

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

1a. Type of work: <input type="checkbox"/> DRILL <input type="checkbox"/> REENTER		5. Lease Serial No.
1b. Type of Well: <input type="checkbox"/> Oil Well <input type="checkbox"/> Gas Well <input type="checkbox"/> Other		6. If Indian, Allottee or Tribe Name
1c. Type of Completion: <input type="checkbox"/> Hydraulic Fracturing <input type="checkbox"/> Single Zone <input type="checkbox"/> Multiple Zone		7. If Unit or CA Agreement, Name and No.
2. Name of Operator		8. Lease Name and Well No.
3a. Address		9. API Well No. 30-015-54940
3b. Phone No. (include area code)		10. Field and Pool, or Exploratory
4. Location of Well (Report location clearly and in accordance with any State requirements. *) At surface At proposed prod. zone		11. Sec., T. R. M. or Blk. and Survey or Area
14. Distance in miles and direction from nearest town or post office*		12. County or Parish
		13. State
15. Distance from proposed* location to nearest property or lease line, ft. (Also to nearest drig. unit line, if any)	16. No of acres in lease	17. Spacing Unit dedicated to this well
18. Distance from proposed location* to nearest well, drilling, completed, applied for, on this lease, ft.	19. Proposed Depth	20. BLM/BIA Bond No. in file
21. Elevations (Show whether DF, KDB, RT, GL, etc.)	22. Approximate date work will start*	23. Estimated duration
24. Attachments		

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

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

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

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

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

(Continued on page 2)

*(Instructions on page 2)



Approval Date: 04/08/2024

INSTRUCTIONS

GENERAL: This form is designed for submitting proposals to perform certain well operations, as indicated on Federal and Indian lands and leases for action by appropriate Federal agencies, pursuant to applicable Federal laws and regulations. Any necessary special instructions concerning the use of this form and the number of copies to be submitted, particularly with regard to local, area, or regional procedures and practices, either are shown below or will be issued by, or may be obtained from local Federal offices.

ITEM I: If the proposal is to redrill to the same reservoir at a different subsurface location or to a new reservoir, use this form with appropriate notations. Consult applicable Federal regulations concerning subsequent work proposals or reports on the well.

ITEM 4: Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult local Federal offices for specific instructions.

ITEM 14: Needed only when location of well cannot readily be found by road from the land or lease description. A plat, or plats, separate or on the reverse side, showing the roads to, and the surveyed location of, the well, and any other required information, should be furnished when required by Federal agency offices.

ITEMS 15 AND 18: If well is to be, or has been directionally drilled, give distances for subsurface location of hole in any present or objective productive zone.

ITEM 22: Consult applicable Federal regulations, or appropriate officials, concerning approval of the proposal before operations are started.

ITEM 24: If the proposal will involve hydraulic fracturing operations, you must comply with 43 CFR 3162.3-3, including providing information about the protection of usable water. Operators should provide the best available information about all formations containing water and their depths. This information could include data and interpretation of resistivity logs run on nearby wells. Information may also be obtained from state or tribal regulatory agencies and from local BLM offices.

NOTICES

The Privacy Act of 1974 and regulation in 43 CFR 2.48(d) provide that you be furnished the following information in connection with information required by this application.

AUTHORITY: 30 U.S.C. 181 et seq., 25 U.S.C. 396; 43 CFR 3160

PRINCIPAL PURPOSES: The information will be used to: (1) process and evaluate your application for a permit to drill a new oil, gas, or service well or to reenter a plugged and abandoned well; and (2) document, for administrative use, information for the management, disposal and use of National Resource Lands and resources including (a) analyzing your proposal to discover and extract the Federal or Indian resources encountered; (b) reviewing procedures and equipment and the projected impact on the land involved; and (c) evaluating the effects of the proposed operation on the surface and subsurface water and other environmental impacts.

ROUTINE USE: Information from the record and/or the record will be transferred to appropriate Federal, State, and local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecution, in connection with congressional inquiries and for regulatory responsibilities.

EFFECT OF NOT PROVIDING INFORMATION: Filing of this application and disclosure of the information is mandatory only if you elect to initiate a drilling or reentry operation on an oil and gas lease.

The Paperwork Reduction Act of 1995 requires us to inform you that:

The BLM connects this information to an evaluation of the technical, safety, and environmental factors involved with drilling for oil and/or gas on Federal and Indian oil and gas leases. This information will be used to analyze and approve applications. Response to this request is mandatory only if the operator elects to initiate drilling or reentry operations on an oil and gas lease. The BLM would like you to know that you do not have to respond to this or any other Federal agency-sponsored information collection unless it displays a currently valid OMB control number.

BURDEN HOURS STATEMENT: Public reporting burden for this form is estimated to average 8 hours per response, including the time for reviewing instructions, gathering and maintaining data, and completing and reviewing the form. Direct comments regarding the burden estimate or any other aspect of this form to U.S. Department of the Interior, Bureau of Land Management (1004-0137), Bureau Information Connection Clearance Officer (WO-630), 1849 C Street, N.W., Mail Stop 401 LS, Washington, D.C. 20240.

Additional Operator Remarks

Location of Well

0. SHL: SESW / 700 FSL / 1556 FWL / TWSP: 26S / RANGE: 30E / SECTION: 19 / LAT: 32.022482 / LONG: -103.924193 (TVD: 0 feet, MD: 0 feet)

PPP: SESW / 812 FSL / 1680 FWL / TWSP: 26S / RANGE: 30E / SECTION: 19 / LAT: 32.022791 / LONG: -103.923794 (TVD: 11221 feet, MD: 11725 feet)

PPP: NENW / 1328 FNL / 1681 FWL / TWSP: 26S / RANGE: 30E / SECTION: 18 / LAT: 32.046127 / LONG: -103.923804 (TVD: 11287 feet, MD: 19888 feet)

PPP: SESW / 0 FSL / 1681 FWL / TWSP: 26S / RANGE: 30E / SECTION: 7 / LAT: 32.049777 / LONG: -103.923806 (TVD: 11298 feet, MD: 21216 feet)

BHL: NESW / 2561 FSL / 1680 FWL / TWSP: 26S / RANGE: 30E / SECTION: 7 / LAT: 32.056817 / LONG: -103.923809 (TVD: 11321 feet, MD: 24104 feet)

BLM Point of Contact

Name: JORDAN NAVARRETTE

Title: LIE

Phone: (575) 234-5972

Email: jnavarrette@blm.gov

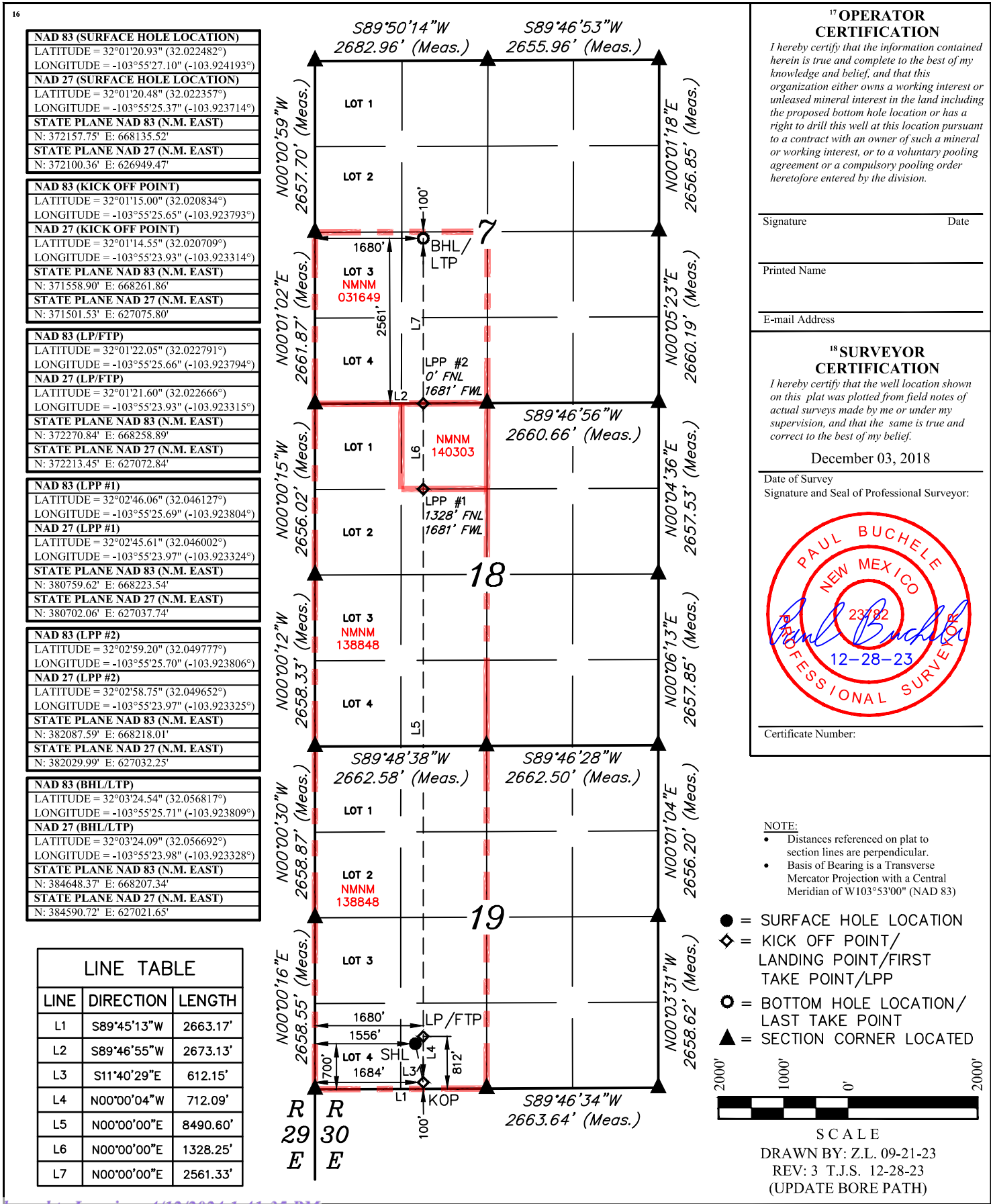
Review and Appeal Rights

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

Form C-102
Revised August 1, 2011
Submit one copy to appropriate
District Office

☐ AMENDED REPORT

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.



State of New Mexico
Energy, Minerals and Natural Resources DepartmentSubmit Electronically
Via E-permittingOil 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:** 1/30/2023**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
Tar Heel 19-18-7 Fed Com 5H		4, Sec 19 T26S, R30E	480 FSL/469 FWL	500	2000	7500

IV. Central Delivery Point Name: Tar Heel 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
Tar Heel 19-18-7 Fed Com 5H		1/1/2024	2/1/2024	6/1/2024	8/1/2024	8/1/2024

VI. Separation Equipment: ☒ Attach a complete description of how Operator will size separation equipment to optimize gas capture.**VII. Operational Practices:** ☒ Attach a complete description of the actions Operator will take to comply with the requirements of Subsection A through F of 19.15.27.8 NMAC.**VIII. Best Management Practices:** ☒ Attach a complete description of Operator's best management practices to minimize venting during active and planned maintenance.

Section 2 – Enhanced Plan

EFFECTIVE APRIL 1, 2022

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

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

IX. Anticipated Natural Gas Production:

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

X. Natural Gas Gathering System (NGGS):

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

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

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

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

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

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

Section 3 - Certifications

Effective May 25, 2021

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

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

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

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

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

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

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

Section 4 - Notices

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

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

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

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

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

Signature: 
Printed Name: Sarah Jordan
Title: Regulatory Analyst
E-mail Address: sarah.jordan@coterra.com
Date: 1/30/2023
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.

1. Geological Formations

TVD of target 11,491

Pilot Hole TD N/A

MD at TD 24,301

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
Rustler	1050	N/A	
Base Halite (Castile)	2976	N/A	
Top Delaware/Base Anhy	3246	N/A	
Base Lamar	3276	N/A	
Cherry Canyon	4316	Hydrocarbons	
Brushy Canyon	5606	Hydrocarbons	
Basal Brushy Canyon	6796	Hydrocarbons	
Bone Spring	7046	Hydrocarbons	
1st Bone Spring Sand	7926	Hydrocarbons	
2nd Bone Spring Shale	8216	Hydrocarbons	
2nd Bone Spring Sand	8596	Hydrocarbons	
3rd Bone Spring Carb	9186	Hydrocarbons	
Harkey	9386	Hydrocarbons	
3rd Bone Spring Sand	9868	Hydrocarbons	
Wolfcamp	10206	Hydrocarbons	
Wolfcamp A2	10906	Hydrocarbons	
Wolfcamp C	11206	Hydrocarbons	
Wolfcamp C- Target	11221	Hydrocarbons	

2. Casing Program

Hole Size	Casing Depth From	Casing Depth To	Setting Depth TVD	Casing Size	Weight (lb/ft)	Grade	Conn.	SF Collapse	SF Burst	SF Tension
17 1/2	0	900	900	13-3/8"	48.00	H-40	ST&C	1.55	3.63	6.10
12 1/4	0	3230	3230	9-5/8"	36.00	J-55	LT&C	1.20	2.10	3.90
8 3/4	0	10684	10684	7"	29.00	L-80	BT&C	1.40	1.63	2.08
8 3/4	10684	11434	11181	7"	29.00	L-80	BT&C	1.34	1.56	46.90
6	10184	24103	11491	4-1/2"	13.50	L-80	BT&C	1.14	1.20	17.40
BLM Minimum Safety Factor								1.125	1	1.6 Dry 1.8 Wet

TVD was used on all calculations.

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

Cimarex Energy Co., Tar Heel 19-8-7 Federal Com #5H

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

3. Cementing Program

Casing	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	534	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	143	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	592	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	189	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Production	471	10.30	3.64	22.18		Lead: Tuned Light + LCM
	125	14.80	1.36	6.57	9.5	Tail: Class C + Retarder
Completion System	936	14.20	1.30	5.86	14:30	Tail: 50:50 (Poz:H) + Salt + Bentonite + Fluid Loss + Dispersant + SMS

Casing String	TOC	% Excess
Surface	0	45
Intermediate	0	53
Production	3030	25
Completion System	11234	25

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

4. Pressure Control Equipment

BOP installed and tested before drilling which hole?	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	10M	Annular	5M	100% of working pressure
			Blind Ram		10M
			Pipe Ram	X	
			Double Ram	X	
			Other		
8 3/4	13 5/8	10M	Annular	5M	100% of working pressure
			Blind Ram		10M
			Pipe Ram	X	
			Double Ram	X	
			Other		
6	13 5/8	10M	Annular	5M	100% of working pressure
			Blind Ram		10M
			Pipe Ram	X	
			Double Ram	X	
			Other		

X	Formation integrity test will be performed per Onshore Order #2. On Exploratory wells or on that portion of any well approved for a 10M 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		
	N	Are anchors required by manufacturer?

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 900'	FW Spud Mud	7.83 - 8.33	30-32	N/C
900' to 3230'	Brine Water	9.50 - 10.00	30-32	N/C
3230' to 11434'	Cut Brine or OBM	8.50 - 9.00	27-70	N/C
11724' to 24103'	OBM	12.00 - 12.50	50-70	N/C

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

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

6. Logging and Testing Procedures

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

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

7. Drilling Conditions

Condition	
BH Pressure at deepest TVD	7469 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.

X	H2S is present
X	H2S plan is attached

8. Other Facets of Operation

9. Wellhead - Please see Pressure Control Misc Notes on page 6 of the attached Well Control Plan.

Coterra: Well Control Plan, Wellheads, & Additional Notes



Pressure Control Misc Notes

BOPE Additional Information & Testing

1. After running the first string of casing, a 10M BOP/BOPE system with 5M annular will be installed. BOPs will be tested according to Onshore Order #2. BOPE will be tested to full rated pressure (10K for all BOPE except the annular, which is tested to 5K). For the low test, the system will be tested to 250 psi.
2. All BOP equipment will be tested utilizing a conventional test plug.
3. A remote kill line is included in the BOPE system
4. All casing strings will be tested per Onshore Order #2, to 0.22 psi/ft or 1,500 psi, whichever is greater, not to exceed 70% of casing burst.
5. If well conditions dictate, conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

Additional Well Control Notes

1. In the event wellbore pressure encroaches to the maximum rated pressure of the annular, primary pressure control will be switched to the higher rated components (i.e., switch from annular to pipe rams) – upper pipe rams will be closed, and the annular opened in order to not exceed maximum rated pressures.

Wellhead

1. The multi-bowl wellhead will be installed by a vendor representative. A copy of the installation instructions has been sent to the BLM field office.
2. A packoff will be installed after running and cementing the production casing. This packoff will be tested to 10K psi.

Coterra: Well Control Plan



Well Control Plan

Warning Signs of a Kick

If a kick is ever suspected, perform flow check.

While Drilling:

1. Drilling break or increase in penetration rate
2. Increase of flow
3. Pit gain
4. Flow without pumping
5. Circulating pressure decrease and/or spm increase
6. Increase in gas cutting at the shakers
7. Decrease in cuttings at shakers

While Tripping:

1. Hole not taking the proper fill on trip out of hole
2. Hole returns too much mud on trip in hole
3. Flow without pumping

While Out of the Hole:

1. Flow
2. Pit gain

Well Control Procedures with Diverter

A TIW valve in the open position must be on the rig floor at all times.

If rotating head is installed:

1. Perform flow check.
2. If well is flowing, divert flow down flow line and through separator, before returning across shakers.
3. Swap to 10 ppg brine and circulate around. Notify superintendent.

Coterra: Well Control Plan

4. If well becomes uncontrollable, close annular, which will open HCR to divert flow away from rig.

If rotating head is not installed:

1. Perform flow check.
2. If well is flowing uncontrollably, close annular, which will open HCR to divert flow away from rig.
3. Swap to 10 ppg brine and circulate around. Notify superintendent.
4. After 10 ppg is circulated around shut pumps off and perform flow check.

Well Control Procedures

Coterra follows a hard shut-in procedure. Choke will be in the closed position.

General Well Control

1. If in doubt, secure the well first, then inform your supervisor.
2. Never wait for approval to shut in the well.
3. Verify that the mud pump is off before you close the BOP.
4. Always check and verify the well is properly secured after shut in.
5. Always install TIW valve in the open position.
6. If TIW valve is installed and then closed, apply estimated DP shut-in pressure above valve before opening.
7. The weak link in the mud system and mud lines is the pressure relief valve or pop off valve on the mud pump.
8. Keep the TIW valve wrench in a designated location on the rig floor and in the open position.
9. Use a drill string float above the bit. Don't perforate or disable the float.

Hard Shut-In

1. Remote choke is closed.
2. Stop pumping and space out.
3. Check for flow.
4. To shut in, close annular or pipe ram if no annular is present.
5. Open the HCR valve.
6. Check systems, bump float. Record Initial Shut in Drill pipe pressure and Initial shut in casing pressure.

Flow Check when on Bottom

1. Alert crew & stop rotating
2. Pick up and space out
3. Shut down pumps

Coterra: Well Control Plan

4. Observe well for flow
5. Shut-in if flowing

Shutting in while Drilling

1. After flow has been detected via flow check, kill pumps, shut in well and open HCR
2. Verify well is shut-in and flow has stopped
3. Notify supervisory personnel
4. Record data
5. Begin go forward planning

Flow Check while Tripping

1. Alert crew & pick up / space out
2. Stop pipe movement. Set slips with tool joint accessible at rotary table
3. Install open TIW safety valve and close valve
4. Observe well for flow
5. Shut-in if flowing

Shutting in while Tripping

1. Install open TIW safety valve and close valve
2. Shut-in the well
3. Verify well is shut-in and flow has stopped
4. Install IBOP
5. Notify supervisory personnel
6. Record data; SICP, shut-in time, kick depth, and pit gain
7. Begin go forward planning

Shutting in while Out of Hole

1. Sound alarm
2. Shut-in well: close blind rams.
3. Verify well is shut-in and monitor pressures.
4. Notify supervisory personnel
5. Record data; SICP, shut-in time, kick depth, and pit gain
6. Begin go forward planning

Information to Record while Shut-In

1. Shut in drill pipe pressure every 5 minutes
2. Shut in casing pressure every 5 minutes
3. Pit gain
4. Total volume in pit system
5. Mud weight in suction pit

Coterra: Well Control Plan

6. Current depth
7. Total depth
8. Time the well is shut in

H2S with Annular Diverter:

1. Kill Pumps, close annular, which will open HCR, to divert flow away from rig.
2. Muster and take head count.
3. Call ASSI to check location for H2S. Call Coterra superintendent.
4. After ASSI has checked for H2S the path forward will be decided from Coterra superintendent.

H2S with BOP's:

1. Kill pumps
2. Shut in annular with HCR open and chokes closed.
3. Muster and take head count.
4. Call ASSI to check location for H2S. Call Coterra superintendent.
5. After ASSI has checked for H2S. discuss path forward with Coterra superintendent

Procedure for Closing Blind Rams

- Open HCR valve (visually check that the HCR valve is open – stem in the valve is open, stem out the valve is closed).
- Verify all circulating pumps are off (mud pumps, trip tank pump, etc.)
- Ensure that the hydraulic choke is in the closed position.
- Close the blind rams and place the “blind rams closed, bleed pressure and remove hole cover before opening” sign on the console.
- Monitor the shut in casing pressure gauge periodically while the blinds are closed to ensure that wellbore pressure isn't building. If pressure build up is observed, monitor the shut in casing pressure more frequently & document. Notify rig management and Coterra representative of the pressure build up.
- Ensure that the inner bushings are locked into the master bushings if applicable.
- Install hole cover.

Procedure for Opening Blind Rams

- Make sure choke manifold is aligned correctly.
- Open the hydraulic choke to bleed any trapped pressure that may be under the blind rams. (Even if the casing pressure gauge is reading zero).
- Confirm that no flow is discharging into the trip tank or possum bellies of the shale shaker (wherever the separator is discharging into).
- Remove hole cover.
- Confirm that the inner bushing are locked into the master bushings if applicable.

Coterra: Well Control Plan

- Clear all personnel from the rig floor.
- Remove sign and open blind rams.
- Return the BOPE to its original operating alignment.

BOP Drills

- Drilling crews should conduct BOP drills weekly from BOP nipple up to TD for reaction time to properly simulate securing the well. Record BOP drills on that day's report.
- Standard precautions such as checking the accumulator for proper working pressure, function testing rams, and recording slow pump rates are performed on a daily basis or on trips..
- All supervisory personnel onsite need to be properly trained and currently hold certification from an approved blowout prevention school. Any deviation from this needs to be discussed prior to spud.
- Drillers should always notify the tool pusher and the drilling foreman before performing a blowout drill.

Choke Manifold Freeze Prevention

- When possible, blow out the choke & kill lines as well as the choke manifold with rig air to remove water based fluids.
- When clear water is being placed into the choke & kill line as well as the choke manifold, make sure that the water has a mixture of 30% methanol added.
- When applicable, choke & kill lines as well as choke manifold needs to be pumped through with the rig pump by the driller to ensure that the lines aren't plugged with settling barite or solids.



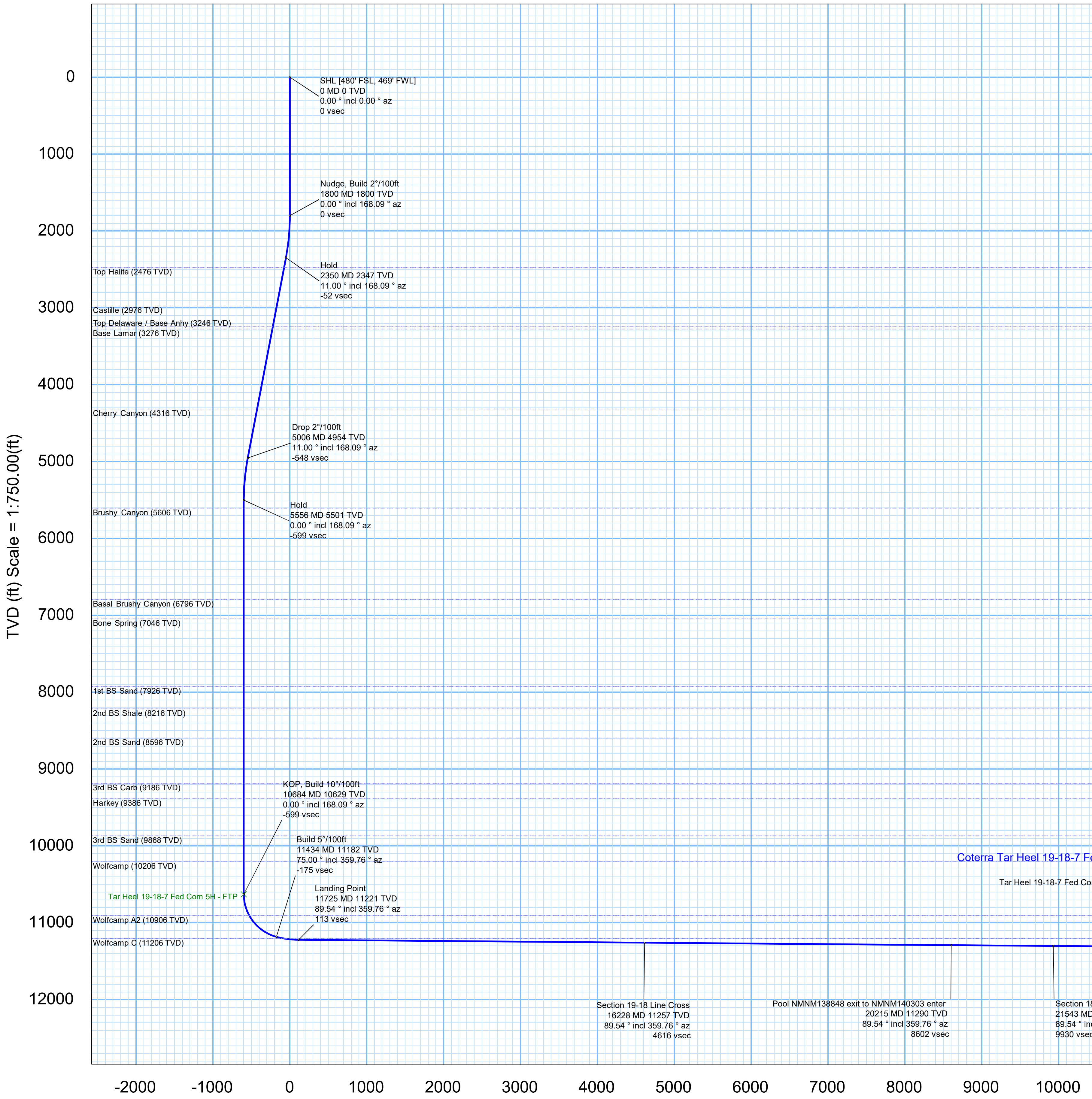
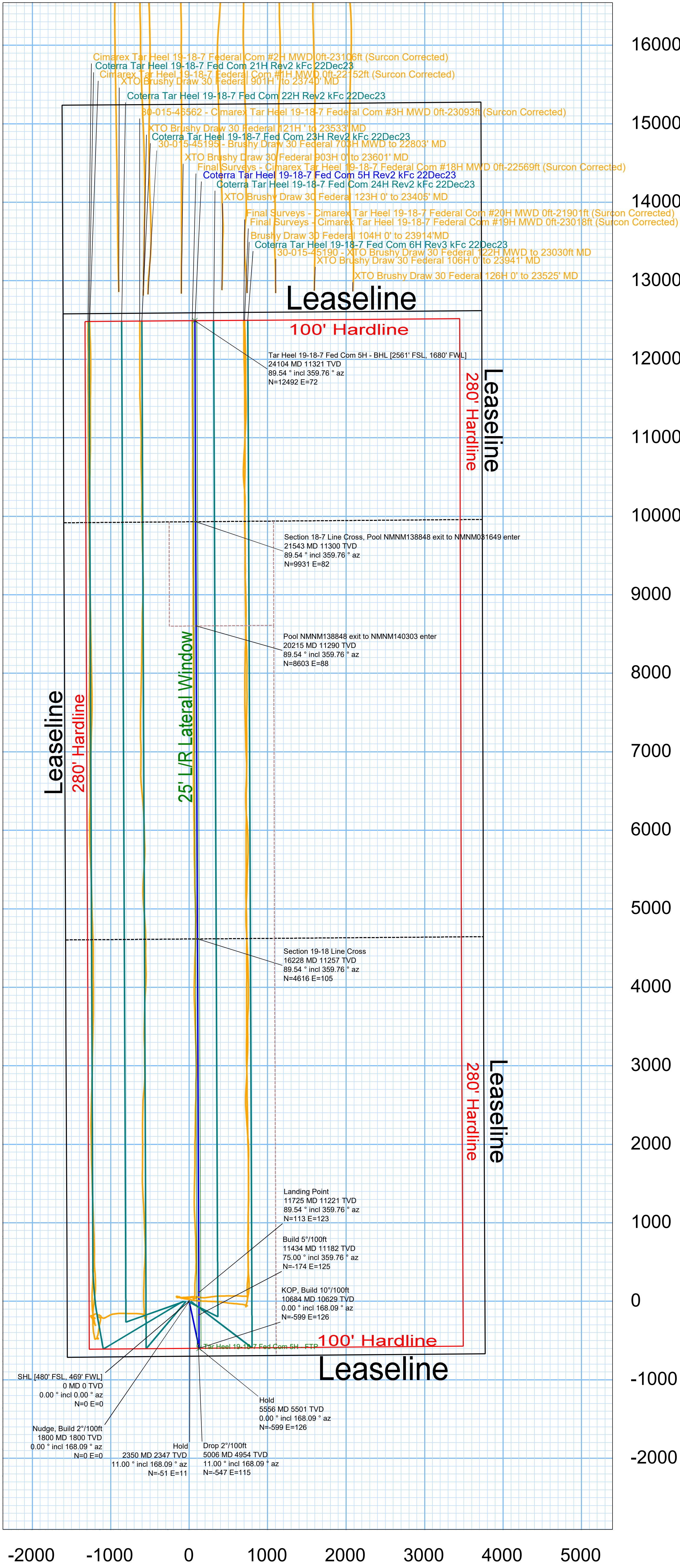
COTERRA

Rev 2



Borehole: Tar Heel 19-18-7 Fed Com 5H				Well: Tar Heel 19-18-7 Fed Com 5H				Field: NM Eddy County (NAD 83)				Structure: Coterra Tar Heel 19-18-7 Fed Com Pad (N)			
Gravity & Magnetic Parameters				Surface Location				NAD83 New Mexico State Plane, Eastern Zone, US Feet				Miscellaneous			
Model:	HDGM 2023	Dip:	59.447°	Date:	22-Dec-2023	Lat:	N 32 1 20.93	Northing:	372157.75ftUS	Grid Conv:	0.2169°	Slot:	Tar Heel 19-18-7	TVD Ref:	RKB (3049.800 ft above MSL)
MagDec:	6.359°	FS:	47261.208NT	Gravity FS:	998.44mgN (9.80665 Based)	Lon:	W 103 55 27.10	Easting:	668135.52ftUS	Scale Fact:	0.99992751	Plan:	Fed Com 5H	Coterra Tar Heel 19-18-7 Fed Com 5H Rev2 kFc 22Dec23	

Critical Points								
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS
SHL [700' FSL, 1556' FWL]	0.00	0.00	0.00	0.00	0.00	0.00	0.00	
Nudge, Build 2"/100ft	1800.00	0.00	168.09	1800.00	0.00	0.00	0.00	0.00
Hold	2350.00	11.00	168.09	2346.62	-51.54	-51.50	10.87	2.00
Top Halite	2481.79	11.00	168.09	2476.00	-76.17	-76.11	16.06	0.00
Castille	2991.15	11.00	168.09	2976.00	-171.35	-171.20	36.12	0.00
Top Delaware / Base Anhy	3266.21	11.00	168.09	3246.00	-222.75	-222.55	46.95	0.00
Base Lamar	3296.77	11.00	168.09	3276.00	-228.46	-228.26	48.16	0.00
Cherry Canyon	4356.23	11.00	168.09	4316.00	-426.43	-426.06	89.89	0.00
Drop 2"/100ft	5006.11	11.00	168.09	4953.94	-547.87	-547.39	115.49	0.00
Hold	5556.10	0.00	168.09	5500.56	-599.41	-598.89	126.35	2.00
Brushy Canyon	5661.54	0.00	168.09	5606.00	-599.41	-598.89	126.35	0.00
Basal Brushy Canyon	6851.54	0.00	168.09	6796.00	-599.41	-598.89	126.35	0.00
Bone Spring	7101.54	0.00	168.09	7046.00	-599.41	-598.89	126.35	0.00
1st BS Sand	7981.54	0.00	168.09	7926.00	-599.41	-598.89	126.35	0.00
2nd BS Shale	8271.54	0.00	168.09	8216.00	-599.41	-598.89	126.35	0.00
2nd BS Sand	8651.54	0.00	168.09	8596.00	-599.41	-598.89	126.35	0.00
3rd BS Carb	9241.54	0.00	168.09	9186.00	-599.41	-598.89	126.35	0.00
Harkey	9441.54	0.00	168.09	9386.00	-599.41	-598.89	126.35	0.00
3rd BS Sand	9923.54	0.00	168.09	9868.00	-599.41	-598.89	126.35	0.00
Wolfcamp	10261.54	0.00	168.09	10206.00	-599.41	-598.89	126.35	0.00
KOP, Build 10"/100ft	10684.10	0.00	168.09	10628.56	-599.41	-598.89	126.35	0.00
Wolfcamp A2	10973.72	28.96	359.76	10906.00	-527.76	-527.24	126.05	10.00
Build 5"/100ft	11434.10	75.00	359.76	11181.99	-174.74	-174.23	124.57	10.00
Wolfcamp C	11548.24	80.71	359.76	11206.00	-63.21	-62.70	124.11	5.00
Landing Point	11724.85	89.54	359.76	11221.00	112.58	113.10	123.37	5.00
Section 19-18 Line Cross	16228.00	89.54	359.76	11257.38	4615.59	4616.06	104.62	0.00
Pool NMNM138848 exit to NMNM140303 enter	20215.00	89.54	359.76	11289.59	8602.46	8602.90	88.02	0.00
Section 18-7 Line Cross, Pool NMNM138848 exit to NMNM031649 enter	21543.00	89.54	359.76	11300.31	9930.42	9930.84	82.49	0.00
Tar Heel 19-18-7 Fed Com 5H - BHL [2561' FSL, 1680' FWL]	24103.81	89.54	359.76	11321.00	12491.14	12491.55	71.83	0.00



Vertical Section (ft) Azim = 359.76° Scale = 1:750.00(ft) Origin = 0N-/S, 0E-/W

EW (ft) Scale = 1:650.00(ft)

Grid North
Tot Corr (M->G 6.142°)
Mag Dec (6.359°)
Grid Conv (0.217°)

CONTROLLED

Plan ref
Drawing ref
Copy number
Date

Coterra Tar Heel 19-18-7 Fed Com 5H Rev2 kFc 22Dec23

of 3

21-Dec-2023

1	Client	
2	Client	
3	Office	
4	Office	

Copy number for



Coterra Tar Heel 19-18-7 Fed Com 5H Rev2 kFc 22Dec23 Proposal Geodetic

Report
Def Plan

Report Date:	December 21, 2023 - 08:39 PM (UTC 0)	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	COTERRA	Vertical Section Azimuth:	359.762 °(GRID North)
Field:	NM Eddy County (NAD 83)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Coterra Tar Heel 19-18-7 Fed Com Pad (N) / Tar Heel 19-18-7 Fed Com	TVD Reference Datum:	RKB
Well:	Tar Heel 19-18-7 Fed Com 5H	TVD Reference Elevation:	3049.800 ft above MSL
Borehole:	Tar Heel 19-18-7 Fed Com 5H	Sealed / Ground Elevation:	3027.800 ft above MSL
UBH / AP#:	Unknown / Unknown	Magnetic Declination:	6.359°
Survey Name:	Coterra Tar Heel 19-18-7 Fed Com 5H Rev2 kFc 22Dec23	Total Gravity Field Strength:	998.44mgn (9.80665 Based)
Survey Date:	December 21, 2023	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	111.537 ° / 13702.629 ft / 6.512 / 1.210	Total Magnetic Field Strength:	47261.208 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	59.447°
Location Lat / Long:	32°120.93432'N, 103°55'27.09619"W	Declination Date:	December 22, 2023
Location Grid NE YK:	N 372157.750 IJUS, E 668135.520 IJUS	Magnetic Declination Model:	HOGM 2023
CRS Grid Convergence Angle:	0.217°	North Reference:	Grid North
Grid Scale Factor:	0.99992751	Grid Convergence Used:	0.217°
Version / Patch:	2023.1.0.1	Total Corr Mag North->Grid North:	6.142°
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100ft)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)
SHL 770' FSL, 1556' FWL]	0.00	0.00	0.00	0.00	-3,049.80	0.00	0.00	0.00		372,157.75	668,135.52	32.02248176	-103.92419339
	100.00	0.00	168.09	100.00	-2,949.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	200.00	0.00	168.09	200.00	-2,849.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	300.00	0.00	168.09	300.00	-2,749.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	400.00	0.00	168.09	400.00	-2,649.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	500.00	0.00	168.09	500.00	-2,549.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	600.00	0.00	168.09	600.00	-2,449.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	700.00	0.00	168.09	700.00	-2,349.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	800.00	0.00	168.09	800.00	-2,249.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	900.00	0.00	168.09	900.00	-2,149.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	1,000.00	0.00	168.09	1,000.00	-2,049.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	1,100.00	0.00	168.09	1,100.00	-1,949.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	1,200.00	0.00	168.09	1,200.00	-1,849.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	1,300.00	0.00	168.09	1,300.00	-1,749.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	1,400.00	0.00	168.09	1,400.00	-1,649.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	1,500.00	0.00	168.09	1,500.00	-1,549.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
	Nudge, Build 2°/100ft	1,600.00	0.00	168.09	1,600.00	-1,449.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176
1,700.00		0.00	168.09	1,700.00	-1,349.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
1,800.00		0.00	168.09	1,800.00	-1,249.80	0.00	0.00	0.00	0.00	372,157.75	668,135.52	32.02248176	-103.92419339
1,900.00		2.00	168.09	1,899.98	-1,149.82	-1.71	-1.71	0.36	2.00	372,156.04	668,135.88	32.02247706	-103.92419224
2,000.00		4.00	168.09	1,999.84	-1,049.96	-6.83	-6.83	1.44	2.00	372,150.92	668,136.96	32.02246297	-103.92418882
2,100.00		6.00	168.09	2,099.45	-950.35	-15.37	-15.36	3.24	2.00	372,142.40	668,138.76	32.02243951	-103.92418312
2,200.00		8.00	168.09	2,198.70	-851.10	-27.30	-27.28	5.76	2.00	372,130.47	668,141.27	32.02240671	-103.92417515
2,300.00		10.00	168.09	2,297.47	-752.33	-42.62	-42.59	8.98	2.00	372,115.17	668,144.50	32.02236461	-103.92416492
2,350.00		11.00	168.09	2,346.62	-703.18	-51.54	-51.50	10.87	2.00	372,106.25	668,146.38	32.02234008	-103.92415896
2,400.00		11.00	168.09	2,395.71	-654.09	-60.89	-60.84	12.84	0.00	372,096.92	668,148.35	32.02231440	-103.92415272
Top Halite	2,481.79	11.00	168.09	2,476.00	-573.80	-76.17	-76.11	16.06	0.00	372,081.65	668,151.58	32.02227239	-103.92414251
	2,500.00	11.00	168.09	2,493.87	-555.93	-79.57	-79.51	16.77	0.00	372,078.25	668,152.29	32.02226304	-103.92414024
	2,600.00	11.00	168.09	2,592.03	-457.77	-98.26	-98.18	20.71	0.00	372,059.58	668,156.23	32.02221168	-103.92412776
	2,700.00	11.00	168.09	2,690.20	-359.60	-116.95	-116.84	24.65	0.00	372,040.91	668,160.17	32.02216033	-103.92411528
	2,800.00	11.00	168.09	2,788.36	-261.44	-135.63	-135.51	28.59	0.00	372,022.25	668,164.11	32.02210897	-103.92410280
	2,900.00	11.00	168.09	2,886.52	-163.28	-154.32	-154.18	32.53	0.00	372,003.58	668,168.05	32.02205761	-103.92409032
	2,991.15	11.00	168.09	2,976.00	-73.80	-171.35	-171.20	36.12	0.00	371,986.56	668,171.64	32.02201079	-103.92407894
	3,000.00	11.00	168.09	2,984.69	-65.11	-173.00	-172.85	36.47	0.00	371,984.91	668,171.99	32.02200625	-103.92407784
	3,100.00	11.00	168.09	3,082.85	33.05	-191.69	-191.52	40.41	0.00	371,966.24	668,175.92	32.02195489	-103.92406536
	3,200.00	11.00	168.09	3,181.01	131.21	-210.38	-210.19	44.35	0.00	371,947.57	668,179.86	32.02190353	-103.92405288
Top Delaware / Base Anhy Base Lamar	3,266.21	11.00	168.09	3,246.00	196.20	-222.75	-222.55	46.95	0.00	371,935.21	668,182.47	32.02186953	-103.92404461
	3,296.77	11.00	168.09	3,276.00	226.20	-228.46	-228.26	48.16	0.00	371,929.51	668,183.67	32.02185383	-103.92404080
	3,300.00	11.00	168.09	3,279.17	229.37	-229.06	-228.86	48.29	0.00	371,928.90	668,183.80	32.02185217	-103.92404039
	3,400.00	11.00	168.09	3,377.34	327.54	-247.75	-247.53	52.22	0.00	371,910.22	668,187.74	32.02180881	-103.92403271
	3,500.00	11.00	168.09	3,475.50	425.70	-266.43	-266.20	56.16	0.00	371,891.57	668,191.68	32.02174945	-103.92401543
	3,600.00	11.00	168.09	3,573.66	523.86	-285.12	-284.87	60.10	0.00	371,872.90	668,195.62	32.02169809	-103.92400295
	3,700.00	11.00	168.09	3,671.82	622.02	-303.81	-303.54	64.04	0.00	371,854.23	668,199.56	32.02164673	-103.92399047
	3,800.00	11.00	168.09	3,769.99	720.19	-322.49	-322.21	67.98	0.00	371,835.56	668,203.50	32.02159538	-103.92397799
	3,900.00	11.00	168.09	3,868.15	818.35	-341.18	-340.88	71.92	0.00	371,816.89	668,207.43	32.02154402	-103.92396551
	4,000.00	11.00	168.09	3,966.31	916.51	-359.86	-359.55	75.86	0.00	371,798.22	668,211.37	32.02149266	-103.92395303
Castille	4,100.00	11.00	168.09	4,064.48	1,014.68	-378.55	-378.22	79.80	0.00	371,779.55	668,215.31	32.02144130	-103.92394055
	4,200.00	11.00	168.09	4,162.64	1,112.84	-397.24	-396.89	83.74	0.00	371,760.89	668,219.25	32.02138994	-103.92392807
	4,300.00	11.00	168.09	4,260.80	1,211.00	-415.92	-415.56	87.67	0.00	371,742.22	668,223.19	32.02133858	-103.92391559
	4,356.23	11.00	168.09	4,316.00	1,266.20	-426.43	-426.06	89.89	0.00	371,731.72	668,225.40	32.02130970	-103.92390857
	4,400.00	11.00	168.09	4,358.96	1,309.16	-434.61	-434.23	91.61	0.00	371,723.55	668,227.13	32.02128722	-103.92390311
	4,500.00	11.00	168.09	4,457.13	1,407.33	-453.29	-452.90	95.55	0.00	371,704.88	668,231.07	32.02123586	-103.92389063
	4,600.00	11.00	168.09	4,555.29	1,505.49	-471.98	-471.57	99.49	0.00	371,686.21	668,235.00	32.02118450	-103.92387815
	4,700.00	11.00	168.09	4,653.45	1,603.65	-490.67	-490.24	103.43	0.00	371,667.55	668,238.94	32.02113314	-103.92386567
	4,800.00	11.00	168.09	4,751.61	1,701.81	-509.35	-508.91	107.37	0.00	371,648.88	668,242.88	32.02108178	-103.92385319
	4,900.00	11.00	168.09	4,849.78	1,799.98	-528.04	-527.58	111.31	0.00	371,630.21	668,246.82	32.02103043	-103.92384071
Drop 2°/100ft	5,000.00	11.00	168.09	4,947.94	1,898.14	-546.72	-546.25	115.25	0.00	371,611.54	668,250.76	32.02097907	-103.92382823
	5,066.11	11.00	168.09	4,953.94	1,904.14	-547.87	-547.39	115.49	0.00	371,610.40	668,251.00	32.02097593	-103.92382747
	5,100.00	9.12	168.09	5,046.38	1,996.58	-563.93	-563.44	118.87	2.00	371,594.35	668,254.39	32.02093178	-103.92381674
	5,200.00	7.12	168.09	5,145.37	2,095.57	-577.76	-577.26	121.79	2.00	371,580.53	668,257.30	32.02089375	-103.92380750
	5,300.00	5.12	168.09	5,244.80	2,195.00	-598.21	-597.70	125.99	2.00	371,566.70	668,259.50	32.02086505	-103.92380053
	5,400.00	3.12	168.09	5,344.53	2,294.73	-595.25	-594.73	125.48	2.00	371,563.06	668,260.99	32.02084570	-103.92379582
	5,500.00	1.12	168.09	5,444.46	2,394.66	-598.87	-598.35	126.24	2.00	371,559.44	668,261.75	32.02083574	-103.92379340
Brushy Canyon	5,556.10	0.00	168.09	5,500.56	2,450.76	-599.41	-598.89	126.35	2.00	371,558.90	668,261.86	32.02083426	-103.92379304
	5,600.00	0.00	168.09	5,544.46	2,494.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	5,661.54	0.00	168.09	5,606.00	2,556.20	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	5,700.00	0.00	168.09	5,644.46	2,594.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	5,800.00	0.00	168.09	5,744.46	2,694.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	5,900.00	0.00	168.09	5,844.46	2,794.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	6,000.00	0.00	168.09	5,944.46	2,894.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	6,100.00	0.00	168.09	6,044.46	2,994.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	6,200.00	0.00	168.09	6,144.46	3,094.66	-599.41	-598.						

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100n)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)
3rd BS Carb	8,900.00	0.00	168.09	8,844.46	5,794.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	9,000.00	0.00	168.09	8,944.46	5,894.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	9,100.00	0.00	168.09	9,044.46	5,994.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	9,200.00	0.00	168.09	9,144.46	6,094.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	9,241.54	0.00	168.09	9,186.00	6,136.20	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	9,300.00	0.00	168.09	9,244.46	6,194.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
Harkey	9,400.00	0.00	168.09	9,344.46	6,294.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	9,441.54	0.00	168.09	9,386.00	6,336.20	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	9,500.00	0.00	168.09	9,444.46	6,394.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	9,600.00	0.00	168.09	9,544.46	6,494.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	9,700.00	0.00	168.09	9,644.46	6,594.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	9,800.00	0.00	168.09	9,744.46	6,694.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
3rd BS Sand	9,900.00	0.00	168.09	9,844.46	6,794.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	9,923.54	0.00	168.09	9,886.00	6,816.20	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	10,000.00	0.00	168.09	9,944.46	6,894.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	10,100.00	0.00	168.09	10,044.46	6,994.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	10,200.00	0.00	168.09	10,144.46	7,094.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	10,261.54	0.00	168.09	10,206.00	7,156.20	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
Wolfcamp	10,300.00	0.00	168.09	10,244.46	7,194.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	10,400.00	0.00	168.09	10,344.46	7,294.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	10,500.00	0.00	168.09	10,444.46	7,394.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	10,600.00	0.00	168.09	10,544.46	7,494.66	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	10,684.10	0.00	168.09	10,628.56	7,578.76	-599.41	-598.89	126.35	0.00	371,558.90	668,261.86	32.02083426	-103.92379304
	10,700.00	1.59	359.76	10,644.45	7,594.65	-599.19	-598.67	126.35	10.00	371,559.12	668,261.86	32.02083486	-103.92379304
KOP, Build 10°/100ft	10,800.00	11.59	359.76	10,743.67	7,693.87	-587.73	-587.21	126.30	10.00	371,570.58	668,261.82	32.02086637	-103.92379306
	10,900.00	21.59	359.76	10,839.38	7,789.58	-559.21	-558.69	126.19	10.00	371,599.10	668,261.70	32.02094475	-103.92379309
	10,973.72	28.96	359.76	10,906.00	7,856.20	-527.76	-527.24	126.05	10.00	371,630.55	668,261.56	32.02103121	-103.92379314
	11,000.00	31.59	359.76	10,928.69	7,878.70	-514.51	-513.99	126.00	10.00	371,643.80	668,261.51	32.02106762	-103.92379315
	11,100.00	41.59	359.76	11,008.88	7,959.08	-454.58	-454.46	125.75	10.00	371,703.92	668,261.26	32.02123226	-103.92379323
	11,200.00	51.59	359.76	11,077.52	8,027.72	-382.43	-381.91	125.44	10.00	371,775.87	668,260.96	32.02143069	-103.92379332
Build 5°/100ft	11,300.00	61.59	359.76	11,132.51	8,082.71	-299.06	-298.54	125.10	10.00	371,859.23	668,260.61	32.02165985	-103.92379343
	11,400.00	71.59	359.76	11,172.19	8,122.39	-207.40	-206.89	124.71	10.00	371,950.88	668,260.22	32.02191178	-103.92379355
	11,434.10	75.00	359.76	11,181.99	8,132.19	-174.74	-174.23	124.57	10.00	371,983.53	668,260.09	32.02200155	-103.92379359
	11,500.00	78.29	359.76	11,197.21	8,147.41	-110.64	-110.12	124.31	5.00	372,047.63	668,259.82	32.02217776	-103.92379367
	11,548.24	80.71	359.76	11,206.76	8,156.20	-63.21	-62.70	124.11	5.00	372,095.06	668,259.62	32.02230812	-103.92379373
	11,600.00	83.29	359.76	11,213.20	8,163.40	-11.96	-11.44	123.89	5.00	372,146.31	668,259.40	32.02244901	-103.92379380
Wolfcamp C	11,700.00	88.29	359.76	11,220.53	8,170.73	87.74	88.25	123.48	5.00	372,246.00	668,258.99	32.02272306	-103.92379392
	11,724.85	89.54	359.76	11,221.00	8,171.20	112.58	113.10	123.37	0.00	372,270.84	668,258.89	32.02279134	-103.92379395
	11,800.00	89.54	359.76	11,221.61	8,171.81	187.73	188.25	123.06	0.00	372,345.98	668,258.57	32.02299791	-103.92379404
	11,900.00	89.54	359.76	11,222.42	8,172.62	287.73	288.24	122.65	0.00	372,445.97	668,258.16	32.02327277	-103.92379416
	12,000.00	89.54	359.76	11,223.23	8,173.43	387.73	388.24	122.23	0.00	372,545.96	668,257.74	32.02354764	-103.92379428
	12,100.00	89.54	359.76	11,224.03	8,174.23	487.72	488.23	121.81	0.00	372,645.95	668,257.32	32.02382250	-103.92379440
Landing Point	12,200.00	89.54	359.76	11,224.84	8,175.04	587.72	588.23	121.40	0.00	372,745.94	668,256.91	32.02409737	-103.92379452
	12,300.00	89.54	359.76	11,225.65	8,175.85	687.72	688.23	120.98	0.00	372,845.92	668,256.49	32.02437223	-103.92379464
	12,400.00	89.54	359.76	11,226.46	8,176.66	787.71	788.22	120.56	0.00	372,945.91	668,256.07	32.02464710	-103.92379476
	12,500.00	89.54	359.76	11,227.27	8,177.47	887.71	888.22	120.15	0.00	373,045.90	668,255.66	32.02492196	-103.92379488
	12,600.00	89.54	359.76	11,228.07	8,178.27	987.71	988.21	119.73	0.00	373,145.89	668,255.24	32.02519683	-103.92379500
	12,700.00	89.54	359.76	11,228.88	8,179.08	1,087.70	1,088.21	119.31	0.00	373,245.88	668,254.83	32.02547169	-103.92379512
Section 19-18 Line Cross	12,800.00	89.54	359.76	11,229.69	8,179.89	1,187.70	1,188.20	118.90	0.00	373,345.87	668,254.41	32.02574656	-103.92379525
	12,900.00	89.54	359.76	11,230.50	8,180.70	1,287.70	1,288.20	118.48	0.00	373,445.86	668,253.99	32.02602142	-103.92379537
	13,000.00	89.54	359.76	11,231.30	8,181.50	1,387.69	1,388.20	118.06	0.00	373,545.84	668,253.58	32.02629629	-103.92379549
	13,100.00	89.54	359.76	11,232.11	8,182.31	1,487.69	1,488.19	117.65	0.00	373,645.83	668,253.16	32.02657115	-103.92379561
	13,200.00	89.54	359.76	11,232.92	8,183.12	1,587.69	1,588.19	117.23	0.00	373,745.82	668,252.74	32.02684602	-103.92379573
	13,300.00	89.54	359.76	11,233.73	8,183.93	1,687.68	1,688.18	116.82	0.00	373,845.81	668,252.33	32.02712088	-103.92379585
	13,400.00	89.54	359.76	11,234.54	8,184.74	1,787.68	1,788.18	116.40	0.00	373,945.80	668,251.91	32.02739575	-103.92379597
	13,500.00	89.54	359.76	11,235.34	8,185.54	1,887.68	1,888.18	115.98	0.00	374,045.79	668,251.49	32.02767061	-103.92379609
	13,600.00	89.54	359.76	11,236.15	8,186.35	1,987.67	1,988.17	115.57	0.00	374,145.77	668,251.08	32.02794548	-103.92379621
	13,700.00	89.54	359.76	11,236.96	8,187.16	2,087.67	2,088.17	115.15	0.00	374,245.76	668,250.66	32.02822034	-103.92379633
	13,800.00	89.54	359.76	11,237.77	8,187.97	2,187.67	2,188.16	114.73	0.00	374,345.75	668,250.24	32.02849520	-103.92379645
	13,900.00	89.54	359.76	11,238.57	8,188.77	2,287.67	2,288.16	114.32	0.00	374,445.74	668,249.83	32.02877007	-103.92379657
	14,000.00	89.54											

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	DLS (°/100m)	Northing (ftUS)	Easting (ftUS)	Latitude (°)	Longitude (°)
Section 18-7 Line Cross, Pool NA	20,700.00	89.54	359.76	11,293.50	8,243.70	9,087.44	9,087.88	86.00	0.00	381,244.95	668,221.51	32.04746084	-103.92380475
	20,800.00	89.54	359.76	11,294.31	8,244.51	9,187.44	9,187.87	85.58	0.00	381,344.94	668,221.10	32.04773570	-103.92380487
	20,900.00	89.54	359.76	11,295.12	8,245.32	9,287.44	9,287.87	85.17	0.00	381,444.93	668,220.68	32.04801057	-103.92380499
	21,000.00	89.54	359.76	11,295.93	8,246.13	9,387.43	9,387.87	84.75	0.00	381,544.92	668,220.26	32.04828543	-103.92380511
	21,100.00	89.54	359.76	11,296.74	8,246.94	9,487.43	9,487.86	84.33	0.00	381,644.91	668,219.85	32.04856029	-103.92380523
	21,200.00	89.54	359.76	11,297.54	8,247.74	9,587.43	9,587.86	83.92	0.00	381,744.89	668,219.43	32.04883516	-103.92380535
	21,300.00	89.54	359.76	11,298.35	8,248.55	9,687.42	9,687.85	83.50	0.00	381,844.88	668,219.01	32.04911002	-103.92380547
	21,400.00	89.54	359.76	11,299.16	8,249.36	9,787.42	9,787.85	83.08	0.00	381,944.87	668,218.60	32.04938488	-103.92380559
	21,500.00	89.54	359.76	11,299.97	8,250.17	9,887.42	9,887.85	82.67	0.00	382,044.86	668,218.18	32.04965975	-103.92380571
	21,543.00	89.54	359.76	11,300.31	8,250.51	9,930.42	9,930.84	82.49	0.00	382,087.85	668,218.00	32.04977794	-103.92380576
	21,600.00	89.54	359.76	11,300.77	8,250.97	9,987.41	9,987.84	82.25	0.00	382,144.85	668,217.77	32.04993461	-103.92380583
	21,700.00	89.54	359.76	11,301.58	8,251.78	10,087.41	10,087.84	81.84	0.00	382,244.84	668,217.35	32.05020948	-103.92380595
	21,800.00	89.54	359.76	11,302.39	8,252.59	10,187.41	10,187.83	81.42	0.00	382,344.82	668,216.93	32.05048434	-103.92380607
	21,900.00	89.54	359.76	11,303.20	8,253.40	10,287.40	10,287.83	81.00	0.00	382,444.81	668,216.52	32.05075920	-103.92380619
	22,000.00	89.54	359.76	11,304.01	8,254.21	10,387.40	10,387.82	80.59	0.00	382,544.80	668,216.10	32.05103407	-103.92380631
	22,100.00	89.54	359.76	11,304.81	8,255.01	10,487.40	10,487.82	80.17	0.00	382,644.79	668,215.68	32.05130893	-103.92380643
	22,200.00	89.54	359.76	11,305.62	8,255.82	10,587.39	10,587.82	79.75	0.00	382,744.78	668,215.27	32.05158379	-103.92380655
	22,300.00	89.54	359.76	11,306.43	8,256.63	10,687.39	10,687.81	79.34	0.00	382,844.77	668,214.85	32.05185866	-103.92380667
	22,400.00	89.54	359.76	11,307.24	8,257.44	10,787.39	10,787.81	78.92	0.00	382,944.75	668,214.43	32.05213352	-103.92380679
	22,500.00	89.54	359.76	11,308.04	8,258.24	10,887.38	10,887.80	78.50	0.00	383,044.74	668,214.02	32.05240839	-103.92380691
	22,600.00	89.54	359.76	11,308.85	8,259.05	10,987.38	10,987.80	78.09	0.00	383,144.73	668,213.60	32.05268325	-103.92380703
	22,700.00	89.54	359.76	11,309.66	8,259.86	11,087.38	11,087.80	77.67	0.00	383,244.72	668,213.19	32.05295811	-103.92380715
	22,800.00	89.54	359.76	11,310.47	8,260.67	11,187.37	11,187.79	77.25	0.00	383,344.71	668,212.77	32.05323298	-103.92380727
	22,900.00	89.54	359.76	11,311.28	8,261.48	11,287.37	11,287.79	76.84	0.00	383,444.70	668,212.35	32.05350784	-103.92380738
	23,000.00	89.54	359.76	11,312.08	8,262.28	11,387.37	11,387.78	76.42	0.00	383,544.69	668,211.94	32.05378270	-103.92380750
	23,100.00	89.54	359.76	11,312.89	8,263.09	11,487.36	11,487.78	76.01	0.00	383,644.67	668,211.52	32.05405757	-103.92380762
	23,200.00	89.54	359.76	11,313.70	8,263.90	11,587.36	11,587.78	75.59	0.00	383,744.66	668,211.10	32.05433243	-103.92380774
	23,300.00	89.54	359.76	11,314.51	8,264.71	11,687.36	11,687.77	75.17	0.00	383,844.65	668,210.69	32.05460729	-103.92380786
	23,400.00	89.54	359.76	11,315.31	8,265.51	11,787.36	11,787.77	74.76	0.00	383,944.64	668,210.27	32.05488216	-103.92380798
	23,500.00	89.54	359.76	11,316.12	8,266.32	11,887.35	11,887.76	74.34	0.00	384,044.63	668,209.85	32.05515702	-103.92380810
	23,600.00	89.54	359.76	11,316.93	8,267.13	11,987.35	11,987.76	73.92	0.00	384,144.62	668,209.44	32.05543188	-103.92380822
	23,700.00	89.54	359.76	11,317.74	8,267.94	12,087.35	12,087.75	73.51	0.00	384,244.60	668,209.02	32.05570675	-103.92380834
	23,800.00	89.54	359.76	11,318.55	8,268.75	12,187.34	12,187.75	73.09	0.00	384,344.59	668,208.61	32.05598161	-103.92380846
	23,900.00	89.54	359.76	11,319.35	8,269.55	12,287.34	12,287.75	72.67	0.00	384,444.58	668,208.19	32.05625648	-103.92380858
	24,000.00	89.54	359.76	11,320.16	8,270.36	12,387.34	12,387.74	72.26	0.00	384,544.57	668,207.77	32.05653134	-103.92380870
	24,100.00	89.54	359.76	11,320.97	8,271.17	12,487.33	12,487.74	71.84	0.00	384,644.56	668,207.36	32.05680620	-103.92380882
Tar Heel 19-18-7 Fed Com 5H - f	24,103.81	89.54	359.76	11,321.00	8,271.20	12,491.14	12,491.55	71.83	0.00	384,648.37	668,207.34	32.05681668	-103.92380883

Survey Type: Def Plan

Survey Error Model: ISCWSAO 3 - D 95 % 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 Code	Vendor / Tool	Borehole / Survey
	1	0.000	10,882.000	1/100.000 - 12.25 – 8.75 – 6 1/75 – 7.625 – 4.5				A001Mb_MWD		Tar Heel 19-18-7 Fed Com 5H / Coterra Tar Heel 1
	1	10,882.000	24,301.425	1/100.000	6	4.5		A008Mb_MWD+IFR1+MS		Tar Heel 19-18-7 Fed Com 5H / Coterra Tar Heel 1

EOU Geometry:

End MD (ft)	Hole Size (in)	Casing Size (in)	Name
1,009.200	17.500	13.375	
5,009.200	12.250	10.750	
8,009.200	8.750	7.625	
15,009.200	6.000	4.500	

**PECOS DISTRICT
SURFACE USE
CONDITIONS OF APPROVAL**

OPERATOR'S NAME:	Cimarex Energy Company of CO
LEASE NO.:	NMNM138848
LOCATION:	Section 19, T. 26 S., R. 30 E.
COUNTY:	Eddy

Wells:

Well Pad 1

Tar Heel 19-18 Federal #1H

Surface Hole Location: 540' FSL & 369' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: 330' FNL & 380' FWL, Section 18, T.26 S, R.30 E

Tar Heel 19-18 Federal #2H

Surface Hole Location: 540' FSL & 389' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: 330' FNL & 756' FWL, Section 18, T.26 S, R.30 E

Tar Heel 19-18 Federal #3H

Surface Hole Location: 540' FSL & 409' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: 330' FNL & 1132' FWL, Section 18, T.26 S, R.30 E

Tar Heel 19-18 Federal #4H

Surface Hole Location: 540' FSL & 429' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: 100' FNL & 660' FWL, Section 18, T.26 S, R.30 E

Tar Heel 19-18 Federal #5H

Surface Hole Location: 480' FSL & 469' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #6H

Surface Hole Location: 480' FSL & 489' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #7H

Surface Hole Location: 480' FSL & 509' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #8H

Surface Hole Location: 480' FSL & 529' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #9H

Surface Hole Location: 420' FSL & 369' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #10H

Surface Hole Location: 420' FSL & 389' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #11H

Surface Hole Location: 420' FSL & 409' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #12H

Surface Hole Location: 420' FSL & 429' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #13H

Surface Hole Location: 350' FSL & 469' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #14H

Surface Hole Location: 360' FSL & 489' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #15H

Surface Hole Location: 360' FSL & 509' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #16H

Surface Hole Location: 360' FSL & 529' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Well Pad 2

Tar Heel 19-18 Federal #17H

Surface Hole Location: 760' FSL & 1376' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: 1650' FNL & 1508' FWL, Section 18, T.26 S, R.30 E

Tar Heel 19-18 Federal #18H

Surface Hole Location: 760' FSL & 1396' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: 1650' FNL & 1884' FWL, Section 18, T.26 S, R.30 E

Tar Heel 19-18 Federal #19H

Surface Hole Location: 760' FSL & 1416' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: 1650' FNL & 2260' FWL, Section 18, T.26 S, R.30 E

Tar Heel 19-18 Federal #20H

Surface Hole Location: 760' FSL & 1436' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: 1420' FNL & 1980' FWL, Section 18, T.26 S, R.30 E

Tar Heel 19-18 Federal #21H

Surface Hole Location: 700' FSL & 1476' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #22H

Surface Hole Location: 700' FSL & 1496' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #23H

Surface Hole Location: 700' FSL & 1516' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #24H

Surface Hole Location: 700' FSL & 1536' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #25H

Surface Hole Location: 640' FSL & 1376' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #26H

Surface Hole Location: 640' FSL & 1396' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #27H

Surface Hole Location: 640' FSL & 1416' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #28H

Surface Hole Location: 640' FSL & 1436' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #29H

Surface Hole Location: 580' FSL & 1476' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #30H

Surface Hole Location: 580' FSL & 1496' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #31H

Surface Hole Location: 580' FSL & 1516' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

Tar Heel 19-18 Federal #32H

Surface Hole Location: 580' FSL & 1536' FWL, Section 19, T.26 S, R.30 E

Bottom Hole Location: TBD

TABLE OF CONTENTS

Standard Conditions of Approval (COA) apply to this APD. If any deviations to these standards exist or special COAs are required, the section with the deviation or requirement will be checked below.

- ☐ **General Provisions**
- ☐ **Permit Expiration**
- ☐ **Archaeology, Paleontology, and Historical Sites**
- ☐ **Noxious Weeds**
- ☒ **Special Requirements**
 - Watershed
 - Cave/Karst
 - Range
 - VRM
 - Wildlife
- ☐ **Construction**
 - Notification
 - Topsoil
 - Closed Loop System
 - Federal Mineral Material Pits
 - Well Pads
 - Roads
- ☐ **Road Section Diagram**
- ☐ **Production (Post Drilling)**
 - Well Structures & Facilities
 - Pipelines
- ☐ **Interim Reclamation**
- ☐ **Final Abandonment & Reclamation**

I. GENERAL PROVISIONS

The approval of the Application For Permit To Drill (APD) is in compliance with all applicable laws and regulations: 43 Code of Federal Regulations 3160, the lease terms, Onshore Oil and Gas Orders, Notices To Lessees, New Mexico Oil Conservation Division (NMOCD) Rules, National Historical Preservation Act As Amended, and instructions and orders of the Authorized Officer. Any request for a variance shall be submitted to the Authorized Officer on Form 3160-5, Sundry Notices and Report on Wells.

II. PERMIT EXPIRATION

If the permit terminates prior to drilling and drilling cannot be commenced within 60 days after expiration, an operator is required to submit Form 3160-5, Sundry Notices and Reports on Wells, requesting surface reclamation requirements for any surface disturbance. However, if the operator will be able to initiate drilling within 60 days after the expiration of the permit, the operator must have set the conductor pipe in order to allow for an extension of 60 days beyond the expiration date of the APD. (Filing of a Sundry Notice is required for this 60 day extension.)

III. ARCHAEOLOGICAL, PALEONTOLOGY & HISTORICAL SITES

Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See information below discussing NAGPRA.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

IV. NOXIOUS WEEDS

The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, pads, associated pipeline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

V. SPECIAL REQUIREMENT(S)

Watershed:

The entire well pad(s) will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad. The compacted berm shall be constructed at a minimum of 12 inches with impermeable mineral material (e.g. caliche). Topsoil shall not be used to construct the berm. No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad. The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed. Any water erosion that may occur due to the construction of the well pad during the life of the well will be quickly corrected and proper measures will be taken to prevent future erosion. Stockpiling of topsoil is required. The top soil shall be stockpiled in an appropriate location to prevent loss of soil due to water or wind erosion and not used for berming or erosion control. If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.

Tank battery locations will be lined and bermed. A 20 mil permanent liner will be installed with a 4 oz. felt backing to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank or 24 hour production, whichever is greater. Automatic shut off, check valves, or similar systems will be installed for tanks to minimize the effects of catastrophic line failures used in production or drilling.

When crossing ephemeral drainages the pipeline(s) will be buried to a minimum depth of 48 inches from the top of pipe to ground level. Erosion control methods such as gabions and/or rock aprons should be placed on both up and downstream sides of the pipeline crossing. In addition, curled (weed free) wood/straw fiber wattles/logs and/or silt fences should be placed on the downstream side for sediment control during construction and maintained until soils and vegetation have stabilized. Water bars should be placed within the ROW to divert and dissipate surface runoff. A pipeline access road is not permitted to cross these ephemeral drainages. Traffic should be diverted to a preexisting route. Additional seeding may be required in floodplains and drainages to restore energy dissipating vegetation.

Prior to pipeline installation/construction a leak detection plan will be developed. The method(s) could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.

Temporary Fresh Water Frac Line(s): once the temporary use exceeds the timeline of 180 days and/or with a 90 day extension status; further analysis will be required if the applicant pursues to turn the temporary ROW into a permanent ROW.

Cave/Karst:
Construction Mitigation

In order to mitigate the impacts from construction activities on cave and karst resources, the following Conditions of Approval will apply to this APD or project:

General Construction:

- No blasting
- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, cave passages, or voids are penetrated during construction, and no additional construction shall occur until clearance has been issued by the Authorized Officer.
- All linear surface disturbance activities will avoid sinkholes and other karst features to lessen the possibility of encountering near surface voids during construction, minimize changes to runoff, and prevent untimely leaks and spills from entering the karst drainage system.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

Pad Construction:

- The pad will be constructed and leveled by adding the necessary fill and caliche – no blasting.
- The entire perimeter of the well pad will be bermed to prevent oil, salt, and other chemical contaminants from leaving the well pad.
- The compacted berm shall be constructed at a minimum of 12 inches high with impermeable mineral material (e.g., caliche).
- No water flow from the uphill side(s) of the pad shall be allowed to enter the well pad.
- The topsoil stockpile shall be located outside the bermed well pad.
- Topsoil, either from the well pad or surrounding area, shall not be used to construct the berm.
- No storm drains, tubing or openings shall be placed in the berm.
- If fluid collects within the bermed area, the fluid must be vacuumed into a safe container and disposed of properly at a state approved facility.
- The integrity of the berm shall be maintained around the surfaced pad throughout the life of the well and around the downsized pad after interim reclamation has been completed.
- Any access road entering the well pad shall be constructed so that the integrity of the berm height surrounding the well pad is not compromised (i.e. an access road crossing the berm cannot be lower than the berm height).
- Following a rain event, all fluids will vacuumed off of the pad and hauled off-site and disposed at a proper disposal facility.

Road Construction:

- Turnout ditches and drainage leadoffs will not be constructed in such a manner as to alter the natural flow of water into or out of cave or karst features.
- Special restoration stipulations or realignment may be required if subsurface features are discovered during construction.

Buried Pipeline/Cable Construction:

- Rerouting of the buried line(s) may be required if a subsurface void is encountered during construction to minimize the potential subsidence/collapse of the feature(s) as well as the possibility of leaks/spills entering the karst drainage system.

Surface Flowlines Installation:

- Flowlines will be routed around sinkholes and other karst features to minimize the possibility of leaks/spills from entering the karst drainage system.

Drilling Mitigation

Federal regulations and standard Conditions of Approval applied to all APDs require that adequate measures are taken to prevent contamination to the environment. Due to the extreme sensitivity of the cave and karst resources in this project area, the following additional Conditions of Approval will be added to this APD.

To prevent cave and karst resource contamination the following will be required:

- Closed loop system using steel tanks - all fluids and cuttings will be hauled off-site and disposed of properly at an authorized site
- Rotary drilling with fresh water where cave or karst features are expected to prevent contamination of freshwater aquifers.
- Directional drilling is only allowed at depths greater than 100 feet below the cave occurrence zone to prevent additional impacts resulting from directional drilling.
- Lost circulation zones will be logged and reported in the drilling report so BLM can assess the situation and work with the operator on corrective actions.
- Additional drilling, casing, and cementing procedures to protect cave zones and fresh water aquifers. See drilling COAs.

Production Mitigation

In order to mitigate the impacts from production activities and due to the nature of karst terrane, the following Conditions of Approval will apply to this APD:

- Tank battery locations and facilities will be bermed and lined with a 20 mil thick permanent liner that has a 4 oz. felt backing, or equivalent, to prevent tears or punctures. Tank battery berms must be large enough to contain 1 ½ times the content of the largest tank.
- Development and implementation of a leak detection system to provide an early alert to operators when a leak has occurred.

- Automatic shut off, check valves, or similar systems will be installed for pipelines and tanks to minimize the effects of catastrophic line failures used in production or drilling.

Residual and Cumulative Mitigation

The operator will perform annual pressure monitoring on all casing annuli and reported in a sundry notice. If the test results indicated a casing failure has occurred, remedial action will be taken to correct the problem to the BLM's approval.

Plugging and Abandonment Mitigation

Upon well abandonment in high cave karst areas additional plugging conditions of approval may be required. The BLM will assess the situation and work with the operator to ensure proper plugging of the wellbore.

Range:**Cattleguards**

Where a permanent cattlegaurd is approved, an appropriately sized cattleguard(s) sufficient to carry out the project shall be installed and maintained at fence crossing(s). Any existing cattleguard(s) on the access road shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattleguard(s) that are in place and are utilized during lease operations. A gate shall be constructed on one side of the cattleguard and fastened securely to H-braces.

Fence Requirement

Where entry granted across a fence line, the fence must be braced and tied off on both sides of the passageway PRIOR to cutting. Once the work is completed, the fence will be restored to its prior condition, or better. The operator shall notify the private surface landowner or the grazing allotment holder PRIOR to crossing any fence(s).

VRM IV:

- Above-ground structures including meter housing that are not subject to safety requirements are painted a flat non-reflective paint color, Shale Green from the BLM Standard Environmental Color Chart (CC-001: June 2013).

Wildlife:**Texas Hornshell Mussel:**

Oil and Gas and Associated Infrastructure Mitigation Measures for Zone D – CCA
Boundary Requirements:

- Provide CEHMM with the permit, lease grant, or other authorization form BLM, if applicable.
- Provide CEHMM with plats or other electronic media describing the new surface disturbance for the project.

Desert Heronries proposed ACEC:

- No surface disturbance within up to 200 meters of a heronry.

VI. CONSTRUCTION**A. NOTIFICATION**

The BLM shall administer compliance and monitor construction of the access road and well pad. Notify the Carlsbad Field Office at (575) 234-5909 at least 3 working days prior to commencing construction of the access road and/or well pad.

When construction operations are being conducted on this well, the operator shall have the approved APD and Conditions of Approval (COA) on the well site and they shall be made available upon request by the Authorized Officer.

B. TOPSOIL

The operator shall strip the top portion of the soil (root zone) from the entire well pad area and stockpile the topsoil along the edge of the well pad as depicted in the APD. The root zone is typically six (6) inches in depth. All the stockpiled topsoil will be redistributed over the interim reclamation areas. Topsoil shall not be used for berming the pad or facilities. For final reclamation, the topsoil shall be spread over the entire pad area for seeding preparation.

Other subsoil (below six inches) stockpiles must be completely segregated from the topsoil stockpile. Large rocks or subsoil clods (not evident in the surrounding terrain) must be buried within the approved area for interim and final reclamation.

C. CLOSED LOOP SYSTEM

Tanks are required for drilling operations: No Pits.

The operator shall properly dispose of drilling contents at an authorized disposal site.

D. FEDERAL MINERAL MATERIALS PIT

Payment shall be made to the BLM prior to removal of any federal mineral materials. Call the Carlsbad Field Office at (575) 234-5972.

E. WELL PAD SURFACING

Surfacing of the well pad is not required.

If the operator elects to surface the well pad, the surfacing material may be required to be removed at the time of reclamation. The well pad shall be constructed in a manner which

creates the smallest possible surface disturbance, consistent with safety and operational needs.

F. EXCLOSURE FENCING (CELLARS & PITS)

Exclosure Fencing

The operator will install and maintain exclosure fencing for all open well cellars to prevent access to public, livestock, and large forms of wildlife before and after drilling operations until the pit is free of fluids and the operator initiates backfilling. (For examples of exclosure fencing design, refer to BLM's Oil and Gas Gold Book, Exclosure Fence Illustrations, Figure 1, Page 18.)

G. ON LEASE ACCESS ROADS

Road Width

The access road shall have a driving surface that creates the smallest possible surface disturbance and does not exceed fourteen (14) feet in width. The maximum width of surface disturbance, when constructing the access road, shall not exceed twenty-five (25) feet.

Surfacing

Surfacing material is not required on the new access road driving surface. If the operator elects to surface the new access road or pad, the surfacing material may be required to be removed at the time of reclamation.

Where possible, no improvements should be made on the unsurfaced access road other than to remove vegetation as necessary, road irregularities, safety issues, or to fill low areas that may sustain standing water.

The Authorized Officer reserves the right to require surfacing of any portion of the access road at any time deemed necessary. Surfacing may be required in the event the road deteriorates, erodes, road traffic increases, or it is determined to be beneficial for future field development. The surfacing depth and type of material will be determined at the time of notification.

Crowning

Crowning shall be done on the access road driving surface. The road crown shall have a grade of approximately 2% (i.e., a 1" crown on a 14' wide road). The road shall conform to Figure 1; cross section and plans for typical road construction.

Ditching

Ditching shall be required on both sides of the road.

Turnouts

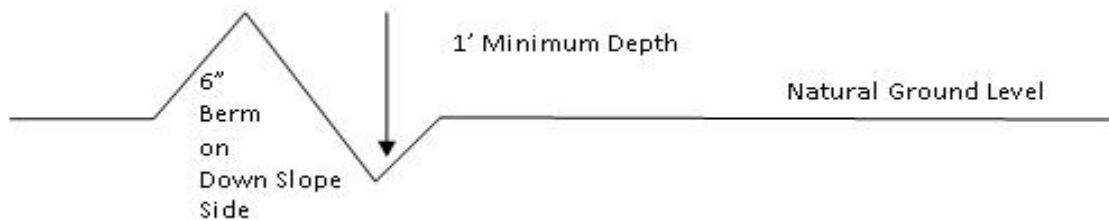
Vehicle turnouts shall be constructed on the road. Turnouts shall be intervisible with interval spacing distance less than 1000 feet. Turnouts shall conform to Figure 1; cross section and plans for typical road construction.

Drainage

Drainage control systems shall be constructed on the entire length of road (e.g. ditches, sidehill outslowing and insloping, lead-off ditches, culvert installation, and low water crossings).

A typical lead-off ditch has a minimum depth of 1 foot below and a berm of 6 inches above natural ground level. The berm shall be on the down-slope side of the lead-off ditch.

Cross Section of a Typical Lead-off Ditch



All lead-off ditches shall be graded to drain water with a 1 percent minimum to 3 percent maximum ditch slope. The spacing interval are variable for lead-off ditches and shall be determined according to the formula for spacing intervals of lead-off ditches, but may be amended depending upon existing soil types and centerline road slope (in %);

Formula for Spacing Interval of Lead-off Ditches

Example - On a 4% road slope that is 400 feet long, the water flow shall drain water into a lead-off ditch. Spacing interval shall be determined by the following formula:

$$400 \text{ foot road with } 4\% \text{ road slope: } \frac{400'}{4\%} + 100' = 200' \text{ lead-off ditch interval}$$

Cattle guards

An appropriately sized cattle guard sufficient to carry out the project shall be installed and maintained at fence/road crossings. Any existing cattle guards on the access road route shall be repaired or replaced if they are damaged or have deteriorated beyond practical use. The operator shall be responsible for the condition of the existing cattle guards that are in place and are utilized during lease operations.

Fence Requirement

Where entry is granted across a fence line, the fence shall be braced and tied off on both sides of the passageway prior to cutting. The operator shall notify the private surface landowner or the grazing allotment holder prior to crossing any fences.

Public Access

Public access on this road shall not be restricted by the operator without specific written approval granted by the Authorized Officer.

- Construction Steps
1. Salvage topsoil

2. Construct road

3. Redistribute topsoil

4. Revegetate slopes

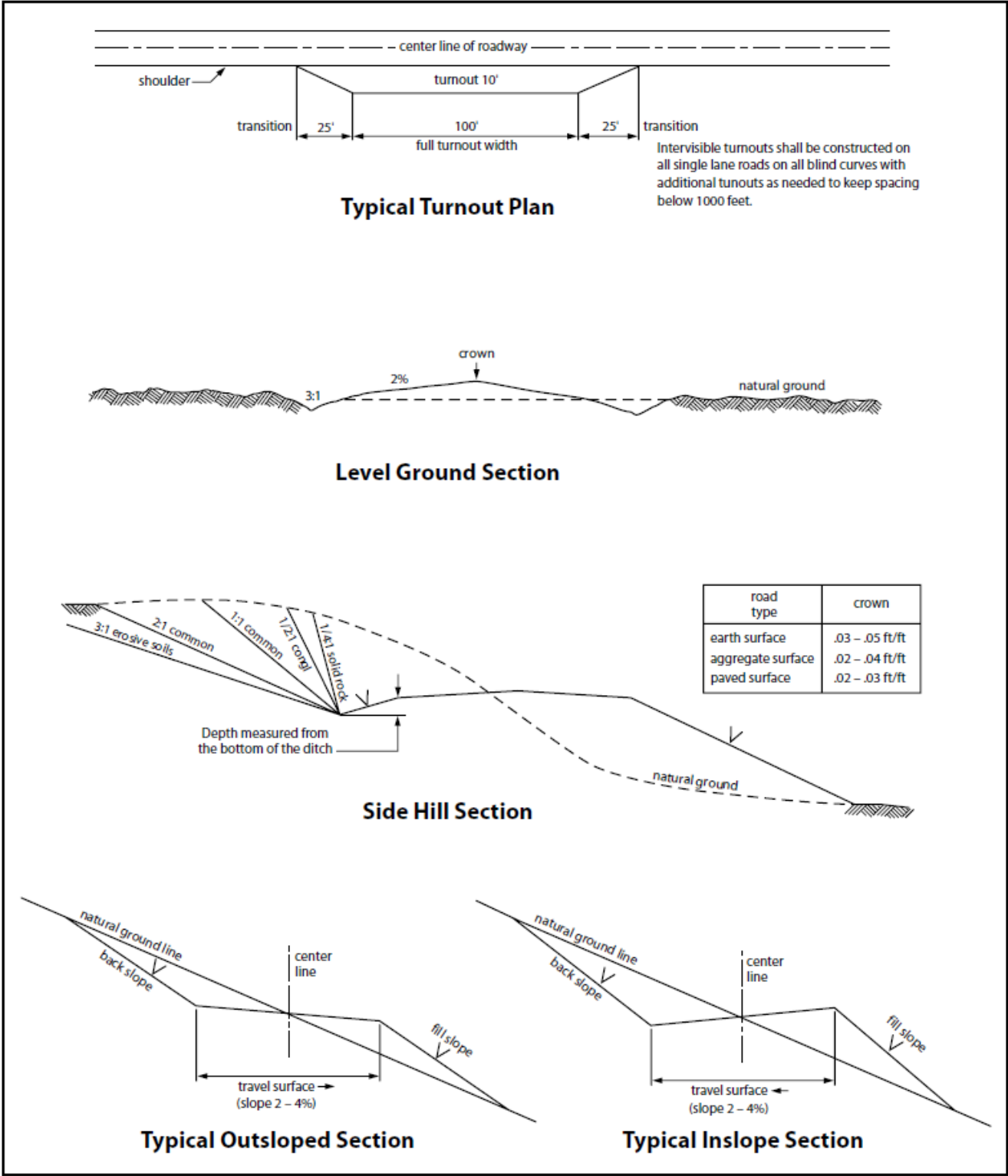


Figure 1. Cross-sections and plans for typical road sections representative of BLM resource or FS local and higher-class roads.

VII. PRODUCTION (POST DRILLING)

A. WELL STRUCTURES & FACILITIES

Placement of Production Facilities

Production facilities should be placed on the well pad to allow for maximum interim recontouring and revegetation of the well location.

Exclosure Netting (Open-top Tanks)

Immediately following active drilling or completion operations, the operator will take actions necessary to prevent wildlife and livestock access, including avian wildlife, to all open-topped tanks that contain or have the potential to contain salinity sufficient to cause harm to wildlife or livestock, hydrocarbons, or Resource Conservation and Recovery Act of 1976-exempt hazardous substances. At a minimum, the operator will net, screen, or cover open-topped tanks to exclude wildlife and livestock and prevent mortality. If the operator uses netting, the operator will cover and secure the open portion of the tank to prevent wildlife entry. The operator will net, screen, or cover the tanks until the operator removes the tanks from the location or the tanks no longer contain substances that could be harmful to wildlife or livestock. Use a maximum netting mesh size of 1 ½ inches. The netting must not be in contact with fluids and must not have holes or gaps.

Chemical and Fuel Secondary Containment and Exclosure Screening

The operator will prevent all hazardous, poisonous, flammable, and toxic substances from coming into contact with soil and water. At a minimum, the operator will install and maintain an impervious secondary containment system for any tank or barrel containing hazardous, poisonous, flammable, or toxic substances sufficient to contain the contents of the tank or barrel and any drips, leaks, and anticipated precipitation. The operator will dispose of fluids within the containment system that do not meet applicable state or U. S. Environmental Protection Agency livestock water standards in accordance with state law; the operator must not drain the fluids to the soil or ground. The operator will design, construct, and maintain all secondary containment systems to prevent wildlife and livestock exposure to harmful substances. At a minimum, the operator will install effective wildlife and livestock exclosure systems such as fencing, netting, expanded metal mesh, lids, and grate covers. Use a maximum netting mesh size of 1 ½ inches.

Open-Vent Exhaust Stack Exclosures

The operator will construct, modify, equip, and maintain all open-vent exhaust stacks on production equipment to prevent birds and bats from entering, and to discourage perching, roosting, and nesting. (*Recommended exclosure structures on open-vent exhaust stacks are in the shape of a cone.*) Production equipment includes, but may not be limited to, tanks, heater-treaters, separators, dehydrators, flare stacks, in-line units, and compressor mufflers.

Containment Structures

Proposed production facilities such as storage tanks and other vessels will have a secondary containment structure that is constructed to hold the capacity of 1.5 times the largest tank, plus freeboard to account for precipitation, unless more stringent protective requirements are deemed necessary.

Painting Requirement

All above-ground structures including meter housing that are not subject to safety requirements shall be painted a flat non-reflective paint color, **Shale Green** from the BLM Standard Environmental Color Chart (CC-001: June 2008).

B. PIPELINES

- The BLM, Carlsbad Field Office, will be informed immediately if any subsurface drainage channels, passages, or voids are intersected by trenching, and no pipe will be laid in the trench at that point until clearance has been issued by the Authorized Officer.
- If a void is encountered alignments may be rerouted to avoid the karst feature and lessen; the potential of subsidence or collapse of karst features, buildup of toxic or combustible gas, or other possible impacts to cave and karst resources from the buried pipeline.
- Special restoration stipulations or realignment may be required at such intersections, if any.
- A leak detection plan **will be submitted to the BLM Carlsbad Field Office for approval** prior to pipeline installation. The method could incorporate gauges to detect pressure drops, situating valves and lines so they can be visually inspected periodically or installing electronic sensors to alarm when a leak is present. The leak detection plan will incorporate an automatic shut off system that will be installed for proposed pipelines to minimize the effects of an undesirable event.
- Regular monitoring is required to quickly identify leaks for their immediate and proper treatment.
- All spills or leaks will be reported to the BLM immediately for their immediate and proper treatment.

BURIED PIPELINE STIPULATIONS

A copy of the application (Grant, APD, or Sundry Notice) and attachments, including conditions of approval, survey plat and/or map, will be on location during construction. BLM personnel may request to you a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. The Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, the holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC 2601 et seq. (1982) with regards to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant. (See 40 CFR Part 702-799 and especially, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193.) Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the authorized officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. The holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. 9601, et seq. or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, et seq.) on the Right-of-Way (unless the release or threatened release is wholly unrelated to the Right-of-Way holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way holder on the Right-of-Way. This agreement applies without regard to whether a release is caused by the holder, its agent, or unrelated third parties.
4. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil or other pollutant, wherever found, shall be the responsibility of holder, regardless of fault. Upon failure of holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he deems necessary to control and clean up the discharge and restore the area, including where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of the holder. Such action by the Authorized Officer shall not relieve holder of any responsibility as provided herein.

5. All construction and maintenance activity will be confined to the authorized right-of-way.

6. The pipeline will be buried with a minimum cover of 36 inches between the top of the pipe and ground level.

7. The maximum allowable disturbance for construction in this right-of-way will be 30 feet:

- Blading of vegetation within the right-of-way will be allowed: maximum width of blading operations will not exceed 20 feet. The trench is included in this area. (*Blading is defined as the complete removal of brush and ground vegetation.*)
- Clearing of brush species within the right-of-way will be allowed: maximum width of clearing operations will not exceed 30 feet. The trench and bladed area are included in this area. (*Clearing is defined as the removal of brush while leaving ground vegetation (grasses, weeds, etc.) intact. Clearing is best accomplished by holding the blade 4 to 6 inches above the ground surface.*)
- The remaining area of the right-of-way (if any) shall only be disturbed by compressing the vegetation. (*Compressing can be caused by vehicle tires, placement of equipment, etc.*)

8. The holder shall stockpile an adequate amount of topsoil where blading is allowed. The topsoil to be stripped is approximately 6 inches in depth. The topsoil will be segregated from other spoil piles from trench construction. The topsoil will be evenly distributed over the bladed area for the preparation of seeding.

9. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

10. Vegetation, soil, and rocks left as a result of construction or maintenance activity will be randomly scattered on this right-of-way and will not be left in rows, piles, or berms, unless otherwise approved by the Authorized Officer. The entire right-of-way shall be recontoured to match the surrounding landscape. The backfilled soil shall be compacted and a 6 inch berm will be left over the ditch line to allow for settling back to grade.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. The holder will reseed all disturbed areas. Seeding will be done according to the attached seeding requirements, using the following seed mix.

<input type="checkbox"/> seed mixture 1	<input checked="" type="checkbox"/> seed mixture 3
<input checked="" type="checkbox"/> seed mixture 2	<input type="checkbox"/> seed mixture 4
<input type="checkbox"/> seed mixture 2/LPC	<input type="checkbox"/> Aplomado Falcon Mixture

13. All above-ground structures not subject to safety requirements shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be color which simulates "Standard Environmental Colors" – Shale Green, Munsell Soil Color No. 5Y 4/2.

14. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. All signs and information thereon will be posted in a permanent, conspicuous manner, and will be maintained in a legible condition for the life of the pipeline.

15. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder before maintenance begins. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway. As determined necessary during the life of the pipeline, the Authorized Officer may ask the holder to construct temporary deterrence structures.

16. Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible

within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 17 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

17. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

18. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

19. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes associated roads, pipeline corridor and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

20. Escape Ramps - The operator will construct and maintain pipeline/utility trenches [that are not otherwise fenced, screened, or netted] to prevent livestock, wildlife, and humans from becoming entrapped. At a minimum, the operator will construct and maintain escape ramps, ladders, or other methods of avian and terrestrial wildlife escape in the trenches according to the following criteria:

- a. Any trench left open for eight (8) hours or less is not required to have escape ramps; however, before the trench is backfilled, the contractor/operator shall inspect the trench for wildlife, remove all trapped wildlife, and release them at least 100 yards from the trench.

- b. For trenches left open for eight (8) hours or more, earthen escape ramps (built at no more than a 30 degree slope and spaced no more than 500 feet apart) shall be placed in the trench.

STANDARD STIPULATIONS FOR SURFACE INSTALLED PIPELINES

A copy of the Grant and attachments, including stipulations, survey plat(s) and/or map(s), shall be on location during construction. BLM personnel may request to review a copy of your permit during construction to ensure compliance with all stipulations.

Holder agrees to comply with the following stipulations to the satisfaction of the Authorized Officer:

1. Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this grant.
2. Holder shall comply with all applicable Federal laws and regulations existing or hereafter enacted or promulgated. In any event, Holder shall comply with the Toxic Substances Control Act of 1976 as amended, 15 USC § 2601 *et seq.* (1982) with regard to any toxic substances that are used, generated by or stored on the right-of-way or on facilities authorized under this right-of-way grant (*see* 40 CFR, Part 702-799 and in particular, provisions on polychlorinated biphenyls, 40 CFR 761.1-761.193). Additionally, any release of toxic substances (leaks, spills, etc.) in excess of the reportable quantity established by 40 CFR, Part 117 shall be reported as required by the Comprehensive Environmental Response, Compensation, and Liability Act, section 102b. A copy of any report required or requested by any Federal agency or State government as a result of a reportable release or spill of any toxic substances shall be furnished to the Authorized Officer concurrent with the filing of the reports to the involved Federal agency or State government.
3. Holder agrees to indemnify the United States against any liability arising from the release of any hazardous substance or hazardous waste (as these terms are defined in the Comprehensive Environmental Response, Compensation and Liability Act of 1980, 42 U.S.C. § 9601, *et seq.* or the Resource Conservation and Recovery Act, 42 U.S.C. 6901, *et seq.*) on the Right-of-Way (unless the release or threatened release is wholly unrelated to activity of the Right-of-Way Holder's activity on the Right-of-Way), or resulting from the activity of the Right-of-Way Holder on the Right-of-Way. This provision applies without regard to whether a release is caused by Holder, its agent, or unrelated third parties.
4. Holder shall be liable for damage or injury to the United States to the extent provided by 43 CFR Sec. 2883.1-4. Holder shall be held to a standard of strict liability for damage or injury to the United States resulting from pipe rupture, fire, or spills caused or substantially aggravated by any of the following within the right-of-way or permit area:
 - a. Activities of Holder including, but not limited to: construction, operation,

maintenance, and termination of the facility;

b. Activities of other parties including, but not limited to:

- (1) Land clearing
- (2) Earth-disturbing and earth-moving work
- (3) Blasting
- (4) Vandalism and sabotage;

c. Acts of God.

The maximum limitation for such strict liability damages shall not exceed one million dollars (\$1,000,000) for any one event, and any liability in excess of such amount shall be determined by the ordinary rules of negligence of the jurisdiction in which the damage or injury occurred.

This section shall not impose strict liability for damage or injury resulting primarily from an act of war or from the negligent acts or omissions of the United States.

5. If, during any phase of the construction, operation, maintenance, or termination of the pipeline, any oil, salt water, or other pollutant should be discharged from the pipeline system, impacting Federal lands, the control and total removal, disposal, and cleaning up of such oil, salt water, or other pollutant, wherever found, shall be the responsibility of Holder, regardless of fault. Upon failure of Holder to control, dispose of, or clean up such discharge on or affecting Federal lands, or to repair all damages resulting therefrom, on the Federal lands, the Authorized Officer may take such measures as he/she deems necessary to control and clean up the discharge and restore the area, including, where appropriate, the aquatic environment and fish and wildlife habitats, at the full expense of Holder. Such action by the Authorized Officer shall not relieve Holder of any responsibility as provided herein.

6. All construction and maintenance activity shall be confined to the authorized right-of-way width of 30 feet. If the pipeline route follows an existing road or buried pipeline right-of-way, the surface pipeline shall be installed no farther than 10 feet from the edge of the road or buried pipeline right-of-way. If existing surface pipelines prevent this distance, the proposed surface pipeline shall be installed immediately adjacent to the outer surface pipeline. All construction and maintenance activity shall be confined to existing roads or right-of-ways.

7. No blading or clearing of any vegetation shall be allowed unless approved in writing by the Authorized Officer.

8. Holder shall install the pipeline on the surface in such a manner that will minimize suspension of the pipeline across low areas in the terrain. In hummocky or dune areas, the pipeline shall be "snaked" around hummocks and dunes rather than suspended across these features.

9. The pipeline shall be buried with a minimum of 6 inches under all roads,

"two-tracks," and trails. Burial of the pipe will continue for 20 feet on each side of each crossing. The condition of the road, upon completion of construction, shall be returned to at least its former state with no bumps or dips remaining in the road surface.

10. The holder shall minimize disturbance to existing fences and other improvements on public lands. The holder is required to promptly repair improvements to at least their former state. Functional use of these improvements will be maintained at all times. The holder will contact the owner of any improvements prior to disturbing them. When necessary to pass through a fence line, the fence shall be braced on both sides of the passageway prior to cutting of the fence. No permanent gates will be allowed unless approved by the Authorized Officer.

11. In those areas where erosion control structures are required to stabilize soil conditions, the holder will install such structures as are suitable for the specific soil conditions being encountered and which are in accordance with sound resource management practices.

12. Excluding the pipe, all above-ground structures not subject to safety requirement shall be painted by the holder to blend with the natural color of the landscape. The paint used shall be a color which simulates "Standard Environmental Colors" – **Shale Green**, Munsell Soil Color No. 5Y 4/2; designated by the Rocky Mountain Five State Interagency Committee.

13. The pipeline will be identified by signs at the point of origin and completion of the right-of-way and at all road crossings. At a minimum, signs will state the holder's name, BLM serial number, and the product being transported. Signs will be maintained in a legible condition for the life of the pipeline.

14. The holder shall not use the pipeline route as a road for purposes other than routine maintenance as determined necessary by the Authorized Officer in consultation with the holder. The holder will take whatever steps are necessary to ensure that the pipeline route is not used as a roadway.

15. Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 16 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

16. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

17. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

18. The operator shall be held responsible if noxious weeds become established within the areas of operations. Weed control shall be required on the disturbed land where noxious weeds exist, which includes the roads, powerline corridor, and adjacent land affected by the establishment of weeds due to this action. The operator shall consult with the Authorized Officer for acceptable weed control methods, which include following EPA and BLM requirements and policies.

19. Surface pipelines shall be less than or equal to 4 inches and a working pressure below 125 psi.

Temporary Freshwater Pipelines (Drilling and Fracturing Operations)
CONDITIONS OF APPROVAL

Maintain a copy of your temporary permit and your approved route diagram on location. BLM personnel may request to see a copy of your permit during construction to ensure compliance with all conditions of approval.

Holder agrees to comply with the following conditions of approval to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this permit.
2. Standard Conditions of Approval:
 - Pipelines must be removed within 30-45 days from this route unless granted in writing by the authorized officer.
 - Pipelines will be placed not farther than 5 to 10 feet off the edge of existing oil and gas maintained roads or other maintained roads.
 - Areas impacted (disturbed greater than vegetation compaction) by your project will require full reclamation.
 - Pipelines will be empty before disassembly. Flow water back to the designated holding area.
 - Do not restrict traffic on existing roads. Place ramps where needed on existing access roads.
 - All pumps and other equipment must be placed on existing surfaced areas (pads, roads, etc.).
3. . Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred

objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 4 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

4. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

5. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

Temporary Produced Water CONDITIONS OF APPROVAL
(Pipelines from Pond to Wells)

Pipelines must follow within 10 feet of existing oil and gas roads. The applicant must get like approval from the state. The applicant is responsible for cleanup of any spills. The primary objective is to not allow produced water to reach the ground.

Maintain a copy of your temporary permit and your approved route diagram on location during installation and operations. BLM personnel may request to see a copy of your permit during installation or operations to ensure compliance with all conditions of approval. The project will cease until the permit is on location.

Holder agrees to comply with the following conditions of approval to the satisfaction of the Authorized Officer:

1. The Holder shall indemnify the United States against any liability for damage to life or property arising from the occupancy or use of public lands under this permit.

2. Standard Conditions of Approval:

- Pipelines must be removed within 30-45 days from this route.
- Pipelines and all connection points must be leak proof. The company must prevent any amount of produced water from reaching the ground. Small drips are not allowed to touch the ground.
- Pipelines and all connection points must be pressure-tested with freshwater prior to use with produced water.
- Pipelines flowing from the frac water holding area to the target well(s) will be laid along existing oil and gas maintained roads (within 5 to 10 feet of roadway).
- Areas impacted (disturbed greater than vegetation compaction) by your project will require full reclamation.
- Pipelines will be empty before disassembly. Freshwater must be flowed through the pipeline to removal all the produced water prior to disassembly. Flow water back to the designated holding area.
- Do not restrict traffic on existing roads. Place ramps where needed on existing access roads.
- Pipe will be placed not farther than 5 to 10 feet off the edge of existing oil and gas maintained roads or other maintained roads.
- All pumps and other equipment must be placed on existing surfaced areas (pads, roads, etc.).
- All equipment associated with transporting produced water must be leak proof.
- The produced water lines and equipment would need to be checked and monitored continuously to ensure a leak is not occurring. If a leak is discovered (no matter how small), it must be corrected immediately, even if it would require ceasing the fracturing operation. Non-earthen secondary containments should be put in place if a small leak occurs.
- Any spills or leaks of produced water would need to be reported as soon as possibly known to the authorized officer. Any spills would need to be addressed as quickly as possible, and reclamation of the disturbance will need to be discussed with the authorized officer.

3. Any cultural resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

OR

If the entire project is covered under the Permian Basin Programmatic Agreement (cultural resources only):

The proponent has contributed funds commensurate to the undertaking into an account for offsite mitigation. Participation in the PA serves as mitigation for the effects of this project on cultural resources. If any human skeletal remains, funerary objects, sacred objects, or objects of cultural patrimony are discovered at any time during construction, all construction activities shall halt and the BLM will be notified as soon as possible within 24 hours. Work shall not resume until a Notice to Proceed is issued by the BLM. See Stipulation 4 for more information.

If the proposed project is split between a Class III inventory and a Permian Basin Programmatic Agreement contribution, the portion of the project covered under Class III inventory should default to the first paragraph stipulations.

4. The holder is hereby obligated to comply with procedures established in the Native American Graves Protection and Repatriation Act (NAGPRA) to protect such cultural items as human remains, associated funerary objects, sacred objects, and objects of cultural patrimony discovered inadvertently during the course of project implementation. In the event that any of the cultural items listed above are discovered during the course of project work, the proponent shall immediately halt the disturbance and contact the BLM within 24 hours for instructions. The proponent or initiator of any project shall be held responsible for protecting, evaluating, reporting, excavating, treating, and disposing of these cultural items according to the procedures established by the BLM in consultation with Indian Tribes."

5. Any paleontological resource (historic or prehistoric site or object) discovered by the holder, or any person working on the holder's behalf, on public or Federal land shall be immediately reported to the Authorized Officer. The holder shall suspend all operations in the immediate area of such discovery until written authorization to proceed is issued by the Authorized Officer. An evaluation of the discovery will be made by the Authorized Officer to determine appropriate actions to prevent the loss of significant cultural or scientific values. The holder will be responsible for the cost of evaluation and any decision as to the proper mitigation measures will be made by the Authorized Officer after consulting with the holder.

VIII. INTERIM RECLAMATION

During the life of the development, all disturbed areas not needed for active support of production operations should undergo interim reclamation in order to minimize the environmental impacts of development on other resources and uses.

Within six (6) months of well completion, operators should work with BLM surface management specialists (Jim Amos: 575-234-5909) to devise the best strategies to reduce the size of the location. Interim reclamation should allow for remedial well operations, as well as safe and efficient removal of oil and gas.

During reclamation, the removal of caliche is important to increasing the success of revegetating the site. Removed caliche that is free of contaminants may be used for road repairs, fire walls or for building other roads and locations. In order to operate the well or complete workover operations, it may be necessary to drive, park and operate on restored interim vegetation within the previously disturbed area. Disturbing revegetated areas for production or workover operations will be allowed. If there is significant disturbance and loss of vegetation, the area will need to be revegetated. Communicate with the appropriate BLM office for any exceptions/exemptions if needed.

All disturbed areas after they have been satisfactorily prepared need to be reseeded with the seed mixture provided below.

Upon completion of interim reclamation, the operator shall submit a Sundry Notices and Reports on Wells, Subsequent Report of Reclamation (Form 3160-5).

IX. FINAL ABANDONMENT & RECLAMATION

At final abandonment, well locations, production facilities, and access roads must undergo "final" reclamation so that the character and productivity of the land are restored.

Earthwork for final reclamation must be completed within six (6) months of well plugging. All pads, pits, facility locations and roads must be reclaimed to a satisfactory revegetated, safe, and stable condition, unless an agreement is made with the landowner or BLM to keep the road and/or pad intact.

After all disturbed areas have been satisfactorily prepared, these areas need to be revegetated with the seed mixture provided below. Seeding should be accomplished by drilling on the contour whenever practical or by other approved methods. Seeding may need to be repeated until revegetation is successful, as determined by the BLM.

Operators shall contact a BLM surface protection specialist prior to surface abandonment operations for site specific objectives (Jim Amos: 575-234-5909).

Seed Mixture 2, for Sandy Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law (s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

<u>Species</u>	<u>lb/acre</u>
Sand dropseed (<i>Sporobolus cryptandrus</i>)	1.0
Sand love grass (<i>Eragrostis trichodes</i>)	1.0
Plains bristlegrass (<i>Setaria macrostachya</i>)	2.0

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

Seed Mixture 3, for Shallow Sites

The holder shall seed all disturbed areas with the seed mixture listed below. The seed mixture shall be planted in the amounts specified in pounds of pure live seed (PLS)* per acre. There shall be no primary or secondary noxious weeds in the seed mixture. Seed will be tested and the viability testing of seed will be done in accordance with State law(s) and within nine (9) months prior to purchase. Commercial seed will be either certified or registered seed. The seed container will be tagged in accordance with State law(s) and available for inspection by the authorized officer.

Seed will be planted using a drill equipped with a depth regulator to ensure proper depth of planting where drilling is possible. The seed mixture will be evenly and uniformly planted over the disturbed area (smaller/heavier seeds have a tendency to drop the bottom of the drill and are planted first). The holder shall take appropriate measures to ensure this does not occur. Where drilling is not possible, seed will be broadcast and the area shall be raked or chained to cover the seed. When broadcasting the seed, the pounds per acre are to be doubled. The seeding will be repeated until a satisfactory stand is established as determined by the authorized officer. Evaluation of growth will not be made before completion of at least one full growing season after seeding.

Species to be planted in pounds of pure live seed* per acre:

<u>Species</u>	<u>lb/acre</u>
Plains Bristlegrass (<i>Setaria macrostachya</i>)	1.0
Green Sprangletop (<i>Leptochloa dubia</i>)	2.0
Sideoats Grama (<i>Bouteloua curtipendula</i>)	5.0

*Pounds of pure live seed:

Pounds of seed x percent purity x percent germination = pounds pure live seed

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex Energy Company
LEASE NO.:	NMNM138848
LOCATION:	Section 19, T.26 S., R.30 E., NMPM
COUNTY:	Eddy County, New Mexico ▼

WELL NAME & NO.:	Tar Heel 19-18-7 Fed Com 5H
SURFACE HOLE FOOTAGE:	700'/S & 1556'/W
BOTTOM HOLE FOOTAGE:	2561'/S & 1680'/W
ATS/API ID:	ATS-23-975
APD ID:	10400090858
Sundry ID:	N/a

COA

H2S	No ▼		
Potash	None ▼		
Cave/Karst Potential	High ▼		
Cave/Karst Potential	<input type="checkbox"/> Critical		
Variance	<input checked="" type="checkbox"/> None	<input checked="" type="checkbox"/> Flex Hose	<input checked="" type="checkbox"/> Other
Wellhead	Conventional and Multibowl ▼		
Other	<input type="checkbox"/> 4 String	Capitan Reef None ▼	<input type="checkbox"/> WIPP
Other	Pilot Hole None ▼	<input type="checkbox"/> Open Annulus	
Cementing	Contingency Squeeze None ▼	Echo-Meter None ▼	Primary Cement Squeeze None ▼
Special Requirements	<input type="checkbox"/> Water Disposal/Injection	<input checked="" type="checkbox"/> COM	<input type="checkbox"/> Unit
Special Requirements	<input type="checkbox"/> Batch Sundry		
Special Requirements Variance	<input type="checkbox"/> Break Testing	<input type="checkbox"/> Offline Cementing	<input type="checkbox"/> Casing Clearance

A. HYDROGEN SULFIDE

Hydrogen Sulfide (H₂S) monitors shall be installed prior to drilling out the surface shoe. If H₂S is detected in concentrations greater than 100 ppm, the Hydrogen Sulfide area shall meet **43 CFR part 3170 Subpart 3176**, which includes equipment and personnel/public protection items. If Hydrogen Sulfide is encountered, provide measured values and formations to the BLM.

B. CASING

1. The **13-3/8 inch** surface casing shall be set at approximately **1100 feet** (a minimum of **70 feet (Eddy County)** into the Rustler Anhydrite and above the salt when present, and below usable fresh water) and cemented to the surface. The surface hole shall be **17 1/2 inch** in diameter.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8 hours** or 500 pounds compressive strength, whichever is greater. (This is to include the lead cement)
 - c. Wait on cement (WOC) time for a remedial job will be a minimum of 4 hours after bringing cement to surface or 500 pounds compressive strength, whichever is greater.
 - d. If cement falls back, remedial cementing will be done prior to drilling out that string.
2. The minimum required fill of cement behind the **9-5/8 inch** intermediate casing is:
 - Cement to surface. If cement does not circulate see B.1.a, c-d above.
Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
 - ❖ In High Cave/Karst Areas if cement does not circulate to surface on the first two casing strings, the cement on the 3rd casing string must come to surface.
3. The minimum required fill of cement behind the **7 inch** production casing is:
 - Cement should tie-back at least **200 feet** into previous casing string. Operator shall provide method of verification.
Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.

4. The minimum required fill of cement behind the 4-1/2 inch production liner is:
 - Cement should tie-back **100 feet** into the previous casing. Operator shall provide method of verification.
Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst or potash.
Cement excess is less than 25%, more cement is required if washout occurs. Adjust cement volume and excess based on a fluid caliper or similar method that reflects the as-drilled size of the wellbore.

C. PRESSURE CONTROL

1.

Option 1:

- a. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the surface casing shoe shall be **2000 (2M) psi**.
- b. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 9-5/8 inch intermediate casing shoe shall be **5000 (5M) psi**.
- c. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the 7 inch intermediate 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.**

Option 2:

Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the 13-3/8 inch 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 43 CFR 3172.6(b)(9) 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.
- The operator will submit an as-drilled survey well plat of the well completion, but are not limited to, those specified in **43 CFR part 3170 Subpart 3171**
- 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

EMAIL or call the Carlsbad Field Office, 620 East Greene St., Carlsbad, NM 88220,

BLM_NM_CFO_DrillingNotifications@BLM.GOV

(575) 361-2822

1. Unless the production casing has been run and cemented or the well has been properly plugged, the drilling rig shall not be removed from over the hole without prior approval.
 - a. In the event the operator has proposed to drill multiple wells utilizing a skid/walking rig. Operator shall secure the wellbore on the current well, after installing and testing the wellhead, by installing a blind flange of like pressure rating to the wellhead and a pressure gauge that can be monitored while drilling is performed on the other well(s).
 - b. When the operator proposes to set surface casing with Spudder Rig
 - Notify the BLM when moving in and removing the Spudder Rig.
 - Notify the BLM when moving in the 2nd Rig. Rig to be moved in within 90 days of notification that Spudder Rig has left the location.
 - BOP/BOPE test to be conducted per **43 CFR part 3170 Subpart 3172** 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 when present.

A. CASING

1. Changes to the approved APD casing program need prior approval if the items substituted are of lesser grade or different casing size or are Non-API. The Operator can exchange the components of the proposal with that of superior strength (i.e. changing from J-55 to N-80, or from 36# to 40#). Changes to the approved cement program need prior approval if the altered cement plan has less volume or strength or if the changes are substantial (i.e. Multistage tool, ECP, etc.). The initial wellhead installed on the well will remain on the well with spools used as needed.
2. Wait on cement (WOC) for Potash Areas: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi for all cement blends, 2) until cement has been in place at least 24 hours. WOC time will be recorded in the driller's log. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
3. Wait on cement (WOC) for Water Basin: After cementing but before commencing any tests, the casing string shall stand cemented under pressure until both of the following conditions have been met: 1) cement reaches a minimum compressive strength of 500 psi at the shoe, 2) until cement has been in place at least 8 hours. WOC time will be recorded in the driller's log. See individual casing strings for details regarding lead cement slurry requirements. The casing integrity test can be done (prior to the cement setting up) immediately after bumping the plug.
4. Provide compressive strengths including hours to reach required 500 pounds compressive strength prior to cementing each casing string. Have well specific cement details onsite prior to pumping the cement for each casing string.
5. No pea gravel permitted for remedial or fall back remedial without prior authorization from the BLM engineer.
6. On that portion of any well approved for a 5M BOPE system or greater, a pressure integrity test of each casing shoe shall be performed. Formation at the shoe shall be tested to a minimum of the mud weight equivalent anticipated to control the formation pressure to the next casing depth or at total depth of the well. This test shall be performed before drilling more than 20 feet of new hole.
7. If hardband drill pipe is rotated inside casing, returns will be monitored for metal. If metal is found in samples, drill pipe will be pulled and rubber protectors which have a larger diameter than the tool joints of the drill pipe will be installed prior to continuing drilling operations.
8. Whenever a casing string is cemented in the R-111-P potash area, the NMOCD requirements shall be followed.

B. PRESSURE CONTROL

1. All blowout preventer (BOP) and related equipment (BOPE) shall comply with well control requirements as described in **43 CFR part 3170 Subpart 3172 and API STD 53 Sec. 5.3**.
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 43 CFR 3172.6(b)(9) 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 cement), 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 cement plug. The BOPE test can be initiated after bumping the cement plug with the casing valve open. (only applies to single stage cement jobs, prior to the cement setting up.)
- c. The tests shall be done by an independent service company utilizing a test plug not a cup or J-packer and can be initiated immediately with the casing valve open. The operator also has the option of utilizing an independent tester to test without a plug (i.e. against the casing) pursuant to **43 CFR part 3170 Subpart 3172** with the pressure not to exceed 70% of the burst rating for the casing. Any test against the casing must meet the WOC time for water basin (8 hours) or potash (24 hours) or 500 pounds compressive strength, whichever is greater, prior to initiating the test (see casing segment as lead cement may be critical item).
- d. The test shall be run on a 5000 psi chart for a 2-3M BOP/BOP, on a 10000 psi chart for a 5M BOP/BOPE and on a 15000 psi chart for a 10M BOP/BOPE. If a linear chart is used, it shall be a one hour chart. A circular chart shall have a maximum 2 hour clock. If a twelve hour or twenty-four hour chart is used, tester shall make a notation that it is run with a two hour clock.
- e. The results of the test shall be reported to the appropriate BLM office.
- f. All tests are required to be recorded on a calibrated test chart. A copy of the BOP/BOPE test chart and a copy of independent service company test will be submitted to the appropriate BLM office.
- g. The BOP/BOPE test shall include a low pressure test from 250 to 300 psi. The test will be held for a minimum of 10 minutes if test is done with a test plug and 30 minutes without a test plug. This test shall be performed prior to the test at full stack pressure.
- h. BOP/BOPE must be tested by an independent service company within 500 feet of the top of the Wolfcamp formation if the time between the setting of the intermediate casing and reaching this depth exceeds 20 days. This test does not exclude the test prior to drilling out the casing shoe as per **43 CFR part 3170 Subpart 3172**.

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.

Long Vo (LVO) 3/29/2024

Coterra: H2S Plan



H2S Drilling Operations Plan

Training

All company and contract personnel admitted on location must be trained by a qualified H2S safety instructor to do the following:

1. Characteristics of H2S
2. Physical effects and hazards
3. Principle and operation of H2S detectors, warning system, and briefing areas
4. Evacuation procedure, routes and first aid
5. Proper use of safety equipment & life support systems
6. Essential personnel meeting Medical Evaluation criteria will receive additional training on the proper use of 30 minute pressure demand air packs.

H2S Detection and Alarm Systems

1. H2S sensors/detectors to be located on the drilling rig floor, in the base of the sub structure/cellar area, on the mud pits in the shale shaker area. Additional H2S detectors may be placed as deemed necessary
2. An audio alarm system will be installed on the derrick floor and in the top doghouse

Windsock and/or wind streamers

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

Condition Flags & Signs

1. Warning signs on access road to location
2. Flags are to be displayed on sign at the entrance to location. Green flag indicates normal safe condition. Yellow flag indicates potential pressure and danger. Red flag indicates

Coterra: H2S Plan

danger (H2S present in dangerous concentration). Only H2S trained and certified personnel admitted to location.

Well Control Equipment

1. See the pressure control section of this submission.

Communication

1. While working under masks, chalkboards will be used for communication
2. Hand signals will be used where chalk board is inappropriate.
3. Two way radio will be used to communicate off location in case emergency help is required. In most cases, cellular telephones will be available at most drilling foreman's trailer or living quarters.

Drillstem Testing

1. No DSTs or cores are planned at this time
2. Drilling contractor supervisor will be required to be familiar with the effects that H2S has on tubular goods and other mechanical equipment.
3. If H2S is encountered, mud system will be altered if necessary to maintain control of the well. A mud gas separator will be brought into service along with H2S scavenger if necessary.

Coterra: H2S Plan

H2S Contingency Plan

Emergency Procedures

In the event of an H2S release, the first responder(s) must:

1. Isolate the area and prevent entry by other persons into the 100 PPM ROE.
2. Evacuate any public places encompassed by the 100 PPM ROE.
3. Be equipped with H2S monitors and air packs in order to control the release.
4. Use the buddy system
5. Take precautions to avoid personal injury during this operation
6. Contact operator and/or local officials to aid in operation. See list of emergency contacts attached.
7. Have received training the detection of H2S, measures for protection against the gas, and equipment used for protection and emergency response

Ignition of the Gas Source

1. Should control of the well be considered lost and ignition considered, take care to protect against exposure to Sulfur Dioxide (SO₂). Intentional ignition must be coordinated with the NMOCD and local officials. Additionally, the NM State Police may become involved. NM State Police shall be the Incident Command on scene of any major release. Take care to protect downwind whenever there is an ignition of the gas

Contacting Authorities

1. Coterra 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.
2. 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. Coterra's response must be in coordination with the State of New Mexico's "Hazardous Materials Emergency Response Plan" (HMER).

Coterra: H2S Plan

Emergency Contacts

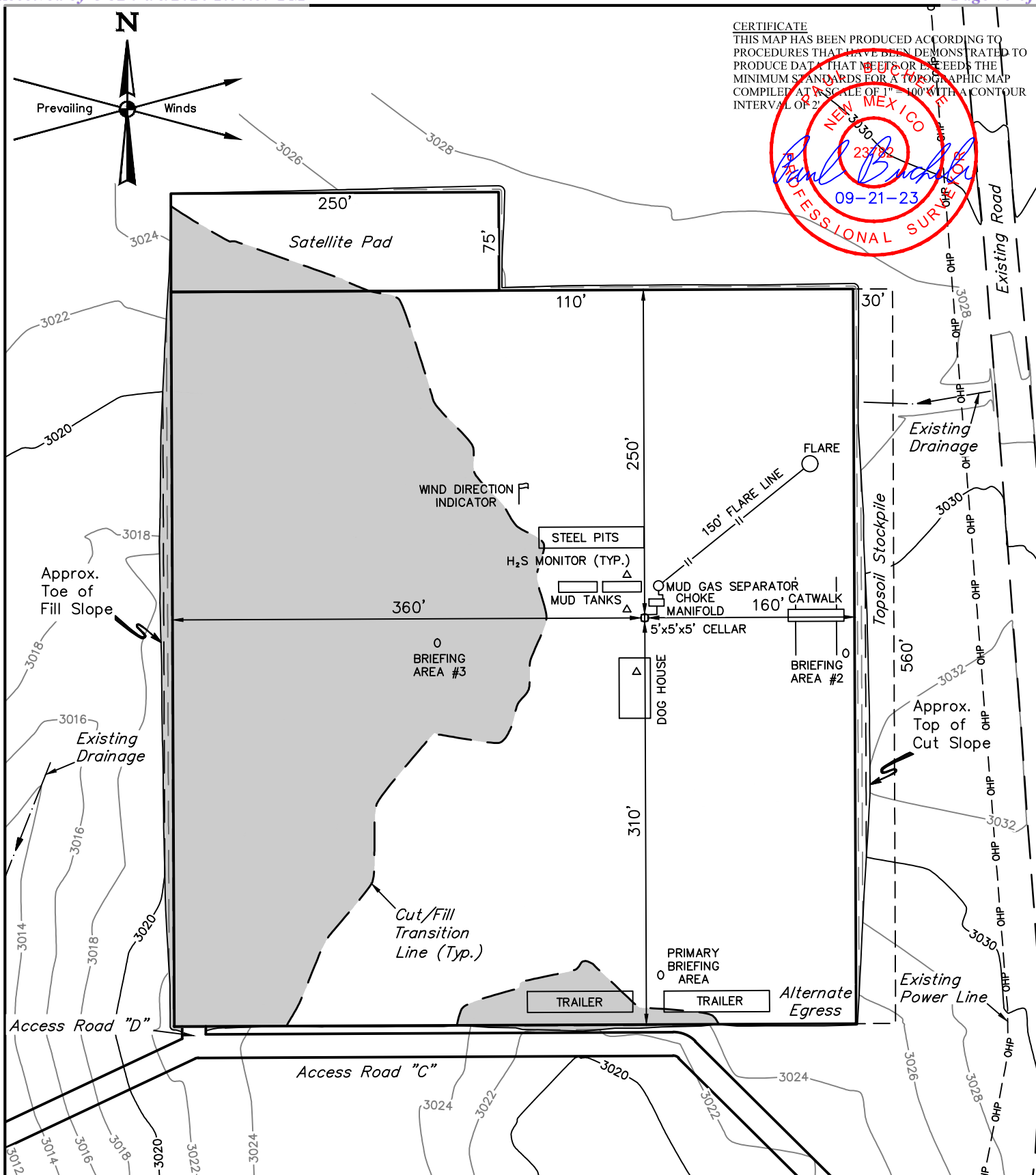
Coterra Energy

Charlie Pritchard: Drilling Operations Manager: 432 – 238 – 7084

Darrell Kelly: Vice President EHS: 281 – 589 – 5795

Third Party

PERMIAN REGION CONTACT NUMBERS					
CALL 911					
Air Ambulance Services					
	Reeves County Medical - Pecos, TX	432-447-3551			
	Aero Care - Midland, TX	800-627-2376			
	Tri State Care Flight - Artesia, NM	800-800-0900			
	Air Methods - Hobbs, NM	800-242-6199			
Fire / Police / Medical Care					
Sheriff's Office		Fire Departments		Hospital / Medical Care Facilities	
Andrews County	432-523-5545	Andrews	432-523-3111	Permian Regional Med.	432-523-2200
Reagan County	325-884-2929	Big Lake	325-884-3650	Reagan Memorial Hosp.	325-884-2561
Howard County	432-264-2244	Big Springs	432-264-2303	Scenic Mountain Med Ctr	432-263-1211
Terry County	806-637-2212	Brownfield	806-637-6633		
Crane County	432-558-3571	Crane	432-558-2361	Crane Memorial Hosp.	432-558-3555
Val Verde County	830-774-7513	Del Rio	830-774-8648	Val Verde Regional Med.	830-775-8566
		Denver City	806-592-3516	Yoakum County Hospital	806-592-2121
Pecos County	432-336-3521	Ft Stockton	432-336-8525		
Glasscock County	432-354-2361	Garden City			
Winkler County	432-586-3461	Kernit	432-586-2577	Winkler County Memorial	432-586-5864
		McCamey	432-652-8232	McCamey Hospital	432-652-8626
Loving County	432-377-2411	Mentone			
Irion County	325-835-2551	Mertzon			
Ward County	432-943-6703	Monahans	432-943-2211	Ward Memorial Hospital	432-943-2511
Ector County	432-335-3050	Odessa	432-335-4650	Odessa Regional Hosp.	432-582-8340
Crocket County	325-392-2661	Ozona	325-392-2626		
Reeves County	432-445-4901	Pecos	505-757-6511	Reeves County Hospital	432-447-3551
Yoakum County	806-456-2377	Plains	806-456-2288		
Garza County	806-495-3595	Post			
Upton County	432-693-2422	Rankin			
Coke County	915-453-2717	Robert Lee			
		Roscoe	325-766-3931		
Hockley County	806-894-3126	Levelland	806-894-3155	Covenant Health	806-894-4963
Tom Green County	325-655-8111	San Angelo	325-657-4355	San Angelo Comm. Med.	325-949-9511
Gaines County	432-758-9871	Seminole	432-758-3621	Memorial Hospital	432-758-5811
Terrell County	432-345-2525	Sanderson			
Scurry County	325-573-3551	Snyder	325-573-3546	DM Cogdell Memorial	325-573-6374
Sterling County	325-378-4771	Sterling City			
Nolan County	325-235-5471	Sweetwater	325-235-8130	Rolling Plains Memorial	325-235-1701
Culberson County	432-283-2060	Van Horn		Culberson Hospital	432-283-2760
New Mexico					
Lea County	505-396-3611	Knowles	505-392-7469	Lea Reg Med Ctr	575-492-5000
Eddy County	575-887-7551	Carlsbad	575-885-3125	Carlsbad Medical	575-887-4100
		Artesia	575-746-5050	Artesia Hospital	575-748-3333
Roosevelt County	575-356-4408				
Chaves County	575-624-7590				
Ground Ambulance Services					
	Reeves County Medical		Pecos, TX	432-447-3551	

**CIMAREX ENERGY CO.**

TAR HEEL 19-18-7 FED COM 5H
700' FSL 1556' FWL
SE 1/4 SW 1/4, SECTION 19, T26S, R30E, N.M.P.M.
EDDY COUNTY, NEW MEXICO

SURVEYED BY	I.R., M.P.	11-20-18	SCALE
DRAWN BY	Z.L.	09-21-23	1" = 100'
TYPICAL RIG LAYOUT			EXHIBIT K



UELS, LLC
 Corporate Office * 85 South 200 East
 Vernal, UT 84078 * (435) 789-1017

43 CRF 4170 Surface Use Plan of Operations

Cimarex Energy Company of CO.
 Tar Heel 19-18-7 Federal Com E2W2 Pad
 Section 19, T26S, R30E, NMNM138848
 Eddy County, New Mexico

Tar Heel 19-18-7 Federal Com 5H	700' FSL/1556' FWL
Tar Heel 19-18-7 Federal Com 21H	700' FSL/1476' FWL
Tar Heel 19-18-7 Federal Com 22H	700' FSL/1496' FWL
Tar Heel 19-18-7 Federal Com 23H	700' FSL/1516' FWL
Tar Heel 19-18-7 Federal Com 24H	700' FSL/1536' FWL

This surface use plan of operations provides site specific information for the above referenced wells located within the proposed "Tar Heels 19-18-7 Federal Com E2W2 Project".

1. Existing Roads, directions to location: See Exhibit C

- a. **Existing Road Purpose:** Existing roads providing access to the well site are shown on Exhibit B and D. Existing roads will be maintained and kept in good repair during all drilling and completion operations associated with these wells.
- b. **BLM ROW Approved Serial #:** NM-143208

2. New Roads: Coterra/Cimarex will utilize the existing roads

3. Location of Wells: See Exhibit E. 1 Mile Radius Map.

4. Location of Production Facilities: See Exhibit. J Location Layout.

- a. **Production Facilities:**
 - Coterra/Cimarex will utilize existing facilities and infrastructure.

5. Location and Types of Water Supply: See Water Haul Map.

- a. **Source & Volume:**
 - **Source Type:** Commercial Water – NGL CTP – Treated Produced Water.
 - **Use:** Surface Casing and Intermediate/Production Casing.
 - **Location:** Latitude: 32.3070805, Longitude: -103.6602027, SW/NE, Section 15, T23S, R32E.
 - **Source Land Ownership:** Federal
 - **Source Transportation Land Ownership:** Federal
 - **Permit Type:** Water Right
 - **Transportation Method:** Pipeline/Trucking
 - **Volume:** 150,000 BBLS

6. Construction Materials: No new construction will occur.

7. Methods of Handling Waste

- a. **Reserve Pits (if necessary):** No Reserve Pit Planned.
- b. **Cuttings stored on location:** Contents (drill cuttings, mud, salts, and other chemicals) of the mud tanks will be hauled to state approved disposal.
- c. **Garbage:** All trash will be placed in a portable trash cage. It will be hauled to the Lea County landfill. There will be no trash burning.
 - **Waste content description:** Onsite Refuse/trash
 - **Amount:** 32,500 pounds
 - **Disposal frequency:** Weekly
 - **Safe Containment description:** Garbage, trash, and other waste materials will be collected in a portable, self-contained, fully enclosed trash cage during operations. Trash will not be burned on location. All debris and other waste material not contained in the trash cage will be cleaned up and removed from the location immediately after removal of the drilling rig.
 - **Waste disposal type:** Haul to commercial facility
 - **Disposal location ownership:** Commercial
 - **Disposal location description:** All trash and waste material will be hauled to the Lea County Landfill.
- d. **Sewage:** Human waste will be disposed of in chemical toilets and hauled to the Hobbs wastewater treatment plant.
 - **Waste content description:** Onsite human waste
 - **Amount:** 300 gallons
 - **Disposal frequency:** Weekly
 - **Safe Containment description:** A chemical porta-toilet will be furnished with the drilling rig.
 - **Waste disposal type:** Haul to commercial facility
 - **Disposal location ownership:** Commercial
 - **Disposal location description:** The chemical porta-toilet wastes will be hauled to state approved disposal facility for treatment.
- e. **Produced Water:**
 - **Waste content description:** After first production, produced water will be confined to storage tanks on location and then disposed of in an approved location or recycled on location for future use.
 - **Amount:** 400 BBLS
 - **Disposal frequency:** Daily
 - **Safe Containment description:** Flowline to an approved disposal location
 - **Waste disposal type:** Off-lease injection
 - **Disposal location ownership:** Federal
 - **Disposal location description:** Federal

8. Ancillary Facilities

No camps, airstrips or other facilities will be necessary during drilling of this well.

9. Well Site Layout: See Exhibits J, K, L, Archeological Survey Boundary Plat

- a. The location showing access roads onto the pad and orientation of the rig with respect to the pad and other facilities are shown on Typical Rig Layout, Exhibit K for each well.

10. Plans for Final Surface Reclamation

- a. **Final Reclamation:** Once the last well is plugged, then the pad, CTB, and new road will be reclaimed within 6 months of plugging. Disturbed areas will be recontoured to match pre- construction grades. Soil and brush will be evenly spread over disturbed areas and harrowed on the contour. Disturbed areas will be seeded in accordance with BLM requirements. Road will be blocked. Noxious weeds will be controlled.
- b. **Drainage Systems:**
 - **Drainage/Erosion control construction:** Pad construction will include drainage control by rerouting drainages around the pad and installing culverts or low water crossings where needed. Erosion control techniques will be used where needed to minimize wind and water erosion and sedimentation prior to vegetation establishment.
 - **Drainage/Erosion control reclamation:** Area-wide drainage will be stabilized and restored so that surface runoff flows and gradients are returned to the condition present prior to development. Drainage basins will have similar features found in nearby, properly functioning basins.
- c. **Existing Vegetation:**
 - **Well/Road/Pipeline/Other (Powerline):** Vegetation types noted during onsite were shinnery oak, yucca, mesquite, and big blue stem.
- d. **Reconstruction method:** Areas to be reclaimed will be graded to approximate original contours and to blend in with adjacent topography. Graded surfaces will be suitable for the replacement of a uniform depth of topsoil, will promote cohesion between subsoil and topsoil layers, will reduce wind erosion, and will facilitate moisture capture. Specialized grading techniques may be applied, if warranted, and could include slope rounding, stair-step grading/terracing, and/or contour furrowing.
- e. **Topsoil redistribution:** After compaction relief (ripping and discing) all topsoil will be redistributed on the reclaimed area to a pre-disturbance depth. Topsoil is typically redistributed with a scraper or front-end loader which leaves a friable surface to work with. Waterbars and erosion control devices will be installed on reclaimed areas, as necessary, to control topsoil erosion.
- f. **Soil Treatments:** As needed.
- g. **Seed Management (for each seed type, or Seed Reclamation Attachment):**
 - **Seed type:** The seed mixture and seeding rates will be submitted to the BLM in a subsequent report sundry notice following reclamation operations. Seed mixtures will be certified weed-free.
 - **Seed use location:** Well pad, access road, pipeline right-of-way, powerline right-of-way

- **Proposed seeding season:** Once the topsoil is replaced, seeding will occur generally between August 15 and ground freeze-up. If fall seeding is not feasible and erosion control is needed, seeding may occur between spring thaw and May 15. Spring seeding will be an exception, not the rule. The site will be monitored as outlined in this plan. Seeding will not be applied to wet or frozen ground. In this circumstance, seeding will take place when the ground dries or thaws to the point where soils are friable.

h. Revegetation Operator Contact:

- **Name:** Laci Luig
- **Phone #:** 432-425-0434
- **Email:** laci.luig@coterra.com
- **Seed method:** Broadcast over rough surface.

i. Existing invasive species: Yes

- **Existing invasive species treatment description:** African Rue is present in proximity to well pad, access road, pipeline right-of-way, powerline right-of-way.
- **Weed treatment plan:** Operator will be responsible for noxious and invasive weed control from all project activities for the life of the project. If use of herbicides is deemed necessary, a Pesticide Use Proposal will be submitted for approval to the BLM. Herbicides will be used only in the season or growth stage during which they are most effective. Herbicides will be applied only by certified personnel using approved precautionary and application procedures in compliance with all applicable federal, state, and local regulations. Herbicides will not be used within 100 feet of open water or during extremely windy conditions. Mowing may be considered as an alternative to herbicide applications. Mowing would be implemented prior to seed head establishment or bloom. A weed control program will be applied to all existing and proposed access roads, pipeline ROWs, and well pads. Weed control involves annual treatments that are monitored and continued until desirable vegetation out-competes invasive or noxious weeds.
- **Monitoring:** Monitoring will be done in accordance with the BLM Reclamation Guidelines.
- **Success standard:** Success Standards will be in accordance with the BLM Reclamation Guidelines.

- j. Pit Closure Description:** No pit closure will be necessary. The referenced wells will be drilled utilizing a closed loop system. The closed loop system will be installed in a manner that will prevent leaks, breaks, or discharge. Drill cuttings will be contained in designated cuttings area. Upon completion of drilling operations, the cuttings will be mixed on location and dried; then spread on location.

11. Surface Ownership

- **Well site**
 - a. **Surface owner:** Bureau of Land Management
- **Roads**
 - a. **Surface owner:** Bureau of Land Management

- **Pipeline**
 - a. **Surface owner:** Bureau of Land Management

12. Additional Information

- a. **Location Construction:** Coterra/Cimarex shall notify the BLM AO 48 hours prior to construction of the location and access roads.
- b. **Location Completion:** Coterra/Cimarex shall notify the BLM AO prior to moving the drilling rig on location
- c. **Approved APD:** A true and complete copy of the approved Application for Permit to Drill will be located on site during all drilling & completion operations.

13. Additional Information

Onsite Information: An onsite inspection was conducted for the Pad on 4/27/2023. Weather conditions were warm and sunny at the time of the onsite. In attendance at the inspection were the following individuals:

Attendee	Organization/Affiliate
Phillip Levasseur	Coterra
Todd Miller	Coterra
Caroline Kaufman (NRS)	BLM
Michelle Gross (Arch)	BLM

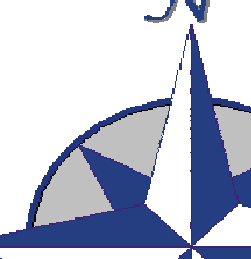
Permitting Matters

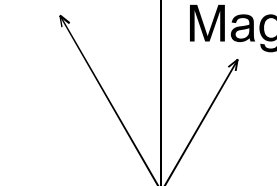
Operator: Cimarex Energy Co.
Address: 6001 Deauville Blvd., Suite 300N
City, State, Zip: Midland, TX 79706
Name: Phillip Levasseur
Title: Regulatory Manager
Phone: 432-620-1974
Email: phillip.levasseur@coterra.com

Drilling, Completions Operational Matters

Operator: Cimarex Energy Co.
Address: 6001 Deauville Blvd., Suite 300N
City, State, Zip: Midland, TX 79706
Name: Grant Muncrief
Title: Drilling and Completions Manager
Phone: 432-570-3607
Email: grant.muncrief@coterra.com







Grid North

Tot Corr (M->G 6.142°)

Mag Dec (6.359°)

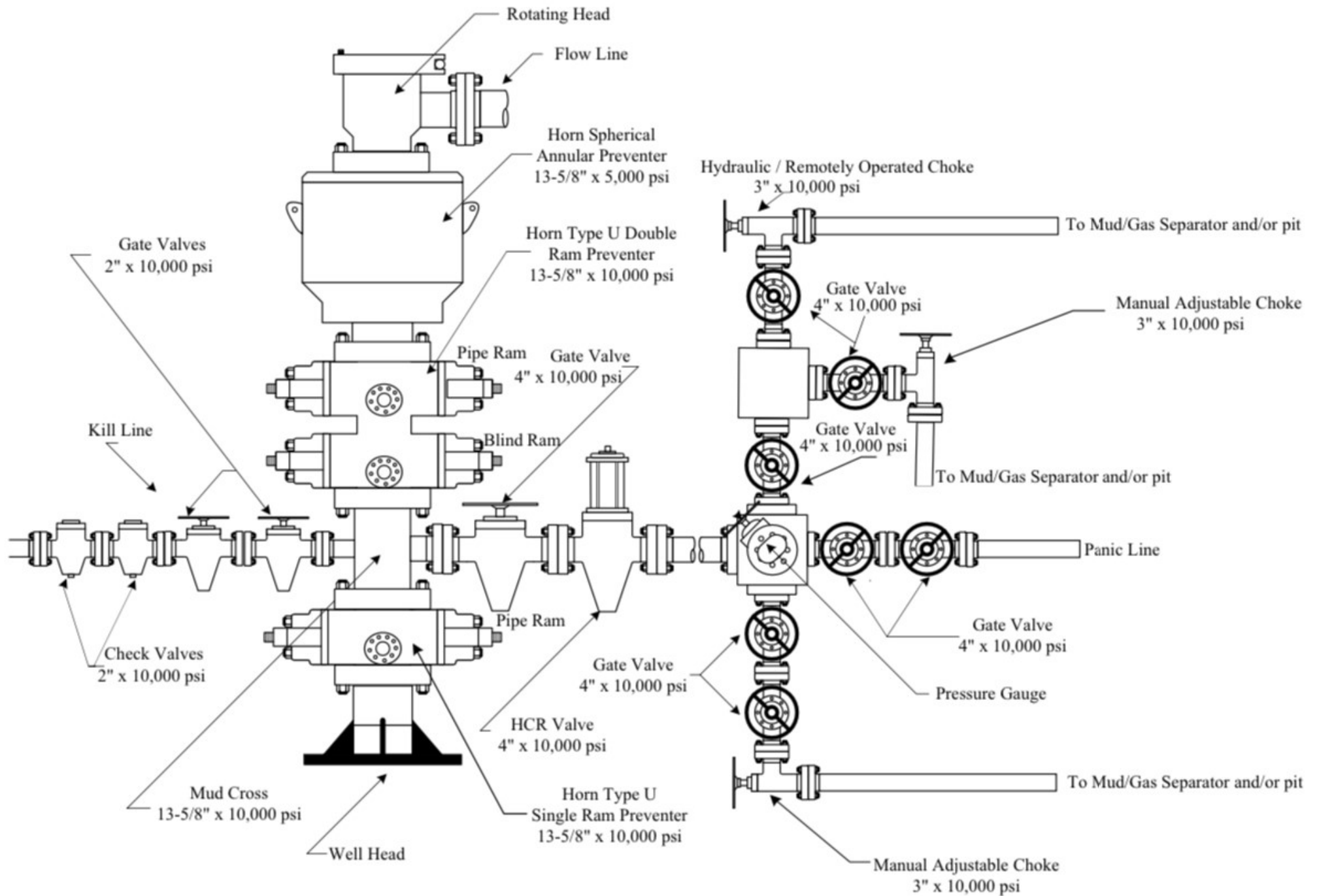
Grid Conv (0.217°)

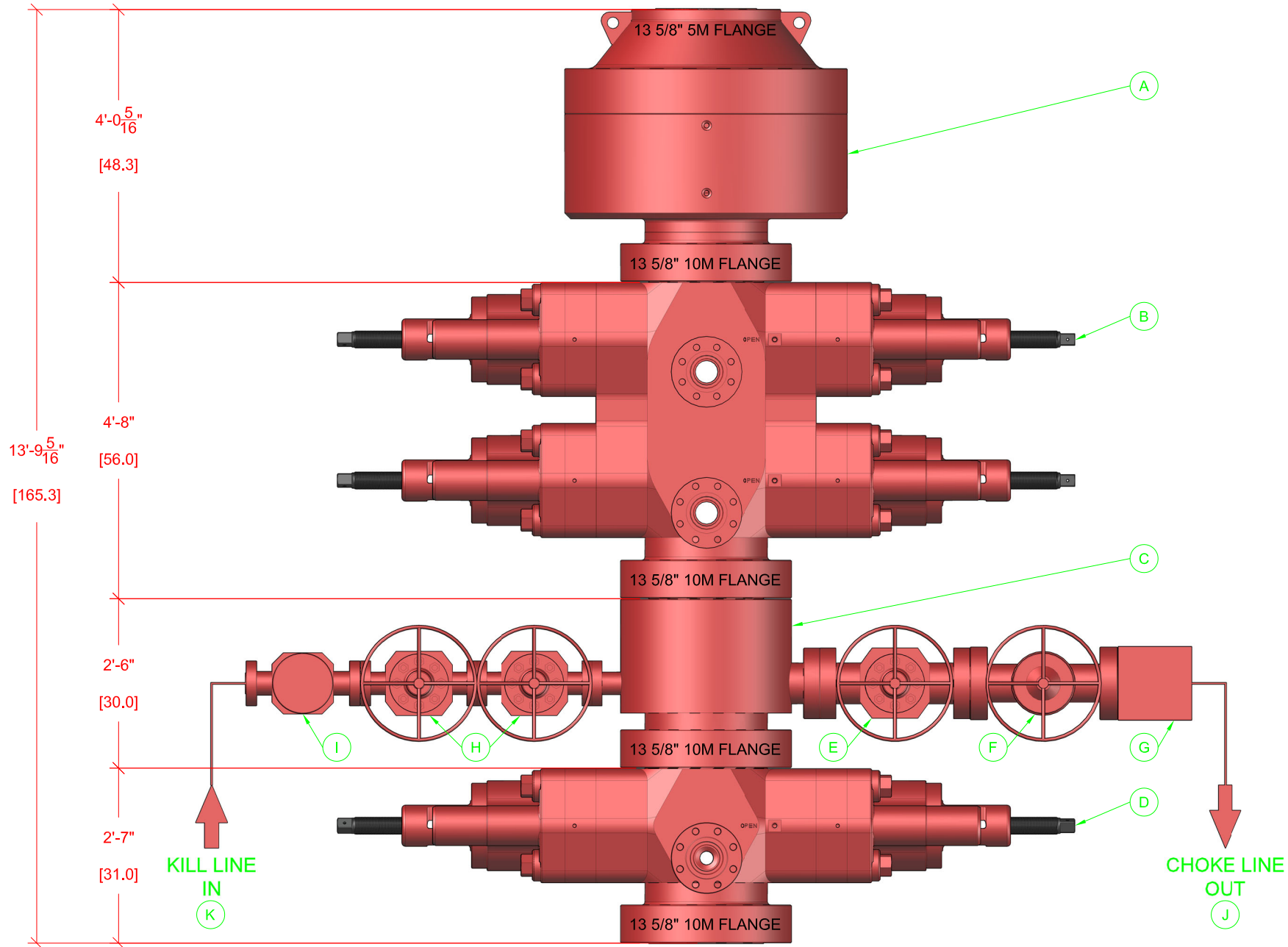
CONTROLLED

Plan ref	Cottara Tar Heel 19-18-7 Fed Com SH Rev2 kVc 22Dec23		
Drawing ref			
Project number	of 3		
Date	21-Dec-2023		

1	Client	
2	Client	
3	Office	
4	Office	

Project number
for





BOP EQUIPMENT INFORMATION						
DESCRIPTION	MODEL	QTY	ITEM	DESCRIPTION	MODEL	QTY
ANNULAR BOP	13 5/8" 5M	1	G	STUDDED BLOCK	4 1/2" 10M	1
DOUBLE RAM BOP	13 5/8" 10M TYPE-U	1	H	GATE VALVE	2 1/2" 10M FC MANUAL	2
MUD CROSS	13 5/8" 10M	1	I	CHECK VALVE	2 1/2" 10M	1
SINGLE RAM BOP	13 5/8" 10M TYPE-U	1	J	CHOKER HOSE	4 1/2" 10M	1
GATE VALVE	4 1/2" 10M FC MANUAL	1	K	KILL HOSE	2 1/2" 10M	1
HCR VALVE	4 1/2" 10M HCR	1	L			

THIS DRAWING IS OWNED BY AND CONTAINS PROPRIETARY INFORMATION OF CACTUS DRILLING COMPANY, L.L.C. IT IS CONDITIONALLY LOANED AND IS TO BE RETURNED UPON COMPLETION OF WORK OR UPON EARLIER REQUEST. THE BORROWER BY RECEIVING IT HAS AGREED NOT TO REPRODUCE NOR TO COPY IT IN WHOLE OR IN PART NOR TO FURNISH INFORMATION FROM IT TO OTHERS NOR TO MAKE ANY USE OF IT OR THE INFORMATION CONTAINED THEREIN EXCEPT FOR OR UNDER SPECIFIC LICENSE FROM CACTUS DRILLING COMPANY, L.L.C.				TOLERANCE UNLESS OTHERWISE SPECIFIED DIMENSIONS IN INCHES		
				DECIMAL	DIMENSION	CONCENTRICITY
				X.X	±.1	.1 F.J.R.
				X.XX	±.06	.06 F.J.R.
				X.XXX	±.010	.010 F.J.R.
				ANGLES ± .5 DEGREES		
SYM	DATE	REVISION	BY	ACAD FILE: CAC148-A-005-00-RO		

CACTUS Drilling Co., L.L.C. Oklahoma City, OK, U.S.A.	
Tel: 405-577-5347 Fax: 405-577-9306	
FILE: R-148_BOP.dwg	
DWG BY: IJA	9/10/2021
CHK BY:	
APP BY:	
SCALE: 1:25	
SHEET: 1/1	
TITLE: RIG 148 BOP STACK-UP	
SIZE: A CAC148-A005	

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 331090

CONDITIONS

Operator: CIMAREX ENERGY CO. 6001 Deauville Blvd Midland, TX 79706	OGRID:
	215099
	Action Number: 331090
	Action Type: [C-101] BLM - Federal/Indian Land Lease (Form 3160-3)

CONDITIONS

Created By	Condition	Condition Date
ward.rikala	Notify OCD 24 hours prior to casing & cement	4/12/2024
ward.rikala	Will require a File As Drilled C-102 and a Directional Survey with the C-104	4/12/2024
ward.rikala	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	4/12/2024
ward.rikala	Cement is required to circulate on both surface and intermediate1 strings of casing	4/12/2024
ward.rikala	If cement does not circulate on any string, a CBL is required for that string of casing	4/12/2024
ward.rikala	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	4/12/2024