the cement has had a minimum of 24 hours setup time, except the casing pressure test can be initiated immediately after bumping the plug (only applies to single stage cement jobs).

c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to Onshore Order 2 with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).

Approval Date: 04/19/2022

d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.

e. The results of the test shall be reported to the appropriate BLM office.

f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.

g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.

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

C. DRILLING MUD

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

D. WASTE MATERIAL AND FLUIDS

All waste (i.e. drilling fluids, trash, salts, chemicals, sewage, gray water, etc.) created as a result of drilling operations and completion operations shall be safely contained and disposed of properly at a waste disposal facility. No waste material or fluid shall be disposed of on the well location or surrounding area.

Porto-johns and trash containers will be on-location during fracturing operations or any other crew-intensive operations.
ZS032222

Approval Date: 04/19/2022

Hydrogen Sulfide Drilling Operations Plan
Cascade 29 Federal 73H
Cimarex Energy Co.
Sec. 29, 25S, 33E
Lea Co., NM

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

A. Characteristics of 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
Cascade 29 Federal 73H
Cimarex Energy Co.
Sec. 29, 25S, 33E Lea
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 Contacts
Cascade 29 Federal 73H
Cimarex Energy Co.
Sec. 29, 25S, 33E
Lea Co., NM

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

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		

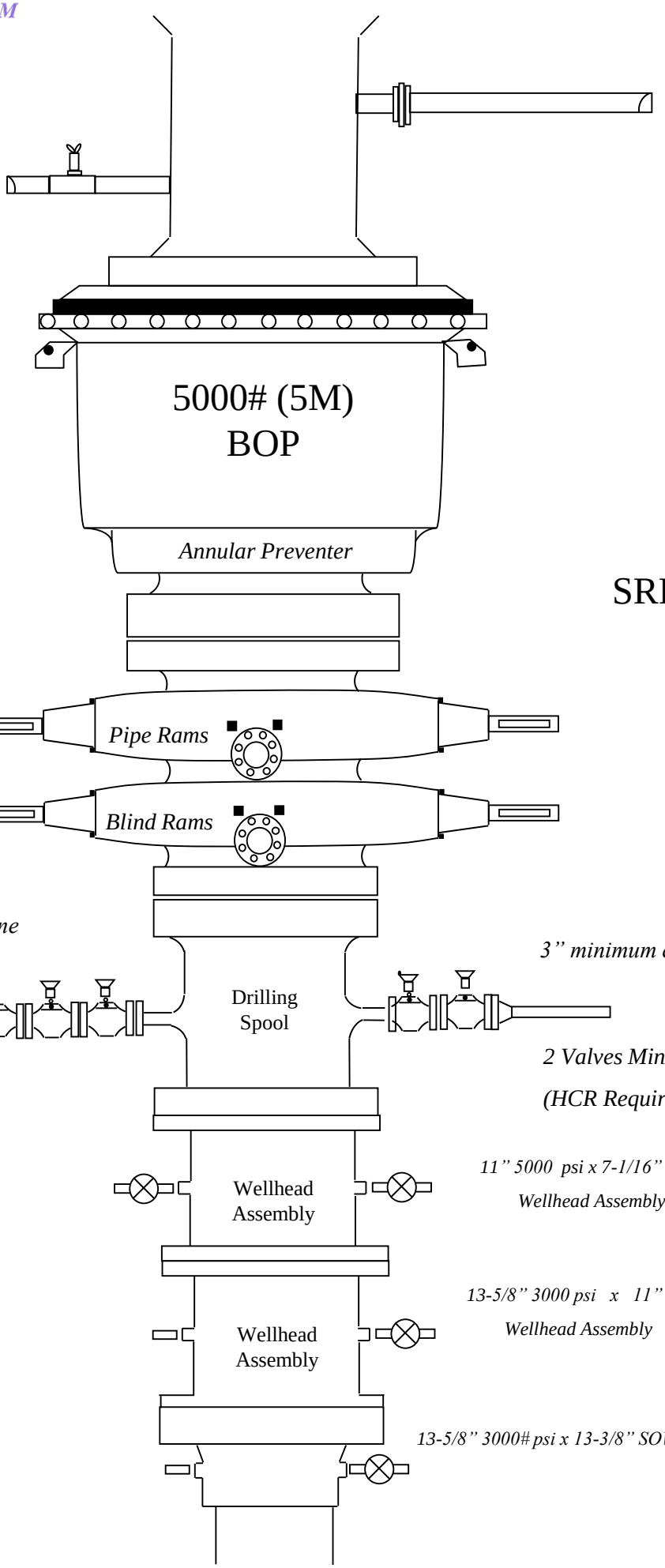
National			
National Emergency Response Center (Washington, D.C.)	800-424-8802		

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		

5M BOP

Drilling 9 7/8" hole below 10 3/4" Casing



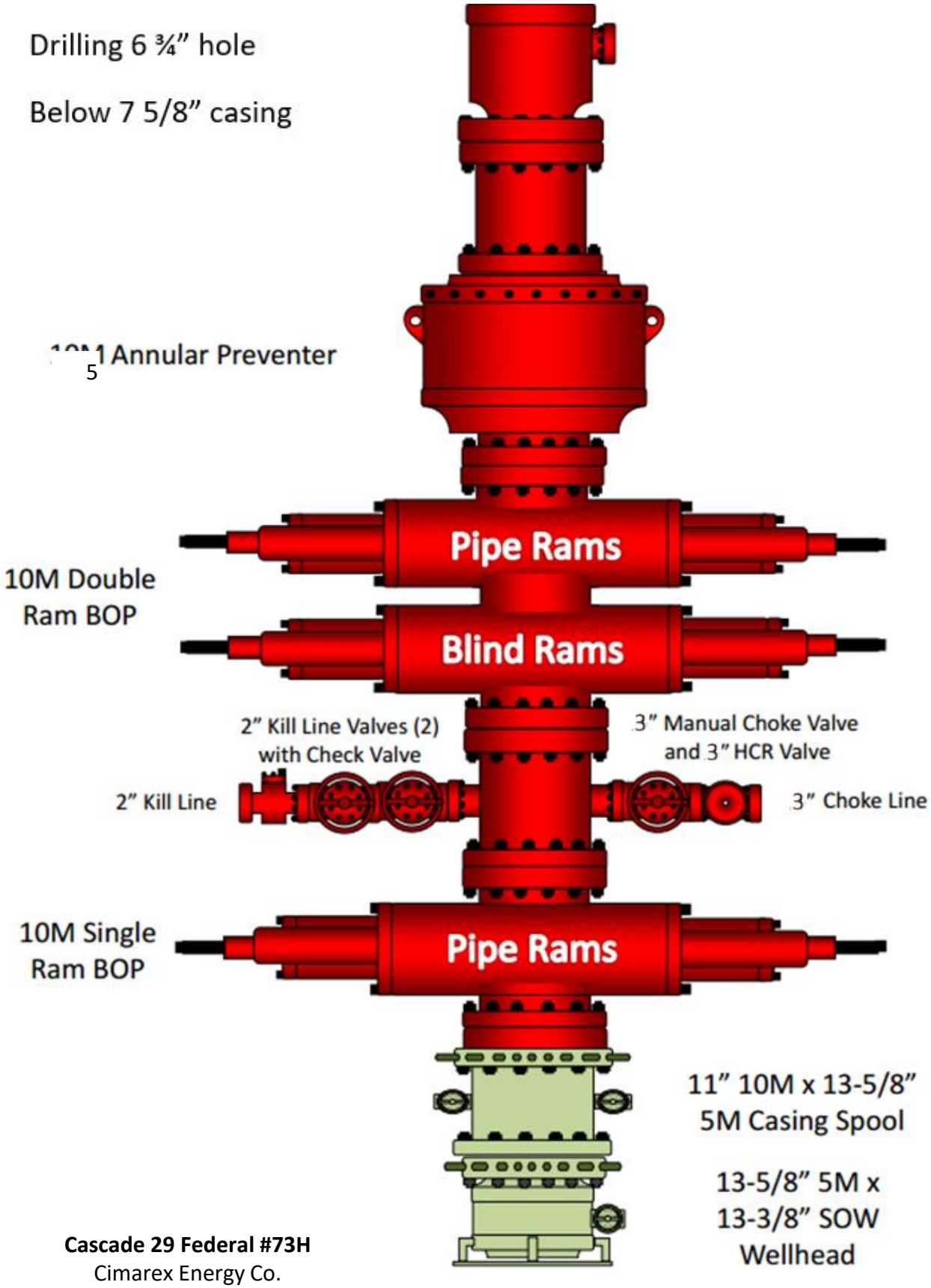
SRR & A

Cascade 29 Federal #73H
Cimarex Energy Co.
29-25S-33E
Lea Co., NM

10M BOP

Drilling 6 ¾" hole

Below 7 5/8" casing



Cascade 29 Federal #73H
Cimarex Energy Co.
29-25S-33E
Lea Co., NM

Intent ☐ As Drilled ☐

API #

Operator Name:	Property Name:	Well Number

Kick Off Point (KOP)

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

Latitude	Longitude	NAD

First Take Point (FTP)

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

Latitude	Longitude	NAD

Last Take Point (LTP)

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

Latitude	Longitude	NAD

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

Is this well an infill well? ☐

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

API #

Operator Name:	Property Name:	Well Number

Estimated Formation Tops

Formation:	Top:	Formation:	Top:

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

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

CONDITIONS

Action 114301

CONDITIONS

Operator: CIMAREX ENERGY CO. 600 N. Marienfeld Street Midland, TX 79701	OGRID: 215099
	Action Number: 114301
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
pkautz	Will require a File As Drilled C-102 and a Directional Survey with the C-104	6/30/2022
pkautz	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	6/30/2022
pkautz	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	6/30/2022
pkautz	Cement is required to circulate on both surface and intermediate1 strings of casing	6/30/2022