

Well Name: RED HILLS UNIT	Well Location: T25S / R33E / SEC 33 / NENW / 32.092844 / -103.579122	County or Parish/State: LEA / NM
Well Number: 47H	Type of Well: OIL WELL	Allottee or Tribe Name:
Lease Number: NMNM0024368A, NMNM024368A	Unit or CA Name:	Unit or CA Number:
US Well Number: 3002548454	Well Status: Approved Application for Permit to Drill	Operator: CIMAREX ENERGY COMPANY OF COLORADO

Notice of Intent

Sundry ID: 2739375

Type of Submission: Notice of Intent	Type of Action: APD Change
Date Sundry Submitted: 07/05/2023	Time Sundry Submitted: 01:21
Date proposed operation will begin: 01/01/2024	

Procedure Description: Please see the attached sundry language and supporting documents regarding requested APD changes on the Red Hills 47H approved APD.

NOI Attachments

Procedure Description

RED_HILLS_47H_SUNDRY_LANGUAGE_AND_ATTACHMENTS_REV2_20230706133811.pdf

Conditions of Approval

Additional

RedHillsUnit47HCOA_20231114152329.pdf

Received by OCD: 12/6/2023 8:46:10 AM

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Operator

I certify that the foregoing is true and correct. 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. Electronic submission of Sundry Notices through this system satisfies regulations requiring a

Operator Electronic Signature: AMY DOEBELE

Signed on: JUL 06, 2023 01:40 PM

Name: CIMAREX ENERGY COMPANY OF COLORADO

Title: Authorized Agent

Street Address: 85 S 200 E

City: VERNALState: UT

Phone: (435) 789-1017

Email address: ADOEBELE@UINTAHGROUP.COM

Field

Representative Name: Brittany Gordon

Street Address: 6001 Deauville Blvd, 300N

City: MidlandState: TNZip: 79706

Phone: (432)620-1960

Email address: brittany.gordon@coterra.com

BLM Point of Contact

BLM POC Name: CHRISTOPHER WALLS

BLM POC Title: Petroleum Engineer

BLM POC Phone: 5752342234

BLM POC Email Address: cwalls@blm.gov

Disposition: Approved

Disposition Date: 11/21/2023

Signature: Chris Walls

Form 3160-5
(June 2019)

UNITED STATES
DEPARTMENT OF THE INTERIOR
BUREAU OF LAND MANAGEMENT

FORM APPROVED
OMB No. 1004-0137
Expires: October 31, 2021

SUNDRY NOTICES AND REPORTS ON WELLS
Do not use this form for proposals to drill or to re-enter an abandoned well. Use Form 3160-3 (APD) for such proposals.

5. Lease Serial No.	
6. If Indian, Allottee or Tribe Name	
7. If Unit of CA/Agreement, Name and/or No.	
8. Well Name and No.	
9. API Well No.	
10. Field and Pool or Exploratory Area	11. Country or Parish, State

12. CHECK THE APPROPRIATE BOX(ES) TO INDICATE NATURE OF NOTICE, REPORT OR OTHER DATA

TYPE OF SUBMISSION	TYPE OF ACTION				
<input type="checkbox"/> Notice of Intent	<input type="checkbox"/> Acidize	<input type="checkbox"/> Deepen	<input type="checkbox"/> Production (Start/Resume)	<input type="checkbox"/> Water Shut-Off	
<input type="checkbox"/> Subsequent Report	<input type="checkbox"/> Alter Casing	<input type="checkbox"/> Hydraulic Fracturing	<input type="checkbox"/> Reclamation	<input type="checkbox"/> Well Integrity	
<input type="checkbox"/> Final Abandonment Notice	<input type="checkbox"/> Casing Repair	<input type="checkbox"/> New Construction	<input type="checkbox"/> Recomplete	<input type="checkbox"/> Other	
	<input type="checkbox"/> Change Plans	<input type="checkbox"/> Plug and Abandon	<input type="checkbox"/> Temporarily Abandon		
	<input type="checkbox"/> Convert to Injection	<input type="checkbox"/> Plug Back	<input type="checkbox"/> Water Disposal		

13. Describe Proposed or Completed Operation: Clearly state all pertinent details, including estimated starting date of any proposed work and approximate duration thereof. If the proposal is to deepen directionally or recompleate horizontally, give subsurface locations and measured and true vertical depths of all pertinent markers and zones. Attach the Bond under which the work will be perfonned or provide the Bond No. on file with BLM/BIA. Required subsequent reports must be filed within 30 days following completion of the involved operations. If the operation results in a multiple completion or recompletion in a new interval, a Form 3160-4 must be filed once testing has been completed. Final Abandonment Notices must be filed only after all requirements, including reclamation, have been completed and the operator has detennined that the site is ready for final inspection.)

14. I hereby certify that the foregoing is true and correct. Name (Printed/Typed)	Title
Signature	Date

THE SPACE FOR FEDERAL OR STATE OFFICE USE

Approved by	Title	Date
Conditions of approval, if any, are attached. Approval of this notice 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.	Office	

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.

(Instructions on page 2)

GENERAL INSTRUCTIONS

This form is designed for submitting proposals to perform certain well operations and reports of such operations when completed as indicated on Federal and Indian lands pursuant to applicable Federal law 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, are either shown below, will be issued by or may be obtained from the local Federal office.

SPECIFIC INSTRUCTIONS

Item 4 - Locations on Federal or Indian land should be described in accordance with Federal requirements. Consult the local Federal office for specific instructions.

Item 13: Proposals to abandon a well and subsequent reports of abandonment should include such special information as is required by the local Federal office. In addition, such proposals and reports should include reasons for the abandonment; data on any former or present productive zones or other zones with present significant fluid contents not sealed off by cement or otherwise; depths (top and bottom) and method of placement of cement plugs; mud or other material placed below, between and above plugs; amount, size, method of parting of any casing, liner or tubing pulled and the depth to the top of any tubing left in the hole; method of closing top of well and date well site conditioned for final inspection looking for approval of the abandonment. 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 the 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., 351 et seq., 25 U.S.C. 396; 43 CFR 3160.

PRINCIPAL PURPOSE: The information is used to: (1) Evaluate, when appropriate, approve applications, and report completion of subsequent well operations, on a Federal or Indian lease; and (2) document for administrative use, information for the management, disposal and use of National Resource lands and resources, such as: (a) evaluating the equipment and procedures to be used during a proposed subsequent well operation and reviewing the completed well operations for compliance with the approved plan; (b) requesting and granting approval to perform those actions covered by 43 CFR 3162.3-2, 3162.3-3, and 3162.3-4; (c) reporting the beginning or resumption of production, as required by 43 CFR 3162.4-1(c) and (d) analyzing future applications to drill or modify operations in light of data obtained and methods used.

ROUTINE USES: Information from the record and/or the record will be transferred to appropriate Federal, State, local or foreign agencies, when relevant to civil, criminal or regulatory investigations or prosecutions in connection with congressional inquiries or to consumer reporting agencies to facilitate collection of debts owed the Government.

EFFECT OF NOT PROVIDING THE INFORMATION: Filing of this notice and report and disclosure of the information is mandatory for those subsequent well operations specified in 43 CFR 3162.3-2, 3162.3-3, 3162.3-4.

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

The BLM collects this information to evaluate proposed and/or completed subsequent well operations on Federal or Indian oil and gas leases.

Response to this request is mandatory.

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 Collection Clearance Officer (WO-630), 1849 C St., N.W., Mail Stop 401 LS, Washington, D.C. 20240

Additional Information

Location of Well

0. SHL: NENW / 527 FNL / 2062 FWL / TWSP: 25S / RANGE: 33E / SECTION: 33 / LAT: 32.092844 / LONG: -103.579122 (TVD: 0 feet, MD: 0 feet)

PPP: SENW / 2640 FSL / 2430 FWL / TWSP: 25S / RANGE: 33E / SECTION: 33 / LAT: 32.0869444 / LONG: -103.5778861 (TVD: 9940 feet, MD: 11900 feet)

BHL: SESW / 100 FSL / 2430 FWL / TWSP: 26S / RANGE: 33E / SECTION: 4 / LAT: 32.065549 / LONG: -103.577932 (TVD: 9940 feet, MD: 19683 feet)

CONFIDENTIAL

PECOS DISTRICT DRILLING CONDITIONS OF APPROVAL

OPERATOR'S NAME:	Cimarex
LEASE NO.:	NMNM024368A
LOCATION:	Section 33, T.25 S, R.33 E., NMPM
COUNTY:	Lea County, New Mexico
WELL NAME & NO.:	Red Hills Unit 47H
SURFACE HOLE FOOTAGE:	347'/N & 1982'/W
BOTTOM HOLE FOOTAGE:	100'/S & 1100'/W

*Changes approved through engineering via **Sundry 2739375** on 11-14-2023. Any previous COAs not addressed within the updated COAs still apply.*

COA

H₂S	<input type="radio"/> Yes	<input checked="" type="radio"/> No		
Potash / WIPP	<input checked="" type="radio"/> None	<input type="radio"/> Secretary	<input type="radio"/> R-111-P	<input type="checkbox"/> WIPP
Cave / Karst	<input checked="" type="radio"/> Low	<input type="radio"/> Medium	<input type="radio"/> High	<input type="radio"/> Critical
Wellhead	<input type="radio"/> Conventional	<input checked="" type="radio"/> Multibowl	<input type="radio"/> Both	<input type="radio"/> Diverter
Cementing	<input type="checkbox"/> Primary Squeeze	<input type="checkbox"/> Cont. Squeeze	<input type="checkbox"/> EchoMeter	<input type="checkbox"/> DV Tool
Special Req	<input type="checkbox"/> Break Testing	<input type="checkbox"/> Water Disposal	<input type="checkbox"/> COM	<input checked="" type="checkbox"/> Unit
Variance	<input checked="" type="checkbox"/> Flex Hose	<input type="checkbox"/> Casing Clearance	<input type="checkbox"/> Pilot Hole	<input type="checkbox"/> Capitan Reef
Variance	<input type="checkbox"/> Four-String	<input type="checkbox"/> Offline Cementing	<input type="checkbox"/> Fluid-Filled	<input type="checkbox"/> Open Annulus
<input type="checkbox"/> Batch APD / Sundry				

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 must meet all requirements from **43 CFR 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 **976** feet (a minimum of **25 feet (Lea County)** into the Rustler Anhydrite, above the salt, and below usable fresh water) and cemented to the surface.
 - a. If cement does not circulate to the surface, the appropriate BLM office shall be notified and a temperature survey utilizing an electronic type temperature survey with surface log readout will be used or a cement bond log shall be run to verify the top of the cement. Temperature survey will be run a minimum of six hours after pumping cement and ideally between 8-10 hours after completing the cement job.
 - b. Wait on cement (WOC) time for a primary cement job will be a minimum of **8**

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

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

2. The minimum required fill of cement behind the **9-5/8** inch intermediate casing is:

- Cement to surface. If cement does not circulate see B.1.a, c-d above.

Wait on cement (WOC) time for a primary cement job is to include the lead cement slurry due to cave/karst.

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.

4. The minimum required fill of cement behind the **4-1/2** inch production liner is:

- Cement should tie-back **100 feet** into the previous casing. Operator shall provide method of verification. **Excess calculates to 10%. Additional cement maybe required.**

C. PRESSURE CONTROL

1. Variance approved to use flex line from BOP to choke manifold. Manufacturer's specification to be readily available. No external damage to flex line. Flex line to be installed as straight as possible (no hard bends).'
2. Operator has proposed a multi-bowl wellhead assembly. This assembly will only be tested when installed on the surface casing. Minimum working pressure of the blowout preventer (BOP) and related equipment (BOPE) required for drilling below the casing shoe shall be **5000 (5M)** psi.
 - a. Wellhead shall be installed by manufacturer's representatives, submit documentation with subsequent sundry.
 - b. If the welding is performed by a third party, the manufacturer's representative shall monitor the temperature to verify that it does not exceed the maximum temperature of the seal.
 - c. Manufacturer representative shall install the test plug for the initial BOP test.
 - d. If the cement does not circulate and one inch operations would have been possible with a standard wellhead, the well head shall be cut off, cementing operations performed and another wellhead installed.
 - e. Whenever any seal subject to test pressure is broken, all the tests in 43 CFR 3172 must be followed.

D. SPECIAL REQUIREMENT (S)**Unit Wells**

The well sign for a unit well shall include the unit number in addition to the surface and bottom hole lease numbers. This also applies to participating area numbers. If a participating area has not been established, the operator can use the general unit designation, but will replace the unit number with the participating area number when the sign is replaced.

Commercial Well Determination

A commercial well determination shall be submitted after production has been established for at least six months. (This is not necessary for secondary recovery unit wells)

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

☒ Lea County

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

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

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 part 3170 Subpart 3172** 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.

ZS 11/14/2023

Cimarex Energy Company of Colorado respectfully requests the following drilling and directional changes be made to the existing, approved APD for the following well:

RED HILLS UNIT 47H

The AFMSS Location Table does not match the points in the C-102 & Directional Plan attached to the approved APD

527' FNL 2,062' FWL, NENW (C-102) 10,233 MD & 9,940' TVD (DIR PLAN)

Exit point #1 was called out at 0' FNL of Section 4, which would not account for the bottom lateral portion of the producing wellbore.

APPROVED APD

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Sec	Aliquot/Lot/Track	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	TVD	MD
SHL #1 Leg	527	FNL	2062	FWL	25S	33E	33	NENW	32.092844	-103.579122	LEA	NEWMEXICO	NEWMEXICO	F	NMNM0024368A	3361	0	0
KOP #1 Leg	527	FNL	1675	FWL	25S	33E	33	NENW	32.0928388	-103.5778722	LEA	NEWMEXICO	NEWMEXICO	F	NMNM0024368A	-6101	9483	9462
PPP #1-1 Leg	2640	FSL	2430	FWL	25S	33E	33	SESW	32.0869444	-103.5778861	LEA	NEWMEXICO	FIRSTPRIN	F	NMNM0005792	-6579	11900	9940
EXIT #1 Leg	0	FNL	2430	FWL	26S	33E	4	NENW	32.0797972	-103.5779028	LEA	NEWMEXICO	FIRSTPRIN	F	NMNM089425	-6579	14500	9940
BHL #1 Leg	100	FSL	2430	FWL	26S	33E	4	SESW	32.065549	-103.577932	LEA	NEWMEXICO	FIRSTPRIN	F	NMNM089425	-6579	19683	9940

PROPOSED CHANGES

Wellbore	NS-Foot	NS Indicator	EW-Foot	EW Indicator	Twsp	Range	Sec	Aliquot/Lot/Track	Latitude	Longitude	County	State	Meridian	Lease Type	Lease Number	Elevation	TVD	MD
SHL #1 Leg	347	FNL	1982	FWL	25S	33E	33	NENW	32.09334	-103.579379	LEA	NEWMEXICO	NEWMEXICO	F	NMNM0024368A	3361	0	0
KOP #1 Leg	102	FNL	1530	FWL	25S	33E	33	NENW	32.09402241	-103.58083244	LEA	NEWMEXICO	NEWMEXICO	F	NMNM0024368A	-6998	10333	10359
PPP #1-1 Leg	100	FNL	1100	FWL	25S	33E	33	NWNW	32.094025	-103.582227	LEA	NEWMEXICO	NEWMEXICO	F	NMNM0024368A	-8048	10925	11409
PPP #1-2 Leg	2640	FNL	1101	FWL	25S	33E	33	NWSW	32.087045	-103.582226	LEA	NEWMEXICO	NEWMEXICO	F	NMNM0005792A	-8048	10925	13950
PPP #1-3 Leg	1320	FSL	1102	FWL	25S	33E	33	SWSW	32.083417	-103.582226	LEA	NEWMEXICO	NEWMEXICO	F	NMNM0005792	-8048	10925	15270
PPP #1-4 Leg	0	FNL	1102	FWL	25S	33E	4	NWNW	32.079789	-103.582226	LEA	NEWMEXICO	NEWMEXICO	F	NMNM089425	-8048	10925	16590
EXIT #1 Leg	100	FSL	1100	FWL	25S	33E	4	SWSW	32.065557	-103.582225	LEA	NEWMEXICO	NEWMEXICO	F	NMNM089425	-8048	10925	21100
BHL #1 Leg	100	FSL	1100	FWL	25S	33E	4	SWSW	32.065557	-103.582225	LEA	NEWMEXICO	NEWMEXICO	F	NMNM089425	-8048	10925	21100

Drilling Plan amendments:

Sec 1 - Geologic Formations

Geologic formation depths have all changed. Please see attached drilling plans.

Section 2 - Blowout Prevention

12.25" hole size – Min required WP 2M

8.75" hole size – Min required WP 3M

6" hole size – Min required WP 5M

Section 3 - Casing

Surface casing changed from 989' MD to 976' MD.

Intermediate casing string changed from 4,912' MD to 4,980' MD.

Tapered production string changed from 5.5" & 9,483' MD to 7" & 11,109' MD (L-80 & LT&C) with 7" P-110 & BT&C) ran from 10,359' to 11,109' MD.

A new 4 1/2" (P-110, BT&C) completion liner was added to 21,100' MD.

Section 4 - Cement

Surface cement sacks changed from 417 lead/195 tail to 410 lead/195 tail.

Intermediate cement sacks changed from 933 lead/287 tail to 948 lead/287 tail. Tail yield changed from 1.34 to 1.36.

Tapered production string changed from multiple production string cement segments to one production string segment consisting of:

Lead: 343 sx Tuned Light + LCM cement / 10.30 density & 3.64 yield.

Tail: 125 sx Class C + retarder cement / 14.80 density & 1.36 yield.

A completion liner string was added consisting of 741 sx, 14.20 density & 1.30 yield (Tail: 50:50 (Poz:H)

+ Salt + Bentonite + Fluid Loss + Dispersant + SMS) TOC @ 10,909'.

Section 5 - Circulating Medium

Changed from:

0' to 989' - Spud Mud - 8.3 Min/8.8 Max

989' to 4,912' - Salt Saturated - 9.7 Min/10.2 Max

4,912' to 19683' - Cut Brine - 8.5 Min/9 Max

To:

0' to 976' Fresh Water 7.83 Min/8.33 Max

976' to 4,980' Brine Water 9.80 Min/10.30 Max

4,980' to 11,109' Cut Brine or OBM 8.70 min/ 9.20 Max

11,109' to 21,100' OBM 9.00 Min/ 9.50 Max

Section 7 – Pressure

Anticipated BHP changed from 4,651' to 5,396'.

Other Variances:

Cimarex requests to perform offline cementing. OLC procedure as follows: 1. Land casing on solid body mandrel hanger. Engage pack off and lock ring 2. Install BPV. 3. Skid rig. 4. Check for pressure and remove BPV. 5. Circulate down casing, taking returns through casing valves. 6. Pump lead and tail cement. 7. Displace cement and bump the plug. 8. Ensure floats are holding pressure. 9. RD cement crew. 10. Install BPV and TA cap.

Cimarex requests permission to skid the rig to the next well on the pad to begin operations instead of waiting 8 hours for surface cement to harden on this well. Surface cement will be pumped, and we will ensure floats hold, do a green cement test and then skid to the next well on pad.

We will not perform any operations on this well until at least 8 hours and when both tail and lead slurry reach 500 psi. The mandrel hanger is made up on the last joint of 13 5/8" casing and then lowered down with and landing joint. It is then lowered down until the mandrel contacts the landing ring which is pre-welded to the conductor pipe. At this point the 13 5/8" casing is entirely supported by the conductor pipe via the landing ring/mandrel and is independent from the rig. This allows us to walk the rig away from the well and begin work on the next well while the cement is hardening. There is no way for the casing to be moved or knocked off center since it is hanging from the landing ring.

1. Geological Formations

TVD of target 10,925

Pilot Hole TD N/A

MD at TD 21,100

Deepest expected fresh water

Formation	Depth (TVD) from KB	Water/Mineral Bearing/Target Zone	Hazards
RUSTLER	926	Useable Water	
TOP SALT	1295	N/A	
BASE SALT	4900	N/A	
TOP DELAWARE SANDS	4930	N/A	
CHERRY CANYON	5960	N/A	
BASAL BRUSHY CANYON	8855	Hydrocarbons	
BONE SPRING LIME	9040	Hydrocarbons	
LEONARD	9065	Hydrocarbons	
AVALON	9330	Hydrocarbons	
1ST BONE SPRING SAND	10020	Hydrocarbons	
2ND BONE SPRING SHALE	10220	Hydrocarbons	
2ND BONE SPRING SAND	10925	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	976	976	13-3/8"	48.00	H-40	ST&C	1.75	4.09	6.87
12 1/4	0	4980	4980	9-5/8"	40.00	HCK-55	LT&C	1.43	1.48	2.82
8 3/4	0	10359	10359	7"	29.00	L-80	LT&C	1.42	1.65	1.86
8 3/4	10359	11109	10886	7"	29.00	P-110	BT&C	1.64	2.15	60.79
6	9359	21100	10925	4-1/2"	11.60	P-110	BT&C	1.40	1.98	20.20
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., Red Hills Unit 47H

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

3. Cementing Program

Casing	# Sk	Wt. lb/gal	Yld ft ³ /sack	H ₂ O gal/sk	500# Comp. Strength (hours)	Slurry Description
Surface	410	13.50	1.72	9.15	15.5	Lead: Class C + Bentonite
	195	14.80	1.34	6.32	9.5	Tail: Class C + LCM
Intermediate	948	12.90	1.88	9.65	12	Lead: 35:65 (Poz:C) + Salt + Bentonite
	287	14.80	1.36	6.57	9.5	Tail: Class C + Retarder
Production	343	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	741	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	42
Intermediate	0	49
Production	4780	25
Completion System	10909	10

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

4. Pressure Control Equipment

	Size	Min Required WP	Type		Tested To
12 1/4	13 5/8	2M	Annular	X	2M
			Blind Ram		
			Pipe Ram		
			Double Ram	X	
			Other		
8 3/4	13 5/8	3M	Annular	X	3M
			Blind Ram		
			Pipe Ram		
			Double Ram	X	
			Other		
6	13 5/8	5M	Annular	X	5M
			Blind Ram		
			Pipe Ram	X	
			Double Ram	X	
			Other		

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

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

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

5. Mud Program

Depth	Type	Weight (ppg)	Viscosity	Water Loss
0' to 976'		7.83 - 8.33		N/C
976' to 4980'	Brine Water	9.80 - 10.30	30-32	N/C
4980' to 11109'	Cut Brine or OBM	8.70 - 9.20	27-70	N/C
11109' to 21100'	OBM	9.00 - 9.50	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	
X	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.
	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	5396 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	H ₂ S is present
X	H ₂ S plan is attached

8. Other Facets of Operation**9. Wellhead**

A multi-bowl wellhead system will be utilized.

After running the 13-3/8" surface casing, a 13 5/8" BOP/BOPE system with a minimum working pressure of 5000 psi will be installed on the wellhead system and will be pressure tested to 250 psi low followed by a 5000 psi test. Annular will be tested to working pressure, or a maximum test pressure of 5000 psi. The pressure test will be repeated at least every 30 days, as per Onshore Order No. 2.

The multi-bowl wellhead will be installed by vendor's representative. A copy of the installation instructions has been sent to the BLM field office.

The wellhead will be installed by a third-party welder while being monitored by the wellhead vendor representative.

All BOP equipment will be tested utilizing a conventional test plug. Not a cup or J-packer type.

A solid steel body pack-off will be utilized after running and cementing the intermediate casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.

A solid steel body pack-off will be utilized after running and cementing the production casing. After installation the pack-off and lower flange will be pressure tested to 5000 psi.

All casing strings will be tested as per Onshore Order No.2 to at least 0.22 psi/ft or 1,500 whichever is greater and not to exceed 70% of casing burst.

If well conditions dictate conventional slips will be set and BOPE will be tested to appropriate pressures based on permitted pressure requirements.

10. Other Variances

Cimarex requests to perform offline cementing. OLC procedure as follows: 1. Land casing on solid body mandrel hanger. Engage pack off and lock ring 2. Install BPV. 3. Skid rig. 4. Check for pressure and remove BPV. 5. Circulate down casing, taking returns through casing valves. 6. Pump lead and tail cement. 7. Displace cement and bump the plug. 8. Ensure floats are holding pressure. 9. RD cement crew. 10. Install BPV and TA cap.

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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.

Geologic Prognosis



Well Information					Contact Information		
Well Name: Red Hills Unit 47H		County: Lea			Jenny Blake		
API #:		State: New Mexico			Office: (432) 571-7800		
Dev/Exp: Development		Field:			Cell: (281) 639-4419		
Surface Hole Information					Email: Jenny.Blake@coterra.com		
Footages:	Section:	Township:	Range:	Direction			
347' FNL / 1982' FWL	33	25S	33E	N-S	Staci Mueller		
Bottom Hole Information					Office: (432) 571-7898		
Footages:	Section:	Township:	Range:		Cell: (406) 794-2287		
100' FSL / 1100' FWL	4	26S	33E		Email: Staci.Mueller@coterra.com		
Target Information							
Lower 2nd Sand		Landing TVD: 10,925'		TD TVD: 10,925'			
Generated By: Jenny Blake Date Generated: 5/17/2023							
Est. GL Elevation: 3367		Rig:					
Est. KB above GL 23							
Est. KB Elevation: 3390							
Horizon	TVD top	TVD base	SSTVD top	Thickness	Lithology	Mineral Resource	Comments
Rustler	926	1295	2629	369	Anhydrite	Useable Water	Hardline 100' FSL/100' FNL & 330' FWL/FEL
Top Salt/Salado	1295	4900	1360	3605	Halite	N/A	
Base Salt/Lamar	4900	4930	-1021	30	Shale	N/A	
Top Delaware Sands/Bell Canyon	4930	5960	-1067	1030	Sandstone	Natural gas, oil	
Cherry Canyon	5960	7480	-2053	1520	Sandstone	Natural gas, oil	
Brushy Canyon	7480	8855	-4090	1375	Sandstone	Natural gas, oil	
Basal Brushy Canyon	8855	9040	-5465	185			
Bone Spring Lime	9040	9065	-5015	25	Limestone	N/A	
Leonard/Avalon Sand	9065	9330	-5115	265	Shale	Natural gas, oil	
Avalon Shale	9330	10020	-5491	690	Shale	Natural gas, oil	
1st Bone Spring Sand	10020	10220	-6111	200	Sandstone	Natural gas, oil	
2nd Bone Spring Shale	10220	10575	-6435	355			
2nd Bone Spring Sand	10575	10925	-6434	350	Sandstone	Natural gas, oil	
2nd Bone Spring Sand Target	10,925	---	-7535	---			
Potential Geologic / Drilling Hazards: N/A							
Type Log: 30025351120000							
Offset Injection Wells:							
Open Hole Logs: n/a							
Service Provider:							
Ops Contact:							
Sales Contact:							
Log Type:							
Mudlogging Vendor: n/a							



Coterra Red Hills Unit 47H Rev1 kFc 24May23 Proposal Geodetic Report

Def Plan

Report Date:	May 24, 2023 - 03:11 PM (UTC 0)	Survey / DLS Computation:	Minimum Curvature / Lubinski
Client:	COTERRA	Vertical Section Azimuth:	179.800 °(GRID North)
Field:	NM Lea County (NAD 83)	Vertical Section Origin:	0.000 ft, 0.000 ft
Structure / Slot:	Coterra Red Hills Unit Pad 47-50 / Red Hills Unit 47H	TVD Reference Datum:	RKB
Well:	Red Hills Unit 47H	TVD Reference Elevation:	3385.600 ft above MSL
Borehole:	Red Hills Unit 47H	Seabed / Ground Elevation:	3362.600 ft above MSL
UBHI / API#:	Unknown / Unknown	Magnetic Declination:	6.243°
Survey Name:	Coterra Red Hills Unit 47H Rev1 kFc 24May23	Total Gravity Field Strength:	998.4352mgn (9.80665 Based)
Survey Date:	May 24, 2023	Gravity Model:	GARM
Tort / AHD / DDI / ERD Ratio:	119.001 ° / 10926.332 ft / 6.400 / 1.000	Total Magnetic Field Strength:	47341.144 nT
Coordinate Reference System:	NAD83 New Mexico State Plane, Eastern Zone, US Feet	Magnetic Dip Angle:	59.617°
Location Lat / Long:	32°5'36.02514"N , 103°34'45.76269"W	Declination Date:	May 24, 2023
Location Grid NE Y/X:	N 388510.220 RUS , E 774820.370 RUS	Magnetic Declination Model:	HDGM 2023
CRS Grid Convergence Angle:	0.4006°	North Reference:	Grid North
Grid Scale Factor:	0.99997153	Grid Convergence Used:	0.4006°
Version / Patch:	2022.5.0.11	Total Corr Mag North->Grid North:	5.842°
		Local Coord Referenced To:	Well Head

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	Northing (RUS)	Easting (RUS)	Latitude (°)	Longitude (°)	DLS (°100ft)	BR (°100ft)	TR (°100ft)
SHL [347 FNL, 1982° FWL]	0.00	0.00	298.46	0.00	-3,385.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853			
	100.00	0.00	298.46	100.00	-3,285.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	200.00	0.00	298.46	200.00	-3,185.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	300.00	0.00	298.46	300.00	-3,085.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	400.00	0.00	298.46	400.00	-2,985.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	500.00	0.00	298.46	500.00	-2,885.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	600.00	0.00	298.46	600.00	-2,785.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	700.00	0.00	298.46	700.00	-2,685.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	800.00	0.00	298.46	800.00	-2,585.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	900.00	0.00	298.46	900.00	-2,485.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
Rustler	926.00	0.00	298.46	926.00	-2,459.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	1,000.00	0.00	298.46	1,000.00	-2,385.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	1,100.00	0.00	298.46	1,100.00	-2,285.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	1,200.00	0.00	298.46	1,200.00	-2,185.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	1,295.00	0.00	298.46	1,295.00	-2,090.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	1,300.00	0.00	298.46	1,300.00	-2,085.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	1,400.00	0.00	298.46	1,400.00	-1,985.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	1,500.00	0.00	298.46	1,500.00	-1,885.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	1,600.00	0.00	298.46	1,600.00	-1,785.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	1,700.00	0.00	298.46	1,700.00	-1,685.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
Salado	1,800.00	0.00	298.46	1,800.00	-1,585.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	1,900.00	0.00	298.46	1,900.00	-1,485.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	2,000.00	0.00	298.46	2,000.00	-1,385.60	0.00	0.00	0.00	398.510.22	774.820.37	32.09334032	-103.57937853	0.00	0.00	0.00
	2,100.00	2.00	298.46	2,099.98	-1,285.62	-0.84	0.83	-1.53	398.511.05	774.818.84	32.09334263	-103.57938346	2.00	2.00	0.00
	2,200.00	4.00	298.46	2,199.84	-1,185.76	-3.37	6.14	-12.35	398.513.55	774.814.24	32.09334957	-103.57939826	2.00	2.00	0.00
	2,299.96	6.00	298.46	2,299.41	-1,086.19	-7.57	7.48	-13.79	398.517.70	774.806.58	32.09336113	-103.57942289	2.00	2.00	0.00
	2,300.00	6.00	298.46	2,299.45	-1,086.15	-7.57	7.48	-13.80	398.517.70	774.806.57	32.09336114	-103.57942291	0.00	0.00	0.00
	2,400.00	6.00	298.46	2,398.90	-986.70	-12.62	12.46	-22.99	398.522.68	774.797.39	32.09337500	-103.57945246	0.00	0.00	0.00
	2,500.00	6.00	298.46	2,498.36	-887.24	-17.66	17.44	-32.17	398.527.66	774.788.20	32.09338887	-103.57948202	0.00	0.00	0.00
	2,600.00	6.00	298.46	2,597.81	-787.79	-22.71	22.42	-41.36	398.532.64	774.779.01	32.09340273	-103.57951157	0.00	0.00	0.00
Nudge, Build 2°/100ft	2,700.00	6.00	298.46	2,697.26	-688.34	-27.75	27.40	-50.55	398.537.62	774.769.82	32.09341660	-103.57954113	0.00	0.00	0.00
	2,800.00	6.00	298.46	2,796.71	-588.89	-32.80	32.38	-59.74	398.542.60	774.760.63	32.09343047	-103.57957068	0.00	0.00	0.00
	2,900.00	6.00	298.46	2,896.17	-489.43	-37.84	37.36	-68.93	398.547.58	774.751.44	32.09344433	-103.57960024	0.00	0.00	0.00
	3,000.00	6.00	298.46	2,995.62	-389.98	-42.89	42.34	-78.12	398.552.56	774.742.26	32.09345820	-103.57962979	0.00	0.00	0.00
	3,100.00	6.00	298.46	3,095.07	-290.53	-47.93	47.32	-87.30	398.557.54	774.733.07	32.09347206	-103.57965935	0.00	0.00	0.00
	3,200.00	6.00	298.46	3,194.52	-191.08	-52.98	52.30	-96.49	398.562.52	774.723.88	32.09348593	-103.57968891	0.00	0.00	0.00
	3,300.00	6.00	298.46	3,293.98	-91.62	-58.02	57.28	-105.68	398.567.50	774.714.69	32.09349980	-103.57971846	0.00	0.00	0.00
	3,400.00	6.00	298.46	3,393.43	7.83	-63.06	62.26	-114.87	398.572.48	774.705.50	32.09351366	-103.57974802	0.00	0.00	0.00
	3,500.00	6.00	298.46	3,492.88	107.28	-68.11	67.24	-124.06	398.577.46	774.696.32	32.09352753	-103.57977757	0.00	0.00	0.00
	3,600.00	6.00	298.46	3,592.33	206.73	-73.15	72.22	-133.25	398.582.44	774.687.13	32.09354139	-103.57980713	0.00	0.00	0.00
Hold	3,700.00	6.00	298.46	3,691.78	306.18	-78.20	77.20	-142.44	398.587.42	774.677.94	32.09355526	-103.57983668	0.00	0.00	0.00
	3,800.00	6.00	298.46	3,791.24	405.64	-83.24	82.19	-151.62	398.592.40	774.668.75	32.09356913	-103.57986624	0.00	0.00	0.00
	3,900.00	6.00	298.46	3,890.69	505.09	-88.29	87.17	-160.81	398.597.38	774.659.56	32.09358298	-103.57989579	0.00	0.00	0.00
	4,000.00	6.00	298.46	3,990.14	604.54	-93.33	92.15	-170.00	398.602.36	774.650.37	32.09359686	-103.57992535	0.00	0.00	0.00
	4,100.00	6.00	298.46	4,089.59	703.99	-98.38	97.13	-179.19	398.607.34	774.641.19	32.09361072	-103.57995491	0.00	0.00	0.00
	4,200.00	6.00	298.46	4,189.05	803.45	-103.42	102.11	-188.38	398.612.32	774.632.00	32.09362459	-103.57998446	0.00	0.00	0.00
	4,300.00	6.00	298.46	4,288.50	902.90	-108.46	107.09	-197.57	398.617.29	774.622.81	32.09363846	-103.58001402	0.00	0.00	0.00
	4,400.00	6.00	298.46	4,387.95	1,002.35	-113.51	112.07	-206.75	398.622.27	774.613.62	32.09365232	-103.58004357	0.00	0.00	0.00
	4,500.00	6.00	298.46	4,487.40	1,101.80	-118.55	117.05	-215.94	398.627.27	774.604.43	32.09366619	-103.58007313	0.00	0.00	0.00
	4,600.00	6.00	298.46	4,586.86	1,201.26	-123.60	122.03	-225.13	398.632.25	774.595.25	32.09368005	-103.58010268	0.00	0.00	0.00
Lamar	4,700.00	6.00	298.46	4,686.31	1,300.71	-128.64	127.01	-234.32	398.637.23	774.586.06	32.09369392	-103.58013224	0.00	0.00	0.00
	4,800.00	6.00	298.46	4,785.76	1,400.16	-133.69	131.99	-243.51	398.642.21	774.576.87	32.09370779	-103.58016180	0.00	0.00	0.00
	4,900.00	6.00	298.46	4,885.21	1,499.61	-138.73	136.97	-252.70	398.647.19	774.567.68	32.09372165	-103.58019135	0.00	0.00	0.00
	4,914.87	6.00	298.46	4,900.00	1,514.40	-139.48	137.71	-254.06	398.647.93	774.566.32	32.09372371	-103.58019575	0.00	0.00	0.00
	4,945.03	6.00	298.46	4,930.00	1,544.40	-141.00	139.21	-256.83	398.649.43	774.563.54	32.09372790	-103.58020466	0.00	0.00	0.00
	5,000.00	6.00	298.46	4,984.67	1,599.07	-143.78	141.95	-261.88	398.653.15	774.558.49	32.09373552	-103.58022091	0.00	0.00	0.00
	5,100.00	6.00	298.46	5,084.12	1,698.52	-148.82	146.93	-271.07	398.658.17	774.549.30	32.09374938	-103.58025046	0.00	0.00	0.00
	5,200.00	6.00	298.46	5,183.57	1,797.97	-153.86	151.91	-280.26	398.662.13	774.540.12	32.09376325	-103.58028002	0.00	0.00	0.00
	5,300.00	6.00	298.46	5,283.02	1,897.42	-158.91	156.89	-289.45	398.667.11	774.530.93	32.09377712	-103.58030957	0.00	0.00	0.00
	5,400.00	6.00	298.46	5,382.47	1,996.87	-163.95	161.87	-298.64	398.672.09	774.521.74	32.09379098	-103.58033913	0.00	0.00	0.00
Bell Canyon	5,500.00	6.00	298.46	5,481.93	2,096.33	-169.00	166.85	-307.83	398.677.07	774.512.55	32.09380485	-103.58036869	0.00	0.00	0.00
	5,600.00	6.00	298.46	5,581.38	2,195.78	-174.04	171.88	-317.00	398.682.05	774.503.36	32.09381871	-103.58039824	0.00	0.00	0.00
	5,700.00	6.00	298.46												

Comments	MD (ft)	Incl (°)	Azim (°)	TVD (ft)	TVDSS (ft)	VSEC (ft)	NS (ft)	EW (ft)	Northing (ft)	Easting (ft)	Latitude (°)	Longitude (°)	DLS (°/100ft)	BR (°/100ft)	TR (°/100ft)
2nd BS SS	10,609.28	25.04	196.60	10,575.00	7,189.40	-196.66	193.40	-467.38	398,703.62	774,353.00	32.09388089	-103.58088326	10.00	10.00	0.00
	10,700.00	34.11	196.60	10,653.82	7,268.22	-153.89	150.54	-480.16	398,660.76	774,340.23	32.09376333	-103.58092548	10.00	10.00	0.00
	10,800.00	44.11	196.60	10,731.31	7,345.71	-93.65	90.17	-498.16	398,600.39	774,322.23	32.09359773	-103.58098496	10.00	10.00	0.00
	10,900.00	54.11	196.60	10,796.69	7,411.09	-21.45	17.82	-519.73	398,539.04	774,300.66	32.09339927	-103.58105623	10.00	10.00	0.00
	11,000.00	64.11	196.60	10,847.97	7,462.37	60.51	-64.32	-544.21	398,445.91	774,276.18	32.09317398	-103.58113714	10.00	10.00	0.00
Build 5"/100ft	11,100.00	74.11	196.60	10,883.58	7,497.98	149.75	-153.73	-570.87	398,356.49	774,249.52	32.09292871	-103.58122522	10.00	10.00	0.00
	11,108.91	75.00	196.60	10,885.95	7,500.35	157.96	-161.97	-573.32	398,348.26	774,247.07	32.09290613	-103.58123333	10.00	10.00	0.00
	11,200.00	79.55	196.60	10,906.01	7,520.41	242.91	-247.09	-590.70	398,263.14	774,221.69	32.09267264	-103.58131719	5.00	5.00	0.00
	11,300.00	84.55	196.60	10,919.83	7,534.23	337.59	-341.97	-626.68	398,168.26	774,193.43	32.09241234	-103.58141065	5.00	5.00	0.00
	11,400.00	89.55	196.60	10,924.97	7,539.37	433.06	-437.65	-655.51	398,072.58	774,164.88	32.09214995	-103.58150490	5.00	5.00	0.00
Landing Point	11,408.91	90.00	196.60	10,925.00	7,539.40	441.59	-446.19	-658.05	398,064.04	774,162.34	32.09212653	-103.58151331	5.00	5.00	0.00
	11,500.00	90.00	196.60	10,925.00	7,539.40	528.69	-533.48	-684.08	397,976.75	774,136.32	32.09188709	-103.58159930	0.00	0.00	0.00
	11,593.91	90.00	196.60	10,925.00	7,539.40	618.50	-623.48	-710.91	397,886.76	774,109.49	32.09164023	-103.58168795	0.00	0.00	0.00
	11,600.00	90.00	196.51	10,925.00	7,539.40	629.33	-629.32	-712.64	397,880.92	774,107.75	32.09162423	-103.58169368	1.50	0.00	-1.50
	11,700.00	90.00	195.01	10,925.00	7,539.40	720.37	-725.55	-739.80	397,784.69	774,080.59	32.09136022	-103.58178353	1.50	0.00	-1.50
Turn 2"/100ft	11,800.00	90.00	193.51	10,925.00	7,539.40	817.11	-822.47	-764.43	397,687.77	774,055.97	32.09109430	-103.58186524	1.50	0.00	-1.50
	11,900.00	90.00	192.01	10,925.00	7,539.40	914.49	-920.00	-786.51	397,590.25	774,033.88	32.09082666	-103.58193873	1.50	0.00	-1.50
	12,000.00	90.00	190.51	10,925.00	7,539.40	1,012.42	-1,018.07	-806.03	397,492.18	774,014.36	32.09055746	-103.58200387	1.50	0.00	-1.50
	12,100.00	90.00	189.01	10,925.00	7,539.40	1,110.85	-1,116.62	-822.98	397,393.63	773,997.41	32.09028691	-103.58206092	1.50	0.00	-1.50
	12,200.00	90.00	187.51	10,925.00	7,539.40	1,209.71	-1,215.58	-837.35	397,294.67	773,983.05	32.09001518	-103.58210952	1.50	0.00	-1.50
Hold	12,300.00	90.00	186.01	10,925.00	7,539.40	1,308.92	-1,314.88	-849.12	397,195.38	773,971.28	32.08974246	-103.58214975	1.50	0.00	-1.50
	12,400.00	90.00	184.51	10,925.00	7,539.40	1,408.43	-1,414.46	-858.28	397,095.80	773,962.12	32.08946893	-103.58218158	1.50	0.00	-1.50
	12,500.00	90.00	183.01	10,925.00	7,539.40	1,508.17	-1,514.24	-864.84	396,996.02	773,955.56	32.08919479	-103.58220499	1.50	0.00	-1.50
	12,600.00	90.00	181.51	10,925.00	7,539.40	1,608.06	-1,614.16	-868.78	396,896.11	773,951.62	32.08892022	-103.58221996	1.50	0.00	-1.50
	12,700.00	90.00	180.01	10,925.00	7,539.40	1,708.03	-1,714.15	-870.10	396,796.12	773,950.30	32.08864542	-103.58222648	1.50	0.00	-1.50
Pool NMNM0024368A exit to NMI	12,727.43	90.00	179.60	10,925.00	7,539.40	1,735.47	-1,741.58	-870.01	396,768.69	773,950.39	32.08857001	-103.58222679	1.50	0.00	-1.50
	12,800.00	90.00	179.60	10,925.00	7,539.40	1,808.03	-1,814.15	-869.50	396,696.13	773,950.90	32.08837055	-103.58222678	0.00	0.00	0.00
	12,900.00	90.00	179.60	10,925.00	7,539.40	1,908.03	-1,914.15	-868.79	396,596.13	773,951.60	32.08809567	-103.58222676	0.00	0.00	0.00
	13,000.00	90.00	179.60	10,925.00	7,539.40	2,008.03	-2,014.14	-868.03	396,496.14	773,952.32	32.08782063	-103.58222674	0.00	0.00	0.00
	13,100.00	90.00	179.60	10,925.00	7,539.40	2,108.03	-2,114.14	-867.39	396,396.14	773,953.01	32.08754593	-103.58222671	0.00	0.00	0.00
Pool NMNM002592A exit to NMI	13,200.00	90.00	179.60	10,925.00	7,539.40	2,208.03	-2,214.14	-866.68	396,296.15	773,953.71	32.08727106	-103.58222669	0.00	0.00	0.00
	13,282.00	90.00	179.60	10,925.00	7,539.40	2,290.03	-2,296.14	-866.11	396,214.15	773,954.29	32.08704567	-103.58222668	0.00	0.00	0.00
	13,300.00	90.00	179.60	10,925.00	7,539.40	2,308.03	-2,308.03	-866.11	396,196.15	773,954.42	32.08699619	-103.58222667	0.00	0.00	0.00
	13,400.00	90.00	179.60	10,925.00	7,539.40	2,408.03	-2,414.13	-865.44	396,096.16	773,955.12	32.08672132	-103.58222665	0.00	0.00	0.00
	13,500.00	90.00	179.60	10,925.00	7,539.40	2,508.03	-2,514.13	-864.58	395,996.17	773,955.82	32.08644645	-103.58222663	0.00	0.00	0.00
Section 33-4 Line, Pool NMNM00	13,600.00	90.00	179.60	10,925.00	7,539.40	2,608.03	-2,614.13	-863.87	395,896.17	773,956.52	32.08617158	-103.58222661	0.00	0.00	0.00
	13,700.00	90.00	179.60	10,925.00	7,539.40	2,708.03	-2,714.13	-863.17	395,796.18	773,957.23	32.08589670	-103.58222659	0.00	0.00	0.00
	13,800.00	90.00	179.60	10,925.00	7,539.40	2,808.03	-2,814.12	-862.47	395,696.18	773,957.93	32.08562183	-103.58222656	0.00	0.00	0.00
	13,900.00	90.00	179.60	10,925.00	7,539.40	2,908.03	-2,914.12	-861.76	395,596.19	773,958.63	32.08534696	-103.58222654	0.00	0.00	0.00
	14,000.00	90.00	179.60	10,925.00	7,539.40	3,008.03	-3,014.12	-861.06	395,496.19	773,959.34	32.08507209	-103.58222652	0.00	0.00	0.00
Pool NMNM005792A exit to NMI	14,100.00	90.00	179.60	10,925.00	7,539.40	3,108.03	-3,114.12	-860.36	395,396.20	773,960.04	32.08479722	-103.58222650	0.00	0.00	0.00
	14,200.00	90.00	179.60	10,925.00	7,539.40	3,208.03	-3,214.11	-859.65	395,296.20	773,960.74	32.08452235	-103.58222648	0.00	0.00	0.00
	14,300.00	90.00	179.60	10,925.00	7,539.40	3,308.03	-3,314.11	-858.95	395,196.21	773,961.45	32.08424748	-103.58222646	0.00	0.00	0.00
	14,400.00	90.00	179.60	10,925.00	7,539.40	3,408.03	-3,414.11	-858.25	395,096.22	773,962.15	32.08397261	-103.58222643	0.00	0.00	0.00
	14,500.00	90.00	179.60	10,925.00	7,539.40	3,508.03	-3,514.11	-857.54	394,996.22	773,962.85	32.08369773	-103.58222641	0.00	0.00	0.00
Section 33-4 Line, Pool NMNM00	14,600.00	90.00	179.60	10,925.00	7,539.40	3,608.03	-3,614.10	-856.84	394,896.23	773,963.55	32.08342286	-103.58222639	0.00	0.00	0.00
	14,602.00	90.00	179.60	10,925.00	7,539.40	3,610.03	-3,616.10	-856.83	394,894.23	773,963.57	32.08341737	-103.58222639	0.00	0.00	0.00
	14,700.00	90.00	179.60	10,925.00	7,539.40	3,708.03	-3,714.10	-856.14	394,794.26	773,964.26	32.08314799	-103.58222637	0.00	0.00	0.00
	14,800.00	90.00	179.60	10,925.00	7,539.40	3,808.03	-3,814.10	-855.44	394,696.24	773,964.96	32.08287312	-103.58222635	0.00	0.00	0.00
	14,900.00	90.00	179.60	10,925.00	7,539.40	3,908.03	-3,914.10	-854.73	394,596.24	773,965.66	32.08259825	-103.58222633	0.00	0.00	0.00
Section 33-4 Line, Pool NMNM00	15,000.00	90.00	179.60	10,925.00	7,539.40	4,008.03	-4,014.09	-854.03	394,496.25	773,966.37	32.08232338	-103.58222630	0.00	0.00	0.00
	15,100.00	90.00	179.60	10,925.00	7,539.40	4,108.03	-4,114.09	-853.33	394,396.25	773,967.07	32.08204851	-103.58222628	0.00	0.00	0.00
	15,200.00	90.00	179.60	10,925.00	7,539.40	4,208.03	-4,214.09	-852.62	394,296.26	773,967.77	32.08177363	-103.58222626	0.00	0.00	0.00
	15,300.00	90.00	179.60	10,925.00	7,539.40	4,308.03	-4,314.09	-851.92	394,196.26</						

Borehole:	Well:	Field:	Structure:
Red Hills Unit 47H	Red Hills Unit 47H	NM Lea County (NAD 83)	Coterra Red Hills Unit Pad 47-50

Gravity & Magnetic Parameters				Surface Location				Miscellaneous			
Model:	HDGM 2023	Dip:	59.617°	Date:	24-May-2023	Lat:	N 32 5 36.03	Northing:	398510.22ftUS	Grid Conv:	0.4006°
MagDec:	6.243°	FS:	47341.144nT	Gravity FS:	998.435mgN (9.80665 Based)	Lon:	W 103 34 45.76	Easting:	774820.37ftUS	Scale Fact:	0.99997153
								Slot: Red Hills Unit 47H			
								TVD Ref: RKB (3385.600 ft above MSL)			
								Plan: Coterra Red Hills Unit 47H Rev1 kFc 24May23			

Critical Points									
Critical Point	MD	INCL	AZIM	TVD	VSEC	N(+)/S(-)	E(+)/W(-)	DLS	
SHL [347° FNL, 1982° FWL]	0.00	0.00	298.46	0.00	0.00	0.00	0.00	0.00	
Rustler	926.00	0.00	298.46	926.00	0.00	0.00	0.00	0.00	
Salado	1295.00	0.00	298.46	1295.00	0.00	0.00	0.00	0.00	
Nudge, Build 2°/100ft	2000.00	0.00	298.46	2000.00	0.00	0.00	0.00	0.00	
Hold	2299.96	6.00	298.46	2299.41	-7.57	7.48	-13.79	2.00	
Lamar	4914.87	6.00	298.46	4900.00	-139.48	137.71	-254.06	0.00	
Bell Canyon	4945.03	6.00	298.46	4930.00	-141.00	139.21	-256.83	0.00	
Cherry Canyon	5960.71	6.00	298.46	5960.00	-193.25	190.79	-352.00	0.00	
Drop 2°/100ft	6918.95	6.00	298.46	6893.11	-240.58	237.52	-438.21	0.00	
Hold	7218.91	0.00	298.46	7192.52	-248.15	245.00	-452.00	2.00	
Brushy Canyon	7506.39	0.00	298.46	7480.00	-248.15	245.00	-452.00	0.00	
Basal Brushy Canyon	8881.39	0.00	298.46	8855.00	-248.15	245.00	-452.00	0.00	
Bone Springs Lime	9066.39	0.00	298.46	9040.00	-248.15	245.00	-452.00	0.00	
Leonard	9091.39	0.00	298.46	9065.00	-248.15	245.00	-452.00	0.00	
Avalon	9356.39	0.00	298.46	9330.00	-248.15	245.00	-452.00	0.00	
1st BS SS	10046.39	0.00	298.46	10020.00	-248.15	245.00	-452.00	0.00	
2nd BS Carb	10246.39	0.00	298.46	10220.00	-248.15	245.00	-452.00	0.00	
KOP, Build 10°/100ft	10358.91	0.00	298.46	10332.52	-248.15	245.00	-452.00	0.00	
2nd BS SS	10609.28	25.04	196.60	10575.00	-196.66	193.40	-467.38	10.00	
Build 5°/100ft	11108.91	75.00	196.60	10885.95	157.96	-161.97	-573.32	10.00	
Landing Point	11408.91	90.00	196.60	10925.00	441.59	-446.19	-658.05	5.00	
Turn 2°/100ft	11593.91	90.00	196.60	10925.00	618.50	-623.48	-710.91	0.00	
Hold	12727.43	90.00	179.60	10925.00	1735.47	-1741.58	-870.01	1.50	
Pool NMNM0024368A exit to NMNM0005792A enter	13282.00	90.00	179.60	10925.00	2290.03	-2296.14	-866.11	0.00	
Section 33-4 Line, Pool NMNM0005792 enter	14602.00	90.00	179.60	10925.00	3610.03	-3616.10	-856.83	0.00	
Section 33-4 Line, Pool NMNM0005792 exit to NMNM089425 enter	15922.00	90.00	179.60	10925.00	4930.03	-4936.07	-847.55	0.00	
Red Hills Unit 47H - BHL [100° FSL, 1100° FWL]	21099.86	90.00	179.60	10925.00	10107.90	-10113.81	-811.14	0.00	

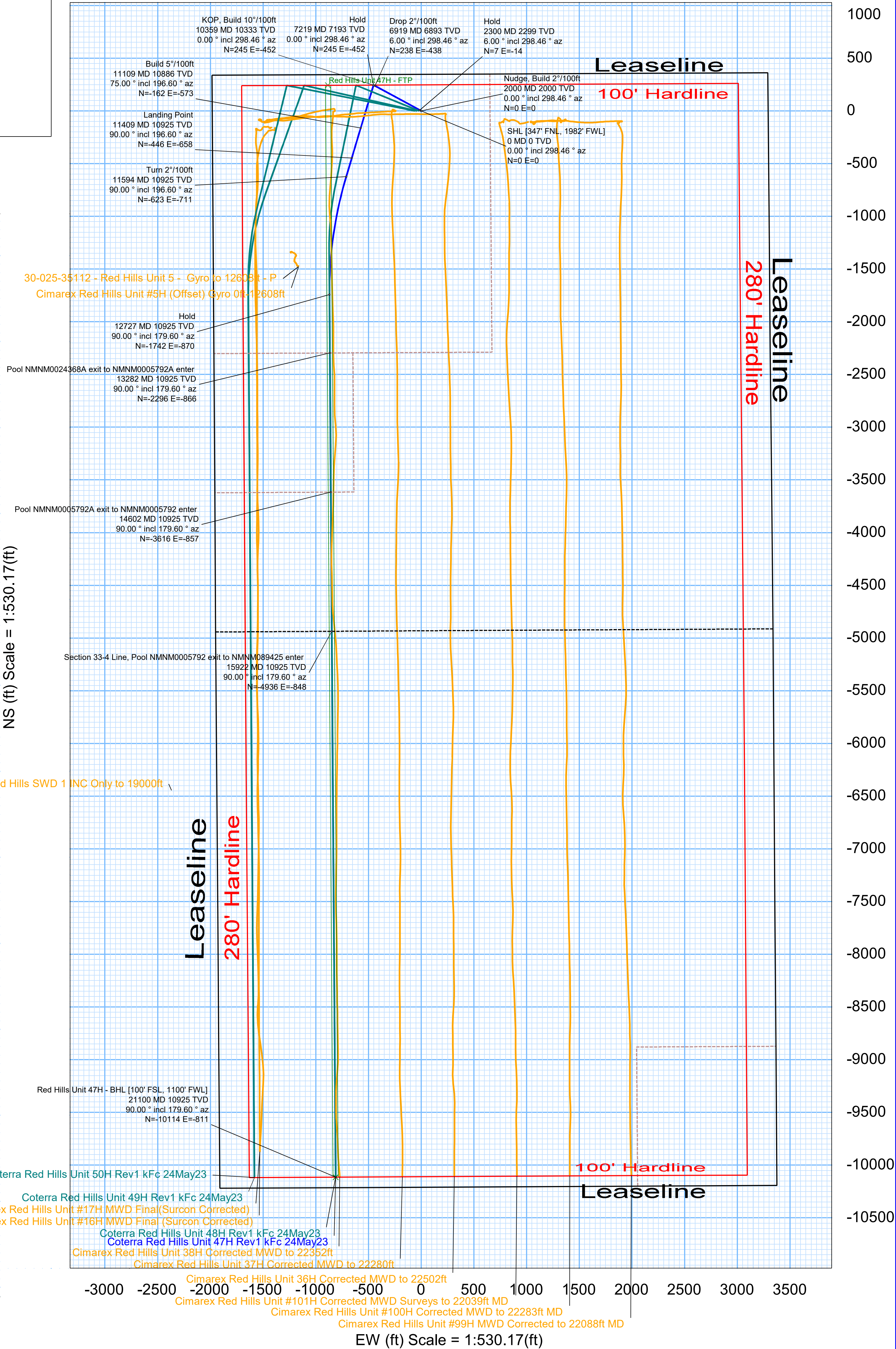
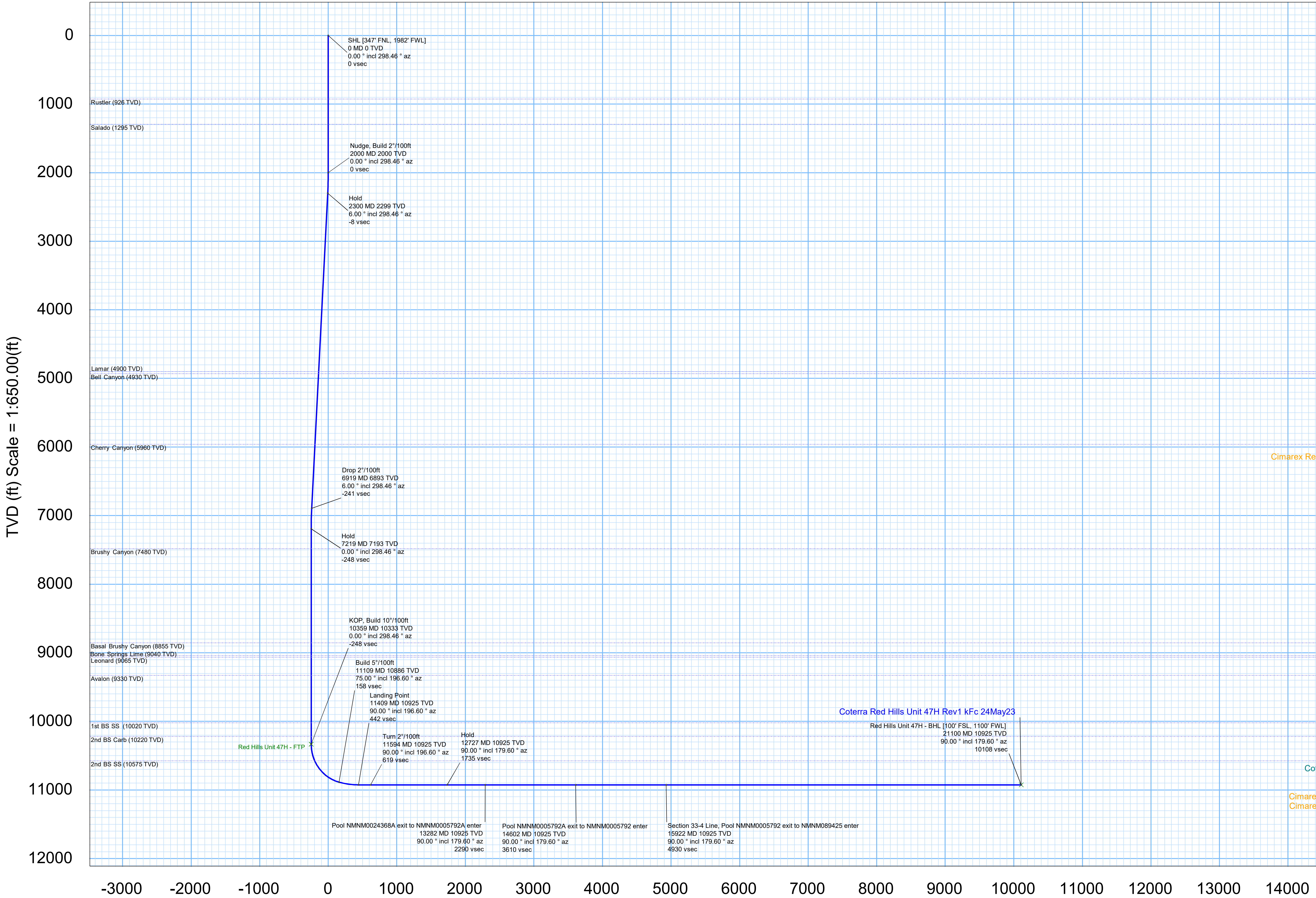
Grid North
Tot Corr (M->G 5.842°)
Mag Dec (6.243°)
Grid Conv (0.401°)

CONTROLLED

Plan ref
Drawing ref
Copy number
Date

Coterra Red Hills Unit 47H Rev1 kFc 24May23
of 3
24-May-2023

1	Client	
2	Client	
3	Office	
4	Office	
Copy number		for



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 291650

CONDITIONS

Operator: CIMAREX ENERGY CO. 6001 Deauville Blvd Midland, TX 79706	OGRID: 215099
	Action Number: 291650
	Action Type: [C-103] NOI Change of Plans (C-103A)

CONDITIONS

Created By	Condition	Condition Date
pkautz	None	1/22/2024